HP SiteScope

for the Windows, Solaris, and Linux operating systems

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Monitor Reference

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Acknowledgements

This product includes software developed by the Apache Software Foundation (**http://www.apache.org/**).

This product includes software developed by the JDOM Project (**http://www.jdom.org/**).

Documentation Updates

The title page of this document contains the following identifying information:

- Software Version number, which indicates the software version.
- Document Release Date, which changes each time the document is updated.
- Software Release Date, which indicates the release date of this version of the software.

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This site requires that you register for an HP Passport and sign-in. To register for an HP Passport ID, go to:

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You will also receive updated or new editions if you subscribe to the appropriate product support service. Contact your HP sales representative for details.

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PART II: INTEGRATION MONITORS (A-Z)

Welcome to This Guide

This guide describes how to set up the monitoring environment and configure SiteScope and integration monitors to monitor the enterprise IT infrastructure.

This chapter includes:

How This Guide Is Organized

The guide contains the following parts:

Part I SiteScope Monitors (A-Z)

Describes how to set up the monitoring environment and configure each type of SiteScope monitor. It includes information on supported versions, setup requirements, user permissions, and troubleshooting issues.

Part II Integration Monitors (A-Z)

Describes how to configure each type of integration monitor, including troubleshooting issues relating to monitoring EMS environments with SiteScope.

Note: For details on setting panels in the monitor Properties tab that are common to all monitors, see "Common Monitor Settings" in *Using SiteScope*.

Who Should Read This Guide

This guide is intended for the following users of HP SiteScope and HP Business Service Management (BSM):

- SiteScope/BSM administrators
- SiteScope/BSM application administrators
- SiteScope/BSM data collector administrators
- SiteScope/BSM end users

Readers of this guide should be knowledgeable about enterprise system administration, infrastructure monitoring systems, and SiteScope, and have familiarity with the systems being set up for monitoring. In addition, readers who are integrating with BSM should be familiar with BSM and enterprise monitoring and management concepts.

How Do I Find the Information That I Need?

This guide is part of the HP SiteScope Help. The SiteScope Help provides a single-point of access for all SiteScope documentation.

You can access the SiteScope Help by selecting **Help** > **SiteScope Help** on the SiteScope server.

Topic Types

Within this guide, each subject area is organized into topics. A topic contains a distinct module of information for a subject. The topics are generally classified according to the type of information they contain.

This structure is designed to create easier access to specific information by dividing the documentation into the different types of information you may need at different times.

Three main topic types are in use: **Concepts**, **Tasks**, and **Reference**. The topic types are differentiated visually using icons.

Topic Type	Description	Usage
Concepts	Background, descriptive, or conceptual information.	Learn general information about what a feature does.
Tasks	**Instructional Tasks.** Step-by-step guidance to help you work with the application and accomplish your goals. Some task steps include examples, using sample data. Task steps can be with or without numbering: ➤ **Numbered steps.** Tasks that are performed by following each step in consecutive order. ➤ **Non-numbered steps.** A list of self-contained operations that you can perform in any order.	➤ Learn about the overall workflow of a task. ➤ Follow the steps listed in a numbered task to complete a task. ➤ Perform independent operations by completing steps in a non-numbered task.
	Use-case Scenario Tasks. Examples of how to perform a task for a specific situation.	Learn how a task could be performed in a realistic scenario.

Topic Type	Description	Usage
Reference 📌	**General Reference**. Detailed lists and explanations of reference-oriented material.	Look up a specific piece of reference information relevant to a particular context.
	User Interface Reference. Specialized reference topics that describe a particular user interface in detail. Selecting **Help on this page** from the Help menu in the product generally opens the user interface topics.	Look up specific information about what to enter or how to use one or more specific user interface elements, such as a window, dialog box, or wizard.
Troubleshooting and Limitations 🔍	**Troubleshooting and Limitations**. Specialized reference topics that describe commonly encountered problems and their solutions, and list limitations of a feature or product area.	Increase your awareness of important issues before working with a feature, or if you encounter usability problems in the software.

Additional Online Resources

Troubleshooting & Knowledge Base accesses the Troubleshooting page on the HP Software Support Web site where you can search the Self-solve knowledge base. Choose **Help** > **Troubleshooting & Knowledge Base**. The URL for this Web site is http://h20230.www2.hp.com/troubleshooting.jsp.

HP Software Support accesses the HP Software Support Web site. This site enables you to browse the Self-solve knowledge base. You can also post to and search user discussion forums, submit support requests, download patches and updated documentation, and more. Choose **Help** > **HP Software Support**. The URL for this Web site is www.hp.com/go/hpsoftwaresupport.

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract.

To find more information about access levels, go to:

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To register for an HP Passport user ID, go to:

http://h20229.www2.hp.com/passport-registration.html

HP Software Web site accesses the HP Software Web site. This site provides you with the most up-to-date information on HP Software products. This includes new software releases, seminars and trade shows, customer support, and more. Choose **Help** > **HP Software Web site**. The URL for this Web site is www.hp.com/go/software.

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Part I

SiteScope Monitors (A-Z)

1

Monitor Categories List

This section displays the SiteScope monitors in each monitor category.

Application Monitors

- Active Directory Replication Monitor
- Apache Server Monitor
- BroadVision Application Server Monitor
- Check Point Monitor
- Cisco Works Monitor
- Citrix Monitor
- ColdFusion Server Monitor
- COM+ Server Monitor
- F5 Big-IP Monitor

- Microsoft ASP Server Monitor
- Microsoft Exchange 2007/2010 Monitor
- Microsoft Exchange 2003 Mailbox Monitor
- Microsoft Exchange 5.5 Message Traffic Monitor
- Microsoft Exchange 2000/2003/2007 Message Traffic Monitor
- Microsoft Exchange 2003 Public Folder Monitor
- Microsoft IIS Server Monitor
- News Monitor
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- Oracle 10g Application Server Monitor
- Radius Monitor
- SAP CCMS Monitor
- SAP CCMS Alerts Monitor
- SAP Java Web Application Server Monitor
- SAP Performance Monitor
- SAP Work Processes Monitor
- Siebel Application Server Monitor
- Siebel Log File Monitor
- Siebel Web Server Monitor
- SunONE Web Server Monitor
- Tuxedo Monitor
- UDDI Monitor
- WebLogic Application Server Monitor
- WebSphere Application Server Monitor
- WebSphere MQ Status Monitor
- WebSphere Performance Servlet Monitor

Database Monitors

- DB2 8.x and 9.x Monitor
- Database Counter Monitor
- Database Query Monitor‘
- LDAP Monitor
- Microsoft SQL Server Monitor
- Oracle Database Monitor
- Sybase Monitor

Generic Monitors

- Composite Monitor
- Directory Monitor
- File Monitor
- JMX Monitor
- Log File Monitor
- Multi Log File Monitor
- Script Monitor
- Web Service Monitor
- XML Metrics Monitor

Integration Monitors

- HP OM Event Monitor
- HP Service Manager Monitor
- NetScout Event Monitor
- Technology Database Integration Monitor
- Technology Log File Integration Monitor
- Technology SNMP Trap Integration Monitor
- Technology Web Service Integration Monitor

Media Monitors

- Microsoft A/V Conferencing Server Monitor
- Microsoft Archiving Server Monitor
- Microsoft Director Server Monitor
- Microsoft Edge Server Monitor
- Microsoft Front End Server Monitor
- Microsoft Mediation Server Monitor
- Microsoft Monitoring and CDR Server Monitor
- Microsoft Registrar Server Monitor
- Microsoft Windows Media Player Monitor
- Microsoft Windows Media Server Monitor
- Real Media Player Monitor
- Real Media Server Monitor

Network Monitors

- DHCP Monitor
- DNS Monitor
- FTP Monitor
- Formula Composite Monitor
- Mail Monitor
- MAPI Monitor
- Microsoft Windows Dial-up Monitor
- Network Bandwidth Monitor
- Ping Monitor
- Port Monitor
- SNMP Monitor

- SNMP Trap Monitor
- SNMP by MIB Monitor

Server Monitors

- Browsable Windows Performance Monitor
- CPU Monitor
- Disk Space Monitor
- HP iLO (Integrated Lights-Out) Monitor
- HP NonStop Event Log Monitor
- HP NonStop Resources Monitor
- IPMI Monitor
- Memory Monitor
- Microsoft Windows Event Log Monitor
- Microsoft Windows Performance Counter Monitor
- Microsoft Windows Resources Monitor
- Microsoft Windows Services State Monitor
- Service Monitor
- UNIX Resources Monitor
- Web Server Monitor

Web Transaction Monitors

- e-Business Transaction Monitor
- Link Check Transaction Monitor
- URL Monitor
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- URL List Monitor
- URL Sequence Monitor
- Web Script Monitor

Virtualization and Cloud Monitors

- Amazon Web Services Monitor
- Microsoft Hyper-V Monitor
- Solaris Zones Monitor
- VMware Host CPU Monitor
- VMware Host Memory Monitor
- VMware Host Network Monitor
- VMware Host State Monitor
- VMware Host Storage Monitor
- VMware Performance Monitor

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Active Directory Replication Monitor

This chapter includes:

Concepts

Reference

Concepts

Active Directory Replication Monitor Overview

Use the Active Directory Replication monitor to monitor the time that it takes a change made on one Domain Controller to replicate to up to as many as ten other Domain Controller. This enables you to verify that replication, a key part of the Active Directory System, is occurring within set thresholds. Create a separate Active Directory Replication monitor for each Domain Controller that is being replicated throughout your system. The error and warning thresholds for the monitor can be set on each of the monitored Domain Controllers. This monitor supports monitoring remote servers running on Windows Server 2000, 2003, 2008, and 2008 R2.

Note:

- The Active Directory Replication monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- This monitor can only be added by deploying an Active Directory Solution template. For information about using templates to deploy monitors, see "SiteScope Templates" in *Using SiteScope*.

No additional setup is required other than to enable access to a Domain Admin account.

The Active Directory Replication monitor works by making a small change to part of the Directory Service tree of the configured Domain Controller. It then checks each of the configured Replicating Domain Controllers for this small change. As the change is detected the difference between when the change was made and when it was replicated is calculated.

For details on configuring the monitor, see "Active Directory Replication Monitor Settings" on page 33.

Reference

Active Directory Replication Monitor Settings

The Active Directory Replication monitor enables you to monitor the time that it takes replication to occur between up to ten Domain Controllers.

To access	Select the **Templates** context. In the template tree, expand the **Solution Templates** container. Right-click the Active Directory solution template that you require, and select **Deploy Template**. Select the SiteScope group container into which you want to deploy the solution template, and enter the deployment values.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ This monitor can only be added by deploying an Active Directory Solution template. For information about using templates to deploy monitors, see "SiteScope Templates" in *Using SiteScope*. ➤ The **LDAP Authentication Tool** is available when configuring this monitor to authenticate a user on an LDAP server (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "LDAP Authentication Status Tool" in *Using SiteScope*.
See also	➤ "Active Directory Replication Monitor Overview" on page 32

Active Directory Monitor Settings

User interface elements are described below:

UI Element	Description
Domain controller	Domain controller that contains the replicated data.
Replicating domain controllers	Comma separated list of domain controllers that replicate data from the domain controller entered above.
User name	User name or the entire Security Principal of a Domain Admin account. If a user name is given, the default security principal is created from the root context of the Domain Controller. **Example:** If you enter Administrator for a domain controller in the domain yourcompany.com, then the entire Security Principal would be CN=Administrator,CN=Users,DC=yourcompany,DC=com.
Password	Password for the Domain Admin account.
Maximum replication time (seconds)	Maximum amount of time for replication to occur. The monitor goes into error if any of the Replicating Domain Controllers exceed this replication time. **Default value:** 600 seconds
Polling interval (seconds)	Amount of time this monitor should wait between queries of the Replicating Domain Controllers. A higher number reduces the number of LDAP queries against the servers. **Default value:** 10 seconds
Directory path	Path to a directory in the Active Directory that you want to monitor. This is in the form of an LDAP query. **Default value:** Based on the default Directory for this server. For example, the default for a Domain Controller for sub.yourcompany.com is DC=sub,DC=yourcompany,DC=com.

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Amazon Web Services Monitor

This chapter includes:

Concepts

Reference

Concepts

Amazon Web Services Monitor Overview

The Amazon Web Services monitor enables monitoring of Amazon Web service cloud resources, starting with Amazon Elastic Compute Cloud service (EC2). It provides data on resource utilization, operational performance, and overall network demand patterns. Amazon CloudWatch API provides two methods that can be accessed by Web service or plain HTTP requests. They are GetMetricStatistics and ListMetrics.

Note: The Amazon CloudWatch Service is required to monitor Amazon Web Services.

For details on configuring the monitor, see "Amazon Web Services Monitor Settings" on page 37.

Reference

Amazon Web Services Monitor Settings

This monitor enables you to monitor Amazon Web Services (AWS) cloud resources.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	The Amazon CloudWatch Service is required to monitor Amazon Web Services.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Amazon Web Services Monitor Overview" on page 36

Amazon Web Services Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
AWS Access Key ID	An alphanumeric token that uniquely identifies a request sender. This ID is associated with your AWS Secret Access Key.
AWS Secret Key	The key assigned to you by AWS when you sign up for an AWS account. Used for request authentication.
Socket timeout (milliseconds)	Amount of time, in milliseconds, to wait for data from a server during a single data request. After the socket timeout period elapses, the monitor logs an error and reports the error status. A value of zero means there is no timeout used. **Default value:** 120 milliseconds

UI Element	Description
Main Settings	
Counters	Server performance counters to check with this monitor. The list displays the available counters and those currently selected for this monitor.
Proxy Settings	
NTLM V2 Proxy	Select if the proxy requires authentication using NTLM version 2.
Address	Domain name and port of an HTTP Proxy Server if a proxy server can be used to access the AWS cloud resources to be monitored.
User name	Proxy server user name if required to access the AWS cloud resources. **Note**: Your proxy server must support Proxy-Authenticate for these options to function.
Password	Proxy server password if required to access the AWS cloud resources. **Note**: Your proxy server must support Proxy-Authentication for these options to function.

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Apache Server Monitor

This chapter includes:

Concepts

Reference

Concepts

Apache Server Monitor Overview

Use the Apache Server monitor to monitor the content of server administration pages for Apache 1.3.9, 1.3.12, 2.0 and 2.2 servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate monitor instance for each Apache server you are running.

For details on configuring the monitor, see "Apache Server Monitor Settings" on page 41.

Setup Requirements and User Permissions

Before you can use the Apache Server monitor, you must do the following:

- Configure the Apache server you want to monitor so that status reports (server-status) are enabled for the server. The steps needed to do this may vary depending on the version of Apache you are using.
- Enable extended status (ExtendedStatus On) in the configuration file.
- Know the URL of the server statistics page for the server you want to monitor.
- Know the user name and password for accessing the counters of the Apache server you want to monitor, if required.
- If using a proxy server to access the server, get the domain name and port of an HTTP Proxy Server from your network administrator.
- The SiteScope Apache Server monitor currently supports the server status page available at http://<server_address>:<port>/server-status?auto. The port is normally port 80, although this may vary depending on the server set up and your environment. For some Apache server configurations, you may need to use the server name rather than an IP address to access the server statistics page.

Reference

Apache Server Monitor Settings

This monitor enables you to monitor the administrative and performance statistics for an Apache server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	Before configuring the monitor, make sure you have the necessary "Setup Requirements and User Permissions" on page 40.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Apache Server Monitor Overview" on page 40

Apache Monitor Settings

User interface elements are described below:

UI Element	Description
Server Settings	
Administration URL	Server URL you want to verify with this monitor. This should be the Apache server statistics URL which usually has the form of http://<servername>:<port>/server-status?auto.
Operating System	Operating system that the Apache server is running on. This is used to correctly read server statistics from Apache based on the operating system platform. **Default value:** UNIX

UI Element	Description
Counter Settings	
Counters	Server performance counters to check with this monitor. The list displays the available counters and those currently selected for this monitor.
Connection Settings	
Authorization user name	User name if the server you want to monitor requires a name and password for access.
Authorization password	Password if the server you want to monitor requires a name and password for access.
HTTP Proxy	Domain name and port of an HTTP Proxy Server if required by the proxy server is to access the server.
Proxy user name	Proxy server user name if required to access the server. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy password	Proxy server password if required to access the server. **Note:** your proxy server must support Proxy-Authenticate for these options to function.
Timeout (seconds)	Number of seconds that the monitor should wait for a response from the server before timing-out. Once this time period passes, the monitor logs an error and reports an error status. **Default value:** 60 seconds

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BroadVision Application Server Monitor

This chapter includes:

Concepts

Reference

Concepts

BroadVision Application Server Monitor Overview

Use the BroadVision Application Server monitor to monitor the server performance data for BroadVision 4.1, 5.x, and 6.0 servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate monitor instance for each BroadVision server in your environment. The error and warning thresholds for the monitor can be set on one or more BroadVision server performance statistics.

For user interface details, see "BroadVision Application Server Monitor Settings" on page 45.

Setup Requirements

The following are important requirements for using the BroadVision Application Server monitor:

- You must know the Object Request Broker (ORB) port number for the BroadVision server you are trying to monitor.
- In a BroadVision Production-style environment where there is one primary root server and other secondary servers (for example, Interaction Manager node) on different machines, you can only define a monitor against the primary root node. Metrics for the other nodes in the configuration are available for selection during root node monitor definition. In other words, monitoring is always accomplished through the primary root node, for all servers.

Reference

BroadVision Application Server Monitor Settings

This monitor enables you to monitor the availability and performance statistics of a BroadVision server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 44. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "BroadVision Application Server Monitor Overview" on page 44

BroadVision Application Server Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
Server	BroadVision root server name of the BroadVision server you want to monitor. For example, 199.123.45.678.
Port	ORB port number to the BroadVision server you want to monitor. **Example:** 1221
Counter Settings	
Counters	Server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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Browsable Windows Performance Monitor

This chapter includes:

Concepts

Reference

Concepts

Browsable Windows Performance Counter Monitor Overview

Use the Browsable Windows Performance Counter monitor to monitor the values of Windows performance statistics. Each time the Browsable Windows Performance Counter monitor runs, it returns readings and a status message and writes them in the monitoring log file. The status is displayed in the group detail table for the monitor which represents the current value returned by this monitor. The status is logged as either OK or warning. A count of the number of counters that could not be read is also kept, and error conditions can be created depending on this count.

Note:

- The Browsable Windows Performance Counter monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- This monitor can be added only by deploying a Microsoft Exchange Solution Template. For information about using templates to deploy monitors, see "SiteScope Solution Templates" in *Using SiteScope*.

For details on configuring the monitor, see "Browsable Windows Performance Counter Monitor Settings" on page 49.

Reference

Browsable Windows Performance Counter Monitor Settings

The Browsable Windows Performance Counter monitor tracks the values of Windows performance statistics. These are the same statistics that can be viewed using the Performance monitor application under Windows.

To access	Select the **Templates** context. In the template tree, expand the **Solution Templates** container. Right-click the required Microsoft Exchange Solution Template, and select **Deploy Template**. Select the SiteScope group container into which you want to deploy the solution template, and enter the deployment values.
Important information	➤ This monitor is only available on the Windows version of SiteScope. ➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ This monitor can only be added by deploying a Microsoft Exchange Solution Template. For more information, see "SiteScope Solution Templates" in *Using SiteScope*. After the monitor has been created, you can edit the monitor configuration in the same way as other monitors. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
See also	➤ "Browsable Windows Performance Counter Monitor Overview" on page 48

Browsable Windows Performance Counter Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Server where the performance counters you want to monitor are found. **Note:** After deployment, you can use the drop-down list to select a server from the list of Microsoft Windows remote servers that are available to SiteScope. **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box.
Counter file	File that contains a list of counters from which to choose to monitor. Use the drop-down list to select a server from the list of remote servers that are available to SiteScope. The files in this list all reside in the <**SiteScope root directory**>**\templates.perfmon\browsable** directory under SiteScope. There are a number of default files in the standard SiteScope distribution.

UI Element	Description
Counters	Server performance counters you want to check with this monitor. Use the **Get Counters** button to select counters. **Note when working in template mode:** To update counters in template browsable monitors that need a target server, click the **Select measurement from** button and add the required server and counters. Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.
Get Counters	Opens the Select Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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Check Point Monitor

This chapter includes:

Concepts

Reference

Concepts

Check Point Monitor Overview

Use the Check Point monitor to monitor the content of event logs and other data from Check Point Firewall-1 4.1 NG servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate Check Point monitor instance for each Check Point Firewall-1 server in your environment. The error and warning thresholds for the monitor can be set on one or more firewall statistics.

For details on configuring the monitor, see "Check Point Monitor Settings" on page 55.

Reference

Check Point Monitor Settings

This monitor enables you to monitor the statistics of a Check Point Firewall-1 server using SNMP.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Check Point Monitor Overview" on page 54

Check Point Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
Index	Index of the SNMP object you want to check with this monitor. Non-table object IDs have an index of 0 (zero). **Default value:** 0
Community	Community name of the Check Point Firewall-1 you want to monitor. You may need to consult with your network administrators about what community names are active in your network environment. **Default value:** public
Host	Host name or IP address of the Check Point Firewall-1 server you want to monitor. If the Check Point Firewall is configured to respond to SNMP on a port number other than the default port (161), enter the port number as part of the server address.

UI Element	Description
Retry delay (seconds)	Number of seconds that the monitor should wait for a response from the server before retrying the request. **Default value:** 1 second
Timeout (seconds)	Number of seconds that the monitor should wait for a response from the server before timing out. Once this time period passes, the monitor logs an error and reports an error status. **Default value:** 5 seconds
Counter Settings	
<**List of counters**>	Displays the available server performance counters and those currently selected for this monitor.

8

Cisco Works Monitor

This chapter includes:

Concepts

Reference

Concepts

Cisco Works Monitor Overview

Use the Cisco Works monitor to monitor the content of event logs and other data from Cisco Works 2000 servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate Cisco Works monitor instance for each Cisco Works server in your environment. The error and warning thresholds for the monitor can be set on one or more Cisco Works server statistics.

For details on configuring the monitor, see "Cisco Works Monitor Settings" on page 59.

Reference

Cisco Works Monitor Settings

This monitor enables you to monitor the statistics of a Cisco Works Server using SNMP.

Description	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box. ➤ The **SNMP Browser Tool** is available when configuring this monitor to verify the connection properties of an SNMP agent and to gain more information about the MIBs which that agent implements (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "SNMP Browser Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Cisco Works Monitor Overview" on page 58

Cisco Works Monitor Settings

User interface elements are described below:

UI Element	Description
SNMP Connection Settings	
Server	Name of the server you want to monitor.

UI Element	Description
SNMP version	Version of SNMP to use when connecting. Supports SNMP version 1, 2, and 3. Selecting V3 enables you to enter V3 settings in the SNMP V3 settings panel. **Default value:** V1
Community	Community name of the Cisco Works Server you want to monitor (valid only for version 1 or 2 connections). You may need to consult with your network administrators about what community names are active in your network environment. **Default value:** public
Timeout (seconds)	Amount of time, in seconds, that SiteScope should wait for all SNMP requests (including retries) to complete. **Default value:** 5
Retries	Number of times each SNMP GET request should be retried before SiteScope considers the request to have failed. **Default value:** 1
Port	Port to use when requesting data from the SNMP agent. **Default value:** 161
Starting OID	Use this option when selecting counters for this monitor. When the monitor attempts to retrieve the SNMP agent's tree, it starts with the OID value that is entered here. You should edit this box only when attempting to retrieve values from an application that does not handle OIDs starting with 1. If the default value of 1 did not enable retrieving any counters, then you may have to enter a different value. **Default value:** 1

UI Element	Description
MIB file	MIB file display option. ➤ **CISCOWORKS-MIB.my** file causes only those objects that are described within that MIB file to be displayed. ➤ **All MIBs** causes all objects discovered on the given Cisco Works server to be displayed when browsing counters. If no MIB information is available for an object, it is still displayed, but with no textual name or description. **Default value:** All MIBs
Counter calculation mode	Performs a calculation on objects of type Counter, Counter32, or Counter64. The available calculations are: ➤ **Calculate delta.** Calculates a simple delta of the current value from the previous value. ➤ **Calculate rate.** Calculates a rate calculation using the delta of current value from previous value, divided by the time elapsed between measurements. ➤ **Do not calculate.** No calculation is performed. **Note:** This option only applies to the aforementioned object types. A Cisco Works monitor that monitors Counter objects as well as DisplayString objects only performs this calculation on the Counter objects.
V3 SNMP Settings (This panel is enabled only if V3 is selected in the SNMP version field)	
SNMP V3 authentication type	The type of authentication to use for version 3 connections. **Default value:** MD5
SNMP V3 user name	User name for version 3 connections.
SNMP V3 authentication password	Authentication password to use for version 3 connections.
SNMP V3 privacy password	Privacy password if DES privacy encryption is desired for version 3 connections. Leave blank if you do not want privacy.

UI Element	Description
SNMP V3 context engine ID	Hexadecimal string representing the Context Engine ID to use for this connection. This is applicable for SNMP V3 only.
SNMP V3 context name	Context Name to use for this connection. This is applicable for SNMP V3 only.
SNMP Counters	
Counters	Server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note:** ➤ The counters displayed are those received during the timeout period, and may not include all the counters available on the server. Specifying a longer timeout in the Timeout (seconds) field in the SNMP Connection Settings panel may result in receiving more counters. ➤ The total time for receiving the counters may be longer than the timeout specified, due to additional processing time not part of the request/response period. ➤ Due to third-party counter restrictions, the total number of counters that can be monitored is limited to 32. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

9

Citrix Monitor

This chapter includes:

Concepts

Reference

Concepts

Citrix Monitor Overview

Use the Citrix monitor to monitor the server performance statistics from Citrix servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate Citrix monitor instance for each Citrix server in your environment. The error and warning thresholds for the monitor can be set on one or more Citrix server performance statistics.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

The Citrix monitor makes use of performance objects and counters to measure application server performance. The Citrix monitor keeps track of the following performance objects:

- Citrix IMA Networking
- Citrix Presentation Server (Citrix MetaFrame XP)
- ICA Session
- Terminal Services Session

You can find information about the Citrix performance objects and their counters in Appendix C of the Presentation Server 4.0 Administrator's Guide (http://support.citrix.com/article/CTX106319), and about the Terminal Services Session Object at http://technet2.microsoft.com/windowsserver/en/library/9784cf82-9d06-4efa-b6fc-51c803fe78671033.mspx?mfr=true.

For details on configuring the monitor, see "Citrix Monitor Settings" on page 69.

This section also includes:

- "Supported Versions" on page 65
- "IPv6 Addressing Supported Protocols" on page 66
- "Setup Requirements and User Permissions" on page 67
- "Troubleshooting and Limitations" on page 68

Supported Versions

This monitor supports monitoring remote servers running on:

- Citrix MetaFrame 1.8 Service Pack 3
- Citrix MetaFrame XP(s,a,e) Feature Release 1/Service Pack 1
- Citrix MetaFrame XP(s,a,e) Feature Release 2/Service Pack 2
- Citrix Presentation Server 3.5, 4.x
- Citrix XenApp 4.6, 5.0

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Setup Requirements and User Permissions

The following are important requirements for using the SiteScope Citrix monitor:

- SiteScopes running on Windows platforms need to be running under an account that has the necessary administrative security privileges to access performance counter data from remote servers. If the servers you want to monitor are in a different domain, are governed under a different policy, or require a unique login different than the account SiteScope is running under, then you must define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view. For SiteScopes installed on UNIX platforms, you only need to define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.
- The Remote Registry service must be running on the machine where the Citrix is running if Citrix is running on a Windows 2000 platform.
- The Citrix Resource Manager must be available, installed, and running on the Citrix servers you want to monitor.
- One or more Citrix vusers must have established a connection with the Citrix server to enable viewing of ICA Session object.
- The Citrix monitor requires the same permissions (trust level between monitoring and monitored machines) in Windows 2003 as Microsoft Windows Resources monitor. For details, see "Configuring the Monitor to Run on Windows 2003 as a Non-Administrator User" in *Using SiteScope*.

Troubleshooting and Limitations

Perform the following steps to troubleshoot the Citrix monitor.

1 Open a command line window (DOS prompt).

2 Enter the following command, substituting the host name as required:

```
C:\>perfex \\hostname -u username -p password -h | find "ICA"
```

3 This should return the following response:

```
(3378) ICA Session
(3386) ICA Session
(3379) This object has several counters that can be used to monitor the performance
in ICA sessions
(3387) This object has several counters that can be used to monitor the performance
in ICA sessions"
ICA Session" 3386    performance in ICA sessions
```

If you do not get a similar response, either the counters are not available on the remote server or you a more descriptive error message is displayed indicating what might be the problem.

Reference

Citrix Monitor Settings

This monitor enables you to monitor the availability of the Citrix Presentation (MetaFrame) server.

Description	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements and User Permissions" on page 67. ➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Citrix Monitor Overview" on page 64

Citrix Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Server where the Citrix server you want to monitor is running. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed in the server list. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.
Counters	The server performance counters selected for this monitor. Use the **Get Counters** button to select counters. For information about the Citrix performance counters, see Appendix C of the MetaFrame Presentation Server 4.0 Administrator's Guide (http://support.citrix.com/article/CTX106319). **Note when working in template mode:** To update counters in template browsable monitors that need a target server, click the **Select measurement from** button and add the required server and counters. Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.

10

ColdFusion Server Monitor

This chapter includes:

Concepts

Reference

Concepts

ColdFusion Server Monitor Overview

Use the ColdFusion Server monitor to monitor the server performance statistics from ColdFusion 4.5.x and 9 servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate ColdFusion Server monitor instance for each ColdFusion server in your environment. The error and warning thresholds for the monitor can be set on one or more ColdFusion server performance statistics.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

For details on configuring the monitor, see "ColdFusion Server Monitor Settings" on page 77.

This section contains the following topics:

- "Setup Requirements" on page 75
- "IPv6 Addressing Supported Protocols" on page 76

Setup Requirements

For user interface details, see "ColdFusion Server Monitor Settings" on page 77.

- SiteScopes running on Windows platforms need to be running under an account that has the necessary administrative security privileges to access performance counter data from remote servers. If the servers you want to monitor are in a different domain, are governed under a different policy, or require a unique login different than the account SiteScope is running under, then you must define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view. For SiteScopes installed on UNIX platforms, you only need to define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.
- If ColdFusion is running on Windows 2000, the Remote Registry service must be running on the machine where the ColdFusion server is running.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

ColdFusion Server Monitor Settings

This monitor enables you to monitor the availability of ColdFusion servers.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 75. ➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "ColdFusion Server Monitor Overview" on page 74

ColdFusion Server Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Server where the ColdFusion Server you want to monitor is running. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed in the server list. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.
Counters	Server performance counters selected for this monitor. Use the **Get Counters** button to select counters. **Note when working in template mode:** To update counters in template browsable monitors that need a target server, click the **Select measurement from** button and add the required server and counters. Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.

11

COM+ Server Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

COM+ Server Monitor Overview

Use the COM+ Server monitor to monitor the performance of COM+ software components registered and running on Microsoft Windows Server 2000, 2003, 2008, and 2008 R2. When you specify the host and port number of this probe instance, SiteScope retrieves all the functions running on the COM+ server for your monitoring selection. Error and warning thresholds for the monitor can be set on one or more function measurements.

Note: The COM+ Server monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.

For task details, see "How to Configure the COM+ Monitoring Environment" on page 83.

For user interface details, see "COM+ Server Monitor Settings" on page 85.

Tasks

How to Configure the COM+ Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 83
- "Install the COM+ probe" on page 83
- "Start the COM+ probe" on page 84
- "Configure the monitor properties" on page 84

1 Prerequisites

- An Option license for the COM+ Server monitor must be obtained and input into SiteScope.
- There must be HTTP connectivity between the SiteScope server and the server running the COM+ probe.

2 Install the COM+ probe

A COM+ probe component must be installed and running on the target COM+ server you want to monitor.

a Go to the HP Software Support site (http://www.hp.com/go/hpsoftwaresupport) and click the **Downloads** tab. Then click **Software patches**, and enter your HP user name and password to access the Software Patches page.

b In the **Product** section, select **SiteScope.**

c In the optional search box, enter **COM+** and click **Search**.

d Download the COM+ probe from the results.

e After downloading, follow the instructions for installing the probe on the COM+ server to be monitored.

Note: You cannot have multiple SiteScope instances share one probe instance. You can have multiple COM+ Server monitors within a single SiteScope installation access the same probe instance (uniquely identified by the probe host and port). The probe cannot serve data to multiple SiteScope installations.

3 Start the COM+ probe

After successfully installing the probe, you must start it prior to running or defining a COM+ Server monitor, by invoking **mon_cplus_probe.exe** found in the COM+ probe's **bin** directory. By default, the installation creates this file at **C:\Program Files\Mercury Interactive\COMPlusMonitor\bin\**.

4 Configure the monitor properties

Create a COM+ Server monitor, and specify the COM+ probe for the target COM+ server. The COM+ probe is queried for a list of available functions to monitor, and a browse tree is displayed. Select the COM+ functions or counters that you want to measure.

Configure the other COM+ Server monitor fields as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "COM+ Server Monitor Settings" on page 85.

Reference

COM+ Server Monitor Settings

The COM+ Server monitor monitors the performance of software components registered and running on Microsoft COM+ servers.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the COM+ Monitoring Environment" on page 83 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "COM+ Server Monitor Overview" on page 82

COM+ Monitor Settings

User interface elements are described below:

UI Element	Description
COM+ probe host name	Host name of the COM+ probe.
COM+ probe port number	Port number of the COM+ probe. **Default value:** 8008
Credentials	Option for providing the user name and password authorization to the COM+ probe: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.
HTTP proxy	Domain name and port of an HTTP proxy server if a proxy server is used to access the probe.
Proxy server user name	Proxy user name if the proxy server requires a name and password to access the probe. Your proxy server must support Proxy-Authenticate for these options to function.
Proxy server password	Proxy password if the proxy server requires a name and password to access the probe.

UI Element	Description
Timeout (seconds)	Number of seconds that the monitor should wait for a response from the server before timing-out. Once this time period passes, the monitor logs an error and reports an error status. **Default value:** 60 seconds **Note:** Depending on the activity on the server, the time to build the server monitor statistics Web page may take more than 15 seconds. You should test the monitor with a timeout value of more than 60 seconds to enable the server to build and serve the server monitor statistics Web page before the SiteScope monitor is scheduled to run again.
Counters	Server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

12

Composite Monitor

This chapter includes:

Concepts

Reference

Concepts

Composite Monitor Overview

Each time the Composite monitor runs, it returns a status based on the number and percentage of items in the specified monitors, groups, or both, currently reporting an error, warning, or OK status. It writes the percentages reported in the monitoring log file.

Use this monitor is if you want to create complex monitor alert logic. For example, if you want to trigger an alert when:

- Five or more monitors in a group of eight are in error
- Three or more groups have monitors with errors in them
- You have two monitors, and exactly one is in error

then you could create a Composite monitor that went into error on these conditions, and then add alerts on the Composite monitor to take the desired actions.

If you need alert logic that is more complex than SiteScope's standard alerts permit, you can use the Composite monitor to create customized alert behavior.

For details on configuring the monitor, see "Composite Monitor Settings" on page 91.

Reference

Composite Monitor Settings

This monitor enables you to monitor complex network environments by checking the status readings of a set of other SiteScope monitors, groups, or both.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ When using this monitor to monitor a URL monitor in which at least one of the steps uses a session cookie to send to the server instead of logging in each time, the Composite monitor saves the context including the cookie. This means that the login information does not need to be entered again, as the login credentials are sent in a cookie. ➤ This monitor cannot be copied to a template. It must be created directly in a template.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Composite Monitor Overview" on page 90

Composite Monitor Settings

User interface elements are described below:

UI Element	Description
Items	Click the **Add** ✱ button to open the Add Items dialog box, and select the groups, monitors, or both, that you want in the Composite monitor. For details on the Add Items dialog box, see "Add Items Dialog Box" on page 93. To remove items from the list, select the groups, monitors, or both, you want to remove (you can select multiple items using the CTRL or SHIFT keys), and click the **Delete** ✖ button.
Run monitors	The Composite monitor controls the scheduling of the selected monitors, as opposed to just checking their status readings. Monitors that are to be run this way should not also be run separately, so edit the individual monitors, set the **Frequency** box for that monitor to zero ("0"), and save the changes. Those monitors then run only when scheduled by the Composite monitor. This is useful if you want the monitors to run one after another or run at approximately the same time. **Default value:** Not selected
Monitor delay (seconds)	Amount of time, in seconds, to wait between running each monitor (if **Run monitors** is selected). This setting is useful if you need to wait for processing to occur on your systems before running the next monitor. **Default value:** 0 seconds
Check all monitors in group(s)	All monitors in the selected groups (and their subgroups) are checked and counted. **Default value:** Not selected (each group is checked and counted as a single item when checking status readings).

Add Items Dialog Box

This dialog box enables you to select the monitors, groups, or both, that you want in the Composite monitor.

To access	In the monitor view, right-click a group and select **New** > **Monitor**. Select the **Composite** monitor from the New Monitor Page, and click the **Add Items** ✱ button.
Important information	➤ If you add the Composite monitor to a template, group, or subgroup, when you click the **Add Items** ✱ button, the Add Items dialog box displays only the monitors that are part of the same template as the new Composite monitor. ➤ If you add the Composite monitor to a SiteScope, when you click the **Add Items** ✱ button, the Add Items dialog box displays all the monitors that are part of the same SiteScope. **Note:** When working in template mode, the monitors that you add to the Composite monitor are placeholders. They become real monitors when you deploy the Composite monitor.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Composite Monitor Overview" on page 90

User interface elements are described below:

UI Element	Description
Add Selected Items	Click to add the selected groups, monitors, or both, to the Composite monitor.
SiteScope	Represents the SiteScope root directory.

UI Element	**Description**
📁 📁	Represents a SiteScope monitor group or subgroup (with enabled monitors/with no monitors or no enabled monitors). If a group alert has been set up for the monitor group or subgroup, the alert ! symbol is displayed next to the group icon.
🖥 🖥	Represents a SiteScope monitor (enabled/disabled). If an alert has been set up for the monitor, the alert ! symbol is displayed next to the monitor icon.

13

CPU Monitor

This chapter includes:

Concepts

Reference

Concepts

CPU Monitor Overview

Use the CPU monitor to monitor the percentage of CPU time that is currently being used on the server. By monitoring CPU usage, you can prevent poor system response times and outages before they occur.

Whether the servers in your infrastructure are running with a single CPU or with multiple CPUs, you only need to create one CPU monitor per remote server. If you have multiple CPUs, SiteScope reports on the average usage for all of them, as well as each individual CPU usage.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

For details on configuring the monitor, see "CPU Monitor Settings" on page 99.

This section contains the following topics:

- "Status" on page 97
- "IPv6 Addressing Supported Protocols" on page 97
- "Scheduling the Monitor" on page 98
- "Troubleshooting and Limitations" on page 98

Status

The Status reading is the current value returned by this monitor; for example, 68% used. SiteScope displays an average for multiple CPU systems. On NT, this is the average CPU usage between runs of the monitor. On UNIX, this is the instantaneous CPU when the monitor runs.

The status is logged as either OK or warning. A warning status is returned if the CPU is in use more than 90% of the time.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)
- SSH (from SiteScope installed on UNIX platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Scheduling the Monitor

In general, the CPU monitor does not need to be run as often as some of the other monitors. If you do not usually suffer from CPU problems, you can run it less frequently, perhaps every half hour or so. If you are prone to CPU usage problems, you should run it more frequently. All machines have short spikes of CPU usage, but the primary thing that you are looking for is high usage on a regular basis. This indicates that your system is overloaded and that you need to look for a cause.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the CPU monitor.

Problem: Unable to monitor CPU usage on a clean installation of Linux RedHat 4.

Cause: The mpstat command that SiteScope runs on the monitored server as depicted in **<SiteScope root directory>\Templates.os** folder (/usr/bin/mpstat), is not deployed by default on a Linux machine. Linux installations come with a sysstat package.

Solution: In a terminal window, type up2date sysstat to deploy the mpstat package.

Problem: Getting invalid CPU value error message in **<SiteScope root directory>\logs\RunMonitor.log** file when using perfmon monitors on VMware host servers.

Solution: Use the VMWare Performance monitor to measure CPU on VMWare host servers.

Reference

CPU Monitor Settings

This monitor enables you to monitor the percentage of CPU time that is currently being used on the server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ The **Performance Counters Tool** is available when configuring this monitor to check performance counters on a specific machine in a Windows NT/2000 network (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Performance Counters Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "CPU Monitor Overview" on page 96

CPU Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Server where the CPU you want to monitor is running. Select a server from the server list (only those remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed here. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When configuring this monitor on SiteScopes running on UNIX versions, only remote servers that have been configured with an **SSH** connection method are displayed. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Remote Server dialog box, enabling you to select the type of remote you want to add (Windows or UNIX), and enter the configuration details. For details on the Microsoft Windows Remote Servers user interface, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. For details on the UNIX Remote Servers user interface, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.

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Database Counter Monitor

This chapter includes:

Concepts

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Concepts

Database Counter Monitor Overview

Use the Database Counter monitor to make SQL queries for performance metrics from any JDBC-accessible database. This monitor provides optional support for calculating deltas and rates for metrics between monitor runs. You can monitor multiple counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. The error and warning thresholds for the monitor can be set on one or more database server performance statistics.

This monitor supports monitoring on any database with a valid JDBC driver that supports SQL queries.

For details on configuring the monitor, see "Database Counter Monitor Settings" on page 108.

This section also includes:

- "Setup Requirements and User Permissions" on page 105
- "IPv6 Addressing Supported Protocols" on page 107

Setup Requirements and User Permissions

The following are several key requirements for using the Database Counter monitor:

- You must have a copy of the applicable JDBC database driver file on the SiteScope server. Copy the downloaded driver file into the <**SiteScope root directory**>**\WEB-INF\lib** subdirectory. If the file is in zip format, do not unzip the file. Stop and restart the SiteScope service after copying the driver file to the SiteScope machine.
- You must know the syntax for accessing the database driver. Examples of common database driver strings are:
  - **sun.jdbc.odbc.JdbcOdbcDriver.** JDBC-ODBC Bridge Driver from Sun Microsystems.
  - **com.inet.tds.TdsDriver.** TDS driver from i-net Software for Microsoft SQL databases. This driver is deployed with SiteScope.
  - **com.inet.ora.OraDriver.** A driver from Oracle for Oracle databases. This driver is deployed with SiteScope.
  - **com.mercury.jdbc.sqlserver.SQLServerDriver.** DataDirect driver from DataDirect Technologies. It is an alternative to the TDS driver for those Microsoft SQL databases that use Windows NT authentication. This driver is deployed with SiteScope.
  - **oracle.jdbc.driver.OracleDriver.** SiteScope supports the following categories of JDBC driver that are supplied by Oracle:
    - JDBC thin driver for Oracle 7 and 8 databases.
    - JDBC OCI (thick) driver. For details on accessing Oracle databases using OCI driver, see "Access Oracle databases using OCI driver" on page 121.
  - **com.mercury.jdbc.oracle.OracleDriver.** A driver for Oracle databases. This driver is deployed with SiteScope. When using the Oracle mercury driver, the database connection URL has the form of: jdbc:mercury:oracle://<server name or IP address>:<database server port>;sid=<sid>
  - **org.postgresql.Driver.** The database driver for the Postgresql database.

- You must know the syntax for the Database connection URL. The Database connection URL normally includes the class of driver you are using, some key name relating to the supplier of the driver software, followed by a combination of server, host, and port identifiers.

  Examples of common database connection URLs are:

  - **jdbc:odbc:<dsname>**
    where <dsname> is the data source name in the system environment or configuration.
  - **jdbc:inetdae:<hostname>:<port>**
    where <hostname> is the name of the host where the database is running and <port> is the port on which the database interfaces with the driver.
  - **jdbc:mercury:sqlserver://<hosthost>:1433;DatabaseName=master; AuthenticationMethod=type2**
    where <hostname> is the name of the host where the database is running.
  - **jdbc:oracle:thin:@<hostname>:<port>:<dbname>**
    where <hostname> is the name of the host where the database is running, <port> is the port on which the database interfaces with the driver, and <dbname> is the SID of the Oracle database instance.
  - **jdbc:postgresql://<hostname>:<port>/<dbname>**
    where <hostname> is the name of the host where the database is running, <port> is the port on which the database interfaces with the driver, and <dbname> is the name of the Postgresql database.

- Generally, you should only have one instance of each type of JDBC driver client installed on the SiteScope machine. If there is more than one instance installed, SiteScope may report an error and be unable to connect to the database. For example, installing two **classes12.zip** files from two different versions of Oracle is unlikely to work.

- You must have a database user login that SiteScope can use to access the database with CREATE SESSION system privileges. SiteScope is only able to run the SQL queries that this user has permission to run on the database.

Note: When Windows authentication is used to connect to the database, configure SiteScope using the following settings:

- **Database connection URL:** jdbc:mercury:sqlserver://<server name or IP address>:1433;DatabaseName=<database name>; AuthenticationMethod=type2.
- **Database driver:** com.mercury.jdbc.sqlserver.SQLServerDriver.
- Leave the **Database User name** and **Database Password** boxes empty, because the Windows user credentials of the account from which the SiteScope service is running are used to establish a connection to the database.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the TCP (JDBC) protocol. Support for IPv6 might also depend on the JDBC driver being used.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

Database Counter Monitor Settings

The Database Counter monitor enables you to monitor the availability of any database through a JDBC driver.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements and User Permissions" on page 105. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box. ➤ The **Database Connection Tool** is available when configuring this monitor to test and verify connectivity between SiteScope and an external ODBC or JDBC compatible database (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Database Connection Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Database Counter Monitor Overview" on page 104

Database Counter Monitor Settings

User interface elements are described below:

UI Element	Description
Database connection URL	Connection URL to the database you want to connect to. The syntax is jdbc:oracle:thin:@<server name or IP address>:<database server port>:<sid>. **Example:** To connect to the ORCL database on a machine using port 1521 use: jdbc:oracle:thin:@206.168.191.19:1521:ORCL. The colon (:) and the (@) symbols must be included as shown. **Note for using Windows Authentication:** If you want to access the database using Windows authentication, enter jdbc:mercury:sqlserver://<server name or IP address>:1433;DatabaseName=<database name>; AuthenticationMethod=type2 as the connection URL, and com.mercury.jdbc.sqlserver.SQLServerDriver as your database driver. Leave the **Database user name** and **Database password** boxes empty, because the Windows user credentials of the account from which the SiteScope service is running are used to establish a connection to the database.
Query	SQL query that returns at least two columns of data. The values in the first column of data are interpreted as the labels for the entries in the each row. The values in the first row are treated as labels for each entry in the column.
Database driver	Driver used to connect to the database. **Example:** org.postgresql.Driver
Database machine name	Identifier for the target database server, as it should be reported to HP Business Service Management.
Divisor query	SQL query that returns a single numeric value. The value of each counter is calculated by dividing the counter value as retrieved from the database divided by the Divisor Query value.

UI Element	Description
No cumulative counters	Turns off the default behavior of calculating the value of a counter as the difference between that counter's cumulative values (as retrieved from the database on consecutive monitor runs).
No divide counters	Turns off the default behavior of calculating the value of a counter as the value retrieved from the database (or the delta of two values retrieved from the database over consecutive monitor runs) divided by some number. The divisor is either taken from the Divisor Query, or it is the elapsed time in seconds since the previous monitor run.
Credentials	Option for providing the user name and password to be used to access the database server: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.
Counters	Server performance counters you want to check with this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

Database Connection Settings

The Database Connection Settings enable you to retrieve, share, and reuse database connections for database monitors that use any JDBC-compliant driver. When multiple database monitors use the same database, using a connection pool instead of an open connection for each monitor improves monitor performance and optimizes database server resource utilization.

Connections can be shared regardless of monitor enter. For example, SiteScope database logger, database tools (Database Connection, Database Information), database alerts, and database monitors (Oracle Database, Database Counter, Database Query, DB2 8.x and 9.x, Technology Database Integration, and so forth) can share and reuse database connections in a connection pool.

Important information	You can set additional database options that affect all resources that connect to the database in the JDBC Global Options in the General Preferences container.
See also	"JDBC Global Options" in *Using SiteScope*

User interface elements are described below:

UI Element	Description
Use connection pool	Enables SQL connection sharing. This means that you use a connection pool rather than open and close a new connection for each monitor query. **Default value:** Selected
Physically close if idle connection count exceeds	Maximum number of unused SQL connections in the SQL connection pool. When this number is exceeded, unused connections are closed rather than returned to the connection pool. **Default value:** 10

UI Element	Description
Idle connection timeout	Maximum amount of time, in seconds/minutes/hours/days, that a SQL connection remains unused after it has been returned to the SQL connection pool. When the time is exceeded, the connection is automatically closed. **Default value:** 5 minutes
Query timeout	Amount of time, in seconds/minutes/hours/days, to wait for execution of a SQL statement. Not all SQL drivers have this function. If your SQL driver does not support this function, this parameter is ignored. **Default value:** 1 minute

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Database Query Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

Database Query Monitor Overview

Use the Database Query monitor to monitor the availability and proper functioning of your database application. If your database application is not working properly, the user may not be able to access Web content and forms that depend on the database. Most importantly, the user cannot complete e-commerce transactions that are supported by databases. You can also use the Database Query monitor to isolate performance bottlenecks. If the database interaction time and the associated user URL retrieval times are both increasing at about the same amount, the database is probably the bottleneck.

This monitor supports monitoring on any database with a valid JDBC driver that supports SQL queries.

For task details, see "How to Configure the Database Query Monitoring Environment" on page 120.

For user interface details, see "Database Query Monitor Settings" on page 127.

This section contains the following topics:

- "What to Monitor" on page 115
- "Setup Requirements and User Permissions" on page 115
- "IPv6 Addressing Supported Protocols" on page 118
- "Troubleshooting and Limitations" on page 118

What to Monitor

Usually the most important thing to monitor in databases are the queries used by your most frequently used and most important Web applications. If more than one database is used, you must monitor each of the databases.

Each time the Database Query monitor runs, it returns a status, the time it takes to perform the query, the number of rows in the query result, and the first two fields in the first row of the result and writes them in the monitoring log file.

You can also monitor internal database statistics. The statistics provided by each database are different but may include items such as database free space, transaction log free space, transactions/second, and average transaction duration.

Setup Requirements and User Permissions

The steps for setting up a Database Query monitor vary according to what database software you are trying to monitor. The following is an overview of the requirements for using the Database Query monitor:

- You must install or copy a compatible JDBC database driver or database access API into the required SiteScope directory location.

  Many database driver packages are available as compressed (zipped) archive files or .jar files. Copy the downloaded driver file into the **<SiteScope root directory>\WEB-INF\lib** subdirectory. Do not unzip the file.

- You must know the syntax for accessing the database driver. Examples of common database driver strings are:

  - **sun.jdbc.odbc.JdbcOdbcDriver.** JDBC-ODBC Bridge Driver from Sun Microsystems.
  - **com.inet.tds.TdsDriver.** TDS driver from i-net Software for Microsoft SQL databases. This driver is deployed with SiteScope.
  - **com.inet.ora.OraDriver.** A driver from Oracle for Oracle databases. This driver is deployed with SiteScope.

  - **com.mercury.jdbc.sqlserver.SQLServerDriver.** Datadirect driver from DataDirect Technologies. It is an alternative to the TDS driver for those Microsoft SQL databases that use Windows NT authentication. This driver is deployed with SiteScope.
  - **oracle.jdbc.driver.OracleDriver.** SiteScope supports the following categories of JDBC driver that are supplied by Oracle:
    - JDBC thin driver for Oracle 7 and 8 databases.
    - JDBC OCI (thick) driver. For details on accessing Oracle databases using OCI driver, see "Access Oracle databases using OCI driver" on page 121.
  - **com.mercury.jdbc.oracle.OracleDriver.** A driver for Oracle databases. This driver is deployed with SiteScope. When using the Oracle mercury driver, the database connection URL has the form of:
    jdbc:mercury:oracle://<server name or IP address>:<database server port>;sid=<sid>

- You must know the syntax for the database connection URL. The database connection URL normally includes the class of driver you are using, some key name relating to the supplier of the driver software, followed by a combination of server, host, and port identifiers.

  Examples of common database connection URLs are:

  - **jdbc:odbc:<dsname>**
    where <dsname> is the data source name in the system environment or configuration.
  - **jdbc:inetdae:<hostname>:<port>**
    where <hostname> is the name of the host where the database is running and <port> is the port on which the database interfaces with the driver.

  - **jdbc:mercury:sqlserver://<hosthost>:1433;DatabaseName=master;AuthenticationMethod=type2**
    where <hostname> is the name of the host where the database is running.
  - **jdbc:oracle:thin:@<hostname>:<port>:<dbname>**
    where <hostname> is the name of the host where the database is running, <port> is the port on which the database interfaces with the driver, and <dbname> is the name of the Oracle database instance.
- The database you want to monitor needs to be running, have a database name defined, and have at least one named table created in the database. In some cases, the database management software needs to be configured to enable connections by using the middleware or database driver.
- You need a valid user name and password to access and perform a query on the database. In some cases, the machine and user account that SiteScope is running on must be given permissions to access the database.
- You must know a valid SQL query string for the database instance and database tables in the database you want to monitor. Consult your database administrator to work out required queries to test.

Note: When Windows authentication is used to connect to the database, configure SiteScope using the following settings:

- **Database connection URL:** jdbc:mercury:sqlserver://<server name or IP address>:1433;DatabaseName=<database name>; AuthenticationMethod=type2.
- **Database driver:** com.mercury.jdbc.sqlserver.SQLServerDriver.
- Leave the **Database user name** and **Database password** boxes empty, because the Windows user credentials of the account from which the SiteScope service is running are used to establish a connection to the database.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the TCP (JDBC) protocol. Support for IPv6 might also depend on the JDBC driver being used.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the Database Query monitor.

Possible Errors Using the Oracle Thin Driver

- **error, connect error, No suitable driver**: check for syntax errors in Database connection URL, such as dots instead of colons.
- **error, connect error, Io exception: The Network Adapter could not establish the connection**: in Database connection URL, check **jdbc:oracle:thin:@206.168.191.19:1521:ORCL**.
- **error, connect error, Io exception: Invalid connection string format, a valid format is: "host:port:sid"**: in Database connection URL check **jdbc:oracle:thin:@206.168.191.19:1521:ORCL**.
- **error, connect error, Invalid Oracle URL specified: OracleDriver.connect**: in Database connection URL, check for a colon before the "**@**" **jdbc:oracle:thin:@206.168.191.19:1521:ORCL**.
- **Refused:OR=(CODE=12505)(EMFI=4)))):** in Database connection URL, check the database SID is probably incorrect (ORCL part). This error can also occur when the tcp address, or tcp port is incorrect. If this is the case, verify the tcp port and check with the your database administrator to verify the proper SID.
- **String Index out of range: -1**: in Database connection URL, check for the database server address, port, and the database SID.
- **error, driver connect error, oracle.jdbc.driver.OracleDriver**: check syntax in item Database driver.

- **error, driver connect error, oracle.jdbc.driver.OracleDriver**: check that driver is loaded in correct place.
- **error, connect error, No suitable driver**: check driver specified in item Database driver.
- **error, connect error, No suitable driver**: check for syntax errors in Database connection URL, such as dots instead of colons.

Possible Errors Using the MySQL Driver

If, after setting this up, you get an authorization error in the Database Query monitor, then you may have to grant rights for the SiteScope machine to access the MySQL database. Consult the MySQL Database administrator for setting up privileges for the SiteScope machine to access the MySQL server.

Possible Errors with Sybase Database Monitoring

- Verify you are using the correct driver for the version of Sybase you are monitoring. Enter com.sybase.jdbc.SybDriver for Sybase version 4.x. and com.sybase.jdbc2.jdbc.SybDriver for Sybase version 5.x.
- If you get the error: **error, driver connect error, com/sybase/jdbc/SybDriver**, verify that there are no spaces at the end of the driver name. Save the changes and try the monitor again.
- If you get the error: **connect error, JZ006: Caught IOException: java.net.UnknownHostException: dbservername**, verify the name of the database server in the **Database connection URL** box is correct.

Tasks

How to Configure the Database Query Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 121
- "Access Oracle databases using OCI driver" on page 121
- "Access Oracle databases without using ODBC" on page 122
- "Enable SiteScope to monitor an Informix database" on page 123
- "Enable SiteScope to monitor a MySQL database" on page 124
- "Enable SiteScope to monitor a Sybase database" on page 124
- "Troubleshoot driver or database errors" on page 126
- "Configure the monitor properties" on page 126

1 Prerequisites

There are several key requirements for using this monitor. For details, see "Setup Requirements and User Permissions" on page 115.

2 Access Oracle databases using OCI driver

You can monitor an Oracle database using an OCI driver. If the port or SID are changed, you only need to make the change in the **tnsnames.ora** file (the SiteScope Oracle monitors remain unchanged).

a On the SiteScope server, install the version of Oracle client that you are using.

b Connect to the Oracle database using the Oracle OCI driver.

- Set **ORACLE_HOME** environment variable (**ORACLE_HOME** is the folder where the Oracle client or database has been installed).
- Add **ORACLE_HOME\lib** to System PATH (on Windows platforms), or **LD_LIBRARY_PATH** env variable (on UNIX platforms).
- Set **CLASSPATH** environment variable to use Oracle JDBC driver from **ORACLE_HOME\jdbc\lib**.

c In the **\oracle\oraX\network\admin\tnsnames.ora** file, configure the service name. You can test this using a SQL+ tool or the SiteScope Database Connection tool (see Database Connection Tool in *Using SiteScope*).

d Add a database monitor within SiteScope, and configure the following settings in the Monitor Settings panel:

- **Database connection URL**: jdbc:oracle:oci8:@<service name>
- **Database driver**: oracle.jdbc.driver.OracleDriver
- Enter the database user credentials in the **Database user name** and **Database password** boxes

3 Access Oracle databases without using ODBC

If you want to monitor an Oracle database without using ODBC, you can use the Oracle Thin JDBC Drivers.

a To set up SiteScope to use the JDBC Thin Drivers, download the Oracle Thin JDBC drivers from the Oracle Web site (may require service/support agreement with Oracle).

b Copy the downloaded driver package into the <**SiteScope root directory**>**WEB-INF****lib** subdirectory.

Note: Do not extract the files from the archive file.

c Stop and restart the SiteScope service.

d Add a Database Query monitor within SiteScope, and configure the following settings in the Monitor Settings panel:

- **Database connection URL.** The format for the Oracle JDBC driver is:

  jdbc:oracle:thin:@<tcp address>:<tcp port>:<database SID>

  For example to connect to the ORCL database on a machine using port 1521 you would use:

  jdbc:oracle:thin:@206.168.191.19:1521:ORCL

  Note: After the word thin is a colon (:) and an at (@) symbol.

- **Database driver.** Enter the following string: oracle.jdbc.driver.OracleDriver.

4 Enable SiteScope to monitor an Informix database

Monitoring a Informix database requires the use of a JDBC driver.

a Download the Informix JDBC driver from Informix. See the Informix Web site for details.

b Uncompress the distribution file.

c Open a DOS window and go to the **jdbc140jc2** directory.

d Unpack the driver by running the following command:

```
c:\SiteScope\java\bin\java -cp . setup
```

e Copy **ifxjdbc.jar** to the <**SiteScope root directory**>**WEB-INF****lib** subdirectory.

f Stop and restart SiteScope.

g Add a Database Query monitor within SiteScope, and configure the following settings in the Monitor Settings panel:

- **Database connection URL.** The format for the Informix JDBC driver is:

  ```
  jdbc:informix-sqli://<database hostname>:<tcp port><database server>:INFORMIXSERVER=<database>
  ```

- If you require a **Database user name** and **Database password**, the database connection URL format for the Informix JDBC driver is:

  ```
  jdbc:informix-sqli://<database hostname>:<tcp port><database server>:INFORMIXSERVER=<database>;user=myuser;password=mypassword
  ```

  For example, to connect to the Database Server sysmaster running on the machine called pond.thiscompany.com and the Database called maindbase, type:

  ```
  jdbc:informix-sqli://pond.thiscompany.com:1526/sysmaster:INFORMIXSERVER=maindbase;
  ```

- **Database driver.** Enter the Informix JDBC driver com.informix.jdbc.IfxDriver

5 Enable SiteScope to monitor a MySQL database

Monitoring a MySQL database requires the use of a JDBC driver.

a Download the MySQL JDBC driver from the MySQL web site (http://www.mysql.com).

b Uncompress the distribution file.

c Copy the .jar file into the <**SiteScope root directory**>**\WEB-INF\lib** directory.

d Stop and restart SiteScope.

e Add a Database Query monitor within SiteScope, and configure the following settings in the Monitor Settings panel:

- **Database connection URL.** The format for the MySQL JDBC driver is:

  ```
  jdbc:mysql://<database hostname>[:<tcp port>]/<database>
  ```

  For example to connect to the MySQL database "aBigDatabase" on a machine using the standard MySQL port number 3306 you would use:

  ```
  jdbc:mysql://206.168.191.19/aBigDatabase
  ```

  If you are using a different port to connect to the database, include that port number as part of the IP address.

- **Database driver.** Enter the specification for the MySQL JDBC driver: org.gjt.mm.mysql.Driver

6 Enable SiteScope to monitor a Sybase database

To use JDBC drivers with your Sybase SQL server, perform the following steps:

a Obtain the driver for the version of Sybase that you are using. For example, for version 5.X databases you need **jconn2.jar**. If you have Jconnect, you should be able to find a driver in the Jconnect directory.

b Place the zip file in the <**SiteScope root directory**>**\WEB-INF\lib** directory. Do not extract the zip file.

c Stop and restart the SiteScope service.

d Add a Database Query monitor within SiteScope, and configure the following settings in the Monitor Settings panel:

- **Database connection URL.** Use the syntax of: jdbc:sybase:Tds:hostname:port

  For example to connect to SQL server named bgsu97 listening on port 2408, you would enter:

  jdbc:sybase:Tds:bgsu97:2408

- You can specify a database by using the syntax:

  jdbc:sybase:Tds:hostname:port#/database

  For example to connect to SQL server named bgsu97 listening on port 2408 and to the database of quincy, you would enter:

  jdbc:sybase:Tds:bgsu97:2408/quincy

- **Database driver.** Enter com.sybase.jdbc.SybDriver (for Sybase version 4.x) or com.sybase.jdbc2.jdbc.SybDriver (for Sybase version 5.x).

- Enter the **Database user name** and **Database password**.

- Enter a query string for a database instance and table in the Sybase database you want to monitor.

  For example, Sp_help should work and return something similar to: good, 0.06 sec, 27 rows, KIRK1, dbo, user table

  Alternately, the query string select * from spt_ijdbc_mda should return something similar to:
  Monitor: good, 0.06 sec, 175 rows, CLASSFORNAME, 1, create table #tmp_class_for_name (xtbinaryoffrow image null), sp_ijdbc_class_for_name(?), select * from #tmp_class_for_name, 1, 7, 12000, -1

7 Troubleshoot driver or database errors

To troubleshoot possible errors using the Oracle Thin Driver, MySQL Driver, or Sybase database, see "Possible Errors Using the Oracle Thin Driver" on page 118.

8 Configure the monitor properties

Configure the Database Query monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Database Query Monitor Settings" on page 127.

Note: You may want to monitor your most critical and most common queries frequently, every 2-5 minutes. Database statistics that change less frequently can be monitored every 30 or 60 minute.

Reference

Database Query Monitor Settings

Checks that a database is working correctly by connecting to it and performing a query. Optionally, it can check the results of a database query for expected content.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements and User Permissions" on page 115. ➤ The **Database Connection Tool** is available when configuring this monitor to test and verify connectivity between SiteScope and an external ODBC or JDBC compatible database (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Database Connection Tool" in *Using SiteScope*. **Note:** When using the Database Connection Tool to apply properties to the monitor, you must enter the credential data manually (if you select a credential profile the credential data is lost).
Relevant tasks	➤ "How to Configure the Database Query Monitoring Environment" on page 120 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Database Query Monitor Overview" on page 114

Database Query Monitor Settings

User interface elements are described below:

UI Element	Description
Database connection URL	URL to a database connection (no spaces are allowed in the URL). One way to create a database connection is to use ODBC to create a named connection to a database. **Example:** First use the ODBC control panel to create a connection called test. Then, enter jdbc:odbc:test as the connection URL. **Note for using Windows Authentication:** If you want to access the database using Windows authentication, enter jdbc:mercury:sqlserver://<server name or IP address>:1433;DatabaseName=<database name>; AuthenticationMethod=type2 as the connection URL, and com.mercury.jdbc.sqlserver.SQLServerDriver as your database driver. Leave the **Database user name** and **Database password** boxes empty, because the Windows user credentials of the account from which the SiteScope service is running are used to establish a connection to the database.
Database driver	Java class name of the JDBC database driver. The default driver uses ODBC to make database connections. SiteScope uses the same database driver for both primary and backup database connections. If a custom driver is used, the driver must also be installed in the <**SiteScope root directory**>**\WEB-INF\lib** directory. **Default value:** sun.jdbc.odbc.JdbcOdbcDriver

UI Element	Description
Database user name	User name used to log on to the database. If you are using Microsoft SQL server and the default driver (Sun Microsystem JDBC-ODBC bridge driver, sun.jdbc.odbc.JdbcOdbcDriver), you can leave this blank and choose NT Authentication when you setup the ODBC connection. With NT Authentication, SiteScope connects using the login account of the SiteScope service. **Note:** The specified user name must have privileges to run the query specified for the monitor.
Database password	Password used to log on to the database. If you are using Microsoft SQL server and the default driver (Sun Microsystem JDBC ODBC bridge driver (sun.jdbc.odbc.JdbcOdbcDriver), you can leave this blank and choose NT Authentication when you create the ODBC connection. With NT Authentication, SiteScope connects using the login account of the SiteScope service.
Query	SQL query to test. **Example:** select * from sysobjects
Match content	Text string to check for in the query result. If the text is not contained in the result, the monitor displays no match on content. This works for XML tags as well. You may also perform a Perl regular expression match by enclosing the string in forward slashes, with an i after the trailing slash indicating case-insensitive matching. **Example:** /href=Doc\d+\.html/ or /href=doc\d+\.html/i If you want a particular piece of text to be saved and displayed as part of the status, use parentheses in a Perl regular expression. **Example:** /Temperature: (\d+)/ would return the temperature as it appears on the page and this could be used when setting an Error if or Warning if threshold. **Note:** The search is case sensitive.

UI Element	Description
Open Tool	Opens the Regular Expression Tool, enabling you to test a regular expression for content matching against a sample of the content you want to monitor. For details, see "Regular Expression Tool" in *Using SiteScope*.
File path	Name of the file that contains the query you want to run. The file should be in a simple text format. Use this function as an alternative to the Query text box for complex queries or queries that change and are updated by an external application.
Column labels	Field labels for the two columns returned by the query, separated by a comma ("**,**"). These column labels are used as data labels in SiteScope reports for Database Query Monitors. **Note:** The field labels should be two of the labels that are returned by the Query string entered above.
Database machine name	Text identifier describing the database server that this monitor is monitoring if you are reporting monitor data to an installation of HP Business Service Management. This text descriptor is used to identify the database server when the monitor data is viewed in an HP Business Service Management report.

Database Connection Settings

The Database Connection Settings enable you to retrieve, share, and reuse database connections for database monitors that use any JDBC-compliant driver. When multiple database monitors use the same database, using a connection pool instead of an open connection for each monitor improves monitor performance and optimizes database server resource utilization.

Connections can be shared regardless of monitor type. For example, SiteScope database logger, database tools (Database Connection, Database Information), database alerts, and database monitors (Oracle Database, Database Counter, Database Query, DB2 8.x and 9.x, Technology Database Integration, and so forth) can share and reuse database connections in a connection pool.

Important information	You can set additional database options that affect all resources that connect to the database in the JDBC Global Options in **Preferences** > **General Preferences**.
See also	"JDBC Global Options" in *Using SiteScope*

User interface elements are described below:

UI Element	Description
Use connection pool	Enables SQL connection sharing. This means that you use a connection pool rather than open and close a new connection for each monitor query. **Default value:** Selected
Physically close if idle connection count exceeds	The maximum number of unused SQL connections in the SQL connection pool. When this number is exceeded, unused connections are closed rather than returned to the connection pool. **Default value:** 10

UI Element	Description
Idle connection timeout	The maximum amount of time, in seconds/minutes/hours/days, that a SQL connection remains unused after it has been returned to the SQL connection pool. When the time is exceeded, the connection is automatically closed. **Default value:** 5 minutes
Query timeout	The amount of time, in seconds/minutes/hours/days, to wait for execution of a SQL statement. Not all SQL drivers have this function. If your SQL driver does not support this function, this parameter is ignored. **Default value:** 1 minute

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DB2 8.x and 9.x Monitor

This chapter includes:

Concepts

- DB2 8.x and 9.x Monitor Overview on page 134

Tasks

- How to Configure the DB2 Monitoring Environment on page 136

Reference

- DB2 8.x and 9.x Monitor Settings on page 138

Concepts

DB2 8.x and 9.x Monitor Overview

Use the DB2 8.x and 9.x monitor to monitor DB2 8.x and 9.x servers for availability and proper functioning. You can monitor multiple parameters or counters with a single monitor instance. This enables you to monitor server loading for performance, availability, and capacity planning. Create a separate DB2 monitor instance for each Database in your IBM DB2 environment. The error and warning thresholds for the monitor can be set on up to ten DB2 server performance statistics.

For task details, see "How to Configure the DB2 Monitoring Environment" on page 136.

For user interface details, see "DB2 8.x and 9.x Monitor Settings" on page 138.

This section contains the following topics:

- "IPv6 Addressing Supported Protocols" on page 134
- "DB2 8.x and 9.x Topology" on page 135

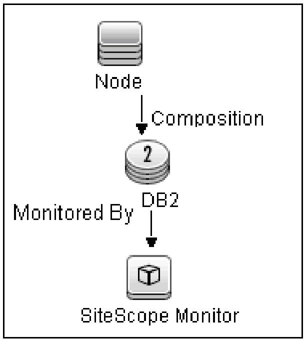
IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the TCP (JDBC) protocol. Support for IPv6 might also depend on the JDBC driver being used.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

DB2 8.x and 9.x Topology

The DB2 8.x and 9.x monitor can identify the topology of the DB2 system being monitored. The monitor creates the following topology in BSM's RTSM.



For details on enabling topology reporting, see "How to Configure the DB2 Monitoring Environment" on page 136.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

Tasks

How to Configure the DB2 Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 136
- "Configure the monitor properties" on page 136
- "Enable topology reporting - optional" on page 137

1 Prerequisites

The following are requirements for using the DB2 8.x and 9.x monitor:

- JDBC drivers for connecting to the DB2 Database server. These can be found in your DB2 server installation directories. Copy the **db2jcc.jar** file to the <**SiteScope root directory**>**\java\lib\ext** folder.
- This monitor uses the Snapshot mirroring functionality supported by DB2. You must enable the Snapshot Mirror on your DB2 instance to retrieve counters. For details, refer to the relevant IBM DB2 documentation.

2 Configure the monitor properties

Configure the DB2 8.x and 9.x monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "DB2 8.x and 9.x Monitor Settings" on page 138.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

Reference

DB2 8.x and 9.x Monitor Settings

This monitor enables you to monitor the availability and performance statistics of an IBM DB2 8.x or 9.x database.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box. ➤ The **Database Connection Tool** is available when configuring this monitor to test and verify connectivity between SiteScope and an external ODBC or JDBC compatible database (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Database Connection Tool" in *Using SiteScope*.
Relevant tasks	➤ "How to Configure the DB2 Monitoring Environment" on page 136 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "DB2 8.x and 9.x Monitor Overview" on page 134

DB2 8.x and 9.x Monitor Settings

User interface elements are described below:

UI Element	Description
DB2 server	Address or name of the server where the DB2 database is running.
Port	Port on which the DB2 database accepts connections. **Default value:** 50000
Database	DB2 database node name that you want to monitor. **Default value:** sample **Example:** DB2 is the default node name created by DB2 installation.
Credentials	Option for providing the user name and password to be used to access the DB2 database server: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (selected by default). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.
Partition	Partition to monitor. -1 is the current partition; -2 is all partitions. **Default value:** -1
Calculate rate	Calculates rates for counter values rather than the actual values returned from the monitored server. **Example**: If a counter counts logins and every second an average of two users log on to the database, the counter keeps growing. Selecting this option, the monitor displays the value 2, which means 2 user logins per second.

UI Element	Description
Counters	Server performance counters to check with this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

Database Connection Settings

The Database Connection Settings enable you to retrieve, share, and reuse database connections for database monitors that use any JDBC-compliant driver. When multiple database monitors use the same database, using a connection pool instead of an open connection for each monitor improves monitor performance and optimizes database server resource utilization.

Connections can be shared regardless of monitor type. For example, SiteScope database logger, database tools (Database Connection, Database Information), database alerts, and database monitors (Oracle database, Database Counter, Database Query, DB2 8.x and 9.x, Technology Database Integration, and so forth) can share and reuse database connections in a connection pool.

Important information	You can set additional database options that affect all resources that connect to the database in the JDBC Global Options in the General Preferences container.
See also	"JDBC Global Options" in *Using SiteScope*

User interface elements are described below:

UI Element	Description
Use connection pool	Enables SQL connection sharing. This means that you use a connection pool rather than open and close a new connection for each monitor query. **Default value:** Selected
Physically close if idle connection count exceeds	Maximum number of unused SQL connections in the SQL connection pool. When this number is exceeded, unused connections are closed rather than returned to the connection pool. **Default value:** 10
Idle connection timeout	Maximum amount of time, in seconds/minutes/hours/days, that a SQL connection remains unused after it has been returned to the SQL connection pool. When the time is exceeded, the connection is automatically closed. **Default value:** 5 minutes
Query timeout	Amount of time, in seconds/minutes/hours/days, to wait for execution of a SQL statement. Not all SQL drivers have this function. If your SQL driver does not support this function, this parameter is ignored. **Default value:** 1 minute

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DHCP Monitor

This chapter includes:

Concepts

- DHCP Monitor Overview on page 144

Tasks

- How to Configure the DHCP Monitoring Environment on page 145

Reference

- DHCP Monitor Settings on page 146

Concepts

DHCP Monitor Overview

Use the DHCP monitor to monitor your DHCP servers to verify that they are working properly. If your DHCP server fails, machines relying on DHCP are unable to acquire a network configuration when rebooting. Additionally, as DHCP address leases expire on already-configured machines, those machines drop off the network when the DHCP server fails to renew their address lease.

Most networks have a DHCP server listening for DHCP requests. This monitor finds DHCP servers by broadcasting a request for an IP address and waiting for a DHCP server to respond.

Each time the DHCP monitor runs, it returns a status and writes it in the monitoring log file. It also writes the total time it takes to receive and release an IP address in the log file. Your DHCP server is a critical part of providing functionality to other hosts on your network, so it should be monitored about every 10 minutes.

The SiteScope DHCP monitor requires that a third-party Java DHCP library be installed on the server where SiteScope is running. The DHCP monitor type does not appear in the interface until this library is installed. For details on how to perform this task, see "Install the jDHCP library" on page 145.

For task details, see "How to Configure the DHCP Monitoring Environment" on page 145.

For user interface details, see "DHCP Monitor Settings" on page 146.

Tasks

How to Configure the DHCP Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Install the jDHCP library" on page 145
- "Configure the monitor properties" on page 145

1 Install the jDHCP library

Install the Java DHCP library on the server where SiteScope is running.

a Download the jDHCP library (either in .zip or in .tar.gz format).

b Extract the file named **JDHCP.jar** and copy it to the **<SiteScope root directory>\WEB-INF\lib** directory.

c After installing the **JDHCP.jar** file, restart the SiteScope service.

2 Configure the monitor properties

Configure the DHCP monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "DHCP Monitor Settings" on page 146.

Reference

DHCP Monitor Settings

This monitor enables you to monitor a DHCP Server by using the network. It verifies that the DHCP server is listening for requests and that it can allocate an IP address in response to a request.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	This monitor requires that a third-party Java DHCP library be installed on the server where SiteScope is running. The DHCP monitor type does not appear in the interface until this library is installed. For more information, see "Install the jDHCP library" on page 145.
Relevant tasks	➤ "How to Configure the DHCP Monitoring Environment" on page 145 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "DHCP Monitor Overview" on page 144

DHCP Monitor Settings

User interface elements are described below:

UI Element	Description
Timeout	Amount of time, in seconds, to wait for an IP address. **Default value:** 10 seconds
Requested client address	IP address to request from the DHCP server.

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Directory Monitor

This chapter includes:

Concepts

Reference

Concepts

Directory Monitor Overview

Use the Directory monitor to monitor directories that contain log files or other files that tend to grow and multiply unpredictably. You can instruct SiteScope to notify you if either the number of files or total disk space used gets out of hand. You can also use this to monitor directories in which new files are added and deleted frequently. For example, in the case of an FTP directory, you probably want to watch both the number of files in the directory and the files contained in the directory.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

The Directory monitor supports monitoring remote servers running on HP NonStop operating systems. For details on enabling the HP NonStop operating system monitoring environment, see "Setup Requirements and User Permissions" on page 219.

You can set up thresholds for this monitor based on the time in minutes since the latest time a file in the directory has been modified, as well as the time in minutes since the first time a file in the directory has been modified.

Because the uses for the Directory monitor vary so greatly, there is no one interval that works best. Keep in mind that if you are watching a directory that contains a lot of files and sub directories, this monitor may take longer to run.

For details on configuring the monitor, see "Directory Monitor Settings" on page 149.

Reference

Directory Monitor Settings

The Directory monitor enables you to monitor an entire directory and report on the total number of files in the directory, the total amount of disk space used, and the time (in minutes) since any file in the directory was modified. This information is useful if you have limited disk space, you want to monitor the number of files written to a specific directory, or you want to know the activity level in a certain directory.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor supports monitoring remote servers running on HP NonStop operating systems. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Directory Monitor Overview" on page 148

Directory Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Server where the directory you want to monitor is running. Select a server from the server list (only those remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** Monitoring log files using SSH on Windows platforms is supported for this monitor only if the remote SSH server supports SSH File Transfer Protocol. **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.

UI Element	Description
Add Remote Server	Opens the Add Remote Server dialog box, enabling you to select the type of remote you want to add (Windows or UNIX), and enter the configuration details. For details on the Microsoft Windows Remote Servers user interface, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. For details on the UNIX Remote Servers user interface, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.
Directory path	Directory that you want to monitor. ➤ To monitor directories on a remote Windows NT/2000 server through NetBIOS, the path should contain the name of the shared folder for remote NetBIOS servers. You can also specify an absolute path of the directory on the remote machine without specifying the server name. For example, if you type c:\test, the remote directory is accessed as \\Server\C$\test. ➤ To monitor a directory on a remote Windows SSH machine, the path must be relative to the home directory of the user account used to log on to the remote machine. ➤ To monitor a directory on remote UNIX machines, the path must be relative to the home directory of the UNIX user account used to log on to the remote machine. You must also select the corresponding remote UNIX server in the **Servers** box described above. For details on which UNIX user account to use for the applicable remote server, see "Remote Servers Overview" in *Using SiteScope*. To monitor a directory that is created automatically by some application and the directory path includes date or time information, you can use SiteScope's special data and time substitution variables in the path of the directory. For details, see "SiteScope Date Variables" in *Using SiteScope*.

UI Element	Description
No subdirectories	Subdirectories are not included in the match count.
File name match	Text or an expression to match against. Only file names which match are counted in the totals.

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Disk Space Monitor

This chapter includes:

Concepts

Reference

Concepts

Disk Space Monitor Overview

Use the Disk Space monitor to monitor the amount of disk space that is currently in use on your server. Having SiteScope verify that your disk space is within acceptable limits can save you from a crashed system and corrupted files.

The disk space monitor does not require many resources, so you can check it as often as every 15 seconds, but every 10 minutes should be sufficient. You may want to have SiteScope run a script (using a Script Alert) that deletes all files in certain directories, such as /tmp, when disk space becomes constrained. For details on using a Script Alert, see "Working with Script Alerts" in *Using SiteScope*.

The Disk Space monitor supports monitoring remote servers running on HP NonStop operating systems. For details on enabling the HP NonStop operating system monitoring environment, see "Setup Requirements and User Permissions" on page 219.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

For details on configuring the monitor, see "Disk Space Monitor Settings" on page 157.

This section contains the following topics:

- "Setup Requirements and User Permissions" on page 155
- "IPv6 Addressing Supported Protocols" on page 155
- "Troubleshooting and Limitations" on page 156

Setup Requirements and User Permissions

You must have domain privileges or authenticated access to the remote Windows or UNIX server, and specify valid user credentials. The user specified in the **Credentials** section must have sufficient permissions to connect to and gather information from the remote server disk drives. On UNIX systems, the defined user must have privileges to execute a command to retrieve available mounted disks (for example, on Linux: /bin/df -k <disk>).

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)
- SSH (from SiteScope installed on UNIX platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the Disk Space monitor.

- "Disk Performance Counters Unavailable on Windows 2000" on page 156
- "WMI Returns Incorrect Disk Space Values" on page 156

Disk Performance Counters Unavailable on Windows 2000

Disk performance counters are unavailable by default in standard Windows 2000 installations. To monitor disk drives on servers running Windows 2000, you must enable these disk counters. Use the diskperf -y command line on each Windows 2000 machine you want to monitor disk space, and then reboot each server. You should then be able to select the disk drives for those servers in the Disk Space monitor dialog box.

WMI Returns Incorrect Disk Space Values

Due to a limitation with WMI, the WMI connection method returns incorrect results when this monitor is used on Windows Server 2008.

Workaround: To monitor Windows Server 2008 using WMI, you should install the Microsoft hot fix (http://support.microsoft.com/kb/961435/en-us) on the target Windows system.

Reference

Disk Space Monitor Settings

The Disk Space monitor tracks how much disk space is currently in use on your server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ This monitor supports: ➤ WMI (Windows Management Instrumentation) as a method for gathering statistics. ➤ Monitoring remote servers running on HP NonStop operating systems. ➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements and User Permissions" on page 155. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ The **Performance Counters Tool** is available when configuring this monitor to check performance counters on a specific machine in a Windows NT/2000 network (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Performance Counters Tool" in *Using SiteScope*.

Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Disk Space Monitor Overview" on page 154

Disk Space Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Server where the disk space you want to monitor is running. Select a server from the server list (only those remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed here. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Remote Server dialog box, enabling you to select the type of remote you want to add (Windows or UNIX), and enter the configuration details. For details on the Microsoft Windows Remote Servers user interface, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. For details on the UNIX Remote Servers user interface, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.
Disk/File system	Disk drive to monitor.

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DNS Monitor

This chapter includes:

Concepts

Reference

Concepts

DNS Monitor Overview

Use the DNS monitor to monitor your Domain Name Servers (DNS) to verify that they are working properly. If your DNS server is not working properly, you cannot get out on the network, and people trying to reach your server are not able to find it using the server name (they can connect to it using the IP address only).

The DNS monitor checks your DNS server by using the network; verifies that the DNS server is accepting requests; verifies that the address for a specific domain name can be found; and returns a status and writes it in the monitoring log file with each running.

Most companies have both a primary and a secondary DNS server. If your company employs a firewall, these DNS servers may sit outside the firewall with another DNS server located inside the firewall. This internal DNS server provides domain name service for internal machines. It is important to monitor all of these servers to check that each is functioning properly.

If you have both a primary and secondary DNS server outside your firewall and an internal DNS server inside your firewall, you should monitor your internal server and your primary DNS server every 2-5 minutes. You can monitor the secondary DNS server less frequently (about every 10-15 minutes). To use this monitor, the TCP/IP protocol must be installed.

For details on configuring the monitor, see "DNS Monitor Settings" on page 164.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the DNS monitor.

- If the SiteScope server cannot reach a DNS server that is running (no ping to host), and there are no network connectivity issues, check the TCP/IP client configuration settings on the DNS server. Also verify that the DNS server itself does not a connectivity issue.
- If the SiteScope server does not get a response to name resolution requests (even though it can ping the DNS server), ask your network administrator to verify that the DNS Server service is enabled and running on the DNS server.
- If the DNS server responds to queries for name resolution but with the incorrect information, it might be because the DNS server has incorrect or outdated information in its resource records for the specific zone. This situation can be due to a number of issues, including the following (should be managed by network administrator):
  - If administrators are manually creating and updating resource records, the incorrect information might have been inserted into the zone database file by the individual updating the resource records. To rectify this issue, you would have to manually verify the validity of each resource record.
  - If the DNS server is configured for dynamic updates, verify that dynamic updates have indeed occurred. If no dynamic updates have occurred, this would be the reason that the DNS server responded to SiteScope requests with outdated information. If the issue still persists, verify that the DNS server is configured for dynamic updates.
  - The DNS server might be incorrectly resolving names from a secondary DNS server due to zone transfer not occurring for the specific secondary DNS server. This would result in the secondary zone database file containing the incorrect information. To rectify this issue, manually force a zone transfer to ensure that the secondary DNS zone database file contains updated information.

Reference

DNS Monitor Settings

This monitor enables you to monitor your DNS server to verify that they are working properly.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	The **DNS Lookup Tool** is available when configuring this monitor to look up names from a Domain Name Server and show you the IP address for a domain name (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "DNS Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "DNS Monitor Overview" on page 162

DNS Monitor Settings

User interface elements are described below:

UI Element	Description
DNS server address	IP address of the DNS server that you want to monitor. **Example:** 206.168.191.1
Host to resolve	Host name to lookup. If you only want to verify that your DNS server is operating, the host name you enter here can be any valid host name or domain name. **Example:** demo.thiscompany.com To verify that a domain name resolves to a specific IP address, enter the IP address that corresponds to the host name you enter in the **Expected IP address** box.
Expected IP address	IP address or addresses that are mapped to the **Host to resolve** (domain name) entered above. You can use the DNS monitor to verify that a host name or domain name resolves to the correct IP address or addresses. **Note:** If you enter more than one IP address, the monitor reports a status of good, even if only one of the IP addresses that you enter is mapped correctly to the **Host to resolve**. When using this option, the monitor only reports an error if none of the IP addresses entered here are mapped to the given **Host to resolve**. When entering multiple IP addresses, separate them with a comma (",").

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e-Business Transaction Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

e-Business Transaction Monitor Overview

Use this monitor to verify that an end-to-end transaction and associated processes complete properly. This includes:

- Successful navigation through a series of URLs.
- Transmission of an email confirming the sequence.
- Logging the information into a database file.

The e-Business Transaction monitor runs a sequence of other SiteScope monitors, checking that each monitor returns a status of OK. It reports an Error status if any monitor in the sequence fails.

For example, you could use this monitor to verify that the following steps, each of which is a step in a single transaction, run properly:

- Place an order on a Web site (see "Working with the URL Sequence Monitor" on page 712).
- Check that the order status was updated (see "Working with the URL Sequence Monitor" on page 712).
- Check that a confirmation email was received (see "Mail Monitor Overview" on page 266).
- Check that the order was added to the order database (see "Database Query Monitor Overview" on page 114).
- Check that the order was transferred to a legacy system (see "Script Monitor Settings" on page 552).

You should monitor any multi-step transaction process that causes other updates or actions in your systems. Monitor each of the actions taken to check that updates were performed properly and that actions were carried out successfully.

Using this example, you would first create the URL Sequence monitor, Mail monitor, Database monitor, and applicable Script monitor needed to verify each step of the chain. Then you would create an e-Business Transaction monitor and select each of these SiteScope monitors as a group in the order they should be run. If any one monitor indicates a failure, the e-Business Transaction monitor reports an error.

Each time the e-Business Transaction monitor runs, it returns a status based on the number and percentage of items in the specified monitors, groups, or both, currently reporting an error, warning, or OK status. It writes the percentages reported in the monitoring log file.

For task details, see "How to Configure the e-Business Transaction Monitoring Environment" on page 171.

For user interface details, see "e-Business Transaction Monitor Settings" on page 173.

This section contains the following topics:

- "Editing the Order of the Monitors in the Chain" on page 169
- "Setting up Monitors for the e-Business Chain" on page 170

Editing the Order of the Monitors in the Chain

By default, the Add e-Business Transaction monitor page lists monitor groups and individual monitors in alphabetical order. To have the e-Business Transaction monitor run the chain of monitors in the proper order, they must appear in the proper order in the **Selected** table on the New e-Business Transaction Monitor page. You can do this by selecting the individual monitors in the order in which they should be run.

Note: To control the order of the monitors in the chain, you should select monitors and not groups. If you select groups to run in the e-Business Transaction monitor, they are run at random and not by group order.

Setting up Monitors for the e-Business Chain

Before you can add an e-Business Transaction monitor, you must define other SiteScope monitors that report on the actions and results of the steps in the sequence chain. Using the example from the usage guidelines above, you can create one or more URL Sequence monitor for verifying the sequence of online actions, a Mail monitor to confirm that an email acknowledgement is sent, and a Database Query monitor to see that information entered online is logged into a database.

For details on setting up a URL sequence chain monitor, see "How to Configure the e-Business Transaction Monitoring Environment" on page 171.

Tasks

How to Configure the e-Business Transaction Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

➤ "Set up monitors for the e-Business chain" on page 171

➤ "Add and configure the e-Business Transaction monitor" on page 172

1 Set up monitors for the e-Business chain

Before you can add an e-Business Transaction monitor, you must define other SiteScope monitors that report on the actions and results of the steps in the sequence chain.

a Create a new group that contains all the individual monitors to be included in the sequence chain.

b Open the new monitor group, and add the first individual monitor type needed for the sequence (for example, "URL Sequence Monitor" on page 709).

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

Note: Monitors should be added in the order that they are run in the chain. For example, select a URL Sequence monitor which triggers an email event before you select the Mail monitor to check for the email.

To control the order of the monitors in the chain, you should select monitors and not groups. If you select groups to run in the e-Business Transaction monitor, they are run at random and not by group order.

c If necessary, set up the values to be passed from one monitor to another in the chain.

d Add the other monitors for this transaction chain in the required order of execution into the group.

Note: The individual monitors run by the e-Business Transaction monitor should generally not be run separately by SiteScope. You should make sure that the **Frequency** setting for each of these monitors is set to zero ("0").

---

e Create a new group or open an existing group that contains the e-business transaction chain monitor you are creating.

f Click **New** > **Monitor** and select the **e-Business Transaction** monitor.

2 Add and configure the e-Business Transaction monitor

Configure the e-Business Transaction monitor settings as required.

For user interface details, see "e-Business Transaction Monitor Settings" on page 173.

Reference

e-Business Transaction Monitor Settings

This monitor enables you to verify that the multiple tasks that make up an online transaction are completed properly.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	This monitor cannot be copied to a template. It must be created directly in a template.
Relevant tasks	➤ "How to Configure the e-Business Transaction Monitoring Environment" on page 171 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "e-Business Transaction Monitor Overview" on page 168

e-Business Transaction Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
Monitor delay (seconds)	Number of seconds to wait between running each monitor. This setting is useful if you need to wait for processing to occur on your systems before running the next monitor. **Default value:** 0 seconds

UI Element	Description
When error	Error handling option during the sequence: ➤ **Continue to run the remainder of the monitors.** This runs every monitor no matter what the status of a given monitor is. ➤ **Stop and do not run any of the remaining monitors.** This stops running the list of monitors immediately, if a monitor returns an error. ➤ **Run the last monitor.** This runs the last monitor in the list. It is useful if a monitor is used for closing or logging off a session opened in a previous monitor.
Single session	URL monitors use the same network connection and the same set of cookies. This is useful if you are using the e-Business Transaction monitor to group several URL Sequence monitors and do not want to include the login steps as part of each transaction.
Item Settings	
Items	Using the control key or equivalent, double-click the set of monitors that make up the e-Business Transaction monitor to move them to the **Selected** column. **Note:** ➤ Monitors are run in the order that they are listed in their group. For details, see "Editing the Order of the Monitors in the Chain" on page 169. ➤ To control the order of the monitors in the chain, select monitors and not groups. If you select groups, they are run at random and not by group order.

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F5 Big-IP Monitor

This chapter includes:

Concepts

Reference

Concepts

F5 Big-IP Monitor Overview

Use the F5 Big-IP monitor to monitor the content of event logs and other data from F5 Big-IP 4.0 load balancing device. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate F5 Big-IP monitor instance for each F5 Big-IP load balancing device in your environment. The error and warning thresholds for the monitor can be set on one or more load balancer statistics.

For details on configuring the monitor, see "F5 Big-IP Monitor Settings" on page 177.

Reference

F5 Big-IP Monitor Settings

This monitor enables you to monitor the statistics of a F5 Big-IP load balancing device using SNMP.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box. ➤ The **SNMP Browser Tool** is available when configuring this monitor to verify the connection properties of an SNMP agent and to gain more information about the MIBs which that agent implements (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "SNMP Browser Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "F5 Big-IP Monitor Overview" on page 176

F5 Big-IP Monitor Settings

User interface elements are described below:

UI Element	Description
SNMP Connection Settings	
Server	Name of the server you want to monitor.
SNMP version	Version of SNMP to use when connecting. Supports SNMP version 1, 2, and 3. Selecting V3 enables you to enter V3 settings in the SNMP V3 settings panel. **Default value:** V1
Community	Community string (valid only for version 1 or 2 connections). **Default value:** public
Timeout (seconds)	Amount of time, in seconds, that SiteScope should wait for all SNMP requests (including retries) to complete. **Default value:** 5
Retries	Number of times each SNMP GET request should be retried before SiteScope considers the request to have failed. **Default value:** 1
Port	Port to use when requesting data from the SNMP agent. **Default value:** 161
Starting OID	Use this option when selecting counters for this monitor. When the monitor attempts to retrieve the SNMP agent's tree, it starts with the OID value that is entered. You should edit this box only when attempting to retrieve values from an application that does not handle OIDs starting with 1. If the default value of 1 did not enable retrieving any counters, then you may have to enter a different value. **Default value:** 1

UI Element	Description
MIB file	MIB file option: ➤ **LOAD-BAL-SYSTEM-MIBS.txt** file displays only those objects that are described within that MIB file. ➤ **All MIBs** displays all objects discovered on the given F5 Big-IP when browsing counters. If no MIB information is available for an object, it is still displayed, but with no textual name or description. **Default value:** All MIBs
Counter calculation mode	Performs a calculation on objects of type Counter, Counter32, or Counter64. The available calculations are: ➤ **Calculate delta.** Calculates a simple delta of the current value from the previous value. ➤ **Calculate rate** Calculates a rate calculation using the delta of current value from previous value, divided by the time elapsed between measurements. ➤ **Do not calculate.** No calculation is performed. **Note:** This option only applies to the aforementioned object types. An SNMP by MIB monitor that monitors Counter objects as well as DisplayString objects only performs this calculation on the Counter objects.
V3 SNMP Settings (This panel is enabled only if V3 is selected in the SNMP version field)	
SNMP V3 authentication type	The type of authentication to use for version 3 connections. **Default value:** MD5
SNMP V3 user name	User name for version 3 connections.
SNMP V3 authentication password	Authentication password to use for version 3 connections.
SNMP V3 privacy password	Privacy password if DES privacy encryption is desired for version 3 connections. Leave blank if you do not want privacy.

UI Element	Description
SNMP V3 context engine ID	Hexadecimal string representing the Context Engine ID to use for this connection. This is applicable for SNMP V3 only.
SNMP V3 context name	Context Name to use for this connection. This is applicable for SNMP V3 only.
SNMP Counters	
Counters	Server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note:** ➤ The counters displayed are those received during the timeout period, and may not include all the counters available on the server. Specifying a longer timeout in the **Timeout (seconds)** field in the SNMP Connection Settings panel may result in receiving more counters. The total time for receiving the counters may be longer than the timeout specified, due to additional processing time not part of the request/response period. ➤ Due to third-party counter restrictions, the total number of counters that can be monitored is limited to 32. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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File Monitor

This chapter includes:

Concepts

Reference

Concepts

File Monitor Overview

The File monitor is useful for watching files that can grow too large and use up disk space, such as log files. Other files that you may want to watch are Web pages that have important content that does not change often.

You can set up your File Monitors to monitor file size, age, or content, and set a threshold at which you should be notified. SiteScope can alert you to unauthorized content changes so that you can correct them immediately. You can write scripts for SiteScope to run that automatically roll log files when they reach a certain size.

The File monitor supports:

- Monitoring UNIX remote servers that have been configured in SiteScope and the local SiteScope machine only.
- Monitoring remote servers running on HP NonStop operating systems. For details on enabling the HP NonStop monitoring environment, see "Setup Requirements and User Permissions" on page 219.

For details on configuring the monitor, see "File Monitor Settings" on page 183.

Reading and Status

Each time the File monitor runs, it returns a reading and a status and writes them in the monitoring log file. It also writes the file size and age into the log file. The reading is the current value of the monitor. Possible values are:

- OK
- content match error
- file not found
- contents changed

An error status is returned if the current value of the monitor is anything other than OK.

Reference

File Monitor Settings

This monitor enables you to read a specified file and check the size and age of the file.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	This monitor supports monitoring remote servers running on HP NonStop operating systems.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "File Monitor Overview" on page 182

File Monitor Settings

User interface elements are described below:

UI Element	**Description**
Server	Server where the file you want to monitor is located. Select a server from the server list (only UNIX remote servers that have been configured in SiteScope and the local SiteScope machine are displayed), or click **Add Remote Server** to add a new UNIX server. **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Add Remote Server	Opens the Add UNIX Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.
File name	Path and name to the file you want to monitor. For reading files on remote UNIX machines, the path must be relative to the home directory of the UNIX user account being used to log on to the remote machine. **Example:** It may be necessary to provide the full path to the target file, such as /opt/application/logs/user.log. You must also select the corresponding remote UNIX server in the **Server** box described above. For details on which UNIX user account to use for the applicable remote server, see "Remote Servers Overview" in *Using SiteScope*. For reading files on remote Windows NT/2000 servers, you use NetBIOS to specify the server and UNC path to the remote log file. **Example:** \\remoteserver\sharedfolder\filename.log. You can also monitor files local to the server where SiteScope is running. **Example:** C:\application\appLogs\access.log. Optionally, you can use regular expressions for special date and time variables to match on log file names that include date and time information. **Example:** You can use a syntax of s/ex$shortYear$$0month$$0day$.log/ to match a current date-coded file. For details on using regular expressions and dates, see "SiteScope Date Variables" in *Using SiteScope*.

UI Element	Description
File encoding	File content is monitored using an encoding that is different than the encoding used on server where SiteScope is running. This may be necessary if the code page which SiteScope is using does not support the character set used in the target file. This enables SiteScope to match and display the encoded file content correctly. **Default value:** windows-1252
Match content	Text string to check for in the returned page. If the text is not contained in the page, the monitor displays **no match on content**. The search is case sensitive. HTML tags are part of a text document, so include them if they are part of the text you are searching for. This works for XML pages as well. **Example:** <B> Hello</B> World You may also perform a regular expression match by enclosing the string in forward slashes, with an i after the trailing slash indicating case-insensitive matching. **Example:** /href=Doc\d+\.html/ or /href=doc\d+\.html/i To save and display a particular piece of text as part of the status, use parentheses in a Perl regular expression. **Example:** /Temperature: (\d+). This returns the temperature as it appears on the page and this could be used when setting an Error if or Warning if threshold. For details on regular expressions, see "Using Regular Expressions" in *Using SiteScope*.
Open Tool	Opens the Regular Expression Tool, enabling you to test a regular expression for content matching against a sample of the content you want to monitor. For details, see "Regular Expression Tool" in *Using SiteScope*.

UI Element	Description
Check for content changes	Unless this is set to "no content checking" (the default) SiteScope records a checksum of the document the first time the monitor runs and then does a checksum comparison each subsequent time it runs. If the checksum changes, the monitor has a status of "content changed error" and goes into error. If you want to check for content changes, you should use "compare to saved contents". The options for this setting are: ➤ **No content checking** (default). SiteScope does not check for content changes. ➤ **Compare to last contents.** The new checksum is recorded as the default after the initial error **content changed error** occurs, so the monitor returns to OK until the checksum changes again. ➤ **Compare to saved contents.** The checksum is a snapshot of a given page (retrieved either during the initial or a specific run of the monitor). If the contents change, the monitor gets a **content changed error** and stays in error until the contents return to the original contents, or the snapshot is update by resetting the saved contents. ➤ **Reset saved contents.** Takes a new snapshot of the page and saves the resulting checksum on the first monitor run after this option is chosen. After taking the snapshot, the monitor reverts to **compare to saved contents** mode.
No error if file not found	The monitor remains in Good status even if the file is not found. The monitor status is Good regardless of how the monitor's thresholds have been configured.

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Formula Composite Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

Formula Composite Monitor Overview

Use this monitor if you have devices or systems in your network that return values that you want to combine in some way to produce a composite value. The following monitor types can be used to build a Formula Composite monitor:

- Database Query monitor.
- Microsoft Windows Performance Counter monitor.
- Script monitor.
- SNMP monitor.

If you need alert logic that is more complex than SiteScope's standard alerts permit, you can use the Formula Composite monitor to create custom alert behavior. For example, if you have two parallel network devices that record network traffic but the values need to be combined to produce an overall figure of network traffic. This monitor may also be used to combine the results returned by scripts run on two different machines.

Each time the Formula Composite monitor runs, it returns a status based on the measurement results of the two subordinate monitors and the calculation specified for the composite monitor.

For details on configuring the monitor, see "How to Configure the Formula Composite Monitoring Environment" on page 190.

For user interface details, see "Formula Composite Monitor Settings" on page 192.

Notes and Limitations

- You should only use the Formula Composite monitor for calculations that you consider to be compatible data types. The monitor does not verify that the data returned by the subordinate monitors are compatible.
- You can select two different types of monitors as subordinate monitors of a Formula Composite monitor. For example, one monitor may be a Script monitor and the other may be a Database Query monitor.
- Moving any of the monitors being used by the Formula Composite monitor causes the composite monitor to report an error. If it is necessary to move either of the underlying monitors, recreate or edit the Formula Composite monitor to select the monitor from its new location.

Tasks

How to Configure the Formula Composite Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 190
- "Configure the monitor properties" on page 191

1 Prerequisites

- You must create at least two individual Database Query, Microsoft Windows Performance Counter, Script, or SNMP monitor instances before you can set up a Formula Composite monitor for those monitors. For details, see:
  - "Database Query Monitor Overview" on page 114.
  - "Microsoft Windows Performance Counter Monitor Overview" on page 404.
  - "Script Monitor Overview" on page 546.
  - "SNMP Monitor Overview" on page 596.
- The monitors you create for use with a Formula Composite monitor should be configured to return a single value per monitor. This is generally simple with SNMP monitors. Database Query and Script monitors should use queries and scripts that return a single value.

For Microsoft Windows Performance Counter monitors, you can use the (Custom Object) option for the **PerfMon Chart File** setting and then specify a single performance **Object**, **Counter**, and **Instance** (if applicable) in the Microsoft Windows Performance Counter Monitor Settings section of the monitor setup. If a subordinate monitor is configured to return more than one numeric measurement, only the first numeric measurement from that monitor instance is used by the Formula Composite monitor.

2 Configure the monitor properties

Configure the Formula Composite monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Formula Composite Monitor Settings" on page 192.

Reference

Formula Composite Monitor Settings

This monitor enables you to monitor complex network environments by checking the status readings of two SNMP, Script, Database Query, or Microsoft Windows Performance Counter monitors and performing an arithmetic calculation on their results.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	When copying this monitor to a template, the subordinate monitors used to build a Formula Composite monitor are not copied. Therefore, it is recommended to create this monitor and its subordinate monitors directly in a template.
Relevant tasks	➤ "How to Configure the Formula Composite Monitoring Environment" on page 190 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Formula Composite Monitor Overview" on page 188

Formula Composite Monitor Settings

User interface elements are described below:

UI Element	Description
Monitors	Click the **Add** ✳ button, and select two SNMP monitors, two Script monitors, two Database monitors, or two Microsoft Windows Performance Counter monitors that the Formula Composite monitor should operate on. Click **Add Selected Monitors** to display the selected monitors in the Monitors box. For details on the Add Items dialog box, see "Add Items Dialog Box" on page 194. To remove monitors from the list, select the monitors and click the **Delete** ☒ button.
Run monitors	The Formula Composite monitor controls the scheduling of the selected monitors, as opposed to just checking their status readings. This is useful if you want the monitors to run one after another or run at approximately the same time. **Note:** Any monitors that are to be run this way should not also be run separately, so set **Frequency** in Monitor Run Settings to 0. Those monitors then only run when scheduled by the Formula Composite monitor.
Monitor delay (seconds)	Amount of time, in seconds, to wait between running each monitor (if **Run monitors** is selected). **Default value:** 0 seconds
Operation	Arithmetic operation to be performed on the results of the two monitors selected above. You can add the results, multiply the results of the two monitors, subtract the results of the first from the second, divide the second by the first, and so on.

UI Element	Description
Constant	An operator and a constant to operate on the result of the calculation specified in the **Operation** item above. For example, if an **Operation** of Add is selected above, entering the characters *8 in the **Constant** box multiplies the result of the Add operation by 8. The syntax for this box should be <operator> <number>. Valid operators are + (addition), - (subtraction), * (multiplication), and / (division). Numbers may be integers or decimals.
Result label	Name for the result of the formula calculation.

Add Items Dialog Box

This dialog box enables you to select the monitors, groups, or both, that you want in the Composite monitor.

To access	In the monitor view, right-click a group and select **New** > **Monitor**. Select the **Composite** monitor from the New Monitor Page, and click the **Add Items** ✳ button.
Important information	➤ If you add the Formula Composite monitor to a template, group, or subgroup, when you click the **Add Items** ✳ button, the Add Items dialog box displays only the monitors that are part of the same template as the new Formula Composite monitor. ➤ If you add the Formula Composite monitor to a SiteScope, when you click the **Add Items** ✳ button, the Add Items dialog box displays only the SNMP, Script, Database Query, or Microsoft Windows Performance Counter monitors if they are part of the same SiteScope. **Note:** When working in template mode, the monitors that you add to the Composite monitor are placeholders. They become real monitors when you deploy the Composite monitor.

Relevant tasks	➤ "How to Configure the Formula Composite Monitoring Environment" on page 190 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Formula Composite Monitor Overview" on page 188

User interface elements are described below:

UI Element	Description
Add Selected Items	Click to add the selected groups, monitors, or both, to the Composite monitor.
🌐 SiteScope	Represents the SiteScope root directory.
📁 📁	Represents a SiteScope monitor group or subgroup (with enabled monitors/with no monitors or no enabled monitors). If a group alert has been set up for the monitor group or subgroup, the alert ❗ symbol is displayed next to the group icon.
🖥 🖥	Represents a SiteScope monitor (enabled/disabled). If an alert has been set up for the monitor, the alert ❗ symbol is displayed next to the monitor icon.

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FTP Monitor

This chapter includes:

Concepts

Reference

Concepts

FTP Monitor Overview

If you provide FTP access to files, it is important to check that your FTP server is working properly. Use the FTP monitor to check FTP servers to insure the accessibility of FTP files.

In addition to retrieving specific files, the FTP monitor can help you verify that the contents of files, either by matching the contents for a piece of text, or by checking to see if the contents of the file ever changes compared to a reserve copy of the file.

While you may have many files available for FTP from your site, it is not necessary to monitor every one. We recommend that you check one small file and one large file.

For details on configuring the monitor, see "FTP Monitor Settings" on page 200.

This section contains the following topics:

- "Setup Requirements" on page 198
- "Status" on page 199
- "Scheduling the Monitor" on page 199

Setup Requirements

To use this monitor, you must:

- Know the relative paths, if any, to the files on the FTP server.
- Know an applicable user name and password to access the files.
- Know the filenames of one or more files available for FTP transfer.

Status

The reading is the current value of the monitor. Possible values are:

- OK
- unknown host name
- unable to reach server
- unable to connect to server
- timed out reading
- content match error
- login failed
- file not found
- contents changed
- The status is logged as either good or error. An error status is returned if the current value of the monitor is anything other than OK.

Scheduling the Monitor

A common strategy is to monitor a small file every 10 minutes or so just to verify that the server is functioning. Then schedule a separate monitor instance to FTP a large file once or twice a day. You can use this to test the ability to transfer a large file without negatively impacting your machine's performance. You can schedule additional monitors that watch files for content and size changes to run every 15 minutes to half hour. Choose an interval that makes you comfortable.

If you have very important files available, you may also want to monitor them occasionally to verify that their contents and size do not change. If the file does change, you can create a SiteScope alert that runs a script to automatically replace the changed file with a back-up file.

Reference

FTP Monitor Settings

This monitor enables you to log on to an FTP server and retrieve a specified file. A successful file retrieval indicates that your FTP server is functioning properly. Use this page to add a monitor or edit the monitor's properties.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 198. ➤ The **FTP Tool** is available when configuring this monitor to access an FTP server and view the interaction between SiteScope and the FTP server (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "FTP Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "FTP Monitor Overview" on page 198

FTP Monitor Settings

User interface elements are described below:

UI Element	Description
Basic FTP Settings	
Protocol	Select a protocol for the monitor: ➤ **FTP**. The monitor supports non-secure sockets only. ➤ **SFTP**. The monitor supports Secure FTP. It typically uses SSH version 2 (TCP port 22) to provide secure file transfer. In this version, only password authentication is supported. **Note:** SFTP protocol does not support **Passive mode** and SFTP is encrypted, rendering traditional proxies ineffective for controlling SFTP traffic (the proxy fields are not available).
FTP server	IP address or the name of the FTP server that you want to monitor. **Example:** 206.168.191.22 or ftp.thiscompany.com (ftp.thiscompany.com:<port number> to specify a different port)
File	File name to retrieve from the FTP server. **Example:** /pub/docs/mydoc.txt You can use a regular expression to insert date and time variables. For details on using SiteScope's special data and time substitution variables in the file path, see "SiteScope Date Variables" in *Using SiteScope*. **Example:** s/C:\\firstdir\\$shortYear$$0month$$0day$/
User name	Name used to log into the FTP server. A common user name for general FTP access is user name anonymous.
Password	Password used to log into the FTP server. If using the anonymous login, the password is also anonymous.
Passive mode	SiteScope uses FTP passive mode. You use this mode to enable FTP to work through firewalls. (Not available in SFTP mode.)

UI Element	Description
Advanced FTP Settings	
Match content	Text string to check for in the returned file. If the text is not contained in the file, the monitor displays **no match on content**. The search is case sensitive. You may also perform a regular expression match by enclosing the string in forward slashes, with an "i" after the trailing slash indicating case-insensitive matching. **Example:** "/Size \d\d/" or "/size \d\d/i"
Check for content changes	SiteScope records a checksum of the document the first time the monitor runs and then does a checksum comparison each subsequent time it runs. If the checksum changes, the monitor has a status of **content changed error** and go into error. If you want to check for content changes, you usually want to use compare to saved contents. The options for this setting are: ➤ **No content checking** (default). SiteScope does not check for content changes. ➤ **Compare to last contents.** Any changed checksum is recorded as the default after the change is detected initially. Thereafter, the monitor returns to a status of **OK** until the checksum changes again. ➤ **Compare to saved contents.** The checksum is a snapshot of a given page (retrieved either during the initial or a specific run of the monitor). If the contents change, the monitor gets a **content changed error** and stays in error until the contents return to the original contents, or the snapshot is update by resetting the saved contents. ➤ **Reset saved contents.** Takes a new checksum of the file and saves the resulting checksum on the first monitor run after this option is chosen. After taking the updated checksum, the monitor reverts to **compare to saved contents** mode.

UI Element	Description
Timeout (seconds)	Amount of time, in seconds, that the FTP monitor should wait for a file to complete downloading before timing out. Once this time period passes, the FTP monitor logs an error and reports an error status. **Default value:** 60 seconds
Connection timeout (seconds)	Amount of time, in seconds, that the FTP monitor should wait to connect to the FTP server before timing out. Once this time period passes, the FTP monitor logs an error and reports an error status. **Default value:** 30 seconds
HTTP Proxy Settings (Not available in SFTP mode)	
HTTP proxy	SiteScope runs the FTP through an HTTP proxy. Generally, if you use an HTTP proxy you have it set up in your browser. Enter that same information here. Remember to include the port. **Example:** proxy.thiscompany.com:8080 **Note:** The FTP monitor does not support an FTP Proxy server.
Proxy user name	Proxy user name if the proxy server requires a name and password to access the file. The proxy server must support Proxy-Authenticate for these options to function.
Proxy password	Proxy password if the proxy server requires a name and password to access the file. The proxy server must support Proxy-Authenticate for these options to function.

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HP iLO (Integrated Lights-Out) Monitor

This chapter includes:

Concepts

Reference

Concepts

HP iLO Monitor Overview

Use the HP iLO (Integrated Lights-Out) monitor that enables monitoring of hardware health on supported HP ProLiant servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server health status and hardware configuration for stability monitoring and fast response for critical hardware issues. You can create a separate HP iLO Monitor instance for each supported server in your environment.

The HP iLO monitor supports monitoring HP iLO 2.

For details on configuring the monitor, see "HP iLO Monitor Settings" on page 209.

This section also includes:

- "HP iLO Background" on page 207
- "What to Monitor" on page 207
- "Setup Requirements" on page 208
- "IPv6 Addressing" on page 208

HP iLO Background

HP Integrated Lights-Out, or iLO, is an embedded server management technology exclusive to Hewlett-Packard but similar in functionality to the Lights out management (LOM) technology of other vendors.

iLO makes it possible to perform activities on an HP server from a remote location. iLO is currently available on all new ProLiant 300/500/blade server models and has a separate network connection (and its own IP address).

iLO actively participates in monitoring and maintaining server health, referred to as embedded health. iLO monitors temperatures in the server and sends corrective signals to the fans to maintain proper server cooling. In addition to temperature monitoring, iLO provides fan status monitoring and monitoring of the status of the power supplies, voltage regulators, and the internal hard drives.

System Information displays the health of the monitored system. These features are available without installing and loading the health driver for the installed operating system. The iLO microprocessor monitors these devices when the server is powered on during server boot, operating system initialization, and operation.

What to Monitor

The HP iLO monitor makes use of performance counters to measure application server performance, and can be used to provide the following information:

- Processors. Displays the available processor slots and a brief status summary of the processor subsystem. If available, installed processor speed in MHz and cache capabilities are displayed.
- Memory. Displays the available memory slots and the type of memory, if any, installed in the slot.
- Drives. Displays the presence and condition of installed drive bays.
- Power Supplies. Displays the presence and condition of installed power supplies.

- Voltage Regulator Modules (VRMs). Displays VRM status. A VRM is required for each processor in the system. The VRM adjusts the power to meet the power requirements of the processor supported. A failed VRM prevents the processor from being supported and should be replaced.
- Fans. Displays the state of the replaceable fans in the server chassis. This data includes the area that is cooled by each fan and current fan speeds.
- Temperatures. Displays the temperature conditions monitored at sensors in various locations in the server chassis, and the processor temperature. The temperature is monitored to maintain the location temperature below the caution threshold. If the temperature exceeds the caution threshold, the fan speed is increased to maximum.
- Other. Other information about the server, such as firmware version and available slots.

Setup Requirements

The following are important requirements for using the HP iLO monitor:

- The HP iLO system administrator must configure the service on the ProLiant server so that it can access a command line interface over SSH.
- The configuration should be tested by connecting the server to the SSH client using the configured credentials, and running the following command:

  ```
  show system1 -l 1
  ```

  The result should contain targets and their properties available on the server.

IPv6 Addressing

The HP iLO monitor supports IP version 6 addresses if the network and remote server support this protocol.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

HP iLO Monitor Settings

This monitor enables monitoring of hardware health on supported HP ProLiant servers.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 208. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "HP iLO Monitor Overview" on page 206

HP iLO Monitor Settings

User interface elements are described below:

UI Element	Description
Server	HP iLO server you want to monitor. Select a server from the server list (only those HP iLO remote servers that have been configured in SiteScope are displayed), or click **Add Remote Server** to add an HP iLO server. **Note:** When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box.
Add Remote Server	Opens the Add UNIX Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.
Counters	The server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note:** When working in template mode, the maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

27

HP NonStop Event Log Monitor

This chapter includes:

Concepts

Reference

Concepts

HP NonStop Event Log Monitor Overview

Use the HP NonStop Event Log monitor to monitor the Event Logs for added entries on HP NonStop Operating System servers. The HP NonStop Event Log monitor examines events that occurred after the time that the monitor was created. Each time the monitor runs thereafter, it examines only those entries added since the last time it ran. You can choose to filter out messages that are not important by using the boxes listed under Monitor Settings to specify values that must appear in the event entry for the entry to match.

The minimum officially supported version of the HP NonStop Open System Management (OSM) Event Viewer is T0682 H02 ABU (released May 2009).

For details on configuring the monitor, see "HP NonStop Event Log Monitor Settings" on page 213.

Reference

HP NonStop Event Log Monitor Settings

The HP NonStop Event Log monitor enables you to monitor Event Logs for added entries on a single HP NonStop Operating System server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	When configuring this monitor in template mode, you can use regular expressions to define counters.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "HP NonStop Event Log Monitor Overview" on page 212

HP NonStop Event Log Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
URL	URL of the OSM Event Viewer. **Example:** https://<nonstopserver>:9991
Match content	Text to look for in the log entries. You can also use a regular expression in this entry to match text patterns. The monitor reports how many times the matched pattern was found. To match text that includes more than one line of text, add an s search modifier to the end of the regular expression. For details, see "Using Regular Expressions" in *Using SiteScope*. You can also use the Regular Expression Test tool to check your regular expressions. For details, see "Regular Expression Tool" in *Using SiteScope*.
Timeout (seconds)	Amount of time, in seconds, that the monitor should wait for an event before timing-out. Once this time period passes, the monitor logs an error and reports an error status. **Default value:** 60 seconds
Retries	Number of times that SiteScope should retry the request if a recoverable error was encountered. A timeout of the request for is a recoverable error. **Default value:** 0
Time zone	Appropriate time zone, according to the location of the HP NonStop server.

UI Element	Description
Filter Settings	
Event sources	Collectors or log file name. You can type more than one collector, separated by comma. Events from multiple collectors are merged by generation time. You can also specify a single event log file. **Default value:** $ZLOG
Options	Filter options. You can enter more than one option, using commas as separators. **Example:** CPU 0, PIN 253
Owner	Enter an owner in this field (up to 8 characters).
Subsystem names	Subsystem name. You can enter more than one subsystem, using commas as separators. **Example:** PATHWAY,TMF You can use the full subsystem name (for example, PATHWAY), an existing abbreviated subsystem name (for example, PWY), or the subsystem number (for example, 8).
Event IDs	Event number to filter on a specific event number. You can enter a single event number, a set of event numbers separated by commas, a range a..b, or a set of ranges separated by commas. Event numbers may be signed. If you specify any event numbers, you can only have one subsystem.
Filter files	Filter names. You can enter more than one filter by using commas as separators. You can add more than one filter file, using commas as separators.

UI Element	Description
Authentication Settings	
Credentials	User name and password required to access the HP NonStop server. Select the option to use for providing credentials: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.

UI Element	Description
Pre-emptive authorization	Authorization user name and password option if SiteScope requests the target UR: ➤ **Use global preference.** SiteScope uses the authenticate setting as specified in the Pre-emptive authorization section of the General Preferences page. This is the default value. ➤ **Authenticate first request.** The user name and password are sent on the first request SiteScope makes for the target URL. **Note:** If the URL does not require a user name and password, this option may cause the URL to fail. ➤ **Authenticate if requested.** The user name and password are sent on the second request if the server requests a user name and password. **Note:** If the URL does not require a user name and password, this option may be used. All options use the **Authorization user name** and **Authorization password** entered for this monitor instance. If these are not specified for the individual monitor, the **Default authentication user name** and **Default authentication password** specified in the Main section of the General Preferences page are used, if they have been specified. **Note:** Pre-emptive authorization does not control if the user name and password should be sent, or which user name and password should be sent.
Client side certificate	The certificate file, if using a client side certificate to access the target URL. Normally, this is a .pfx (.p12) type certificate, which usually requires a password. You enter the password for the certificate in the **Client side certificate password** box. **Note:** Client side certificate files must be copied into the **<SiteScope root directory>\templates.certificates** directory.
Client side certificate password	Password if you are using a client side certificate and a password is required.

UI Element	Description
Accept untrusted certificates for HTTPS	Select if you need to use certificates that are untrusted in the certificate chain to access the target URL using Secure HTTP (HTTPS). **Default value:** Not selected
Accept invalid certificates for HTTPS	Select if you need to accept an invalid certificate to access the XML URL using Secure HTTP (HTTPS). This may happen, for example, if the current date is not in the date ranges specified in the certificate chain. **Default value:** Not selected
Proxy Settings	
HTTP proxy	Domain name and port of an HTTP Proxy Server if a proxy server can be used to access the URL.
Proxy server user name	Proxy server user name if the proxy server requires a name and password to access the URL. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy server password	Proxy server password if the proxy server requires a name and password to access the URL. **Note:** Your proxy server must support Proxy-Authentication for these options to function.

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HP NonStop Resources Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

HP NonStop Resources Monitor Overview

Use the HP NonStop Resources monitor to monitor the server system statistics on HP NonStop Operating System servers. You can monitor multiple parameters or measurements with a single monitor instance. This enables you to monitor the remote server for loading, performance, and availability at a basic system level. Create a separate HP NonStop Resources monitor instance for each HP NonStop Operating System server in your environment.

The HP NonStop Resources monitor queries the list of HP NonStop Servers currently configured in the UNIX Remote Servers container. To monitor a remote HP NonStop Operating System server, you must define a NonStop Remote connection profile for the server before you can add an HP NonStop Resources monitor for that server. For details on configuring a remote server, see "Remote Servers Overview" in *Using SiteScope*.

You can also use the Directory, Disk Space, File, Log File, and Script monitors to monitor remote servers running on HP NonStop Operating Systems. Monitors that do not depend on a remote operating system, such as FTP, Port, SNMP, SNMP by MIB, and URL family monitors, can also support monitoring on an HP NonStop operating system server.

For details on configuring the monitor, see "How to Configure the HP NonStop Resources Monitoring Environment" on page 221.

For details on the monitor user interface, see "HP NonStop Resources Monitor Settings" on page 223.

Tasks

How to Configure the HP NonStop Resources Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 221
- "Configure the monitor properties" on page 222

1 Prerequisites

To enable monitoring of remote servers running on a HP NonStop Operating System (using either the HP NonStop Resources monitor or the Directory, Disk Space, File, Log File, or Script monitor), you must perform the following on the HP NonStop Operating System server:

a Create a user for SiteScope monitoring.

b In the **/etc/profile** and **.profile** files, perform the following:

- Comment out the string: set –o vi.
- Set the following parameter: export PS1='$PWD:

2 Configure the monitor properties

Configure the HP NonStop Resources monitor fields as required.

Note: When configuring a remote server for monitoring the HP NonStop server, if the remote server gives a choice of TACL shell only, select the remote server in **Remote Servers** > **UNIX Remote Servers**, and enter the following in the **Main Settings** panel:

- In the **Shell name** field, enter **tacl**.
- In the **Login prompt** field, enter >.
- In the **Secondary response** field, enter **OSH**.
- In the **User name** box in the **Credentials** section, enter the user name in the format: logon <user_name>.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "HP NonStop Resources Monitor Settings" on page 223.

Reference

HP NonStop Resources Monitor Settings

The HP NonStop Resources monitor enables you to monitor multiple system statistics on a single HP NonStop Operating System server. The error and warning thresholds for the monitor can be set on one or more server system statistics.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ The performance objects and counters available for the HP NonStop Resources monitor vary depending on what operating system options and applications are running on the remote server. ➤ When configuring this monitor in template mode, you can use regular expressions to define counters.
Relevant tasks	➤ "How to Configure the HP NonStop Resources Monitoring Environment" on page 221 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "HP NonStop Resources Monitor Overview" on page 220

HP NonStop Resources Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Server where the resources you want to monitor are located. Select a server from the server list (only UNIX remote servers that have been configured in SiteScope to run on an HP NonStop operating system are displayed), or click **Add Remote Server** to add a UNIX server. **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box.
Add Remote Server	Opens the Add UNIX Remote Server dialog box, enabling you to enter the configuration details (in the **Operating System** list, you must select **NonStopOS**). For user interface details, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.
Available Counters	Displays the available measurements for this monitor. For each measurement, select the **Objects**, **Instances** and **Counters** you want to check with the HP NonStop Resources monitor, and click the **Add Selected Counters** ➡ button. The selected measurements are moved to the Selected Counters list.
Selected Counters	Displays the measurements currently selected for this monitor, and the total number of selected counters. To remove measurements selected for monitoring, select the required measurements, and click the **Remove Selected Counters** ⬅ button. The measurements are moved to the Available Counters list.

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IPMI Monitor

This chapter includes:

Concepts

Reference

Concepts

IPMI Monitor Overview

The Intelligent Platform Management Interface (IPMI) provides an interface for reporting on device operations, such as whether fans are turning and voltage flowing within server hardware. You use the IPMI monitor to monitor server and network element platforms to get a more complete view of component health and operation statistics for IPMI enabled devices running version 1.5.

You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch key operational factors that can seriously effect availability and degrade performance. Create a separate monitor instance for each server you are running.

For details on configuring the monitor, see "IPMI Monitor Settings" on page 227.

Setup Requirements

The following are requirements for using the IPMI monitor:

- The device you want to monitor has to be IPMI-enabled. In most cases, this means that the device must be designed for IPMI sensing and include a separate, dedicated IPMI network adapter. The monitor supports IPMI version 1.5 only.
- You must know the IP address of the IPMI network adapter for the device you want to monitor. In many cases, this IP address is different than the IP address used for other network communication to and from the device. Use an applicable IPMI utility to query for the IP address or contact the applicable system administrator.

Reference

IPMI Monitor Settings

This monitor enables you to monitor component health and operation statistics for Intelligent Platform Management Interface (IPMI) enabled devices running version 1.5.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 226. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "IPMI Monitor Overview" on page 226

IPMI Monitor Settings

User interface elements are described below:

UI Element	Description
Server name	IPMI server name or IP address of the IPMI network adapter. **Note:** The IP address is normally not the same as the ordinary ethernet NIC adapter address.
Port number	Port number of the IPMI device. **Default value:** 623
Credentials	Option for providing the user name and password to be used to access the IPMI server: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.
Counters	Displays the server performance counters to check with this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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JMX Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

JMX Monitor Overview

Use the JMX monitor to monitor performance statistics of Java-based applications that provide access to their statistics by using the standard JMX remoting technology defined by JSR 160 (remote JMX). This monitor supports monitoring on WebLogic 9.x, 10.0-10.3.3 and 11g, Apache Tomcat 5.0, 5.5, and 6.0, Oracle 10.1.3g Application Server, and JBoss 4.0.3, 4.2, 5.0, 5.1, and 6.0 servers.

You can monitor multiple parameters or counters with a single monitor instance. The counters available vary from application to application, but normally include both basic JVM performance counters as well as counters specific to the application. You may create one JMX monitor instance for each application you are monitoring, or several monitors for the same application that analyze different counters.

Note:

- WebLogic 9.x, 10.0-10.3.3, and 11g servers can be monitored using a JMX monitor only. For details on how to monitor a WebLogic 9.x, 10.0-10.3.3 or 11g server, see "Create a JMX Monitor for a WebLogic 9.x, 10.0-10.3.3, or 11g Server" on page 235.
- When monitoring a WebLogic Application Server using a t3 or t3s protocol, you need to use WebLogic's own protocol provider package. For details on how to use the t3 or t3s protocol, see "Monitor WebLogic using the t3 or t3s protocols" on page 236.
- SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various aspects of a WebLogic Application server. For details, see "WebLogic Solution Templates" in *Using SiteScope*.

For task details, see "How to Configure the JMX Monitoring Environment" on page 235.

For user interface details, see "JMX Monitor Settings" on page 238.

This section contains the following topics:

- "Applications Supporting JSR 160" on page 231
- "WebLogic Application Server Topology" on page 233
- "Troubleshooting and Limitations" on page 233

Applications Supporting JSR 160

Here are some applications that currently support JSR 160 and information about how to monitor them:

- Oracle WebLogic 9.x, 10.0-10.3.3, and 11g support JSR 160, which can be enabled on the WebLogic application server by following instructions found on the Oracle Web site (http://download.oracle.com/docs/cd/E14571_01/apirefs.1111/e13952/taskhelp/channels/EnableAndConfigureIIOP.html).

  Once enabled, the JMX URL for monitoring the server follows the following form:

  ```
  service:jmx:iiop:///jndi/iiop://<host>:<port>/weblogic.management.
  mbeanservers.runtime
  ```

  where <host> is the server name or IP address that is running your WebLogic application.

  For instructions to create a JMX monitor for WebLogic 9.x, 10.0-10.3.3, or 11g servers, see "Create a JMX Monitor for a WebLogic 9.x, 10.0-10.3.3, or 11g Server" on page 235.

- Tomcat 5.x and 6.0 support JSR 160, by defining the following properties to the JVM on startup:

  - Dcom.sun.management.jmxremote
  - Dcom.sun.management.jmxremote.port=9999
  - Dcom.sun.management.jmxremote.ssl=false

- Dcom.sun.management.jmxremote.authenticate=false

The above properties specify the port as 9999. This value can be changed to any available port. Also, it specifies no authentication. If authentication is necessary, see the Oracle Web site for more details (http://download.oracle.com/javase/1.5.0/docs/guide/jmx/tutorial/security.html). If the above properties are defined when starting Tomcat 5.x on <host>, the following would be the JMX URL for monitoring it:

```
service:jmx:rmi:///jndi/rmi://<host>:9999/jmxrmi
```

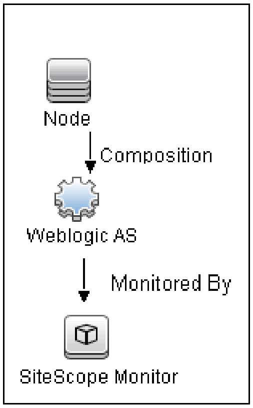
Note: SiteScope 8.x runs within Tomcat 5.x, and can be monitored as described above.

- Other vendors that have released versions of their software that are JSR 160 compliant, include JBoss, Oracle 10g, and IBM WebSphere.

You can find more information about JSR 160 on the Java Community Process Web site (http://www.jcp.org/en/jsr/detail?id=160).

WebLogic Application Server Topology

The JMX monitor can identify the topology of WebLogic Application Servers. If **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting), the monitor creates the following topology in BSM's RTSM.



Note: The JMX monitor can report topology data to BSM only when monitoring the WebLogic application server, not when monitoring any other environment.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

Troubleshooting and Limitations

When using the JMX monitor to monitor performance statistics on a JBoss server, the **Good** status is displayed in the SiteScope Dashboard even when the JBoss server is unavailable. SiteScope handles the exceptions differently according to the platform.

- On Windows platforms, each counter is set to **n/a**.
- On Linux and Solaris platforms, the counters are not reset, but the **no data** value is set, and **No Data Availability** is displayed in the SiteScope Dashboard.

A workaround when monitoring JBoss is to change the monitor's properties in Threshold Settings, by setting **If unavailable** to **Set monitor status to error**.

Tasks

How to Configure the JMX Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Create a JMX Monitor for a WebLogic 9.x, 10.0-10.3.3, or 11g Server" on page 235
- "Monitor WebLogic using the t3 or t3s protocols" on page 236

Create a JMX Monitor for a WebLogic 9.x, 10.0-10.3.3, or 11g Server

1. To monitor a WebLogic 9.x, 10.0-10.3.3, or 11g server, create a JMX monitor, and enter the following in the **JMX URL** box:

   ```
   service:jmx:iiop:///jndi/iiop://<server_name>:7001/weblogic.management.
   mbeanservers.runtime.
   ```

   For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

   For user interface details, see "JMX Monitor Settings" on page 238.

2. (For WebLogic 6.x, 7.x, and 8.x) To help you to select the counters that you require, you can open a WebLogic monitor for versions prior to WebLogic 9.x and see the counters that were defined there. Search for these same counters in the counter tree. You can select additional counters that are available in the JMX monitor and were not available in the WebLogic monitors.

3 (For WebLogic 10.3.x or 11g) To enable monitoring of a WebLogic Application Server 10.3.x or 11g, enter the **wlfullclient.jar** in the **Additional Classpath** field in the JMX Monitor Settings. You can specify the timeout for JMX task execution (mbeans retrieval and conversion into xml) by modifying the **_overallJMXCountersRetrievalTimeout** property in the **master.config** file. The default value is 15 minutes. This is not an ORB timeout.

Note: For details on creating the **wlfullclient.jar**, refer to the Oracle documentation on Using the WebLogic JarBuilder Tool (http://download.oracle.com/docs/cd/E12840_01/wls/docs103/client/jarbuilder.html).

---

4 Configure the other monitor settings as required.

Monitor WebLogic using the t3 or t3s protocols

When monitoring a WebLogic Application Server using a t3 or t3s protocol, you need to use WebLogic's own protocol provider package.

1 Enter the URL in the following format in the **JMX URL** box of JMX Monitor Settings:

➤ **For t3 protocol:**

service:jmx:t3://<host>:<port>/jndi/weblogic.management.mbeanservers.runtime

where the default port for t3 protocol is 7001

➤ **For t3s protocol:**

service:jmx:t3s://<host>:<port>/jndi/weblogic.management.mbeanservers.runtime

where the default port for t3s protocol is 7002

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For user interface details, see "JMX Monitor Settings" on page 238.

2 Copy the following jars from the WebLogic library to the <**SiteScope root directory**>**\WEB-INF\lib** folder:

- %WEBLOGIC_HOME%\server\lib\wlclient.jar
- %WEBLOGIC_HOME%\server\lib\wljmxclient.jar
- %WEBLOGIC_HOME%\server\lib\weblogic.jar
- %WEBLOGIC_HOME%\server\lib\wlfullclient.jar
- %WEBLOGIC_HOME%\server\lib\webserviceclient+ssl.jar (for t3s protocol only)

Note: For details on creating the **wlfullclient.jar**, refer to the Oracle documentation on Using the WebLogic JarBuilder Tool (http://download.oracle.com/docs/cd/E12840_01/wls/docs103/client/jarbuilder.html).

---

3 (For t3s protocol only) Enable SSL on the WebLogic server and import the SSL certificate into the SiteScope keystore. For details, see "Certificate Management Overview" on page 908.

4 Configure the other monitor settings as required.

Reference

JMX Monitor Settings

This monitor enables you to monitor the performance statistics of those Java-based applications that provide access to their statistics by using the standard JMX remoting technology.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the JMX Monitoring Environment" on page 235 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "JMX Monitor Overview" on page 230

JMX Monitor Settings

User interface elements are described below:

UI Element	Description
JMX URL	URL to gather JMX statistics. Typically the URL begins with service:jmx:rmi:///jndi, followed by information specific to the application. **Note:** When creating a JMX monitor for a WebLogic 9.x, 10.x, or 11g server, enter the following URL: service:jmx:iiop:///jndi/iiop://<host>:<port>/weblogic.management.mbeanservers.runtime. If you are using a t3 or t3s protocol, you need to use WebLogic's own protocol provider package and the JMX URL is in a different format. For details, see "Monitor WebLogic using the t3 or t3s protocols" on page 236.
Domain filter	Domain filter to show only those counters existing within a specific domain (optional).
User name	User name for connection to the JMX application (optional).
Password	Password for connection to the JMX application (optional).
Timeout (seconds)	Amount of time, in seconds, to wait for a response from the server before timing-out. After this time period passes, the monitor logs an error and reports an error status. **Default value:** 60 seconds (using a value other than the default timeout value may adversely affect performance)

UI Element	Description
Additional Classpath	Specify the classpath library that is used to resolve unknown classes retrieved from the JMX server. Multiple libraries can be entered separated by a semicolon. **Note:** When monitoring a WebLogic Application Server 10.3.3 or 11g, this field is mandatory, and the **wlfullclient.jar** must be used. For details on creating the **wlfullclient.jar**, refer to Using the WebLogic JarBuilder Tool (http://download.oracle.com/docs/cd/E12840_01/wls/docs103/client/jarbuilder.html).
Counters	Server performance counters to check with this monitor. Use the **Get Counters** button to select counters. When the server being monitored is a WebLogic 9.x, 10.x, or 11g server, see "Create a JMX Monitor for a WebLogic 9.x, 10.0-10.3.3, or 11g Server" on page 235 for further details.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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LDAP Monitor

This chapter includes:

Concepts

Reference

Concepts

LDAP Monitor Overview

If your LDAP server is not working properly, the user is not able to access and update information in the directory. Most importantly, the user is not able to perform any authentication using the LDAP server. Use the LDAP monitor to monitor the availability and proper functioning of your LDAP server. Another reason to monitor the LDAP server is so that you can find performance bottlenecks. If your end user and LDAP times are both increasing at about the same amount, the LDAP server is probably the bottleneck.

The most important thing to monitor is the authentication of a specific user on the LDAP server. If more than one LDAP server is used, you should monitor each of the servers. You may also want to monitor round trip time of the authentication process.

LDAP traffic is transmitted unsecured by default. You can make LDAP traffic confidential and secure by using Secure Sockets Layer (SSL) and installing a properly formatted certificate.

For details on configuring the monitor, see "LDAP Monitor Settings" on page 243.

Status

Each time the LDAP monitor runs, it returns a status based on the time it takes to perform the connection. An error status or warning status is returned if the current value of the monitor is anything other than good. Errors occur if SiteScope is unable to connect, receives an unknown host name error, or the IP address does not match the host name.

Reference

LDAP Monitor Settings

This monitor enables you to verify that a Lightweight Directory Access Protocol (LDAP) server is working correctly by connecting to it and performing a simple authentication. Optionally, it can check the result for expected content.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ The **LDAP Authentication Tool** is available when configuring this monitor to test an LDAP server can authenticate a user by performing a simple authentication (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "LDAP Authentication Status Tool" in *Using SiteScope*. ➤ The monitor run summary string is limited to 100 characters. If the LDAP response is larger than the default value, you can increase this limit by adding the property **_ldapMaxSummary=<# of symbols in summary>** to the <**SiteScope root>\groups\master.config** file, and then restart SiteScope.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "LDAP Monitor Overview" on page 242

LDAP Monitor Settings

User interface elements are described below:

UI Element	Description
Authentication Settings	
LDAP service provider	The constant that holds the name of the environment property for specifying configuration information for the service provider to use. The value of the property should contain a URL string (for example, ldap://somehost:389). This property may be specified in the environment, an applet parameter, a system property, or a resource file. If it is not specified in any of these sources, the default configuration is determined by the service provider. **Note:** ➤ By default, LDAP version 2 is used. To use LDAP version 3, type **[LDAP-3]** before the URL. ➤ To enable LDAP over SSL, type **[LDAP-SSL]** before the URL.
Security principal	The constant that holds the name of the environment property for specifying the identity of the principal for authenticating the caller to the service. The format of the principal depends on the authentication scheme. If this property is unspecified, the behavior is determined by the service provider. **Example:** uid=testuser,ou=TEST,o=mydomain.com **Note**: To prevent binary data appearing in the output of LDAP queries, all binary attributes should be listed in the **LDAP binary attributes** field in **Preferences** > **Infrastructure Preferences** > **General Settings**.

UI Element	Description
Security credential	The constant that holds the name of the environment property for specifying the credentials of the principal for authenticating the caller to the service. The value of the property depends on the authentication scheme. For example, it could be a hashed password, clear-text password, key, certificate, and so on. If this property is unspecified, the behavior is determined by the service provider.
LDAP Settings	
Content match	Text string to check for in the query result. If the text is not contained in the result, the monitor displays no match on content. The search is case sensitive. You may also perform a regular expression match by enclosing the string in forward slashes, with an i after the trailing slash indicating case-insensitive matching. **Example:** /href=Doc\d+\.html/ or /href=doc\d+\.html/i If you want a particular piece of text to be saved and displayed as part of the status, use parentheses in a Perl regular expression. **Example:** /Temperature: (\d+). This would return the temperature as it appears on the page and this could be used when setting an Error if or Warning if threshold.

UI Element	Description
Object query	An object query to look at an LDAP object other than the default user **dn** object. For example, enter the mail object to check for an email address associated with the dn object entered above. You must enter a valid object query in this text box if you are using a LDAP filter (see the description below). For more information on LDAP queries, see http://technet.microsoft.com/es-es/library/aa996205(EXCHG.65).aspx. **Note:** To use LDAP version 3 for a particular monitor, type [LDAP-3] before the query. If you want to use version 2 and version 3, type [LDAP-ANY].
LDAP filter	Performs an LDAP search using a filter criteria. The LDAP filter syntax is a logical expression in prefix notation meaning that logical operator appears before its arguments. For example, the item sn=Freddie means that the sn attribute must exist with the attribute value equal to Freddie. Multiple items can be included in the filter string by enclosing them in parentheses (such as sn=Freddie) and combined using logical operators such as the & (the ampersand conjunction operator) to create logical expressions. **Example:** The filter syntax (& (sn=Freddie) (mail=*)) requests LDAP entries that have both a sn attribute of Freddie and a mail attribute. More information about LDAP filter syntax can be found at http://www.ietf.org/rfc/rfc2254.txt and also at http://download.oracle.com/javase/jndi/tutorial/basics/directory/filter.html.

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Link Check Transaction Monitor

This chapter includes:

Concepts

Reference

Concepts

Link Check Monitor Overview

Use the Link Check monitor to check the internal and external links on a Web page to insure that they can be reached. Each time the Link Check monitor runs, it returns a status and writes it in a link report log file named LinkReport_<group name><number>.log (this should not be confused with the daily logs). It also writes the total number of link errors, the total number of links, the total number of graphics, and the average time for retrieving a page.

You should monitor the Web site for the availability of key content. This includes checking that image files and linked HTML files are accessible as referenced within the Web pages. Starting with your home page, the Link Check monitor branches out and checks every link available on your entire site by default. If you only want it to check a portion of your site, specify the URL that links into the targeted area. You can limit the number of linked hops the monitor follows in the **Maximum hops** box of the Monitor Settings panel.

You probably only need to run the link monitor once a day to check for external links that have been moved or no longer work and internal links that have been changed. You can also run it on demand any time you do a major update of your Web site.

For details on configuring the monitor, see "Link Check Monitor Settings" on page 249.

Reference

Link Check Monitor Settings

This monitor checks the internal and external links on a Web page to insure that they can be reached. SiteScope begins checking links from a URL that you specify, verifies that linked graphics can be found, and follows HREF links to the referenced URLs. The monitor can be configured to check all of the links on your site or to check a limited number of hops from the initial URL.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Link Check Monitor Overview" on page 248

Link Check Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
URL	URL that is the starting point for checking links. The link monitor retrieves the page for this URL and reads the URLs for any links on the page. It continues until it has checked all of the links on the site. Links to other servers are checked but it does not continue and check all the links of those other servers. **Example:** http://demo.thiscompany.com

UI Element	Description
Search external links	The monitor follows all links on each page and not just links that contain the original base URL. **Warning:** Using this option may greatly increase the number of links that are tested and the amount of time required for the monitor to run. In some cases this may cause the monitor to run for more than 24 hours without being able to complete all of the link checks. If you select this option, be sure to limit the total number of links to test using the **Maximum links** setting and limit the depth of the search using the **Maximum hops** setting. **Default value:** Not selected
Pause (milliseconds)	Delay, in milliseconds, between each link check. Larger numbers lengthen the total time to check links but decrease the load on the server. **Default value:** 250 milliseconds
Timeout (seconds)	Amount of time, in seconds, that the URL monitor should wait for a page to begin downloading before timing-out. Once this time period passes, the URL monitor logs an error and reports an error status. **Default value:** 60 seconds
Maximum links	Maximum number of links this monitors checks. When the maximum number of links is reached the monitor stops and reports the results of those links that were checked. Increase this number if you have a large site and want to check every link on the site. **Default value:** 800

UI Element	Description
Maximum hops	Maximum number of internal links that SiteScope should follow from the starting URL. Limiting the number of links reduces the number of URLs that SiteScope follows and shortens the time to complete the report. SiteScope does not follow any links on external pages. Select one of the predefined choices using the **Commonly used values** list. To enter your own limit, enter a numeric value in the **Other values** box. **Default value:** Main page links **Example:** If you set the number of hops to 3, SiteScope checks all internal pages that can be reached within 3 links from the starting URL.
POST data	Form values required for the first page being checked. This is useful if you need to log on using an HTML form to reach the rest of the site that you are checking. Enter form values in the format key=value (one on each line).
Authorization Settings	
Authorization user name	User name to access the URL if required.
Authorization password	Password to access the URL if required.
Proxy Settings	
HTTP proxy	Domain name and port of an HTTP Proxy Server if a proxy server is used to access the URL.
Proxy server user name	Proxy server user name if the proxy server requires a name to access the URL. Technical note: your proxy server must support Proxy-Authenticate for these options to function.
Proxy server password	Proxy server password if the proxy server requires a name to access the URL. Technical note: your proxy server must support Proxy-Authenticate for these options to function.

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Log File Monitor

This chapter includes:

Concepts

Reference

Concepts

Log File Monitor Overview

The Log File monitor watches for specific entries added to a log file by looking for entries containing a text phrase or a regular expression. You can use it to automatically scan log files for error information. With SiteScope doing this for you at set intervals, you can eliminate the need to scan the logs manually. In addition, you can be notified of warning conditions that you may have otherwise been unaware of until something more serious happened.

By default, each time that SiteScope runs this monitor, it starts from the point in the file where it stopped reading last time it ran. This insures that you are notified only of new entries and speeds the rate at which the monitor runs. You change this default behavior using the **Check from beginning** property. For details, see "Check from beginning" on page 261.

The Log File monitor supports monitoring remote servers running on HP NonStop operating systems. For details on enabling the HP NonStop operating system monitoring environment, see "Setup Requirements and User Permissions" on page 219.

Note: Monitoring log files using SSH on Windows platforms is supported from SiteScope version 8.5 and later.

For details on configuring the monitor, see "Log File Monitor Settings" on page 258.

This section contains the following topics:

- "Setup Requirements and User Permissions" on page 255
- "Scheduling the Monitor" on page 255
- "Customizing Log File Content Matches and Monitor Alerts" on page 256
- "Support for IPv6 Addresses" on page 257

Setup Requirements and User Permissions

The following configuration requirements must be performed or verified before the Log File monitor can be used:

- The log file to be monitored must exist, and be accessible under credentials used for connecting to the remote server, or under which SiteScope is running (if monitoring a local file).
- The remote server should be created with credentials that grant read access on the monitored file.

Scheduling the Monitor

You can schedule your Log File Monitors to run as often as every 15 seconds. However, depending on the size of the log file, the total number of monitors you have running, and **Check from beginning** option selected, the monitor may take 15 seconds or longer to check the file for the desired entries. The default update schedule of every 10 minutes is a reasonable frequency in most cases.

Customizing Log File Content Matches and Monitor Alerts

You can create a Log File monitor that triggers customized alerts for content matches according to the threshold status of the monitor.

To configure the Log File monitor with custom matches and alerts:

1. In the Log Monitor Settings, configure the following settings:
   - ➤ **Run alerts:** Select the **For each log entry matched** option.
   - ➤ **Content match:** Enter the text to look for in the log entries. For example, to find text entries redflag and disaster in the log file, enter /(redflag|disaster)/.
   - ➤ **Match value label:**. Enter a label name for the matched values found in the target log file. For example, type matchedValue.
2. In the Threshold Settings, set the error and warning threshold. For example, set Error if matchedValue == disaster and set Warning if matchedValue == redflag.
3. Configure error, warning, and good alerts for the Log File monitor. The alert that is sent depends on the threshold that is met for each entry matched. For example, if the error threshold is met, the error alert is triggered. For details on configuring alerts, see "How to Configure an Alert" in *Using SiteScope*.

Support for IPv6 Addresses

This monitor supports the IPv6 protocol. If you want your environment to resolve host names to IPv6, you can select the **Prefer IP version 6 addresses** option in SiteScope Infrastructure Settings (**Preferences** > **Infrastructure Preferences** > **Server Setting**). If this option is selected, whenever a host name is specified for a remote server and the name is resolved to both IPv4 and IPv6, the IPv6 address is used.

When using IPv6, the following protocols are supported:

- NetBios (from SiteScope installed on Windows platforms only)
- SSH (from SiteScope installed on UNIX platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

Log File Monitor Settings

The Log File monitor checks for specific entries added to a log file by looking for entries containing a text phrase or a regular expression.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements and User Permissions" on page 255. ➤ This monitor supports monitoring remote servers running on HP NonStop operating systems. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Log File Monitor Overview" on page 254

Log File Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
Server	Server where the file you want to monitor is located. Select a server from the server list (only those remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** If using NetBIOS to connect to other servers in an NT domain, use the UNC format to specify the path to the remote log file. **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.

UI Element	Description
Add Remote Server	Opens the Add Remote Server dialog box, enabling you to select the type of remote you want to add (Windows or UNIX), and enter the configuration details. For details on the Microsoft Windows Remote Servers user interface, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. For details on the UNIX Remote Servers user interface, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.
Log file path	Path to the log file you want to monitor. ➤ For reading log files on remote UNIX machines, the path must be relative to the home directory of the UNIX user account being used to log on to the remote machine. ➤ For reading log files on remote Windows NT/2000 servers using the NetBIOS method, use UNC to specify the path to the remote log file. **Example:** \\remoteserver\sharedfolder\filename.log ➤ For reading log files on remote Windows NT/2000 servers using the SSH method, specify the local path of the remote log file on the remote machine. **Example:** C:\Windows\System32\filename.log You must also select the corresponding remote Windows SSH server in the **Servers** box. For details on configuring a remote Windows server for SSH, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*. You can also monitor files local to the server where SiteScope is running. **Example:** C:\application\appLogs\access.log Optionally, you can use special date and time regular expression variables to match log file names that include date and time information. For example, you can use a syntax of s/ex$shortYear$$0month$$0day$.log/ to match a current date-coded log file. For details on using regular expressions, refer to "SiteScope Date Variables" in *Using SiteScope*.

UI Element	Description
Run alerts	Method for running alerts for this monitor. ➤ **For each log entry matched.** The monitor triggers alerts according to thresholds applied to each matching entry found. Since status can change according to thresholds for each matched entry, each alert action could be triggered many times within a monitor run. **Example:** If you want to send a warning alert on matched text value "power off" and an error alert if more than one server is turned off, set the following thresholds: ➤ Error if matchCount > 1 ➤ Warning if value == 'power off' To send an error alert if only one threshold is matched, set Error if value == 'power off'. For details on how to create a Log File monitor that triggers customized alerts for content matches, see "Customizing Log File Content Matches and Monitor Alerts" on page 256. ➤ **Once, after all log entries have been checked.** The monitor counts up the number of matches and then triggers alerts. **Note:** The status category is resolved according to the last content that matched the regular expression. If the last matched content does not meet the threshold measurement, an alert is not triggered.
Check from beginning	File checking option for this monitor instance. This setting controls what SiteScope looks for and how much of the target file is checked each time that the monitor is run. ➤ **Never.** Checks newly added records only. ➤ **First time only.** Checks the whole file once, and then newly added records only. ➤ **Always.** Always checks the whole file. **Default value:** Never

UI Element	Description
Content match	Text to look for in the log entries. You can also use a regular expression in this entry to match text patterns. Unlike the content match function of other SiteScope monitors, the Log File monitor content match is run repeatedly against the most recent content of the target log file until all matches are found. This means the monitor not only reports if the match was found but also how many times the matched pattern was found. To match text that includes more than one line of text, add an s search modifier to the end of the regular expression. For details, see "Using Regular Expressions" in *Using SiteScope*. **Note:** If you enter more than four values here, when you create a report by clicking the monitor title, the report includes only the first four values.
Open Tool	Opens the Regular Expression Tool, enabling you to test a regular expression for content matching against a sample of the content you want to monitor. For details, see "Regular Expression Tool" in *Using SiteScope*.
Advanced Settings	
Log file encoding	If the log file content to be monitored uses an encoding that is different than the encoding used on the server where SiteScope is running, select the code page or encoding to use. This may be necessary if the code page which SiteScope is using does not support the character sets used in the target log file. This enables SiteScope to match and display the encoded log file content correctly. **Default value:** windows-1252

UI Element	Description
Rules file path	In rare cases, it may be necessary to create a custom rules file to specify the log entries to match and the alerts to send. An example rules file is located in **<SiteScope root directory>\examples\log_monitor\sample.rules**. Make a copy of this file and rename. There is no required naming convention. Open the file with the editor of your choice, and using the comments as a guideline, edit the file to meet your needs. When you are finished, enter the full path to your rules file.
Match value labels	Use to enter labels for the matched values found in the target log file. The match value labels are used as variables to access retained values from the **Content match** expression for use with the monitor threshold settings. Separate multiple labels with a comma (,). The labels are used to represent any retained values from the **Content match** regular expression in the parameters available for the status threshold settings (Error if, Warning if, and Good if). These labels are also displayed as the text labels in graphs generated for the retained values in management reports for this monitor. **Note:** If you enter more than four match value labels, when you create a report by clicking the monitor title, the report includes only the first four values.
Multi-line match	Runs a regular expression match on multiple lines of text. **Default value:** Not selected

UI Element	Description
Server-side processing	Processes log file data on the server-side. Benefits include low memory usage and low CPU utilization on the SiteScope server, and faster monitor run. Server-side processing does however cause high CPU utilization on the remote server when processing the file. **Default value:** Not selected (we recommend using this option only if SiteScope performance is affected by large amounts of data being appended to the target log file between monitor runs, and the Log File monitor is performing badly in regular mode). **Note:** ➤ Server-side processing is enabled for remote Linux, RedHat Enterprise Linux, and Oracle Solaris servers only. Windows SSH is not supported. ➤ "Rule files" are not supported in this mode. ➤ The encoding for the remote server must be Unicode, or match the encoding of the log file (if the remote file is in Unicode charset).
No error if file not found	Monitor remains in Good status if the file is not found. The monitor status remains Good regardless of the monitor threshold configuration. **Default value:** Not selected

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Mail Monitor

This chapter includes:

Concepts

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Concepts

Mail Monitor Overview

The Mail monitor checks that the mail server is accepting requests, and also verifies that a message can be sent and retrieved. It does this by sending a standard mail message using SMTP and then retrieving that same message by using a POP user account. Each message that SiteScope sends includes a unique key that it checks to insure that it does not retrieve the wrong message and return a false OK reading. Each time the Mail monitor runs, it returns a status and writes it in the log file. It also writes the total time it takes to send and receive the mail message in the log file. If SiteScope is unable to complete the entire loop, it generates an error message.

We recommend that you monitor your primary mail server at least every five minutes. The other mail servers can be monitored less frequently. You may find it useful to set up a special mail account to receive the test email messages send by SiteScope.

For details on configuring the monitor, see "Mail Monitor Settings" on page 267.

Reference

Mail Monitor Settings

The Mail monitor checks to see that the mail server is both accepting and delivering messages. Use this monitor to verify that all your mail servers, including internal servers where a firewall is used, are working properly.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	The **Mail Round Trip Tool** is available when configuring this monitor to verify that the mail server is accepting requests and that a message can be sent and retrieved (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Mail Round Trip Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Mail Monitor Overview" on page 266

Mail Monitor Settings

User interface elements are described below:

UI Element	Description
Action	Action the Mail monitor should take with respect to the mail server: ➤ **Send and receive.** This option enables you to send a test message to an SMTP server and then to receive it back from the POP3 or IMAP4 server. This checks that the mail server is up and running. ➤ **Receive only.** This option enables you to check the incoming POP3 or IMAP4 mail servers for a message that was sent previously. This check is done by matching the content of the previously sent message. **Note:** If the this option is selected, the **Match content** box must have a value to match against. Also, if this option is selected, you should use this monitor for a dedicated mail account that is not being accessed by any other mail client. If another mail client attempts to retrieve mail messages from the account that the Mail monitor is monitoring in **Receive only** mode, the monitor and the other mail client may lock each other out of the account, and neither can retrieve the messages. ➤ **Send only.** This option checks that the receiving mail server has accepted the message.
Sending email server (SMTP)	Host name of the SMTP mail server to which the test mail message should be sent. **Example:** mail.thiscompany.com
Send to address	Mail address to which the test message should be sent.
Receiving protocol	Protocol used by the receiving mail server. You use the POP3 option to check the POP3 mail server for a sent message. You use the IMAP4 option to check the IMAP mail server for a sent message.

UI Element	Description
Receiving email server	Host name of the POP3/IMAP4 mail server that should receive the test message. This can be the same mail server to which the test message was sent. **Example:** mail.thiscompany.com
Receiving email server user name	POP user account name on the receiving mail server. A test email message is sent to this account and the Mail monitor logs in to the account and verifies that the message was received. No other mail in the account is touched; therefore you can use your own personal mail account or another existing account for this purpose. **Example:** support **Note:** If you use a mail reader that automatically retrieves and deletes messages from the server, there is a chance that the Mail monitor won't see the mail message and therefore reports an error.
Receiving email server password	Password, if necessary, for the receiving mail account.

UI Element	Description
Receive only content match	Text string to match against the contents of the incoming message. If the text is not contained in the incoming message, the monitor reports an error. This is for the receiving only option. The search is case sensitive. **Example:** Subject:MySubject HTML tags are part of a text document, so include the HTML tags if they are part of the text you are searching for (for example, < B> Hello< /B> World). This works for XML pages as well. You may also perform a regular expression match by enclosing the string in forward slashes, with an i after the trailing slash indicating case-insensitive matching. **Example:** /href=Doc\d+\.html/ or /href=doc\d+\.html/i If you want a particular piece of text to be saved and displayed as part of the status, use parentheses in a regular expression. **Example:** /Temperature: (\d+)/ This would return the temperature as it appears on the page and this could be used when setting an Error if or Warning if threshold.
Attachment	Full path of a file to add as an attachment to the email message. Use this option to check that your email server can accept and forward messages with attached files. Optionally, you can use a regular expression to insert date and time variables to create a filename or file path. **Example:** s/C:\firstdir\$shortYear$$0month$$0day$/
Attachment encoding	The code page or encoding to use if the attachment file content uses an encoding that is different than the encoding used on server where SiteScope is running. This may be necessary if the code page which SiteScope is using does not support the character sets used in the attachment file. **Default value:** windows-1252

UI Element	Description
Timeout (seconds)	Amount of time, in seconds, that the Mail monitor should wait for a mail message to be received before timing-out. Once this time period passes, the Mail monitor logs an error and reports an error status. **Default value:** 300 seconds
POP check delay (seconds)	After SiteScope sends the test message, it immediately logs into the mail account to verify that the message has been received. If the message has not been received, SiteScope automatically waits 10 seconds before it checks again. You can adjust this wait time by indicating an alternate number of seconds to wait in this box. **Default value:** 10 seconds
SMTP user	User name required for SMTP authentication if the SMTP server requires authentication before sending messages.
SMTP password	Password for the SMTP authentication (if required).
NTLM authentication	NTLM authentication version (1 or 2) if used by the email server. **Default value:** none

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MAPI Monitor

This chapter includes:

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Concepts

MAPI Monitor Overview

The MAPI monitor checks a Messaging Application Program Interface (MAPI) server to confirm that email operations can be run. The monitor is designed to test the operation of a Microsoft Exchange Server 2003/2007, and for Outlook 2007. It verifies that the server is accepting requests, and also verifies that a message can be sent and retrieved. It does this by sending a standard email and deleting the mail if the message is successfully sent and received. If the received part of the monitoring fails (for example, because of a delay in sending the email or due to a short timeout for receiving the mail) the test mail remains in the mailbox. The error and warning thresholds for the monitor are set based on the email delivery time. Create a separate MAPI monitor instance for each Microsoft Exchange server in your environment.

Note: This monitor is supported in SiteScopes that are running on Windows versions only.

For details on the monitor user interface, see "MAPI Monitor Settings" on page 280.

Setup Requirements

There are several important configuration requirements that must be performed or verified before the MAPI monitor can be used. For a description of the steps you use to configure your environment for this monitor, see "How to Prepare the System for Using the MAPI Monitor" on page 276. The following are several definitions that are used in the steps listed below.

- **Local Administrator.** An account that has administrative privileges on the local machine. An account can have this privilege either implicitly by having Domain Admin privileges or explicitly by adding as a member of the Administrators group on the local machine. Consult your system administrator, if necessary, for help with creating accounts.
- **MailBox Owner.** This is an "owner" account for which an Exchange mailbox has been set up. To use the MAPI monitor, this account must be a Local Administrator (see definition above) on the SiteScope server.
- **SiteScope User.** This is the account that is used to run the SiteScope service. This account must also be a Local Administrator (see definition above).

Tasks

How to Prepare the System for Using the MAPI Monitor

This task describes the steps involved in preparing the monitoring environment.

Note: For definitions of the terms Local Administrator, MailBox Owner, and SiteScope User that are used in the steps that follow, see "Setup Requirements" on page 275.

This task includes the following steps:

- "Create mailbox accounts on each Exchange Server to be monitored with the MAPI monitor" on page 277
- "Add each Exchange Mailbox Owner to the Administrators users group on the SiteScope server" on page 277
- "Install Microsoft Outlook or an equivalent MAPI 1.0 Mail Client on the SiteScope server" on page 278
- "Configure Outlook for the MailBox User" on page 278
- "Verify the SiteScope user logon is a member of Administrators group or a domain administrator account" on page 278
- "Add the SiteScope user account to the "Act as part of the operating system" Local Security Policy" on page 279
- "Configure the monitor properties" on page 279

1 Create mailbox accounts on each Exchange Server to be monitored with the MAPI monitor

Exchange mailbox accounts are used by SiteScope to measure the roundtrip time for a message to originate and arrive in a mailbox account. The MAPI Monitor Settings pane supports up to two mailboxes per Exchange Server. If only one mailbox is specified in the MAPI Monitor Settings the same mailbox can be used for the sender and receiver accounts.

Consult your Exchange system administrator for help setting up mailbox accounts for use with the SiteScope MAPI monitor.

2 Add each Exchange Mailbox Owner to the Administrators users group on the SiteScope server

The Mailbox Owner accounts setup in the previous step, which are by definition domain logons, must be added to the Administrators group on the SiteScope server.

a Click **Start** > **Settings** > **Control Panel** > **Users and Passwords** > **Advanced tab** or open the Computer Management utility and expand the **Local Users and Groups** folder in the left pane and click the **Groups** folder.

b Double-click the Administrators group icon to open the Administrators Properties window.

c Click the **Add** button to add each Mailbox Owner you expect to use with the MAPI monitor.

Note: Make sure that the domain logon description is of the form domain\logon.

---

3 Install Microsoft Outlook or an equivalent MAPI 1.0 Mail Client on the SiteScope server

The SiteScope server requires a MAPI 1.0 client such as Outlook XP or Outlook 2003 or later. Consult your system administrator, if necessary, for help installing a compliant MAPI client.

4 Configure Outlook for the MailBox User

After logging on to the SiteScope server as the MailBox User created in the first step, the Outlook wizard may start setting up an Outlook profile for the mail box. If an Outlook client is already installed, you can use that Outlook client and click **Tools** > **E-mail Accounts** to create a profile for the mailbox/logon you intend to use with the MAPI monitor. See your Exchange System administrator for help configuring an Outlook client on your SiteScope server.

Creating an Outlook profile is not necessary, although it may be helpful for the purpose of troubleshooting. After the wizard prompts you to set up a profile you can cancel to exit the wizard.

5 Verify the SiteScope user logon is a member of Administrators group or a domain administrator account

The SiteScope user account must be a Local Administrator or a member of the domain admins group. To change the logon account for the SiteScope user:

a Open the **Services** control utility on the SiteScope server.

b Right-click the **SiteScope** service entry and click **Properties**. The SiteScope Properties settings page opens.

c Click the **Log On** tab.

d Verify that the SiteScope user is run as a member of Administrators group or a domain logon account. To change the logon properties, click the **This account** radio button and enter the SiteScope user logon.

e Restart the SiteScope server after making changes to the SiteScope service logon account.

6 Add the SiteScope user account to the "Act as part of the operating system" Local Security Policy

To add the SiteScope user account to the "Act as part of the operating system" local security policy.

a Click **Start** > **Programs** > **Administrative Tools** > **Local Security Policy**. The Local Security Policy panel opens.

b Click the **Local Policies** folder in the left pane and then click the **User Rights Assignments** folder to display the list of policies.

c Double-click the **Act as part of the operating system** policy item in the right pane. The Local Security Policy Setting list opens.

d If the SiteScope user is not in the list of logons for this security policy setting then it must be added now. Click the **Add** button to bring up the Select Users or Groups window.

e Enter the SiteScope user logon using the **domain\logon** format if the SiteScope user is a domain account.

f After adding the SiteScope service logon, you must reload the security settings. To do this, right-click the **Security Settings** root folder in the left pane and click **Reload**.

g Restart the SiteScope service after making changes to security policy.

7 Configure the monitor properties

Configure the MAPI monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "MAPI Monitor Settings" on page 280.

Reference

MAPI Monitor Settings

This monitor enables you to monitor the availability of Microsoft Exchange 2003 and 2007. The monitor checks for email delivery time. This enables you to verify availability of the MAPI server by sending and receiving a test message in a Microsoft Exchange email account.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 275.
Relevant tasks	➤ "How to Prepare the System for Using the MAPI Monitor" on page 276 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "MAPI Monitor Overview" on page 274

MAPI Monitor Settings

User interface elements are described below:

UI Element	Description
Receiver server	Host name or address of a Microsoft Exchange Server. The name can be an IP address or other name that can be resolved by the DNS server. We recommend that you copy the server name as it appears in the Properties of the email account you are using with this monitor.
Receiver mailbox	Name (alias) of the mailbox to be used for this monitor. This is often the email account name but it may be a different name. We recommend that you copy the mailbox name as it appears in the E-Mail Account properties for the email account you are using with this monitor.

UI Element	Description
Receiver domain	Domain to which both the owner of the mailbox being used and the Microsoft Exchange server belong. **Note:** The owner of the mailbox to be used by this monitor must also have administrative account privileges on the machine where SiteScope is running. SiteScope also needs user account access to the domain where the Microsoft Exchange server is running.
Receiver user name	NT account login name for the user associated with the above email account.
Receiver password	NT account login password for the user name above.
Sender server	Sender's Microsoft Exchange server name. **Note:** ➤ The MAPI sender is ignored if an SMTP sender is specified in the **Sender** box below. ➤ If any of the SMTP sender values are not specified, the receiver values are used instead.
Sender mailbox	Alias of the sending mailbox.
Sender domain	Domain to which both the sending mailbox owner and the sending Microsoft Exchange server belong.
Sender user name	Login name for the NT account of the sending mailbox owner.
Sender password	NT account login password for the sender account above.
Transaction timeout (seconds)	Amount of time, in seconds, for the monitor to wait for the message to arrive before the monitor should timeout. The monitor reports an error if timeout value is met before the email message is delivered. **Default value:** 25 seconds
SMTP server	SMTP server through which an outgoing message is sent. **Note:** If you set any of the SMTP values (**SMTP server**, **Sender** or **Receiver**) they override the MAPI sender options.

UI Element	Description
Sender	Email address of the SMTP sender.
Receiver	Email address of the receiver. This must match the **Receiver mailbox** alias specified above.
Attachment	Full path of a file to attach to the outgoing SMTP message.

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Memory Monitor

This chapter includes:

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Memory Monitor Overview

Memory is one of the primary factors that can affect your server's performance. Use the Memory monitor to monitor how much physical and virtual memory (which consists of both physical memory and swap memory) is currently in use on a server and how much space is free. Use the pages per second and value of free memory measurements to help detect problems in this area. Each time the Memory monitor runs, it collects the measurements and displays the status in the SiteScope Dashboard.

In most environments, the Memory monitor does not put a heavy load on your server. For monitoring remote UNIX servers, SiteScope needs to open the connection, while getting the data from the remote server. While the monitor actions generally do not load the either server, managing a large number of remote connections can results in some performance problems. You can use the error and warning thresholds to have SiteScope notify you if memory on a remote server starts to get low.

Note:

- This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.
- Physical memory (free space and used %) can only be monitored on Windows remote servers using the WMI connection method. On UNIX remote servers, monitoring physical and virtual memory is not supported using the rlogin connection method.

For details on configuring the monitor, see "Memory Monitor Settings" on page 288.

This section also includes:

- "IPv6 Addressing Supported Protocols" on page 285
- "Troubleshooting and Limitations" on page 286

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)
- SSH (from SiteScope installed on UNIX platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the Memory monitor.

- "Percentage of Virtual Memory Used Reaches 100%" on page 286
- "Pages Per Second is Affecting System Performance" on page 287
- "WMI Returns Incorrect Memory Values" on page 287

Percentage of Virtual Memory Used Reaches 100%

Problem: The number of virtual memory used % reaches 100%, and services that are running may fail and new ones are unable to start. Virtual memory used % measures the percentage of memory and paging file space used.

Solution 1: Increase the size of the paging file. This may solve the immediate problem but may decrease performance by increasing paging. A slow increase in virtual memory used is often caused by a memory leak in a service. Use the **Processes Tool** to view the memory used by each service. For details on using the tool, see "Processes Tool" in *Using SiteScope*.

Solution 2: An interim solution is to use the Service monitor to measure the service size and run a SiteScope Script Alert to restart the service when it becomes too large. If restarting the service does not fix the leak, it may be necessary to add a Script Alert to restart the server when memory usage is too high. For details on using a Script Alert, see "Working with Script Alerts" in *Using SiteScope*. For details on using the Service monitor, see "Service Monitor Overview" on page 560.

Solution 3: Install an upgraded version of the service without the leak.

Note: When deploying the Memory monitor on a remote UNIX machine, the monitor displays swap memory usage and not virtual memory usage. To monitor virtual memory usage, deploy the UNIX Resources monitor. For details, see "UNIX Resources Monitor Overview" on page 654.

Pages Per Second is Affecting System Performance

Problem: The number of pages per second is consistently high (>10 pages/sec) and is affecting system performance. Pages per second measures the number of virtual memory pages that are moved between main memory and disk storage.

Solution 1: Add more memory.

Solution 2: Turn off non-critical services that are using memory, or move these services to a different machine. The SiteScope Service monitor measures the memory usage for each service.

WMI Returns Incorrect Memory Values

WMI returns incorrect values for the memory used % and MB free counters when the WMI connection method is used on a Windows Server 2008. This is due to an issue with WMI (not SiteScope).

Reference

Memory Monitor Settings

This monitor enables you to track how much physical and virtual memory is currently in use on a server. Running out of memory can cause server applications to fail and excessive paging can have a drastic effect on performance. Use this page to add a monitor or edit the monitor's properties.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ Physical memory (free space and used %) can only be monitored on Windows remote servers using the WMI connection method. On UNIX remote servers, monitoring physical and virtual memory is not supported using the rlogin connection method. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ The **Performance Counters Tool** is available when configuring this monitor to check performance counters on a specific machine in a Windows network (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Performance Counters Tool" in *Using SiteScope*.

Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Memory Monitor Overview" on page 284

Memory Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Server where the memory you want to monitor is running. Select a server from the server list (only those remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed here. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. ➤ If you are monitoring a Windows remote server using the NetBIOS method, only virtual memory counters are available. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Remote Server dialog box, enabling you to select the type of remote you want to add (Windows or UNIX), and enter the configuration details. For details on the Microsoft Windows Remote Servers user interface, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. For details on the UNIX Remote Servers user interface, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.

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Microsoft ASP Server Monitor

This chapter includes:

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Microsoft ASP Server Monitor Overview

Use the Microsoft ASP Server monitor to monitor Active Server Pages (ASP) performance parameters on Microsoft Windows NT Terminal Server 4.0 and Microsoft Windows 2000 Server. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate monitor instance for each ASP Server you are running.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

For details on configuring the monitor, see "Microsoft ASP Server Monitor Settings" on page 294.

This section also includes:

- "Setup Requirements" on page 292
- "IPv6 Addressing Supported Protocols" on page 293

Setup Requirements

- The Remote Registry service must be running on the machine where the ASP server is running if the ASP Server is running on Windows 2000.
- The Microsoft ASP Server monitor makes use of performance counters to measure application server performance. SiteScopes running on Windows platforms need to be running under an account that has the necessary administrative security privileges to access performance counter data from remote servers. If the servers you want to monitor are in a different domain, are governed under a different policy, or require a unique login

different than the account SiteScope is running under, then you must define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view. For SiteScopes installed on UNIX platforms, you only need to define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

Microsoft ASP Server Monitor Settings

This monitor enables you to monitor the availability of a Microsoft ASP server on Windows NT systems. The error and warning thresholds for the monitor can be set on one or more ASP server performance statistics.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 292. ➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft ASP Server Monitor Overview" on page 292

Microsoft ASP Server Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Server where the Microsoft ASP Server you want to monitor is running. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed in the server list. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters. **Note when working in template mode:** To update counters in template browsable monitors that need a target server, click the **Select measurement from** button and add the required server and counters. Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.

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Microsoft Exchange 2007/2010 Monitor

This chapter includes:

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Concepts

Microsoft Exchange 2007/2010 Monitor Overview

Use the Microsoft Exchange 2007/2010 monitor to display important statistics about the messaging system handled by a Microsoft Exchange Server 2007 with PowerShell v1.0 or Microsoft Exchange Server 2010 with PowerShell v2.0. The statistics are gathered through Exchange Management Shell, a command-line interface (built on Microsoft Windows PowerShell technology) that is used for managing and testing Microsoft Exchange servers and objects.

By default, the Microsoft Exchange 2007/2010 monitor can run command-lets (cmdlets) to provide health information about MAPI logons, Mail flow, and Search. You can also retrieve health information for Outlook Web Access and Web Services by configuring a test mailbox in Exchange Server 2007/2010. For details, see "How to Configure the Microsoft Exchange 2007/2010 Monitoring Environment" on page 301.

Create a separate Microsoft Exchange 2007/2010 monitor instance for each Microsoft Exchange server in your environment. The Microsoft Exchange 2007/2010 monitor is supported on Windows versions of SiteScope only.

Note: SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various aspects of a Microsoft Exchange 2007/2010 server. For details, see "Microsoft Exchange Solution Templates" in *Using SiteScope*.

For task details, see "How to Configure the Microsoft Exchange 2007/2010 Monitoring Environment" on page 301.

For user interface details, see "Microsoft Exchange 2007/2010 Monitor Settings" on page 307.

Setup Requirements

- To configure Microsoft Exchange 2007/2010 monitor, Exchange Management Shell must be installed on SiteScope server. Windows PowerShell 1.0 or 2.0 must be installed on the computer that runs the Exchange Management Shell.
- You must log on to the SiteScope server using a domain account that has the permissions assigned to the Exchange Server Administrators group. The account must also be a member of the local Administrators group on that computer. For details, see "How to Prepare the System for Using the Microsoft Exchange 2007/2010 Monitor" on page 304.
- For each comdlet, the account you use must be delegated as follows (according to Microsoft Exchange Server 2007/2010, Permission Considerations section: http://technet.microsoft.com/en-us/library/aa996881.aspx):

cmdlet	Description
Test-MAPIConnectivity	To run the Test-MapiConnectivity cmdlet, the account you use must be delegated the Exchange Server Administrators role and local Administrators group for the target server. To run the Test-MapiConnectivity cmdlet on a computer that has the Mailbox server role installed, you must log on by using a domain account that has the permissions assigned to the Exchange Server Administrators group. The account must also be a member of the local Administrators group on that computer.
Test-ExchangeSearch	To run the Test-ExchangeSearch cmdlet, the account you use must be delegated the following: ➤ Exchange Recipient Administrator role ➤ Exchange Server Administrators role and local Administrators group for the target server

cmdlet	**Description**
Test-MailFlow	To run the Test-Mailflow cmdlet, the account you use must be delegated the Exchange Server Administrators role and local Administrators group for the server where the cmdlet is run.
Test-OWAConnectivity	To run the Test-OwaConnectivity cmdlet to test Outlook Web Access connectivity for all Exchange 2007/2010 virtual directories on a Client Access server, the account you use must be delegated the Exchange Server Administrators role and membership in the local Administrators group for the target server.
Test-WebServicesConnectivity	To run the Test-WebServicesConnectivity cmdlet, the account you use must be delegated the Exchange Administrator role and local Administrators group for the target server.

- To run each cmdlet, the server roles that correspond to the cmdlets you want to run must be installed on the Microsoft Exchange Server. When monitoring Microsoft Exchange Server 2007 or 2010, the available counters are determined according to the server roles installed. For example, if the Hub Transport and Mailbox roles are installed, the Test-MailFlow cmdlet runs. The following table shows the server roles required to run the cmdlets.

Server Role	**Cmdlet**
Mailbox	➤ Test-MAPIConnectivity ➤ Test-ExchangeSearch
Hub Transport, Mailbox	Test-MailFlow
Client Access	➤ Test-OWAConnectivity ➤ Test-WebServicesConnectivity

Tasks

How to Configure the Microsoft Exchange 2007/2010 Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 302
- "Prepare the system for using the Microsoft Exchange 2007/2010 monitor" on page 302
- "Enter the PowerShell execute command when using the Microsoft Exchange 2007/2010 monitor on a 64-bit version of Windows 2003, 2008, or XP" on page 302
- "Configure additional Microsoft Exchange Server counters - optional" on page 303
- "Configure the monitor properties" on page 303
- "Schedule the monitor - optional" on page 303

1 Prerequisites

There are several key requirements for using this monitor. For details on this topic, see "Setup Requirements" on page 299.

2 Prepare the system for using the Microsoft Exchange 2007/2010 monitor

For information on the steps you use to configure your environment for this monitor, see "How to Prepare the System for Using the Microsoft Exchange 2007/2010 Monitor" on page 304.

3 Enter the PowerShell execute command when using the Microsoft Exchange 2007/2010 monitor on a 64-bit version of Windows 2003, 2008, or XP

To enable use of the Microsoft Exchange 2007/2010 monitor on 64-bit version of Windows 2003, Windows 2008, or Windows XP (since a 32-bit application cannot access the system32 folder on a computer that is running a 64-bit version of Windows Server 2003, 2008, or of Windows XP), perform the following:

a Apply the Microsoft hotfix available from http://support.microsoft.com/?scid=kb;en-us;942589.

b In the **Power Shell execute command** box in **Preferences** > **Infrastructure Preferences** > **General Settings**, enter the PowerShell execute command. For example:
```
C:\Windows\Sysnative\WindowsPowerShell\v1.0\powershell.exe
```

Note: Symlink Sysnative is not available by default on Windows 2003 or Windows XP.

---

4 Configure additional Microsoft Exchange Server counters - optional

You must configure a test mailbox in the Microsoft Exchange Server to retrieve health information for the Outlook Web Access and Web Services cmdlets.

a To configure a test mailbox in the Microsoft Exchange Server, run the script **New-TestCasConnectivityUser.ps1** in the Exchange Server to create a test mailbox. The script can be found under **<Exchange installation directory>\Scripts**.

b After running the command, define an initial password for this account, and press ENTER to confirm the process. A new user is created with a name similar to CAS_<16 digits>.

You can run the **Get-Mailbox** cmdlet to verify that the test mailbox was created. This cmdlet retrieves a list of mailboxes, which you can use to check for the new test mailbox.

c Repeat this process for each Exchange Mailbox Server that is to be tested.

5 Configure the monitor properties

Configure the Microsoft Exchange 2007/2010 monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Microsoft Exchange 2007/2010 Monitor Settings" on page 307.

6 Schedule the monitor - optional

This monitor computes statistics that do not normally change very rapidly and are not critical to system availability, so it should be scheduled to run infrequently, or on demand only. We do not recommend setting monitor run frequency to less than 10 minutes.

How to Prepare the System for Using the Microsoft Exchange 2007/2010 Monitor

There are several important configuration requirements that must be performed or verified before the Microsoft Exchange 2007/2010 monitor can be used. This section describes the steps you use to configure your environment for this monitor. The following are several definitions that are used in the steps listed below.

Terminology	Description
Exchange Server Administrators	An account that has administrative privileges on the Exchange server.
Local Administrator	An account that has administrative privileges on the local machine. An account can have this privilege either implicitly by having Domain Admin privileges or explicitly by adding as a member of the Administrators group on the local machine. Consult your system administrator, if necessary, for help with creating accounts.
MailBox Owner	This is an "owner" account for which an Exchange mailbox has been set up. To use the Microsoft Exchange 2007/2010 monitor, this account must be a Local Administrator (see definition above) on the SiteScope server.
SiteScope User	This is the account that is used to run the SiteScope service. This account must also be a Local Administrator and delegated the Exchange Server Administrators role (see definition above).

This task includes the following steps that should be performed before creating a Microsoft Exchange monitor:

- "Create mailbox accounts on each Exchange Server to be monitored with the Microsoft Exchange 2007/2010 monitor" on page 305
- "Add each Exchange Mailbox Owner to the Administrators users group on the SiteScope server" on page 305

➤ "Verify that the SiteScope user logon is a member of Administrators group or a domain administrator account and delegated the Exchange Server Administrators role" on page 306

1 Create mailbox accounts on each Exchange Server to be monitored with the Microsoft Exchange 2007/2010 monitor

Exchange mailbox accounts are used by Microsoft Exchange 2007/2010 monitor to measure the performance counters on the Exchange server. Consult your Exchange system administrator if you need help setting up mailbox accounts for use with the SiteScope Microsoft Exchange 2007/2010 monitor.

2 Add each Exchange Mailbox Owner to the Administrators users group on the SiteScope server

The Mailbox Owner accounts setup in step 1, which are by definition domain logons, must be added as to the Administrators group on the SiteScope server.

a Click **Start** > **Settings** > **Control Panel** > **Users and Passwords** > **Advanced tab** or open the Computer Management utility and expand the **Local Users and Groups** folder in the left pane and click the **Groups** folder.

b Double-click the **Administrators** group icon to open the Administrators Properties window.

c Click the **Add** button to add each Mailbox Owner you expect to use with the Exchange 2007/2010 monitor.

Note: Make sure that the domain logon description is of the form domain\logon.

---

3 Verify that the SiteScope user logon is a member of Administrators group or a domain administrator account and delegated the Exchange Server Administrators role

For more information about permissions, delegating roles, and the rights that are required for SiteScope user logon to monitor Microsoft Exchange Server 2007/2010, see "Setup Requirements" on page 299.

Caution: The SiteScope user account must be a Local Administrator or a member of the domain admins group and delegated the Exchange Server Administrators role.

To change the logon account for the SiteScope user:

a Open the **Services** control utility on the SiteScope server.

b Right-click the **SiteScope** service entry and click **Properties**. The SiteScope Properties settings page opens.

c Click the **Log On** tab.

d Verify that the SiteScope user is run as a member of Administrators group or a domain logon account. To change the logon properties, click the **This account** radio button and enter the SiteScope user logon.

e Restart the SiteScope server after making changes to the SiteScope service logon account.

Reference

Microsoft Exchange 2007/2010 Monitor Settings

This monitor enables you to monitor statistics of Microsoft Exchange Server 2007 or 2010 on Windows platforms only.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 299. ➤ You can create or update the Microsoft Exchange 2007/2010 monitor even if you input the incorrect **Exchange Domain** or **Mailbox**. This is because these properties are counter specific. As a result, some counter values may not be retrieved. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the Microsoft Exchange 2007/2010 Monitoring Environment" on page 301 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft Exchange 2007/2010 Monitor Overview" on page 298

Microsoft Exchange 2007/2010 Monitor Settings

User interface elements are described below:

UI Element	Description
Exchange server	Name of the server running Microsoft Exchange Server 2007/2010 that you want to monitor.
Exchange domain	Domain name and the mailbox of the server running Microsoft Exchange Server 2007/2010 that you want to monitor.
Mailbox	Name (alias) of the mailbox to be used for this monitor. This is often the email account name but it may be a different name. We recommend that you copy the mailbox name as it appears in the E-Mail Account properties for the email account you are using with this monitor.
Exchange PS console file path	Full path to the Microsoft Exchange Server Management Shell console file. **Example:** ➤ On Microsoft Exchange 2007: C:\Program Files\Microsoft\Exchange Server\Bin\ExShell.psc ➤ On Microsoft Exchange 2010: C:\Program Files\Microsoft\Exchange Server\V14\Bin\ExShell.psc
Timeout (seconds)	Amount of time to wait, in seconds, for getting a response. You can set the timeout to no less than 1 second and no more than 10 minutes. **Default value:** 120 seconds

UI Element	Description
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters. Each performance counter contains information in the following categories: ➤ **Unit\Type.** The statistic's units. Some examples of possible types of units include percent, millisecond, or KB. ➤ **Component.** Components from which the performance counter is collected. ➤ **Server Role.** Indicates the required server role for running the cmdlet.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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Microsoft Exchange 2003 Mailbox Monitor

This chapter includes:

Concepts

Reference

Concepts

Microsoft Exchange 2003 Mailbox Monitor Overview

Use the Microsoft Exchange 2003 Mailbox monitor to display important statistics about mailboxes handled by a Microsoft Exchange 2003 server, including mailboxes that are over a certain size, and mailboxes that have not been accessed in some number of days.

Note:

- The Microsoft Exchange 2003 Mailbox monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- This monitor can only be added by deploying a Microsoft Exchange Solution template. For details on using the template, see "Microsoft Exchange Solution Templates" in *Using SiteScope*.
- This monitor is supported in SiteScopes that are running on Windows versions only.
- This monitor does not work with the 64-bit version of SiteScope, so if you plan to work with this monitor, it is recommended to install the SiteScope 32-bit version.
- SiteScope must be configured to log on as a user account within the domain when running as a service, and not as Local System account.

This monitor computes statistics that do not normally change very rapidly and are not critical to system availability, so it should be scheduled to run infrequently, or on demand only.

For details on configuring the monitor, see "Microsoft Exchange 2003 Mailbox Monitor Settings" on page 314.

Troubleshooting and Limitations

Problem: You encounter one of the following errors when using the Microsoft Exchange 2003 Mailbox monitor (even though the monitor is in Good status):

- 1- Query failed: Cannot send request. Driver is not ready
- 2- Query failed: Request timed out
- 3- Query failed: Could not connect to the server

Solution 1: Enable WMI requests on the Microsoft Exchange 2003 server by setting the Remote Enable permission in the WMI Control for a namespace. If a user tries to connect to a namespace they are not allowed access to, they receive an error.

1. On the target server, select **Control Panel** > **Administrative Tools->** **Computer Management**.
2. Expand **Services and Applications**.
3. Right-click **WMI Control** and select **Properties**.
4. In the **Security** tab, select the namespace and click **Security**.
5. Locate the appropriate account and select **Remote Enable** in the **Permissions** list.

Solution 2: Enable WMI requests through Windows firewall.

If the target server is running Windows Firewall (also known as Internet Connection Firewall), enable it to let remote WMI requests through. On the target server, run the following command:

```
netsh firewall set service RemoteAdmin enable
```

For more details, see the Microsoft documentation (http://msdn.microsoft.com/en-us/library/aa389286.aspx).

Reference

Microsoft Exchange 2003 Mailbox Monitor Settings

The Microsoft Exchange 2003 Mailbox monitor enables you to monitor mailbox statistics of Microsoft Exchange Server 2003.

To access	Select the **Templates** context. In the template tree, expand the **Solution Templates** container. Right-click **Microsoft Exchange 2003**, and select **Deploy Template**. Select the SiteScope group container into which you want to deploy the solution template, and enter the deployment values.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ This monitor can only be added by deploying a Microsoft Exchange Solution template. After the monitor has been created, you can edit the monitor configuration in the same way as other monitors. For information about using templates to deploy monitors, see "SiteScope Templates" in *Using SiteScope*.
See also	➤ "Microsoft Exchange 2003 Mailbox Monitor Overview" on page 312

Microsoft Exchange 2003 Mailbox Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Server running Microsoft Exchange Server 2003 that you want to monitor.
User name	User name to use when querying the server for mailbox statistics. The statistics are gathered by using WMI (Windows Management Instrumentation). The user name entered here must have permissions to read WMI statistics on the server from WMI namespace root\MicrosoftExchangeV2. **Default value:** If this box is left blank, the user that SiteScope is running is used.
Password	Password for the user name entered above, or blank if user name is blank.
N largest mailboxes	Number (N) of mailboxes to display when reporting the N largest mailboxes. **Default value:** 5
Days since access	Number of days (N) to use when reporting the number of mailboxes that have not been accessed in N days. **Default value:** 30
Reporting directory	Location for SiteScope to save the results of each execution of this monitor. A default location is chosen if this box is left blank.
Timeout (seconds)	Number of seconds that the monitor should wait for a response from the server before timing-out. Once this time period passes, the monitor logs an error and reports an error status. **Default value:** 60 seconds

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Microsoft Exchange 5.5 Message Traffic Monitor

This chapter includes:

Concepts

Reference

Concepts

Microsoft Exchange 5.5 Message Traffic Monitor Overview

Use the Microsoft Exchange 5.5 Message Traffic monitor to display important statistics about messages handled by a Microsoft Exchange 5.5 server, such as a count of messages sent that are larger than a certain size, or sent to a large number of recipients.

Note:

- The Microsoft Exchange 5.5 Message Traffic monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- This monitor can only be added by deploying a Microsoft Exchange Solution template. For details on using the template, see "Microsoft Exchange Solution Templates" in *Using SiteScope*.

This monitor computes statistics that do not normally change very rapidly and are not critical to system availability, so it should be scheduled to run infrequently, or on demand only.

For details on configuring the monitor, see "Microsoft Exchange 5.5 Message Traffic Monitor Settings" on page 319.

Reference

Microsoft Exchange 5.5 Message Traffic Monitor Settings

The Microsoft Exchange 5.5 Message Traffic monitor enables you to monitor message statistics of Microsoft Exchange Server 5.5.

To access	Select the **Templates** context. In the template tree, expand the **Solution Templates** container. Right-click **Microsoft Exchange 5.5**, and select **Deploy Template**. Select the SiteScope group container into which you want to deploy the solution template, and enter the deployment values.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ This monitor can only be added by deploying a Microsoft Exchange Solution template. After the monitor has been created, you can edit the monitor configuration in the same way as other monitors. For information about using templates to deploy monitors, see "SiteScope Templates" in *Using SiteScope*.
See also	➤ "Microsoft Exchange 5.5 Message Traffic Monitor Overview" on page 318

Microsoft Exchange 5.5 Message Traffic Monitor Settings

User interface elements are described below:

UI Element	Description
Recipient limit	Number (N) of recipients to use when computing the number of messages sent to more than N recipients. **Default value:** 10
Query interval	Number of minutes to look back for messages when computing statistics. This affects how long it takes to run the monitor as a large interval could result in a large number of messages to be processed. **Default value:** 1440 minutes (one day)
Message size limit	Number (N) of bytes to use when computing the number of messages sent larger than N bytes. **Default value:** 2000
Number of domains	Number (N) of domains to use for reporting the top N sending domains. **Default value:** 5
Number of outgoing users	Number (N) of users to use for reporting the top N outgoing users. **Default value:** 5
Log directory	UNC path to the directory where message tracking logs are stored for the Exchange 5.5 server. **Default value:** \\<server name>\tracking.log.
Reporting directory	Location for SiteScope to save the results of each execution of this monitor. **Default value:** A default location is chosen if this box is left blank.

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Microsoft Exchange 2000/2003/2007 Message Traffic Monitor

This chapter includes:

Concepts

Reference

Concepts

Microsoft Exchange 2000/2003/2007 Message Traffic Monitor Overview

Use the Microsoft Exchange 2000/2003/2007 Message Traffic monitor to display important statistics about messages handled by a Microsoft Exchange 2000/2003/2007 server, such as a count of messages sent that are larger than a certain size, or sent to a large number of recipients.

Note:

- The Microsoft Exchange 2000/2003/2007 Message Traffic monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- This monitor can only be added by deploying a Microsoft Exchange Solution template. For details on using the template, see "Microsoft Exchange Solution Templates" in *Using SiteScope*.
- This monitor is supported in SiteScopes that are running on Windows versions only.
- SiteScope must be configured to log on as a user account within the domain when running as a service, and not as Local System account.

This monitor computes statistics that do not normally change very rapidly and are not critical to system availability, so it should be scheduled to run infrequently, or on demand only.

For details on configuring the monitor, see "Microsoft Exchange 2000/2003/2007 Message Traffic Monitor Settings" on page 323.

Reference

Microsoft Exchange 2000/2003/2007 Message Traffic Monitor Settings

This monitor enables you to monitor message statistics of Microsoft Exchange Server 2000/2003/2007.

To access	Select the **Templates** context. In the template tree, expand the **Solution Templates** container. Right-click the Microsoft Exchange solution template version that you require, and select **Deploy Template**. Select the SiteScope group container into which you want to deploy the solution template, and enter the deployment values.
Important information	➤ SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ This monitor can only be added by deploying an Exchange Solution template. After the monitor has been created, you can edit the monitor configuration in the same way as other monitors. For information about using templates to deploy monitors, see "SiteScope Templates" in *Using SiteScope*.
See also	➤ "Microsoft Exchange 2000/2003/2007 Message Traffic Monitor Overview" on page 322

Microsoft Exchange 2000/2003/2007 Message Traffic Monitor Settings

User interface elements are described below:

UI Element	Description
Recipient limit	Number (N) of recipients to use when computing the number of messages sent to more than N recipients. **Default value:** 10
Query interval	Number of minutes to look back for messages when computing statistics. This affects how long it takes to run the monitor as a large interval could result in a large number of messages to be processed. **Default value:** 1440 minutes (one day)
Message size limit	Number (N) of bytes to use when computing the number of messages sent larger than N bytes. **Default value:** 2000
Number of domains	Number (N) of domains to use for reporting the top N sending domains. **Default value:** 5
Number of outgoing users	Number (N) of users to use for reporting the top N outgoing users. **Default value:** 5
Log directory	UNC path of the messaging tracking log file directory. **Default value:** ➤ For 2000/2003 versions: \\<server name>\<server name>.log ➤ For 2007 version: \\<server name>\MessageTracking
Reporting directory	Location for SiteScope to save the results of each execution of this monitor. **Default value:** A default location is chosen if this box is left blank.

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Microsoft Exchange 2003 Public Folder Monitor

This chapter includes:

Concepts

Reference

Concepts

Microsoft Exchange 2003 Public Folder Monitor Overview

Use the Microsoft Exchange 2003 Public Folder monitor to display important statistics about public folders handled by a Microsoft Exchange 2000/2003 server, such as access times, empty folders, folder sizes, and folders not accessed within some time period.

Note:

- The Microsoft Exchange 2003 Public Folder monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- This monitor can only be added by deploying a Microsoft Exchange Solution template. For details on using the template, see "Microsoft Exchange Solution Templates" in *Using SiteScope*.
- This monitor is supported in SiteScopes that are running on Windows versions only.
- This monitor does not work with the 64-bit version of SiteScope, so if you plan to work with this monitor, it is recommended to install the SiteScope 32-bit version.
- SiteScope must be configured to log on as a user account within the domain when running as a service, and not as Local System account.

This monitor computes statistics that do not normally change very rapidly and are not critical to system availability, so it should be scheduled to run infrequently, or on demand only.

For details on configuring the monitor, see "Microsoft Exchange 2003 Public Folder Monitor Settings" on page 327.

Reference

Microsoft Exchange 2003 Public Folder Monitor Settings

This monitor enables you to monitor public folder statistics of Microsoft Exchange Server 2003.

To access	Select the **Templates** context. In the template tree, expand the **Solution Templates** container. Right-click **Microsoft Exchange 2003**, and select **Deploy Template**. Select the SiteScope group container into which you want to deploy the solution template, and enter the deployment values.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ This monitor can only be added by deploying a Microsoft Exchange Solution template. After the monitor has been created, you can edit the monitor configuration in the same way as other monitors. For information about using templates to deploy monitors, see "SiteScope Templates" in *Using SiteScope*.
See also	➤ "Microsoft Exchange 2003 Public Folder Monitor Overview" on page 326

Microsoft Exchange 2003 Public Folder Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server running Microsoft Exchange Server 2003 that you want to monitor.
User name	User name to use when querying the server for mailbox statistics. The statistics are gathered by using WMI (Windows Management Instrumentation), so the user name entered here must have permissions to read WMI statistics on the server from WMI namespace root\MicrosoftExchangeV2. **Default value:** If this box is left blank, the user that SiteScope is running as is used.
Password	Password for the user name entered above, or blank if user name is blank.
Days since access	Number of days (N) to use when reporting the number of public folders that have not been accessed in N days. **Default value:** 7
Timeout (seconds)	Number of seconds that the monitor should wait for a response from the server before timing-out. Once this time period passes, the monitor logs an error and reports an error status. **Default value:** 60
Reporting directory	Location for SiteScope to save the results of each execution of this monitor. **Default value:** A default location is chosen if this box is left blank.

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Microsoft Hyper-V Monitor

This chapter includes:

Concepts

Reference

Concepts

Microsoft Hyper-V Monitor Overview

Use the Microsoft Hyper-V monitor to monitor vital performance metrics in Hyper-V environments. Microsoft Hyper-V is a server virtualization that runs on Windows 2008 or higher. It is a hypervisor-based virtualization system for x64 Windows operating systems. The Microsoft Hyper-V monitor enables monitoring of Microsoft Hyper-V hosts and virtual machines.

You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate Microsoft Hyper-V monitor instance for each Hyper-V Server in your environment. The error and warning thresholds for the monitor can be set on one or more Microsoft Hyper-V Server performance statistics.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

The Microsoft Hyper-V monitor makes use of performance objects and counters to measure application server performance.

For details on configuring the monitor, see "Microsoft Hyper-V Monitor Settings" on page 332.

This section also includes:

- "Supported Versions" on page 331
- "IPv6 Addressing Supported Protocols" on page 331

Supported Versions

This monitor supports monitoring remote servers running on:

- Microsoft Hyper-V Server 2008 R2 (stand-alone product)
- Microsoft Windows Server 2008 (Hyper-V role enabled)
- Microsoft Windows Server 2008 R2 (Hyper-V role enabled)

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)
- SSH (from SiteScope installed on UNIX platforms only)

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

Microsoft Hyper-V Monitor Settings

This monitor enables you to monitor performance statistics of the Microsoft Hyper-V infrastructure for various server applications.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft Hyper-V Monitor Overview" on page 330

Microsoft Hyper-V Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of server that you want to monitor. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed in the server list. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.
Counters	The server performance counters selected for this monitor. Use the **Get Counters** button to select counters. **Note when working in template mode:** To update counters in template browsable monitors that need a target server, click the **Select measurement from** button and add the required server and counters. Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.

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Microsoft IIS Server Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

Microsoft IIS Server Monitor Overview

Use the Microsoft IIS Server monitor to monitor server performance statistics from IIS servers on Windows systems. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate IIS Server monitor instance for each IIS server in your environment. The error and warning thresholds for the monitor can be set on one or more IIS server performance counters.

The Microsoft IIS Server monitor supports monitoring the following:

- HTTP/HTTPS services on IIS 4.0, 5.0, 7.0, and 7.5, Windows Server 2008 R2, and Windows 7
- HTTP/HTTPS, FTP, NNTP and MSMQ Queue on IIS 6 and 7.0.

Note:

- SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various services and aspects of an IIS 6 server. For details, see "Microsoft IIS Solution Templates" in *Using SiteScope*.
- This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

For task details, see "How to Configure the Microsoft IIS Server Monitoring Environment" on page 339.

For user interface details, see "Microsoft IIS Server Monitor Settings" on page 341.

This section contains the following topics:

- "IPv6 Addressing Supported Protocols" on page 337
- "Microsoft IIS Server Topology" on page 338
- "Troubleshooting and Limitations" on page 338

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

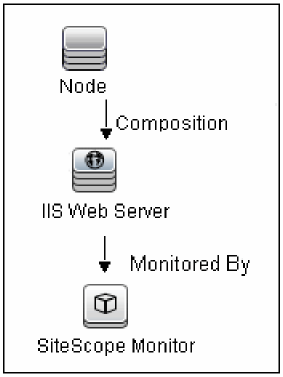
would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Microsoft IIS Server Topology

The Microsoft IIS Server monitor can identify the topology of the Microsoft IIS Server being monitored. The monitor creates the following topology in BSM's RTSM.



For details on enabling topology reporting, see "How to Configure the Microsoft IIS Server Monitoring Environment" on page 339.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" on page 282 in *Using SiteScope*.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the Microsoft IIS Server monitor.

- Check if the Microsoft IIS server is available and the services that should be monitored are up and running.
- If SiteScope is unable to get counters, run a test on the target remote server. If counters do not contain the required service (for example, FTP or Web Server), check if the corresponding service is running on the target machine.

Tasks

How to Configure the Microsoft IIS Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 339
- "Configure the monitor properties" on page 340
- "Enable topology reporting - optional" on page 340

1 Prerequisites

The following are requirements for using the Microsoft IIS Server monitor:

- The Microsoft IIS Server monitor makes use of performance counters to measure application server performance. If the servers you want to monitor require a unique login different than the account SiteScope is running under, you must define the connection to these servers in the Microsoft Windows Remote Servers container. Alternatively, you can enter the credentials of a user with administrative permissions on the server in the **Default authentication user name** and **Default authentication password** boxes in **Preferences** > **General Preferences**, and create the monitor without creating a Microsoft Windows Remote Server.
- The Remote Registry service must be running on the machine where the IIS server is running if IIS is running on Windows 2000.

2 Configure the monitor properties

Configure the Microsoft IIS Server monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Microsoft IIS Server Monitor Settings" on page 341.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

Reference

Microsoft IIS Server Monitor Settings

This monitor enables you to monitor the availability and server statistics of a Microsoft IIS server on Windows NT systems.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the Microsoft IIS Server Monitoring Environment" on page 339 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft IIS Server Monitor Overview" on page 336

Microsoft IIS Server Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server where the Microsoft IIS performance statistics you want to monitor is running. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed here. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters. **Note when working in template mode:** To update counters in template browsable monitors that need a target server, click the **Select measurement from** button and add the required server and counters. Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.

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Microsoft Lync Server 2010 Monitors

This chapter includes:

Concepts

Tasks

Reference

Note: This chapter contains details on configuring settings for the following Microsoft Lync Server 2010 monitors: Microsoft A/V Conferencing Server, Microsoft Archiving Server, Microsoft Director Server, Microsoft Edge Server, Microsoft Front End Server, Microsoft Mediation Server, Microsoft Monitoring and CDR Server, and Microsoft Registrar Server monitors.

Concepts

Microsoft Lync Server 2010 Monitors Overview

Use the Microsoft Lync Server 2010 monitors to monitor the following:

- **Microsoft A/V Conferencing Server.** Monitors the server performance statistics of the Microsoft Lync A/V Conferencing Server. A/V conferencing, enables real-time audio and video A/V communications between your users (that is, provided they have appropriate client devices such as headsets for audio conferences, and web cams for video conferences). A/V Conferencing Server provides A/V conferencing functionality to your deployment. It can be collocated with Front End Server, or deployed separately as a single server or A/V Conferencing Server pool.
- **Microsoft Archiving Server.** Monitors the server performance statistics of the Microsoft Lync Archiving Server. The Archiving Server enables you to archive instant messaging (IM) communications and meeting content for compliance reasons. Corporations and other organizations are subject to an increasing number of industry and government regulations that require the retention of specific types of communications. With the Archiving Server feature, Microsoft Lync Server 2010 communications software provides a way for you to archive IM content, conferencing (meeting) content, or both that is sent through Lync Server 2010. If you deploy Archiving Server and associate it with Front End pools, you can set it to archive instant messages and conferences and specify the users for which archiving is enabled.
- **Microsoft Director Server.** Monitors the server performance statistics of the Microsoft Lync Director Server. A Director is a server running Microsoft Lync Server communications software that authenticates user requests, but does not home any user accounts or provide presence or conferencing services. Directors are most useful in deployments that enable external user access, where the Director can authenticate requests before sending them on to internal servers. Directors can also improve performance in organizations with multiple Front End pools.

- **Microsoft Edge Server.** Monitors the server performance statistics of the Microsoft Lync Edge Server. The Edge Server enables your users to communicate and collaborate with users outside the organization's firewalls. These external users can include the organization's own users who are currently working offsite, users from federated partner organizations, and outside users who have been invited to join conferences hosted on your Lync Server deployment. Edge Server also enables connectivity to public IM connectivity services, including Windows Live, AOL, and Yahoo!.
- **Microsoft Front End Server.** Monitors the server performance statistics of the Microsoft Lync Front End Server. The Front End Server is the core server role, and runs many basic Lync Server functions. The Front End Server, along with the Back End Servers, which provide the database, are the only server roles required to be in any Lync Server Enterprise Edition deployment.

  A Front End pool is a set of Front End Servers, configured identically, that work together to provide services for a common group of users. A pool provides scalability and failover capability your users.

  Front End Server includes the following functionality:

  - User authentication and registration
  - Presence information and contact card exchange
  - Address book services and distribution list expansion
  - IM functionality, including multiparty IM conferences
  - Web conferencing and application sharing (if deployed)
  - Application hosting services, for both applications included with Lync Server (for example, Conferencing Attendant and Response Group application) and third-party applications
  - Application services for application hosting and hosts applications (for example, Response Group application, and several others)

- **Microsoft Mediation Server.** Monitors the server performance statistics of the Microsoft Lync Mediation Server. The Mediation Server is a necessary component for implementing Enterprise Voice and dial-in conferencing. The Mediation Server translates signaling and, in some configurations, media between your internal Lync Server infrastructure and a public switched telephone network (PSTN) gateway, IP-PBX, or a Session Initiation Protocol (SIP) trunk. On the Lync Server side, Mediation Server listens on a single mutual TLS (MTLS) transport address. On the gateway side, Mediation Server listens on a single TCP and single TLS transport address or a single TLS transport address. All qualified gateways must support TLS, but can enable TCP as well.
- **Microsoft Monitoring and CDR Server.** Monitors the server performance statistics of the Microsoft Lync Monitoring and CDR Server. The Monitoring Server collects data about the quality of your network media, in both Enterprise Voice calls and A/V conferences. This information can help you provide the best possible media experience for your users. It also collects call error records (CERs), which you can use to troubleshoot failed calls. Additionally, it collects usage information in the form of call detail records (CDRs) about various Lync Server features, so that you can calculate return on investment of your deployment, and plan the future growth of your deployment.
- **Microsoft Registrar Server.** Monitors the server performance statistics of the Microsoft Lync Registrar Server. The Lync Server 2010 Registrar is a new server role that enables client registration and authentication and provides routing services. It resides along with other components on a Standard Edition Server, Enterprise Front End Server, Director, or Survivable Branch Appliance. A Registrar pool consists of Registrar Services running on the Lync Server pool and residing at the same site.

This enables you to watch server loading for performance, availability, and capacity planning.

You can monitor multiple parameters or counters on a single, remote server with each monitor instance. Create one or more Microsoft Lync Server 2010 monitor instances for each remote server in your environment. The error and warning thresholds for the monitor can be set on one or more performance statistics.

Note: These monitors are also supported in SiteScopes that are running on UNIX versions if the server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

For task details, see "How to Configure the Microsoft Lync Server 2010 monitoring Environment" on page 352.

For user interface details, see "Microsoft Lync Server 2010 Monitor Settings" on page 356.

This section contains the following topics:

- "Support for IPv6 Addresses" on page 349
- "Server-Centric Report" on page 350
- "Configuring the Monitor to Run on Windows 2008 R2 as a Non-Administrator User" on page 351
- "Troubleshooting and Limitations" on page 351

Support for IPv6 Addresses

These monitors support the IPv6 protocol. If you want your environment to resolve host names to IPv6, you can select the **Prefer IP version 6 addresses** option in SiteScope Infrastructure Settings (**Preferences** > **Infrastructure Preferences** > **Server Setting**). If this option is selected, whenever a host name is specified for a remote server and the name is resolved to both IPv4 and IPv6, the IPv6 address is used.

When using IPv6, the following protocols are supported:

- WMI (from SiteScope installed on Windows platforms only)
- NetBios (from SiteScope installed on Windows platforms only)

Note:

- When using the **Direct registry queries** collection method with a NetBios connection, counters are not displayed in the Available Counters table. However, you can still use monitoring process if you modify the counters using the IPv4 protocol, or copy the counters from an already configured monitor (copy the monitor), and then change back to the IPv6 address or host.
- When using the **Microsoft Windows PDH Library** collection method with a NetBios connection, IPv6 does not work if the name of the monitored server is specified as a literal IPv6 address.
- When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

  1. Replacing any colon (":") characters with a dash ("-") character.
  2. Appending the text ".ipv6-literal.net" to the IP address.

  For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

  Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Server-Centric Report

You can create a Server-Centric Report for the Windows server by clicking the server name in the Target column of the row corresponding to the Microsoft Lync Server 2010 monitor in the SiteScope Dashboard. For details, see "Server-Centric Report" in *Using SiteScope*.

Configuring the Monitor to Run on Windows 2008 R2 as a Non-Administrator User

For the Microsoft Lync Server 2010 monitors to monitor a Windows 2008 R2 machine if the SiteScope user account is not in the Administrators group, you must either:

- Use the same domain account on both the SiteScope and the remote monitored system, or
- Use local accounts on both systems, provided that the user accounts have the same name and password and are always synchronized on both systems. You cannot use **Local System** or other similar system predefined accounts that do not enable you to specify a password for them.

In addition, you must configure the user account settings on SiteScope and the remote monitored machine to log on using the selected non-administrator user account (domain or local account). You can then use a standard Windows perfmon utility to verify that it works. For details on how to perform this task, see "How to Configure the Microsoft Windows Resources Monitoring Environment" on page 414.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the Microsoft Lync Server 2010 monitors.

- Getting invalid CPU value error message in <**SiteScope root directory**>**\logs\RunMonitor.log** file when using perfmon monitors on VMware host servers. **Workaround:** Use the VMWare Performance monitor to measure CPU on VMWare host servers.
- If you encounter "Error: Object Processor not found on host" or "Error: Failed to collect the data" when running the Microsoft Lync Server 2010 monitors, change the collection method to the **Direct registry queries method** option.

Tasks

How to Configure the Microsoft Lync Server 2010 Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 352
- "Configure user account settings on SiteScope" on page 353
- "Configure user account settings on the remote monitored machine:" on page 353
- "Verify that the non-administrator user account works" on page 355
- "Configure the monitor properties" on page 355

1 Prerequisites

SiteScopes running on Windows platforms need to be running under an account that has the necessary administrative security privileges to access performance counter data from remote servers. If the servers you want to monitor are in a different domain, are governed under a different policy, or require a unique login different than the account SiteScope is running under, then you must define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.

For SiteScopes installed on UNIX platforms, you only need to define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.

2 Configure user account settings on SiteScope

The user account settings on SiteScope must be configured to log on using the selected non-administrator user account.

a In the **Services** control panel, right-click the **SiteScope** service, and then click **Properties**. The SiteScope Properties dialog box opens.

b Click the **Log On** tab, and configure the user account to log on using the selected non-administrator user account (domain or local account).

3 Configure user account settings on the remote monitored machine:

The user account settings on the monitored remote server must be configured to log on using the selected non-administrator user account.

a Check that you can access the remote machine. Perform a ping test and check DNS resolves the server name with its IP address.

We recommend that you check that there are no other network-related problems by using the selected user account to map a network drive of the monitored machine to the drive used on the SiteScope machine.

b In the **Services** control panel, check that the **RemoteRegistry** service is running and that the selected user account has access to it. You can use the following command from the Windows 2003 Resource Kit (run it under an administrator account):

```
subinacl /service RemoteRegistry /grant=tester=f
```

This command grants Full Access to the RemoteRegistry service for the local user tester.

c Add the domain or local user account to be used into the **Performance Monitor Users** and **Performance Log Users** local user groups. Make sure that these groups have at least read permissions for the following registry key (and all its subkeys):

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Perflib]

Note: To check read permissions, select **Start** > **Run**, and type **Regedt32.exe**. In the Registry Editor, select the registry key, click **Security**, and select **Permissions**. In the Name pane, highlight the user SiteScope uses to access the remote machine, and make sure that the **Allow** check box for **Read** is selected in the **Permissions** pane.

---

d Make sure that the domain or local user account to be used has at least read permissions on the following objects:

- Registry key: [HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SecurePipeServers\winreg]
- Files in **%WINDIR%\System32\perf?XXX.dat**, where **XXX** is the basic language ID for the system. For example, 009 is the ID for the English version.

Note: If the required Performance Counter Library Values are missing or are corrupted, follow the instructions in Microsoft knowledge base article KB300956 (http://support.microsoft.com/kb/300956/en-us) to manually rebuild them.

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4 Verify that the non-administrator user account works

After configuring the user account settings, verify that they work.

a Launch a standard Windows perfmon utility. You can either:

- ➤ Launch it interactively when logged on to the SiteScope machine with the selected user account by typing perfmon, or
- ➤ Launch it when logged on to the SiteScope machine with some other account through the RunAs command, which enables you to launch commands under different user account. Enter the following command:

  ```
  runas /env /netonly /user:tester "mmc.exe perfmon.msc"
  ```

  Then enter the password (in this example, for the tester account), and the command is run under the tester user account.

b After the Performance window opens, right-click in the right graph area and select **Add Counters**. The Add Counters dialog box opens.

c Select **Choose counters from computer** and enter the remote monitored machine name or its IP address in the box.

Press the TAB key. If the perfmon utility is able to connect to the remote machine, the Performance object box is filled in with the performance objects that can be monitored from the remote machine.

5 Configure the monitor properties

Configure the Microsoft Lync Server 2010 monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Microsoft Lync Server 2010 Monitor Settings" on page 356.

Note: When monitoring Windows servers configured using SSH, you must use the **Direct registry queries** option for the **Collection method** in the Monitor Settings panel when you configure the monitor.

Reference

Microsoft Lync Server 2010 Monitor Settings

Enables you to monitor the performance of the various Microsoft Lync Server 2010 monitors (Microsoft A/V Conferencing Server, Microsoft Archiving Server, Microsoft Director Server, Microsoft Edge Server, Microsoft Front End Server, Microsoft Mediation Server, Microsoft Monitoring and CDR Server, and Microsoft Registrar Server) as described in "Microsoft Lync Server 2010 Monitors Overview" on page 346.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ These monitors are also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring these monitors in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ When deploying these monitors using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the Microsoft Lync Server 2010 monitoring Environment" on page 352 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft Lync Server 2010 Monitors Overview" on page 346

<Microsoft Lync Server 2010> Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server where the Microsoft Lync Server 2010 performance statistics you want to monitor is running. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed here. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)
Server to get measurements from	(Available in template mode only) Name of any SiteScope remote server from which you want to get counters (it must be accessible in the domain using NETBIOS). Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.

UI Element	Description
Collection method	Select the collection method option. The Available Counters list is dynamically updated according to the collection method selected. This enables you to see the counters when creating or editing the monitor instead of when running the monitor: ➤ **Microsoft Windows PDH Library**. This is the default and most common option. ➤ **Use global setting**. Instructs the monitor to use the value configured in **Default collection method for Microsoft Windows Resources monitor** in **Preferences** > **Infrastructure Preferences** > **General Settings**. The default value for this setting is PDH. ➤ **Direct registry queries**. Use this option if Windows PDH library is not accessible or if the monitor is having trouble using the Windows PDH library. You must use this option when monitoring Windows servers configured using SSH. **Note:** The collection method option is available only when the target remote server uses the NetBIOS protocol (not SSH or WMI).
Enable Server-Centric Report	Enables collecting data specifically for generating the Server-Centric Report. The report displays various measurements for the server being monitored. For details, see "Generating a Server-Centric Report" in *Using SiteScope*.
Available Counters	Displays the available measurements for this monitor. For each measurement, select the **Object**, **Instances** and **Counters** you want to check with the monitor, and click the **Add Selected Counters** ➡ button. The selected measurements are moved to the Selected Counters list.
Selected Counters	Displays the measurements currently selected for this monitor, and the total number of selected counters. To remove measurements selected for monitoring, select the required measurements, and click the **Remove Selected Counters** ⬅ button. The measurements are moved to the Available Counters list.

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Microsoft SQL Server Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

Microsoft SQL Server Monitor Overview

Use the Microsoft SQL Server monitor to monitor the server performance metrics pages for SQL Servers 6.5, 7.1, 2000, 2005, 2008, and 2008 R2 on Windows NT systems. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate monitor instance for each Microsoft SQL Server you are running. The error and warning thresholds for the monitor can be set on one or more SQL Server performance statistics.

Note:

- SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various aspects of a Microsoft SQL Server 2005, 2008, and 2008 R2. For details, see "Microsoft SQL Server Solution Templates" in *Using SiteScope*.
- This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

For task details, see "How to Configure the Microsoft SQL Server Monitoring Environment" on page 365.

For user interface details, see "Microsoft SQL Server Monitor Settings" on page 367.

This section contains the following topics:

- "IPv6 Addressing Supported Protocols" on page 363
- "Microsoft SQL Server Topology" on page 364
- "Troubleshooting and Limitations" on page 364

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

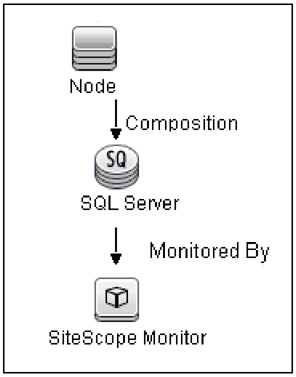
would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Microsoft SQL Server Topology

The Microsoft SQL Server monitor can identify the topology of the Microsoft SQL Servers being monitored. The monitor creates the following topology in BSM's RTSM.



For details on enabling topology reporting, see "How to Configure the Microsoft SQL Server Monitoring Environment" on page 365.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

Troubleshooting and Limitations

Problem: SiteScope is unable to retrieve instances and counters from a Microsoft SQL Server 2008 when using the WMI connection method.

Solution:

1. Configure the monitor to use the NetBIOS connection.
2. If this does not work, you can monitor Microsoft SQL Server 2008 using the Microsoft Windows Resources monitor.

Tasks

How to Configure the Microsoft SQL Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 365
- "Configure the monitor properties" on page 366
- "Enable topology reporting - optional" on page 366

1 Prerequisites

The following are requirements for using the Microsoft SQL Server monitor:

- JDBC drivers for connecting to the DB2 Database server. These can be found in your DB2 server installation directories. Copy the **db2jcc.jar** file to the **<SiteScope root directory>\java\lib\ext** folder.
- This monitor uses the Snapshot mirroring functionality supported by DB2. You must enable the Snapshot Mirror on your DB2 instance to retrieve counters. For details, refer to the relevant IBM DB2 documentation.

- The Microsoft SQL Server monitor uses performance counters to measure application server performance. SiteScopes running on Windows platforms need to be running under an account that has the necessary administrative security privileges to access performance counter data from remote servers. If the servers you want to monitor are in a different domain, are governed under a different policy, or require a unique login different than the account SiteScope is running under, then you must define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view. For SiteScopes installed on UNIX platforms, you only need to define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.
- The Remote Registry service must be running on the machine where the SQL Server is running if the SQL Server is running on Windows 2000.

2 Configure the monitor properties

Configure the Microsoft SQL Server monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Microsoft SQL Server Monitor Settings" on page 367.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

Reference

Microsoft SQL Server Monitor Settings

This monitor enables you to monitor the availability and performance of a Microsoft SQL Server on Windows NT systems.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the Microsoft SQL Server Monitoring Environment" on page 365 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft SQL Server Monitor Overview" on page 362

Microsoft SQL Server Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server where the Microsoft SQL Server you want to monitor is running. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed here. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.
SQL instance name	The Microsoft SQL server instance you want to monitor from the list of SQL instances running on the selected server. **Default value:** SQLServer (this value is displayed even if SiteScope is unable to get the instance list).

UI Element	Description
Counters	Displays the server performance counters you want to check with this monitor. All non-default instances are dynamically loaded and displayed in the drop-down box. Use the **Get Counters** button to select counters. **Note when working in template mode:** To update counters in template browsable monitors that need a target server, click the **Select measurement from** button and add the required server and counters. Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.

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Microsoft Windows Dial-up Monitor

This chapter includes:

Concepts

Reference

Concepts

Microsoft Windows Dial-up Monitor Overview

Use the Microsoft Windows Dial-up monitor to measure the availability and performance of your Internet applications from a dial-up user's perspective. The Microsoft Windows Dial-up monitor can also be used to monitor the availability and performance of remote access servers.

Note: This monitor is supported in SiteScopes that are running on Windows versions only.

If you are primarily interested in dial-up availability, then you can just have the Microsoft Windows Dial-up monitor try to connect, and if successful, run one or two low impact monitors to verify that the connection is operating properly. If you are more interested in the perspective of a dial-up user, then running a suite of monitors that represent typical user tasks gives you more complete assessment.

To set up the Remote Access Service on a Windows NT machine, go to the Network Control Panel, and add the service. At that time you also have the option of adding one or more modems as Remote Access modems. At least one of the modems has to have dial out capability for this monitor to work.

For details on configuring the monitor, see "Microsoft Windows Dial-up Monitor Settings" on page 375.

This section contains the following topics:

- "Status" on page 373
- "Scheduling the Monitor" on page 373
- "Troubleshooting and Limitations" on page 374

Status

Each time the Microsoft Windows Dial-up monitor runs, it returns a reading and status message and writes them in the monitoring log file. The reading is the current value returned by the monitor. For example, "5 of 5 monitors OK in 55 sec", or "The line was busy". The status is logged as either OK or warning.

For reports, the Microsoft Windows Dial-up Monitors saves the total time taken (to connect and run the monitors), the connect time (the time for the modem to establish a physical connection), the authorization time (the time after physical connection is established before the connection can be used), and the percentage of the monitors run that were OK.

Scheduling the Monitor

The Microsoft Windows Dial-up monitor stops other monitors from running while it is connected, so you should take into account the number and kinds of monitors that are running while the connection is established as well as the number of other monitors that are running. If SiteScope is running only Microsoft Windows Dial-up Monitors, then you can schedule them more frequently (every 5 or 10 minutes). However, if you are monitoring many other items, choose a large interval (hours), so that other monitoring is not disrupted.

Only one Microsoft Windows Dial-up monitor can run at a time, so if you have more than one Microsoft Windows Dial-up monitor, take that into account when scheduling the monitors.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the Microsoft Windows Dial-up monitor.

- The Microsoft Windows Dial-up monitor should not be used on a machine that is used for accessing resources outside of the local network. This is because the monitor uses Remote Access, which affects the entire machine's network connectivity when it establishes a connection. For example, if you are using a Web browser on the machine where SiteScope is running a Microsoft Windows Dial-up monitor, and the Microsoft Windows Dial-up monitor is connected, all the requests by the browser out to the Internet also use the dial-up connection. This affects the speed of the browser and the reading from the Microsoft Windows Dial-up monitor.
- The Microsoft Windows Dial-up monitor prevents the other SiteScope monitors (those not being run by this Dial-up monitor) from running while the dial-up connection is established (they are held up until the Microsoft Windows Dial-up monitor is completed).
- No two Microsoft Windows Dial-up Monitors can be run at the same time.
- The Microsoft Windows Dial-up monitor uses the dial-up connection only for requests outside of the local network. If you have monitors that access network resources on the local network, their readings are the same as if the Microsoft Windows Dial-up monitor was not used. However, monitors that access network resources outside the local network use the dial-up connection. For example, if you ran two Ping monitors in the Microsoft Windows Dial-up monitor, one of which was yourserver.com (on the local network), and the other of which was externalserver.com (on an external network), the yourserver.com Ping would be very fast, because it would use the LAN, while the externalserver.com Ping would take longer, because it would go through the dial-up connection.

Reference

Microsoft Windows Dial-up Monitor Settings

The Windows Dial-up monitor (available only on the Windows NT version of SiteScope) uses the Windows NT Remote Access Service to connect to an Internet Service Provider or Remote Access server and optionally runs a user-defined set of monitors. The monitor confirms that the dial-up connection can be established, and measures the performance of the connection and of the network services using the dial-up connection.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	This monitor cannot be copied to a template. It must be created directly in a template.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft Windows Dial-up Monitor Overview" on page 372

Microsoft Windows Dial-up Monitor Settings

User interface elements are described below:

UI Element	Description
Account Settings	
Phone number	Phone number for the dial-up account, adding any extra modem digits or pauses that are required. **Example:** 9,4432266 includes a "9," for getting an outside line. Insert a comma wherever you need a short pause.
Account user name	Login name for the dial-up account.
Account password	Password for the dial-up account.

UI Element	Description
Advanced Settings	
Timeout (seconds)	Timeout limits the total time that the Microsoft Windows Dial-up monitor takes to connect, authenticate, and run each of it is monitors. If the time ever exceeds this time, then the connection is hung up, and the monitor completes with a timeout error. **Default value:** 60 seconds
Monitor Settings	
Monitor(s) to run	Groups, monitors, or both, that you want to run while the dial-up connection is established. Monitors that are used by Microsoft Windows Dial-up Monitors should not be scheduled to run by themselves because some of their data would be through the dial-up connection, and some of their data would be through the local connection. Make sure that the **Frequency** box for these monitors is set to 0. For details, see "Monitor Run Settings" in *Using SiteScope*.

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Microsoft Windows Event Log Monitor

This chapter includes:

Concepts

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Microsoft Windows Event Log Monitor Overview

Use the Microsoft Windows Event Log monitor to monitor added entries in one of the Microsoft Windows Event Logs (System, Application, or Security). The Microsoft Windows Event Log monitor examines log entries made only after the time that the monitor is created. Each time the monitor runs thereafter, it examines only those entries added since the last time it ran. You can choose to filter out messages that are not important by using the boxes listed under Monitor Settings to specify values that must appear in the event entry for the entry to match.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

For details on configuring the monitor, see "Microsoft Windows Event Log Monitor Settings" on page 381.

This section contains the following topics:

➤ "Configuring SiteScope Alerts" on page 379

➤ "Status" on page 379

➤ "IPv6 Addressing Supported Protocols" on page 380

Configuring SiteScope Alerts

When setting up SiteScope alerts for Microsoft Windows Event Log Monitors that are set to alert **For each event matched**, it is most useful to select the NTEventLog template for the E-mail, Pager, SNMP, or Script alert. This alert template sends the alert with the event entry fields broken out. The type of SiteScope alert triggered depends on the type of the log event entry:

Event Log Entry Type	SiteScope Alert Type
Error	Error
Warning	Warning
Information	OK

Each time the Microsoft Windows Event Log monitor runs, it returns a reading and status message and writes them in the **<SiteScope root directory\logs\SiteScopeyyyy_mm_dd.log** file.

Status

The status for the Microsoft Windows Event Log monitor includes the number of entries examined, and the number of entries matched. If an interval is specified, the number of events in that interval is also displayed. Matched entries and interval entries can trigger alerts.

IPv6 Addressing Supported Protocols

This monitor supports the NetBIOS protocol when **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**).

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

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For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

Microsoft Windows Event Log Monitor Settings

The Microsoft Windows Event Log monitor enables you to monitor the Microsoft Windows Event Logs (System, Application, or Security) for added entries.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ The **Event Log Tool** is available when configuring this monitor to display portions of the Windows Event Log (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Event Log Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft Windows Event Log Monitor Overview" on page 378

Microsoft Windows Event Log Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server where the event log you want to monitor is running. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed here. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When configuring this monitor on SiteScopes running on UNIX versions: ➤ Only remote servers that have been configured with an **SSH** connection method and **SSH using preinstalled SiteScope remote Windows SSH files** is selected are displayed. For details, see "How to Configure Remote Windows Servers for SSH monitoring" on page 647. ➤ If you create a new remote server from the Monitor Settings panel, the **SSH using preinstalled SiteScope remote Windows SSH files** setting is automatically selected and cannot be cleared. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.

UI Element	Description
Log name	Select the event log to monitor. The list of event logs is automatically generated from the target server (from the registry for NetBIOS/SSH connections, and from WMI Classes for WMI connections). **Note:** When using a NetBIOS or WMI connection, only the IDs (names) are displayed for independent libraries. For example, if you install Microsoft Office Diagnostics, only ODiag is displayed as the log name. To display the whole name, manually add the log name to the **event_log_names.properties** file in <**SiteScope root directory**>**template.applications**. For example: ➤ ODiag=Microsoft Office Diagnostics ➤ OSession=Microsoft Office Sessions ➤ HardwareEvents=Hardware Events **Note**: You should only add names to **event_log_names.properties** that are different from the IDs, otherwise all names will be the same as IDs.
Event type	The event types to match. Select from the following event types: ➤ Any ➤ Audit Failure ➤ Audit Success ➤ Warning ➤ Error or warning ➤ Information
Run alerts	Method for running alerts: ➤ **For each event matched.** The monitor triggers alerts for every matching entry found regardless of the defined threshold settings and the monitor status (good, warning, or error). ➤ **Once, after all events have been checked.** The monitor counts up the number of matches and triggers alerts based on the warning and error threshold settings.

UI Element	Description
Source and ID match	The match string identifying the source of the event and the event ID in the form: <Event Source>:<Event ID>. **Example:** Print:20 matches event source named Print and event ID of 20. To match against all events from a specific source, enter just the event source name. **Example:** W3SVC To match an exact event ID from an event source, specify both. **Example:** Service Control Mar:7000 **Note:** You can click the **Open Tool** button to use the Regular Expression Test tool to check your regular expressions. For details, see "Regular Expression Tool" in *Using SiteScope*.

UI Element	Description
Source and ID do not match	The string identifying the source of the event and the event ID to NOT MATCH in the form: <Event Source>:<Event ID>. **Example:** Print:20 means an event source named Print and event ID of 20 must not be in the event to have a match. To not match all events from a particular source, specify just the source name. **Example:** W3SVC To not match an exact event ID from an event source, specify both. **Example:** Service Control Mar:7000 You can also use a regular expression for a more complex NOT MATCH. **Example:** ➤ to not match all Perflib sources from 200 to 299 use: /Perflib:2\d\d/ ➤ to not match all events from the Perflib source, use: Perflib:* **Note:** You can click the **Open Tool** button to use the Regular Expression Test tool to check your regular expressions. For details, see "Regular Expression Tool" in *Using SiteScope*.
Description match	Text string to match against the description text for the event entry. Thresholds that are defined as value/value 2/value3/value4 refer to the matches found in the event description. The description text is the same as the description that is displayed when viewing the detail of an event log entry in the Windows Event Viewer. **Note:** You can click the **Open Tool** button to use the Regular Expression Test tool to check your regular expressions. For details, see "Regular Expression Tool" in *Using SiteScope*.

UI Element	Description
Description does not match	Text string description that must not be in the event to have a match. The description text can be viewed in the detail view of the event log entry by using the Windows Event Viewer. **Note:** You can click the **Open Tool** button to use the Regular Expression Test tool to check your regular expressions. For details, see "Regular Expression Tool" in *Using SiteScope*.
Event category	Matches the category number of the event entry. Leaving this blank matches events with any category.
Event machine	Matches against the machine that added the entry to the log file. Leaving this blank matches events with any machine.
Interval (minutes)	Time period for which matching event log entries are totaled. This is useful when the case you are interested in is a quantity of events happening in a given time period. **Example:** If you wanted to detect a succession of service failures, 3 in the last 5 minutes, you would specify **5** minutes for the interval, and then change the **Error If** threshold to **matches in interval** >= **3**. **Note:** This field is not available when **For each event matched** is selected in the **Run alert** field.

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Microsoft Windows Media Player Monitor

This chapter includes:

Concepts

Reference

Concepts

Microsoft Windows Media Player Monitor Overview

Use the Microsoft Windows Media Player monitor to monitor availability and delivery quality parameters for media files and streaming data compatible with Windows Media Servers. This monitor supports monitoring Windows Media Player 7.x, 9.x, 10.x, 11.0, and 12.

You can monitor multiple parameters or counters with a single monitor instance. This enables you to report on delivery performance. Create a separate monitor instance for files or data streams that are representative of the content available from the site you want to monitor. The error and warning thresholds for the monitor can be set on one or more Windows Media Player performance statistics.

Note:

- This monitor is supported in SiteScopes that are running on Windows versions only.
- This monitor does not work with the 64-bit version of SiteScope, so if you plan to work with this monitor, it is recommended to install the SiteScope 32-bit version.
- You should monitor only video streams, not audio streams, with this monitor.

You must have an instance of Windows Media Player installed on the machine where SiteScope is running to use this monitor.

For a list of the Media Player performance parameters or counters you can check with the Microsoft Windows Media Player monitor, see "Performance Counters" on page 393.

For details on configuring the monitor, see "Microsoft Windows Media Player Monitor Settings" on page 391.

Reference

Microsoft Windows Media Player Monitor Settings

The Microsoft Windows Media Player monitor enables you to emulate a user playing media or streaming data from a Windows Media Server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor does not support the .asx or .mov formats. ➤ The **Microsoft Windows Media Player Tool** is available when configuring this monitor (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Microsoft Windows Media Player Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft Windows Media Player Monitor Overview" on page 390

Microsoft Windows Media Player Monitor Settings

User interface elements are described below:

UI Element	Description
URL	URL of the media file or streaming source you want to monitor. This should be the URL of the media file. **Example:** mms://<servername>/sample.asf for a unicast stream or http://<servername>/stationid.nsc for a multicast stream using a Windows Media Server multicast station program. **Note:** This monitor does not support the .asx or .mov formats.
Duration (milliseconds)	Playback duration that the monitor should use for the media file or streaming source. The duration value does not need to match the duration of the media contained in the file. If the media content of the file or source you are monitoring is less than the duration value selected for the monitor, the monitor plays the entire media content and reports the results, including the time required to play the media content. **Default value:** 15000 milliseconds
Counters	Media player performance parameters or counters to check with the Microsoft Windows Media Player monitor. For details on the available parameters or counters, see "Performance Counters" on page 393.

Performance Counters

The media player performance parameters or counters you can check with the Microsoft Windows Media Player monitor include:

UI Element	Description
Buffering count	Number of times the Player had to buffer incoming media data due to insufficient media content.
Buffering time	Time spent waiting for sufficient media data to continue playing the media clip.
Interrupts	Number of interruptions encountered while playing a media clip. This includes buffering and playback errors.
Packets lost	Number of lost packets not recovered (applicable to network playback).
Packets recovered	Number of lost packets successfully recovered (applicable to network playback).
Packet quality	Percentage ratio of packets received to total packets.
Ratio bandwidth	Ratio (as a percentage) of the actual bandwidth used to the recommended bandwidth. **Example:** If the recommended bandwidth is 100 bps and the actual bandwidth is 50 bps, the ratio bandwidth is 50%. If the recommended bandwidth is 50 bps and the actual bandwidth is 100 bps, the ratio bandwidth is 200%.
Recommended bandwidth	Recommended bandwidth in bits per second. When a .wmv file is opened in Media Player, the property **bitrate** is the recommended bandwidth. This bandwidth is embedded in the stream itself.
Recommended duration	Total duration of the media clip in seconds. This value is not effected by what was already played.
Sampling rate	Sampling rate in milliseconds, for collecting statistics.
Stream count	Packet count.
Stream max	Maximum number of packets.

UI Element	Description
Stream min	Minimum number of packets.
Stream rate	Packet rate indicating the speed at which the clip is played: 1 is the actual speed, 2 is twice the original speed, and so on.
Time quality	Percentage of stream samples received on time (no delays in reception).

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Microsoft Windows Media Server Monitor

This chapter includes:

Concepts

Reference

Concepts

Microsoft Windows Media Server Monitor Overview

Use the Microsoft Windows Media Server monitor to monitor the server performance parameters for Microsoft Windows Media Servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning.

Create a separate monitor instance for each Windows Media Server you are running. The error and warning thresholds for the monitor can be set on one or more Windows Media server performance statistics.

Note:

- This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.
- This monitor supports all versions of Microsoft Windows Media Server through perfmon.
- By default, SiteScope monitors the Microsoft Windows Media Server default services, **Windows Media Station Service** and **Windows Media Unicast Service**. To monitor other services, add the service names (separated by commas) to the **Microsoft Windows Media Server monitor service names** box in **Preferences** > **Infrastructure Preferences** > **Monitor Settings**.

For details on configuring the monitor, see "Microsoft Windows Media Server Monitor Settings" on page 399.

This section also includes:

- "Setup Requirements and User Permissions" on page 397
- "IPv6 Addressing Supported Protocols" on page 397

Setup Requirements and User Permissions

The Microsoft Windows Media Server monitor uses performance counters to measure application server performance. SiteScopes running on Windows platforms need to be running under an account that has the necessary administrative security privileges to access performance counter data from remote servers. If the servers you want to monitor are in a different domain, are governed under a different policy, or require a unique login different than the account SiteScope is running under, then you must define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view. For SiteScopes installed on UNIX platforms, you only need to define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

Microsoft Windows Media Server Monitor Settings

The Microsoft Windows Media Server monitor enables you to monitor the availability of a Microsoft Windows Media server on Windows NT systems.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements and User Permissions" on page 397. ➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft Windows Media Server Monitor Overview" on page 396

Microsoft Windows Media Server Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server where the Windows Media Server you want to monitor is running. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed here. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.
Counters	Displays the server performance counters you want to check with this monitor. Use the **Get Counters** button to select counters. **Note when working in template mode:** To update counters in template browsable monitors that need a target server, click the **Select measurement from** button and add the required server and counters. Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.

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Microsoft Windows Performance Counter Monitor

This chapter includes:

Concepts

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Concepts

Microsoft Windows Performance Counter Monitor Overview

Use the Microsoft Windows Performance Counter monitor to monitor the values of any Windows performance statistic running on Windows XP Pro, Windows NT Server 4.0, and Windows Server 2000/2003/2008. Each time the Microsoft Windows Performance Counter monitor runs, it returns a reading and a status message and writes them in the monitoring log file. The status is displayed in the group details table for the monitor which represents the current value returned by this monitor. The status is logged as either good, warning, or error. An error occurs if the counter could not be read, or if measurements are within the error threshold range.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

For details on configuring the monitor, see "Microsoft Windows Performance Counter Monitor Settings" on page 405.

Reference

Microsoft Windows Performance Counter Monitor Settings

The Microsoft Windows Performance Counter monitor enables you to track the values of any Windows performance statistic. These are the same statistics that can be viewed using the Microsoft Management Console under Windows.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ The **Performance Counters Tool** is available when configuring this monitor to check performance counters on a specific machine in a Windows network (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Performance Counters Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft Windows Performance Counter Monitor Overview" on page 404

Windows Performance Counter Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server on which you want to monitor Windows performance statistics. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. When using a settings file from the Microsoft Windows Performance Counter monitor, all counters are measured on the server specified by this entry. **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.

UI Element	Description
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.
PerfMon chart file	The Microsoft Windows Performance Counter monitor setting file you want to use for your settings. These files can be saved in the Microsoft Management Console (perfmon) and have either a .pmc or .pmw extension. On Windows 2000 Platform these can be saved using the .htm format. The files in this list all reside in the <**SiteScope root directory**>\ **templates.perfmon** directory. There are a number of default files in the standard SiteScope distribution. **Note:** If you make your own settings file, it must be placed in the <**SiteScope root directory**>\ **templates.perfmon** directory. You can optionally specify the settings directly for a single counter in the **Counter** box below. If you create your own .pmc file, any server specified in the .pmc file is ignored by SiteScope. The queried server is the one in the **Server** box (see above). Therefore, do not include identical counters directed at different servers in a single .pmc file. One .pmc file can be used by more than one Microsoft Management Console instance, but any single instance of the Microsoft Management Console only queries one server regardless of the servers assigned in the .pmc. If you have specified the settings directly in the **Object** box below, this list displays **(Custom object)**.
Object	Name of the high level item that is being measured, such as Processor or Server. It is the same as the Object in the Microsoft Management Console. The object name is case sensitive. If you are using a Performance monitor file for counter settings, leave this item blank.

UI Element	Description
Counter	The specific aspect of the Object that is measured, such as Interrupts/sec. It is the same as the Counter in the Microsoft Windows Performance monitor application. The counter name is case sensitive. If you are using a Microsoft Windows Performance monitor file for counter settings, leave this item blank.
Units	The units to be displayed with the counter's values to make them more readable.
Instance	The instance in the Microsoft Windows Performance monitor application. The instance name is case sensitive. Some counters can have multiple instances, for example, on machines with two CPUs, there are two instances of the Processor object. If you are using a Microsoft Windows Performance monitor file for counter settings, leave this item blank. If you leave this blank and there are multiple instances, the first instance in the list is selected.
Scale	If you want the raw performance counter value scaled to make it more readable, select one of the predefined choices using the **Commonly used values** list, or enter a numeric value in the **Other values** box. The raw value of the counter is multiplied by the scale to determine the value of the monitor. The kilobytes option divides the raw value by 1,024 (the number of bytes in 1 K), and the megabytes option divides the raw value by 1,048,576 (the number of bytes in 1 MB). If there are multiple counters specified by using a Microsoft Windows Performance monitor file, this scaling applies to all counters. **Default value:** 1

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Microsoft Windows Resources Monitor

This chapter includes:

Concepts

Microsoft Windows Resources Monitor Overview

Use the Microsoft Windows Resources monitor to monitor the server performance statistics from remote Windows servers running on Windows XP Pro, Windows NT Server 4.0, Windows Server 2000, 2003 and 2008, 2008 R2, Windows Vista, and Windows 7. This enables you to watch server loading for performance, availability, and capacity planning.

You can monitor multiple parameters or counters on a single, remote server with each monitor instance. Create one or more Microsoft Windows Resources monitor instances for each remote server in your environment. The error and warning thresholds for the monitor can be set on one or more performance statistics.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

For task details, see "How to Configure the Microsoft Windows Resources Monitoring Environment" on page 414. For user interface details, see "Microsoft Windows Resources Monitor Settings" on page 418.

This section contains the following topics:

- "Support for IPv6 Addresses" on page 411
- "Server-Centric Report" on page 412
- "Configuring the Monitor to Run on Windows 2003 as a Non-Administrator User" on page 413
- "Troubleshooting and Limitations" on page 413

Support for IPv6 Addresses

This monitor supports the IPv6 protocol. If you want your environment to resolve host names to IPv6, you can select the **Prefer IP version 6 addresses** option in SiteScope Infrastructure Settings (**Preferences** > **Infrastructure Preferences** > **Server Setting**). If this option is selected, whenever a host name is specified for a remote server and the name is resolved to both IPv4 and IPv6, the IPv6 address is used.

When using IPv6, the following protocols are supported:

- WMI (from SiteScope installed on Windows platforms only)
- NetBios (from SiteScope installed on Windows platforms only)

Note:

- When using the **Direct registry queries** collection method with a NetBios connection, counters are not displayed in the Available Counters table. However, you can still use monitoring process if you modify the counters using the IPv4 protocol, or copy the counters from an already configured monitor (copy the monitor), and then change back to the IPv6 address or host.
- When using the **Microsoft Windows PDH Library** collection method with a NetBios connection, IPv6 does not work if the name of the monitored server is specified as a literal IPv6 address.
- When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

  1. Replacing any colon (":") characters with a dash ("-") character.
  2. Appending the text ".ipv6-literal.net" to the IP address.

  For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d
  would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

  Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Server-Centric Report

You can create a Server-Centric Report for the Windows server by clicking the server name in the Target column of the row corresponding to the Microsoft Windows Resources monitor in the SiteScope Dashboard. For details, see "Server-Centric Report" in *Using SiteScope*.

Configuring the Monitor to Run on Windows 2003 as a Non-Administrator User

For the Microsoft Windows Resources monitor to monitor a Windows 2003 machine if the SiteScope user account is not in the Administrators group, you must either:

- use the same domain account on both the SiteScope and the remote monitored system, or
- use local accounts on both systems, provided that the user accounts have the same name and password and are always synchronized on both systems. You cannot use **Local System** or other similar system predefined accounts that do not enable you to specify a password for them.

In addition, you must configure the user account settings on SiteScope and the remote monitored machine to log on using the selected non-administrator user account (domain or local account). You can then use a standard Windows perfmon utility to verify that it works. For details on how to perform this task, see "How to Configure the Microsoft Windows Resources Monitoring Environment" on page 414.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the Microsoft Windows Resources monitor.

- Getting invalid CPU value error message in <**SiteScope root directory**>**\logs\RunMonitor.log** file when using perfmon monitors on VMware host servers. **Workaround:** Use the VMWare Performance monitor to measure CPU on VMWare host servers.
- If you encounter "Error: Object Processor not found on host" or "Error: Failed to collect the data" when running the Microsoft Windows Resources monitor, change the collection method to the **Direct registry queries method** option.

Tasks

How to Configure the Microsoft Windows Resources Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 414
- "Configure user account settings on SiteScope" on page 415
- "Configure user account settings on the remote monitored machine:" on page 415
- "Verify that the non-administrator user account works" on page 417
- "Configure the monitor properties" on page 417

1 Prerequisites

SiteScopes running on Windows platforms need to be running under an account that has the necessary administrative security privileges to access performance counter data from remote servers. If the servers you want to monitor are in a different domain, are governed under a different policy, or require a unique login different than the account SiteScope is running under, then you must define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.

For SiteScopes installed on UNIX platforms, you only need to define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.

2 Configure user account settings on SiteScope

The user account settings on SiteScope must be configured to log on using the selected non-administrator user account.

a In the **Services** control panel, right-click the **SiteScope** service, and then click **Properties**. The SiteScope Properties dialog box opens.

b Click the **Log On** tab, and configure the user account to log on using the selected non-administrator user account (domain or local account).

3 Configure user account settings on the remote monitored machine:

The user account settings on the monitored remote server must be configured to log on using the selected non-administrator user account.

a Check that you can access the remote machine. Perform a ping test and check DNS resolves the server name with its IP address.

We recommend that you check there are no other network-related problems by using the selected user account to map a network drive of the monitored machine to the drive used on the SiteScope machine.

b In the **Services** control panel, check that the **RemoteRegistry** service is running and that the selected user account has access to it. You can use the following command from the Windows 2003 Resource Kit (run it under an administrator account):

```
subinacl /service RemoteRegistry /grant=tester=f
```

This command grants Full Access to the RemoteRegistry service for the local user tester.

c Add the domain or local user account to be used into the **Performance Monitor Users** and **Performance Log Users** local user groups. Make sure that these groups have at least read permissions for the following registry key (and all its subkeys):

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Perflib]

Note: To check read permissions, select **Start** > **Run**, and type **Regedt32.exe**. In the Registry Editor, select the registry key, click **Security**, and select **Permissions**. In the Name pane, select the user that SiteScope uses to access the remote machine, and make sure that the **Allow** check box for **Read** is selected in the **Permissions** pane.

d Make sure that the domain or local user account to be used has at least read permissions on the following objects:

- Registry key: [HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SecurePipeServers\winreg]
- Files in **%WINDIR%\System32\perf?XXX.dat**, where **XXX** is the basic language ID for the system. For example, 009 is the ID for the English version.

Note: If the required Performance Counter Library Values are missing or are corrupted, follow the instructions in Microsoft knowledge base article KB300956 (http://support.microsoft.com/kb/300956/en-us) to manually rebuild them.

4 Verify that the non-administrator user account works

After configuring the user account settings, verify that they work.

a Launch a standard Windows perfmon utility. You can either:

- ➤ launch it interactively when logged on to the SiteScope machine with the selected user account by typing perfmon, or
- ➤ launch it when logged on to the SiteScope machine with some other account through the RunAs command, which enables you to launch commands under different user account. Enter the following command:

```
runas /env /netonly /user:tester "mmc.exe perfmon.msc"
```

Then enter the password (in this example, for the tester account), and the command is run under the tester user account.

b After the Performance window opens, right-click in the right graph area and select **Add Counters**. The Add Counters dialog box opens.

c Select **Choose counters from computer** and enter the remote monitored machine name or its IP address in the box.

Press the TAB key. If the perfmon utility can connect to the remote machine, the Performance object box is filled in with the performance objects that can be monitored from the remote machine.

5 Configure the monitor properties

Configure the Microsoft Windows Resources monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Microsoft Windows Resources Monitor Settings" on page 418.

Note: When monitoring Windows servers configured using SSH, you must use the **Direct registry queries** option for the **Collection method** in the Monitor Settings panel when you configure the monitor.

Reference

Microsoft Windows Resources Monitor Settings

The Microsoft Windows Resources monitor enables you to monitor system performance data using the Performance Data Helper (PDH) interface on Windows systems.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ The performance parameters or counters available for the Microsoft Windows Resources monitor vary depending on what operating system options and applications are running on the remote server. ➤ When configuring this monitor in template mode: ➤ You can use regular expressions to define counters. ➤ The **Add Remote Server** button is not displayed. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the Microsoft Windows Resources Monitoring Environment" on page 414 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft Windows Resources Monitor Overview" on page 410

Microsoft Windows Resources Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server that you want to monitor. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed here. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When configuring this monitor on SiteScopes running on UNIX versions, only remote servers that have been configured with an **SSH** connection method are displayed. For details, see "How to Configure Remote Windows Servers for SSH monitoring" on page 647. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)
Server to get measurements from	(Available in template mode only) Name of any SiteScope remote server from which you want to get counters (it must be accessible in the domain using NETBIOS). Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.

UI Element	Description
Collection method	Select the collection method option. The Available Counters list is dynamically updated according to the collection method selected. This enables you to see the counters when creating or editing the monitor instead of when running the monitor: ➤ **Microsoft Windows PDH Library**. This is the default and most common option. ➤ **Use global setting**. Instructs the monitor to use the value configured in **Default collection method for Microsoft Windows Resources monitor** in **Preferences** > **Infrastructure Preferences** > **General Settings**. The default value for this setting is PDH. ➤ **Direct registry queries**. Use this option if Windows PDH library is not accessible or if the monitor is having trouble using the Windows PDH library. You must use this option when monitoring Windows servers configured using SSH. **Note:** The collection method option is available only when the target remote server uses the NetBIOS protocol (not SSH or WMI).
Enable Server-Centric Report	Enables collecting data specifically for generating the Server-Centric Report. The report displays various measurements for the server being monitored. For details, see "Generating a Server-Centric Report" in *Using SiteScope*.

UI Element	Description
Available Counters	Displays the available measurements for this monitor. For each measurement, select the **Object**, **Instances** and **Counters** you want to check with the Microsoft Windows Resources monitor, and click the **Add Selected Counters** ➡ button. The selected measurements are moved to the Selected Counters list.
Selected Counters	Displays the measurements currently selected for this monitor, and the total number of selected counters. To remove measurements selected for monitoring, select the required measurements, and click the **Remove Selected Counters** ⬅ button. The measurements are moved to the Available Counters list.

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Microsoft Windows Services State Monitor

This chapter includes:

Concepts

Reference

Concepts

Microsoft Windows Services State Monitor Overview

Use the Microsoft Windows Services State monitor to monitor the services installed and running on remote Windows servers running on Windows XP Pro, Windows NT Server 4.0, and Windows Server 2000, 2003, 2008, and 2008 R2. By default, the monitor returns a list of all of the services that are set to be run automatically on the remote server. You can filter the list of services returned by the monitor using regular expressions. The monitor displays the number of services running and related statistics along with a summary listing of the services installed on the remote server.

Note:

- This monitor is also supported in SiteScopes running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.
- The Microsoft Windows Services State monitor only retrieves a list of installed services. It does not query the list of processes that may be running on the remote machine (use the Service monitor for this).

To use this monitor to create event alerts, configure alert definitions associated with this monitor to alert **Once, after the condition has occurred exactly 1 times**. This is because the Microsoft Windows Services State monitor only signals a change in state for services relative to the previous run of the monitor. For example, if the monitor is set to signal an error if a service has changed from running to not running, the monitor only signals an error status for one monitor run cycle. The number of services running and not running is reset for each monitor run and this number is used for comparison with the next monitor run.

For details on configuring the monitor, see "Microsoft Windows Services State Monitor Settings" on page 425.

Reference

Microsoft Windows Services State Monitor Settings

The Microsoft Windows Services State monitor enables you to monitor a list of services running on Windows systems and report changes in the number of services that are running and list the services that changed state.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Microsoft Windows Services State Monitor Overview" on page 424

Microsoft Windows Services State Monitor Settings

User interface elements are described below:

UI Element	Description
Server	The name of the server you want to monitor. Select a server from the server list (only those remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed in the server list. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When configuring this monitor on SiteScopes running on UNIX versions: ➤ Only remote servers that have been configured with an **SSH** connection method and **SSH using preinstalled SiteScope remote Windows SSH files** is selected are displayed. For details, see "How to Configure Remote Windows Servers for SSH monitoring" on page 647. ➤ If you create a new remote server from the Monitor Settings panel, the **SSH using preinstalled SiteScope remote Windows SSH files** setting is automatically selected and cannot be cleared. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add New Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.
Services to include	Optional regular expression to filter the list of services returned by the monitor. When you use a regular expression to filter the list of services, the monitor calculates changes in state (that is, running or not running) based only on the services matched by the regular expression. **Default value:** /(.*)/ (All of the services detected on the remote machine) **Examples:** /.*Network.*/ includes all services that contain the word Network.

UI Element	Description
Services to ignore	Optional regular expression to filter the list of services matched by the expression used in the **Services to include** setting. When you use a **Services to ignore** regular expression to filter the list of **Services to include**, the monitor calculates changes in state (that is, running or not running) based only on the services matched by the **Services to ignore** regular expression. **Examples:** /.*Remote.*/ ignores all services that contain the word Remote (the services that are ignored are listed in the **Services Deleted** field).
Include driver services	Includes all low-level driver services in the monitor. This generally increases the size of the list. You use the **Services to include** and **Service to ignore** options to filter the list of services returned using this option.

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Multi Log File Monitor

This chapter includes:

Concepts

Reference

Concepts

Multi Log File Monitor Overview

Note: This monitor is available only on a SiteScope System Health installation.

The Multi Log File monitor performs the same functionality as the Log File monitor, but also enables you to run the monitor on all files in a given directory. You specify the directory in the **Log File directory** field in the New Multi Log Monitor dialog box.

For details on configuring the monitor, see "Multi Log Monitor Settings" on page 431.

Reference

Multi Log Monitor Settings

The Multi Log monitor enables you to check for specific entries added to a log file by looking for entries containing a text phrase or a regular expression.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	This monitor is available only when SiteScope is configured with System Health.
Relevant tasks	"How to Deploy a Monitor" on page 414
See also	➤ "Multi Log File Monitor Overview" on page 430

Multi Log Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server where the files you want to monitor are located.
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Remote Server dialog box, enabling you to select the type of remote you want to add (Windows or UNIX), and enter the configuration details. For details on the Microsoft Windows Remote Servers user interface, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. For details on the UNIX Remote Servers user interface, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.

UI Element	Description
Log file directory	Path to the log file you want to monitor. The monitor runs on all files in the directory. ➤ For reading log files on remote UNIX machines, the path must be relative to the home directory of the UNIX user account being used to log into the remote machine. ➤ For reading log files on remote Windows NT/2000 servers using the NetBIOS method, use UNC to specify the path to the remote log file. **Example:** \\remoteserver\sharedfolder\filename.log ➤ For reading log files on remote Windows NT/2000 servers using the SSH method, specify the local path of the remote log file on the remote machine. **Example:** C:\Windows\System32\filename.log You must also select the corresponding remote Windows SSH server in the **Servers** box. For details on configuring a remote Windows server for SSH, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*. You can also monitor files local to the server where SiteScope is running. **Example:** C:\application\appLogs\access.log Optionally, you can use special date and time regular expression variables to match log file names that include date and time information. For example, you can use a syntax of s/ex$shortYear$$0month$$0day$.log/ to match a current date-coded log file. For details on using regular expressions, refer to "SiteScope Date Variables" in *Using SiteScope*.

UI Element	Description
Content match	Text to look for in the log entries. You can also use a regular expression in this entry to match text patterns. Unlike the content match function of other SiteScope monitors, the Log File monitor content match is run repeatedly against the most recent content of the target log file until all matches are found. This means the monitor not only reports if the match was found but also how many times the matched pattern was found. To match text that includes more than one line of text, add an s search modifier to the end of the regular expression. For details, see "Using Regular Expressions" in *Using SiteScope*. You can also use the Regular Expression Test tool to check your regular expressions. For details, see "Regular Expression Tool" in *Using SiteScope*. **Note:** If you enter more than four content match values, when you create a report by clicking the monitor title, the report includes only the first four values.
File name match	File name to look for in the log entries. You can also use a regular expression in this entry to match text patterns.
Search from start	Searches for the specified content from the beginning of the directory. **Default value:** Cleared
Match value labels	Use to enter labels for the matched values found in the target log file. The match value labels are used as variables to access retained values from the **Content match** expression for use with the monitor threshold settings. Separate multiple labels with a comma (,). The labels are used to represent any retained values from the **Content match** regular expression in the parameters available for the status threshold settings (Error if, Warning if, and Good if). These labels are also displayed as the text labels in graphs generated for the retained values in management reports for this monitor. **Note:** If you enter more than four match values, when you create a report by clicking the monitor title, the report includes only the first four values.

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Network Bandwidth Monitor

This chapter includes:

Concepts

Reference

Concepts

Network Bandwidth Monitor Overview

Use the Network Bandwidth monitor to monitor SNMP-enabled network appliances such as routers and switches. The Network Bandwidth monitor operates like many other browsable monitors to gather information from a source and enable the user to choose which items in the tree it should monitor. It works by connecting to the specified network component and returning a list of interfaces.

The MIB files in <**SiteScope root directory**>**\templates.mib** are used to create a browsable tree that contains names and descriptions of the objects found during the traversal. Note that an object may or may not be displayed with a textual name and description, depending on the MIBs available in <**SiteScope root directory**>**\templates.mib**. SiteScope does not display objects for user selection when it has no knowledge of how to display those objects. For example, a plain OctetString may contain binary or ascii data, but SiteScope has no way to decode and display this data correctly without more information.

For details on configuring the monitor, see "Network Bandwidth Monitor Settings" on page 437.

Performing Sanity Checks

By default, SiteScope performs a sanity check for every run of the monitor. This checks that the values returned by the monitor are in the valid range. You can also choose to disable these sanity checks.

To disable the sanity checks, clear the **Network Bandwidth monitor sanity check** box in the Infrastructure Settings Preferences page (**Preferences** > **Infrastructure Settings Preferences** > **Monitor Settings**).

Reference

Network Bandwidth Monitor Settings

This monitor enables you to monitor SNMP-enabled network appliances such as routers and switches. The error and warning thresholds for the monitor can be set on one or more different objects. This monitor type also provides a Real-time metrics report, available as a link in the More column on the Group Detail Page.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ When working in template mode, the monitor's non-default thresholds are not copied properly to a template. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Network Bandwidth Monitor Overview" on page 436

Network Bandwidth Monitor Settings

User interface elements are described below:

UI Element	Description
SNMP Connection Settings	
Server	Name of the server you want to monitor.
SNMP version	Version of SNMP to use when connecting. SiteScope supports SNMP versions 1, 2, and 3. Selecting V3 enables you to enter V3 settings in the SNMP V3 settings panel. **Default value:** V1
Community	Community string (valid only for version 1 or 2 connections). **Default value:** public
Timeout (seconds)	Amount of time, in seconds, that SiteScope should wait for all SNMP requests (including retries) to complete. **Default value:** 5 seconds
Retries	Number of times each SNMP GET request should be retried before SiteScope considers the request to have failed. **Default value:** 1
Port	Port to use when requesting data from the SNMP agent. **Default value:** 161
Starting OID	Use when selecting counters for this monitor. When the monitor attempts to retrieve the SNMP agent's tree, it starts with the OID value that is entered here. You should edit this box only when attempting to retrieve values from an application that does not handle OIDs starting with 1. If the default value did not enable retrieving any counters, then you may have to enter a different value. **Default value:** 1

UI Element	Description
V3 SNMP Settings (This panel is enabled only if V3 is selected in the SNMP version field)	
SNMP V3 authentication type	The type of authentication to use for version 3 connections. **Default value:** MD5
SNMP V3 user name	User name for version 3 connections.
SNMP V3 authentication password	Authentication password to use for version 3 connections.
SNMP V3 privacy password	Privacy password if DES privacy encryption is desired for version 3 connections. Leave blank if you do not want privacy.
SNMP V3 context engine ID	Hexadecimal string representing the Context Engine ID to use for this connection.
SNMP V3 context name	Context Name to use for this connection.

UI Element	Description
Network Counters	
Counters	Displays the server performance counters you want to check with this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note:** ➤ The counters displayed are those received during the timeout period, and may not include all the counters available on the server. Specifying a longer timeout in the Timeout (seconds) field in the SNMP Connection Settings panel may result in receiving more counters. ➤ The total time for receiving the counters may be longer than the timeout specified, due to additional processing time not part of the request/response period. ➤ Due to third-party counter restrictions, the total number of counters that can be monitored is limited to 32.
Advanced Network Settings	
Device type	Optional device type for device specific monitoring. By specifying a device type, you enable the Network Bandwidth monitor to watch certain device-specific metrics. For information about controlling the metrics associated with these device types and on adding new device types, see the section entitled Device Specific Metrics Config File. **Default value:** Do not monitor device-specific metrics

UI Element	Description
Duplex or half-duplex	Duplex state (**Half-duplex** or **Full-duplex**) to use when calculating percent bandwidth utilized for all selected interfaces on this device. **Default value:** Full-duplex
Interface index	Metrics for network interfaces on an SNMP-enabled device are presented as a table of management information (the ifTable). Each row corresponds to a different interface. There is no requirement that the mappings from interface-to-row in this table remain constant across device reboots. The Interface Index parameter may help prevent the interfaces SiteScope is monitoring from becoming confused after a device restarts. The three possible options are: ➤ **Indexed by interface name.** The ifDescr field of the ifTable is used to maintain monitoring consistency across device reboots. ➤ **Indexed by physical address.** The ifPhysAddr field of the ifTable is used to maintain monitoring consistency across device reboots. ➤ **Indexed by ifTable row number.** SiteScope assumes that the interfaces remain in the same row in the ifTable across device reboots. **Note:** Some devices (for example, Cisco) may have a configuration option to not jumble the position of interfaces in the ifTable during reboot. This may be the safest option, as not all interfaces may always have a unique ifDescr, and not all interfaces may have an ifPhysAddr (loopback interfaces do not typically have a physical address). **Default value:** Indexed by ifTable row number.
Show bytes in/out	Displays a graph for bytes in/out along with the percent bandwidth utilized on the Real-Time Metrics page. **Default value:** Not selected

UI Element	Description
Real-Time data vertical axis	Maximum value on the vertical axis for real-time graphs (leave blank to have this automatically calculated by SiteScope).
Real-Time data time window (hours)	Number of hours for which real-time graph data should be stored. **Default value:** 24 hours

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News Monitor

This chapter includes:

Concepts

Reference

Concepts

News Monitor Overview

Use the News monitor to regularly monitor news groups on News servers. This enables you to manage the number of articles that can queue up, and delete them before they cause disk space problems.

For details on configuring the monitor, see "News Monitor Settings" on page 446.

Status

Each time the News monitor runs, it returns a status message and writes it in the monitoring log file. It also writes the total time it takes to receive a response from the news server, and the number of articles available for each of the specified news groups.

The reading is the current value of the monitor. The possible values for the News monitor are:

- OK.
- unknown host name.
- unable to reach server.
- unable to connect to server.
- timed out reading.
- <news group> not found. The given news group was not found on the news server.
- permission denied for connection. The connection could not be made, probably because the news server was configured to enable connections from a limited range of addresses.

- login expected. The news server expected a user name and password, but none were provided. In this case, enter a user name and password under the Monitor Settings section of the monitor.
- login failed, unauthorized. The user name and password were not accepted by the news server.

The status is logged as either **good** or **error**. An error status is returned if the current value of the monitor is anything other than **good**.

Reference

News Monitor Settings

The News monitor verifies that a news server can be connected to, and is responding. It also measures how long it takes to make a connection, and how many articles are currently in the specified news groups.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	The **News Server Tool** is available when configuring this monitor to access a news server and view the NNTP interaction between SiteScope and the news server (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "News Server Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "News Monitor Overview" on page 444

News Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
News server	IP address or the name of the news server that you want to monitor. **Example:** 206.168.191.21 or news.thiscompany.com. If the port is not the standard news port, add the port after the server with a colon. **Example:** news.thiscompany.com:7777

UI Element	Description
News groups	News groups to be checked, separated by commas. Each of these news groups are checked for the current number of articles available in that news group. The reading of the monitor is the sum of articles available for each of the specified news groups.
User name	User name if your News server requires authorization.
Password	Password if your News server requires authorization.
Advanced Settings	
Connect from	Name or IP address of the server that connects to the News monitor.
Timeout (seconds)	Amount of time, in seconds, that the News monitor should wait for all of news transactions to complete before timing-out. Once this time period passes, the News monitor logs an error and reports an error status. **Default value:** 60 seconds

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Oracle 10g Application Server Monitor

This chapter includes:

Concepts

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Concepts

Oracle 10g Application Server Monitor Overview

Use the Oracle 10g Application Server monitor to monitor the server performance data for Oracle 10g application servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning.

Create a separate monitor instance for each Oracle 10g Application Server in your environment. The error and warning thresholds for the monitor can be set on one or more Oracle 10g server performance statistics.

Note: By default, the Oracle 10g metrics servlet is visible only to the local host. To enable monitoring the Oracle 10g Application Server, the servlet must be accessible from other IP addresses. You must edit the **dms.conf** file in the **<Oracle 10g installation path>infra/Apache/Apache/conf** directory. For details on editing the file and making this change, refer to the Oracle 10g Application Server documentation. Once configured properly, you should be able to see the following URL: **http://<Oracle 10g machine URL>:7201/dmsoc4j/Spy?format=xml**.

For details on configuring the monitor, see "Oracle 10g Application Server Monitor Settings" on page 451.

Reference

Oracle 10g Application Server Monitor Settings

The Oracle 10g Application Server monitor enables you to monitor the availability and performance statistics of an Oracle 10g Application Server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Oracle 10g Application Server Monitor Overview" on page 450

Oracle 10g Application Server Monitor Settings

User interface elements are described below:

UI Element	Description
Authorization user name	User name to access the server if required.
Authorization password	Password to access the server if required.
Proxy server	Domain name and port of an HTTP Proxy Server if a proxy server is used to access the server.
Proxy server user name	Proxy server user name if the proxy server requires a name and password to access the server. Your proxy server must support Proxy-Authenticate for these options to function.

UI Element	Description
Proxy server password	Proxy server password if the proxy server requires a name and password to access the server. Your proxy server must support Proxy-Authenticate for these options to function.
Host name	Server administration URL for the server you want to monitor.
Metric type	The type of metrics to monitor. Options are App Server (OC4J) and Web Server (DMS).
Port	Server port for the server you want to monitor. **Default value:** 7201 (configured in the **dms.conf** file)
Secure server	Select to use a secure server.
Timeout (seconds)	Amount of time, in seconds, that the monitor should wait for a response from the server before timing-out. Once this time period passes, the monitor logs an error and reports an error status. **Default value:** 60 seconds
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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Oracle 9i Application Server Monitor

This chapter includes:

Concepts

Reference

Concepts

Oracle 9i Application Server Monitor Overview

Use the Oracle 9i Application Server monitor to monitor the server performance data for Oracle 9i servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning.

Create a separate monitor instance for each Oracle 9i Application server in your environment. The error and warning thresholds for the monitor can be set on one or more Oracle 9i server performance statistics.

Note: You must enable Web caching on the Oracle 9i Application Server to use the Oracle 9i Application Server monitor.

For details on configuring the monitor, see "Oracle 9i Application Server Monitor Settings" on page 455.

Reference

Oracle 9i Application Server Monitor Settings

The Oracle 9i Application Server monitor enables you to monitor the availability and performance statistics of a Oracle 9i Application Server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box. ➤ The **URL Tool** is available when configuring this monitor to request a URL from a server, print the returned data, and test network routing (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "URL Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Oracle 9i Application Server Monitor Overview" on page 454

Oracle 9i Application Server Monitor Settings

User interface elements are described below:

UI Element	Description
URL	Server administration URL for the server you want to monitor. The URL is usually in the format: http://server:port/webcacheadmin?SCREEN_ID=CGA.Site.Stats&ACTION=Show.
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.
Authorization user name	User name if the server you want to monitor requires a name and password for access.
Authorization password	password if the server you want to monitor requires a name and password for access.
HTTP Proxy	Domain name and port of an HTTP Proxy Server. if a proxy server is used to access the server.
Proxy user name	Proxy server user name if the proxy server requires a name and password to access the server. Technical note: your proxy server must support Proxy-Authenticate for these options to function.
Proxy password	Proxy server password if the proxy server requires a name and password to access the server. Technical note: your proxy server must support Proxy-Authenticate for these options to function.
Timeout (seconds)	Amount of time, in seconds, that the monitor should wait for a response from the server before timing-out. Once this time period passes, the monitor logs an error and reports an error status.

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Oracle Database Monitor

This chapter includes:

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Tasks

Reference

Concepts

Oracle Database Monitor Overview

Use the Oracle Database monitor to monitor the server performance statistics from Oracle Database 8i, 9i, 10g, 11i, and 11g R2 (11.2.0.1) servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning.

Create a separate Oracle Database monitor instance for each Oracle database server in your environment. The error and warning thresholds for the monitor can be set on one or more Oracle server performance statistics.

Note: SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various aspects of an Oracle database server. For details, see "Oracle Database Solution Template" in *Using SiteScope*.

For task details, see "How to Configure the Oracle Database Monitoring Environment" on page 461.

For user interface details, see "Oracle Database Monitor Settings" on page 464.

This section contains the following topics:

- "IPv6 Addressing Supported Protocols" on page 459
- "Oracle Database Topology" on page 459
- "Troubleshooting and Limitations" on page 460

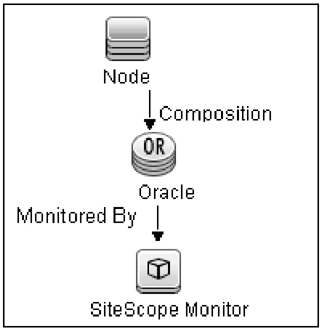
IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the TCP (JDBC) protocol. Support for IPv6 might also depend on the JDBC driver being used.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Oracle Database Topology

The Oracle Database monitor can identify the topology of the Oracle databases being monitored. The monitor creates the following topology in BSM's RTSM.



For details on enabling topology reporting, see "How to Configure the Oracle Database Monitoring Environment" on page 461.

To ensure that the topology is reported accurately, you should enter the values for the **Database machine name** and the **SID**. These fields appear in the **BSM Integration Data and Topology Settings** section of **HP Integration Settings**.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

Troubleshooting and Limitations

For information about troubleshooting the Oracle Database monitor, refer to the HP Software Self-solve knowledge base (http://support.openview.hp.com/selfsolve/document/KM189298). To enter the knowledge base, you must log on with your HP Passport ID.

Tasks

How to Configure the Oracle Database Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 461
- "Configure the monitor properties" on page 463
- "Enable topology reporting - optional" on page 463

1 Prerequisites

The following are several key requirements for using the Oracle Database monitor:

- You must have a copy of the applicable Oracle JDBC database driver file (for example, classes12.zip) on the SiteScope server. Copy the downloaded driver file into the **<SiteScope root directory>\WEB-INF\lib** subdirectory. Do not unzip the file. Stop and restart the SiteScope service after copying the driver file to the SiteScope machine.

Note: More than one driver file is available for download. Some drivers support more than one version of Oracle database (for example, the classes12.zip Oracle JDBC thin driver) while others only support a particular version. If you are monitoring a recent version of Oracle database, download the latest version of the database driver.

- You must supply the correct **Database connection URL**, a database user name and password when setting up the monitor. When using the Oracle thin driver, the database connection URL has the form of: jdbc:oracle:thin:@<server name or IP address>:<port>:<database sid>.

  For example, to connect to the ORCL database on a machine using port 1521 you would use: jdbc:oracle:thin:@206.168.191.19:1521:ORCL.

  Note: The colon (:) and the at (@) symbols must be included as shown.

- You must know the syntax for accessing the Oracle **Database driver** that was installed on the SiteScope server. Examples of common database driver strings are:
  - **com.inet.ora.OraDriver**. A driver from Oracle for Oracle databases. This driver is deployed with SiteScope.
  - **oracle.jdbc.driver.OracleDriver.** SiteScope supports the following categories of JDBC driver that are supplied by Oracle: JDBC thin driver for Oracle 7 and 8 databases, and JDBC OCI (thick) driver. For details on accessing Oracle databases using OCI driver, see "Access Oracle databases using OCI driver" on page 121.
  - **com.mercury.jdbc.oracle.OracleDriver.** A driver for Oracle databases. This driver is deployed with SiteScope. When using the Oracle mercury driver, the database connection URL has the form of: jdbc:mercury:oracle://<server name or IP address>:<database server port>;sid=<sid>
- You should have only one version of each driver installed on the SiteScope machine. If there is more that version is installed, SiteScope may report an error and be unable to connect to the database.
- The user specified in the **Credentials** section must be granted the permission to access System tablespace.

2 Configure the monitor properties

Configure the Oracle Database monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Oracle Database Monitor Settings" on page 464.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

Reference

Oracle Database Monitor Settings

The Oracle Database monitor enables you to monitor the availability of an Oracle database server (versions 9i plus some earlier versions).

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box. ➤ If you are using a third-party database driver and you upgrade SiteScope, you must deploy the driver to SiteScope again, since the driver configuration data is not saved during an upgrade.
Relevant tasks	➤ "How to Configure the Oracle Database Monitoring Environment" on page 461 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Oracle Database Monitor Overview" on page 458

Oracle Database Monitor Settings

User interface elements are described below:

UI Element	Description
Database connection URL	Connection URL to the database you want to connect to. The syntax is jdbc:oracle:thin:@<server name or IP address>:<database server port>;sid=<sid>. **Example:** To connect to the ORCL database on a machine using port 1521, use: jdbc:oracle:thin:@206.168.191.19:1521:ORCL. **Note:** The colon (:) symbol must be included as shown.
Database driver	Driver used to connect to the database. **Example:** oracle.jdbc.driver.OracleDriver
Credentials	Option for providing the user name and password to be used to access the database server: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.
Counters	Displays the server performance counters you want to check with this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.

Database Connection Settings

The Database Connection Settings enable you to retrieve, share, and reuse database connections for database monitors that use any JDBC-compliant driver. When multiple database monitors use the same database, using a connection pool instead of an open connection for each monitor improves monitor performance and optimizes database server resource utilization.

Connections can be shared regardless of monitor type. For example, SiteScope database logger, database tools (Database Connection, Database Information), database alerts, and database monitors (Oracle Database, Database Counter, Database Query, DB2 8 and 9, Technology Database Integration, and so forth) can share and reuse database connections in a connection pool.

Important information	You can set additional database options that affect all resources that connect to the database in the JDBC Global Options in the General Preferences container.
See also	"JDBC Global Options" in *Using SiteScope*

User interface elements are described below:

UI Element	Description
Use connection pool	Enables SQL connection sharing. This means that you use a connection pool rather than open and close a new connection for each monitor query. **Default value:** Selected
Physically close if idle connection count exceeds	Maximum number of unused SQL connections in the SQL connection pool. When this number is exceeded, unused connections are closed rather than returned to the connection pool. **Default value:** 10

UI Element	Description
Idle connection timeout	Maximum amount of time, in seconds/minutes/hours/days, that a SQL connection remains unused after it has been returned to the SQL connection pool. When the time is exceeded, the connection is automatically closed. **Default value:** 5 minutes
Query timeout	Amount of time, in seconds/minutes/hours/days, to wait for execution of a SQL statement. Not all SQL drivers have this function. If your SQL driver does not support this function, this parameter is ignored. **Default value:** 1 minute

HP Integration Settings - Topology Settings

Use the HP Integration Settings area to control what data a monitor forwards to the BSM database. The topology settings for the Oracle Database monitor include fields that must be entered to ensure that SiteScope reports the topology to BSM.

Note: The HP Integration Settings panel is displayed only when SiteScope is reporting to BSM, or when SiteScope is integrated with HP Operations Manager (HPOM) and event or metrics integration is enabled.

The monitor specific settings are described below. For details on the HP Integration Settings that are common to all monitors, "Common Monitor Settings" in *Using SiteScope*.

UI Element	Description
Database machine name	Database machine name to enable accurate reporting of CI property information to BSM from the monitored Oracle database. If this field is left empty and the monitor cannot discover the database machine name, the CI data may not be reported accurately.
SID	The SID to enable accurate reporting of CI property information to BSM from the monitored Oracle database. If this field is left empty and the monitor cannot discover the SID, the CI data may not be reported accurately.

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Ping Monitor

This chapter includes:

Concepts

Reference

Concepts

Ping Monitor Overview

The Ping monitor obtains two of the most common measurements used to determine if your network connection is congested: Round Trip Time and Loss Percentage. An increase of either of these suggests that you are experiencing problems.

In the case of Loss Percentage, you want to see a 0% reading. A 100% reading indicates your link is completely down. Some loss may happen occasionally, but if it becomes common, either some packets are being lost or the router is exceptionally busy and dropping packets.

Each time the Ping monitor runs, it returns a reading and a status message and writes them in the monitoring log file. It also writes the total time it takes to receive a response from the designated host in the log file.

For details on configuring the monitor, see "Ping Monitor Settings" on page 472.

This section contains the following topics:

- "What to Monitor" on page 470
- "Scheduling the Monitor" on page 471
- "IPv6 Addressing Supported Protocols" on page 471
- "Troubleshooting and Limitations" on page 471

What to Monitor

We recommend that you set up monitors that test your connection to the Internet at several different points. For example, if you have a T1 connection to a network provider who in turn has a connection to the backbone, you would want to set up a Ping monitor to test each of those connections. The first monitor would ping the router on your side of the T1. The second would ping the router on your provider's side of the T1. The third monitor would ping your provider's connection to the backbone.

In addition to these monitors, it is also a good idea to have a couple of other monitors ping other major network providers. These monitors do not really tell you whether the other provider is having a problem, but it does tell you if your network provider is having trouble reaching them.

Scheduling the Monitor

You can monitor your own router as often as every two minutes without compromising system performance. The monitors that watch your provider's connection to your line and to the backbone should only be run every ten minutes or so. This minimizes traffic while still providing you with sufficient coverage.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the ICMP protocol.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Troubleshooting and Limitations

If you are unable to ping a remote machine, there are several possible causes:

- If you are trying to ping a host name, make sure the name you are pinging is fully qualified.
- If pinging the fully qualified host name does not work, try pinging the IP address of the destination machine. If ping fails when you try the name of the site, but works when you try the IP address, it is a problem with DNS.
- If pinging both the name and the IP address fail, it might be because they are administratively denied by an access control list. Sometimes routers block ping with an access list. Try a traceroute instead, or if it is a Web site, try browsing it.
- If the traceroute shows multiple hops between you and the destination, try pinging each host in the path. Start pinging the host closest to you, and work your way towards the destination until you find the host that fails to respond to ping. Use a traceroute to get a list of the hosts between you and the destination for this purpose.

Reference

Ping Monitor Settings

The Ping monitor enables you to check the availability of a host by using ICMP (Internet Control Message Protocol). Use this monitor to check network connectivity and response time.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	The **Ping Tool** is available when configuring this monitor to check if the host can be reached, and the round-trip time along the path (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Ping Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Ping Monitor Overview" on page 470

Ping Monitor Settings

User interface elements are described below:

UI Element	Description
Host name to resolve	IP address or the name of the host that you want to monitor. **Example:** 206.168.191.21 or demo.thiscompany.com **Note:** You can monitor only one IP or host name at a time for each monitor instance.
Packet size (bytes)	The size, in bytes (including the IP and ICMP headers), of the ping packets sent. To change the threshold, enter the new value in the text box. **Default value:** 32 bytes
Time to wait for replies before ping timeouts	Amount of time, in milliseconds, that should pass before the ping times out. To change the threshold, enter the new value in the text box. **Default value:** 5000 milliseconds

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Port Monitor

This chapter includes:

Concepts

Port Monitor Overview

Use the Port monitor for monitoring network applications that none of the other SiteScope monitors watch such as Gopher and IRC services, some media services, or other custom network applications. You are notified immediately if SiteScope is unable to connect to the monitored port.

For details on configuring the monitor, see "Port Monitor Settings" on page 478.

This section contains the following topics:

- "Status" on page 476
- "Scheduling the Monitor" on page 477
- "IPv6 Addressing Supported Protocols" on page 477

Status

Each time the Port monitor runs, it returns a status message and writes it in the monitoring log file. It also writes the total time it takes to receive a response from the remote service.

The reading is the current value of the monitor. The possible values for the Port monitor are:

- OK
- unknown host name
- unable to reach server
- unable to connect to server
- timed out reading
- match error

The status is logged as either good or error. An error status is returned if the current value of the monitor is anything other than OK.

Scheduling the Monitor

Scheduling Port monitors depends on the application or system you are monitoring. The Port monitor does not use many resources, so you can schedule it to run as often as every 15 seconds if necessary. Monitoring most systems every 10 minutes is normally sufficient.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the TCP and UDP protocols.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

Port Monitor Settings

The Port monitor verifies that a connection can be made to a network port and measures the length of time it takes to make the connection. Optionally, it can look for a string of text to be returned or send a string of text after the connection is made.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	The **Ping Tool** is available when configuring this monitor to check if the host can be reached, and the round-trip time along the path (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Ping Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Port Monitor Overview" on page 476

Port Monitor Settings

User interface elements are described below:

UI Element	Description
Host name	IP address or the name of the host that you want to monitor. **Example:** 206.168.191.21 or demo.thiscompany.com
Port number	Port number to connect to from the list of **Commonly used ports**, or enter a port number in the **Other ports** text box. Additional entries can be added to the list by editing the **<SiteScope root directory>\groups\master.config** file.
Timeout (seconds)	Amount of time, in seconds, to wait for the connection to the port, and for any sending and receiving to complete. Once this time period passes, the Port monitor logs an error and reports an error status. **Default value:** 60 seconds
Send string	Customizes the string sent to the host after a connection is made.
Match string	Checks for a string of text after a connection is made. If the text is not received, the monitor displays the message no match on content. **Note:** ➤ The search is case sensitive. ➤ You cannot use regular expressions in this field.

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Radius Monitor

This chapter includes:

Concepts

Reference

Concepts

Radius Monitor Overview

Use the Radius monitor to test that the RADIUS server correctly handles authentication requests. If the RADIUS server fails, any users that try to use it are unable to log on and access any services. Create a separate monitor instance for each server you are running. You may want to setup multiple monitors per server if you want to test different kinds of login accounts.

For details on configuring the monitor, see "Radius Monitor Settings" on page 484.

This section contains the following topics:

- "Setup Requirements" on page 482
- "Status" on page 483

Setup Requirements

- For SiteScope to monitor your RADIUS server, you must first add the IP address of your SiteScope server to the list of clients that the RADIUS server can communicate with. This must be done for the Radius Server to take requests from SiteScope. Failure to do this results in Unknown Client errors on the RADIUS server.
- The Radius monitor currently supports Password Authentication Procedure (PAP) authentication but not the Challenge Handshake Authentication Protocol (CHAP) or Microsoft Challenge Handshake Authentication Protocol (MS-CHAP). Your RADIUS server must be configured to accept PAP requests to use this monitor.

Status

Each time the Radius monitor runs, it returns a status message and writes it in the monitoring log file. It also writes the total time it takes to receive a authentication response. The reading is the current value of the monitor. The possible values for the Radius monitor are:

- OK
- unknown host name
- timed out reading
- match error

The status is logged as either good or error. An error status is returned if the current value of the monitor is anything other than **OK**.

Reference

Radius Monitor Settings

The Radius (Remote Authentication Dial In User Service) monitor checks that a RADIUS server is working correctly by sending an authentication request and checking the result. A RADIUS server is used to authenticate users, often connecting through a remote connection such as a dialup modem or a DSL line. Use this page to add a monitor or edit the monitor’s properties.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 482.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Radius Monitor Overview" on page 482

Radius Monitor Settings

User interface elements are described below:

UI Element	Description
Radius server	IP address or the name of the RADIUS server that you want to monitor. **Example:** 206.168.191.21 or radius.thiscompany.com
Secret phrase	Secret used to encrypt all requests to this RADIUS server.
User name	User name to authenticate.
Password	Password to authenticate.

UI Element	Description
Called Station Id	Telephone number on which the call was received. For virtual private network (VPN) connections, the IP address of the VPN server.
Calling Station Id	Telephone number from which the call was made. For virtual private network (VPN) connections, the IP address of the VPN client.
Port	UDP port used by the RADIUS server. **Default value:** 1812
Timeout (seconds)	Amount of time, in seconds, to wait for the connection to the port, and for any sending and receiving to complete. Once this time period passes, the Radius monitor logs an error and reports an error status. **Default value:** 30 seconds
Match content	Text string to check for in the response. If the text is not contained in the response, the monitor displays the message **no match on content**. You can also perform a regular expression match by enclosing the string in forward slashes, with an **i** after the trailing slash indicating case-insensitive matching. **Example:** / \d\d/ or /size \d\d/i **Note:** The search is case sensitive.
Open Tool	Opens the Regular Expression Tool, enabling you to test a regular expression for content matching against a sample of the content you want to monitor. For details, see "Regular Expression Tool" in *Using SiteScope*.

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Real Media Player Monitor

This chapter includes:

Concepts

Reference

Concepts

Real Media Player Monitor Overview

Use the Real Media Player monitor to monitor availability and delivery quality parameters for media files and streaming data compatible with RealNetworks Real Media Player versions 7.x, 8.x, 9.x, and 10.x. You can monitor multiple parameters or counters with a single monitor instance. This enables you to report on delivery performance.

Create a separate monitor instance for files or data streams that are representative of the content available from the site you want to monitor. The error and warning thresholds for the monitor can be set on one or more Real Media Player performance statistics.

Note:

- This monitor is supported in SiteScopes that are running on Windows versions only.
- This monitor does not work with the 64-bit version of SiteScope, so if you plan to work with this monitor, it is recommended to install the SiteScope 32-bit version.

For details on configuring the monitor, see "Real Media Player Monitor Settings" on page 489.

Setup Requirements

Before you can use the Real Media Player monitor, Real Media Player client libraries must be installed on the server where SiteScope is running. Normally, it is sufficient to download and install a Real Media Player client on the server.

Reference

Real Media Player Monitor Settings

The Real Media Player monitor enables you to emulate a user playing media or streaming data from a Real Media Server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 488. ➤ This monitor does not support metadata files such as the .smi format. ➤ The **Real Media Player Tool** is available when configuring this monitor (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Real Media Player Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Real Media Player Monitor Overview" on page 488

Real Media Player Monitor Settings

User interface elements are described below:

UI Element	Description
URL	URL of the media file or streaming source you want to monitor. This should be the URL of the media file. **Note:** ➤ Only monitor video, not audio, streams with this monitor. ➤ This monitor does not support metadata files such as the .smi format.
Counters	Select the server performance counters you want to check with this monitor. The list displays the available counters and those currently selected for this monitor.
Duration (milliseconds)	Playback duration that the monitor should use for the media file or source. The duration value does not need to match the duration of the media contained in the file. If the media content of the file or source you are monitoring is less than the duration value selected for the monitor, the monitor plays the entire media content and reports the results, including the time required to play the media content. **Default value:** 15,000 milliseconds

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Real Media Server Monitor

This chapter includes:

Concepts

Reference

Concepts

Real Media Server Monitor Overview

Use the Real Media Server monitor to monitor the server performance parameters for RealNetworks Real Media Servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate monitor instance for each RealSystem Server you are running.

Note:

- This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.
- By default, SiteScope monitors the Real Media Server default service, **RMServer**. To monitor other services, add the service names (separated by commas) to the **Real Media Server monitor service names** box in **Preferences** > **Infrastructure Preferences** > **Monitor Settings**.

For details on configuring the monitor, see "Real Media Server Monitor Settings" on page 495.

This section also includes:

- "Setup Requirements and User Permissions" on page 493
- "IPv6 Addressing Supported Protocols" on page 494

Setup Requirements and User Permissions

The following are key requirements for using the Real Media Server monitor:

- The Real Media Server monitor makes use of Performance Counters to measure application server performance. SiteScopes running on Windows platforms need to be running under an account that has the necessary administrative security privileges to access performance counter data from remote servers. If the servers you want to monitor are in a different domain, are governed under a different policy, or require a unique login different than the account SiteScope is running under, then you must define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view. For SiteScopes installed on UNIX platforms, you only need to define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.
- The Remote Registry service must be running on the machine where the Real Media server is running if the Real Media Server is running on Windows 2000.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

Real Media Server Monitor Settings

The Real Media Server monitor enables you to monitor the availability of a Real Media Server on Windows NT systems. The error and warning thresholds for the monitor can be set on one or more Real Media Server performance statistics. Use this page to add a monitor or edit the monitor's properties.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements and User Permissions" on page 493. ➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Real Media Server Monitor Overview" on page 492

Real Media Server Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server you want to monitor. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** ➤ This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed in the server list. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. ➤ When working in template mode, you can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*.
Counters	Displays the server performance counters you want to check with this monitor. Use the **Get Counters** button to select counters. **Note when working in template mode:** To update counters in template browsable monitors that need a target server, click the **Select measurement from** button and add the required server and counters. Any server that is accessible in the domain can be used. If a server is not in the domain, you must manually add the server to the remote server tree before adding counters, and then specify the newly created server name in the **Server** field.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.

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SAP CCMS Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

SAP CCMS Monitor Overview

Use the SAP CCMS monitor to retrieve and report metrics using SAP's centralized monitoring architecture, CCMS (Computer Center Management System). With CCMS, a SAP administrator can monitor all servers, components and resources in the R/3 4.6B, R/3 4.6C, R/3 4.7E, SAP ECC5 and SAP ECC6 landscape from a single centralized server, greatly facilitating not only problem discovery but also problem diagnosis.

Note:

- The SAP CCMS monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various services and aspects of a SAP CCMS environment. For details, see "SAP Solution Templates" in *Using SiteScope*.

Using the SAP CCMS monitor, you can also enable reporting of the host topology to BSM. If enabled, BSM automatically populates the RTSM with CIs based on the monitored hardware in SiteScope.

Using SAP's advanced CCMS interface BC-XAL 1.0, the SiteScope SAP CCMS monitor exposes hundreds of performance and availability metrics. The error and warning thresholds for the monitor can be set for one or more of the nearly 120 SAP server performance statistics available by using the CCMS interface.

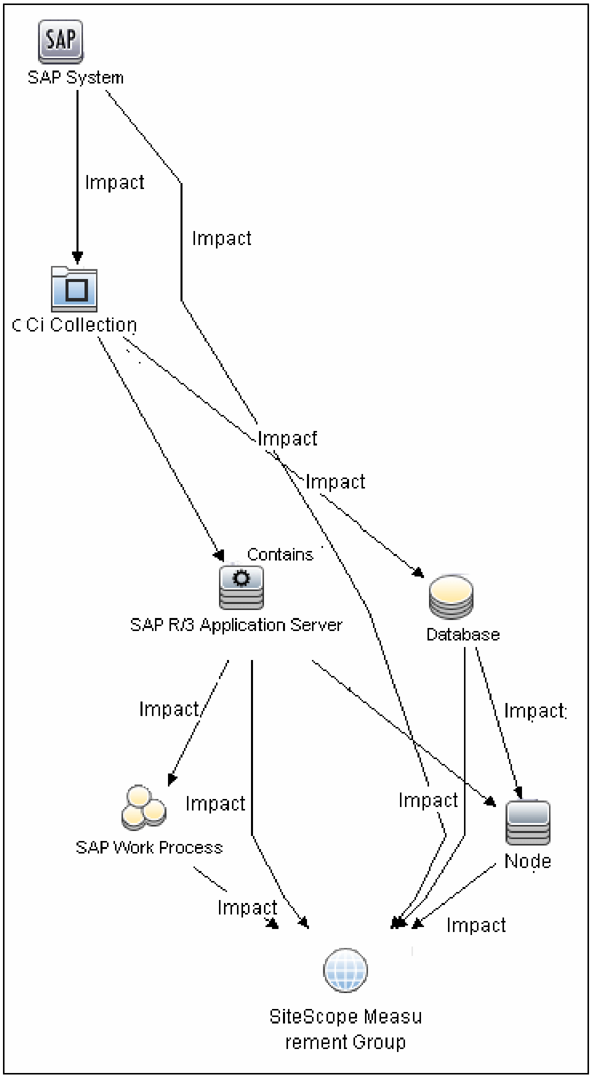
For task details, see "How to Configure the SAP CCMS Monitoring Environment" on page 504.

For user interface details, see "SAP CCMS Monitor Settings" on page 508.

This section contains the following topics:

SAP CCMS Topology

The SAP CCMS monitor can identify the topology of the SAP System being monitored. The monitor creates the following topology in BSM's RTSM.



The CIs are created only for the monitored entities according to the counters that you select. The monitors are represented in the RTSM as SiteScope Measurement Groups and SiteScope Measurement CIs.

Note:

- This direct integration between SiteScope and BSM is available only when the Application Management for SAP license is installed.
- When you add a new application server to the SAP System, you must clear the **Report monitor and related CI topology** option, save the monitor definition, and then select the option again and save the monitor definition, in order for the monitor to recognize the new application server.

For details on enabling topology reporting, see "How to Configure the SAP CCMS Monitoring Environment" on page 504.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

For information about the SAP topology, see "SAP Systems View" in *Solutions and Integrations* in the HP Business Service Management Documentation Library.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the SAP CCMS monitor.

- The SAP CCMS monitor only retrieves and displays numeric metrics (Performance attributes). Status, Log and Information attributes are not supported. Also, presentation and management of SAP CCMS Alerts in SiteScope are not supported at this time.
- Due to the large amount of metrics that are retrieved when displaying the entire SAP metrics browse tree during monitor definition, there could be a delay in opening the Choose Counters page. However, after a browse tree has been successfully retrieved, it is cached to file automatically, so that the next time you retrieve metrics from the same server/user name, the wait time is greatly reduced.

Tasks

How to Configure the SAP CCMS Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 504
- "Download the SAP Java Connector" on page 505
- "Enable the SAP CCMS monitor (on a Windows environment)" on page 506
- "Enable the SAP CCMS monitor (on a UNIX environment)" on page 507
- "Configure the monitor properties" on page 507
- "Enable topology reporting - optional" on page 507

1 Prerequisites

Before configuring the monitor, make sure you have the necessary setup requirements and user privileges to log on to the CCMS server and retrieve metrics.

- Consult your SAP documentation to determine if your R/3 landscape components requires additional software installed to run or work with CCMS.

Note: The BC-XAL 1.0 interface is supported on R/3 systems 4.5B and later only.

- A SAP user requires certain privileges to read CCMS metrics. When defining a SAP CCMS monitor in SiteScope you must specify a user who has XMI authorization to be able to log on to the CCMS server and retrieve metrics. The user should have one or more of the profiles listed below assigned to it. Authorizations are collected in SAP profiles, and the following profiles include XMI authorization:
  - S_A.SYSTEM
  - PD_CHICAGO
  - S_WF_RWTEST
  - SAP_ALL

  One test to see if a user has such authorization is to try and issue transaction RZ20 in the SAP user interface and see if the CCMS monitor sets can be displayed.

2 Download the SAP Java Connector

The SAP Java Connector (SAP JCo version 2.0.6 or later) component must be downloaded and installed on the same server where SiteScope is running (or at least be accessible on a shared or remote location).

a To download SAP Java Connector, go to the SAP Software Distribution Web site (http://www.service.sap.com/connectors).

Note: You need a valid Service Marketplace login to access the SAP Web site

b After you log on, select **SAP NetWeaver** > **SAP NetWeaver in Detail** > **Application Platform** > **Connectivity** > **Connectors** > **SAP Java Connector**, and then click **Tools and Services**.

3 Enable the SAP CCMS monitor (on a Windows environment)

The SAP CCMS monitor uses SAP JCo libraries to connect to the SAP R/3 system. A user must have the required license granted by SAP to receive and use these libraries.

a Download the following .jar file and .dll files from the SAP support Web site (http://www.service.sap.com/connectors):

- **sapjco.jar**
- **librfc32.dll**
- **sapjcorfc.dll**

b Copy the **sapjco.jar** file into the <**SiteScope root directory**>**WEB-INF****lib** directory.

c Copy the two .dll files into the <**SiteScope root directory**>**bin** directory.

Note: Check if the .dll files already exist in the <**Windows installation directory**>/**system32** directory. They may have been copied into this directory as part of the SAP client installation. If they do exist in your system, you must overwrite them with the above .dll files before copying into the SiteScope directory.

d Restart SiteScope.

4 Enable the SAP CCMS monitor (on a UNIX environment)

The SAP CCMS monitor uses SAP JCo libraries to connect to the SAP R/3 system. A user must have the required license granted by SAP to receive and use these libraries.

a Download the following .jar file and .so files from the SAP support Web site:

- **sapjco.jar**
- **librfccm.so**
- **libsapjcorfc.so**

b Copy the **sapjco.jar** file into the <**SiteScope root directory**>**WEB-INF****lib** directory.

c Copy the two .so files as follows:

- For Sun installations, copy into the <**SiteScope root directory**>**java****lib****sparc** directory.
- For Linux installation, copy into the <**SiteScope root directory**>**java****lib****i386** directory.

d Restart SiteScope.

5 Configure the monitor properties

Configure the SAP CCMS monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "SAP CCMS Monitor Settings" on page 508.

6 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

Reference

SAP CCMS Monitor Settings

The SAP CCMS monitor enables you to monitor the performance of your SAP R/3 System landscape in a centralized manner using SAP CCMS interface.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the SAP CCMS Monitoring Environment" on page 504 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "SAP CCMS Monitor Overview" on page 500

SAP CCMS Monitor Settings

User interface elements are described below:

UI Element	Description
Application server	Address of the SAP server you want to monitor.
SAP client	Client to use for connecting to SAP.
System number	System number for the SAP server.

UI Element	Description
SAP router string	Router address string if your connection is being made through a router (otherwise leave it blank). You can find the router address using the SAP Logon tool from the SAP Client software. Open the Logon console, select the server you want to monitor and then select **Properties** to view the router address.
Credentials	Option for providing the user name and password to access the SAP server: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password to access the SAP server in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.
CCMS monitor sets match	Enter a regular expression to match the SAP CCMS monitor sets you want to view (top level nodes of the CCMS tree). Only counters of matched tree sets are requested from SAP and displayed in the counter tree. To change the match, you must reload the counters. If the field is empty, all monitor sets are shown.
Collect all types of counters	Select to enable the monitor to collect all other types of counters in addition to collecting SAP performance counters. **Note:** If this option is selected, it is recommended to use **CCMS monitor sets match** to prevent performance capacity problems.

UI Element	Description
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. This tree displays the hierarchy of Monitoring Tree Elements displayed in the Monitoring Tree that is shown in the SAP user interface with transaction RZ20. The information in the SiteScope browse tree may differ slightly from that in RZ20 depending on the authorization level of the user name you specified for this monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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SAP CCMS Alerts Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

SAP CCMS Alerts Monitor Overview

Use the SAP CCMS Alerts monitor to retrieve and report alerts from the SAP CCMS monitors using SAP's centralized monitoring architecture, CCMS (Computer Center Management System). The SAP CCMS Alerts monitor retrieves alerts using SAP's advanced CCMS interface BC-XAL 1.0.

The SAP CCMS Alerts monitor enables you to monitor alerts for various components of your SAP R/3 4.6B, R/3 4.6C, R/3 4.7E, and SAP ECC5 and ECC6 landscape.

Note: The SAP CCMS Alerts monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.

For task details, see "How to Configure the SAP CCMS Alerts Monitoring Environment" on page 513.

For user interface details, see "SAP CCMS Alerts Monitor Settings" on page 517.

Tasks

How to Configure the SAP CCMS Alerts Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 513
- "Download the SAP Java Connector" on page 514
- "Enable the SAP CCMS Alerts monitor (on a Windows environment)" on page 515
- "Enable the SAP CCMS Alerts monitor (on a UNIX environment)" on page 516
- "Configure the monitor properties" on page 516

1 Prerequisites

Before configuring the monitor, make sure you have the necessary setup requirements and user privileges to log on to the CCMS server and retrieve metrics.

- The SAP Java Connector (SAP JCo 2.0.6 and later) component must be downloaded from the SAP Service Marketplace Software Distribution Center, and installed on the same server where SiteScope is running (or at least be accessible on a shared or remote location).
- The BC-XAL 1.0 interface is supported on R/3 systems 4.5B and later only.
- Consult your SAP documentation to determine if your R/3 landscape components requires additional software installed to run or work with CCMS.

- A SAP user requires certain privileges to read CCMS metrics. When defining a SAP CCMS monitor in SiteScope you must specify a user who has XMI authorization to be able to log on to the CCMS server and retrieve metrics. The user should have one or more of the profiles listed below assigned to it. Authorizations are collected in SAP profiles, and the following profiles include XMI authorization:

  - S_A.SYSTEM
  - PD_CHICAGO
  - S_WF_RWTEST
  - SAP_ALL

  One test to see if a user has such authorization is to try and issue transaction RZ20 in the SAP user interface and see if the CCMS monitor sets can be displayed.

2 Download the SAP Java Connector

The SAP Java Connector (SAP JCo version 2.0.6 or later) component must be downloaded and installed on the same server where SiteScope is running (or at least be accessible on a shared or remote location).

a To download SAP Java Connector, go to the SAP Software Distribution Web site (http://www.service.sap.com/connectors).

Note: You need a valid Service Marketplace login to access the SAP Web site

b After you log on, select **SAP NetWeaver** > **SAP NetWeaver in Detail** > **Application Platform** > **Connectivity** > **Connectors** > **SAP Java Connector**, and then click **Tools and Services**.

3 Enable the SAP CCMS Alerts monitor (on a Windows environment)

The SAP CCMS monitor uses SAP JCo libraries to connect to the SAP R/3 system. A user must have the required license granted by SAP to receive and use these libraries.

a Download the following .jar file and .dll files from the SAP support Web site (http://www.service.sap.com/connectors):

- **sapjco.jar**
- **librfc32.dll**
- **sapjcorfc.dll**

b Copy the **sapjco.jar** file into the **<SiteScope root directory>\WEB-INF\lib** directory.

c Copy the two .dll files into the **<SiteScope root directory>\bin** directory.

Note: Check if the .dll files already exist in the **<Windows installation directory>/system32** directory. They may have been copied into this directory as part of the SAP client installation. If they do exist in your system, you must overwrite them with the above .dll files before copying into the SiteScope directory.

d Restart SiteScope.

4 Enable the SAP CCMS Alerts monitor (on a UNIX environment)

The SAP CCMS monitor uses SAP JCo libraries to connect to the SAP R/3 system. A user must have the required license granted by SAP to receive and use these libraries.

a Download the following .jar file and .so files from the SAP support Web site:

- **sapjco.jar**
- **librfccm.so**
- **libsapjcorfc.so**

b Copy the **sapjco.jar** file into the <**SiteScope root directory**>**\WEB-INF\lib** directory.

c Copy the two .so files as follows:

- For Sun installations, copy into the <**SiteScope root directory**>**\java\lib\sparc** directory.
- For Linux installation, copy into the <**SiteScope root directory**>**\java\lib\i386** directory.

d Restart SiteScope.

5 Configure the monitor properties

Configure the SAP CCMS Alerts monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "SAP CCMS Alerts Monitor Settings" on page 517.

Note: Although you can change the run schedule for this monitor using the **Frequency** setting in Monitor Run Settings (the default is every 10 minutes), CCMS metrics are generally only updated once every 5 minutes.

Reference

SAP CCMS Alerts Monitor Settings

The SAP CCMS Alerts monitor enables you to read and complete alerts from the SAP CCMS Alerts monitors.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the SAP CCMS Alerts Monitoring Environment" on page 513 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "SAP CCMS Alerts Monitor Overview" on page 512

SAP CCMS Alerts Monitor Settings

User interface elements are described below:

UI Element	Description
Application server	Host name/IP address of the SAP server you want to monitor.
SAP client	Client to use for connecting to SAP.
System number	System number for the SAP server.

UI Element	Description
SAP router string	Router address string if your connection is being made through a router (otherwise leave it blank). You can find the router address using the SAP Logon tool from the SAP Client software. Open the Logon console, select the server you want to monitor and then select Properties to view the router address.
Credentials	Option for providing the user name and password to access the SAP CCMS metrics: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password to access the SAP server in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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SAP Java Web Application Server Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

SAP Java Web Application Server Monitor Overview

Use the SiteScope SAP Java Web Application Server monitor to monitor the availability and server statistics for SAP Java Web Application Server cluster. A Java cluster consists of one instance of Dispatcher per host, and one or more Servers. The monitor displays a counter tree for each dispatcher and server in the cluster. The SiteScope SAP Java Web Application Server monitor supports Web Application Server 6.40, Web Application Server 7.00, and SAP Enterprise Portal 5.0, 6.0 and 7.0.

Note:

- The SAP Java Web Application monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various services and aspects of a SAP Java Web Application server. For details on using the template, see "SAP Solution Templates" in *Using SiteScope*.

To enable the SAP Java Web Application Server monitor, you must enable the monitoring environment. For task details, see "How to Configure the SAP Java Web Application Server Monitoring Environment" on page 521.

For user interface details, see "SAP Java Web Application Server Monitor Settings" on page 523.

Tasks

How to Configure the SAP Java Web Application Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Enable the SAP Java Web Application Server monitoring environment" on page 521
- "Configure the monitor properties" on page 522

1 Enable the SAP Java Web Application Server monitoring environment

The SAP Java Web Application Server monitor uses SAP JMX Connector libraries to connect to SAP J2EE cluster. Depending on your monitored environment, the JMX Connector files are available on the SAP Java Web Application server from **\usr\sap\<SID>\JC<InstanceNumber>\j2ee\admin\lib** or **\usr\sap\<SID>\DVEBMGS<InstanceNumber>\j2ee\admin\lib**).

a Rename the **logging.jar** file from the SAP Java Web Application server to **sap_logging.jar** so as not to overwrite the SiteScope **logging.jar** file.

b Copy the following .jar files from the SAP Java Web Application server installation into the **<SiteScope root directory>\WEB-INF\lib** directory:

- **admin.jar**
- **com_sap_pj_jmx.jar**
- **exception.jar**
- **sap_logging.jar** (renamed from **logging.jar** in SAP library)
- **jmx.jar**

c Restart SiteScope.

2 Configure the monitor properties

Configure the SAP Java Web Application monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "SAP Java Web Application Server Monitor Settings" on page 523.

Reference

SAP Java Web Application Server Monitor Settings

The SAP Java Web Application Server monitor enables you to monitor the availability and server statistics for SAP Java Web Application server cluster.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor requires that a third-party Java DHCP library be installed on the server where SiteScope is running. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the SAP Java Web Application Server Monitoring Environment" on page 521 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "SAP Java Web Application Server Monitor Overview" on page 520

SAP Java Web Application Server Monitor Settings

User interface elements are described below:

UI Element	Description
Application server	Address of the SAP Java Web Application Server you want to monitor.
Port	Number of the P4 port for the SAP Java Web Application Server you want to monitor. **Default value:** 50004

UI Element	Description
Credentials	Option for providing the user name and password to access the SAP server: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password to access the SAP server in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. These counters are received dynamically from the JMX. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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SAP Performance Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

SAP Performance Monitor Overview

Use the SAP Performance monitor to monitor the server and database performance data for SAP application servers R/3 4.6B, R/3 4.6C, R/3 4.7E, SAP ECC5 and SAP ECC6. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server and database loading for performance, availability, and capacity planning.

Create a separate monitor instance for each SAP server in your environment. The error and warning thresholds for the monitor can be set on SAP server and database performance statistics.

Note:

- The SAP Performance monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various services and aspects of a SAP server. For details, see "SAP Solution Templates" in *Using SiteScope*.

To enable the SAP Performance monitor, you must install the SAP Java Connector. For details, see "How to Configure the SAP Performance Monitoring Environment" on page 527.

For details on configuring the monitor, see "SAP Performance Monitor Settings" on page 531.

Tasks

How to Configure the SAP Performance Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 527
- "Download the SAP Java Connector" on page 528
- "Enable the SAP Performance monitor (on a Windows environment)" on page 528
- "Enable the SAP Performance monitor (on a UNIX environment)" on page 529
- "Configure the monitor properties" on page 530

1 Prerequisites

A SAP user should have one or more of the profiles listed below assigned to it. Authorizations are collected in SAP profiles, and the following profiles include XMI authorization:

- S_A.SYSTEM
- PD_CHICAGO
- S_WF_RWTEST
- SAP_ALL

2 Download the SAP Java Connector

The SAP Java Connector (SAP JCo version 2.0.6 or later) component must be downloaded and installed on the same server where SiteScope is running (or at least be accessible on a shared or remote location).

a To download SAP Java Connector, go to the SAP Software Distribution Web site (http://www.service.sap.com/connectors).

Note: You need a valid Service Marketplace login to access the SAP Web site

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b After you log on, select **SAP NetWeaver** > **SAP NetWeaver in Detail** > **Application Platform** > **Connectivity** > **Connectors** > **SAP Java Connector**, and then click **Tools and Services**.

3 Enable the SAP Performance monitor (on a Windows environment)

The SAP Performance monitor uses SAP JCo libraries to connect to the SAP R/3 system. A user must have the required license granted by SAP to receive and use these libraries.

a Download the following .jar file and .dll files from the SAP support Web site (http://www.service.sap.com/connectors):

- ➤ **sapjco.jar**
- ➤ **librfc32.dll**
- ➤ **sapjcorfc.dll**

b Copy the **sapjco.jar** file into the <**SiteScope root directory**>**\WEB-INF\lib** directory.

c Copy the two .dll files into the <**SiteScope root directory**>**\bin** directory.

Note: Check if the .dll files already exist in the <**Windows installation directory**>**/system32** directory. They may have been copied into this directory as part of the SAP client installation. If they do exist in your system, you must overwrite them with the above .dll files before copying into the SiteScope directory.

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d Restart SiteScope.

4 Enable the SAP Performance monitor (on a UNIX environment)

The SAP Performance monitor uses SAP JCo libraries to connect to the SAP R/3 system. A user must have the required license granted by SAP to receive and use these libraries.

a Download the following .jar file and .so files from the SAP support Web site:

- **sapjco.jar**
- **librfccm.so**
- **libsapjcorfc.so**

b Copy the **sapjco.jar** file into the <**SiteScope root directory**>**\WEB-INF\lib** directory.

c Copy the two .so files as follows:

- For Sun installations, copy into the <**SiteScope root directory**>**\java\lib\sparc** directory.
- For Linux installation, copy into the <**SiteScope root directory**>**\java\lib\i386** directory.

d Restart SiteScope.

5 Configure the monitor properties

Configure the SAP Performance monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "SAP Performance Monitor Settings" on page 531.

Reference

SAP Performance Monitor Settings

The SAP Performance monitor enables you to monitor the availability and performance statistics of a SAP Application Server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the SAP Performance Monitoring Environment" on page 527 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "SAP Performance Monitor Overview" on page 526

SAP Performance Monitor Settings

User interface elements are described below:

UI Element	Description
Application server	Address of the SAP server you want to monitor.
SAP client	Client to use for connecting to SAP.
System number	System number for the SAP server.

UI Element	Description
SAP router string	Router address string if your connection is being made through a router (otherwise leave it blank). You can find the router address using the SAP Logon tool from the SAP Client software. Open the Logon console, select the server you want to monitor and then select **Properties** to view the router address.
Credentials	Option for providing the user name and password to access the SAP server: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password to access the SAP server in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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SAP Work Processes Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

SAP Work Processes Monitor Overview

Use the SAP Work Processes monitor to monitor the effectiveness of your R/3 4.6B, R/3 4.6C, R/3 4.7E, SAP ECC5 and SAP ECC6 servers. The monitor provides statistical information on work process performance. This information enables you to estimate whether the SAP R/3 Server is efficiently using its resources.

Note: The SAP Work Processes monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.

Using the SAP Work Processes monitor, you can also enable reporting of the host topology to BSM. If enabled, BSM automatically populates the RTSM with CIs based on the monitored hardware in SiteScope.

To enable the SAP Work Processes monitor, you must install the SAP Java Connector. For details, see "How to Configure the SAP Work Processes Monitoring Environment" on page 538.

For user interface details, see "SAP Work Processes Monitor Settings" on page 542.

This section contains the following topics:

- "Understanding the SAP Work Processes Monitor" on page 535
- "SAP Work Processes Topology" on page 536

Understanding the SAP Work Processes Monitor

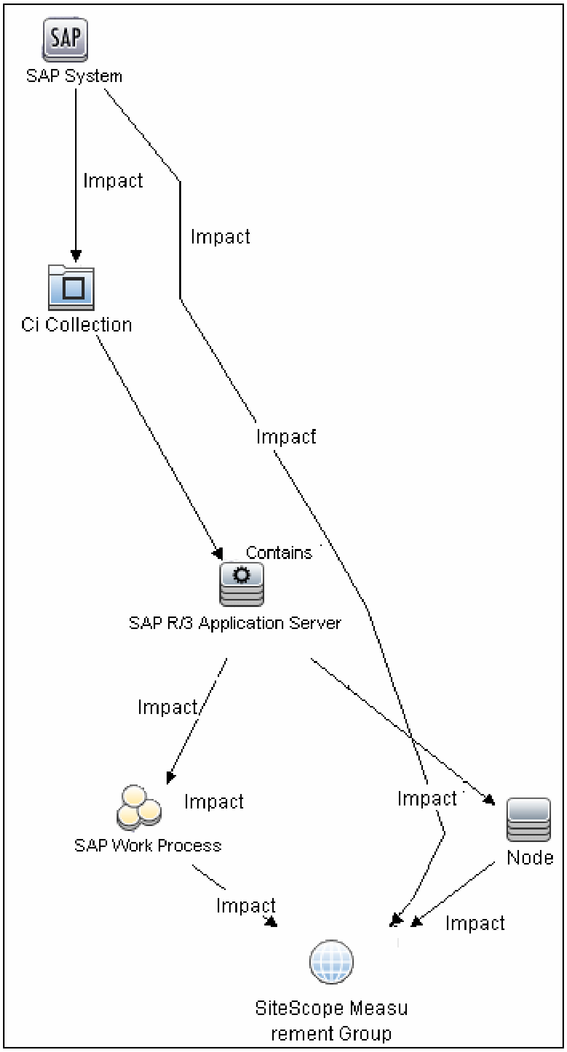
A SAP work process is a program that runs the R/3 application tasks. Each work process acts as a specialized system service. In terms of the operating system, a group of parallel work processes makes up the R/3 runtime system.

Every work process specializes in a particular task type: dialog, batch, update, enqueue, spool, message, or gateway. In client/server terms, a work process is a service, and the computing system running the particular service is known as a server. For example, if the system is providing only dialog services, this is a dialog server, although commonly referred to as an application server.

The dispatcher assigns tasks to the free work processes, making optimal use of system resources and balancing the system load. The dispatcher knows and distributes pending tasks according to the type of the defined processes. The difference among the various work processes affects only those tasks or special services that have been assigned to the work processes through the dispatching strategy.

SAP Work Processes Topology

The SAP Work Processes monitor can identify the work processes of the server being monitored. The monitor creates the following topology in BSM's RTSM.



The CIs are created only for the monitored entities according to the counters that you select. The monitors are represented in the RTSM as SiteScope Measurement Groups and SiteScope Measurement CIs.

Note: This direct integration between SiteScope and BSM is available only when the Application Management for SAP license is installed.

For details on enabling topology reporting, see "How to Configure the SAP Work Processes Monitoring Environment" on page 538.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

For information about the SAP topology, see "SAP Systems View" in *Solutions and Integrations* in the HP Business Service Management Documentation Library.

Tasks

How to Configure the SAP Work Processes Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 538
- "Download the SAP Java Connector" on page 539
- "Enable the SAP Work Processes monitor (on a Windows environment)" on page 539
- "Enable the SAP Work Processes monitor (on a UNIX environment)" on page 540
- "Configure the monitor properties" on page 541
- "Enable topology reporting - optional" on page 541

1 Prerequisites

A SAP user should have one or more of the profiles listed below assigned to it. Authorizations are collected in SAP profiles, and the following profiles include XMI authorization:

- S_A.SYSTEM
- PD_CHICAGO
- S_WF_RWTEST
- SAP_ALL

2 Download the SAP Java Connector

The SAP Java Connector (SAP JCo version 2.0.6 or later) component must be downloaded and installed on the same server where SiteScope is running (or at least be accessible on a shared or remote location).

a To download SAP Java Connector, go to the SAP Software Distribution Web site (http://www.service.sap.com/connectors).

Note: You need a valid Service Marketplace login to access the SAP Web site

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b After you log on, select **SAP NetWeaver** > **SAP NetWeaver in Detail** > **Application Platform** > **Connectivity** > **Connectors** > **SAP Java Connector**, and then click **Tools and Services**.

3 Enable the SAP Work Processes monitor (on a Windows environment)

The SAP Work Processes monitor uses SAP JCo libraries to connect to the SAP R/3 system. A user must have the required license granted by SAP to receive and use these libraries.

a Download the following .jar file and .dll files from the SAP support Web site (http://www.service.sap.com/connectors):

- **sapjco.jar**
- **librfc32.dll**
- **sapjcorfc.dll**

b Copy the **sapjco.jar** file into the **<SiteScope root directory>\WEB-INF\lib** directory.

c Copy the two .dll files into the <**SiteScope root directory**>**bin** directory.

Note: Check if the .dll files already exist in the <**Windows installation directory**>/**system32** directory. They may have been copied into this directory as part of the SAP client installation. If they do exist in your system, you must overwrite them with the above .dll files before copying into the SiteScope directory.

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d Restart SiteScope.

4 Enable the SAP Work Processes monitor (on a UNIX environment)

The SAP Work Processes monitor uses SAP JCo libraries to connect to the SAP R/3 system. A user must have the required license granted by SAP to receive and use these libraries.

a Download the following .jar file and .so files from the SAP support Web site:

- **sapjco.jar**
- **librfccm.so**
- **libsapjcorfc.so**

b Copy the **sapjco.jar** file into the <**SiteScope root directory**>**WEB-INF****lib** directory.

c Copy the two .so files as follows:

- For Sun installations, copy into the <**SiteScope root directory**>**java****lib****sparc** directory.
- For Linux installation, copy into the <**SiteScope root directory**>**java****lib****i386** directory.

d Restart SiteScope.

5 Configure the monitor properties

Configure the SAP Work Processes monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "SAP Work Processes Monitor Settings" on page 542.

6 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

Reference

SAP Work Processes Monitor Settings

The SAP Work Processes monitor enables you to monitor the effectiveness of your SAP R/3 server configurations. The monitor provides statistical information on work process performance to estimate whether the SAP R/3 Server is efficiently using its resources.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the SAP Work Processes Monitoring Environment" on page 538 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "SAP Work Processes Monitor Overview" on page 534

SAP Work Processes Monitor Settings

User interface elements are described below:

UI Element	Description
Application server	Address of the SAP server you want to monitor.
SAP client	Client to use for connecting to SAP.
System number	System number for the SAP server.

UI Element	Description
SAP router string	Router address string if your connection is being made through a router (otherwise leave it blank). You can find the router address using the SAP Logon tool from the SAP Client software. Open the Logon console, select the server you want to monitor and then select **Properties** to view the router address.
Credentials	Option for providing the user name and password to access the SAP server: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password to access the SAP server in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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Script Monitor

This chapter includes:

Concepts

Reference

Concepts

Script Monitor Overview

The Script monitor can be used to run shell commands or other scripts on the machine where SiteScope is running or it can run a script that is stored on a remote machine.

One of the primary reasons for using the Script monitor is to integrate into SiteScope an existing script that you use to do a particular system management function. For example, if you have a script that runs a diagnostic on an application and returns a 0 reading if everything is working, you could create a Script monitor that runs this script and recognizes any exit value other than 0 as an error. Then you could create an alert which would email or page you if this monitor was in error.

The Script monitor supports monitoring remote servers running on HP NonStop operating systems. For details on enabling the HP NonStop operating system monitoring environment, see "Setup Requirements and User Permissions" on page 219.

Note:

- This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.
- Symbolic links are now supported when executing scripts on remote UNIX servers. This support is enabled by setting the property **_scriptMonitorAllowSymbolicLink** to **true** (false by default) in the **master.config** file. When enabled, the symbolic link appears in the list of available scripts when configuring a Script monitor to monitor a UNIX remote.

For details on configuring the monitor, see "Script Monitor Settings" on page 552.

This section contains the following topics:

- "Script Options" on page 547
- "Status" on page 549
- "Caching Script Output" on page 550
- "Setting a Timeout Value for Script Execution" on page 550
- "Running Different Types of Scripts" on page 551

Script Options

The following is an overview of the possible script execution options and requirements for the SiteScope Script monitor:

Script Option	Description
Local Script	A file stored and run on the SiteScope machine. The file should be stored in the **<SiteScope root directory>\scripts** directory.

Script Option	Description
Remote Script	A remote script file (UNIX and Windows-Windows SSH only) in a scripts subdirectory in the home directory of the account SiteScope uses to access the remote server. For example, home/sitescope/scripts. **Note:** ➤ On Window platforms, the path to the user home directory depends on the particular SSH server. For example if you install a Cygwin SSH server in C:\Cygwin, the default path to the home directory for the Administrator user will be C:\Cygwin\home\Administrator. For additional information, see the documentation for your SSH server. ➤ Only executable script files are displayed. The remote scripts must include an echo construct to echo script results and exit codes back to SiteScope (see the Return Status Example section below). The monitor may fail if the required exit code is not echoed back to SiteScope. When running a script on a remote Windows server using SSH, you must include an "end script" string at the end of the script to avoid a timeout error. For example: @echo off time echo end script
Remote Command	A script file containing a single command stored locally in the <**SiteScope root directory**>**scripts.remote** directory. This script file is used to run a command on a remote server. The command may be used to run a remote script file that performs multiple functions.

Note: For SiteScope on Linux, the script itself must have a shell invocation line as the very first line of the script. This applies to scripts that you are trying to run locally on the SiteScope machine. For example, the first line of the script should include something like #!/bin/sh or #!/usr/local/bin/perl. If the shell invocation line is not found then the exec() call returns with a -1 exit status. This is a limitation of the Java Runtime in JRE prior to release 1.4. This has been fixed in the 1.4 JRE from Sun which is shipped with SiteScope version 7.8 and later.

Scheduling Script monitors is dependent on the script that you want SiteScope to run. You can use the scheduling option to have SiteScope run scripts at different intervals throughout the week.

Status

Each time the Script monitor runs, it returns a status and writes it into the monitoring log file. It also reports a command result, a value, and the time it took to run the command.

The command result is the exit value returned by running the command. This works for local UNIX scripts, but does not work for remote UNIX scripts, or Win NT batch files. Win NT batch file (*.bat) exit codes are not passed out of the command interpreter, and remote UNIX script exit codes are not passed back through the remote connection. See the example below for a way to receive information from the script.

Caching Script Output

The Script monitor includes an optional function that can be used to cache the output of a script execution. The cached output is useful in you want to have multiple script monitors check and alert on different parts of the output of a script, or reduce network traffic and server load by minimizing the number of times a script is run.

You can enable script output caching by entering a time value (in seconds) greater than zero in the **Cache life (seconds)** setting in the Monitor Settings section. To configure multiple Script monitors to use the data in the cache, each monitor instance must be:

- Configured to use the same remote Server profile.
- Configured to use the same Script file.
- Have a **Cache life (seconds)** value greater than zero.

The **Cache life (seconds)** value entered for each monitor should approach, but not exceed, the equivalent of the value selected for the **Frequency** setting for that monitor. For example, if the **Frequency** setting is 10 minutes, the **Cache life (seconds)** value can be set to a value of 590 because 10 minutes is equivalent to 600 seconds and 590 is less than 600. Any monitor that detects the end of its Cache Life runs the script again and refreshes the cache.

Setting a Timeout Value for Script Execution

You can set a timeout value for the Script monitor for SiteScope running on Windows. The timeout value is the total time, in seconds, that SiteScope should wait for a successful run of the script. You can use this option to have SiteScope run the monitor but kill the script execution if a script exit code is not detected within the timeout period.

The requirements and limitations of this option are:

- It is only available with SiteScope for Windows.
- It can only be used with scripts stored and run on the local SiteScope server (that is, where the **Server** setting for the Script monitor is this server or localhost).
- The timeout setting value is expressed in seconds.
- It only applies to Script Monitors.

For details on how to set a timeout value for script execution, see "Script Monitor Settings" on page 552.

Running Different Types of Scripts

You can run non-batch scripts, for example VBScript or Perl scripts, without wrapping them into a batch file (in versions of SiteScope earlier than 9.50, this was not possible).

Note: This is supported only on Windows machines where SiteScope Server is the target of the Script monitor.

- You can see scripts with any extensions by adding the **_scriptMonitorExtensions** property to the **master.config** file. For example, to see **.pl**, **.py**, or **.php** scripts, use the following format:
  _scriptMonitorExtensions=.pl;.py;.php
- You can run script interpreters with script extensions by specifying the **_scriptInterpreters** property in the **master.config** file as follows:
  _scriptInterpreters=pl=c:/perl/perl.exe;py=c:/python/python.exe;php=c:/php/php.exe

Reference

Script Monitor Settings

This monitor enables you to integrate existing system management scripts into the SiteScope environment by running external commands and reporting the command result. It also enables you to parse and report a specific value from the command output.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor supports monitoring remote servers running on HP NonStop operating systems. ➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Server**s and **Add Remote Server** buttons are not displayed. ➤ When deploying a Script monitor from a template, the case of the remote script name must match that of the script in the scripts subdirectory. Otherwise, the selected script is shown as 'none'.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Script Monitor Overview" on page 546

Script Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server where the script you want to run is stored. Select a server from the server list (only those Windows and UNIX remote servers configured in SiteScope using SSH are displayed). **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)
Add Remote Server	Opens the Add Remote Server dialog box, enabling you to select the type of remote you want to add (Windows or UNIX), and enter the configuration details. For details on the Microsoft Windows Remote Servers user interface, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. For details on the UNIX Remote Servers user interface, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.

UI Element	Description
Script	The script to run. SiteScope gets scripts from a scripts subdirectory in the home directory of the account SiteScope uses to access the remote server. For example, home/sitescope/scripts. On Windows, SiteScope gets scripts from the home directory on the remote machine (this depends on the SSH server configuration). For example, C:\Documents and Settings\Administrator\Scripts directory. When monitoring the SiteScope Server, scripts placed into the <**SiteScope root directory**>**scripts** directory may be used. In that directory, there are several examples scripts with comments describing each one. If you choose USE COMMAND, your must also specify a USE COMMAND script file name in the **Remote script command file** field below. SiteScope sends the command or commands found in the USE COMMAND script file to be run as a command line on the remote UNIX Machine. Script files for the USE COMMAND option must be created in the <**SiteScope root directory**>**scripts.remote** directory. **Example:** Create a file named **test.sh** and save it in the <**SiteScope root directory**>**scripts.remote** directory. Edit **test.sh** to include the command syntax ps -ef;echo "all done" as the content of the file. Then create a Script monitor with the USE COMMAND option selected, select a remote UNIX machine, and select test.sh as the USE COMMAND script to run. **Note:** The **diskSpace.bat** script accepts only two required parameters: host name and physical drive name. Because the connection to the remote host is made using the current SiteScope account, you can only use this script if SiteScope can access this account. If the specified account does not have the privileges to access the remote host, we recommend that you use the Disk Space monitor instead.

UI Element	Description
Parameters	Specifies any additional parameters to pass to the script. You can use a regular expression or use the attributes found in SiteScope alert templates to insert variables into the parameters box. For details, see "SiteScope Alert Template and Event Properties Directory". **Example:** s/$month$ day $year$/ passes the current month, day and year to the script. **Syntax exceptions:** SiteScope cannot pass the following characters to scripts: ` ; & |
Output encoding	The encoding used on the server where SiteScope is running if the command output uses an encoding that is different than. This enables SiteScope to match and display the encoded file content correctly. **Default value:** windows-1252
Match value labels	Labels for the matched values found in the script output. The matched value labels are used as variables to access retained values from the match expression for use with the monitor threshold settings. These labels are also displayed as the text labels in graphs generated for the retained values in management reports for this monitor. **Example:** Enter Copyright_start, Copyright_end to represent the copyright date range used in the **Match expression** field. After the monitor runs, these labels are displayed in the Condition list in Threshold Settings, enabling you to set status threshold settings (Error if, Warning if, and Good if) for the matched value. **Note:** ➤ Separate multiple labels with a comma (,). ➤ You can set up to 10 labels.

UI Element	Description
Match expression	Regular expression used to retrieve values from the script output. For example, the expression: /(\d+)/ matches one or more digits returned by the script. Use parentheses to enable the monitor to retrieve these values as counters. By using the labels in **Match value labels**, these counters can be automatically assigned with a customized name and you can define thresholds for them. The retrieved value can be used to set the error or warning status of the monitor and to trigger alerts. SiteScope checks up to four values returned. **Example:** /([UDTCP]{3,4})\s*([\w\d\W]{5,35}\:\d+)\s*([\w\d\W]{5,35}\:\d+)\s*([A-Z]{5,35})/s could be used to match and retain values from the four columns of the following command output: TCP planetcom:2664 COMSRVF01:2412 ESTABLISHED **Note:** ➤ If this item is left blank, no value is retrieved from the script. ➤ You can use up to 10 sets of parentheses to retain multiple values from the script output.
Open Tool	Opens the Regular Expression Tool, enabling you to test a regular expression for content matching against a sample of the content you want to monitor. For details, see "Regular Expression Tool" in *Using SiteScope*.

UI Element	Description
Remote script command file	The script file that contains the commands that SiteScope should send to the remote machine if you USE COMMAND is selected as the Script option and a remote machine as the Server. You can save one or more commands in the text script file and save the file in the **<SiteScope root directory>\ scripts.remote** directory. SiteScope opens this file and runs the command at the command line of the remote server chosen in the **Choose Server** option above. You can then use the Match Expression option to parse the output of the command and display valuable information. The USE COMMAND script can make use of positional parameters such as $1, $2 (or alternatively %1, %2), and so on, inside the script. Enter the parameters you want SiteScope to pass to the script in the Parameters box provided above. You can use one or more commands per USE COMMAND script file. **Default value:** none **Syntax exception:** Do not include any carriage returns or any command that would normally discontinue script processing (for example, do not use the exit command).
Cache life (seconds)	Uses multiple Script monitor instances to check or match on content returned by a single run of a script. ➤ Enter a time value (in seconds) greater than zero to have SiteScope cache the output of the script execution. Each time the monitor is run, SiteScope checks if the cache life has expired. If it has not, then the monitor uses the cached script output data, otherwise the script is run again to update the cache and the monitor. ➤ Enter a value of **0** (zero) to disable the cache function. This causes the monitor to run the script each time that it runs. **Default value:** 0

UI Element	Description
Measurement maximum (milliseconds)	Maximum value, in milliseconds, for creating the gauge display. **Example:** If the runtime of the script is 4 seconds, and this value is set to 8 seconds (8000 milliseconds), the gauge shows at 50%. **Default value:** 0
Timeout (seconds)	Amount of time, in seconds, to wait for the script to run successfully before timing out. **Default value:** -1 (no timeout)

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Service Monitor

This chapter includes:

Concepts

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Service Monitor Overview

The Service monitor verifies that specific services or processes are listed as running, and optionally, it can also check to see how much CPU and memory (Page File Bytes) a service or process is using. If a service or process that should be running does not show up or if it is using too much memory, SiteScope can either alert you to the problem so that you can address it yourself, or it can run a script to automatically restart the service or process to help minimize the effect on other operations and downtime.

Note: This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*.

You should create a Service monitor for any service or process that should be running on a consistent basis. You can also create a Script Alert that restarts the service automatically if the service monitor in SiteScope cannot find it. The **restartService.bat** script, located in the **<SiteScope root directory>\scripts** directory, is a template that you can customize to create a script for SiteScope to run if your monitor fails. For details on using a Script Alert, see "Working with Script Alerts" in *Using SiteScope*.

For details on configuring the monitor, see "Service Monitor Settings" on page 563.

This section contains the following topics:

- "Setup Requirements and User Permissions" on page 561
- "Status" on page 561
- "Scheduling the Monitor" on page 562
- "IPv6 Addressing Supported Protocols" on page 562

Setup Requirements and User Permissions

SiteScopes running on Windows platforms need to be running under an account that has the necessary administrative security privileges to access performance counter data from remote servers. If the servers you want to monitor are in a different domain, are governed under a different policy, or require a unique login different than the account SiteScope is running under, then you must define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view. For SiteScopes installed on UNIX platforms, you only need to define the connection to these servers under the Microsoft Windows Remote Servers option in the remote server view.

Status

Each time the Service monitor runs, it returns a reading and a status message and writes them in the monitoring log file.

The reading is the current value of the monitor. For this monitor, the possible readings are:

- running
- not found

The status is logged as either good or error. An error status is returned if the service is not found.

Scheduling the Monitor

The Service monitor does not put a heavy load on your server. For monitoring remote UNIX servers, SiteScope usually needs to open a telnet or SSH connection to the remote server. While the monitor actions generally do not load either server, managing a large number of remote connections can results in some performance problems. You probably want to monitor critical services and services that have a history of problems every five minutes or so. Less critical services and processes should be monitored less frequently.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the following protocols:

- NetBios (from SiteScope installed on Windows platforms only)
- WMI (from SiteScope installed on Windows platforms only)
- SSH (from SiteScope installed on UNIX platforms only)

Note: When specifying a literal IPv6 address as the name for the monitored remote server when using the NetBIOS connection method, the IPv6 address must be customized by:

1. Replacing any colon (":") characters with a dash ("-") character.
2. Appending the text ".ipv6-literal.net" to the IP address.

For example, the IPv6 address: 2004:DB8:2a:1005:230:48ff:fe73:982d

would be: 2004-DB8-2a-1005-230-48ff-fe73-982d.ipv6-literal.net

Alternatively, you can switch to the WMI connection method, and avoid having to make changes to the IPv6 address.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Reference

Service Monitor Settings

The Service monitor checks to see if a service (Windows environment) or a specific process (UNIX and Windows) is running. There are many services or processes that play an important role in the proper functioning of your server, including Web server, Mail, FTP, News, Gopher, and Telnet. Web environments which support e-commerce transactions may have other important processes that support data exchange.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is also supported in SiteScopes that are running on UNIX versions if the remote server being monitored has been configured for SSH. For details, see "SiteScope Monitoring Using Secure Shell (SSH)" in *Using SiteScope*. ➤ In Threshold Settings, the CPU and memory (Page File Bytes) measurements are relevant only for processes and not for system services. If the selected service is a process name, CPU and memory (Page File Bytes) measurements are in the drop-down list. If the selected service is a system service, such as Event Log, CPU and memory (Page File Bytes) measurements are not listed. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed. ➤ The **Services Tool** is available when configuring this monitor to view services running on the server where SiteScope is installed (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Services Tool" in *Using SiteScope*.

Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Service Monitor Overview" on page 560

Service Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server where the service or process you want to monitor is running. Select a server from the server list (only those remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** This monitor supports WMI (Windows Management Instrumentation) as a method for gathering statistics. Remote servers that have been configured with the WMI method are also displayed in the server list. For details, see "Configure the WMI Service for Remote Monitoring" in *Using SiteScope*. **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Remote Server dialog box, enabling you to select the type of remote you want to add (Windows or UNIX), and enter the configuration details. For details on the Microsoft Windows Remote Servers user interface, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. For details on the UNIX Remote Servers user interface, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.
Service	The service (or process in UNIX) that you want to monitor from the services list. To monitor an NT process, select **(Using Process Name)** in the drop-down list and enter the name in the **Process name** box. **Note:** The CPU and memory (Page File Bytes) counters are relevant for processes and not for services, and it is displayed only if the selected service is by process name.

UI Element	Description
Other service	Name of the service you want to monitor (if it is not listed in the services list). **Note:** This field is available only when **Unknown** is selected in the **Service** box.
Process name	(For Windows only) Name of the process if you want to get information about the percentage of CPU and memory (Page File Bytes) being used by a specific process and/or the number of a specific type of process running. Use a string or a regular expression. **Note:** ➤ The name of the process must be as it appears in NT Task Manager. ➤ This field is available only when **(using Process name)** is selected in the **Service** box. **Example:** explorer.exe
Measure process memory use	(For UNIX only) SiteScope reports the amount of virtual memory being used by a specific process.

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Siebel Application Server Monitor

This chapter includes:

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Concepts

Siebel Application Server Monitor Overview

The Siebel Application Server monitor (previously known as the Siebel Server Manager monitor) uses the Siebel Server Manager client to monitor Object Manager components and task information on Siebel 7.03, 7.04, 7.5.3, 7.7, 8.0, and 8.1 application servers.

Note:

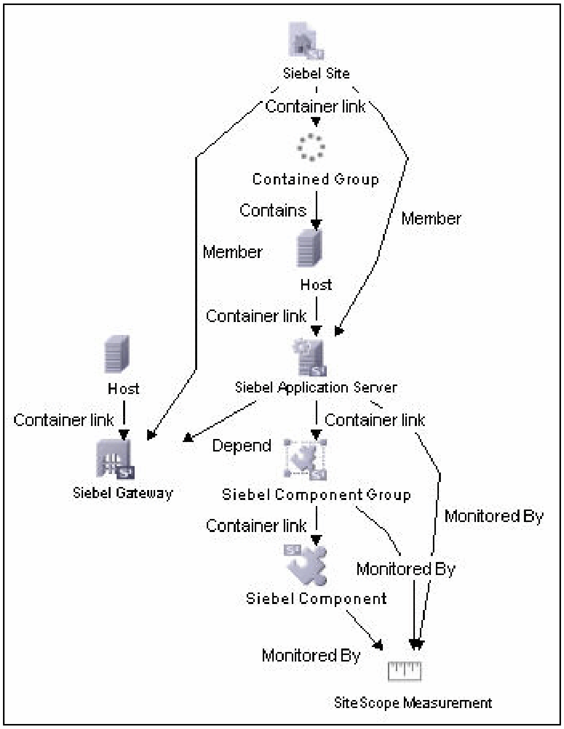
- The Siebel Application Server monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various services and aspects of a Siebel application server. For details, see "Siebel Solution Templates" in *Using SiteScope*.

For task details, see "How to Configure the Siebel Application Server Monitoring Environment" on page 571.

For user interface details, see "Siebel Application Server Monitor Settings" on page 574.

Siebel Application Server Topology

The Siebel Application Server monitor can identify the topology of the Siebel Application Servers being monitored. The monitor creates the following topology in BSM's RTSM.



The CIs are created only for the monitored entities according to the counters that you select. The monitors are represented in the RTSM as SiteScope Measurement Groups and SiteScope Measurement CIs.

Note: This direct integration between SiteScope and BSM is available only when the Application Management for Siebel license is installed.

For details on enabling topology reporting, see "How to Configure the Siebel Application Server Monitoring Environment" on page 571.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

For information about the Siebel topology, see "Siebel Views" in *Solutions and Integrations* in the HP Business Service Management Documentation Library.

Tasks

How to Configure the Siebel Application Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 571
- "Configure the monitor properties" on page 573
- "Enable topology reporting - optional" on page 573

1 Prerequisites

The following are requirements for using the Siebel Application Server monitor:

- The Siebel Server Manager client must be installed only on the machine where SiteScope is running or that is accessible to the SiteScope. There are several options for how you can do this:
  - Copy the necessary client libraries from the Siebel server and install them on the machine where SiteScope is running (recommended option).
  - Enable the client on the Siebel server itself and create a remote server profile in SiteScope to access that server and the Siebel client on that server.
  - Install and enable the client on a third remote server and create a remote server profile in SiteScope to access that server and the Siebel client on that server. This option is applicable only for UNIX remotes.
  - For Windows networks, map the network drive where the Siebel client is installed to the SiteScope machine and use this in the Script Path.

- You must know the install path for the Server Manager client to be able to setup Siebel Server Manager monitors in SiteScope. If the client is installed on the machine where SiteScope is running, this is the path on that machine. If the client is installed on a remote machine, you must know the fully qualified path to the client executable relative to that machine (usually called **srvrmgr** or **srvrmgr.exe**).
- You must know the name or address of the Siebel Gateway server used by the Siebel applications you want to monitor. Ask your Siebel system administrator or consult the Siebel documentation for more information about the Gateway server name.
- You must know the name or address of the Siebel Enterprise server used by the Siebel applications you want to monitor. Ask your Siebel system administrator or consult the Siebel documentation for more information.
- You must know the user and password that Server Manager uses for logging into the Siebel server. This user must be granted Siebel Administrator responsibility on the Siebel server.
- For monitoring Siebel processes, SiteScope needs credentials/authorization to access the target Siebel machine. You may need to define a Remote host in SiteScope for the target Siebel machine, unless the SiteScope server is already implicitly authenticated by the Siebel machine.

Note: Process monitoring remote Siebel machines incurs a noticeable delay (to get process metrics) hence the monitor runs slower than if the target Siebel machine is in close proximity to the SiteScope server. If your process counters are returning with no values during a run, it may be that the process metrics read operation is taking too long and SiteScope is timing out. In this case you may want to specify a required timeout value for perfex in the Infrastructure Settings Preferences page; for example, change the **Perfix timeout** value to 120 seconds. To access this setting, open the **Preferences** context, select **Infrastructure Settings Preferences**, and expand the **General Settings** section.

- For SiteScope on Solaris/Linux: You must make sure that the Siebel Server Manager Client's libraries are available to the Client. Set the LD_LIBRARY_PATH on that machine by using the Initialize Shell Environment field for the remote server configuration created in SiteScope. An example shell initialization command is LD_LIBRARY_PATH=/var/siebel/client/lib;export LD_LIBRARY_PATH.

2 Configure the monitor properties

Configure the Siebel Application Server monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Siebel Application Server Monitor Settings" on page 574.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

Reference

Siebel Application Server Monitor Settings

The Siebel Application Server monitor uses the Siebel Server Manager client to monitor Object Manager components and task information on Siebel application servers.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers, Add Remote Server**, and **Add Credentials** buttons are not displayed. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the Siebel Application Server Monitoring Environment" on page 571 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Siebel Application Server Monitor Overview" on page 568

Siebel Application Server Monitor Settings

User interface elements are described below:

UI Element	Description
Siebel host name	Siebel host name is required if you are doing either of the following: ➤ **Doing process monitoring.** In this case you must define a Remote Definition to the target Siebel machine whose Siebel processes are to be monitored. Enter the **Host Server Name** of the Siebel Remote definition (not the **Title**). This is the **NT Server Address** box for NT remote servers or **Server Address** box for UNIX remote servers. ➤ **Reporting monitor data to an installation of HP Business Service Management.** In this case the value entered is used as a text identifier describing the target Siebel server that this monitor is monitoring. This text descriptor is used to identify the Siebel server when the monitor data is viewed in a BSM report. The box is optional only if the **Script Server** box is already specified to be the target Siebel server.
Application server	Siebel server name or address.
Gateway server	Gateway server name or address.
Enterprise server	Enterprise server name or address.
Credentials	Siebel Server Manager client requires a user name and password. Option to use for providing credentials: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (selected by default). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.

UI Element	Description
Script server	The remote Windows or UNIX machine where the Server Manager (srvrmgr) script is installed. Select a server from the server list (only those remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. The method of connection is either SSH or Telnet (but not Microsoft NetBios). For NetBios, choose this server and map the drive. **Default value:** SiteScope Server (the server on which SiteScope is installed)
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Remote Server dialog box, enabling you to select the type of remote you want to add (Windows or UNIX), and enter the configuration details. For details on the Microsoft Windows Remote Servers user interface, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. For details on the UNIX Remote Servers user interface, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.

UI Element	Description
Script path	Full path to the Siebel Server Manager executable directory relative to the machine chosen above. **Example:** E:\sea704\client\BIN
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.
Siebel tasks time window (minutes)	A time window in which tasks are monitored on the Siebel application server. This setting applies only to the "No. of Tasks in XXX" counters. This value tells SiteScope to count tasks that have started within the last N minutes only. It can be used, for instance, to make SiteScope monitor only newly occurring tasks. **Example:** If the task start time is within the time window (for example, 20 minutes), the task is monitored. The time window is calculated according to the formula: time window = (current time – property value). Enter 0 to monitor every task on the Siebel application server, regardless of its start time. **Default value:** 60 minutes

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Siebel Log File Monitor

This chapter includes:

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Siebel Log File Monitor Overview

Use the Siebel Log File monitor to automatically scan multiple log files for detailed data and error information. By having SiteScope scan the log files at set intervals, you can eliminate the need to scan the logs manually. In addition, you can be notified of warning conditions that you may have otherwise been unaware of until something more serious happened.

This monitor supports monitoring remote servers running on Siebel Application Server 7.03, 7.04, 7.5.3, 7.7, 8.0, and 8.1.

Note: The Siebel Log File monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.

Each time that SiteScope runs this monitor, it starts from the point in the file where it stopped reading last time it ran. This insures that you are only notified of new entries and speeds the rate at which the monitor runs. While this behavior can be overridden, we do not recommend it, and this should be done for troubleshooting purposes only.

You can schedule your Siebel Log File Monitors to run as often as every 15 seconds. However, depending on the size of the log files, the total number of monitors you have running, and whether the **Search from start** option is selected, the monitor may take a considerable amount of time to run.

For details on configuring the monitor, see "Siebel Log File Monitor Settings" on page 581.

Reference

Siebel Log File Monitor Settings

The Siebel Log File monitor checks for log file entries added to a group of log files by looking for entries containing a specific event type or subtype.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Siebel Log File Monitor Overview" on page 580

Siebel Log Monitor Settings

User interface elements are described below:

UI Element	Description
Server	The Siebel server where the log files you want to monitor are running. Select a server from the server list (only those remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.

UI Element	Description
Add Remote Server	Opens the Add Remote Server dialog box, enabling you to select the type of remote you want to add (Windows or UNIX), and enter the configuration details. For details on the Microsoft Windows Remote Servers user interface, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. For details on the UNIX Remote Servers user interface, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.
Log file directory	Path to the log directory you want to monitor. To monitor log files on a remote Windows NT/2000 server through NetBIOS, specify a UNC path to the remote directory. **Example:** \\remoteserver\logFileDirectory If you are using SSH as a connection method to the remote NT server, you must select the **java library** and **ssh1** options for that remote.
File name (regular expr.)	Log files that you want to monitor. You must use a regular expression to specify multiple files, and the regular expression string must be enclosed in forward slashes (for example, /<my reg exp>/). The search is not recursive and only matches files listed within the log file directory. **Note:** Selecting too many log files to monitor can significantly degrade SiteScope performance.
Severity	Severity level of entries to consider for matching. Entries that have the correct event type/subtype and have an equal or greater severity are matched. Those entries with lesser severity are ignored. **Default value:** Fatal
Event type	Matching event type or subtype. The monitor reports how many log entries were found of the specified type. **Default value:** GenericLog

UI Element	Description
Log-entry content match	(Optional) Additional text string or regular expression to further narrow down the matched log entries. This match expression is run against the content returned from the initial **Severity** and **Event type** match. You use this option to find only those log entries with the selected severity an event type that meet this additional match criteria.
Search from start	Always checks the contents of the whole file. If this option is not selected, SiteScope checks only newly-added records, starting at the time that the monitor was created (not when the file was created). **Note:** Monitoring large numbers of log files with this option enabled may use large amounts of memory and CPU time. This can degrade SiteScope server performance. **Default value:** Not selected

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Siebel Web Server Monitor

This chapter includes:

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Siebel Web Server Monitor Overview

Use the Siebel Web Server monitor to monitor statistical and operational information about a Siebel server by way of the Siebel Web server plug-in. You can use this monitor to watch Siebel server login session statistics and gauge the performance of the Siebel server Object Managers and database.

This monitor supports monitoring remote servers running on Siebel Application Server 7.03, 7.04, 7.5.3, 7.7, 8.0, and 8.1.

Note:

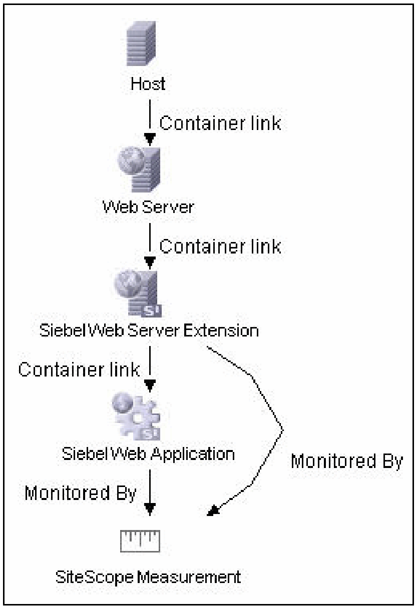
- ➤ The Siebel Web Server monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- ➤ SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various services and aspects of a Siebel Web server. For details, see "Siebel Solution Templates" in *Using SiteScope*.

For task details, see "How to Configure the Siebel Web Server Monitoring Environment" on page 589.

For user interface details, see "Siebel Web Server Monitor Settings" on page 590.

Siebel Web Server Topology

The Siebel Web Server monitor can identify the topology of the Siebel Web Server being monitored. The monitor creates the following topology in BSM's RTSM.



The CIs are created only for the monitored entities according to the counters that you select. The monitors are represented in the RTSM as SiteScope Measurement Groups and SiteScope Measurement CIs.

Note: This direct integration between SiteScope and BSM is available only when the Application Management for Siebel license is installed.

For details on enabling topology reporting, see "How to Configure the Siebel Web Server Monitoring Environment" on page 589.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" on page 282 in *Using SiteScope*.

For information about the Siebel topology, see "Siebel Views" in *Solutions and Integrations* in the HP Business Service Management Documentation Library.

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How to Configure the Siebel Web Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 589
- "Configure the monitor properties" on page 589
- "Enable topology reporting - optional" on page 589

1 Prerequisites

The following are requirements for using the Siebel Web Server monitor:

- The Siebel Web server plug-in must be installed.
- The Siebel Web server plug-in should be configured to enable the display of the statistics you want to monitor. This may require that stats page sections be enabled by editing the **eapps.cfg** file for the Siebel server. Refer to the Siebel documentation for more information.

2 Configure the monitor properties

Configure the Siebel Web Server monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*. For monitor user interface details, see "Siebel Web Server Monitor Settings" on page 590.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

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Siebel Web Server Monitor Settings

The Siebel Web Server monitor enables you to use SiteScope to monitor statistical and operational information about a Siebel server by way of the Siebel Web server plug-in. You can use this monitor to watch Siebel server login session statistics and gauge the performance of the Siebel server Object Managers and database.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the Siebel Web Server Monitoring Environment" on page 589 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Siebel Web Server Monitor Overview" on page 586

Siebel Web Server Monitor Settings

User interface elements are described below:

UI Element	Description
Basic Settings	
Application URL	URL of the Web plug-in server stats page for the application you want to monitor. **Example:** http://siebelsrv/service/_stats.swe If the Siebel Web server is configured to support verbose mode, you can also use http://siebelsrv/service/_stats.swe?verbose=high to include information on Locks and Current Operations Processing for the Siebel server.
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.
Connecton Settings (These settings are optional, unless the server requires authentication)	
Authorization user name	User name to access the Web server stats page.
Authorization password	Password for accessing the Web server stats page.
HTTP proxy	Proxy server and port to use if you are using a proxy to access the Siebel server. **Example:** proxy.SiteScope.com:8080

UI Element	Description
Proxy server user name	Proxy user name if the proxy server requires authorization.
Proxy server password	Proxy password if the proxy server requires authorization. If access to the Siebel Web Server site is controlled by a centralized authorization and authentication access control system, the following fields are used to submit information to a HTML/CGI enabled authentication system. You can determine if authentication is required by trying to access the Web plug-in server stats page using a Web browser outside of SiteScope. If an HTML-based authentication form opens before you see the Siebel service statistics page, you must use the following fields to access the Siebel Web server plug-in.
HTML Form-Based Authentication (These settings are optional, unless the server requires authentication)	
HTML form-based authentication required	SiteScope submits HTML form-based authentication when accessing the Siebel Web server plug-in.
Authorization form name	Authentication form identifier within the Web page when using HTML Form-based Authentication. The identifier is a number representing the place or order of the forms on an HTML page. **Example:** [1] is the first HTML <FORM> set, [2] is the second, and so on. The default is [1] because it assumes that the authentication information is entered into the first HTML <FORM> tag set on the page.
Authorization user name form field	User name that should be submitted to the access control system when using HTML Form-based Authentication. This must be the user name that would be entered in the authentication form the same as if you were accessing the Siebel Web server plug-in manually using a Web browser.

UI Element	Description
Authorization password form field	Password that should be submitted to the access control system. This must be the password that would be entered in the authentication form when accessing the Siebel Web server plug-in manually using a Web browser.
Authorization form button	Identifier of the Submit button on the authentication form when using HTML Form-based Authentication. The identifier is a number representing the place or order of the buttons on an HTML page. **Example:** [1] is the first HTML <INPUT TYPE=SUBMIT> button, [2] is the second, and so on. **Default value:** [1]

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SNMP Monitor

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SNMP Monitor Overview

Many network devices support the SNMP protocol as a way of monitoring them. Use the SNMP monitor to monitor devices that communicate with the SNMP protocol, such as firewalls, routers, and UPS's. Several operating systems suppliers also provide SNMP agents and Management Information Bases (MIBs) for accessing workstation or server performance metrics, interface statistics, and process tables by using SNMP. The monitor supports monitoring agents of SNMP versions 1.0, 2.0, and 3.0 MD5 and SHA.

You can use the SNMP monitor to watch any values known by the SNMP agent running on a device, provided that you can supply an Object ID that maps to that value. The Object ID's may be available in the product documentation or in the form of a MIB file. If your router supports SNMP, for example, you could have SiteScope monitor for packet errors, bandwidth, or device status.

Note: To have SiteScope listen for SNMP traps from multiple devices, use the SNMP Trap monitor.

For details on configuring the monitor, see "SNMP Monitor Settings" on page 598.

Setup Requirements and User Permissions

Requirements for using the SNMP monitor include:

- SNMP agents must be deployed and running on the servers and devices that you want to monitor.
- The SNMP agents must be supplied with the necessary Management Information Bases (MIBs) and configured to read those MIBs.
- If SNMP version 3 is used, a valid user name and password might be required to access the SNMP device.
- You must know the Object ID's (OIDs) of the parameters you want to monitor. In some cases, an equipment manufacturer may supply a list of OIDs that are available. Otherwise, you may need to locate a MIB browser utility to parse a MIB and extract the values of interest to you. If you want the monitor to get you the next OID of the OID you entered, you can enter the OID with a plus sign (+) at the end of the OID (for example, 1.3.6.1.2.1.4.3+). For each monitor run, the monitor retrieves the next OID value and not the OID that you entered. This may be helpful if you want to reach one of the SNMP table columns.

For information about monitoring SNMP systems, refer to the HP Software Self-solve knowledge base (http://h20230.www2.hp.com/selfsolve/documents). To enter the knowledge base, you must log on with your HP Passport ID.

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SNMP Monitor Settings

This monitor enables you to monitor devices that communicate with the SNMP protocol, such as firewalls, routers, and UPS's. You can also use this monitor to have SiteScope listen for SNMP traps from multiple devices.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements and User Permissions" on page 597. ➤ The **SNMP Tool** is available when configuring this monitor to query a SNMP Management Information Base (MIB) and retrieve a set of OIDs (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "SNMP Tool" on page 215.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "SNMP Monitor Overview" on page 596

SNMP Monitor Settings

User interface elements are described below:

UI Element	Description
Basic SNMP Settings	
Host name	Host name or IP address of the SNMP device that you want to monitor (for example, demo.thiscompany.com). If your SNMP device is using a different port, add it to the host name using **:port**. **Example:** demo.SiteScope.com:170 (to use port 170)

UI Element	Description
Object ID	Object ID setting: ➤ **Commonly used values.** Select the Object ID mnemonic from the drop-down list. (This is the default option with **system.sysDescr** set as the default value.) ➤ **Other values.** Enter the Object Identifier (OID) for the SNMP value you want to retrieve. The OID specifies which value should be retrieved from the device. **Example:** 1.3.6.1.2.1.4.3 **Tip:** To troubleshooting basic connectivity to the device and to confirm that the SNMP agent is active, select the **system.sysDescr** object from the drop-down list if other objects cannot be found. **Note:** SiteScope version 7.1 and later supports SNMP version 1 and version 2. To send a trap using snmpv2, you must select the version number in the SNMP Connection Settings. If you receive the error message **error - noSuchName**, it means SiteScope was able to contact the device but the OID given is not know by the device. You must provide an OID that is valid to the device to obtain a value. If you have a MIB file for the device you want to monitor, you can copy the *.mib (or *.my) file into the **<SiteScope root directory>\templates.mib** subdirectory and use the MIB Help utility to compile the MIB and browse the OIDs for the device. To use the MIB Helper tool, select **Tools** > **MIB Browser** and enter the connection details. After copying a new MIB file to SiteScope, SiteScope must be restarted. Select the MIB file to browse using the drop-down list. Click the **browse** button to show the OIDs from the selected MIB file. A tree is displayed that represents the chosen MIB on the specified server. You can browse that tree to find the OID that you want to monitor. **Note:** It is not necessary to browse a MIB file with the SiteScope Mib Helper to monitor a device. The MIB Helper is provided simply as a tool to help you discover OIDs available on a device, but it is not the only tool available. You can find other alternative tools on the Web (for example, MG-SOFT or iReasoning).

UI Element	Description
Index	Index of the SNMP object. Values for an OID come as either scalar or indexed (array or table) values. ➤ For a scalar OID, the index value must be set to 0. ➤ For an indexed or table value, you must provide the index (a positive integer) to the element that contains the value you want. For example, OID 1.3.6.1.2.1.2.2.1.17 is an indexed value that contains four elements. To access this second element of this OID, enter an index of 2 in the **Index** text box. To access the fourth element, enter an Index value of 4. In some vendor specific MIB's, the indexed entries (often referred to in tables) can have compound index values. For example, the OID for the process entry table in a Sun MicroSystems server MIB may be: .1.3.6.1.4.1.42.3.12.1.1. This indexed or table object may have up to eleven nodes with OIDs ranging from .1.3.6.1.4.1.42.3.12.1.1.1 to .1.3.6.1.4.1.42.3.12.1.1.11. Each of these nodes contains an indexed list of entries with index values that range from 0 to over 27300 where the Index value represents the process ID number used by the operating system (view examples using the ps -ef command in UNIX). In this example, the index values may not be consecutive from 0 to 27300. **Default value:** 0
Community	Community string for the SNMP device. The Community string provides a level of security for a SNMP device. Most devices use **public** as a community string. However, the device you are going to monitor may require a different Community string to access it. If you try to monitor an SNMP agent through specific community, you must make sure that the SNMP agent is familiar with that community. For example, if you try to monitor a Windows 2003 server through public community, you must make sure that the SNMP agent has this community configured. Otherwise, the monitor cannot connect to the agent. **Default value:** public **Note:** The field is valid only for version 1 or 2 connections.

UI Element	Description
SNMP Connection Settings	
Timeout (seconds)	Amount of time, in seconds, that SiteScope should wait for all SNMP requests (including retries) to complete. **Default value:** 5 seconds
Retry delay (seconds)	Amount of time, in seconds, that SiteScope should wait before retrying the request. It continues to retry at the interval specified here until the Timeout threshold is met. **Default value:** 1 second
SNMP version	SNMP version used by the SNMP host you want to monitor. SiteScope supports SNMP version 1, version 2, and version 3. **Default value:** V1
Authentication Type	Type of authentication used for SNMP V3. You can select MD5, SHA, or None. **Note:** This field is available only if SNMP V3 is selected.
User name	User name to be used for authentication if you are using SNMP version 3. **Note:** This field is available only if SNMP V3 is selected.
Password	Password to be used for authentication if you are using SNMP version 3. **Note:** This field is available only if SNMP V3 is selected.
Privacy Password	The privacy password used for authentication for SNMP version 3. **Note:** This field is available only if SNMP V3 is selected.
Context Name	The context name of SNMP version 3. **Note:** This field is available only if SNMP V3 is selected.
Context Engine ID	The context engine ID of SNMP version 3. **Note:** This field is available only if SNMP V3 is selected.

UI Element	Description
SNMP Data Manipulation Settings	
Scaling	If you choose a scaling option from the **Commonly used values** list, SiteScope divides the returned value by this factor before displaying it. Alternatively, you can specify a factor by which the value should be divided in the **Other values** box. **Default value:** No scaling
Match content	Use to match against an SNMP value, using a string or a regular expression or XML names.
Open Tool	Opens the Regular Expression Tool, enabling you to test a regular expression for content matching against a sample of the content you want to monitor. For details, see "Regular Expression Tool" in *Using SiteScope*.
Units	Optional units string to append when displaying the value of this counter.
Measurement label	Optional text string to describe the measurement being made by the monitor.
Measure as delta	Reports the measurement as the difference between the current value and the previous value.
Measure as rate per second	Divides the measurement by the number of seconds since the last measurement.
Percentage base	Value to use for calculating the percentage base from the **Commonly used values** list or by typing a number or SNMP object ID in the **Other values** box. If entered, the measurement is divided by this value to calculate a percentage. If an object ID is entered, the **Index** value from the SNMP Monitor Settings pane is used. **Default value:** No percentage base
Measure base as delta	Calculates the Percentage Base as the difference between the current base and the previous base. Use this option when an SNMP object ID is used for Percentage Base and the object is not a fixed value.

UI Element	Description
Gauge maximum	Maximum value for the Object ID. The maximum is calculated to create the gauge display (Optional).
Secondary SNMP Settings (To enable secondary object changes, you must add the property **_enableSecondSNMP=true** to the **master.config** file.)	
Secondary object ID	Object ID of the secondary SNMP object to be queried from the **Commonly used values** drop-down list, or enter the Object Identifier (OID) for the SNMP value you want to query in the **Other values** box.
Secondary match content	Sets up a secondary SNMP index. Match this item against the main SNMP value using a string, regular expression (see "Using Regular Expressions" in *Using SiteScope*), or XML names (see "Monitoring XML Documents" in *Using SiteScope*). **Example:** /(\d)/ gets the first digit and uses it in the secondary index.

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SNMP by MIB Monitor

This chapter includes:

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SNMP by MIB Monitor Overview

The SNMP by MIB monitor gathers information from a source, organizes it into a browsable tree structure, and enables you to choose which items in the tree it should monitor. It works by connecting to the specified SNMP agent and performing a full traversal of the MIBs implemented by the agent. Thus, you do not need to know which objects are present on the agent in advance. The monitor supports agents of SNMP version 1, 2, and 3 MD5.

The MIB files in <**SiteScope root directory**>**templates.mib** are then used to create a browsable tree that contains names and descriptions of the objects found during the traversal. An object may or may not be displayed with a textual name and description, depending on the MIBs available in **templates.mib**. SiteScope does not display objects for user selection when it has no knowledge of how to display those objects. For example, a plain OctetString may contain binary or ascii data, but SiteScope has no way to decode and display this data correctly without more information.

The error and warning thresholds for the monitor can be set on one or more different objects.

For task details, see "How to Configure the SNMP by MIB Monitoring Environment" on page 608.

For user interface details, see "SNMP by MIB Monitor Settings" on page 610.

Troubleshooting MIB Compilation

If MIBs are not listed in the **MIB file** drop-down box after adding MIB files to the **templates.mib** directory, perform the following MIB Compilation troubleshooting steps:

1. Open **<SiteScope root directory>\logs\RunMonitor.log** and look for MIB compilation error messages close to the time of your most recent restart. The error messages in the file contain descriptions of compilation errors encountered in each file, together with the line number that helps you identify the source of the errors.
2. Correct the errors found in **RunMonitor.log**. Usually, these errors can be fixed by one of the following:
   - Adding a MIB to **templates.mib** on which some of the new MIBs depend.
   - Removing a MIB from **templates.mib** which is duplicated or upgraded in the new MIBs.
   - Fixing broken comments in the new MIBs. Note that a comment is defined as follows: "ASN.1 comments commence with a pair of adjacent hyphens and end with the next pair of adjacent hyphens or at the end of the line, whichever occurs first." This means that a line containing only the string "-----" is a syntax error, whereas the a line containing only the string "----" is a valid comment. Beware of lines containing only hyphens, as adding or subtracting a single hyphen from such lines may break compilation for that MIB.
   - Fixing missing IMPORT statements. Some MIBs may neglect to import objects that they reference which are defined in other MIBs. You can also search in Web sites for the error that you get in **RunMonitor.log**. There is a lot of information about these errors on the Web.
3. After correcting the errors described in **RunMonitor.log**, restart SiteScope.
4. Follow the procedures in "Add MIBs to the templates.mib directory" on page 608 to verify that the new MIB files compiled correctly.

Tasks

How to Configure the SNMP by MIB Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Add MIBs to the templates.mib directory" on page 608
- "Configure the monitor properties" on page 609

1 Add MIBs to the templates.mib directory

You can add to the MIBs of which SiteScope is aware by putting new MIB files in the **templates.mib** directory.

Note: Since MIB files may depend on other MIB files, and because ASN.1 syntax is not always obeyed completely by vendors, you may encounter compilation errors with some MIBs.

---

a To check compilation of the new MIB, you can use the command line tool located in **<SiteScope root directory>\tools\SNMPMIBCompilation**. This tool enables you to check the new MIB compilation without having to restart SiteScope for every change you make in the MIB file. If the MIB is compiled using another tool (for example, MG-SOFT or iReasoning), you are not notified that the MIB file is compiled in SiteScope.

b Add new MIB files to the **templates.mib** directory. SiteScope only compiles MIBs in ASN.1 format which abide by the SMIv1 or SMIv2 standards.

c Restart SiteScope.

d Proceed to add a new SNMP by MIB monitor. Before adding the monitor, check that your new MIB files are listed in the **MIB file** drop-down box. If they are, then they were successfully compiled and you can use the SNMP by MIB monitor and the SNMP by MIB tool to browse devices that implement these MIBs.

If your newly added MIBs are not listed in the MIB File drop-down box, see "Troubleshooting MIB Compilation" on page 607.

2 Configure the monitor properties

Configure the SNMP by MIB monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "SNMP by MIB Monitor Settings" on page 610.

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SNMP by MIB Monitor Settings

The SNMP by MIB monitor enables you to monitor objects on any SNMP agent.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box. ➤ The **SNMP Browser Tool** is available when configuring this monitor to verify the connection properties of an SNMP agent and to gain more information about the MIBs which that agent implements (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "SNMP Browser Tool" in *Using SiteScope*.
Relevant tasks	➤ "How to Configure the SNMP by MIB Monitoring Environment" on page 608 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "SNMP by MIB Monitor Overview" on page 606

SNMP by MIB Monitor Settings

User interface elements are described below:

UI Element	Description
SNMP Connection Settings	
Server	Name of the server you want to monitor.
SNMP version	Version of SNMP to use when connecting. SiteScope supports SNMP version 1, version 2, and version 3. Selecting V3 enables you to enter V3 settings in the SNMP V3 settings panel. **Default value:** V1
Community	Community string. If you try to monitor SNMP agent through a specific community, you must make sure that the SNMP agent is familiar with that community. If you try to monitor Windows 2003 server through public community, you must make sure that the SNMP agent has this community configured. Otherwise, the monitor cannot connect to the agent. **Note:** This is valid only for version 1 or 2 connections. **Default value:** public
Timeout (seconds)	Amount of time, in seconds, to wait for all SNMP requests (including retries) to complete. **Default value:** 5 seconds
Retries	Number of times each SNMP GET request should be retried before SiteScope considers the request to have failed. **Default value:** 1
Port	Port to use when requesting data from the SNMP agent. **Default value:** 161

UI Element	Description
Starting OID	Use when selecting counters for this monitor. When the monitor attempts to retrieve the SNMP agent's tree, it starts with the OID value that is entered here. **Default value:** 1 **Note:** You should edit this box only when attempting to retrieve values from an application that does not handle OIDs starting with 1. If the default value of 1 did not enable retrieving any counters, then you may have to enter a different value.
MIB File	MIB file that contains the objects you want to monitor. If you select a specific MIB file, then only the objects described in that MIB file are displayed. If you select **All MIBs**, then all objects retrieved from the agent during the MIB traversal are displayed. If no MIB information is available for an object, it is still displayed but with no textual name or description. To make this monitor aware of new or additional MIBs, place new MIB files in the <**SiteScope root directory**>\ **templates.mib** directory and restart SiteScope. **Default value:** All MIBs
Counter calculation mode	Performs a calculation on objects of type Counter, Counter32, or Counter64. The available calculations are: ➤ **Calculate delta.** Calculates a simple delta of the current value from the previous value. ➤ **Calculate rate** Calculates a rate calculation using the delta of current value from previous value, divided by the time elapsed between measurements. ➤ **Do not calculate.** No calculation is performed. **Note:** This option only applies to the aforementioned object types. An SNMP by MIB monitor that monitors Counter objects as well as DisplayString objects only performs this calculation on the Counter objects. **Default value:** Do not calculate

UI Element	Description
V3 SNMP Settings (This panel is enabled only if V3 is selected in the SNMP version field)	
SNMP V3 authentication type	Type of authentication to use for version 3 connections. **Default value:** MD5
SNMP V3 user name	User name for version 3 connections.
SNMP V3 authentication password	Authentication password to use for version 3 connections.
SNMP V3 privacy password	Privacy password if DES privacy encryption is desired for version 3 connections. Leave blank if you do not want privacy.
SNMP V3 context engine ID	Hexadecimal string representing the Context Engine ID to use for this connection. This is applicable for SNMP V3 only.
SNMP V3 context name	Context Name to use for this connection. This is applicable for SNMP V3 only.

UI Element	Description
SNMP Counters	
Counters	Displays the server performance counters you want to check with this monitor. Use the **Get Counters** button to select counters. **Note:** Not all OIDs from the MIB file are displayed—only the available OIDs which the device can return.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note:** ➤ The counters displayed are those received during the timeout period, and may not include all the counters available on the server. Specifying a longer timeout in the Timeout (seconds) field in the SNMP Connection Settings panel may result in receiving more counters. ➤ The total time for receiving the counters may be longer than the timeout specified, due to additional processing time not part of the request/response period. ➤ Due to third-party counter restrictions, the total number of counters that can be monitored is limited to 32. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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SNMP Trap Monitor

This chapter includes:

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SNMP Trap Monitor Overview

Note: To have SiteScope query a specific device for a specific value, use the SNMP monitor.

Use the SNMP Trap monitor for automatically collecting SNMP Traps from other devices. With SiteScope doing this for you at set intervals, you can eliminate the need to check for the SNMP Traps manually. In addition, you can be notified of warning conditions that you may have otherwise been unaware of until something more serious happened. Each time that it runs this monitor, SiteScope checks traps that have been received since the last time it ran. The monitor supports monitoring traps of SNMP versions 1, 2, and 3.

Note: The SNMP Trap monitor uses port 162 for receiving traps. If another application or process on the machine where SiteScope is running has bound this port, the monitor reports an **Address in use** error.

For details on configuring the monitor, see "SNMP Trap Monitor Settings" on page 618.

Setup Requirements

You must configure the network devices to send SNMP Traps to SiteScope. On Windows 2000 systems, this can be configured by using the **Administrative Tools** > **Services** > **SNMP Service** > **Properties** > **Traps** page. SNMP agents on UNIX platforms usually require that you edit the configuration files associated with the agent. For an example of working with other devices, see the instructions on the Cisco Web site for SNMP Traps and Cisco Devices.

Reference

SNMP Trap Monitor Settings

The SNMP Trap monitor checks for SNMP Traps received by SiteScope from other devices. The agents for the SNMP enabled devices must be configured to send traps to the SiteScope server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 617. ➤ To have SiteScope query a specific device for a specific value, use the SNMP monitor, "SNMP Monitor Overview" on page 596. ➤ The **SNMP Trap Tool** is available when configuring this monitor to view SNMP Traps received by SiteScope's SNMP listener (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "SNMP Trap Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "SNMP Trap Monitor Overview" on page 616

SNMP Trap Monitor Settings

User interface elements are described below:

UI Element	Description
Content match	Text to look for in SNMP Traps. Regular expressions may also be used for pattern matching. By default, all SNMP traps received are matched. All SNMP Traps received by SiteScope are logged to <**SiteScope root directory**>\logs\SNMPTrap.log file. **Example:** The following shows two traps received from one router and another trap received from a second router: 09:08:35 09/10/2001 from=router1/10.0.0.133 oid=.1.3.6.1.4.1.11.2.17.1 trap=link down specific=0 traptime=1000134506 community=public agent=router1/10.0.0.133 var1=The interface Serial1 is down 09:08:45 09/10/2001 from=router1/10.0.0.133 oid=.1.3.6.1.4.1.11.2.17.1 trap=link up specific=0 traptime=1000134520 community=public agent=router1/10.0.0.133 var1=The interface Serial1 is up 09:10:55 09/10/2001 from=router2/10.0.0.134 oid=.1.3.6.1.4.1.11.2.17.1 trap=enterprise specific specific=1000 traptime=1000134652 community=public agent=router2/10.0.0.134 var1=CPU usage is above 90% The examples shown here may wrap across multiple lines to fit on this page. The actual traps are in a single extended line for each trap.

UI Element	Description
Match value labels	Labels for the matched values found in the trap. The match value labels are used as variables to access retained values from the Content Match expression for use with the monitor threshold settings. You can set up to four labels. The labels are used to represent any retained values from the Content Match regular expression in the parameters available for the status threshold settings (Error if, Warning if, and Good if). These labels are also displayed as the text labels in graphs generated for the retained values in management reports for this monitor. **Note:** Separate multiple labels with a comma (,).
Run alerts	Method for running alerts: ➤ **For each SNMP Trap matched.** The monitor triggers alerts for every matching entry found. When the SNMP Trap monitor is run for each SNMP Trap received, the monitor never reports a status of error or warning, regardless of the results of the content match or even if the target SNMP Trap is not found. ➤ **Once, after all SNMP Traps have been checked.** The monitor counts up the number of matches and triggers alerts based on the **Error if** and **Warning if** thresholds defined for the monitor in the Threshold Settings section. **Default value:** For each SNMP Trap matched

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Solaris Zones Monitor

This chapter includes:

Concepts

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Solaris Zones Monitor Overview

Use the Solaris Zones monitor to show statistics on the physical host, its zones, and their resource pools on Solaris servers. This monitor can help you recognize problems in the Solaris system, and isolate them in the zone or resource pool level. The Solaris Zones monitor supports monitoring machines that are running on Solaris 10 update 7 (5/09) operating systems.

The Solaris Zones monitor queries the list of UNIX servers currently configured in the UNIX Remote Servers container. To monitor a remote Solaris Zones server, you must define a UNIX Remote connection profile for the server before you can add a Solaris Zones monitor for that server. For details, see "Remote Servers Overview" in *Using SiteScope*.

For details on how to analyze Solaris zones monitor results, see "How to Analyze Solaris Zones Monitor Results – Use-Case Scenario" on page 627. For user interface details, see "Solaris Zones Monitor Settings" on page 629.

This section contains the following topics:

- "Virtualization Support" on page 622
- "Solaris Zones Topology" on page 623
- "Notes and Limitations" on page 624

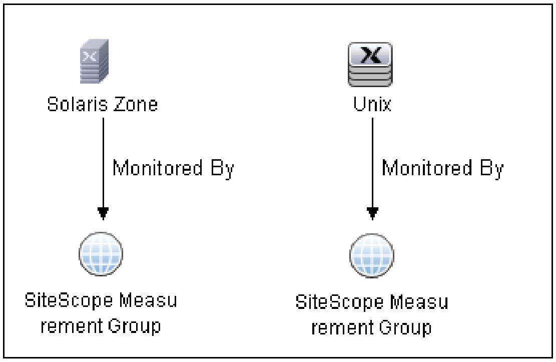
Virtualization Support

A Solaris zone is a virtualized operating system environment created within a single instance of the Solaris Operating System. It provides the required isolation and security to run multiple applications of the same operating system on the same server.

Note: Branded zones that are not of Solaris type are not supported.

Solaris Zones Topology

The Solaris Zones monitor can identify the topology of the Solaris system being monitored. If **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting), the monitor creates the following topology in BSM's RTSM.



The CIs are created only for the monitored entities according to the counters that you select. The monitors are represented in the RTSM as SiteScope Measurement Groups CIs and the counters in it as SiteScope Measurement CIs. SiteScope Measurement CIs that refer to the physical host or global zone are linked to a UNIX host CI that represents the machine. SiteScope Measurement CIs that refer to a non-global zone are linked to a UNIX host CI that represents the zone. SiteScope can also report other measurements that are not connected to the host CIs. These can include pool measurements and counters in error.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

Notes and Limitations

- The monitor collects measurements for counters of running zones only. If a zone that was running is stopped or deleted, when the monitor next runs, the counters of this zone that were selected show n/a and the state string indicates that the zone is not running.
- When defining a Solaris remote server (by selecting Sun Solaris as the operating system), it does not necessarily mean that you can run special zone commands. To verify that zones are supported, run the **zoneadm** command, and check the output list contains the word **global** (this is the default zone that exists in any machine that supports zones). If it does not, the operating system does not support zones.
- A Solaris Zones monitor should be defined on a Solaris machine that supports Solaris Zones. The remote server should be defined on the machine itself (the global zone), and not on one of the machine's non-global zones. If the monitor is defined on a remote server that does not support zones, SiteScope identifies it by the output of the **zoneadm list** command. The output on operating systems that support zones always includes the global zone. If the global zone is not part of the command output (where the command is not supported), SiteScope displays the following error message: "The operating system does not support Solaris Zones".

Note: If the server goes down while running the **zoneadm** command, all the zones go down with it, and the server might be identified as a version that does not support zones.

- Some of the commands use **zlogin** to resolve the zone’s data. Since this command can be used only by the global administrator operating in the global zone, you need to define your remote server with the global administrator user when selecting the zone’s counters.

- While pool counters show all pools displayed by the **poolstat** command (including temporary pools), the **%usageOfPoolCpu** counter refers only to the pool defined for the zone in the **zonecfg** command, and does not include temporary dynamic pools. Where temporary pools are used, for example, by defining a **dedicated-cpu** resource for the zone, this counter does not reflect the real state.

- The **%usageOfPoolCpu** counter also takes account of the size of the pools, and assumes that pool size does not change during the monitor run.

- All counters that refer to pools, including all counters under the **Resource Pool** category and the **%usageOfPoolCpu** counter, show n/a if the pool facility is not active.

- Processes in the global zone can be bound to a pool used by another zone through a project. In this situation, the **%usageOfPoolCpu** counter (which takes into account only the pool configured to the zone in **zonecfg**), does not reflect the CPU usage out of all CPU power allocated to this zone's processes, since the potential CPU power available for the zone comes not only from its pool, but also from the other pools that its processes use.

- The **mbSize** zone counter has the same value in the SIZE and SWAP columns in the **prstat -Z** command output. In some versions of Solaris 10, the column is called SIZE and refers to the total address space size of all processes. In some later versions, the column is called SWAP and refers to the total swap (virtual memory) reserved by the zone's processes.

- If you create a Solaris Zones monitor and click **Save** (instead of **Verify & Save**), only a partial topology is reported to BSM. This topology includes the CIs of the measurements and measurement groups and the host CI of the machine itself (if some of its measurements were selected). The topology does not include the host CIs that represent the zones, since when saving only, no connection is made to the remote server to collect data that it has not already been collected (such as the zone's names in the network). These missing CIs are reported either:
  - If you make a change to the monitor, and click **Verify & Save**.
  - According to the **Topology resolving frequency (minutes)** value that is defined in **Preferences** > **Infrastructure Preferences** > **General Settings**. This is the amount of time, in minutes, to wait between checking the topology of the server being monitored (the default time is 120 minutes). If this time is exceeded during a monitor run, the monitor connects to the server to collect topology data (the zone's names in the network). If the data has changed or has not yet been reported, the monitor is put in the queue for reporting data. Since the queue is checked every hour, the monitor reports the topology again after a maximum of three hours since the time that the topology changed.

Tasks

How to Analyze Solaris Zones Monitor Results – Use-Case Scenario

This use-case scenario describes how the Solaris Zones monitor can be used to diagnose problems on the physical host, and in the zone and resource pool level.

This scenario includes the following steps:

- "Background" on page 627
- "High CPU load in zone1" on page 627
- "High CPU load and memory consumption" on page 628
- "High CPU load in a resource pool" on page 628

Background

Bob, the SiteScope administrator for ABC Company, configures the Solaris Zones monitor to monitor the company's Solaris system that comprises of four zones, two CPUs, and 4GB RAM.

High CPU load in zone1

Bob notices that the physical host counters show CPU consumption of 51%, of which, according to zone1 counters, zone1 uses 50% of the machine's total CPU (no resource pools are used, so both CPUs can be used by each zone).

Now that Bob knows that the problem is with zone1, he can further investigate this zone.

High CPU load and memory consumption

The Solaris Zones monitor's physical host counters show that there is high CPU and memory consumption and excessive paging. After examining the counters results for each of the four zones, Bob discovers that zone2 consumes 2 GB of virtual memory.

Now that Bob knows that the problem is with zone2, he can further investigate this zone.

High CPU load in a resource pool

In this scenario, zone1 and zone2 use ResourcePool1 that contains one CPU, while all the other zones use the default pool that has the other CPU. Bob is alerted by the Solaris Zones monitor to the following:

- High CPU usage (100%) in ResourcePool1.
- The physical host counters in the Solaris Zones show CPU consumption of 51%.
- zone1 consumes 49-50% of the total machine CPU, while zone2 consumes only 0.4% (both of these zones use ResourcePool1).

  Bob realizes that there is a problem with the existing resource allocation. Possible actions include:

- Assigning more CPU to zone1.
- Associating zone2 to the default pool to reduce the effect of poor performance from zone1.
- Stopping zone1 until the reason for the high CPU usage is found.

Reference

Solaris Zones Monitor Settings

The Solaris Zones monitor enables you to monitor the physical host, its zones, and their resource pools on Solaris servers.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ The monitor collects measurements for the zones that are in **Running** state only. ➤ When configuring this monitor in template mode, you can use regular expressions to define counters. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Analyze Solaris Zones Monitor Results – Use-Case Scenario" on page 627 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Solaris Zones Monitor Overview" on page 622

Solaris Zones Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of server that you want to monitor. Select a server from the server list (only the UNIX remote servers that have been configured in SiteScope are displayed), or use the **Add Remote Servers** button to add a Solaris server. **Note when working in template mode:** ➤ You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. ➤ There is a **Server to get measurements from** box with the list of UNIX servers from which you can select the server from which to get measurements.
Add Remote Server	Opens the Add UNIX Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.
Counters	Displays the server performance counters you want to check with this monitor. You can select counters on the physical host, its zones, and the resource pools used by the host. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor.

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SunONE Web Server Monitor

This chapter includes:

Concepts

Reference

Concepts

SunONE Web Server Monitor Overview

Use the SunONE Web Server monitor to monitor performance metrics reported in the stats-xml file of SunONE 6.x servers. By providing the URL of this stats-xml file, SiteScope can parse and display all metrics reported in this file and enable you to choose those metrics you need to be monitored as counters. In addition, several derived counters are provided for your selection which measure percent utilization of certain system resources.

You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate monitor instance for each SunONE server you are running. Error and warning thresholds for the monitor can be set on one or more SunONE server performance statistics or HTTP response codes.

For details on configuring the monitor, see "SunONE Web Server Monitor Settings" on page 633.

Setup Requirements

Before you can use the SunONE Web Server monitor, the **stats-xml** service option must be enabled on each Web server you want to monitor. This normally requires that you manually edit the **obj.conf** configuration file for each server instance. For iPlanet 6.0 servers, the entry has the following syntax:

```
<Object name="stats-xml">
ObjectType fn="force-type" type="text/xml"
Service fn="stats-xml"
</Object>
```

Each server instance must be restarted for the changes to take effect.

Reference

SunONE Web Server Monitor Settings

This monitor enables you to monitor the availability of SunONE or iPlanet 6.x servers using the stats-xml performance metrics file (iwsstats.xml or nesstats.xml) facility.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 632. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "SunONE Web Server Monitor Overview" on page 632

SunONE Web Server Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
Stats-XML URL	URL to the stats-xml file on the SunONE server you want to monitor. This is usually in the form http://server_id:port/stats-xml/<stats-xml-file> where <stats-xml-file> is **nesstats.xml** or **iwsstats.xml**.
Authorization user name	User name of the SunONE server you want to monitor.
Authorization password	Password of the SunONE server you want to monitor.
HTTP proxy	Domain name and port of an HTTP Proxy Server if a proxy server is used to access the server.
Proxy server user name	Proxy server user name if the proxy server requires a name and password to access the server. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy server password	Proxy server password if the proxy server requires a name and password to access the server.

UI Element	Description
Timeout (seconds)	Amount of time, in seconds, to wait for a response from the server before timing-out. Once this time period passes, the monitor logs an error and reports an error status. **Default value:** 60 seconds **Note:** Depending on the activity on the server, the time to build the server monitor statistics Web page may take more than 15 seconds. You should test the monitor with a timeout value of more than 60 seconds to enable the server time to build and serve the server monitor statistics Web page before the SiteScope monitor is scheduled to run again.
Counter Settings	
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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Sybase Monitor

This chapter includes:

Concepts

Reference

Concepts

Sybase Monitor Overview

Use the Sybase monitor to monitor the server performance data for Sybase 11.0, 11.5, 11.92, 12.x, and 15.5 database servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning.

Create a separate monitor instance for each Sybase server in your environment. The error and warning thresholds for the monitor can be set on one or more Sybase server performance statistics.

Note:

- This monitor is supported in SiteScopes that are running on Windows versions only.
- This monitor does not work with the 64-bit version of SiteScope, so if you plan to work with this monitor, it is recommended to install the SiteScope 32-bit version.

For details on configuring the monitor, see "How to Configure the Sybase Monitoring Environment" on page 639.

For details on the monitor settings, see "Sybase Monitor Settings" on page 641.

How to Configure the Sybase Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 639
- "Configure the monitor properties" on page 640

1 Prerequisites

- Before you can use the Sybase monitor, you have to configure the Sybase server environment. The Sybase monitor connects to the Sybase Adaptive Server Enterprise (ASE) server by using the ASE Monitor Server and retrieves metrics from the server using Sybase-provided libraries. When connecting to the monitored server, you connect to the ASE Monitor Server, not the Sybase server. The ASE Monitor Server is an application that runs on the same machine as Sybase server and retrieves performance information from the Sybase server. The ASE Monitor Server usually has the same server name as the Sybase server, but with the suffix _ms. For example, if the name of the Sybase database application server is back-enddb, the name of the ASE Monitor Server for that server would be back-enddb_ms.
- Make sure that your ASE Monitor Server has all EBF updates and works correctly. To download the updates, log on to the Sybase web site (http://www.sybase.com/downloads), and in the **Support** menu, select **EBFs/Update** > **EBFs/Maintenance** > **Adaptive Server Enterprise**. (A Sybase account is required to access this page.)
- You also have to install the Sybase Central client on the machine where SiteScope is running to connect to the ASE Monitor Server. The version of the client software that you install must be at least as recent or more recent than the version of the server you are trying to monitor. For example, if you have Sybase version 11.0 servers, you must use the Sybase Central client version 11.0 or later. Copy the content of the **sql.ini** file located in <**System Root**>**\SYBASE\INI\** on the Sybase server into the **sql.ini** file on the SiteScope server. You can use the dsedit tool in the Sybase client console to test connectivity with the ASE Monitor Server.

2 Configure the monitor properties

Configure the Sybase monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Sybase Monitor Settings" on page 641.

Reference

Sybase Monitor Settings

The Sybase monitor enables you to monitor the availability and performance statistics of a Sybase Server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the Sybase Monitoring Environment" on page 639 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Sybase Monitor Overview" on page 638

Sybase Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server you want to monitor. Usually it is the name of the server followed by _MS.
User name	User name to access the Sybase database.
Password	Password of the user name to access the Sybase database.

UI Element	Description
Counters	Displays the server performance counters you want to check with this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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Tuxedo Monitor

This chapter includes:

Concepts

Reference

Concepts

Tuxedo Monitor Overview

Use the Tuxedo monitor to monitor the server performance data for Oracle Tuxedo 6.5, 7.1, 8.0, 8.1, 9.0, and 9.1 servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning.

Create a separate monitor instance for each Tuxedo server in your environment. The error and warning thresholds for the monitor can be set on one or more Tuxedo monitor performance statistics.

Note:

- This monitor is supported in SiteScopes that are running on Windows versions only. However, this monitor can monitor remote servers running on any platform/operating system.
- This monitor does not work with the 64-bit version of SiteScope, so if you plan to work with this monitor, it is recommended to install the SiteScope 32-bit version.

For details on configuring the monitor, see "Tuxedo Monitor Settings" on page 646.

Setup Requirements

The following are several key configuration requirements for using the Tuxedo monitor:

- If SiteScope is running as a machine in the same domain as the Tuxedo server then SiteScope can connect to the Tuxedo server as a native client. If SiteScope is outside the domain of the Tuxedo server, you must install, configure, and enable the Tuxedo Workstation component to enable SiteScope to make requests of the Tuxedo server.
- The client and server side workstation component software versions should be the same. Some versions of the client software can work with multiple versions of Tuxedo servers but support information is limited.
- If Tuxedo 7.1 or later is installed on both the server you want to monitor and the SiteScope server, more than one Tuxedo server can be monitored at a time. If Tuxedo 6.5 or earlier is used, only one Tuxedo server can be monitored at a time.
- If SiteScope is outside the domain of the Tuxedo server, the Tuxedo Workstation client software needs to be installed on the server where SiteScope is running. This is usually in a DLL called **libwsc.dll**. The address to the application server needs to be specified in the WSNADDR environment variable.
- On the server where the Tuxedo application server is running, set the **TUXDIR** variable to be the Tuxedo installation directory and add the **TUXEDO** bin directory to the **PATH** variable.

The following environment variables must be added to the SiteScope environment:

- **%TUXDIR%** should be set on the monitoring machine to the <**Tuxedo_root_folder**>
- <**Tuxedo_root_folder**>**\bin** should be added to **%PATH%** variable

Note: Any environment variables (for example, **TUXDIR**) should be defined as system variables, not user variables.

Reference

Tuxedo Monitor Settings

The Tuxedo monitor enables you to monitor the availability of an Oracle Tuxedo server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 645. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Tuxedo Monitor Overview" on page 644

Tuxedo Monitor Settings

User interface elements are described below:

UI Element	Description
Basic Tuxedo Settings	
Server	Name or IP address of the server. The address should match that dedicated to the Tuxedo Workstation component (the WSL process). On UNIX servers, enter the full path of the applicable server.
Port	Port number for the Tuxedo server. The port number should match the port dedicated to the Tuxedo Workstation component (the WSL process).

UI Element	Description
User name	User name if required to access the Tuxedo server.
Password	Password if required to access the Tuxedo server.
Advanced Tuxedo Settings	
Client name	Optional client name for the Tuxedo server.
Connection data	Any extra or optional connection data to be used for connecting to the Tuxedo server. In some cases, this may be a hexadecimal number.
Tuxedo Counters	
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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UDDI Monitor

This chapter includes:

Concepts

Reference

Concepts

UDDI Monitor Overview

Use the UDDI monitor to check the availability and round-trip response time of the UDDI 2.0 server. Each time that the monitor is run, SiteScope checks if the UDDI Server can find a business entity. The administrator of the UDDI server can limit or disable this monitor.

For details on configuring the monitor, see "UDDI Monitor Settings" on page 651.

Reference

UDDI Monitor Settings

The UDDI monitor checks the availability and round-trip response time of the UDDI server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "UDDI Monitor Overview" on page 650

UDDI Monitor Settings

User interface elements are described below:

UI Element	Description
Inquiry URL	UDDI server inquiry URL. **Example:** http://uddi.company.com/inquiry/
Business name	Business entity to search for in the UDDI server.
Maximum number of businesses	Maximum number of business entities to receive from the UDDI server (1–200). **Default value:** 10

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UNIX Resources Monitor

This chapter includes:

Concepts

Reference

Concepts

UNIX Resources Monitor Overview

Use the UNIX Resources monitor to monitor the server system statistics on UNIX servers. You can monitor multiple parameters or measurements with a single monitor instance. This enables you to monitor the remote server for loading, performance, and availability at a basic system level. Create a separate UNIX Resources monitor instance for each UNIX server in your environment. The error and warning thresholds for the monitor can be set on one or more server system statistics.

The UNIX Resources monitor queries the list of UNIX servers currently configured in the UNIX Remote Servers container. To monitor a remote UNIX server, you must define a UNIX Remote connection profile for the server before you can add a UNIX Resources monitor for that server. For details, see "Remote Servers Overview" in *Using SiteScope*.

For details on configuring the monitor, see "UNIX Resources Monitor Settings" on page 657.

This section contains the following topics:

- "Supported Versions" on page 655
- "IPv6 Addressing Supported Protocols" on page 655
- "Server-Centric Report" on page 656

Supported Versions

This monitor supports monitoring UNIX remote servers running on:

- Solaris 2.7, 2.8, 2.9, 5.10, 7, 8, 9, 10
- RedHat Linux 7.x, 8.x, 9.x, and Redhat Linux AS/ES Linux 3.x, 4.x, 5.2, 5.4, 5.5
- HP-UX 11iv1 (B.11.11) on HP 9000 series:
  - HP-UX B.11.11 U 9000/800 4030070275 unlimited-user license
  - HP-UX B.11.31 U ia64 4005705783 unlimited-user license
  - HP-UX 11i v3
- AIX 5.2, 5.3, 6.1

Note: The UNIX Resources monitor does not support monitoring remote servers running on HP NonStop operating systems. You should use the NonStop Resources Monitor instead.

IPv6 Addressing Supported Protocols

When **Prefer IP version 6 addresses** is enabled in SiteScope (**Preferences** > **Infrastructure Preferences** > **Server Settings**), this monitor supports the SSH protocol only.

Note: SSH is supported only when SiteScope is installed on UNIX machines.

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Server-Centric Report

You can create a Server-Centric report for the UNIX Server by clicking the server name in the Target column of the row corresponding to the UNIX Resources monitor in the SiteScope Dashboard. For details, see "Server-Centric Report" in *Using SiteScope*.

Reference

UNIX Resources Monitor Settings

The UNIX Resources monitor enables you to monitor multiple system statistics on a single UNIX system.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ When configuring this monitor in template mode, you can use regular expressions to define counters. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "UNIX Resources Monitor Overview" on page 654

UNIX Resources Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server that you want to monitor. Select a server from the server list (only those UNIX remote servers that have been configured in SiteScope are displayed), or click the **Add Remote Servers** button to add a UNIX server. **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box.
Server to get measurements from	(Available in template mode only) Name of any SiteScope remote server from which you want to get counters.
Add Remote Server	Opens the Add UNIX Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit UNIX Remote Server Dialog Box" in *Using SiteScope*.
Available Counters	Displays the available measurements for this monitor. For each measurement, select the **Object**, **Instances** and **Counters** you want to check with the UNIX Resources monitor, and click the **Add Selected Counters** ➡ button. The selected measurements are moved to the Selected Counters list. **Note:** The Disk Stat counter is available only when monitoring remote servers running on Linux version 2.4. This is because the **/proc/stat/** command, which retrieves relevant disk stat information, is available for this version only.

UI Element	Description
Selected Counters	Displays the measurements currently selected for this monitor, and the total number of selected counters. To remove measurements selected for monitoring, select the required measurements, and click the **Remove Selected Counters** ← button. The measurements are moved to the Available Counters list.
Enable Server-Centric Report	Select to enable collecting data specifically for generating the Server-Centric report. The report displays various measurements for the server being monitored. For details, see "Generating a Server-Centric Report" in *Using SiteScope*.

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URL Monitor

This chapter includes:

Concepts

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Concepts

URL Monitor Overview

The URL monitor is used to monitor a specified Web page to verify that it can be retrieved. The URL monitor supports monitoring HTTP versions 1.0 and 1.1. You can also use the URL monitor to do the following:

- Check secure pages using SSL, 128 bit SSL, and client certificates
- Check for specific content on the retrieved Web page
- Check the Web page for change
- Check for specific error messages
- Check the Web page for a value
- Retrieve detailed download information
- Check XML

When the URL monitor retrieves a Web page, it retrieves the page's contents. A successful page retrieval is an indication that your Web server is functioning properly. The URL monitor does not automatically retrieve any objects linked from the page, such as images or frames. You can, however, instruct SiteScope to retrieve the images on the page by selecting **Retrieve images** or **Retrieve frames** in the HTTP Settings pane.

In addition to retrieving specific Web pages, the URL monitor can verify that CGI scripts and back-end databases are functioning properly. You must input the complete URL used to retrieve data from your database or trigger one of your CGI scripts. The URL monitor verifies that the script generates a page and returns it to the user. For example, you can verify that your visitors are receiving a thank you page when they purchase something from your site. The URL monitor's string matching capability enables you to verify that the contents of the page are correct.

For task details, see "How to Configure the URL Monitoring Environment" on page 667. For user interface details, see "URL Monitor Settings" on page 670.

This section contains the following topics:

What to Monitor

You can create URL monitors to watch pages that are critical to your Web site (such as your home page), pages that are generated dynamically, and pages that depend on other applications to work correctly (such as pages that use a back-end database). The goal is to monitor a sampling of every type of page you serve to check that things are working. There is no need to verify that every page of a particular type is working correctly.

When you choose which pages to monitor, select pages with the lowest overhead. For example, if you have several pages that are generated by another application, monitor the shortest one with the fewest graphics. This puts less load on your server while still providing you with the information you need about system availability.

Status

Each time the URL monitor runs, it returns a reading and a status and writes it in the monitoring log file. It also writes in the log file the total time it takes to receive the designated document. This status value is also displayed in the SiteScope Monitor tables and is included as part of alert messages sent by using e-mail.

The status reading shows the most recent result for the monitor. This status value is displayed in the URL Group table within SiteScope. It is also recorded in the SiteScope log files, email alert messages, and can be transmitted as a pager alert. The possible status values are:

- OK
- unknown host name
- unable to reach server
- unable to connect to server
- timed out reading
- content match error
- document moved
- unauthorized
- forbidden
- not found
- proxy authentication required
- server error
- not implemented
- server busy

The status is logged as either good, warning, or error in the SiteScope Dashboard. A warning status or error status is returned if the current value of the monitor is a condition that you have defined as other than good.

Scheduling the Monitor

Each URL monitor puts no more load on your server than someone accessing your site and retrieving a page, so in most cases you can schedule them as closely together as you want. Keep in mind that the length of time between each run of a monitor is equal to the amount of time that can elapse before you are notified of a possible problem.

A common strategy is to schedule monitors for very critical pages to run every 1 to 2 minutes, and then schedule monitors for less critical pages to run only every 10 minutes or so. Using this strategy, you are notified immediately if a critical page goes down or if the entire Web site goes down, but you do not have an excessive number of monitors running simultaneously.

Support for IPv6 Addresses

This monitor supports the IPv6 protocol. If you want your environment to resolve host names to IPv6, you can select the **Prefer IP version 6 addresses** option in SiteScope Infrastructure Settings (**Preferences** > **Infrastructure Preferences** > **Server Setting**). If this option is selected, whenever a host name is specified for a remote server and the name is resolved to both IPv4 and IPv6, the IPv6 address is used.

When using IPv6, this monitor supports the HTTP protocol.

If specifying a literal IPv6 address as the name for the monitored remote server when IPv6 addressing is enabled, the IP address must be enclosed in square brackets ("[", "]"). For example:

```
http://[2004:DB8:2a:1005:230:48ff:fe73:982d]:8080
```

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

SSL Connectivity

Web servers are generally configured to use SSL encryption for administrative connections. This can be determined by the prefix of the Web service URL. The http:// prefix means that the server uses a non-encrypted connection. The https:// prefix means that it is a secure, encrypted connection. Monitoring a Web server which uses an encrypted connection, requires either:

- Selecting the **Accept untrusted certificates for HTTPS** option in the Authentication Settings section of the Monitor Settings panel. For details, see "URL Monitor Settings" on page 670.
- Importing the server certificate. For details on how to perform this task, see "Import the server certificates (if the Web Server is configured to use SSL encryption)" on page 667.

Troubleshooting and Limitations

You can use the URL Sequence Tool to get on the spot data for the URL and to view the HTML received from the HTTP request.

Tasks

How to Configure the URL Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 667
- "Import the server certificates (if the Web Server is configured to use SSL encryption)" on page 667
- "Configure the monitor properties" on page 668

1 Prerequisites

The user name and password specified in the **Credentials** section (in **Authentication Settings**) must have sufficient permissions to complete the HTTP request that the monitor is configured to perform.

2 Import the server certificates (if the Web Server is configured to use SSL encryption)

If the Web server has an https:// prefix, it is a secure, encrypted connection, and you need to import the server certificate. Use one of the following methods for importing server certificates:

- Import the server certificates using SiteScope Certificate Management. For details, see "How to Import Server Certificates Using Certificate Management" in *Using SiteScope* in the SiteScope Help.
- Import the server certificates manually. For details, see "Import Server Certificates Manually" on page 668.

3 Configure the monitor properties

Configure the URL monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "URL Monitor Settings" on page 670.

Import Server Certificates Manually

Instead of using Certificate Management, you can import certificates manually using the keytool method, if preferred. Certificates imported this way can still be managed using Certificate Management. For details on Certificate Management, see "Certificate Management" in *Using SiteScope*.

To import server certificates manually:

1. Check the certificates already in the keystore, from the <**SiteScope root directory**>**java****lib****security** directory, by entering:

   ```
   ../../bin/keytool -list -keystore cacerts
   ```

2. Import the certificate, into <**SiteScope root directory**>**java****lib****security**, by entering:

   ```
   ../../bin/keytool -import -file myCert.cer -alias myalias -keystore cacerts
   ```

   where myCert.cer is the certificate file name and myalias is the certificate alias.

   Make sure that you specify a unique alias for every certificate you add. If you do not, the keytool uses an automatic alias and once you attempt to add more than one custom certificate, the new certificate overwrites the old and keeps the default alias.

   The word changeit is the default password for the **cacerts** file.

Note: The default **cacerts** file is overwritten every time SiteScope is upgraded or re-installed. Therefore, you should create a copy of the **cacerts** file with a different name before SiteScope is upgraded or re-installed so that the file is not overwritten when new certificates are imported.

3 In SiteScope, select **Preferences** > **Certificate Management**, and click the **Reload Certificate List** button to reload the keystore certificates from the **cacerts** file. This enables you to manually reload keystore changes without having to restart SiteScope.

Reference

URL Monitor Settings

This monitor provides you with end-to-end verification that your Web server is running, serving pages correctly, and doing so in a timely manner. It tests end-to-end, so it is also able to determine whether back-end databases are available, verify the content of dynamically generated pages, check for changed content, and look for specific values from a page.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ While the **round trip time** performance counter is measured in milliseconds in the Threshold Settings, it is displayed in seconds in the SiteScope Dashboard. ➤ The **Get URL Tool** is available when configuring this monitor to request a URL from a server, print the returned data, and test network routing (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "URL Tool" in *Using SiteScope*. ➤ When SiteScope is connected to BSM, not all monitor metrics are reported to BSM. If a URL monitor gets its status from a metric that is not reported to BSM and a metric that is reported to BSM (for example, **roundtrip time**) does not have any threshold set in SiteScope, then no monitor status is reported to BSM. ➤ When setting thresholds for the URL monitor, the **status** condition relates only to HTTP status codes (such as 200, 302, and 404) in the page itself, whereas **overall status** relates to HTTP status codes in the page and in components of the page such as images or frames (provided **Retrieve images** and **Retrieve frames** are selected in the monitor settings).

Relevant tasks	➤ "How to Configure the URL Monitoring Environment" on page 667 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "URL Monitor Overview" on page 662

URL Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
URL	URL that you want to monitor. **Example:** http://demo.thiscompany.com For HTTPS monitoring (secure HTTP), if the URL starts with HTTPS, then a secure connection is made using SSL. SiteScope uses Java SSL libraries for HTTPS monitoring. **Example:** https://www.thiscompany.com
Match content	Text string to match in the returned page or frameset. If the text is not contained in the page, the monitor displays the message content match error. HTML tags are part of a text document, so include the HTML tags if they are part of the text you are searching for. This works for XML pages as well. **Example:** < B> Hello< /B> World You can also perform a regular expression match by enclosing the string in forward slashes, with a letter i after the trailing slash indicating case-insensitive matching. **Example:** /href=Doc\d+\.html/ or /href=doc\d+\.html/i **Note:** The search is case sensitive.
Open Tool	Opens the Regular Expression Tool, enabling you to test a regular expression for content matching against a sample of the content you want to monitor. For details, see "Regular Expression Tool" in *Using SiteScope*.

UI Element	Description
Match content for error	Text string to check for in the returned page or frameset. If the text is contained in the page, the monitor indicates an error condition. HTML tags are part of a text document, so include them if they are part of the text for which you are searching. **Example:**< B> Error < /B> Message You may also perform a regular expression match by enclosing the string in forward slashes, with an **i** after the trailing slash indicating case-insensitive matching. **Example:** /href=Doc\d+\.html/ or /href=doc\d+\.html/i **Note:** ➤ The search is case sensitive. ➤ You can click the **Open Tool** button to use the Regular Expression Test tool to check your regular expressions. For details, see "Regular Expression Tool" in *Using SiteScope*.
Show detailed measurement	Records a detailed breakdown of the process times involved in retrieving the requested URL. These measurements include the following: ➤ **DNS lookup time.** The time it takes to send a name resolution request to your DNS server until you get a reply. ➤ **Connection time.** The time it takes to establish a TCP/IP/Socket connection to the Web server. ➤ **Server response time.** The time after the request is sent until the first byte (rather first buffer full) of the page comes back. ➤ **Download time.** The time it takes to download the entire page.

UI Element	Description
Timeout (seconds)	Amount of time, in seconds, to wait for a page to complete downloading before timing-out. Once this time period passes, the URL monitor logs an error and reports an error status. If you have selected the **Retrieve images** or **Retrieve frames** option, SiteScope waits for these items to be retrieved before considering the page to be fully downloaded. **Default value:** 60 seconds
Retries	Number of times (between 0-10) that SiteScope should retry the request if a recoverable error was encountered. A timeout of the request is a recoverable error. **Default value:** 0
HTTP Settings	
Request headers	Header request lines sent by the HTTP client to the server. Headers should be linebreak separated. The standard list of HTTP1.1 request headers can be found in http://www.w3.org/Protocols/rfc2616/rfc2616-sec14.html#sec14. **Note:** Although this field is optional, some Web pages behave unexpectedly when the request header is missing (such as performing endless redirects, providing wrong content, and so forth).
URL content encoding	SiteScope retrieves the correct encoding from the server response. The default value appearing here should not be edited. **Default value:** Retrieve encoding from server response

UI Element	Description
POST data	If the URL is for a POST request, enter the post variables, one per line as name=value pairs. This option is used to verify that a form is working correctly by performing the same request that occurs when a user submits a form. See also the **Match content** item for a way to verify that the correct form response was received. If this item is blank, a GET request is performed. The POST data can be used to send cookie data. To send cookies with the request, use the format Set-cookie: cookieName=cookieValue. To change the content type of a post, use the format Content-Type: application/my-format. To substitute values in the POST data, add a line to the **master.config** file, such as: _private=_name=mysecret _value=rosebud _private=_name=mypassword _privateValue=sesame and then use the following form in the POST data: s|username=$private-mysecret$| s|password=$private-mypassword$| and SiteScope substitutes the values from the **master.config** into the POST data.
POST data encoding	Determines if the POST data is encoded. Select from the following options: ➤ **Use content type.** Decide to encode the POST data by the content type header. If the header equals urlencoded then encode, otherwise do not encode. ➤ **Force URL encoding.** Always encode the post data. ➤ **Do not force URL encoding.** Do not encode the POST data.

UI Element	Description
Check for content changes	SiteScope records a checksum of the document the first time the monitor runs and then does a checksum comparison each subsequent time it runs. If the checksum changes, the monitor has a status of **content changed error** and goes into error. If you want to check for content changes, you usually want to use **Compare to saved contents**. The options for this setting are: ➤ **No content checking** (default). SiteScope does not check for content changes. ➤ **Compare to last contents.** The new checksum is recorded as the default after the initial error **content changed error** occurs, so the monitor returns to OK until the checksum changes again. ➤ **Compare to saved contents.** The checksum is a snapshot of a given page (retrieved either during the initial or a specific run of the monitor). If the contents change, the monitor gets a **content changed error** and stays in error until the contents return to the original contents, or the snapshot is update by resetting the saved contents. ➤ **Reset saved contents.** Takes a new snapshot of the page and saves the resulting checksum on the first monitor run after this option is chosen. After taking the snapshot, the monitor reverts to **Compare to saved contents** mode. **Default value:** No content checking
Error if redirected	Generates an error (and notifies you) if a URL is redirected. **Default value:** Not selected
HTTP version	HTTP version for SiteScope to use for style request headers (HTTP version 1.1 or 1.0). **Default value:** 1.1

UI Element	Description
Retrieve images	The status and response time statistics include the retrieval times for all of the embedded images in the page. Embedded images include those referenced by IMG, BODY (from the background property), and INPUT TYPE=IMAGE HTML tags. Images that appear more than once in a page are retrieved only once. **Note:** If this option is checked, each image referenced by the target URL contributes to the download time. However, if a image times out during the download process or has a problem during the download, that time is not added to the total download time. **Default value:** Not selected
Retrieve frames	Retrieves the frames references in a frameset and counts their retrieval time in the total time to download this page. Frames include those referenced by FRAME and IFRAME tags. If **Retrieve images** is also checked, SiteScope attempts to retrieve all images in all frames. **Note:** If this option is checked, each frame referenced by the target URL contributes to the download time. However, if a frame times out during the download process or has a problem during the download, that time is not added to the total download time. **Default value:** Not selected

UI Element	Description
Use WinInet	WinInet is used as an alternative HTTP client for this monitor. Select this option to use WinInet instead of Apache when: ➤ The Apache HTTP client does not support a specific technology required to access the server you are monitoring. For example, Kerberos authentication is not supported by the Apache library, and is supported by WinInet. WinInet also supports trusted client-side certificates while Apache does not. ➤ You tried running this monitor and the Apache server returned errors. Using WinInet may solve these errors. **Default value:** Not selected
Proxy Settings	
HTTP proxy	Domain name and port of an HTTP Proxy Server if a proxy server is used to access the URL.
Proxy server user name	Proxy server user name if the proxy server requires a user name to access the URL. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy server password	Proxy serverpassword if the proxy server requires a user name to access the URL. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy NTLM V2	Select if the proxy requires authentication using NTLM version 2.

UI Element	Description
Authentication Settings	
Credentials	Option to use for authorizing credentials if the URL specified requires a name and password for access: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password to access the URL in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password for the URL (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.

UI Element	Description
Pre-emptive authorization	Option for sending authorization credentials if SiteScope requests the target URL: ➤ **Use global preference.** Select to have SiteScope use the setting specified in the **Pre-emptive authorization** section of the General Preferences page. ➤ **Authenticate first request.** Select to send the user name and password on the first request SiteScope makes for the target URL. **Note:** If the URL does not require a user name and password, this option may cause the URL to fail. ➤ **Authenticate if requested.** Select to send the user name and password on the second request if the server requests a user name and password. **Note:** If the URL does not require a user name and password, this option may be used. All options use the **User name** and **Password** entered for this monitor instance. If these are not specified for the individual monitor, the **Default authentication user name** and **Default authentication password** specified in the Main section of the General Preferences page are used, if they have been specified. **Note:** Pre-emptive authorization does not control if the user name and password should be sent, or which user name and password should be sent.
Client side certificate	The certificate file, if you need to use a client side certificate to access the target URL. Normally, this is a .pfx (.p12) type certificate, which usually requires a password. You enter the password for the certificate in the **Client side certificate password** box. **Note:** Client side certificate files must be copied into the <SiteScope root directory>\templates.certificates directory.
Client side certificate password	Password if you are using a client side certificate and that certificate requires a password.
Authorization NTLM domain	Domain for NT LAN Manager (NTLM) authorization if required to access the URL.

UI Element	Description
Accept untrusted certificates for HTTPS	If you are accessing a target URL using Secure HTTP (HTTPS) and SiteScope does not have the required server certificates, you can either select this option or import the related certificates. For details on importing server certificates, see SSL Connectivity in "URL Monitor Overview" in *Using SiteScope*.
Accept invalid certificates for HTTPS	Select this option if you are accessing a target URL using Secure HTTP (HTTPS) and SiteScope has invalid server certificates. This may happen, for example, if the current date is not in the date ranges specified in the certificate chain.
NTLM V2	Select if the URL you are accessing requires authentication using NTLM version 2.

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URL Content Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

URL Content Monitor Overview

The URL Content monitor is primarily used to monitor Web pages that are generated dynamically and display statistics about custom applications. By monitoring these pages, these statistics can be retrieved and integrated into the rest of your SiteScope system. The URL Content monitor supports monitoring HTTP versions 1.0 and 1.1.

You should use the URL Content monitor if you need to verify multiple values (up to 10 variables) from the content of a single URL. Otherwise, the standard URL monitor is normally used. One use for this monitor is to integrate SiteScope with other applications that export numeric data through a Web page. The content values are matched using regular expressions. The monitor includes the matched values as part of the monitor status which are written to the log. If the matched values are numeric data, the results can be plotted in a report.

For task details, see "How to Configure the URL Content Monitoring Environment" on page 685.

For user interface details, see "URL Content Monitor Settings" on page 687.

This section contains the following topics:

- "Status" on page 683
- "Support for IPv6 Addresses" on page 684
- "SSL Connectivity" on page 684
- "Troubleshooting and Limitations" on page 684

Status

Each time the URL Content monitor runs, it returns a status and several match values and writes them in the monitoring log file. It also writes the total time it takes to receive the designated document in the log file.

The reading is the current value of the monitor. Possible values are:

- OK
- unknown host name
- unable to reach server
- unable to connect to server
- timed out reading
- content match error
- document moved
- unauthorized
- forbidden
- not found
- proxy authentication required
- server error
- not implemented
- server busy

The status is displayed as good, warning, or error in the SiteScope Dashboard dependent on the results of the retrieval, content match, and the error or warning status criteria that you select.

Support for IPv6 Addresses

This monitor supports the IPv6 protocol. If you want your environment to resolve host names to IPv6, you can select the **Prefer IP version 6 addresses** option in SiteScope Infrastructure Settings (**Preferences** > **Infrastructure Preferences** > **Server Setting**). If this option is selected, whenever a host name is specified for a remote server and the name is resolved to both IPv4 and IPv6, the IPv6 address is used.

When using IPv6, this monitor supports the HTTP protocol.

If specifying a literal IPv6 address as the name for the monitored remote server when IPv6 addressing is enabled, the IP address must be enclosed in square brackets ("[", "]"). For example:

```
http://[2004:DB8:2a:1005:230:48ff:fe73:982d]:8080
```

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

SSL Connectivity

Web servers are generally configured to use SSL encryption for administrative connections. This can be determined by the prefix of the Web service URL. The http:// prefix means that the server uses a non-encrypted connection. The https:// prefix means that it is a secure, encrypted connection. Monitoring a Web server which uses an encrypted connection, requires either:

- Selecting the **Accept untrusted certificates for HTTPS** option in the Authentication Settings section of the Monitor Settings panel as described in "URL Content Monitor Settings" on page 687.
- Importing the server certificate. For details on how to perform this task, see "Import the server certificates (if the Web Server is configured to use SSL encryption)" on page 685.

Troubleshooting and Limitations

You can use the URL Sequence Tool to get on the spot data for the URL and to view the HTML received from the HTTP request.

Tasks

How to Configure the URL Content Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 685
- "Import the server certificates (if the Web Server is configured to use SSL encryption)" on page 685
- "Configure the monitor properties" on page 686

1 Prerequisites

The user name and password specified in the **Credentials** section (in **Authentication Settings**) must have sufficient permissions to complete the HTTP request that the monitor is configured to perform.

2 Import the server certificates (if the Web Server is configured to use SSL encryption)

If the Web server has an https:// prefix, it is a secure, encrypted connection, and you need to import the server certificate. Use one of the following methods for importing server certificates:

- Import the server certificates using SiteScope Certificate Management. For details, see "How to Import Server Certificates Using Certificate Management" in *Using SiteScope* in the SiteScope Help.
- Import the server certificates manually. For details, see "Import Server Certificates Manually" on page 668.

3 Configure the monitor properties

Configure the URL Content monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "URL Content Monitor Settings" on page 687.

Reference

URL Content Monitor Settings

The URL Content monitor is a specialized variation of the URL Monitor that can match up to ten different values from the content of a specified URL. The matched values are displayed with the status of the monitor in the monitor group table and written to the monitor log.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ The **URL Tool** is available when configuring this monitor to request a URL from a server, print the returned data, and test network routing (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "URL Tool" in *Using SiteScope*.
Relevant tasks	➤ "How to Configure the URL Content Monitoring Environment" on page 685 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "URL Content Monitor Overview" on page 682

URL Content Monitor Settings

User interface elements are described below:

UI Element	Description
Main Setting	
URL	URL that you want to monitor. **Example:** http://demo.thiscompany.com If you are monitoring a secure URL, the URL must reflect the correct transfer protocol. The URL starts with https:// and the connection is made using SSL. **Example:** https://demo.thiscompany.com
Match content	Expression describing the values to match in the returned page. If the expression is not contained in the page, the monitor displays the message no match on content. A regular expression is used to define the values to match. Use parentheses to enable the monitor to retrieve these values as counters. By using the labels, these counters can be automatically assigned with a customized name and you can define thresholds for them. You can use up to 10 sets of parentheses. **Example:** The expression /Copyright (\d*)-(\d*)/ would match two values, 1996 and 1998, from a page that contained the string Copyright 1996-1998. The returned values (1996 and 1998) could be used when setting Error if or Warning if thresholds.

UI Element	Description
Open Tool	Opens the Regular Expression Tool, enabling you to test a regular expression for content matching against a sample of the content you want to monitor. For details, see "Regular Expression Tool" in *Using SiteScope*.
Match content labels	Labels for the matched values found in the content. The matched value labels are used as variables to access retained values from the content match expression for use with the monitor threshold settings. These labels are also displayed as the text labels in graphs generated for the retained values in management reports for this monitor. **Example:** Type Copyright_start, Copyright_end to represent the copyright date range used in the **Match content** field. After the monitor runs, these labels are displayed in the Condition list in Threshold Settings, enabling you to set status threshold settings (Error if, Warning if, and Good if) for the matched value. SiteScope also sends the label name of content matches to Generic Data integrations, Diagnostics integrations, and OM metrics integrations. **Note:** ➤ Separate multiple labels with a comma (,). ➤ You can set up to 10 labels.

UI Element	Description
Match content for error	Text string to check for in the returned page. If the text is contained in the page, the monitor displays content error found. HTML tags are part of a text document, so include them if they are part of the text for which you are searching. **Example:** < B> Error < /B> Message You can also perform a regular expression match by enclosing the string in forward slashes, with an **i** after the trailing slash, to indicate that there is no case sensitive matching. Click the **Open Tool** button to use the Regular Expression Test tool to check your regular expressions. For details, see "Regular Expression Tool" in *Using SiteScope*. **Example:** /href=Doc\d+\.html/ or /href=doc\d+\.html/i **Note:** The search is case sensitive.
Show detailed measurement	SiteScope records a detailed breakdown of the process times involved in retrieving the requested URL. These times include the following: ➤ **DNS lookup time.** The time it takes to send a name resolution request to your DNS server until you get a reply. ➤ **Connection time.** The time it takes to establish a TCP/IP/Socket connection to the Web server. ➤ **Server response time.** The time after the request is sent until the first byte (rather first buffer full) of the page comes back. ➤ **Download time.** The time it takes to download the entire page.

UI Element	Description
Timeout (seconds)	Amount of time, in seconds, to wait for a page to begin downloading before timing-out. Once this time period passes, the URL monitor logs an error and reports an error status. If you have selected the **Retrieve frames** or **Retrieve images** option, SiteScope waits for these items to be retrieved before considering the page to be fully downloaded. **Default value:** 60 seconds
Retries	Number of times that SiteScope should retry the request if a recoverable error was encountered. A timeout of the request for is a recoverable error. **Default value:** 0
HTTP Settings	
Request headers	Header request lines sent by the HTTP client to the server. Headers should be separated by a linebreak. The standard list of HTTP1.1 request headers can be found in http://www.w3.org/Protocols/rfc2616/rfc2616-sec14.html#sec14. **Note:** Although this field is optional, some Web pages behave unexpectedly when the request header is missing (such as performing endless redirects, providing wrong content, and so forth).
URL content encoding	SiteScope retrieves the correct encoding from the server response. The default value appearing here should not be edited. **Default value:** Retrieve encoding from server response

UI Element	Description
POST data	If the URL is for a POST request, enter the post variables, one per line as name=value pairs. This option is used to verify that a form is working correctly by performing the same request that occurs when a user submits a form. See also the Match Content box for a way to verify that the correct form response was received. If this item is blank, a GET request is performed. **Note:** This item can also be used to pass cookies with the request. **Example:** "Set-cookie:<cookieName>=<cookieValue>"
POST data encoding	Determines if the POST data is to be encoded. Select from the following options: ➤ **Use content type.** Decide to encode the post data by the content type header. If the header equals **urlencoded** then encode, otherwise do not encode. ➤ **Force URL encoding.** Always encode the POST data. ➤ **Do not force URL encoding.** Do not encode the POST data. **Default value:** Use content type

UI Element	Description
Check for content changes	SiteScope records a checksum of the document the first time the monitor runs and then does a checksum comparison each subsequent time it runs. If the checksum changes, the monitor has a status of **content changed error** and go into error. If you want to check for content changes, you usually want to use **compare to saved contents**. The options for this setting are: ➤ **No content checking** (default). SiteScope does not check for content changes. ➤ **Compare to last contents.** The new checksum is recorded as the default after the initial error **content changed error** occurs, so the monitor returns to OK until the checksum changes again. ➤ **Compare to saved contents.** The checksum is a snapshot of a given page (retrieved either during the initial or a specific run of the monitor). If the contents change, the monitor gets a **content changed error** and stays in error until the contents return to the original contents, or the snapshot is update by resetting the saved contents. ➤ **Reset saved contents.** Takes a new snapshot of the page and saves the resulting checksum on the first monitor run after this option is chosen. After taking the snapshot, the monitor reverts to **Compare to saved contents** mode. **Default value:** No content checking
HTTP version	HTTP version for SiteScope to use for style request headers (HTTP version 1.0 or 1.1). **Default value:** 1.1

UI Element	Description
Retrieve images	The status and response time statistics include the retrieval times for all of the embedded images in the page. Embedded images include those referenced by IMG, BODY (from the background property), and INPUT TYPE=IMAGE HTML tags. Images that appear more than once in a page are only retrieved once. **Note:** If the Retrieve Images option is checked, each image referenced by the target URL contributes to the download time. However, if an image times out during the download process or has a problem during the download, that time is not added to the total download time.
Retrieve frames	Retrieves the frames references in a frameset and counts their retrieval time in the total time to download this page. Frames include those referenced by FRAME and IFRAME tags. If **Retrieve images** is also checked, SiteScope attempts to retrieve all images in all frames. **Note:** If the **Retrieve frames** option is checked, each frame referenced by the target URL contributes to the download time. However, if a frame times out during the download process or has a problem during the download, that time is not added to the total download time.
Error if redirected	SiteScope notifies you if a URL is redirected.

UI Element	Description
Use WinInet	WinInet is used as an alternative HTTP client for this monitor. Select this option to use WinInet instead of Apache when: ➤ The Apache HTTP client does not support a specific technology required to access the server you are monitoring. For example, Kerberos authentication is not supported by the Apache library, and is supported by WinInet. WinInet also supports trusted client-side certificates while Apache does not. ➤ You tried running this monitor and the Apache server returned errors. Using WinInet may solve these errors. **Note:** This field is available on Windows versions of SiteScope only.
Authentication Settings	
Credentials	Option to use for authorizing credentials if the URL specified requires a name and password for access: ➤ **Use use name and password.** Select this option to manually enter user credentials. Enter the user name and password to access the URL in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password for the URL. Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.

UI Element	Description
Pre-emptive authorization	Option for sending authorization credentials if SiteScope requests the target URL: ➤ **Use global preference.** Select to have SiteScope use the **When to Authenticate** setting as specified in the Pre-emptive Authorization section of the General Preferences page. ➤ **Authenticate first request.** Select to send the user name and password on the first request SiteScope makes for the target URL. **Note:** If the URL does not require a user name and password, this option may cause the URL to fail. ➤ **Authenticate if requested.** Select to send the user name and password on the second request if the server requests a user name and password. **Note:** If the URL does not require a user name and password, this option may be used. All options use the **User name** and **Password** entered for this monitor instance. If these are not specified for the individual monitor, the **Default authentication user name** and **Default authentication password** specified in the Main section of the General Preferences page are used, if they have been specified. **Note:** Pre-emptive authorization does not control if the user name and password should be sent, or which user name and password should be sent.
Accept untrusted certificates for HTTPS	If you are accessing a target URL using Secure HTTP (HTTPS) and SiteScope does not have the required server certificates, you can either select this option or import the related certificates. For details on importing server certificates, see SSL Connectivity in "URL Content Monitor Overview" on page 682.
Accept invalid certificates for HTTPS	Select this option if you are accessing a target URL using Secure HTTP (HTTPS) and SiteScope has invalid server certificates. This may happen, for example, if the current date is not in the date ranges specified in the certificate chain.

UI Element	Description
Client side certificates	Certificate file if you need to use a client side certificate to access the target URL. Normally, this is a .pfx (.p12) type certificate, which usually requires a password. You type the password for the certificate in the **Client side cert password** box. **Note:** Client side certificate files must be copied into the <SiteScope root directory>\templates.certificates directory.
Client side certificates password	Password for a client side certificate if required.
Authorization NTLM domain	Domain for NT LAN Manager (NTLM) authorization if required to access the URL.
NTLM V2	Select if the URL you are accessing requires authentication using NTLM version 2.
Proxy Settings	
HTTP proxy	Domain name and port of an HTTP Proxy Server if a proxy server is used to access the URL.
Proxy server user name	Proxy server user name if required to access the URL. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy server password	Proxy server password if required to access the URL. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy NTLM V2	Proxy requires authentication using NTLM version 2.

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URL List Monitor

This chapter includes:

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URL List Monitor Overview

You can use the URL List monitor to check the availability of a list of URLs without having to create a separate URL monitor for each one. For example, this is useful if you host several Web sites and simply want to see that they are each serving pages as expected. The URL List monitor is not used to confirm links between pages (see the "Link Check Monitor Overview" on page 248) or other Web transaction processes (see "URL Sequence Monitor Overview" on page 710). The URL List monitor supports monitoring HTTP versions 1.0 and 1.1.

A URL List is specified by giving a filename containing the list of URLs to check. The URLs that you want to monitor are saved in a plain text file. There is virtually no limit to the number that you can list though the run interval selected for the monitor may require that the number of URLs be limited. For each URL included in the URL list file, the monitor retrieves the contents of the URL or the server response to the request.

For task details, see "How to Configure the URL List Monitoring Environment" on page 703.

For user interface details, see "URL List Monitor Settings" on page 705.

This section contains the following topics:

- "Scheduling the Monitor" on page 701
- "Support for IPv6 Addresses" on page 702
- "SSL Connectivity" on page 702
- "Troubleshooting and Limitations" on page 702

Scheduling the Monitor

This is dependent on how often you want to check to see if the URLs are working. Once an hour is common, but you can schedule it to run more often. There are a few factors that affect how long it takes the URL List monitor to complete a run:

- number of URLs in the list
- URL retrieval time
- the number of threads used

In some cases this may lead to the monitor not running as expected. As an example, assume you have a list of 200 URLs that you want to monitor every 10 minutes, but, due to Internet traffic, SiteScope is not able to complete checking all of the 200 URLs in that amount of time. The next time the monitor was scheduled to run, SiteScope would see that it did not complete the previous run and would wait for another 10 minutes before trying again.

The error log marks this as a "skip". If this happens 10 times, SiteScope restarts itself, and SiteScope Health shows an error status. There are several things you can do to try to resolve this issue:

- Schedule the monitor to run less frequently. If this conflicts with some other objective, use the other options.
- Split the URLs that you want to check into more than one list, and add additional monitors to monitor each list.
- Increase the number of threads that SiteScope can use when checking the URLs. The more threads, the quicker SiteScope can check them. Increasing the number of threads can adversely affect SiteScope's performance.

Ideally, you want SiteScope to have just completed checking the URLs in the list when it is time to start checking again. This would indicate that the load was evenly balanced.

Each time the URL List monitor runs, it returns the number of errors, if any, and writes it into the monitoring log file. It also writes the total number of URLs checked and the average time, in milliseconds, to retrieve each URL.

Support for IPv6 Addresses

This monitor supports the IPv6 protocol. If you want your environment to resolve host names to IPv6, you can select the **Prefer IP version 6 addresses** option in SiteScope Infrastructure Settings (**Preferences** > **Infrastructure Preferences** > **Server Setting**). If this option is selected, whenever a host name is specified for a remote server and the name is resolved to both IPv4 and IPv6, the IPv6 address is used.

When using IPv6, this monitor supports the HTTP protocol.

If specifying a literal IPv6 address as the name for the monitored remote server when IPv6 addressing is enabled, the IP address must be enclosed in square brackets ("[", "]"). For example:

```
http://[2004:DB8:2a:1005:230:48ff:fe73:982d]:8080
```

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

SSL Connectivity

Web servers are generally configured to use SSL encryption for administrative connections. This can be determined by the prefix of the Web service URL. The http:// prefix means that the server uses a non-encrypted connection. The https:// prefix means that it is a secure, encrypted connection. Monitoring a Web server which uses an encrypted connection, requires importing the server certificate. For details on how to perform this task, see "Import the server certificates (if the Web Server is configured to use SSL encryption)" on page 703.

Troubleshooting and Limitations

You can use the URL Sequence Tool to get on the spot data for the URL and to view the HTML received from the HTTP request.

Tasks

How to Configure the URL List Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 703
- "Import the server certificates (if the Web Server is configured to use SSL encryption)" on page 703
- "Configure the monitor properties" on page 704

1 Prerequisites

The user name and password specified in the **Credentials** section (in **Authentication Settings**) must have sufficient permissions to complete the HTTP request that the monitor is configured to perform.

2 Import the server certificates (if the Web Server is configured to use SSL encryption)

If the Web server has an https:// prefix, it is a secure, encrypted connection, and you need to import the server certificate. Use one of the following methods for importing server certificates:

- Import the server certificates using SiteScope Certificate Management. For details, see "How to Import Server Certificates Using Certificate Management" in *Using SiteScope* in the SiteScope Help.
- Import the server certificates manually. For details, see "Import Server Certificates Manually" on page 668.

3 Configure the monitor properties

Configure the URL List monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "URL List Monitor Settings" on page 705.

Reference

URL List Monitor Settings

The URL List monitor is used to check a large list of URLs. This monitor is commonly used by Web hosting providers to measure the availability and performance of their customer's Web sites.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Relevant tasks	➤ "How to Configure the URL List Monitoring Environment" on page 703 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "URL List Monitor Overview" on page 700

URL List Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
URL list file	Path for the file containing the list of URLs to be monitored. This file should be a plain text file and contain only one URL per line. If the URLs are stored in a map format, each URL must be in the format: ;<URL ID>;<host>;<port>;<secure> or <nonsecure>;<page> **Examples:** http://www.website.com/index.html http://www.website.com/main/customer/order.html http://www.website.net/default.htm http://www.Webpages.com/tech/support/ws/intro.html

UI Element	Description
Log file	Path for the log file for this monitor. For each URL checked, an entry is added to this log file. If this item is blank, a log is not created.
Error log file	Path for the error log file for this monitor. For each error retrieving a URL, an entry is added to this log file. If this item is blank, a log is not created.
Specific server	Server name of URLs to check in the URL list. If the URLs are stored in a map format (see **URL list file** box for details), this item is used to check a subset of the URLs from the list. **Default value:** All URLs that are in the list are checked. **Note:** If you modify the value in the this box, you must also change the value in the **URL list file** box for SiteScope to implement the change.
Pause (milliseconds)	The pause, in milliseconds, between each URL check. Decreasing this number shortens the total time required to check all of the URLs but also increases the load on the server. **Default value:** 1000 milliseconds
Threads	Number of threads to retrieve URLs. This is the number of simultaneous checks to perform. Increasing this number shortens the time for all of the URLs to be checked but also increases the load on the server. **Default value:** 4
Timeout (seconds)	Number of seconds that the URL monitor should wait for a page to complete downloading before timing-out. Once this time period passes, the URL monitor logs an error and reports an error status. **Default value:** 60 seconds
Retries	Number of times you want SiteScope to try to reach URLs that are returning an error. **Default value:** 0

UI Element	Description
HTTP Settings	
Request headers	Header request lines sent by the HTTP client to the server. Headers should be separated by a linebreak. The standard list of HTTP1.1 request headers can be found in http://www.w3.org/Protocols/rfc2616/rfc2616-sec14.html#sec14. **Note:** Although this field is optional, some Web pages behave unexpectedly when the request header is missing (such as performing endless redirects, providing wrong content, and so forth).
Use WinInet	WinInet is used as an alternative HTTP client for this monitor. Select this option to use WinInet instead of Apache when: ➤ The Apache HTTP client does not support a specific technology required to access the server you are monitoring. For example, Kerberos authentication is not supported by the Apache library, and is supported by WinInet. WinInet also supports trusted client-side certificates while Apache does not. ➤ You tried running this monitor and the Apache server returned errors. Using WinInet may solve these errors. **Default value:** Not selected
Proxy Settings	
HTTP proxy	Domain name and port of an HTTP Proxy Server if a proxy server is used to access the URLs in the list.
Proxy server user name	Proxy server user name if the required to access the URL. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy server password	Proxy server password if the required to access the URL. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.

UI Element	Description
Authentication Settings	
Credentials	Option to use for authorizing credentials if the URLs in the list require a user name and password for access: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password to access the URLs in the **User name** and **Password** box. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password for the URLs (default option). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.

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URL Sequence Monitor

This chapter includes:

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URL Sequence Monitor Overview

You use URL Sequence Monitors to verify that multiple-page Web transactions are working properly. This is an important part of monitoring key business processes and services. For example, you can have SiteScope retrieve a login page, type an account name by using a secure Web form, check an account status for the page that is returned, and then follow a sequence of links through several more pages. URL Sequence Monitors are also useful for checking pages that include dynamically generated information, such as session IDs, that are embedded in the Web pages by using dynamic links or hidden input items. The URL Sequence monitor supports monitoring HTTP versions 1.0 and 1.1.

The core of the URL Sequence monitor is the sequence of URL and associated action requests that are performed by the monitor. A URL Sequence begins with a URL acting as the starting point or Step 1 for the sequence. This can then be followed by additional URLs that are accessed manually, or more commonly, by links or form buttons that a user would select to navigate or complete a specific transaction.

By default, you can define up to twenty sequence steps. For each step you may specify a content match to search for, enter a user name and password if required, define custom POST data, as well as other optional criteria for that step.

You can edit the steps in a URL sequence after they have been added. Making changes to a sequence step requires that you update both the individual step and update the monitor as a whole. Editing any step of a URL sequence may affect subsequent steps in the sequence and cause the sequence to fail. It may be necessary to change all of the steps that occur after the step that is changed.

You can delete steps from a URL sequence but they can only be deleted starting from the last step in the sequence. This is to prevent inadvertently breaking a sequence because, in most cases, one step is dependent on data returned by the previous step. When you update or delete steps, SiteScope attempts to run the changes to the step. The results of the monitor run are displayed in the SiteScope Dashboard.

For task details, see "How to Create a URL Sequence" on page 724.

For user interface details, see "URL Sequence Monitor Settings" on page 728.

This section contains the following topics:

What to Monitor

You should monitor any multi-step Web page sequence that you have made available to general users to verify that they are available and function correctly. Web site visitors often assume that any problems they encounter are due to user error rather than system error, especially if they're not familiar with your application. By using this monitor to perform sequence testing, you can verify that users are able to successfully complete transactions.

Working with the URL Sequence Monitor

The URL Sequence monitor is more complex than most other SiteScope monitor types and the steps for working with the monitor are different than for other monitors. The following is an overview of key concepts and actions you use when working with the URL Sequence monitor:

- The URL Sequence monitor can be configured with between one to forty steps. Each step is defined individually in a sequence of numbered entries in the interface. The steps must be initially configured in the intended sequence as the request for one step provides the content used in the following step.
- When you first configure a URL Sequence monitor, be sure to configure the steps you want to include in the sequence before you create the monitor.
- You can set thresholds for individual steps or for the whole monitor.
- You configure the URL Sequence monitor in text mode. The navigation links and form actions are displayed as text parsed from the HTML that is used to construct a page in Web browsers. In some cases, portions of HTML code may also be included. You must be familiar with HTML when working with this monitor.
- Many Web-based systems use session data to identify clients and track the state of a user’s interaction with the server application. This session data is often sent back and forth to the client in the HTTP header or Post Data. You should be familiar with the session tracking methods used by the systems you want to monitor to effectively configure this monitor.

- Web-based sequences or transactions can be difficult to navigate when dealing with many Web pages. For example, Web pages that use many graphic images for navigation hyperlinks can present special challenges when configuring URL Sequence monitors. You must be familiar with HTML hyperlink syntax when working with this monitor.

- When you first configure the URL Sequence monitor, the HTML text content returned from the request made in one step can be displayed in the following step by clicking the **Show Source** button. This can be very useful for finding content on which you want to perform a match. You may also use this to correlate links and forms in the respective selection menus with their relative location on the page. For example, if there is a search entry form near the top of a Web page and another, different search form further down in the page, you can view the raw HTML to help determine the syntax associated with the form that you want to test.

- SiteScope does not parse or interpret embedded scripts or other client-side program code such as JavaScript (ECMAscript). Web page content that is generated or controlled by client-side code does not usually appear in the URL Sequence monitor. For information about dealing with Web page scripts, see "URL Sequence Monitor Settings" on page 728 and Client-side Programs help page.

- You should consider using the VuGen script rather than the URL Sequence monitor in the following circumstances:

  - Where Javascripts are embedded in the HTML being monitored (if they play an important role in the HTML). This is because Javascripts are not supported by the URL monitor.

  - If you experience problems when monitoring HTMLs over the SSL protocol, and these problems persist after you have verified that all monitor settings are correct.

Support for IPv6 Addresses

This monitor supports the IPv6 protocol. If you want your environment to resolve host names to IPv6, you can select the **Prefer IP version 6 addresses** option in SiteScope Infrastructure Settings (**Preferences** > **Infrastructure Preferences** > **Server Setting**). If this option is selected, whenever a host name is specified for a remote server and the name is resolved to both IPv4 and IPv6, the IPv6 address is used.

When using IPv6, this monitor supports the HTTP protocol.

If specifying a literal IPv6 address as the name for the monitored remote server when IPv6 addressing is enabled, the IP address must be enclosed in square brackets ("[", "]"). For example:

```
http://[2004:DB8:2a:1005:230:48ff:fe73:982d]:8080
```

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Defining Sequence Steps

The URL sequence must begin with an initial URL. SiteScope makes a request for the URL, and the data returned by this initial request is used for subsequent steps. The HTTP response header and the content of the URL are available in the HTML Source section at the bottom of the subsequent step dialog box.

When you have entered the first step, you can add more steps. You repeat this process depending on the number of Web pages and actions that need to be taken to complete the sequence. The step screens provide access to the available elements on the Web page requested by the previous step. This includes form buttons, hyperlinks, form input elements, and other data. You use these elements to create each subsequent sequence step separately. Most sequence steps involve one of the following elements:

Reference Type	**Description**
Go to URL Manually	Where the sequence uses the Common Gateway Interface (CGI) for data transmission between the client and the server, it may be useful to specify a particular URL and name-value pairs. You can enter the URL you want to request along with any name-value pairs needed to get to the next sequence step even if those values are available through some other page element (such as a form). This option also enables you to copy URL and CGI strings directly from the location or address bar of another browser client that you may be using to step through the sequence you are building.
Following a Hyperlink	SiteScope parses the content of the URL returned by the previous step and creates a list of hyperlinks that are found on the page. This includes links that are part of an image map that may be virtual "buttons" on a navigation menu. Any links found on this page of the sequence can be viewed and selected using the drop-down list box to the right of the **Link** radio button. Use the following steps to add a link step to the sequence.
Selecting a Form button	SiteScope parses the content of the URL in the current step and creates a list of form elements of the type "Submit". If SiteScope finds any HTML forms on the current page of the sequence, they are displayed in a drop-down list. The listings are in the following format:{[formNumber]FormName}ButtonName **Example:** The Search button on a company's search page might be listed as:{[1]http://www.CompanyName.com/bin/search}search

Reference Type	Description
Selecting a Frame within a frameset	If the URL for a step in the sequence contains an HTML FRAMESET and you need to access a hyperlink, form, or form button that is a page displayed in a frame, you must drill down into the Frameset to the actual page that contains the links or forms that you want before you can proceed with other steps in the sequence.
Following a META REFRESH redirection	If the page for this step of the sequence is controlled by a <META HTTP-EQUIV="Refresh" CONTENT="timedelay; URL=filename.htm"> tag, you can instruct SiteScope to retrieve the specified file as the next step. This sort of construct is sometimes used for intro pages, splash screens, or pages redirecting visitors from an obsolete URL to the active URL.

Note: SiteScope does not parse or interpret embedded scripts or other client-side program code such as JavaScript (ECMAscript). Web page content that is generated or controlled by client-side code usually does not appear in the URL Sequence monitor.

SSL Connectivity

Web servers are generally configured to use SSL encryption for administrative connections. This can be determined by the prefix of the Web service URL. The http:// prefix means that the server uses a non-encrypted connection. The https:// prefix means that it is a secure, encrypted connection. Monitoring a Web server which uses an encrypted connection, requires either:

- Selecting the **Accept untrusted certificates for HTTPS** option in the Authentication Settings section of the URL Sequence Monitor Settings panel as described in "URL Sequence Monitor Settings" on page 728.
- Importing the server certificate. For details on how to perform this task, see "Import the server certificates (if the Web Server is configured to use SSL encryption)" on page 724.

URL Sequences and Dynamic Content

Web pages which include client-side programming or dynamically generated content can present problems in constructing SiteScope URL Sequence monitors. Client-side programs might include Java applets, ActiveX controls, JavaScript, or VBScript. Web pages which are generated by server-side programming (Perl/CGI, ASP, CFM, SSI, JSP, and so forth) can also present a problem if link references or form attributes are changed frequently.

SiteScope does not interpret JavaScript, VBScript, Java applets, or Active X Controls embedded in HTML files. This may not be a problem when the functionality of the client-side program is isolated to visual effects on the page where it is embedded. Problems can arise when the client-side program code controls links to other URL's or modifies data submitted to a server-side program. Because SiteScope does not interpret client-side programs, actions or event handlers made available by scripts or applets are not displayed in the URL Sequence Step dialog box.

Some Web sites use dynamically generated link references on pages generated by server-side programming. While these Web pages do not contain client-side programs, frequently changing link references or cookie data can make it difficult to set up and maintain a URL Sequence monitor.

Dynamic Content Workarounds

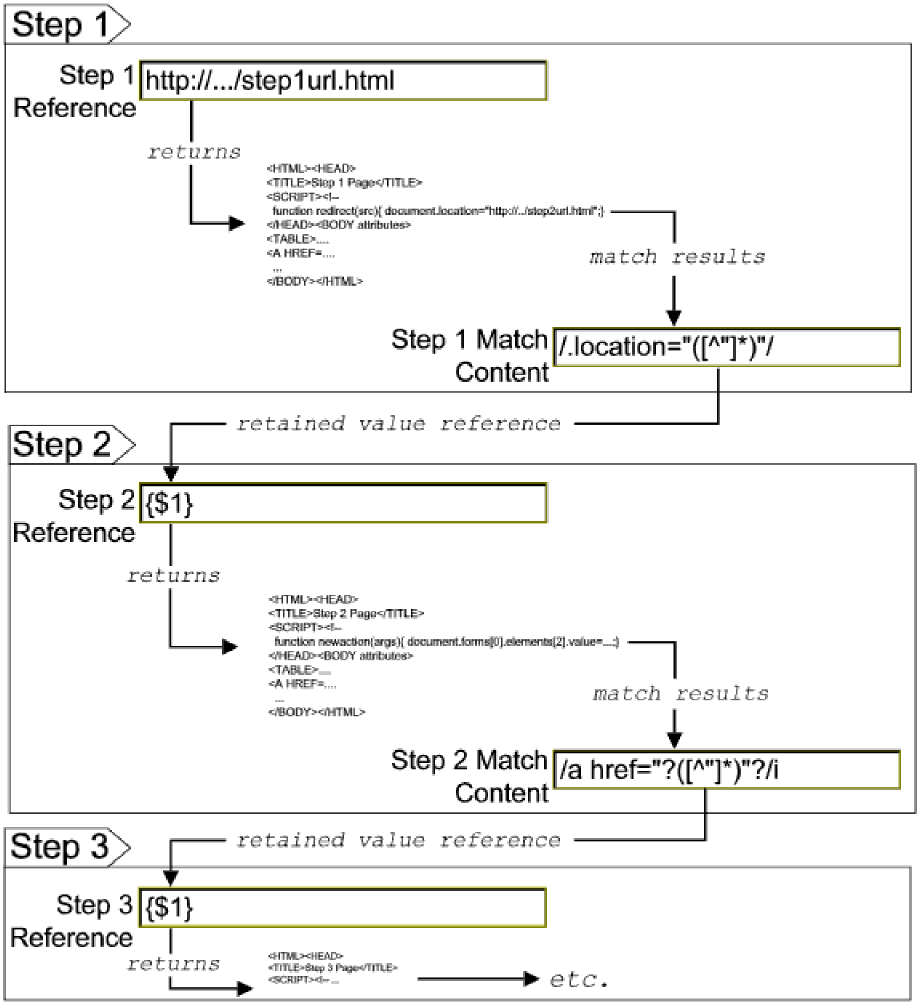
There are several ways to make a SiteScope URL Sequence monitor perform actions controlled by client-side programs and other dynamic content. Several of these workarounds are presented below. The workarounds generally require knowledge of the principles of Web page construction, CGI programming, Perl-style regular expressions, and the programming used to support the Web site being monitored.

Dynamic Content	SiteScope Workaround
A Web page contains a script which controls a link to another URL. **Example:** onClick = "document.location='http://...	Use a match content regular expression in the sequence step for the subject page to retain the **filename.ext** value from the .location="filename.ext" match pattern. The retained value can then be passed as a URL in the **URL** box of the next step of the sequence.
A client-side program reformats, edits, or adds data to a POST or GET data set collected by HTML form inputs.	Manually edit the script changes into the NAME=VALUE pairs displayed for the subject sequence step. This is done in the **POST data** box in the HTTP Settings section of the URL Sequence Step dialog box. This requires familiarity with the script function and CGI request headers.
A client-side program generates HTML content which, after interpretation by a Web browser, includes HTML <A HREF=...> links.	Use a match content regular expression to return the filename.ext value from the HREF="filename.ext" pattern and pass it to the **URL** box of the next sequence step.

Dynamic Content	SiteScope Workaround
A client-side program generates HTML content which, after interpretation by a Web browser, includes forms submitted to a CGI program.	Manually enter the NAME=VALUE pairs for the subject sequence step. This is done in the **POST data** box in the HTTP Settings section of the URL Sequence Step dialog box. This requires familiarity with the script, the form structure, and CGI request headers.
A script dynamically sets the ACTION attribute of an HTML <FORM> tag.	Manually enter the ACTION URL for the next sequence step. This is done in the **URL** box in the Reference Settings section of the URL Sequence Step dialog box. This requires familiarity with the script.
A script dynamically sets the METHOD attribute of an HTML <FORM> tag.	Manually enter the POST or GET data for the next sequence step. For POST methods, enter the data in the **POST data** box in the HTTP Settings section of the URL Sequence Step dialog box. For GET methods, enter the ACTION URL plus the &NAME=VALUE pairs in the **URL** box in the Reference Settings section of the URL Sequence Step dialog box. This requires familiarity with the script, the form structure, and CGI request headers.

The figure below illustrates several of the principles of constructing a URL Sequence monitor using regular expressions. The regular expression shown in the figure can be used to extract URLs from JavaScript or other Web page content. As indicated, content matches for a given step are performed on the content returned for that step. The parentheses used in the regular expressions cause the value matched by the expression inside the parentheses to be remembered or retained. This retained value can be passed on to the next step of the sequence by using the {$n} variable. Because the regular expression can contain more than one set of parentheses, the $n represents the match value from the n^{th} set of parentheses.

The example in the figure uses only one set of parentheses and thus references the retained value as {$1}.



```
<HTML><HEAD>
<TITLE>Step 1 Page</TITLE>
<SCRIPT><!--
 function redirect(src){ document.location="http://../step2url.html";}
</HEAD><BODY attributes>
<TABLE>....
<A HREF=....
 ...
</BODY></HTML>
```

```
<HTML><HEAD>
<TITLE>Step 2 Page</TITLE>
<SCRIPT><!--
 function newaction(args){ document.forms[0].elements[2].value=....}
</HEAD><BODY attributes>
<TABLE>....
<A HREF=....
 ...
</BODY></HTML>
```

```
<HTML><HEAD>
<TITLE>Step 3 Page</TITLE>
<SCRIPT><!-- ...
```

Web pages containing code that perform the following present additional challenges:

- A script parses a cookie or other dynamic content to be added to a CGI GET request.
- Link information is contained in an external script file accessed by using a HTML <SCRIPT HREF="http://... > tag.

Web pages with dynamically generated link and form content may not be parsed correctly by the SiteScope URL Sequence monitor.

Retaining and Passing Values Between Sequence Steps

One important function of the match content capability in URL Sequence monitor is the ability to match, retain, and then reference values from one URL sequence step for use as input in a subsequent step. Using one or more sets of parentheses as part of a match content regular expression instructs SiteScope to remember the values matched by the pattern inside the parentheses. These values can then be referenced using the syntax described in the following example.

Example

Suppose you create a URL Sequence monitor and include a match content expression for the first step to capture some session information. The Step 1 match content expression could be in the form of

```
/[\w\s]*?(pattern1)[\/\-\=]*?(pattern2)/
```

The two sets of parentheses in this expression instruct SiteScope to retain the two values matched by pattern1 and pattern2. To use these values as input to the **next** step in the URL sequence, use the syntax {**$valuenum**}. In this example, the string {$1} references the value matched by pattern1 and {$2} references the value matched by pattern2.Use the above syntax for passing the referenced values to the URL sequence step immediately following the step in which the content match was made (step 1 to step 2 in our example).

You can retain and pass matched values from one step to any other subsequent step by using a compound syntax of {**$$stepnum.valuenum**}. If, in our example, you want to use the value matched by pattern1 in step 1 as input in a FORM or URL request in step 4 of the URL sequence, you would include the syntax {$$1.1} in step 4. To reference the value matched by pattern2, use the {$$1.2} syntax.

Sharing Cookies Between Monitor Runs and Configured Monitors

The URL Sequence monitor also supports sharing cookies between monitor runs and between configured monitors. This is done by maintaining a persistency of both session cookies and permanent cookies that can be queried, updated and shared among other URL Sequence monitors.

Suppose you have a number of different URL Sequence monitors that are currently configured on a SiteScope server. Assume that all the monitors simulate a URL transaction in which at least one of the steps uses a session cookie to send to the server instead of logging in each time. Using cookie persistency, you can configure one monitor to save the cookies it receives and configure all the other monitors to load the cookies. This can save system costs if there is a charge for each request to the login server from the monitoring tool. The monitor can 'log on' once and reuse the credentials from the login by other monitor runs and monitor instances. Thus, only one monitor needs to contain a login step. All the others can skip this step and send the login credentials in a cookie instead.

Note:

- Configure the monitor designated to save cookies to run at a frequency that is not less than the time frame of the session to make sure that cookies remain valid throughout the time frame of a session. A monitor that loads cookies from the persistency file does not check to see whether the cookie it is loading and sending is still valid.
- Configure the monitor designated to save cookies before you configure the loading monitors. This is to make sure that the persistency file exists when you configure monitors to load from the file. Configuring the saving monitor to run at a higher frequency than loading monitors does not assure that the monitor saving cookies runs first.

Troubleshooting and Limitations

You can run all the steps defined in the URL sequence by clicking the **Test Steps** button in the Step Settings panel. This displays the data collected from each step, and embeds a copy of the HTML page returned. For details, see "Step Settings" on page 729.

Tasks

How to Create a URL Sequence

This task describes the steps and settings you use to create a URL sequence.

This task includes the following steps:

- "Prerequisites" on page 724
- "Import the server certificates (if the Web Server is configured to use SSL encryption)" on page 724
- "Add a URL Sequence monitor" on page 725
- "Start a new URL sequence" on page 725
- "Define additional sequence steps" on page 726
- "Enter an encrypted or unencrypted password (if required)" on page 727
- "Configure other settings for the monitor" on page 727

1 Prerequisites

The user name and password specified in the URL Sequence Step dialog box must have sufficient permissions to complete the HTTP request that the monitor is configured to perform.

2 Import the server certificates (if the Web Server is configured to use SSL encryption)

If the Web server has an https:// prefix, it is a secure, encrypted connection, and you need to import the server certificate. Use one of the following methods for importing server certificates:

- Import the server certificates using SiteScope Certificate Management. For details, see "How to Import Server Certificates Using Certificate Management" in *Using SiteScope*.
- Import the server certificates manually. For details, see "Import Server Certificates Manually" on page 668.

3 Add a URL Sequence monitor

Add the URL Sequence monitor to a monitor group container and enter a name for the monitor instance in the General Settings panel.

For details on the General Settings panel, see "General Settings" in *Using SiteScope*

4 Start a new URL sequence

Configure the first URL in the sequence in the URL Sequence Step dialog box. The URL sequence must begin with an initial URL.

a In the Step Settings panel of the New URL Sequence Monitor dialog box, click the **New Step** button.

b In the URL Sequence Step dialog box, enter the initial URL address in the Reference Settings section. This URL should be the initial Web page that the user is expected to see or the access point for the web-based system you are going to monitor.

c Configure the other sequence step settings as necessary and click **OK**. Generally, the URL is sufficient for the first step of most URL sequences.

d In the Step Settings panel, click the **Test Steps** button to run all the defined steps in the URL Sequence and display the results of data collected. For details on the URL Sequence test, see "URL Sequence Steps Results Dialog Box" on page 741.

For details on the URL Sequence Step dialog box, see "URL Sequence Step Dialog Box" on page 735.

5 Define additional sequence steps

Configure the individual steps for the URL sequence in the URL Sequence Step dialog box.

a In the URL Sequence Step Settings panel of the New URL Sequence Monitor dialog box, click the **New Step** button.

b Use the options in the Reference Settings section to select how SiteScope progresses from one step of a URL sequence to the next. The options are:

- **URL.** To go to a URL manually.
- **Link.** To follow a hyperlink.
- **Form.** To select a form button.
- **Frame.** To select a frame within a frameset.
- **Refresh.** To follow a meta refresh redirection.

For details on the reference types, see "Defining Sequence Steps" on page 714.

c Configure the other sequence step settings as necessary and click **OK**. For user interface details, see "URL Sequence Step Dialog Box" on page 735.

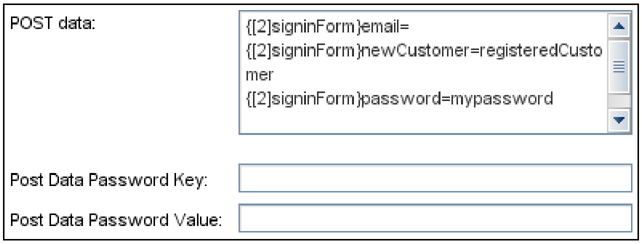
6 Enter an encrypted or unencrypted password (if required)

You can give an encrypted or unencrypted password to the URL monitor in the URL Sequence Step dialog box.

➤ To give an unencrypted password, enter the password in the **password=** line in the **POST data** text box. The password you enter is displayed in the text box.

➤ To give an encrypted password to the URL monitor form, type the string password in the **Post data password key** text box. Enter the password itself in the **Post data password value** text box. The password is encrypted.

Example - Unencrypted Password:



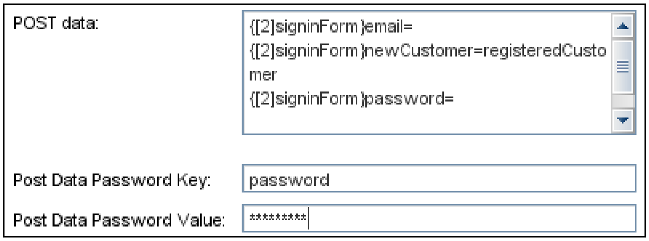
POST data:

{[2]signinForm}email=
{[2]signinForm}newCustomer=registeredCusto
mer
{[2]signinForm}password=mypassword

Post Data Password Key:

Post Data Password Value:

Example - Encrypted Password:



POST data:

{[2]signinForm}email=
{[2]signinForm}newCustomer=registeredCusto
mer
{[2]signinForm}password=

Post Data Password Key: password

Post Data Password Value: *********

7 Configure other settings for the monitor

Edit the monitor configuration settings as required.

For details on the URL Sequence Monitor Settings, see "URL Sequence Monitor Settings" on page 728.

Reference

URL Sequence Monitor User Interface

This section includes:

- URL Sequence Monitor Settings on page 728
- URL Sequence Step Dialog Box on page 735
- URL Sequence Steps Results Dialog Box on page 741

URL Sequence Monitor Settings

The URL Sequence monitor simulates a user's actions across a series of Web pages and URLs. This is particularly useful for monitoring and testing multi-page e-commerce transactions and other interactive online applications.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Relevant tasks	➤ "How to Create a URL Sequence" on page 724 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "URL Sequence Monitor Overview" on page 710

Step Settings

User interface elements are described below:

UI Element	Description
✱	**New Step.** Opens the URL Sequence Step dialog box enabling you to define the URL sequence steps. For user interface details, see "URL Sequence Step Dialog Box" on page 735.
✎	**Edit Step.** Opens the URL Sequence Step dialog box enabling you to edit the properties of an existing URL sequence step. For user interface details, see "URL Sequence Step Dialog Box" on page 735.
✖	**Delete Last Step.** Deletes the last step in the URL sequence.
☑	**Select All.** Selects all listed URL sequence steps.
☐	**Clear Selection.** Clears the selection.
⚗	**Test Steps.** Runs the defined steps in the URL Sequence, and display the results of data collected. The response embeds a copy of the HTML received from the HTTP request. For details, see "URL Sequence Steps Results Dialog Box" on page 741.
Step	The step number in the URL sequence.
Reference Type	URL of the sequence step.
Title	Name of this step within the sequence monitor.

URL Sequence Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
Timeout (seconds)	Amount of time, in seconds, to wait for the entire sequence to complete before timing-out. Once this time period passes, the URL Sequence monitor logs an error and reports an error status. **Default value:** 60 seconds
Timeout for each step	Uses the value entered for the **Timeout** above as the timeout for each step of the sequence rather than for the entire transaction. If the step takes more than this time to complete, the URL Sequence monitor logs an error and reports an error status. **Default value:** Not selected
Retries	Number of times that SiteScope should retry the request if a recoverable error was encountered. A timeout of the request for is a recoverable error. **Default value:** 0
If error, resume at step	Specifies a URL sequence step to run in the case that a URL Sequence results in an error. This is useful when a URL sequence involves a user or customer login which would result in problems if the sequence ended without logging out. Use the drop-down list to select a URL sequence step to jump to in the case that any step in the sequence returns an error.
Run resume step and remaining steps	If the **If error, resume at step** option is selected and run, selection of this option causes SiteScope to run that step and continue running the other, subsequent steps until it reaches the end of the sequence. **Default value:** Not selected

UI Element	Description
Show detailed measurements	SiteScope records a detailed breakdown of the process times involved in retrieving the requested URL. These include the following: ➤ **DNS lookup time.** The time it takes to send a name resolution request to your DNS server until you get a reply. ➤ **Connection time.** The time it takes to establish a TCP/IP/Socket connection to the Web server. ➤ **Server response time.** The time after the request is sent until the first byte (rather first buffer full) of the page comes back. ➤ **Download time.** The time it takes to download the entire page. **Default value:** Not selected
HTTP Settings	
Request headers	Header request lines sent by the HTTP client to the server. Headers should be separated by a linebreak. The standard list of HTTP1.1 request headers can be found in http://www.w3.org/Protocols/rfc2616/rfc2616-sec14.html#sec14. **Note:** Although this field is optional, some Web pages behave unexpectedly when the request header is missing (such as performing endless redirects, providing wrong content, and so forth).
HTTP version	HTTP version for SiteScope to use. Some systems may not be designed to accept HTTP 1.1 requests headers. If this is the case, select HTTP 1.0. **Default value:** HTTP version 1.1

UI Element	**Description**
Retrieve images	Status and response time statistics include the retrieval times for all of the embedded images in the page. Embedded images include those referenced by IMG, BODY (from the background property), and INPUT TYPE=IMAGE HTML tags. Images that appear more than once in a page are only retrieved once. **Note:** If this option is checked, each image referenced by the target URL contributes to the download time. However, if an image times out during the download process or has a problem during the download, that time is not added to the total download time. **Default value:** Not selected
Retrieve frames	SiteScope retrieves the frames references in a frameset and counts their retrieval time in the total time to download this page. Frames include those referenced by FRAME and IFRAME tags. If **Retrieve Images** is also checked, SiteScope attempts to retrieve all images in all frames. **Note:** If this option is checked, each frame referenced by the target URL contributes to the download time. However, if a frame times out during the download process or has a problem during the download, that time is not added to the total download time. **Default value:** Not selected

UI Element	Description
Use WinInet	WinInet is used as an alternative HTTP client for this monitor. Select this option to use WinInet instead of Apache when: ➤ The Apache HTTP client does not support a specific technology required to access the server you are monitoring. For example, Kerberos authentication is not supported by the Apache library, and is supported by WinInet. WinInet also supports trusted client-side certificates while Apache does not. ➤ You tried running this monitor and the Apache server returned errors. Using WinInet may solve these errors. **Default value:** Not selected (Apache is used)
Proxy Settings	
HTTP proxy	Domain name and port of an HTTP Proxy Server if a proxy server is used to access the URLs in the sequence.
Proxy server user name	Proxy server user name if required to access the URLs in the sequence. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy server password	Proxy server password if required to access the URLs in the sequence. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy NTLM V2	Select if the proxy server requires authentication using NTLM version 2.
Authentication Settings	
NTLM V2	Select if the URL you are accessing requires authentication using NTLM version 2. **Default value:** Not selected

UI Element	Description
Accept untrusted certificates for HTTPS	If you are accessing a target URL using Secure HTTP (HTTPS) and SiteScope does not have the required server certificates, you can either select this option or import the related certificates. For details on importing server certificates, see SSL Connectivity in "URL Sequence Monitor Overview" on page 710. **Default value:** Not selected
Accept invalid certificates for HTTPS	Select this option if you are accessing a target URL using Secure HTTP (HTTPS) and SiteScope has invalid server certificates. This may happen, for example, if the current date is not in the date ranges specified in the certificate chain. **Default value:** Not selected
Use cookie persistency	Shares cookies between monitor runs and between configured monitors. For details, see "Sharing Cookies Between Monitor Runs and Configured Monitors" on page 722. **Default value:** Not selected
Load cookies from persistency	Loads all relevant cookies from the persistency file and adds them to the list of cookies to be sent to the server. Cookies are loaded at the beginning of the monitor run. **Default value:** Not selected
Save cookies to persistency	Saves all cookies received from the server for the current monitor run to the persistency file. Where a cookie has the same name, and its domain and path attribute string values exactly match those of an existing cookie in the persistency file, the cookie replaces the existing cookie. Cookies are saved at the end of every monitor run and the persistency file is updated. **Default value:** Not selected
Cookie persistency file path	Path and name of the cookie persistency file.

URL Sequence Step Dialog Box

This dialog box displays the settings used for each individual sequence step in the URL Sequence Step Settings panel of the New URL Sequence Monitor dialog box. The scope of each of these settings is limited to the request action for the step. For example, the **User name** and **Password** settings are only sent as part of the request being made in the step that they are defined.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the **URL Sequence** monitor. In the **Step Settings** panel, click the **New Step** ✳ or **Edit Step** ✎ button.
Relevant tasks	"How to Create a URL Sequence" on page 724
See also	➤ "URL Sequence Monitor Overview" on page 710 ➤ "URL Sequence Monitor Settings" on page 728 ➤ "URL Sequence Steps Results Dialog Box" on page 741

User interface elements are described below:

UI Element	Description
Reference Settings	
<Reference type>	Use these options to select how SiteScope progresses from one step of a URL sequence to the next. For details, see "Defining Sequence Steps" on page 714. ➤ **URL.** Go to a particular URL directly. Enter the URL you want SiteScope to go to in the URL box. ➤ **Link.** Follow a hyperlink on the page received from the previous step. Click to display all available links on the current page. Click the label or HTML text corresponding to the hyperlink that you want SiteScope to follow. If you know a link is available on the subject page but it does not appear in the drop-down list, it may that the page uses a client-side program. In this case, you may have to specify the URL manually. ➤ **Form.** Enter data into a form received from the previous step and submit the form data to an application. Click to display the list of available form buttons. Click the name or HTML text corresponding to the form button that you want SiteScope to use. If you know a form is available on the subject page but it does not appear in the drop-down list, see "URL Sequences and Dynamic Content" on page 717. ➤ **Frame.** Request the content of a specific frame if the previous step returned an HTML frameset. Click the arrow on the right of the box to display all available filenames displayed in the current FRAMESET and then click the file that you want SiteScope to retrieve. ➤ **Refresh.** Follow an automated redirection defined by a META HTTP-EQUIV="Refresh" tag. Click the arrow on the right of the box to display all available Refresh filenames, and select the file that you want SiteScope to retrieve. Normally there is only one filename.

UI Element	Description
Main Settings	
Step title	Enter the text for the title of this step within the sequence monitor. The title is only displayed in the URL Sequence Steps Settings panel.
Match content	Enter a string of text to check for in the returned page or frameset. If the text is not contained in the page, the monitor displays the message content match error. HTML tags are part of a text document, so include them if they are part of the text for which you are searching. This works for XML pages as well. **Example:** < B> Hello< /B> World You can also perform a regular expression match by enclosing the string in forward slashes, with a letter i after the trailing slash indicating case-insensitive matching. **Example:** /href=Doc\d+\.html/ or /href=doc\d+\.html/i If you want a particular piece of text to be saved and displayed as part of the status, use parentheses in a Perl regular expression. **Example:** /Temperature: (\d+). This returns the temperature as it appears on the page and this could be used when setting an **Error if** or **Warning if** threshold. **Note:** The search is case sensitive.
Match content for error	Enter a string of text to check for in the returned page for this step. If the text is contained in the page, the monitor display the message **content error found** for this step's URL. The search is the same as for the **Match content** box described above.
Delay (seconds)	Enter how long SiteScope should wait before executing the next step of the sequence. **Default value:** 0 seconds

UI Element	Description
Authentication Settings	
User name	If the URL specified for this step requires a name and password for access, enter the user name. Alternately, you can leave this entry blank and enter the user name in the Default Authentication Credentials section on the General Preferences page. You use this alternate method to define common authentication credentials for use with multiple Web Service monitor.
Password	If the URL specified for this step requires a name and password for access, enter the password. Alternately, you can leave this entry blank and enter the password in the Default Authentication Credentials section on the General Preferences page. You use this alternate method to define common authentication credentials for use with multiple Web Service monitor.
Pre-emptive authorization	Select when the authorization credentials should be sent if SiteScope requests the target URL. ➤ **Use global preference** (default value). Select to have SiteScope use the settings specified in the **Pre-emptive authorization** field in the Main Panel of the General Preferences page. ➤ **Authenticate first request.** Select to send the user name and password on the first request SiteScope makes for the target URL. **Note:** If the URL does not require a user name and password, this option may cause the URL to fail. ➤ **Authenticate if requested.** Select to send the user name and password on the second request if the server requests a user name and password. **Note:** If the URL does not require a user name and password, this option may be used. All options use the authorization **User name** and **Password** entered for this monitor instance. If these are not specified for the individual monitor, the **Default authentication user name** and **Default authentication password** specified in the Main Panel of the General Preferences page are used, if they have been specified. **Note:** Pre-emptive authorization does not control if the user name and password should be sent, or which user name and password should be sent.

UI Element	Description
Client side certificate	If you need to use a client side certificate to access the target URL, select the certificate file using the drop down menu. Client side certificate files must be copied into the **SiteScope\templates.certificates** directory. Normally, this is a .pfx (.p12) type certificate, which usually requires a password. You enter the password for the certificate in the **Client side certificate password** box. **Default value:** none
Client side certificate password	If you are using a client side certificate and that certificate requires a password, enter the password.
Authorization NTLM domain	Enter the domain for NT LAN Manager (NTLM) authorization if it is required to access the URL in this step.
HTTP Settings	
URL content encoding	SiteScope retrieves the correct encoding from the server response. The default value appearing here should not be edited. **Default value:** Retrieve encoding from server response
POST data (for Form)	If the URL at this step issues a POST request for a form and the user has used the **Form** reference type (indicating that the user wants to send the form), enter the post variables, one per line as name=value pairs. This option is used to verify that a form is working correctly by performing the same request that occurs when a user manually submits a form. When the form is submitted, SiteScope fills in any items that are not specified with data here with the same defaults as a browser would have chosen. A single name=value pair may be used to hide any data that is passed to the form, such as a password. The values entered in the **POST data** text box are not encrypted and are visible to anyone. If you want to secure the value by encrypting it, use the **Post data password key** and **Post data password value** boxes to secure the monitor as described below. **Note:** There may be more than one form on the page.

UI Element	Description
Post data password key	Enter the name of the box that was supplied by the URL in the **POST data** box. It is the **name** component of the name=value pair.
Post data password value	Enter the value that is required when accessing the form. This is the **value** component of the name=value pair. The value is encrypted using the TDES algorithm. For example, you want to define an encrypted password to the form that the URL monitor, gmail.com sends. The site gmail.com automatically supplies information in the POST data text box of the URL Sequence dialog box. The Post Data Password Key may vary from site to site. The Post Data Password Key provided by gmail.com is Passwd. The Post Data Password Value is the password that you provide. For details on how to enter an encrypted or unencrypted password, see "Enter an encrypted or unencrypted password (if required)" on page 727.
POST Data encoding	Determines if the Post Data is encoded. Select from the following options: ➤ **Use content-type.** Decide to encode the post data by the content type header. If the header equals **urlencoded** then encode, otherwise do not encode. ➤ **Force URL encoding.** Always encode the post data. ➤ **Do not force URL encoding.** Do not encode the post data.
Show Source	Click to open a new browser window that displays the source code of the URL returned by the previous request. You can use this window to copy data, such as a session ID or form data, from the Web page for use in the current step. The HTML Source folding panel at the bottom of the step page can also be used to view the source of the Web page. However, some browsers do not support copying data from this panel.
Show HTML	Click to open a new browser window that displays the URL in a regular browser view. You can use this window to match the **Link** and **Form** data displayed in the URL Sequence Monitor step dialog form with the elements as displayed on the Web page.

URL Sequence Steps Results Dialog Box

This dialog box displays the data collected from running all the URL steps defined in the Step Settings panel. This includes the status and time taken for each step in the sequence. A copy of the HTML page returned at each step of the sequence is also displayed, so that a more graphical view of the sequence can be viewed.

To access	**1** Select the **Monitors** context. **2** In the monitor tree, right-click a group, select **New > Monitor**, and select the **URL Sequence** monitor. **3** In the **Step Settings** panel, configure the individual steps for the URL sequence, and then click the **Test Steps** button to view the test results. **4** In the URL Sequence Steps Results dialog box, use the step hyperlinks at the top to navigate to any step in the sequence.
Relevant tasks	"How to Create a URL Sequence" on page 724
See also	➤ "URL Sequence Monitor Overview" on page 710 ➤ "URL Sequence Step Dialog Box" on page 735 ➤ "URL Sequence Steps Results Dialog Box" on page 741

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VMware Host Monitors

This chapter includes:

Concepts

Tasks

Reference

Note: This chapter contains details on configuring settings for the following VMware Host monitors: VMware Host CPU, VMware Host Memory, VMware Host Network, VMware Host State, and VMware Host Storage monitors.

Concepts

VMware Host Monitors Overview

Use the VMware Host monitors to monitor performance related resources (CPU, memory, network, state, and storage) on the host server and its guest virtual machines. The VMware Host CPU and VMware Host Memory monitors also include configuration counters that provide useful information for configuring the VM on the host to help maximize resource usage. For details, see "Calculated (Smart) Counters" on page 748.

The VMware Host monitors are dynamic monitors that update themselves over time by adding or removing counters and thresholds as virtual machines are added or removed from the VMware Host. The update is not only as a result of VMotion, but also when a new CPU, disk, or other resource is added or removed from the host server or guest VM.

During initial monitor creation, the monitors use the connection URL configured to access the vCenter or physical host URL and dynamically discover the object hierarchy and available performance counters. You can select from these performance counters to determine which measurements SiteScope should retrieve for reporting server status.

Note: The VMware Host monitors are optional SiteScope monitors that require additional licensing to enable the monitor type in the SiteScope interface. Contact your HP sales representative for more information.

For details describing all the available counters, refer to the VMware documentation available at http://www.vmware.com/support/developer/vc-sdk/visdk25pubs/ReferenceGuide/.

For task details, see "How to Configure the VMware Host Monitors Monitoring Environment" on page 754.

Tip: We recommend adding these monitors by deploying the VMware Host solution template instead of creating the monitors manually. This is because the template has a predefined monitor set with optimized settings that allow you to monitor only the relevant components (counter patterns) in dynamic environments, and to get the minimum data required for troubleshooting problems in the monitored infrastructure. For details, see "VMware Host Solution Template" in *Using SiteScope*.

This section contains the following topics:

- "Supported Versions" on page 745
- "VMware Host Monitors or VMware Performance Monitor?" on page 746
- "Dynamic Monitoring Mechanism" on page 747
- "Calculated (Smart) Counters" on page 748
- "SSL Connectivity" on page 749
- "Connection Pool Settings" on page 749
- "VMotion Support" on page 750
- "VMware Host Monitor Topology" on page 751
- "Troubleshooting and Limitations" on page 752

Supported Versions

This monitor supports monitoring remote servers running on:

- VMware VirtualCenter 2.x
- VMware ESX 3.x, 4.0, 4.1
- VMware ESXi 3.5, 4.0
- VMware ESX 2.5 using VirtualCenter 2.x
- VMware ESX 3.x using VirtualCenter 3.x
- VMware vCenter Server 4.0, 4.1

VMware Host Monitors or VMware Performance Monitor?

	VMware Performance Monitor	VMware Host Monitors
Type of user	VM user/owner	Virtualization administrator
Requirements	➤ Measure performance and availability of a particular VM or set of VMs. ➤ Display SiteScope and BSM reports and BSM topology for this VM. Not interested on which host the VM runs or other issues.	➤ Manage a virtualization environment or vCenter and provide VM services to other users. ➤ Measure the availability and performance of vCenter resources (physical host machines). Not interested in specific VMs (only if this machine causes performance issues to the host.)
Recommended Use	One per VM	Deploy using VM Host solution template
Benefits	Measures the data every monitor runs regardless of whether the VM has migrated.	➤ Enables the administrator to make most efficient use of host resources (create maximum VMs and serve more users). ➤ Provides notifications of availability and performance problems on the host (that might be caused by specific VM or VMs). ➤ The monitor is dynamically updated (see "Dynamic Monitoring Mechanism" on page 747). ➤ Smart counters provide useful information for configuring the VM on the host to help maximize resource usage. For details, see "Calculated (Smart) Counters" on page 748.
Data in SiteScope and BSM Reports	Provides user with SiteScope and BSM reports with continuous data and topology that match the changes (the same VM connects to the relevant host).	➤ Enables the administrator to check host information only (the data is continuous). The topology matches VM migration for the monitored hosts. ➤ Does not provide continuous data on the VM (every time a VM migrates from host to host, its ID changes in SiteScope and BSM reports). However, VM data does not interest the administrator.

Dynamic Monitoring Mechanism

To enable the monitor to dynamically update counters and thresholds, select the counter patterns you want to monitor using a regular expression. For example, if you enter the pattern /.*/VirtualMachine/.*/cpu/usage.average\[\]/, the monitor retrieves the usage.average[] counter for all VMs.

Note: SiteScope uses Perl regular expressions for pattern matching. For example, if you enter /cpu.*/ or cpu, any counters with cpu in their name match this pattern and are added to the counters list.

You also set the frequency of the dynamic update mechanism at the monitor level. This is the frequency that SiteScope uses to update the counters retrieved from the server. This enables running the update mechanism at a frequency that is appropriate for the monitor type.

During each update, the monitor connects to the vCenter/Host server and updates:

- The status of each counter that matches the pattern defined by the regular expression. If there are no available counters on the server, or no counters that match the monitor patterns, the monitor is not updated and it displays the previous counters set.
- The thresholds for the selected counters.

In this way, the monitor automatically configures itself with counters on the relevant dynamic environment components. Counters that are no longer available on the VMware host server are automatically removed from SiteScope and no errors are logged.

Note: When you define static counters (with no regular expression), these counters are never removed from the monitor, even if they are no longer present on the server.

Calculated (Smart) Counters

The VMware Host CPU and VMware Host Memory monitors also have a set of calculated counters. These counters provide useful information for configuring the VM on the host to help maximize VM resource usage. These counters are not available in monitors deployed by the solution template.

These counters provide the following information:

Monitor	Counter Name	Description
VMware Host CPU	usageToReservation Relation	Relation between CPU usage and CPU reserved on the VM. If the counter value is < 1 over time, the VM is not using the reserved CPU and you should consider reducing the reservation.
	usageToLimitRelation	Relation between CPU usage and the CPU limit on the VM. If the counter value is >= 1 (or close to 1) over time, you should consider increasing the CPU limit for the VM.
VMware Host Memory	usageToReservation Relation	Relation between memory usage and memory reserved on the VM. If the counter value is < 1 over time, the VM is not using the reserved memory and you should consider reducing the reservation.
	usageToLimitRelation	Relation between memory usage and memory limit on the VM. If the counter value is >= 1 (or close to 1) over time, you should consider increasing the memory limit for the VM.
	usageOfESXMemory	Provides ESX host memory usage for every VM. This is useful for VMs that always run on the same ESX host (when there are no clusters or Distributed Resource Scheduler (DRS)).
	missingBalloonSizeTill Target	The difference between the target balloon set for the VM (by the VMkernel) and the actual balloon size. If the counter value is < 1 over time, the VM uses more balloon size than was set as the target, and you should consider increasing the target balloon size.

SSL Connectivity

VMware servers are generally configured to use SSL encryption for administrative connections. This can be determined by the prefix of the Web service URL. The https:// prefix means that it is a secure, encrypted connection. Monitoring a VMware server which uses an encrypted connection, requires importing the server certificate. For details on how to perform this task, see "How to Import the VMware Server Certificates" on page 758.

Connection Pool Settings

The connection pool mechanism reduces the load on vCenter and SiteScope by reusing connections. The connection pool is a set of pools per key. A key is the combination of a vCenter or host URL, and a user (the connection cannot be shared between different users due to different permissions).

If all VM monitors are configured with the same vCenter URL and user, one connection pool is created. For two vCenters and two different users for every vCenter, four connection pools are created.

The connection pool configures itself over time to ensure that only working connections stay in the pool. It does this by running an additional thread at the rate of the connection timeout multiplied by two; if the connection timeout is 30 minutes, it will run once every hour and evict idle connections from the pool. Connections that are idle for more than half a minute before the connection timeout are eligible for eviction.

For example, if the connection timeout is 30 minutes, the thread will evict connections that were idle for more than 29.5 minutes, but less than 30 minutes (to avoid a connection timeout). The connections that were idle more than 30 minutes are evicted by the timeout process. As a result, only working connections stay in the pool.

You can configure the following connection pool properties in the **<SiteScope root directory>\groups\master.config** file:

- **_vmWareConnectionPoolMaxIdlePervCenterKey.** The maximum number of idle connections in the pool. The default value is 60.
- **_vmWareConnectionPoolMaxSizePervCenterKey.** The maximum number of active connections in the pool. The default value is 60.

Note: If a SiteScope is registered to BSM, it uses more connections to retrieve properties relevant for topology reporting. Therefore, you should increase the maximum number of idle and active connection properties to enable SiteScope to perform well.

- **_vmWareConnectionPoolMaxTotal.** Maximum size of total connections for all keys. This is the total number of connections used in all the defined SiteScope vCenters. The default value is 1500.

  Tip: We recommend setting the maximum size of total connections to the number of configured VM monitors in SiteScope, and let the internal connection pool mechanism optimize itself.

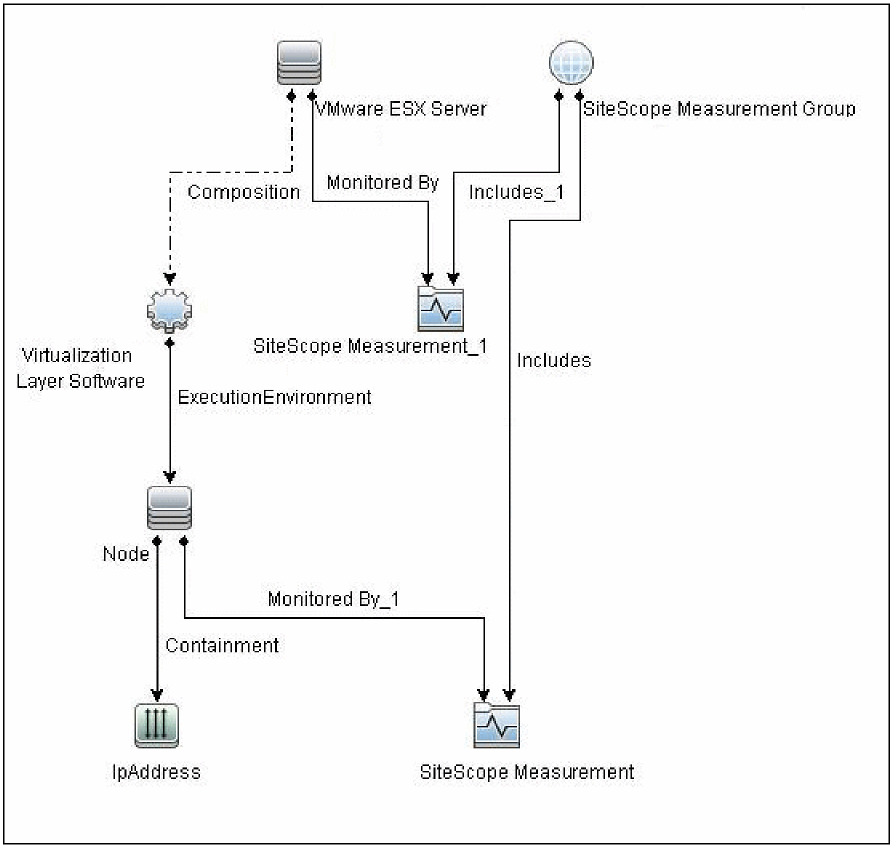
- **_vmWareConnectionTimeOut.** Connection timeout in minutes. The default value is 30 minutes.

VMotion Support

VMware's VMotion technology enables the transparent migration of running virtual machines between physical hosts in a virtual infrastructure cluster. It enables you to move an entire running virtual machine instantaneously from one server to another with continuous service availability and zero downtime. This process can be done both manually and automatically as part of cluster load balancing.

VMware Host Monitor Topology

The VMware Host monitors can identify the topology of the VMware servers being monitored. The monitor creates the following topology in BSM's RTSM.



For details on enabling topology reporting, see "How to Configure the VMware Host Monitors Monitoring Environment" on page 754.

The VMware Host monitor reports the Node CI for the virtual machine (VM) and the VMware ESX Server CI (ESX), and reports the connection between the VM and ESX. If there is counter defined on the VM, the related ESX is also reported.

Note: When deleting a monitor or making configuration changes, links between previously reported VMs and ESXs are not deleted. This means that if a monitor was deleted and relevant VMs were subsequently migrated, the newly-created monitor contains the old link to the previous ESX Server and a link to the current ESX Server (reported on monitor creation).

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for VMware Host monitors.

- "Inaccurate Performance Analysis Using Perfmon to Monitor CPU on VMware" on page 752
- "Maximum Number of Counters That Can be Saved" on page 753

Inaccurate Performance Analysis Using Perfmon to Monitor CPU on VMware

Problem: SiteScope uses Perfmon to connect to the operating system of the VMware virtual machine and query it for CPU usage of the virtual host. When used over a period of time to monitor CPU on VMware, Perfmon provides inaccurate performance analysis.

Solution: VMware resolved this issue by integrating virtual machine performance counters such as CPU and memory into Perfmon for Microsoft Windows guest operating systems when VMware Tools is installed.

- For vSphere v4.0, install the latest version of VMware Tools from vSphere v4.0. When running the Windows perfmon utility, use the new counter groups, VM Processor and VM Memory, to see real CPU utilization.
- For VMs running on ESX/ESXi v3.5, contact VMware alliances for a standalone version of this Perfmon integration tool.

Use the VMware Host monitors to monitor the new counters groups to get accurate CPU utilization and memory data.

Maximum Number of Counters That Can be Saved

Browsable monitors are limited by the number of counters they have. The maximum number of counters is determined by the **_browsableContentMaxCounters** parameter in the **master.config** file (also in **Preferences** > **Infrastructure Preferences** > **Monitor Settings** > **Maximum browsable counters to be selected**). If you create or edit a monitor so that it has more counters than this value, only the number of counters up to this value is saved.

When a browsable monitor is deployed in a template, the number of counters that match the selected patterns are limited by the **_maxCountersForRegexMatch** parameter in the **master.config** file. If during deployment, the number of counters that match the patterns exceeds this value, only the number of counters up to this value is saved.

The **_maxCountersForRegexMatch** parameter is also used to limit the number of counters that match the selected counter patterns when creating and updating dynamic monitors. We recommend using the same value for both **_browsableContentMaxCounters** and **_maxCountersForRegexMatch** parameters in the **master.config** file. The default value for both of these parameters is 1000.

When upgrading from earlier versions of SiteScope, the value for both of these parameters is set to the higher of these two parameter values in the previous version, or to 1000 (whichever is greater).

Tasks

How to Configure the VMware Host Monitors Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 754
- "Import the server certificates (if the Web Server is configured to use SSL encryption)" on page 755
- "Configure the monitor properties" on page 755
- "Enable topology reporting - optional" on page 757
- "Configure the connection pool mechanism - optional" on page 757
- "Results" on page 757

1 Prerequisites

- The VMware Host monitors are optional SiteScope monitors that require additional licensing to enable the monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- The following are the requirements for monitoring VMware-based servers:
  - The monitored vCenter or ESX server must be directly accessible by the SiteScope server (no proxy involved).
  - The vCenter or ESX server provides a connection either by http or by https (depending on the vCenter or host server configuration). If https is used, server certificate must be imported to the SiteScope.

2 Import the server certificates (if the Web Server is configured to use SSL encryption)

If the Web server has an https:// prefix, it is a secure, encrypted connection, and you need to import the server certificate. Use one of the following methods for importing server certificates:

- Import the server certificates either:
  - Directly from the monitor using SiteScope's Certificate Management. In the monitor settings pane, click the **Import Certificates** icon (next to the **vCenter URL/Host URL** box) to open the Import Certificates dialog box, and select the server certificates to import. For details, see step 2 of "How to Import Server Certificates Using Certificate Management" in *Using SiteScope*.
  - Manually import the server certificates. For details, see "How to Import the VMware Server Certificates" on page 758.
- To use the monitor without having to import or check untrusted or invalid SSL certificates, set the **_vmWareConnectionAcceptAllUntrustedCerts** property to **=true** in the **master.config** file, and restart SiteScope. You must add this property when upgrading from older versions of SiteScope.

3 Configure the monitor properties

For each VMware host, you can:

- Create the monitor by deploying the VMware Host solution template (recommended). The template contains a predefined monitor set with optimized settings that allow you to monitor only the relevant components. For solution template details, see "VMware Host Solution Template" in *Using SiteScope*.
- Create the monitor manually (for task details on creating a monitor, see "How to Deploy a Monitor" in *Using SiteScope*), and then configure the settings as specified in the step below.

To create the monitor manually:

a In the VMware Host Monitor Settings pane, enter the required vCenter or Host settings.

For monitor user interface details, see "VMware Host Monitor Settings" on page 759.

b Click the **Get Counter** button, and select the counters you want to monitor from the Select Counters Form. The counters are added to the Preview tree in the **Patterns & Counters** section.

c For dynamic monitoring, you can add patterns to counters to instruct the monitor which counters to use, either by:

➤ Clicking the **Add New Counter** button to add an empty line to the table, and creating a pattern format using a regular expression.

For example, /.*/VirtualMachine/.*/cpu/usage.average\[\]/ displays usage.average[] counter for all VMs.

➤ Selecting a static counter, and editing the counter to create a pattern format using a regular expression. For details on using regular expressions, see "Using Regular Expressions" on page 235.

d To view the counters that match a selected pattern, click the **View Matches for selected Pattern** button. The matching counters are highlighted in the Counters Preview tree.

e Set the frequency for updating counters from the server, and then click **Verify & Save** or **Save** to save your settings. If you use only static counters, they are not affected by the frequency for updating counters, since the dynamic framework does not run.

f In the **Threshold Settings** tab, you can manually set logic conditions for the dynamic counters that determine the reported status of each monitor instance. To view thresholds of all patterns translated to actual current counters, click the **Threshold Preview** button.

For threshold user interface details, see "Threshold Settings" in *Using SiteScope*.

Note: When configuring threshold settings for VMware Host monitors:

- The monitor **always(default)** counter configured in the **Good if** section of the monitor's properties means that the state of the monitor is good, unless one of the thresholds of any of the other counters is breached.
- The **countersinError** counter configured in the **Error if** section of the monitor's properties means that the state of the monitor is error if one of the other counters is unavailable.

4 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

5 Configure the connection pool mechanism - optional

The connection pool mechanism reduces the load on vCenter and SiteScope by reusing connections. We recommend setting the maximum size of total connections (the **_vmWareConnectionPoolMaxTotal** property in the **master.config** file) to the number of configured VM monitors in SiteScope, and letting the internal connection pool mechanism optimize itself. For details, see "Connection Pool Settings" on page 749.

6 Results

If you are using the dynamic monitoring mechanism, during each update, the monitor connects to the vCenter/Host service and updates the status of each counter that matches the pattern defined by the regular expression. It also updates the thresholds for the selected counters.

If counters are in error, try to isolate and troubleshoot the problem using the SiteScope VMware Host Best Practices document, which is available from (**<SiteScope root directory>\sisdocs\pdfs\SiteScope_VMware_Host_Best_Practices.pdf**).

How to Import the VMware Server Certificates

If the VMware server has an https:// prefix, it is a secure, encrypted connection, and you need to import the server certificate.

You can import the certificates either:

- Manually using the keytool method (see procedure below for details).
- Directly from the monitor using SiteScope's Certificate Management. Click the **Import Certificates** icon in the monitor settings pane to open the Import Certificates dialog box, and select the server certificates to import. For task details, see "How to Import Server Certificates Using Certificate Management" in *Using SiteScope*.

To import server certificates manually:

1. Export the certificate by going to the VMware administration URL and performing the export procedure described in the document.
2. Import the certificate, from the **<SiteScope root directory>java\lib\security**, by entering:

   ```
   ../../bin/keytool -import -file myCert.cer -alias myalias -keystore cacerts
   ```

   Make sure to specify a unique alias for every certificate you add. If you do not, the keytool uses an automatic alias and once you attempt to add more than one custom certificate, the new certificate overwrites the old one and keeps only the default alias.

   The word changeit is the default password for the **cacerts** file.

   Note: The default **cacerts** file is overwritten every time SiteScope is upgraded or re-installed. Therefore, you should create a copy of the **cacerts** file with a different name before SiteScope is upgraded or re-installed so the file is not overwritten when new certificates are imported.

3. In SiteScope, select **Preferences** > **Certificate Management**, and click the **Reload Certificate List** button to reload the keystore certificates from the **cacerts** file. This enables you to manually reload keystore changes without having to restart SiteScope.

Reference

VMware Host Monitor Settings

Enables you to monitor CPU, Memory, Network, State and storage-related counters of the VMware host server and its guest virtual machines, as described in "VMware Host Monitors Overview" on page 744.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ VMware Host monitors are an optional SiteScope function that require additional licensing to enable them in the SiteScope interface. Contact your HP sales representative for more information. ➤ We recommend creating these monitors by deploying the VMware Host solution template. For details, see "VMware Host Solution Template" in *Using SiteScope*. ➤ When deploying these monitors using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box. ➤ For details on the maximum number of counters that can be selected from the browsable tree and the maximum number of counters that can match the selected counter patterns when creating and updating dynamic monitors, see "Maximum Number of Counters That Can be Saved" on page 753. If the maximum number of counters that can be deployed is exceeded, an error is written to the **RunMonitor.log**.

Important information (continued)	➤ When SiteScope is connected to BSM 9.00 or later, the **Indicator State and Severity** column is not displayed in Threshold Settings by default. This is because each counter pattern can affect more than one measurement, and only static counters and counter patterns are displayed by default. This column is displayed only when you click the **Threshold Preview** button (thresholds of all patterns are translated to actual current counters and are displayed). ➤ Baseline Settings are not available for dynamic monitors (these monitors configure their own thresholds).
Relevant tasks	➤ "How to Configure the VMware Host Monitors Monitoring Environment" on page 754 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "VMware Host Monitors Overview" on page 744

VMware Host Monitor Settings

User interface elements are described below:

UI Element	Description
vCenter	Select this option when connecting using a vCenter, and enter the following settings: ➤ **vCenter URL.** URL of the VMware vCenter infrastructure for the server you want to monitor. The format of the URL is: <protocol>://<server_name>/sdk where <protocol> is either http or https, and <server_name> is the name of the vCenter server. You can import the server certificates directly from the monitor using SiteScope's Certificate Management (click the **Import Certificates** icon), instead of importing certificates manually. **Note:** If you get 'Error Code: 31008. Error getting counters' when SSL is used, navigate to **Preferences** > **Infrastructure Preferences** > **General Settings**, and select **Accept untrusted SSL certificates**. ➤ **vCenter user name.** User name with view host permissions on the vCenter. ➤ **vCenter password.** Password with view host permissions on the vCenter. ➤ **Host name.** Name of the ESX/ESXi host server you want to monitor.
Host	Select this option when connecting directly using a host server, and enter the following settings: ➤ **Host URL.** URL of the VMware host server you want to monitor. You can import the server certificates directly from the monitor using SiteScope's Certificate Management (click the **Import Certificates** icon), instead of importing certificates manually. ➤ **Host user name.** User name of the VMware host server administrator. ➤ **Host password.** Password of the VMware host server administrator.

UI Element	Description
Host to take counters from (available in Template mode only)	When working in template mode, enter the name of the VMware host server from which to take counters.
VMware Host CPU Counters	
Get Counters	Opens a tree of all current counters, enabling you to select the counters you want to monitor. The tree is opened with no nodes selected. When you make a selection in the tree, the counters table is updated.
Patterns & Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters. Click the **Add New Counter** button to add an empty row at the bottom of the counters tree, enabling you to manually add a counter. Click the **Delete Counter** button to remove the selected counters from the list. You can select multiple items using the CTRL or SHIFT keys. Click the **View Matches for Selected Pattern Counter** button to display counters that match the selected patterns. **Note:** SiteScope uses Perl regular expressions for pattern matching. For example, if you enter /cpu.*/ or cpu, any counters with cpu in their name match this pattern and are added to the counters list.
Counters Preview	Displays all real counters in the monitor. This includes static counters and counter patterns that have been translated to real counters.

UI Element	Description
Frequency of updating counters from server	Time interval at which the counters that are requested by this monitor are retrieved from the server, and the monitor is updated with counter pattern matches. Use the drop-down list to specify increments of seconds, minutes, hours, or days. **Default value**: 15 minutes **Note:** ➤ The update frequency cannot be less than the monitor run frequency in Monitor Run Settings. ➤ When configuring this setting in a template, the variable value can only be in time units of seconds. ➤ Static counters are never deleted.

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VMware Performance Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

VMware Performance Monitor Overview

Use the VMware Performance monitor to monitor VMware-based servers. VMware supplies much of the virtualization software available for x86-compatible computers. The VMware Performance monitor supports monitoring:

- ESX host, VM, and resource pool monitoring (it is not recommended to monitor more than one VM and ESX on a single monitor).
- VMotion of virtual machines.

During initial monitor creation, the new monitor uses the connection URL configured to access the software and dynamically discover the object hierarchy and available performance counters. You can select from these performance counters to determine which measurements SiteScope should retrieve for reporting server status.

For details describing all the available counters, refer to the VMware documentation available at
http://www.vmware.com/pdf/ProgrammingGuide201.pdf

For task details, see "How to Configure the VMware Performance Monitoring Environment" on page 776.

For best practices details, see "Best Practices for Configuring the VMware Performance Monitor" on page 773.

For user interface details, see "VMware Performance Monitor Settings" on page 780.

This section contains the following topics:

Supported Versions

This monitor supports monitoring remote servers running on:

- VMware VirtualCenter 2.x
- VMware ESX 3.x, 4.0, 4.1
- VMware ESXi 3.5
- VMware ESX 2.5 using VirtualCenter 2.x
- VMware ESX 3.x using VirtualCenter 3.x
- VMware vCenter Server 4.0, 4.1

VMware Performance Monitor or VMware Host Monitor?

	VMware Performance Monitor	VMware Host Monitors
Type of user	VM user/owner	Virtualization administrator
Requirements	➤ Measure performance and availability of a particular VM or set of VMs. ➤ Display SiteScope and BSM reports and BSM topology for this VM. Not interested on which host the VM runs or other issues.	➤ Manage a virtualization environment or vCenter and provide VM services to other users. ➤ Measure the availability and performance of vCenter resources (physical host machines). Not interested in specific VMs (only if this machine causes performance issues to the host.)
Recommended Use	One per VM	Deploy using VM Host solution template
Benefits	Measures the data every monitor runs regardless of whether the VM has migrated.	➤ Enables the administrator to make most efficient use of host resources (create maximum VMs and serve more users). ➤ Provides notifications of availability and performance problems on the host (that might be caused by specific VM or VMs). ➤ The monitor is dynamically updated (see "Dynamic Monitoring Mechanism" on page 747). ➤ Smart counters that provide useful information for configuring the VM on the host to help maximize resource usage. For details, see "Calculated (Smart) Counters" on page 748.
Data in SiteScope and BSM Reports	Provides user with SiteScope and BSM reports with continuous data and topology that match the changes (the same VM connects to the relevant host).	➤ Enables the administrator to check host information only (the data is continuous). The topology matches VM migration for the monitored hosts. ➤ Does not provide continuous data on the VM (every time a VM migrates from host to host, its ID changes in SiteScope and BSM reports). However, VM data does not interest the administrator.

SSL Connectivity

VMware servers are generally configured to use SSL encryption for administrative connections. This can be determined by the prefix of the Web service URL. The https:// prefix means that it is a secure, encrypted connection. Monitoring a VMware server which uses an encrypted connection, requires importing the server certificate. For details on how to perform this task, see "How to Import the VMware Server Certificates" on page 779.

VMotion Support

VMware's VMotion technology enables transparent migration of running virtual machines between physical hosts in a virtual infrastructure cluster. It enables you to move an entire running virtual machine instantaneously from one server to another with continuous service availability and zero downtime. This process can be done both manually and automatically as part of cluster load balancing.

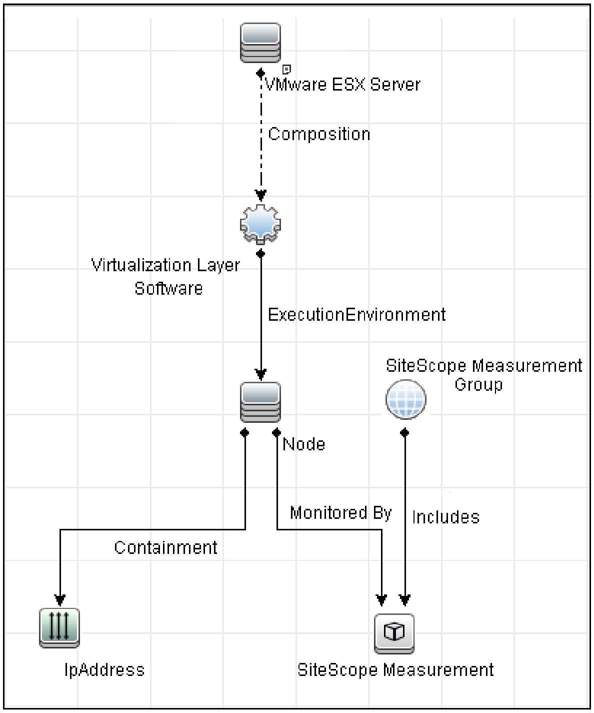
The VMware Performance monitor is browseable, and the counters tree is designed so that virtual machine nodes are not children of physical host nodes. This means that the structure of the tree does not change during migration and if counters from a virtual machine are selected for this monitor, they do not change as a result of VMotion. This is regardless of where the virtual machine belonged at any particular moment.

You can set the interval for checking topology changes on the server in **HP Integration Settings** > **BSM Integration Data and Topology Settings**. Each time the monitor is run or updated, if the specified time since the last such server check has passed, the monitor checks the target server to see if migration of the monitored VMs has occurred.

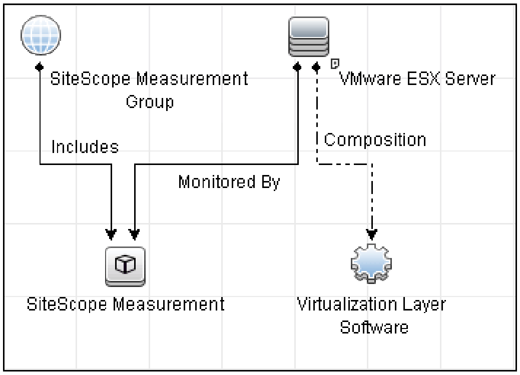
VMware Performance Topology

The VMware Performance monitor can identify the topology of the VMware servers being monitored. The monitor creates the following topology in BSM's RTSM.

Virtual Machine



ESX Server



For details on enabling topology reporting, see "How to Configure the VMware Performance Monitoring Environment" on page 776.

The VMware Performance monitor reports the Node CI for the virtual machine (VM) and the VMware ESX Server CI (ESX), and reports the connection between the VM and ESX. If there is counter defined on the VM, the related ESX is also reported.

Note: When deleting a monitor or making configuration changes, links between previously reported VMs and ESXs are not deleted. This means that if a monitor was deleted and relevant VMs were subsequently migrated, the newly-created monitor contains the old link to the previous ESX Server and a link to the current ESX Server (reported on monitor creation).

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

Troubleshooting and Limitations

This section contains the following troubleshooting issues:

- "Counter Errors After SiteScope Upgrade" on page 771
- "Inaccurate Performance Analysis Using Perfmon to Monitor CPU on VMware" on page 772
- "Performance Issues Using the Monitor" on page 772

Counter Errors After SiteScope Upgrade

If you encounter errors retrieving the counters after upgrading from an earlier version of SiteScope, you should re-install the server certificate as follows:

1. Create a backup of the **cacerts** file in a directory outside of the SiteScope directory. The **cacerts** file is located in the **<SiteScope root directory>java\lib\security** folder.
2. Remove the **cacerts** file from the SiteScope folder.
3. Restart the SiteScope server.
4. Create a new **cacerts** file with the new certificate.

Inaccurate Performance Analysis Using Perfmon to Monitor CPU on VMware

Problem: SiteScope uses Perfmon to connect to the operating system of the VMware virtual machine and query it for CPU usage of the virtual host. When used over a period of time to monitor CPU on VMware, Perfmon provides inaccurate performance analysis.

Solution: VMware resolved this issue by integrating virtual machine performance counters such as CPU and memory into Perfmon for Microsoft Windows guest operating systems when VMware Tools is installed.

- For vSphere v4.0, install the latest version of VMware Tools from vSphere v4.0. When running the Windows perfmon utility, use the new counter groups, VM Processor and VM Memory, to see real CPU utilization.
- For VMs running on ESX/ESXi v3.5, contact VMware alliances for a standalone version of this Perfmon integration tool.

Use the VMware Performance monitor to monitor the new counters groups to get accurate CPU utilization and memory data.

Performance Issues Using the Monitor

Problem: SiteScope encounters performance problems when monitoring a larger number of VMware counters.

Solution: The VMware Performance monitor is limited to monitoring 100 counters. Since every VM or host has an average of 80-90 counters, do not monitor more than one VM or host with the full counter set on the same monitor. You should also configure the filter options as recommended in "How to Configure the VMware Performance Monitoring Environment" on page 776.

Best Practices for Configuring the VMware Performance Monitor

To benefit from performance improvements made to the VMware Performance monitor, you should configure the monitor filtering options and the connection pool settings according to the best practices below.

This section includes:

- "Filtering Options" on page 773
- "Connection Pool Settings" on page 774

Filtering Options

To reduce monitor load on the VMware Performance monitor, it is important to use the appropriate filtering settings when configuring the monitor settings. If filtering options are not used, the monitor is placed under enormous load as it creates an XML file with all the counters retrieved. This causes performance problems each time monitor properties are opened, since the monitor attempts to display a large number of counters and create a heavy cache file.

When configuring the monitor, you should:

- Enter a virtual machine and host name in the **Virtual machine** and **Host** fields. If these fields are not filled, the monitor attempts to retrieve counters for all VMs, hosts, and resource pools defined in the vCenter. For example, if a vCenter has 800 VMs and 100 hosts, the monitor will try to get 80 counters per VM and 90 counters per host (this is the average number - the actual number depends on the configuration of the VM or host and may be even higher). In total: (800 VMs x 80 counters) + (100 Hosts x 90 counters) = 73,000 counters.
- Make sure that the **Get real-time data only** option is selected (it is selected by default) so that historical data is not included. The number of counters above represents real-time data only. This number could be much higher, depending on your configuration, if historical data is not excluded.

➤ To avoid retrieving historical data from powered off VMs and hosts, make sure that the **Get VMs and Hosts in powered on state only** option is selected (it is selected by default).

For details on configuring filtering options, see "Configure the monitor properties" on page 777.

Connection Pool Settings

The connection pool mechanism reduces the load on vCenter and SiteScope by reusing connections. The connection pool is a set of pools per key. A key is the combination of a vCenter or host URL, and a user (the connection cannot be shared between different users due to different permissions).

If all VMware Performance monitors are configured with the same vCenter URL and user, one connection pool is created. For two vCenters and two different users for every vCenter, four connection pools are created.

The connection pool configures itself over time to ensure that only working connections stay in the pool. It does this by running an additional thread at the rate of the connection timeout multiplied by two; if the connection timeout is 30 minutes, it will run once every hour and evict idle connections from the pool. Connections that are idle for more than half a minute before the connection timeout are eligible for eviction.

For example, if the connection timeout is 30 minutes, the thread will evict connections that were idle for more than 29.5 minutes, but less than 30 minutes (to avoid a connection timeout). As a result, only working connections stay in the pool.

You can configure the following connection pool properties in **<SiteScope root directory>\groups\master.config**:

- **_vmWareConnectionPoolMaxIdlePervCenterKey.** The maximum number of idle connections in the pool. The default value is 60.
- **_vmWareConnectionPoolMaxSizePervCenterKey.** The maximum number of active connections in the pool. The default value is 60.

Note: If a SiteScope is registered to BSM, it uses more connections to retrieve properties relevant for topology reporting. Therefore, you should increase the maximum number of idle and active connection properties to enable SiteScope to perform well.

- **_vmWareConnectionPoolMaxTotal.** Maximum size of total connections for all keys. This is the total number of connections used in all the defined SiteScope vCenters. The default value is 1500.

  Tip: We recommend setting the maximum size of total connections to the number of configured VM monitors in SiteScope, and let the internal connection pool mechanism optimize itself.

- **_vmWareConnectionTimeOut.** Connection timeout in minutes. The default value is 30 minutes.

Tasks

How to Configure the VMware Performance Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Prerequisites" on page 776
- "Import the server certificates (if the Web Server is configured to use SSL encryption)" on page 777
- "Configure the monitor properties" on page 777
- "Enable topology reporting - optional" on page 778
- "Configure the connection pool mechanism - optional" on page 778

1 Prerequisites

The following are the requirements for monitoring VMware-based servers:

- The monitored vCenter server or ESX server must be directly accessible by the SiteScope server (no proxy involved).
- The vCenter server or ESX server provides connection either by http or by https (depending on the vCenter/host server configuration). If https is used, server certificate must be imported to the SiteScope.

2 Import the server certificates (if the Web Server is configured to use SSL encryption)

If the Web server has an https:// prefix, it is a secure, encrypted connection. You can use one of the following methods for importing server certificates, or disable the requirement of having to import untrusted or invalid SSL certificates.

- Import the server certificates either:
  - Using Certificate Management in SiteScope (avoids having to restart SiteScope). For details, see step 2 of "How to Import Server Certificates Using Certificate Management" in *Using SiteScope*.
  - Manually import the server certificates. For details, see "How to Import the VMware Server Certificates" on page 779.
- To use the monitor without having to import or check untrusted or invalid SSL certificates, set the **_vmWareConnectionAcceptAllUntrustedCerts** property to **=true** in the **master.config** file, and restart SiteScope. You must add this property when upgrading from older versions of SiteScope.

3 Configure the monitor properties

To benefit from performance improvements made to this monitor, configure the monitor according to the recommendations below. For best practices details, see "Best Practices for Configuring the VMware Performance Monitor" on page 773.

a Create a separate monitor for each VM or host. (This is because the monitor is limited to monitoring 100 counters, and every VM or host has an average of 80-90 counters.)

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

b Configure the following filter options to avoid overloading the monitor:

For Virtual machine:

- **Get real-time data only:** Selected
- **Get VMs and Hosts in powered on state only:** Selected
- **Host:** /--/
- **Virtual machine:** < Enter VM name>

For Host:

- **Get real-time data only:** Selected
- **Get VMs and Hosts in powered on state only:** Selected
- **Host:** <Enter host name>
- **Virtual machine: /--/**

c Configure the other monitor properties as required.

For user interface details, see "VMware Performance Monitor Settings" on page 780.

4 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

5 Configure the connection pool mechanism - optional

The connection pool mechanism reduces the load on vCenter and SiteScope by reusing connections. We recommend setting the maximum size of total connections, **_vmWareConnectionPoolMaxTotal**, in **Preferences** > **Infrastructure Preferences** > **Custom Settings** to the number of configured VM monitors in SiteScope, and let the internal connection pool mechanism optimize itself.

For best practices details, see "Best Practices for Configuring the VMware Performance Monitor" on page 773.

How to Import the VMware Server Certificates

If the VMware server has an https:// prefix, it is a secure, encrypted connection, and you need to import the server certificate. You can import the certificates manually using the keytool method.

Tip: You can import the server certificates without having to restart SiteScope by using Certificate Management. For details, see "How to Import Server Certificates Using Certificate Management" in *Using SiteScope*.

To import server certificates manually:

1. Export the certificate by going to the VMware administration URL and performing the export procedure described in the document.
2. Import the certificate, from the <**SiteScope root directory**>**java\lib\security**, by entering:

   ```
   ../../bin/keytool -import -file myCert.cer -alias myalias -keystore cacerts
   ```

   Make sure to specify a unique alias for every certificate you add. If you do not, the keytool uses an automatic alias and once you attempt to add more than one custom certificate, the new certificate overwrites the old one and keeps only the default alias.

   The word changeit is the default password for the **cacerts** file.

   Note: The default **cacerts** file is overwritten every time SiteScope is upgraded or re-installed. Therefore, you should create a copy of the **cacerts** file with a different name before SiteScope is upgraded or re-installed so that the file is not overwritten when new certificates are imported.

3. In SiteScope, select **Preferences** > **Certificate Management**, and click the **Reload Certificate List** button to reload the keystore certificates from the **cacerts** file. This enables you to manually reload keystore changes without having to restart SiteScope.

Reference

VMware Performance Monitor Settings

This monitor enables you to monitor performance statistics of the VMware infrastructure for various server applications.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ To benefit from performance improvements made to this monitor, configure the filter options (**Get real-time data only**, **Get VMs and Hosts in powered on state only**, **Virtual machine**, and **Host**) according to the recommendations in "Configure the monitor properties" on page 777. For best practices details, see "Best Practices for Configuring the VMware Performance Monitor" on page 773. ➤ For VMware Performance monitors that were configured in previous versions of SiteScope, the **Get real-time data only** and **Get VMs and Hosts in powered on state only** options are not selected by default. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the VMware Performance Monitoring Environment" on page 776 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "VMware Performance Monitor Overview" on page 766 ➤ "Best Practices for Configuring the VMware Performance Monitor" on page 773

VMware Performance Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
URL	URL of the VMware infrastructure for the server you want to monitor. The format of the URL is: <protocol>://<server_name>/sdk where <protocol> is either http or https, and <server_name> is the name of the ESX server. **Note:** If you get 'Error Code: 31008. Error getting counters' when SSL is used, navigate to **Preferences** > **Infrastructure Preferences** > **General Settings**, and select **Accept untrusted SSL certificates**.
User name	User name of the VMware Web service's administrator.
Password	Password of the VMware Web service's administrator.
Get real-time data only	Select to retrieve real-time metrics data only and exclude historical metrics data. **Default value**: Selected
Get VMs and Hosts in powered on state only	Select to retrieve metrics data from powered on VMs and hosts only (data from powered off VMs/hosts is excluded). **Default value**: Selected.
Host	Enter a regular expression to match the name of one or more system hosts. When you apply this filter, only the system hosts that match this string are displayed in the Get Counters list. Click the **Open Tool** button to use the Regular Expression tool to check the correctness of your regular expression.

UI Element	Description
Virtual machine	Enter a regular expression to match the name of one or more virtual machines. When you apply this filter, only the virtual machines that match this string are displayed in the Get Counters list. Click the **Open Tool** button to use the Regular Expression tool to check the correctness of a regular expression.
Counter Settings	
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

HP Integration Settings

The setting below is specific to the VMware Performance monitor. For HP Integration Settings common to all monitors, see "HP Integration Settings" in *Using SiteScope*.

UI Element	Description
BSM Integration Data and Topology Settings	
Interval to check server for topology changes (minutes)	Each time the monitor is run or updated, if the specified time since the last such server check has passed, the monitor checks the target server to see if migration of the monitored VMs has occurred. If it has, it updates the relationship of monitored VMs to the ESX servers on which they are running. **Default value:** 60 minutes

90

Web Script Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

Web Script Monitor Overview

The Web Script monitor proactively monitors Web sites in real time, identifying performance problems before users experience them. It enables you to monitor sites from various location where SiteScope is installed, emulating the end-user experience. You can assess site performance from different client perspectives.

Note:

- The Web Script monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.
- This monitor is supported in SiteScopes that are running on Windows versions only.
- This monitor does not work with the 64-bit version of SiteScope, so if you plan to work with this monitor, it is recommended to install the SiteScope 32-bit version.

The Web Script monitor runs the scripts created in the HP Virtual User Generator (VuGen). You use VuGen to create a script that emulates end-user actions. You can create the script with the steps that you want monitored on target Web sites. For information on working with VuGen, see "Working with VuGen" on page 789.

Note to BSM users: The Web Script monitor is not available when working in BSM. The monitor’s data cannot be reported to BSM.

For task details, see "How to Configure the Web Script Monitoring Environment" on page 794.

For user interface details, see "Web Script Monitor Settings" on page 797.

This section contains the following topics:

What to Monitor

You can create transactions to monitor pages that are critical to your Web applications, pages that are generated dynamically, and pages that depend on other applications to work correctly (such as pages that use a back-end database).

Counter Measurements and Transaction Breakdown Data

Each time the Web Script monitor runs the VuGen script, it returns the transaction breakdown and performance data. The VuGen script also includes content match functionality, enabling you to check images, texts, links, and other areas of the Web site.

In addition, the monitor's reported data can include the following measurements:

- The amount of time needed to establish an initial connection with the Web server performing the transaction.
- The amount of time taken to establish an SSL connection for HTTPS connections.
- The time in milliseconds for the transaction to be run.

- Whether the transaction passed or failed to connect and perform its required steps.
- Number of pages accessed when running the transaction.
- Number of errors that occurred during the transaction run.

The monitor can provide early indicators of the following performance issues:

- Excessive connection or retry times.
- Slow DNS resolution or other problems with the DNS server.
- Problems along the network or whether the server is responsive to requests.
- Delays or failures in secured or authorized connections.
- Overall network quality.
- Web server delays.

Each of the measurements is available as a parameter for assigning thresholds. This means that thresholds can be set for specific transactions and measurements, providing status indicators per transaction.

For details on selecting measurement counters, see "Selecting Counters" on page 787.

Setting up the Web Script Monitor

Prior to configuring the Web Script monitor in SiteScope, you must create the script in VuGen. The monitor runs only those scripts created in VuGen. For information on working with VuGen, see "Working with VuGen" on page 789.

For an overview of the steps necessary to set up the Web Script monitor, see "How to Configure the Web Script Monitoring Environment" on page 794.

Selecting Counters

The Web Script monitor makes use of performance counters to measure Web sites performance. Select the counter metrics you want to monitor with the Web Script monitor. For details on adding performance counter metrics, see "Web Script Monitor Settings" on page 797. For details on the counter metrics available for the monitor, see "Web Script Performance Counters" on page 800.

Advanced Information

The Web Script monitor uses an internal engine to run the VuGen scripts you create. This section includes some advanced issues.

SiteScope makes a copy of the script created in VuGen and stores it in a location within the SiteScope directory. SiteScope makes the necessary modifications for the script to be run properly by the Web Script monitor. These modifications are automatic and cannot be manually duplicated. They include:

- Disabling the **Download Snapshots** operation.
- Disabling the **Think Time** operation.
- Disabling the **Iterations** operation.

Therefore:

- If there is any change made to the script in VuGen, including the name of the script, and you want the Web Script monitor to run the revised version of the script, you must edit the monitor in SiteScope and select the edited script in its saved location.
- Each script must have a unique name even if the different zip files for the scripts reside in different directories.
- The name of the zip file selected for the monitor must be the same as the name of the script created in VuGen.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for the Web Script monitor.

- Each time the monitor is run, a log is created. You can view the log to troubleshoot the monitor if you see there is a problem running the scripts. The logs are stored in **<SiteScope root directory>\cache\temp\WebScript\<name of script>\log**. You can search for the required log based on the name of the script run by the monitor and the time the log was created.

  This directory is cleaned out every time SiteScope is restarted.

- If the log files do not give you the necessary information to determine why the script is not running properly, run the script in VuGen. For details, refer to "Running Vuser Scripts in Standalone Mode" in the HP Virtual User Generator guide.

- If all the transaction breakdown counters for the monitor are reporting a status of -1 and there is a reported time for the Duration counter (the total running time of the transaction), it could be because the transaction breakdown times exceed the total running time. This can occur in rare cases because of the way the transaction breakdown times are calculated and because the Duration is an actual measurement of the total transaction time from start to finish, with no additional calculations. If the problem persists for a specific transaction, we recommend that you adjust the counters selected for the transaction.

- If you get the message "Error: Fail to get performance data timeout (error)" during the monitor run, add LogFileWrite=1 to the **default.cfg** file of the specific script file to get more details about the error. If the script log shows that some of the resources are taking more time than the monitor timeout, increase the **Web script timeout (sec)** value in the monitor settings.

- By default, the number of Web Script monitors that can run simultaneously is 20. When this number is exceeded, SiteScope places the rest in a queue to await execution. You can change the number of monitors that can run simultaneously by modifying the **Web Script monitor queue size** in **Preferences** > **Infrastructure Preferences** > **Monitor Settings**. The maximum number of Web Script monitors that can run simultaneously is 40. You can also change the amount of time for the monitor to wait in the queue before timing out by modifying the **Web Script monitor queue timeout (seconds)** property. The default queue timeout is 120 seconds.
- The Web Script monitor supports script names with English characters only.

Working with VuGen

VuGen can be used to automatically create a transaction script by recording the actual business processes and actions performed by users interacting with a Web application. VuGen captures all end-user activity between the client and the server, thereby capturing the exact tasks and functions users perform.

Note: The Web Script monitor supports scripts created in HP Virtual User Generator version 9.51 and earlier.

This section also includes:

- "Getting Started" on page 790
- "Supported VuGen Protocols" on page 790
- "Inserting Transactions and Creating Checkpoints" on page 792
- "Saving and Storing the Script" on page 792

Getting Started

The VuGen help is accessible from the VuGen product once it is downloaded. It can be accessed in the following ways:

- Press F1 for context-sensitive help when working with a specific function.
- Select **Help** > **Contents and Index** > **Contents** tab > **Books Online** > **VuGen** to view the entire online guide. Use this option when searching for a specific topic referred to in the description of this monitor.
- Select **Help** > **Books Online** > **HP Virtual User Generator User's Guide** to access the guide in PDF format.

The VuGen interface includes a detailed workflow that takes the user through the step-by-step process of creating a script. For information about the workflow, refer to "Working with VuGen" > "Viewing the VuGen Workflow" in the HP Virtual User Generator guide.

For more detailed information on creating scripts, refer to "Working with VuGen" > "Recording with VuGen" > "Creating New Virtual User Scripts" in the HP Virtual User Generator guide.

Supported VuGen Protocols

The following are the protocols supported for the Web Script monitor when VuGen scripts are invoked by SiteScope:

- "Web (Click and Script) Protocol" on page 790
- "Web (HTTP/HTML) Protocol" on page 791

Web (Click and Script) Protocol

This is the recommended protocol to use to record scripts to be run by the Web Script monitor.

Web (Click and Script) is a new approach to Web scripting. It introduces a user interface-level scripting API, and a quicker way to create scripts.

- Easy-to-use scripting.
- Intuitive API functions describe user actions on Web objects (for example, button and text link).
- In tree view, the steps are grouped according to their pages.

- In snapshot viewer, the object corresponding to the active step is highlighted.

For details on using this protocol, refer to the "Creating Web Vuser Scripts" and "Working with Web (Click and Script) Vuser Scripts" sections under "E-Business Protocols" in the HP Virtual User Generator guide.

Limitations:

- Records and emulates on Internet Explorer version 6 only.
- Does not support recording on Microsoft Windows 2003.
- Does not support VBScript and applets.
- Does not support user actions on ActiveX objects and Macromedia Flash.
- Recording of an application in a specific language (for example, French, Japanese) must be performed on a machine whose default locale (in **Control Panel** > **Regional Options**) is the same language.

Note: If any of these limitations affect your ability to record a script, use VuGen's Web (HTTP/HTML) Protocol instead. For details, see below. For information about choosing a protocol, refer to "E-Business Protocols" > "Choosing a Web Vuser Type" in the HP Virtual User Generator guide.

Web (HTTP/HTML) Protocol

This is the standard VuGen protocol for recording Web applications.

When recording a Web (HTTP/HTML) script, VuGen records the HTTP traffic and server response over the Internet. The scripts contain detailed information about your actions in the browser.

The Web (HTTP/HTML) Vuser provides two recording levels: HTML-based script and URL-based script. These levels let you specify what information to record and which functions to use when generating a Vuser script.

For details on using this protocol, refer to the "E-Business Protocols" > "Creating Web Vuser Scripts" in the HP Virtual User Generator guide.

Inserting Transactions and Creating Checkpoints

- While creating your VuGen script, you must insert transactions into the script. These transactions provide the breakdown performance data reported by the monitor.

  For details on transactions, refer to "Working with VuGen" > "Enhancing Vuser Scripts" > "Inserting Transactions into a Vuser Script" in the HP Virtual User Generator guide.

- VuGen's Content Check mechanism enables you to check the contents of a page for a specific string. This is useful for detecting non-standard errors. We recommend that you include content check checkpoints in your script.

  For details on checkpoints, refer to the "Checking Web Page Content" and "Verifying Web Pages under Load" sections under "E-Business Protocols" in the HP Virtual User Generator guide.

Saving and Storing the Script

The script you create in VuGen must be saved as a zip file. We recommend saving only the runtime files. For details, refer to the "Recording with VuGen" and "Using Zip Files" sections of the HP Virtual User Generator guide.

When saving the zip file:

- make sure that the zip file has the same name as the script
- make sure that each script used for a Web Script monitor has a unique name

You can save the script into:

- The configured default location for VuGen scripts within the SiteScope root directory is **<SiteScope root directory>\templates.webscripts\**. This directory is automatically created.

  By default, all the scripts in this directory appear in the drop-down list of available scripts when configuring the monitor.

- A different location for VuGen scripts that you configure in SiteScope's General Preferences.

  You can change the default location of VuGen scripts by entering a value in the **VuGen scripts path route** box in General Preferences (**Preferences** > **General Preferences** > **Main Panel**). The scripts stored in the location you enter appear in the drop-down list of available scripts when configuring the monitor.

- Any other location accessible to the SiteScope machine.

  When configuring the monitor, you can also enter the full directory path and name of the script. The Web Script monitor can access the script if the machine on which SiteScope is running has file system access to the path location.

Tasks

How to Configure the Web Script Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Create a script using Virtual User Generator (VuGen)" on page 794
- "Create the Web Script monitor in SiteScope" on page 796

1 Create a script using Virtual User Generator (VuGen)

Prior to configuring the Web Script monitor in SiteScope, you must create the script in VuGen.

a Download HP Virtual User Generator (VuGen).

Go to the HP Software Support site (http://www.hp.com/go/hpsoftwaresupport) and click the **Downloads** tab. Then click **Software patches**, and enter your HP user name and password to access the Software Patches page. In the **Product** section, select **SiteScope** and type **VuGen** in the optional search box. Download the required version of VuGen from the results. You must log on with your HP user name and password to access the Software Patches page.

To enable monitoring, you must also download the latest HP Virtual User Generator Feature Pack.

b Familiarize yourself with how to create scripts.

The script you create in VuGen is run by the Web Script monitor and must contain transactions. The VuGen interface contains different access points for getting help. For details, see "Getting Started" on page 790.

c Use the supported protocols in HP Virtual User Generator to create your script.

Tip: We recommend that you use the Web (Click and Script) protocol to create your script for use in SiteScope. For a list of all the supported protocols and for details on the Web (Click and Script) protocol, see "Supported VuGen Protocols" on page 790.

---

d Include transactions and content match checkpoints in your script.

The VuGen script must contain transactions to be run by the Web Script monitor in SiteScope. These transactions provide the breakdown performance data reported by the monitor. For details on transactions, refer to "Working with VuGen" > "Enhancing Vuser Scripts" > "Inserting Transactions into a Vuser Script" in the HP Virtual User Generator guide.

Checkpoints are recommended for checking contents of a page for a specific string while running the VuGen script. This is useful for detecting non-standard errors. For details on checkpoints, refer to the "Checking Web Page Content" and "Verifying Web Pages under Load" sections under "E-Business Protocols" in the HP Virtual User Generator guide.

e Save the script’s runtime files into a zip file and save the zip file into the required directory.

For details, see "Saving and Storing the Script" on page 792.

f Make sure that the script runs properly in VuGen before continuing.

For details, refer to "Working with VuGen" > "Running Vuser Scripts in Standalone Mode" in the HP Virtual User Generator guide.

2 Create the Web Script monitor in SiteScope

Add the monitor and configure the monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Web Script Monitor Settings" on page 797.

Reference

Web Script Monitor Settings

The Web Script monitor provides a flexible solution for virtual end-user monitoring of all your Web-based Applications. It can monitor dynamic content, test various authentication methods, and capture each step in a transaction between virtual user and Web site. This can help identify performance and availability issues before they affect end users.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ The Web Script monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information. ➤ **Note to BSM and OM users**: The Web Script monitor is not available when working in BSM and cannot be configured in System Availability Management. The monitor's data cannot be reported to BSM or OM.
Relevant tasks	➤ "How to Configure the Web Script Monitoring Environment" on page 794 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Web Script Monitor Overview" on page 784 ➤ "Web Script Performance Counters" on page 800

Web Script Monitor Settings

User interface elements are described below:

UI Element	Description
Web script URL	Select from the following options: ➤ **Web script files list.** Select from the list of available scripts in the directory storing your VuGen scripts. This could be the default directory <**SiteScope root directory**>**templates.webscripts** or a directory you name in **VuGen scripts path root** in General Preferences. For details, see "General Preferences Page" in *Using SiteScope*. ➤ **Full path Web script name**. Enter the full path for the VuGen script. The script must be a .zip file and the path must be a location to which the machine running SiteScope has file system access. When the script is selected, it is copied into a SiteScope directory and the monitor no longer accesses the original location or the original script files. ➤ If the script is changed in VuGen and you want the monitor to run the newer version of the script, you must edit the monitor and select the script again. ➤ Each script used for a Web Script monitor must have a unique name.
Web script timeout (seconds)	Amount of time, in seconds, after which you want SiteScope to stop running the script if it has not successfully completed its run. This value must be less than the value you entered for the Frequency setting. **Default value:** 60 seconds

UI Element	Description
Counters	Displays the server performance counters you want to check with this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. For the list of counters available for the monitor, see "Web Script Performance Counters" on page 800. The first list of counters applies to all the transactions in the script and is called **Total**. The **Status** counter is the only counter that is in the **Total** list and the only counter that can be applied to all the transactions within the script. The subsequent lists are by transaction. Each transaction list includes all the available counters, enabling you to make specific selections of counters for the different transactions in the script. **Note:** ➤ Not all counters return values for all transactions. ➤ When working in template mode, the maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

Web Script Performance Counters

The following table lists all the counter metrics available for the monitor. Not all the counters report on all the transactions.

Name	Description
Retry Time	Displays the overall amount of time that passes from the moment an HTTP request is started until the moment an HTTP or TCP error message is returned. Retry time only relates to HTTP or TCP errors that execute a retry after the error.
DNS Time	Displays the average amount of time needed to resolve the DNS name to an IP address, using the closest DNS server. The DNS Lookup measurement is a good indicator of slow DNS resolution or other problems with the DNS server.
Connection Time	Displays the amount of time needed to establish an initial connection with the Web server performing the transaction. The connection measurement is a good indicator of problems along the network or whether the server is responsive to requests.
SSL Handshaking Time	Displays the amount of time taken to establish an SSL connection (includes the client hello, server hello, client public key transfer, server certificate transfer, and other optional stages). After this point, all the communication between the client and server is encrypted. The SSL handshaking measurement is only applicable for HTTPS communications.
Network Time to First Buffer	Displays the amount of time that passes from the moment the first HTTP request is sent until receipt of ACK. The network measurement is a good indicator of network quality (look at the time/size ratio to calculate download rate).

Name	Description
Server Time to First Buffer	Displays the amount of time that passes from the receipt of ACK of the initial HTTP request (usually GET) until the first buffer is successfully received back from the Web server. The server time to first buffer measurement is a good indicator of Web server delay. **Note:** Because server time to first buffer is being measured from the client, network time may influence this measurement if there is a change in network performance from the time the initial HTTP request is sent until the time the first buffer is sent.
Download Time	Displays the time from the receipt of the first buffer until the last byte arrives. Download time is a combination of server and network time, because each server (as specified by the URLs in the script) sends data over two or four connections, and therefore is usually working while data is being transmitted over the network. As a Web page is retrieved, its various components (images, applets, and so on) travel in data packets from server to client across the connections, so that some data packets may be traveling over the network through one of the connections, while others are being processed by the server through another connection.
Client Time	Displays the time during the script run when the client is not sending or receiving data from the server.
Duration	The time in milliseconds for the transaction to be run.
Status	Displays whether the transaction passed or failed. A value of 0 is passed, a value of 1 is failed. A failed transaction could be caused by a content matching error, as set up in the VuGen script, or an http error from the server.
Size	The size in bytes received from the Web sites being monitored by the transaction.
Number of Errors	Number of errors that occurred during the transaction run.
Number of Pages	Number of pages accessed when running the transaction.

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Web Server Monitor

This chapter includes:

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Web Server Monitor Overview

The Web Server monitor gathers information about a Web Server by reading the server log files. Using this information, you can see how busy your Web site is, and plan hardware upgrades and configuration changes to improve performance.

It is most effective if you create a separate Web Server monitor for each Web server you are running. If you are running multiple Web servers, each one should have its own log file so that SiteScope can report on them separately. For information about what data is recorded, see "SiteScope Log File Columns" in *Using SiteScope*.

For details on configuring the monitor, see "Web Server Monitor Settings" on page 805.

Reference

Web Server Monitor Settings

The Web Server monitor reports information about a Web server by reading the server log files. Each time the Web Server monitor runs, it writes the current hits per minute and bytes per minute in the monitor status string and in the SiteScope logs.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	When configuring this monitor in template mode, some fields that contain drop-down lists may be displayed as text boxes, and the **Browse Servers** and **Add Remote Server** buttons are not displayed.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Web Server Monitor Overview" on page 804

Web Server Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Name of the server where the Web server instance you want to monitor is running. Select a server from the server list (only those Windows remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Note:** If SiteScope is installed on a Windows platform, this monitor can monitor a target Windows server that has a Web Server installed on it. If SiteScope is installed on a UNIX platform, this monitor can monitor local log files only (monitoring a Web Server on UNIX platforms is no longer supported). **Note when working in template mode:** You can use the template remote server (if one was created) without having to enter its name, by selecting the **Use already configured template remote under current template** check box. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Browse Servers	Opens the HP SiteScope Discover Servers dialog box, enabling you to select the server to be monitored: ➤ **Browse servers.** Select a server from the drop-down list of Windows servers visible in the local domain. ➤ **Enter server name.** If the server you want to monitor does not appear in the Servers list because it has not been identified in the network or has not been configured in Remote Servers, enter the IP address or name of the server to monitor. **Note:** ➤ This button is available for SiteScope running on Windows platforms only. ➤ To monitor a remote Windows server, you must have domain privileges or authenticated access to the remote server. For details on how to configure a remote Windows server, see "How to Configure SiteScope to Monitor a Remote Microsoft Windows Server" in *Using SiteScope*.
Add Remote Server	Opens the Add Microsoft Windows Remote Server dialog box, enabling you to enter the configuration details. For user interface details, see "New/Edit Microsoft Windows Remote Server Dialog Box" in *Using SiteScope*. **Note:** This button is available for SiteScope running on Windows platforms only.
Web server	Web server type for the selected Web server. **Default value:** Microsoft IIS **Note:** This field is available for SiteScope running on Windows platforms only.

UI Element	Description
Log file path	**For SiteScope running on Windows platforms:** Select the Web Server from the list. If your Web server does not appear in the list, enter the full path to the Web server log file. **For SiteScope running on UNIX platforms:** Enter the full path of the Web server log file. **Example:** c:/ns-home/httpd-test/logs/access For servers that dynamically create the filename for log files, you can include regular expression as part of the log file path definition. The SiteScope can then retrieve data from a range of filenames based on evaluation of the regular expressions.
Request size column	Enter the column number which contains the Request Size if your Web server saves information in a custom format. If this item is blank, the common log file format is assumed.

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Web Service Monitor

This chapter includes:

Concepts

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Concepts

Web Service Monitor Overview

Use the Web Service monitor to check the availability of a Web service accepting Simple Object Access Protocol (SOAP) requests. The Web Service monitor checks that the service can send a response to the client in certain amount of time and to verify that the SOAP response is correct based on your selected match specifications.

The Simple Object Access Protocol is a way for a program running under one operating system to communicate with another program running under the same or different operating system (such as a Windows 2000 program talking to a Linux based program) The Simple Object Access Protocol uses the Hypertext Transfer Protocol (HTTP) and Extensible Markup Language (XML) for information exchange with services in a distributed environment.

This monitor uses a Web Services Description Language (WSDL) file to extract technical interface details about a Web service and uses information returned to create an actual SOAP request to that Web service. That is this monitor emulates a real Web service client making a request. The SOAP request can be used to confirm that the Web service is serving the expected response data and in a timely manner. The status of the Web Service monitor is set based on the results of the SOAP request.

For information about SOAP, refer to the W3C Web site (http://www.w3.org/TR/SOAP/).

For information about WSDL, refer to the Microsoft site (http://msdn2.microsoft.com/en-us/library/ms996486.aspx).

For details on configuring the monitor, see "Web Service Monitor Settings" on page 815.

This section contains the following topics:

Supported Technologies

The following specification features are currently supported:

- WSDL 1.2
- SOAP 1.1 only (SOAP 1.2 is not supported)
- Simple and Complex Types based on XML Schema 2001
- SOAP binding with the HTTP(S) protocol only
- SOAP with Attachments is not supported
- Nested WSDL
- WSDL with multi-ports and multi-services

Note: SOAP and WSDL technologies are evolving. As a result, some WSDL documents may not parse accurately and some SOAP requests may not interact with all Web service providers. When SiteScope is unable to generate the correct skeleton code, for example, if the WSDL file has errors or the complexType element uses schema syntax that is not supported, you can modify the XML argument as necessary. For example, if an argument is displayed like this:

```
parameters[COMPLEX] =<pPatientSSN xsi:type="xs:string">***</pPatientSSN>
```

you can modify it by deleting the **xs:** and **xsi:** as follows:

```
parameters[COMPLEX] =<pPatientSSN type="string">***</pPatientSSN>
```

Support for IPv6 Addresses

This monitor supports the IPv6 protocol. If you want your environment to resolve host names to IPv6, you can select the **Prefer IP version 6 addresses** option in SiteScope Infrastructure Settings (**Preferences** > **Infrastructure Preferences** > **Server Setting**). If this option is selected, whenever a host name is specified for a remote server and the name is resolved to both IPv4 and IPv6, the IPv6 address is used.

When using IPv6, this monitor supports the HTTP protocol.

If specifying a literal IPv6 address as the name for the monitored remote server when IPv6 addressing is enabled, the IP address must be enclosed in square brackets ("[", "]"). For example:

```
http://[2004:DB8:2a:1005:230:48ff:fe73:982d]:8080
```

For details on using IPv6, see "Support for IP Version 6" in *Using SiteScope*.

Status

The status reading shows the most recent result for the monitor. It is also recorded in the SiteScope log files, email alert messages, and can be transmitted as a pager alert. The possible status values are:

- OK
- unknown host name
- unable to reach server
- unable to connect to server
- timed out reading
- content match error
- document moved
- unauthorized
- forbidden
- not found
- proxy authentication required

- server error
- not implemented
- server busy

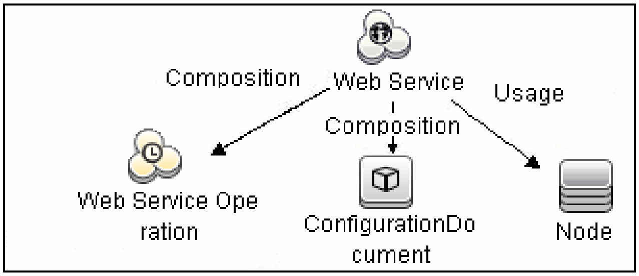
The final status result is either OK, error, or warning based on the threshold established for these conditions.

Integration with Business Service Management for SOA

If SiteScope is reporting to BSM, the monitor sends SOA samples, in addition to the regular samples it sends, for use in BSM for SOA. If the logging setting in **HP Integration Settings** is set to **Disable reporting metrics to BSM**, the monitor does not send any samples to BSM.

Web Service Topology

The Web Service monitor can identify the topology of the Web Service being monitored. If **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting), the monitor creates the following topology in BSM's RTSM.



The CIs are created only for the monitored entities according to the counters that you select.

Note: The SiteScope Web Service Monitor CI replaces the legacy SiteScope Monitor CI for the Web Service monitor instances when upgrading from previous versions of SiteScope to SiteScope 9.50. The SiteScope Monitor CI is removed from RTSM, which causes it to be removed from views that included it or from SLAs to which it was attached.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" on page 282 in *Using SiteScope*.

For information about the SOA topology, see "SOA Views and Their Components" in *Solutions and Integrations* in the HP Business Service Management Documentation Library.

Reference

Web Service Monitor Settings

The Web Service monitor enables you to check Simple Object Access Protocol (SOAP) enabled Web services for availability and stability. The Web Service monitor sends a SOAP based request to the server and checks the response to verify that the service is responding.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	The **Web Service Tool** is available when configuring this monitor to test the availability of SOAP enabled Web Services (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Web Service Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "Web Service Monitor Overview" on page 810

Web Service Monitor Settings

User interface elements are described below:

UI Element	Description
WSDL Settings	
WSDL location	Select one of the following options: ➤ **File.** Select the WSDL file to be used for this monitor. This list reflects the files found by searching on **<SiteScope root directory>\templates.wsdl/*.wsdl**. ➤ **URL.** Enter the URL of the WSDL file to be used for this monitor. Your WSDL files must have the extension **.wsdl**.
Get Data	Retrieves the specified WSDL file and analyzes it for method arguments. The ensuing page displays the measurements available for monitoring.
Service name	Name of the service to be invoked. During initial setup, this is extracted from the WSDL file.
Port name	Name of the port to be invoked. During initial setup, this is extracted from the WSDL file.
Method name	Name of the method to be invoked. During initial setup, this is extracted from the WSDL file.
Method name space	XML name space for the method in the SOAP request. During initial setup, this value is extracted from the WSDL file.
Schema name space	XML name space for the schema in the SOAP request. During initial setup, this value is extracted from the WSDL file.
SOAP action	SOAP action URL in the header of the SOAP request to the Web Service. During initial setup, this is extracted from the WSDL file.

UI Element	Description
Name of arguments	Displays the name and type/structure of the arguments to the method specified above. SiteScope supports both simple (primitive) and complex (user-defined using XML schema) types. Simple type arguments appear in the form: parm-name(parm-type) = where you need to enter the parameter value to be used in invoking the Web service after the equal sign. Strings with embedded spaces should be enclosed in double quotes. Each parameter must be in a separate line, that is, do not remove the carriage return at the end of each parameter. A complex type parameter is displayed as one long string, with needed input fields marked with asterisks (***). An example of a complex type parameter is shown below: stocksymbol[COMPLEX] =<stocksymbol xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:fw100="urn:ws-stock" xsi:type="fw100:getQuote"> <ticker xsi:type="xsd:string">***</ticker></stocksymbol> You must replace these occurrences of asterisks with meaningful values of the required type (in the example above, xsd:string), otherwise the Web service request may fail. Do not add any carriage returns within a complex type parameter. If the Web service method does not take any parameters, the text box must be empty. **Note:** SiteScope cannot set the order of arguments. If the order is important, enter arguments in the same order in which they appear in the WSDL file.
Use user-defined SOAP XML	Uses the XML in the **User SOAP XML** box. This enables you to use XML that has been manually defined.

UI Element	Description
User SOAP XML	Displays the SOAP XML for the selected Web service extracted from the WSDL file. You can make changes to the default XML, and use the manually defined XML in this box by selecting the **Use user-defined SOAP XML** check box.
Main Settings	
Request's schema	The request schema. Currently SiteScope only supports SOAP.
Timeout (seconds)	Amount of time, in seconds, that SiteScope should wait for the Web service request to complete. **Default value:** 30 seconds
Use .NET SOAP	Select if the Web service is based on Microsoft .NET.

UI Element	Description
Content match	Text string to check for in the returned page or frameset. If the text is not contained in the page, the monitor displays the message no match on content. HTML tags are part of a text document, so include the HTML tags if they are part of the text you are searching for. This works for XML pages as well. **Example:** "< B> Hello< /B> World" You may also perform a regular expression match by enclosing the string in forward slashes, with an i after the trailing slash to indicate that the search is not case sensitive. **Example:** /href=Doc\d+\.html/ or /href=doc\d+\.html/i If you want a particular piece of text to be saved and displayed as part of the status, use parentheses in a Perl regular expression. **Example:** /Temperature: (\d+) **Note:** ➤ The search is case sensitive. ➤ Content match behavior was changed for the Web Service monitor in SiteScope 10.12. To enable Web Service monitors defined prior to SiteScope 10.12 to match the correct value, the **Web Service Monitor use common content match** setting must be selected in **Preferences** > **Infrastructure Preferences** > **Monitor Settings**.
HTTP Settings	
Web service server URL	Displays the URL of the Web service server to be monitored.
HTTP user agent	HTTP user agent for the SOAP request.
HTTP content type	Content type of the HTTP request.

UI Element	Description
Proxy Settings	
HTTP proxy	Domain name and port of an HTTP Proxy Server if a proxy server can be used to access the URL.
Proxy server user name	Proxy server user name if required to access the URL. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy server password	Proxy server password if required to access the URL. **Note:** Your proxy server must support Proxy-Authentication for these options to function.
Login Settings	
NTLM domain	If the Web service requires NTLM / Challenge Response authentication, a domain name is required as part of your credentials (as well as a user name and password below).
Authorization user name	Authorization user name if the web service requires a user name and password for access (Basic, Digest, or NTLM authentication). Alternately, you can leave this entry blank and enter the user name in the Default Authentication Credentials section on the General Preferences page. You use this alternate method to define common authentication credentials for use with multiple Web Service monitor.
Authorization password	Authorization password if the web service requires a user name and password for access (Basic, Digest, or NTLM authentication). Alternately, you can leave this entry blank and enter the password in the Default Authentication Credentials section on the General Preferences page. You use this alternate method to define common authentication credentials for use with multiple Web Service monitor.

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WebLogic Application Server Monitor

This chapter includes:

Concepts

- WebLogic Application Server Monitor Overview on page 822

Tasks

- How to Configure the WebLogic Application Server Monitoring Environment on page 824

Reference

- WebLogic Application Server Monitor Settings on page 827

Concepts

WebLogic Application Server Monitor Overview

Use the WebLogic Application Server monitor to monitor performance statistics data from WebLogic 6.x, 7.x, and 8.x servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. Create a separate WebLogic Application Server monitor instance for each WebLogic server in your environment.

Note:

- WebLogic Application Server Monitors cannot be used to monitor WebLogic 9.x, 10.0-10.3.3, or 11g servers. To monitor these servers, use a JMX monitor as described in "JMX Monitor Overview" on page 230. For further details, see "Create a JMX Monitor for a WebLogic 9.x, 10.0-10.3.3, or 11g Server" on page 235.
- SiteScope can discover the topology of WebLogic application servers using the JMX monitor. You cannot use the WebLogic Application Server monitor to discover topology data for reporting to BSM. For details, see "WebLogic Application Server Topology" on page 233.
- SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various aspects of a WebLogic Application server. For details, see "WebLogic Solution Templates" in *Using SiteScope*.

The Oracle WebLogic Application Server monitor uses the Java JMX interface to access Runtime MBeans on the WebLogic server. An MBean is a container that holds the performance data. You must set certain permissions on the WebLogic server for SiteScope to be able to monitor MBeans.

Note: SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various services and aspects of a WebLogic application server. For details, see "WebLogic Solution Templates" on page 1267.

For task details, see "How to Configure the WebLogic Application Server Monitoring Environment" on page 824.

For user interface details, see "WebLogic Application Server Monitor Settings" on page 827.

Tasks

How to Configure the WebLogic Application Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Set permissions for monitoring WebLogic 6.x servers" on page 824
- "Set permissions for monitoring WebLogic 7.x or 8.x servers" on page 824
- "Configure SiteScope to use T3 over SSL against a WebLogic 7.x or 8.x server - optional" on page 825
- "Configure the monitor properties" on page 826

Set permissions for monitoring WebLogic 6.x servers

To set permissions for monitoring WebLogic 6.x servers, create a new ACL on the WebLogic server with the name **weblogic.admin.mbean**. Set the permission type to **access** and set the Users and Groups to be the user or group account that SiteScope uses to monitor the WebLogic server.

Set permissions for monitoring WebLogic 7.x or 8.x servers

WebLogic 7.x and later servers use Security Policies instead of ACL's to control access to the server resources. To monitor WebLogic 7.x and later servers with SiteScope, the WebLogic administrator needs to add the user account that is running SiteScope to a WebLogic user group. The WebLogic group containing the SiteScope user must then be associated with a role statement that grants the necessary security role for accessing the desired WebLogic resources. The same security role must also be associated with the applicable policy statement that grants SiteScope access to the WebLogic resources. Refer to the WebLogic server documentation for more information.

Configure SiteScope to use T3 over SSL against a WebLogic 7.x or 8.x server - optional

Perform the following steps to configure a WebLogic monitor with the **Secure Server** option to monitor a WebLogic 7.x or 8.x server.

1 Obtain and install a JRE version 1.4.1 on the machine where SiteScope is running. Make a note of the full path to this JRE installation, as you must enter this information in the WebLogic monitor setup.

2 Import the WebLogic Server's certificate, signed by a certificate authority, into the <**jre_path**>**\lib\security\cacerts** file for the JRE 1.4.1 installation on the SiteScope machine. If it is not, then you have to import the signer's certificate into the cacerts file using the keytool program. For instance, using the default WebLogic cert setup, you must import the **CertGenCA.der** certificate using the following command (this must all be entered on a single command line):

```
C:\j2sdk1.4.1\jre\bin>keytool.exe -import -alias weblogic81CA -keystore
..\lib\security\cacerts -trustcacerts -file
C:\BEA\weblogic81\server\lib\CertGenCA.der
```

3 Obtain a valid Oracle license file and put it somewhere on the SiteScope machine. This is the file named **license.bea** in the BEA installation directory.

4 Obtain the **weblogic.jar** file from the WebLogic server or from a WebLogic server of the same version that you are monitoring. For WebLogic version 8.x, you must also obtain a copy of the **wlcipher.jar** file. Copy this or these files to the SiteScope server.

Note: Do not install the **weblogic.jar** file in the SiteScope directory tree. In other words, do not install it in the <**SiteScope root directory**>**\java\lib\ext** directory as this causes the Weblogic monitor to fail. You must install it in a separate directory on the server where SiteScope is running.

5 Open SiteScope and add a WebLogic Application Server monitor.

6 Configure the WebLogic Application Server Monitor Settings as follows:

➤ In the Authentication Settings area, select the **Secure server** option.

➤ In the Advanced Settings area:

  ➤ Enter the full path to the **wlcipher.jar** and **weblogic.jar** files in the **WLCipher jar file** and the **WebLogic jar file** boxes, respectively.

  ➤ Enter the full path to the Oracle license file in the **WebLogic license file** box.

  ➤ Enter the full path to the javaw.exe (for Windows platforms) or the java (Solaris/Linux) executable for the JRE version 1.4.1 installation in the **JVM** box.

7 Click the **Get Counters** button to browse the counters on the WebLogic server over SSL.

Configure the monitor properties

Configure the WebLogic Application Server monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "WebLogic Application Server Monitor Settings" on page 827.

Reference

WebLogic Application Server Monitor Settings

The WebLogic Application Server monitor enables you to monitor the statistics of a WebLogic version 6 through 8 servers.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ WebLogic Application Server Monitors cannot be used to monitor WebLogic 9.x,10.0-10.3.3, or 11g servers. To monitor these servers, use a JMX monitor. For further details, see "Create a JMX Monitor for a WebLogic 9.x, 10.0-10.3.3, or 11g Server" on page 235. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the WebLogic Application Server Monitoring Environment" on page 824 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "WebLogic Application Server Monitor Overview" on page 822

WebLogic Application Server Monitor Settings

User interface elements are described below:

UI Element	Description
Authentication Settings	
Target	Name of the server where WebLogic is running.
Server	Address of the server where WebLogic is running.

UI Element	Description
Port number	Port number that the WebLogic server is responding on. **Default value:** 7001
User name	User name required to log on to the WebLogic server.
Password	Password required to log on to the WebLogic server.
Secure server	Select if using a secure server connection option. If you select this option, you must enter the applicable port number used by the WebLogic server for secure connections. **Default value:** 7002
Advanced Settings	
WLCipher jar file	For some versions of WebLogic Server, you must install a copy of the wlcipher.jar file from the WebLogic server onto the SiteScope server to enable monitoring over SSL. Enter the absolute path to the file on the SiteScope machine. **Example:** C:\bea\weblogic81\server\lib\wlcipher.jar **Note:** This option is for use only with the **Secure Server** (SSL) option.
WebLogic license file	Enables the Secure Server (SSL) option. Enter the absolute path to the Oracle license file that was copied to the SiteScope machine. **Example:** C:\bea\license.bea
JVM	Full path to the Java Virtual Machine (JVM) in which the WebLogic monitoring process should be run. For monitors that do not use the Secure Server option, this is not required. For monitors which do use the Secure Server option, a separate JVM must be installed on the server where SiteScope is running. This other JVM must be version 1.4.1 or earlier. This is not the same JVM version used by SiteScope. **Example:** C:\j2sdk1.4.1\jre\bin\javaw.exe

UI Element	Description
WebLogic jar file	Absolute path to the weblogic.jar file on the SiteScope machine. This file must be installed on the SiteScope server and can be downloaded from the WebLogic server. **Example:** c:\bea\weblogic7\ebcc\lib\ext\weblogic.jar This file is not strictly required for monitoring some earlier versions of WebLogic 6. In this case, leaving this box blank normally causes any necessary classes to be downloaded directly from the WebLogic server. Note that this is not as efficient as loading the classes from the *.jar file on the server where SiteScope is running.
Classpath	Additional classpath variables that are to be used by the WebLogic JVM running on the SiteScope machine. File path elements should be separated by a colon (":") on UNIX systems, and by a semicolon (";") on Microsoft Windows systems.
Timeout (seconds)	Amount of time, in seconds, to wait for a response from the server before timing-out. Once this time period passes, the monitor logs an error and reports an error status. **Default value:** 180 (using a value other than the default timeout value may adversely affect performance)
Counter Settings	
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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WebSphere Application Server Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

WebSphere Application Server Monitor Overview

Use the WebSphere Application Server monitor to monitor the server performance statistics from IBM WebSphere 3.5.x, 4.x, 5.x, 6.0x, 6.1x, and 7.0x servers using the performance monitoring interfaces provided with WebSphere. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning. The error and warning thresholds for the monitor can be set on one or more WebSphere Application Server performance statistics.

Create a separate WebSphere Application Server monitor instance for each WebSphere 3.5.x, 4.x, 5.x, and 7.0x Application Server in your environment. For WebSphere 6.0 and 6.1 Application Servers, you can monitor different instances of WebSphere 6.0 and 6.1 Application Servers simultaneously within one SiteScope process. Previously, you could monitor only one WebSphere 6.0 or 6.1 version at one time.

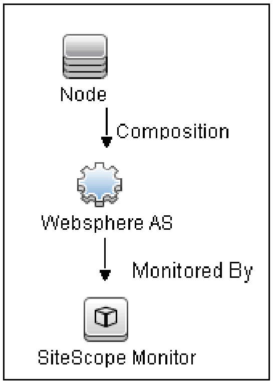
Note: SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various aspects of a WebSphere Application server. For details, see "WebSphere Solution Templates" in *Using SiteScope*.

Before you can use the WebSphere Application Server monitor, there are a number of configuration requirements involving the server environment.

For user interface details, see "WebSphere Application Server Monitor Settings" on page 862.

WebSphere Application Server Topology

The WebSphere Application Server monitor can identify the topology of the WebSphere Application Servers being monitored. The monitor creates the following topology in BSM's RTSM.



For details on enabling topology reporting, see the task for the relevant WebSphere Application Server version.

For information about retrieving topologies and reporting them to BSM, see "Reporting Discovered Topologies to BSM" in *Using SiteScope*.

Tasks

How to Configure the WebSphere 3.5x and 4.x Application Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Configure the WebSphere 3.5.x and 4.x server environment" on page 834
- "Configure the monitor properties" on page 835
- "Enable topology reporting - optional" on page 835

1 Configure the WebSphere 3.5.x and 4.x server environment

Perform the following to prepare the WebSphere environment for SiteScope monitoring of WebSphere versions 3.5.x and 4.x:

a Install the IBM WebSphere Administrator's Console on the SiteScope server if you are monitoring WebSphere versions 3.5.x or 4.x.

If installing the Administrator's Console:

- Select **Custom Installation** option during installation.
- Select **Administrator's Console** and **IBM JDK 1.2.2.** in the **Choose Application Server Components** dialog box.
- Specify the machine you want to monitor during the installation.

b Enable the WebSphere servers to be monitored.

- ➤ For WebSphere 3.5.x, enable EPM Counters on the WebSphere server. You can also use the WebSphere Administrator's Console to set the EPM Specification to `epm=high:epm.beanMethodData=none`.
- ➤ For WebSphere 4.x, enable PMI Counters or enable the Performance Monitoring Service on the WebSphere server. You can enable the counters for the application you want to monitor by using the WebSphere Administrator's Console.
- ➤ For WebSphere 4.x, select **Resources** and then select the **Performance** option. In the dialog box that opens, expand the **Performance Modules** tree. To manage different levels of performance data, select the performance modules, choose a performance level, and then click the **Set** button.

c If security has been enabled on the WebSphere server, the server security ring must be copied to the admin client.

2 Configure the monitor properties

Configure the WebSphere Application Server monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "WebSphere Application Server Monitor Settings" on page 862.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

How to Configure the WebSphere 5.x Application Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Configure the WebSphere 5.x server environment" on page 836
- "Configure the monitor properties" on page 838
- "Enable topology reporting - optional" on page 838

1 Configure the WebSphere 5.x server environment

To monitor WebSphere version 5.x, the necessary WebSphere libraries must be available on the SiteScope server. Generally, this means that a WebSphere 5.x client install must exist on the SiteScope server.

a Install the **Administration (or admin console) Performance Analysis** option from the custom options menu in the WebSphere 5.x install.

Caution: Certain trial versions of IBM WebSphere do not include the Performance Analysis option required by the SiteScope WebSphere Application Server monitor. The SiteScope monitor can only work when a complete WebSphere production installation is available.

b Copy all of the files from the **lib** folder of a WebSphere 5.x Application Server installation to the **lib** folder on the client install from step1.

c The WebSphere 5.x server and client settings have to match. This means that the SiteScope WebSphere Application Server monitor is not able to monitor a WebSphere 5.1 application server if the client libraries are from a WebSphere 5.0 and vice versa. Client libraries should be installed in separate folders with clearly distinct directory names (for example, Websphere50 and Websphere51) to avoid confusion and SiteScope setup errors.

Note: For WebSphere 5.x SiteScope uses the WebSphere JMX interface so the port number used to communicate with the application server is the SOAP port number. The default SOAP port number is 8880.

---

d Enable PMI Counters or the Performance Monitoring Service on the WebSphere server. You can enable the counters for the application you want to monitor by using the WebSphere Administrator's Console.

➤ Click **Servers** > **Application Servers**.

➤ Select the server to be monitored from the Application Server list.

➤ From the Configuration tab, click the Performance Monitoring Service in the Additional Properties list.

➤ Select the **Start Up** check box and select the **Initial specification** level as Standard or Custom.

➤ Click **Apply**.

e If security has been enabled on the WebSphere server, the server security ring must be copied to the admin client.

Note: If security has been enabled on the WebSphere 5.x server, you must copy the security keyring from the WebSphere server to SiteScope. A keyring is a certification used by the server to identify the client.

---

2 Configure the monitor properties

Configure the WebSphere Application Server monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "WebSphere Application Server Monitor Settings" on page 862.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

How to Configure the WebSphere 6.0x Application Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Configure the WebSphere 6.0x server environment" on page 839
- "Configure the monitor properties" on page 839
- "Enable topology reporting - optional" on page 840
- "Monitor different instances simultaneously - Optional" on page 841

1 Configure the WebSphere 6.0x server environment

Configure the WebSphere version 6.0x monitoring environment according to whether you are using internal or external Java.

- For details on configuring the WebSphere 6.0x monitoring environment using internal Java, see "Configure the WebSphere 6.0x Server Environment Using Internal Java" on page 841.
- For details on configuring the WebSphere 6.0x monitoring environment using external Java, see "Configure the WebSphere 6.0x Server Environment Using External Java" on page 843.

2 Configure the monitor properties

Create the WebSphere Application Server monitor, and enter the following information in the Monitor Settings panel:

- **WebSphere directory:** %WAS_ENV%
- **Trust store:** %WAS_ENV%\DummyClientTrustFile.jks
- **Trust store password:** WebAS
- **Key store:** %WAS_ENV%\DummyClientKeyFile.jks
- **Key store password:** WebAS

Note:

- If you configured the WebSphere environment to use internal JVMs, make sure that the **Launch an external JVM** check box is not selected. By default, the WebSphere monitor uses internal JVMs for new monitors. When upgrading from previous versions of SiteScope, this check box is selected automatically during the upgrade for existing monitors.
- You can use certificates added using Certificate Management only if **Launch an external JVM** is not selected.
- When using SSL, you also need to define the **User name** and **Password** to access the WebSphere Application Server.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For user interface details, see "WebSphere Application Server Monitor Settings" on page 862.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

4 Monitor different instances simultaneously - Optional

After configuring settings for the WebSphere Application Server monitor version 6.0x, select **6.1x** from the **Version** drop-down list. The monitor runs simultaneously with the monitor that you just created for WebSphere version 6.0x.

Note: To monitor a WebSphere version 6.1x simultaneously, you must have configured the WebSphere version 6.1x monitoring environment. For details, see "How to Configure the WebSphere 6.1x Application Server Monitoring Environment" on page 846.

Configure the WebSphere 6.0x Server Environment Using Internal Java

To enable monitoring WebSphere version 6.0x, you must configure the server environment.

Note: This task is part of a higher-level task. For details, see "How to Configure the WebSphere 6.0x Application Server Monitoring Environment" on page 838.

To configure the WebSphere 6.0x server environment using internal Java:

1 On the SiteScope machine, create a directory and give it a name, for example, C:\WAS_6. This directory is referred to as %WAS_ENV%, and the SiteScope root folder is referred to as %SIS_HOME% (you should replace all appearances of %WAS_ENV% and %SIS_HOME% with the actual value).

2 Copy the following contents from WebSphere Application Server to the SiteScope machine:

From WebSphere Application Server:	To SiteScope machine:
Copy the entire folder: <WAS_SERVER>\ WebSphere\AppServer\lib	%WAS_ENV%\lib
<WAS_SERVER>\WebSphere\AppServer\java\jre\lib\ibmcertpathprovider.jar	%WAS_ENV%\ibmcertpathprovider.jar
<WAS_SERVER>\WebSphere\AppServer\java\jre\lib\ext\ibmjceprovider.jar	%WAS_ENV%\ibmjceprovider.jar
<WAS_SERVER>\WebSphere\AppServer\profiles\<ServerName>\etc\DummyClientTrustFile.jks	%WAS_ENV%\
<WAS_SERVER>\WebSphere\AppServer\profiles\<ServerName>\etc\DummyClientKeyFile.jks	%WAS_ENV%\

3 (SSL only) Import the SSL server certificates. You can use Certificate Management to import the certificates, or you can import the certificates manually.

- For details on importing certificates using Certificate Management, see "How to Import Server Certificates Using Certificate Management" in *Using SiteScope*.
- For details on importing certificates manually, see "Import Server Certificates Manually for WebSphere 6.0x" on page 845.

4 After importing the server certificates, restart the SiteScope server.

5 Continue with step 2 on page 839.

Configure the WebSphere 6.0x Server Environment Using External Java

To enable monitoring WebSphere version 6.0x, you must configure the server environment.

Note: This task is part of a higher-level task. For details, see "How to Configure the WebSphere 6.0x Application Server Monitoring Environment" on page 838.

To configure the WebSphere 6.0x server environment using external Java:

1 You must have the following directories copied onto the SiteScope machine:

- AppServer/Java
- AppServer/lib

These directories must be copied into any directory on the SiteScope machine but must be stored exactly as they appear under the **AppServer** directory.

You can use one of the following options:

- Create a directory on the machine running SiteScope called **AppServer** and copy the two directories, **Java** and **lib**, directly into the newly created **AppServer** directory. We recommend this option because it occupies the least amount of disk space on your SiteScope machine.
- Copy the entire WebSphere AppServer directory from the machine being monitored onto the machine running SiteScope.
- Copy all the WebSphere application server files onto the machine running SiteScope. We do not recommend this option because of the size of the application server files.

Once you have the **AppServer/Java** and **Appserver/lib** files on the SiteScope machine, you can prepare the WebSphere environment for monitoring WebSphere 6.x.

2 On the WebSphere server, select **Servers** > **Application Servers** > **<server name>** > **Performance Monitoring Infrastructure (PMI)** and make sure that the counters are set to **Extended**.

3 From the SiteScope machine, make sure that you can access the SOAP from a browser. For example, open a browser and enter the following sample address: http://jberantlab:8880. If an XML page is returned, the monitor is ready to be added to SiteScope and configured.

Note: For WebSphere 6.x and later, SiteScope uses the WebSphere JMX interface so the port number used to communicate with the application server is the SOAP port number. The default SOAP port number is 8880.

4 Continue with step 2 on page 839.

Import Server Certificates Manually for WebSphere 6.0x

Instead of using Certificate Management, you can import certificates manually using the keytool method, if preferred. Certificates imported this way can still be managed using Certificate Management. For details on Certificate Management, see "Certificate Management" in *Using SiteScope*.

Note: This task is part of a higher-level task. For details, see "How to Configure the WebSphere 6.0x Application Server Monitoring Environment" on page 838.

To import server certificates manually:

1. Using Internet Explorer 6 or 7, export the SSL certificate to **%WAS_ENV%\was_certificate.cert** (in base-64 format).

   a. Download the server certificate by double-clicking the key lock icon in Internet Explorer when there is an SSL connection. The icon is located in the status bar for Internet Explorer 6, and to the right of the URL field for Internet Explorer 7 (the field is marked red when self-signed certified is used by the server).

   b. In the Certificate dialog box, select the **Details** tab, and click **Copy to File**.

   c. In the Certificate Export Wizard, export the server certificate as **Base-64 encoded X.509 (.CER)** certificate.

2. Import the certificate to the **cacerts** file in the SiteScope java folder as follows:

   ```
   %SIS_HOME%\java\bin\keytool -import -v -file %WAS_ENV%\was_certificate.cert -
   alias was_cert -keystore %SIS_HOME%\java\lib\security\cacerts
   ```

   When prompted for the password, type changeit (default password for JRE).

   When asked if you trust the imported certificate, type yes.

3. Continue with step 4 on page 842.

How to Configure the WebSphere 6.1x Application Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Configure the WebSphere 6.1x Server Environment Using Internal Java" on page 848
- "Configure the monitor properties" on page 846
- "Enable topology reporting - optional" on page 847
- "Monitor different instances simultaneously - Optional" on page 847

1 Configure the WebSphere 6.1x server environment

Configure the WebSphere version 6.1x monitoring environment according to whether you are using internal or external Java.

- For details on configuring the WebSphere 6.1x monitoring environment using internal Java, see "Configure the WebSphere 6.1x Server Environment Using Internal Java" on page 848.
- For details on configuring the WebSphere 6.1x monitoring environment using external Java, see "Configure the WebSphere 6.1x Server Environment Using External Java" on page 850.

2 Configure the monitor properties

Create the WebSphere Application Server monitor, and enter the following information in the Monitor Settings panel:

- **WebSphere directory:** %WAS_ENV%
- **Trust store:** %WAS_ENV%\DummyClientTrustFile.jks
- **Trust store password:** WebAS
- **Key store:** %WAS_ENV%\DummyClientKeyFile.jks
- **Key store password:** WebAS

Note:

- If you configured the WebSphere environment to use internal JVMs, make sure that the **Launch an external JVM** check box is not selected. By default, the WebSphere monitor uses internal JVMs for new monitors. When upgrading from previous versions of SiteScope, this check box is selected automatically during the upgrade for existing monitors.
- You can use certificates added using Certificate Management only if **Launch an external JVM** is not selected.
- When using SSL, you also need to define the **User name** and **Password** to access the WebSphere Application Server.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For user interface details, see "WebSphere Application Server Monitor Settings" on page 862.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

4 Monitor different instances simultaneously - Optional

To monitor a WebSphere version 6.0x simultaneously, choose **6.0x** from the **Version** drop-down list. The monitor runs simultaneously with the monitor that you just created for WebSphere version 6.1x.

Configure the WebSphere 6.1x Server Environment Using Internal Java

To enable monitoring WebSphere version 6.1x, you must configure the server environment.

Note: This task is part of a higher-level task. For details, see "How to Configure the WebSphere 6.1x Application Server Monitoring Environment" on page 846.

To enable monitoring WebSphere version 6.1x using internal Java:

1 On the SiteScope machine, create a directory and give it a name, for example, C:\WAS_6_1. This directory is referred to as %WAS_ENV%, and the SiteScope root folder is referred to as %SIS_HOME% (you should replace all appearances of %WAS_ENV% and %SIS_HOME% with the actual value).

2 Copy the following contents from WebSphere Application Server to the SiteScope machine:

From WebSphere Application Server:	To SiteScope machine:
<WAS_SERVER>\WebSphere\AppServer\plugins\com.ibm.ws.security.crypto_6.1.0.jar	%SIS_HOME%\java\lib\ext\com.ibm.ws.security.crypto_6.1.0.jar
<WAS_SERVER>\WebSphere\AppServer\runtimes\com.ibm.ws.admin.client_6.1.0.jar	%WAS_ENV%\com.ibm.ws.admin.client_6.1.0.jar
<WAS_SERVER>\plugins\com.ibm.ws.runtime_6.1.0.jar	%WAS_ENV%\com.ibm.ws.runtime_6.1.0.jar
<WAS_SERVER>\WebSphere\AppServer\profiles\<ServerName>\etc\DummyClientTrustFile.jks	%WAS_ENV%\

From WebSphere Application Server:	To SiteScope machine:
<WAS_SERVER>\WebSphere\AppServer\profiles\<ServerName>\etc\DummyClientKeyFile.jks	%WAS_ENV%\
<WAS_SERVER>\WebSphere\AppServer\java\jre\lib\ext\ibmkeycert.jar	%SIS_HOME%\java\lib\ext

3 (SSL only) Import the SSL server certificates. You can use Certificate Management to import the certificates, or you can import the certificates manually.

- For details on importing certificates using Certificate Management, see "How to Import Server Certificates Using Certificate Management" in *Using SiteScope*.
- For details on importing certificates manually, see "Import Server Certificates Manually for WebSphere 6.1x" on page 853.

4 After importing the server certificates, modify the **%SIS_HOME%\java\lib\security\java.security** file as follows:

a Change it so that it reads:

```
# Default JSSE socket factories
ssl.SocketFactory.provider=com.sun.net.ssl.internal.ssl.SSLSocketFactoryImpl
ssl.ServerSocketFactory.provider=com.sun.net.ssl.internal.ssl.SSLServerSocket
FactoryImpl
```

b Add the following additional provider to the list of providers, where N is the number of the next provider in the list:

```
## List of providers and their preference orders (see above):
#
<all existing providers>
security.provider.N=com.ibm.crypto.provider.IBMJCE
```

5 Restart the SiteScope server.

6 Continue with step 2 on page 846.

Configure the WebSphere 6.1x Server Environment Using External Java

To enable monitoring WebSphere version 6.1x, you must configure the server environment.

Note: This task is part of a higher-level task. For details, see "How to Configure the WebSphere 6.1x Application Server Monitoring Environment" on page 846.

To configure the WebSphere 6.1x server environment using external Java:

1 On the SiteScope machine, create a directory and give it a name, for example, C:\WAS_6_1. This directory is referred to as %WAS_ENV% (you should replace all appearances of %WAS_ENV% with the actual value).

2 Copy the following contents from WebSphere Application Server to the SiteScope machine:

From WebSphere Application Server:	To SiteScope machine:
<WAS_SERVER>\java\***.*	%WAS_ENV%\java\***.*
<WAS_SERVER>\runtimes\com.ibm.ws.admin.client_6.1.0.jar	%WAS_ENV%\com.ibm.ws.admin.client_6.1.0.jar
<WAS_SERVER>\plugins\com.ibm.ws.runtime_6.1.0.jar	%WAS_ENV%\com.ibm.ws.runtime_6.1.0.jar
<WAS_SERVER>\WebSphere\AppServer\profiles\<ServerName>\etc\DummyClientTrustFile.jks	%WAS_ENV%\
<WAS_SERVER>\WebSphere\AppServer\profiles\<ServerName>\etc\DummyClientKeyFile.jks	%WAS_ENV%\

3. (SSL only) Using Internet Explorer 6 or 7, export the SSL certificate to **%WAS_ENV%\was_certificate.cert** (in base-64 format).

   a. Download the server certificate by double-clicking the key lock icon in Internet Explorer when there is an SSL connection. The icon is located in the status bar for Internet Explorer 6, and to the right of the URL field for Internet Explorer 7 (the field is marked red when self-signed certified is used by the server).

   b. In the Certificate dialog box, select the **Details** tab, and click **Copy to File**.

   c. In the Certificate Export Wizard, export the server certificate as **Base-64 encoded X.509 (.CER)** certificate.

4. (SSL only) Import the certificate to the **cacerts** file in the above java folder as follows:

```
%WAS_ENV%\java\bin\keytool -import -v -file %WAS_ENV%\was_certificate.
cert -alias was_cert   -keystore %WAS_ENV%\java\jre\lib\security\cacerts
```

   When prompted for the password, type changeit (default password for JRE).

   When asked if you trust the imported certificate, type yes.

5 Modify the **%WAS_ENV%\java\jre\lib\security\java.security** file so that it reads as follows:

```
== FROM==
# Default JSSE socket factories
#ssl.SocketFactory.provider=com.ibm.jsse2.SSLSocketFactoryImpl
#ssl.ServerSocketFactory.provider=com.ibm.jsse2.SSLServerSocketFactoryImpl
# WebSphere socket factories (in cryptosf.jar)
ssl.SocketFactory.provider=com.ibm.websphere.ssl.protocol.SSLSocketFactory
ssl.ServerSocketFactory.provider=com.ibm.websphere.ssl.protocol.SSLServerSock
etFactory

==TO==
# Default JSSE socket factories
ssl.SocketFactory.provider=com.ibm.jsse2.SSLSocketFactoryImpl
ssl.ServerSocketFactory.provider=com.ibm.jsse2.SSLServerSocketFactoryImpl
# WebSphere socket factories (in cryptosf.jar)
#ssl.SocketFactory.provider=com.ibm.websphere.ssl.protocol.SSLSocketFactory
#ssl.ServerSocketFactory.provider=com.ibm.websphere.ssl.protocol.SSLServerSoc
ketFactory
```

6 Restart the SiteScope machine.

7 Continue with step 2 on page 846.

Import Server Certificates Manually for WebSphere 6.1x

Instead of using Certificate Management, you can import certificates manually using the keytool method, if preferred. Certificates imported this way can still be managed using Certificate Management. For details on Certificate Management, see "Certificate Management" in *Using SiteScope*.

Note: This task is part of a higher-level task. For details, see "How to Configure the WebSphere 6.1x Application Server Monitoring Environment" on page 846.

To import server certificates manually:

1. Using Internet Explorer 6 or 7, export the SSL certificate to **%WAS_ENV%\was_certificate.cert** (in base-64 format).

   a Download the server certificate by double-clicking the key lock icon in Internet Explorer when there is an SSL connection. The icon is located in the status bar for Internet Explorer 6, and to the right of the URL field for Internet Explorer 7 (the field is marked red when self-signed certified is used by the server).

   b In the Certificate dialog box, select the **Details** tab, and click **Copy to File**.

   c In the Certificate Export Wizard, export the server certificate as **Base-64 encoded X.509 (.CER)** certificate.

2. Import the certificate to the **cacerts** file in the SiteScope java folder as follows:

   ```
    %SIS_HOME%\java\bin\keytool -import -v -file %WAS_ENV%\was_certificate.cert -
   alias was_cert -keystore %SIS_HOME%\java\lib\security\cacerts
   ```

   When prompted for the password, type changeit (default password for JRE).

   When asked if you trust the imported certificate, type yes.

3. Continue with step 4 on page 849.

How to Configure the WebSphere 7.0x Application Server Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Configure the WebSphere 7.0x server environment" on page 854
- "Configure the monitor properties" on page 854
- "Enable topology reporting - optional" on page 855

1 Configure the WebSphere 7.0x server environment

Configure the WebSphere version 7.0x monitoring environment according to whether you are using internal or external Java.

- For details on configuring the WebSphere 7.0x monitoring environment using internal Java, see "Configure the WebSphere 7.0x Server Environment Using Internal Java" on page 856.
- For details on configuring the WebSphere 7.0x monitoring environment using external Java, see "Configure the WebSphere 7.0x Server Environment Using External Java" on page 858.

2 Configure the monitor properties

Create the WebSphere Application Server monitor, and enter the following information in the Monitor Settings panel:

- **WebSphere directory:** %WAS_ENV%
- **Trust store:** %WAS_ENV%\DummyClientTrustFile.jks
- **Trust store password:** WebAS
- **Key store:** %WAS_ENV%\DummyClientKeyFile.jks
- **Key store password:** WebAS

Note:

- If you configured the WebSphere environment to use internal JVMs, make sure that the **Launch an external JVM** check box is not selected. By default, the WebSphere monitor uses internal JVMs for new monitors. When upgrading from previous versions of SiteScope, this check box is selected automatically during the upgrade for existing monitors.
- You can use certificates added using Certificate Management only if **Launch an external JVM** is not selected.
- When using SSL, you also need to define the **User name** and **Password** to access the WebSphere Application Server.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For user interface details, see "WebSphere Application Server Monitor Settings" on page 862.

3 Enable topology reporting - optional

To enable topology reporting, make sure that **Report monitor and related CI topology** is selected in **HP Integration Settings** (the default setting).

For user interface details, see "HP Integration Settings" in *Using SiteScope*.

Configure the WebSphere 7.0x Server Environment Using Internal Java

To enable monitoring WebSphere version 7.0x, you must configure the server environment.

Note: This task is part of a higher-level task. For details, see "How to Configure the WebSphere 7.0x Application Server Monitoring Environment" on page 854.

To enable monitoring WebSphere version 7.0x using internal Java:

1 On the SiteScope machine, create a directory and give it a name, for example, C:\WAS_7. This directory is referred to as %WAS_ENV%, and the SiteScope root folder is referred to as %SIS_HOME% (you should replace all appearances of %WAS_ENV% and %SIS_HOME% with the actual value).

2 Copy the following contents from WebSphere Application Server to the SiteScope machine:

From WebSphere Application Server:	To SiteScope machine:
<WAS_SERVER>\ WebSphere\ AppServer \plugins\ com.ibm.ws.security.crypto.jar	%SIS_HOME% \java\lib\ext\ com.ibm.ws.security.crypto.jar
<WAS_SERVER>\WebSphere\ AppServer\runtimes\ com.ibm.ws.admin.client.jar	%WAS_ENV%\ com.ibm.ws.admin.client.jar
<WAS_SERVER>\WebSphere\ AppServer\plugins\ com.ibm.ws.runtime.jar	%WAS_ENV%\ com.ibm.ws.runtime.jar
<WAS_SERVER>\WebSphere\ AppServer\profiles\<ServerName>\etc \DummyClientTrustFile.jks	%WAS_ENV%\

From WebSphere Application Server:	To SiteScope machine:
<WAS_SERVER>\WebSphere\AppServer\profiles\<ServerName>\etc\DummyClientKeyFile.jks	%WAS_ENV%\
<WAS_SERVER>\WebSphere\AppServer\java\jre\lib\ext\ibmkeycert.jar	%SIS_HOME%\java\lib\ext

3 (SSL only) Import the SSL server certificates. You can use Certificate Management to import the certificates, or you can import the certificates manually.

- For details on importing certificates using Certificate Management, see "How to Import Server Certificates Using Certificate Management" in *Using SiteScope*.
- For details on importing certificates manually, see "Import Server Certificates Manually for WebSphere 7.0x" on page 861.

4 After importing the server certificates, modify the **%SIS_HOME%\java\lib\security\java.security** file as follows:

a Change it so that it reads:

```
# Default JSSE socket factories
ssl.SocketFactory.provider=com.sun.net.ssl.internal.ssl.SSLSocketFactoryImpl
ssl.ServerSocketFactory.provider=com.sun.net.ssl.internal.ssl.SSLServerSocket
FactoryImpl
```

b Add the following additional provider to the list of providers, where N is the number of the next provider in the list:

```
## List of providers and their preference orders (see above):
#
<all existing providers>
security.provider.N=com.ibm.crypto.provider.IBMJCE
```

5 Restart the SiteScope server.

6 Continue with step 2 on page 854.

Configure the WebSphere 7.0x Server Environment Using External Java

To enable monitoring WebSphere version 7.0x, you must configure the server environment.

Note: This task is part of a higher-level task. For details, see "How to Configure the WebSphere 7.0x Application Server Monitoring Environment" on page 854.

To configure the WebSphere 7.0x server environment using external Java:

1. On the SiteScope machine, create a directory and give it a name, for example, C:\WAS_7. This directory is referred to as %WAS_ENV% (you should replace all appearances of %WAS_ENV% with the actual value).
2. Copy the following contents from WebSphere Application Server to the SiteScope machine:

From WebSphere Application Server:	To SiteScope machine:
<WAS_SERVER>\java\***.*	%WAS_ENV%\java\***.*
<WAS_SERVER>\runtimes\com.ibm.ws.admin.client_7.0.0.jar	%WAS_ENV%\com.ibm.ws.admin.client_7.0.0.jar
<WAS_SERVER>\plugins\com.ibm.ws.runtime.jar	%WAS_ENV%\com.ibm.ws.runtime.jar
<WAS_SERVER>\WebSphere\AppServer\profiles\<ServerName>\etc\DummyClientTrustFile.jks	%WAS_ENV%\
<WAS_SERVER>\WebSphere\AppServer\profiles\<ServerName>\etc\DummyClientKeyFile.jks	%WAS_ENV%\

3. (SSL only) Using Internet Explorer 6 or 7, export the SSL certificate to **%WAS_ENV%\was_certificate.cert** (in base-64 format).

   a. Download the server certificate by double-clicking the key lock icon in Internet Explorer when there is an SSL connection. The icon is located in the status bar for Internet Explorer 6, and to the right of the URL field for Internet Explorer 7 (the field is marked red when self-signed certified is used by the server).

   b. In the Certificate dialog box, select the **Details** tab, and click **Copy to File**.

   c. In the Certificate Export Wizard, export the server certificate as **Base-64 encoded X.509 (.CER)** certificate.

4. (SSL only) Import the certificate to the **cacerts** file in the above java folder as follows:

   ```
   %WAS_ENV%\java\bin\keytool -import -v -file %WAS_ENV%\was_certificate.
   cert -alias was_cert  -keystore %WAS_ENV%\java\jre\lib\security\cacerts
   ```

   When prompted for the password, type changeit (default password for JRE).

   When asked if you trust the imported certificate, type yes.

5 Modify the **%WAS_ENV%\java\jre\lib\security\java.security** file so that it reads as follows:

```
== FROM==
# Default JSSE socket factories
#ssl.SocketFactory.provider=com.ibm.jsse2.SSLSocketFactoryImpl
#ssl.ServerSocketFactory.provider=com.ibm.jsse2.SSLServerSocketFactoryImpl
# WebSphere socket factories (in cryptosf.jar)
ssl.SocketFactory.provider=com.ibm.websphere.ssl.protocol.SSLSocketFactory
ssl.ServerSocketFactory.provider=com.ibm.websphere.ssl.protocol.SSLServer
SocketFactory

==TO==
# Default JSSE socket factories
ssl.SocketFactory.provider=com.ibm.jsse2.SSLSocketFactoryImpl
ssl.ServerSocketFactory.provider=com.ibm.jsse2.SSLServerSocketFactoryImpl
# WebSphere socket factories (in cryptosf.jar)
#ssl.SocketFactory.provider=com.ibm.websphere.ssl.protocol.SSLSocketFactory
#ssl.ServerSocketFactory.provider=com.ibm.websphere.ssl.protocol.SSLServer
SocketFactory
```

6 Restart the SiteScope machine.

7 Continue with step 2 on page 854.

Import Server Certificates Manually for WebSphere 7.0x

Instead of using Certificate Management, you can import certificates manually using the keytool method, if preferred. Certificates imported this way can still be managed using Certificate Management. For details on Certificate Management, see "Certificate Management" in *Using SiteScope*.

Note: This task is part of a higher-level task. For details, see "How to Configure the WebSphere 7.0x Application Server Monitoring Environment" on page 854.

To import server certificates manually:

1. Using Internet Explorer 6 or 7, export the SSL certificate to **%WAS_ENV%\was_certificate.cert** (in base-64 format).

   a. Download the server certificate by double-clicking the key lock icon in Internet Explorer when there is an SSL connection. The icon is located in the status bar for Internet Explorer 6, and to the right of the URL field for Internet Explorer 7 (the field is marked red when self-signed certified is used by the server).

   b. In the Certificate dialog box, select the **Details** tab, and click **Copy to File**.

   c. In the Certificate Export Wizard, export the server certificate as **Base-64 encoded X.509 (.CER)** certificate.

2. Import the certificate to the **cacerts** file in the SiteScope java folder as follows:

   ```
   %SIS_HOME%\java\bin\keytool -import -v -file %WAS_ENV%\was_certificate.cert -
   alias was_cert -keystore %SIS_HOME%\java\lib\security\cacerts
   ```

   When prompted for the password, type changeit (default password for JRE).

   When asked if you trust the imported certificate, type yes.

3. Continue with step 4 on page 857.

Reference

WebSphere Application Server Monitor Settings

The WebSphere Application Server monitor enables you to monitor the availability and server statistics of an IBM WebSphere Application Server 3.5.x, 4.x, 5.x, 6.0x, 6.1x, and 7.0x.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	➤ "How to Configure the WebSphere 3.5x and 4.x Application Server Monitoring Environment" on page 834 ➤ "How to Configure the WebSphere 5.x Application Server Monitoring Environment" on page 836 ➤ "How to Configure the WebSphere 6.0x Application Server Monitoring Environment" on page 838 ➤ "How to Configure the WebSphere 6.1x Application Server Monitoring Environment" on page 846 ➤ "How to Configure the WebSphere 7.0x Application Server Monitoring Environment" on page 854 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "WebSphere Application Server Monitor Overview" on page 832

WebSphere Monitor Settings

User interface elements are described below:

UI Element	Description
Target	Logical name of the server you want to monitor. If this box is left empty, the host name entered above is used.
Server	Name of the server where the WebSphere Application Server you want to monitor is running. **Note:** Do not include backslashes in the name.
Launch an external JVM	External JVMs are used for monitoring. By default, the WebSphere monitor uses internal JVMs. External JVMs consume greater resources, take longer to start up, and have bad error handling. **Note:** You cannot use certificates added using Certificate Management if this setting is selected. **Default value:** Not selected (if upgrading from previous versions of SiteScope, this check box is selected automatically during the upgrade for existing monitors).
Port number	Port number for the SOAP. **Default value:** 8880
Credentials	User name and password required to access the WebSphere Application Server. Select the option to use for providing credentials: ➤ **Use user name and password.** Select this option to manually enter user credentials. Enter the user name and password in the **User name** and **Password** box if one has been configured. ➤ **Select predefined credentials.** Select this option to have SiteScope automatically supply a predefined user name and password (selected by default). Select the credential profile to use from the **Credential profile** drop-down list, or click **Add Credentials** and create a new credential profile. For details on how to perform this task, see "How to Configure Credential Preferences" in *Using SiteScope*.

UI Element	Description
Security realm	(For WebSphere 3.5 users) The security realm of the WebSphere application server.
Version	Version of the WebSphere application you are monitoring (3.5x, 4.x, 5.x, 6.0x, 6.1x, 7.0x). **Default value:** 3.5x
WebSphere directory	➤ For 3.x: Path to a WebSphere 3.5x Directory. The directory you enter here should contain at least a valid Admin Client installation. ➤ For 6.x: Path to the AppServer directory. **Default value:** C:\WebSphere\AppServer
Client properties file	Name of the custom client properties file. **Default value:** soap.client.props (use the default for version 6.x)
Classpath	Additional classpath variables that are to be used by the WebSphere JVM running on the SiteScope machine.
Timeout (seconds)	Amount of time, in seconds, that the monitor should wait for a response from the server. If a response is not received within the interval of the timeout, the monitor reports a timeout error. **Default value:** 60 seconds
Trust store	Full directory path of file **DummyClientTrustFile.jks**. The trust file is typically used to store signer certificates, which specify whether the signer of the server's certificate is trusted. This file is in the client monitor directory on the SiteScope machine. **Default value:** C:\WebSphere\AppServer\profiles\default\etc\DummyClientTrustFile.jks
Trust store password	Password for the SSL trust store file. **Default value:** WebAS

UI Element	Description
Key store	Full directory path of file **DummyClientKeyFile.jks**. This file is typically used to store personal certificates, including private keys. This file is in the client monitor directory on the SiteScope machine. **Default value:** C:\WebSphere\AppServer\profiles\default\etc\DummyClientTrustFile.jks
Key store password	Password for the SSL key store file. **Default value:** WebAS The values for **Trust Store**, **Trust Store Password**, **Key Store**, and **Key Store Password** are automatically configured and can be found in the following directories: ➤ On Windows platform, in **<drive>:\WebSphere\AppServer\etc\** ➤ On Solaris platform, in **/opt/WebSphere/AppServer/etc/** ➤ On Linux platform, in **/opt/IBMWebAS/etc/** For more information about Key Store passwords, refer to the IBM Information Center (http://publib.boulder.ibm.com/infocenter/wasinfo/v4r0/index.jsp?topic=/com.ibm.websphere.v4.doc/wasa_content/050703.html) and search for SSL configuration.
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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WebSphere MQ Status Monitor

This chapter includes:

Concepts

WebSphere MQ Status Monitor Overview

Use the WebSphere MQ Status monitor to monitor the performance attributes of MQ Objects: channels and queues, on MQ (formerly known as MQSeries) Servers 5.2, 5.3, 5.3.1, 6.0, 7.0, and 7.0.1. You can monitor both performance attributes and events for channels and queues.

Note: The WebSphere MQ Status monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP sales representative for more information.

You can set the error and warning thresholds for the WebSphere MQ Status monitor on as many as fifteen function measurements.

For task details, see "How to Configure the WebSphere MQ Status Monitoring Environment" on page 871.

For user interface details, see "WebSphere MQ Status Monitor Settings" on page 875.

This section contains the following topics:

- "Setup Requirements" on page 869
- "Monitoring MQ Events" on page 869
- "Authentication" on page 870

Setup Requirements

This monitor requires two IBM MQ SupportPacs to be downloaded from the IBM Web site and installed on the machine where the SiteScope server is running. For details on how to perform this task, see "How to Configure the WebSphere MQ Status Monitoring Environment" on page 871.

Monitoring MQ Events

For events, two system queues are regularly polled for the presence of relevant events:

- SYSTEM.ADMIN.PERFM.EVENT - for queue performance events
- SYSTEM.ADMIN.CHANNEL.EVENT - for channel events

On each scheduled run of the MQ monitor (which contain event counters), one or both of these system queues are queried for the presence of events that match the chosen event type, the source queue or channel that generated the event, and its queue manager. Events found are only browsed and not removed from the queue, so such events can continue to be consumed by other applications, if necessary. On each run the MQ monitor reports the number of event occurrences found since the last run of the monitor.

The monitor strives not to report the same event occurrence more than once. This is accomplished by recording the timestamp of the most recent event browsed, so that in the next monitor run any events encountered that were generated prior to this recorded timestamp are ignored.

Enabling Queue Events on the MQ Server

By default, queue performance events are unavailable in the MQ server. For SiteScope to monitor these events, enable the MQ server to create these events. A MQSC command must be issued on each queue and for each event to be enabled. In addition, required threshold values must be set on each queue and for each event that specify the conditions for generating the event. Consult the IBM MQ MQSC Command Reference for more information. Channel events are always enabled and require no further action for them to operate.

Specifying Alternate Queue Managers

It is possible to set up an MQSeries environment such that events from remote queue managers are routed to a central queue manager for monitoring. If the event configured for monitoring by the user is from a remote queue manager (a queue manager other than the one identified in **Queue manager** of the MQ Status Monitor Settings panel), it must be specified in the **Alternate queue manager** text box.

Authentication

Your MQ server may require SiteScope to authenticate itself when connecting to retrieve metrics. A function has been built into this monitor to run a user-developed, client-side security exit written in Java.

To use this function, specify the fully-qualified class name of the security exit component in file <**SiteScope root directory**>**\groups\master.config**. For example,

```
_mqMonitorSecurityExit=com.mycompany.mq.MyExit
```

where the security exit class is called com.mycompany.mq.MyExit.

Make sure this class is in the classpath of the running SiteScope JVM by copying your security exit class into <**SiteScope root directory**>**\java\lib\ext**. You can only deploy one security exit class for a SiteScope instance, and every MQ monitor running on that instance runs that security exit.

In the case of a Windows-based SiteScope instance monitoring a Windows-based MQ server, the default authentication scheme requires that SiteScope be running under a user account that is recognized by the target server's Windows security group. Specifically, the SiteScope user must be added to the server's mqm group.

For information about MQ security exits and other authentication schemes, consult the IBM WebSphere MQ documentation.

Tasks

How to Configure the WebSphere MQ Status Monitoring Environment

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Download and install the IBM MQ 7.0 SupportPacs (when monitoring using WebSphere MQ 7.0 libraries)" on page 871
- "Download and install the IBM MQ 6.0 SupportPacs (when monitoring using WebSphere MQ 6.0 libraries)" on page 872
- "Deploy a security exit class (if MQ server requires SiteScope authentication)" on page 873
- "Configure the monitor properties" on page 873

1 Download and install the IBM MQ 7.0 SupportPacs (when monitoring using WebSphere MQ 7.0 libraries)

a Download the WebSphere MQ V7.0 client from the IBM Web site (http://www-01.ibm.com/support/docview.wss?rs=171&uid=swg24019253) and install it on the machine where the SiteScope server is running.

Follow the instructions for installing the support pack.

b Stop SiteScope.

c Copy the following jars from the installed MQ directory (**IBM\WebSphere MQ\java\lib**) to the <**SiteScope root directory**>**java****lib****ext** folder.

- **com.ibm.mq.commonservices.jar**
- **com.ibm.mq.headers.jar**
- **com.ibm.mq.jar**
- **com.ibm.mq.jmqi.jar**
- **connector.jar**

d Restart SiteScope.

2 Download and install the IBM MQ 6.0 SupportPacs (when monitoring using WebSphere MQ 6.0 libraries)

a Download the WebSphere ms0b support pack from the IBM Web site (http://www-01.ibm.com/support/docview.wss?uid=swg24000668) and install it on the machine where the SiteScope server is running.

Follow the instructions for installing the support pack.

b Stop SiteScope.

c Copy **com.ibm.mq.pcf-6.1.jar** from **ms0b.zip** to the <**SiteScope root directory**>**java****lib****ext** folder.

d Copy the following files from the installed MQ client to the <**SiteScope root directory**>**java****lib****ext** folder.

- **com.ibm.mq.jar**
- **connector.jar**

e Restart SiteScope.

3 Deploy a security exit class (if MQ server requires SiteScope authentication)

If the MQ server requires SiteScope to authenticate itself when connecting to retrieve metrics, specify the fully-qualified class name of the security exit component in file **<SiteScope root directory>\groups\master.config**. For example,

```
_mqMonitorSecurityExit=com.mycompany.mq.MyExit
```

where the security exit class is called com.mycompany.mq.MyExit.

Make sure this class is in the classpath of the running SiteScope JVM by copying your security exit class into **<SiteScope root directory>\java\lib\ext**. You can deploy only one security exit class for a SiteScope instance, and every MQ monitor running on that instance runs that security exit.

Note: For a Windows-based SiteScope instance monitoring a Windows-based MQ server, the default authentication scheme requires that SiteScope be running under a user account that is recognized by the target server's Windows security group. Specifically, the SiteScope user must be added to the server's mqm group.

For information about MQ security exits and other authentication schemes, consult the IBM WebSphere MQ documentation.

4 Configure the monitor properties

Configure the WebSphere MQ Status monitor settings as required.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "WebSphere MQ Status Monitor Settings" on page 875.

Reference

Channel Status Codes

You can choose from two different reporting schemes for Channel status code values:

- **IBM MQ coding scheme.** Report the actual or original channel status codes as documented in the IBM MQ literature.
- **HP coding scheme.** Report channel status codes in ascending values that are directly proportional to the health of the channel. That is, SiteScope reports a channel status value from 0 (least healthy) to 6 (healthiest). This scheme is consistent with how other HP products report MQ channel status codes. However this scheme provides less gradients than the IBM scheme, as shown in the table below:

MQ Channel Status	MQ Coding Scheme	HP Coding Scheme
Stopped	6	0
Paused	8	0
Inactive	-1	0
Initializing	4	1
Stopping	13	1
Starting	2	2
Retrying	5	3
Requesting	7	4
Binding	1	5
Running	3	6
Stopped	6	0

You can select the required coding scheme in the **Channel status code scheme** box under WebSphere MQ Status Monitor Settings.

WebSphere MQ Status Monitor Settings

The WebSphere MQ Status monitor enables you to monitor the performance attributes of MQ Objects (channels and queues) on MQ Servers. Both performance attributes and events for channels and queues can be monitored.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 869. ➤ This monitor is an optional SiteScope function. Additional licensing is required to enable this monitor type in the SiteScope interface. Contact your HP Sales representative for more information.
Relevant tasks	➤ "How to Configure the WebSphere MQ Status Monitoring Environment" on page 871 ➤ "How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "WebSphere MQ Status Monitor Overview" on page 868

WebSphere MQ Status Monitor Settings

User interface elements are described below:

UI Element	Description
MQ server name	Host name of the MQ Server you want to monitor. Enter the network name of the server or the IP address of the server. **Example:** mqmachinename
MQ server port	Port number of the target MQ Server. **Default value:** 1414
Server connection channel	Name of the server connection channel of the target MQ server. Check with the MQ Server administrator for the name syntax of the server connection channel.

UI Element	Description
Queue manager	Name of the queue manager whose queues or channels are to be monitored.
User name	User name for the MQ Server you want to monitor. To connect to the server using the SiteScope user, leave this field and the **Password** empty.
Password	Password for the MQ Server you want to monitor. To connect to the server using the SiteScope user, leave this field and the **User name** empty.
Alternate queue manager	(Optional) An alternate queue manager name that has been set up to forward its events to the primary queue manager specified above if you are also interested in monitoring those events.
Channel status code scheme	Select a reporting schemes for Channel Status Code values, and click **Apply**. ➤ **Use HP coding scheme.** Report the actual or original channel status codes as documented in the IBM MQ literature. ➤ **Use IBM MQ coding scheme.** Report channel status codes in ascending values that are directly proportional to the health of the channel. SiteScope reports a channel status value from 0 (least healthy) to 6 (healthiest). For details, see "Channel Status Codes" on page 874.

UI Element	Description
Available Measurements	Displays available MQ queue instances and channel instances, and counters to choose from. In the **Objects** drop-down list, select either **Queue** or **Channel Objects** to work with. After an object is selected, a connection to the MQ server is made. A list of available queues or channels is displayed, both system and user instances, depending on the object type selected. Select the instances and counters you want to monitor, and click the **Add Selected Measurements** ➡ button. The selected measurements are moved to the Selected Measurements list.
Selected Measurements	Displays the measurements currently selected for this monitor, and the total number of selected counters. To remove measurements selected for monitoring, select those measurements, and click the **Remove Selected Measurements** ⬅ button. The measurements are moved to the Available Measurements list.

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WebSphere Performance Servlet Monitor

This chapter includes:

Concepts

Reference

Concepts

WebSphere Performance Servlet Monitor Overview

Use the WebSphere Performance Servlet Monitor to monitor the server performance statistics for IBM WebSphere 3.0x, 3.5, 3.5.x, 4.0, 5. 0, 5.1, 5.1.1, 6.0, 6.0.1, 6.0.2, 6.1, and 7.0 servers. You can monitor multiple parameters or counters with a single monitor instance. This enables you to watch server loading for performance, availability, and capacity planning.

Create a separate WebSphere Performance Servlet Monitor instance for each WebSphere Application Server in your environment. The error and warning thresholds for the monitor can be set on one or more performance statistics.

For details on configuring the monitor, see "WebSphere Performance Servlet Monitor Settings" on page 882.

Setup Requirements

The following are several key requirements for using the WebSphere Performance Servlet Monitor:

- The WebSphere Performance Servlet is an optional component for WebSphere 3.0x and 3.5x versions. The performance servlet must be installed on WebSphere servers to use this monitor. A patch needs to be applied according to which WebSphere 3.x version you are monitoring.
- The WebSphere Performance Servlet must be installed on each WebSphere 3.x server you want to monitor. The files should be copied to the **hosts\default_host\default_app\servlets** subdirectory on each WebSphere server machine. The files needed per version are as follows:

Version	Files
3.02	xml4j.jar performance.dtd perf.jar
3.5	perf35.jar
3.5.2, 3.5.3	perf35x.jar

- The WebSphere Performance Servlet included as part of WebSphere 4.0 must be deployed. If you are running WebSphere 4.0 servers, only one instance of the servlet needs to be deployed to monitor one or more WebSphere 4.0 servers.
- Verify that the servlet is running properly and that the performance data is generated. One way to do this is to try to display it through an XML enabled browser. The servlet URL should be in the following format:

  http://<server:port:>/<dir_alias>/com.ibm.ivb.epm.servlet.PerformanceServlet

  For example,
  http://wbs.company.com:81/servlet/com.ibm.ivb.epm.servlet.Performance
  Servlet

Reference

WebSphere Performance Servlet Monitor Settings

This monitor enables you monitor the server statistics of IBM WebSphere Server by using a WebSphere Performance Servlet.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ Before configuring the monitor, make sure you have the necessary "Setup Requirements" on page 881. ➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "WebSphere Performance Servlet Monitor Overview" on page 880

WebSphere Performance Servlet Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
Server	Name of the server you want to monitor. On UNIX servers, enter the full path of the server.
Secure server	Select if the server being monitored is secure. **Default value:** Not selected

UI Element	Description
Target	Logical name of the server that is the target of this monitor instance. Depending on the deployment of the WebSphere application in your infrastructure, this may be the same as the **Server** selected above. **Default value:** Empty (the host name is used)
Port	Port number to the WebSphere server you want to monitor.
Servlet URL	URL of the performance servlet. For WebSphere versions 3.x.x, the URL can be viewed by using the Servlet Properties page in the WebSphere Admin Console. For WebSphere 4.0, the default URL is /wasPerfTool/servlet/perfservlet. In earlier versions, the URL is chosen during the installation of the servlet. For WebSphere 6.0 and later, use the URL: /wasPerfTool/servlet/perfservlet?version=5. In either case, the URL can be found in the Servlet properties page of the Admin Console.
User name	User name if the URL requires authorization.
Password	Password if the URL requires authorization.
Advanced Settings	
Timeout (seconds)	Amount of time, in seconds, that the monitor should wait for a response from the Performance Servlet. If a response is not received within the interval of the timeout, the monitor reports a timeout error. **Default value:** 60 seconds
Refresh frequency	Time interval at which the WebSphere server should update the metrics that are requested by this monitor. This value should be equal to or less than the **Frequency** time interval for the monitor in Monitor Run Settings. **Default value:** 10 minutes

UI Element	Description
Proxy Settings	
HTTP proxy	Name of the proxy server if required.
Proxy user name	Proxy server user name if required to access the server. **Note:** Your proxy server must support Proxy-Authenticate for these options to function.
Proxy password	Proxy server password if required to access the server.
WebSphere Performance Counters	
Counters	Displays the server performance counters selected for this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

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XML Metrics Monitor

This chapter includes:

Concepts

Reference

Concepts

XML Metrics Monitor Overview

Use the XML Metrics monitor to monitor metrics for systems that make performance data available in the form of an XML file or page. The XML Metrics monitor gathers information from a source, organizes it into a browsable tree structure, and enables you to choose which items in the tree should be monitored. It works by requesting an XML file that is accessible by an URL. When the monitor runs, the XML metrics file is parsed to extract values for each of the counters selected during setup.

The XML metrics must be in a format where each metric is a separate, unique entity in the tree/leaf format. An optional XSL facility can help with formatting.

The error and warning thresholds for the monitor can be set on one or more different objects.

For details on configuring the monitor, see "XML Metrics Monitor Settings" on page 888.

XML Requirements

A monitor instance must be defined and run against the same XML metrics file format. That is, when running this monitor, SiteScope expects the XML file it is monitoring to have the same format that was used when defining that monitor.

SiteScope parses the input XML content according to the following assumptions:

- The XML content has only one root node. This means that all of the XML content is encapsulated within a single parent element and not multiple instances of a repeating root element.
- A leaf node, an element containing only character data and no child elements, is considered a counter and must be of the form:

  ```
  <node_tag>node_value</node_tag>
  ```

  where <node_tag> becomes the counter name, and <node_value> is reported as the counter value.
- Each leaf node (and therefore each counter) must have a unique path within the hierarchy of the XML content.
- The XML metric file should contain at least one leaf node.

If your XML metric file does not conform to these rules, you can specify an XSLT (eXtensible Stylesheet Language: Transformations) file that transforms your XML file into a file that does conform. Such a file usually has a file extension of .xsl.

If you need to develop a XSLT file to transform the XML content for this monitor, SiteScope includes a Tools page you can use to verify the transformation output. For more information, see the section "XSL Transformation Tool" in *Using SiteScope*.

Reference

XML Metrics Monitor Settings

The XML Metrics monitor enables you to monitor metrics for systems that make performance data available in the form of an XML file or page.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ When deploying this monitor using a template, an error message is displayed if you clear the **Verify monitor properties with remote server** check box in the Deployment Values dialog box. ➤ The **XSL Transformation Tool** is available when configuring this monitor to test a user defined XSL file that can be used to transform an XML file or output (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "XSL Transformation Tool" in *Using SiteScope*.
Relevant tasks	"How to Deploy a Monitor" in *Using SiteScope*
See also	➤ "XML Metrics Monitor Overview" on page 886

XML Metrics Monitor Settings

User interface elements are described below:

UI Element	Description
Main Settings	
XML URL	URL of the XML page or file that contains the metrics that you want to monitor.

UI Element	Description
XSL file	Convert the XML metrics file into a format that SiteScope can use.
Authorization NTLM domain	Domain for NT LAN Manager (NTLM) authorization if it is required to access the URL.
Pre-emptive authorization	Option for sending Authorization user name and Authorization password if SiteScope requests the target URL: ➤ **Use global preference.** SiteScope uses the authenticate setting as specified in the Pre-emptive authorization section of the General Preferences page. This is the default value. ➤ **Authenticate first request.** Sends the user name and password on the first request SiteScope makes for the target URL. **Note:** If the URL does not require a user name and password, this option may cause the URL to fail. ➤ **Authenticate if requested.** Sends the user name and password on the second request if the server requests a user name and password. **Note:** If the URL does not require a user name and password, this option may be used. All options use the **Authorization user name** and **Authorization password** entered for this monitor instance. If these are not specified for the individual monitor, the **Default authentication user name** and **Default authentication password** specified in the Main section of the General Preferences page are used, if they have been specified. **Note:** Pre-emptive authorization does not control if the user name and password should be sent, or which user name and password should be sent.
Timeout (seconds)	Amount of time, in seconds, to wait for the XML page to complete downloading before timing-out. Once this time period passes, the monitor logs an error and reports an error status. **Default value:** 60 seconds

UI Element	Description
Authentication Settings	
Authorization user name	Authorization user name to access the URL with the XML content, if required.
Authorization password	Authorization password to access the URL with the XML content, if required.
Proxy server	Host or domain name and port of the proxy server if using a proxy server to access the XML URL.
Proxy server user name	Proxy server user name if you using a proxy server and the proxy requires a name and password to access the target URL. **Note:** The proxy server must support Proxy-Authenticate for these options to function.
Proxy server password	Proxy server password if you using a proxy server and the proxy requires a name and password to access the target URL. **Note:** The proxy server must support Proxy-Authenticate for these options to function.
Accept untrusted certificates for HTTPS	Select if you need to use certificates that are untrusted in the cert chain to access the target XML URL using Secure HTTP (HTTPS). **Default value:** Not selected
Accept invalid certificates for HTTPS	Select if you need to accept an invalid certificate to access the target XML URL using Secure HTTP (HTTPS). This may happen, for example, if the current date is not in the date ranges specified in the certificate chain. **Default value:** Not selected

UI Element	Description
Counter Settings	
Counters	Displays he server performance counters you want to check with this monitor. Use the **Get Counters** button to select counters.
Get Counters	Opens the Get Counters dialog box, enabling you to select the counters you want to monitor. **Note when working in template mode:** The maximum number of counters that you can select is 100. If you import a template monitor from an earlier version of SiteScope, or perform a copy to template action, the number of counters is not limited.

Part II

Integration Monitors (A-Z)

98

HP OM Event Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

HP OM Event Monitor Overview

The HP OM Event Monitor enables you to integrate an existing HP Operations Manager (OM) Server with BSM by transferring HP OM events from an HP OM Server to a BSM server.

Note:

- The HP OM Event monitor is not available when SiteScope is connected to BSM version 9.00 or later (unless the monitor was created in an earlier version of SiteScope that was upgraded to SiteScope 11.10). OM events can be forwarded to BSM 9.00 from the HP OM Server, provided you have an Event Management Foundation license and an integration is configured per the instructions in the *HP Business Service Management Deployment Guide* PDF in the HP Business Service Management Documentation Library.
- This monitor supports English only. It does not support I18N mode.

The HP OM Event monitor depends on an HP OM Integration Add-on module to collect events from the HP OM Server. The Add-on, when installed on the HP OM Server, listens to events received by the HP OM system and sends them to the HP OM Event Monitor. The HP OM Event Monitor transfers the events to an BSM server. The HP OM Integration Add-on and the HP OM Event Monitor communicate using TCP/IP networking (with a customizable TCP port).

The HP OM Event monitor uses a predefined configuration file, **<SiteScope root directory>\conf\ems\hp\event.config**, to define the processing of incoming data and to define the output sample forwarded to BSM. Do not modify this configuration file.

For task details, see "How to Work with the HP OM Integration Add-on (UNIX Platforms)" on page 898 and "How to Work with the HP OM Integration Add-on (Windows Platforms)" on page 905. For user interface details, see "HP OM Event Monitor Settings" on page 911.

This section also includes:

- "Supported Versions" on page 897
- "Status" on page 897

Supported Versions

This monitor supports:

- HP OM versions 8.24 or later, when installed on Solaris 5.7 and later or when installed on HP UX 11.11 or HP UX 11.23.
- HP OM versions 9.0 or later when installed on Red Hat Linux.
- HP OM versions 7.5 or later when installed on Windows.

Status

The status returned by the monitor is the current value of the monitor, such as:

```
Status: GOOD
Status Summary: 10 events received, connected Add-ons: 1
```

The status is logged as either good, warning, or error. A warning status is returned if no Add-on is connected to the monitor.

The status can be configured further using advanced options in the HP OM Alert Monitor Configuration Form.

For information about Integration Monitor logging and troubleshooting, see "Integration Monitor Logs" and "Troubleshooting and Limitations" (Working with SiteScope Integration Monitors) in *Using SiteScope*.

Tasks

How to Work with the HP OM Integration Add-on (UNIX Platforms)

The purpose of the HP OM Integration Add-on is to connect to the HP OM message infrastructure, to receive events from the HP OM, and to forward these events to the SiteScope machine.

Note: The HP OM Integration Add-on module is platform specific. Modules are provided for all platforms supported by OM/UNIX version 8.24.

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Install the HP OM integration add-on" on page 899
- "Configure the HP OM integration add-on" on page 900
- "Tune the HP OM integration add-on" on page 901
- "Start and stop the HP OM integration add-on" on page 903
- "Uninstall the HP OM integration add-on files from the HP OM server" on page 903
- "Support in HP OM cluster installation" on page 904
- "View log file messages" on page 904

1 Install the HP OM integration add-on

Installation packages for the various platforms used below is in **<SiteScope root directory>\conf\ems\hp\addon\OVO-BAC.zip** file.

On HP-UX 11.11 platforms:

- Log on as superuser to the HP OM Server. Alternatively, use the su command to gain superuser permissions.
- Copy **HPOvOBac-01.00.000-HPUX11.0-release.depot** installation package to **\tmp**.
- Perform the following command:

```
swinstall -s /tmp/HPOvOBac-01.00.000-HPUX11.0-release.depot \*
```

On HP-UX 11.23 platforms:

- Log on as superuser to the HP OM Server. Alternatively, use the su command to gain superuser permissions.
- Copy **HPOvOBac-01.00.000-HPUX11.22_IPF32-release.depot** installation package to **\tmp**.
- Perform the following command:

```
swinstall -s /tmp/HPOvOBac-01.00.000-HPUX11.22_IPF32-release.depot
\*
```

On Solaris 5.7 or later platforms:

- Log on as user root to the HP OM Server. Alternatively, use the su command to gain super-user permissions.
- Copy **HPOvOBac-01.00.000-SunOS5.7-release.sparc** installation package to **\tmp**.
- Perform the following command:

```
pkgadd -d /tmp/HPOvOBac-01.00.000-SunOS5.7-release.sparc
HPOvOBac
```

2 Configure the HP OM integration add-on

Once installed, the HP OM Integration Add-on must be configured on the HP OM Server before it can be used.

a To configure the HP OM Integration Add-on on the HP OM Server, configure the host name or IP address of the SiteScope machine on which the HP OM Event Monitor is installed:

```
ovconfchg -ns opc.bac -set TargetHost <host name>
```

Note: Configure the port if you are using a port other than the default (9000):

```
ovconfchg -ns opc.bac -set TargetHost <host name> -set TargetPort <port>
```

If you change this setting, make sure to update the HP OM Event Monitor.

Tip: HP OM Integration Add-on for UNIX provides a function that improves performance of internal message processing. Enabling this function improves the performance of the HP OM Integration Add-on (and other OM components, such as the OM Java user interface). This function is disabled by default.

---

b To enable improved HP-OM Add-on performance on UNIX feature, on the HP OM Server, perform the following commands:

- ➤ opcsv -stop
- ➤ ovconfchg -ovrg server -ns opc -set OPCMSGM_USE_GUI_THREAD NO_RPC
- ➤ opcsv -start

3 Tune the HP OM integration add-on

You can tune the HP OM Integration Add-on by running utilities from the command line on the HP OM Server.

To check the current settings, perform the following command:
ovconfget opc.bac

To change a parameter, perform the following command:
ovconfchg -ns opc.bac -set <variable name> <value>
where <variable name> and <value> are in the following table:

Variable Name	Default Value	Description
TargetHost	<empty>	Host name of the SiteScope receiver. No connection is attempted if this is empty.
TargetPort	9000	Port number of the SiteScope receiver. No connection is attempted if this is 0.
CacheMax	1000	Maximum number of messages stored in cache memory to avoid database lookups.
CacheKeep	500	If cache size reaches CacheMax, only the most-recently-used messages in CacheKeep are kept in the cache. All others are removed from the cache.
Connection Timeout	300	If no new messages or message changes are transmitted to the SiteScope receiver, the connection is closed after this number of seconds.
MinWaitTime	15	If the connecting to the SiteScope receiver failed, the HP OM Integration Add-on waits this many seconds the first time after connection failure before retrying to connect. The wait time is doubled after each retry, up to MaxWaitTime.

Variable Name	Default Value	Description
MaxWaitTime	120	Maximum number of seconds to wait after connection failures before retry. When doubling the wait time after connection failures exceeds MaxWaitTime, the wait time is no longer doubled and MaxWaitTime is used instead.
MaxQueueLen	1000	If the connection to the SiteScope receiver has been lost and new messages or message changes come in, these messages and message changes are buffered in a memory queue. If the number of entries in that queue reaches MaxQueueLen, the oldest entries are removed from the queue.
NodeKeepTime	900	The HP OM Integration Add-on looks up IP addresses from host names. In addition, OM/Windows host names also need to be looked up from the OM database. These IP addresses (and host names on OM/Windows) are stored in a memory cache. Because host names and IP addresses of systems can be changed, entries in that cache are invalidated (and afterwards looked up again) after NodeKeepTime seconds.

Changing any of these variables automatically updates the HP OM Integration Add-on. There is no need to stop and restart the HP OM Integration Add-on process.

4 Start and stop the HP OM integration add-on

The HP OM Integration Add-on must be started after it is installed.

On UNIX platforms, the HP OM Integration Add-on is controlled by OpenView Control Daemon (ovcd). Using the command line tool **ovc** on the HP OM Server, perform the command:

```
ovc -stop <or start> opc2bac
```

If the HP OM Integration Add-on disconnects from SiteScope during operation, it tries to reconnect to the SiteScope at regular intervals. In the meantime, events are stored within the HP OM Integration Add-on.

If the HP OM Integration Add-on terminates from SiteScope during operation, the events not yet sent to SiteScope are lost.

Note: Because the Integration Add-on is linked with HP OM API libraries, it may be necessary to stop the Integration Add-on before installing HP OM patches, and start it after the patch installation.

5 Uninstall the HP OM integration add-on files from the HP OM server

If you must uninstall the HP OM Integration Add-on files from the HP OM Server, perform the following procedure:

On HP-UX platforms:

➤ Log on as superuser.

➤ Perform the command: `swremove HPOvOInt.HPOVOBAC`

On Solaris platforms:

➤ Log on as superuser.

➤ Perform the command: `pkgrm HPOvOBac`

6 Support in HP OM cluster installation

The HP OM Integration Add-on is supported in an HP OM cluster environment. You can do the following tasks:

- Install HP OM Integration Add-on on each cluster node separately.
- Configure HP OM Integration Add-on on each cluster node separately. All configuration settings on all cluster nodes must be identical.
- Uninstall HP OM Integration Add-on on each cluster node separately.

7 View log file messages

The HP OM Integration Add-on writes log messages into the log file **/var/opt/OV/logSystem.txt**.

Log file entries use the process name **opc2bac** for messages logged by the HP OM Integration Add-on.

How to Work with the HP OM Integration Add-on (Windows Platforms)

The purpose of the HP OM Integration Add-on is to connect to the HP OM message infrastructure, to receive events from the HP OM, and to forward these events to the SiteScope machine.

Note:

- The HP OM Integration Add-on module is platform specific. Modules are provided for all platforms supported by OM/Windows version 7.5.
- Added support to install the HP OM Integration Add-on module on a Windows Server R2 64-bit machine from the **OVO-BAC.zip** installation file.

This task describes the steps involved in configuring the monitoring environment.

This task includes the following steps:

- "Install the HP OM integration add-on" on page 899
- "Configure the HP OM integration add-on" on page 900
- "Tune the HP OM integration add-on" on page 901
- "Start and stop the HP OM integration add-on" on page 903
- "Uninstall the HP OM integration add-on files from the HP OM server" on page 903
- "Support in HP OM cluster installation" on page 904
- "View log file messages" on page 904

1 Install the HP OM integration add-on

Installation packages for the various platforms used below is in <**SiteScope root directory**>**\conf\ems\hp\addon\OVO-BAC.zip** file.

a Log on as user administrator to the HP OM Server.

b Copy **HPOvXpl-03.10.040-WinNT4.0-release.msi** and **HPOvOBac-01.00.000-WinNT4.0-release.msi** installation packages to **C:\tmp**. Perform the following commands:

- ➤ msiexec /I C:\tmp\HPOvXpl-03.10.040-WinNT4.0-release.msi /qn
- ➤ msiexec /I C:\tmp\HPOvOBac-01.00.000-WinNT4.0-release.msi /qn

2 Configure the HP OM integration add-on

Once installed, the HP OM Integration Add-on must be configured on the HP OM Server before it can be used. To configure the HP OM Integration Add-on on the HP OM Server, configure the host name or IP address of the SiteScope machine on which the HP OM Event Monitor is installed:
```
ovconfchg -ns opc.bac -set TargetHost <host name>
```

Note:

- ➤ Configure the port if you are using a port other than the default (9000):
  ```
  ovconfchg -ns opc.bac -set TargetHost <host name> -set TargetPort <port>
  ```
- ➤ If you change this setting, make sure to update the HP OM Event Monitor.

3 Tune the HP OM integration add-on

You can tune the HP OM Integration Add-on by running utilities from the command line on the HP OM Server.

To check the current settings, perform the following command:

```
ovconfget opc.bac
```

To change a parameter, perform the following command:

```
ovconfchg -ns opc.bac -set <variable name> <value>
```

where <variable name> and <value> are in the following table:

Variable Name	Default Value	Description
TargetHost	<empty>	Host name of the SiteScope receiver. No connection is attempted if this is empty.
TargetPort	9000	Port number of the SiteScope receiver. No connection is attempted if this is 0.
CacheMax	1000	Maximum number of messages stored in cache memory to avoid database lookups.
CacheKeep	500	If cache size reaches CacheMax, only the most-recently-used messages in CacheKeep are kept in the cache. All others are removed from the cache.
Connection Timeout	300	If no new messages or message changes are transmitted to the SiteScope receiver, the connection is closed after this number of seconds.
MinWaitTime	15	If the connecting to the SiteScope receiver failed, the HP OM Integration Add-on waits this many seconds the first time after connection failure before retrying to connect. The wait time is doubled after each retry, up to MaxWaitTime.

Variable Name	Default Value	Description
MaxWaitTime	120	Maximum number of seconds to wait after connection failures before retry. When doubling the wait time after connection failures exceeds MaxWaitTime, the wait time is no longer doubled and MaxWaitTime is used instead.
MaxQueueLen	1000	If the connection to the SiteScope receiver has been lost and new messages or message changes come in, these messages and message changes are buffered in a memory queue. If the number of entries in that queue reaches MaxQueueLen, the oldest entries are removed from the queue.
NodeKeepTime	900	The HP OM Integration Add-on looks up IP addresses from host names. In addition, OM/Windows host names also need to be looked up from the OM database. These IP addresses (and host names on OM/ Windows) are stored in a memory cache. Because host names and IP addresses of systems can be changed, entries in that cache are invalidated (and afterwards looked up again) after NodeKeepTime seconds.

Changing any of these variables automatically updates the HP OM Integration Add-on. There is no need to stop and restart the HP OM Integration Add-on process.

4 Start and stop the HP OM integration add-on

The HP OM Integration Add-on runs as a Windows service and must be started after it is installed. To start or stop the HP OM Integration Add-on on Windows platforms:

a On the HP OM Server, click **Start** > **Settings**> **Control Panel** > **Administrative Tools** > **Services**.

b Select the service **HP OpenView Operations Message Forwarder to BAC**.

c Click **Start** or **Stop**.

5 Uninstall the HP OM integration add-on files from the HP OM server

If you must uninstall the HP OM Integration Add-on files from the HP OM Server, perform the following procedure:

a On the HP OM Server, click **Start** > **Settings** > **Control Panel** > **Administrative Tools** > **Services**.

b Remove the following installed programs:

- HP OpenView Operations, BAC Integration
- HP OpenView Cross Platform Components (unless used by other installed programs). If this program is in use, you receive an error message and the removal fails.

6 Support in HP OM cluster installation

The HP OM Integration Add-on is supported in an HP OM cluster environment. You can do the following tasks:

- Install HP OM Integration Add-on on each cluster node separately.
- Configure HP OM Integration Add-on on each cluster node separately. All configuration settings on all cluster nodes must be identical.
- Uninstall HP OM Integration Add-on on each cluster node separately.

7 View log file messages

The HP OM Integration Add-on writes log messages into the **System.txt** log file in the <**DataDir**>**log** directory, where <DataDir> is the data directory chosen during OM/Windows installation (for example, C:\Program Files\HP OpenView\Data).

Log file entries use the process name **opc2bac** for messages logged by the HP OM Integration Add-on.

Reference

HP OM Event Monitor Settings

The HP OM Event Monitor enables you to integrate an existing HP OpenView installation with BSM by transferring HP OM messages from HP OM Server to an BSM server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	➤ The HP OM Event monitor is not available when SiteScope is connected to BSM version 9.00 or later (unless the monitor was created in an earlier version of SiteScope that was upgraded to SiteScope 11.10). OM events can be forwarded to BSM 9.00 from the HPOM server, provided you have an Event Management Foundation license and an integration is configured per the instructions in the *HP Business Service Management Deployment Guide* PDF in the HP Business Service Management Documentation Library. ➤ For script alerts to be sent to Operations Manager when using an OM script, the **Template** setting in Action Type Settings must be changed to **Default** (by default it is set to **Typical**).
Relevant tasks	➤ "How to Work with the HP OM Integration Add-on (UNIX Platforms)" on page 898 ➤ "How to Work with the HP OM Integration Add-on (Windows Platforms)" on page 905 ➤ "How to Deploy Integration Monitors" in *Using SiteScope*
See also	➤ "HP OM Event Monitor" on page 895

HP OM Event Monitor Settings

User interface elements are described below:

UI Element	Description
HP OM Add-on TCP port	TCP port number as configured in the HP OM Integration Add-on. **Default value:** 9000

Field Mapping

User interface elements are described below:

UI Element	Description
Field mapping	The out-of-the-box integration script that enables the monitor to correctly map the data it collects from the OM installation to a format recognizable by the monitor and BSM. The field mappings are not editable while configuring the monitor and we recommend that you use the out-of-the-box integration mappings. If you must customize the field mapping, locate the file in the following location and edit it in your preferred text editor: **<SiteScope root directory>\conf\ems\hp\event.config**. To enable any changes, you must edit the monitor to reload the edited script. For details on the field mapping script template, see "Integration Monitor Field Mapping" in *Using SiteScope*.

Topology Settings

User interface elements are described below:

UI Element	Description
Script	The out-of-the-box integration script that creates a topology in BSM that is based on the data collected from the OM installation. The script is based on the Jython scripting language (Python enabled by Java) and enables the integration between the data the monitor collects from the OM system and BSM's applications. We recommend that you use the topology settings as is and it is not editable while creating the monitor. If you must customize the field mapping, locate the following file: **<SiteScope root directory>\discovery\scripts\ems_hpovo.py** and edit it in your preferred text editor. To enable any changes, you must edit the monitor to reload the edited script. For more details on editing the script, see "Editing the Topology Script" in *Using SiteScope*.

99

HP Service Manager Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

HP Service Manager Monitor Overview

The HP Service Manager Monitor enables you to integrate Incident Management data from an HP ServiceCenter or HP Service Manager installation with BSM. In general, this chapter uses the name Service Manager when referring to both ServiceCenter and Service Manager. If there are specific differences, they are noted.

Note: SiteScope also provides a solution template that includes a set of predefined monitors to create a monitoring solution for various services and aspects of a Service Manager environment. For details, see "HP Service Manager Solution Templates" on page 1139 in *Using SiteScope*.

Incident Management automates reporting and tracking an incident, or groups of incidents, associated with a business enterprise. Incident Management enables you to identify types of incidents, such as software, equipment, facilities, network, and so on, and track the resolution process of these incidents.

The HP Service Manager monitor forwards business service-related incidents to BSM to create configuration items (CIs) based on those incidents. By default, CIs are created only for those incidents that are considered business service incidents in HP Service Manager. If necessary for your environment, you can configure the integration scripts to map other incidents as well.

The integration maps the incidents to the business service CIs created and creates a monitored by relationship between the HP Service Manager monitor CI and the business service CI. The monitor integrates the incident data into samples which are forwarded to BSM applications, such as Service Health and Service Level Management.

For more details on the capabilities of the integration, see "How to Integrate HP Service Manager with Business Service Management Components" in *Solutions and Integrations* in the HP Business Service Management Documentation Library.

For more detailed information on the CIs and related KPIs, see "Integration with HP Service Manager" in *Using Service Level Management* in the HP Business Service Management Documentation Library.

For task details, see "How to Work with the HP Service Manager Integration" on page 918.

For user interface details, see "HP Service Manager Monitor Settings" on page 922.

Supported Versions

This monitor supports:

- ServiceCenter 6.2.6
- Service Manager 7.01, 7.02, 7.11 and 9.20 (previously 7.2)

Tasks

How to Work with the HP Service Manager Integration

The following are the steps necessary to configure the integration:

- "Edit clocks and Incident Management configuration files" on page 918
- "Add or create the JAR file (if required)" on page 919
- "Configure an HP Service Manager monitor in SiteScope" on page 919

1 Edit clocks and Incident Management configuration files

If any changes were made to the clocks table, the incident management tables in HP Service Manager, or both, then the same changes must be made to the corresponding configuration files in SiteScope. The configuration files included with the integration are configured with the same parameters as the default tables in HP Service Manager. However, if these tables were changed in any way, they must be edited on the SiteScope side as follows:

a Access the files from the following location:

- **<SiteScope root directory>\conf\ems\peregrine\incidentAttributesMapping.config**
- **<SiteScope root directory>\conf\ems\peregrine\clockAttributesMapping.config**

b Edit the files using a text editor. Follow the mapping directions as documented in the files.

2 Add or create the JAR file (if required)

You can add or create the JAR file for this monitor as follows:

- For integrations with ServiceCenter 6.2.6 and HP Service Manager 7.0.x using default settings, no additional JAR configurations are required.
- For integrations with HP Service Manager 7.1 or 9.2 using default settings, you must copy the JAR file to the **WEB-INF\lib** directory and edit the configuration file. For details, see "Copy the JAR File" on page 920.
- For any integration with ServiceCenter or HP Service Manager that does not use the default configuration, you must create the JAR file. For details, see "Create the JAR File" on page 920.

Note: SiteScope cannot monitor HP Service Manager 7.1 and earlier versions of HP Service Manager at the same time, since they require different JARs and configurations.

3 Configure an HP Service Manager monitor in SiteScope

You can create this monitor:

- Using the EMS Integrations Administration portal in BSM.
- Directly in SiteScope.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For user interface details, see "HP Service Manager Monitor Settings" on page 922.

Copy the JAR File

1 To enable SiteScope to integrate with HP Service Manager 7.1 or 9.2 using default settings, copy the JAR file from **<SiteScope root directory>\conf\ems\peregrine\lib\<SM version>** to **<SiteScope root directory>WEB-INF\lib**.

2 Open the **incidentAttributesMapping.config** file located in **<SiteScope root directory>conf\ems\peregrine**, and change the line target_name=configurationItem to target_name=affectedItem.

Note: The **peregrine.jar** located in **<SiteScope root directory>conf\ems\peregrine\lib\6x-7.0x** can be used as backup for the out-of-the-box JAR.

Create the JAR File

This batch file creates and compiles the files needed for the HP Service Manager monitor. The result of this batch is the file **peregrine.jar** that is automatically copied to the **WEB-INF\lib** directory. You should also create a backup of the .jar file. To create the .jar file:

1 Stop the SiteScope service on the SiteScope machine.

2 Ensure that JDK version 1.5 is installed (1.5.0_08 recommended -- can be downloaded from Sun archives, http://java.sun.com/products/archive/).

3 Set **JAVA_HOME** system variable to the JDK directory (for example **C:\j2sdk1.5.0_08**). You must recompile the peregrine.jar file if you made changes to the monitor tables.

4 Update the <**SiteScope root directory**>**conf****ems****peregrine****build.properties** file with the wsdl locations.

- When integrating with HP ServiceCenter 6.2.6, use the following syntax:

  ```
  clocks.wsdl.url=http://<SM host>:<SM port>/sc61server/PW/Clocks?wsdl
  prob.wsdl.url=http://<SM host>:<SM port>/sc61server/PW/
  IncidentManagement?wsdl
  ```

- When integrating with Service Manager 7.x, use the following syntax:

  ```
  clocks.wsdl.url=http://<SM host>:<SM port>/sc62server/PWS/Clocks?wsdl
  prob.wsdl.url=http://<SM host>:<SM port>/sc62server/PWS/
  IncidentManagement?wsdl
  ```

5 Run the batch file:

- **Windows**: Double-click the <**SiteScope root directory**>**conf****ems****peregrine****create-peregrine-jar.bat** file to run the batch.
- **UNIX**: You must run the <**SiteScope root directory**>**conf****ems****peregrine****create-peregrine-jar.sh** file from the full path in a terminal window.

6 Restart the SiteScope service on the SiteScope machine.

Reference

HP Service Manager Monitor Settings

This monitor enables you to integrate HP Service Manager incidents with BSM. The incidents in Service Manager are forwarded to BSM as samples by this SiteScope monitor. The samples are used in reporting data to the BSM applications, such as Service Level Management and Service Health.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	Monitors must be created in a group in the monitor tree. We recommend that you create a special group for the Service Manager integration.
Relevant tasks	➤ "How to Work with the HP Service Manager Integration" on page 918 ➤ "How to Deploy Integration Monitors" in *Using SiteScope*
See also	➤ "HP Service Manager Monitor" on page 915

HP Service Manager Monitor Settings

User interface elements are described below:

UI Element	Description
HP Service Manager Web Service Endpoint	URL for the HP Service Manager Web Service. Use the following format: **<protocol>://<host_name>:<port>/** where **host_name** is the name of the Service Manager server and **port** is the port number of the Service Manager server. The URL syntax when integrating with Service Manager 7.01 and 7.02 is: **<protocol>://<SM host>:<SM port>/sc62server/PWS/** The URL syntax when integrating with Service Manager 6.2.6 is: **<protocol>://<SM host>:<SM port>/sc61server/PWS/**
Username	Designated user name created in HP Service Manager for the purpose of this integration monitor.
Password	Password of the designated user created in HP Service Manager for the purpose of this integration monitor.
Field Mapping	The out-of-the-box integration script that enables the monitor to correctly map the data it collects from the Service Manager installation to a format recognizable by the monitor and BSM. The field mappings are not editable while configuring the monitor and we recommend that you use the out-of-the-box integration mappings. If you must customize the field mapping, locate the following file: **<SiteScope root directory>\conf\ems\peregrine\ticket.config** and edit it in your preferred text editor. To enable any changes, you must edit the monitor to reload the edited script. For details on the field mapping script template, see "Integration Monitor Field Mapping" in *Using SiteScope*.

UI Element	Description
Test Script	Tests the field mapping script. We recommend that you test the script before running the monitor. This test gives you the results of what events are forwarded to BSM. You can also view the results of the test in the following log file: **<SiteScope root directory>\logs\bac_integration.log**. **Note:** The test does not forward samples to BSM; it tests that the configuration is correct and that data is forwarded accurately when the monitor does run.
Synch Flag	Enables the monitor to query Service Manager to retrieve all Incidents Changes from the time specified in the **Synch Time** setting. **Default value**: Cleared **Note**: This flag is reset to cleared after each time the monitor retrieves the data from Service Manager.
Synch Time	Time from which the monitor retrieves incidents. Enter a value only when **Synch Flag** is selected.
Incident Management (probsummary table) query	Text to add to the query that the monitor sends to Service Manager. You can add to the query to determine which Incidents the monitor retrieves. **Default value**: type="bizservice". The query is set to retrieve only those incidents opened on CIs of type **bizservice**. **Note**: The syntax for the query must be specified by the Service Manager application. We recommend that you consult the Service Manager help to create the text to add to the query and to test the query using the advanced search found in the Service Manager application.
Incident Open State	Indicates the initial state as defined in Service Manager for the incident lifecycle. **Default value**: Open

Topology Settings

User interface elements are described below:

UI Element	Description
Script	The out-of-the-box integration script that creates a topology in BSM that is based on the data collected from the Service Manager installation. The script is based on the Jython scripting language (Python enabled by Java) and enables the integration between the data the monitor collects from the Service Manager system and BSM's applications. We recommend that you use the topology settings as is and it is not editable while creating the monitor. If you must customize the field mapping, locate the following file: **<SiteScope root directory>\discovery\scripts\EMS_peregrine.py** and edit it in your preferred text editor. To enable any changes, you must edit the monitor for SiteScope to reload the edited script. For more details on editing the script, see "Editing the Topology Script" in *Using SiteScope*.
Test Script	Tests the topology script. This test gives you the results of what events are forwarded to BSM and what topology is mapped. You can also view the results of the test in the following log file: **<SiteScope root directory>\logs\bac_integration.log**. **Note**: The test does not forward samples to BSM; it tests that the configuration is correct and that data is forwarded accurately when the monitor does run.

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NetScout Event Monitor

This chapter includes:

Concepts

Tasks

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Concepts

NetScout Event Monitor Overview

The NetScout Event Monitor is designed to collect SNMP Trap data from NetScout nGenius servers. Each time that the monitor is run, SiteScope checks traps that have been received since the last time the monitor ran and reports the results to BSM. This provides a way to centralize data collection, display, and alerting for the conditions for which you may otherwise be unaware until something more serious happens.

The NetScout Event Monitor forwards alerting instances to BSM to create configuration items (CIs) based on application or host alarms in NetScout.

The integration maps the alarms to the NetScout CIs created and creates a monitored by relationship between the NetScout Event monitor CI and the relevant host, interface, or application CI. The monitor integrates the incident data into samples that are forwarded to BSM applications, such as Service Health and Service Level Management.

Note: For information about Integration Monitor logging and troubleshooting, see "Integration Monitor Logs" and "Troubleshooting and Limitations" (Working with SiteScope Integration Monitors) in *Using SiteScope*.

For task details, see "How to Integrate Data From a NetScout System" on page 929.

For user interface details, see "NetScout Event Monitor Settings" on page 931.

Tasks

How to Integrate Data From a NetScout System

The following are the tasks necessary to integrate data from a NetScout system and view the NetScout data in a way that is customized to your needs.

This task includes the following steps:

- "Prerequisites" on page 929
- "Configure a NetScout Event monitor in SiteScope" on page 930
- "Activate NetScout EMS integration in BSM" on page 930

1 Prerequisites

The following are important guidelines and requirements for using the NetScout Event Monitor to forward alerts to BSM.

- The NetScout nGenius server must be configured to send traps to the SiteScope server.

> **Note:** The NetScout Event Monitor uses port 162 for receiving traps. If another application or process on the machine where SiteScope is running has bound this port, the monitor reports an **Address in use** error and the monitor type is unavailable.

- SiteScope must be registered with an BSM installation. The SiteScope must have a profile defined in the BSM installation prior to enabling the registration in the SiteScope interface. To verify registration or to re-register SiteScope with BSM, see the Integration Preferences page in the Preferences container.

- The NetScout Event Monitor must be set to synchronize integration monitor data with BSM. You can use the configuration file for the NetScout Event Monitor to control the data that is sent from SiteScope to BSM. For details on the file structure and syntax, see "Integration Monitor Field Mapping" in *Using SiteScope*.

2 Configure a NetScout Event monitor in SiteScope

You can create this monitor:

- Directly in SiteScope.
- Using the System Availability Management Administration portal in BSM.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For details on the monitor's settings, see "NetScout Event Monitor Settings" on page 931.

3 Activate NetScout EMS integration in BSM

Activate the assignment rules in BSM. For details on how to perform this task, see "NetScout nGenius Integration" in *Solutions and Integrations* in the HP Business Service Management Documentation Library.

Reference

NetScout Event Monitor Settings

The NetScout Event Monitor monitors alerts received from the NetScout nGenius server and forwards them to BSM.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Relevant tasks	➤ "How to Integrate Data From a NetScout System" on page 929 ➤ "How to Deploy Integration Monitors" in *Using SiteScope*
See also	➤ "NetScout Event Monitor" on page 927

NetScout Event Monitor Settings

User interface elements are described below:

UI Element	Description
Run Alerts	Method for running alerts: ➤ **For each event received from NetScout system.** The monitor triggers alerts for every matching entry found. **Note:** If **For each event received from NetScout system** is selected as the alert method, when the NetScout Monitor is run, the monitor never reports a status of error or warning, regardless of the results of the content match or even if the target SNMP Trap is not found. ➤ **Once, after all events from NetScout system were received.** The monitor counts up the number of matches and triggers alerts based on the **Error if** and **Warning if** thresholds defined for the monitor in the Threshold Setting section.
EMS Time Difference	Value that accounts for any time differences greater than one minute between the system clock time on the monitored EMS machine and the server where SiteScope is running. This is only needed when the monitored data includes time data and the data shows a difference between the EMS machine and the SiteScope server. If the time difference is too great, the data may be discarded. **Note**: The time difference value only needs to be entered if the difference is greater than one minute. There is no need to synchronize differences of seconds less than one minute.

Field Mapping

User interface elements are described below:

UI Element	Description
Field Mapping	The out-of-the-box integration script that enables the monitor to correctly map the data it collects from the NetScout installation to a format recognizable by the monitor and BSM. This script is not editable.

Topology Settings

User interface elements are described below:

UI Element	Description
Script	The out-of-the-box integration script that creates a topology in BSM. The topology is based on the data collected from the NetScout installation. The script is based on the Jython scripting language (Python enabled by Java) and enables the integration between the data the monitor collects from the NetScout system and BSM's applications. We recommend that you use the topology settings as is and it is not editable while creating the monitor. If you must customize the topology, locate the following file: **<SiteScope root directory>\discovery\scripts\ems\ems_netscout.py** and edit it in your preferred text editor. To enable any changes, you must edit the monitor to reload the edited script. For more details on editing the script, see "Editing the Topology Script" in *Using SiteScope*.

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Technology Database Integration Monitor

This chapter includes:

Concepts

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Reference

Concepts

Technology Database Integration Monitor Overview

The Technology Database Integration Monitor enables you to collect event and time series data from database tables used by Enterprise Management Systems (EMS) by performing a query through a JDBC connection. The data retrieved is then processed and sent to BSM as samples (one sample for each row that was returned by a SQL query).

Use the Technology Database Integration Monitor to integrate database records into BSM. The following are examples of data that can be integrated into BSM using the Technology Database Integration Monitor:

- Events from monitoring applications event tables or views.
- Open tickets from ticketing systems applications.
- Time series from monitoring applications metrics tables.

Each time the Technology Database Integration Monitor runs, it returns the monitors status, the time it took to perform the query, the number of rows in the query result set, and the first two fields in the first row of the result and writes them in the monitoring log file.

For task details, see "How to Integrate Database Data into Business Service Management" on page 941.

For user interface details, see "Technology Database Integration Monitor Settings" on page 945.

This section also includes:

- "What Data Is Forwarded" on page 937
- "Setup Requirements" on page 938
- "Notes and Limitations" on page 939

What Data Is Forwarded

The Technology Database Integration Monitor uses a user-defined query and enumerating field name, field type, and initial value. While the query provided by the user is used to define a search criterion on the database, the enumerating field is used so that events are forwarded only once. Using an initial value enables you to specify an initial threshold value for the events that should be forwarded.

For example, if **Enumerating Field Type** uses DATE and **Start from value** uses 2003-20-03 12:00:00, only events that happened after the specified date are forwarded in the first run of the monitor. In subsequent monitor runs, the highest value for the DATE field found is used to verify that only new events are forwarded.

You use the field mapping script selected for the Technology Database Integration Monitor to control the data that is sent from SiteScope to BSM. For more details on the file structure and syntax, see "Integration Monitor Field Mapping" in *Using SiteScope*.

Data can also be mapped to a topology to forward data to the correct CI hierarchy in BSM. You can configure topology settings for the monitor by selecting a topology template, which loads the applicable scripts, and editing them in a separate text editor during monitor creation. For more details on editing the script, see "Topology Settings for Technology Integration Monitors" in *Using SiteScope*.

Before setting up the Technology Database Integration Monitor, you should be clear about the purpose and usage of the data in BSM (for presentation in Service Health, Service Level Management, reports, or all).

Setup Requirements

The steps for setting up a Technology Database Integration Monitor vary according to what database software you are trying to query. The following is an overview of the requirements for using the Technology Database Integration Monitor:

- You must use one of the database drivers supplied by default, or install or copy a compatible database driver or database access API into the required SiteScope directory location. The supplied drivers include:

  - **com.inet.tds.TdsDriver.** TDS driver is from i-net Software for Microsoft SQL databases. This driver is deployed with SiteScope.
  - **com.mercury.jdbc.sqlserver.SQLServerDriver.** DataDirect driver is from DataDirect Technologies. It is an alternative to the TDS driver for those Microsoft SQL databases that use Windows NT authentication. This driver is deployed with SiteScope.
  - **com.inet.ora.OraDriver.** OraDriver driver is from Oracle for Oracle databases. This driver is deployed with SiteScope.

  Other database driver packages are available as compressed (zipped) archive files or .jar files. Database drivers in this form must not be extracted. Rather, put them into the **<SiteScope root directory>\java\lib\ext** subdirectory.

- You must know the syntax for the Database Connection URL. The Database Connection URL normally includes the class of driver you are using, some key name relating to the supplier of the driver software, followed by a combination of server, host, and port identifiers.

  Database Connection URLs for this monitor are:

  - **jdbc:inetdae:<hostname>:<port>**
    where <hostname> is the name of the host where the database is running and <port> is the port on which the database interfaces with the driver.
  - **jdbc:mercury:sqlserver://<hosthost>:1433;DatabaseName=master; AuthenticationMethod=type2**
    where <hostname> is the name of the host where the database is running.

  - **jdbc:oracle:thin:@<hostname>:<port>:<dbname>**
    where <hostname> is the name of the host where the database is running, <port> is the port on which the database interfaces with the driver, and <dbname> is the name of the Oracle database instance.

- The database you want to query must be running, have a database name defined, and have at least one named table created in the database. In some cases, the database management software needs to be configured to enable connections by using the middleware or database driver.

- You need a valid user name and password to access and perform a query on the database. In some cases, the machine and user account that SiteScope is running on must be given permissions to access the database.

- You must know a valid SQL query string for the database instance and database tables in the database you want to query. Consult your database administrator to work out required queries to use.

- When adding the monitor to SiteScope, in the Field Mapping panel, you must select a field mapping script and load the script for the monitor. Copy the contents of the script into your preferred text editor, and edit the script to define the event handlers for this monitor instance. For details on the file structure and syntax, see "Integration Monitor Field Mapping" in *Using SiteScope*.

Notes and Limitations

- When Windows authentication is used to connect to the database, configure SiteScope using the following settings:

  - JDBC Connection string: **jdbc:mercury:sqlserver://<hosthost>:1433; DatabaseName=master;AuthenticationMethod=type2**

  - JDBC driver: **com.mercury.jdbc.sqlserver.SQLServerDriver**.

  - Leave the **Database User name** and **Database Password** fields empty, because the Windows user credentials of the account from which the SiteScope service is running are used to establish a connection to the database.

- When referring to data arriving from the Technology Database Integration Monitor in the config file, use the column name prefixed by the dollar sign ($).

  For example, for the following database query:

  ```
  SELECT height,width FROM some_table WHERE width > 0
  ```

You can refer to the columns returned using the labels $height and $width. The names of the columns are case sensitive.

Tasks

How to Integrate Database Data into Business Service Management

This section provides the workflow for setting up the Technology Database Integration Monitor to work with BSM. If you need more information on performing any of the steps, see the sections on "Setup Requirements" on page 938, and "Technology Database Integration Monitor Settings" on page 945.

This task includes the following steps:

- "Prerequisites" on page 942
- "Use the SiteScope Database Connection tool" on page 942
- "Create a Technology Database Integration monitor" on page 943
- "Edit the monitor's field mappings" on page 943
- "Edit the monitor's topology settings - optional" on page 944
- "View data from the monitor in BSM" on page 944

1 Prerequisites

a There are several key requirements for using this monitor. For details on this topic, see "Setup Requirements" on page 938.

b Use a database client to connect to the relevant software database. Identify which tables contain the required events/metrics (the software schema documentation may help you with this).

c A JDBC database driver is a prerequisite for setting up the monitor. We recommend that you use the following JDBC drivers:

➤ For SQL Server:

Database Connection URL= jdbc:inetdae:<DatabaseHostName>:<Port>?database=<Database Name>

Database Driver=com.inet.tds.TdsDriver

➤ For Oracle:

Database Connection URL= jdbc:inetora:<DatabaseHostName>:<Port>:<Database Instance Name>

Database Driver=com.inet.ora.OraDriver

2 Use the SiteScope Database Connection tool

Run the SiteScope Database Connection tool and follow these steps:

a Verify the driver can be loaded and that it successfully connects.

b Add a user name and password to verify that a connection can be established to the database.

c Add a native query. Refine the query until you get all the required events/metrics required for BSM.

3 Create a Technology Database Integration monitor

Add a Technology Database Integration Monitor to SiteScope. For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Technology Database Integration Monitor Settings" on page 945.

- When adding the new monitor to a group, it is recommended that you use a dedicated group for integration monitors only.
- If you do not see the **Integration Monitors** category, make sure you have an EMS Option License for your SiteScope.
- **Name.** It is recommended that the monitor name include the name of the integrated software.
- Enter all connection parameters for connecting to the database in the **Connection parameters** area.
- **SELECT/FROM/WHERE query clauses. SELECT** and **FROM** are mandatory. When specifying the **SELECT** clause, the value given for **Enumerating field** must appear in the clause.
- **Frequency.** Define how often the monitor should query the database. The maximum number of rows that the monitor can retrieve on each cycle is 5000; this is to prevent an out-of-memory exception. The frequency should therefore be set so that the monitor retrieves a maximum of 5000 rows per cycle.

  You can edit the maximum number of rows in the **Query Settings** section for the monitor.
- **Enumerating field parameters.** Enter details for the enumerating field.

4 Edit the monitor's field mappings

In the New Technology Database Integration Monitor dialog box, expand the Field Mapping area. Select a field mapping type and click **Load File**.

- A template script is displayed in the **Field mapping** box. Edit the script to enable SiteScope to retrieve the data from the monitored application that you want to forward to BSM.

- If you select **Custom**, create your own script to map the fields for retrieving data from the monitored application.

For details on working with the field mapping script, see "Integration Monitor Field Mapping" on page 547 in *Using SiteScope*.

For user interface details, see "Field Mapping" on page 950.

5 Edit the monitor's topology settings - optional

In the New Technology Database Integration Monitor dialog box in the Topology Settings area, you can create a topology script that creates a topology of configuration items in BSM's RTSM to match your EMS system. You copy the script into the Script field in the Topology Settings.

For details on this topic, see "Topology Settings for Technology Integration Monitors" on page 527 in *Using SiteScope*.

For user interface details, see "Topology Settings" on page 951.

6 View data from the monitor in BSM

View the data in BSM:

- **Events integration.** If you chose and edited the Events script in the Field Mapping area, you can view events in Service Health, System Availability Management Event Log reports, or Analytics. You can also use events when building SLAs.
- **Metrics integration.** If you chose and edited the Metrics script in the Field Mapping area, you can view the data in any application that supports SiteScope data, including SiteScope Over Time reports.
- If you want to watch the incoming samples (to view the original data before it is passed to the applications), use the sprinter utility available under **<BSM root directory>\bin**.

To troubleshoot problems with data arriving to BSM, see "Troubleshooting and Limitations" on page 953.

Reference

Technology Database Integration Monitor Settings

The Technology Database Integration Monitor enables you to collect event and time series data from database tables used by Enterprise Management Systems (EMS) by performing a query through a JDBC connection. The data retrieved is then processed and sent to HP Business Service Management as samples (one sample for each row that was returned by a SQL query).

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	The **Database Connection Tool** is available when configuring this monitor to test and verify connectivity between SiteScope and an external ODBC or JDBC compatible database (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "Database Connection Tool" in *Using SiteScope*. **Note:** When using the Database Connection Tool to apply properties to the monitor, you must enter the credential data manually (if you select a credential profile the credential data is lost).
Relevant tasks	➤ "How to Integrate Database Data into Business Service Management" on page 941 ➤ "How to Deploy Integration Monitors" in *Using SiteScope*
See also	➤ "Technology Database Integration Monitor" on page 935

Technology Database Integration Monitor Settings

User interface elements are described below:

UI Element	Description
Basic Settings	
Database connection URL	URL to a database connection (sometimes referred to as an Authentication string). One way to create a database connection is to use ODBC to create a named connection to a database. For example, first use the ODBC control panel to create a Data Source Name (DSN) called test under the system DSN tab. Then, enter jdbc:odbc:test as the connection URL. Alternatively, use the supplied Microsoft SQL or Oracle driver to connect to the Database.
Database driver	Driver used to connect to the database. Use the Fully Qualified Class Name of the JDBC driver you are using.
Database user name	User name used to log on to the database.
Database password	Password used to log on to the database.
OS integrated security	Uses the user name and password from Windows' user authentication to access the database. Entries in the Database Username and Database Password are ignored. If this parameter is checked, you must use the DataDirect driver as your database driver.
EMS server name	Text identifier describing the database server that this monitor is monitoring if you are reporting monitor data to an installation of HP Business Service Management. This text descriptor is used to identify the database server when the monitor data is viewed in an HP Business Service Management report. **Syntax exceptions:** Use only alphanumeric characters for this entry. You can enter the name of the monitored server or a description of the database to be used to identify the host.

UI Element	Description
EMS time difference	Value to account for any time differences greater than one minute between the system clock time on the monitored EMS machine and the server where SiteScope is running. This is only needed when the monitored data includes time data and the data shows a difference between the EMS machine and the SiteScope server. If the time difference is too great, the data may be discarded. You can also view the results of the test in the following log file: **<SiteScope root directory>\logs\bac_integration.log**. **Note**: The time difference value only needs to be entered if the difference is greater than one minute. There is no need to synchronize differences of seconds less than one minute.
Query Settings	
SELECT	SELECT clause to be used in the SQL query. Enter ***** for all fields or a comma separated list of column names to be retrieved from the database. When specifying the SELECT clause, the column used as the enumerating field must appear in the clause.
FROM	FROM clause to be used in the SQL query. Enter a table name or a comma separated list of tables from which the selected columns should be extracted.
WHERE	WHERE clause to be used in the SQL query. This is an optional field which enables you to define the select criteria. Leaving it empty results in retrieving all the rows from the table defined in the FROM option.
Enumerating field	Name for a database field that can be used to order the events that are returned from the database query. **Note:** The column used as enumerating field must be included in the SELECT clause.

<table>
<tr><th>UI Element</th><th>Description</th></tr>
<tr><td><b>Enumerating field type</b></td><td>The type of field used to order the result set. This can be a DATE field, an INTEGER field, a DOUBLE floating point numeral field, or a LONG field.
The following table maps SQL types to the required enumerating field type.
<table>
<tr><th>SQL Type</th><th>Enumerating Field Type</th></tr>
<tr><td>SMALLINT</td><td>INTEGER</td></tr>
<tr><td>INTEGER</td><td>INTEGER / LONG</td></tr>
<tr><td>BIGINT</td><td>LONG</td></tr>
<tr><td>NUMERIC</td><td>LONG</td></tr>
<tr><td>DOUBLE</td><td>DOUBLE</td></tr>
<tr><td>DECIMAL</td><td>DOUBLE</td></tr>
<tr><td>FLOAT</td><td>DOUBLE</td></tr>
<tr><td>TIMESTAMP</td><td>TIMESTAMP</td></tr>
<tr><td>DATE</td><td>TIMESTAMP</td></tr>
</table></td></tr>
</table>

UI Element	Description
Initial enumerating value	Initial value to be used as a condition for the initial run of this monitor instance. For example, if you specify the **Enumerating Field Type** as a field type DATE and you enter a value of 2000-01-31 12:00:00 in the **Start from** value field, only records that were added to the database after the specified date are forwarded. **Note:** The value of this field cannot be edited.
Max rows	Maximum number of rows the monitor retrieves from the database for each monitor cycle. **Default value**: 5000 rows If the number of result rows exceeds the set maximum, the monitor retrieves the remaining rows (those that exceeded the maximum) on future cycles, until all result rows are retrieved. The value should be sufficient to keep up with database table growth, yet small enough to avoid java.lang.OutOfMemoryException errors. Further, monitor run frequency should also be considered. Make sure that the rate at which data is collected by the monitor—which is dependent on both monitor run frequency and network/system speed—is greater than, or equal to, the rate of data insertion on the monitored system.

Field Mapping

User interface elements are described below:

UI Element	Description
Sample type	Select from the following sample types for this integration: ➤ **Events**. For details, see "Configuring Field Mapping for Event Samples" in *Using SiteScope*. ➤ **Metrics**. For details, see "Configuring Field Mapping for Metrics Samples" in *Using SiteScope*. ➤ **Tickets**. For details, see "Configuring Field Mapping for Ticket Samples" in *Using SiteScope*.
Load File	Loads the script that is applicable to the sample type selected above.
Field mapping	The monitor uses the field mapping script to correctly map the data it collects from the monitored application to a format recognizable by BSM. To enable the integration, you must configure these mappings as required by the environment you are monitoring. The mapping is editable in this box using the script editor provided (you can make the script field read only by right-clicking the script and selecting **Configure** > **Read Only**). You can also copy it into your preferred text editor, edit it, and then copy it back into this box. For details on the field mapping script template, see "Integration Monitor Field Mapping" in *Using SiteScope*.
Test Script	Tests the field mapping script. We recommend that you test the script before running the monitor. This test gives you the results in a separate window of what events or metrics are forwarded to BSM. You can also view the results of the test in the following log file: **<SiteScope root directory>\logs\bac_integration.log**. **Note**: The test does not forward samples to BSM; it tests that the configuration is correct and that data is forwarded accurately when the monitor does run.

Topology Settings

User interface elements are described below:

UI Element	Description
Topology template	Script to create the topology in BSM for the samples retrieved from the monitored application. The script is based on the Jython scripting language (Python enabled by Java). The monitor propagates its status to the CIs mapped in this topology. The template options displayed depend on the sample type selected in the Field Mapping panel. ➤ **Custom**. You create your own topology if you want the retrieved data to be forwarded to specific CIs and not the standard host or EMS element CIs. ➤ **Node**. Creates a topology with a host CI as the parent CI and a Running Software CI under it, and an EMS monitor CI under the Running Software CI. Available for event samples only. ➤ **Node - Running Software.** Creates a topology with a Node CI as the parent CI and a Running Software CI under it, and an EMS monitor CI under the Running Software CI. Available for event samples only. ➤ **SiteScope Topology**. Sends SiteScope topology (monitors). If selected, the script area is not available. Available for metrics samples only. ➤ **No Topology**. No topology is sent (although data and configuration samples are still be sent). If selected, the script area is not available. Available for metrics samples only. ➤ **Tickets.** Creates a business service CI with an EMS monitor CI as a leaf node. Available for ticket samples only. **Note**: You must be familiar with the Jython language if you select **Custom**, since you must write the Jython topology script yourself. Depending on the sample type you select, we recommend that you begin with and edit one of the existing scripts. When editing the topology, you must make sure that an EMS Monitor CI is created as the leaf node to any CI that receives samples from the integration. For more details, see "Topology Settings for Technology Integration Monitors" in *Using SiteScope*.

UI Element	Description
Load Script	Loads the required script for the topology you selected in the **Topology template** option. If you selected **Custom**, there is no script to load. The script is based on the Jython scripting language (Python enabled by Java).
Script	The contents of the script are visible in this box. You can edit the script contents in this field using the script editor provided by SiteScope, or you can copy it into your preferred text editor, edit it, and then copy it back into this box. **Note**: The topology script is very sensitive to spaces and tabs. For more details on editing the script, see "Editing the Topology Script" in *Using SiteScope*.
Test Script	Tests the topology script. We recommend that you test the script before running the monitor. This test gives you the results of what events or metrics are forwarded to BSM and what topology is created. The test relies on an open socket connection for several minutes and then displays what data was captured for the test period. You can also view the results of the test in the following log file: **<SiteScope root directory>\logs\bac_integration.log**. **Note**: The test does not forward samples to BSM; it tests that the configuration is correct and that data is forwarded accurately when the monitor does run.

Troubleshooting and Limitations

This section describes troubleshooting and limitations when working with the Technology Database Integration monitor.

- Check for errors in <**SiteScope root directory**>**logs****RunMonitor.log** and in <**SiteScope root directory**>**logs****error.log**.
- Change the log level to DEBUG in <**SiteScope root directory**>**conf****core****Tools****log4j****PlanJava****log4j.properties**, to watch outgoing samples.

  Change the line:
  log4j.category.EmsEventPrinter=${emsloglevel}, ems.appender
  to:
  log4j.category.EmsEventPrinter= DEBUG, ems.appender.

  The log file to look at is:
  <**SiteScope root directory**>**logs****RunMonitor.log**
- If samples are created and sent from SiteScope, but the data is not seen in **Service Health/Event Log/SiteScope reports**, look in <**BSM root directory**>**log****mercury_wde****wdeIgnoredSamples.log** to make sure the samples were not dropped due to missing fields or values.
- Change the logging level for Service Health to verify that Service Health received the samples. Open the following file on the Gateway Server machine:
  <**BSM root directory**>**conf****core****tools****log4j****mercury_wde****wde.properties**

  Change the log level parameter to DEBUG in the following lines:

  - log4j.category.com.mercury.am.platform.wde.decode.IgnoredSamplesLogger=${loglevel}, IgnoredSamples.appender
  - log4j.category.com.mercury.am.platform.wde.publish_SamplePublisherSamples=${loglevel}, PublishedSamples.appender

  Look at the corresponding log files:

  - <**BSM root directory**>**logs****mercury_wde****wdeIgnoredSamples.log**
  - <**BSM root directory**>**logs****mercury_wde****wdePublishedSamples.log**

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Technology Log File Integration Monitor

This chapter includes:

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Technology Log File Integration Monitor Overview

The Technology Log File Integration Monitor watches for specific entries added to a log file of an Enterprise Management System (EMS) application by trying to match against a regular expression. From each matched entry, one sample is created and sent to BSM.

Each time that SiteScope runs this monitor, the monitor starts from the point in the log file where it stopped reading the last time the monitor ran. This insures that you are notified only of new entries and speeds the rate at which the monitor runs.

When using a regular expression to match against a specific line in the log, it is possible to use regular expression back references to select the data to be forwarded to BSM. For details on using back references, see "Retaining Content Match Values" in *Using SiteScope*.

For task details, see "How to Integrate Log File Data into Business Service Management" on page 958.

For user interface details, see "Technology Log File Integration Monitor Settings" on page 962.

What Data Is Collected

The Technology Log File Integration monitor sends to BSM data that is extracted from any row that matched against the **Content match** regular expression.

Before setting up the Technology Log File Integration Monitor, you should be clear about the purpose and usage of the data in BSM (for presentation in Service Health, Service Level Management, and reports).

The specific data that is forwarded to BSM is controlled by the field mapping script. You use this script to specify the preferred value fields that you want forwarded. For more details on selecting the script and the file structure and syntax, see "Integration Monitor Field Mapping" in *Using SiteScope*.

Data can also be mapped to a topology to forward data to the correct CI hierarchy in BSM. You can configure topology settings for the monitor by selecting a topology template, which loads the applicable scripts, and editing them in a separate text editor during monitor creation. For more details on editing the script, see "Topology Settings for Technology Integration Monitors" in *Using SiteScope*.

Tasks

How to Integrate Log File Data into Business Service Management

This section provides the overall flow for setting up the Technology Log File Integration Monitor to work with BSM. If you need more information on performing any of the steps, see "Technology Log File Integration Monitor Settings" on page 962.

This task includes the following steps:

- "Analyze the log file to be monitored" on page 958
- "Create a Technology Log File Integration monitor" on page 959
- "Edit the monitor’s field mapping" on page 960
- "Edit the monitor’s topology settings - optional" on page 961
- "Check the regular expression - optional" on page 961
- "View data from the monitor in BSM" on page 961

1 Analyze the log file to be monitored

Open the relevant software log file, and identify which lines describe events or metrics. Build your regular expression with the SiteScope Regular Expression tool. Use the tool to:

- Match against the line you wish to monitor.
- Make sure that values are extracted correctly from the line.

For user interface details, see "Regular Expression Tool" in *Using SiteScope*.

2 Create a Technology Log File Integration monitor

Add a Technology Log File Integration Monitor to SiteScope.

For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For user interface details, see "Technology Log File Integration Monitor Settings" on page 962.

- When adding the new monitor to a group, it is recommended that you use a dedicated group for integration monitors only.
- If you do not see the **Integration Monitors** category, make sure you have an EMS Option License for your SiteScope.
- **Name.** It is recommended that the monitor name include the name of the integrated software.
- **Log file path name** and **Server**:
  - The file name can include a variable name (for example: **s/c:\temp\EV-$year$-$0month$-$0day$.tab/**).
  - When reading a file on a remote UNIX machine, define a remote UNIX connection; you can then select the UNIX machine from the **Server** list.
  - When reading a file on a remote Windows machine, enter the UNC path in the **Log file path name** field (SiteScope should run under a privileged user for the machine that holds the file), and leave the **Server** box empty.
- **Content match (regular expression).** Surround values you wish to extract with parenthesis. It is recommended that you build your content match with the SiteScope Regular Expression tool before defining the monitor.

3 Edit the monitor's field mapping

In the New Technology Log File Integration Monitor dialog box, expand the Field Mapping area. Select a field mapping type and click **Load File**.

- If you select **Events**, **Tickets**, or **Metrics**, a template script is displayed in the **Field mapping** box. Edit the script to enable SiteScope to retrieve the data from the monitored application that you want to forward to BSM.
- If you select **Custom**, create your own script to map the fields for retrieving data from the monitored application.

Note: When referring to data arriving from the Technology Log File Integration monitor in the configuration file, use the number corresponding to the back reference returned prefixed by the label $group.

For example, for the **Content Match** expression:

```
/([0-9]{2})\s([A-Z]*) ([a-z]*) /
```

and the corresponding Log file text that contains:

```
21 HELLO world
```

You can refer in the config file to three retained values (back references) as follows, where the number appended to the end of the $groupn label corresponds to the order of the parentheses in the expression:

```
$group0 = (21)
$group1 = (HELLO)
$group2 = (world)
```

For details on working with the field mapping script, see "Integration Monitor Field Mapping" in *Using SiteScope*.

For user interface details, see "Field Mapping" on page 967.

4 Edit the monitor's topology settings - optional

In the New Technology Log File Integration Monitor dialog box in the Topology Settings area, you can create a topology script that creates a topology of configuration items in BSM's RTSM to match your EMS system. You copy the script into the Script field in the Topology Settings.

For details on this topic, see "Topology Settings for Technology Integration Monitors" in *Using SiteScope*.

For user interface details, see "Topology Settings" on page 969.

5 Check the regular expression - optional

After entering the settings for the Technology Log File Integration Monitor, it is recommended that you perform optimization of the regular expression (for example, to check for problems with use of quantifiers such as **.***). Use the SiteScope Regular Expression tool to perform the optimization. Update the monitor with any corrections.

For user interface details, see "Regular Expression Tool" in *Using SiteScope*.

6 View data from the monitor in BSM

View the data in BSM:

- ➤ **Events integration.** If you chose and edited the Events script in the Field Mapping area, you can view events in Service Health, System Availability Management Event Log reports, or Analytics. You can also use events when building SLAs.
- ➤ **Tickets integration**. If you chose and edited the tickets script in the Field Mapping area, you can view events in any application that supports SiteScope data, including SiteScope Over Time reports.
- ➤ **Metrics integration.** If you chose and edited the metrics script in the Field Mapping area, you can view the data in any application that supports SiteScope data, including SiteScope Over Time reports.
- ➤ If you want to watch the incoming samples (to view the original data before it is passed to the applications), use the sprinter utility available under **<BSM root directory>\bin**.

To troubleshoot problems with data arriving to BSM, see "Troubleshooting and Limitations" on page 971.

Reference

Technology Log File Integration Monitor Settings

Technology Log File Integration Monitor watches for specific entries added to a log file of a Enterprise Management System (EMS) application by trying to match against a regular expression. From each matched entry, one sample is created and sent to HP Business Service Management. Each time the monitor runs, it examines log entries added since the last time it ran.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	You must have the format and syntax of the log file that you want to monitor. You must construct a **Content match** regular expression to match on the entries in the log file that contain the data you want to monitor and forward to BSM. For examples of regular expressions, see "Examples for Log File Monitoring" in *Using SiteScope*.
Relevant tasks	➤ "How to Integrate Log File Data into Business Service Management" on page 958 ➤ "How to Deploy Integration Monitors" in *Using SiteScope*
See also	➤ "Technology Log File Integration Monitor" on page 955

Log File Integration Monitor Settings

User interface elements are described below:

UI Element	Description
Server	Select a server from the server list (only those remote servers that have been configured in SiteScope are displayed). Alternatively, click the **Browse Servers** button to select a server from the local domain, or **Add Remote Server** to add a new server. **Default value:** SiteScope Server (the server on which SiteScope is installed)

UI Element	Description
Log file path name	Path to the log file from which you want to extract data. ➤ **Remote UNIX.** For reading log files on remote UNIX machines, the path must be relative to the home directory of UNIX user account being used to log on to the remote machine. Select **Preferences** > **UNIX Servers** for information about which UNIX user account is being used. ➤ **Remote Windows NT/2000 through NetBIOS.** You can also monitor log files by including the UNC path to the remote log file. For example, \\remoteserver\sharedfolder\filename.log. This requires that the user account under which SiteScope is running has permission to access the remote directory using the UNC path. If a direct connection using the operating system is unsuccessful, SiteScope tries to match the \\remoteserver with servers currently defined as remote NT connection profiles (displayed in the Microsoft Windows remote server list). If an exact match is found for \\remoteserver in the remote NT connection profiles, SiteScope tries to use this connection profile to access the remote log file. If no matching server name is found, the monitor reports that the remote log file can not be found. ➤ **Remote NT through SSH.** You must select the remote server using the **Server** selection above. It is not necessary to select a remote Windows server if you are using NetBIOS to connect to remote Windows servers. Optionally, you can use a regular expression to insert date and time variables. For example, you can use a syntax of s/ex$shortYear$$0month$$0day$.log/ to match date-coded IIS log file names.

UI Element	Description
Content match	Text to look for in the log entries. You can also use a regular expression in this entry to match text patterns. Unlike the content match function of other SiteScope monitors, the Log File Monitor content match is run repeatedly against the most recent content of the target log file until all matches are found. This means the monitor not only reports if the match was found, but also how many times the matched pattern was found. To match text that includes more than one line of text, add an **s** search modifier to the end of the regular expression. For details on regular expressions, see "Using Regular Expressions" in *Using SiteScope*.
Open Tool	Opens the Regular Expression Tool, enabling you to test a regular expression for content matching against a sample of the content you want to monitor. For details, see "Regular Expression Tool" in *Using SiteScope*.
No error if file not found	Keeps the monitor in good status if the file is not found.
Log file encoding	Log file encoding that is used if you are reading a log file whose encoding is different than the SiteScope machine's default encoding. **Default value:** windows-1252

UI Element	Description
Run alerts	Method for running alerts for this monitor: ➤ **For each log entry matched.** Triggers alerts for each matching entry found regardless of the defined threshold settings and the monitor status (good, warning, or error). **Note:** When the Technology Log File Integration Monitor is run with this alert method selected, the monitor never displays an error or warning status in the SiteScope interface, regardless of the results of the content match or if the target log file is not found. The monitor triggers alerts if one or more matching entries are found and the Error if or Warning if thresholds are defined accordingly (for example, setting Error if to the default of matchCount > 0). ➤ **Once, after all log entries have been checked.** Counts the number of matches and trigger alerts one time. The alert is based on the **Error if** and **Warning if** thresholds defined for the monitor. **Note:** By default, selecting this option causes SiteScope to send one alert message if one or more matches are found, but the alert does not include any details of the matching entries. To have SiteScope include the matching entries, you must associate the monitor with an alert definition that has the property <matchDetails> in the alert template. This special template property is used to populate the alert with the details of all the matching entries. You use this for email alerts or other alert types that work with template properties. Email alert templates are stored in the <SiteScope root directory>\templates.mail directory.

UI Element	Description
EMS time difference	Value that accounts for any time differences greater than one minute between the system clock time on the monitored EMS machine and the server where SiteScope is running. This is only needed when the monitored data includes time data and the data shows a difference between the EMS machine and the SiteScope server. If the time difference is too great, the data may be discarded. You can also view the results of the test in the following log file: <**SiteScope root directory**>**\logs\bac_integration.log**. **Note**: The time difference value only needs to be entered if the difference is greater than one minute. There is no need to synchronize differences of seconds less than one minute.

Field Mapping

User interface elements are described below:

UI Element	Description
Sample Type	Select from the following sample types for this integration: ➤ **Events**. For details, see "Configuring Field Mapping for Event Samples" in *Using SiteScope*. ➤ **Metrics**. For details, see "Configuring Field Mapping for Metrics Samples" in *Using SiteScope*. ➤ **Tickets**. For details, see "Configuring Field Mapping for Ticket Samples" in *Using SiteScope*.
Load File	Loads the script that is applicable to the sample type selected above.

UI Element	Description
Field Mapping	The monitor uses the field mapping script to correctly map the data it collects from the monitored application to a format recognizable by BSM. To enable the integration, you must configure these mappings as required by the environment you are monitoring. The mapping is editable in this box using the script editor provided (you can make the script field read only by right-clicking the script and selecting **Configure** > **Read Only**). You can also copy it into your preferred text editor, edit it, and then copy it back into this box. For details on the field mapping script template, see "Integration Monitor Field Mapping" in *Using SiteScope*.
Test Script	Tests the field mapping script. We recommend that you test the script before running the monitor. This test gives you the results of what events or metrics are forwarded to BSM. The test relies on an open socket connection for several minutes and then displays what data was captured for the test period. You can also view the results of the test in the following log file: **<SiteScope root directory>\logs\bac_integration.log**. **Note**: The test does not forward samples to BSM; it tests that the configuration is correct and that data is forwarded accurately when the monitor does run.

Topology Settings

User interface elements are described below:

UI Element	Description
Topology template	Script to create the topology in BSM for the samples retrieved from the monitored application. The script is based on the Jython scripting language (Python enabled by Java). The monitor propogates its status to the CIs mapped in this topology. The template options displayed depend on the sample type selected in the Field Mapping panel. ➤ **Custom**. You create your own topology if you want the retrieved data to be forwarded to specific CIs and not the standard host or EMS monitor CIs. ➤ **Node**. Creates a topology with a host CI as the parent CI and a Running Software CI under it, and an EMS monitor CI under the Running Software CI. Available for event samples only. ➤ **Node - Running Software.** Creates a topology with a Node CI as the parent CI and a Running Software CI under it, and an EMS monitor CI under the Running Software CI. Available for event samples only. ➤ **SiteScope Topology**. Sends SiteScope topology (monitors). If selected, the script area is not available. Available for metrics samples only. ➤ **No Topology**. No topology is sent (although data and configuration samples are still be sent). If selected, the script area is not available. Available for metrics samples only. ➤ **Tickets.** Creates a business service CI with an EMS monitor CI as a leaf node. Available for ticket samples only. **Note**: You must be familiar with the Jython language if you select **Custom**, since you must write the Jython topology script yourself. Depending on the sample type you select, we recommend that you begin with and edit one of the existing scripts. For more details, see "Topology Settings for Technology Integration Monitors" in *Using SiteScope*.

UI Element	Description
Load Script	Loads the required script for the topology you selected in the **Topology template** option. If you selected **Custom**, there is no script to load. The script is based on the Jython scripting language (Python enabled by Java).
Script	The contents of the script are visible in this box. You can edit the script contents in this field using the script editor provided by SiteScope, or you can copy it into your preferred text editor, edit it, and then copy it back into this box. **Note**: The topology script is very sensitive to spaces and tabs. For more details on editing the script, see "Editing the Topology Script" in *Using SiteScope*.
Test Script	Tests the topology script. It is recommended that you test the script before running the monitor. This test gives you the results of what events or metrics are forwarded to BSM and what topology is mapped. The test relies on an open socket connection for several minutes and then displays what data was captured for the test period. You can also view the results of the test in the following log file: **<SiteScope root directory>\logs\bac_integration.log**. **Note**: The test does not forward samples to BSM; it tests that the configuration is correct and that data is forwarded accurately when the monitor does run.

Troubleshooting and Limitations

This section describes troubleshooting and limitations when working with the Technology Log File Integration monitor.

- Check for errors in <**SiteScope root directory**>**\logs\RunMonitor.log** and in <**SiteScope root directory**>**\logs\error.log**.
- Change the log level to DEBUG in <**SiteScope root directory**>**\conf\core\Tools\log4j\PlainJava\log4j.properties**, to watch outgoing samples.

  Change the line:
  log4j.category.EmsEventPrinter=${emsloglevel}, ems.appender
  to:
  log4j.category.EmsEventPrinter= DEBUG, ems.appender.

  The log file to look at is:
  <**SiteScope root directory**>**\logs\RunMonitor.log**
- If samples are created and sent from SiteScope, but the data is not seen in **Service Health/Event Log/SiteScope reports**, look in <**BSM root directory**>**\log\mercury_wde\wdeIgnoredSamples.log** to make sure the samples were not dropped due to missing fields or values.
- Change the logging level for Service Health to verify that Service Health received the samples. Open the following file on the Gateway Server machine:
  <**BSM root directory**>**\conf\core\tools\log4j\mercury_wde\wde.properties**

  Change the log level parameter to DEBUG in the following lines:

  - log4j.category.com.mercury.am.platform.wde.decode.IgnoredSamplesLogger=${loglevel}, IgnoredSamples.appender
  - log4j.category.com.mercury.am.platform.wde.publish_SamplePublisherSamples=${loglevel}, PublishedSamples.appender

  Look at the corresponding log files:

  - <**BSM root directory**>**\logs\mercury_wde\wdeIgnoredSamples.log**
  - <**BSM root directory**>**\logs\mercury_wde\wdePublishedSamples.log**

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Technology SNMP Trap Integration Monitor

This chapter includes:

Concepts

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Concepts

Technology SNMP Trap Integration Monitor Overview

The Technology SNMP Trap Integration Monitor watches for SNMP traps received by SiteScope from third-party Enterprise Management Systems (EMS). For each SNMP trap that SiteScope receives, a sample is forwarded to BSM containing the SNMP trap values.

The third-party EMS systems must be configured to send traps to the SiteScope server.

The Technology SNMP Trap Integration Monitor is useful for integrating traps that your external devices create into the BSM framework. For example, you can use this monitor to forward information from Hewlett Packard Network Node Manager to BSM. For more information, see "Integration with HP Network Node Manager" in *Using SiteScope*.

For task details, see "How to Integrate SNMP Trap Data into Business Service Management" on page 976.

For user interface details, see "Technology SNMP Trap Integration Monitor Settings" on page 980.

What Data Is Collected

The Technology SNMP Trap Integration Monitor collects data that is extracted from any SNMP trap (version 1 and 2) received by SiteScope and sends notifications to BSM containing preferred values from the original SNMP trap.

Before setting up the Technology SNMP Trap Integration Monitor, you should be clear about the purpose and usage of the data in BSM (for presentation in Service Health, Service Level Management, reports, or all).

The specific data that is forwarded to BSM is controlled by the field mapping script. You use this script to specify the preferred value fields that you want forwarded. For more details on selecting the script and the file structure and syntax, see "Integration Monitor Field Mapping" in *Using SiteScope*.

Data can also be mapped to a topology to forward data to the correct CI hierarchy in BSM. You can configure topology settings for the monitor by selecting a topology template, which loads the applicable scripts, and editing them in a separate text editor during monitor creation. For more details on editing the script, see "Topology Settings for Technology Integration Monitors" in *Using SiteScope*.

Tasks

How to Integrate SNMP Trap Data into Business Service Management

This section provides the overall flow for setting up the Technology SNMP Trap Integration Monitor to work with BSM. If you need more information on performing any of the steps, see the section on "Technology SNMP Trap Integration Monitor Settings" on page 980.

This task includes the following steps:

- "Prerequisites" on page 976
- "Configure the relevant software to send SNMP traps to the SiteScope machine" on page 977
- "Use SiteScope SNMP Trap tool to watch if the traps are received" on page 977
- "Create a Technology SNMP Trap Integration monitor" on page 977
- "Edit the monitor's field mappings" on page 978
- "Edit the monitor's topology settings - optional" on page 979
- "View data from the monitor in BSM" on page 979

1 Prerequisites

Your SiteScope has to be integrated with BSM and enabled to forward data.

For details on how to perform this task, see "How to Configure the Integration Between SiteScope and BSM" in *Using SiteScope*.

2 Configure the relevant software to send SNMP traps to the SiteScope machine

The SNMP agents you want to monitor must be configured to send SNMP traps to the SiteScope host. Consult with the system administrator or applicable product documentation for more about SNMP configuration.

3 Use SiteScope SNMP Trap tool to watch if the traps are received

If you do not see any traps, make sure that the SNMP trap port is available for the SiteScope. The Technology SNMP Trap Integration Monitor uses port 162 for receiving traps.

a Stop the SiteScope service.

b Verify that the SNMP trap port (162) is available—**netstat –na | find** "**162**" shows no output.

c If the port is busy, locate the process or program that uses it (for example the Microsoft SNMP Trap Service) and terminate it.

Note: To see which process uses this port, you can download **tcpview** from **www.sysinternals.com**.

d Restart SiteScope.

4 Create a Technology SNMP Trap Integration monitor

Add a Technology SNMP Trap Integration Monitor to SiteScope. For task details on adding a monitor, see "How to Deploy a Monitor" in *Using SiteScope*.

For monitor user interface details, see "Technology SNMP Trap Integration Monitor Settings" on page 980.

- When adding the new monitor to a group, it is recommended that you use a dedicated group for integration monitors only.
- If you do not see the **Integration Monitors** category, make sure you have an EMS Option License for your SiteScope.

- **Name.** It is recommended that the monitor name include the name of the integrated software.

5 Edit the monitor's field mappings

In the New Technology SNMP Trap Integration Monitor dialog box, expand the Field Mapping area. Select a field mapping type and click **Load File**.

- A template script is displayed in the **Field mapping** box. Edit the script to enable SiteScope to retrieve the data from the monitored application that you want to forward to BSM.
- If you select **Custom**, create your own script to map the fields for retrieving data from the monitored application.

Note: All the received traps are saved to **snmptrap.log** in <**SiteScope root directory**>**\logs**. When referring to data arriving from the Technology SNMP Trap Integration Monitor, use the names from the snmptrap.log file, prefixed with the dollar sign ($).

For example:

Use the $oid to refer to the oid value of the trap, $var1 to refer to the variable bound as the first variable in trap, and $var2 for variable bound as second variable in trap.

For details on working with the field mapping script, see "Integration Monitor Field Mapping" in *Using SiteScope*.

For user interface details, see "Field Mapping" on page 982.

6 Edit the monitor’s topology settings - optional

Optionally, in the New Technology SNMP Trap Integration Monitor dialog box in the Topology Settings area, you can create a topology script that creates a topology of configuration items in BSM’s RTSM to match your EMS system. You copy the script into the Script field in the Topology Settings.

For details on this topic, see "Topology Settings for Technology Integration Monitors" in *Using SiteScope*.

For user interface details, see "Topology Settings" on page 984.

7 View data from the monitor in BSM

View the data in BSM:

- You can view SNMP traps in the **Tools** link or in <**SiteScope root directory**\
logs\snmptrap.log. (For a better understanding of what SNMP traps are, refer to: www.snmplink.org.)
- **Events integration.** If you chose and edited the Events script in the Field Mapping area, you can view events in Service Health, System Availability Management Event Log reports, or Analytics. You can also use events when building SLAs.
- **Metrics integration.** If you chose and edited the Metrics script in the Field Mapping area, you can view the data in any application that supports SiteScope data, including SiteScope Over Time reports.
- If you want to watch the incoming samples (to view the original data before it is passed to the applications), use the sprinter utility available under <**BSM root directory**>\bin.

To troubleshoot problems with data arriving to BSM, see "Troubleshooting and Limitations" on page 985.

Reference

Technology SNMP Trap Integration Monitor Settings

The Technology SNMP Trap Integration Monitor watches for SNMP traps received by SiteScope from third-party Enterprise Management Systems (EMS). For each SNMP trap that SiteScope receives, a sample is forwarded to BSM containing the SNMP trap values. The third-party EMS systems must be configured to send traps to the SiteScope server.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Important information	The **SNMP Trap Tool** is available when configuring this monitor to view SNMP Traps received by SiteScope's SNMP listener (provided you are an administrator in SiteScope, or a user granted **Use monitor tools** permissions). To use the tool when configuring or editing a monitor, click the **Use Tool** button. For details on the tool, see "SNMP Trap Tool" in *Using SiteScope*.
Relevant tasks	➤ "How to Integrate SNMP Trap Data into Business Service Management" on page 976 ➤ "How to Deploy Integration Monitors" in *Using SiteScope*
See also	➤ "Technology SNMP Trap Integration Monitor" on page 973

Technology SNMP Trap Monitor Settings

User interface elements are described below:

UI Element	Description
Run alerts	Method for running alerts: ➤ **For each SNMP Trap received from EMS system.** The monitor triggers alerts for every matching entry found. When the Technology SNMP Trap Integration Monitor is run in the for each SNMP Trap received from EMS system alert method, the monitor never reports a status of error or warning, regardless of the results of the content match or even if the target SNMP Trap is not found. ➤ **Once, after all SNMP Traps from EMS system were received.** The monitor counts up the number of matches and triggers alerts based on the Error If and Warning If thresholds defined for the monitor in the Advanced Settings section.
EMS time difference	Value that accounts for any time differences greater than one minute between the system clock time on the monitored EMS machine and the server where SiteScope is running. This is only needed when the monitored data includes time data and the data shows a difference between the EMS machine and the SiteScope server. If the time difference is too great, the data may be discarded. **Note**: The time difference value only needs to be entered if the difference is greater than one minute. There is no need to synchronize differences of seconds less than one minute.

Field Mapping

User interface elements are described below:

UI Element	Description
Sample Type	Select from the following sample types for this integration: ➤ **Events**. For details, see "Configuring Field Mapping for Event Samples" in *Using SiteScope*. ➤ **Metrics**. For details, see "Configuring Field Mapping for Metrics Samples" in *Using SiteScope*. ➤ **Tickets**. For details, see "Configuring Field Mapping for Ticket Samples" in *Using SiteScope*.
Load File	Loads the script that is applicable to the sample type selected above.
Field mapping	The monitor uses the field mapping script to correctly map the data it collects from the monitored application to a format recognizable by BSM. To enable the integration, you must configure these mappings as required by the environment you are monitoring. The mapping is editable in this box using the script editor provided (you can make the script field read only by right-clicking the script and selecting **Configure** > **Read Only**). You can also copy it into your preferred text editor, edit it, and then copy it back into this box. For details on the field mapping script template, see "Integration Monitor Field Mapping" in *Using SiteScope*.

UI Element	Description
Test Script	Tests the field mapping script. We recommend that you test the script before running the monitor. This test gives you the results of what events or metrics are forwarded to BSM. The test relies on an open socket connection for several minutes and then displays what data was captured for the test period. You can also view the results of the test in the following log file: **<SiteScope root directory>\logs\bac_integration.log**. **Note**: The test does not forward samples to BSM; it tests that the configuration is correct and that data is forwarded accurately when the monitor does run.

Topology Settings

User interface elements are described below:

UI Element	Description
Topology template	Script to create the topology in BSM for the samples retrieved from the monitored application. The script is based on the Jython scripting language (Python enabled by Java). The monitor propogates its status to the CIs mapped in this topology. The template options displayed depend on the sample type selected in the Field Mapping panel. ➤ **Custom**. You create your own topology if you want the retrieved data to be forwarded to specific CIs and not the standard host or EMS monitor CIs. ➤ **Node**. Creates a topology with a host CI as the parent CI and a Running Software CI under it, and an EMS monitor CI under the Running Software CI. Available for event samples only. ➤ **Node - Running Software.** Creates a topology with a Node CI as the parent CI and a Running Software CI under it, and an EMS monitor CI under the Running Software CI. Available for event samples only. ➤ **SiteScope Topology**. Sends SiteScope topology (monitors). If selected, the script area is not available. Available for metrics samples only. ➤ **No Topology**. No topology is sent (although data and configuration samples are still be sent). If selected, the script area is not available. Available for metrics samples only. ➤ **Tickets.** Creates a business service CI with an EMS monitor CI as a leaf node. Available for ticket samples only. **Note**: You must be familiar with the Jython language if you select **Custom**, since you must write the Jython topology script yourself. Depending on the sample type you select, we recommend that you begin with and edit one of the existing scripts. For more details, see "Topology Settings for Technology Integration Monitors" in *Using SiteScope*.

UI Element	Description
Load Script	Loads the required Jython script for the topology you selected in the **Topology template** option. If you selected **Custom**, there is no script to load. The script is based on the Jython scripting language (Python enabled by Java).
Script	The contents of the script are visible in this box. You can edit the script contents in this field using the script editor provided by SiteScope, or you can also copy it into your preferred text editor, edit it, and then copy it back into this box. **Note**: The topology script is very sensitive to spaces and tabs. For more details on editing the script, see "Editing the Topology Script" in *Using SiteScope*.
Test Script	Tests the topology script. We recommend that you test the script before running the monitor. This test gives you the results of what events or metrics are forwarded to BSM and what topology is mapped. The test relies on an open socket connection for several minutes and then displays what data was captured for the test period. You can also view the results of the test in the following log file: **<SiteScope root directory>\logs\bac_integration.log**. **Note**: The test does not forward samples to BSM; it tests that the configuration is correct and that data is forwarded accurately when the monitor does run.

Troubleshooting and Limitations

This section describes troubleshooting and limitations when working with the Technology SNMP Trap Integration monitor.

This section contains:

Basic Troubleshooting Guidelines

- Check for errors in <**SiteScope root directory**>**logs****RunMonitor.log** and in <**SiteScope root directory**>**logs****error.log**.
- Change the log level to DEBUG in <**SiteScope root directory**>**conf****core****Tools****log4j****PlainJava****log4j.properties**, to watch outgoing samples.

  Change the line:
  log4j.category.EmsEventPrinter=${emsloglevel}, ems.appender
  to:
  log4j.category.EmsEventPrinter= DEBUG, ems.appender.

  The log file to look at is: <**SiteScope root directory**>**logs****RunMonitor.log**
- Change the logging level for Service Health to verify that Service Health received the samples. Open the following file on the Gateway Server machine:
  <**BSM root directory**>**conf****core****tools****log4j****mercury_wde****wde.properties**

  Change the log level parameter to DEBUG in the following lines:

  - log4j.category.com.mercury.am.platform.wde.decode.IgnoredSamplesLogger=${loglevel}, IgnoredSamples.appender
  - log4j.category.com.mercury.am.platform.wde.publish_SamplePublisherSamples=${loglevel}, PublishedSamples.appender

  Refer to the following log files:

  - <**BSM root directory**>**logs****mercury_wde****wdeIgnoredSamples.log**
  - <**BSM root directory**>**logs****mercury_wde****wdePublishedSamples.log**

Verify SNMP Trap Reception to SiteScope

You can verify that SiteScope is receiving SNMP traps from other management systems using the SiteScope SNMP Trap Monitor. Use the following steps to verify that SiteScope is receiving traps.

1. Configure the intended SNMP Trap sending entity to send traps to the SiteScope machine. The steps to configure the SNMP host depends on system. Usually, it involves lowering system thresholds to cause normal situations to create traps. On some systems there is a test mode that you can use to create traps on demand. The other way is to use one of the freely available SNMP trap generators, and to send copies of the trap to SiteScope.
2. Inspect the SNMP Trap Monitor log file in SiteScope for sent traps. Every SNMP Trap received by the SiteScope is written into the SNMP Trap Monitor's log file, located in <**SiteScope root directory**>**logs\snmptrap.log**.

Common Problems and Solutions

The following table summarizes common problems and suggested solutions:

Problem Symptom	Possible Cause	Solution
The monitor does not appear in the monitor list.	Option License for Integration Monitors had not been provided.	Provide the Option License for Integration Monitors.
The monitor reports an Address in use error and the monitor type is unavailable.	Another application or process on the machine where SiteScope is running has bound the port 162, the port used to receive SNMP traps.	You must stop the SiteScope service, terminate the process or service that is using the port, and restart SiteScope.

Problem Symptom	Possible Cause	Solution
The SNMP traps are not forwarded to BSM applications.	The SNMP Agent does not emit SNMP traps.	Verify that the SNMP Agent is configured to emit SNMP traps. Use the <**SiteScope**>\logs\snmptrap.log file to verify that traps are received by SiteScope. For details, see "Verify SNMP Trap Reception to SiteScope" on page 986.
	The EMS configuration file contains errors.	Click the **Test Script** button in the Field Mapping area to verify the field mapping.
	The SNMP trap port is busy.	Make sure that no other SNMP trap service is listening to SNMP traps on the SiteScope machine. Microsoft SNMP Trap Service is common cause on computers running Windows NT or Windows 2000 operating system.
	The monitor is not configured to report to these applications.	Make sure that the monitor is configured to report to these applications.
Samples are created and sent from SiteScope, but the data is not seen in Service Health/Event Log/SiteScope reports.	Samples were dropped due to missing fields or values.	Check in <**BSM root directory**>\log\mercury_wde\wdeIgnoredSamples.log.

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Technology Web Service Integration Monitor

This chapter includes:

Concepts

Tasks

Reference

Concepts

Technology Web Service Integration Monitor Overview

The Technology Web Service Integration Monitor enables a Web service entry point to SiteScope. The monitor can be used to report data from third-party Enterprise Management Systems (EMS) to SiteScope through Web service. Both event and metrics entry points into BSM are published for external systems to use. For each event, metric, or both, that SiteScope receives, a sample is forwarded to BSM containing the event and/or metrics values.

SiteScope supplies a WSDL file which the user can use to create a client code. The client code reports the event and/or metrics data to SiteScope. The client has several ways to report data to BSM:

- report one event
- report an array of events
- report one metric
- report an array of metrics

For task details, see "How to Check Connectivity to the Technology Web Service Integration Monitor" on page 993.

For user interface details, see "Technology Web Service Integration Monitor Settings" on page 995.

This section also includes:

- "What Data Is Collected" on page 991
- "Setup Requirements" on page 991
- "Limitations" on page 992

What Data Is Collected

The Technology Web Service Integration Monitor collects data that is extracted from any message received by SiteScope report data Web service and sends notifications to BSM containing preferred values from the original message.

Before setting up the Technology Web Service Integration Monitor, you should understand and map out the purpose and usage of the data that is forwarded to BSM. You should determine if the data is for presentation in the Service Health, Service Level Management, reports, or all.

The specific data that is forwarded to BSM is controlled by the field mapping script. You use this script to specify the preferred value fields that you want forwarded. For more details on selecting the script and the file structure and syntax, see "Integration Monitor Field Mapping" in *Using SiteScope*.

Data can also be mapped to a topology to forward data to the correct CI hierarchy in BSM. You can configure topology settings for the monitor by selecting a topology template, which loads the applicable scripts, and editing them in a separate text editor during monitor creation. For more details on editing the script, see "Topology Settings for Technology Integration Monitors" in *Using SiteScope*.

Setup Requirements

The following are requirements for using the Technology Web Service Integration Monitor to forward data to BSM:

- When adding the monitor to SiteScope, in the Field Mapping panel, you must select a field mapping script and load the script for the monitor. Copy the contents of the script into your preferred text editor and edit the script to define the event handlers for the monitor instance. For details on the file structure and syntax, see "Integration Monitor Field Mapping" in *Using SiteScope*.
- To enable the connection to SiteScope reportMonitorData Web service, you must create a client code (in any language) that makes the connection and handles the reporting of the data to SiteScope through the Web service. For details on enabling the connection, see below.

To enable the connection to SiteScope reportMonitorData Web service:

1. Open Explorer and go to SiteScope (http://<SiteScope host>:8080/SiteScope/services). Take the WSDL file of the service **reportMonitorData**. The WSDL is an interface file which represents the API of the reportMonitorData Web service in SiteScope. The reportMonitorData service is the service that listens to incoming messages and forwards them to BSM. This file is used to create the client stubs that connect to the service and report the data.

2. Generate the stubs using the WSDL file. The generation of the stubs can be to any language. The way to create the files depends on the language that you want to use.

   For example, if you want to use Java as the client code, you must use the WSDL2JAVA task in AXIS package that can be downloaded from their Web site. Run **Java org.apache.axis.wsdl.WSDL2Java <name of saved WSDL file>**. After running this, you get two packages. One package is **com**, which holds the needed objects for sending the data, and the second is **localhost**, which holds the stubs that makes the connection to SiteScope Web service.

3. Write the actual client code which uses the generated classes to send the data to SiteScope. In the code, call the **setreportMonitorDataEndpointAddress(<SiteScope targetHost>)**, which is found in **MonitorDataAcceptorServiceLocator** (one of the generated stubs) to set the SiteScope address to where you want the data reported.

4. Run your code and check if you get data in the SiteScope Technology Web Service Integration monitor.

Limitations

If you are working with Business Availability Center version 5.1 and earlier, you cannot define new Technology Web Service Integration monitors or edit existing ones from within BSM. If you need to define a new Technology Web Service Integration monitor or edit an existing monitor, detach SiteScope from BSM, define the monitor in SiteScope's new user interface, and then attach the SiteScope to BSM again.

Tasks

How to Check Connectivity to the Technology Web Service Integration Monitor

After creating a Technology Web Service Integration monitor in SiteScope, you can check connectivity to the Web service by using the **test_client** which is located in the <**SiteScope root directory**>**\conf\ems\webservice\test_client** directory. This tool sends constant messages to SiteScope reportMonitorData Web service. The messages can be either metrics messages or event messages.

To use the client tool to check connectivity:

1 In the <**SiteScope root directory**>**\conf\ems\webservice\test_client** directory, run the **test_event_client.bat** for events or **test_metrics_client.bat** for metrics, using the following parameters:

- **Target Host.** The address of the SiteScope host which receives the messages.
- **Number of messages to send.** Number of messages to send to SiteScope.
- **System Id.** System Id of the monitor that receives the messages.
- **Severity/Quality.** Severity of the event when forwarding events (default is to send 1 to 5). Quality of the metric when forwarding metrics data (default is 0-3).

2 If you are forwarding other values to BSM, you must edit the field mapping accordingly.

The tool can also be run with no parameters. In this case, the tool tries to send one message to the local host. The message has the system id: **Test Event System Id**. The severity is 5 (for events) or the quality is 3 (for metrics).

If you use this option, you must activate it on the SiteScope machine and add a Technology SNMP Trap Integration monitor with the system id: **Test Event System Id**.

3 After running the tool, go to the required SiteScope monitor and see if the number of messages received equals the number that you sent. In addition, you can go to one of the applications (Service Health, Service Level Management) and see if the data that you sent is displayed.

Reference

Technology Web Service Integration Monitor Settings

The Technology Web Service Integration Monitor enables a Web service entry point to SiteScope. The monitor can be used to report data from third-party Enterprise Management Systems (EMS) to SiteScope through Web service. Both event and metrics entry points into BSM are published for external systems to use. For each event, metric, or both, that SiteScope receives, a sample is forwarded to BSM containing the event and/or metrics values.

To access	Select the **Monitors** context. In the monitor tree, right-click a group, select **New** > **Monitor**, and select the monitor from the New Monitor Page.
Relevant tasks	➤ "How to Check Connectivity to the Technology Web Service Integration Monitor" on page 993 ➤ "How to Deploy Integration Monitors" in *Using SiteScope*
See also	➤ "Technology Web Service Integration Monitor" on page 989

Technology Web Service Integration Monitor Settings

User interface elements are described below:

UI Element	Description
System ID	Text system ID for the Technology Web Service Integration Monitor instance. Each received message from the EMS system holds a system id. Each monitor receives messages only with a system id that matches the system id defined in the monitor. The system id is unique for all monitors. Enter the system id that represents the messages that you want this monitor to receive.

Field Mapping

User interface elements are described below:

UI Element	Description
Sample Type	Select from the following sample types for this integration: ➤ **Events**. For details, see "Configuring Field Mapping for Event Samples" in *Using SiteScope*. ➤ **Metrics**. For details, see "Configuring Field Mapping for Metrics Samples" in *Using SiteScope*. ➤ **Tickets**. For details, see "Configuring Field Mapping for Ticket Samples" in *Using SiteScope*.
Load File	Loads the script that is applicable to the sample type selected above.
Field Mapping	The monitor uses the field mapping script to correctly map the data it collects from the monitored application to a format recognizable by BSM. To enable the integration, you must configure these mappings as required by the environment you are monitoring. The mapping is editable in this box using the script editor provided (you can make the script field read only by right-clicking the script and selecting **Configure** > **Read Only**). You can also copy it into your preferred text editor, edit it, and then copy it back into this box. For details on the field mapping script template, see "Integration Monitor Field Mapping" in *Using SiteScope*. **Note:** All parameters in the field mapping should be in the format logical_group and not logicalGroup. Therefore, the target name parameter should be filled as follows: target_name=resolveHostName($**target_name**)

UI Element	Description
Test Script	Tests the field mapping script. We recommend that you test the script before running the monitor. This test gives you the results of what events or metrics are forwarded to BSM. The test relies on an open socket connection for several minutes and then displays what data was captured for the test period. You can also view the results of the test in the following log file: **<SiteScope root directory>\logs\bac_integration.log**. **Note**: The test does not forward samples to BSM; it tests that the configuration is correct and that data is forwarded accurately when the monitor does run.

Topology Settings

User interface elements are described below:

UI Element	Description
Topology template	Script to create the topology in BSM for the samples retrieved from the monitored application. The script is based on the Jython scripting language (Python enabled by Java). The monitor propogates its status to the CIs mapped in this topology. The template options displayed depend on the sample type selected in the Field Mapping panel. ➤ **Custom**. You create your own topology if you want the retrieved data to be forwarded to specific CIs and not the standard host or EMS monitor CIs. ➤ **Node**. Creates a topology with a host CI as the parent CI and a Running Software CI under it, and an EMS monitor CI under the Running Software CI. Available for event samples only. ➤ **Node - Running Software.** Creates a topology with a Node CI as the parent CI and a Running Software CI under it, and an EMS monitor CI under the Running Software CI. Available for event samples only. ➤ **SiteScope Topology**. Sends SiteScope topology (monitors). If selected, the script area is not available. Available for metrics samples only. ➤ **No Topology**. No topology is sent (although data and configuration samples are still be sent). If selected, the script area is not available. Available for metrics samples only. ➤ **Tickets.** Creates a business service CI with an EMS monitor CI as a leaf node. Available for ticket samples only. **Note**: You must be familiar with the Jython language if you select **Custom**, since you must write the Jython topology script yourself. Depending on the sample type you select, we recommend that you begin with and edit one of the existing scripts. For more details, see "Topology Settings for Technology Integration Monitors" in *Using SiteScope*.

UI Element	Description
Load Script	Loads the required Jython script for the topology you selected in the **Topology template** option. If you selected **Custom**, there is no script to load. The script is based on the Jython scripting language (Python enabled by Java).
Script	The contents of the script are visible in this box. You can edit the script contents in this field using the script editor provided by SiteScope, or you can copy it into your preferred text editor, edit it, and then copy it back into this box. **Note**: The topology script is very sensitive to spaces and tabs. For more details on editing the script, see "Editing the Topology Script" in *Using SiteScope*.
Test Script	Tests the topology script. We recommend that you test the script before running the monitor. This test gives you the results of what events or metrics are forwarded to BSM and what topology is mapped. The test relies on an open socket connection for several minutes and then displays what data was captured for the test period. You can also view the results of the test in the following log file: <**SiteScope root directory**>**logs****bac_integration.log**. **Note**: The test does not forward samples to BSM; it tests that the configuration is correct and that data is forwarded accurately when the monitor does run.

Troubleshooting and Limitations

This section describes troubleshooting and limitations when working with the Technology Web Service Integration monitor.

- Check for errors in <**SiteScope root directory**>**\logs\RunMonitor.log** and in <**SiteScope root directory**>**\logs\error.log**.
- Change the log level to DEBUG in <**SiteScope root directory**>**\conf\core\Tools\log4j\PlainJava\log4j.properties**, to watch outgoing samples.

  Change the line:
  log4j.category.EmsEventPrinter=${emsloglevel}, ems.appender
  to:
  log4j.category.EmsEventPrinter= DEBUG, ems.appender.

  The log file to look at is:
  <**SiteScope root directory**>**\logs\RunMonitor.log**
- If samples are created and sent from SiteScope, but the data is not seen in **Service Health/Event Log/SiteScope reports**, look in <**BSM root directory**>**\log\mercury_wde\wdeIgnoredSamples.log** to make sure the samples were not dropped due to missing fields or values.
- Change the logging level for Service Health to verify that Service Health received the samples. Open the following file on the Gateway Server machine:
  <**BSM root directory**>**\conf\core\tools\log4j\mercury_wde\wde.properties**

  Change the log level parameter to DEBUG in the following lines:

  - log4j.category.com.mercury.am.platform.wde.decode.IgnoredSamples Logger=${loglevel}, IgnoredSamples.appender
  - log4j.category.com.mercury.am.platform.wde.publish_SamplePublisher Samples=${loglevel}, PublishedSamples.appender

  Look at the corresponding log files:

  - <**BSM root directory**>**\logs\mercury_wde\wdeIgnoredSamples.log**
  - <**BSM root directory**>**\logs\mercury_wde\wdePublishedSamples.log**

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