

HP Business Service Management

For the Windows and Linux Operating Systems

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BSM Installation Guide

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Chapter 1

Introduction

Welcome to the BSM Installation Guide. This guide provides a detailed workflow for how to install BSM.

How This Guide is Organized

This book is divided into two parts:

- Part 1 contains the step-by-step workflow for installing BSM.
- Part 2, the appendix, contains reference information and optional procedures such as how to configure a disaster recovery environment.

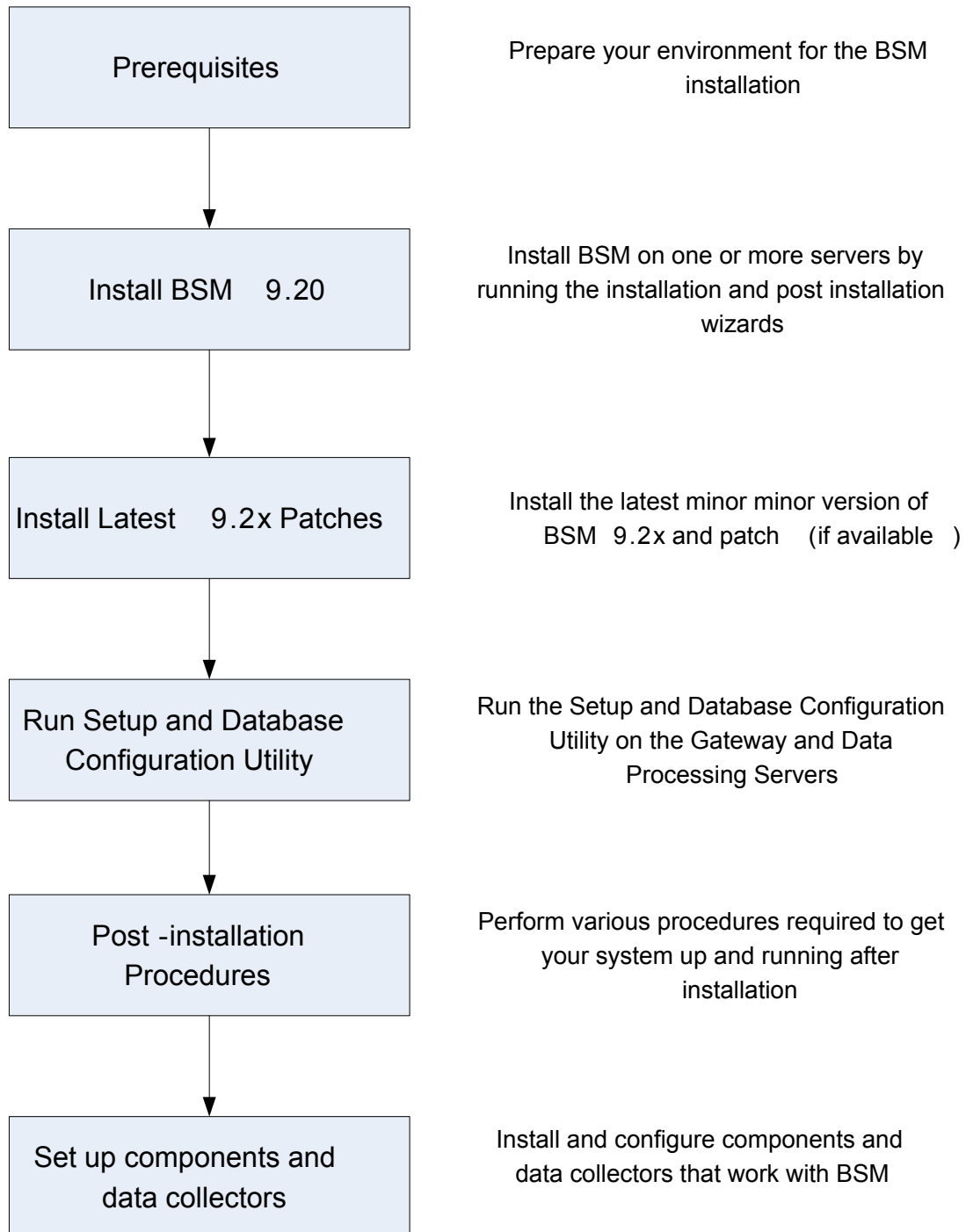
Part 1

Installation Workflow

Chapter 2

BSM 9.2x Installation Overview

The installation of BSM 9.2x involves the following main steps:



Chapter 3

General Prerequisites

Perform the following steps before starting the installation process:

1. **Create deployment plan**

Create a complete deployment plan including the required software, hardware, and components. For details, see the BSM Planning Guide and the BSM System Requirements and Support Matrixes.

2. **Order and register licenses**

Order licenses with a sales representative based on your deployment plan. Register your copy of BSM to gain access to technical support and information on all HP products. You will also be eligible for updates and upgrades. You can register your copy of BSM on the [HP Software Support site](http://www.hp.com/go/hpssoftwaresupport) (<http://www.hp.com/go/hpssoftwaresupport>).

3. **Prepare hardware**

Set up your BSM servers and your BSM database server. For information about setting up your database server, see the BSM Database Guide.

4. **Set up web server (optional)**

BSM installs the Apache web server on all BSM Gateway servers during the installation. If you would like to use the IIS web server, install it on all Gateway servers before installing BSM.

Installation Prerequisites - Windows

Note the following before installing BSM servers on a Windows platform:

- It is recommended that you install BSM servers to a drive with at least 20 GB of free disk space. For more details on server system requirements, see the BSM System Requirements and Support Matrixes.
- If BSM servers, including the database servers, are installed on multiple network segments, it is highly recommended that the number of hops and the latency between the servers be minimal. Network-induced latency may cause adverse affects to the BSM application and can result in performance and stability issues. We recommend the network latency should be no more than 5 milliseconds, regardless of the number of hops. For more information, contact HP Software Support.
- BSM servers must be installed on dedicated machines and must not run other applications. However, the coexistence of BSM servers with SiteScope or Operations Manager agent has been tested and is supported.
- If you use the IIS Web server, it must be up and running prior to BSM installation.
- BSM servers must not be installed on a drive that is mapped to a local or network resource.
- Due to certain Web browser limitations, the names of server machines running the Gateway Server must consist only of alphanumeric characters (a-z, A-Z, 0-9), hyphens (-), and periods (.). For example, if the names of the machines running the Gateway Server contain underscores, it may not be possible to log into the BSM site when using Microsoft Internet Explorer 7.0 or later.
- During BSM server installation, you can specify a different path for the BSM directory (default is **C:\HPBSM**), but note that the full path to the directory must not contain spaces, cannot contain more than 15 characters, and should end with **HPBSM**.
- If you are installing BSM on a Windows Server 2008 SP2 machine, User Access Control (UAC) must be disabled during the installation process.
- If you plan to run BSM servers on a hardened platform (including using HTTPS protocol), review the hardening procedures described in the BSM Hardening Guide.
- **Note:** During installation, the value of the Windows Registry key `HKLM\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\ReservedPorts` is updated to include the following port ranges required by BSM: 1098-1099, 2506-2507, 8009-8009, 8080-8080, 4444-4444, 8083-8083, 8093-8093.

These ports ranges are not removed from the registry key at BSM uninstall. You should remove the ports from the registry key manually after uninstalling BSM if they are no longer needed by any other application.

Installation Prerequisites - Linux

Note the following before installing BSM servers on a Linux platform:

- It is recommended that you install BSM servers to a drive with at least 20 GB of free disk space. For more details on server system requirements, see the BSM System Requirements and Support Matrixes.
- If BSM servers, including the database servers, are installed on multiple network segments, it is highly recommended that the number of hops and the latency between the servers be minimal. Network-induced latency may cause adverse affects to the BSM application and can result in performance and stability issues. We recommend the network latency should be no more than 5 milliseconds, regardless of the number of hops. For more information, contact HP Software Support.
- BSM servers must be installed on dedicated machines and must not run other applications. However, the coexistence of BSM servers with HP SiteScope or Operations Manager agent has been tested and is supported.
- Before installing BSM on a linux machine, make sure that SELinux will not block it. You can do this by either disabling SELinux, or configuring it to enable java 32-bit to run.
 - To disable SELinux, open the `/etc/selinux/config` file, set the value of **SELINUX=disabled**, and reboot the machine.
 - To configure SELinux to enable java 32-bit to run, execute the command **setsebool -P allow_execmod on**.
- BSM servers must not be installed on a drive that is mapped to a network resource.
- Due to certain Web browser limitations, the names of server machines running the Gateway Server must only consist of alphanumeric characters (a-z, A-Z, 0-9), hyphens (-), and periods (.). For example, if the names of the machines running the Gateway Server contain underscores, it may not be possible to log in to the BSM site. To access the BSM site in this case, use the machine's IP address instead of the machine name containing the underscore.
- If you plan to run BSM servers on a hardened platform (including using HTTPS protocol), review the hardening procedures described in the BSM Hardening Guide.
- You must be a root user to install BSM on the server machine.
- The **DISPLAY** environment variable must be properly configured on the BSM server machine. The machine from which you are installing must be running an X-Server.

Chapter 4

Install BSM 9.20

Install BSM 9.20 on a set of servers. This set can be either one Gateway Server and one Data Processing Server, or one one-machine server. In the first case, run the wizards on the Data Processing Server first. The wizard will direct you as to when to begin installation on the Gateway Server.

The installation wizard will guide you to run the post installation wizard. After running the post-installation wizard, you have the option of running the setup and database utility automatically now, or running it later.

Run the installation and post-installation wizards. Do not run the Setup and Database Configuration Utility yet. Exit the wizard on the last screen of the post-installation wizard without continuing.

To run the installation wizard:

- For Windows:

DVD1 > windows_setup > HPBsm_9.20_setup.exe

- For Linux:

DVD2 > linux_setup > HPBsm_9.20_setup.bin

For more details, see the following sections:

- ["Installing BSM on a Linux Platform" on page 24](#)
- ["Installing BSM on a Windows Platform" on page 29](#)

Chapter 5

Install the Latest BSM 9.2x Minor Minor Release and Patch

Install the latest minor minor version of BSM 9.2x and patch (if available).

1. **Download and install the latest minor minor version from the SSO site**

- a. Go to the SSO site:

<http://support.openview.hp.com/selfsolve/patches>

- b. Select **Application Performance Management (BAC)** and select the most recent minor minor 9.2x version.
- c. Click **Search** to locate the installation files.
- d. Save the package locally and launch the relevant setup file to install the patch.
- e. Run the installation files on all BSM servers (Gateway and Data Processing).
- f. Run the post-installation wizard. This wizard follows the patch installation automatically.
- g. Repeat this procedure for the latest intermediate patch (if available).

2. **Run the Setup and Database Configuration Utility**

Run the Setup and Database Configuration Utility on the Gateway and Data Processing Servers. For details, see "[Server Deployment and Setting Database Parameters](#)" on page 36

3. **Enable BSM**

Enable BSM on all servers

Chapter 6

Post-Installation Procedures

This chapter contains the following topics:

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General Post-Installation Procedures

Perform these tasks to complete the installation process:

- **Disable firewall between BSM servers**

In general, placing firewalls between BSM servers is not supported. If an operating system firewall is active on any BSM server machine (GW or DPS), a channel must be left open to allow traffic between the BSM machines (GW and DPS).

- **Configure Event Traffic when using OM Agent 8.60**

If you installed BSM on a Linux machine with OM Agent 8.60, you must run the batch processes below. If you do not run them, the connection of the OM Agent on the BSM server with the OM server may be broken.

Run the following batch processes on all BSM machines (GW and DPS):

- `/opt/OV/lbin/bbc/install/configure.sh`
- `/opt/OV/lbin/xpl/install/configure.sh`

- **Create Profile Database**

You create the profile database schema after running the installation wizards. For more information, see "Database Administration" in the BSM Platform Administration Guide.

- **Upload additional licenses**

The main BSM license is entered during the main BSM installation. However, a number of BSM applications require additional licenses. To use these applications, you must obtain licenses from HP. For more information visit [HP Software Support online](http://www.hp.com/go/hpsupport) (<http://www.hp.com/go/hpsupport>).

You upload the license files in the License Manager. For more information, see "License Manager Page" in the BSM Platform Administration Guide.

- **Configure LW-SSO when load balancer is located in separate domain**

If you are using a load balancer and it is not in the same domain as servers integrating with BSM (for example, NNMi, TransactionVision, OO), you will need to customize a LW-SSO configuration. For details, see LW-SSO Configuration for Multi-Domain and Nested Domain Installations in the BSM Platform Administration Guide.

- **Configure load balancer or reverse proxy certificates**

If you are using a Load Balancer or Reverse Proxy in which your data sources are not communicating directly with the BSM Gateway Server, perform the following task:

Note: Generally, OMi certificates must be exchanged on all nodes (Data Processing Servers, Gateway Servers, manager of manager configurations, and Load balancers). However, some load balancer technologies include a by-pass or pass-through functionality for incoming encrypted messages to its pool members. When using such technologies, certificate exchange on the Load Balancer node is not required.

For details about Reverse Proxy configuration, see the BSM Hardening Guide.

- a. Request server and client certificates from your Certificate Authority for each front-end server (could be a load balancer VIP or a reverse proxy VIP)

If you do not have a Certificate Authority, you can issue an OMi certificate from the BSM Data Processing server with the following command:

```
ovcm -issue -file <certificate file> -name <Fully Qualified Domain Name of  
load balancer or reverse proxy node> [ -pass <passphrase>]
```

- b. Import these certificates to the load balancer or reverse proxy.
- c. Make sure the load balancer/reverse proxy trusts your Certificate Authority (you may need to import the Certificate Authority certificate into the load balancer/reverse proxy).
- d. On the load balancer/reverse proxy add a listener on port 383.

- **Perform hardening procedures**

If you want to secure the communication between BSM servers, perform the procedures in the BSM Hardening Guide

- **Ensure all processes started properly**

You can check to ensure that all processes started properly. For details, see "How to View the Status of Processes and Services" in the BSM Platform Administration Guide.

- **Modify the product_name_enum**

If you are planning to use Operations Manager i, perform the following steps:

- a. Go to **Admin > RTSM Administration > Modeling > CI Type Manager**.
- b. From the CI Types list, select **System Type Manager**.
- c. Select **product_name_enum** and click **Edit**.

- d. Type **lync_server** and click **Add**.
- e. Click **OK**.

• Install and Configure System Health

System Health enables you to monitor the performance of the servers, databases, and data collectors running on your BSM system and ensure that they are functioning properly. It is recommended that you install and configure System Health after you deploy BSM servers. For details, see the System Health Guide.

• Check installation log files

You can see the installation log file by clicking the **View log file** link at the bottom of the installer window.

In a Windows environment, this log file, along with additional log files for separate installation packages, is located in the **%temp%\..\HPOVInstaller\HPBsm_9.10** directory.

In a Linux environment, the logs files are located in the **/tmp/HPOVInstaller/HPBsm_9.10** directory.

The installer log file name is in the following format:

HPBsm_<VERSION>_<DATE>_HPOVInstallerLog.html or **HPBsm_<VERSION>_<DATE>_HPOVInstallerLog.txt** (for example, **HPBsm_9.10_2010.10.21_13_34_HPOVInstallerLog.html**).

Individual installation package log file names are in the following format:

Package_<PACKAGE_TYPE>_HPBSM_<PACKAGE_NAME>_install.log (for example, **Package_msi_HPBSM_BPIPkg_install.log**).

• Install component setup files

The component setup files are used to install the components used by BSM. The component setup files are not installed as part of the basic BSM installation. They are located separately in the Web delivery package download area and in the **Data Collectors and Components\components** directory of the BSM DVDs and must be installed separately to the BSM Downloads page. The component setup files can then be downloaded from BSM and used when required. For details on working with the BSM Downloads page, see "Downloads Overview" in the BSM Platform Administration Guide.

You must run all DVDs provided for installation to enable downloading all the BSM data collectors and components.

Note: You can install a component by using the component's setup file directly from the network or DVD. For details on installing a component, refer to the individual documentation for the component you want to install. The relevant documentation is available from the

Downloads page in BSM after the component's setup files are copied to the Downloads page.

The procedure for installing component setup files to the Downloads page differs, depending on whether you are installing a Web delivery version or DVD delivery version of BSM.

- **Installing Component Setup Files Using a Web Delivery Version**

Copy the component setup files that you want available in the Downloads page from the appropriate directory in the release download area to the **<BSM root directory>\AppServer\webapps\site.war\admin\install** directory on the BSM Gateway Server. If required, create the **admin\install** directory structure.

- **Installing Component Setup Files Using a DVD Delivery Version**

There is a setup utility in the **Data Collectors and Components** directory on the DVD that copies the component setup files from the DVD to the **<BSM root directory>\AppServer\webapps\site.war\admin\install** directory on the BSM Gateway Server.

During the setup process, you can choose which data collectors to copy by selecting the relevant checkboxes.

Note: You can install all or some of the component setup files on multiple Gateway Servers, with the files installed on a specific server being available on that server's Downloads page.

To install component setup files to the BSM Downloads page:

- i. Insert the BSM DVD into the drive of the BSM Gateway Server on which you want to copy the component setup files.
- ii. On the Setup window, click the **Data Collectors and Components Downloads Page Setup** link to open the Data Collector Wizard.

If the Setup window does not appear on your screen, navigate to the **Data Collectors and Components** directory on the DVD and run **copydc.bat**.
- iii. Follow the on-screen instructions to complete the wizard.

- **Restart BSM**

Restart BSM by disabling and then enabling all servers. This can be performed from the following menu: **Start > Programs > HP Business Service Management > Administration**.

Starting and Stopping BSM

After completing the BSM server installation, restart your computer. It is recommended that you do this as soon as possible. Note that when the machine restarts, you must log in as the same user under which you were logged in before restarting the machine.

After installing the BSM servers (either together on one machine, or at least one instance of each server type in a distributed deployment) and connecting the server machines to the databases, you launch BSM on each server machine.

Note: You can check which BSM servers and features are installed on a BSM server machine by viewing the [INSTALLED_SERVERS] section of the **<BSM server root directory>\conf\TopazSetup.ini** file. For example, Data_Processing_Server=1 indicates that the Data Processing Server is installed on the machine.

To start or stop BSM in Windows:

Select **Start > Programs > HP Business Service Management > Administration > Enable | Disable Business Service Management**. When enabling a distributed environment, first enable the Data Processing Server and then enable the Gateway Server.

To start or stop BSM in Linux:

```
/opt/HP/BSM/scripts/run_hpbsm start | stop
```

To start, stop, or restart BSM using a daemon script:

```
/etc/init.d/hpbsmd {start| stop | restart}
```

Note: When you stop BSM, the BSM service is not removed from Microsoft's Services window. The service is removed only after you uninstall BSM.

Logging In and Out

You log in to BSM from a client machine's browser using the login page. LW-SSO is BSM's default authentication strategy. For details, see "Logging into BSM with LW-SSO" in the BSM Platform Administration Guide.

You can disable single sign-on authentication completely, or you can disable LW-SSO and use another supported authentication strategy. For details on selecting an authentication strategy, see "Set Up the Authentication Strategies" in the BSM Platform Administration Guide.

Tip: For complete login help, click the **Help** button on the login page.

To access the BSM login page and log in for the first time:

1. In the Web browser, enter the URL `http://<server_name>.<domain_name>/HPBSM` where **server_name** and **domain_name** represent the FQDN of the BSM server. If there are multiple servers, or if BSM is deployed in a distributed architecture, specify the load balancer or Gateway Server URL, as required.

Note: Users running previous versions of BSM can still use bookmarks set to access the URL `http://<server_name>.<domain_name>/mercuriam` and `http://<server_name>.<domain_name>/topaz`

2. Enter the default administrator user ("admin"), and the password specified in the Setup and Database Configuration utility, and click **Log In**. After logging in, the user name appears at the top right.
3. (Recommended) Create additional administrative users to enable BSM administrators to access the system. For details on creating users in the BSM system, see "User Management" in the BSM Platform Administration Guide.

Note:

- For login troubleshooting information, see "Troubleshooting and Limitations" in the BSM Platform Administration Guide.
- For details on login authentication strategies that can be used in BSM, see "Authentication Strategies — Overview" in the BSM Platform Administration Guide.
- For details on accessing BSM securely, see the BSM Hardening Guide.

When you have completed your session, it is recommended that you log out of the Web site to prevent unauthorized entry.

To log out:

Click **Logout** at the top of the page.

Chapter 7

Install and Configure Additional Components

For an end-to-end, high-level workflow for setting up BSM, as well as details about BSM components and concepts, see the BSM Getting Started Guide, available as part of the BSM Help.

Use the following references to install and configure additional components:

Item	Resource
BSM Platform	To configure the BSM platform, see the BSM Platform Administration Guide, available as part of the BSM Help.
BSM Integrations	Information about integrations between BSM and other products can be found on the HP Software Integrations site: http://support.openview.hp.com/sc/solutions/index.jsp#tab=tab3 .
BSM Components	<ul style="list-style-type: none">• Real User Monitor: See the Real User Monitor Installation and Upgrade Guide.• Business Process Monitor: See the Business Process Monitor Deployment Guide.• SiteScope: See the HP SiteScope Deployment Guide.• TransactionVision: See the TransactionVision Deployment Guide.• Diagnostics: See the Diagnostics Installation and Configuration Guide.• Service Health Analyzer Data Collector: See the Service Health Analyzer Data Collector Installation Guide.• Business Process Insight: See the the Business Process Insight Server Administration Guide.• System Health: See the System Health Guide.• BSM Connector: See the BSM Connector Installation and Upgrade Guide.• Data Flow Probe: See the Data Flow Probe Installation Guide.

You can access the above resources in the following locations:

- The Planning and Deployment Guides page: Can be found on the DVD root directory (**Get_documentation.htm**), or from BSM, go to **Help > Planning and Deployment Guides**.
- The Downloads Page: **Admin> Platform > Setup and Maintenance > Downloads**.
- The Product Manuals site <http://h20230.www2.hp.com/selfsolve/manuals>.

Part 2

Appendix

Appendix 1

Installing BSM on a Linux Platform

This chapter contains the following topics:

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Prepare Information Required for Installation

Have the following information ready before installation:

- **Maintenance number.** This is the number you received with your BSM package.
- **Web server name.** This name must also include the domain name.

Note: When installing on Linux, the domain name must be entered manually.

- **Administrator's e-mail address.**
- **SMTP mail server name.**
- **SMTP sender name.** This name appears on notifications sent from BSM.
- **Name of the Gateway Server machine.**
- **Name of the load balancer** (if any). This is the load balancer used to access the BSM site.
- **Port number used by the Web server.** The default port is 80.

Working with the Web Server

BSM installed on a Linux platform works with Apache HTTP Server.

Note: There must only be one running Web server on a BSM server machine.

Apache HTTP Server

BSM uses a version of the Apache HTTP Server that has been adapted by HP for BSM. It is installed during the server installation.

BSM runs its Apache HTTP Server, by default, through port 80. If port 80 is already in use, there are two ways to resolve the port conflict:

- Before beginning BSM installation, reconfigure the service using that port to use a different port.
- During BSM installation, select a different port for the Apache HTTP Server.

By default, the Apache HTTP Server is not enabled for SSL use. For details on configuring the Web server to use SSL, see <http://httpd.apache.org/docs/2.2/ssl/>. SSL should be enabled for all the directories in use by BSM, as configured in the Apache configuration file (**httpd.conf** and **httpd-ssl.conf**).

Installing BSM Servers

You install BSM servers—the Gateway Server and Data Processing Server—from the BSM DVD provided with the BSM distribution package.

To verify that the installation files are original HP-provided code and have not been manipulated by a third-party, you can use the HP Public Key and verification instructions provided on this HP web site: <https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=HPLinuxCodeSigning>.

The only supported installation method is to mount the Business Service Management DVD on a machine with a DVD device. You can then either install directly from the DVD or copy the files to a directory on a Linux machine and install from there. Copying files from a Windows operating system to a Linux operating system may cause loss of files during installation.

After each stage of the installation process, you have the option to continue to the next stage or move back to the previous stage.

Note: It is recommended that you do not use an emulator application, for example Exceed, to install BSM. Installing via an emulator may slow the pace of the installation and may adversely affect the appearance and functionality of the user interface.

To install BSM servers:

1. Log in to the server as user **root**.
2. Insert the BSM DVD into the drive from which you want to install. If you are installing from a network drive, mount the DVD.
3. Go to the installation root directory.
4. (Optional) You can verify that the installation files are original HP-provided code and have not been manipulated by a third-party by using the HP Public Key and verification instructions on the following website:
<https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=HPLinuxCodeSigning>.
5. Run the following script:

```
/HPBsm_9.20_setup.bin
```

6. Follow the on-screen instructions for server installation.

Note: If BSM detects a previous installation on the machine, a message is displayed warning that any customized configuration data will be overwritten.

- Select the setup type:
 - Select **Gateway** setup type to install the Gateway Server on the current machine.
 - Select **Data Processing** setup type to install the Data Processing Server on the current machine.

- Select **Typical** setup type to install the Gateway Server and Data Processing Server on the same machine.
- The directory where the BSM files are copied is **/opt/HP/BSM**.
- The installation directory for HP shared content is **/opt/OV**.
- The data directory for HP shared content is **/var/opt/OV**.

Note: During installation you may get the following message:

The necessary ports are in use. If the installation indicates that there are ports in use, the installation does not fail but it is recommended that you free the necessary ports.

This phase of the installation can take approximately 30-60 minutes in a virtual environment.

After the process completes, you see check marks next to each of the packages and applications successfully deployed. If there are errors, an **Errors** tab opens detailing what errors may have occurred.

7. The post-installation wizard opens. Do the following:

- **Register the product.** Enter **Name**, **Company**, and **Maintenance number**.
- **Configure connection settings:**
 - **Host.** Must be the fully qualified domain name (FQDN). The name of the server may appear by default but you must add the domain manually. If you use a load balancer, here you must enter the machine name for the load balancer.
 - **Port.** If port 80, the default port, is already in use by the existing Web server, BSM notifies you to resolve the conflict.
- **View the Web server type and enter the BSM administrator email address.** BSM installs the Apache HTTP Server. This is the web server that must be used in Linux environments.
- **Specify the SMTP mail server:**
 - It is recommended that you specify the complete Internet address of your SMTP server. Use only alphanumeric characters.
 - In the Sender name box, specify the name to appear in scheduled reports and on alert notices that BSM sends.

Note: You can rerun the post-installation wizard to modify the settings. The post-installation wizard can be run from the following location: **<HPBSM root directory>/bin/postinstall.sh**. However, if you are running the post-installation wizard for the first time or it was closed before completion, use the following file instead **<HP BSM root directory>/bin/ovii-postinstall.sh <TOPAZ_HOME>**, where **<TOPAZ_HOME>** is the BSM installation directory (typically /opt/HP/BSM).

Appendix 2

Installing BSM on a Windows Platform

This chapter contains the following topics:

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Installing BSM Servers	33

Prepare Information Required for Installation

Have the following information ready before installation:

- **Target directory names.** During installation BSM installs the HP Software L-Core packages. If a lower version of these packages is already installed, the packages are automatically upgraded. Otherwise, the currently installed version is not overwritten. This change cannot be reversed.
- During the installation, you must select directories for installing these shared packages. They include:
 - HP Software Cross Platform Component
 - HP Software Cross Platform Component Java
 - HP Software Security Core
 - HP Software HTTP Communication
 - HP Software Certificate Management Client
 - HP Software Security Core Java
 - HP Software HTTP Communication Java
 - HP Software Performance Access Java
 - HP Software Graphing Component
 - HP Software Process Control
 - HP Software Certificate Management Server
- **License key.** You have the option to use an evaluation license (60 days) or import your permanent license. You can browse to a local or network location to locate your license .DAT file.

If at a later stage you need to update the license key (for example, if you acquire a license for one or more new BSM components), you can do so within the BSM site: Select **Admin > Platform > Setup and Maintenance > License Management** and click the **Add License from File** button. For information on updating the license key, see "Licenses" in the BSM Platform Administration Guide.
- **Maintenance number.** This is the maintenance number you received with your BSM package.
- **Administrator's e-mail address.**
- **Port number used by the Web server.** This is the port for access to BSM. The default is port 80.
- **Name of the Gateway Server machine.** This name must also include the domain name.
- **Name of the load balancer** (if applicable). This is the load balancer used to access the BSM site.
- **SMTP mail server name.**
- **SMTP sender name.** This name appears on notifications sent from BSM. This name cannot contain spaces. If a name is entered with spaces the reports will not be delivered.

Note: After BSM is started, you can configure an alternative SMTP server via **Admin > Platform > Setup and Maintenance > Infrastructure Settings**.

Working with the Web Server

BSM installed on a Windows platform works with Apache HTTP Server or Microsoft Internet Information Server (IIS). You specify the web server type in the post-installation wizard. You can re-run the post-installation wizard to modify these settings.

Note: There must be only one running Web server on a server machine that uses the same port that BSM uses. For example, if you select to use Apache HTTP Server during BSM server installation, and you are installing on a machine on which IIS is already running, make sure to stop the IIS service and set its startup status to **Manual** before you begin the installation process.

Apache HTTP Server

BSM uses an Apache HTTP Server version that has been adapted by HP for use with BSM. It is installed during the server installation.

By default, the Apache HTTP Server is not enabled for SSL use. For details on configuring the Web server to use SSL, see <http://httpd.apache.org/docs/2.2/ssl/>. SSL should be enabled for all the directories in use by BSM, as configured in the Apache configuration file (**httpd.conf** and **httpd-ssl.conf**).

Microsoft Internet Information Server (IIS)

If you are installing on a Microsoft Windows Server 2008 and using the IIS 7.X Web server, you must perform the following procedure:

1. In the **Control Panel**, select **Administrative Tools > Server Manager**.
2. Right-click **Roles** and select **Add server role** to launch the Add Roles wizard.
3. On the Select Role Services page, select **Web Server (IIS) role** to install.
If a popup opens with the question **Add features required for Web Server (IIS)?**, click the **Add required features** button.
4. Click **Next** twice.
5. In the Select Role Services panel, select the following roles:
 - a. **Common HTTP Features** section: **Static Content** (usually enabled by default)
 - b. **Application Development** section: **ISAPI Extensions** and **ISAPI Filters**.
 - c. **Management Tools** section: **IIS Management Scripts and Tools**
6. Click **Install**.

Installing BSM Servers

You install BSM servers—the Gateway Server and Data Processing Server—from the DVD provided with the BSM distribution package. Unless you install on a machine running IIS, BSM installs Apache HTTP Server during the installation process.

You need administrative privileges for the machines on which you are installing BSM servers.

Note: Make sure that there are no other installations or processes that may be using the Windows Installer. If there are, the BSM installation hangs and cannot continue running. You must stop the other installation, stop the BSM installation by clicking the **Cancel** button in the installation wizard, and re-run the BSM installation.

The first installation wizard copies the files and packages onto your machine. The post-installation wizard enables registration, and configuring connection, Web server, and SMTP settings.

To install BSM servers:

1. Insert the BSM DVD into the drive from which you want to install. A splash screen opens if Autorun is enabled on the machine.

If you are installing from a network drive:

- a. Connect to the DVD.
- b. From the **Start** menu, select **Run**.
- c. Enter the location from which you are installing, followed by HPBsm_9.20_setup.exe. The setup file for BSM servers is located in the **Windows_Setup** directory of the DVD. For example, enter d:\Windows_Setup\HPBsm_9.20_setup.exe

Note: If you are installing on a virtual machine, you must copy the .exe file, as well as the packages directory, locally. If you attempt to run the installation over the network onto a virtual machine, the installation fails.

- d. Click **OK**. Setup begins.
2. Follow the on-screen instructions for server installation.
 - **Language.** If your installer has been localized to offer additional languages, select one from the options available.

Note: You may receive an anti-virus warning. You can proceed with the installation without taking any action and with the anti-virus software running on the machine.

- **Setup type:**
 - Select **Gateway** setup type to install the Gateway Server on the current machine.
 - Select **Data Processing** setup type to install the Data Processing Server on the current machine.

- Select **Typical** setup type to install the Gateway Server and Data Processing Server on the same machine.

Note: If you are installing onto a machine running Windows 2008 R2 Server, you may get the following message: The installation folder for shared content is not valid. The problem may in fact be that you do not have the necessary administrator permissions to install BSM on the machine. Check with your system administrator.

- **Installation directories.** You must select the following directories for installation.
 - Select the installation directory for HP shared content. Note that there is additional shared data in **%ALLUSERSPROFILE%\HP\BSM**
 - Select the installation directory for product specific content. In Microsoft Windows environments, this path must be 15 characters or less, and must not contain blank spaces. If the name exceeds 15 characters or does not end with **HPBSM**, during the next step, the installation prompts you to give a different name.

Note: During installation you may get the following message:

The necessary ports are in use. If the installation indicates that there are ports in use, the installation does not fail but it is recommended that you free the necessary ports. Otherwise, you will have to re-configure BSM to use a different set of ports.

This phase of the installation can take approximately 30-60 minutes in a virtual environment.

After the process completes, you see check marks next to each of the packages and applications successfully deployed. If there are errors, an Error window opens indicating which installation scripts may have failed.

3. The post-installation wizard opens. Do the following:

- **Register the product.**
- **Configure connection settings:**
 - i. **Apache HTTP Server.** If port 80, the default port, is already in use by the existing Web server, BSM notifies you to resolve the conflict. If you select Apache, you must also enter the email address of the BSM administrator.
 - ii. **Microsoft IIS.** If IIS is using a port other than port 80, enter the IIS port. If you select IIS, you must also select the IIS Web site address to be used by BSM.
- **Select the Web server type:**

If BSM does not detect an installation of Microsoft IIS on the machine, you are offered the **Apache HTTP Server** option only. If you want to run BSM with Microsoft IIS, click **Cancel** to exit the wizard. Install IIS and rerun the BSM installation.
- **Specify the SMTP mail server:**
 - It is recommended that you specify the complete Internet address of your SMTP server. Use only alphanumeric characters.
 - In the **Sender name** box, specify the name to appear in scheduled reports and on alert notices that BSM sends. If BSM was ever installed on the same machine, a default

name, **HP_BSM_Notification_Manager**, may appear. You can accept this default or enter a different name.

- After BSM is started you can configure an alternative SMTP server via **Platform Administration > Admin > Platform > Setup and Maintenance > Infrastructure Settings**.

If deploying on more than one server, install additional BSM servers using the above steps.

Note: You can rerun the post-installation wizard to modify the settings. The post-installation wizard can be run from the following location: **<HPBSM root directory>\bin\postinstall.bat**. However, if you are running the post-installation wizard for the first time or it was closed before completion, use the following file instead **<HPBSM root directory>\bin\ovii-postinstall.bat**.

Appendix 3

Server Deployment and Setting Database Parameters

This chapter contains the following topics:

- Setup and Database Configuration Utility Overview37
- Setting Database Parameters 38
- Required Information for Setting Database Parameters40
- Running the Setup and Database Configuration Utility42

Note: If you work with Oracle Server, substitute the term **user schema** for the term **database** below.

Setup and Database Configuration Utility Overview

You configure your server deployment and create and connect to the databases/user schemas by using the Setup and Database Configuration utility.

You can run the Setup and Database Configuration utility as part of the BSM server installation by selecting it in the last page of the post-installation wizard. Alternatively, you can run the Setup and Database Configuration utility independently after server installation. The steps involved are the same for both procedures.

When installing in a distributed environment, run the utility first on the Data Processing Server and then on the Gateway Server.

If, at a later time, you want to modify any of the database types or connection parameters, you can run the Setup and Database Configuration utility again. BSM must be disabled when running this utility (**Start > Programs > HP Business Service Management > Administration > Disable HP Business Service Management**).

After modifying database type or connection parameters, restart all BSM servers and data collectors.

Note: Modifying connection parameters for the management, RTSM, RTSM history, Business Process Insight, and Event databases after BSM is up and running may cause serious data loss and integrity problems.

Before beginning this procedure, it is recommended that you review ["Setting Database Parameters" on next page](#) and ["Required Information for Setting Database Parameters" on page 40](#).

For detailed information on preparing either MS SQL Server or Oracle Server in your system for use with BSM, see the BSM Database Guide.

Setting Database Parameters

You must set connection parameters for the following databases:

- Management
- RTSM
- RTSM History
- Business Process Insight (BPI)
- Event

To configure the connections for these databases, you must:

- Select the type of database you plan to use— MS SQL Server or Oracle Server
- Select to create or re-use the database on MS SQL Server, or user schema on Oracle Server. See ["Creating Databases" below](#).
- Specify the connection parameters to the database or user schema. See ["Connecting to Existing Databases" below](#).

Note: If you need to change an active management database for BSM, contact HP Software Support.

Creating Databases

You can either use the Setup and Database Configuration utility to create the databases for you on MS SQL Server or Oracle Server, or you can create these databases manually, directly in the relevant database server (for example, if your organization does not allow the use of administrator credentials during Setup). If you created the databases manually, you must still run the Setup and Database Configuration utility to connect to them.

For instructions on creating databases manually on MS SQL Server, see "Creating and Configuring Microsoft SQL Server Databases" in the BSM Database Guide. For instructions on creating user schemas manually on Oracle Server, see "Manually Creating the Oracle Server Database Schemas" in the BSM Database Guide.

Note: Each database/user schema created in BSM(whether on the same database server or on different database servers) must have a unique name.

Connecting to Existing Databases

When running the Setup and Database Configuration utility, you select whether you want to create a new database/user schema or connect to an existing one.

You generally use the **Connect to an existing schema** option in the following scenarios:

- When connecting to a database/user schema you manually created directly on MS SQL Server/Oracle Server.
- When installing BSM in a distributed environment and running the utility on servers subsequent to the first server. In this case, you should have run the wizard on the Data Processing Server first and then on the Gateway servers.

You connect to the databases/user schemas that you created during the installation of the first Data Processing Server. After you have connected to the management database, by specifying the same connection parameters that you set during the installation of the first server, the connection parameters for the other databases appear by default in the appropriate screens. Not all databases appear when running on the Gateway Server.

For information on implementing a distributed deployment of BSM, see "Deployment Configurations" in the BSM Planning Guide.

Required Information for Setting Database Parameters

Before setting database parameters, you should prepare the information described in the following sections.

Configuring Connection Parameters for MS SQL Server

You need the following information for both creating new databases and connecting to existing ones:

- **Host name.** The name of the machine on which MS SQL Server is installed. If you are connecting to a non-default MS SQL Server instance in dynamic mode, enter the following: <host_name>\<instance_name>

Caution: There is a twenty six (26) character limit for the **Host name** field while running the utility. If using a host name without a domain name is not appropriate in your environment, perform one of these workarounds:

- Use the IP instead of the host name in the **Host name** field.
 - Map the host name to the IP in the Windows Hosts file. Use the host name you mapped in the **Host name** field.
- **Port.** The MS SQL Server's TCP/IP port. BSM automatically displays the default port, **1433**.
 - If you connect to a named instance in static mode, enter the port number.
 - If you connect to a named instance in dynamic mode, change the port number to **1434**. This port can dynamically listen to the correct database port.
 - **Database name.** The name of the existing database that has been manually created, or the name that you will give your new database (for example, BSM_Management).
 - **User name and Password.** (if you use MS SQL Server authentication) The user name and password of a user with administrative rights on MS SQL Server. The default MS SQL Server administrator user name is **sa**. Note that a password must be supplied.

You can create and connect to a database using Windows authentication instead of MS SQL Server authentication. To do so, you must ensure that the Windows user running the BSM service has the necessary permissions to access the MS SQL Server database. For information on assigning a Windows user to run the BSM service, see ["Changing BSM Service Users" on page 81](#). For information on adding a Windows user to MS SQL Server, see ["Using Windows Authentication to Access Microsoft SQL Server Databases"](#) in the BSM Database Guide.

Note: In Linux environments, Windows authentication is not supported.

Configuring Connection Parameters for Oracle Server

Note: If your Oracle Server is on a Real Application Cluster (Oracle RAC), some of the parameters in this section should be assigned different values. For details, see the section about Support for Oracle Real Application Cluster in the BSM Database Guide.

Before setting database parameters, ensure that you have created at least one tablespace for each user schema for application data persistency purposes, and that you have set at least one temporary tablespace according to the requirements. For details on creating and sizing the tablespaces for BSM user schemas, see "Oracle Server Configuration and Sizing Guidelines" in the BSM Database Guide.

You need the following information for both creating a new user schema and for connecting to an existing one:

- **Host name.** The name of the host machine on which Oracle Server is installed.

Caution: There is a twenty six (26) character limit for the **Host name** field while running the utility. If using a host name without a domain name is not appropriate in your environment, perform one of these workarounds:

- Use the IP instead of the host name in the **Host name** field.
- Map the host name to the IP in the Windows Hosts file. Use the host name you mapped in the **Host name** field.

- **Port.** The Oracle listener port. BSM automatically displays the default port, **1521**.
- **SID.** The Oracle instance name that uniquely identifies the Oracle database instance being used by BSM.
- **Schema name and password.** The name and password of the existing user schema, or the name that you will give the new user schema (for example, BSM_MANAGEMENT).

If you are creating a new user schema, you need the following additional information:

- **Admin user name and password.** (to connect as an administrator) The name and password of a user with administrative permissions on Oracle Server (for example, a System user).
- **Default tablespace.** The name of the dedicated default tablespace you created for the user schema.
- **Temporary tablespace.** The name of the temporary tablespace you assigned to the user schema. The default Oracle temporary tablespace is **temp**.

Note: To create a new user BSM user schema, you must have administrative permissions and CREATE USER, CONNECT, CREATE SEQUENCE, CREATE TABLE, CREATE TRIGGER, UNLIMITED TABLESPACE, CREATE VIEW, and CREATE PROCEDURE privileges on the Oracle Server.

Running the Setup and Database Configuration Utility

You can run the Setup and Database Configuration utility either as part of the BSM Installation process or separately. If you run the Setup and Database Configuration utility separately from BSM Installation process, note the following important points:

- If the command prompt window is open on the BSM server machine, you must close it before continuing with the Setup and Database Configuration utility.
- If running this wizard after installation to modify existing configuration and not during initial installation, you must disable BSM before running the Setup and Database Configuration utility (select **Start > Programs > HP Business Service Management > Administration > Disable HP Business Service Management**).
- Use only English characters when entering database parameters.

To set database parameters and configure server deployment:

1. Launch the Setup and Database Configuration utility in one of the following ways:
 - At the end of the post-installation wizard, select the option to run the Setup and Database Configuration utility.
 - **Windows:** On the BSM server, select **Start > Programs > HP Business Service Management > Administration > Configure HP Business Service Management**. BSM launches the Setup and Database Configuration utility. Alternatively, you can run the file directly from **<BSM_Installation_Directory>\bin\config-server-wizard.bat**.
 - **Linux:** On the BSM server machine, open a terminal command line and launch **/opt/HP/BSM/bin/config-server-wizard.sh**.
2. Follow the on-screen instructions for setting the following databases:
 - Management
 - RTSM
 - RTSM history
 - Business Process Insight
 - Event

Note: When running the utility on the Gateway Server, not all databases appear.

3. **License.** If you are running this utility for the first time, you can select to use the evaluation license or download your new licenses. If this is not the first time you are running this utility, you can select to skip this step or download additional licenses. The license file has a .DAT suffix and must be in a local or network location accessible to the server running the utility.

You can update your licenses after BSM is installed in the Licenses Management page of Platform Administration. For details, see "Licenses" in the BSM Platform Administration Guide.

4. **Server Deployment.** The recommended workflow is to enter your deployment information in the capacity calculator to determine the scope of your deployment and which applications and features you will be running. You can upload the saved capacity calculator Excel file into this page of the utility. The required fields are automatically populated with the data from the capacity calculator, based on your entries in the Excel sheet. For details, see the BSM Planning Guide.
- **Users.** The number of logged in users determines whether your user load is **small**, **medium**, or **large**.
 - **Model.** The number of configuration items in your model determines whether your model is **small**, **medium**, **large**, or **extra-large**.
 - **Metric Data.** The number of monitored applications, transactions, locations, and hosts determines whether your metric data load is **small**, **medium**, or **large**.
 - **<List of Applications>.** Select or clear the applications to activate or deactivate for this deployment. Clear those applications you are not using to free memory and processor speed for those applications that you are using.

Note: If you do not enable functionality while running this utility, it is not available to any users. For example, if you do not select Custom Rules (used in OMi and labelled Custom Event Handling in the capacity calculator), users are not able to customize event processing. For details on the application options, see the tooltips in the capacity calculator.

After the installation is complete and you want to change your deployment, you can adjust capacity levels and enable or disable applications and functionality in the Server Deployment page in Platform Administration.

You can also manually enter the information in this page, but it is highly recommended that you use the capacity calculator to determine the scope and capacity of your deployment.

5. **Login Settings.** Enter passwords for the administrator user ("admin") to access BSM and the JMX console.

Optionally, set an **Access to RTSM password** to secure communication to the Run-time Service Model from RUM, BPI, and TransactionVision.

6. **IIS Configuration.** If you are using Microsoft Internet Information Server (IIS) version 7.X on Microsoft Windows Server 2008, BSM requires that the following IIS roles are enabled:

- ISAPI Extensions
- ISAPI Filters
- IIS Management Scripts and Tools
- Static Content

If they are already enabled, the IIS Configuration screen is not displayed.

If any of the roles are not enabled, you can request that they are automatically configured now by selecting **Automatically enable IIS roles** and clicking **Next**.

If you want to configure them manually, select **Manually enable IIS roles** and click **Next**.

7. **Firewall Configuration.** If you are running BSM behind a firewall, when running the utility on a Gateway Server, you have the option of configuring the firewall either automatically or manually.
- If you choose to configure automatically, **only port 383** (the event system default port) is configured. When the user decides to configure the firewall automatically we check which port is configured for BBC in XPL config and open this port. 383 is the default BBC port but if the user changed this in XPL config we open that port in the firewall instead of port 383.
- You must then manually configure the same port when running the utility on the Data Processing Server because the certificate server is hosted there. You may need to open additional ports if a firewall is enabled on this server. For details, see "Port Usage" in the BSM Platform Administration Guide.
- If you choose to configure manually, no port configuration is executed and you must manually configure on both the Gateway Server and the Data Processing Server.
8. To enable the database connections, you must click **Finish** at the end of the utility.
9. If you ran the Setup and Database Configuration utility as part of the BSM server installation, you must start BSM on all servers only after successfully setting the parameters for all the databases. For details, see ["Starting and Stopping BSM " on page 20.](#)

If you ran the Setup and Database Configuration utility to add a new Gateway Server or modify the previously defined database types or connection parameters, restart all BSM servers and data collectors after successfully completing the parameter modification process.

Note: If you used this utility to modify any databases on a running BSM deployment, MyBSM and Service Health will no longer contain any pages and components, and OMi perspectives are removed. To restore MyBSM and Service Health pages and components and OMi perspectives:

- Open the following directory: **<Gateway Server root directory>\conflumashup\import**. This contains two directories: **\loaded**, and **\tload**.
- Copy the contents of the **\loaded** directory into the **\tload** directory. Restart BSM.

Appendix 4

Disaster Recovery for BSM

This chapter contains the following topics:

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Preparing the Disaster Recovery Environment	47
Cleanup Procedure	50
Configure the New Environment	54
Configure Data Collectors	55

Introduction to Disaster Recovery for BSM

You can set up and activate (when necessary) a Disaster Recovery system for your BSM system.

This chapter describes the basic principles and guidelines on how to set up a Disaster Recovery system, and the required steps to make the Secondary BSM system become the new Primary BSM system. The chapter covers a typical BSM environment consisting of one BSM Gateway server, one Data Processing Server, and one database server containing BSM database schemas.

Note:

- Disaster Recovery involves manual steps in moving various configuration files and updates to the BSM database schemas. This procedure requires at least one BSM Administrator and one database administrator, who is familiar with the BSM databases and schemas.
- There are a number of different possible deployment and configurations for BSM. To validate that the disaster recovery scenario works in a particular environment, it should be thoroughly tested and documented. You should contact HP Professional Services to ensure best practices are used in the design and failover workflow for any disaster recovery scenario.
- A disaster recovery machine must use the same operating system and root directory as the original environment.

Preparing the Disaster Recovery Environment

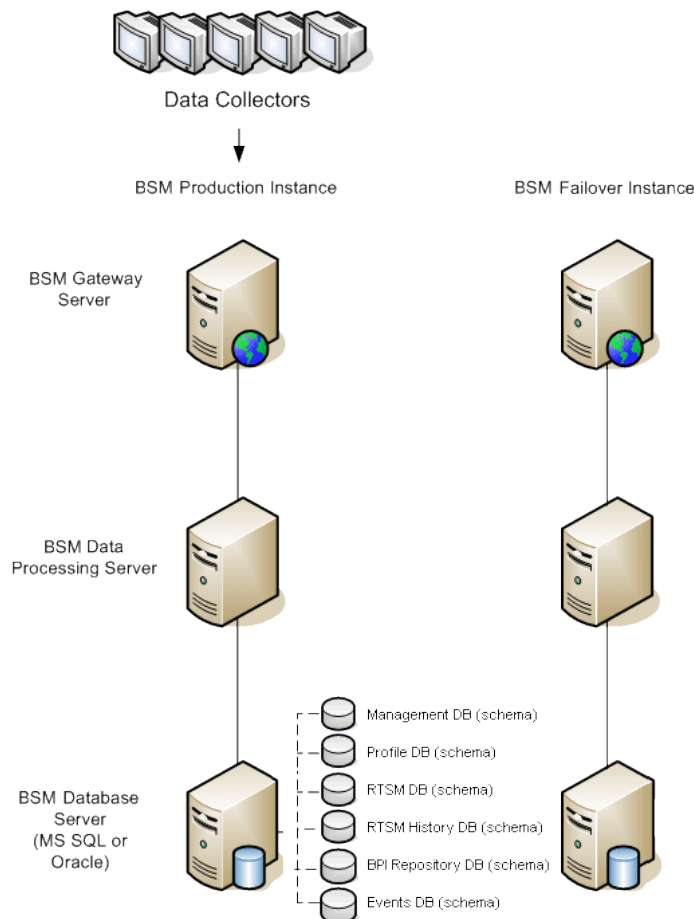
Preparing the Disaster Recovery environment by performing the following steps:

1. Install a set of BSM servers

Install a second instance of BSM that matches your current production environment.

- Install exactly the same version of BSM in your backup environment as that used in your production environment.
- The backup environment should be the same as your production environment (for example, one- or two-machine deployment, similar hardware)
- The backup environment must use the same operating system and installation directory as the original environment.
- Do not run the Server and Database Configuration utility and do not create any databases or enable the servers.

The following diagram shows a typical BSM environment with a Failover system also installed:



2. Copy configuration files from the original system

Copy files you manually modified in any of the following directories from the BSM Production instance to the same server type in the Failover instance:

- conf
- odb/conf
- odb/content/
- BLE/rules/<custom rules>.jar

If you used User Reports to create Excel reports, you must manually copy these to the Failover Instance. The reports are stored in the **<Gateway Server>\HPBSM\AppServer\webapps\site.war\openapi\excels** directory in folders for each customer ID.

Also copy any other files or directories in the system that you have customized.

Note: It is recommended to have at least daily backups of BSM servers. Depending on the amount and interval of configuration changes, it may be necessary to incorporate a faster interval to prevent a large loss of configuration changes in the event of losing the Production instance.

3. Configure the Backup database

Replicate the original database. The original database can now be used as a backup, and the replicated database will be used as the primary database.

Note: HP recommends that only an experienced database administrator perform this phase of the Disaster Recovery scenario.

■ Microsoft SQL—configure database logfile shipping

To provide the most up to date monitoring and configuration data, it is critical to enable log file shipping to minimize the time in data gaps. By using log file shipping you can create an exact duplicate of the original database; out of date only by the delay in the copy-and-load process. You then have the ability to make the standby database server a new primary database server, if the original primary database server becomes unavailable. When the original primary server becomes available again, you can make it a new standby server, effectively reversing the servers roles.

The log file shipping needs to be configured for the following BSM databases:

- Management
- Profile
- RTSM
- RTSM History

- Business Process Insight Repository
- Event

Note: When Business Process Insight is installed on its own server as a full installation, refer to the Business Process Insight Server Administration Guide for information regarding disaster recovery.

For details about how to configure log file shipping for Microsoft SQL, refer to the appropriate Microsoft SQL documentation.

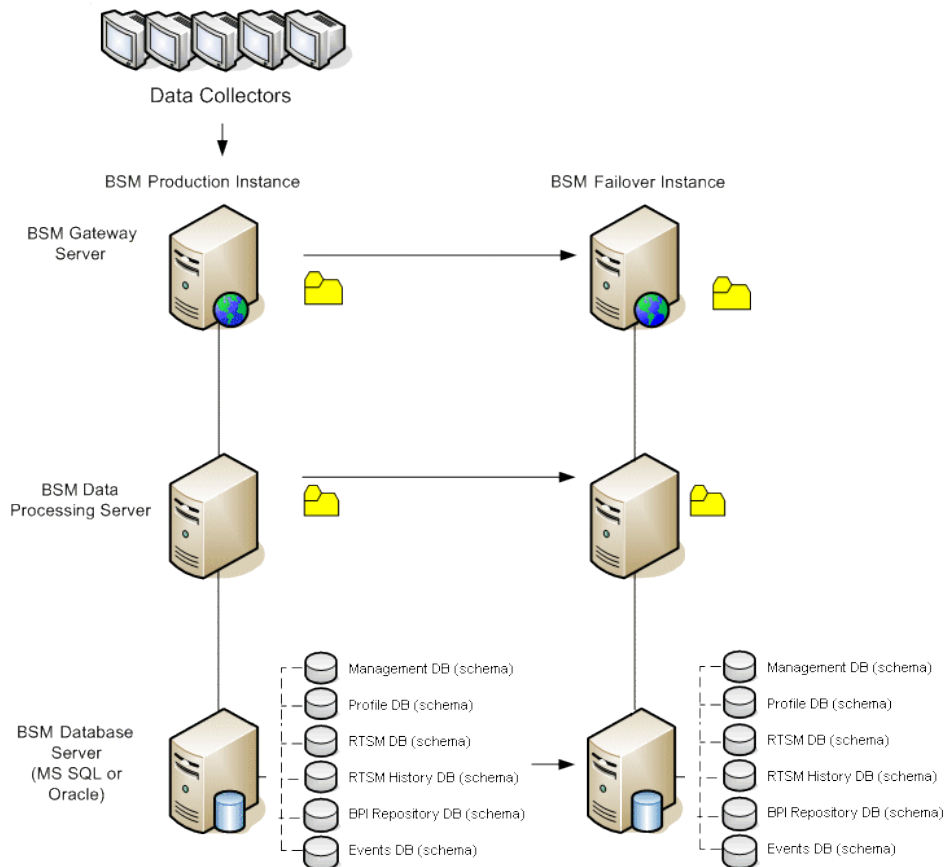
■ Oracle—configure the Standby database (Data Guard)

Oracle does not have logs for each schema, but only on a database level, which means that you cannot make a standby database on the schema level and must create copies of the production system databases on your backup system.

For details about how to configure a Standby database, refer to the appropriate Oracle documentation.

Upon successful completion of the Backup database configuration, the BSM Failover Database should be in sync with the BSM Production Database.

The following diagram shows the production and Failover systems with database logfile shipping enabled:



Cleanup Procedure

Now that you have replicated the original environment, certain settings must be manually modified to avoid confusion between the original environment and the new environment. This procedure cleans up all the machine-specific references in the configurations from the Production instance.

Note:

- Before starting the activation procedures, the BSM Administrator should ensure that the appropriate license has been applied to the Failover instance and that all the available data collectors can communicate with the Failover instance.
- HP recommends that an experienced database administrator perform the SQL statements included in this procedure.
- The SQL statements below to be run against the management database except for the last step. The SQL statements in the last step needs to be run against the RTSM database.

1. Delete old information from High Availability (HA) tables.

Run the following queries on the management database:

- **delete from HA_ACTIVE_SESS**
- **delete from HA_BACKUP_PROCESSES**
- **delete from HA_PROC_ALWD_SERVICES**
- **delete from HA_PROCESSES**
- **delete from HA_SRV_ALLWD_GRP**
- **delete from HA_SERVICES_DEP**
- **delete from HA_SERVICES**
- **delete from HA_SERVICE_GRP**
- **delete from HA_TASKS**
- **delete from HA_SERVERS**

2. Run the following query on the management database.

Delete from PROPERTIES where NAME = 'HServiceControllerUpgrade'

3. Switch references in the Sessions table on the management database to the backup databases.

- a. Run the following query to retrieve all database names:

```
SELECT * FROM SESSIONS  
  
where SESSION_NAME like '%Unassigned%'
```

- b. Update the following columns in each received row with the following values:

- **SESSION_NAME:** Replace with the new restored database name (only where SESSION_NAME is like '%Unassigned%'). Use the following script:


```
UPDATE SESSIONS set SESSION_NAME='Unassigned<NEW_DB_Server_
name><NEW_schema_name><DB_User_name>'

WHERE SESSION_NAME='Unassigned<OLD_DB_Server_name><OLD_schema_
name><old_DB_User_name>'
```
- **SESSION_DB_NAME:** Replace with the new restored schema name. Use the following script:


```
UPDATE SESSIONS set SESSION_DB_NAME='<<NEW_schema_name>'

WHERE SESSION_DB_NAME='<OLD_schema_name>'
```
- **SESSION_DB_HOST:** Replace with the new restored database host name. Use the following script:


```
UPDATE SESSIONS set SESSION_DB_HOST='<<NEW_host_name>'

WHERE SESSION_DB_HOST='<OLD_host_name>'
```
- **SESSION_DB_PORT:** Replace with the new restored port name. Use the following script:


```
UPDATE SESSIONS set SESSION_DB_PORT='<NEW_port_name>'

WHERE SESSION_DB_PORT='<OLD_port_name>'
```
- **SESSION_DB_SID:** Replace with the new restored session ID name. Use the following script:


```
UPDATE SESSIONS set SESSION_DB_SID='<<<NEW_SID_name>>>'

WHERE SESSION_DB_SID='<<<OLD_SID_name>>>'
```
- **SESSION_DB_UID:** Replace with the new restored name. Use the following script:


```
UPDATE SESSIONS set SESSION_DB_UID='<NEW_UID_name>'

WHERE SESSION_DB_UID='<OLD_UID_name>'
```
- **SESSION_DB_SERVER:** Replace with the new restored server name. Use the following script:


```
UPDATE SESSIONS set SESSION_DB_SERVER='<NEW_server_name>'

WHERE SESSION_DB_SERVER='<OLD_server_name>'
```

4. Delete bus cluster info from PROPERTIES table on the management database.

Run the following query:

Delete from PROPERTIES where

**NAMESPACE='MessageBroker' or NAMESPACE='SonicMQ_Namespace' or
NAMESPACE='BrokerName'**

5. Delete machines from Deployment table on the management database.

Run the following query:

DELETE from DEPLOY_HW

6. Setting Manager Values of **SETTING_PARAMETERS** table on the management database.

Update the URLs and LDAP Server in the SETTING_PARAMETERS table.

The following table shows the keys in the Setting Manager table that need to be updated:

SP_CONTEXT	SP_NAME	Description
platform	settings.smtp.server	Name of the SMTP server used for the alert engine
scheduledreports	settings.smtp.server	Name of the SMTP server used for scheduled reports
platform	default.core.server.url	The URL used by data collectors to access the Gateway server in BSM
platform	default.centers.server.url	The URL used by users to access BSM
platform	virtual.centers.server.url	
platform	virtual.core.server.url	

For each key in the table, modify and run the following query:

update SETTING_PARAMETERS set SP_VALUE='<new value>'

where SP_CONTEXT='<context value>' and SP_NAME='<name value>'

As follows:

- update SETTING_PARAMETERS set SP_VALUE='<newmachinename>' where SP_CONTEXT='platform' and SP_NAME='settings.smtp.server'
- update SETTING_PARAMETERS set SP_VALUE='<newmachinename>' where SP_CONTEXT='scheduledreports' and SP_NAME='settings.smtp.server'
- update SETTING_PARAMETERS set SP_VALUE='http://<newmachinename>:80' where SP_CONTEXT='platform' and SP_NAME='default.core.server.url'
- update SETTING_PARAMETERS set SP_VALUE='http://<newmachinename>:80' where SP_CONTEXT='platform' and SP_NAME='default.centers.server.url'

The last two settings in the table above do not need to be updated unless you are using a load balancer or a reverse proxy. In that case, update the settings as follows:

- update SETTING_PARAMETERS set SP_VALUE='http://<Load Balancer or Reverse Proxy>:80' where SP_CONTEXT='platform' and SP_NAME='virtual.centers.server.url'
- update SETTING_PARAMETERS set SP_VALUE='http://<Load Balancer or Reverse Proxy>:80' where SP_CONTEXT='platform' and SP_NAME='virtual.core.server.url'

7. Update SYSTEM Keys.

Update the following keys in the SYSTEM table on the management database:

AdminServerURL	new gateway machine
GraphServerURL	new gateway machine
GraphServerURL4.5.0.0	new gateway machine
application.tac.path	new gateway machine
application.flipper.path	new gateway machine

For each value in the table, modify and run the following query:

update SYSTEM set SYS_VALUE='<new value>' where SYS_NAME='<key>'

where **<new value>** is the new URL in the format of the original URL.

For example:

```
update SYSTEM set SYS_VALUE='http://<newmachine>:port' where SYS_
NAME='AdminServerURL'
```

Note: The default port number is 80.

8. Empty and update tables on the RTSM database.

This procedure cleans up all the machine-specific references in the RTSM configuration tables.

Run the following SQL statements against the RTSM database:

- **update CUSTOMER_REGISTRATION set CLUSTER_ID=null**
- **truncate table CLUSTER_SERVER**
- **truncate table SERVER**
- **truncate table CLUSTERS**

Configure the New Environment

1. Run the Server and Database Configuration utility

Run the Server and Database Configuration utility on each machine to re-initialize the needed tables in the database. To run the Server and Database Configuration utility, select **Start > Programs > HP Business Service Management > Administration > Configure HP Business Service Management**.

Note: When running the Server and Database Configuration utility, make sure to reconnect to the same databases that were created for the Failover environment (that is, the one to which the backup data was shipped). Possible complete loss of configuration data will result if trying to run this on the Production instance.

Run the Server and Database Configuration utility on the machines in the same order that BSM was originally installed in the failover environment.

2. Enable BSM

Enable BSM on the new servers.

3. Run the Post Startup Cleanup procedure to disable any obsolete hosts that are not part of the Failover instance

To disable obsolete hosts:

- a. Browse to the URL
`http://<Gateway Server machine>/topaz/systemConsole/displayBACHosts.do`
- b. Disable all obsolete hosts.

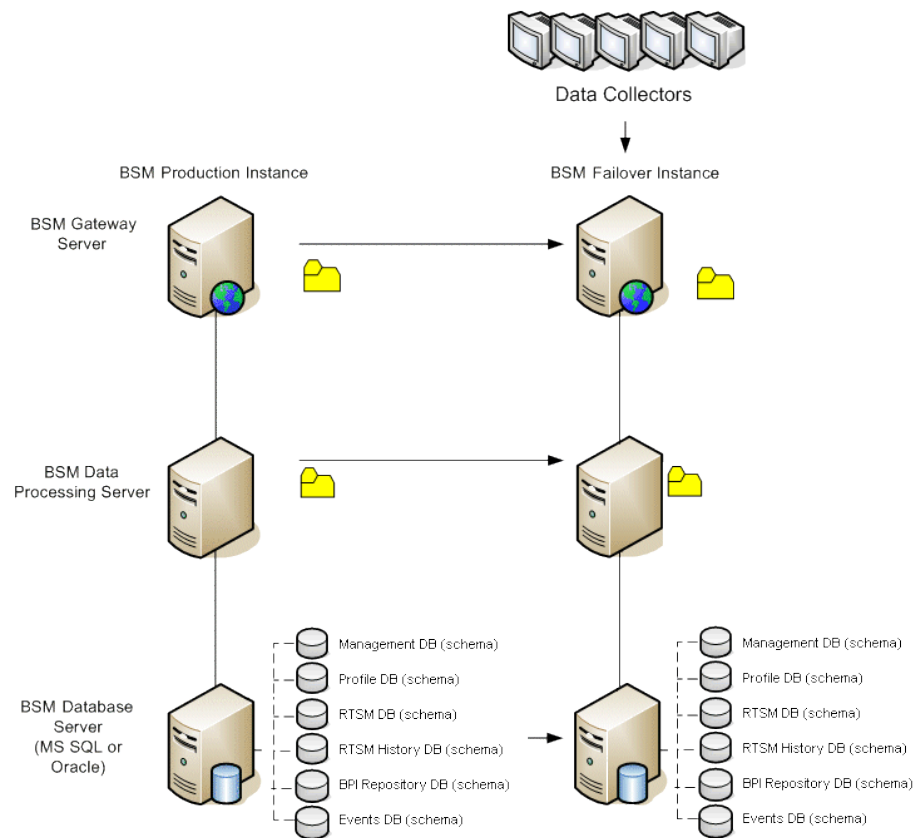
For details on changed host names, refer to the HP Software Self-solve knowledge base, article number KM522738, which can be accessed at <http://h20230.www2.hp.com/selfsolve/document/KM522738>.

Configure Data Collectors

1. Configure data collectors.

Configure all the data collectors, including Business Process Monitor agents, Real User Monitor engines, SiteScopes, TransactionVision, HPOM, Service Manager, Operations Orchestration, and Business Process Insight (if installed on a separate server) to work with the Failover instance. For details, see the relevant documentation for each data collector.

The following diagram shows a fully activated Failover instance:



2. Configuring failover data collector connections.

If any of the data collectors also experienced a failure and were moved to different machines, the new URLs must be communicated to the BSM servers. This is done in various applications in BSM. For example:

Data Collector	Procedure
Business Process Insight	Go to Admin > Platform > Setup and Maintenance > Infrastructure Settings > Applications > Business Process Insight . Change the location of the Business Process Insight - Server Settings and Business Process Insight - Database Settings to point to the new locations.
SiteScope	Reconnect the SiteScope servers to the BSM server from the SiteScope console.
Business Process Monitor	Reconnect the BPM servers to the BSM server from the BPM console.
Real User Monitor	Reconnect the RUM servers to the BSM server from the RUM console.
Operations Manager	<ul style="list-style-type: none"> Exchange certificates between your HPOM and BSM systems. In BSM, go to the Infrastructure Settings for Operations Management: Administration > Platform > Infrastructure Settings > Applications > Operations Management In the Operations Management – Certificate Server Settings section, enter the IP address of the new primary Data Processing Server. In the Operations Management – HPOM Topology Synchronization Connection Settings section, check the connection settings for HPOM. If you switched your HPOM server, reconfigure all entries to reflect the details of the new HPOM server. If no settings are recorded, leave these fields empty, and go to the next step. Open the Connected Servers manager and check the HPOM server connections as follows: Administration > Operations Management > Tune Operations Management > Connected Servers If you switched your HPOM server, reconfigure all entries to reflect the details of the new HPOM server. Use the Test Connection button to validate communication for the current settings, even if they have not been changed.

Data Collector	Procedure
Operations Manager (continued)	<ul style="list-style-type: none"><li data-bbox="553 258 1383 426">■ In HPOM, change the Flexible Management Server Forwarding policy to specify the new BSM server as the target and deploy the new version to your HPOM management server node. For details, see How to Configure the HPOM for Windows Forwarding Policy and How to Configure the HPOM for UNIX Forwarding Policy.<li data-bbox="553 447 1383 541">■ Change the destination server for receiving discovery (topology) data. For details, see described in "Topology Synchronization" in the OMi part of the BSM User Guide.<li data-bbox="553 562 1383 772">■ Restart the service, and in a Command Prompt window on the HPOM management server system, execute the command: ovagtrep -publish Topology data from the HPOM system should now be available in Operations Management.<li data-bbox="553 793 1383 888">■ Delete the buffered messages on the HPOM system for the old BSM server. It is not possible to re-direct these messages to the new BSM server, and these cannot be synchronized. <p data-bbox="553 909 1383 1003">Note: All messages currently in the buffer are deleted. It is not possible to distinguish between different targets and messages for other targets are also deleted.</p>

Data Collector	Procedure
Operations Manager (continued)	<p>To delete the forwarding buffer files on HPOM for Windows:</p> <ol style="list-style-type: none"> Stop the server processes: vpstat -3 -r STOP Delete all files and folders contained within the following directories: <OvDataDir>\shared\server\datafiles\bbc\snf\data <OvDataDir>\shared\server\datafiles\bbc\snf\OvEpMessageActionServer Restart the server processes: vpstat -3 -r START <p>To delete the forwarding buffer files on HPOM for UNIX:</p> <ol style="list-style-type: none"> Stop the server processes: ovc -kill Delete all files and folders contained within the following directories: /var/opt/OV/shared/server/datafiles/bbc/snf/data /var/opt/OV/share/tmp/OpC/mgmt_sv/snf/opcforwm Restart the server processes: ovc -start <p>Note: If the messages are left in the forwarding buffer, there may be some performance degradation as the system regularly tries to deliver them without success. They also consume some disk space.</p>
HP Operations Orchestration	On the HP Operations Orchestration server, adopt the configuration to reflect the new BSM server according to the procedure described in the Solutions and Integrations guide.
HP Service Manager	On the HP Service Manager server, adopt the configuration to reflect the new BSM server according to the procedure described in the Solutions and Integrations guide.
TransactionVision	<p>You must configure in both of the following:</p> <ul style="list-style-type: none"> Go to Admin > Platform > Setup and Maintenance > Infrastructure Settings > Applications > TransactionVision. Change the setting of the URL that BSM uses to communicate with TransactionVision. Go to Admin > TransactionVision > HP Business Service Management Settings page. Change the URL, protocol, and port that TransactionVision uses to communicate to BSM.

Appendix 5

High Availability for BSM

This chapter contains the following topics:

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Overview of High Availability Options

You can improve your system availability and reliability using high availability options that combine multiple servers, external load balancing, and failover procedures.

Implementing a high availability configuration means setting up your BSM servers so that service is continuous despite power outages, machine downtime, and heavy load.

High availability is implemented in two layers:

- **Hardware infrastructure.** This layer includes redundant servers, networks, power supplies, and so forth.
- **Application.** This layer has two components:
 - **Load balancing.** Load balancing divides the work load among several computers. As a result, system performance and availability increase.

External load balancing is a software and hardware unit supplied by an outside vendor. This unit must be installed and configured to work with BSM applications.
 - **Failover.** Work performed by the Data Processing Server is taken over by a backup server if the primary server or component fails or becomes temporarily unavailable.

Implementation of load balancing and failover is discussed in detail throughout this chapter.

Note: HP Software Professional Services offers consulting services to assist customers with BSM strategy, planning and deployment. For information, contact an HP representative.

Load Balancing for the Gateway Server

When you install multiple BSM Gateway Servers, BSM can utilize external load balancing mechanisms to help ensure the even distribution of processing and communication activities across the network. This is particularly important in cases of high load, to avoid overwhelming any single server.

Note: We recommend installing BSM behind a load balancer or reverse proxy. This enables additional security options and can simplify disaster recovery and upgrade procedures.

This section includes the following topics:

["Configuring Load Balancing" on next page](#)

["Notes and Limitations" on page 63](#)

Configuring Load Balancing

1. Create two virtual hostnames. The virtual hostname must be a fully qualified domain name (FQDN), in the format **<servername>.<domainname>**. This requirement is necessary to support Lightweight Single Sign On authentication, which is enabled by default.

The first host name is for accessing the BSM Web site on the Gateway Server. This URL can be distributed to BSM users. The second host name is for the data collectors to access the Gateway Server. This URL must be used when configuring data collectors to communicate with BSM.

2. Enter the relevant load balancer host names in the Infrastructure Settings for the virtual servers. To do so, select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Foundations**, select **Platform Administration - Host Configuration table**:
 - **Default Virtual Gateway Server for Application Users URL.** Virtual host name for the BSM Web site. The Gateway Server you are working on must be able to resolve this Virtual IP address. This means that **nslookup** for the **virtual host name for the application users** should return name and IP address when executed on this Gateway Server.
 - **Default Virtual Gateway Server for Data Collectors URL.** Virtual host name for Data Collectors. All data collectors must be able to resolve this Virtual IP address. This means that **nslookup** for the **virtual host name for the Data Collectors** should return name and IP address when executed on data collector server.
3. In the Reverse Proxy Configuration pane, set the following parameters:
 - **Enable Reverse Proxy parameter = true.**
 - **HTTP Reverse Proxy IPs** (optional).

Add the internal IP addresses of the Load Balancers to this setting.

- If the IP address of the load balancer sending the HTTP/S request is included, the URL returned to the client is either the Default Virtual Server URL or the Local Virtual Server URL (when defined).
- If the IP address of the load balancer sending the HTTP/S request is not included, the Gateway Server machine returns the base URL that it receives in the HTTP/S request.
- If no IP addresses are defined for this parameter (default), BSM works in Generic Mode. This means that you will only be able to log into BSM using the Virtual URL and not directly to the Gateway.

To determine the internal IP of your load balancer:

- a. Log in to BSM through the load balancer.
 - b. Open the log in the following location **<BSM Gateway Server>\log\EJBContainer\UserActionsServlet.log**.
 - c. The IP that appears in the latest login line in this log is the internal load balancer IP. The entry should have your user name.
4. After changing the reverse proxy settings, restart the HP BSM service on the BSM Gateway

and Data Processing servers.

5. Configure the load balancer for data collector access. All data collectors must be able to access the Virtual IP of the Load Balancer. Use the standard settings for the load balancer, but set the following:
 - The Load balancing method should be **Round robin**.
 - Use the following KeepAlive URI:
 - Send String: **GET /ext/mod_mdrv_wrap.dll?type=test**
 - Receive String: **Web Data Entry is up**
6. Configure the load balancer for user access.
 - Use the standard settings for the load balancer, but set persistency to **stickiness by session enabled** or **Destination Address Affinity** (depending on the Load Balancer). If neither of these options are available and the choice is between **Cookie based** stickiness and **IP based** stickiness, then we recommend trying **IP based** stickiness. If this is not done properly, you may experience intermittent user interface failures.
 - Use the following KeepAlive URI:
 - Send String: **GET /topaz/topaz_api/loadBalancerVerify_centers.jsp**
 - Receive String: **Success**

Notes and Limitations

- BSM supports hardware and virtual appliance based load balancers. A hardware load balancer solution is preferred for performance reasons. All load balancers must be able to configure sticky session for users and being able to configure URL based health monitors.
- If you use two load balancers for failover, you must ensure that you configure the hostnames of both load balancers on the DNS server machine. You can then specify the machine name, hostname's FQDN, or URL of either load balancer when this information is required for the data collectors, or in the browser to open the BSM site.
- If two Gateway servers are installed into different drive paths, for example, one was installed onto the C:\ drive and the other onto the E:\ drive, BSM may not be able to be accessed.

Workaround: Create a duplicate path on the **C:\ drive by copying E:\<HP BSM root directory>\conf\settings to C:\HP BSM root directory>\conf\settings.**

- If you use two load balancers for failover, and the load balancers each work with more than one server type, you should define a unique virtual hostname on each load balancer for each server type, map the virtual hostnames to the actual hostnames of the corresponding servers, and ensure that you configure all the virtual hostnames on the DNS server machine. You can then specify either of the relevant virtual hostnames for each data collector, or in the browser to open the BSM site.

High Availability for the Gateway Server

HP Business Service Management provides high availability for the Gateway Servers to ensure that data gets to its destination and that the users can use BSM applications in the event of a server failure.

Protected Delivery for Incoming Data

BSM provides protected data delivery for monitor data. Protected data delivery means that the data is not deleted from one data store until it is forwarded to, and stored in, the next data store.

Note: HP Professional Services offers best practice consulting on this subject. For information on how to obtain this service, contact your HP representative.

BSM supports the following mechanisms to help ensure high availability for the raw data:

- If the Web server of the Gateway Server machine fails, the data is either redirected to another Gateway Server by the load balancer, or is queued on the data collector until the Web Server is up.
- If the Web server of the Gateway Server machine receives the data, but the bus is down, the data is stored on the data collector until the bus is up again.
- If the bus receives the data, but the monitoring data loader is down, the data is stored on the bus until the monitoring data loader is up again. The data is then sent to the database.

High Availability for Service Health

HP Business Service Management provides high availability for Service Health on the Gateway Server to ensure that users can continue working with Service Health even if a Gateway Server fails while a user is in the middle of a session.

When a user logs in to BSM and starts working with Service Health, the session information is registered on a specific Gateway Server and the load balancer sends all communications related to that session to the same Gateway Server. If that Gateway Server fails, the load balancer redirects the session to another Gateway Server and the session is re-registered on the new Gateway Server. The user continues working without any interruption of service and without having to log in to BSM again.

The load balancer for the Gateway Server must be set with **stickiness by session enabled**. For details, see ["Configuring Load Balancing" on page 62](#).

Caution: It is possible that in certain situations, the transition from one Gateway Server to another could take a few seconds. During this transition, errors may be received for some user actions.

High Availability for the Data Processing Server

To ensure high availability, you should install a backup Data Processing Server. For BSM to function properly in the event of a primary Data Processing Server failure, the backup Data Processing Server can take over.

Tip: It is recommended that when you install the primary and backup Data Processing Servers, the servers should be comparable in terms of hardware, memory, and performance.

If the high availability for the Data Processing Server is enabled and a backup server is defined, in the event that one or more services becomes unavailable, the High Availability Controller performs automatic failover and moves the services to the backup server. The server retrieves the current configuration from the management database and continues to provide the services as the new active Data Processing Server.

You can also use the JMX console to manually reassign services to the backup server. You may want to do this if for example, you are planning a maintenance on one of the Data Processing Servers. Moving the services manually can reduce BSM's downtime.

Note: When deploying a new BSM installation, the first Data Processing Server started becomes the default server for the assigned Data Processing Server services—that is, it becomes the primary Data Processing Server. If a second Data Processing Server is started, you can assign it to act as a backup server. For details, see "Understanding Service Reassignment" in the BSM Platform Administration Guide.

This section includes the following topics:

["Services Assigned to the Server" below](#)

["Services Managed by the High Availability Controller \(HAC\)" on page 67](#)

["Configuring Automatic Failover " on page 68](#)

["Reassigning Services with JMX Console" on page 70](#)

["Manually Reassigning Services " on page 71](#)

["Manually Disabling Data Aggregator Services" on page 73](#)

Services Assigned to the Server

Various processes are assigned to the Gateway and Data Processing Servers. Each process is responsible for running specific services. You can use the JMX console to view the services running on the BSM servers or on a specific server, such as the Data Processing Server.

To view services via the JMX Web console:

1. In a Web browser, open:

`http://<Data Processing Server machine name>:8080/jmx-console`

2. When prompted, enter the JMX Console authentication credentials (if you do not have these

credentials, contact your system administrator).

3. In the **Topaz** section, select **service=hac-manager**.
4. Under **java.lang.String listAllAssignments()** from the database, click **Invoke**.

If you want to view the services of a specific server, such as the Data Processing Server, enter the name of the server in the parameter value. If you want to view all services, leave the parameter value for the server name empty.

The processes running on the server are displayed in a table. The JMX online table contains the following columns:

Column Name	Description
Service	The name of the assigned service.
Customer	The ID of the customer to which the service is assigned. The default customer ID for an individual BSM system (one not managed by HP Software-as-a-Service) is 1. A service with a customer id of -1 is a global service used by all customers in a SaaS deployment.
Process	The name of the Data Processing Server and the name of the JVM process handling the service. The length of time the server has been running and the last time it was pinged are also displayed.
Assigned	Whether the service assignment is currently active or not, the date the service was assigned, and the length of time it has been assigned are displayed.
State	The current state of the service. Valid states are: 1 – Stopped 2 – Starting 3 – Stopping 4 – Running -1 – Failed -2 – Failed to stop -3 – Failed to start The date that the service acquired the state, and the length of time that it has been in the state are displayed.
Srv. Sign	Server signature.
State Sign	State signature (should match the server signature).

Services Managed by the High Availability Controller (HAC)

The Data Processing Server services that can be managed by HAC are described in the following table, including:

- Name of the process in JVM
- Name the High Availability Controller (HAC) uses for the process
- The services running on the process
- A description of the process

JVM Process Name	HAC Process Name	Description of Service	
		Service Name	Location of Log File
Mercury AS	mercury _as	KPI_ ENRICHMENT	KPI_Enrichment service is responsible for adding dashboard KPIs to CIs that were added to the model by external monitoring systems. The KPIs to add and the CIs to which the KPIs are added are configurable.
		BSM_DT	BSM_DT handles the configured downtimes in the system. Downtimes can be configured onto CIs and can be configured to affect alerts, events, reports, KPI calculations, and monitoring.
		VERTICALS	Verticals service is for SAP that ensures compatibility with BSM. SAP service links data retrieved from SiteScope and Business Process Monitors to SAP related entities brought from the RTSM.
		EUM_ADMIN	EUM_ADMIN handles End User Management Administration where Business Process Monitors and Real User Monitors are configured for monitoring.
mercury_ odb	odb	BSM_ODB	The RTSM is a central repository for configuration information that is gathered from the various BSM and third-party applications and tools. This information is used to build BSM views.

JVM Process Name	HAC Process Name	Service Name	Description of Service Location of Log File
hpbsm_bizImpact	businessimpact_service	BIZ_IMPACT	The Business Impact component enables you to see the business CIs and SLAs that are impacted by another CI in Service Health.
		LIV_SERVICE	Local Impact View enables you to also create local impact views in Service Health. These are independent of all other views. When you modify indicator definitions on a CI within a local impact view, this has no effect on this CI in all other views.
bpi_process_repository	bpi_process_repository	PROCESS_REPOS	Responsible for maintaining all Business Process Insight configurations when Business Process Insight is not installed on a separate server.
hpbsm_offline_engine	offline_engine	NOA	The New Offline Aggregator service validates and synchronizes new tasks for the offline aggregator on an hourly or daily basis.
hpbsm_marble_supervisor	marble_supervisor	DASHBOARD	Dashboard service on the Data Processing Server is responsible for online business logic calculations for Service Health.
hpbsm_pmanager	pmanager	PM	The Partition and Purging Manager splits fast-growing tables into partitions at defined time intervals. After a defined amount of time has elapsed, data in a partition is no longer accessible for use in BSM reports. After an additional, defined amount of time, that partition is purged from the profile database.
hpbsm_opr_backend	opr_backend	OPR	Responsible for the Operations Management application.

Configuring Automatic Failover

You can configure automatic reassignment of services running on a primary Data Processing Server to a backup Data Processing Server. To configure the automatic reassignment of services running on a primary Data Processing Server to a backup Data Processing Server, you must:

- Define a backup Data Processing Server in the JMX console.
- Enable automatic failover.

Note: If you enable automatic failover and set the keep alive timeout to less than ten minutes, this can cause BSM services to move to the backup server after a restart. To prevent this from happening, when disabling BSM, shut down the backup server before the primary server. When enabling BSM, enable the primary server and verify that all services have started before enabling the backup server.

Defining a Backup Server

You must use the JMX console to define or remove a backup Data Processing Server. You can also view your high availability configurations.

To use the JMX console to define a backup server:

1. In a Web browser, open: **http://<Data Processing Server machine name>:8080/jmx-console**

When prompted, enter the JMX Console authentication credentials (if you do not have these credentials, contact your system administrator).

2. In the **Topaz** section, select **service=hac-backup**.
3. Locate **addBackupServer** and enter the following values:

- **primaryServerName**. The name of the primary server.
- **backupServerName**. The name of the backup server.

Use the machine name for both these parameters. If you are unsure of the machine name, you can use the **listservers** method described below to retrieve the name of the machines already configured.

4. Click **Invoke**.

To remove a backup server:

1. Follow steps 1 and 2 above for accessing the JMX and **hac-backup** service.
2. Locate **removeBackupServer** and enter the following value:

primaryServerName. The name of the primary server for which you are removing the backup server.

3. Click **Invoke**.

To view your high availability configuration:

1. Follow steps 1 and 2 above for accessing the JMX and **hac-backup** service.
2. Locate **listservers** and click **Invoke**.

The result displays a list of **Servers** and **Backup Servers**. If there are no backup servers defined or if high availability is not enabled, you get a message saying automatic failover is disabled.

Enabling Automatic Failover

You enable either using the Infrastructure Settings in the BSM interface or in the JMX console. You can also use the JMX console to check whether high availability is enabled.

To enable automatic failure in Infrastructure Settings:

1. Select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**.
2. Choose **Foundations**, select **High Availability Controller**, and locate the **Automatic Failover Enabled** entry in the General Properties table.
3. Modify the value to **true**. The change takes effect immediately.

To enable automatic failover in the JMX:

1. In a Web browser, open:
`http://<Data Processing Server machine name>:8080/jmx-console`

When prompted, enter the JMX Console authentication credentials (if you do not have these credentials, contact your system administrator).
2. In the **Topaz** section, select **service=hac-backup**.
3. Locate **void setAutomaticFailoverEnabled ()**, select **True**, and click **Invoke**.

To check whether automatic failover has been configured:

1. Follow steps 1 and 2 above for accessing the JMX and **hac-backup** service.
2. Locate **void getAutomaticFailoverEnabled ()**, click **Invoke**.

Reassigning Services with JMX Console

You can move services between Data Processing Servers as server availability and resource issues arise. Reassigning services can also limit downtime during maintenance of the Data Processing Servers.

You do not have to have high availability enabled to perform this procedure and the source and destination servers do not have to have been configured for high availability.

To use the JMX console to reassign services between Data Processing Servers:

1. In a Web browser, open:
`http://<Data Processing Server machine name>:8080/jmx-console`

When prompted, enter the JMX Console authentication credentials (if you do not have these credentials, contact your system administrator).
2. In the **Topaz** section, select **service=hac-backup**.
3. Locate **moveServices()** and enter the following values:
 - **customerId**. The default customer ID for a regular BSM installation is **1**. HP Software-as-a-Service customers should use their customer ID.
 - **srcServer**. The name of the source server from where you are moving services.

- **dstServer**. The name of the destination server to where you are moving the services.

Use the machine name for both these parameters. If you are unsure of the machine name, you can use the **listservers** method described above to retrieve the name of the machines already configured.

- **groupName**. Leave this parameter value blank.

4. Click **Invoke**. All services running on the source server are moved to the destination server.

Manually Reassigning Services

Caution: This section is for advanced users only.

You can manually reassign services running on a primary Data Processing Server to a backup Data Processing Server should it be necessary. Since a service can only be active on one Data Processing Server, you must either remove the existing assignment, or make it inactive, before reassigning the service to a different Data Processing Server.

To reassign a service, you can either add a new assignment, or activate a previously defined, but inactive, assignment.

Tip: You can check that services have been reassigned, activated, or inactivated correctly by viewing the service status in the JMX Web console. For details, see "[Services Assigned to the Server](#)" on page 65.

Removing a Service's Assignment

Removing a service's assignment deletes the entry from the HA_TASKS table in the management database so that it must be added as a new assignment if you wish to use it again in the future.

To remove a service's current assignment:

1. In a Web browser, open:
http://<Data Processing Server machine name>:8080/jmx-console

When prompted, enter the JMX Console authentication credentials (if you do not have these credentials, contact your system administrator).
2. In the **Topaz** section, click **service=hac-manager**.
3. Under **removeAssignment()**, enter the following data:
 - **customer_id**. The default customer ID for an individual BSM system is 1. HP Software-as-a-Service customers should use their customer ID in this field.

Note: The customer_id for the PM and NOA services is always -1, as they are services assigned to the system as a whole, as opposed to a specific customer.

- **serviceName**. The name of the service for which you are removing the current assignment.

- **serverName.** The name of the Data Processing Server to which the service is currently assigned.
 - **processName.** The name of the process (such as **mercury_as**, **mercury_online_engine**, **mercury_offline_engine**, **topaz_pm**).
4. Click **Invoke**. The assignment for the service is removed from the specified Data Processing Server.

Changing the Status of an Assigned Service

You can leave the assignment of a service to a specific Data Processing Server in the HA_TASKS table in the management database, but make it active or inactive by changing its assigned value.

Note: The HA_TASK_ASSIGN table from previous versions is obsolete. Use the HA_TASKS table.

To change the assigned value of an existing assignment:

1. In a Web browser, open:
`http://<Data Processing Server machine name>:8080/jmx-console`

When prompted, enter the JMX Console authentication credentials (if you do not have these credentials, contact your system administrator).
2. In the Topaz section, click **service=hac-manager**.
3. Under **changeAssignment()**, enter the following data:
 - **customerId.** The default customer ID for a regular BSM installation is **1**. HP Software-as-a-Service customers should use their customer ID.

The customer_id for the PM and NOA services is always -1 as they are services assigned to the system as a whole, as opposed to a specific customer.
 - **serviceName.** The name of the service for which you are changing the assignment value.
 - **serverName.** The name of the Data Processing Server to which the service is assigned.
 - **processName.** The name of the process.
 - **assignValue.** The assigned value for the assignment. Any number between -9 and 9 is valid. The value **1** makes the assignment active and any other number makes it inactive.
4. Click **Invoke**. The assignment for the service is changed according to the **assignValue** entered.

Adding an Assignment for a Service

You can add an assignment for a service to a specific Data Processing Server and either activate it immediately, or keep it inactive until needed. This is useful when working with a primary and a backup Data Processing Server. Assignments for all the services can be created for each server, with the assignments to the primary Data Processing Server being active, and the assignments to the backup Data Processing Server being inactive.

To add a new assignment for a service:

1. In a Web browser, open:
`http://<Data Processing Server machine name>:8080/jmx-console`

When prompted, enter the JMX Console authentication credentials (if you do not have these credentials, contact your system administrator).
2. In the Topaz section, click **service=hac-manager**.
3. Under **addAssignment()**, enter the following data:
 - **customer_id**. The ID of the customer for which the service is to be assigned. The default customer ID for an individual BSM system (that is, one not managed by HP Software-as-a-Service) is **1**.

Note: The customer_id for the PM and NOA services is always -1 as they are services assigned to the system as a whole, as opposed to a specific customer.

- **serviceName**. The name of the service you are assigning.
 - **serverName**. The name of the new Data Processing Server to which the service is being assigned.
 - **processName**. The name of the process.
 - **assignValue**. The assigned value for the assignment. Any number between -9 and 9 is valid. The value **1** makes the assignment active and any other number makes it inactive.
4. Click **Invoke**. The assignment for the service is added for the specified Data Processing Server.

Manually Disabling Data Aggregator Services

The data aggregator can be disabled in System Health (preferred method). However, if you need to disable data aggregator services but either do not have or cannot use System Health, you can perform this manual procedure.

To disable the offline aggregation and business logic engine services on the Data Processing Server:

1. Select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Foundations**.
2. Select **Offline Aggregator**.
3. Edit the **Run Aggregator** parameter. Change the setting to **False**. The change takes effect immediately.

Configuring BSM Data Collectors in a Distributed Environment

This section describes how to configure the HP Business Service Management data collectors to work in a distributed deployment.

Business Process Monitor and Real User Monitor

For Business Process Monitors to perform their work, you must specify the Gateway Server URL in the BPM Admin Console application on each host machine on which the Business Process Monitor is running. Edit the Gateway Server URL entry in the Configure Instance page for each Business Process Monitor instance. For more information, see "Business Service Management Registration Properties Area" in the Business Process Monitor Administrator's Guide.

For Real User Monitors to perform their work, BSM requires you to specify the Gateway Server URL in the Real User Monitor Web Console. For more information, see "BSM Connection Settings" in the Real User Monitor Administration Guide.

Specify the Gateway Server address as follows:

- If you install one Gateway Server, specify the URL of this machine.
- If you cluster two or more Gateway Servers behind a load balancer, specify the URL of the load balancer.

If you use two load balancers for failover, specify the URL of either load balancer, and ensure that you configure the host names of both load balancers on the DNS server machine.

SiteScope

For SiteScopes to perform their work, you must specify the Gateway Server URL in each SiteScope profile, using BSM System Availability Management (**Admin > System Availability Management**). For details, refer to "Configuring the Connection" in the SAM part of the BSM User Guide.

If you use a load balancer and have defined virtual IPs or URLs, you use the virtual IPs or URLs when defining the Gateway Server URL. If you use two load balancers for failover, specify the URL of either load balancer and ensure that you configure the hostnames of both load balancers on the DNS server machine.

For more information on configuring high availability for SiteScope, see the the HP SiteScope Failover Guide.

Business Process Insight

Refer to the Business Process Insight Server Administration Guide for details on how to configure for high availability.

Troubleshooting

This section contains troubleshooting information about High Availability related issues.

Primary DPS Server fails

If your primary DPS server was running Domain Manager process (default) and it crashes, you must reassign this process to the backup DPS.

To assign the Domain Manager process to a DPS:

From the DPS server, run the following file: **<HPBSM Home Directory>\Sonic\bin\setDomainManager.bat** (or .sh for linux).

Appendix 6

Uninstalling BSM Servers

This chapter contains the following topics:

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Uninstalling BSM

Use the procedure below to completely uninstall BSM.

Uninstalling BSM servers in a Windows environment

To completely uninstall HP Business Service Management servers in a Windows environment:

1. On the machine from which you are uninstalling HP Business Service Management, select **Start > Settings > Control Panel > Add/Remove Programs**. Select **HP Business Service Management**.
2. Click **Remove**, wait for the BSM uninstall script to remove any present updates, and follow the on-screen instructions when prompted.

Note: In some cases, this process may take a long time (more than 30 minutes).

Note: When a Minor-Minor BSM Release (for example, 9.01) is removed, any BSM Public Patches installed on top of the release are removed, as well.

3. If the **Show Updates** check box is selected, all the updates installed over BSM are displayed. When BSM is removed, all updates are also removed.
4. Restart the server machine.
5. If you are running BSM with Microsoft IIS, open the IIS Internet Services Manager and check the following:
 - a. Under the **Default Web Site**, check that the following virtual directories have been removed and remove them if they still appear:
 - ext
 - HPBAC
 - Jakarta
 - mam_images
 - MercuryAM
 - opr-console
 - Topaz
 - TopazDC
 - b. Right-click the server machine name in the tree, and select **Properties**. In the Properties dialog box, with **WWW Service** displayed in the Master Properties list, click **Edit**. Select the **ISAPI Filters** tab. If the **jakartaFilter** filter still appears, remove it.

Note: If you plan to uninstall BSM and then reinstall it to a different directory on the server machine, there is no need to remove the **jakartaFilter** filter. However, you will need to update the path for the filter. For details, see ["After uninstalling BSM and reinstalling to a different directory, BSM does not work"](#) on page 86.

6. Access the Windows Registry Editor by selecting **Start > Run**. Enter **Regedit**.

During installation, the value of the Windows Registry key

HKLM\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\ReservedPorts was updated to include the following port ranges required by BSM: 1098-1099, 8009-8009, 8080-8080, 4444-4444, 8083-8083, 8093-8093.

These ports ranges are not removed from the registry key during uninstall. You should remove the ports from the registry key manually after uninstalling BSM if they are no longer needed by any other application.

Tip: When working with the registry, it is recommended that you back it up before making any changes.

Uninstalling BSM servers in a Linux environment

1. Log in to the server as user **root**.
2. To access the uninstall program, type: **cd /opt/HP/BSM/installation/bin**
3. Run the following script to uninstall in UI mode: **./uninstall.sh**
4. The BSM uninstall program begins. Follow the on-screen instructions. When the uninstall program is complete, a success message is displayed.
5. Click **Finish**.
6. Check the **HPBsm_<version>_HPOvInstaller.txt** log file located in the **/tmp** directory for errors. Previous installation files can be found in the **/tmp/HPOvInstaller/HPBsm_<version>** directory.

Note: If you encounter problems during the uninstall procedure, contact HP Software Support.

Uninstalling a Patch (Rolling Back)

This procedure explains how to uninstall a patch. For example, this means rolling back from BSM 9.21 to BSM 9.20. Follow the appropriate instructions depending on your operating system.

To roll back a BSM service pack to a previously installed version - Windows:

1. Stop the HP BSM service on all servers and confirm that they are stopped.
2. Stop the web server process on all servers (IIS Admin Service for IIS; Apache service for Apache).
3. Select the service pack to remove from **Control Panel > Add/Remove Programs > Change or Remove Programs**. On Windows 2003 Server, select the Show Updates option to ensure that the service pack version is displayed beneath the root entry.
4. When the uninstall process is complete, restart the machine if requested.
5. Remove all subdirectories under the directory **<HP BSM root directory>\EJBContainer\server\mercury\work** on all Gateway servers.
6. Delete the temporary internet files on each browser that accesses BSM.
7. Restart the web server process on all Gateway servers.
8. Rerun the Setup and Database Configuration Utility without changing any of the existing settings on every BSM server (Gateway and Data Processing Servers). For details, see ["Server Deployment and Setting Database Parameters" on page 36](#).
9. You may also need to roll back any database that changed as a result of the upgrade. If you encounter any problems, contact HP Software Support.
10. Make sure to uninstall or rollback any updated data collectors as well.

To roll back a BSM service pack to a previously installed version - Linux:

1. Stop BSM as follows:

```
\opt\HP\BSM\script\run_hpbsm stop
```

2. Run the uninstall script as follows:

```
\opt\HP\BSM\uninstall\<version>\setup.bin
```

Where <version> is your HP BSM version. For example HPBSM921.

3. Remove all subdirectories under the directory **<HP BSM root directory>\EJBContainer\server\mercury\work** for all Gateway servers.
4. Delete the temporary internet files on each browser that accesses BSM.
5. Restart the web server process on all Gateway servers.
6. Rerun the Setup and Database Configuration Utility without changing any of the existing settings on every BSM server (Gateway and Data Processing Servers). For details, see ["Server Deployment and Setting Database Parameters" on page 36](#).

Appendix 7

Changing BSM Service Users

The BSM service, which runs all BSM services and processes, is installed when you run the Setup and Database Configuration utility. By default, this service runs under the local system user. However, you may need to assign a different user to run the service (for example, if you use NTLM authentication).

The user you assign to run the service must have the following permissions:

- Sufficient database permissions (as defined by the database administrator)
- Sufficient network permissions
- Administrator permissions on the local server

Note: When the BSM service is installed, it is installed as a manual service. When you enable BSM for the first time, it becomes an automatic service.

To change the BSM service user:

1. Disable BSM (**Start > Programs > HP Business Service Management > Administration > Disable HP Business Service Management**).
2. In Microsoft's Services window, double-click **HP Business Service Management**. The HP Business Service Management Properties (Local Computer) dialog box opens.
3. Click the **Log On** tab.
4. Select **This account** and browse to choose another user from the list of valid users on the machine.
5. Enter the selected user's Windows password and confirm this password.
6. Click **Apply** to save your settings and **OK** to close the dialog box.
7. Enable BSM (**Start > Programs > HP Business Service Management > Administration > Enable HP Business Service Management**).

Note: This procedure must be repeated if BSM is uninstalled or upgraded.

Appendix 8

Troubleshooting

This chapter contains the following topics:

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Troubleshooting Resources

- **Installation log files.** For details, see "Check installation log files" on page 18.
- **Upgrade log tool.** To view a summary of errors that occurred during the configuration upgrade portion of the upgrade wizard, run the upgrade log tool located at **<HP Business Service Management server root directory>\tools\logTool\logTool.bat**. This generates a report in the same directory with the name **logTool.txt**.
- **HP Software Self-solve knowledge base.** For additional troubleshooting information, see the HP Software Self-solve knowledge base (<http://www.hp.com/go/hpsupport>).
- **BSM Tools.** You can use BSM tools to assist in troubleshooting the HP Business Service Management environment. You access the tools from **<HP Business Service Management server root directory>\tools** directory. Most of the tools should only be used in coordination with HP personnel. The Database Schema Verification utility (dbverify) and Data Marking utility should be used according to documented instructions.
- **BSM Logging Administrator.** This tool allows you to temporarily modify the level of details displayed in BSM logs, as well as create custom logs. To open the BSM Logging Administrator Tool, open the following URL:
<http://<BSM Gateway Server>/topaz/logAdminBsm.jsp>

Installation and Connectivity Troubleshooting

This section describes common problems that you may encounter when installing BSM or connecting to BSM following installation, and the solutions to these problems.

The Setup and Database Configuration Utility does not allow you to enter a password

When running this utility on a Linux machine, in some cases the password field will not allow any entries. This was discovered on a Japanese RHEL5 64 machine.

Workaround:

Execute the wizard using a terminal emulator application, such as PuTTY or GNOME.

Receive error message: not enough space on the drive to extract the installation files

This happens during component installation. If you enter a new path for a different drive with sufficient space, the same error message is displayed.

Possible Cause:

During the file extraction process, certain data is always saved to the TEMP directory on the system drive, even if you choose to save the installation files to a different location from the default path.

Solution:

- Free up sufficient disk space on the system drive (as specified in the error message), then continue with the installation procedure.
- If it is not possible to free up sufficient disk space on the system drive, change the path for the system's TEMP variable. To do this, select **Start > Settings > Control Panel > System > Advanced tab > Environment Variables**, and edit the path for the **TEMP** variable in the User variables area.

Connection to a Microsoft SQL Server database fails when running the Setup and Database Configuration Utility

Verify that the user under whom the SQL Server service is running has permissions to write to the disk on which you are creating the database.

A network login prompt appears when completing the BSM server installation

Possible Cause:

This can occur if the IIS server's authentication method is not set to the default setting, **Allow Anonymous Access**.

Solution:

Reset the IIS server's authentication method to the default setting, **Allow Anonymous Access**, and ensure that the default user account **IUSR_XXX** (where "XXX" represents the name of the machine) is selected (the user account **IUSR_XXX** is generated during IIS installation). Then uninstall and reinstall BSM.

Tomcat servlet engine does not start and gives an error

The error message is as follows:

```
java.lang.reflect.InvocationTargetException: org.apache.tomcat.core.TomcatException: Root cause - Address in use: JVM_Bind
```

Possible Cause:

Running Oracle HTTP Server, installed with a typical Oracle installation, on the same machine as BSM servers causes a conflict with the Tomcat servlet engine.

Solution:

Stop the Oracle HTTP Server service, disable and then enable BSM.

To prevent the problem from recurring after the machine is restarted, change the Oracle HTTP Server service's startup setting to **manual**.

Inability to install BSM components due to administrative restrictions

Possible Cause:

The machine on which you are installing has policy management software that restricts access to files, directories, the Windows registry, and so forth.

Solution:

If this type of software is running, contact your organization's network administration staff to obtain the permissions required to install and save files on the machine.

After installing, receive http error 404 on the page when attempting to access BSM

Perform the following tasks:

1. Verify that all BSM processes were started by accessing the status page. For details, see "How to View the Status of Processes and Services" in the BSM Platform Administration Guide.
2. If all the services appear green in the status page, browse to BSM using port 8080 (http://MACHINE_NAME:8080).

Try to access the JMX console. If you can access the console, continue with step 3 trying to discover the problem.

3. Check if the Web server is started (http://MACHINE_NAME). If the Web server is started, you probably have a problem with the ISAPI filter.
4. If the problem is with the ISAPI filter and you are running on a Microsoft Windows 2008 server, check that you followed the procedure for creating a role. For details, see "[Working with the Web Server](#)" on page 32.
5. The Apache server may not be successfully starting because of a port collision.

After uninstalling BSM and reinstalling to a different directory, BSM does not work

Possible Cause: When uninstalling and reinstalling to a different location, the IIS ISAPI filter did not get updated to the new path.

Solution:

To update the IIS ISAPI filter to the new path:

1. Open the IIS Internet Services Manager.
2. Right-click the machine name in the tree and select **Properties**.
3. With **WWW Service** displayed in the Master Properties list, click **Edit**.
4. Select the **ISAPI Filter** tab.
5. Ensure that **jakartaFilter** is pointing to the correct BSM directory.
6. Apply your changes and quit the Internet Services Manager.
7. Restart the IIS service.

Business Process Monitor or SiteScope data are not being reported to BSM

There are various conditions that may cause this problem. For details on causes and possible solutions, refer to the HP Software Self-solve Knowledge Base, and search for article number KM438393 (<http://h20230.www2.hp.com/selfsolve/document/KM438393>).

Business Process Monitors fail to report to the Gateway Server running on IIS

Symptoms/Possible Causes:

- No data reported to loaders
- No data in Web site reports
- An error in the **data_deport.txt** log on the Business Process Monitor machine similar to the following:

```
Topaz returned an error (<html><head><title>Error Dispatching
URL</title></head>

<body>

The URI:<br><b>api_reporttransactions_ex.asp</b><br> is <b>not</b>
mapped to an API Adapter.<br>Either the URI is misspelled or the mapping file
is incorrect (the mapping file is located at:
D:\HPBAC/AppServer/TMC/resources/ServletDispatcher.xml)

</body>

</html>)
```

The problem can be confirmed by opening the page `http://<machine name>/ext/mod_mdrv_wrap.dll?type=report_transaction`. If there is a problem, a Service Temporarily Unavailable message is displayed.

You can also submit the following URL to verify Web Data Entry status: `http://<machine name>/ext/mod_mdrv_wrap.dll?type=test`

This problem may be caused by the existence of **MercRedirectFilter**, which is a deprecated filter that is no longer needed for BSM and may be left over from previous versions of BSM.

Solution:

Delete the **MercRedirectFilter** filter and ensure that the **jakartaFilter** is the only IIS ISAPI filter running.

Business Process Monitor is unable to connect via the Internet to the Gateway Server installed on an Apache Web server

Possible Cause:

The Business Process Monitor machine is unable to resolve the Gateway Server name correctly.

Solution:

- Add the Gateway Server name to the Business Process Monitor machine's **<Windows system root directory>\system32\drivers\etc\hosts** file.
- Change the Gateway Server name in the **<Business Service Management root directory>\WebServer\conf\httpd.conf** file on the Gateway Server to a recognized name in the DNS.

Post-Installation Wizard fails during BSM installation on Linux machine

This may be due to a Linux bug. Open the `/etc/sysctl.conf` file and remove the line **vm.swapiness = 0**. Restart the post installation wizard.

Failed to install Adobe Flash Player

Adobe Flash Player is installed using the Adobe Download Manager which cannot handle automatic proxy configuration scripts. If Internet Explorer is configured to use an automatic proxy configuration, the download manager fails and hangs with no visual response. Try configuring a proxy host manually or see the Flash Player documentation.

BSM fails to start or BSM configuration wizard does not open

Check the supervisorwrapper.log file for the following error:

```
C:\HPBSM\conf\supervisor\manager\nannyManager.wrapper wrapper |
OpenService failed - Access is denied.
```

If this error is present, the issue may be due to having User Access Control (UAC) enabled on a Windows 2008 SP2 system during the installation process. Disable UAC on all BSM servers running Windows 2008 SP2 during the installation process.

Failure to log in based on FQDN

If you see the following error in the login screen: **The HP Business Service Management URL must include the Fully Qualified Domain Name (FQDN). Please retype HP Business Service Management URL in the address bar**, but you are connecting via FQDN, check if there is a DNS resolution for Load Balanced virtual IPs from the BSM gateways. You may need to add LB virtual IPs (for application users and for data collectors if needed) to the hosts file on BSM gateway.

After pressing Login, nothing happens. Or user logs in, but Sitemap is empty.

Possible Cause:

You are trying to login to BSM from the Windows Server instead of the client machine. On Windows Server, the Internet Explorer Enhanced Security Configuration is typically enabled. With this configuration, several BSM UI features including BSM login page, may not work.

Resolution:

Check if the Internet Explorer Enhanced Security Configuration is enabled. If it is enabled, use a regular client for login, and not the Windows server.

If you must login from the server, either disable Internet Explorer Enhanced Security Configuration (**Control Panel > Add/remove Windows components**) or add the BSM URL to the trusted sites in the IE Security Settings.

Java applets not opening

- If you use Internet Explorer, select **Tools > Internet Options > Connections > Local Area Network (LAN) Settings**. Clear the following options: **Automatically detect settings** and **Use automatic configuration script**.
- Select **Control Panel > Java > General tab > Network Settings** > select **Direct connection** option (and not the default option to **Use browser settings**).