

HP Business Availability Center

for the Windows and Solaris operating systems

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Deployment Guide

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This manual's title page contains the following identifying information:

- Software version number, which indicates the software version
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HP Software Support

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- Download software patches
- Manage support contracts
- Look up HP support contacts
- Review information about available services
- Enter into discussions with other software customers
- Research and register for software training

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract. To find more information about access levels, go to:

http://h20230.www2.hp.com/new_access_levels.jsp

To register for an HP Passport ID, go to:

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Table of Contents

Welcome to This Guide

Welcome to the HP Business Availability Center Deployment Guide. This guide introduces you to HP Business Availability Center, provides information on getting started, describes server and component configuration and installation, and details the upgrade process.

Note to HP Managed Software Solutions customers: The information in the the *HP Business Availability Center Deployment Guide* PDF is not relevant to HP Managed Software Solutions customers.

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How This Guide Is Organized

This guide contains the following parts:

Part I Introduction to HP Business Availability Center

Introduces HP Business Availability Center and provides a getting started roadmap, deployment planning checklist, and overview of the HP Business Availability Center platform and components.

Part II Deployment Introduction and System Requirements

Provides an overview of platform deployment and describes the system requirements required for running the HP Business Availability Center platform.

Part III Deployment Configuration

Describes the various possible HP Business Availability Center deployment configurations, as well as how to improve your system availability and reliability using high availability options.

Part IV HP Business Availability Center Server Installation for Windows

Describes how to install HP Business Availability Center servers, configure database parameters, install component setup files, and uninstall HP Business Availability Center servers on a Windows platform.

Part V HP Business Availability Center Server Installation for Solaris

Describes how to install HP Business Availability Center servers, configure database parameters, install component setup files, and uninstall HP Business Availability Center servers on a Solaris platform.

Part VI Troubleshooting

Describes common problems that you may encounter when installing, or connecting to, HP Business Availability Center and the solutions to these problems.

Part VII Upgrading HP Business Availability Center

Describes how to upgrade the HP Business Availability Center platform.

Part VIII Server Administration and Maintenance

Provides file backup recommendations, describes Bus communication, lists the ports used by HP Business Availability Center for communication, and explains how to change the user for both the HP Business Availability Center service and OpenLDAP Directory Service.

Part IX Accessing HP Business Availability Center

Describes the HP Business Availability Center server Start menu options and explains how to log in to the HP Business Availability Center Web interface for the first time.

Who Should Read This Guide

This guide is intended for all types of HP Business Availability Center administrators.

Readers of this guide should be knowledgeable and highly skilled in enterprise system administration and knowledgeable about HP Business Availability Center.

HP Business Availability Center Documentation

HP Business Availability Center documentation provides complete information on deploying, administering, and using the HP Business Availability Center platform and applications.

HP Business Availability Center includes the following documentation:

Readme. Provides a list of version limitations and last-minute updates. From the HP Business Availability Center DVD root directory, double-click `readme70.html`. You can also access the most updated readme file from the Customer Support Web site.

What's New. Provides a list of new features and version highlights. In HP Business Availability Center, select **Help > What's New**.

Online Documentation Library. The Documentation Library is an online help system that describes how to work with HP Business Availability Center. You access the Documentation Library using a Web browser. For a list of viewing considerations, see "Viewing the HP Business Availability Center Site" on page 58.

To access the Documentation Library, in HP Business Availability Center, select **Help > Documentation Library**. Context-sensitive help is available from specific HP Business Availability Center pages by clicking **Help > Help on this page** and from specific windows by clicking the **Help** button. For details on using the Documentation Library, see "Working with the HP Business Availability Center Documentation Library" in *Platform Administration*.

The HP Business Availability Center Documentation Library includes the following online guides:

- ▶ Documentation Updates. Lists details of updates to the Documentation Library.
- ▶ Glossary. Defines key terms used in HP Business Availability Center.
- ▶ Platform Administration. Describes how to configure and administer the HP Business Availability Center platform, including database management, alert configuration, and user permission and security administration.
- ▶ Discovery. Describes how to use the Discovery process to automatically discover and map IT infrastructure resources and their interdependencies.
- ▶ IT World Model Management. Describes how to build and administer a CMDB-based model of your IT organization.
- ▶ CI Attribute Customization. Describes how to create and customize configuration items and the objects that influence their display and behavior.
- ▶ Reference Information. Describes common user interface elements, details data samples and their fields, dates and times, and troubleshooting.
- ▶ Using My BAC. Describes how to work with the My BAC application and configuration pages.
- ▶ Using Dashboard. Describes how to administer and work with Dashboard application.
- ▶ Using Service Level Management. Describes how to administer and work with the Service Level Management application.
- ▶ Using End User Management. Describes how to administer and work with End User Management application.
- ▶ Using System Availability Management. Describes how to administer and work with System Availability Management application.
- ▶ Using Problem Isolation. Describes how to administer and work with Problem Isolation application.

- ▶ Custom Reporting and Alerting. Describes how to create and manage custom reports, as well as work with and administer the Alerts application.
- ▶ Solutions and Integrations. Describes various solutions and integrations that enable you to use HP Business Availability Center together with external and third-party software and environments.

Books Online/Printer-Friendly Documentation. All HP Business Availability Center documentation is available in PDF format. To access PDF files, in HP Business Availability Center select **Help > Documentation Library** and select the PDFs tab. Alternatively, access PDF files from the Documentation directory on the HP Business Availability Center DVD.

The following Books Online guides are only available in PDF format and can also be accessed from the Main Topics tab in the Documentation Library:

- ▶ HP Business Availability Center Database Guide. Describes how to prepare and configure the enterprise database infrastructure to work optimally with HP Business Availability Center, including how to set up a recommended database configuration.
- ▶ HP Business Availability Center Deployment Guide (this guide). Describes how to get started with, install, and upgrade HP Business Availability Center.
- ▶ HP Business Availability Center Hardening Guide. Describes how to harden the HP Business Availability Center platform to provide a secure environment for the HP Business Availability Center software and hardware.
- ▶ Business Process Monitor Administration. Describes how to deploy and administer the Business Process Monitor data collector.
- ▶ Real User Monitor Administration. Describes how to deploy and administer the Real User Monitor data collector.
- ▶ HP SiteScope Deployment Guide. Describes how to deploy and administer the SiteScope data collector.

Books Online can be viewed and printed using Adobe Reader 4.0 or later. Reader can be downloaded from the Adobe Web site (www.adobe.com).

Recommended Reading Lists

The lists below describe the guides in the HP Business Availability Center Documentation Library that are recommended reading for the different users of HP Business Availability Center. These lists can be distributed to staff as required.

Reading lists for the following users are described below:

- Mercury Business Availability Center Administrators. See page 17.
- Database Administrators. See page 17.
- Security Administrators. See page 17.
- Data Collector Administrators. See page 17.
- Script Developers. See page 18.
- Platform Administrators. See page 18.
- Application Administrators. See page 18.
- End Users. See page 18.

Mercury Business Availability Center Administrators

- All books in Documentation Library

Database Administrators

- Glossary
- HP Business Availability Center Database Guide
- Reference Information

Security Administrators

- Glossary
- Hardening the Platform

Data Collector Administrators

- All books in Documentation Library

Script Developers

- Glossary
- Using End User Management
- Application Performance Lifecycle in *Solutions and Integrations*
- Reference Information

Platform Administrators

- All books in Documentation Library

Application Administrators

- All books in Documentation Library

End Users

- Glossary
- Using My BAC
- Using Dashboard
- Using Service Level Management
- Using End User Management
- Using System Availability Management
- Using Problem Isolation
- Custom Reporting and Alerting
- Solutions and Integrations

Additional Online Resources

Knowledge Base opens directly to the Knowledge Base landing page on the Mercury Customer Support Web site. Choose **Help > Knowledge Base**. The URL for this Web site is support.mercury.com/cgi-bin/portal/CSO/kbBrowse.jsp.

Customer Support Web site accesses the Mercury Customer Support Web site. This site enables you to browse the Mercury Support Knowledge Base and add your own articles. You can also post to and search user discussion forums, submit support requests, download patches and updated documentation, and more. Choose **Help > Customer Support Web site**. The URL for this Web site is support.mercury.com.

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

Typographical Conventions

This guide uses the following typographical conventions:

UI Elements and Function Names	This style indicates the names of interface elements on which you perform actions, file names or paths, and other items that require emphasis. For example, “Click the Save button.” It also indicates method or function names. For example, “The wait_window statement has the following parameters:”
<i>Arguments</i>	This style indicates method, property, or function arguments and book titles. For example, “Refer to the <i>HP User’s Guide</i> .”
<Replace Value>	Angle brackets enclose a part of a file path or URL address that should be replaced with an actual value. For example, <MyProduct installation folder>\bin .
Example	This style is used for examples and text that is to be typed literally. For example, “Type Hello in the edit box.”
CTRL+C	This style indicates keyboard keys. For example, “Press ENTER.”
[]	Square brackets enclose optional arguments.
{ }	Curly brackets indicate that one of the enclosed values must be assigned to the current argument.
...	In a line of syntax, an ellipsis indicates that more items of the same format may be included. In a programming example, an ellipsis is used to indicate lines of a program that were intentionally omitted.
	A vertical bar indicates that one of the options separated by the bar should be selected.

Part I

Introduction to HP Business Availability Center

1

Introduction to HP Business Availability Center

Welcome to HP Business Availability Center. Before you install HP Business Availability Center or read any other HP Business Availability Center documentation, it is recommended that you read this short introduction to HP Business Availability Center, which includes a description of the new concepts that are a result of HP Business Availability Center's alignment with ITIL, starting from version 6.0.

This chapter describes:	On page:
About HP Business Availability Center	23
Alignment with ITIL	24

About HP Business Availability Center

HP Business Availability Center helps companies optimize the performance and availability of applications in production and proactively resolve problems when they arise, thus assisting critical production applications to perform as required and deliver business results.

HP Business Availability Center helps customers model their business processes and services by providing a framework for mapping the complex and dynamic dependencies between applications and their supporting infrastructure. HP Business Availability Center helps customers optimize business availability by proactively detecting problems in order to prioritize problem resolution based on business impact and service level compliance.

HP Business Availability Center consists of an integrated set of applications for real-time performance and availability monitoring from a business perspective, service level management, end-user management, system availability management, problem isolation, and custom reporting and alerting. HP Business Availability Center is based on a common foundation of shared workflow, administration and reporting services, shared assets, and expertise.

HP Business Availability Center helps customers to reduce mean time to detection (MTTD) and end-user downtime by proactively detecting application performance and availability problems—assisting in escalation of problems to the right department at the right priority, as well as isolation and resolution of performance problems before service-level objectives are breached. This helps organizations toward the goal of the maximization of value of IT operations and reduction of Total Cost of Ownership (TCO) of IT infrastructure.

Alignment with ITIL

Several concepts in HP Business Availability Center come as a result of the alignment with the Information Technology Infrastructure Library (ITIL) methodology. ITIL is the most widely accepted methodology for IT service management in the world. In fact, it is quite possible that your organization is already following the ITIL methodology.

What Is ITIL?

Originally developed by the Office of Government Commerce, a branch of the British Government, ITIL is a cohesive set of well-defined best practices for IT processes drawn from the public and private sectors internationally. ITIL best practices aim to provide the following benefits:

- ▶ Improved communications between IT, businesses, and customers
- ▶ Increased IT productivity
- ▶ Reduced IT costs
- ▶ Better management of risk
- ▶ Higher levels of customer satisfaction

For more information on ITIL, refer to the following Internet resources:

- <http://www.itipeople.com>
- <http://www.ogc.gov.uk> (click Programmes & Projects and then click ITIL)

Note: The main ITIL concepts and terminology used in HP Business Availability Center are defined in the HP Business Availability Center Documentation Library *Glossary*.

ITIL in HP Business Availability Center

HP Business Availability Center introduces the concept of the HP Universal Configuration Management Database (CMDB). The HP Universal CMDB stores information on services, their components or configuration items, details about configuration item attributes, the history of each configuration item, and details of the relationships between configuration items. A configuration item (CI) is a component that makes up a part of the IT environment. A CI can be a line of business, business process, application, server hardware, or a service that is provided by your IT organization. A CI can also be a logical container that includes multiple CIs. A CI Type (CIT) is the type of each CI within the IT environment.

The IT Universe Concept

If you provide an application to your company's employees to manage their own retirement accounts, then you are also providing a service. Let us call this service "Employee Self Help." To provide this service, you create an application that runs on a server and connects to a database. In your environment, you may provide many such services that depend on many applications and databases that utilize a variety of server and network hardware. All these services, applications, and hardware are interconnected to form what is called in HP Business Availability Center the **IT Universe**.

In HP Business Availability Center, you start by defining a model of your company's IT Universe. To manage your company's IT Universe model, you create service views (views). Views enable you to divide up the IT Universe model into logical entities for monitoring. The IT Universe model then becomes the foundation for the management functions provided by HP Business Availability Center applications.

Having a defined model of the organization's IT Universe can then help you, for example, to see what application is being monitored by which Business Process Monitor, or to determine whether a server problem, detected by SiteScope, affects other CIs as well—for example, whether the Employee Self-Help service described above suffered service outages due to a problem with its database server.

Applying these new HP Business Availability Center concepts can help you manage and deliver IT services to your end users and customers more efficiently and effectively.

2

Getting Started Roadmap

This chapter provides a basic step-by-step roadmap for getting up and running with HP Business Availability Center.

All guides referred to are located in the **Documentation\pdfs** directory on the HP Business Availability Center DVD.

Note to customers upgrading to HP Business Availability Center 7.0: For details on upgrading, see “Upgrading HP Business Availability Center” on page 209.

1 Read about where to get help.

Learn about the various sources of assistance, including Customer Support and the HP Business Availability Center Documentation Library. For details, review the information at the very beginning of this guide, as well as the Welcome chapter.

2 Register your copy of HP Business Availability Center.

Register your copy of HP Business Availability Center 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 HP Business Availability Center from the Customer Support Web site (support.mercury.com).

3 Plan your HP Business Availability Center deployment.

Create a complete deployment plan prior to installing HP Business Availability Center software. Use the Deployment Planning checklist on page 30 to assist you. For in-depth deployment planning best practices, consult your HP Professional Services representative.

4 Learn about the HP Business Availability Center platform and components.

Learn about the servers and components that power the HP Business Availability Center system. For details, see page “Understanding the HP Business Availability Center Platform and Components” on page 31.

5 Install HP Business Availability Center servers.

Before installing, review deployment requirements (page 39) and configurations (page 69). To install, follow the instructions relevant to your platform—Windows (page 129) or Solaris (page 163). If deploying HP Business Availability Center securely, see the *HP Business Availability Center Hardening Guide* PDF. You can also use the step-by-step process flow “How Do I Build and Maintain My HP Business Availability Center System?” on page 49 to guide you through the deployment process.

6 Log in to HP Business Availability Center and initiate system administration.

Log in to the HP Business Availability Center Web interface using a Web browser. For details on logging in for the first time, see “Initial Login to HP Business Availability Center” on page 261. For details on initial platform administration tasks, see *Platform Administration*.

7 Set up HP Business Availability Center to monitor your IT environment.

Using HP Business Availability Center applications and tools, you model your IT world, configure data collectors to monitor your IT assets, and collect metrics on your infrastructure and applications. For details on working with HP Business Availability Center, see the HP Business Availability Center Documentation Library.

8 Roll out HP Business Availability Center to business and systems users.

Once the HP Business Availability Center system is up and running with defined users and incoming monitor data about your modeled IT world, begin the process of educating business and systems users on how to access and use HP Business Availability Center reporting and alerting functionality.

3

Deployment Planning

Deploying HP Business Availability Center in an enterprise network environment is a process that requires resource planning, system architecture design, and a well-planned deployment strategy. The checklist below describes some of the basic issues that should be considered prior to installation. For comprehensive best practices documentation on deployment planning, consult with HP Professional Services.

Note to HP Managed Software Solutions customers: Although HP Managed Software Solutions customers do not deploy HP Business Availability Center software, most of the steps listed below are still relevant to optimally plan the best way to use HP Business Availability Center within the HP Managed Software Solutions framework.

This chapter describes:	On page:
Deployment Planning Checklist	30

Deployment Planning Checklist

Use this checklist to review the basic issues that your organization should consider when planning the HP Business Availability Center deployment.

✓	Step
	Analyze the IT processes and organizational structure and culture that can affect, or be affected by, the deployment.
	Map the customer environment.
	Analyze the organization's goals and identify the key IT-enabled business processes to achieve these goals.
	Identify the target users (those with a vested interest in the business processes), for example, executives, LOB managers, marketing managers, customer support personnel, support engineers, and so forth.
	Align the project with current performance management practices.
	Map the architecture of the monitored infrastructure, including identifying the processes, systems, system resources, and other infrastructure elements to monitor in each of the applications.
	Define the project deliverables, including setting expectations regarding measurements, features, the deployment scope, and maturity levels.
	Identify the appropriate HP Business Availability Center functionality.
	Build a deployment roadmap.
	Define success criteria for the project.
	Define performance and availability objectives for each monitored business process.
	Define measurement types to be supported at each deployment stage.
	Form HP Business Availability Center administration and operations team(s).
	Plan the practical aspects of the deployment, including system architecture and capacity planning, database environment considerations, security considerations, and so forth.

4

Understanding the HP Business Availability Center Platform and Components

The HP Business Availability Center platform consists of proprietary servers and components, data collectors, scripting tools, and third-party servers, such as database and mail servers, that you set up in the enterprise network environment. This chapter provides an overview of the HP Business Availability Center platform and components.

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Additional Proprietary Components	34
Third-Party Components	35
Platform Architecture Diagram	37

HP Business Availability Center Servers

HP Business Availability Center is powered by a set of servers that are responsible for running the applications, facilitating system management, data handling, reporting, and alerting. You install the following HP Business Availability Center servers on one or more Microsoft Windows or Sun Solaris machines in your enterprise network environment:

- ▶ **HP Business Availability Center Gateway Server.** Responsible for running HP Business Availability Center applications, producing reports, operating the Administration Console, receiving data samples from the data collectors and distributing this data to the relevant HP Business Availability Center components, and supporting the Bus.
- ▶ **HP Business Availability Center Data Processing Server.** Responsible for aggregating data, running the Business Logic Engine, and controlling the CMDB service.

To work with HP Business Availability Center, the above server machines must run Web servers. For more information on HP Business Availability Center servers, see “Introducing HP Business Availability Center Platform Deployment” on page 41.

HP Business Availability Center Data Collectors

HP Business Availability Center data collectors are responsible for collecting performance data from various points throughout the infrastructure, as well as from external locations, and feeding it into a central repository. The data is used to monitor and analyze the performance of business applications and IT infrastructure and alert staff to performance and threshold breaches.

Data collectors are installed and administered separately. Each data collector can be downloaded from the HP Business Availability Center Downloads page, accessed from Platform Administration (**Admin > Platform > Setup and Maintenance > Downloads**). For details, see “Downloads” in *Platform Administration*.

You install the following data collectors on machines in your enterprise network environment or at remote locations:

- ▶ **Business Process Monitor (BPM)**. Emulates the end-user experience by running transactions (virtual business processes) and collecting availability and response time data.
- ▶ **SiteScope**. Collects key performance measurements on a wide range of back-end infrastructure components, including Web, application, database, and firewall servers.
- ▶ **Real User Monitor (RUM)**. Measures the end-user experience of real users from a network/server perspective by monitoring real user traffic and collecting network and server performance data in real time.

Once the data collectors are installed and configured, you further define their settings in End User Management Administration (**Admin > End User Management**) and System Availability Management Administration (**Admin > System Availability Management**). End User Management Administration enables you to centrally manage your monitoring environment for Business Process Monitor and Real User Monitor. System Availability Management enables you to access hosted instances of SiteScope. You can set up profiles, deploy monitors, configure alert schemes, and manage and organize your monitor environment all from within the HP Business Availability Center platform.

Additional Proprietary Components

HP Business Availability Center administrators deploy the Discovery Probe to enable the Discovery process, which aids in modeling the IT world. In addition, administrators use HP scripting tools to create the scripts that are used by Business Process Monitor to collect data for monitored applications.

Discovery Probe

The Discovery process is the mechanism that enables you to collect data about your IT infrastructure resources and their interdependencies. Discovery discovers resources such as applications, databases, network devices, servers, and so on. The Discovery Probe is the main Discovery component responsible for receiving Discovery tasks from the server, dispatching them to the IT components, and sending the results back to the CMDB through the server. For details on the Discovery process and Discovery Probe deployment, see *Discovery*.

Scripting Tools

HP Business Availability Center scripting tools enable you to record the end-user actions that represent the key business transactions whose performance you want to monitor using Business Process Monitor. You save the transactions in recorded scripts. The table below describes the scripting tools that are available. For additional information on Business Process Monitor scripting tools, including script recording tips, see *Using End User Management*.

Tool	Description
HP Virtual User Generator (VuGen)	Enables you to record scripts for a large variety of protocols. This is the recommended tool for recording Business Process Monitor scripts. You download VuGen from the Downloads page, accessed from the Setup and Maintenance tab in Platform Administration. For details on using VuGen, see the HP Virtual User Generator documentation. For information on using HP LoadRunner scripts in HP Business Availability Center, contact Customer Support.
QuickTest Professional (for use with Windows-based Business Process Monitor only)	Enables you to record scripts for Web-based applications that include Java applets and ActiveX. For details on using QuickTest Professional, refer to the documentation installed with the product.

Third-Party Components

For full functionality, HP Business Availability Center requires connection to a database server and a mail server.

The database server is used to store:

- ▶ system-wide and management-related data, which includes administrative settings and customer-configured information
- ▶ profile data, which includes data collector settings and collected metrics
- ▶ configuration item (CI) data, which includes the CIs used to model your IT infrastructure and the relationships between them.

The mail server is used to send alerts and scheduled reports to designated recipients.

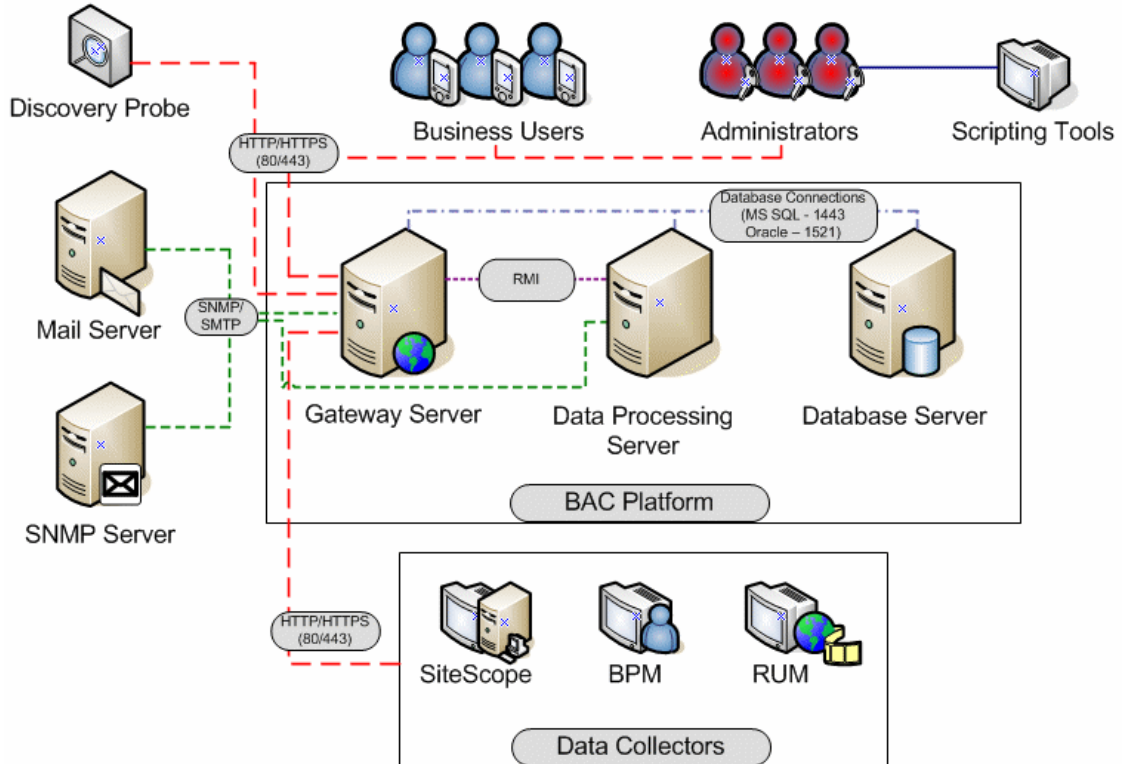
Optionally, connection to an SNMP server might be implemented to receive SNMP traps sent by the HP Business Availability Center alerting mechanism.

In addition, HP Business Availability Center supports integration of data from third-party systems via SiteScope Integration Monitors, and to third-party systems, using HP Business Availability Center APIs.

For more information on using database servers in HP Business Availability Center, see the the *HP Business Availability Center Database Guide* PDF. For more information on SiteScope Integration Monitors, see “Integration Monitors” in *Using System Availability Management*. For more information on third-party integrations, see *Solutions and Integrations*.

Platform Architecture Diagram

The below diagram illustrates the general HP Business Availability Center platform architecture and the communication protocols used among the components.



Part II

Deployment Introduction and System Requirements

5

Introducing HP Business Availability Center Platform Deployment

This chapter provides an overview of platform deployment.

This chapter describes:	On page:
About HP Business Availability Center Platform Deployment	42
Deploying HP Business Availability Center Servers	44
Setting Management, CMDB, and CMDB History Database Parameters	46
Web Servers	48
How Do I Build and Maintain My HP Business Availability Center System?	49

About HP Business Availability Center Platform Deployment

The HP Business Availability Center servers are the backbone of the HP Business Availability Center platform, which powers the HP Business Availability Center applications. This chapter provides an overview of HP Business Availability Center 7.0 platform deployment and describes the process recommended to set up and maintain an HP Business Availability Center system.

When setting up the HP Business Availability Center platform, in addition to reviewing deployment guidelines, it is recommended that you also review the following documentation, as relevant for your organization and platform requirements:

- ▶ If you are upgrading to HP Business Availability Center 7.0 from an earlier version of HP Business Availability Center, see “Upgrading the HP Business Availability Center Servers” on page 211.
- ▶ For details on deploying a database server for use with HP Business Availability Center, see the *HP Business Availability Center Database Guide* PDF.
- ▶ For information on running HP Business Availability Center on a hardened platform (including using HTTPS protocol), see the *HP Business Availability Center Hardening Guide* PDF.
- ▶ HP Services offers best practice consulting on deployment planning, strategies, and security. For information on how to obtain this service, contact your HP representative.

If you are installing HP Business Availability Center for the first time, the platform deployment consists of the following main stages:

- 1 Installing HP Business Availability Center 7.0 servers.** For details, see “Deploying HP Business Availability Center Servers” on page 44.
- 2 Creating the HP Business Availability Center management, CMDB, and CMDB history databases and connecting to these databases.** For details, see “Setting Management, CMDB, and CMDB History Database Parameters” on page 46.
- 3 Configuring Web server settings for Sun Java System Web Server** (Solaris installations only, when not done automatically). For details, see “Web Servers” on page 48.

Note:

- ▶ After installing HP Business Availability Center servers, register your copy of HP Business Availability Center 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 HP Business Availability Center on the Customer Support Web site (<http://support.mercury.com>). Remember to notify HP or your local representative if you move to a new address, so that you can continue to receive product information and updates.
 - ▶ For troubleshooting issues, refer to the Customer Support Knowledge Base, which can be accessed from the HP Business Availability Center Help menu or from the Customer Support Web site. In addition, refer to the HP Business Availability Center readme file (located in the HP Business Availability Center package root directory) for the latest technical and troubleshooting information.
-

Deploying HP Business Availability Center Servers

You install the following servers when deploying HP Business Availability Center:

- ▶ **HP Business Availability Center Gateway Server.** Responsible for running HP Business Availability Center applications, producing reports, operating the Administration Console, receiving data samples from the data collectors and distributing this data to the relevant HP Business Availability Center components, and supporting the Bus.
- ▶ **HP Business Availability Center Data Processing Server.** Responsible for aggregating and partitioning data, running the Business Logic Engines, and controlling the HP Universal CMDB-related services.

The HP Business Availability Center servers are run in a Microsoft Windows or Sun Solaris operating environment, and should be installed by your organization's system administration staff. The procedure for installing HP Business Availability Center servers is described in "Installing HP Business Availability Center Servers on a Windows Platform" on page 131 and "Installing HP Business Availability Center Servers on a Solaris Platform" on page 165.

You can install the HP Business Availability Center servers according to a number of different deployment strategies. Distributed deployments, in which multiple server machines are installed, can benefit from various high availability and load balancing options. For details on the recommended deployment strategies, see "Deployment Configuration" on page 71. For details on high availability and load balancing options, see "High Availability for HP Business Availability Center" on page 83.

Note: If HP Business Availability Center 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 HP Business Availability Center application and can result in performance and stability issues. For more information, contact Customer Support.

General Information for Server Deployment

Note the following when deploying HP Business Availability Center servers:

- ▶ Access to the HP Business Availability Center server machine must be available, either through HTTP or HTTPS, from any standard Internet or intranet connection.
- ▶ The HP Business Availability Center server machine must have a user account with administrative rights to the database server(s) upon which you set up the management, CMDB, and CMDB history databases (and later, one or more profile databases).
- ▶ To maximize the performance of machines on which you install HP Business Availability Center servers, it is recommended that server machines be dedicated to HP Business Availability Center and not run other applications.
- ▶ HP Business Availability Center servers should not be installed on machines on which other HP products are installed.
- ▶ The HP Business Availability Center service resides on all HP Business Availability Center servers and is responsible for running all required HP Business Availability Center processes. The HP Business Availability Center service is installed when you run the Server and Database Configuration utility.
- ▶ After HP Business Availability Center deployment, you install the setup files for various HP Business Availability Center tools (data collectors and tools for recording scripts) to the HP Business Availability Center Downloads page. For details on installing HP Business Availability Center tools setup files on a Windows platform, see “Installing Component Setup Files” on page 153. For details on installing HP Business Availability Center tools setup files on a Solaris platform, see “Installing Component Setup Files” on page 187.
- ▶ The Microsoft Data Access Component (MDAC) 2.7 SP1 is included in the server installation on a Windows platform (on the Gateway Server in a two-machine HP Business Availability Center deployment).
- ▶ Sun JVM 1.5.0 is automatically installed on the machine during server installation.

- ▶ For instructions and recommendations on performing a distributed deployment/high availability deployment of HP Business Availability Center, see “High Availability for HP Business Availability Center” on page 83.
- ▶ Installing HP Business Availability Center in an I18N environment is supported only for HP Business Availability Center installed on a Windows platform. For considerations and limitations when deploying HP Business Availability Center in a non-English language environment, see “Working in Non-English Locales” in *Reference Information*.

Setting Management, CMDB, and CMDB History Database Parameters

HP Business Availability Center requires the following types of databases/user schemas, which you set up on either Microsoft MS SQL Server or Oracle Server:

- ▶ **Management database.** For storage of system-wide and management-related metadata for the HP Business Availability Center environment. HP Business Availability Center requires one management database.
- ▶ **CMDB database.** For storage of configuration information that is gathered from the various HP Business Availability Center and third-party applications and tools. This information is used when building HP Business Availability Center views. The CMDB also contains the object repositories used to define configuration items and Key Performance Indicators (KPIs).
- ▶ **CMDB history database.** For storage of changes, over time, of the CMDB configuration items (CIs). This information can be viewed in the form of CI changes as well as snapshots.
- ▶ **Profile database(s).** For storage of raw and aggregated measurement data obtained from the HP Business Availability Center data collectors. Although only one profile database is required, you can store profile data in multiple databases, if required.

Part of the process of deploying HP Business Availability Center servers requires connecting to the management, CMDB, and CMDB history databases. If you are installing HP Business Availability Center for the first time, you can manually create these databases directly on the database server(s) before server installation, or you can allow HP Business Availability Center to create the database for you, using the Server and Database Configuration utility.

For detailed information on deploying either of the database servers in your system for use with HP Business Availability Center, and creating the management, CMDB, and CMDB history databases/user schemas manually, see the *HP Business Availability Center Database Guide* PDF.

The procedure for setting management, CMDB, and CMDB history database parameters is described in “Setting Database Parameters on a Windows Platform” on page 145 and “Setting User Schema Parameters on a Solaris Platform” on page 181.

Note: If you need to verify the integrity of the management and CMDB databases, you can run the database schema verify program. For details, see Appendix E, “Database Schema Verification” in the *HP Business Availability Center Database Guide* PDF.

Web Servers

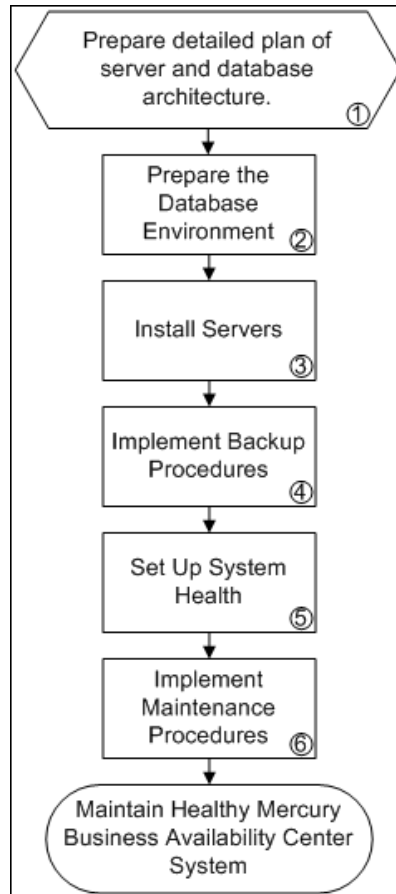
To work with HP Business Availability Center, the server machine(s) must run one of the following Web servers:

- ▶ **Microsoft Internet Information Server (IIS)** (for Windows deployment only). If you plan to run HP Business Availability Center on IIS, you should install the IIS prior to HP Business Availability Center installation. During HP Business Availability Center server installation, the IIS settings are automatically configured to work with HP Business Availability Center.
- ▶ **Sun Java System Web Server** (for Solaris deployment only). If you plan to run HP Business Availability Center using the Sun Java System Web Server, you should install this Web server prior to HP Business Availability Center installation. During installation, the Sun Java System Web Server settings are automatically configured to work with HP Business Availability Center.
- ▶ **Apache HTTP Server** (for Windows and Solaris deployment). If you plan to use HP Business Availability Center with the Apache HTTP Server, you must use the version that has been adapted by HP for HP Business Availability Center. This version is installed during HP Business Availability Center server installation if you select the Apache HTTP Server during installation.

For information on setting up the Web server to work with HP Business Availability Center, see “Working with the Web Server” on page 136 (Windows platforms), or “Working with the Web Server” on page 171 (Solaris platforms).

How Do I Build and Maintain My HP Business Availability Center System?

The flowchart below describes the process recommended to set up and maintain an HP Business Availability Center system. Note that the term database in this section refers to both MS SQL Server databases and Oracle Server user schemas. The numbered elements are referenced in the table on the following page, which provides additional details about the steps and a reference to more information.



Ref. No.	Comment
1	Map out the HP Business Availability Center server and database architecture that will be required, based on organizational requirements, expected system capacity requirements (considering load factors such as data input and application usage), high availability and system failover requirements, and security requirements. For information on system hardening, see the <i>HP Business Availability Center Hardening Guide</i> PDF.
2	Set up the database server(s) that will be used with HP Business Availability Center. Establish procedures for database backup and maintenance, including backup of management, CMDB, CMDB history, profile, and LDAP databases and a data purging policy. Optionally, manually create the HP Business Availability Center databases. For more information, see the <i>HP Business Availability Center Database Guide</i> PDF.
3	Install HP Business Availability Center servers and connect to the databases. Server installation must take into account planned high availability and failover strategies (including load balancing, backup servers, and so forth). Consider installing a separate staging system to use for testing configuration changes, patches, backup and restore procedures, and so forth.
4	Implement a backup process whereby key configuration files that contain data not stored in the databases are automatically backed up daily (for more information, see “File Backup Recommendations” on page 237). In addition execute database backup plans. It is also recommended to create procedures for restoring resources and test those procedures on a staging system.

Ref. No.	Comment
5	Set up System Health to monitor the health of HP Business Availability Center servers. For details on deploying and accessing System Health, see “System Health” in <i>Platform Administration</i> .
6	<p>Implement ongoing maintenance procedures that will enable the system to run smoothly and minimize issues during future upgrade. For example:</p> <ul style="list-style-type: none"> ▶ Create run books that instruct personnel how to perform server maintenance procedures, as well as how to proceed in the event of system failure or server downtime. ▶ Track customization and configuration changes that you make (such as those made in configuration files or in the Infrastructure Settings Manager) in case you need to roll back at a later time. ▶ If you install private patches, keep track of them, and when upgrading make sure your HP representative knows about them and can confirm how the upgrade will affect their status. Tip: Private patches should be installed on a staging system before being deployed to production. ▶ Troubleshoot problems by accessing log files and searching for errors (for more information, see “HP Business Availability Center Logs” in <i>Reference Information</i>). Use the Knowledge Base on the Customer Support Web site (http://support.mercury.com) to search for answers to issues that may come up.

6

Reviewing System Requirements

This chapter describes the system requirements required for running the HP Business Availability Center platform.

Note: The HP Business Availability Center readme file, available with the HP Business Availability Center package, contains support matrixes with the supported operating systems for HP Business Availability Center components. It also lists support for the current and previous HP Business Availability Center versions.

This chapter describes:	On page:
HP Business Availability Center Servers	54
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Viewing the HP Business Availability Center Site	58
Additional Requirements for HP Business Availability Center	61
Server Environment Settings	62
Updating Daylight Savings Time	62
HP Business Availability Center on VMware	66

HP Business Availability Center Servers

Computer/Processor	<p>Windows:</p> <p>To fulfill the CPU requirements, you must have one of the following:</p> <ul style="list-style-type: none">➤ Intel Dual Core Xeon Processor 2.4 GHz or higher➤ AMD Opteron Dual Core Processor 2.4 GHz or higher <p>In addition to the above requirements, you must have the following number of CPUs, depending on your deployment configuration:</p> <ul style="list-style-type: none">➤ One-server: 1 CPU➤ Two-server (standard deployment): 1 CPU➤ Two-server (enterprise deployment): 2 CPUs <p>Solaris:</p> <ul style="list-style-type: none">➤ Recommended for standard deployment: Sun Fire T1000 Server Single 1.0 GHz 6 Core UltraSPARC T1➤ Recommended for enterprise deployment: Sun Fire T1000 Server Single 1.0 GHz 8 Core UltraSPARC T1➤ Minimum: SunFire V240 machine with dual UltraSPARC-IIIi processor, 1.5 GHz➤ Unsupported hardware: SunFire 280R machine
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Operating System	<p>Windows:</p> <ul style="list-style-type: none"> ▶ Minimum for all deployments: <ul style="list-style-type: none"> ▶ Windows Server 2000 32-Bit Edition, Service Pack 4 or later ▶ Windows Server 2003 32-Bit Standard Edition, Service Pack 1 or later ▶ Highly recommended for enterprise deployment: <ul style="list-style-type: none"> ▶ Windows Advanced Server 2000 32-Bit Edition, Service Pack 4 or later ▶ Windows Server 2003 32-Bit Enterprise Edition, Service Pack 1 or later <p>Note: It is recommended that Dr. Watson be enabled and configured in automatic mode (after running Dr. Watson, Drwtsn32.exe, at least once). To set up automatic mode, search for <code>\\HKEY_LOCAL_MACHINE\Software\Microsoft\Windows NT\CurrentVersion\AeDebug</code> in the Windows Registry and set the value of the Auto parameter to 1.</p> <p>Solaris:</p> <ul style="list-style-type: none"> ▶ Sun Solaris 8 ▶ Sun Solaris 9 ▶ Sun Solaris 10 (recommended) <p>Note: Regardless of the operating system version, the entire Distribution (with OEM support) and the latest recommended Patch Cluster are required.</p>
Web Server	<p>Windows:</p> <ul style="list-style-type: none"> ▶ Microsoft Internet Information Server (IIS) 5.0 ▶ Microsoft Internet Information Server (IIS) 6.0 ▶ Apache HTTP Server 2.2.3 (adapted by HP for HP Business Availability Center and installed during HP Business Availability Center server installation) <p>Solaris:</p> <ul style="list-style-type: none"> ▶ Sun Java System Web Server 6.0, Service Pack 7 ▶ SSL-compatible Apache HTTP Server 2.2.3 (adapted by HP for HP Business Availability Center and installed during HP Business Availability Center server installation)

<p>Memory</p>	<p>One-server deployment:</p> <ul style="list-style-type: none"> ➤ Recommended: 2 GB RAM <p>Two-server standard deployment:</p> <ul style="list-style-type: none"> ➤ Minimum: 2 GB RAM ➤ Recommended: 4 GB RAM <p>Two-server enterprise deployment:</p> <ul style="list-style-type: none"> ➤ Recommended: 8 GB RAM <p>Note: Ensure that your operating system is able to recognize all of the memory. You will probably need to add the <code>/PAE</code> parameter to the <code>c:\boot.ini</code> file.</p>
<p>Virtual Memory/ Memory Swap Space</p>	<p>One-server deployment:</p> <ul style="list-style-type: none"> ➤ Recommended: 3 GB RAM <p>Two-server standard deployment:</p> <ul style="list-style-type: none"> ➤ Recommended: 6 GB RAM <p>Two-server enterprise deployment:</p> <ul style="list-style-type: none"> ➤ Recommended: 12 GB RAM <p>Note: The virtual memory/memory swap space should always be at least 1.5 times the physical memory size.</p>
<p>Virtual Address Space (for enterprise deployments on Windows)</p>	<p>On Windows Server 2003 Enterprise Edition and Windows Advanced Server 2000, set the 3 GB flag as well as the <code>/3GB</code> switch in the Windows Boot.ini file to increase virtual address space.</p>
<p>Free Hard Disk Space</p>	<ul style="list-style-type: none"> ➤ Minimum: 10 GB ➤ Recommended: 20 GB

HP Business Availability Center Databases

Supported Databases	<p>Windows:</p> <ul style="list-style-type: none">▶ MS SQL Server: Microsoft SQL Server 2000 Enterprise, Service Pack 4; Microsoft SQL Server 2005 Enterprise, Service Pack 1 (recommended)▶ Oracle Server: Oracle Enterprise Edition Server 9.2.0.6; Oracle Enterprise Edition Server 10.2.0.1 (recommended) <p>Solaris:</p> <ul style="list-style-type: none">▶ Oracle Enterprise Edition Server 9.2.0.6▶ Recommended: Oracle Enterprise Edition Server 10.2.0.1 <p>Note: For more information on supported and recommended database environments when working with HP Business Availability Center, see the <i>HP Business Availability Center Database Guide</i> PDF.</p>
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Viewing the HP Business Availability Center Site

Display	<p>Windows:</p> <ul style="list-style-type: none"> ▶ Minimum: color palette setting of at least 256 colors ▶ Recommended: color palette setting of 32,000 colors <p>Note: This requirement is only necessary for the Gateway Server machine.</p> <p>Solaris:</p> <p>X-Server installed. This requirement is only necessary for the Gateway Server machine.</p>
Resolution	1024 x 768 or higher
Supported Browsers	<p>Windows:</p> <ul style="list-style-type: none"> ▶ Recommended: Microsoft Internet Explorer (IE) 6.0, Service Pack 2 ▶ Microsoft Internet Explorer (IE) 6.0, Service Pack 1 ▶ Microsoft Internet Explorer (IE) 7.0 <p>Solaris:</p> <ul style="list-style-type: none"> ▶ FireFox 2.0. FireFox supports the following applications: Dashboard (excluding topology map), System Availability Management Administration, Service Level Management, and End User Management. <p>Note: For both Internet Explorer and FireFox, the browser must be set to accept all cookies.</p>
Flash Player (to view charts)	Acrobat Flash 8 or later

Java Plug-in (to view applets)	<p>Sun Java Plug-in 1.5 or 1.6.2</p> <p>Note: If an earlier version is installed on the client machine, HP Business Availability Center will automatically try to download Java Plug-in 1.6 when you access an applet. This version will not enable you to view all HP Business Availability Center applets and you will need to download version 1.6.2 from the Java download site (http://www.java.com/en/download/manual.jsp) and install it.</p> <p>After installation, if you are using Internet Explorer, verify that the browser is using the correct Java version. To do so, choose Tools > Internet Options > Advanced tab, select the Java (Sun) check box, click OK, close the browser, and reopen it.</p>
Viewing the Documentation Library	<ul style="list-style-type: none"> ▶ The Documentation Library is best viewed in Internet Explorer. ▶ The Documentation Library is best viewed from a browser with Java support. If your browser does not have Java support, download the Sun Java plug-in from the Sun Java Web site (http://java.com/en/index.jsp). Note that if Java support is not available, the Documentation Library automatically opens using the JavaScript implementation. The JavaScript implementation provides the same basic functionality as the Java implementation, however does not allow use of the Favorites tab within the navigation pane. ▶ If you experience a JavaScript error when opening the Documentation Library, disable the Show Exception Dialog Box in the Java Console and open the Help again.

Note the following additional requirements for using your browser with HP Business Availability Center:

- ▶ HP Business Availability Center uses cookies. Ensure that your Web browser is set to accept all cookies.
- ▶ HP Business Availability Center requires browser support for pop-up windows. HP Business Availability Center will not perform properly if you are using Web applications that are set to block pop-up windows in your browser.
- ▶ Staff who view the HP Business Availability Center site using Microsoft Internet Explorer (IE) must set their browser caching to automatically check for newer versions of stored pages.

To set IE browser caching options for HP Business Availability Center:

- 1** In the browser page, select **Tools > Internet Options**. The Internet Options dialog box opens and displays the **General** tab.
- 2** Click **Settings**.
 - ▶ If you are working with IE 6.0, this button is located within the **Temporary Internet files** section.
 - ▶ If you are working with IE 7.0, this button is located within the **Browsing History** section.

The Settings dialog box opens.

- 3** In the **Check for newer version of stored pages** list, select **Automatically**.
- 4** Click **OK** to close the dialog boxes.

Additional Requirements for HP Business Availability Center

System Availability Management Administration to manage SiteScope	Requires SiteScope 9.0 (available from the Downloads page in Platform Administration).
HP TransactionVision Integration	<ul style="list-style-type: none"> ▶ Requires Internet Explorer 6.0 Service Pack 1 or 2 or Internet Explorer 7.0. ▶ Requires the Sun Java plug-in 1.5 or later for viewing applets. ▶ Requires Adobe Flash Player version 6 or later for viewing charts and graphs. <p>For additional information on HP TransactionVision requirements, refer to the HP TransactionVision documentation.</p>
HP Business Availability Center for Siebel Applications	Requires SiteScope version 8.2 or later. Note: If you are using SiteScope version 8.7 or earlier, contact Customer Support to receive a required patch.
HP Business Availability Center for SAP	Requires SiteScope version 8.1.2 or later.

Server Environment Settings

Time Settings	<p>All HP Business Availability Center servers and database servers must have the same settings for the following:</p> <ul style="list-style-type: none">▶ time zone▶ Daylight Savings Time configuration▶ time <p>In addition, all operating systems and HP Business Availability Center components must comply with the Daylight Savings Time requirements of the U.S. Energy Policy Act of 2005. For details, see “Updating Daylight Savings Time” on page 62.</p>
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Updating Daylight Savings Time

In August 2005, the United States Congress passed the Energy Policy Act, which changes the dates of both the start and end of Daylight Saving Time (DST). As of 2007, DST starts three weeks earlier (2:00 A.M. on the second Sunday in March) and ends one week later (2:00 A.M. on the first Sunday in November) than it did previously.

This section explains how to ensure that HP Business Availability Center is compliant with the DST change. For more information see:

- ▶ http://java.sun.com/developer/technicalArticles/Intl/FAQ_appendix.html
- ▶ http://bugs.sun.com/bugdatabase/view_bug.do?bug_id=6466476

Updating Business Availability Center Servers and Databases

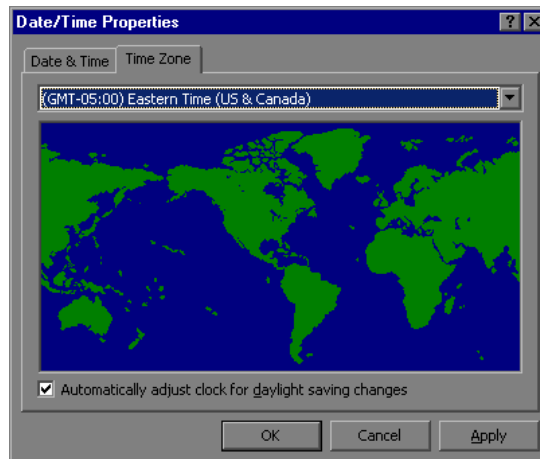
- ▶ Update the operating system on all server machines on which HP Business Availability Center is installed. For details, see “Updating the Operating System” on page 64.
- ▶ Update the operating system on all HP Business Availability Center database machines. For details, see “Updating the Operating System” on page 64.

Updating Components (Data Collectors)

Updating of Real User Monitors and SiteScopes is not required, however it is recommended that you update the operating system for these data collectors, as described in “Updating the Operating System” on page 64.

Business Process Monitor

- ▶ It is recommended that you update both the operating system and the JRE for all Business Process Monitor machines. For details on updating the operating system, see “Updating the Operating System” on page 64. For details on updating the JRE, see “Updating the Java Runtime Environment (JRE)” on page 64. If you decide to update the JRE for Business Process Monitor, note that the Business Process Monitor supplied with HP Business Availability Center 7.0 (available from the Downloads page) uses the “non-updated” JRE and should be updated.
- ▶ Although updating the JRE is optional, note that if you do not update it, the Business Process Monitor Admin GUI may show times that are offset by one hour.
- ▶ Updating the operating system for Business Process Monitor machines that are set to **Automatically adjust clock for daylight saving changes** is mandatory.



Updating the Operating System

For information on updating your operating system, consult the following links:

Microsoft Windows

- ▶ Microsoft Windows update: <http://support.microsoft.com/kb/928388/>
- ▶ General Information:
<http://www.microsoft.com/windows/timezone/dst2007.msp>
- ▶ Windows 2000: If you still use Windows 2000, note that Microsoft's Web site indicates that Windows 2000 has passed the end of mainstream support and will not be receiving an update without an Extended Support Hotfix Agreement. See also: <http://support.microsoft.com/kb/914387/>

SUN Solaris

- ▶ SUN Solaris update:
<http://sunsolve.sun.com/search/document.do?assetkey=1-26-102775-1>
- ▶ General Information:
http://www.sun.com/bigadmin/features/techtips/dst_changes.html
<http://java.sun.com/developer/technicalArticles/Intl/USDST/>

Redhat Linux

- ▶ Redhat Linux update: http://kbase.redhat.com/faq/FAQ_80_7909.shtm

Updating the Java Runtime Environment (JRE)

If you choose to update the JRE on the Business Process Monitor, follow the procedure(s) below.

To determine whether a JRE update is necessary:

- 1** Insert the HP Business Availability Center DVD into the drive of the Business Process Monitor whose JRE you want to update.
- 2** Navigate to the **Windows_Setup** or **Solaris_Setup** directory on the DVD.
- 3** Copy the **tzupdater.jar** file to the **<Business Process Monitor root directory>\JRE\bin** directory.

- 4** Open a Command Prompt window (DOS shell).
- 5** Change the directory to the following: **<Business Process Monitor root directory>\JRE\bin**
- 6** Run the following command to check whether the update is required:
java -jar tzupdater.jar -t

If an update is required, the command will return a long list of messages. If nothing is returned, no further action is necessary.

To update the JRE on the Business Process Monitor:

- 1** Stop the Business Process Monitor service.
- 2** Close all Business Process Monitor Admin windows.
- 3** Run the following command to install the patch:
java -jar tzupdater.jar -u -bc
- 4** Verify that the patch has been correctly applied. Run the same command specified in step 6 of the above procedure. If nothing is returned, the patch has been successfully applied.
- 5** Restart the Business Process Monitor service.

Note: For more information about the JRE update, see:
http://java.sun.com/javase/tzupdater_README.html

HP Business Availability Center on VMware

If you are deploying HP Business Availability Center on a VMware platform, the sizing guidelines for a regular installation are not applicable. The following general limitations and recommendations are applicable to a VMware installation:

- ▶ Performance of HP Business Availability Center on VMware can be expected to be slower than in a regular installation. Using a VMware platform is therefore not recommended for an enterprise deployment of HP Business Availability Center.
- ▶ Business Process Monitors can be run in a VMware environment, but HP will not address or resolve any support issues arising from Business Process Monitors running in a VMware environment.
- ▶ HP Business Availability Center capacities and performance will vary according to the various server resources, such as CPU, memory, and network bandwidth, allocated to HP Business Availability Center components.
- ▶ ESX Server version 2.5.2 or later should be used.
- ▶ A Gigabit network card should be used.
- ▶ It is strongly recommended that you do not run a database server containing HP Business Availability Center databases on VMware if the database files reside on a VMware virtual disk.
- ▶ VMWare is the only virtualization technology supported by HP Business Availability Center.
- ▶ See the following HP Business Availability Center Knowledge Base article for guidelines on deploying SiteScope on a VMware platform:
<http://kb-web.mercury.com/top5/kblinkExtern.asp?Conceptid=34432;Product=SS>

The following table lists the HP Business Availability Center components that are supported on VMware ESX Server 3.0 or later:

Component	Support
HP Business Availability Center servers (Gateway and Data Processing)	Yes
SiteScope	Yes
Business Process Monitor	No
Real User Monitor (Probe and Engine)	No
HP Universal CMDB	No

Part III

Deployment Configuration

7

Deployment Configuration

You can deploy HP Business Availability Center in a number of different configurations according to the size of your system and according to your load balancing and high availability needs.

This chapter describes:	On page:
One-Machine Deployment	72
Two-Machine (Standard and Enterprise) Deployment	73
Three-Machine (Legacy) Deployment	78
Five-Machine (Legacy) Deployment	80

Important:

- ▶ Beginning with HP Business Availability Center version 7.0, the two-machine (standard and enterprise) deployment is the recommended deployment. Although there is no added benefit in three- or five-machine deployments over a two-machine deployment, these legacy configurations are supported.
- ▶ In HP Business Availability Center 7.0, the machine that is responsible for the functions that were previously performed by both the Centers Server and Core Server is called the Gateway Server.

For details on the deployment that best suits your needs, contact your HP Professional Services representative.

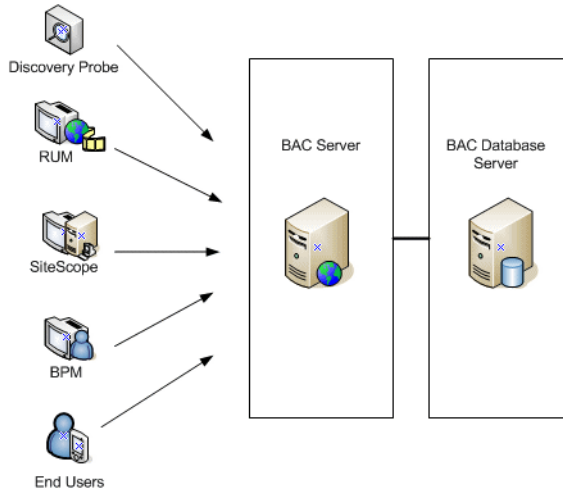
One-Machine Deployment

A one-machine deployment has the Gateway Server and Data Processing Server installed on the same machine.

Important: A one-machine deployment should be used for development and testing purposes only. It requires 2 GB RAM.

Diagram of a One-Machine Deployment

In a one-machine deployment, all servers are installed on one machine:



Note: If you already have a CMDB server set up as part of another HP product installation, you can connect to this server when you set your database parameters. For details, see “Setting Database Parameters on a Windows Platform” on page 145 or “Setting User Schema Parameters on a Solaris Platform” on page 181.

To set up a one-machine deployment:

Choose the **Typical** setup type during HP Business Availability Center installation.

For details on installing HP Business Availability Center on a Windows platform, see “Installing HP Business Availability Center Servers on a Windows Platform” on page 131.

For details on installing HP Business Availability Center on a Solaris platform, see “Installing HP Business Availability Center Servers on a Solaris Platform” on page 165.

Load Balancing and High Availability

A one-machine deployment is not scalable and has no load balancing or high availability options. For this reason, it should not be used as a production system.

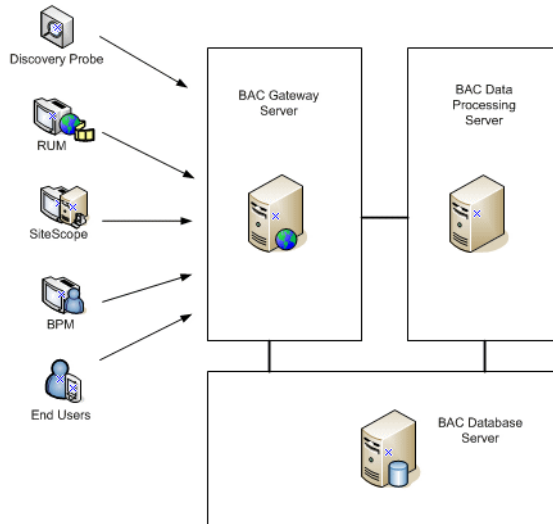
Two-Machine (Standard and Enterprise) Deployment

A two-machine deployment is one in which one instance of a Gateway Server is installed on one machine and the Data Processing Server is installed on a second machine.

A two-machine deployment can have either a standard or enterprise configuration. These configurations differ in terms of the CPU and memory required. For details of the system requirements for each of these configurations, see “Reviewing System Requirements” on page 53.

Diagram of a Two-Machine (Standard and Enterprise) Deployment

In a two-machine (standard and enterprise) deployment, servers are installed as illustrated below:



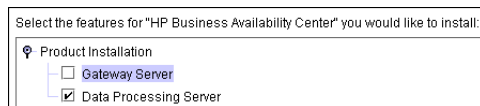
Note: If you already have a CMDB server set up as part of another HP product installation, you can connect to this server when you set your database parameters. For details, see “Setting Database Parameters on a Windows Platform” on page 145 or “Setting User Schema Parameters on a Solaris Platform” on page 181.

To set up a two-machine (standard or enterprise) deployment:

- 1** During HP Business Availability Center installation, specify the server type you want to install on each machine.
- 2** When installing the Gateway Server, do the following:
 - a** Choose **Custom** setup.
 - b** Select **Gateway Server**.



- 3** To install the Data Processing Server, do the following:
 - a** Choose **Custom** setup.
 - b** Select **Data Processing Server** and click **Next**.



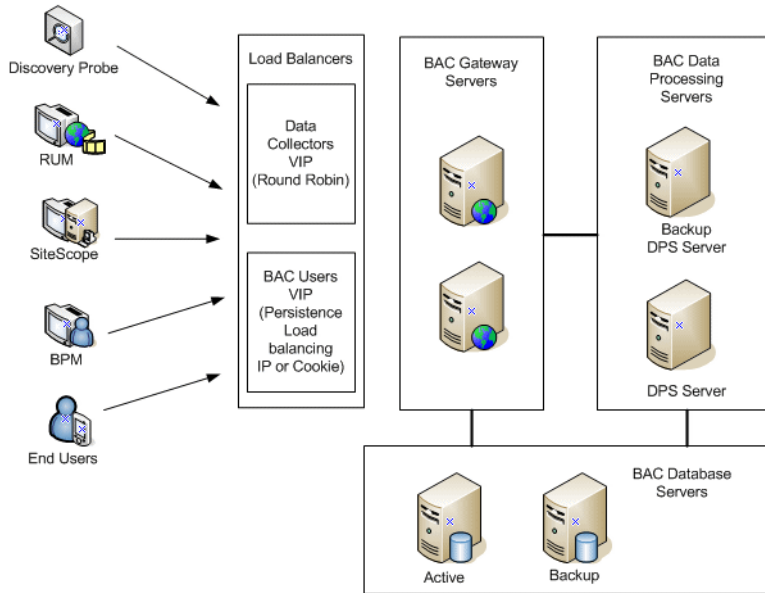
- c** Select **All** to install all the Data Processing Server types (Modeling, Online, and Offline) on the same machine.

For details on installing HP Business Availability Center on a Windows platform, see “Installing HP Business Availability Center Servers on a Windows Platform” on page 131.

For details on installing HP Business Availability Center on a Solaris platform, see “Installing HP Business Availability Center Servers on a Solaris Platform” on page 165.

Load Balancing and High Availability

Load balancing and high availability can be implemented in a two-machine (standard and enterprise) deployment by adding an additional Gateway Server and a backup Data Processing Server, as illustrated in the following diagram:



Note: Data Processing Servers can run concurrently with additional Data Processing Servers as long as the same service is not being run concurrently on more than one machine.

Benefits of a Distributed Deployment

Using a distributed architecture for HP Business Availability Center gives you the following benefits:

- ▶ Provides scaling solutions for your HP Business Availability Center system.
- ▶ Multiple Gateway Servers can be placed behind a load balancer to divide load and improve system performance. For details on load balancing, see “Load Balancing for the Gateway Server” on page 85.
- ▶ Backup machines for the HP Business Availability Center servers allow high availability options to be used to improve system availability and reliability. For details on high availability, see “High Availability for HP Business Availability Center” on page 83.

Deploying Multiple Servers

When deploying multiple HP Business Availability Center servers, you must perform the following steps:

- ▶ At the end of the server installation process, use the Server and Database Configuration utility to establish connectivity between the server and the management, CMDB, and CMDB history databases. You must specify the same database and connection parameters for each HP Business Availability Center server (whether the servers are at the same location or geographically separated).
- ▶ After installing HP Business Availability Center servers, point HP Business Availability Center data collectors (Business Process Monitor, SiteScope, Real User Monitor) to the server or load balancer with which they must communicate to perform their work. For details, see “Configuring HP Business Availability Center Data Collectors in a Distributed Environment” on page 102.
- ▶ Ensure that the servers are accessible from any standard Internet or intranet connection, either through HTTP or HTTPS.

- ▶ Ensure that each server has a user account with administrative rights to the database servers containing the management, CMDB, CMDB history, and profile databases.
- ▶ Create a common temporary directory to hold the temporary images created by the Gateway Servers when generating scheduled reports. For details, see “Modifying the Location and Expiration of Temporary Image Files” in *Platform Administration*.

Notes and Limitations

- ▶ If HP Business Availability Center servers are installed on multiple network segments, it is highly recommended to minimize the number of hops and the latency between the servers. Network-induced latency may adversely affect the HP Business Availability Center application and can result in performance and stability issues. For more information, contact Customer Support.

Three-Machine (Legacy) Deployment

A three-machine (legacy) deployment has two Gateway Servers and one Data Processing Server. You configure your data collectors to communicate with one Gateway Server and HP Business Availability Center users to communicate with the other Gateway Server.

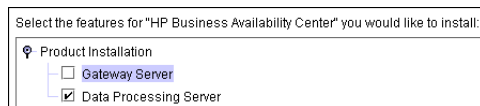
Note: If you already have a CMDB server set up as part of another HP product installation, you can connect to this server when you set your database parameters. For details, see “Setting Database Parameters on a Windows Platform” on page 145 or “Setting User Schema Parameters on a Solaris Platform” on page 181.

To set up a three-machine (legacy) deployment:

- 1** During HP Business Availability Center installation, specify the server type you want to install on each machine.
- 2** When installing each Gateway Server, do the following:
 - a** Choose **Custom** setup.
 - b** Select **Gateway Server**.



- 3** To install the Data Processing Server, do the following:
 - a** Choose **Custom** setup.
 - b** Select **Data Processing Server** and click **Next**.



- c** Select **All** to install all the Data Processing Server types (Modeling, Online, and Offline) on the same machine.

For details on installing HP Business Availability Center on a Windows platform, see “Installing HP Business Availability Center Servers on a Windows Platform” on page 131.

For details on installing HP Business Availability Center on a Solaris platform, see “Installing HP Business Availability Center Servers on a Solaris Platform” on page 165.

Load Balancing and High Availability

Load balancing for the Gateway Servers is implemented by adding a second Gateway Server, making a total of four Gateway Servers. High availability for the Data Processing Server is implemented by adding a backup server.

For details on load balancing and high availability for a three-machine deployment, see “High Availability for Three-Machine and Five-Machine (Legacy) Deployments” on page 104.

Five-Machine (Legacy) Deployment

A five-machine (legacy) deployment is one in which there are two Gateway Servers and a Data Processing Server installed on three additional machines.

Each Data Processing Server is installed with different features and each runs different Data Processing Server services, in addition to the Partition and Purging Manager. The breakdown of the Data Processing Servers is as follows:

- ▶ **Online Data Processing Server.** This server includes real-time data-related services, such as the Online Business Logic Engine and the Alerts Engine.
- ▶ **Offline Data Processing Server.** This server includes the offline data-related services, such as the Offline Business Logic Engine, the New Offline Aggregator (NOA), and the enrichment and reconciliation services.
- ▶ **Modeling Data Processing Server.** This server includes the HP Universal CMDB-related services.

For details of Data Processing Server services, see “Services Assigned to the Data Processing Server” on page 90.

To set up a five-machine (legacy) deployment:

- 1 Choose the **Custom** setup type during HP Business Availability Center installation.
- 2 Specify the server type you want to install on each machine.

For the Data Processing Servers, specify which type of Data Processing Server you want to install on each machine.

For details on installing HP Business Availability Center on a Windows platform, see “Installing HP Business Availability Center Servers on a Windows Platform” on page 131.

For details on installing HP Business Availability Center on a Solaris platform, see “Installing HP Business Availability Center Servers on a Solaris Platform” on page 165.

Load Balancing and High Availability

Load balancing and high availability can be implemented in a five-machine (legacy) deployment by adding additional machines. For details on load balancing and high availability for a five-machine deployment, see “High Availability for Three-Machine and Five-Machine (Legacy) Deployments” on page 104.

8

High Availability for HP Business Availability Center

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

This chapter describes:	On page:
Overview of High Availability Options	84
Load Balancing for the Gateway Server	85
High Availability for the Gateway Server	87
High Availability for the Data Processing Server	89
High Availability for the CDM	100
Configuring HP Business Availability Center Data Collectors in a Distributed Environment	102
High Availability for Three-Machine and Five-Machine (Legacy) Deployments	104

Overview of High Availability Options

Implementing a high availability configuration means setting up your HP Business Availability Center 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. Load balancing can be internal or external.

Internal load balancing is built into the HP Business Availability Center applications and into the Bus communication between HP Business Availability Center servers.

External load balancing is a software and hardware unit supplied by an outside vendor. This unit must be installed and configured to work with HP Business Availability Center applications.

- ▶ **failover.** Work performed by a server, for example, the Data Processing Server, is taken over by a backup 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 Professional Services offers best practice consulting on high availability. For information on how to obtain this service, contact your HP representative.

Load Balancing for the Gateway Server

When you install multiple HP Business Availability Center Gateway Servers, HP Business Availability Center 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.

When using multiple HP Business Availability Center servers, it is generally recommended that you use one or more external load balancers at the entry to HP Business Availability Center.

Configuring Load Balancing

To configure the load balancer for a Gateway Server, create two virtual IP addresses. The first IP address is for accessing the HP Business Availability Center Web site on the Gateway Server. This URL can be distributed to BAC users. The second IP address is for the data collectors to access the Gateway Server. This URL must be used when configuring data collectors to communicate with HP Business Availability Center.

You must enter the relevant load balancer IP address in the Infrastructure Settings for the virtual servers. To do so, select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Foundations**, select **Platform Administration**, and locate the **Default Virtual Centers Server URL** and **Default Virtual Cores Services Server URL** entries in the Host Configuration table. Modify the values to the appropriate load balancer IP address, where the following values are true:

Default Virtual Centers Server URL = <Virtual IP for HP Business Availability Center Web site>

Default Virtual Cores Services Server URL = <Virtual IP for Data Collectors>

To configure the load balancer for the data collectors' virtual IP:

Use the standard settings for the load balancer, but set the following:

- **stickiness by session disabled**
- **round robin enabled**

To configure the load balancer for HP Business Availability Center Web site's virtual IP:

Use the standard settings for the load balancer, but set **stickiness by session enabled**.

Notes and Limitations

- A software load balancer is not supported.
- If you use two load balancers for failover, you must ensure that you configure the IP addresses of both load balancers on the DNS server machine. You can then specify the machine name, IP address, or URL of either load balancer when this information is required for the data collectors, or in the browser to open the HP Business Availability Center site.
- 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 IP address on each load balancer for each server type, map the virtual IPs to the actual IPs of the corresponding servers, and ensure that you configure all the virtual IP addresses on the DNS server machine. You can then specify either of the relevant virtual IPs for each data collector, or in the browser to open the HP Business Availability Center site.

High Availability for the Gateway Server

HP Business Availability Center provides high availability for the Gateway Servers to ensure that data gets to its destination and that the users can use the Dashboard application during server failures.

Protected Delivery for Incoming Monitor Data

HP Business Availability Center 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.

HP Business Availability Center 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 the Dashboard Application

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

When a user logs in to HP Business Availability Center and starts working with the Dashboard, 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 HP Business Availability Center again.

The load balancer for the Gateway Server must be set with **stickiness by session enabled**. For details, see “Configuring Load Balancing” on page 85.


Important: 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

In the event of a primary Data Processing Server failure, all services must be reassigned and activated on the backup Data Processing Server for HP Business Availability Center to function properly.

For Data Processing Servers, you can install only one active server in an HP Business Availability Center system. A second server can act as a backup Data Processing Server. The active server runs specific HP Business Availability Center services. In the event that the active server becomes unavailable, you can use HP Business Availability Center's System Health to reassign the services to the backup server, which then retrieves the current configuration from the management database and continues to provide the services as the new active Data Processing Server.

To configure System Health:

- 1 Click **Admin > Platform > Setup and Maintenance > Infrastructure Settings**.
- 2 Select **Foundations** and then select **System Health** from the dropdown menu.
- 3  Click the Edit button in System Health – URL pane.
- 4 Enter the URL of the System Health machine you want to connect to in the **Value** field of the Edit Setting dialog box, and click **Save** to save the setting.

Note: When carrying out a new HP Business Availability Center 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 *Platform Administration*. To configure the automatic reassignment of services running on a primary Data Processing Server to a backup Data Processing Server, see “Configuring Automatic Failover” on page 95.

This section includes the following topics:

- “Services Assigned to the Data Processing Server” on page 90
- “Configuring Automatic Failover” on page 95
- “Reassigning Services from System Health” on page 95
- “Manually Reassigning Services” on page 95
- “Manually Disabling Data Aggregator Services” on page 100

Services Assigned to the Data Processing Server

Various processes are assigned to the Data Processing Server. Each process is responsible for running specific services.

To view services via the JMX Web console:

- 1 In a Web browser, open:
<http://<Data Processing Server machine name>:8080/jmx-console>
- 2 In the **Topaz** section, click **service=hac-manager**.
- 3 Under **java.lang.String listAllAssignments()** from the database, click **Invoke**.
The processes running on a typical server are displayed in the following online table:

Service	Customer	Process - [Start] - [Ping]	Assigned - [Since] - [Duration]	State - [Since] - [Duration]
NOA	-1	labmlamrnd08 : mercury_offline_engine - [1h:6m:3s] - [19s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:33:24] - [1h:6m:3s]
PM	-1	labmlamrnd08 : mercury_pm - [1h:5m:38s] - [15s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:33:49] - [1h:5m:38s]
DASHBOARD	1	labmlamrnd08 : mercury_online_engine - [1h:7m:6s] - [3s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:32:32] - [1h:6m:55s]
CDM	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:31:10] - [1h:8m:17s]
CMDB	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:29:57] - [1h:9m:30s]
MAMVIEWSYS	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:30:24] - [1h:9m:3s]
VERTICALS	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:31:03] - [1h:8m:24s]
MAMPACKAGER	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:30:52] - [1h:8m:35s]
MAMBASIC	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:30:02] - [1h:9m:25s]
MAMDISCOVERY	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:30:24] - [1h:9m:3s]
KPI_ENRICHMENT	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:31:02] - [1h:8m:25s]
MAMIMPACT	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:30:26] - [1h:9m:1s]
MAMREPORT	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:30:26] - [1h:9m:1s]
MAMCONFIG	1	labmlamrnd08 : mercury_as - [1h:11m:10s] - [17s]	Yes (1) - [03/Jul/2007 04:24:19] - [6h:15m:8s]	RUNNING - [03/Jul/2007 09:30:26] - [1h:9m:1s]

The JMX online table contains the following columns:

Column Name	Description
Service	The name of the assigned service.
Customer	The ID of the customer for which the service is assigned. The default customer ID for an individual HP Business Availability Center system (that is, one not managed by HP Managed Software Solutions) is 1. A customer ID of -1 represents the entire system as opposed to a specific customer.
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: <ul style="list-style-type: none"> ▶ 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).

The Data Processing Server services are described in the following table:

JVM Process Name	Service Name	Description of Service
mercury_as	CDM	The CDM (Configuration Data Model) service is responsible for adding CIs representing monitors from the data collectors to the CMDB. This service is referred to as Source Adapters service in System Health (Admin > Platform > System Health).
	CMDB	The CMDB is a central repository for configuration information that is gathered from the various HP Business Availability Center and third-party applications and tools. This information is used to build HP Business Availability Center views. Note: The CMDB service is not necessarily run by the mercury_as process.
	KPI_ENRICHMENT	The 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.
	MAM BASIC	The MAM_Basic service is responsible for user management, system parameters, and login/logout services.
	MAM CONFIG	The MAM_Config service is responsible for snapshots, CI changes queries, and TQL/View History queries.
	MAM DISCOVERY	The MAM_Discovery service is responsible for Discovery-related services.
	MAM IMPACT	The MAM_Impact service is responsible for HP Universal CMDB impact, root cause, and correlation subsystems.

JVM Process Name	Service Name	Description of Service
mercury_as (cont)	MAM_PACKAGER	The MAM_Packager service is responsible for packages. Packages are zip files containing resources that are structured in organized, predefined subdirectories.
	MAM_REPORT	The MAM_Report service is responsible for HP Universal CMDB report services.
	MAM_VIEWSYS	The viewing system and package manager service installed on the Data Processing Server. The Viewsys service manages HP Business Availability Center views. This service is referred to as Viewing System in System Health in the HP Business Availability Center Administration Console.
	VERTICALS	Verticals service is a service for both SAP and Siebel that ensures compatibility with HP Business Availability Center. SAP service links data retrieved from SiteScope and Business Process Monitors to SAP related entities brought from HP Universal CMDB. Siebel service links data retrieved from SiteScope and Business Process Monitors to Siebel related entities brought from HP Universal CMDB, for HP Business Availability Center compatibility.
	EMS_HOST	The EMS_Host service is responsible for CMDB host configuration.
mercury_offline_engine	NOA	The New Offline Aggregator service validates and synchronizes new tasks for the offline aggregator on an hourly or daily basis.

JVM Process Name	Service Name	Description of Service
mercury_online_engine	DASHBOARD	Dashboard service on the Data Processing Server is responsible for online business logic calculations. This service is referred to as Online BLE (Business Logic Engine) in System Health in the HP Business Availability Center Administration Console.
topaz_pm	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 HP Business Availability Center reports. After an additional, defined amount of time, that partition is purged from the profile database.

Log Files

The JVM process log files are contained in the following directories under **<HP Business Availability Center root directory>\log:**

- cmdb (Data Processing Server)
- mam (Data Processing Server)
- EJBContainer (Data Processing Server)
- mercury_data_upgrade (Data Processing Server)
- mercury_db_loader (Gateway Server)
- mercury_offline_engine (Data Processing Server)
- mercury_online_engine (Data Processing Server)
- mercury_pm (Data Processing Server)
- mercury_wde (Gateway Server)

Note: Log files are primarily for Customer Support's use. They are listed here only to alert you to new files on your servers.

Configuring Automatic Failover

You can configure automatic reassignment of services running on a primary Data Processing Server to a backup Data Processing Server. Access **Select Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Foundations**, select **High Availability Controller**, and locate the **Automatic Failover Enabled** entry in the General Properties table. Modify the value to **true**. The change takes effect immediately.

Reassigning Services from System Health

Using the new System Health, you can move groups of services between Data Processing Servers as server availability and resource issues arise. Select **Admin > Platform > Setup and Maintenance > System Health**.

For details on using System Health to move services between Data Processing Servers, see “Service Manager Dialog Box” in *Platform Administration*.

Manually Reassigning Services

Important: The procedures below (which require accessing the JMX Web console) should only be used for reassigning services that cannot be reassigned in System Health.

If you have not installed the new System Health, you can manually reassign services running on a primary Data Processing Server to a backup Data Processing Server should it be necessary (for example, if you have to move the CDM service and the <HP Business Availability Center root directory>\CMDB directory). 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. When reassigning the CDM service between Data Processing Servers, there are additional steps that may need to be carried out. For details, see “Reassigning the CDM Service” on page 99.

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 Data Processing Server” on page 90.

Removing a Service’s Assignment

Removing a service’s assignment deletes the entry from the HA_TASK_ASSIGN 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>
- 2** In the **Topaz** section, click **service=hac-manager**.

3 Under **removeAssignment()**, enter the following data:

- ▶ **customer_id.** The ID of the customer for which the service is assigned. The default customer ID for an individual HP Business Availability Center system (that is, one not managed by HP Managed Software Solutions) 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 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_TASK_ASSIGN` table in the management database, but make it active or inactive by changing its assigned value.

To change the assigned value of an existing assignment:

- 1** In a Web browser, open:
<http://<Data Processing Server machine name>:8080/jmx-console>
- 2** In the Topaz section, click **service=hac-manager**.

3 Under **changeAssignment()**, enter the following data:

- ▶ **customerid.** The ID of the customer for which the service is assigned. The default customer ID for an individual HP Business Availability Center system (that is, one not managed by HP Managed Software Solutions) 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 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 (such as **mercury_as**, **mercury_online_engine**, **mercury_offline_engine**, **topaz_pm**).
 - ▶ **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>

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 HP Business Availability Center system (that is, one not managed by HP Managed Software Solutions) 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 (such as **mercury_as**, **mercury_online_engine**, **mercury_offline_engine**, **topaz_pm**).
 - ▶ **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.

Reassigning the CDM Service

The CDM service relies on content contained in the **<HP Business Availability Center root directory>\CMDB** directory. Before reassigning the CDM service to a backup server, the CMDB directory on the active server must be manually copied to the backup machine, or the directories must be synchronized, or the directory must be placed on a third machine that can be accessed by both active and backup machines (for example a netapp machine). For details on the latter two options, see “High Availability for the CDM” on page 100.

Manually Disabling Data Aggregator Services

There may be times, such as during server maintenance, when you need to disable data aggregator services but do not need to use System Health.

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.

High Availability for the CDM

The CDM (source adapters framework) service uses the **<HP Business Availability Center root directory>\CMDB** directory. This directory must be identical on both the active and backup Data Processing Servers. This can be accomplished in the following ways:

- ▶ Place the CMDB directory in a shared directory on a different machine (such as a netapp server) and point HP Business Availability Center to this machine. This is the recommended option.
- ▶ Synchronize the CMDB directories on the active and backup servers on a regular basis (for example, create a batch file that copies the directory from the active to backup servers periodically).

Note: If you are working with a five-machine deployment, the CDM service is installed on the Offline Data Processing Server.

Important: If the CDM service is reassigned to the shared directory on the Data Processing Server without the <HP Business Availability Center root directory>\CMDB directory being copied (for example, if the primary Data Processing Server fails in such a way that you do not have access to the file system), the CDM service uses the empty <HP Business Availability Center root directory>\CMDB directory that exists on the Data Processing Server and you lose all of your existing source adapter framework data.

To set up the Data Processing Server to use a shared CMDB directory for a new HP Business Availability Center installation:

Immediately after the installation of HP Business Availability Center, and before it is started for the first time, carry out the following steps:

- 1** Create the shared CMDB directory on the third machine.
- 2** Select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Foundations**, select **Sources Configuration**, and locate the **The location of the adapters directory (CMDB)** entry in the Sources Configuration – Sources table. Modify the value to the full network address to the shared CMDB directory (//<Data Processing Server name or IP address>/).
- 3** Ensure that the user under which the HP Business Availability Center service is running has read/write access to the shared CMDB directory on the third machine.

To set up the Data Processing Server to use a shared CMDB directory in an existing HP Business Availability Center environment:

- 1** Ensure that there are no open connections to HP Business Availability Center.
- 2** Copy the <HP Business Availability Center root directory>\CMDB directory from the active Data Processing Server to the third machine.

- 3 Select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Foundations**, select **Sources Configuration**, and locate the **The location of the adapters directory (CMDB)** entry in the Sources Configuration – Sources table. Modify the value to the full network address to the shared CMDB directory (**//<Data Processing Server name or IP address>/**).
- 4 Ensure that the user who starts the HP Business Availability Center service has read/write access to the **<HP Business Availability Center root directory>\CMDB** directory on the shared directory on the other machine.
- 5 Restart HP Business Availability Center on all machines.

Configuring HP Business Availability Center Data Collectors in a Distributed Environment

This section describes how to configure the HP Business Availability Center data collectors to work in a distributed HP Business Availability Center 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 Business Process Monitor Admin 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 “Configuring Business Process Monitor Instances” in *the Business Process Monitor Administration* PDF.

For Real User Monitors to perform their work, HP Business Availability Center requires you to specify the Gateway Server URL in the Real User Monitor Web Console. For more information, see “Using the HP Real User Monitor Web Console” in the *Real User Monitor Administration* PDF.

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 IP addresses 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 HP Business Availability Center System Availability Management (**Admin > System Availability Management**). For details, refer to the *HP SiteScope Deployment Guide* PDF.

If you are using 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 are using two load balancers for failover, specify the URL of either load balancer and ensure that you configure the IP addresses of both load balancers on the DNS server machine.

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

High Availability for Three-Machine and Five-Machine (Legacy) Deployments

If you are working with a three-machine or five-machine legacy deployment, two Gateway Servers are being used. One Gateway Server has been configured to communicate with your data collectors and the other Gateway Server has been configured to communicate with HP Business Availability Center users. The virtual IP for the data collector Gateway Server's load balancer should be set to **round robin enabled**. The virtual IP for the application user Gateway Server's load balancer should be set to **stickiness by session enabled**.

If you are working with a five-machine legacy deployment, the Data Processing Server services are divided among three machines: the Modeling Data Processing Server, the Offline Data Processing Server, and the Online Data Processing Server. The following backup strategies may be used:

- ▶ One machine with 8 GB RAM is used as a backup server for all three Data Processing Servers. This is the preferred strategy.
- ▶ One machine is used to back up each Data Processing Server.

The New Offline Aggregator service, which runs on the Offline Data Processing Server, is symmetrical and can be run concurrently by more than one Offline Data Processing Server. This guarantees both high availability and load balancing for the New Offline Aggregator service.

If the backup Offline Data Processing Server has been installed solely for the purpose of enabling manual failover (in the event of an Offline Data Processing Server failure), it is recommended that you stop the offline aggregation and business logic engine services from running on this machine. If manual failover is enabled, restart the offline aggregation on the backup Offline Data Processing Server. Note that other services that run on the Offline Data Processing Server use the failover mechanism.

9

Disaster Recovery for HP Business Availability Center

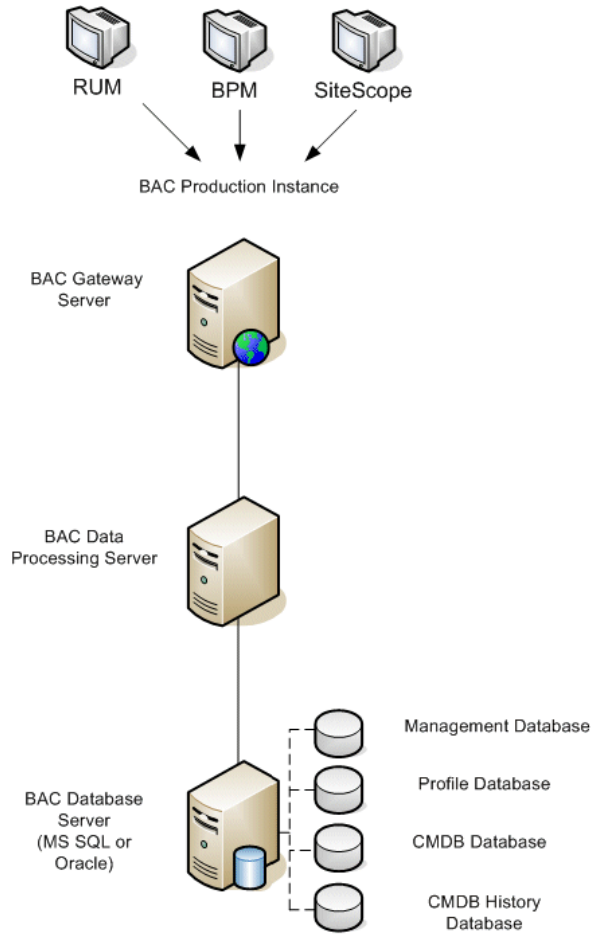
You can set up and activate (when necessary) a Disaster Recovery (DR) system for your HP Business Availability Center system.

This chapter describes:	On page:
Introduction to Disaster Recovery for HP Business Availability Center	106
Preparing the Disaster Recovery Environment	108
Preparing the HP Business Availability Center Failover Instance for Activation	120
Before Startup Cleanup Procedure	120
Post Startup Cleanup Procedure	127
Configuring the Softerra LDAP Administrator	127

Introduction to Disaster Recovery for HP Business Availability Center

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 HP Business Availability Center system become the new Primary HP Business Availability Center system. The chapter covers a typical HP Business Availability Center environment consisting of one HP Business Availability Center Gateway server, one Data Processing Server, and one database server containing HP Business Availability Center database schemas.

The following diagram shows a typical HP Business Availability Center environment:



Note:

- ▶ This chapter is a high level guide to introduce concepts of enabling disaster recovery.
 - ▶ Disaster Recovery involves manual steps in moving various configuration files and updates to the HP Business Availability Center database schemas. This procedure requires at least one HP Business Availability Center Administrator and one database administrator, who is familiar with the HP Business Availability Center databases and schemas.
 - ▶ There are a number of different possible deployment and configurations for HP Business Availability Center. To validate that the DR 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 DR scenario.
-

Preparing the Disaster Recovery Environment

Preparing the Disaster Recovery environment comprises the following stages:

“Installing HP Business Availability Center Software in the Failover Environment” on page 109

“System Configuration Backup and Data Backup Configuration” on page 111

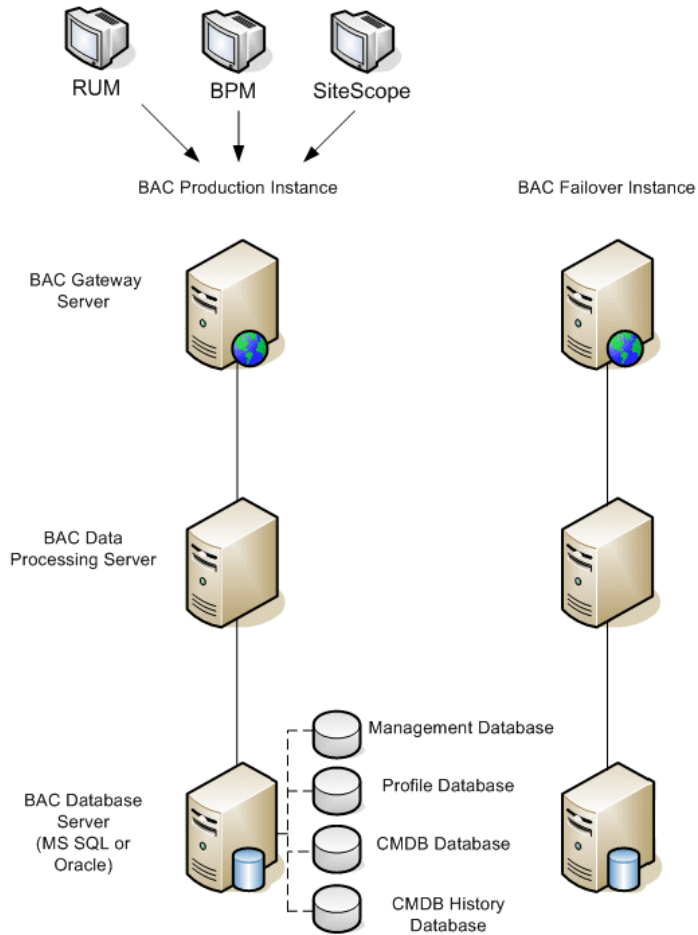
Installing HP Business Availability Center Software in the Failover Environment

Install a second instance of HP Business Availability Center that matches your current production environment.

- ▶ Install exactly the same version of HP Business Availability Center in your backup environment, as that used in your production environment.
- ▶ To simplify issues with disparate capacities and deployments, the backup environment should be the same as your production environment (for example, Enterprise or Standard deployment).
- ▶ Do not run the Server and Database Configuration utility and do not create any databases.
- ▶ Do not start the Backup system.

Note: The Disaster Recovery environment should closely resemble the HP Business Availability Center production environment. The hardware, deployment, and versions should all be matched to prevent any loss of functionality when moving to the Failover system.

The following diagram shows a typical HP Business Availability Center environment with a Failover system also installed:



System Configuration Backup and Data Backup Configuration

This stage includes copying configuration directories to the Failover instance, configuring LDAP for Disaster Recovery, and configuring database logfile shipping.

Copying Configuration Directories to the Failover Instance

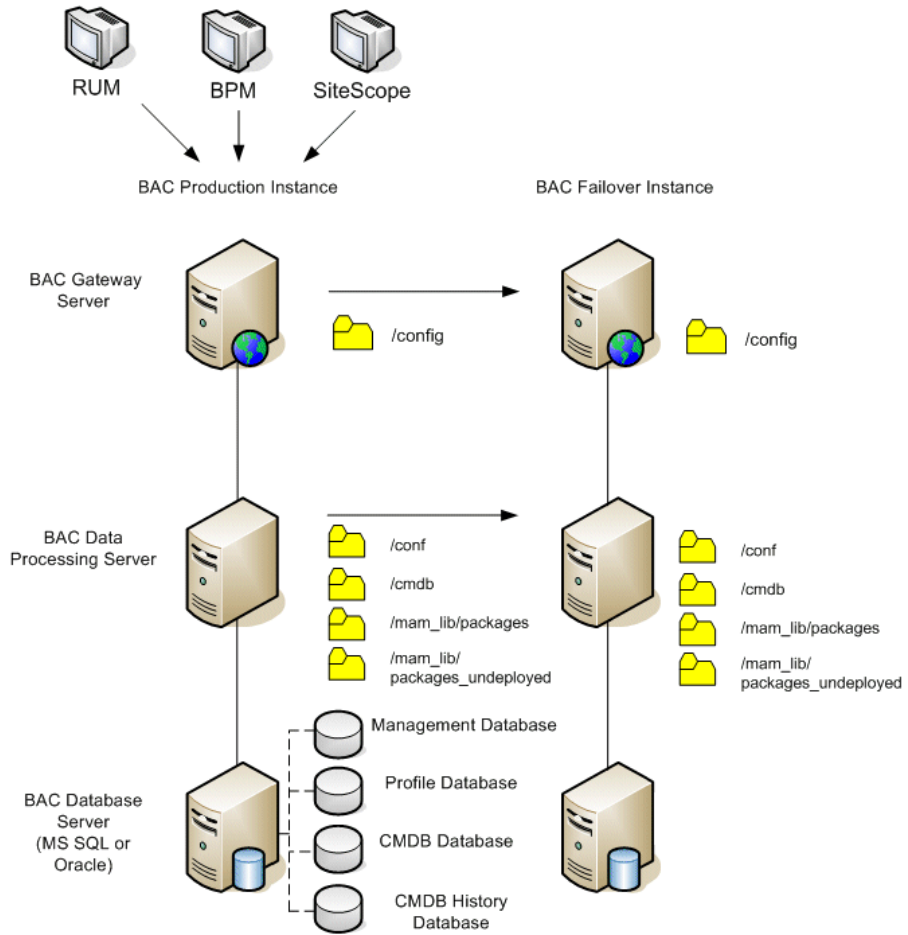
Copy from the HP Business Availability Center Production instance to the same server type in the Failover instance, any files changed in the following directories:

- /conf
- /cmdb (located on the Data Processing Server)
- /mam_lib/packages (located on the Data Processing Server)
- /mam_lib/packages_undeployed (located on the Data Processing Server)

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 HP Business Availability Center 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.

The following diagram shows the Failover system after copying the directories from the Production system.



Configuring LDAP for Disaster Recovery

HP Business Availability Center contains an LDAP server component that is used to store monitoring configuration. While the loss of LDAP services does not disrupt data collection, it prevents the ability to make any configuration changes to the various HP Business Availability Center monitors and can cause errors in the HP Business Availability Center Web site.

The LDAP server included in HP Business Availability Center is OpenLDAP Software, an open source implementation of LDAP. The two most important components of the suite are:

- slapd - stand-alone LDAP daemon (server)
- slurpd - stand-alone LDAP update replication daemon

To configure LDAP for Disaster Recovery:

1 Review current HP Business Availability Center configuration.

When HP Business Availability Center is installed, LDAP is automatically installed on the Gateway Server. If HP Business Availability Center is installed on multiple Gateway Servers, the first Gateway Server becomes the master LDAP server. To determine which Gateway Server is the master LDAP server, use the following steps:

- a** Login to HP Business Availability Center.
- b** Select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Foundation** and select **Monitor Administration**.
- c** The value in the **Monitor Administration Data Storage Location** setting is the name of the master server.

2 Prepare the slave server.

To prepare your failover server as a slave LDAP server use the following steps:

- a** Shutdown HP Business Availability Center on both servers on which ldap is running.
- b** Copy the entire **<HP Business Availability Center root directory>\opendap** directory from the master server to the slave server. If this directory already exists on the slave server, overwrite it.

3 Set up replication between master and slave servers.

On the **master server**, do the following:

- a** Install the replication daemon (slurpd) by running **<HP Business Availability Center root directory>\openldap\slurpd install**.
- b** Backup **<HP Business Availability Center root directory>\openldap\slapd.conf**.
- c** Edit **<HP Business Availability Center root directory>\openldap\slapd.conf** and add a **replica** and a **repllogfile** directive as follows:

```
replica uri=ldap://<slaveHost>:9389 binddn="E=SSEnterprise"  
bindmethod=simple credentials=fl1pp3r  
repllogfile ./replicate.log
```

Note:

- ▶ The file contains lines that are commented out; you can use them as a starting point.
- ▶ Each directive is on a separate line.
- ▶ Each directive must not break across lines.
- ▶ Replace **<slaveHost>** with the name (Fully Qualified Domain Name preferred) of your slave server.

-
- d** Start the slapd service.

On the **slave server**, do the following:

- a** Backup **<HP Business Availability Center root directory>\openldap\slapd.conf**.
- b** Edit **<HP Business Availability Center root directory>\openldap\slapd.conf** and add an **updatedn** and an **updateref** directive as follows:

```
updatedn "E=SSEnterprise" updateref ldap://<masterHost>:9389  
minServer installation Change
```

Note:

- The file contains lines that are commented out; you can use them as a starting point.
 - Each directive must not break across lines.
 - Replace <masterHost> with the name (Fully Qualified Domain Name preferred) of the master Gateway Server of your slave system.
-

- c** Open the slapd service.

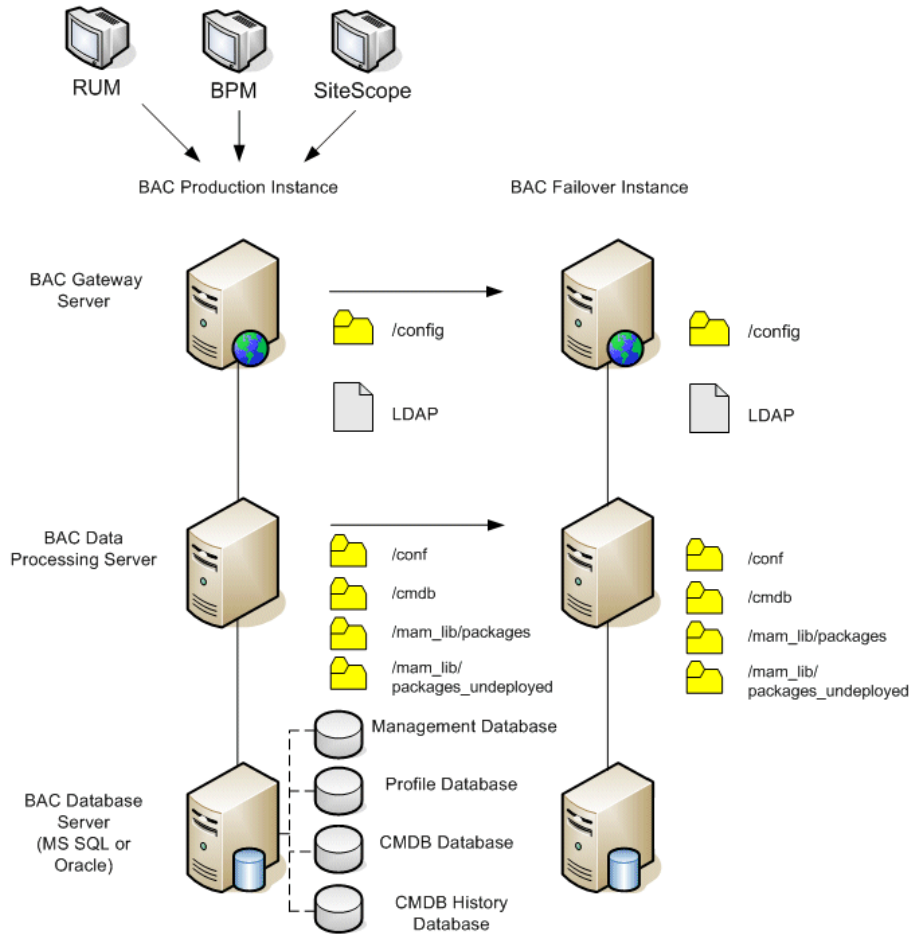
After the slapd service has started on the failover server, perform the following steps on the **master server**:

- a** Start the slurpd service from <open LDAP directory>\slurpd.exe.
- b** Connect to the **master server** using an LDAP administrator utility (you can obtain one from www.ldapbrowser.com). For configuration details for the Softerra LDAP administrator see “Configuring the Softerra LDAP Administrator” on page 127.
- c** Make a change in the LDAP repository (for example, add a value) using the administrator utility.
- d** Check <HP Business Availability Center root directory>\openldap\replicate.log. You should see entries that reflect the change you applied.
- e** Connect to the **slave server** using an LDAP administrator utility.
- f** Check the LDAP repository to see that your change is reflected.

You can now shut down both slaps services on the master and slave servers.

Start the failover LDAP server to receive updates.

The following diagram shows the Production and Failover systems with LDAP replication enabled:



4 Configure the Backup database.

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

► MS 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 HP Business Availability Center databases:

- HP Business Availability Center Management database
- HP Business Availability Center Profile database
- HP Business Availability Center CMDB database
- HP Business Availability Center CMDB History database

This section does not contain the specific steps to configure log file shipping. The HP Business Availability Center database administrator can use the following links as a guide to configure log file shipping for the appropriate version of database software that is used in the HP Business Availability Center environment:

SQL Server 2000:

- <http://support.microsoft.com/default.aspx?scid=http://support.microsoft.com/support/sql/content/2000papers/LogShippingFinal.asp>
- <http://www.microsoft.com/technet/prodtechnol/sql/2000/maintain/logship1.mspx>

SQL Server 2005:

- <http://msdn2.microsoft.com/en-us/library/ms188625.aspx>
- <http://msdn2.microsoft.com/en-us/library/ms190016.aspx>
- <http://msdn2.microsoft.com/en-us/library/ms187016.aspx>

➤ **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.

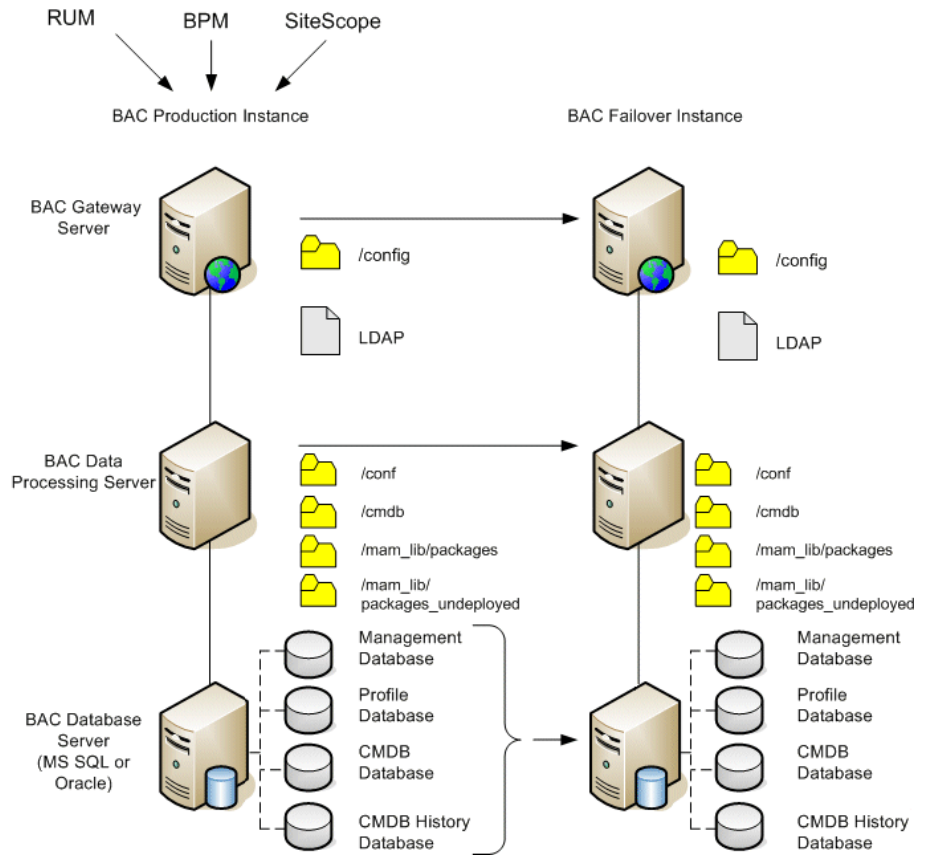
Note: HP recommends that if Oracle is the database platform, Oracle 10g should be used to utilize Data Guard.

This section does not contain the specific steps to configure a Standby database. The HP Business Availability Center database administrator can use the following link as a guide to configure a Standby database for Oracle 10g:

[http://download.oracle.com/docs/cd/B19306_01/
server.102/b14239/toc.htm](http://download.oracle.com/docs/cd/B19306_01/server.102/b14239/toc.htm)

Upon successful completion of the Backup database configuration, the HP Business Availability Center Failover Database should be in sync with the HP Business Availability Center Production Database.

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



Preparing the HP Business Availability Center Failover Instance for Activation

When it is time to activate the Failover instance, perform the following steps:

- ▶ Activate the Backup system, including its database.
- ▶ Ensure that all the latest database logs have been updated into the Failover Environment's databases.
- ▶ Run the Before Startup Cleanup Procedure (for details, see page 120) to remove any localization in the databases.

Before Startup Cleanup Procedure

This procedure cleans up all the machine specific references in the configurations from the Production instance. It is needed to reset the database on the Backup system.

Note:

- ▶ Before starting the activation procedures, the HP Business Availability Center 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.
 - ▶ All the SQL statements included in this procedure need to be run against the management database.
-

1 HAC Tables

a Empty the HAC tables:

- ALTER TABLE HA_SERVICES_DEP DROP CONSTRAINT HA_SERVICES_DEP_FK1;
- ALTER TABLE HA_SERVICES_DEP DROP CONSTRAINT HA_SERVICES_DEP_FK2;
- ALTER TABLE HA_SRV_ALLWD_GRPES DROP CONSTRAINT HA_SRV_ALLWD_GRPES_FK2;
- ALTER TABLE HA_SERVICES DROP CONSTRAINT HA_SERVICES_FK1;
- TRUNCATE TABLE HA_BACKUP_PROCESSES
- TRUNCATE TABLE HA_PROC_ALWD_SERVICES
- TRUNCATE TABLE HA_SRV_ALLWD_GRPES
- TRUNCATE TABLE HA_SERVICES_DEP
- TRUNCATE TABLE HA_SERVICES
- TRUNCATE TABLE HA_SERVICE_GRPES
- TRUNCATE TABLE HA_TASK_ASSIGN
- ALTER TABLE HA_SERVICES_DEP ADD CONSTRAINT HA_SERVICES_DEP_FK1 FOREIGN KEY (SERVICE_ID) REFERENCES HA_SERVICES (ID);
- ALTER TABLE HA_SERVICES_DEP ADD CONSTRAINT HA_SERVICES_DEP_FK2 FOREIGN KEY (DEPENDS_ON) REFERENCES HA_SERVICES (ID);
- ALTER TABLE HA_SRV_ALLWD_GRPES ADD CONSTRAINT HA_SRV_ALLWD_GRPES_FK2 FOREIGN KEY (GROUP_ID) REFERENCES HA_SERVICE_GRPES (ID);
- ALTER TABLE HA_SERVICES ADD CONSTRAINT HA_SERVICES_FK1 FOREIGN KEY (GROUP_ID) REFERENCES HA_SERVICE_GRPES (ID);

b Erase references to **controller upgrade** from **properties**:

```
delete from Properties
where NAMESPACE='FND_AUTO_UPGRADE' and
NAME='HAServiceControllerUpgrade'
```

2 Sessions Table

Switch references in the Sessions table to the backup session databases:

```
update sessions set SESSION_DB_SERVER = '<New DB Server>',
SESSION_DB_HOST = '<New DB Server>', SESSION_DB_SID='<New DB
SID>'
```

3 Bus Tables

Remove the reference to Bus locations (including the Domain Manager) in the **properties** table:

```
DELETE FROM properties
WHERE namespace='MessageBroker' or
namespace='SonicMQ_Namespace'
```

4 Setting Manager Values

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
Alertengine	settings.smtp.server
Scheduledreports	settings.smtp.server
Platform	default.core.server.url
Platform	default.centers.server.url
Monitoring	ldap.host.and.port

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>'
```

For example:

- update SETTING_PARAMETERS set SP_VALUE='newmachinename' where SP_CONTEXT='alertengine' 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'
- update SETTING_PARAMETERS set SP_VALUE='ldap://<hostname>:<port number>' where SP_CONTEXT='monitoring' and SP_NAME='ldap.host.and.port'

5 SYSTEM Keys

Update the following keys in the SYSTEM table:

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='<key>' where SYS_NAME='<new value>'
```

For example:

- update SYSTEM set SYS_VALUE='http://newmachine:port' where SYS_NAME='AdminServerURL'
- update SYSTEM set SYS_VALUE='http://newmachine:port' where SYS_NAME='GraphServerURL'

- update SYSTEM set SYS_VALUE='http://newmachine:port'
where SYS_NAME='GraphServerURL4.5.0.0'
- update SYSTEM set SYS_VALUE='http://newmachine:port'
where SYS_NAME='application.tac.path'
- update SYSTEM set SYS_VALUE='http://newmachine:port'
where SYS_NAME='application.flipper.path'

Note: The default port number is 80.

6 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 Availability Center > Administration > Connect to Database**.

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.
 - When prompted for the databases by the Server and Database Configuration utility, ensure that you enter the names of the new databases in the Failover environment.
 - Run the Server and Database Configuration utility on the machines in the same order that HP Business Availability Center was originally installed in the failover environment.
-

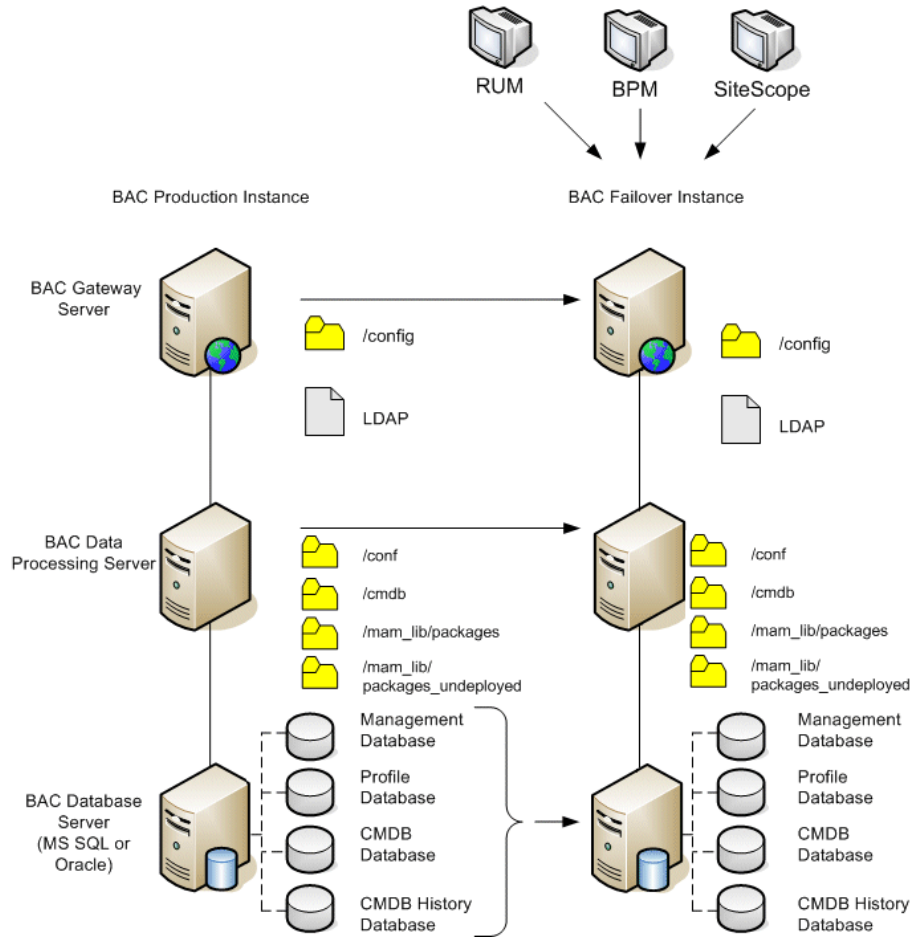
7 Bring up the Backup Environment.

Start HP Business Availability Center on all of the servers in the failover environment.

8 Configure data collectors.

Configure all the data collectors, Business Process Monitor agents, Real User Monitor engines, and SiteScopes 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:



Post Startup Cleanup Procedure

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

To disable obsolete hosts:

- 1 Browse to the URL **http://<Gateway Server machine>/topaz/systemConsole/displayBACHosts.do**.
- 2 Disable all obsolete hosts.

Configuring the Softerra LDAP Administrator

To configure Softerra LDAP Administrator:

- 1 Start Softerra LDAP administrator.
- 2 From the menu select **File > New > New profile**.
- 3 Enter a descriptive name for the profile.
- 4 Click **Next**.
- 5 Enter the host name (FQDN preferred) of the LDAP server to which you want to connect.
- 6 Enter port = **9389**.
- 7 Enter Base DN = **E=SSEnterprise**.
- 8 Click **Next**.
- 9 Enter Principal = **E=SSEnterprise**.
- 10 Enter Password = **fl1pp3r**.
- 11 Click **Next**.
- 12 Click **Finish**.

Part IV

HP Business Availability Center Server Installation for Windows

10

Installing HP Business Availability Center Servers on a Windows Platform

This chapter describes how to install HP Business Availability Center servers on a Windows platform.

This chapter describes:	On page:
Overview of HP Business Availability Center Server Installation	132
Features Included in HP Business Availability Center Server Installation	132
Preparing Information Required for Installation	133
Installation Prerequisites	135
Working with the Web Server	136
Installing HP Business Availability Center Servers	138
Starting and Stopping HP Business Availability Center	141
Post-Installation Tasks	142

Overview of HP Business Availability Center Server Installation

There are several stages to the HP Business Availability Center 7.0 server installation:

- 1 Installing HP Business Availability Center 7.0 as described in “Installing HP Business Availability Center Servers” on page 138.
- 2 Setting the management, CMDB, and CMDB history databases by specifying the database type and connection parameters for each database, as described in “Setting Database Parameters on a Windows Platform” on page 145.
- 3 Installing component setup files in the HP Business Availability Center Downloads page, as described in “Installing Component Setup Files” on page 153.

The server Setup program gives you the option of installing both of the HP Business Availability Center servers on one machine (referred to as an HP Business Availability Center box), or installing only one of the servers on the machine. For details on the different deployment configurations that are possible, see “Deployment Configuration” on page 71.

Features Included in HP Business Availability Center Server Installation

Component	Description
Gateway Server	The Gateway Server is responsible for the following: <ul style="list-style-type: none">▶ running the HP Business Availability Center applications▶ reporting▶ operating the Administration Console▶ receiving data samples from the data collectors▶ distributing data to the relevant HP Business Availability Center components▶ supporting the Bus

Component	Description
Data Processing Server	<p>The Data Processing Server is responsible for aggregating and partitioning data, running the Business Logic Engines, and controlling the HP Universal CMDB-related services. When you choose to install the Data Processing Server as part of a custom installation, you select the type (All, Modeling, Online, or Offline) of Data Processing Server to install.</p> <p>For further details on the services run by the Data Processing Servers, see “Services Assigned to the Data Processing Server” on page 90.</p>

Note: Other servers and components are automatically installed during HP Business Availability Center server installation. For details, see “Deploying HP Business Availability Center Servers” on page 44.

Preparing Information Required for Installation

Have the following information ready before installation:

- **License key.** If you did not receive a license key with your HP Business Availability Center package, you can obtain one from your Customer Support representative. Note that you can enter **TEMPORARY** if you do not yet have a permanent license key. The temporary license key grants you ten transactions over seven days. **TEMPORARY** appears by default during first-time installations.

If at a later stage you need to update the license key (for example, if you acquire a license for one or more new HP Business Availability Center components), you can do so within the HP Business Availability Center site: Select **Admin > Platform > Setup and Maintenance > License Management** and click **New License Key**. For information on updating the license key, see “Downloads and Licenses” in *Platform Administration*.

- **Maintenance number.** This is the maintenance number you received with your HP Business Availability Center package.
- **Web server name.** This name must also include the domain name.
- **Administrator's e-mail address.**
- **Port number used by the Web server.** This is the port for access to the HP Business Availability Center. The default is port 80.
- **Name of the Gateway Server machine.**
- **Name of the load balancer** (if any). This is the load balancer used to access the HP Business Availability Center site.
- **SMTP mail server name.**
- **SMTP sender name.** This name appears on alerts sent from HP Business Availability Center.

Note: In addition to sending e-mail alerts via the configured SMTP server, HP Business Availability Center can send e-mail alerts via the Microsoft SMTP Service. For details, see “Configure SMTP Mails” in *Custom Reporting and Alerting*.

- **Information for setting the management, CMDB, and CMDB history database parameters.** If you plan to set the management, CMDB, and CMDB history databases during server Setup, see “Required Information for Setting Database Parameters” on page 149.

Installation Prerequisites

Note the following before installing HP Business Availability Center servers:

- ▶ It is recommended that you install HP Business Availability Center servers to a drive with at least 10 GB of free disk space. For more details on server system requirements, see “Reviewing System Requirements” on page 53.
- ▶ If you have an enterprise deployment and are installing HP Business Availability Center on a Windows Server 2003 Enterprise Edition or Windows 2000 Advanced Server platform, it is strongly recommended that you set the **3 GB** flag on the operating system and that you add **/3GB** to your Windows **Boot.ini** file to increase virtual address space.
- ▶ If HP Business Availability Center 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 HP Business Availability Center application and can result in performance and stability issues. For more information, contact Customer Support.
- ▶ HP Business Availability Center servers should not be installed on a machine that already has other HP products installed on it.

Note: If you have other Mercury products that you need to keep installed on the machine, use the following workaround: Before running the installation, access the Windows Registry Editor (select **Start > Run**, and enter **Regedit**) and rename the **HKEY_LOCAL_MACHINE\SOFTWARE\Mercury Interactive** key. Start the server installation and accept the license agreement, then return to the Registry Editor and rename the key to the original name, **Mercury Interactive**. Continue with the installation procedure.

- ▶ HP Business Availability Center servers must not be installed on a drive that is mapped to a local or network resource.

- ▶ During installation, custom configuration data from any previous installation on the server machine is overwritten. If you have customized configuration data that you want to reapply after the new installation, you must make a list of the changes.
- ▶ 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 in to the HP Business Availability Center site when using Microsoft Internet Explorer 6.0 or later. To access the HP Business Availability Center site in this case, use the machine's IP address instead of the machine name containing the underscore.
- ▶ During HP Business Availability Center server installation, you can specify a different path for the HP Business Availability Center directory (default is **C:\HPBAC**), but note that the full path to the directory must not contain spaces and cannot contain more than 15 characters.
- ▶ If you plan to run HP Business Availability Center servers on a hardened platform (including using HTTPS protocol), review the hardening procedures described in the *HP Business Availability Center Hardening Guide* PDF.

Working with the Web Server

HP Business Availability Center installed on a Windows platform works with Apache HTTP Server or Microsoft Internet Information Server (IIS).

Note: There must be only one running Web server on a server machine. For example, if you select to use Apache HTTP Server during HP Business Availability Center 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

If you plan to run HP Business Availability Center on the Apache HTTP Server, you must use the Apache HTTP Server version that has been adapted by HP for HP Business Availability Center. It is installed during the server installation.

HP Business Availability Center 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 HP Business Availability Center installation, reconfigure the service using that port to use a different port.
- ▶ During HP Business Availability Center installation, select a different port for the Apache HTTP Server.

Edit the file <HP Business Availability Center root directory>\conf\core\WebPlatform\webserver_guard.conf and add the following line:

```
webserver_port=<new port>
```

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 HP Business Availability Center, as configured in the Apache configuration file (**httpd.conf** and **httpd-ssl.conf**).

Microsoft Internet Information Server

If you plan to use the Microsoft Internet Information Server (IIS), the IIS settings are automatically configured to work with HP Business Availability Center during the server installation.

Note that you can make your HP Business Availability Center server machines running IIS under Windows 2000 more robust by configuring IIS to restart automatically upon failure.

To configure automatic IIS restart:

- 1 Select **Start > Settings > Control Panel**. Right-click **Internet Information Server (IIS)** and select **Properties**.

- 2 In the **Recovery** tab, specify to run a file upon failure.
- 3 In the **File** box, enter:

```
IISReset.exe /RESTART /TIMEOUT:30 /REBOOTONERROR
```

This instructs Windows 2000 to run the IISReset tool if IIS fails. If the tool fails to run within 30 seconds, the machine restarts.

Installing HP Business Availability Center Servers

You install HP Business Availability Center 7.0 servers—the Gateway Server and Data Processing Server—from the HP Business Availability Center DVD provided with the HP Business Availability Center distribution package. Unless you install on a machine running IIS, HP Business Availability Center installs Apache HTTP Server (adapted for HP Business Availability Center) during the installation process.

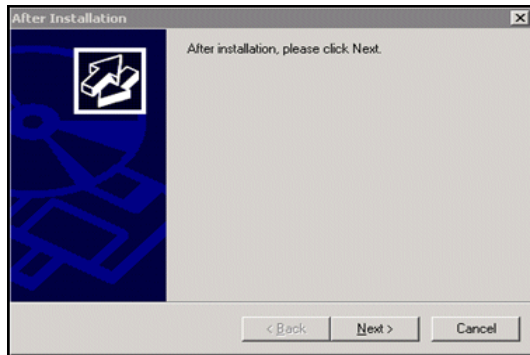
You need administrative privileges for the machines on which you are installing HP Business Availability Center servers.

To install HP Business Availability Center servers:

- 1 Insert the HP Business Availability Center DVD into the drive from which you want to install. If you are installing from a network drive, connect to the DVD.
- 2 From the **Start** menu, select **Run**.
- 3 Enter the location from which you are installing, followed by `setup.exe`. Note that the setup file for HP Business Availability Center servers is located in the **Windows Setup** directory of the DVD. For example, enter `d:\Windows Setup\setup.exe`.
- 4 Click **OK**. Setup begins. Follow the on-screen instructions for server installation.

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

If installing on a Windows platform with remote services running in application server mode, the following window opens if Windows detects a wrong user mode for the installation:



Ensure that this window remains open throughout the HP Business Availability Center setup process. When Setup is complete, click **Next** and follow any other instructions that may appear in the window.

For more information on this subject, refer to Microsoft Knowledge Base Article – 252330.

- **Selecting the setup type:**
 - Select **Typical** setup type to install the Gateway Server and Data Processing Server on the same machine.
 - Select **Custom** setup type to select the HP Business Availability Center features to be installed on the machine.

► **Selecting the Web server type:**

If HP Business Availability Center 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 HP Business Availability Center with Microsoft IIS, click **Cancel** to exit HP Business Availability Center Setup. Install IIS and rerun the HP Business Availability Center installation.

► **Configuring connection settings:**

- **Apache HTTP Server.** If port 80, the default port, is already in use by the existing Web server, HP Business Availability Center notifies you to resolve the conflict. For details, see “Apache HTTP Server” on page 137.
- **Microsoft IIS.** If IIS is using a port other than port 80, enter the IIS port.

► **Specifying 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 HP Business Availability Center sends. Accept the default name, **HP_BAC_Alert_Manager**, or enter another sender name.

- 5 Create the management, CMDB, and CMDB history databases and connect to them. For details, see “Setting Database Parameters on a Windows Platform” on page 145.

Note: If deploying a distributed server architecture, install additional HP Business Availability Center 7.0 servers using the above steps.

Starting and Stopping HP Business Availability Center

After completing HP Business Availability Center 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 prior to restarting the machine.

After successfully installing the 7.0 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 management, CMDB, and CMDB history databases, you launch HP Business Availability Center on each server machine.

Note: You can check which HP Business Availability Center servers and features are installed on an HP Business Availability Center server machine by viewing the [INSTALLED_SERVERS] section of the <HP Business Availability Center 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 HP Business Availability Center:

Select **Start > Programs > HP Business Availability Center > Administration > Enable Business Availability Center.**

You can now open and work in HP Business Availability Center.

To stop HP Business Availability Center:

Select **Start > Programs > HP Business Availability Center > Administration > Disable Business Availability Center.**

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

Post-Installation Tasks

This section contains the following post-installation tasks:

- ▶ “Verifying JBoss and Tomcat Connectivity” on page 142
- ▶ “Checking Components” on page 143
- ▶ “Checking Installation Log Files” on page 143
- ▶ “Viewing System Health” on page 143
- ▶ “Troubleshooting” on page 144

Verifying JBoss and Tomcat Connectivity

After you deploy HP Business Availability Center servers, verify the JBoss application server and Tomcat servlet engine connections with the **TopazVerify.jsp** utility.

To run TopazVerify:

- 1 Enter the following address in your Web browser:

```
http://<HP Business Availability Center server>/topaz/topazverify.jsp
```

- 2 If errors are returned, follow the on-screen links. Alternatively, use the troubleshooting information in the Customer Support Knowledge Base accessed from the HP Business Availability Center Help menu or from (<http://support.mercury.com/cgi-bin/portal/CSO/docViewAndSearch.jsp>).

Note: After upgrading or reinstalling HP Business Availability Center to the same location as a previous installation, the TopazVerify page may not load properly. If this occurs, manually delete the contents of the <HP Business Availability Center server root directory>\EJBContainer\server\default\work directory and restart the server.

Checking Components

After installation, you can check which HP Business Availability Center components are installed on an HP Business Availability Center server machine by doing the following:

- 1 Open the <HP Business Availability Center server root directory>/conf/TopazSetup.ini file.
- 2 Check the [INSTALLED_SERVERS] section. For example, Data_Processing_Server=1 indicates that the Data Processing Server is installed on the machine.

Viewing System Health

HP Business Availability Center's System Health enables you to monitor the performance of the servers, databases, and data collectors running on your HP Business Availability Center system and ensure that they are functioning properly. It is recommended that you enable System Health after you deploy HP Business Availability Center servers. For details on deploying and accessing System Health, see "System Health" in *Platform Administration*.

Checking Installation Log Files

Two installation log files are located in \Documents and Settings\
<HP Business Availability Center user>\LocalSettings\Temp\Mercury.

You can access them by selecting **Start > Run**, typing %temp%\Mercury, and clicking **OK**. The log file names are in the format:

- <product name><date and time>.install.html

- **<product name><date and time>.install.is.log**

For example: **HP_Business_Availability_Center.10.31.18.05.install.is.log**

Troubleshooting

For troubleshooting installation and connectivity problems, refer to the following documentation:

- **Customer Support Knowledge Base.** This site can be accessed from the HP Business Availability Center Help menu or from the Customer Support Web site (<http://support.mercury.com/cgi-bin/portal/CSO/docViewAndSearch.jsp>).
- **Readme files.** These files are located with the HP Business Availability Center package.
- **Chapter 18, “Installation and Connectivity Troubleshooting.”** This chapter lists installation and connectivity problems and solutions.

11

Setting Database Parameters on a Windows Platform

This chapter describes how to configure management, CMDB, and CMDB history database parameters on a Windows platform.

Note: If you are working with Oracle Server, substitute user schema for references to database below.

This chapter describes:	On page:
Overview of Setting Database Parameters	146
Setting Database Parameters	147
Required Information for Setting Database Parameters	149
Running the Server and Database Configuration Utility	151

Overview of Setting Database Parameters

The Server and Database Configuration utility enables you to create and connect to the management, CMDB, and CMDB history databases/user schemas for HP Business Availability Center on MS SQL Server or Oracle Server.

You can run the Server and Database Configuration utility as part of HP Business Availability Center server installation (described in “Installing HP Business Availability Center Servers on a Windows Platform” on page 131) by continuing with the second stage of Setup for setting management, CMDB, and CMDB history database parameters. Alternatively, you can run the Server and Database Configuration utility independently after server installation. The steps involved are the same for both procedures, as described in “Running the Server and Database Configuration Utility” on page 151.

If, at a later time, you want to modify the management, CMDB, or CMDB history database type or connection parameters, you can run the Server and Database Configuration utility again. After modifying database type or connection parameters, restart all HP Business Availability Center servers and data collectors.

Note: The management, CMDB, and CMDB history databases are connected to one another. Modification of one database may cause problems with another. In addition, modifying connection parameters after HP Business Availability Center is up and running may cause serious data loss and integrity problems.

Before beginning the procedure for creating and/or connecting to the management, CMDB, and CMDB history databases, it is recommended that you review “Setting Database Parameters” on page 147 and “Required Information for Setting Database Parameters” on page 149.

For detailed information on deploying either MS SQL Server or Oracle Server in your system for use with HP Business Availability Center, and on setting up the database, see the *HP Business Availability Center Database Guide* PDF.

Setting Database Parameters

Setting the management, CMDB, and CMDB history database parameters involves:

- ▶ selecting the type of database you plan to use— MS SQL Server or Oracle Server
- ▶ creating the database on MS SQL Server, or user schema on Oracle Server. See “Creating Databases” on page 147.
- ▶ specifying the connection parameters to the database or user schema. See “Connecting to Existing Databases” on page 148.

Note: If you need to change an active management database for HP Business Availability Center, contact Customer Support.

Creating Databases

You can either use the Server and Database Configuration utility to create the management, CMDB, and CMDB history databases/user schemas 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 run the Server 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 2000 Databases” or “Creating and Configuring Microsoft SQL Server 2005 Databases” in the *HP Business Availability Center Database Guide* PDF. For instructions on creating user schemas manually on Oracle Server, see “Manually Creating the Oracle Server Database Schemas” in the *HP Business Availability Center Database Guide* PDF.

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

Connecting to Existing Databases

When running the Server and Database Configuration utility, you select whether you want to create a new database/user schema or connect to an existing one. In the case of the CMDB database, you can also choose to connect to an external CMDB database if you already have a CMDB server set up as part of another HP product installation.

Note: Connecting to an external CMDB database can take up to 40 minutes.

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 HP Business Availability Center servers subsequent to the first server in a distributed HP Business Availability Center deployment. In this case, you connect to the databases/user schemas that you created during the installation of the first server by specifying the same connection parameters that you set during the installation of the first server. Note that once you have connected to the management database, the connection parameters for the CMDB and CMDB history databases appear by default in the appropriate screens of the Server and Database Configuration utility.

For information on implementing a distributed deployment of HP Business Availability Center, see “Deployment Configuration” on page 71.

Required Information for Setting Database Parameters

Before setting management, CMDB, and CMDB history database parameters, you should prepare the information described in the following sections.

Deploying 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, enter the following: <host_name>\<instance_name>
- ▶ **Port.** The MS SQL Server's TCP/IP port. HP Business Availability Center automatically displays the default port, **1433**.
- ▶ **Database name.** The name of the existing database, or the name that you will give your new database (for example, **BAC_Management**).
- ▶ **User name and Password.** (if you are using 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 HP Business Availability Center service has the necessary permissions to access the MS SQL Server database. For information on assigning a Windows user to run the HP Business Availability Center service, see “Changing the HP Business Availability Center Service User” on page 249. For information on adding a Windows user to MS SQL Server, see “Using Windows Authentication to Access Microsoft SQL Server Databases” in the *HP Business Availability Center Database Guide* PDF.

Deploying Oracle Server

Before setting management, CMDB, and CMDB history database parameters, ensure that you have created at least one default tablespace for each user schema for data persistency purposes, and that at least one temporary tablespace is assigned to each user schema.

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

- ▶ **Host name.** The name of the host machine on which Oracle Server is installed.
- ▶ **Port.** The Oracle listener port. HP Business Availability Center automatically displays the default port, **1521**.
- ▶ **SID.** The Oracle instance name that uniquely identifies the Oracle database instance being used by HP Business Availability Center.
- ▶ **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, BAC_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. For details on creating a dedicated HP Business Availability Center tablespace, see “Creating HP Business Availability Center Schemas Manually” in the *HP Business Availability Center Database Guide* PDF.
- ▶ **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 schema, you must have user creation privileges.

Running the Server and Database Configuration Utility

You can run the Server and Database Configuration utility either as part of the HP Business Availability Center Setup program or separately from the Setup program. If you run the Server and Database Configuration utility separately from HP Business Availability Center server Setup, note the following important points:

- ▶ If the command prompt window is open on the HP Business Availability Center server machine, you must close it before continuing with the Server and Database Configuration utility.
- ▶ It is advisable to disable HP Business Availability Center on the HP Business Availability Center server machine before running the Server and Database Configuration utility.
- ▶ Use only English characters when entering database parameters.

To set database parameters:

- 1** Launch the Server and Database Configuration utility in one of the following ways:
 - ▶ After completing the server installation stage of HP Business Availability Center Setup, choose to create a new database/user schema or to connect to an existing one. HP Business Availability Center launches the Server and Database Configuration utility as a continuation of the HP Business Availability Center Setup program.
 - ▶ On the HP Business Availability Center server machine, select **Start > Programs > HP Business Availability Center > Administration > Connect to Database**. HP Business Availability Center launches the Server and Database Configuration utility.
- 2** Follow the on-screen instructions for setting the management, CMDB, and CMDB history database parameters.
- 3** If you ran the Server and Database Configuration utility as part of HP Business Availability Center server installation, you must start HP Business Availability Center on the server only after successfully setting the parameters for all the databases. For details, see “Starting and Stopping HP Business Availability Center” on page 141.

If you ran the Server and Database Configuration utility to modify the previously defined database types or connection parameters, restart all HP Business Availability Center servers and data collectors after successfully completing the parameter modification process.

12

Installing Component Setup Files

This chapter describes how to install component (data collectors and scripting tools) setup files to the HP Business Availability Center Downloads page on a Windows platform.

This chapter describes:	On page:
Overview of Installing Component Setup Files	153
Installing Component Setup Files to the HP Business Availability Center Downloads Page	154
Available Components and Setup Files	156

Overview of Installing Component Setup Files

The component setup files are used to install the components used by HP Business Availability Center to deploy monitors that collect performance and availability data related to your business environment, as well as scripting tools.

The component setup files are not installed as part of the basic HP Business Availability Center installation. They are located in the **Data Collectors and Components\components** directory of the Web delivery package download area and HP Business Availability Center DVD and must be installed separately to the HP Business Availability Center Downloads page. The component setup files can then be downloaded from HP Business Availability Center and used when required. For details on working with the HP Business Availability Center Downloads page, see “Downloads” in *Platform Administration*.

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.

Installing Component Setup Files to the HP Business Availability Center 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 HP Business Availability Center 7.0.

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 **<HP Business Availability Center root directory>\AppServer\webapps\site.war\admin\install** directory on the HP Business Availability Center Gateway Server. If required, create the **admin\install** directory structure.

For a list of available components, see “Available Components and Setup Files” on page 156.

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 **<HP Business Availability Center root directory>\AppServer\webapps\site.war\admin\install** directory on the HP Business Availability Center Gateway Server.

During the setup process, you can choose **Typical** setup to install all the component setup files to the HP Business Availability Center Downloads page, or **Custom** setup to select specific component setup files for installation.

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 HP Business Availability Center Downloads page using the setup utility:

- 1** Insert the HP Business Availability Center DVD into the drive of the HP Business Availability Center Gateway Server on which you want to install the component setup files. For details on which component setup files are available, see “Available Components and Setup Files” on page 156.
- 2** Navigate to the **Data Collectors and Components** directory on the DVD and double-click **setup.exe**. The component setup begins.
- 3** From the initial page, click **Next** to continue.
- 4** Select the type of installation you want to perform: **Typical** or **Custom**.

A typical installation installs all of the component setup files included in the **Data Collectors and Components\components** directory on the DVD.

In a custom installation, you can select specific component setup files to install.

Click **Next**.

- 5 If you are performing a custom installation, select the component setup files to be installed.

Click **Next**.

- 6 Read the summary information. If it is correct, click **Next** to continue with the installation. If it is not correct, click **Back** to correct the information you previously provided.

Click **Next**.

- 7 Once the component setup files have been installed, click **Finish** to exit the setup.

Available Components and Setup Files

The following table lists the components available for installation and the name of the setup program used to directly install each component:

Operating System	Components	Setup Program
Windows Components	Business Process Monitor for Windows 2000/2003/XP	MercuryBPMSetup_win.exe
	SiteScope for Windows 2000/2003	SiteScopeSetup.exe
	HP Virtual User Generator	Vugen.exe

Operating System	Components	Setup Program
	Discovery Probe for Windows 2000/2003/XP	DiscoveryProbe.exe Note: The Discovery Probe link in the Downloads page is displayed only if you have purchased a standard or advanced license for the Discovery application, and if the administrator has added the Discovery Probe link to the Downloads page. For details, see “Licensing Models” in <i>Discovery</i> .
	Real User Monitor Engine for Windows	HPRUMSetup_win.exe
	Microsoft .NET framework 2.0	dotnetfx.exe
	Web Services Enhancements (WSE) 3.0 for Microsoft .NET	Microsoft WSE 3.0 Runtime.msi
	Microsoft XML Core Services (MSXML) 6.0	msxml6.msi
	Microsoft Visual C++ 2005 Redistributable Package	vc redistrib_x86.exe
	HP Dashboard Ticker	HP Dashboard Ticker.msi
Solaris Components	SiteScope for Solaris	SiteScope.sun.tar.gz
	Business Process Monitor for Solaris	MercuryBPMSetup_solv4.bin
Linux Components	SiteScope for Linux	SiteScope.linux.tar.gz
	Real User Monitor Probe	HPRUMProbeSetup_linux.bin

13

Uninstalling HP Business Availability Center Servers on a Windows Platform

This chapter describes how to completely uninstall HP Business Availability Center servers.

This chapter describes:	On page:
Complete Uninstall	159

Complete Uninstall

Use the procedure below to completely uninstall HP Business Availability Center.

Note: When uninstalling HP Business Availability Center servers completely, the uninstall program removes all HP Business Availability Center servers installed on the server machine.

To completely uninstall HP Business Availability Center servers:

- 1 On the machine from which you are uninstalling HP Business Availability Center, select **Start > Settings > Control Panel > Add/Remove Programs**. Select **HP Business Availability Center**. (If there are additional entries or child entries, for example, **HP Business Availability Center 7.0**, do not select them). Click **Change/Remove** and follow the on-screen instructions.

- 2 Click **Yes** when asked to delete the HP Business Availability Center directory and then click **Next**.
- 3 Restart the server machine.
- 4 If you are running HP Business Availability Center with Microsoft IIS, open the IIS Internet Services Manager and check the following:
 - Under the **Default Web Site**, check that the following virtual directories have been removed and remove them if they still appear:
 - ext
 - Jakarta
 - mam_images
 - HPBAC
 - MercuryAM
 - Topaz
 - TopazDC
 - 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 HP Business Availability Center 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 “Installation and Connectivity Troubleshooting” on page 197.

5 Access the Windows Registry Editor by selecting **Start > Run**. Enter **Regedit** and delete the HP Business Availability Center root registry keys from the following paths:

- **HKEY_CURRENT_USER\software\Mercury Interactive\Topaz**
- **HKEY_LOCAL_MACHINE\SOFTWARE\Mercury Interactive\Topaz**
- **HKEY_LOCAL_MACHINE\SOFTWARE\Mercury Interactive\AM**

Part V

HP Business Availability Center Server Installation for Solaris

14

Installing HP Business Availability Center Servers on a Solaris Platform

This chapter describes how to install HP Business Availability Center servers on a Solaris platform.

This chapter describes:	On page:
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Overview of HP Business Availability Center Server Installation

There are several stages to the HP Business Availability Center 7.0 server installation:

- 1** Installing HP Business Availability Center 7.0 as described in “Installing HP Business Availability Center Servers” on page 174.
- 2** Setting the management, CMDB, and CMDB history databases by specifying the database type and connection parameters for each database, as described in “Setting User Schema Parameters on a Solaris Platform” on page 181.
- 3** Installing component setup files in the HP Business Availability Center Downloads page, as described in “Installing Component Setup Files” on page 187.

The server Setup program gives you the option of installing both of the HP Business Availability Center servers on one machine (referred to as an HP Business Availability Center box), or installing only one of the servers on the machine. For details on the different deployment configurations that are possible, see “Deployment Configuration” on page 71.

Features Included in HP Business Availability Center Server Installation

Component	Description
Gateway Server	<p>The Gateway Server is responsible for the following:</p> <ul style="list-style-type: none"> ▶ running the HP Business Availability Center applications ▶ reporting ▶ operating the Administration Console ▶ receiving data samples from the data collectors ▶ distributing data to the relevant HP Business Availability Center components ▶ supporting the Bus
Data Processing Server	<p>The Data Processing Server is responsible for aggregating and partitioning data, running the Business Logic Engines, and controlling the HP Universal CMDB-related services. When you choose to install the Data Processing Server as part of a custom installation, you select the type (All, Modeling, Online, or Offline) of Data Processing Server to install.</p> <p>For further details on the services run by the Data Processing Servers, see “Services Assigned to the Data Processing Server” on page 90.</p>

Note: Other servers and components are automatically installed during HP Business Availability Center server installation. For details, see “Deploying HP Business Availability Center Servers” on page 44.

Preparing Information Required for Installation

Have the following information ready before installation:

- **Maintenance number.** This is the number you received with your HP Business Availability Center package.
- **Path to Sun Java System Web Server configuration directory.** This is needed only if you are using a Sun Java System Web Server and want HP Business Availability Center to automatically configure the Web server settings. The following are examples of the path:
 - **<Sun Java System Web Server root directory>/<Web server name>/config**
 - **<Sun Java System Web Server root directory>/servers/<Web server name>/config**
- **Web server name.** This name must also include the domain name.
- **Administrator's e-mail address.**
- **Application user and group name.** This user runs the HP Business Availability Center application and owns the files in **<HP Business Availability Center root directory>**. The user and group can be defined by the administrator or by the Setup utility during installation.

Note: It is recommended to create the user before installing HP Business Availability Center rather than using the Setup utility. You then provide this user name during both HP Business Availability Center and Sun Java System Web Server installations.

- **SMTP mail server name.**
- **SMTP sender name.** This name appears on alerts sent from HP Business Availability Center.
- **Name of the Gateway Server machine.**
- **Name of the load balancer** (if any). This is the load balancer used to access the HP Business Availability Center site.

- **Path to the Oracle Client home.**
- **Port number used by the Web server.** The default port is 80.
- **Information for setting the management, CMDB, and CMDB history database parameters.** If you plan to set these database connection parameters during Setup, see “Required Information for Setting User Schema Parameters” on page 184.

Installation Prerequisites

Note the following before installing HP Business Availability Center servers:

- It is recommended that you install HP Business Availability Center servers to a drive with at least 10 GB of free disk space. For more details on server system requirements, see “Reviewing System Requirements” on page 53.
- If you are going to use the Sun Java System Web Server and it was previously installed by a user other than the HP Business Availability Center user, reinstall it as the HP Business Availability Center user.
- If HP Business Availability Center 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 HP Business Availability Center application and can result in performance and stability issues. For more information, contact Customer Support.
- HP Business Availability Center servers should not be installed on a machine that already has other HP products installed on it.
- You must install the latest recommended Patch Cluster for the Solaris operating system version on each HP Business Availability Center server machine. Patch Cluster installation can take several hours. The Patch Cluster can be accessed from SunSolve. After installing the patches, restart the server machine.
- HP Business Availability Center servers must not be installed on a drive that is mapped to a network resource.

- ▶ During installation, custom configuration data from any previous installation on the server machine is overwritten. If you have customized configuration data that you want reapplied after the new installation, make a list of the changes.
- ▶ The following files must be on each HP Business Availability Center server machine. If these files are missing, the installation may fail:
 - ▶ `/usr/xpg4/bin/id`
 - ▶ `/usr/openwin/bin/xdpyinfo`
- ▶ 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 HP Business Availability Center site. To access the HP Business Availability Center site in this case, use the machine's IP address instead of the machine name containing the underscore.
- ▶ If you plan to run HP Business Availability Center servers on a hardened platform (including using HTTPS protocol), review the hardening procedures described in the *HP Business Availability Center Hardening Guide* PDF.
- ▶ You must be a root user to install HP Business Availability Center on the server machine.
- ▶ If you plan to install in UI (graphical user interface) mode, the **DISPLAY** environment variable must be properly configured on the HP Business Availability Center server machine. The machine from which you are installing must be running an X-Server.
- ▶ Apache HTTP Server and Sun Java System Web Server cannot run simultaneously on the same server. One of the Web servers must be stopped.

For example, if you choose to use Apache HTTP Server and you are installing on a machine with Sun Java System Web Server running, stop the Sun Java System service before installation. Also, be sure that Sun Java System Web Server will not automatically start on reboot.

- If you plan to install Apache HTTP Server, you must install the following two packages in the `/usr/local/lib/` directory on the installation machine:

Package	Download Site	Name of Binary to Download
expat version 1.95	<a href="http://www.sunfreeware.com/programlistsparc<version of Solaris operating system>.html#expat">http://www.sunfreeware.com/programlistsparc<version of Solaris operating system>.html#expat For example: http://www.sunfreeware.com/programlistsparc9.html#expat	expat-1.95.5-sol<version of Solaris operating system>-sparc-local.gz or expat-1.95.5.tar.gz For example: expat-1.95.5-sol9-sparc-local.gz or expat-1.95.5.tar.gz
libiconv version 1.8	<a href="http://www.sunfreeware.com/programlistsparc<version of Solaris operating system>.html#libiconv">http://www.sunfreeware.com/programlistsparc<version of Solaris operating system>.html#libiconv For example: http://www.sunfreeware.com/programlistsparc9.html#libiconv	libiconv-1.9.2-sol<version of Solaris operating system>-sparc-local.gz or libiconv-1.9.2.tar.gz For example: libiconv-1.9.2-sol9-sparc-local.gz or libiconv-1.9.2.tar.gz

The download site for each package corresponds to the version of Solaris operating system on the installation machine.

Working with the Web Server

HP Business Availability Center installed on a Solaris platform works with Apache HTTP Server or Sun Java System Web Server.

Note: There must only be one running Web server on an HP Business Availability Center server machine.

Apache HTTP Server

If you plan to run HP Business Availability Center on the Apache HTTP Server, you must use the Apache HTTP Server version that has been adapted by HP for HP Business Availability Center. It is installed during the server installation.

HP Business Availability Center 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 HP Business Availability Center installation, reconfigure the service using that port to use a different port.
- ▶ During HP Business Availability Center installation, select a different port for the Apache HTTP Server.

Edit the **<HP Business Availability Center root directory>/conf/core/WebPlatform/webserver_guard.conf** file and add the following line:

```
webserver_port=<new port>
```

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 HP Business Availability Center, as configured in the Apache configuration file (**httpd.conf** and **httpd-ssl.conf**).

Sun Java System Web Server

The Sun Java System Web Server is not included in the HP Business Availability Center installation. If you plan to run HP Business Availability Center using this Web Server, there are two requirements:

- ▶ It must be installed on all server machines before installing the HP Business Availability Center servers.
- ▶ It must be installed to run with the HP Business Availability Center user and group so that the same permissions apply.

During Setup, choose the **typical** installation procedure. You must specify the Sun Java System Web Server configuration path so that HP Business Availability Center can automatically configure the Sun Java System Web Server settings.

If Sun Java System Web Server does not use the default port of 80, edit the **<HP Business Availability Center root directory>/conf/core/WebPlatform/webserver_guard.conf** file and add the following line:

```
webserver_port=<new port>
```

After completing the installation, HP Business Availability Center restarts the Web Server so that the configuration changes can take effect.

Web Server files are found in the following directories:

- **<Sun Java System Web Server root directory>/https-<machine name>/config/**
- **<Sun Java System Web Server root directory>/httpacl/**

HP Business Availability Center changes the following Sun Java System Web Server files:

Web Server File Name	Change
obj.conf	<ul style="list-style-type: none"> ➤ Adds virtual directories ➤ Adds Web Server extensions (Tomcat redirector, HP extension)
magnus.conf	<ul style="list-style-type: none"> ➤ Adds virtual directories ➤ Adds Web Server extensions (Tomcat redirector, HP extension) ➤ Sets the threads number on the threads pool and cancels multi-process mode if set
mime.types	<ul style="list-style-type: none"> ➤ Provides additional definitions of file extensions

Web Server File Name	Change
start	<ul style="list-style-type: none"> ▶ Sets new environment variables ▶ Sets descriptors number limit
generated.https-<machine name>.acl	<ul style="list-style-type: none"> ▶ Adds virtual directories ▶ Adds Web Server extensions (Tomcat redirector, HP extension)

The original files are saved under the name <original file name>.j2f.bck.

Installing HP Business Availability Center Servers

You install HP Business Availability Center 7.0 servers—the Gateway Server and Data Processing Server—from the HP Business Availability Center DVD provided with the HP Business Availability Center distribution package.

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

There are two installation modes:

- ▶ **Console mode installation.** This is the recommended mode. It enables you to install via the terminal command line in text format.
- ▶ **UI mode installation.** UI mode enables you to install HP Business Availability Center servers using graphical user interface functionality. You cannot install HP Business Availability Center servers in UI mode using MS-DOS Telnet or any kind of serial console connection.

After each stage of the installation process (or after each dialog box in UI mode), 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 **Exceed** to install HP Business Availability Center in UI mode. Installing via **Exceed** may slow the pace of the installation and may adversely affect the appearance and functionality of the GUI. If you are installing via **Exceed**, use the console mode.

To install HP Business Availability Center servers:

- 1** Log in to the server as user **root**.
- 2** Insert the HP Business Availability Center DVD into the drive from which you want to install. If you are installing from a network drive, mount the DVD.
- 3** Move to the **Solaris Setup** directory of the DVD drive.
- 4** Run one of the following scripts:

- To install in UI mode:

```
./setup.bin
```

- To install in console mode:

```
./setup.bin -console
```

Select options by entering the option number. The selected option is marked with an [X].

- 5** The installation begins. Follow the on-screen instructions for server installation. Note the following during the server installation stage:
 - **Selecting the setup type:**
 - Select **Typical** to install both the Gateway Server and Data Processing Server on the same machine.
 - Select **Custom** to select the HP Business Availability Center features to be installed on the machine.

➤ **Setting connection settings:**

- **Apache HTTP Server.** If port 80 (default port) is already in use, HP Business Availability Center notifies you of this.
- **Sun Java System Web Server.** If using a port other than port 80 (default port), enter the port number.

➤ **Specifying user and group:**

If either the user or group that you specify are not found, choose one of the following options:

- **Exit installation.** Exits Setup so that you can create the user/group, and run Setup again.
- **Select a new user/group.** Enables you to enter a new user and/or group.
- **Allow Setup to create the user/group.** Setup creates a user and/or group on the local host.

➤ **Specifying 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 HP Business Availability Center sends. Accept the default name, **HP_BAC_Alert_Manager**, or type another sender name.

- 6 Create the management, CMDB, and CMDB history databases and connect to them. For details, see “Setting User Schema Parameters on a Solaris Platform” on page 181.

Note: If deploying a distributed server architecture, install additional 7.0 servers using the above steps.

Starting and Stopping HP Business Availability Center

If you are using Sun Java System Web Server, HP Business Availability Center restarts the Web Server at the end of installation in order for the configuration changes to take effect.

After successfully installing the 7.0 servers (either together on one machine, or each server type in a distributed deployment) and connecting the server machines to the management, CMDB, and CMDB history databases, you launch HP Business Availability Center on each server machine.

To start HP Business Availability Center:

- 1 Log in to the server as user **root**.
- 2 Navigate to the **scripts** directory using the following command:

```
cd <HP Business Availability Center server root directory>/scripts/
```

- 3 Run the following script:

```
./run_topaz start
```

```
root@1abm2sun08 [11:41] /opt/HPBAC/scripts#./run_topaz start
Setting NLS_LANG to AMERICAN_AMERICA.UTF8
starting X server...
/opt/HPBAC/X/runXvfb : Xvfb (no pid file) not running
/opt/HPBAC/X/runXvfb start: Xvfb started
starting Apache web server...
starting nanny...
*** WARNING!!! ORACLE_HOME environment variable is set incorrectly ! Topaz will not function properly ! ***
/opt/HPBAC
root@1abm2sun08 [11:41] /opt/HPBAC/scripts#Starting nannyManager...
```

You return to the command line prompt when the script has finished.

To access the HP Business Availability Center site, enter the HP Business Availability Center URL with the server machine name and the domain name. The domain was defined in the Web server configuration dialog box during HP Business Availability Center server Setup. For example, enter <http://muffett.hp.com/topaz>.

To stop HP Business Availability Center:

- 1 Log in to the server as user **root**.
- 2 Navigate to the **scripts** directory using the following command:

```
cd <HP Business Availability Center server root directory>/scripts/
```

- 3 Run the following script:

```
./run_topaz stop
```

```
root@labm2sun09 [11:44] /opt/HPBAC/scripts#./run_topaz stop
Setting NLS_LANG to AMERICAN_AMERICA.UTF8
stopping X server...
/opt/HPBAC/X/runXvfb : Xvfb (no pid file) not running
stopping Apache web server...
./run_topaz: /opt/HPBAC/WebServer/bin/apache2stop.sh: not found
stopping nanny...
*** WARNING!!! ORACLE_HOME environment variable is set incorrectly ! Topaz will
not function properly ! ***
/opt/HPBAC
root@labm2sun09 [11:44] /opt/HPBAC/scripts#Stopping nannyManager...
```

You return to the command line prompt when the script has finished.

Post-Installation Tasks

This section contains the following post-installation tasks:

- “Checking Installation Log Files” on page 179
- “Checking Components” on page 179
- “Verifying JBoss and Tomcat Connectivity” on page 179
- “Viewing System Health” on page 180
- “Troubleshooting” on page 180

Checking Installation Log Files

Two installation log files are located in the HP Business Availability Center server root installation directory (the / directory). The log file names are in the following format:

- <product name><date and time>.install.html
- <product name><date and time>.install.is.log

For example: **HPBAC.10.31.18.05.install.is.log**

Checking Components

After installation, you can check which HP Business Availability Center components are installed on an HP Business Availability Center server machine in either of two ways:

- Open the <HP Business Availability Center server root directory>/conf/**TopazSetup.ini** file. Check the [INSTALLED_SERVERS] section. For example, **Data_Processing_Server=1** indicates that the Data Processing Server is installed on the machine.
- Enter the Solaris command at the prompt:

```
pkginfo -i | grep MERQ
```

Verifying JBoss and Tomcat Connectivity

After you deploy HP Business Availability Center servers, verify the JBoss application server and Tomcat servlet engine connections with the TopazVerify utility.

To run the TopazVerify utility:

Enter the following address in your Web browser:

```
http://<HP Business Availability Center server>/topaz/topazverify
```

If errors are returned, follow the on-screen links.

Note: After upgrading or reinstalling HP Business Availability Center to the same location as a previous installation, the TopazVerify page may not load properly. If this occurs, manually delete the contents of the <**HP Business Availability Center server root directory**>/EJBContainer/server/mercury/work directory and restart the server.

Viewing System Health

HP Business Availability Center's System Health enables you to monitor the performance of the servers, databases, and data collectors running on your HP Business Availability Center system and ensure that they are functioning properly. It is recommended that you enable System Health after you deploy HP Business Availability Center servers. For details on deploying and accessing System Health, see "System Health" in *Platform Administration*.

Troubleshooting

For troubleshooting installation and connectivity problems, refer to the following documentation:

- ▶ **Customer Support Knowledge Base.** This site can be accessed from the HP Business Availability Center Help menu or from the Customer Support Web site (<http://support.mercury.com/cgi-bin/portal/CSO/docViewAndSearch.jsp>).
- ▶ **Readme files.** These files are located with the HP Business Availability Center package.
- ▶ **Chapter 18, "Installation and Connectivity Troubleshooting."** This chapter lists installation and connectivity problems and solutions.

15

Setting User Schema Parameters on a Solaris Platform

This chapter describes how to configure management, CMDB, and CMDB history user schema parameters on a Solaris platform.

This chapter describes:	On page:
Overview of Setting User Schema Parameters	181
Setting User Schema Parameters	182
Required Information for Setting User Schema Parameters	184
Running the Server and Database Configuration Utility	185

Overview of Setting User Schema Parameters

The Server and Database Configuration utility enables you to create and connect to the management, CMDB, and CMDB history user schemas for HP Business Availability Center on Oracle Server.

You can run the Server and Database Configuration utility as part of HP Business Availability Center server installation (described in “Installing HP Business Availability Center Servers on a Solaris Platform” on page 165) by continuing with the second stage of Setup for setting management, CMDB, and CMDB history user schema parameters. Alternatively, you can run the Server and Database Configuration utility independently after server installation. The steps involved are the same for both procedures, as described in “Running the Server and Database Configuration Utility” on page 185.

If, at a later time, you want to modify the management, CMDB, or CMDB history user schema connection parameters, you can run the Server and Database Configuration utility again. After modifying connection parameters, restart all HP Business Availability Center servers and data collectors.

Note: The management, CMDB, and CMDB history user schemas are connected to one another. Modification of one user schema may cause problems with another. In addition, modifying connection parameters after HP Business Availability Center is up and running may cause serious data loss and integrity problems.

Before beginning the procedure for creating and/or connecting to the management, CMDB, and CMDB history user schemas, it is recommended that you review “Setting User Schema Parameters” on page 182 and “Required Information for Setting User Schema Parameters” on page 184.

For detailed information on deploying Oracle Server in your system for use with HP Business Availability Center and on setting up user schemas, see the *HP Business Availability Center Database Guide* PDF.

Setting User Schema Parameters

Setting the management, CMDB, and CMDB history user schema parameters involves:

- ▶ creating the user schema on Oracle Server. See “Creating User Schemas” on page 183.
- ▶ specifying the connection parameters to the user schema. See “Connecting to Existing User Schemas” on page 183.

Note: If you need to change an active management user schema for HP Business Availability Center, contact Customer Support.

Creating User Schemas

You can either use the Server and Database Configuration utility to create the management, CMDB, and CMDB history user schemas for you, or you can create these user schemas manually, directly in Oracle Server (for example, if your organization does not allow the use of administrator credentials during Setup). If you created the user schemas manually, you run the Server and Database Configuration utility to connect to them.

For instructions on creating user schemas manually on Oracle Server, see “Setting Up the Database Environment” in the *HP Business Availability Center Database Guide* PDF.

Note:

- ▶ Each user schema created in HP Business Availability Center (whether on the same database server or on different database servers) must have a unique name.
- ▶ If you choose to create user schemas using the Server and Database Configuration utility, you must update the HP Business Availability Center license information once the user schemas have been created, as described in “Updating License Information (for Solaris installations only)” in the *HP Business Availability Center Database Guide* PDF.

Connecting to Existing User Schemas

When running the Server and Database Configuration utility, you select whether you want to create a new user schema or connect to an existing one. In the case of the CMDB user schema, you can also choose to connect to an external CMDB user schema if you already have a CMDB server set up as part of another HP product installation.

Note: Connecting to an external CMDB user schema can take up to 40 minutes.

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

- ▶ When connecting to a user schema you manually created directly on Oracle Server.
- ▶ When installing HP Business Availability Center servers subsequent to the first server in a distributed HP Business Availability Center deployment. In this case, you connect to the user schemas that you created during the installation of the first server by specifying the same connection parameters that you set during the installation of the first server. Note that once you have connected to the management user schema, the connection parameters for the CMDB and CMDB history user schemas appear by default in the appropriate screens of the Server and Database Configuration utility.

For information on implementing a distributed deployment of HP Business Availability Center, see “Deployment Configuration” on page 71.

Required Information for Setting User Schema Parameters

Before setting management, CMDB, and CMDB history user schema parameters, ensure that you have created at least one default tablespace for each user schema for data persistency purposes, and that at least one temporary tablespace is assigned to each user schema.

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

- ▶ **Host name.** The name of the host machine on which Oracle Server is installed.
- ▶ **Port.** The Oracle listener port. HP Business Availability Center automatically displays the default port, **1521**.
- ▶ **SID.** The Oracle instance name that uniquely identifies the Oracle database instance being used by HP Business Availability Center.
- ▶ **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, BAC_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. For details on creating a dedicated HP Business Availability Center tablespace, see “Creating HP Business Availability Center Schemas Manually” in the *HP Business Availability Center Database Guide* PDF.
- ▶ **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 schema, you must have user creation privileges.

Running the Server and Database Configuration Utility

The following procedure describes how to run the Server and Database Configuration utility either as part of the HP Business Availability Center Setup program or separately from the Setup program. If you run the Server and Database Configuration utility separately from HP Business Availability Center server Setup, note the following important points:

- ▶ It is advisable to disable HP Business Availability Center on the HP Business Availability Center server machine before running the Server and Database Configuration utility.
- ▶ Use only English characters when entering database parameters.

To set user schema parameters:

- 1 Launch the Server and Database Configuration utility in one of the following ways:

- ▶ After completing the server installation stage of HP Business Availability Center Setup, choose to create a new user schema or to connect to an existing one. HP Business Availability Center launches the Server and Database Configuration utility as a continuation of the HP Business Availability Center Setup program.
- ▶ On the HP Business Availability Center server machine, navigate to the bin directory using the following command:

```
cd <HP Business Availability Center root directory>/bin
```

Run the following script:

```
./config-server-wizard.sh
```

The Server and Database Configuration utility is launched.

Note: The Server and Database Configuration utility can be run in UI mode only and X-Server is required for this purpose. If the display is not set correctly, enter the following command:
Set DISPLAY=<machine name or IP address>:0.0

- 2 Follow the on-screen instructions for setting the management, CMDB, and CMDB history user schema parameters.
- 3 If you ran the Server and Database Configuration utility as part of server installation, you must start HP Business Availability Center on the server only after successfully setting the parameters for all the user schemas. For details, see “Starting and Stopping HP Business Availability Center” on page 177.

If you ran the Server and Database Configuration utility to modify previously defined connection parameters, restart all HP Business Availability Center servers and data collectors after successfully completing the parameter modification process.

16

Installing Component Setup Files

This chapter describes how to install components (data collectors and scripting tools) setup files to the HP Business Availability Center Downloads page on a Solaris platform.

This chapter describes:	On page:
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Installing Component Setup Files to the HP Business Availability Center Downloads Page	188
Available Components and Setup Files	191

Overview of Installing Component Setup Files

The component setup files are used to install the components used by HP Business Availability Center to deploy monitors that collect performance and availability data related to your business environment, as well as scripting tools.

The component setup files are not installed as part of the basic HP Business Availability Center installation. They are located in the **Data Collectors and Components/components** directory of the Web delivery package download area and HP Business Availability Center DVD and must be installed separately to the HP Business Availability Center Downloads page. The component setup files can then be downloaded from HP Business Availability Center and used when required. For details on working with the HP Business Availability Center Downloads page, see “Downloads” in *Platform Administration*.

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.

Installing Component Setup Files to the HP Business Availability Center 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 HP Business Availability Center 7.0.

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 **<HP Business Availability Center root directory>/AppServer/webapps/site.war/admin/install** directory on the HP Business Availability Center Gateway Server. If required, create the **admin/install** directory structure.

For a list of available components, see “Available Components and Setup Files” on page 191.

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 **<HP Business Availability Center root directory>/AppServer/webapps/site.war/admin/install** directory on the HP Business Availability Center Gateway Server.

During the setup process, you can choose **Typical** setup to install all the component setup files to the HP Business Availability Center Downloads page, or **Custom** setup to select specific component setup files for installation.

Component setup files can be installed only in console mode, via the terminal command line, in text format.

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 HP Business Availability Center Downloads page using the setup utility:

- 1** Insert the HP Business Availability Center DVD into the drive of the HP Business Availability Center Gateway Server on which you want to install the component setup files. If you are installing from a network drive, mount the DVD. For details on which component setup files are available, see “Available Components and Setup Files” on page 191.
- 2** Move to the **Data Collectors and Components** directory of the DVD drive.

An installation progress bar is displayed while the component setup files are being installed.

```

Installing HP Business Availability Center Component. Please wait...

|-----|-----|-----|-----|
0%      25%     50%     75%     100%
|||||

Creating uninstaller...

-----
The InstallShield Wizard has successfully installed HP Business Availability
Center Component. Choose Finish to exit the wizard.

Press 3 to Finish or 4 to Redisplay [3] 3

```

5 Enter **3** to finish the installation.

Available Components and Setup Files

The following table lists the components available for installation and the name of the setup program used to directly install each component:

Operating System	Components	Setup Program
Windows Components	Business Process Monitor for Windows 2000/2003/XP	MercuryBPMSetup_win.exe
	SiteScope for Windows 2000/2003	SiteScopeSetup.exe
	HP Virtual User Generator	Vugen.exe

Operating System	Components	Setup Program
	Discovery Probe for Windows 2000/2003/XP	DiscoveryProbe.exe Note: The Discovery Probe link in the Downloads page is displayed only if you have purchased a standard or advanced license for the Discovery application, and if the administrator has added the Discovery Probe link to the Downloads page. For details, see “Licensing Models” in <i>Discovery</i> .
	Real User Monitor Engine for Windows	HPRUMSetup_win.exe
	Microsoft .NET framework 2.0	dotnetfx.exe
	Web Services Enhancements (WSE) 3.0 for Microsoft .NET	Microsoft WSE 3.0 Runtime.msi
	Microsoft XML Core Services (MSXML) 6.0	msxml6.msi
	Microsoft Visual C++ 2005 Redistributable Package	vcredist_x86.exe
	HP Dashboard Ticker	HP Dashboard Ticker.msi
Solaris Components	SiteScope for Solaris	SiteScope.sun.tar.gz
	Business Process Monitor for Solaris	MercuryBPMSetup_solv4.bin
Linux Components	SiteScope for Linux	SiteScope.linux.tar.gz
	Real User Monitor Probe	HPRUMProbeSetup_linux.bin

17

Uninstalling HP Business Availability Center Servers on a Solaris Platform

This chapter describes how to completely uninstall HP Business Availability Center servers.

This chapter describes:	On page:
Complete Uninstall	193

Complete Uninstall

Use the procedure below to completely uninstall HP Business Availability Center.

Note: When uninstalling HP Business Availability Center servers completely, the uninstall program removes all HP Business Availability Center servers installed on the server machine.

To completely uninstall HP Business Availability Center servers:

- 1** Log in to the server as user **root**.
- 2** To access the uninstall program, type:

```
cd <HP Business Availability Center server root directory>/_uninst
```

3 Run one of the following scripts:

- ▶ To uninstall in UI mode:

```
./uninstall
```

- ▶ To uninstall in console mode:

```
./uninstall -console
```

4 The HP Business Availability Center 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 log file located in the HP Business Availability Center server root installation directory (the / directory) for errors. The log file name follows the format **<product name>.uninst.<date and time>.install.is.log**.

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

Part VI

Troubleshooting

18

Installation and Connectivity Troubleshooting

This section describes common problems that you may encounter when installing HP Business Availability Center or connecting to HP Business Availability Center following installation, and the solutions to these problems. For additional troubleshooting information, refer to the HP Business Availability Center knowledge base on (<http://support.mercury.com>).

Installation very slow and problems with GUI appearance when installing on a Solaris platform in UI mode via Exceed

GUI may include distorted screens or have missing fields.

Solution:

Do not use **Exceed** to install on a Solaris platform in UI mode. Use the console mode, or install directly on the HP Business Availability Center server machine.

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 an MS SQL Server database fails when running the Server 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.

The Sun Java System Web Server has not been updated with the platform's configuration requirements

The Sun Java System Web server should be updated automatically, as part of server installation. If not, try restarting the Sun Java System Web Server for the changes to take effect.

For details, see "Installing HP Business Availability Center Servers on a Solaris Platform" on page 165.

The HP Business Availability Center service is not installed after the Server and Database Configuration utility has been run

This can happen if the Windows Services screen is open when the Server and Database Configuration utility begins to run. To avoid the problem, ensure that the Services screen is closed before starting the Server and Database Configuration utility.

A network login prompt appears when completing an HP Business Availability Center 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 HP Business Availability Center.

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 HP Business Availability Center servers causes a conflict with the Tomcat servlet engine.

Solution:

Stop the Oracle HTTP Server service, disable and then enable HP Business Availability Center.

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 HP Business Availability Center 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 uninstalling HP Business Availability Center and reinstalling to a different directory, HP Business Availability Center does not work

Possible Cause:

When uninstalling and reinstalling to a different location, the IIS ISAPI filters do not get updated to the new path.

Solution:

To update the IIS ISAPI filters 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 Filters** tab.
- 5** Ensure that the **MercRedirectFilter** and the **jakartaFilter** are both pointing to the correct HP Business Availability Center directory.
- 6** Apply your changes and quit the Internet Services Manager.
- 7** Restart the IIS service.

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

Possible Causes:

- No data reported to loaders
- No data in Web site reports
- An error in the **ReportApi1.log** file on the Business Process Monitor machine similar to the following:

File: WebAdo.cpp Line: 385

Error from ReadWebPage: Error Dispatching URL

The URI:

api_reporttransactions_ex.asp

is not mapped to an API Adapter.

Either the URI is misspelled or the mapping file is incorrect...

The problem can be confirmed by opening the page http://<HP Business Availability Center server>/topaz/topaz_api/<unmapped_URI> (for example, http://cats/topaz/topaz_api/api_reporttransactions_ex.asp) and verifying that the appearance of the line is not mapped to an API Adapter.

This problem is caused when the two HP Business Availability Center ISAPI filters that are added to IIS during server installation—**MercRedirectFilter** (filters out most of the `api_report<...>.asp` commands) and **jakartaFilter** (IIS-Tomcat redirections)—do not appear in the correct order. The **MercRedirectFilter** must be above the **jakartaFilter** in the ISAPI Filters list in order to catch the reports from the Business Process Monitor and redirect them to the loaders.

Solution:

To change the order of the ISAPI filters:

- 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 Filters** tab.
- 5** Verify that the **MercRedirectFilter** is located above the **jakartaFilter** and that they both have high priority.
- 6** Apply your changes and quit the Internet Services Manager.
- 7** Restart the IIS service.

HP Business Availability Center has been installed, but the Downloads page is empty

Possible Cause:

The components setup files have not been installed to the Downloads page.

Solution:

Install the components setup files to the Downloads page. For details on installing the component setup files on a Windows platform, see “Installing Component Setup Files” on page 153. For details on installing the component setup files on a Solaris platform, see “Installing Component Setup Files” on page 187.

HP Business Availability Center has been installed on a Solaris platform, but cannot be enabled

Possible Cause:

The HP Business Availability Center user (by default, **tpuser**) does not have sufficient permissions for all files and folders.

Solution:

Ensure that the HP Business Availability Center user is granted read, write, and execute permissions for all files and folders.

General connectivity problems related to ports

Verify that all ports required by HP Business Availability Center servers are not in use by other applications on the same machine. To do so, open a Command Prompt window, and run netstat (or use any utility that enables you to view port information). Search for the required ports.

For details on the ports required by HP Business Availability Center, see Chapter 22, “Bus Communication and Port Usage.”

Tip: To troubleshoot port usage problems, use a utility that lists all ports in use and the application that is using them.

HP Business Availability Center connectivity is down, but the Tomcat servlet engine and JBoss application server appear to be working

Connectivity problems include the inability to log in to HP Business Availability Center, and the inability of Business Process Monitor to connect to the Gateway Server.

Possible Cause:

This can happen if the **TopazInfra.ini** file is empty or corrupt.

To verify that this is the problem:

- 1** In the browser, type <http://<Gateway Server>:8080/web-console> to connect to the JBoss Management Console.
- 2** Under **System > JMX MBeans > Topaz**, select **Topaz:service=Connection Pool Information**.
- 3** Click the **showConfigurationSummary Invoke** button toward the bottom of the page. If the Operation Result page is blank, the **TopazInfra.ini** file is empty or corrupt.

Solution:

To solve this problem, rerun the Server and Database Configuration utility and either reconnect to your existing management database or define a new management database. If you did not discover a problem with the **TopazInfra.ini** file, contact Customer Support.

Inability to log in to HP Business Availability Center, and JBoss server fails to initialize

Running the `TopazVerify.jsp` utility returns errors that indicate failure to connect to the TMC, DataEngine, and ChartEngine due to a JNDI error.

Run the database schema verify program to verify that the database server on which the management database is located is up and running. For details, see Appendix E, “Database Schema Verification” in the *HP Business Availability Center Database Guide* PDF.

Browser unable to reach HP Business Availability Center and an error about insufficient heap space

A message box opens indicating that HP Business Availability Center is not available and you should try logging in at a later time.

Possible Cause 1:

Check log files in `<HP Business Availability Center root directory>\log` directory for errors.

Microsoft’s Security Update 921883 for Windows 2003 Service Pack 1 and for Windows XP Professional x64 Edition may cause applications using more than 700 MB of contiguous memory to fail. HP Business Availability Center JVM uses a heap size larger than 768 MB memory. For more information about Security Update 921883, see <http://www.microsoft.com/technet/security/Bulletin/MS06-040.msp>.

If the HP Business Availability Center server goes down, look for the following error in `<HP Business Availability Center server root directory>\log\jboss_boot.log` when the service or process is restarted:

Error occurred during initialization of VM.
Could not reserve enough space for object heap.

Solution:

Although Microsoft has a hotfix available only for Microsoft Support customers, it is recommend to wait for the next Service Pack release. For more information about this hotfix, see <http://support.microsoft.com/kb/924054>.

If Security Update 921883 is already installed, do the following:

- ▶ If the Security Update is not critical at your site:
 - ▶ Uninstall it and wait for Microsoft's next Service Pack.
 - ▶ Disable **Windows Automatic Updates** to prevent Security Update 921883 from being installed again.
- ▶ If the Security Update is critical at your site, install the hotfix.

Possible Cause 2:

The page file size is too small.

Solution:

Configure the page file size to be at least 150% of RAM size. Restart the server.

Browser unable to reach HP Business Availability Center or the .jsp source code appears in the browser window

A message box opens indicating that the HP Business Availability Center page does not exist.

Solution 1:

Ensure that the Tomcat servlet engine is running and that port 8009 is not in use by another application. Perform the activities below on the HP Business Availability Center Gateway Server machine.

To verify Tomcat servlet engine functionality:

- 1 Verify whether JBoss is running by opening the <HP Business Availability Center server root directory>\log\jboss_boot.log file and looking for a line similar to the following:

```
2007-07-12 18:45:26,202 - 2007-07-12 18:45:26,202 [main]
(ServerImpl.java:504) INFO - JBoss (MX MicroKernel) [4.0.5.GA (build:
CVSTag=JBoss_4_0_5_GA_JBAS-3978 date=200701111225)] Started in
5m:2s:452ms
```

where:

2007-07-12 18:45:26,202 – represents the date in ms

200701111225 – represents the date in hours

5m:2s:452ms – represents JBoss startup duration

- 2 Verify whether the HP Business Availability Center service is installed and running.
- 3 If port 8009 is in use by another application:
 - Terminate the application using port 8009.
 - Modify the port used by HP Business Availability Center.

Solution 2:

Ensure that the Jakarta filter path is correct. The path might be incorrect—for example, if you uninstall HP Business Availability Center servers and then reinstall to a different directory. In this case, the Jakarta filter path is not updated, causing redirection problems.

To update the Jakarta filter 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 Filters** tab.
- 5 Select **jakartaFilter** and click **Edit**.
- 6 In the **Filter Properties** box, update the path to point to the drive and directory of the current HP Business Availability Center installation.

- 7 Apply your changes and quit the Internet Services Manager.
- 8 Restart the IIS service.

HP Business Availability Center is sitting behind a proxy and neither the server name nor the IP address is recognized by the proxy

The problem occurs for both Microsoft IIS and Apache Web servers.

Possible Cause:

The Web server redirects the browser page to a URL that replaces the server name or the IP address entered by the user.

Solution:

Add the HP Business Availability Center server name to the NT or Windows 2000 hosts file on the proxy server machine. This file is located in `WINNT\system32\drivers\etc`.

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/IP address to the Business Process Monitor machine's `WINNT\system32\drivers\etc\hosts` file.
- Change the Gateway Server name in the `<HP Business Availability Center root directory>\WebServer\conf\httpd.conf` file on the Gateway Server to a recognized name in the DNS, or to the Gateway Server IP address.

Part VII

Upgrading HP Business Availability Center

19

Upgrading the HP Business Availability Center Servers

This chapter describes how to upgrade your servers to HP Business Availability Center 7.0 using the upgrade wizard. The aim of the procedures and recommendations provided here is to enable you to upgrade your platform to HP Business Availability Center 7.0 with the minimum possible interruption to your system operation.

Note: The upgrade wizard can be used to upgrade only from Business Availability Center 6.5 or later to HP Business Availability Center 7.0. To upgrade from a previous 6.x version, you must first upgrade to Business Availability Center 6.5. For information on upgrading to Business Availability Center 6.5, refer to *Upgrading Mercury Business Availability Center*, version 6.5.

This chapter describes:	On page:
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Direct Upgrade – Pre-Upgrade Procedure	215
Notes and Limitations	216
Running the Upgrade Wizard	217
Running the Staging Data Replicator as a Standalone Utility	218

Important Information About the Upgrade

- ▶ You can choose to upgrade your servers directly within your production environment, or within a staging environment first. You make this selection within the upgrade wizard. The upgrade process differs slightly depending on the upgrade mode you choose.

Note: If you are upgrading the Real User Monitor, you must upgrade within a staging environment.

- ▶ If you are planning to upgrade your servers directly within your production environment, read the instructions in “Direct Upgrade – Pre-Upgrade Procedure” on page 215.
- ▶ If you are planning to upgrade your servers within a staging environment, you must install HP Business Availability Center 7.0 on your staging servers before running the upgrade wizard.

Important: Choose to configure the database connections at a later time and do not start HP Business Availability Center before running the wizard.

- ▶ Verify the integrity of your management and CMDB databases by running the database schema verify program. For details on running the verify program, see Appendix E, “Database Schema Verification” in the *HP Business Availability Center Database Guide* PDF.
- ▶ Upgrade your data collectors as follows:
 - ▶ Upgrade SiteScope before you run the upgrade wizard. For information on upgrading SiteScope, see “SiteScope” on page 222.
 - ▶ Upgrade Real User Monitor only after you run the upgrade wizard. For information on upgrading Real User Monitor, see “Real User Monitor” on page 227.

- ▶ You can upgrade Business Process Monitor either before or after you run the upgrade wizard. For information on upgrading Business Process Monitor, see “Business Process Monitor” on page 224.
- ▶ HP Business Availability Center can be installed in a variety of configurations. The upgrade procedure depends on how HP Business Availability Center is configured in your environment.
 - ▶ If you are working with a single-machine deployment, you run the upgrade wizard on this machine.
 - ▶ If you are working with a two-machine deployment, the upgrade wizard should be run first on the Data Processing Server, then on the Gateway Server machine.
 - ▶ If you are working with a three-machine deployment, the server upgrade order should be as follows:
 - Data Processing Server
 - Gateway Server that corresponds to the Business Availability Center 6.x Centers Server
 - Gateway Server that corresponds to the Business Availability Center 6.x Core Server
 - ▶ If you are working with a five-machine deployment, the server upgrade order should be as follows:
 - Modeling Data Processing Server
 - Online Data Processing Server
 - Offline Data Processing Server
 - Gateway Server that corresponds to the Business Availability Center 6.x Centers Server
 - Gateway Server that corresponds to the Business Availability Center 6.x Core Server

Note: For a description of the possible HP Business Availability Center 7.0 deployment configurations, see “Deployment Configuration” on page 71. To determine which configuration you should deploy in order to ensure a successful upgrade for your environment, consult your HP Professional Services representative.

- ▶ When you click **Next** at the bottom of the first screen in the upgrade wizard, the wizard automatically detects the types of servers that are installed on the machine on which the wizard is being run. It then takes you through the upgrade process for the components that must be upgraded on each server.
- ▶ Ensure that you reserve at least five percent of free space in each database or user schema to allow for the growth of data due to the upgrade process.
- ▶ If you are upgrading on a Solaris platform, ensure that you back up all files and folders as the user who is running HP Business Availability Center. Ensure that read, write, and execute permissions are granted to the **custom-rules.jar** file, as well as all the contents of each folder you back up. (If you are upgrading within a staging environment, the file and folder backup instructions are available within the upgrade wizard; if you are upgrading directly within your production environment, these instructions can be found in “Direct Upgrade – Pre-Upgrade Procedure” on page 215.)
- ▶ If you are upgrading within a staging environment on a Solaris platform, you must select **Do not run the Staging Data Replicator** in the Staging Data Replicator screen of the upgrade wizard and run the Staging Data Replicator as a standalone utility on a Windows machine. For details, see “Running the Staging Data Replicator as a Standalone Utility” on page 218.
- ▶ Similarly, if you are upgrading within a staging environment and this environment is located in a different domain than the production environment, you must select **Do not run the Staging Data Replicator** in the Staging Data Replicator screen of the upgrade wizard and run the Staging Data Replicator as a standalone utility. (For details, see “Running the Staging Data Replicator as a Standalone Utility” on page 218.) You can run the Staging Data Replicator as part of the wizard only if your network administrator configures your staging environment to recognize the production environment’s Core Server.

- ▶ If you are upgrading within a staging environment, ensure that each server you are upgrading has access to all the production environment profile databases. The production environment profile databases must be accessed using the connection properties listed on the Business Availability Center 6.x Database Management page (**Admin > Platform > Setup and Maintenance > Manage Profile Databases**). If the servers you are upgrading do not have access to the production environment profile databases, you will not be able to proceed with all the steps in the upgrade wizard.
- ▶ Use the following log files for troubleshooting upgrade issues:
 - ▶ Upgrade wizard: the log files in the **<HP Business Availability Center 7.0 server root directory>\log\upgrade** directory
 - ▶ Database/user schema upgrade: the log files in the **<HP Business Availability Center 7.0 server root directory>\dbverify\log** directory
 - ▶ Component configuration upgrade: the **<HP Business Availability Center 7.0 server root directory>\log\EJBContainer\upgradeFramework.log** file

Direct Upgrade – Pre-Upgrade Procedure

Before upgrading your servers directly within your production environment, you must ensure that you back up the following:

- ▶ Back up all Business Availability Center 6.x databases (management, CMDB, CMDB history, profile).
- ▶ Back up the following Business Availability Center 6.x Data Processing Server folders:
 - ▶ **<Data Processing Server root directory>\cmdb\adapters\adapters**
 - ▶ **<Data Processing Server root directory>\cmdb\general**

Note: If you are working with a distributed Business Availability Center 6.x deployment, these folders are located on the Offline Data Processing Server.

- ▶ Back up the Business Availability Center 6.x **custom-rules.jar** file located in the **<Data Processing Server root directory>\BLE\rules** directory. Note that if you are working with a distributed Business Availability Center 6.x deployment, this file is located on both the Online and Offline Data Processing Servers.
- ▶ Back up the following Business Availability Center 6.x folder: **<Centers Server root directory>\openldap\bdb**

After you have performed the above steps, uninstall Business Availability Center 6.x and delete all the files from the Business Availability Center server root directory on each Business Availability Center server machine. Then install HP Business Availability Center 7.0.

Important: When installing HP Business Availability Center 7.0, choose to configure the database connections at a later time. Do not start HP Business Availability Center until you are instructed to do so as part of the upgrade wizard.

Notes and Limitations

- ▶ The Staging Data Replicator replicates only data samples and not configuration changes made within the databases. You must therefore be in configuration freeze during the upgrade process, from the point at which you back up your production environment configuration data. Configuration changes made during the upgrade process are not supported.
- ▶ In the Data Export/Import screen of the upgrade wizard, ensure that you specify an SDR initiation time that is as close as possible to the time at which the Staging Data Replicator is actually activated. If there is overlap (that is, the specified SDR initiation time is later than the Staging Data Replicator's start time), certain types of data (Real User Monitor data and custom data using the UDX framework) will be duplicated for the overlapping period. You can locate the exact time of Staging Data Replicator

activation by checking the creation date in the Staging Data Replicator's persistency directory. This directory is located at:

```
<HP Business Availability Center 6.x root directory>\.persist_dir\
Inch_persistent\<<Gateway Server_host_name>_project_topaz\guarantee\
<Gateway Server_host_name>_project_topaz_
<Staging_Data_Replicator_host_name>_b2g_translator
```

- ▶ In the Data Export/Import screen of the upgrade wizard, the specified SDR initiation time must be at least two hours prior to the current time. For example, if the current time is 11:00 AM, the SDR initiation time must not be later than 9:00 AM. Specifying an SDR initiation time within the past two hours results in incomplete data aggregation.
- ▶ If you install System Health while you are upgrading within a staging environment, you must perform a Full Model Synchronization when you move your HP Business Availability Center 7.0 environment to production mode.
- ▶ For a list of Real User Monitor-related limitations, see “Real User Monitor Limitations” on page 231.

Running the Upgrade Wizard

You run the upgrade wizard on each HP Business Availability Center 7.0 server.

Note: Ensure that you have read and completed the instructions in the previous sections before running the upgrade wizard.

To run the upgrade wizard on a Windows platform:

Double-click the **<HP Business Availability Center 7.0 server root directory>\bin\upgrade_wizard_run.bat** file. Follow the instructions within the upgrade wizard to upgrade your HP Business Availability Center server.

To run the upgrade wizard on a Solaris platform:

- 1** Log in to the HP Business Availability Center 7.0 server as user **root**.

- 2 Move to the <HP Business Availability Center 7.0 server root directory>/bin directory.
- 3 Run the following script:

```
./upgrade_wizard_run.sh
```

The upgrade wizard opens in UI mode.

Note: X-Server is required in order to run the upgrade wizard. If the display in the upgrade wizard is not set correctly, enter the following command:
Set DISPLAY=<machine name or IP address>:0.0

- 4 Follow the instructions within the upgrade wizard to upgrade your HP Business Availability Center server.

Running the Staging Data Replicator as a Standalone Utility

You run the Staging Data Replicator if you are upgrading within a staging environment. You must run the Staging Data Replicator as a standalone utility in the following cases:

- ▶ if you are upgrading on a Solaris platform
- ▶ if your staging and production environments are located in separate domains and your network administrator cannot configure your staging environment to recognize your production environment's Core Server

To use the Staging Data Replicator as a standalone utility, you must install it on a Windows machine with access to both your Business Availability Center 6.x Core Server and your HP Business Availability Center 7.0 Gateway Server. You then configure certain properties and run the Staging Data Replicator.

To use the Staging Data Replicator standalone utility:

- 1** Insert the HP Business Availability Center DVD into the drive from which you want to install. If you are installing from a network drive, connect to the DVD.
- 2** From the **Start** menu, select **Run**.
- 3** Enter the location from which you are installing, followed by **setup.exe**. Note that the setup file for the Staging Data Replicator standalone utility is located in the **Tools and Utilities\SDR\6.x** directory of the DVD. For example, enter `d:\Tools and Utilities\SDR\6.x\setup.exe`.
- 4** Click **OK**. Setup begins. Follow the on-screen instructions to install the Staging Data Replicator.
- 5** After you have completed the Staging Data Replicator installation, open the **<Staging Data Replicator root directory>\conf\b2G_translator.xml** file and modify the following:
 - ▶ **SOURCE_HOST_NAME**. Replace this with the name of the Business Availability Center 6.x Core Server.
 - ▶ **DESTINATION_HOST_NAME**. Replace this with the name of the HP Business Availability Center 7.0 Gateway Server. This string appears twice within this file.
 - ▶ **clientid**. If you do not want data to be saved when the Staging Data Replicator stops running, delete the value for this parameter. It is not generally recommended that you modify this parameter.
- 6** If you want to modify the number of hours for which data is stored if the Staging Data Replicator stops running, open the **<HP Business Availability Center 7.0 server root directory>\SDR\6.x\conf\core\Bus\mjms\b2g_src_jndiobjects.xml** file and modify the value of the **gd_connection_timeout** parameter (time unit=hours). By default, data is stored for 24 hours if the Staging Data Replicator stops running.
- 7** Copy the **<HP Business Availability Center 7.0 server root directory>\SDR\6.x\conf\core\Bus\mjms\b2g_src_jndiobjects.xml** file to the **<Business Availability Center 6.x Core Server>\conf\core\Bus\mjms** directory and restart the Core Server.

- 8 Select **Start > HP BAC Staging Data Replicator > Administration > Enable HP BAC Staging Data Replicator** to begin running the Staging Data Replicator.

After you have completed the staging process and are prepared to move your HP Business Availability Center 7.0 environment to a production environment, stop the Staging Data Replicator by selecting **Start > HP BAC Staging Data Replicator > Administration > Disable HP BAC Staging Data Replicator**.

Note: The Staging Data Replicator standalone utility does not support basic authentication. For information on working with the Staging Data Replicator in conjunction with SSL, see “SSL Configuration for the Staging Data Replicator” in the *HP Business Availability Center Hardening Guide* PDF.

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Upgrading Components

This chapter describes how to upgrade HP Business Availability Center components to work with HP Business Availability Center 7.0.

This chapter describes:	On page:
SiteScope	222
Business Process Monitor	224
Real User Monitor	227
HP Virtual User Generator	232
Discovery Probe	233

SiteScope

HP Business Availability Center 7.0 includes SiteScope 9.0, but also supports previous versions of SiteScope. To benefit from enhanced functionality and to be able to administer SiteScope from System Availability Management Administration, you must upgrade to SiteScope 9.0.

For details of SiteScope versions and their compatibility with HP Business Availability Center 7.0, refer to “Understanding SiteScope Integration with HP Business Availability Center” in *Using System Availability Management*.

If you are upgrading SiteScope, you must do so before you upgrade HP Business Availability Center. You upgrade SiteScope by installing version 9.0 on all your SiteScope machines, as described in “Upgrading SiteScopes” below.

After you upgrade your SiteScopes, you run the HP Business Availability Center upgrade wizard in either Staging or Direct mode. If you run the upgrade wizard in Staging mode, you must redirect each SiteScope to report to the HP Business Availability Center 7.0 Gateway Server. For details, see “Redirecting SiteScopes” on page 223.

Note: If you run the HP Business Availability Center upgrade wizard in Direct mode and the Gateway Server is running on a different machine than that on which the Core Server ran in Business Availability Center 6.x, you must also redirect your SiteScopes.

Upgrading SiteScopes

If you choose to upgrade your SiteScope to version 9.0, you do not need to uninstall the previous version of SiteScope. However, if you are installing on the same machine, you must install version 9.0 in a different directory.

To upgrade a SiteScope:

- 1 In HP Business Availability Center 7.0, select **Admin > Platform > Setup and Maintenance > Downloads**.

- 2 Click the **SiteScope** link appropriate to the operating system on which your application server is running in order to access the SiteScope 9.0 installation file.
- 3 Install SiteScope 9.0. For details, see “Installing SiteScope for Windows” or “Installing SiteScope on Solaris or Linux” in the *HP SiteScope Deployment Guide* PDF.

Redirecting SiteScopes

You must ensure that your SiteScopes are pointing to the correct Gateway Server URL so that they can communicate with the HP Business Availability Center 7.0 Gateway Server.

To redirect a SiteScope:

- 1 In HP Business Availability Center 7.0, select **Admin > System Availability Management** and click the SiteScope whose Gateway Server URL you want to update.
- 2 Select **Preferences > BAC Preferences > Main Settings** and click the **Edit** button at the bottom of the page.
- 3 To the right of the Business Availability Center machine name/IP address, click **Update**. Enter the name or IP address of the HP Business Availability Center 7.0 Gateway Server in the window that opens and click **OK**. Click **OK** at the bottom of the BAC Preferences page.

Important: If you have multiple SiteScopes, you can use the Global Search and Replace wizard to perform the update simultaneously on all your SiteScopes. For details on using Global Search and Replace, see the Using System Availability Management portal in the HP Business Availability Center Documentation Library.



- 4 To modify the SiteScope's settings within HP Business Availability Center, select the SiteScope in System Availability Management and click the **Edit SiteScope** button. Under **Distributed Settings**, enter the name or IP address of the HP Business Availability Center 7.0 Gateway Server, as well as the user name and password required to access the Gateway Server. Click **Submit** at the bottom of the page.

Business Process Monitor

HP Business Availability Center 7.0 includes Business Process Monitor 7.0, but also supports all previous versions of Business Process Monitor. To benefit from HP Virtual User Generator (VuGen) 9.0's enhanced functionality, you must upgrade to Business Process Monitor 7.0. For details on VuGen 9.0's enhanced functionality, see the What's New document, which you can access from within HP Business Availability Center by selecting **Help > What's New**.

Note:

- Business Process Monitor 7.0 supports QuickTest Professional version 9.0 or later. It does not support earlier versions of QuickTest Professional. For details on Business Process Monitor 7.0's support for QuickTest Professional, see "Supported Recording Tools" in the *Business Process Monitor Administration PDF*.
 - Scripts recorded with VuGen 8.1 can run only on Business Process Monitor 6.0 and later. Scripts recorded with VuGen 9.0 can run only on Business Process Monitor 7.0. However, Business Process Monitor 7.0 is backward compatible with older versions of VuGen.
-

You upgrade the Business Process Monitor by uninstalling the previous version and installing Business Process Monitor 7.0. You can upgrade your Business Process Monitors either before or after you run the HP Business Availability Center upgrade wizard, however your Business Process Monitors instances will not succeed in communicating with the HP Business Availability Center 7.0 Gateway Server until they are pointing to the correct Gateway Server URL. For details on pointing Business Process Monitor instances to the HP Business Availability Center 7.0 Gateway Server, see “Redirecting Business Process Monitor Instances” on page 226.

Upgrading Business Process Monitors

If you choose to upgrade your Business Process Monitor to version 7.0, you must uninstall the current version and then install version 7.0.

To upgrade a Business Process Monitor:

- 1** Uninstall the current Business Process Monitor version.
- 2** In HP Business Availability Center 7.0, select **Admin > Platform > Setup and Maintenance > Downloads**.
- 3** Click the **Business Process Monitor** link appropriate to the operating system on which your application server is running in order to access the Business Process Monitor 7.0 installation file.
- 4** Install Business Process Monitor 7.0. For details, see “Deploying Business Process Monitor” in the *Business Process Monitor Administration* PDF.

Redirecting Business Process Monitor Instances

After you have run the HP Business Availability Center upgrade wizard in Staging mode, you must redirect each Business Process Monitor instance to report to the HP Business Availability Center 7.0 Gateway Server.

You can redirect all Business Process Monitor instances simultaneously, using the Business Process Monitor redirect tool, as described below, or you can redirect each Business Process Monitor instance separately by editing each instance within Business Process Monitor Admin. For details on editing a Business Process Monitor instance within Business Process Monitor Admin, see “Modifying an Instance” in the *Business Process Monitor Administration* PDF. It is recommended that you use the Business Process Monitor redirect tool to redirect your Business Process Monitor instances.

Note: If you ran the HP Business Availability Center upgrade wizard in Direct mode and the Gateway Server is now running on a different machine than that on which the Core Server ran in Business Availability Center 6.x, you must also redirect your Business Process Monitor instances. In this case, however, you will not be able to use the redirect tool to perform the redirect.

To redirect Business Process Monitors instances using the redirect tool:

- 1** Extract the files within the <HP Business Availability Center 7.0 server root directory>\HPBAC\tools\RedirectTool.zip file to a directory on a machine that has access to the Business Process Monitors whose instances you want to redirect.
- 2** In HP Business Availability Center 7.0, select **Admin > Platform > Data Collection > Data Collector Maintenance > Business Process Monitor**. The list of Business Process Monitors from your Business Availability Center 6.x system is displayed.
- 3** Select the Business Process Monitor instances you want to redirect and click the **Export BPM Information** button. Save the **BPMList.txt** file to a machine with access to the machine on which the **RedirectTool.zip** files are located.

- 4 In the <RedirectTool installation directory>\conf**BPMRedirectTool.properties** file, specify the following parameters:
 - **NEW_BAC_URL.** The URL of the HP Business Availability Center 7.0 Gateway Server.
 - **INPUT_FILE_PATH.** The directory in which you saved the **BPMList.txt** file. Include the name of the file itself as well. For example:
D:\Tools\RedirectTool\BPMList.txt
 - **USER.** The user name required to access the Business Process Monitors. (A user name is generally not required.)
 - **PASSWORD.** The password required to access the Business Process Monitors. (A password is generally not required.)
- 5 Run the <RedirectTool installation directory>**RedirectTool.bat** file. The Gateway Server URL is updated on all the Business Process Monitor instances. A log file containing information on each updated Business Process Monitor instance is created. If the redirect tool failed to update a Business Process Monitor instance, this information is included in the log file.

Real User Monitor

After you run the HP Business Availability Center upgrade wizard (in Staging mode), you must upgrade each instance of the Real User Monitor probe and engine to Real User Monitor 7.0.

Note:

- The Real User Monitor 7.0 is not compatible with previous versions of HP Business Availability Center.
 - The Real User Monitor 7.0 engine is supported in a Windows environment only. For details of both engine and probe system requirements, see “Reviewing System Requirements” in the *Real User Monitor Administration* PDF.
-

Upgrading the Real User Monitor Probe

To upgrade the Real User Monitor probe, you must install version 7.0, which is compatible with previous versions of the Real User Monitor engine. Note that you should not uninstall the previous version of the Real User Monitor probe before installing version 7.0.

To install the Real User Monitor 7.0 probe:

- 1 On the HP Business Availability Center 7.0 **Downloads** page, which you access from **Admin > Platform > Setup and Maintenance**, click **HP Real User Monitor probe** to download the **HPRUMProbeSetup_linux.bin** file to the **/var/tmp** directory on the Real User Monitor probe machine.

Note: If you cannot download this file directly to the Linux machine on which you are installing the probe, make sure that you download the file to a machine from which you can later FTP (in binary mode) the file to the Linux machine.

- 2 Stop the Real User Monitor probe.
 - a Log in to the Real User Monitor probe machine as the root user.
 - b Stop the Real User Monitor probe with the following command:

```
/etc/init.d/beatbox-capture stop
```

Note: If you want to ensure that no previous Real User Monitor data is lost during the upgrade process, copy the data from the previous version's **/var/spool/beatbox/channels** directory. After you install the Real User Monitor 7.0 probe, copy the data back to the new **channels** directory.

- 3 Run the installation script as described in “Installing the Probe” in the *Real User Monitor Administration* PDF.

- 4 Start the Real User Monitor probe with the following command:

```
/etc/init.d/beatbox-capture start
```

Note: The above procedure should take less than a minute and therefore results in minimal data loss.

Upgrading the Real User Monitor Engine

To upgrade the Real User Monitor engine, you run the **HPRUMSetup_win.exe** file—which you access from the HP Business Availability Center 7.0 Downloads page—on the Real User Monitor engine machine. The setup program uninstalls the previous Real User Monitor version and installs version 7.0.

Note: If you are installing the engine and database on different machines, run the **HPRUMSetup_win.exe** file first on the MySQL database machine and then on the Real User Monitor engine machine.

To upgrade the Real User Monitor engine:

- 1 Stop the Real User Monitor engine by selecting **Start > Programs > HP Real User Monitor > Administration > Disable HP Real User Monitor** on the Real User Monitor engine machine.

Note: Because data is stored on the Real User Monitor probe and can be retrieved when the Real User Monitor engine is restarted, stopping the Real User Monitor engine does not result in data loss.

- 2 On the HP Business Availability Center 7.0 **Downloads** page, which you access from **Admin > Platform > Setup and Maintenance**, click **HP Real User Monitor Engine for Windows**. Download the **HPRUMSetup_win.exe** file to the Real User Monitor engine machine and run the file. The setup program detects a previous version of the Real User Monitor engine and proceeds to uninstall this version. Follow the instructions provided in the wizard to uninstall the Real User Monitor engine.

If you want to save user data settings and configuration from the previous version, you can choose to export data. You can also choose to export the MySQL user schema if you do not want to recreate the user schema.

- 3 Reboot the machine when prompted to do so. When the machine restarts, run the **HPRUMSetup_win.exe** file once again. The setup program reopens and begins the Real User Monitor engine installation process. For details on installing the Real User Monitor engine, see “Installing the HP Real User Monitor Engine” in the *Real User Monitor Administration* PDF.

As part of the installation process, you can import the saved user data settings and configuration from a previous version. You can also choose to import the previous MySQL user schema.

Note: If you changed the user name/password for the previous MySQL database server while working with a previous version of the Real User Monitor, these parameters are no longer in effect. The default user name/password should be used to connect to the MySQL database server.

In the HP Real User Monitor Connection Settings dialog box, ensure that you enter the name of the HP Business Availability Center 7.0 Gateway Server.

- 4 Start the Real User Monitor engine by selecting **Start > Programs > HP Real User Monitor > Administration > Enable HP Real User Monitor** on the Real User Monitor engine machine.

Real User Monitor Limitations

- Upgraded Real User Monitor page alerts must be reconfigured. End-user alerts are not available in HP Business Availability Center 7.0 and are therefore not upgraded at all.
- Real User Monitor end-user and location CIs that were automatically created by Dynamic Nodes are deleted during the upgrade process. Any alerts or SLAs that were created as a result of these CIs are also deleted.
- When uninstalling a previous version of the Real User Monitor engine:
 - Ignore a message indicating that the engine cannot connect to the Real User Monitor database.
 - Ensure that you select **Yes** to delete the Real User Monitor folder.
- If the Real User Monitor engine is working with SSL and:
 - a customer self-signed Certification Authority (CA) certificate is being used for one of the connections;
 - the self signed CA certificate is in the default JRE truststore (cacerts), and not in a separate keystore;

you will have to export the CA certificate manually from the original JRE truststore that is saved in the exported data directory to the new JRE used by the upgraded Real User Monitor engine. If you are using a certificate that is trusted by a well-known CA, or a self-signed certificate in a separate keystore file, you do not have to perform this procedure.

- If you are upgrading a Real User Monitor engine that is running on a different port than the default one (8180), you must manually change each occurrence of port **8180** within the **<Real User Monitor engine root directory>\EJBContainer\bin\mercury_run.bat** file to the port that the Real User Monitor engine is using.
- During the Real User Monitor engine upgrade process, the user name and password of the MySQL database are reset to the defaults (**rum_user** and **rum_password**) if the MySQL data is saved in the default data directory (the Real User Monitor engine root installation directory).

- ▶ If your MySQL data is not saved in the default data directory, a redundant data directory will be created when you install the Real User Monitor 7.0 engine.
- ▶ Snapshots are deleted from the Real User Monitor probe after the probe is upgraded, even if you copy the data from the previous probe version's `/var/spool/beatbox/channels` directory.
- ▶ If the Real User Monitor source adapter (**Admin > Universal CMDB > Source Manager**) was edited before you upgraded your Real User Monitor engine, you may need to select some of the options again after you upgrade the Real User Monitor engine.

HP Virtual User Generator

HP Business Availability Center 7.0 includes HP Virtual User Generator (VuGen) version 9.0. To benefit from enhanced VuGen functionality, it is recommended that you upgrade to this version. For details of the enhanced functionality, see the What's New document, which you can access from within HP Business Availability Center by selecting **Help > What's New**.

To upgrade VuGen to version 9.0:

- 1** If you are installing to the same machine running your existing Virtual User Generator, uninstall the existing version.
- 2** In HP Business Availability Center 7.0, select **Admin > Platform > Setup and Maintenance > Downloads**.
- 3** Click the **HP Virtual User Generator** link to access the VuGen installation file.
- 4** Install VuGen 9.0 according to the on-screen instructions.

Discovery Probe

If you are upgrading to HP Business Availability Center 7.0 from HP Business Availability Center 6.x, you must uninstall the existing Discovery Probe and install Discovery Probe 7.0 before running the discovery process.

To upgrade Discovery Probe from 6.x to 7.0:

- 1** Uninstall all existing Discovery Probes.
- 2** In HP Business Availability Center 7.0, select **Admin > Platform > Setup and Maintenance > Downloads**.
- 3** Click the **Discovery Probe** link to access the Discovery Probe 7.0 installation file.
- 4** Install on all machines as required, according to the on-screen instructions.

Note: Active discovery patterns must be reactivated after the upgrade so that the newly installed Discovery Probes will receive the tasks they are assigned.

Part VIII

Server Administration and Maintenance

21

File Backup Recommendations

This chapter lists the directories that contain key configuration and data files, for which regular backups are recommended.

This chapter describes:	On page:
Configuration and Data File Backup	237

Configuration and Data File Backup

HP Business Availability Center directories that contain key configuration and data files should be backed up on a daily basis as a precautionary measure.

The table below lists the HP Business Availability Center directories that contain such files and should therefore be backed up. All directories are under **<HP Business Availability Center root directory>**.

Resource	Comments
\HPBAC\BLE	Configuration of business rules. Back up if business rules have been created.
\HPBAC\conf	Assorted HP Business Availability Center configuration files.
\HPBAC\CMDB	Dashboard configuration data, such as adapter frameworks and hierarchies.

Resource	Comments
\HPBAC\openldap	System Availability and End User Management Administration configuration data. For further information on backing up the LDAP, see Appendix F, “Backing Up and Restoring Monitor Administration Configuration Data” in the <i>HP Business Availability Center Database Guide</i> PDF.
\HPBAC\dat	Assorted HP Business Availability Center configuration files.
\HPBAC\attachments	Data for user-defined daily reports.
\HPBAC\dbverify\conf	Configuration files for dbverify. This directory does not have to be backed up if dbverify has not been run.
\HPBAC\EJBContainer\bin	Configuration files for the scripts used to run HP Business Availability Center, and environment settings.
\HPBAC\launch_service	Various modules used in HP Business Availability Center. Back up if changes were made to any of the installation defaults.
\HPBAC\settings	Aggregation configuration data.
\HPBAC\tools	Various tools and settings for HP Business Availability Center. Back up if HP Business Availability Center tools are used.
\HPBAC\bin	HP Business Availability Center binary files. Back up if changes were made to any of the installation defaults.
\HPBAC\lib	HP Business Availability Center library files. Back up if changes were made to any of the installation defaults.

Resource	Comments
\HPBAC\AppServer\ DataEngine	HP Business Availability Center Data Engine configuration files used for obtaining data for reports.
\HPBAC\AppServer\GDE	Configuration files for the Generic Data Engine, used for obtaining data for reports.

22

Bus Communication and Port Usage

This chapter describes Bus communication and lists the ports used by HP Business Availability Center for communication.

This chapter describes:	On page:
Bus Communication among HP Business Availability Center Components	242
Incoming HP Business Availability Center Traffic	243
Outgoing HP Business Availability Center Traffic	244
Local HP Business Availability Center Traffic	245

Note: The ports listed here are those ports that HP Business Availability Center uses. If you need to change a port assignment, it is strongly recommended that you first consult with Customer Support.

Bus Communication among HP Business Availability Center Components

A Bus is a virtual communications channel between HP Business Availability Center servers. The HP Business Availability Center 7.0 Bus features improved scalability and functionality.

The following functionality is provided by the Bus:

► **High availability for communication between the Gateway and Data Processing servers**

The Bus uses a JMS-based messaging system for communication between the servers. A broker process on each server receives and delivers messages between the servers. Bus clustering allows multiple brokers to detect dropped server connections and to reconnect without data loss.

► **Transfer of monitoring data**

Data collectors send raw monitoring data via HTTP/HTTPS protocol to the Gateway Server. The Gateway Server formats the raw data and sends it to the Data Processing Server via the Bus. In the event that the Online BLE is experiencing downtime, the Bus preserves the data until the Online BLE is again operational, thus guaranteeing that the Alert Engine has all of the data to perform its calculations on. Dashboard uses the online BLE to listen to the Bus, and Service Level Management uses the offline BLE to listen to the Bus. Both applications display the formatted data to the user.

► **Transfer of alerts**

Each Data Processing server can generate alerts as a result of the data aggregation process. These alerts are sent from the Alerts Administrator in the Gateway Server through the Bus to the Alerts Engine in the Data Processing Server and on to the user's e-mail, pager, or SMS.

Incoming HP Business Availability Center Traffic

There are two categories of incoming HP Business Availability Center traffic:

Internal Traffic

Internal traffic is the traffic between two HP Business Availability Center servers. The following table lists the ports used to transmit data between two HP Business Availability Center servers:

Port Number	HP Business Availability Center Servers that Listen on Port	Port Usage
4444	Gateway Server, Data Processing Server	Remote Method Invocation (RMI) channel between HP Business Availability Center servers
4445	Gateway Server, Data Processing Server	Remote Method Invocation (RMI) channel between HP Business Availability Center servers
9389	Gateway Server	TCP local LDAP connection for communication between Gateway Servers in a distributed deployment environment
2506	Data Processing Server	Bus domain manager for the connection between the Data Processing Server and the Gateway Server
2507	Gateway Server, Data Processing Server	Main Bus processes for the connection between HP Business Availability Center servers

External Traffic

External traffic is the traffic coming into one of the HP Business Availability Center servers from a client that is not an HP Business Availability Center server. The following table lists the ports used to transmit data from an external HP Business Availability Center client machine to an HP Business Availability Center server:

Port Number	HP Business Availability Center Servers that Listen on Port	Port Usage
80/443	Gateway Server	<ul style="list-style-type: none"> ▶ 80. HTTP/S channel to Gateway Server applications ▶ 443. Port for reverse proxy

Outgoing HP Business Availability Center Traffic

The following table lists the ports used by the HP Business Availability Center servers to connect to external servers (non HP Business Availability Center servers):

Port Number	HP Business Availability Center Servers that Connect to Port	Port Usage
25	Gateway Server, Data Processing Server	SMTP channel from the HP Business Availability Center servers to the SMTP mail server
123	Gateway Server	NTP channel from the Gateway Server to the NTP server
161	Data Processing Server	SNMP channel from the Data Processing Server to the SNMP manager

Port Number	HP Business Availability Center Servers that Connect to Port	Port Usage
389	Gateway Server	Connection between the Gateway Server and LDAP server for authentication (optional). For more information, see “Authentication Strategies” in <i>Platform Administration</i> .
1433	Gateway Server, Data Processing Server	T-SQL channel between the HP Business Availability Center servers and the MS SQL Server
1521	Gateway Server, Data Processing Server	PL/SQL connection between the HP Business Availability Center servers and the Oracle Server
80/443	Gateway Server	<ul style="list-style-type: none"> ▶ 80. HTTP/S channel between the Gateway Server and data collectors for remote administration tasks ▶ 443. Port for reverse proxy

Local HP Business Availability Center Traffic

The table below lists the ports used for communication between components on the same HP Business Availability Center server machine.

Port Number	HP Business Availability Center Servers that Connect to Port	Port Usage
1098	Gateway Server, Data Processing Server	RMI management channel used by the JBoss application server
1099	Gateway Server, Data Processing Server	Naming service used by the JBoss application server
4504	Gateway Server	TCP local LDAP connection used by the Gateway Server
5001	Gateway Server	VuGen service

Port Number	HP Business Availability Center Servers that Connect to Port	Port Usage
8009	Gateway Server, Data Processing Server	Tomcat AJP13 connector
8080	Gateway Server, Data Processing Server	HTTP channel for same machine components
8083	Gateway Server, Data Processing Server	RMI dynamic class loading
8093	Gateway Server, Data Processing Server	TCP JMS OIL/2 and UIL used by the JBoss application server
11020	Gateway Server, Data Processing Server	RMI management channel for the HP Business Availability Center service
11021	Gateway Server, Data Processing Server	HTTP channel for the HP Business Availability Center service
29601	Gateway Server, Data Processing Server	RMI management channel for the JBoss application server
29602	Gateway Server, Data Processing Server	RMI management channel for the Bus processes
29603	Gateway Server	RMI management channel for the DB Loader process
29903	Gateway Server	HTTP channel for the DB Loader process
29604	Gateway Server	RMI management channel for the Web Data Entry (WDE) process
29904	Gateway Server	HTTP channel for the Web Data Entry (WDE) process
29608	Data Processing Server	RMI management channel for the Offline BLE process
29908	Data Processing Server	HTTP channel for the Offline BLE process

Port Number	HP Business Availability Center Servers that Connect to Port	Port Usage
29609	Data Processing Server	RMI management channel for the Online BLE process
29909	Data Processing Server	HTTP channel for the Online BLE process
29610	Data Processing Server	RMI management channel for the Partition and Purging Manager
29910	Data Processing Server	HTTP channel for the Partition and Purging Manager
29611	Gateway Server	RMI management channel for the Web Server Guard process
29612	Data Processing Server	RMI management channel for the CMDB process
29912	Data Processing Server	HTTP channel for the CMDB process
29613	Data Processing Server	RMI management channel for the Viewing System process
29913	Data Processing Server	HTTP channel for the Viewing System process
29615	Data Processing Server	RMI management channel for the Data Upgrade process
29915	Data Processing Server	HTTP channel for the Data Upgrade process
29807	Gateway Server, Data Processing Server	Shutdown of main Bus processes
31000-31999; 32000-32999	Gateway Server, Data Processing Server	HP Business Availability Center service, uses the first available port in each range
Dynamic ports	Gateway Server, Data Processing Server	Some dynamic ports are used for inter-component channels

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Changing HP Business Availability Center Service Users

This chapter explains how to change the user for both the HP Business Availability Center service and the OpenLDAP Directory Service.

This chapter describes:	On page:
Changing the HP Business Availability Center Service User	249
Changing the OpenLDAP Directory Service User	251

Changing the HP Business Availability Center Service User

On a Windows platform, the HP Business Availability Center service, which runs all HP Business Availability Center services and processes, is installed when you run the Server 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 are using NTLM authentication).

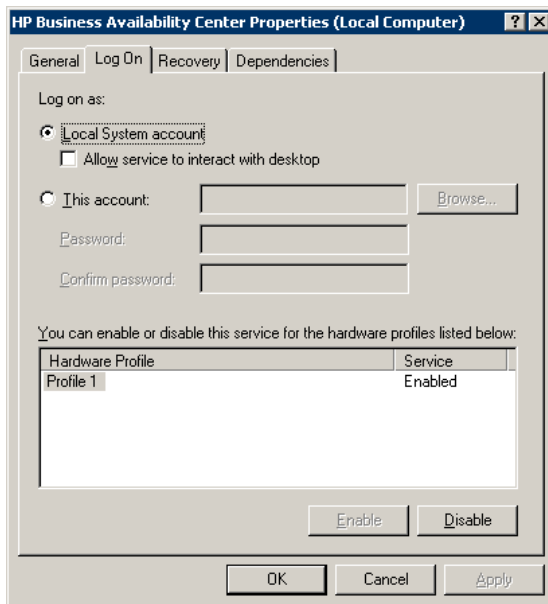
The user you assign to run the service must have the following permissions:

- ▶ sufficient database permissions (as defined by the database administrator)
- ▶ sufficient network permissions
- ▶ administrator permissions on the local server

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

To change the HP Business Availability Center service user:

- 1 Disable HP Business Availability Center (**Start > Programs > HP Business Availability Center > Administration > Disable Business Availability Center**).
- 2 In Microsoft's Services window, double-click **HP Business Availability Center**. The HP Business Availability Center 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 HP Business Availability Center (**Start > Programs > HP Business Availability Center > Administration > Enable Business Availability Center**).

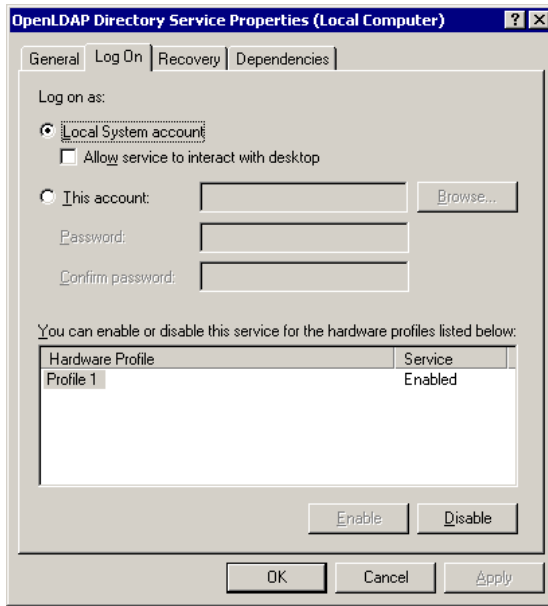
Changing the OpenLDAP Directory Service User

If you change the user for the HP Business Availability Center service and want all HP Business Availability Center services and processes to run under the same user, you must also change the user for the OpenLDAP Directory Service, which is run by the HP Business Availability Center service. (The users of all the other services and processes run by the HP Business Availability Center are automatically updated.)

To change the OpenLDAP Directory Service user:

- 1 Disable HP Business Availability Center (**Start > Programs > HP Business Availability Center > Administration > Disable Business Availability Center**).
- 2 In Microsoft's Services window, double-click **OpenLDAP Directory Service**. The OpenLDAP Directory Service Properties (Local Computer) dialog box opens.

3 Click the **Log On** tab.



- 4** Select **This account** and browse to choose the user you selected to run the HP Business Availability Center service.
- 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 HP Business Availability Center (**Start > Programs > HP Business Availability Center > Administration > Enable Business Availability Center**).

24

Viewing HP Business Availability Center Server Status

This chapter describes the HP Business Availability Center server status HTML page that you can use to view the status of HP Business Availability Center services.

This chapter describes:	On page:
Viewing the Status of HP Business Availability Center Services	253

Viewing the Status of HP Business Availability Center Services

You can view the status of the services run by the HP Business Availability Center service and High Availability Controller on the HP Business Availability Center server status HTML page that you access by selecting **Start > Programs > HP Business Availability Center > Administration > HP Business Availability Center Server Status**.

To view the status of all the services, right-click the security warning above the HP Software title bar, select **Allow Blocked Content**, and click **Yes** in the dialog box that opens. The line below the HP Software title bar indicates whether all the HP Business Availability Center services are running (Server is READY) or some are down (Server is NOT READY).

To view a list of all the services and their statuses, click the **Nanny Status** and **HAC Status** title bars.

The screenshot shows the HP Software interface with a green status bar indicating 'Server is READY'. Below this, there are two main sections: 'Nanny Status' and 'HAC Status'.

Nanny Status Table:

ServiceName	ProcessName	Status	ExecutionOrder
domain_manager	DomainManager	STARTED	2
message_broker	MessageBroker	STARTED	4
mercuryAS	MercuryAS	STARTED	6
tmu	TMU	STARTED	10
online_engine	mercury_online_engine	STARTED	16
db_loader	mercury_db_loader	STARTED	18
wde	mercury_wde	STARTED	20
ldap	slapd	STARTED	22
offline_engine	mercury_offline_engine	STARTED	24
email_reports	EmailReportsMdrv	STARTED	26
pmanager	mercury_pm	STARTED	28

HAC Status Table:

Service	Process	Ping	State - [Since] - [Duration]
CDM	mercury_as	10s	RUNNING - [29/Jul/2007 11:25:59] - [1d:1h:4m]
CMDB	mercury_as	10s	RUNNING - [29/Jul/2007 11:17:27] - [1d:1h:13m]
MAMVIEWSYS	mercury_as	10s	RUNNING - [29/Jul/2007 11:18:03] - [1d:1h:12m]
VERTICALS	mercury_as	10s	RUNNING - [29/Jul/2007 11:25:54] - [1d:1h:4m]
MAMPACKAGER	mercury_as	10s	RUNNING - [29/Jul/2007 11:25:37] - [1d:1h:5m]
MAMBASIC	mercury_as	10s	RUNNING - [29/Jul/2007 11:17:43] - [1d:1h:12m]
MAMDISCOVERY	mercury_as	10s	RUNNING - [29/Jul/2007 11:18:03] - [1d:1h:12m]
KPI_ENRICHMENT	mercury_as	10s	RUNNING - [29/Jul/2007 11:25:55] - [1d:1h:4m]
MAMIMPACT	mercury_as	10s	RUNNING - [29/Jul/2007 11:18:03] - [1d:1h:12m]
MAMREPORT	mercury_as	10s	RUNNING - [29/Jul/2007 11:18:03] - [1d:1h:12m]
MAMCONFIG	mercury_as	10s	RUNNING - [29/Jul/2007 11:18:03] - [1d:1h:12m]
EMS_HOST	mercury_as	10s	RUNNING - [29/Jul/2007 11:25:57] - [1d:1h:4m]
NCA	mercury_as	10s	RUNNING - [29/Jul/2007 11:18:11] - [1d:1h:11m]

Last updated: 14:30:38

If the Dashboard service is not running, check whether you have a license for Dashboard. If other services are not running, contact Customer Support to try and resolve the problem.

Part IX

Accessing HP Business Availability Center

25

HP Business Availability Center Start Menu

During the installation of HP Business Availability Center, a start menu for HP Business Availability Center is added to the settings of the machine on which HP Business Availability Center was installed.

This chapter describes:	On page:
Start Menu	258

Start Menu

To access the HP Business Availability Center start menu that is added to each machine on which HP Business Availability Center is installed, select **Start > Programs > HP Business Availability Center**. The menu includes the following options:

Administration

The Administration menu option includes the following sub-options:

Sub-option	Description
Connect to Database	Runs the Server and Database Configuration utility, which enables you to create and connect to management, CMDB, and CMDB history databases/user schemas for HP Business Availability Center on MS SQL Server or Oracle Server. For details, see “Setting Database Parameters on a Windows Platform” on page 145 or “Setting User Schema Parameters on a Solaris Platform” on page 181.
Disable Business Availability Center	Stops HP Business Availability Center on the specific machine, and disables it from being run automatically whenever the machine is started.
Enable Business Availability Center	Starts HP Business Availability Center on the specific machine, and sets it to be run automatically whenever the machine is started.
HP Business Availability Center Server Status	Opens an HTML page that you use to view the status of the services run by the HP Business Availability Center service and High Availability Controller. For details on this HTML page, see “Viewing HP Business Availability Center Server Status” on page 253.

Documentation

The Documentation menu option, available on the Gateway Server only, includes the following sub-options:

Sub-option	Description
HP Business Availability Center Documentation Library	Opens the HP Business Availability Center Documentation Library home page in your Web browser.
HP Business Availability Center Deployment Guide	Opens a PDF version of the <i>HP Business Availability Center Deployment Guide</i> PDF.

Open Business Availability Center

Selecting this option opens a Web browser displaying the HP Business Availability Center application login page.

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Initial Login to HP Business Availability Center

This chapter describes how to log in to HP Business Availability Center for the first time.

This chapter describes:	On page:
Viewing HP Business Availability Center	261
Logging In	262
Logging Out	263

Viewing HP Business Availability Center

You view HP Business Availability Center within a supported Web browser. To access HP Business Availability Center, the client machine must have a network connection (intranet or Internet) to the HP Business Availability Center servers. For details on Web browser requirements as well as minimum requirements to successfully view HP Business Availability Center, see “Reviewing System Requirements” on page 53.

Note to HP Managed Software Solutions customers: You access HP Business Availability Center via the Managed Software Solutions Customer Support Web site (mms.mercury.com).

Logging In

You log in to HP Business Availability Center from the login page.

Tip: Click the **Help** button on the login page for complete login help.

To access the HP Business Availability Center login page and log in for the first time:

- 1** In the Web browser, enter the URL http://<server_name>/HPBAC (**hpbac** can also be used), where **server_name** is the name or IP address of the HP Business Availability Center server. If there are multiple servers, or if HP Business Availability Center is deployed in a distributed architecture, specify the load balancer or Gateway Server URL, as required.

Customers running previous versions of HP Business Availability Center can still use bookmarks set to access the URL http://<server_name>/mercuryam.

- 2** Enter the default superuser login parameters—Login Name=**admin**, Password=**admin**—and click **Log In**. After logging in, the user name appears at the top right, under the top menu bar.
- 3** (Recommended) Change the superuser password immediately to prevent unauthorized entry. For details on changing the password, see “Managing Users” in *Platform Administration*.
- 4** (Recommended) Create additional administrative users to enable HP Business Availability Center administrators to access the system. For details on creating users in the HP Business Availability Center system, see “User Management” in *Platform Administration*.

Note:

- ▶ For login troubleshooting information, see “Troubleshooting HP Business Availability Center Login” in *Platform Administration*.
 - ▶ For details on login authentication strategies that can be used in HP Business Availability Center, see “Authentication Strategies” in *Platform Administration*.
 - ▶ For details on accessing HP Business Availability Center securely, see the *HP Business Availability Center Hardening Guide* PDF.
-

Logging Out

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.

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