HPE Business Service Management

Software Version: 9.26

BSM Upgrade Guide - 9.1x to 9.26

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Contents

Introduction

Welcome to the BSM Upgrade Guide. This guide provides a detailed workflow for upgrading BSM.

How This Guide is Organized

This book is divided into three parts:

- Part I contains the workflow for upgrading using the direct method
- Part II contains the workflow for upgrading using the staging method
- Part III, the appendix, contains reference information that applies to both the staging and upgrade workflows

You should select either the staging or direct workflow. Whichever workflow is chosen should be read and executed in chronological order where relevant.

Staging vs. Direct Upgrade Overview

Note: If your source and target environments are not running the same operating systems, you must upgrade using the staging method.

Using a **staging** environment to upgrade BSM refers to installing the new software on different machines and database schemas (referred to as the staging environment) to allow the original BSM servers to continue functioning while the upgrade is in process. The original machines are referred to as the production environment. This minimizes downtime and allows you to ensure that the new servers are functioning as required before disconnecting the original servers.

When upgrading using a staging environment, BSM is installed on the staging servers. Staging mode begins when both production and staging servers are installed. During staging mode, metric data is transferred from the production server to the staging server using the Staging Data Replicator (SDR). Event data is forwarded using a different method.

Only changes to the database are transferred during staging mode, configuration changes made to the production server are not transferred.

Note:

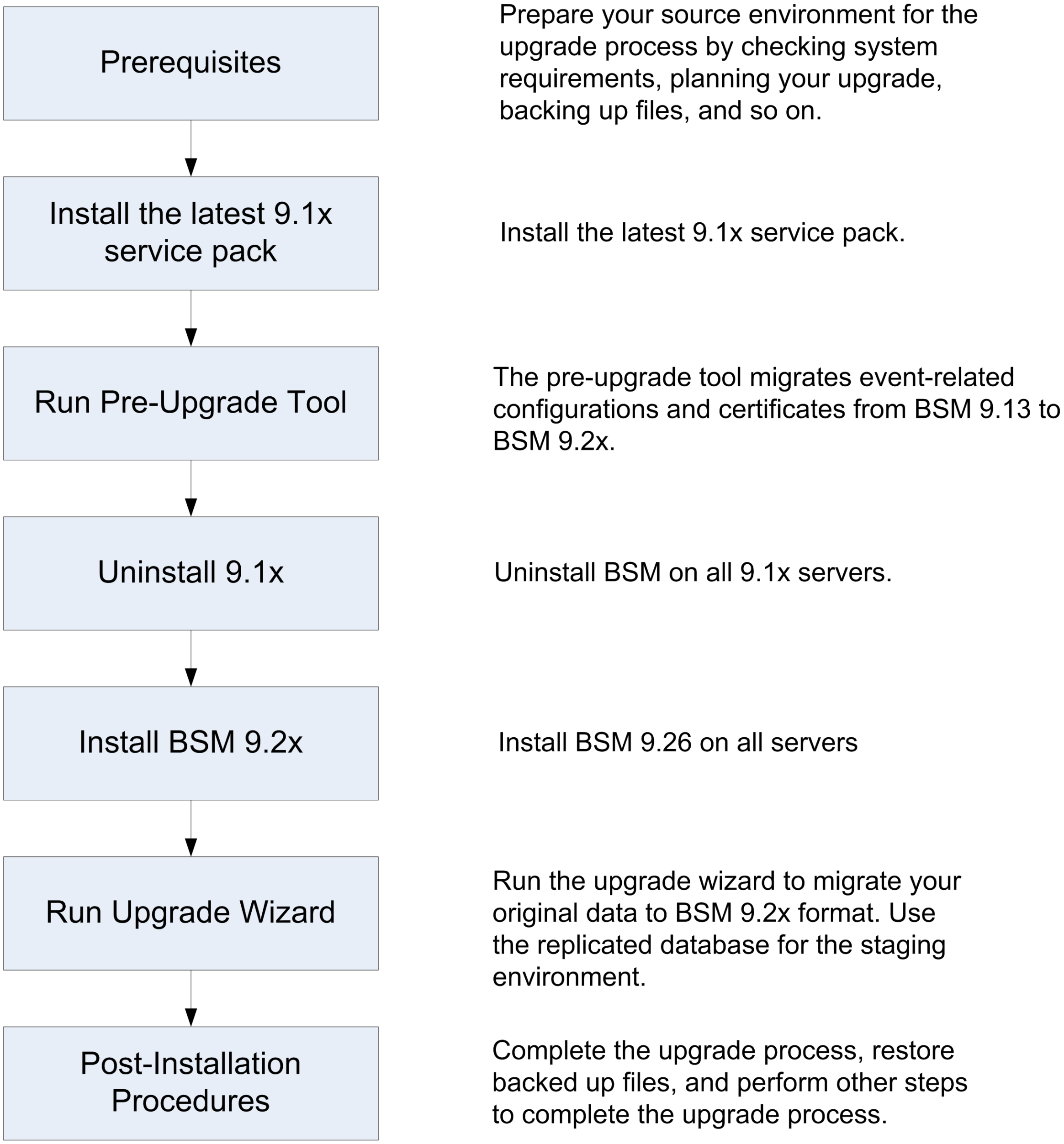
- If you are upgrading to BSM 9.26 and are running Red Hat Enterprise Linux 5.x, upgrade your operating system to Red Hat Enterprise Linux 6.x or 7.x and then perform the upgrade using Method I (Direct) or Method II (Indirect) in the BSM Upgrade Guide - 9.2x to 9.26.
- Scheduled reports are not sent from the staging servers while in staging mode. For more details, see "Troubleshooting the Upgrade Process" on page 159.
- All BSM machines in the staging environment must be set to the same time zone as the source environment. Incompatible time zone settings can lead to inaccuracies in reporting historical data.
- You must upgrade using a staging environment if you are switching operating systems. In BSM 9.2x, Windows Server 2003 is no longer supported, such users would have to perform a staging upgrade to a supported operating system.

Upgrading **directly** refers to installing the new version on the same servers and database schemas as the original version. This can only be performed after uninstalling the original version and therefore results in greater downtime.

Part I: Direct Upgrade

Chapter 1: Overview of BSM 9.1x to BSM 9.2x Direct Upgrade

The upgrade from BSM 9.1x to BSM 9.2x involves a number of milestones. The following diagram shows the major steps and how they affect your environment.



Prepare your source environment for the upgrade process by checking system requirements, planning your upgrade, backing up files, and so on.

Install the latest 9.1x service pack.

The pre-upgrade tool migrates event-related configurations and certificates from BSM 9.13 to BSM 9.2x.

Uninstall BSM on all 9.1x servers.

Install BSM 9.26 on all servers

Run the upgrade wizard to migrate your original data to BSM 9.2x format. Use the replicated database for the staging environment.

Complete the upgrade process, restore backed up files, and perform other steps to complete the upgrade process.

Chapter 2: Prerequisites

Perform all steps specified in this chapter before continuing with the upgrade process.

General Prerequisites

Perform the following steps where relevant before continuing with the upgrade process.

1. Create deployment plan

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

2. Create upgrade plan

Create an upgrade plan, including such items as whether you will be performing a staging or direct upgrade, estimated down-time, and so on.

Database Administrator. During the upgrade process, the services of your Database Administrator may be required.

Multiple servers. If you are upgrading multiple BSM servers, perform the upgrade procedure on only one Gateway and one Data Processing server. When the upgrade process is complete, install any additional servers and connect them to the database schemas using Configuration Wizard as described in the BSM Installation Guide.

3. Order and register licenses

Order licenses with a sales representative based on your deployment plan. Register your copy of BSM to gain access to technical support and information on all HP products. You will also be eligible for updates and upgrades. You can register your copy of BSM on the HP Software Support site https://softwaresupport.hp.com.

4. Set up database server

> **Note:** You cannot change the database type during the upgrade if you want to keep your configuration and runtime data. For example, if you currently run Oracle, you must also use Oracle with the new BSM environment.
>
> In BSM 9.20, support for SQL Server 2005 was removed. In BSM 9.23, support for SQL Server 2012 was added. Make sure the compatibility parameter is up-to-date before starting the upgrade.

Verify that your database has the following settings:

- Oracle: The Oracle Partitioning option must be enabled. Make sure that the parameter **RECYCLEBIN** is set to **Off**, as specified in the BSM Database Guide.

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

5. Migrate manual changes to conf directory

If you made changes to any files in the **<HP BSM root directory>\WebServer\conf** directory, back up the changed files and, after the upgrade, reapply the changes to the new files (**do not copy the old files on top of the new ones**).

6. Back up database schema (recommended)

We recommend backing up the database schema restore as close as possible to the uninstall to minimize the risk of data loss.

7. Back up files

Back up the following files from your original BSM servers:

- <Gateway Server installation directory>\AppServer\webapps\site.war\openapi\excels directory
- <Data Processing Server installation directory>\cmdb\general directory
- <Data Processing Server installation directory>\BLE\rules\<custom rules jar> file(s)
- <Gateway Server installation directory>\JRE\lib\security\cacerts
- <Gateway Server installation directory>\JRE64\lib\security\cacerts

8. Back up SHA analytics metadata (SHA only)

This procedure is only relevant for Service Health Analyzer users.

If you manually modified the SHA analytics metadata, the changes will be overwritten during the upgrade process. In order to prevent this, back up the relevant files before the upgrade and merge them with the new files after BSM 9.2x is installed.

Back up the following directory: **<SHA analytics server installation directory>/conf/analytics/metadata/default**

9. Disable RTSM integrations (optional)

If integrations are configured in the RTSM Integration Studio (for example, topology synchronization integrations between central UCMDB and RTSM), after upgrading, the Data Flow Probe will run population jobs immediately for active integration points, even if the integration is not scheduled. If you do not want the integration to run, disable the integration before running the upgrade from any BSM 9.x version.

10. Copy customized Java database connectivity properties (jdbc) - Oracle RAC (optional)

When upgrading, the custom modifications you made in the **jdbc.drivers.properties** file are overwritten. If you configured BSM with an Oracle RAC database, and if you have custom modifications in the jdbc.drivers.properties file:

Create a new file in **<HOME_BSM>/conf** called **jdbc.drivers.extension<number>.<name>.properties** and copy only the custom properties from jdbc.drivers.properties to this file before performing the upgrade.

For example, before upgrading, copy this string: **ddoracle.url=jdbc:mercury:oracle:TNSNamesFile=<BSM_HOME>\\conf\\bac-tnsnames.ora;TNSServerName=${sid}** from the **jdbc.drivers.properties** file to the **<HOME_BSM>/conf/jdbc.drivers.extension1.RAC.properties** file.

After upgrading, the **jdbc.drivers.extension1.RAC.properties** file is not overwritten so all the custom properties are saved this file is used by BSM 9.2x.

If there are multiple custom files in the **<HOME_BSM>/conf/** directory with the same property name, BSM uses the one with the latest extension number.

Installation Prerequisites - Windows

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

- It is recommended that you install BSM servers to a drive with at least 40 GB of free disk space. For more details on server system requirements, see the BSM System Requirements and Support Matrixes.
- If BSM servers, including the database servers, are installed on multiple network segments, it is highly recommended that the number of hops and the latency between the servers be minimal. Network-induced latency may cause adverse affects to the BSM application and can result in performance and stability issues. We recommend the network latency should be no more than 5 milliseconds, regardless of the number of hops. For more information, contact HP Software Support.
- BSM servers must be installed on dedicated machines and must not run other applications. Certain BSM components can coexist on BSM servers. For details on coexistence support, see the BSM System Requirements and Support Matrixes Guide.
- If you plan to use the IIS web server, install it prior to BSM installation and enable it after the installation is completed. For more information, see "Working with the Web Server" on page 110.
- BSM servers must not be installed on a drive that is mapped to a local or network resource.
- Due to certain web browser limitations, the names of server machines running the Gateway Server must consist only of alphanumeric characters (a-z, A-Z, 0-9), hyphens (-), and periods (.). For example, if the names of the machines running the Gateway Server contain underscores, it may not be possible to log into the BSM site when using Microsoft Internet Explorer 7.0 or later.
- During BSM server installation, you can specify a different path for the BSM directory (default is **C:\HPBSM**), but note that the full path to the directory must not contain spaces, cannot contain more than 15 characters, and should end with **HPBSM**.
- The installation directory name should consist of only alphanumeric characters (a-z, A-Z, 0-9).
- User Access Control (UAC) must be disabled before installing BSM. UAC is enabled by default in some version of Windows Server (for example: 2008 SP2) and must be manually disabled.
- If you plan to run BSM servers on a hardened platform (including using HTTPS protocol), review the hardening procedures described in the BSM Hardening Guide.
- If you do not have a profile database on your source environment, please add one before starting the upgrade. The database should be marked as the default profile database. Most users already have a profile database, but in some scenarios where BSM is being used exclusively for OMi, a profile database may not have been previously created.

- You must have administrator privileges to install BSM on the server machine.
- In the BSM cluster, open port 21212 on the Data Processing Server.

> **Note:** During installation, the value of the Windows Registry key HKLM\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\ReservedPorts is updated to include the following port ranges required by BSM: 1098-1099, 2506-2507, 8009-8009, 29000-29000, 4444-4444, 8083-8083, 8093-8093.
>
> These port ranges are not removed from the registry key at BSM uninstall. You should remove the ports from the registry key manually after uninstalling BSM if they are no longer needed by any other application.

Installation Prerequisites - Linux

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

- It is recommended that you install BSM servers to a drive with at least 40 GB of free disk space. The /tmp directory should have at least 2.5 GB of free disk space. You can change the /tmp directory by running the following command:

  ```
  export IATEMPDIR=/new/tmp/dir
  ```

  ```
  export _JAVA_OPTIONS=-Djava.io.tmpdir=/new/tmp/dir
  ```

  where `/new/tmp/dir` is the new /tmp directory

  For more details on server system requirements, see the BSM System Requirements and Support Matrixes.

- If BSM servers, including the database servers, are installed on multiple network segments, it is highly recommended that the number of hops and the latency between the servers be minimal. Network-induced latency may cause adverse affects to the BSM application and can result in performance and stability issues. We recommend the network latency should be no more than 5 milliseconds, regardless of the number of hops. For more information, contact HP Software Support.

- BSM servers must be installed on dedicated machines and must not run other applications. Certain BSM components can coexist on BSM servers. For details on coexistence support, see the BSM System Requirements and Support Matrixes Guide.

- Before installing BSM on a Linux machine, make sure that SELinux does not block it. You can do this by either disabling SELinux, or configuring it to enable java 32-bit to run.

  To disable SELinux, open the **/etc/selinux/config** file, set the value of **SELINUX=disabled**, and reboot the machine.

  On systems with SELinux disabled, the `SELINUX=disabled` option is configured in **/etc/selinux/config**:

  ```
  # This file controls the state of SELinux on the system.
  # SELINUX= can take one of these three values:
  #       enforcing - SELinux security policy is enforced.
  #       permissive - SELinux prints warnings instead of enforcing.
  #       disabled - No SELinux policy is loaded.
  SELINUX=disabled
  # SELINUXTYPE= can take one of these two values:
  #       targeted - Targeted processes are protected.
  #       mls - Multi Level Security protection.
  SELINUXTYPE=targeted
  ```

Also, the `getenforce` command returns **Disabled**:

```
~]$ getenforce
Disabled
```

To confirm that the aforementioned packages are installed, use the rpm utility:

```
~]$ rpm -qa | grep selinux
selinux-policy-3.12.1-136.el7.noarch
libselinux-2.2.2-4.el7.x86_64
selinux-policy-targeted-3.12.1-136.el7.noarch
libselinux-utils-2.2.2-4.el7.x86_64
libselinux-python-2.2.2-4.el7.x86_64
```

```
~]$ rpm -qa | grep policycoreutils
policycoreutils-2.2.5-6.el7.x86_64
policycoreutils-python-2.2.5-6.el7.x86_64
```

```
~]$ rpm -qa | grep setroubleshoot
setroubleshoot-server-3.2.17-2.el7.x86_64
setroubleshoot-3.2.17-2.el7.x86_64
setroubleshoot-plugins-3.0.58-2.el7.noarch
```

Before SELinux is enabled, each file on the file system must be labeled with an SELinux context. Before this happens, confined domains may be denied access, preventing your system from booting correctly.

To prevent this, configure `SELINUX=permissive` in the **/etc/selinux/config file**:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#       enforcing - SELinux security policy is enforced.
#       permissive - SELinux prints warnings instead of enforcing.
#       disabled - No SELinux policy is loaded.
SELINUX=permissive
# SELINUXTYPE= can take one of these two values:
#       targeted - Targeted processes are protected.
#       mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

As a root user, restart the system. During the next boot, file systems are labeled. The label process labels all files with an SELinux context:

```
~]# reboot
```

In permissive mode, SELinux policy is not enforced, but denials are logged for actions that would have been denied if running in enforcing mode.

Before changing to enforcing mode, as a root user, run the following command to confirm that SELinux did not deny actions during the last boot. If SELinux did not deny actions during the last boot, this command does not return any output.

```
~]# grep "SELinux is preventing" /var/log/messages
```

If there were no denial messages in the **/var/log/messages** file, configure `SELINUX=enforcing` in **/etc/selinux/config**:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#       enforcing - SELinux security policy is enforced.
#       permissive - SELinux prints warnings instead of enforcing.
#       disabled - No SELinux policy is loaded.
SELINUX=enforcing
# SELINUXTYPE= can take one of these two values:
#       targeted - Targeted processes are protected.
#       mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Reboot your system. After reboot, confirm that `getenforce` returns **Enforcing**:

```
~]$ getenforce
Enforcing
```

```
~]# sestatus
SELinux status:                 enabled
SELinuxfs mount:                /sys/fs/selinux
SELinux root directory:         /etc/selinux
Loaded policy name:             targeted
Current mode:                   enforcing
Mode from config file:          enforcing
Policy MLS status:              enabled
Policy deny_unknown status:     allowed
Max kernel policy version:      28
```

- To configure SELinux to enable java 32-bit to run, execute the command **setsebool –P allow_execmod on**.

- BSM servers must not be installed on a drive that is mapped to a network resource.

- Due to certain Web browser limitations, the names of server machines running the Gateway Server must only consist of alphanumeric characters (a-z, A-Z, 0-9), hyphens (-), and periods (.). For example, if the names of the machines running the Gateway Server contain underscores, it may not be possible to log in to the BSM site. To access the BSM site in this case, use the machine’s IP address instead of the machine name containing the underscore.

- If you plan to run BSM servers on a hardened platform (including using HTTPS protocol), review the hardening procedures described in the BSM Hardening Guide.

- You must be a root user to install BSM on the server machine.

- The **DISPLAY** environment variable must be properly configured on the BSM server machine. The machine from which you are installing must be running an X-Server as the upgrade process cannot be performed silently.

- If you do not have a profile database on your source environment, please add one before starting the upgrade. The database should be marked as the default profile database. Most users already have a profile database, but in some scenarios where BSM is being used exclusively for OMi, a profile database may not have been previously created.

- In the BSM cluster, open port 21212 on the Data Processing Server.

- Before installing BSM 9.26 on Oracle Linux (OEL) or Red Hat Enterprise Linux operating systems for supported 6.x versions and 7.x versions, you must install the following RPM packages on all machines running BSM:

■ glibc	■ libXext
■ glibc-common	■ libXtst
■ nss-softokn-freebl	■ compat-libstdc++-33
■ libXau	■ libXrender
■ libxcb	■ libgcc
■ libX11	■ openssl098e
■ compat-expat1	■ rpm-devel

To install the RPM packages listed in the upper table, run the RPM installation tool on all machines running BSM:

<BSM_install_folder>/rhel_oel_installation_fix/rpm_installer.sh.

- If the script fails to install any of the RPM packages, the following message appears:

  ```
  !!! ERROR: package <package name> has not been installed successfully
  ```

  ```
  In this case, refer the problem to your system administrator.
  ```

- If the script detects that an RPM package is already installed, it skips that package and continues with the next package.

  However, you can force the tool to try to re-install any pre-installed packages by adding the **f** parameter to the command:

  ```
  <BSM_install_folder>/rhel_oel_installation_fix/rpm_installer.sh f
  ```

If the Yum Linux upgrade service is not functional on your machine, you will need to download and install the necessary RPM packages manually by running the following command:

yum install -y openssl098e glibc.i686 glibc-common.i686 nss-softokn-freebl.i686 libXau.i686 libxcb.i686 libX11.i686 libXext.i686 libXtst.i686 compat-libstdc++-33.i686 libXrender.i686 libgcc.i686 compat-expat1 rpm-devel

The version of these packages changes from system to system. You can download the packages from any RPM repository site that matches your system specifications. The following RPM search tool can assist you in this task (http://rpm.pbone.net/).

To determine the package version you need to download, execute the following command in a terminal window:

rpm –qa ${PACKAGE_NAME} (ex: rpm -qa glibc)

The command will return the following text:

```
# rpm -qa glibc

glibc-2.12-1.132.el6.x86_64
```

This text indicates the package version required for your machine.

In this case, you would need to download the i686 architecture package with the same version - glibc-2.12-1.132.el6.i686 – and install it manually.

Install the Latest BSM 9.1x Minor-Minor Release and Patch

Install the latest minor minor version of BSM 9.1x and patch (if available).

1. **Prerequisites**

   - It is recommended that you back up all BSM databases and files you made custom changes to.
   - Make sure that BSM has been fully stopped on all machines and that there are no open connections (for example, from Windows Explorer) from any machines to the BSM root directory or any of its subdirectories.

2. **Download and install the latest patch and intermediate patch from the HP Software Support site**

   a. Go to the HP Software Support web site (https://softwaresupport.hp.com) and sign in.

   b. Click **Search**.

   c. Select the relevant product, most recent 9.1x minor minor version, and operating system.

   d. Under Document Type, select **Patches**.

   e. Locate the installation files.

   f. Save the package locally and launch the relevant setup file to install the patch.

   g. Run the installation files on all BSM servers (Gateway and Data Processing).

   h. Run the post-installation wizard. This wizard follows the patch installation automatically.

   i. Repeat this procedure for the latest intermediate patch (if available).

3. **Re-apply manual changes**

   If you have made changes in the HP BSM root directory to files that are updated during patch installation, for example, while performing hardening procedures on your system, you must reapply those changes after patch installation on all relevant BSM machines. You can access your modified files from the backup folder located at: <HP BSM root directory>\installation\<PATCH_NAME>\backup\<PATH_TO_FILE>

Configure HPOM Event Buffering

If you were using HPOM to forward events to BSM, perform this procedure:

During the migration, HPOM continues to attempt sending events to the BSM environment. If the OMi servers cannot be reached, HPOM starts to buffer the events until the servers are online again. Depending on the length of the outage and the number of events, adjust the maximum length of the delivery timeout and the maximum size of the buffer file so that HPOM does not discard any unsent events.

To configure HPOM for Windows event buffering, complete the following steps:

1. In the console tree, right-click **Operations Manager**, and then click **Configure > Server...**. The Server Configuration dialog box appears.

2. Click **Namespaces**, and then click **Server-based Flexible Management**.

3. Note the values of **Forwarding delivery timeout (in seconds)** and **Forwarding queue size maximum (in megabytes)**. Record these values to enable you to restore them after the upgrade.

4. Change the value of **Forwarding delivery timeout (in seconds)** (default 1 hour). For example, to set the timeout to 7 days, type **604800**.

5. Change the value of **Forwarding queue size maximum (in megabytes)** (default 50 MB). For example, to set the buffer size to 2 GB, type 2000.

6. *Optional:* Change the value of **Forwarding queue size warning threshold (in megabytes)** (default 40 MB). For example, to set the warning threshold to 2 GB, type 2000.

7. Click **OK** to save the new values and close the dialog box.

To configure HPOM for UNIX or Linux event buffering, complete the following steps:

1. *Optional:* Check the current values of the HTTPS-based forwarding parameters, type:

   ```
   ovconfget -ovrg server opc.opcforwm
   ```

   The command displays only the non-default values. Record these values to enable you to restore them after the upgrade.

2. Adjust the timeout. For example, to set the timeout to 2 days, type:

   ```
   ovconfchg -ovrg server -ns opc.opcforwm -set REQUEST_TIMEOUT 604800
   ```

3. *Optional:* In HPOM for UNIX or Linux, the buffer size is by default set to 0 (unlimited). To change the buffer size, type

   ```
   ovconfchg -ovrg server -ns opc.opcforwm -set MAX_FILE_BUFFER_SIZE <
   bytes>
   ```

Note: When the upgrade is complete, you can restore the original values of the buffer.

Pre-Upgrade Tool

The pre-upgrade tool temporarily stores some configuration and certificates in the BSM database to help migrate them to 9.2x. It should be run on all BSM Gateway and the active DPS servers.

1. **Run the Pre-Upgrade Tool on all BSM Gateway servers**

   On all BSM Gateway servers, run the PreUpgradeTool using the following command.

   - **Linux:** <HPBSM Install Directory>/opr/bin/PreUpgradeTool.sh -d
   - **Windows:** <HPBSM Install Directory>\opr\bin\PreUpgradeTool.bat -d

2. **Run the Pre-Upgrade Tool on the Active Data Processing Server**

   On the active BSM Data Processing Server, run the PreUpgradeTool using the following command.

   - **Linux:** <HPBSM Install Directory>/opr/bin/PreUpgradeTool.sh -d
   - **Windows:** <HPBSM Install Directory>\opr\bin\PreUpgradeTool.bat -d

   If there is a large number of closed events stored in the database, upgrading can take a long time. If recommended by the tool, and you want to archive closed events before upgrading starts, enter "Yes" (y) when prompted and specify the target location for the archive file.

Additional Information

Install the latest patches to get the newest version of the Pre-upgrade tool. The tool should first be run on a Gateway Server and then on the active Data Processing Server.

The Pre-Upgrade Tool executes the following steps:

- Backs up files required by the upgraded 9.2x installation (event sync scripts, certificates, and so on)
- Ensures the Sonic Queue is emptied
- Gives the customer the ability to shorten the upgrade process by choosing to not upgrade closed events

Note: If you did not run the Pre-Upgrade Tool before shutting down or uninstalling BSM 9.1x, the following will not be migrated to the 9.2x installation:

- Certificate data including trust relationships for connected servers.
- If you have created Groovy scripts in your BSM 9.1x environment, these scripts are not imported to your BSM 9.2x installation.
- Events from your BSM 9.1x environment may be lost.

In this case, you should execute the following steps manually on your BSM 9.2x installation after the upgrade is successfully completed:

- Define trust relationships for connected servers. For details, see the OMi Setup section of the BSM Application Administration Guide.
- If you have any Groovy scripts that are used to forward events, import them from your production environment if possible.

Chapter 3: Uninstall BSM 9.1x

Disable BSM on all 9.1x servers by selecting **Start > Programs > HP Business Service Management > Administration > Disable HP Business Service Management**.

Uninstall BSM 9.1x on all servers using one of the following procedures:

Uninstalling BSM servers in a Windows environment

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

1. Uninstall BSM via the Windows user interface or silently.

   a. Uninstall BSM Using the Windows user interface:

      i. On the machine from which you are uninstalling HP Business Service Management, select **Start > Control Panel > Programs and Features**. Select **HP Business Service Management**.

      ii. Click **Remove,** wait for the BSM uninstall script to remove any present updates, and follow the on-screen instructions when prompted.

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

      iii. If the **Show Updates** check box is selected, all the updates installed over BSM are displayed. When BSM is removed, all updates are also removed.

   b. Uninstall BSM silently:

      i. Stop all BSM servers.

      ii. Run the command **<HPBSM Installation Directory>\installation\bin\uninstall.bat -i silent**

2. Restart the server machine.

Uninstalling BSM servers in a Linux environment

1. Log in to the server as user **root**.

2. To access the uninstall program, type: **cd /opt/HP/BSM/installation/bin**

3. Stop all BSM servers.

4. Run the following script to uninstall in UI mode: **./uninstall.sh**. To peform this step in silent mode, use the command **./uninstall.sh -i silent**.

5. The BSM uninstall program begins. Follow the on-screen instructions. When the uninstall program is complete, a success message is displayed.

6. Click **Finish**.

7. Check the **HPBsm_<version>_HPOvInstaller.txt** log file located in the **/tmp** directory for errors. Previous installation files can be found in the **/tmp/HPOvInstaller/HPBsm_<version>** directory.

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

Chapter 4: Migrate Database to MS SQL 2012 (optional)

If you would like to use MS SQL 2012, migrate your staging database to a new MS SQL 2012 database. For details, refer to MS SQL documentation.

Chapter 5: Install BSM 9.26

Install BSM 9.26 on a set of BSM servers. This set can be either one Gateway Server and one Data Processing Server or a single one-machine server. In the first case, run the wizards on the Data Processing Server first. The wizard will direct you as to when to begin installation on the Gateway Server.

Do not install additional servers at this time, you can install them towards the end of the workflow.

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

Go to My software updates (use your HP Passport credentials) and click the BSM 9.26 installation package.

Or

1. Go to the HP Software Support web site (https://softwaresupport.hp.com) and sign in.
2. Click **Search**.
3. For Windows, select **Application Performance Management (BAC) > 9.26> Windows**).

   For Linux, select **Application Performance Management (BAC) > 9.26> Linux**).
4. Under Document Type, select **Patches**.
5. Locate the BSM 9.26 package and save it locally.
6. Launch the relevant setup file to install BSM 9.26.

Alternatively, you can run these wizards in silent mode. For details, see "Installing BSM Silently" on page 132.

For more details, see the following sections:

- "Installing BSM on a Linux Platform" on page 115
- "Installing BSM on a Windows Platform" on page 107

Chapter 6: Merge SHA analytics metadata

If you backed up your SHA analytics metadata, your manual changes should now be merged onto the new files.

Open any files that had manual changes in the backed up directory:

<SHA analytics server installation directory>/conf/analytics/metadata/default

Merge them using a text editor onto the same files in the following directory:

<Data Processing Server installation directory>/conf/analytics/metadata/default

Chapter 7: 9.26 Upgrade Wizard

Run the upgrade wizard on the BSM 9.26 servers to transfer your data from the original 9.1x format to the 9.26 format.

You should only have one set of 9.26 servers installed at this time. Do not run the upgrade wizard on more than one set of 9.26 servers.

The upgrade wizard can be found on all Gateway, Data Processing, and One-machine servers in the following locations:

- Windows:

  <BSM Home Directory>\bin\upgrade_wizard_run_from91.bat

- Linux:

  /opt/HP/BSM/bin/upgrade_wizard_run_from91.sh

For details about the upgrade wizard, see "Upgrade Wizard" on page 138.

Chapter 8: Post-Installation Procedures

Perform these tasks to complete the upgrade process:

General Post-Installation Procedures

Perform these tasks to complete the upgrade process:

> **Note:** If you use the IIS web server, stop the **IIS Web Server** service before running the post installation procedure. Do not change the **Startup Type** setting of this service. Do not remove **IIS Web Server** as role.

- ## Upgrading Customized Service Health KPIs

  In BSM 9.2x, the internal format of the KPI parameter "KPI is critical if" was changed. As a result, this value may be incorrect following upgrade, if you have created or customized KPIs.

  To fix this, perform the following:

  a. Access the JMX console on the Gateway Server via http://<Gateway Server name>:29000/jmx-console, and enter your user name and password.

  b. Click **service=repositories-manager** in the Topaz section.

  c. Locate the **upgradeCriticalIf()** operation.

  d. Click **Invoke**.

- ## Service Health and SLM repository post-upgrade procedure

  When you installed BSM 9.1x, content that was imported using out-of-the-box content packs was categorized in the Service Health and SLM repositories as **Custom** or **Predefined (Customized)**, rather than as **Predefined**.

  After you install BSM 9.2x, run the Repository Data Transfer tool to automatically re-label this out-of-the-box content in the repositories as **Predefined**, using the following steps:

  a. Access the JMX console on the Gateway Server via **http://<Gateway Server name>:29000/jmx-console**, and enter your user name and password.

  b. Click **service=content-manager** in the Topaz section.

  c. Locate the **invokeRepositoryTool()** operation.

  d. Click **Invoke**.

> **Note:** If you have customized any repository items, they are not affected by this procedure.

- ### Service Health Top View post-upgrade

  In BSM 9.2x, extensive improvements were made to the Top View component. For details, refer to the sections on Top View in the BSM User Guide and in the BSM Application Administration Guide.

  As a result of the changes made to the underlying Top View infrastructure, the following infrastructure settings from earlier BSM versions are now deprecated in BSM 9.2x:

  - **Top View Data Refresh Rate - For Legacy MyBSM**
  - **Top View Font Name**
  - **Top View Green Color Property**

  These infrastructure settings were located in the Service Health Application - Top View Properties section of the Service Health Application infrastructure settings. If you customized these settings prior to upgrade, your customizations are removed.

  In addition, if you used a custom background image for Top View, after upgrade save the image in `<Gateway Server root directory>/AppServer/webapps/site.war/images/topview`, and enter the image file name in the **Custom Background Image Name** infrastructure setting.

- ### SLM - Upgrading SLAs from BSM 9.x to 9.2x using Baselining

  The following section is only relevant for users who have SLAs with BPM transaction CIs with the BPM Percentile Sample-Based rule defined on performance HIs, or Groovy rule (Rules API).

  BSM 9.2x introduces the concept of baselining. In End User Management, Business Process Monitor performance metrics are analyzed over a period of time, and are used to provide a baseline comparison for establishing acceptable performance ranges.

  Baselining influences the transaction thresholds, and will therefore have an impact on your SLA calculation. If you want to minimize this influence so that your SLA calculation results are similar to pre-baselining, perform the steps described in "Upgrading SLAs from BSM 9.x to 9.2x to Work with Baselining" on page 143.

- ### ETI display label

  If you have alerts configured with an Event Template, the ETI display label needs to be manually upgraded. To upgrade the display label, execute the following JMX command from the BSM 9.2x Data Processing Server:

  BAC.Alerts.Upgrade service=change EtI name to ID update()

- ### Upgrade custom reports

  In some cases, custom reports are not migrated properly during the upgrade. If this is the case, execute the following command from the JMX console as follows:

  a. Open the JMX console from **http://<FQDN of BSM Gateway server>:29000/jmx-console/**

  b. In the Topaz section, select **EUM Custom report upgrader service**.

  c. Complete the fields and click **Invoke**.

- ### Delete temporary internet files

  When logging into BSM for the first time after upgrading, delete the browser's temporary Internet files. This should be done on each browser that accesses BSM.

- ### SHA baseline data

  The following note is relevant if you were using SHA with Performance or Operations Agents which include one of the following SPIs: WebLogic, WebSphere, Oracle, MSSQL.

  The baseline may be inaccurate for at least one week after running the upgrade wizard. This is due to an improvement in the way instances in the SPIs are interpreted by SHA.

- ### Disable firewall between BSM Gateway and Data Processing servers

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

  Additionally, to enable BSM users and data collectors to communicate with the BSM Gateway servers, you must leave open the relevant ports depending on your BSM configuration. The required ports are typically 443 or 80, and 383. For details, see "Port Usage" in the BSM Platform Administration Guide.

- Update Data Collectors

  See the System Requirements and Support Matrixes, available from **Help > Planning and Deployment** and the Updated Components section in the HP Business Service Management Release Notes to determine if you must upgrade your data collector to the latest supported version.

- Copy files from production server or restore them from backup

  Restore the following files to the BSM:

  - <Gateway Server installation directory>/AppServer/webapps/site.war/openapi/excels directory
  - <Data Processing Server installation directory>/cmdb/general directory
  - <Data Processing Server installation directory>/BLE/rules/<custom rules jar> file(s)
  - <Gateway Server installation directory>/JRE/lib/security/cacerts
  - <Gateway Server installation directory>/JRE64/lib/security/cacerts

- Reconfigure Integration with HPOM

  This procedure is only required if you are performing a staging upgrade. If you had previously configured an integration with HPOM, repeat the following procedure that you performed when configuring this connection for the first time: "How to Set Up a Forwarding Target in the HPOM for UNIX Node Bank" in the BSM - Operations Manager Integration Guide.

- Perform hardening procedures

  If your original environment was secured with SSL and you are upgrading using a staging environment, you need to repeat the hardening procedures described in the BSM Hardening Guide.

  If your original environment was secured with SSL and you are upgrading directly, you need to repeat the following hardening procedures:

  a. If you had previously made changes to **<HP BSM root directory>\EJBContainer\server\mercury\deploy\jboss-web.deployer\server.xml** while performing hardening procedures on your system, repeat the “Securing JBOSS” procedure in the Hardening Guide after the patch installation on all relevant BSM machines.

  b. If you had previously configured SSL on an IIS web server used by BSM, you need to verify HTTPS port binding in IIS is set to the correct port (443).

  c. If you had previously configured SSL on the Apache web server used by BSM, you may need to reapply the changes to httpd.conf and httpd-ssl.conf files as follows:

  - In **<HP BSM root directory>\WebServer\conf\httpd.conf**, uncomment the following two lines:

    LoadModule ssl_module modules/mod_ssl.so

    Include conf/extra/httpd-ssl.conf

  - In **<HP BSM root directory>\WebServer\conf\extra\httpd-ssl.conf**, specify paths to **SSLCertificateFile** and **SSLCertificateKeyFile**

  - Restart the HP BSM Apache web service

- ## Ensure all processes started properly

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

- ## Check installation log files

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

  In a Windows environment, this log file, along with additional log files for separate installation packages, is located in the **%temp%\..\HPOvInstaller\<BSM version>** directory.

  In a Linux environment, the logs files are located in the **/tmp/HPOvInstaller/<BSM version>** directory.

  The installer log file name is in the following format:

  HPBsm_<VERSION>_<DATE>_ HPOvInstallerLog.html or **HPBsm_<VERSION>_<DATE>_ HPOvInstallerLog.txt** (for example, HPBsm_9.26_2015.10.21_13_34_HPOvInstallerLog.html).

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

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

- ## Overwrite custom changes (optional)

  BSM 9.26 comes with built in content packs. If any of the data in these content packs conflicts with a previously existing custom change, BSM keeps the custom change and does not overwrite it.

  To overwrite your custom changes with the new 9.26 data:

a. Open the Content Packs page from **Admin > Platform > Content Packs**.

b. Select each content pack. In the content pack summary, there is a column indicating the origin of each artifact. For each item who value is **predefined (customized)**, this indicates that the artifact was customized and is different from the one delivered with 9.26.

c. To overwrite a change, locate the artifact in the corresponding admin user interface and select **restore to default**.

- ### Restore BSM service changes

If you manually configured different users to run BSM services, these settings must be configured again. For details, see "Changing BSM Service Users " on page 141.

- ### Install component setup files

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

Note:

- The components on the Downloads page are updated for each major and minor release (for example, 9.00 and 9.20). To download updated components for minor minor releases and patches (for example, 9.26), go to the HP Software Support site (https://softwaresupport.hp.com).
- You can install a component by using the component's setup file directly from the network. For details on installing a component, refer to the individual documentation for the component you want to install. The relevant documentation is available from the Downloads page in BSM after the component's setup files are copied to the Downloads page.

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

- ### Enable IPv6 Support (optional)

BSM by default communicates using IPv4. If your environment uses IPv4 and IPv6, you can choose to use either IPv4 or IPv6, but not both.To enable IPv6, run the following commands on all BSM servers (GW and DPS):

ovconfchg -ns sec.cm.server -set IsIPV6Enabled TRUE

ovc -kill

ovc -start

- **Update the LW-SSO Configuration.**

  You must update the LW-SSO configuration even if you are not using LW-SSO authorization. Be sure to install all patches before performing this step. For instructions, see the BSM 9.26 Build Patch Installation Guide (https://softwaresupport.hpe.com/km/KM02140729).

  a. Go to the JMX console – LW-SSO Configuration :

     http://<Gateway or Data Processing Server >:29000/mbean?objectname=Topaz%3Aservice%3DLW-SSO+Configuration

     where

     <Gateway or Data Processing Server name> is the name of the machine on which BSM is running.

  b. Search for InitString and copy the value.

  c. Access the flat xml file located at:

     \HPBSM\conf\settings\SingleSignOn\lwssofmconf.xml.

  d. Search for InitString and paste the value you just copied.

  e. Go to the JMX console – Infrastructure Settings Manager:

     http://<Gateway or Data Processing Server name>:29000/mbean?objectname=Foundations%3Aservice%3DInfrastructure+Settings+Manager

     where

     <Gateway or Data Processing Server name> is the name of the machine on which BSM is running.

     Note: This step must be performed in either Firefox or Chrome.

  f. Search for the **setGlobalSettingValue()** method.

  g. Enter the following values and invoke the method:

- **contextName:** SingleSignOn
- **settingName:** lw.sso.configuration.xml
- **newValue:** paste the content of the lwssofmconf.xml file

> **Note:** Format the content of the lwssofmconf.xml file on one line.

Starting and Stopping BSM

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

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

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

To start or stop BSM in Windows:

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

To start or stop BSM in Linux:

/opt/HP/BSM/scripts/run_hpbsm {start | stop | restart}

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

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

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

Logging In and Out

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

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

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

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

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

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

2. Enter the default administrator user (“admin”), and the password specified in the Setup and Database Configuration utility, and click **Log In**. After logging in, the user name appears at the top right.

3. (Recommended) Create additional administrative users to enable BSM administrators to access the system. For details on creating users in the BSM system, see "User Management" in the BSM Platform Administration Guide.

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

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

To log out:

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

Adding Additional BSM Servers

After you have a working BSM 9.26 environment, you can add new Gateway and Data Processing servers as desired.

To add new BSM servers to an existing BSM environment:

1. Go to the HP Software Support web site (https://softwaresupport.hp.com) and sign in.

2. Click **Search**.

3. For Windows, select **Application Performance Management (BAC) > 9.26 > Windows**).

   For Linux, select **Application Performance Management (BAC) > 9.26 > Linux**).

4. Under Document Type, select **Patches**.

5. Locate the 9.26 patch and save the package locally.

6. Launch the relevant setup file to install the patch.

7. Run the installation files on all BSM servers (Gateway and Data Processing).

8. Run the Setup and Database Configuration utility.

   - **Windows:** On the BSM server, select **Start > Programs > HP Business Service Management > Administration > Configure HP Business Service Management**. Alternatively, you can run the file directly from **<BSM_Installation_Directory>\bin\config-server-wizard.bat**.

   - **Linux:** On the BSM server machine, open a terminal command line and launch **/opt/HP/BSM/bin/config-server-wizard.sh**.

   For more details about this utility, see "Server Deployment and Setting Database Parameters" on page 121.

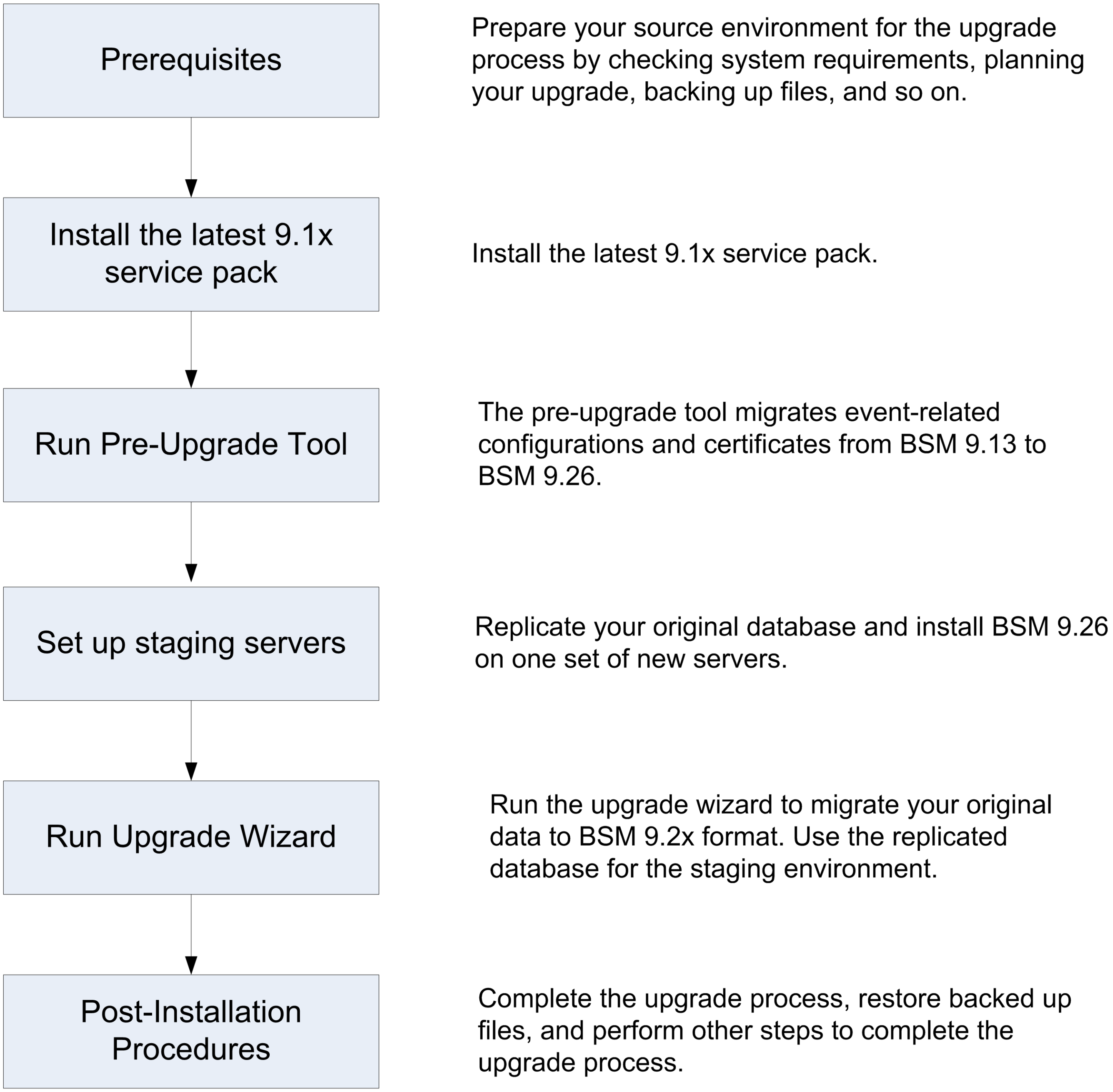
9. Restart all BSM servers.

   After you have installed all additional servers, restart all other BSM servers and data collectors to allow them to recognize the new servers.

Part II: Staging Upgrade

Chapter 9: Overview of BSM 9.1x to BSM 9.2x Staging Upgrade

The upgrade from BSM 9.1x to BSM 9.2x involves a number of milestones. The following diagram shows the major steps and how they affect your environment.



Prerequisites

Prepare your source environment for the upgrade process by checking system requirements, planning your upgrade, backing up files, and so on.

Install the latest 9.1x service pack

Install the latest 9.1x service pack.

Run Pre-Upgrade Tool

The pre-upgrade tool migrates event-related configurations and certificates from BSM 9.13 to BSM 9.26.

Set up staging servers

Replicate your original database and install BSM 9.26 on one set of new servers.

Run Upgrade Wizard

Run the upgrade wizard to migrate your original data to BSM 9.2x format. Use the replicated database for the staging environment.

Post-Installation Procedures

Complete the upgrade process, restore backed up files, and perform other steps to complete the upgrade process.

Chapter 10: Prerequisites

Perform all steps specified in this chapter before continuing with the upgrade process.

General Prerequisites

Perform the following steps where relevant before continuing with the upgrade process.

1. ## Create deployment plan

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

2. ## Create upgrade plan

   Create an upgrade plan, including such items as whether you will be performing a staging or direct upgrade, estimated down-time, and so on.

   Allocate additional disk space. The database replication requires 1.5 times the amount of disk space in your original (production) database. If you want to save original data by selecting this option in the upgrade wizard, you will need two times the amount of disk space in your original database.

   Staging Data Replicator. If you need to run the Staging Data Replicator (SDR) on an external server, you will need an additional server to run the SDR during staging mode. For more information, see "Staging Data Replicator" on page 73.

   Database Administrator. During the upgrade process, the services of your Database Administrator may be required.

   Multiple servers. If you are upgrading multiple BSM servers, perform the upgrade procedure on only one Gateway and one Data Processing server. When the upgrade process is complete, install any additional servers and connect them to the database schemas using Configuration Wizard as described in the BSM Installation Guide.

3. ## Order and register licenses

   Order licenses with a sales representative based on your deployment plan. Register your copy of BSM to gain access to technical support and information on all HP products. You will also be eligible for updates and upgrades. You can register your copy of BSM on the HP Software Support site https://softwaresupport.hp.com.

4. ### Set up database server

   > **Note:** You cannot change the database type during the upgrade if you want to keep your configuration and runtime data. For example, if you currently run Oracle, you must also use Oracle with the new BSM environment.
   >
   > In BSM 9.20, support for SQL Server 2005 was removed. In BSM 9.23, support for SQL Server 2012 was added. Make sure the compatibility parameter is up-to-date before starting the upgrade.

   Verify that your database has the following settings:

   - Oracle: The Oracle Partitioning option must be enabled. Make sure that the parameter **RECYCLEBIN** is set to **Off**, as specified in the BSM Database Guide.
   - SQL: If you are upgrading with a staging environment, the collation must be identical in both the production and staging environments.

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

5. ### Migrate operating systems (optional)

   - BSM supports switching the operating systems of your Gateway and Data Processing servers if you are upgrading in staging mode (for example, from Windows to Linux).
   - BSM supports switching the operating system of your database server during the upgrade (staging and direct) provided that this is also supported by your database vendor.
   - BSM 9.2x no longer supports Windows Server 2003. Windows Server 2003 users upgrading to BSM 9.2x must perform a staging upgrade and must switch to a supported operating system.

6. ### Set up web server (optional)

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

7. ### Resolve time zone inconsistencies

   All BSM machines in the staging environment must be set to the same time zone, daylight savings time, and time as the source environment. This includes BSM Gateway, Data Processing, and Database servers. Incompatible time zone settings can lead to inaccuracies in reporting historical data.

8. Migrate manual changes to conf directory

If you made changes to any files in the **<HP BSM root directory>\WebServer\conf** directory, back up the changed files and, after the upgrade, reapply the changes to the new files (**do not copy the old files on top of the new ones**).

9. Back up database schema (recommended)

We recommend backing up the database schema restore as close as possible to the uninstall to minimize the risk of data loss.

10. Back up SHA analytics metadata (SHA only)

This procedure is only relevant for Service Health Analyzer users.

If you manually modified the SHA analytics metadata, the changes will be overwritten during the upgrade process. In order to prevent this, back up the relevant files before the upgrade and merge them with the new files after BSM 9.2x is installed.

Back up the following directory: **<SHA analytics server installation directory>/conf/analytics/metadata/default**

11. Disable RTSM integrations (optional)

If integrations are configured in the RTSM Integration Studio (for example, topology synchronization integrations between central UCMDB and RTSM), after upgrading, the Data Flow Probe will run population jobs immediately for active integration points, even if the integration is not scheduled. If you do not want the integration to run, disable the integration before running the upgrade from any BSM 9.x version.

12. Copy customized Java database connectivity properties (jdbc) - Oracle RAC (optional)

When upgrading, the custom modifications you made in the **jdbc.drivers.properties** file are overwritten. If you configured BSM with an Oracle RAC database, and if you have custom modifications in the jdbc.drivers.properties file:

Create a new file in **<HOME_BSM>/conf** called **jdbc.drivers.extension<number>.<name>.properties** and copy only the custom properties from jdbc.drivers.properties to this file before performing the upgrade.

For example, before upgrading, copy this string: **ddoracle.url=jdbc:mercury:oracle:TNSNamesFile=<BSM_HOME>\\conf\\bac-tnsnames.ora;TNSServerName=${sid}** from the **jdbc.drivers.properties** file to the **<HOME_BSM>/conf/jdbc.drivers.extension1.RAC.properties** file.

After upgrading, the **jdbc.drivers.extension1.RAC.properties** file is not overwritten so all the custom properties are saved this file is used by BSM 9.2x.

If there are multiple custom files in the **<HOME_BSM>/conf/** directory with the same property name, BSM uses the one with the latest extension number.

Installation Prerequisites - Windows

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

- It is recommended that you install BSM servers to a drive with at least 40 GB of free disk space. For more details on server system requirements, see the BSM System Requirements and Support Matrixes.
- If BSM servers, including the database servers, are installed on multiple network segments, it is highly recommended that the number of hops and the latency between the servers be minimal. Network-induced latency may cause adverse affects to the BSM application and can result in performance and stability issues. We recommend the network latency should be no more than 5 milliseconds, regardless of the number of hops. For more information, contact HP Software Support.
- BSM servers must be installed on dedicated machines and must not run other applications. Certain BSM components can coexist on BSM servers. For details on coexistence support, see the BSM System Requirements and Support Matrixes Guide.
- If you plan to use the IIS web server, install it prior to BSM installation and enable it after the installation is completed. For more information, see "Working with the Web Server" on page 110.
- BSM servers must not be installed on a drive that is mapped to a local or network resource.
- Due to certain web browser limitations, the names of server machines running the Gateway Server must consist only of alphanumeric characters (a-z, A-Z, 0-9), hyphens (-), and periods (.). For example, if the names of the machines running the Gateway Server contain underscores, it may not be possible to log into the BSM site when using Microsoft Internet Explorer 7.0 or later.
- During BSM server installation, you can specify a different path for the BSM directory (default is **C:\HPBSM**), but note that the full path to the directory must not contain spaces, cannot contain more than 15 characters, and should end with **HPBSM**.
- The installation directory name should consist of only alphanumeric characters (a-z, A-Z, 0-9).
- User Access Control (UAC) must be disabled before installing BSM. UAC is enabled by default in some version of Windows Server (for example: 2008 SP2) and must be manually disabled.
- If you plan to run BSM servers on a hardened platform (including using HTTPS protocol), review the hardening procedures described in the BSM Hardening Guide.
- If you do not have a profile database on your source environment, please add one before starting the upgrade. The database should be marked as the default profile database. Most users already have a profile database, but in some scenarios where BSM is being used exclusively for OMi, a profile database may not have been previously created.

- You must have administrator privileges to install BSM on the server machine.
- In the BSM cluster, open port 21212 on the Data Processing Server.

Note: During installation, the value of the Windows Registry key HKLM\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\ReservedPorts is updated to include the following port ranges required by BSM: 1098-1099, 2506-2507, 8009-8009, 29000-29000, 4444-4444, 8083-8083, 8093-8093.

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

Installation Prerequisites - Linux

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

- It is recommended that you install BSM servers to a drive with at least 40 GB of free disk space. The /tmp directory should have at least 2.5 GB of free disk space. You can change the /tmp directory by running the following command:

  ```
  export IATEMPDIR=/new/tmp/dir
  ```

  ```
  export _JAVA_OPTIONS=-Djava.io.tmpdir=/new/tmp/dir
  ```

  where `/new/tmp/dir` is the new /tmp directory

  For more details on server system requirements, see the BSM System Requirements and Support Matrixes.

- If BSM servers, including the database servers, are installed on multiple network segments, it is highly recommended that the number of hops and the latency between the servers be minimal. Network-induced latency may cause adverse affects to the BSM application and can result in performance and stability issues. We recommend the network latency should be no more than 5 milliseconds, regardless of the number of hops. For more information, contact HP Software Support.

- BSM servers must be installed on dedicated machines and must not run other applications. Certain BSM components can coexist on BSM servers. For details on coexistence support, see the BSM System Requirements and Support Matrixes Guide.

- Before installing BSM on a Linux machine, make sure that SELinux does not block it. You can do this by either disabling SELinux, or configuring it to enable java 32-bit to run.

  To disable SELinux, open the **/etc/selinux/config** file, set the value of **SELINUX=disabled**, and reboot the machine.

  On systems with SELinux disabled, the `SELINUX=disabled` option is configured in **/etc/selinux/config**:

  ```
  # This file controls the state of SELinux on the system.
  # SELINUX= can take one of these three values:
  #       enforcing - SELinux security policy is enforced.
  #       permissive - SELinux prints warnings instead of enforcing.
  #       disabled - No SELinux policy is loaded.
  SELINUX=disabled
  # SELINUXTYPE= can take one of these two values:
  #       targeted - Targeted processes are protected.
  #       mls - Multi Level Security protection.
  SELINUXTYPE=targeted
  ```

Also, the `getenforce` command returns **Disabled**:

```
~]$ getenforce
Disabled
```

To confirm that the aforementioned packages are installed, use the rpm utility:

```
~]$ rpm -qa | grep selinux
selinux-policy-3.12.1-136.el7.noarch
libselinux-2.2.2-4.el7.x86_64
selinux-policy-targeted-3.12.1-136.el7.noarch
libselinux-utils-2.2.2-4.el7.x86_64
libselinux-python-2.2.2-4.el7.x86_64
```

```
~]$ rpm -qa | grep policycoreutils
policycoreutils-2.2.5-6.el7.x86_64
policycoreutils-python-2.2.5-6.el7.x86_64
```

```
~]$ rpm -qa | grep setroubleshoot
setroubleshoot-server-3.2.17-2.el7.x86_64
setroubleshoot-3.2.17-2.el7.x86_64
setroubleshoot-plugins-3.0.58-2.el7.noarch
```

Before SELinux is enabled, each file on the file system must be labeled with an SELinux context. Before this happens, confined domains may be denied access, preventing your system from booting correctly.

To prevent this, configure `SELINUX=permissive` in the **/etc/selinux/config file**:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#       enforcing - SELinux security policy is enforced.
#       permissive - SELinux prints warnings instead of enforcing.
#       disabled - No SELinux policy is loaded.
SELINUX=permissive
# SELINUXTYPE= can take one of these two values:
#       targeted - Targeted processes are protected.
#       mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

As a root user, restart the system. During the next boot, file systems are labeled. The label process labels all files with an SELinux context:

```
~]# reboot
```

In permissive mode, SELinux policy is not enforced, but denials are logged for actions that would have been denied if running in enforcing mode.

Before changing to enforcing mode, as a root user, run the following command to confirm that SELinux did not deny actions during the last boot. If SELinux did not deny actions during the last boot, this command does not return any output.

```
~]# grep "SELinux is preventing" /var/log/messages
```

If there were no denial messages in the **/var/log/messages** file, configure `SELINUX=enforcing` in **/etc/selinux/config**:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#       enforcing - SELinux security policy is enforced.
#       permissive - SELinux prints warnings instead of enforcing.
#       disabled - No SELinux policy is loaded.
SELINUX=enforcing
# SELINUXTYPE= can take one of these two values:
#       targeted - Targeted processes are protected.
#       mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Reboot your system. After reboot, confirm that `getenforce` returns **Enforcing**:

```
~]$ getenforce
Enforcing
```

```
~]# sestatus
SELinux status:                 enabled
SELinuxfs mount:                /sys/fs/selinux
SELinux root directory:         /etc/selinux
Loaded policy name:             targeted
Current mode:                   enforcing
Mode from config file:          enforcing
Policy MLS status:              enabled
Policy deny_unknown status:     allowed
Max kernel policy version:      28
```

- To configure SELinux to enable java 32-bit to run, execute the command **setsebool –P allow_execmod on**.

- BSM servers must not be installed on a drive that is mapped to a network resource.

- Due to certain Web browser limitations, the names of server machines running the Gateway Server must only consist of alphanumeric characters (a-z, A-Z, 0-9), hyphens (-), and periods (.). For example, if the names of the machines running the Gateway Server contain underscores, it may not be possible to log in to the BSM site. To access the BSM site in this case, use the machine's IP address instead of the machine name containing the underscore.

- If you plan to run BSM servers on a hardened platform (including using HTTPS protocol), review the hardening procedures described in the BSM Hardening Guide.

- You must be a root user to install BSM on the server machine.

- The **DISPLAY** environment variable must be properly configured on the BSM server machine. The machine from which you are installing must be running an X-Server as the upgrade process cannot be performed silently.

- If you do not have a profile database on your source environment, please add one before starting the upgrade. The database should be marked as the default profile database. Most users already have a profile database, but in some scenarios where BSM is being used exclusively for OMi, a profile database may not have been previously created.

- In the BSM cluster, open port 21212 on the Data Processing Server.

- Before installing BSM 9.26 on Oracle Linux (OEL) or Red Hat Enterprise Linux operating systems for supported 6.x versions and 7.x versions, you must install the following RPM packages on all machines running BSM:

■ glibc	■ libXext
■ glibc-common	■ libXtst
■ nss-softokn-freebl	■ compat-libstdc++-33
■ libXau	■ libXrender
■ libxcb	■ libgcc
■ libX11	■ openssl098e
■ compat-expat1	■ rpm-devel

To install the RPM packages listed in the upper table, run the RPM installation tool on all machines running BSM:

<BSM_install_folder>/rhel_oel_installation_fix/rpm_installer.sh.

- If the script fails to install any of the RPM packages, the following message appears:

  ```
  !!! ERROR: package <package name> has not been installed successfully
  ```

  ```
  In this case, refer the problem to your system administrator.
  ```

- If the script detects that an RPM package is already installed, it skips that package and continues with the next package.

  However, you can force the tool to try to re-install any pre-installed packages by adding the **f** parameter to the command:

  <BSM_install_folder>/rhel_oel_installation_fix/rpm_installer.sh f

If the Yum Linux upgrade service is not functional on your machine, you will need to download and install the necessary RPM packages manually by running the following command:

yum install -y openssl098e glibc.i686 glibc-common.i686 nss-softokn-freebl.i686 libXau.i686 libxcb.i686 libX11.i686 libXext.i686 libXtst.i686 compat-libstdc++-33.i686 libXrender.i686 libgcc.i686 compat-expat1 rpm-devel

The version of these packages changes from system to system. You can download the packages from any RPM repository site that matches your system specifications. The following RPM search tool can assist you in this task (http://rpm.pbone.net/).

To determine the package version you need to download, execute the following command in a terminal window:

rpm –qa ${PACKAGE_NAME} (ex: rpm -qa glibc)

The command will return the following text:

```
# rpm -qa glibc

glibc-2.12-1.132.el6.x86_64
```

This text indicates the package version required for your machine.

In this case, you would need to download the i686 architecture package with the same version - glibc-2.12-1.132.el6.i686 – and install it manually.

Install the Latest BSM 9.1x Minor-Minor Release and Patch

Install the latest minor minor version of BSM 9.1x and patch (if available).

1. **Prerequisites**

   - It is recommended that you back up all BSM databases and files you made custom changes to.

   - Make sure that BSM has been fully stopped on all machines and that there are no open connections (for example, from Windows Explorer) from any machines to the BSM root directory or any of its subdirectories.

2. **Download and install the latest patch and intermediate patch from the HP Software Support site**

   a. Go to the HP Software Support web site (https://softwaresupport.hp.com) and sign in.

   b. Click **Search**.

   c. Select the relevant product, most recent 9.1x minor minor version, and operating system.

   d. Under Document Type, select **Patches**.

   e. Locate the installation files.

   f. Save the package locally and launch the relevant setup file to install the patch.

   g. Run the installation files on all BSM servers (Gateway and Data Processing).

   h. Run the post-installation wizard. This wizard follows the patch installation automatically.

   i. Repeat this procedure for the latest intermediate patch (if available).

3. **Re-apply manual changes**

   If you have made changes in the HP BSM root directory to files that are updated during patch installation, for example, while performing hardening procedures on your system, you must reapply those changes after patch installation on all relevant BSM machines. You can access your modified files from the backup folder located at: <HP BSM root directory>\installation\<PATCH_NAME>\backup\<PATH_TO_FILE>

Configure HPOM Event Buffering

If you were using HPOM to forward events to BSM, perform this procedure:

During the migration, HPOM continues to attempt sending events to the BSM environment. If the OMi servers cannot be reached, HPOM starts to buffer the events until the servers are online again. Depending on the length of the outage and the number of events, adjust the maximum length of the delivery timeout and the maximum size of the buffer file so that HPOM does not discard any unsent events.

To configure HPOM for Windows event buffering, complete the following steps:

1. In the console tree, right-click **Operations Manager**, and then click **Configure > Server...**. The Server Configuration dialog box appears.

2. Click **Namespaces**, and then click **Server-based Flexible Management**.

3. Note the values of **Forwarding delivery timeout (in seconds)** and **Forwarding queue size maximum (in megabytes)**. Record these values to enable you to restore them after the upgrade.

4. Change the value of **Forwarding delivery timeout (in seconds)** (default 1 hour). For example, to set the timeout to 7 days, type **604800**.

5. Change the value of **Forwarding queue size maximum (in megabytes)** (default 50 MB). For example, to set the buffer size to 2 GB, type 2000.

6. *Optional:* Change the value of **Forwarding queue size warning threshold (in megabytes)** (default 40 MB). For example, to set the warning threshold to 2 GB, type 2000.

7. Click **OK** to save the new values and close the dialog box.

To configure HPOM for UNIX or Linux event buffering, complete the following steps:

1. *Optional:* Check the current values of the HTTPS-based forwarding parameters, type:

   ```
   ovconfget -ovrg server opc.opcforwm
   ```

   The command displays only the non-default values. Record these values to enable you to restore them after the upgrade.

2. Adjust the timeout. For example, to set the timeout to 2 days, type:

   ```
   ovconfchg -ovrg server -ns opc.opcforwm -set REQUEST_TIMEOUT 604800
   ```

3. *Optional:* In HPOM for UNIX or Linux, the buffer size is by default set to 0 (unlimited). To change the buffer size, type

   ```
   ovconfchg -ovrg server -ns opc.opcforwm -set MAX_FILE_BUFFER_SIZE <
   bytes>
   ```

Note: When the upgrade is complete, you can restore the original values of the buffer.

Pre-Upgrade Tool

The pre-upgrade tool temporarily stores some configuration and certificates in the BSM database to help migrate them to 9.2x. It should be run on all BSM Gateway and the active DPS servers.

1. **Run the Pre-Upgrade Tool on all BSM Gateway servers**

   On all BSM Gateway servers, run the PreUpgradeTool using the following command.

   - **Linux:** <HPBSM Install Directory>/opr/bin/PreUpgradeTool.sh -s

   - **Windows:** <HPBSM Install Directory>\opr\bin\PreUpgradeTool.bat -s

2. **Run the Pre-Upgrade Tool on the Active Data Processing Server**

   On the active BSM Data Processing Server, run the PreUpgradeTool using the following command.

   - **Linux:** <HPBSM Install Directory>/opr/bin/PreUpgradeTool.sh -s

   - **Windows:** <HPBSM Install Directory>\opr\bin\PreUpgradeTool.bat -s

   If there is a large number of closed events stored in the database, upgrading can take a long time. If recommended by the tool, and you want to archive closed events before upgrading starts, enter "Yes" (y) when prompted and specify the target location for the archive file.

Additional Information

Install the latest patches to get the newest version of the Pre-upgrade tool. The tool should first be run on a Gateway Server and then on the active Data Processing Server.

The Pre-Upgrade Tool executes the following steps:

- Backs up files required by the upgraded 9.2x installation (event sync scripts, certificates, and so on)

- Ensures the Sonic Queue is emptied

- Gives the customer the ability to shorten the upgrade process by choosing to not upgrade closed events

> **Note:** If you did not run the Pre-Upgrade Tool before shutting down or uninstalling BSM 9.1x, the following will not be migrated to the 9.2x installation:

- Certificate data including trust relationships for connected servers.
- If you have created Groovy scripts in your BSM 9.1x environment, these scripts are not imported to your BSM 9.2x installation.
- Events from your BSM 9.1x environment may be lost.

In this case, you should execute the following steps manually on your BSM 9.2x installation after the upgrade is successfully completed:

- Define trust relationships for connected servers. For details, see the OMi Setup section of the BSM Application Administration Guide.
- If you have any Groovy scripts that are used to forward events, import them from your production environment if possible.

Chapter 11: Install BSM 9.26

Install BSM 9.26 on one set of staging servers. This set can be either one Gateway Server and one Data Processing Server, or one one-machine server. In the first case, run the wizards on the Data Processing Server first. The wizard will direct you as to when to begin installation on the Gateway Server.

> **Note:** Do not install more than one set of BSM servers. The upgrade process will use one set of servers to upgrade the database, and you will be directed to install any additional servers towards the end of the upgrade procedure

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

Go to My software updates (use your HP Passport credentials) and click the BSM 9.26 installation package.

Or

1. Go to the HP Software Support web site (https://softwaresupport.hp.com) and sign in.

2. Click **Search**.

3. For Windows, select **Application Performance Management (BAC) > 9.26> Windows**).

   For Linux, select **Application Performance Management (BAC) > 9.26> Linux**).

4. Under Document Type, select **Patches**.

5. Locate the BSM 9.26 package and save it locally.

6. Launch the relevant setup file to install BSM 9.26.

Alternatively, you can run these wizards in silent mode. For details, see "Installing BSM Silently" on page 132.

For more details, see the following sections:

- "Installing BSM on a Linux Platform" on page 115

- "Installing BSM on a Windows Platform" on page 107

Chapter 12: Merge SHA analytics metadata

If you backed up your SHA analytics metadata, your manual changes should now be merged onto the new files.

Open any files that had manual changes in the backed up directory:

<SHA analytics server installation directory>/conf/analytics/metadata/default

Merge them using a text editor onto the same files in the following directory:

<Data Processing Server installation directory>/conf/analytics/metadata/default

Chapter 13: Replicate Database

Replicate your original database onto a new database server. The new database will be used by the staging environment, upgraded, and eventually used as your BSM 9.26 database.

Make sure that your database version is supported in both the original and new BSM environments.

Replicate your original database schema onto a new database server.

Chapter 14: Migrate Database to MS SQL 2012 (optional)

If you would like to use MS SQL 2012, migrate your staging database to a new MS SQL 2012 database. For details, refer to MS SQL documentation.

Chapter 15: OMi Mid-Upgrade Procedure

If you were using OMi with BSM 9.1x, perform the following steps on the production server:

Configure the BSM production server to forward events to the staging server

Events coming into the production environment should also be forwarded to the new staging environment. These events will be queued in the Operations Management EVENT_SYNC_BUFFER DB table until the BSM 9.20 staging server is up and running.

> **Note:** Make sure the Operations Management Database has enough disk space available to hold the events until the staging server is ready to receive them. A general estimate the required space is 2 KB per event that will occur during this time period.

1. In the production server, go to **Admin > Platform > Setup and Maintenance > Infrastructure Settings**.
2. In the **applications** field, select **Operations Management** and locate the **Event Forwarding Settings** table.
3. In the **Target Server for Forward All** setting, enter the DNS of the staging BSM Gateway server.
4. In the **Forward All** setting, set the value to **true**.
5. In the **applications** field, select **Operations Management** and locate the **Certificate Server Settings** table.
6. In the **Certificate Server IP Address** setting, enter the DNS of the staging BSM Data Processing server.

Configure Special Event Type Forwarding

If you were forwarding events of one of the following event types:

Notify, **Notify and Update**, **Synchronize**

You need to perform the following procedure to ensure the forwarding information is correctly synchronized from the production server to the staging server.

1. Configure a Connected Server:
   a. Go to **Administration > Operations Management >Tune Operations Management > Connected Servers**.

b. Add a server using the New button with the following properties

Server Type	External Event Processing
Server Properties	**Target Server:** In the **Fully Qualified DNS Name** field, enter the following string (without quotation marks): **"upgrade.server"**
Integration Type	Select **Call Groovy Script Adapter** ○ **External Event Processing Type:** upgrade ○ **Groovy Script File Name:** UpgradeAdapter
Outgoing Connection	**Connection Credentials:** username and password of admin user (must be a super user) Select **Use Secure HTTP** if the staging server will require SSL and the port number the staging server will require for client connections
Event Drilldown	**Fully Qualified DNS Name:** DNS name of the staging Gateway server (not the Load Balancer)

2. Go to **Administration > Operations Management >Tune Operations Management > Forwarding Rules**. For each existing forwarding rule that forwards the events of this type, add the above target server to the forwarding rule with forwarding type **Notify**. The forwarding script will synchronize the forwarding information changes that occur after the DB backup starts to the staging server.

Enable event receiving on the production system as follows

1. Go to **Admin > Platform > Setup and Maintenance > Infrastructure Settings**.

2. In the **applications** field, select **Operations Management** and locate the **Event Pipeline Receiver Settings** table. Set **Disable receiving of Events** to **false**.

Chapter 16: 9.26 Upgrade Wizard

Run the upgrade wizard on the BSM 9.26 servers to transfer your data from the original 9.1x format to the 9.26 format.

You should only have one set of 9.26 servers installed at this time. Do not run the upgrade wizard on more than one set of 9.26 servers.

The upgrade wizard can be found on all Gateway, Data Processing, and One-machine servers in the following locations:

- Windows:

  <BSM Home Directory>\bin\upgrade_wizard_run_from91.bat

- Linux:

  /opt/HP/BSM/bin/upgrade_wizard_run_from91.sh

For details about the upgrade wizard, see "Upgrade Wizard" on page 138.

Chapter 17: Staging Mode

The Staging Data Replicator (SDR) takes the data coming into your source environment and copies it to the staging environment. The SDR does not transfer event data.

To transfer event data to the staging servers:

1. Verify that trust relationship between the production and staging environments is working. This was configured automatically by the upgrade wizard, but should be verified as follows:

   On a Gateway server in the production environment, run the following command:

   ovbbccb -ping https://<DNS of a Gateway server in the staging environment>/com.hp.ov.opc.msgr

   If this ping fails, you must establish a trust relationship as follows. Run the following command on a gateway server in the staging environment:

   Linux: **BBCTrustServer.sh <DNS of a Gateway server in the production environment> -o**

   Windows: **BBCTrustServer.bat <DNS of a Gateway server in the production environment> -o**

2. Locate the Default Server for Data Collectors URL on the production server from **Admin > Platform > Setup and Maintenance > Infrastructure Settings > Foundations > Platform Administration > Default Virtual Gateway Server for Data Collectors URL** and copy the URL to your clipboard or a temporary location.

3. In the staging environment create a new Connected Server that refers to the current production server.

   a. Go to **Admin > Operations Management > Setup**

   b. In **Connected Servers** select the new icon to create a new Connected Server.

   c. Enter a Display Name and Name and select **Next**.

   d. Select server type Operations Manager i and select **Next**.

   e. Enter the DNS of the **Default Virtual Gateway Server for Data Collectors URL** (saved above) in the **Fully Qualified DNS Name** field.

   f. Click **Finish**.

4. On the staging server enable the processing of incoming events as follows.

   a. Go to **Admin > Platform > Setup and Maintenance > Infrastructure Settings**.

   b. In the **Applications** field, select **Operations Management** and locate the **Staging Upgrade Settings** table.

   c. Set **Forward All** to **false**.

   d. Set **Forward All Target Server** to **<empty>**.

   e. Set **Staging Mode Enable** to **true**.

5. In the staging environment, go to **Admin > Platform > Setup and Maintenance > Infrastructure Settings**. In the **Event Pipeline Receiver Settings** table, in the **Disable receiving of Events**, set the value to **false**.

6. Synchronize the events and changes from the production server.

   a. Allow the events and changes to synchronize. This process is complete when the event sync buffer is empty. To check if the buffer is empty, run the following command on a Data Processing Server in the production environment:

      Windows: **%TOPAZ_HOME%\opr\bin\opr-event-sync.bat -monitor**

      Linux: **%TOPAZ_HOME%/opr/bin/opr-event-sync.sh -monitor**

   b. When the buffers are empty type **control-c** to stop the monitor.

During this phase, you should verify and configure your staging environment. The following chapters describe a few steps which should be completed before ending staging mode and turning your staging environment into your production environment.

Chapter 18: Staging Data Replicator

Staging Data Replicator - Overview

The Staging Data Replicator (SDR) is a tool that transfers data from the production environment to the staging environment during staging mode. The purpose of this tool is to create a window of time in which the same data can be viewed in both environments, allowing you to verify functionality and configuration settings in the staging environment.

While the SDR is running, any configuration changes made to the original BSM servers are not transferred to the staging servers. Only data samples are transferred.

Samples related to new configurations performed on the source environment may not be transferred by the SDR. To view the samples that were not transferred, view the ignored samples log at **log\sdreplicator\sdrIgnoredSamples.log** and the general SDR log at **log\sdreplicator\sdreplicator_all.log.**

You can change the log level of these files through the following file:

HPBSMSDR\conf\ core\Tools\log4j\sdreplicator\sdreplicator.properties

This tool is only supported in staging mode. For more information about staging mode, see "Staging vs. Direct Upgrade Overview" on page 8.

In Linux, you can change the installer working directory (default /tmp) by running the following commands:

```
export IATEMPDIR=/new/tmp/dir
```

```
export _JAVA_OPTIONS=-Djava.io.tmpdir=/new/tmp/directory
```

where `/new/temp` is the new /temp directory.

The SDR must be installed on a machine in the same network as the production environment, with the ability to access the staging environment. If the staging server cannot communicate with the production server, the SDR must be installed as a standalone utility on a different machine.

For task details, see "Running the Staging Data Replicator (Standalone)" on page 76.

Running the Staging Data Replicator (Embedded)

The SDR typically runs embedded in the staging server as part of the upgrade wizard. However, it can also be run as a standalone utility on a different server. For details, see "Running the Staging Data Replicator (Standalone)" on the next page.

Note: The SDR must be installed on a machine in the same network as the production environment, with the ability to access the staging environment. If the staging server cannot communicate with the production server, the SDR must be installed as a standalone utility on a different machine. For details, see "Running the Staging Data Replicator (Standalone)" on the next page.

To run the SDR (embedded)

1. If the staging server uses basic authentication, the SDR cannot communicate with the staging server unless you run the **basicauth** tool. For details, see "Running the SDR with Basic Authentication" on page 80.

2. If the staging server uses SSL, you will need to perform custom configurations to allow the SDR to communicate with the staging server. For details, see "SSL Configuration for the Staging Data Replicator" on page 81.

3. Verify that the SDR embedded in the staging server can communicate with the production server. For details, see "Verifying that the SDR Server Can Communicate with the Production Server" on page 78.

4. After you have completed the staging process and are prepared to move your staging environment to a production environment, stop the SDR by rerunning the upgrade wizard and selecting the appropriate option to stop the SDR.

5. Unsubscribe the staging data replicator from the source server. For details, see "Unsubscribing the Staging Data Replicator from the Source Server" on page 79.

Running the Staging Data Replicator (Standalone)

To use the Staging Data Replicator standalone utility:

1. To use the Staging Data Replicator as a standalone utility, you must install it on a separate machine with access to both your production and staging servers.

   - To check that the SDR server can connect to the staging server, enter the following url in an any internet browser from the standalone server:

     http://<_DESTINATION_>/ext/mod_mdrv_wrap.dll?type=test

     Where **_DESTINATION** is the name of the Gateway Server or Load Balancer, depending on your configuration.

   - Check that the SDR server can connect to the production server. For details, see "Verifying that the SDR Server Can Communicate with the Production Server" on page 78.

2. Run the appropriate replicator file.

   a. Go to the HP Software Support web site (https://softwaresupport.hp.com) and sign in.

   b. Click **Search**.

   c. For Windows, select **Application Performance Management (BAC) > 9.26 > Windows**).

      For Linux, select **Application Performance Management (BAC) > 9.26 > Linux**).

   d. Under Document Type, select **Patches**.

   e. Locate the Staging Data Replicator package and save it locally.

   f. Launch the relevant setup file.

3. Follow the on-screen instructions to install the Staging Data Replicator. Select the type of deployment based on the version of your source environment.

4. 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 host name of the source (production) BSM Gateway Server. If you have more than one Gateway Server, you can use the name of any of them for this value.

   - **_DESTINATION_HOST_NAME_.** Replace this with the host name of the destination (staging) BSM Gateway Server or Load Balancer, depending on your configuration. This string appears twice within this file in the following line:

<ForwardURL url="http://__DESTINATION_HOST_NAME__/ext/mod_mdrv_wrap.dll?type=md_sample_array&amp;acceptor_name=__DESTINATION_HOST_NAME__&amp;message_subject=topaz_report/samples&amp;request_timeout=30&amp;force_keep_alive=true&amp;send_gd=true"/>

- **clientid="".** If you do not require guaranteed delivery of data when the Staging Data Replicator stops running, delete the value for this parameter. It is generally recommended that you do not modify this parameter.

5. If the web server on the staging server uses basic authentication, the SDR cannot communicate with the staging server unless you run the **basicauth** tool. For details, see "Running the SDR with Basic Authentication" on page 80.

6. If the web server on the staging server uses SSL, you will need to perform custom configurations to allow the SDR to communicate with the staging server. For details, see "SSL Configuration for the Staging Data Replicator" on page 81.

7. Begin running the Staging Data Replicator.

   - Windows: Select **Start > HP BSM Staging Data Replicator > Administration > Enable HP BSM Staging Data Replicator**.

     Verify that the SDR is running by looking for **hpbsmsdr** in the Windows Task Manager.

   - Linux: Run the following command:
     <SDR installation directory>/scripts/run_hpbsmsdr.sh start

     Verify that the SDR is running searching for the hpbsmsdr process (for example: **ps -ef | grep hpbsmsdr**)

8. After starting the SDR, copy the **<SDR installation directory>/dat/sdr/SDRBusConnectionStartTime.properties** file from the SDR server to the staging Gateway server in the **<BSM home directory>/dat/sdr** directory.

9. After you have completed the staging process and are prepared to move your staging environment to a production environment, stop the Staging Data Replicator.

   - Windows: Select **Start > HP BSM Staging Data Replicator > Administration > Disable HP BSM Staging Data Replicator**.

   - Linux: Run the following command:
     <SDR installation directory>/scripts/run_hpbsmsdr.sh stop

10. Unsubscribe the staging data replicator from the source server. For details, see "Unsubscribing the Staging Data Replicator from the Source Server" on page 79.

Verifying that the SDR Server Can Communicate with the Production Server

1. Ping the production server.

   a. Ping the production Gateway Server from the SDR server using the Gateway Server’s short name. If this works, continue to step 2. If it does not work, continue with step 1 b.

   b. Ping the production Gateway Server from the SDR server using the Gateway Server’s fully qualified domain name. If this works, open the relevant **hosts** file for your operating system and add the mapping between the production Gateway Server name and its IP address.

2. Verify connection.

   a. **Production Gateway Server runs Windows:** Run **ipconfig** on the production Gateway Server.

      Production Gateway Server runs Solaris/Linux: Run **ifconfig -a** on the production Gateway Server.

   b. Verify all the listed IP addresses are open to connection to and from the server running the SDR.

      If this is not feasible, contact HP Software Support.

   c. Verify that the ports 383, 1098, 1099, 2506, and 2507 are open on the SDR server.

Unsubscribing the Staging Data Replicator from the Source Server

This procedure unsubscribes the SDR from the source server's bus, preventing data from accumulating in the source server. It is performed after you have completed the staging process and disabled the SDR.

> **Note:** You do not have to perform this procedure if you are immediately uninstalling the previous version of BSM from the source server.

To unsubscribe the SDR:

1. Stop the SDR.
   a. Open the Nanny Manager jmx console from **http://<machine name>:11021**, where **<machine name>** for an embedded SDR is the name of the Load Balancer (if it exists) or destination BSM Gateway Server. For a Standalone SDR, **<machine name>** is **localhost**.
   b. Select **Foundations: type=NannyManager**
   c. Open **showServiceInfoAsHTML**
   d. Stop the **HPBSMSDR-x.x** process.
2. Open the **<Staging Data Replicator root directory>\conf\b2G_translator.xml** file and locate the <Message Selector> element(s).
3. Within the **<Message Selector>** element(s), replace the attribute value of enabled to 0 (the default is **enabled="1"**) in the following line:

   <MessageSelector name="customer_name" value="Default Client" enabled="0" />
4. Start the SDR.
   a. Open the Nanny Manager jmx console from **http://<machine name>:11021**, where **<machine name>** for an embedded SDR is the name of the Load Balancer (if it exists) or destination BSM Gateway Server. For a Standalone SDR, **<machine name>** is **localhost**.
   b. Select **Foundations: type=NannyManager**
   c. Open **showServiceInfoAsHTML**
   d. Start the **HPBSMSDR-x.x** process.
5. Wait several minutes, and then stop the SDR as described in step 1.

Running the SDR with Basic Authentication

If the staging server is using basic authentication, the SDR cannot communicate with the staging server without a user name and password. The **basicauth** tool allows you to enter this data into the BSM in an encrypted format, thereby enabling the SDR to communicate with servers that use basic authentication.

To configure SDR to work with basic authentication:

From the command prompt, run the **basicauth** file using the following syntax:

<Staging Data Replicator root directory>\bin basicauth [-embedded | -standalone] [enabled username password | disabled]

Where:

-embedded is for an SDR that is embedded in the destination environment.

-standalone is for a standalone SDR

enabled is to enable basic authentication. Specify a valid username and password. This tool encrypts the password before it is saved in the configuration file.

disabled is to disable basic authentication.

SSL Configuration for the Staging Data Replicator

If the staging server uses SSL, you need to perform the following procedure to allow the SDR to communicate with the staging server.

To configure the SDR to support SSL:

1. Configure SDR to use SSL.

   In the **<SDR root directory>\conf\b2g_translator.xml** file, locate ForwardURL and change **http** to **https**.

2. Configure the SDR to trust the BSM certificate.

   a. Obtain a copy of the certificate used by the web server on the BSM Gateway Server or certificate of Certificate Authority that issued BSM web server certificate. This file must be a DER encoded binary X.509 (.CER) file.

   b. Import the above-mentioned certificate into SDR's truststore. For details, see the BSM Hardening Guide.

      Default truststore for SDR is **<SDR root directory>\JRE\lib\security\cacerts**.

      Example:

      <SDR root directory>\JRE\bin>keytool -import -trustcacerts -alias <your CA certificate alias name> -keystore ..\lib\security\cacerts -file <CA certificate file>

   c. If you are not using the default truststore with SDR, configure the SDR to use a non-default truststore, and add additional options in the file **<SDR root directory>\bin\sdreplicator_run.bat**, as follows:

      Locate the following line:

      ```
      SET PROCESS_OPTS=%PROCESS_OPTS% -Dconf.file=%PRODUCT_HOME_PATH%\conf\b2g_
      translator.xml -Dprop.file=%PRODUCT_HOME_PATH%\conf\b2g_
      translator.properties -Dmsg.filter.file=%PRODUCT_HOME_
      PATH%\conf\includedSamples
      ```

      At the end of this line, add the following:

      ```
      -Dnet.ssl.trustStore=<keystore path>
      ```

      ```
      -Dnet.ssl.trustStorePassword=passphrase
      ```

Chapter 19: Post-Installation Procedures

Perform these tasks to complete the upgrade process:

General Post-Installation Procedures

Perform these tasks to complete the upgrade process:

> **Note:** If you use the IIS web server, stop the **IIS Web Server** service before running the post installation procedure. Do not change the **Startup Type** setting of this service. Do not remove **IIS Web Server** as role.

- ## Upgrading Customized Service Health KPIs

  In BSM 9.2x, the internal format of the KPI parameter “KPI is critical if” was changed. As a result, this value may be incorrect following upgrade, if you have created or customized KPIs.

  To fix this, perform the following:

  a. Access the JMX console on the Gateway Server via http://<Gateway Server name>:29000/jmx-console, and enter your user name and password.

  b. Click **service=repositories-manager** in the Topaz section.

  c. Locate the **upgradeCriticalIf()** operation.

  d. Click **Invoke**.

- ## Service Health and SLM repository post-upgrade procedure

  When you installed BSM 9.1x, content that was imported using out-of-the-box content packs was categorized in the Service Health and SLM repositories as **Custom** or **Predefined (Customized)**, rather than as **Predefined**.

  After you install BSM 9.2x, run the Repository Data Transfer tool to automatically re-label this out-of-the-box content in the repositories as **Predefined**, using the following steps:

  a. Access the JMX console on the Gateway Server via **http://<Gateway Server name>:29000/jmx-console**, and enter your user name and password.

  b. Click **service=content-manager** in the Topaz section.

  c. Locate the **invokeRepositoryTool()** operation.

  d. Click **Invoke**.

> **Note:** If you have customized any repository items, they are not affected by this procedure.

- ### Service Health Top View post-upgrade

  In BSM 9.2x, extensive improvements were made to the Top View component. For details, refer to the sections on Top View in the BSM User Guide and in the BSM Application Administration Guide.

  As a result of the changes made to the underlying Top View infrastructure, the following infrastructure settings from earlier BSM versions are now deprecated in BSM 9.2x:

  - **Top View Data Refresh Rate - For Legacy MyBSM**
  - **Top View Font Name**
  - **Top View Green Color Property**

  These infrastructure settings were located in the Service Health Application - Top View Properties section of the Service Health Application infrastructure settings. If you customized these settings prior to upgrade, your customizations are removed.

  In addition, if you used a custom background image for Top View, after upgrade save the image in `<Gateway Server root directory>/AppServer/webapps/site.war/images/topview`, and enter the image file name in the **Custom Background Image Name** infrastructure setting.

- ### SLM - Upgrading SLAs from BSM 9.x to 9.2x using Baselining

  The following section is only relevant for users who have SLAs with BPM transaction CIs with the BPM Percentile Sample-Based rule defined on performance HIs, or Groovy rule (Rules API).

  BSM 9.2x introduces the concept of baselining. In End User Management, Business Process Monitor performance metrics are analyzed over a period of time, and are used to provide a baseline comparison for establishing acceptable performance ranges.

  Baselining influences the transaction thresholds, and will therefore have an impact on your SLA calculation. If you want to minimize this influence so that your SLA calculation results are similar to pre-baselining, perform the steps described in "Upgrading SLAs from BSM 9.x to 9.2x to Work with Baselining" on page 143.

- ETI display label

  If you have alerts configured with an Event Template, the ETI display label needs to be manually upgraded. To upgrade the display label, execute the following JMX command from the BSM 9.2x Data Processing Server:

  BAC.Alerts.Upgrade service=change EtI name to ID update()

- Upgrade custom reports

  In some cases, custom reports are not migrated properly during the upgrade. If this is the case, execute the following command from the JMX console as follows:

  a. Open the JMX console from **http://<FQDN of BSM Gateway server>:29000/jmx-console/**

  b. In the Topaz section, select **EUM Custom report upgrader service**.

  c. Complete the fields and click **Invoke**.

- Delete temporary internet files

  When logging into BSM for the first time after upgrading, delete the browser's temporary Internet files. This should be done on each browser that accesses BSM.

- SHA baseline data

  The following note is relevant if you were using SHA with Performance or Operations Agents which include one of the following SPIs: WebLogic, WebSphere, Oracle, MSSQL.

  The baseline may be inaccurate for at least one week after running the upgrade wizard. This is due to an improvement in the way instances in the SPIs are interpreted by SHA.

- Disable firewall between BSM Gateway and Data Processing servers

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

  Additionally, to enable BSM users and data collectors to communicate with the BSM Gateway servers, you must leave open the relevant ports depending on your BSM configuration. The required ports are typically 443 or 80, and 383. For details, see "Port Usage" in the BSM Platform Administration Guide.

- ## Update Data Collectors

  See the System Requirements and Support Matrixes, available from **Help > Planning and Deployment** and the Updated Components section in the HP Business Service Management Release Notes to determine if you must upgrade your data collector to the latest supported version.

- ## Copy files from production server or restore them from backup

  Restore the following files to the BSM:

  - <Gateway Server installation directory>/AppServer/webapps/site.war/openapi/excels directory
  - <Data Processing Server installation directory>/cmdb/general directory
  - <Data Processing Server installation directory>/BLE/rules/<custom rules jar> file(s)
  - <Gateway Server installation directory>/JRE/lib/security/cacerts
  - <Gateway Server installation directory>/JRE64/lib/security/cacerts

- ## Reconfigure Integration with HPOM

  This procedure is only required if you are performing a staging upgrade. If you had previously configured an integration with HPOM, repeat the following procedure that you performed when configuring this connection for the first time: "How to Set Up a Forwarding Target in the HPOM for UNIX Node Bank" in the BSM - Operations Manager Integration Guide.

- ## Perform hardening procedures

  If your original environment was secured with SSL and you are upgrading using a staging environment, you need to repeat the hardening procedures described in the BSM Hardening Guide.

  If your original environment was secured with SSL and you are upgrading directly, you need to repeat the following hardening procedures:

  a. If you had previously made changes to **<HP BSM root directory>\EJBContainer\server\mercury\deploy\jboss-web.deployer\server.xml** while performing hardening procedures on your system, repeat the “Securing JBOSS” procedure in the Hardening Guide after the patch installation on all relevant BSM machines.

  b. If you had previously configured SSL on an IIS web server used by BSM, you need to verify HTTPS port binding in IIS is set to the correct port (443).

  c. If you had previously configured SSL on the Apache web server used by BSM, you may need to reapply the changes to httpd.conf and httpd-ssl.conf files as follows:

- In **<HP BSM root directory>\WebServer\conf\httpd.conf**, uncomment the following two lines:

  LoadModule ssl_module modules/mod_ssl.so

  Include conf/extra/httpd-ssl.conf

- In **<HP BSM root directory>\WebServer\conf\extra\httpd-ssl.conf**, specify paths to **SSLCertificateFile** and **SSLCertificateKeyFile**

- Restart the HP BSM Apache web service

Ensure all processes started properly

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

Check installation log files

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

In a Windows environment, this log file, along with additional log files for separate installation packages, is located in the **%temp%\..\HPOvInstaller\<BSM version>** directory.

In a Linux environment, the logs files are located in the **/tmp/HPOvInstaller/<BSM version>** directory.

The installer log file name is in the following format:

HPBsm_<VERSION>_<DATE>_ HPOvInstallerLog.html or **HPBsm_<VERSION>_<DATE>_ HPOvInstallerLog.txt** (for example, HPBsm_9.26_2015.10.21_13_34_HPOvInstallerLog.html).

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

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

Overwrite custom changes (optional)

BSM 9.26 comes with built in content packs. If any of the data in these content packs conflicts with a previously existing custom change, BSM keeps the custom change and does not overwrite it.

To overwrite your custom changes with the new 9.26 data:

a. Open the Content Packs page from **Admin > Platform > Content Packs**.

b. Select each content pack. In the content pack summary, there is a column indicating the origin of each artifact. For each item who value is **predefined (customized)**, this indicates that the artifact was customized and is different from the one delivered with 9.26.

c. To overwrite a change, locate the artifact in the corresponding admin user interface and select **restore to default**.

- ## Restore BSM service changes

If you manually configured different users to run BSM services, these settings must be configured again. For details, see "Changing BSM Service Users " on page 141.

- ## Install component setup files

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

> **Note:**
>
> - The components on the Downloads page are updated for each major and minor release (for example, 9.00 and 9.20). To download updated components for minor minor releases and patches (for example, 9.26), go to the HP Software Support site (https://softwaresupport.hp.com).
>
> - You can install a component by using the component’s setup file directly from the network. For details on installing a component, refer to the individual documentation for the component you want to install. The relevant documentation is available from the Downloads page in BSM after the component’s setup files are copied to the Downloads page.

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

- ## Enable IPv6 Support (optional)

BSM by default communicates using IPv4. If your environment uses IPv4 and IPv6, you can choose to use either IPv4 or IPv6, but not both.To enable IPv6, run the following commands on all BSM servers (GW and DPS):

```
ovconfchg -ns sec.cm.server -set IsIPV6Enabled TRUE

ovc -kill

ovc -start
```

- **Update the LW-SSO Configuration.**

  You must update the LW-SSO configuration even if you are not using LW-SSO authorization. Be sure to install all patches before performing this step. For instructions, see the BSM 9.26 Build Patch Installation Guide (https://softwaresupport.hpe.com/km/KM02140729).

  a. Go to the JMX console – LW-SSO Configuration :

     http://<Gateway or Data Processing Server >:29000/mbean?objectname= Topaz%3Aservice%3DLW-SSO+Configuration

     where

     <Gateway or Data Processing Server name> is the name of the machine on which BSM is running.

  b. Search for InitString and copy the value.

  c. Access the flat xml file located at:

     \HPBSM\conf\settings\SingleSignOn\lwssofmconf.xml.

  d. Search for InitString and paste the value you just copied.

  e. Go to the JMX console – Infrastructure Settings Manager:

     http://<Gateway or Data Processing Server name>:29000/mbean?objectname= Foundations%3Aservice%3DInfrastructure+Settings+Manager

     where

     <Gateway or Data Processing Server name> is the name of the machine on which BSM is running.

     Note: This step must be performed in either Firefox or Chrome.

  f. Search for the **setGlobalSettingValue()** method.

  g. Enter the following values and invoke the method:

- **contextName:** SingleSignOn
- **settingName:** lw.sso.configuration.xml
- **newValue:** paste the content of the lwssofmconf.xml file

> **Note:** Format the content of the lwssofmconf.xml file on one line.

Starting and Stopping BSM

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

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

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

To start or stop BSM in Windows:

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

To start or stop BSM in Linux:

```
/opt/HP/BSM/scripts/run_hpbsm {start | stop | restart}
```

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

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

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

Logging In and Out

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

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

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

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

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

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

2. Enter the default administrator user ("admin"), and the password specified in the Setup and Database Configuration utility, and click **Log In**. After logging in, the user name appears at the top right.

3. (Recommended) Create additional administrative users to enable BSM administrators to access the system. For details on creating users in the BSM system, see "User Management" in the BSM Platform Administration Guide.

Note:

- For login troubleshooting information, see "Troubleshooting and Limitations" in the BSM Platform Administration Guide.

- For details on login authentication strategies that can be used in BSM, see "Authentication Strategies — Overview" in the BSM Platform Administration Guide.

- For details on accessing BSM securely, see the BSM Hardening Guide.

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

To log out:

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

Adding Additional BSM Servers

After you have a working BSM 9.26 environment, you can add new Gateway and Data Processing servers as desired.

To add new BSM servers to an existing BSM environment:

1. Go to the HP Software Support web site (https://softwaresupport.hp.com) and sign in.

2. Click **Search**.

3. For Windows, select **Application Performance Management (BAC) > 9.26 > Windows**).

   For Linux, select **Application Performance Management (BAC) > 9.26 > Linux**).

4. Under Document Type, select **Patches**.

5. Locate the 9.26 patch and save the package locally.

6. Launch the relevant setup file to install the patch.

7. Run the installation files on all BSM servers (Gateway and Data Processing).

8. Run the Setup and Database Configuration utility.

   - **Windows:** On the BSM server, select **Start > Programs > HP Business Service Management > Administration > Configure HP Business Service Management**. Alternatively, you can run the file directly from **<BSM_Installation_Directory>\bin\config-server-wizard.bat**.

   - **Linux:** On the BSM server machine, open a terminal command line and launch **/opt/HP/BSM/bin/config-server-wizard.sh**.

   For more details about this utility, see "Server Deployment and Setting Database Parameters" on page 121.

9. Restart all BSM servers.

   After you have installed all additional servers, restart all other BSM servers and data collectors to allow them to recognize the new servers.

Complete the Upgrade Process

When you are confident that you are ready to use your new servers as your production environment, perform the following tasks:

1. If you were using OMi, perform the following procedure to move the processing of events from the production server to the staging server:

   a. **On the production server** disable receiving of events and changes as follows:

      i. Go to **Admin > Platform > Setup and Maintenance> Infrastructure Settings**

      ii. In the **applications** field, select **Operations Management** and locate the **Event Pipeline Receiver Settings** table.

      iii. Set **Disable receiving of Events** to **true**.

   b. On the production server ensure incoming data connections are all closed by restarting the ovc processes. From the command line execute the following commands:

      ovc -kill

      ovc -start

   c. Now that new events will no longer be coming into the production server, enable the remaining events and changes to synchronize with the staging server. This process is complete when the event sync buffer is empty. To check if the buffer is empty, run the following command on a Data Processing Server in the production environment:

      Windows: %TOPAZ_HOME%\opr\support\opr-jmxClient.bat -system localhost:29622 -user admin -bean opr.backend:name=EventForwardingMBean -m showEventForwardStatistics

      Linux: /opt/HP/BSM/opr/support/opr-jmxClient.sh -system localhost:29622 -user admin -bean opr.backend:name=EventForwardingMBean -m showEventForwardStatistics

      If the command returns a list of buffers with values, it means those buffers have items in them. If the command returns nothing, it means the buffers are all empty and you can continue with the next step.

   d. On the production server disable further processing of incoming events as follows:

      i. Go to **Admin > Platform > Setup and Maintenance > Infrastructure Settings**.

      ii. In the **Applications** field, select **Operations Management** and locate the **Event Synchronization Settings** table. Set **Forward Events** to **true**.

      iii. In the **Duplicate Events Suppression Settings** table, set **Enable duplicate events suppression** to **false**.

    iv. In the **Event Forwarding Settings** table, reset the value of **Event Forwarding Expiration** to the default or any desired value (the current value was temporarily set very high for the purposes of the upgrade).

    v. Go to **Admin > Operations Management > Tune Operations Management > Event Forwarding**. Select and disable each active Forwarding Rule.

    vi. Go to **Tune Operations Management > Time Based Event Automation**. Select and disable each active TBEA rule.

    vii. Go to **Tune Operations Management > Automatic Run Book Execution**. Select and disable each active OO rule.

    viii. Go to **Tune Operations Management > Notifications**. Select and disable each active Notification Rule.

    ix. Go to **Tune Operations Management > Event Processing Customizations**. Select and disable each active EPI step.

e. If you were using multiple OMi environments reporting to one central OMi environment (manager of managers), you need to update the central OMi environment (the receiver) with the locations of the new servers as follows:

   On the Data Processing Server, run the following command:

   Windows: **\hpbsm\bin\opr-switch-forwarding-info.bat --oldServerHost <DNS of production Gateway server> --newServerIp <DNS of staging Gateway server>**

   Linux: **\hpbsm\bin\opr-switch-forwarding-info.sh --oldServerHost <DNS of production Gateway server> --newServerIp <DNS of staging Gateway server>**

f. On the staging server enable processing of incoming events as follows:

    i. Go to **Admin > Platform > Setup and Maintenance > Infrastructure Settings**.

    ii. In the **applications** field, select **Operations Management** and locate the **Staging Upgrade Settings** table. Set **Staging Mode Enable** to **false**.

g. Restore the flow of events to the BSM servers to process the events in the data collector queues.

    i. On the staging server enable event receiving as follows:

       Go to **Admin > Platform > Setup and Maintenance > Infrastructure Settings**.

       In the **applications** field, select **Operations Management** and locate the **Event Pipeline Receiver Settings** table. Set **Disable receiving of Events** to **false**.

    ii. On the production server enable event receiving as follows:

Go to **Admin > Platform > Setup and Maintenance > Infrastructure Settings**.

In the **applications** field, select **Operations Management** and locate the **Event Pipeline Receiver Settings** table. Set **Disable receiving of Events** to **false**.

2. Update the data collectors to communicate with the new servers.

   a. If you have a Load Balancer or Reverse Proxy, set it to communicate with the new servers.

   b. If you do not have a Load Balancer or Reverse Proxy, you must configure each data collector individually to communicate with the new BSM Gateway servers. For details, see the documentation of each data collector. We recommend upgrading each data collector to the latest supported version. For details, see the System Requirements and Support Matrixes, available from **Help > Planning and Deployment**.

      For the HPOM integration, see "OMi Post-upgrade Procedure" on page 97.

      For the SiteScope integration, see "SiteScope Post-upgrade Procedure" on page 103.

3. End the SDR and unsubscribe it from the source server. For details, see "Staging Data Replicator" on page 73

4. Exit staging mode

   a. Go to **Admin > Platform > Infrastructure Settings > Foundation – Platform Administration > Platform Administration – HP BSM Evaluation**.

   b. Set **Enable evaluation (staging) mode** to **false**.

   c. Set **Enable evaluation (staging) mode for customer** to **false**.

5. Keep production server alive

   Even though no new events are sent to the production server, there is still a need to keep this server online. Any active events that were forwarded from HPOM to the production server will continue to send updates this server. These updates will be forwarded to the staging server. If receiving these updates is not important to you, you can decommission the production server immediately. Otherwise, you should wait until all or most of the events previously sent to the production server are closed. HP estimates that most events are typically closed within 1-2 weeks.

The upgrade process is now complete. If you experience any problems during the upgrade process, see "Troubleshooting" on page 150.

Chapter 20: OMi Post-upgrade Procedure

If you were using OMi with BSM in your production environment, and have not configured event synchronization through a Load Balancer or Reverse Proxy, perform this procedure:

1. Configure HPOM to Forward Events to BSM 9.20

By default, when using a staging environment to upgrade BSM, only the original OMi servers receive events from HPOM. To allow event forwarding to the new staging servers, update the HPOM message forwarding policies as appropriate. As soon as the staging servers are online, both the original OMi servers and the new BSM 9.20 environments receive events from HPOM. Until then only the original servers receive the events.

Perform the appropriate procedure below on each HPOM management server, depending on your operating system.

Configuring the HPOM Forwarding Policy - Windows

a. Start the HPOM console as follows:

   Start > Programs (or All Programs) > HP > HP Operations Manager.

b. In the left pane of the HPOM console, select the following:

   Policy management > Server policies grouped by type > Server-based Flexible Management.

c. In the right pane of the HPOM console, double-click the existing policy that you want to edit. The Server-based Flexible Management Editor dialog opens.

d. Replace the existing message target server to point to the new 9.20 BSM Gateway server (or Reverse Proxy or Load Balancer) as shown in the following example policy text:

```
CONTEMPLATES

# none

RESPMGRCONFIGS
  RESPMGRCONFIG DESCRIPTION "Forward all messages to OMi"
  SECONDARYMANAGERS
  ACTIONALLOWMANAGERS

  MSGTARGETRULES
```

```
    MSGTARGETRULE DESCRIPTION "Forward all messages rule"
      MSGTARGETRULECONDS
      MSGTARGETRULECOND DESCRIPTION "Forward all messages"
       MSGTARGETMANAGERS
        MSGTARGETMANAGER
        TIMETEMPLATE "$OPC_ALWAYS"
        OPCMGR IP 0.0.0.0 "<First Target Manager>"

  MSGTARGETMANAGER
  TIMETEMPLATE "$OPC_ALWAYS"
  OPCMGR IP 0.0.0.0 "<fully qualified host name>"
```

> **Note:** This forwards all messages to OMi. If you want to reduce the number of messages to be sent, see “Server-based Flexible Management” in the HPOM documentation and modify the text of the policy, so that only a selected subset of messages is sent to OMi.

e. Replace <*fully qualified host name*> in the text with the fully qualified hostname of the new Gateway Server that should receive HPOM messages (for example, HPGwSrv.example.com).

   In deployments involving a load balancer, a NAT device, or a reverse proxy, use the fully qualified hostname of the system used to access the Gateway Server (for example, VirtualSrv.example.com).

   For details about load balancing and high availability, see the section “High Availability for HP Business Service Management” in the *BSM Installation Guide*.

f. Click **Check Syntax** to check for syntax errors in the new policy text.

g. After correcting any syntax errors, click **Save and Close**.

h. Redeploy the server-based flexible management policy on the HPOM management server.

Configuring the HPOM Forwarding Policy – Linux and UNIX

a. Change to the work_respmgrs directory as follows:

   cd /etc/opt/OV/share/conf/OpC/mgmt_sv/work_respmgrs/

b. Policy template files can be found in:

   /etc/opt/OV/share/conf/OpC/mgmt_sv/tmpl_respmgrs/

c. Edit the existing policy to which you want to add the OMi system as a target as follows:

vi <policy file name>

d. Replace the existing message target server to point to the new 9.20 BSM Gateway server (or Reverse Proxy or Load Balancer) as shown in the following example policy text:

```
TIMETEMPLATES

# none

RESPMGRCONFIGS
  RESPMGRCONFIG DESCRIPTION "Forward all messages to OMi"
  SECONDARYMANAGERS
  ACTIONALLOWMANAGERS

  MSGTARGETRULES
    MSGTARGETRULE DESCRIPTION "Forward all messages rule"
      MSGTARGETRULECONDS
      MSGTARGETRULECOND DESCRIPTION "Forward all messages"

      MSGTARGETMANAGERS
        MSGTARGETMANAGER
        TIMETEMPLATE "$OPC_ALWAYS"
        OPCMGR IP 0.0.0.0 "<First Target Manager>"

           MSGTARGETMANAGER
           TIMETEMPLATE "$OPC_ALWAYS"
           OPCMGR IP 0.0.0.0 "<fully qualified host name>"
```

Note: This forwards all messages to OMi. If you want to reduce the number of messages to be sent, see “Server-based Flexible Management” in the HPOM documentation and modify the text of the policy, so that only a selected subset of messages is sent to OMi.

e. Replace <*fully qualified host name*> in the text with the fully qualified hostname of the Gateway Server that should receive HPOM messages (for example, HPGwSrv.example.com).

In deployments involving a load balancer, a NAT device, or a reverse proxy, use the fully qualified hostname of the system used to access the Gateway Server (for example, VirtualSrv.example.com).

For details about load balancing and high availability, see the section “High Availability for HP Business Service Management” in the *BSM Installation Guide*.

f. Enter the following command to check for syntax errors in the new policy text:

/opt/OV/bin/OpC/opcmomchk -msgforw <policy file name>

g. After correcting any syntax errors, copy the policy to the respmgrs directory as follows:

   cp <policy file name> /etc/opt/OV/share/conf/OpC/mgmt_sv/respmgrs/

h. Restart the server processes as follows:

   /opt/OV/bin/OpC/opcsv -stop

   /opt/OV/bin/OpC/opcsv -start

i. Set Up a Forwarding Target in the HPOM for UNIX Node Bank

   > **Note:** Make sure that the SNMP agent is running before adding a managed node to the HPOM database.

   The forwarding target (BSM Gateway Server, Reverse Proxy, or Load Balancer) must be set up in the node bank as a managed node. You must add the managed node by using the `opcnode` command line tool, for example:

   ```
   /opt/OV/bin/OpC/utils/opcnode -add_node node_name=<node_name> net_
   type=NETWORK_IP mach_type=<machine_type> group_name=<group_name> node_
   label=<node_name>
   ```

   `<machine_type>` relates to the operating system of the BSM host system:

   - Linux: `MACH_BBC_LX26RPM_X64`
   - Windows: `MACH_BBC_WIN2K3_X64`

   `<group_name>` relates to the operating system of the HPOM management server host system and is one of the following:

   - linux
   - hp_ux
   - solaris

2. Replace the 9.2x Servers as Target Servers for Topology Synchronization

If topology synchronization was configured between BSM 9.1x and HPOM, add the fully qualified domain name (FQDN) of the new BSM 9.2x staging servers to the list of target servers to forward discovery data. Follow the appropriate procedure below depending on your operating system.

> **Note:** Make sure that certificates are exchanged between new BSM server system and the

HPOM server system.

To add a server to the list of target servers in Windows:

a. In the console tree, right-click **Operations Manager**, and then click **Configure_¨Server...**. The Server Configuration dialog box opens.

b. Click **Namespaces**, and then click **Discovery Server**. A list of values appears.

c. Add the hostname of the BSM 9.2x staging servers to **List of target servers to forward discovery data**.

   If there is more than one target server, separate the hostnames with semicolons, for example:

   ```
   server1.example.com;server2.example.com
   ```

   If the target server uses a port other than port 383, append the port number to the hostname, for example:

   ```
   server1.example.com:65530;server2.example.com:65531
   ```

d. Make sure that the value of **Enable discovery WMI listener** is **true**. This is the default value.

e. Click **OK** to save your changes and close the Server Configuration dialog box.

f. Restart the **OvAutoDiscovery Server** process for your changes to take effect.

g. Start the initial synchronization of topology data:

   i. In the console tree, select **Tools > HP Operations Manager Tools**.

   ii. Right-click **Synchronize Topology** and select **All Tasks > Launch Tool....**

   The tool **startInitialSync.bat** is started and begins to send all the topology data to the configured target management servers.

To add a server to the list of target servers in Linux:

a. Type the following command to enable topology synchronization:

   ```
   /opt/OV/contrib/OpC/enableToposync.sh -online -target <comma_separated_server_list>
   ```

   Replace **<comma_separated_server_list>** with the fully qualified domain name of the target management server. If you have more than one target management server, separate each server name with a comma (,). Do not include spaces in the server list, for example:

   ```
   server1.example.com;server2.example.com
   ```

If the target server uses a port other than port 383, append the port number to the hostname, for example:

server1.example.com:65530;server2.example.com:65531

This command restarts the service discovery server. The source management server begins to send any topology data changes immediately.

b. Type the following command to start the initial synchronization of topology data:

   /opt/OV/bin/OpC/startInitialSync.sh

c. Make sure that the value of **Enable discovery WMI listener** is **true**. This is the default value.

d. Restart the **OvAutoDiscovery Server** process for your changes to take effect.

e. Start the initial synchronization of topology data:

f. The tool **startInitialSync.xxx** is started and begins to send all the topology data to the configured target management servers.

Chapter 21: SiteScope Post-upgrade Procedure

After performing a BSM staging upgrade, you need to configure SiteScope to communicate with the new BSM Gateway Servers. You also need to redirect the HP Operations agent to the Gateway Servers.

1. **Change the Gateway Server to which SiteScope sends data**

   After performing a BSM staging upgrade, you need to configure SiteScope to communicate with the new BSM Gateway Servers. To do so, perform one of the following:

   - In SiteScope's BSM Integration Preferences, enter the new Gateway Server name or IP address in the **Business Service Management machine name/IP address** box. For user interface details, see BSM Integration Preferences Dialog Box in the Using SiteScope Guide in the SiteScope Help.

   - In SAM Administration, update the SiteScope settings with the new Gateway Server name in **Distributed Settings**. For user interface details, see New/Edit SiteScope Page in the BSM Application Administration Guide in the BSM Help.

   > **Note:** This can only be used for changing the Gateway Server for a SiteScope that is already registered with a given BSM installation. It cannot be used to add a new SiteScope, or to connect a SiteScope to a different BSM system.

2. **Redirect SiteScope HP Operations Agent to a different BSM Gateway server**

   You can reconnect the HP Operations agent (which is installed on the SiteScope server) to a different BSM Gateway server by either:

   - Uninstalling and reinstalling the HP Operations agent.

   - Redirecting the HP Operations agent to a different server.

   To uninstall and reinstall the HP Operations agent:

   a. In SiteScope, select **Preferences > Integration Preferences**, and delete the Operations Manager integration.

   b. Uninstall the HP Operations agent from **Start > Settings > Control panel > Add or Remove Programs**, and select the **HP Operations Agent** option.

   c. Reinstall the HP Operations agent from the SiteScope release media DVD (OA 11.14 for 64 bit Windows or OA 11.14 for 64 bit Linux) or from HP Software Support Downloads.

   d. In SiteScope, configure the HP Operations Manager integration with the new BSM server to which you want to connect.

i. Select **Preferences > Integration Preferences** and create a new **HP Operations Manager Integration**, or select an existing integration and click **Edit Integration**.

ii. In the HP Operations Manager Integration dialog box, expand the **HP Operations Manager Integration Main Settings** panel, and enter the following in the **Connection Settings** area:

- **HP Operations Agent installation path**. Path to the HP Operations agent installation on the SiteScope machine.

  - On Windows platforms, the installation path is automatically resolved from the HP Operations agent **InstallDir** key in the registry, and appears in this field. The default path is **C:\Program Files\HP\HP BTO Software**. If the key is not found, the field is left empty, and you must manually enter the agent installation path.

  - On UNIX platforms: SiteScope checks to see if the HP Operations agent is installed in the default **/opt/OV** path. If it is not there, the field is left empty, and you must manually enter the agent installation path.

    Click the **Resolve Path** button to restore the default installation path found by SiteScope if you manually entered a different path.

- **HP Operations Manager/BSM server**. Enter the name or IP address of the BSM server to which you want to connect. If you are connecting to a BSM distributed environment, enter the BSM Gateway Server name or IP address. If your BSM Gateway Servers are behind a load balancer, enter the name or IP address of the load balancer that is configured for data collectors.

iii. Click **Connect** to connect the agent to the BSM server. This sends a connection request from the agent to the specified server.

To redirect the HP Operations agent to a different server:

> **Note:** If you are cloning a machine with an HP Operations agent which usually includes a host name and IP address change, start from a below; otherwise start from d.

a. On the SiteScope server where the HP Operations agent is installed, run the following command to create a new core ID:

```
ovcoreid -create –force
```

b. To remove the certificates, run:

```
ovcert -list
```

For all IDs in the output, run the command:

```
ovcert -remove 'id'
```

c. Adapt the xpl configuration variable OPC_NODENAME by running the command:

```
ovconfchg -ns eaagt -set OPC_NODENAME 'hostname'
```

d. Set the new server host name and core ID by running the commands:

```
ovconfchg -ns sec.cm.client -set CERTIFICATE_SERVER <new OM server>
ovconfchg -ns sec.core.auth -set MANAGER <new OM server>
ovconfchg -ns sec.core.auth -set MANAGER_ID <new OM server
ovcoreid>
ovconfchg -ns eaagt.lic.mgrs -set general_licmgr <new OM server>
ovcoreid –show
```

> **Tip:** To find the OM server `ovcoreid`, go to the HPOM server (for Operations Management, go to the Data Processing Server) and run the command:
>
> ```
> ovcoreid -show
> ```

If automatic failover has been configured on a BSM distributed environment, you need to change MANAGER_ID on both Data Processing Servers, or assign the same ovcoreid to both Data Processing Servers.

e. Restart the HP Operations agent by running the commands:

```
ovc -kill
ovc –start
```

f. Create a new certificate request by running the command:

```
ovcert –certreq
```

g. Grant a certificate request on the BSM Gateway Server (in case of distributed BSM, grant certificate request on the Data Processing Server).

h. In SiteScope, open the Operations Manager Integration dialog box and perform the following in the **HP Operations Manager Integration Main Settings** panel:

- Change the name or IP address of the BSM server in the **HP Operations Manager / BSM** server box.

- Install the log policies by clicking the **Install Policies** button.

Part III: Appendixes

Appendix A: Installing BSM on a Windows Platform

This appendix contains the following topics:

Preparing Information Required for Installation

Have the following information ready before installation:

- **Target directory names**. During installation BSM installs the HP Software L-Core packages. If a lower version of these packages is already installed, the packages are automatically upgraded. Otherwise, the currently installed version is not overwritten. This change cannot be reversed.

- During the installation, you must select directories for installing these shared packages. They include:

  - HP Software Cross Platform Component
  - HP Software Cross Platform Component Java
  - HP Software Security Core
  - HP Software HTTP Communication
  - HP Software Certificate Management Client
  - HP Software Security Core Java
  - HP Software HTTP Communication Java
  - HP Software Performance Access Java
  - HP Software Graphing Component
  - HP Software Process Control
  - HP Software Certificate Management Server
  - HP Software Configuration
  - HP Software Deployment

- **License key**. You have the option to use an evaluation license (60 days) or import your permanent license. You can browse to a local or network location to locate your license .DAT file.

  If at a later stage you need to update the license key (for example, if you acquire a license for one or more new BSM components), you can do so within the BSM site: Select **Admin > Platform > Setup and Maintenance > License Management** and click the **Add License from File** button. For information on updating the license key, see "Licenses" in the BSM Platform Administration Guide.

- **Maintenance number.** This is the maintenance number you received with your BSM package.

- **Administrator’s e-mail address.**
- **Port number used by the Web server.** This is the port for access to BSM. The default is port 80.
- **Name of the Gateway Server machine.** This name must also include the domain name.
- **Name of the load balancer** (if applicable)**.** This is the load balancer used to access the BSM site.
- **SMTP mail server name.**
- **SMTP sender name.** This name appears on notifications sent from BSM. This name cannot contain spaces. If a name is entered with spaces the reports will not be delivered.

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

Working with the Web Server

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

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

Apache HTTP Server

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

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

Microsoft Internet Information Server (IIS)

- For Microsoft Windows Server 2008 using IIS 7.x Web server, see "Microsoft Windows Server 2008 using IIS 7.x Web Server" below.
- For Microsoft Windows Server 2012 using IIS 8 Web server, see "Microsoft Windows Server 2012 using IIS 8 Web Server" on the next page.

Microsoft Windows Server 2008 using IIS 7.x Web Server

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

1. In the **Control Panel**, select **Administrative Tools** > **Server Manager**.
2. Right-click **Roles** and select **Add server role** to launch the Add Roles wizard.
3. On the Select Role Services page, select **Web Server (IIS) role** to install.

   If a popup opens with the question **Add features required for Web Server (IIS)?**, click the **Add required features** button.
4. Click **Next** twice.

5. In the Select Role Services panel, select the following roles:
   a. **Common HTTP Features** section: **Static Content** (usually enabled by default)
   b. **Application Development** section: **ISAPI Extensions** and **ISAPI Filters.**
   c. **Management Tools** section: **IIS Management Scripts and Tools**
6. Click **Install**.

Microsoft Windows Server 2012 using IIS 8 Web Server

If you are installing on a Microsoft Windows Server 2012 and using the IIS 8 Web server, perform the following procedure:

1. In the **Control Panel**, select **Administrative Tools** > **Server Manager**.
2. Click **Manage** > **Add Roles and Features**.
3. Click **Next**.
4. Select **Role-based or feature-based installation**.
5. Click **Next**.
6. Select **Select a server from the server pool**.
7. Click **Next**.
8. On the Select Role Services page, select **Web Server (IIS) role** to install.

   If a popup opens with the question **Add features required for Web Server (IIS)?**, click the **Add required features** button.
9. Click **Next** twice.
10. In the Select Role Services panel, select the following roles:
    a. **Common HTTP Features** section:
       - **Static Content** (usually enabled by default)
       - **HTTP Redirection**

    b. **Application Development** section: **ISAPI Extensions** and **ISAPI Filters.**
    c. **Management Tools** section: **IIS Management Scripts and Tools**
11. Click **Next**.
12. Click **Install**.

Installing BSM Servers on a Windows Platform

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

You need administrative privileges for the machines on which you are installing BSM servers. If HP Operations Agent is installed on the system and configured to run as non-root user, switch the user under which the agent is running to the user with administrative privileges that is being used to install BSM.

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

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

You can also install BSM in silent mode. For details, see "Installing BSM Silently" on page 132.

To install BSM servers:

1. Obtain the installation package.

   Go to My software updates (use your HP Passport credentials) and click the BSM 9.26 installation package.

   or

   a. Go to the HP Software Support web site (https://softwaresupport.hp.com) and sign in.

   b. Click **Search**.

   c. Select **Application Performance Management (BAC) > 9.26 > Windows**).

   d. Under Document Type, select **Patches**.

   e. Locate the BSM 9.26 package and save it locally.

2. From the **Start** menu, select **Run**.

3. Enter the location from which you are installing, followed by HPBsm_9.26_setup.exe. The setup file for BSM servers is located in the **Windows_Setup** directory. For example, enter d:\Windows_Setup\HPBsm_9.26_setup.exe

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

4. Click **OK**. Setup begins.

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

   - **Language**. If your installer has been localized to offer additional languages, select one from the options available.

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

   - **Setup type:**

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

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

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

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

   - **Installation directories**. You must select the following directories for installation.

     - Select the installation directory for HP shared content. Note that there is additional shared data in **%ALLUSERSPROFILE%\HP\BSM\**

     - Select the installation directory for product specific content. In Microsoft Windows environments, this path must be 15 characters or less, and must not contain blank spaces. If the name exceeds 15 characters or does not end with **HPBSM**, during the next step, the installation prompts you to give a different name.

     > **Note:** During installation you may get the following message:
     > The necessary ports are in use. If the installation indicates that there are ports in use, the

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

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

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

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

   - **Register the product.**

   - **Configure connection settings:**

     i. **Apache HTTP Server.** If port 80, the default port, is already in use by the existing Web server, BSM notifies you to resolve the conflict. If you select Apache, you must also enter the email address of the BSM administrator.

     ii. **Microsoft IIS.** If IIS is using a port other than port 80, enter the IIS port. If you select IIS, you must also select the IIS Web site address to be used by BSM.

   - **Select the Web server type:**

     - If BSM does not detect an installation of Microsoft IIS on the machine, you are offered the **Apache HTTP Server** option only. If you want to run BSM with Microsoft IIS, click **Cancel** to exit the wizard. Install IIS and rerun Post Install.

   - **Specify the SMTP mail server:**

     - It is recommended that you specify the complete Internet address of your SMTP server. Use only alphanumeric characters.

     - In the **Sender name** box, specify the name to appear in scheduled reports and on alert notices that BSM sends. If BSM was ever installed on the same machine, a default name, **HP_BSM_Notification_Manager**, may appear. You can accept this default or enter a different name.

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

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

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

Appendix B: Installing BSM on a Linux Platform

This appendix contains the following topics:

Preparing Information Required for Installation

Have the following information ready before installation:

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

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

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

Working with the Web Server

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

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

Apache HTTP Server

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

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

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

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

Installing BSM Servers on a Linux Platform

You can install BSM servers—the Gateway Server and Data Processing Server—from the BSM 9.26 installation package.

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

You can also install BSM in silent mode. For details, see "Installing BSM Silently" on page 132.

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

BSM and HP Operations Agent must always run as the same user. If the host system for the BSM installation is preinstalled with an HP Operations Agent and the HP Operations Agent is configured to run as a non-root user, you must first switch the HP Operations Agent to a root user before calling the BSM installer. At the end of the installation, you can choose if BSM runs as a root user or non-root user. If you choose to run BSM as a non-root user, you must switch the HP Operations Agent to the same non-root user.

To install BSM servers:

1. Log in to the server as user **root**.

2. Obtain the installation package.

   Go to My software updates (use your HP Passport credentials) and click the BSM 9.26 installation package.

   or

   a. Go to the HP Software Support web site (https://softwaresupport.hp.com) and sign in.

   b. Click **Search**.

   c. Select **Application Performance Management (BAC) > 9.26 > Linux**).

   d. Under Document Type, select **Patches**.

   e. Locate the BSM 9.26 package and save it locally.

3. (Optional) You can verify that the installation files are original HP-provided code and have not been manipulated by a third-party by using the HP Public Key and verification instructions on the following website:
   https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=

HPLinuxCodeSigning.

4. Run the following script:

   ./HPBsm_9.26_setup.bin

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

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

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

   > **Note:** During installation you may get the following message:
   >
   > The necessary ports are in use. If the installation indicates that there are ports in use, the installation does not fail but it is recommended that you free the necessary ports.

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

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

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

   - **Register the product.** Enter **Name, Company,** and **Maintenance number.**
   - **Configure connection settings:**
     - Host. Must be the fully qualified domain name (FQDN). The name of the server may appear by default but you must add the domain manually. If you use a load balancer, here you must enter the machine name for the load balancer.

  - Port. If port 80, the default port, is already in use by the existing Web server, BSM notifies you to resolve the conflict.

- **View the Web server type and enter the BSM administrator email address.** BSM installs the Apache HTTP Server. This is the web server that must be used in Linux environments.

- **Specify the SMTP mail server:**

  - It is recommended that you specify the complete Internet address of your SMTP server. Use only alphanumeric characters.

  - In the Sender name box, specify the name to appear in scheduled reports and on alert notices that BSM sends.

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

Appendix C: Server Deployment and Setting Database Parameters

This appendix contains the following topics:

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

Setup and Database Configuration Utility Overview

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

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

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

If, at a later time, you want to modify any of the database types or connection parameters, you can run the Setup and Database Configuration utility again. The BSM server on which you are running the utility must be disabled. For details, see "Starting and Stopping BSM" on page 91.

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

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

Before beginning this procedure, it is recommended that you review "Setting Database Parameters" on the next page and "Required Information for Setting Database Parameters" on page 125.

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

Setting Database Parameters

You can set connection parameters for the following databases:

- Management
- RTSM
- RTSM History
- Event
- User Engagement Schema

To configure the connections for these databases, you must:

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

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

Creating Databases

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

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

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

Connecting to Existing Databases

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

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

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

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

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

Required Information for Setting Database Parameters

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

Configuring Connection Parameters for MS SQL Server

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

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

  > **Caution:** There is a twenty six (26) character limit for the **Host name** field while running the utility. If using a host name without a domain name is not appropriate in your environment, perform one of these workarounds:
  >
  > - Use the IP instead of the host name in the **Host name** field.
  > - Map the host name to the IP in the Windows Hosts file. Use the host name you mapped in the **Host name** field.

- **Port.** The MS SQL Server's TCP/IP port. BSM automatically displays the default port, **1433**.
  - If you connect to a named instance in static mode, enter the port number.
  - If you connect to a named instance in dynamic mode, change the port number to **1434**. This port can dynamically listen to the correct database port.

- **Database name.** The name of the existing database that has been manually created, or the name that you will give your new database (for example, BSM_Management).

  > **Note:** Database names starting with numbers are not supported.

- **User name and Password.** (If you use MS SQL Server authentication) The user name and password of a user with administrative rights on MS SQL Server. Note that a password must be supplied.

  > **Tip:** We recommend not using the default **sa** user for security reasons.

You can create and connect to a database using Windows authentication instead of MS SQL Server authentication. To do so, you must ensure that the Windows user running the BSM service has the necessary permissions to access the MS SQL Server database. For information on assigning a Windows user to run the BSM service, see "Changing BSM Service Users " on page 141. For information on adding a Windows user to MS SQL Server, see "Using Windows Authentication to Access Microsoft SQL Server Databases" in the BSM Database Guide.

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

Configuring Connection Parameters for Oracle Server

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

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

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

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

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

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

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

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

- **Admin user name and password.** (to connect as an administrator) The name and password of a user with administrative permissions on Oracle Server (for example, a System user).

- **Default tablespace.** The name of the dedicated default tablespace you created for the user schema.
- **Temporary tablespace.** The name of the temporary tablespace you assigned to the user schema. The default Oracle temporary tablespace is **temp**.

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

Running the Setup and Database Configuration Utility

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

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

> **Note:** You can also run this utility in silent mode. For details, see "Installing BSM Silently" on page 132.

To set database parameters and configure server deployment:

1. Launch the Setup and Database Configuration utility in one of the following ways:
   - At the end of the post-installation wizard, select the option to run the Setup and Database Configuration utility.
   - **Windows:** On the BSM server, select **Start > Programs > HP Business Service Management > Administration > Configure HP Business Service Management**. BSM launches the Setup and Database Configuration utility. Alternatively, you can run the file directly from **<BSM_Installation_Directory>\bin\config-server-wizard.bat**.
   - **Linux:** On the BSM server machine, open a terminal command line and launch **/opt/HP/BSM/bin/config-server-wizard.sh**.
2. Follow the on-screen instructions for configuring the databases.
   a. **License**. If you are running this utility for the first time, you can select to use the evaluation license or download your new licenses. If this is not the first time you are running this utility, you can select to skip this step or download additional licenses. The license file has a .DAT suffix and must be in a local or network location accessible to the server running the utility.

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

   b. **Server Deployment**. The recommended workflow is to enter your deployment information in the capacity calculator to determine the scope of your deployment and which applications and features you will be running. You can upload the saved capacity calculator Excel file into this page of the utility. The required fields are automatically populated with the data from the capacity calculator, based on your entries in the Excel sheet. For details, see the BSM Getting Started Guide.

- **Users**. The number of logged in users determines whether your user load is **small**, **medium**, or **large**.

- **Model**. The number of configuration items in your model determines whether your model is **small**, **medium**, **large**, or **extra-large**.

- **Metric Data**. The number of monitored applications, transactions, locations, and hosts determines whether your metric data load is **small**, **medium**, or **large**.

- **<List of Applications>**. Select or clear the applications to activate or deactivate for this deployment. Clear those applications you are not using to free memory and processor speed for those applications that you are using.

  > **Note:** If you do not enable functionality while running this utility, it is not available to any users. For example, if you do not select Custom Rules (used in OMi and labelled Custom Event Handling in the capacity calculator), users are not able to customize event processing. For details on the application options, see the tooltips in the capacity calculator.
  >
  > After the installation is complete and you want to change your deployment, you can adjust capacity levels and enable or disable applications and functionality in the Server Deployment page in Platform Administration.

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

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

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

   > **Note:** If you change the **Access to RTSM** password during the BSM installation, you must similarly change the password in Diagnostics, RUM, and TV.

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

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

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

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

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

e. **Firewall Configuration**. If you are running BSM behind a firewall, when running the utility on a Gateway Server, you have the option of configuring the firewall either automatically or manually.

- If you choose to configure automatically, **only port 383** (the event system default port) is configured. When the user decides to configure the firewall automatically we check which port is configured for BBC in XPL config and open this port. 383 is the default BBC port but if the user changed this in XPL config we open that port in the firewall instead of port 383.

  You must then manually configure the same port when running the utility on the Data Processing Server because the certificate server is hosted there. You may need to open additional ports if a firewall is enabled on this server. For details, see "Port Usage" in the BSM Platform Administration Guide

- If you choose to configure manually, no port configuration is executed and you must manually configure on both the Gateway Server and the Data Processing Server.

f. To enable the database connections, you must click **Finish** at the end of the utility.

3. If you ran the Setup and Database Configuration utility as part of the BSM server installation, you must start BSM on all servers only after successfully setting the parameters for all the databases. For details, see "Starting and Stopping BSM" on page 91.

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

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

   - Open the following directory: **<Gateway Server root directory>\conf\uimashup\import**. This contains two directories: **\loaded**, and **\toload**.

- Copy the contents of the **\loaded** directory into the **\toload** directory. Restart BSM.

Appendix D: Installing BSM Silently

The wizards used to install and configure BSM can be run in silent mode. Silent mode runs the wizards from a command line, without viewing the wizard interface. This allows Linux users without X-windows to run these wizards, however it can be used in windows environments as well.

The instructions have been written for Linux. To run the files for windows environments, replace all .bin file types with .exe and .sh file types with .bat.

> **Note:** Silent mode is not supported for upgrade wizards.

This appendix contains the following topics:

How to Fully Install BSM 9.26 Silently

This procedure describes how to perform a complete installation of BSM silently, including the installation wizard, post-installation wizard, latest minor-minor release, and setup and database configuration utility.

1. Run the BSM 9.26 Installation Wizard silently by running the installation file from the command line with a **-i silent** parameter. The installation file can be found in **<BSM Installation Media>** root folder.

   - To install the Gateway and Data Processing servers on one-machine (typical installation) using the default installation directory, run the following command:

     setup.bin -i silent

   - To install the Gateway and Data Processing Servers on different machines use the following procedure:

     i. Create an empty file called **ovinstallparams.ini** in the same directory as the installation executable file on both servers.

     ii. Copy the following section to the .ini file on the Gateway Server:

     [installer.properties]

     setup=HPBsm

     group=**gateway**

     iii. Run the Installation Wizard in silent mode on the Gateway Server as follows:

     setup.bin -i silent

     iv. Copy the following section to the .ini file on the Data Processing Server:

     [installer.properties]

     setup=HPBsm

     group=**process**

     v. Run the Installation Wizard in silent mode on the Data Processing Server as follows:

     setup.bin -i silent

2. Open the response file in **<BSM Installation Directory>\Temp\emptyRspFile.xml** and complete the values.

3. If you plan to use a non-root BSM configuration, create an appropriate user.

4. Run the post-installation wizard

   silentConfigureBSM.sh <BSM Installation Directory>\temp\emptyRspFile.xml postinstall

5. Log out of and in to Linux (optional). If you are installing BSM in a Linux environment, and you specified a non-root user in the post-installation wizard, log out and log in using the non-root user you selected.

6. Run the Setup and Database Configuration Utility

   silentConfigureBSM.sh <BSM Installation Directory>\temp\emptyRspFile.xml configserver

7. Enable BSM. For details, see "Starting and Stopping BSM" on page 91.

8. Enabling BSM for the first time may take up to an hour. To check the status of BSM, use the following URL:

   http://localhost:11021/invoke?operation=showServiceInfoAsHTML&objectname=Foundations%3Atype%3DNannyManager

9. In BSM, go to **Platform Administration > Setup and Maintenance > Server Deployment** to enable BSM applications.

How to Generate a Response File to Rerun the Post-Installation Wizard and the Setup and Database Configuration Utility Silently

You can create an xml file with the value entries you used when running the Setup and Database Configuration Utility. This file can be used to run the wizard on different machines.

1. Run the Setup and Database Configuration Utility normally on an existing BSM system.

2. The response file is generated and stored in the **<BSM Installation Directory>/temp** directory or in a location you specified. It is automatically filled in with the values you specified when running the Post-Installation Wizard and the Setup and Database Configuration Utility.

3. You can now run the Post-Installation Wizard and the Setup and Database Configuration Utility on any machine silently with the response file using the following syntax:

   silentConfigureBSM.sh <path to response file>/<response file name>.xml

   > **Note:** You can run the two wizards separately by appending the appropriate command as follows:
   >
   > **silentConfigureBSM.sh <path to response file>/<response file name>.xml [postinstall | configserver]**

   The silentConfigureBSM.sh file can be found in the **<BSM Installation Directory>/bin** directory.

How to Configure Windows Authentication When Running the Setup and Database Configuration Utility Silently

The Setup and Database Configuration Utility allows you to configure BSM to take the database schema credentials directly from the windows authentication credentials. To enable this feature when manually creating a response file, leave the UserName and Password keys for each relevant schema blank. The following example shows the Management schema section of the response file formatted to use windows authentication:

```
        <database name="management">
            <!--Enter 'create' to create a new database or 'connect' to connect to
an existing database-->
            <property key="operation" value="connect"/>
            <property key="dbName" value=" "/>
            <property key="hostName" value=""/>
            <property isEncrypted="true" key="password" value=" "/>
            <property key="server" value=" "/>
            <!--'sid' property is  relevant only if you are using an Oracle
database-->
            <property key="sid" value=" "/>
            <property key="UserName" value=" "/>
            <property key="port" value=""/>
            <!--Please enter your Management Database Server Type:'Oracle' or 'SQL
Server'-->
            <property key="dbType" value=" "/>
            <!--The following four items are only relevant if you are using an
Oracle database-->
            <property key="adminUserName" value=" "/>
            <property isEncrypted="true" key="adminPassword" value=" "/>
            <property key="defaultTablespace" value=" "/>
            <property key="temporaryTablespace" value=" "/>
        </database>
```

How to Encrypt Passwords in the Response File

The passwords that are stored in the response file can be encrypted for added security. To do this, run the password encryption tool located in:

<BSM Installation Directory>/bin/encrypt-password.sh

You enter your password and the encryption tool returns a string. Copy the string to the response file where you would have entered your password.

Limitation: encrypted passwords are valid on the machine that ran the encryption tool.

To remove password encryption, enter the passwords in the response file normally and set the value of **IsEncrypted="false"**.

Appendix E: Upgrade Wizard

This appendix provides information about the BSM upgrade wizard and contains the following topics:

Upgrade Wizard Overview

The upgrade wizard is run after the post-installation wizard. It replaces the setup and database configuration utility which is run in a regular deployment. The upgrade wizard performs the following tasks:

- Migrates data from original databases
- Migrates BSM configurations
- Guides you through manual procedures necessary for the upgrade process

The upgrade wizard gives you the option of skipping some steps and running them later by restarting the wizard manually. This can be done as many times as is necessary. For example, if you do not have time to complete the data upgrade, you can skip it and complete the rest of the wizard. When you manually restart the wizard, your previous progress is saved. Make sure that you run the entire upgrade wizard from start to finish at least once.

The upgrade wizard runs the database schema verify program on your database schemas to verify that they have been configured properly. For details, see the BSM Database Guide.

The wizards are located in the HPBSM\bin directory as follows:

- **Windows:** wizard_run_from91.bat
- **Linux:** wizard_run_from91.sh

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

Preparing Information for the Upgrade Wizard

To speed up the upgrade process, we recommend that you have the following information prepared before starting the upgrade wizard:

- **Data collectors / components.** Access to all data collectors and components integrated with the original BAC servers.
- **BAC / BSM Architecture.** Knowledge of your original BAC or BSM architecture including data collectors / components / servers.
- **BAC/BSM Servers.** Location, credentials, and access to files for all original and new BAC or BSM servers.
- **Database Information.** Locations, credentials, CMDB / RTSM configuration (for example: internal RTSM, external CMDB, both).
  - **SQL server:** Credentials for a member of the sysadmin group or a user with select permissions for the syslogins system view.
  - **Oracle server:** Credentials for a user with the DBA or SELECT_CATALOG_ROLE role.

Appendix F: Changing BSM Service Users

This appendix provides the procedure for how to switch the Windows and Linux users associated with BSM and contains the following topics:

"Switching the Windows User" below

"Switching the Linux User" on the next page

Switching the Windows User

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

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

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

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

To change the BSM service user:

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

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

Switching the Linux User

BSM must be configured to run on linux using a specific user. This user can be either the root or any other user. BSM supports only one user at a time. The user is defined in the post-installation wizard.

To switch the user after BSM is installed:

1. Stop BSM.

2. Rerun the post-installation wizard and specify the new user. The post-installation wizard can be run from the following location: **<HPBSM root directory>\bin\postinstall.bat**.

3. Log out of Linux and log in with the new user.

4. Run the Setup and Database Configuration Utility

   Run the Setup and Database Configuration Utility on the Gateway and Data Processing Servers. You do not have to change any settings. The Setup and Database Configuration Utility can be run from the following location **<HPBSM root directory>\bin\config-server-wizard.bat**.

5. Start BSM.

Appendix G: Upgrading SLAs from BSM 9.x to 9.2x to Work with Baselining

BSM 9.20 introduced the concept of **baselining**. In End User Management, Business Process Monitor performance metrics are analyzed over a period of time, and are used to provide a baseline comparison for establishing acceptable performance ranges. When a transaction's performance exceeds that range by some value, the transaction can signal a performance problem. The acceptable performance range of a transaction is determined by how far the current performance is from the baseline. For details, refer to the Baselines for BPM section in the BSM Application Administration Guide.

The following section is *only* relevant if you are upgrading from BSM 9.x to 9.2x and you want to add baselining to your existing SLAs, and your 9.x SLAs contain one of the following:

- BPM transaction CIs with the BPM Percentile Sample-Based rule defined on performance HIs.
- Groovy rule (Rules API) that use the tot_ok, tot_minor, or tot_critical fields from the trans_t sample in their rule calculation.

Baselining influences the transaction thresholds, and will therefore have an impact on your SLA calculation. If you want to minimize this influence so that your SLA calculation results are similar to pre-baselining, perform the steps described in the following section.

> **Note:** If you have Groovy rules that use the above fields, you may prefer to change your rule script to use a different field from the sample, instead of performing the following procedure.

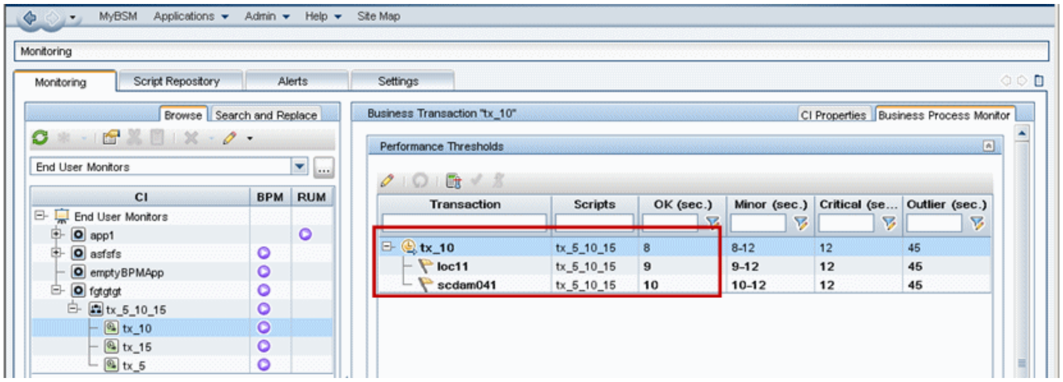
In this procedure you will clone your original SLA (before enabling baselining) to save calculation results; change rules on the cloned SLA to rules that are not influenced by baselining; stop the original SLA; and then configure baselining without it influencing SLA calculation.

Depending on your SLA, proceed with one of the following procedures:

- "To update SLAs with different thresholds in each location:" below.
- "To update SLAs with the same thresholds in each location:" on page 147.

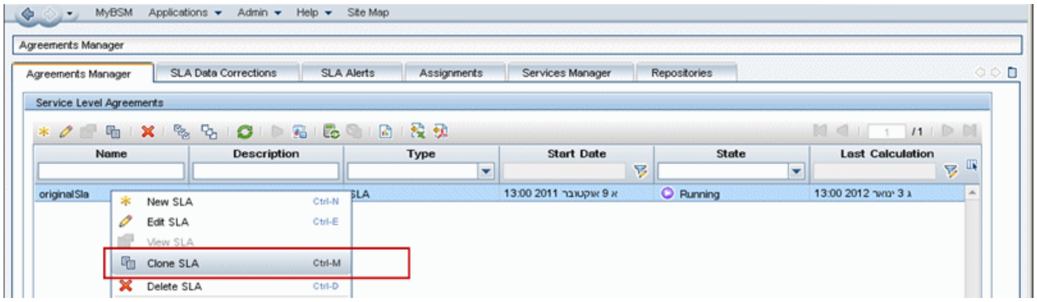
To update SLAs with different thresholds in each location:

If you have different thresholds for a transaction in each BPM location perform the following procedure:



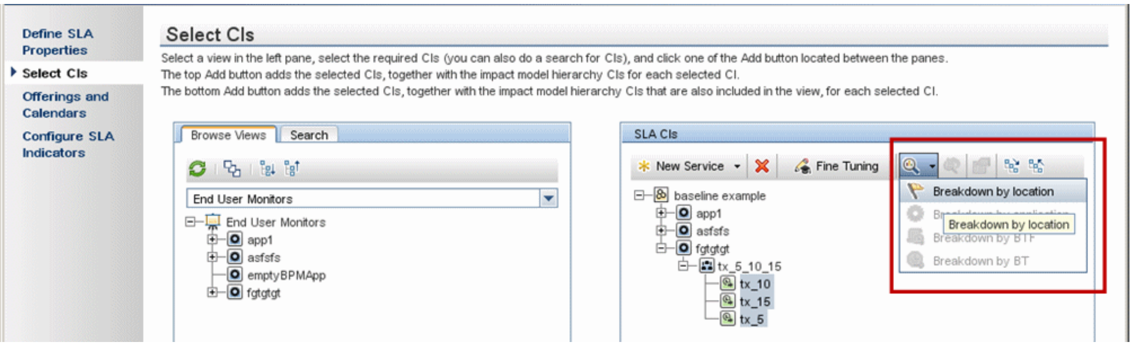
Transaction	Scripts	OK (sec.)	Minor (sec.)	Critical (se...	Outlier (sec.)
tx_10	tx_5_10_15	8	8-12	12	45
loc11	tx_5_10_15	9	9-12	12	45
scdam041	tx_5_10_15	10	10-12	12	45

1. Within **Admin > Service Level Management**, clone your SLA; this saves your original SLA with its old calculation results.



Name	Description	Type	Start Date	State	Last Calculation
originalSla		SLA	13:00 2011 אוקטובר 9 א	Running	13:00 2012 ינואר 3 ג

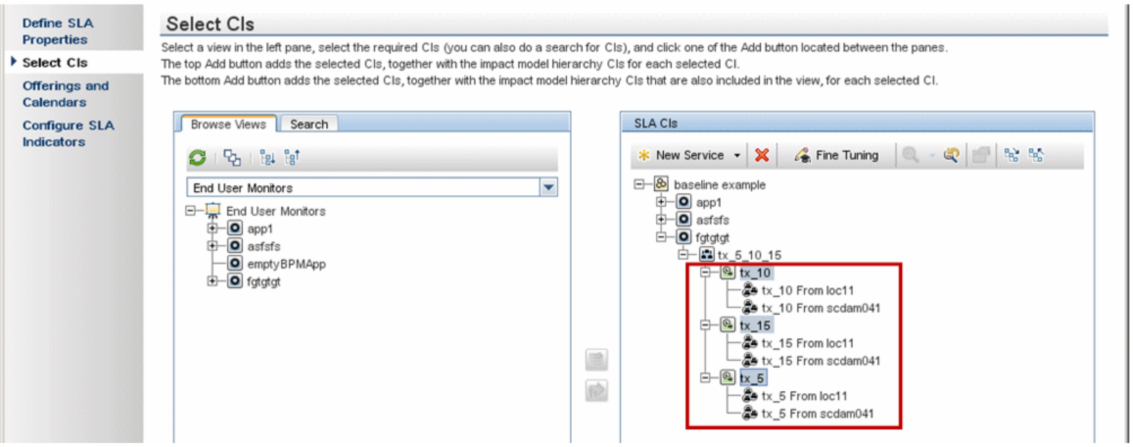
2. Within **Admin > Service Level Management**, edit the duplicated SLA. In the SLA wizard, open the **Select CIs** page. Select all the BPM transaction CIs in the SLA, and perform a breakdown for all locations.



Select CIs

Select a view in the left pane, select the required CIs (you can also do a search for CIs), and click one of the Add button located between the panes.
The top Add button adds the selected CIs, together with the impact model hierarchy CIs for each selected CI.
The bottom Add button adds the selected CIs, together with the impact model hierarchy CIs that are also included in the view, for each selected CI.

The result is as follows:



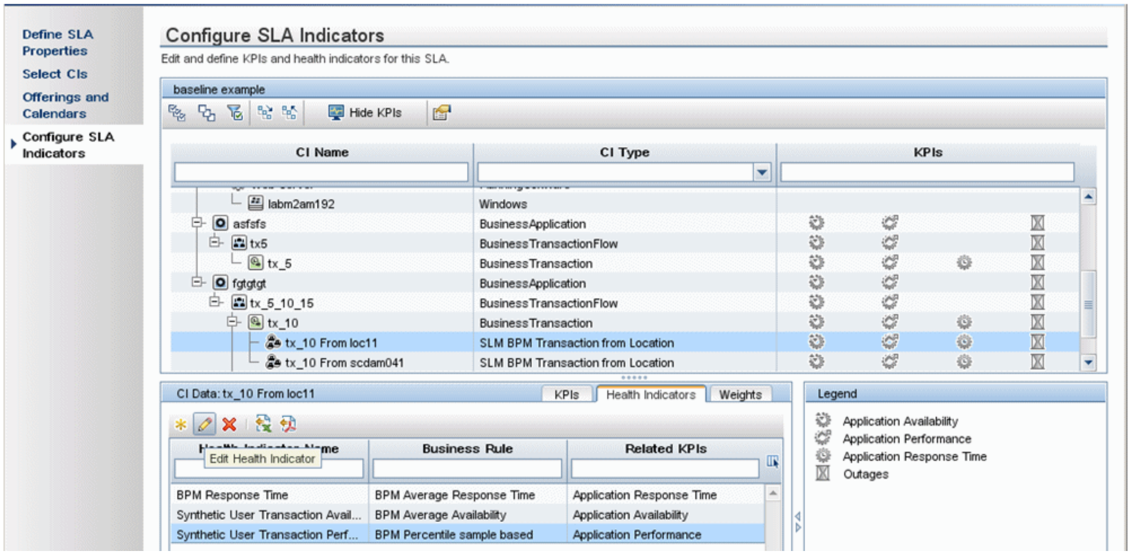
Select CIs

Select a view in the left pane, select the required CIs (you can also do a search for CIs), and click one of the Add button located between the panes.
The top Add button adds the selected CIs, together with the impact model hierarchy CIs for each selected CI.
The bottom Add button adds the selected CIs, together with the impact model hierarchy CIs that are also included in the view, for each selected CI.

Note: If a new location was added to the application inside the SLA, to add the location to the breakdown you must disable the breakdown for the selected transaction using the **Undo Breakdown** button, and then enable it again.

3. Within **Admin > Service Level Management**, edit the duplicated SLA. In the SLA wizard, open the **Configure SLA Indicators** page. On each of the performance HIs under the transaction from location CIs, change the percentile rule from BPM Percentile Sample-Based to BPM Percentile.

For details on these rules, refer to the list of SLM calculation rules in the the BSM Application Administration Guide.



Configure SLA Indicators

Edit and define KPIs and health indicators for this SLA.

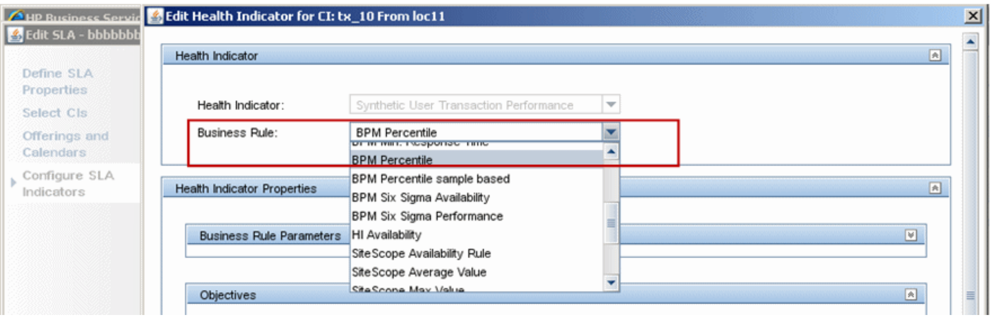
CI Name	CI Type	KPIs
labm2am192	Windows	
asfsfs	BusinessApplication	
tx5	BusinessTransactionFlow	
tx_5	BusinessTransaction	
fgtgtgt	BusinessApplication	
tx_5_10_15	BusinessTransactionFlow	
tx_10	BusinessTransaction	
tx_10 From loc11	SLM BPM Transaction from Location	
tx_10 From scdam041	SLM BPM Transaction from Location	

CI Data: tx_10 From loc11

Health Indicator Name	Business Rule	Related KPIs
BPM Response Time	BPM Average Response Time	Application Response Time
Synthetic User Transaction Avail...	BPM Average Availability	Application Availability
Synthetic User Transaction Perf...	BPM Percentile sample based	Application Performance

Legend

- Application Availability
- Application Performance
- Application Response Time
- Outages



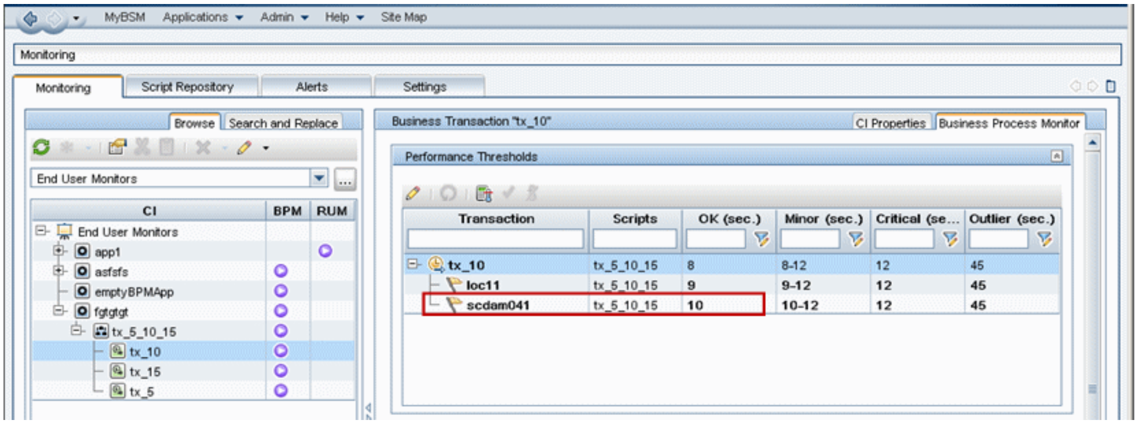
Edit Health Indicator for CI: tx_10 From loc11

Health Indicator: Synthetic User Transaction Performance

Business Rule: BPM Percentile

4. For each of the transaction from location CIs whose rule you changed, copy the OK performance threshold defined for the CI in EUM Admin, and use it to define the Percentile Condition rule parameter.

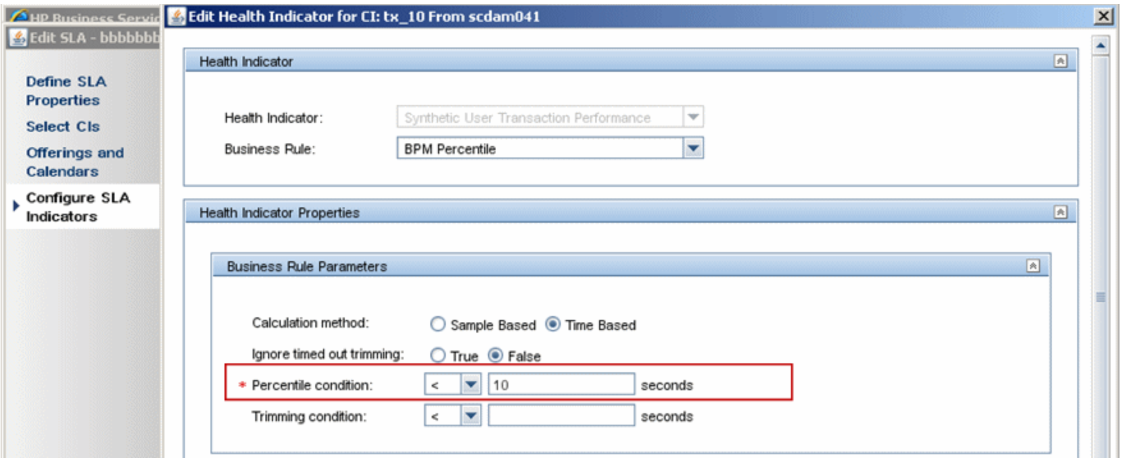
For example, for transaction tx_10 and location scdam041 the threshold is 10:



Business Transaction "tx_10"

Performance Thresholds

Transaction	Scripts	OK (sec.)	Minor (sec.)	Critical (se...	Outlier (sec.)
tx_10	tx_5_10_15	8	8-12	12	45
loc11	tx_5_10_15	9	9-12	12	45
scdam041	tx_5_10_15	10	10-12	12	45



Edit Health Indicator for CI: tx_10 From scdam041

Health Indicator: Synthetic User Transaction Performance

Business Rule: BPM Percentile

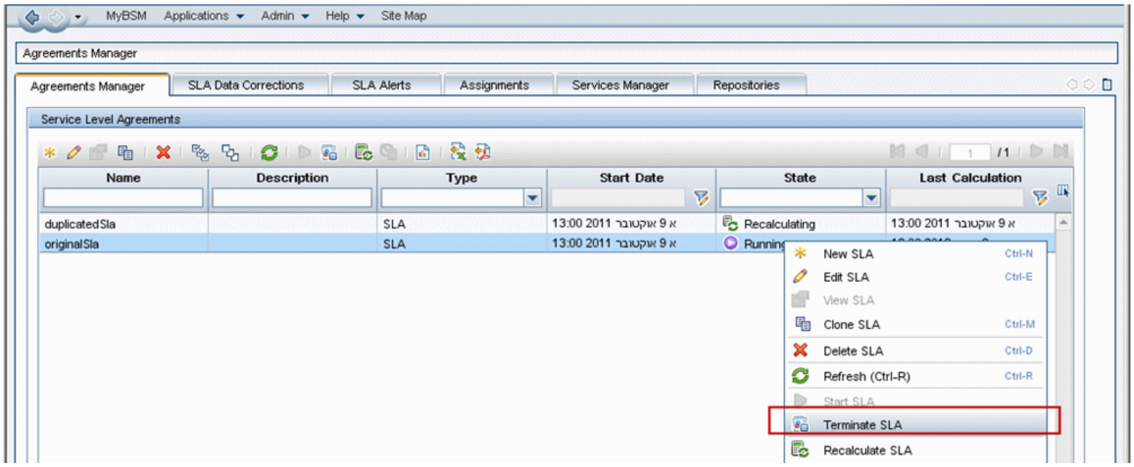
Calculation method: ○ Sample Based ● Time Based

Ignore timed out trimming: ○ True ● False

* Percentile condition: < 10 seconds

Trimming condition: < seconds

5. When you finish creating and editing the duplicated SLA, stop the original SLA.



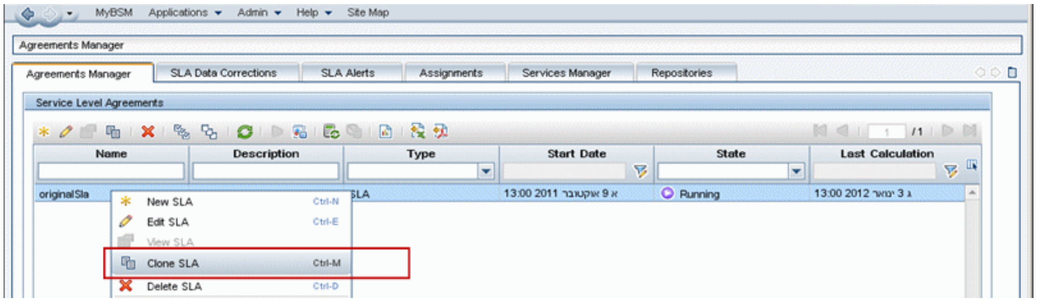
Name	Description	Type	Start Date	State	Last Calculation
duplicatedSla		SLA	13:00 2011 אוקטובר 9 א	Recalculating	13:00 2011 אוקטובר 9 א
originalSla		SLA	13:00 2011 אוקטובר 9 א	Runnin	

You can now configure baselining without influencing the SLA's calculation.

To update SLAs with the same thresholds in each location:

If you have the same threshold for all locations, perform the following procedure:

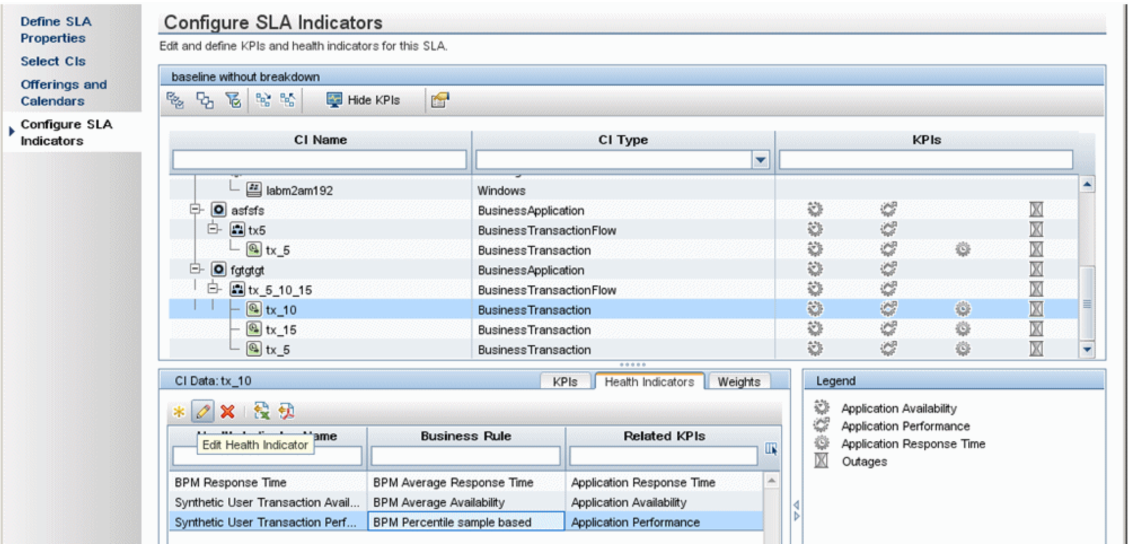
1. Within **Admin > Service Level Management**, clone your SLA; this saves your original SLA with its old calculation results.



Name	Description	Type	Start Date	State	Last Calculation
originalSla		SLA	13:00 2011 אוקטובר 9 א	Running	13:00 2012 ינואר 3 ג

2. Within **Admin > Service Level Management**, edit the duplicated SLA. In the SLA wizard, open the **Configure SLA Indicators** page. On each of the performance HIs under the BPM transaction CIs, change the percentile rule from BPM Percentile Sample-Based to BPM Percentile.

For details on these rules, refer to the list of SLM calculation rules in the the BSM Application Administration Guide.



Configure SLA Indicators

Edit and define KPIs and health indicators for this SLA.

baseline without breakdown

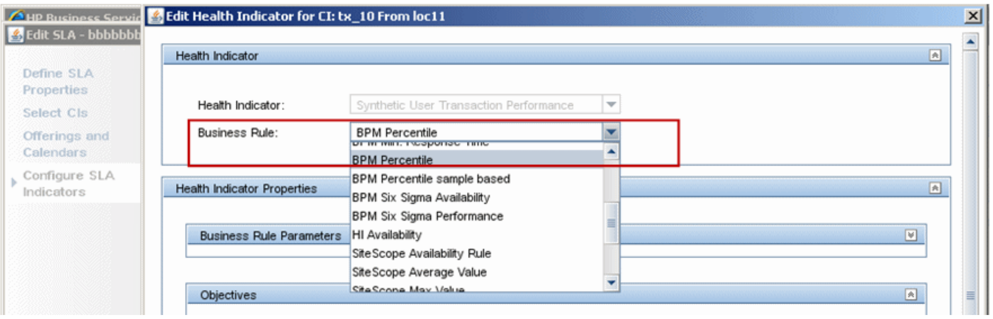
CI Name	CI Type	KPIs
labm2am192	Windows	
asfsfs	BusinessApplication	⚙ ⚙ ☒
tx5	BusinessTransactionFlow	⚙ ⚙ ☒
tx_5	BusinessTransaction	⚙ ⚙ ⚙ ☒
fgtgtgt	BusinessApplication	⚙ ⚙ ☒
tx_5_10_15	BusinessTransactionFlow	⚙ ⚙ ☒
tx_10	BusinessTransaction	⚙ ⚙ ⚙ ☒
tx_15	BusinessTransaction	⚙ ⚙ ⚙ ☒
tx_5	BusinessTransaction	⚙ ⚙ ⚙ ☒

CI Data: tx_10

Health Indicator Name	Business Rule	Related KPIs
BPM Response Time	BPM Average Response Time	Application Response Time
Synthetic User Transaction Avail...	BPM Average Availability	Application Availability
Synthetic User Transaction Perf...	BPM Percentile sample based	Application Performance

Legend

- ⚙ Application Availability
- ⚙ Application Performance
- ⚙ Application Response Time
- ☒ Outages



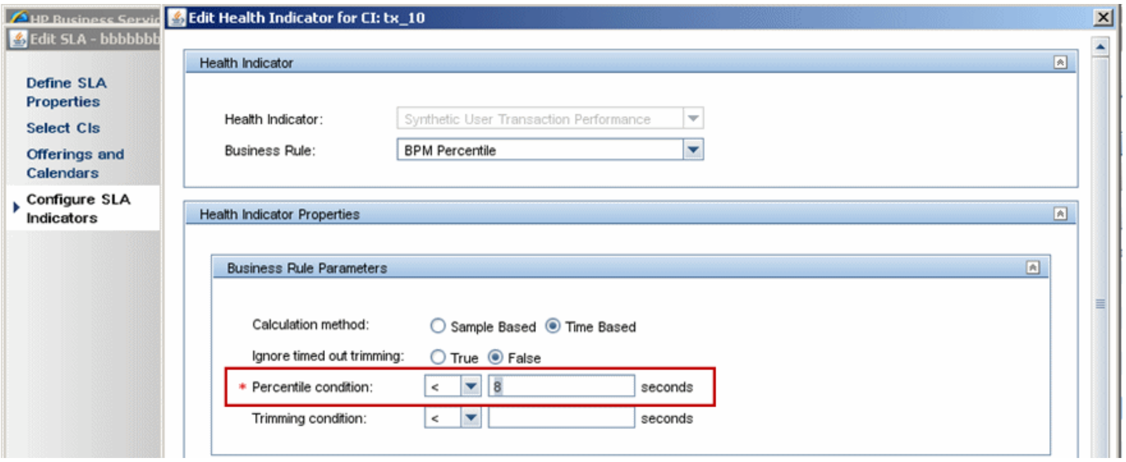
Edit Health Indicator for CI: tx_10 From loc11

Health Indicator: Synthetic User Transaction Performance

Business Rule: BPM Percentile

3. For each of the transaction CIs whose rule you changed, copy the OK performance threshold defined for the CI in EUM Admin, and use it to define the Percentile Condition rule parameter.

For example, for transaction tx_10 the threshold is 8:



Edit Health Indicator for CI: tx_10

Health Indicator: Synthetic User Transaction Performance

Business Rule: BPM Percentile

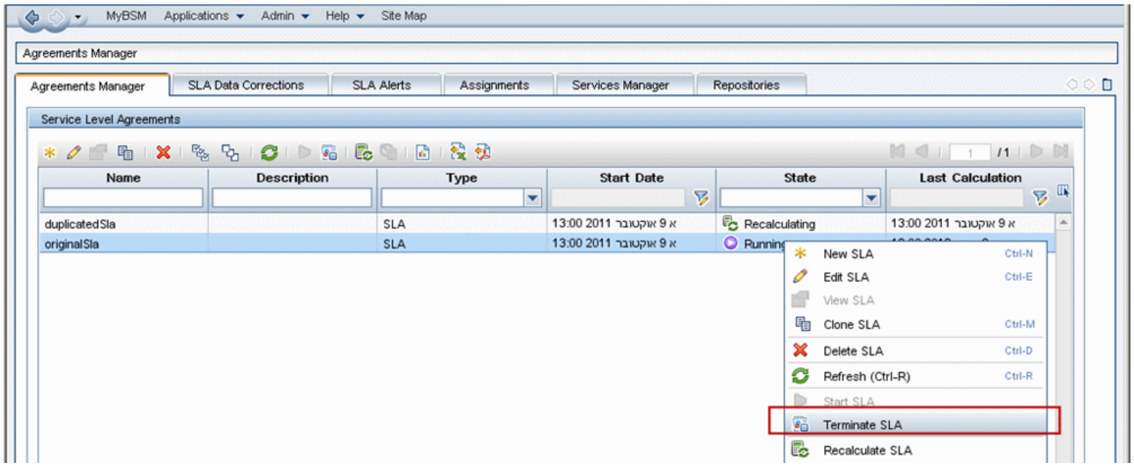
Calculation method: ○ Sample Based ● Time Based

Ignore timed out trimming: ○ True ● False

* Percentile condition: < 8 seconds

Trimming condition: < seconds

4. When you finish creating and editing the duplicated SLA, stop the original SLA.



Name	Description	Type	Start Date	State	Last Calculation
duplicatedSla		SLA	13:00 2011 אוקטובר 9 א	Recalculating	13:00 2011 אוקטובר 9 א
originalSla		SLA	13:00 2011 אוקטובר 9 א	Running	

You can now configure baselining without influencing the SLA’s calculation.

Appendix H: Troubleshooting

This appendix contains the following topics:

Troubleshooting Resources

- **Installation log files.** For details, see "Check installation log files" on page 87.

- **Upgrade log tool.** To view a summary of errors that occurred during the configuration upgrade portion of the upgrade wizard, run the upgrade log tool located at **<HPBSM root directory>\tools\logTool\logTool.bat**. This generates a report in the same directory with the name **logTool.txt**.

- **HP Software Self-solve knowledge base.** For additional troubleshooting information, see the HP Software Self-solve knowledge base accessed from the HP Software Support (https://softwaresupport.hp.com).

- **BSM Tools.** You can use BSM tools to assist in troubleshooting the HP Business Service Management environment. You access the tools from **<HPBSM root directory>\tools** directory. Most of the tools should only be used in coordination with HP personnel. The Database Schema Verification utility (dbverify) and Data Marking utility should be used according to documented instructions.

- **BSM Logging Administrator.** This tool allows you to temporarily modify the level of details displayed in BSM logs, as well as create custom logs. To open the BSM Logging Administrator Tool, open the following URL:

  http://<BSM Gateway Server>/topaz/logAdminBsm.jsp

Installation and Connectivity Troubleshooting

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

Unable to access BSM using Internet Explorer with an FQDN that has a two letter domain

Internet Explorer does not support FQDNs with two letters domains for the BSM default virtual URL (for example XXXX.aa).

Workaround:

If FQDN has a two letter domain, use another browser (not Internet Explorer) to access BSM.

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.

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.
    - **Windows:** Select **Start > Settings > Control Panel > System > Advanced tab > Environment Variables**, and edit the path for the **TEMP** variable in the User variables area.
    - **Linux:** Run the following commands:

      ```
      export IATEMPDIR=/new/tmp
      ```

      ```
      export _JAVA_OPTIONS=-Djava.io.tmpdir=/new/tmp
      ```

      where `/new/tmp` is the new working directory.

Installation fails due to security restrictions of the /tmp directory on Linux

If the /tmp directory has security restrictions that prevent script execution from it, the installation will fail.

Solution:

Set a new /tmp directory not affected by these restrictions, by running the following commands:

```
export IATEMPDIR=/new/tmp
```

```
export _JAVA_OPTIONS=-Djava.io.tmpdir=/new/tmp
```

where `/new/tmp` is the new working directory.

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

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

A network login prompt appears when completing the BSM server installation

Possible Cause:

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

Solution:

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

Tomcat servlet engine does not start and gives an error

The error message is as follows:

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

Possible Cause:

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

Solution:

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

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

Inability to install BSM components due to administrative restrictions

Possible Cause:

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

Solution:

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

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

Perform the following tasks:

1. Verify that all BSM processes were started by accessing the status page. For details, see "How to View the Status of Processes and Services" in the BSM Platform Administration Guide.
2. If all the services appear green in the status page, browse to BSM using port 29000 (http://MACHINE _NAME:29000).

   Try to access the JMX console. If you can access the console, continue with step 3 trying to discover the problem.
3. Check if the Web server is started (http://MACHINE _NAME). If the Web server is started, you probably have a problem with the ISAPI filter.
4. If the problem is with the ISAPI filter and you are running on a Microsoft Windows 2008 server, check that you followed the procedure for creating a role. For details, see "Working with the Web Server" on page 110.
5. The Apache server may not be successfully starting because of a port collision.

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

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

Solution:

To update the IIS ISAPI filter to the new path:

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

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

There are various conditions that may cause this problem. For details on causes and possible solutions, refer to the HP Software Self-solve Knowledge Base, and search for article number KM438393. (https://softwaresupport.hp.com/group/softwaresupport/search-result/-/facetsearch/document/KM438393).

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

Symptoms/Possible Causes:

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

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

<body>

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

</body>

</html>)
```

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

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

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

Solution:

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

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

Possible Cause:

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

Solution:

- Add the Gateway Server name to the Business Process Monitor machine's **<Windows system root directory>\system32\drivers\etc\hosts** file.

- Change the Gateway Server name in the **<HPBSM root directory>\WebServer\conf\httpd.conf** file on the Gateway Server to a recognized name in the DNS.

Post-Installation Wizard fails during BSM installation on Linux machine

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

Failed to install Adobe Flash Player

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

BSM fails to start or BSM configuration wizard does not open

Check the supervisorwrapper.log file for the following error:

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

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

Failure to log in based on FQDN

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

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

Possible Cause:

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

Resolution:

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

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

Java applets not opening

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

Uninstalling BSM results in errors

If you receive a few errors that look like the following:

The package HPOv....can not be uninstalled.

You can ignore these errors. BSM has been uninstalled correctly.

Unreadable Eastern Asian Characters

On some RHEL6.x distributions, when choosing to install BSM in an Eastern Asian locale (Korean, Japanese or Simplified Chinese), the installation UI displays unreadable characters.

Workaround:

Launch the installer with a JRE that supports Eastern Asian Languages.

setup.bin LAX_VM ${PATH_TO_JAVA}

Server is not ready message

If you see the following, it is an indication that JBoss is not starting.

- The status page returns the “Server is not ready” message.
- Processes are not loading.
- The wrapper.log file from the <HPBSM>\log\supervisor folder contains this error: “Error: Password file read access must be restricted: c:\HPBSM/JRE64/lib/management/jmxremote.password”

Workaround:

1. Disable BSM.
2. Navigate to **<HPBSM>\JRE64\lib\management**.
3. Right-click **jmxremote.password** and select **Properties**.
4. Click the **Security** tab..
5. Click **Edit**.
6. Click **Add** and add the **Administrators** group.
7. Allow **Read** and **Write** permissions for the Administrators group.
8. Enable BSM.

Troubleshooting the Upgrade Process

This section describes problems that you may encounter when upgrading BSM, and the solutions to these problems.

General issues

- If you are using remote desktop and the upgrade wizard is not displayed properly, try reconnecting with remote desktop at a different resolution, or from a different machine.
- Within the wizard, if the **Next** button or **Back** button do not work, check the upgrade Framework.log for the cause of the error. In most cases, restarting the upgrade wizard resolves the problem.
- RUM Engine permissions may be reset during the BSM upgrade. Therefore, it is recommend to ensure that the RUM Engine View permission is selected after upgrading BSM.

  a. In BSM, click **Admin > Platform**.

  b. Click the **Users and Permissions** tab.

  c. Click **User Management**.

  d. In the tree, select an EUM context and click the **Permissions** tab.

  e. Select the RUM Engine instance(s) and click the **Operations** tab.

  f. Enable the **View** option if it is not already selected and if it is not inherited or granted from Group/Roles/Parent.

JBoss does not start when there are two enabled NICs

Description: JBoss does not start when there are two enabled NICs.

Workaround: There is a known issue with JBoss 7 (used by BSM 9.26) when there are multiple NICs (LANs) on the box. To resolve this problem, install the following hotfix on top of BSM 9.26 IP1 **https://patch-central.corp.hpecorp.net/crypt-web/protected/viewContent.do?patchId=QCCR1I118920_HOTFIX**.

Cannot log in to LDAP after upgrade

Description: The upgrade process could not reuse an LDAP configuration created before BSM version 9.25. Therefore, newly created users are not able to log in to LDAP. This is because support for multiple LDAPs was added in BSM version 9.25.

Workaround: After upgrading from BSM version 9.24 or earlier to version 9.25 or later, reconfigure LDAP.

Sending Scheduled Reports

Scheduled reports are not sent from the staging servers while they are in staging mode. This prevents multiple reports from being sent. Non-scheduled reports can be sent by opening the **Report Manager**, selecting the report, and clicking the **Email This Report** button.

You can manually modify this setting so that BSM does send scheduled reports from the staging servers. To do so, enter an email address in the **Platform > Setup and Management > Infrastructure Settings > HP BSM Evaluation > Alerts mail address** setting.

SISConfigurationEnrichmentUpgrader failure

Description: During BSM upgrade, if the SISConfigurationEnrichmentUpgrader reports FAILED, PARTIALLY FAILED, or NOT REQUIRED status, the BSM content packs may not automatically upload upon restart.

Workaround: Delete the blockAutoUpload file located in the <HPBSM root directory>\conf\opr\content folder after SISConfigurationEnrichmentUpgrader finished and before BSM restart.

Troubleshooting the 9.1x Upgrade Wizard

Introduction screen

If the introduction screen opens without **Next** or **Back** buttons, close the wizard and reopen it. If repeating this action does not help, restart the wizard.

Upgrade Settings screen

If the server type shown in the upgrade settings screen is not the type you expect, you must reinstall BSM on this machine.

Copying Files screen

- Make sure you copy DPS files to the DPS, and Gateway files to the Gateway. Do not accidentally copy Gateway files to the DPS.

- If you forget to copy the **excels** folder (or you copy it to the wrong location), you can copy it later without consequence. If you have not yet installed the Gateway, save the **excels** folder to a temporary location, and copy it to the correct location after you install the Gateway.

- If you forget to copy the **cmdb/adapters** folder (or you copy it to the wrong location), the EUM configuration upgrade will fail. You can then copy the files and re-run the configuration upgrade with no consequence.

- If you have Service Health custom rule jars and you did not copy them (or copied them to the wrong location), after you start BSM the online engine fails when calculating HIs or KPIs with the custom rule. The log files contain errors, and the HIs or KPIs are shown without status. To resolve this, copy the custom rule jars at any stage and then continue with the upgrade.
- If you have SLM custom rule jars and you did not copy them (or copied them to the wrong location), the offline engine fails when calculating HIs or KPIs with the custom rule. The log files contain errors, and the HIs or KPIs are shown without status. To resolve this, copy the custom rule jars and run recalculation of all your SLAs, before the relevant data is purged from the database.

Database Connection - Profile Schema Settings

If you enter the details of the wrong profile database and you run the schema upgrade, the upgrade fails and the following message appears: **The current schema is not compatible with version 8.0.** The differences between your database and the schema will be greater than expected. Restore the Databases, and restart the upgrade.

Schema Upgrade

- If the schema upgrade step fails, follow the on-screen instructions. In most cases, an SQL script is generated that resolves the problems that caused the failure of the schema upgrade.
- If the schema upgrade fails because you have users connected to the database, but the user shown is the current machine, click **Next** and re-run the schema upgrade. If this happens more than a reasonable number of times, you can ask your DBA to kill the connections, and then click **Next**.
- If there are no connections, and the schema upgrade step fails or gets stuck, you can skip this validation step. In the file **C:\HPBSM\dbverify\conf\UFupgrade_tasks.xml**, remove or comment out the line **com.mercury.dbverify.tasks.ConnectionTask**.

Update Environment

- Use the export tool log to verify that the LDAP Database Export/Import tool worked properly, or to see details of problems encountered.
- Server Deployment: If you select the wrong applications, you may fail with memory issues at any point in the upgrade. To fix the incorrect configuration, change the server deployment and restart BSM.
- Server Deployment: If you receive a message stating that the machine is not aligned with the current deployment and a restart of BSM is required, disregard this message. BSM will be restarted as part of the upgrade process at a later stage.

- Login Settings: If you are using a non-default password for RTSM, update all data collectors with the new password when you finish upgrading to the new servers.

- Login Settings: If you re-run the upgrade wizard and enter a different password for RTSM than the one you used the first time, the configuration upgrade (Geo Attributes upgrader) will fail. The logs will contain the following message: **Failed to connect to RTSM**. Re-run the upgrade wizard, and enter the password for RTSM which you used the first time you ran the upgrade.

- Content Pack Import: If the user is not an administrative user, the oprContentUpgrader will fail. In this case, delete the file OprUpload, and re-run the upgrade wizard using administrative credentials.

- Content Pack Import: If an LDAP was configured in the production environment and is not accessible, you will fail on the oprContentUpgrader. In this case, disable the LDAP and re-run the upgrade wizard.

CMDB Upgrade

- If an upgrader fails, review the following log file: HPBSM\odb\runtime\log\upgrade\upgrade.short.log.

- If the CMDB upgrade fails, and the failure requires restoring the database, you only need to restore the CMDB schemas. You do not need to re-run all previous steps of the wizard. Additionally, you need to delete the following directory from the Data Processing Server running the upgrade wizard: HPBSM\odb\runtime.

Start BSM

- At this point in the upgrade wizard, when you start BSM not all processes are up, and the UI is not available. This is because BSM is temporarily in Upgrade mode; at a later stage you will restart BSM in Full Mode.

- When the upgrade wizard reaches the Start BSM step, certain steps are marked as successful and will not run again. If you want to rerun these steps (for example, if the DB is restored to the backup) remove all files under **<BSM installation directory>\Temp** that start with **opr**.

Configuration Upgrade

- If you passed the Start BSM step and ran the configuration upgrade, but the second upgrader (Geo Attributes) has failed, you may have run the configuration upgrade without BSM being completely ready - all processes and all services must be up. Check that BSM is up, and click the Upgrade button to re-run the configuration upgrade.

- If an optional upgrader fails, do not continue to the next step, but rather investigate the problem. You should then fix the problem and re-run the upgrade, or, if you decide that the problem does not prevent you from declaring the upgrade successful, finish the upgrade.

- If an optional upgrader fails and you proceed with the upgrade anyway, you can return to the configuration upgrade at a later stage. In this case, before you re-run the upgrader you must perform the following procedure:

  a. Run the setVersion JMX with the value 8.0.0.0. The setVersion JMX is under port 29000, Topaz service=Upgrade Framework.

  b. Disable BSM and restart the upgrade wizard.

  c. Re-run the configuration upgrade.

- When all upgraders have passed, check the logs for minor errors by running the upgrade log tool located at **<HPBSM root directory>\tools\logTool**. The log tool is also useful when an upgrader fails.

- If a mandatory upgrader partially failed and you accidentally selected **Pass Upgrade**, the status is set to PASSED and the upgrader cannot be re-run. To re-run, use the jmx setUpgraderStatus and set the upgrader to failed.

Data Upgrade

If the failures column contains an entry greater than 0, check the logs for errors; this may be a database problem that is easily resolved. Otherwise, contact HP Support.

Staging Data Replicator (SDR)

To verify that SDR is working:

1. Open **<SDRroot directory>\conf\core\Tools\log4j\sdreplicator\sdreplicator.properties**. Modify the **loglevel** to **debug**.

2. Open **<BSM Directory>\>\conf\core\Tools\log4j\sdreplicator\wde.properties.** Modify the **loglevel** to **debug**.

3. Find the most recent sample in **<SDR root directory>/log/sdrPublishedSamples.log** and make sure that you can locate it in **<BSM destination>/log/wde/wdePublishedSamples.log**. If samples are appearing in both logs, the SDR is working.

4. Modify the **loglevel** settings to **INFO** in the **sdreplicator.properties** and **wde.properties** files.

Data Transfer Tool

- Verify that the SDR is working before running the Data Transfer Tool; you can check the SDR log to see that the SDR is working. If you ran the Data Transfer Tool and the SDR did not run, a message will appear when you click Next (SDR initiation Date warning).

- If you exit the wizard (or the wizard crashes) during the data transfer tool sequence of steps, re-run the tool on the same dates it ran earlier (see upgrade_all.log for the exact times).
- If you decide not to run the Data Transfer Tool, you will have missing data. Take this into account when looking at reports.
- If you did not record the time of the database backup, choose a date prior to the date of backup. You will have no data missing, but the Data Transfer Tool will take longer than necessary.
- When you run the Data Transfer Tool for a second time, you must choose a different path for the temporary folder than the one chosen for the first run.
- If you accidentally enter the credentials of the staging DB and not the production DB, you will receive the following error message: **Operation Failed … FileNotFoundException**. Enter the correct details, and continue.
- The UI allows you to pause the Transferred data upgrade, but actually this does not have any effect.

Verifying Digitally Signed HP Files

All HP installation files that are in the format listed below are digitally signed:

- **Windows:** MSI, EXE, DLL, VBS, JS, CPL.
- **Linux:** RPM files only.

To verify that the installation files are original HP-provided code and have not been manipulated by a third party, you can do the following:

For Windows files:

1. Right-click the file and select **Properties**.
2. Select the **Digital Signatures** tab and verify that the name of the signer is Hewlett-Packard.

For Linux files:

Open a command line, and run the following commands:

# rpm -v -checksig ${RPM_FILE_NAME}# rpm -v -qi -p ${RPM_FILE_NAME}

For example:

```
# rpm -v --checksig  HPBsmFndCom1-9.10.320-Linux2.6_64.rpm

HPBsmFndCom1-9.10.320-Linux2.6_64.rpm:

    Header V3 DSA signature: OK, key ID 2689b887

    Header SHA1 digest: OK (a4b436a86ca52dde34113c964866d5838b50bbc5)

    MD5 digest: OK (59def5f6719a78eac778324bdb0f6f05)
    V3 DSA signature: OK, key ID 2689b887


# rpm -v -qi -p  HPBsmFndCom1-9.10.320-Linux2.6_64.rpm
Name        : HPBsmFndCom1                 Relocations: (not relocatable)
Version     : 9.10.320                          Vendor: Hewlett-Packard Company
Release     : 1                             Build Date: Sun 27 Mar 2011 06:15:37
PM IST
Install Date: (not installed)               Build Host: LABM1AMRND02.devlab.ad
Group       : Applications/System           Source RPM: HPBsmFndCom1-9.10.320-
1.src.rpm
Size        : 298420659                        License: Hewlett-Packard
Development Company, L.P.
Signature   : DSA/SHA1, Sun 27 Mar 2011 07:04:03 PM IST, Key ID 527bc53a2689b887
Summary     : HP BSM Foundations Common Components Pack_1
Description :
HP BSM Foundations Common Components Pack_1
```

Limitation

- Search queries defined in **EUM Admin > Search and Replace** for BSM version 9.01 do not work in BSM 9.13 or later .

  Workaround: Recreate the queries in the later BSM version.

- In the staging environment, you cannot retrieve any data for reports that query RUM when RUM is pointing to the BAC side.

Send Documentation Feedback

If you have comments about this document, you can contact the documentation team by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

Feedback on BSM Upgrade Guide - 9.1x to 9.26 (Business Service Management 9.26)

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to Sw-doc@hpe.com.

We appreciate your feedback!