

HP Server Automation Storage Visibility and Automation

for the HP-UX, IBM AIX, Red Hat Enterprise Linux, Solaris, SUSE Linux Enterprise Server, VMware, and Windows® operating systems

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Upgrade Guide

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1 Overview

Audience & Assumptions

This guide is intended for storage administrators who are responsible for upgrading the Storage Visibility and Automation feature in Server Automation.

This document assumes that you are familiar with:

- Installing and configuring the Storage Host Agent Extension (SHA) for Storage Visibility and Automation
- Installing and configuring the Storage Scanners (SE Connector and Database Scanner for Oracle) for Storage Visibility and Automation
- The operating systems on which Storage Visibility and Automation is installed or upgraded on
- The discovery processes and tasks in Storage Essentials (SE)
- The fundamentals of Server Automation (SA), including how to upgrade an SA core

See the *Storage Visibility and Automation Installation & Administration Guide*, the *Storage Essentials User Guide*, *Server Automation User Guide*, and the *Server Automation Upgrade Guide* for more information.



You must have read and write privileges for the Manage Storage Systems and Manage Fabrics permissions to upgrade this software on core management servers.

Upgrade Paths

This guide provides instructions for the following upgrade paths:

- Upgrade from ASAS 1.0 to Storage Visibility and Automation 7.80
- Upgrade from ASAS 7.50 to Storage Visibility and Automation 7.80
- Upgrade from Storage Visibility and Automation 7.80 to Storage Visibility and Automation 7.81

See Table 1 for information about these upgrade paths and related SA cores.

Table 1 Upgrade Paths and Supporting SA Cores

Upgrade from	...in an SA Core	...to Storage Visibility and Automation	...in an SA Core
ASAS 1.0	7.00	7.80	7.80
ASAS 7.50	7.50	7.80	7.80
Storage Visibility and Automation	7.80	7.81	7.81

ASAS refers to *Application Storage Automation System*. This is the legacy product name for previous releases of Storage Visibility and Automation.

Upgrade Process for 7.80

This upgrade process consists of obsoleting and updating existing storage components, and installing new storage components. During this process, you will:

- Remove legacy Storage Agents
- Update the Storage Host Agent Extension (SHA)
- Install the Database Scanner for Oracle
- Install SE Connector
- Update the SE Client Library



When you upgrade to Storage Visibility and Automation 7.80, existing storage array and fabric information (in your SA 7.00 or SA 7.50 core) will be *deleted* from the Model Repository. After the upgrade, array and fabric information will be rediscovered by Storage Essentials (SE) and then collected by SE Connector.

The following steps provide an overview of the upgrade process:

- 1 **Create and save reports about existing storage devices**—Search for and report information about all storage devices (storage arrays, NAS filers, and switches) in your existing SA 7.00 or SA 7.50 core.
- 2 **Undeploy all existing ASAS Storage Agents**—Remove all legacy ASAS Storage Agents from your SA 7.00 or SA 7.50 core.
- 3 **Shut down all NGUI Clients that are running on the core**—See the *Server Automation Upgrade Guide* for more information.
- 4 **Upgrade the SA core from SA 7.00 or SA 7.50 to SA 7.80**—See the *Server Automation Upgrade Guide* for more information.
- 5 **Delete storage device information from the Model Repository**—Remove the existing arrays, NAS filers, switches, and fabric data (in your SA 7.00 or SA 7.50 core) from the Model Repository.
- 6 **Upgrade SHA and install the Database Scanner for Oracle**—Using the upload media, you must upgrade the Storage Host Agent Extension (SHA) component and install the Database Scanner for Oracle component. This action also upgrades all Software Repository-Content components.
- 7 **Install SE Connector**—Using the BSA Essentials Network, you must install SE Connector.

- 8 **Rediscover storage arrays, NAS filers, and switches**—Using the discovery process in Storage Essentials, rediscover the storage arrays, NAS filers, and switches that are referenced in [Step 1](#).
- 9 **Upgrade the SE Client Library** —When a new version of Storage Essentials includes a new version of the SE Client Library, you must download a new (replacement) software policy to your core.

See [Upgrade Tasks for 7.80](#) on page 11 for instructions about how to perform these tasks.

Upgrade Process for 7.81

This upgrade process consists of updating the SE Connector component. During this process, you will upgrade SE Connector using the BSA Essentials Network. See [Upgrade Tasks for 7.81](#) on page 17.

2 Upgrade Tasks for 7.80

The following tasks are required to upgrade to Storage Visibility and Automation 7.80:

- [Creating Reports for Existing Storage Devices & Databases](#)
- [Undeploying Storage Agents](#)
- [Upgrading SHA & Installing Database Scanner for Oracle](#)
- [Installing SE Connector](#)
- [Rediscovering Storage Data](#)
- [Upgrading the SE Client Library](#)

Creating Reports for Existing Storage Devices & Databases



When you upgrade to Storage Visibility and Automation 7.80, existing storage array and fabric information (in your SA 7.00 or SA 7.50 core) will be *deleted* from the Model Repository. After the upgrade, array and fabric information will be rediscovered by Storage Essentials (SE) and then collected by SE Connector.

Therefore, before existing storage array and fabric information is removed from the Model Repository, you must create and save reports that identify and report information about storage arrays, NAS filers, and switches that are currently in your core. The information recorded includes the name of the array or NAS filer, customer, facility, manufacturer, model, serial number, discovery date, IP address, and object ID. Optionally, you can also create and save reports that identify existing databases in your SA 7.00 or SA 7.50 core.

Reporting SAN Arrays and NAS Filers

To create a report about existing SAN arrays and NAS filers:

- 1 From the Navigation pane, select Advanced Search. The Advanced Search page appears in the content pane.
- 2 From the Search For drop-down list, select Storage Systems.
- 3 From the Where drop-down lists, select Discovery Date, Before, and today's date.
- 4 Click **Search** to display a list of the arrays in your datacenter.
- 5 Click **Export** to display the Export Results window.
- 6 Enter a file name and specify the type of file, such as .csv or .html.
- 7 Click **Export Results** to save the file to your local system.

Reporting Switches

To create a report about existing switches:

- 1 From the Navigation pane, select Advanced Search. The Advanced Search page appears in the content pane.
- 2 From the Search For drop-down list, select SAN Switch.
- 3 From the Where drop-down lists, select Discovery Date, Before, and today's date.
- 4 Click **Search** to display a list of the switches in your datacenter.
- 5 Click **Export** to display the Export Results window.
- 6 Enter a file name and specify the type of file (.csv or .html).
- 7 Click **Export Results** to save the file to your local system.



You cannot search for fabrics in the Search Client. Fabric data will be populated when switches are discovered by Storage Essentials.

Reporting Database Instances

To create a report about existing database instances:

- 1 From the Navigation pane, select Advanced Search. The Advanced Search page appears in the content pane.
- 2 From the Search For drop-down list, select Database.
- 3 From the Where drop-down lists, select Discovery Date, Before, and today's date.
- 4 Click **Search** to display a list of the database instances in your datacenter.
- 5 Click **Export** to display the Export Results window.
- 6 Enter a file name and specify the type of file, such as .csv or .html.
- 7 Click **Export Results** to save the file to your local system.

Undeploying Storage Agents

To undeploy (remove) Storage Agents, the following Storage Agent objects must be deleted:

- **Binaries that are deployed to a managed server**—See [Undeploying Storage Agents from a Managed Server](#) on page 13 and [Removing Storage Agent Directories from a Managed Server](#) on page 13.
- **The ASAS Agent that is in the Model Repository**—See [Removing the ASAS Agent from the Model Repository](#) on page 14.
- **Storage Agents and packages that are in the core**—See [Uninstalling Storage Agents from a Core](#) on page 14.



This undeployment action does *not* remove the access controls or discovered storage data from the Model Repository.

Undeploying Storage Agents from a Managed Server

To undeploy a Storage Agent (binaries) from a managed server:

- 1 From All Managed Servers, select a managed server.
- 2 From the Views drop-down list, select Software Policies.
- 3 Right-click on a software policy and then select Detach Server.
- 4 In the Detach Software Policy dialog, click **Detach**.
- 5 Wait until the job completes. After the job finishes, proceed to [Removing Storage Agent Directories from a Managed Server](#) on page 13.

Removing Storage Agent Directories from a Managed Server

After the Storage Agents have been undeployed from a managed server, you need to manually remove their old `pam-` directories. The undeployment process does not remove these directories. The location of these directories depends on the type of Storage Agent and operating system. See [Table 2](#) for a Windows operating system and [Table 3](#) for a Unix operating system.



Access controls for these Storage Agents are *not* deleted during the undeployment process.

Table 2 Storage Agent Directories on Windows

Storage Agent	Windows Directory
Brocade	%ProgramFiles%\Common Files\Opware\pam-brocade
CLARiiON	%ProgramFiles%\Common Files\Opware\pam-clariion
HiCommand	%ProgramFiles%\Common Files\Opware\pam-hi_command
McDATA	%ProgramFiles%\Common Files\Opware\pam-mcdata
NetApp	%ProgramFiles%\Common Files\Opware\pam-netapp
Oracle	%ProgramFiles%\Common Files\Opware\pam-oracle
Symmetrix	%ProgramFiles%\Common Files\Opware\pam-symmetrix

To delete the following directories on a Unix operating system, you must be a root user.

Table 3 Storage Agent Directories on Unix

Storage Agent	Unix Directory
Brocade	/var/opt/opware/pam-brocade
CLARiiON	/var/opt/opware/pam-clariion
HiCommand	/var/opt/opware/pam-hi_command
McDATA	/var/opt/opware/pam-mcdata
NetApp	/var/opt/opware/pam-netapp
Oracle	/var/opt/opware/pam-oracle
Symmetrix	/var/opt/opware/pam-symmetrix

Removing the ASAS Agent from the Model Repository

The ASAS Agent that was created in the Model Repository for a Storage Agent on a managed server must be deleted.

To remove the ASAS Agent from the Model Repository:

- 1 From the Navigation pane, select **Opware Administration ► ASAS Agents**.
- 2 In the Storage Scanners content pane, select one or more ASAS Agents.
- 3 Right-click and then select Remove.
- 4 In the confirmation dialog, click **OK** to remove the ASAS Agent from the Model Repository.
- 5 Wait until the job completes.

Uninstalling Storage Agents from a Core



Before you begin this task, make sure you have already detached the software policies from all managed servers. See [Undeploying Storage Agents from a Managed Server](#) on page 13.

Storage Agents for Brocade, CLARiiON, HiCommand, McDATA, NetApp, Oracle, and Symmetrix have been deprecated in this release. You must uninstall these Storage Agents from your core by using the same BSA Installer that you used to install them.

To remove Storage Agents and packages from a core:

- 1 Make sure that all Storage Agents have been undeployed from all managed servers.
- 2 Insert the ASAS media in the tray. This media contains the Storage Agents for Brocade, CLARiiON, HiCommand, McDATA, NetApp, Oracle, and Symmetrix.
- 3 Enter the following command to run the BSA Installer:

```
opsware_installer/uninstall_opsware.sh -r oiresponse.pam-hi_command
```



You must use the same BSA Installer that was used to install these Storage Agents. The BSA Installer for Server Automation 7.80 does not uninstall these Storage Agents.

- 4 Select the item you want to uninstall and start the process. This process will remove all .zip packages and software policies for the Storage Agent.

Upgrading SHA & Installing Database Scanner for Oracle

To upgrade the storage Storage Host Agent Extension (SHA) component and install the Database Scanner for Oracle storage component, you must run the `upgrade_opsware.sh` script using the upload media (the Agent and Utilities DVD). This script upgrades all `Software Repository-Content` components, which include the storage components.

See the *Storage Visibility and Automation Installation & Administration Guide* for information about installing and configuring SHA and the Database Scanner for Oracle.

Installing SE Connector

Server Automation 7.80 or later and Storage Essentials 6.1.1.x are required to install, configure, and deploy SE Connector.

For this upgrade, SE Connector must be installed using the BSA Essentials Network. SE Connector is *not* part of the upload media (the Agent and Utilities DVD). To access the BSA Essentials Network and download SE Connector installation instructions, go to www.hp.com/go/bsaenetwork.

See the *Storage Visibility and Automation Installation & Administration Guide* for information about configuring SE Connector.

Rediscovering Storage Data



When you upgrade to Storage Visibility and Automation 7.80, existing storage array and fabric information (in your SA 7.00 or SA 7.50 core) will be *deleted* from the Model Repository. After the upgrade, array and fabric information will be rediscovered by Storage Essentials (SE) and then collected by SE Connector.



Before you can rediscover storage device information, you must install SE Connector. See [Installing SE Connector](#) on page 15.

To rediscover the storage devices that were deleted during the upgrade process, you must perform the discovery operation in SE. See instructions for discovery tasks in the *Storage Essentials User's Guide*.

Upgrading the SE Client Library

When you upgrade the SE Connector storage component (such as from 7.80 to 7.8x), additional SE Client Library software policies might be required to support new versions of Storage Essentials (SE) that have been released after the last release of Server Automation (SA).

You must download these software policies using the BSA Essentials Network. To access the BSA Essentials Network for instructions about how to download new SE Client Library software policies, go to www.hp.com/go/bsaenetwork.

These software policies will be installed in the core in the `Opware/Storage/Agents/SE Connector Updates` folder and are named using a syntax similar to `SE Connector Update for SE 6.1.x`. To attach these SE Connector Updates software policies to a managed server, SE Connector must be installed on that managed server. If SE Connector is not installed on the managed server, the remediation action will fail.



To upgrade existing instances of SE Connector on a managed server, you must attach the new SE Client software policy to the managed server. The remediation action will stop SE Connector on the managed server, update the SE Client libraries there, and then start SE Connector again.

SE Connector is *not* part of the Agent and Utilities DVD (upload media). See the *Storage Visibility and Automation Installation & Administration Guide* for more information about SE Connector.

3 Upgrade Tasks for 7.81

To upgrade to Storage Visibility and Automation 7.81 on a Server Automation 7.81 core, you must upgrade the SE Connector component using the BSA Essentials Network. SE Connector is *not* part of the upload media (the Agent and Utilities DVD).

To access the BSA Essentials Network:

- 1 Go to www.hp.com/go/bsaenetwork.
- 2 Install the new version of SE Connector.
- 3 Install the latest SE Connector Updates.
- 4 Remediate the “SE Storage Scanner” software policy for attached managed servers.
- 5 (Optional) Use additional SE Connector Updates software policy to change SE Client library on managed servers, as needed.
- 6 (Optional) Run the `truth_sva_etl.sh` script on your SA core. This enables the Storage Reports feature. This script is located in the patch upload media, in the `disk001/opsware_installer/tools` directory.

During these steps the following operations occur:

- New packages for SE Connector and an updated “SE Storage Scanner” software policy will be uploaded and configured to the core.
- Additional SE Connector Updates software policy will be created in the `/Opsware/Storage/Agents/SE Connector Updates` folder.
- There will be a separate software policy for every supported SE Client library created.
- Remediation ensures that managed servers have the latest SE Connector binaries. The remediation process does not change the SE Client library on the managed server. After remediation the SE Connector will be restarted with the same SE Client library that was previously running.
- Additional software policies allow switching back and forth between different SE Client libraries. These policies are used to adjust the SE Connector on a managed server when a corresponding SE server is reinstalled with a different version.



See the *Storage Visibility and Automation Installation & Administration Guide* for information about configuring SE Connector.

4 Troubleshooting

This section contains troubleshooting information and tips. Topics are arranged by the related process or storage component.

Upgrade Process

All errors that occur during the upgrade to the core are logged directly to the console and stored in log files located at `/var/log/opsware/install_opsware`, on the core server where the BSA Installer was executed. To troubleshoot upgrade process errors, review these log files.

SE Connector

To troubleshoot SE Connector errors, review the log and trace files. By default, the log level for log files is INFO and the log level for trace files is FINE. Trace files contain more detailed information than the log files do. The `pam-0-0.trace` file contains the latest information for SE Connector.

On a Windows operating system, the log and trace files are located at `%ProgramFiles%\Common Files\Opware\log\pam-se` on a managed server.

On a Unix operating system, the log and trace files are located at `/var/log/opsware/pam-se` on a managed server.

Log and trace files have a rotation policy. By default, the file size setting for both log files and trace files is 10 MB. They are rotated every 10 files. You can reconfigure this by modifying settings in the `logging.properties` file.

On a Windows operating system, this file is located at `%ProgramFiles%\Common Files\Opware\etc\pam-se` on a managed server.

On a Unix operating system, this file is located at `/etc/opt/opsware/pam-se/logging.properties` on a managed server.

As a best practice, you should also review the storage logs for the Web Services Data Access Engine (twist) when you review the log files and trace files for SE Connector. For twist, storage related logs are located at `/var/log/opsware/twist/storage*.log`. The `storage*.current.log` file is helpful because it contains the latest information. The `storage*.log` files for twist also have a rotation policy. By default, the log level is INFO and the log file size is 10 MB. They are rotated every 10 files. These log files are located on the server with the Web Services Data Access Engine.

Database Scanner for Oracle

Top-level errors for the Database Scanner for Oracle are displayed in the snapshot job window. To troubleshoot these errors, review the log files located at `/var/log/opsware/twist` (`server.log.0`) and `/var/log/opsware/spoke` (`spoke-0.log`). These log files are located on the server with the Web Services Data Access Engine.

Some error messages are reported by the APX server module framework and are, therefore, stored in the OGFS `/tmp` folder, in the file for which its name matches the name of the server module and is `com.opsware.server.module.storage.dbscanner.oracle.log`.

For every discovery session, the Database Scanner for Oracle creates a separate log file in the OGFS folder `~/log/dbscanner.oracle`, where `"~"` is home directory for the current user. The name of this file also contains a timestamp and begins with a `sync_db_` prefix. This file also contains descriptions of discovered database objects. The Database Scanner for Oracle keeps up to 20 log files.

Log messages reported by the storage synchronization process are stored in the `twist` log-folder, in the `storage0001.current.log` file. These log files are located on the server with the Web Services Data Access Engine.

Software Repository

If the Software Repository is not installed or is not running, you will receive a notification and request for confirmation to terminate the process or continue at your own risk. These errors apply only when you are uninstalling legacy Storage Agents. These errors do not apply to the new storage components (SE Connector and Database Scanner for Oracle) in this upgrade.

Remediation Process

All errors that occur during remediation are reported by the remediation process. These error messages are located in the Job panel of the SA Client.