

# HP Server Automation

for the HP-UX, Solaris, Red Hat Enterprise Linux,  
VMware, and Windows operating systems

Software Version: 7.50

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## *Upgrade Guide*

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### Document Changes

Chapter	Version	Changes
All	03/23/2009	Multiple Upgrade Process Revisions
3, 4, 7, 9	03/24/09	Field comment corrections
2, 6, 7	04/01/09	Manual CORD patch uninstall procedure

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# Preface

This guide describes how to upgrade SA and is intended to be used by Professional Services.

## Conventions in this Guide

- For ease of readability, this document may use “6.x” to refer to the SAS versions that you are upgrading from: SAS 6.1.2, 6.5.1.5, 6.6, 6.6.1, or 6.61.01.
- In Table 2-3, “Locating Parameter Values to Verify the Response File,” on page 27, 6.x refers to 6.1.2, 6.5.1.5, 6.6, 6.6.1, or 6.61.01.

The table below describes the sections of this guide relevant to your installed SAS version:.

### *Upgrade Paths*

SA Upgrade Guide Section	Current Core Version
“Single (First) Core Upgrade from SAS 6.x to SA 7.50” on page 43	SAS 6.1.2
	SAS 6.5.1.5
	SAS 6.6
	SAS 6.61
	SAS 6.61.01 (patch release)
“Multimaster Upgrade from SAS 6.x to SA 7.50” on page 63	SAS 6.1.2
	SAS 6.5.1.5
	SAS 6.6
	SAS 6.61
	SAS 6.61.01 (patch release)

*Upgrade Paths (continued)*

SA Upgrade Guide Section	Current Core Version
"Upgrading a Satellite from SAS 6.x to SA 7.50" on page 95	SAS 6.1.2 SAS 6.5.1.5 SAS 6.6 SAS 6.61 SAS 6.61.01 (patch release)
"Single (First) Core Upgrade from SAS 7.0 to SA 7.50" on page 101	SAS 7.0 SAS 7.00.01 (patch release)
"Multimaster Core Upgrade from SAS 7.0 to SA 7.50" on page 111	SAS 7.0 SAS 7.00.01 (patch release)
"Satellite Upgrade from SAS 7.0 to SA 7.50" on page 123	SAS 7.0 SAS 7.00.01 (patch release)

# Chapter 1: Overview of the SA 7.50 Upgrade

## IN THIS DOCUMENT

This section discusses the following topics:

- SA Core Component Bundling
- Implications of Upgrading to a Bundled Component Environment
- Planning your SA 7.50 Layout
- Changes to the SA Gateways

The information in this section is of most interest to those upgrading their SAS 6.x installation(s) to SA 7.50 due to the change in SA architecture from a non-bundled component environment to a bundled component environment. SAS 7.0 and SA 7.50 are both bundled environments.

## SA Core Component Bundling

SAS 7.0 and SA 7.50 introduce the concept of *Core Component bundling*. In a typical installation, certain Core Components are bundled, or grouped together as units, and must be installed together on the same host. This architecture facilitates ease of installation and maintenance, adds simplicity and robustness for multi-server deployments, supports horizontal scaling and Core Component load balancing. For detailed information about Core Component bundling and the new SA component architecture, see the *SA Planning and Installation Guide*.



It is very important that you are familiar with the new bundled component architecture as described in the *SA Planning and Installation Guide* before attempting to upgrade a SAS 6.x *non-bundled* component environment to SA 7.50 as moving from an unbundled component environment to a bundled component environment requires redesigning your current component layout.

Core components have changed in SA 7.50. For example, there is a new component called the *Management Gateway* that handles communications tasks previously handled by the Core Gateway (which still exists but with a somewhat different role). Another example of changing components is the elimination of the Global File Server. This functionality is now integrated into the Slice Component bundle.

---

## Implications of Upgrading to a Bundled Component Environment

Upgrading from a non-bundled component environment to bundled component environment requires that you do some in-depth planning for the upgrade.

The upgrade from a non-bundled environment to a bundled environment is unlike previous SAS upgrades during which components were upgraded without uninstallation. An upgrade from non-bundled to bundled requires that most Core Components be shutdown and uninstalled. You will not lose data during this process. You will also need to rethink your component layout and move certain components from one core box to another.

As you move components from one host to another, you will also be required to:

- Update the DNS or edit `/etc/hosts` file to remove old `cname` pointers
- Allow firewall access on the Management Gateway host (instead of the Core Gateway host).
- Copy the Agent certificates generated by the primary Data Access Engine to the new SA 7.50 host.
- Copy any saved customized configuration files to the new SA 7.50 host.

### The SAS 6.x Standalone Core vs. the SA 7.50 First Core

The SAS 6.x concept of a *Standalone Core* is replaced by the *Single Core*, or more commonly, the *First Core* (of a Multimaster Mesh). Unlike the SAS 6.x Standalone Core, the SA 7.50 First Core is by default installed with all Multimaster-capable components. If the First Core is run as a Single Core, with no other cores in the mesh, SA detects this state and makes no attempt to send or receive transactions with other cores.

If you are upgrading a SAS 6.x Standalone Core to SA 7.50, you will need your SAS 6.x *Product Software DVD* and the SAS 6.x *Planning and Installation Guide*.

## The Software Repository

As in SAS 6.x environments, the SA 7.50 Software Repository can be installed separately on its own host. The Software Repository can be installed on any core server using the **Custom Install** option of the SA Installer.

## OS Provisioning Media and Boot Servers

As with the Software Repository, the SA 7.50 OS Provisioning Media and Boot servers can be installed on any core server in a SA 7.50 environment using the **Custom Install** option of the SA Installer.

## Planning your SA 7.50 Layout

When planning your SA 7.50 layout, you must decide if you need to use a custom layout, or can go with a typical layout. Here are some points to consider:

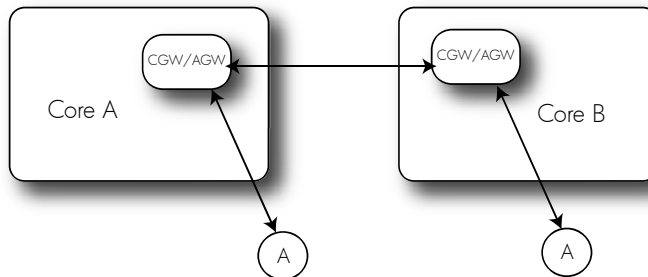
- Moving the Software Repository involves relocating the packages stored there (unless you can NFS-mount the storage).
- You must install the Slice Component bundle on the host where the Core Gateway (CGW)/Agent Gateway (AGW) pair was installed *in your SAS 6.x environment*, otherwise, all managed devices will lose connectivity to the core.
- You must read the chapters on hardware and software guidelines and requirements in the *SA Planning and Installation Guide*.

## Changes to the SA Gateways

Pre-SAS 7.0, the Core Gateway (CGW) had two functions: *inter-core communication* (connections from other cores and satellites) and *intra-core communication*.

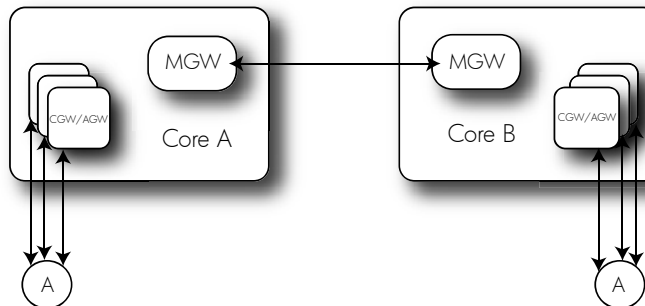
In SAS 7.0 and later, inter-core communication is handled by the Management Gateway (MGW). See Figure 1-1.

Figure 1-1: SAS 6.x Gateway Layout compared to SA 7.50



SAS 6.x and earlier

- One Core Gateway per core (typical)
- Core Gateway handles both intra- and inter-core communication



SAS 7.0/SA 7.50 and later

- Multiple Core/Agent Gateways per core (one per SliceComponent bundle)
- Core Gateway handles intra-core communications
- Management Gateway (MGW) handles inter-core communication

By default, the Core Gateway no longer listens for connections from Gateways in other facilities. That function is now served by the Management Gateway. This could result in the loss of all Satellite connections during an upgrade since the Satellite Gateways point to the SAS 6.x Core Gateway.

However, to address this issue:

- If the Slice Component bundle and the Infrastructure Components bundle are installed on the same host (therefore, the Core Gateway is on the same host as the Management Gateway), Satellites can still point to the same host and port.
- If the Slice Component bundle (and therefore the Core Gateway) is on a separate host, it will continue to listen on the same port for incoming tunnel connections, therefore Satellite connections remain in place after an upgrade.

In SAS 6.x releases, communication between cores was handled by the Core Gateways (CGW). The host on which the CGW was installed in each core typically had the `TunnelDst` port (configurable, 2001 by default) open to allow connections from other Core Gateways and Satellite Gateways.

As of SAS 7.0 and later, this functionality has moved to the Management Gateway (MGW), which is installed as part of the *Infrastructure Component bundle*. Thus, the requirement for the `TunnelDst` port to be open now applies to the server on which the Infrastructure Component bundle is hosted. If you have Satellite Gateways configured to point to the Core Gateways, there is no immediate requirement to point them at the Management Gateway. If you choose to point the satellites at the Management Gateway, then the `TunnelDst` port on the Core Gateway host no longer need be open.

### **Tibco Configuration**

As of SAS 7.0 and later, the *Management Gateway* is also responsible for forwarding Tibco traffic between cores (previously handled by the SAS 6.x Core Gateway). The component `vault`, which keeps databases synchronized between data centers, is now installed as part of the Infrastructure Component bundle and therefore always resides on the same host as the Management Gateway.

During an upgrade from SAS 6.x to SA 7.50, it is likely that the `vault`/Tibco component will be relocated to a different host (in prior releases, the `vault` was typically installed on the same host as the Model Repository). Therefore, the Tibco configuration is recreated by the SA Installer from scratch and by default will follow a star pattern, with the mesh's First Core at the center. If you have a customized Tibco configuration, you must re-create it manually after the upgrade. Also, the SAS 6.x ledger files, Tibco `rvrd` configuration, and logs are removed during the upgrade and re-created in SA 7.50.





# Chapter 2: SA 7.50 Upgrade Prerequisites

## IN THIS DOCUMENT

This section discusses the following topics:

- Supported Upgrade Paths
- The Upgrade Process: SAS 6.x to SA 7.50
- Dual Layer DVD Requirements
- Model Repository/Oracle Database DVD
- Supported Oracle Versions
- DNS Considerations
- Customized Configuration Files
- SA 7.50 Prerequisite Package Checking
- Compatibility with OMDB, PAS, and NAS
- SA Installer Upgrade Scripts
- Preparation for SA Upgrade
- Component Layout IP Addresses and Hostnames
- CREATE JOB Permission Required for Oracle 10g
- Verify the Response File Before Upgrading
- The Multimaster State Monitoring Utility

## Supported Upgrade Paths

SA 7.50 release supports the following types of upgrades:

- Upgrading a Single Core from SAS 6.1.2, 6.5.1.5, 6.6, 6.6.1, 6.61.01 (patch release), 7.0 and 7.00.01 (patch release) to SA 7.50
- Upgrading Multimaster Mesh Cores from SAS 6.1.2, 6.5.1.5, 6.6, 6.6.1, 6.61.01 (patch release), 7.0 and 7.00.01 (patch release) to SA 7.50

- Upgrading Satellite Cores from SAS 6.1.2, 6.5.1.5, 6.6, 6.6.1, 6.61.01 (patch release), 7.0 and 7.00.01 (patch release) to SA 7.50

For information about how to upgrade Agents to SA 7.50, see the *SA User's Guide: Server Automation*.

For information about how to do a fresh install of SA 7.50, see the *SA Planning and Installation Guide*.

## The Upgrade Process: SAS 6.x to SA 7.50

While the upgrade process from SA 6.x to SA 7.50 differs from a standard upgrade, a typical SA 6.x upgrade consists of five phases:

- Uninstallation of all SAS 6.x components except the Model Repository.
- Preservation of certain data including OGFS data, packages in the Software Repository, and SAS configuration files.
- Upgrade of the Model Repository
- Installation of the SA 7.50 bundled components
- Post-Installation Tasks

The upgrade requires that you apply four upgrade scripts:

Table 2-1: SA 7.50 Non-Bundled to Bundled Component Upgrade Scripts

UPGRADE SCRIPT	DESCRIPTION
<code>convert_to_sliced_part1.sh</code>	Uninstalls all SAS 6.x components.
<code>convert_to_sliced_part2.sh</code>	Upgrades the Model Repository.
<code>convert_to_sliced_part3.sh</code>	Installs the SA 7.50 bundled components.
<code>install_opsware.sh</code>	Used to recreate TIBCO neighbor entries.



The script `upgrade_opsware.sh` is still used to upgrade Satellite Cores to SA 7.50

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## Dual Layer DVD Requirements

The Product Software DVD and the Agent and Utilities DVD require a DVD drive that supports dual layer. See the *SA Planning and Installation Guide* for more information about the installation media for the SA Installer.

## Model Repository/Oracle Database DVD

As of SA 7.50, the Oracle database used by the Model Repository has been moved from the *SA 7.50 Product Software DVD* to its own *Oracle \_SA DVD*. This does not affect upgrade because the database is not upgradeable. However, fresh installs of SA 7.50 require a different installation procedure than SAS 6.x releases. For more information, see the *SA Planning and Installation Guide*.

## Supported Oracle Versions

SA 7.50 supports upgrades with existing Oracle database versions 10.2.0.2 or 10.2.0.4.

Support for the Model Repository is limited to certain versions of Oracle running on certain versions of operating systems. The *SA Planning and Installation Guide* lists the supported Oracle versions. HP recommends applying the latest CPU patches to the supported Oracle versions.

## DNS Considerations

During this upgrade, most `cname` pointers are added to the `hosts` file automatically on all component hosts. These entries point to the server hosting the Infrastructure Component bundle (which includes the Management Gateway which has static port forwards for these services). On the servers that host the following Core Components, ensure that the `cname truth` resolves and points to the Model Repository host:

- Model Repository (points to its own host)
- Infrastructure Component bundle
- Slice Component bundle

On the Slice Component bundle host, all the required entries are automatically added to the `hosts` file when the Slice Component bundle is installed.



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The hostname `truth` must be resolvable wherever the Model Repository, the Data Access Engine, or the Web Services Data Access Engine is installed.

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On *Linux* hosts, entries are added to the `/etc/hosts` file.

On *SunOS* hosts, entries are added to the `/etc/inet/hosts` and `/etc/inet/ipnodes` file, if it exists. The `/etc/hosts` file is expected to be a symlink to `/etc/inet/hosts`.



---

It is recommended that you remove all SAS 6.x-related DNS and `hosts` file entries before proceeding with the SA 7.50 upgrade.

---

## Customized Configuration Files

If you have created customized configuration files for your 6.x installation and want to continue using them with SA 7.50, the SA Installer saves the configuration files in `/var/opt/opsware/install_opsware/config_file_archive/`. The files saved are:

- `/opt/opsware/oi_util/startup/components.config`
- `/opt/opsware/oi_util/startup/opsware_start.config`
- `/etc/opt/opsware/occ/psrvr.properties`
- `/etc/opt/opsware/dhcpd/dhcpd.conf`
- `/etc/opt/opsware/spin/spin.args`
- `/etc/opt/opsware/spin/srvrgrps_attr_map.conf`
- `/etc/opt/opsware/twist/twist.conf`
- `/etc/opt/opsware/twist/loginModule.conf`
- `/etc/opt/opsware/twist/twistOverrides.conf`
- `/etc/opt/opsware/vault/vault.conf`
- `/opt/opsware/waybot/etc/waybot.args`
- `/etc/opt/opsware/mm_wordbot/mm_wordbot.args`

The SA Installer does not automatically restore customizations made in configuration files; you must do that manually. If you move components to different hosts during the upgrade, you may want to copy your customized configuration files to the new host.



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To use WinPE-based Windows OS Provisioning on an upgraded core, make sure that the `authoritative` keyword in the `/etc/opt/opsware/dhcpd/dhcpd.conf` file on the boot server is uncommented. If you modify the `dhcpd.conf` file, you must restart the dhcp server, such as `/etc/init.d/opsware-sas restart dhcpd`.

---

## SA 7.50 Prerequisite Package Checking

Also new in SA 7.50 is *prerequisite package checking*. This verifies that all necessary packages/patches are installed on your system prior to the SA 7.50 installation. If a required package is not installed on any machine that will host a SA Core Component, the upgrade can't continue.

For more information about required packages, *SA Planning and Installation Guide*.

## Compatibility with OMDB, PAS, and NAS

SA 7.50 is compatible with:

- NA (Network Automation) 7.2
- OO (Operations Orchestrator) 7.0
- SAR (Server Automation Reporter) 7.0.1

## SA Installer Upgrade Scripts

To upgrade components in a *First Core* or *Multimaster Mesh Core*, you run the SA Installer upgrade scripts using DVD media by entering the following command:

```
/<distro>/opsware_installer/convert_to_sliced_partx.sh -r  
<full_path_to_response_file>
```

where `x` is either script 1, 2, or 3 depending of the phase of the installation process.

To upgrade components in a *Satellite Core*, you run the SA Installer upgrade script using DVD media by entering the following command:

```
/<distro>/opsware_installer/upgrade_opsware.sh -r  
<full_path_to_response_file>
```

Before running the upgrade scripts `convert_to_sliced_partx.sh` or `upgrade_opsware.sh`, you must change directories to the root directory by entering the following command:

```
cd /
```

You must provide the full path to the response file. You will need both your 6.x response file and a new response file created by running the SA 7.50 Installer in interview mode.

You can mount the SA software on all core servers by mounting the DVD or NFS-mount a directory that contains the SA software distribution contents.

The SA Installer must have root read access to the directories from which it installs components, even NFS-mounted network appliances.

The SA upgrade script displays a list of components that you can choose to upgrade. The list only contains components that have been installed on the server where you are running the script.

## Preparation for SA Upgrade

### Preparation for All Upgrades to SA 7.50

Before you upgrade an Single Core or Multimaster Core, perform the following tasks:

- Obtain the response files that were created when you deployed SAS 6.x.

For SAS 6.x, by default, the SA Installer saves the response file in the following directory on the servers where you installed the SAS components:

```
/var/opt/opsware/install_opsware/resp/resp.<timestamp>
```

By looking at the timestamp, choose the latest Core installation version of the response file.

- The server hosting the Core Gateway must be set up to resolve `wordcache` to the hostname for the server running the Software Repository. You can use the following command to list the existing hosts:

```
# getent hosts wordcache
```

- The Core Gateway must be up and running for all SA upgrades. To determine the status, issue this command:

```
# /etc/init.d/opsware_sas status
```

- The core servers hosting the Model Repository and the Software Repository must have the `en_US.UTF-8` locale installed. To display data from Managed Servers in various locales, the core server hosting the Global File System (OGFS) (part of the Slice Component bundle), must also have those locales installed.

To verify whether the `en_US.UTF-8` locale is installed on a server, enter the following command:

```
locale -a | grep <locale>
```

For example:

```
# locale -a | grep en_US
en_US
en_US.iso88591
en_US.iso885915
en_US.utf8
```

To define or modify the locale, enter the following values in the file `/etc/sysconfig/i18n`:

```
LANG="en_US.UTF-8"
SUPPORTED="en_US.UTF-8:en_US:en"
```

- Verify the response file:

Check that the values in your response file match the actual core configuration. If you have changed any of the values that are used in the response file, update the response file accordingly.

See “Verify the Response File Before Upgrading” on page 27.

- Notify SA users to cancel all scheduled **Reconcile Patches** jobs.

After upgrading a Single Core or Multimaster Core to 7.50, SA users will not see their **Reconcile Patches** jobs in the Job Logs (SA Client) or the My Jobs list (SAS Web Client) that ran or are scheduled to run. (By default, the data about a job is cleared from the Job Logs (SA Client) and the My Jobs list (SAS Web Client) after 30 days.)

You can use the OCC Client to check that there are no running or pending jobs. Log in to the OCC client and from the Navigation pane, select **Jobs and Sessions** to review job status.

After the upgrade, set up the scheduled **Reconcile Patches** jobs again by using the Remediate function in the SA Client.

### **Preparation for All Multimaster Upgrades to SA 7.50**

Before you upgrade a Multimaster Core to SA 7.50, perform the following task:

- Log in to the SAS Web Client as a member of the SA System Administrator group and check for and resolve multimaster conflicts by using the Multimaster Tools or the Multimaster State Monitoring Utility.

See the *SA Administrators Guide* for information about using the Multimaster Tools and the *SA Planning and Installation Guide* for information about using the Multimaster State Monitoring Utility.

See the *SA Administrators Guide* for information about the types of SA administrators – the SA Admin user and the SA System Administrators group.



You must not proceed with a core upgrade in a Multimaster Mesh if transaction conflicts are present.

---



## Preparation for SA 7.0 to SA 7.50 Upgrades

All CORD patch releases that have been applied to your cores must be uninstalled (for example CORD patch release 7.0.01, or 7.0.02). See Chapter 6, “Single (First) Core Upgrade from SAS 7.0 to SA 7.50” or Chapter 7, “Multimaster Core Upgrade from SAS 7.0 to SA 7.50” for instructions on removing CORD patches.

## Preparation for Windows Patch Management for All Upgrades

For all upgrades, it is recommended that you download the latest version of all required Windows Patch Management utilities.

See *First Core Post-Installation Tasks* in the *SA Planning and Installation Guide* for information about these required Windows utilities.

## Preparation for Visual Packager for SAS 6.0 and Later

If you are using Visual Packager 6.0.1 or later, you must use version 3.x of the IDK (Intelligent Software Module Development Kit). ISMs created with version 3.x of the IDK are compatible only with SAS 6.x versions. You cannot upload ISMs from IDK 1.x or 2.x into SAS 6.x. You cannot upload ISMs from IDK 3.x into SAS 5.x (or earlier). For more information about the IDK, see the *SA Content Utilities Guide*.

## Component Layout IP Addresses and Hostnames

You will find it helpful to use the chart below to list the IP Addresses and hostnames of the major SAS 6.x components before beginning the upgrade to SA 7.50. You can also use this chart to list your planned 7.50 component layout:

Table 2-2:

COMPONENT	HOSTNAME	IP ADDRESS
Model Repository ( <i>truth</i> )		
Web Services Data Access Engine ( <i>spin</i> )		
Command Engine ( <i>way</i> )		

Table 2-2:

COMPONENT	HOSTNAME	IP ADDRESS
Software Repository (word)		
Global File System server (OGFS)		
Command Center (OCC)		
OS Provisioning Media Server		
Build Manager		
Core Gateway		
OS Provisioning Boot Server		

## CREATE JOB Permission Required for Oracle 10g

If the database for this upgrade is Oracle 10g, SA 7.50 now validates whether the `opsware_admin` user has the CREATE JOB permission. If the `opsware_admin` user does not have the CREATE JOB permission, the Model Repository upgrade fails with the error:

```
Error given by TIU: "The opsware_admin user has not been granted
the following required privileges: CREATE JOB"
```

The privilege can be added by the database administrator, for example:

```
# su - oracle
# sqlplus "/" as sysdba"
```

```
SQL> grant create job to opsware_admin;
```

## Verify the Response File Before Upgrading

The following table provides information about how to locate the values for the parameters in the SAS 6.x response file. For ease of readability, 6.x in this table refers to SAS 6.1.2, 6.5.1.5, and 6.6.

Table 2-3: Locating Parameter Values to Verify the Response File

PARAMETER	HOW TO FIND THE CURRENT VALUE
cast.admin_pwd	This parameter specifies the password for the SA Admin user. To verify that you have the correct value, log in to the SAS Web Client as the Admin user.
decrypt_passwd	This parameter contains the password to decrypt the database of crypto material. The value for this parameter does not change after installing SA. The value should be correct in the response file.
truth.authDom	Log in to the SAS Web Client, click <b>System Configuration</b> in the <b>Navigation</b> panel, and then click <b>Command Engine</b> and note the value for auth_domain.
truth.dcId	Log in to the SAS Web Client, click <b>Facilities</b> in the <b>Navigation</b> panel and click the facility name for the facility you are upgrading to see its ID number.
truth.dcNm	The Facility's short name. Log in to the SAS Web Client, click <b>Facilities</b> in the <b>Navigation</b> panel and click the facility name for the Facility you are upgrading to see its short name.
truth.dcDispNm	The Facility's display name. Log in to the SAS Web Client, click <b>Facilities</b> in the <b>Navigation</b> panel and click the facility name for the facility you are upgrading to see its display name.

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
truth.dcSubDom	Log in to the SAS Web Client, click <b>System Configuration</b> in the <b>Navigation</b> panel, and then click the facility name for the facility you are upgrading; look up the value for <code>opsware.core.domain</code> .
truth.dest	<i>This parameter is not required for upgrades.</i>
truth.gcPwd	<p>The password for the Oracle <code>gadmin</code> user. To verify that you have the correct value, log in to the Model Repository (truth) as the <code>gadmin</code> user using this password. The Oracle <code>gadmin</code> user does not have permission to log in to Oracle. If you have entered the correct password, the following message appears:</p> <pre>ORA-01045: user GCADMIN lacks CREATE SESSION privilege; logon denied</pre> <p>If you have entered an incorrect password, the following message appears:</p> <pre>ORA-01017: invalid username/ password; logon denied</pre>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
truth.lcrepPwd	<p>The password for the Oracle lcrep user. To verify that you have the correct value, log in to the Model Repository (truth) as lcrep using this password. The Oracle lcrep user does not have permission to log in to Oracle.</p> <p>If you have entered the correct password, the following message appears:</p> <pre>ORA-01045: user LCREP lacks CREATE SESSION privilege; logon denied</pre> <p>If you have entered an incorrect password, the following message appears:</p> <pre>ORA-01017: invalid username/ password; logon denied</pre>
truth.oaPwd	<p>The password for the Oracle opsware_admin user. To verify that you have the correct value, log in to the Model Repository (truth) as opsware_admin with this password.</p>
truth.orahome	<p>The path for ORACLE_HOME. Log on to the server hosting the Model Repository (truth) and enter the following command:</p> <pre>su - oracle echo \$ORACLE_HOME</pre>
truth.pubViewsPwd	<p>The value for this parameter does not change after installing SA. The value should be correct in the response file.</p>
truth.servicename	<p>This parameter contains the tnsname of the Model Repository (truth). Check /var/opt/oracle/tnsnames.ora on the server hosting the Model Repository (truth) to find the value.</p>
truth.sourcePath	<p>This parameter is not required for upgrades.</p>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
<code>truth.spinPwd</code>	The password for the Oracle <code>spin</code> user. To verify that you have the correct value, log in to the Model Repository ( <code>truth</code> ) as <code>spin</code> using this password
<code>truth.tnsdir</code>	The directory in which the <code>tnsnames.ora</code> file is located. Typically, this file is stored in the directory <code>/var/opt/oracle</code> .
<code>truth.aaaPwd</code>	<p>The password for the Oracle <code>aaa</code> user. To verify that you have the correct value, log in to the Model Repository (<code>truth</code>) database as user <code>aaa</code> using this password. The Oracle <code>aaa</code> user does not have permission to log in to Oracle.</p> <p>If you have entered the correct password, the following message appears:</p> <pre>ORA-01045: user AAA lacks CREATE SESSION privilege; logon denied</pre> <p>If you have entered an incorrect password, the following message appears:</p> <pre>ORA-01017: invalid username/ password; logon denied</pre>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
truth.truthPwd	<p>The password for the Oracle <code>truth</code> user. To verify that you have the correct value, log in to the Model Repository (<code>truth</code>) as <code>truth</code> using this password. The Oracle <code>truth</code> user does not have permission to log in to Oracle.</p> <p>If you have entered the correct password, the following message appears:</p> <pre>ORA-01045: user TRUTH lacks CREATE SESSION privilege; logon denied</pre> <p>If you have entered an incorrect password, the following message appears:</p> <pre>ORA-01017: invalid username/ password; logon denied</pre>
truth.twistPwd	<p>The password for the Oracle <code>twist</code> user. To verify that you have the correct value, log in to the Model Repository (<code>truth</code>) as <code>twist</code> using this password.</p>
truth.vaultPwd	<p>The password for the Oracle <code>vault</code> user. To verify that you have the correct value, log in to the Model Repository (<code>truth</code>) as <code>vault</code> using this password. This parameter is only relevant to Multimaster Cores.</p>
twist.buildmgr.passwd	<p>On the server where the OS Provisioning Build Manager component is installed, check the file:</p> <pre>/var/opt/opsware/crypto/buildmgr/twist.passwd</pre>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
twist.integration.passwd	<p>On the server where the SAS Web Client component is installed, check the file</p> <p><code>/opt/opsware/twist/Defa...</code></p> <p>In the file, locate the entry for the Integration password by searching for <code>uid=integration,ou=people</code> and note the <code>userpassword</code> attribute.</p>
media_server.linux_media	<p>The location of your Linux OS media. Check the server where the OS Provisioning Media Server component is installed. Because this media is NFS exported, you can check the</p> <p><code>/etc/exports</code> file (Linux) or the <code>/etc/dfs/dfstab</code> file (Solaris).</p>
media_server.sunos_media	<p>The location of your Solaris OS media. Check the server where the OS Provisioning Media Server component is installed. Because this media is NFS exported, you can check the</p> <p><code>/etc/exports</code> file (Linux) or the <code>/etc/dfs/dfstab</code> file (Solaris).</p>
word.remove_files	<p><i>This parameter is not required for upgrades.</i></p>
media_server.windows_media	<p>The location of your Windows OS media. Check the server where the OS Provisioning Media Server component is installed. Check the file to see what this value is set to.</p> <p><code>/etc/opt/opsware/samba/smb.conf</code></p>
media_server.windows_share_name	<p>On the server where the OS Provisioning Media Server component is installed, see the file:</p> <p><code>/opt/OPSWsamba/etc/smb.conf</code></p> <p>for the value.</p>



Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
media_server.windows_share_password	<p>This password is only used when importing Windows OS media; it is not used internally by SA.</p> <p>You cannot recover or validate the current Windows share password; however, you can set it or reset it during the upgrade.</p>
boot_server.buildmgr_host	Log in to the SAS Web Client, click <b>Service Levels</b> in the <b>Navigation</b> panel, click <b>Opware</b> , click <b>buildmgr</b> , and then click the <b>Members</b> tab.
boot_server.speed_duplex	On the server hosting the OS Provisioning Boot Server, check the file /opt/OPSWboot/jumpstart/Boot/etc/.speed_duplex.state
truth.uninstall.needdata	<i>This parameter is not required for upgrades. (It is only relevant when uninstalling SA.)</i>
truth.uninstall.aresure	<i>This parameter is not required for upgrades. (It is only relevant when uninstalling SA.)</i>
bootagent.host	<p>The hostname of the OS Provisioning Boot Server.</p> <p>Log in to the SAS Web Client, click <b>Service Levels</b> in the <b>Navigation</b> panel, click <b>Opware</b>, click <b>boot_server</b>, and then click the <b>Members</b> tab.</p>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
truth.sid	<p>On the server hosting the Model Repository (truth), check the <code>tnsnames.ora</code> file; for example, if the file contains an entry similar to this:</p> <pre>devtruthac03 = (DESCRIPTION= (ADDRESS= (HOST=truth.XXX.dev.example.com) (PORT=1521) (PROTOCOL=tcp) ) (CONNECT_DATA= (SERVICE_NAME=truth) ) )</pre> <p>then, the SID for the Model Repository is <code>truth</code>.</p>
save_crypto	<p><i>This parameter is not required for upgrades. (It is only relevant when uninstalling SA.)</i></p>
agent_gw_list_args	<p><i>This value is required only when upgrading a Satellite.</i></p> <p>Obtain this value from the Gateway Properties file on the server hosting the Core Gateway.</p> <p>In the properties file, locate the values for the following parameters:</p> <pre>--GWAddress</pre> <p>the IP address of the server hosting the Core Gateway.</p> <pre>--ProxyPort</pre> <p>the port number used by Server Agents to communicate with the Core Gateway (port 3001 by default).</p>
default_locale	<p>Log in to the SAS Web Client to determine which locale is being used by SA (the locale value is apparent from the SAS Web Client UI).</p>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
ogfs.store.host	<p>Linux: on the server hosting the OGFS (Slice Component bundle), check the value in the /etc/fstab file. The entry is specified as follows:</p> <pre># Begin Global Filesystem mounts &lt;ogfs.store.host&gt;:&lt;ogfs.store.path&gt; /var/opt/OPSWmnt/store nfs &lt;ogfs.audit.host&gt;:&lt;ogfs.audit.path&gt; /var/opt/OPSWmnt/audit nfs # End Global Filesystem mounts</pre> <p><b>Solaris:</b> on the server hosting the OGFS (Slice Component bundle), check the value in the /etc/mnttab file. The entry is specified as follows:</p> <pre>&lt;ogfs.store.host&gt;:&lt;ogfs.store.path&gt; /var/opt/opsware/ogfs/mnt/storenfs intr,bg,xattr,dev=43c0003 1167864831  &lt;ogfs.audit.host&gt;:&lt;ogfs.audit.path&gt; /var/opt/opsware/ogfs/mnt/auditnfs rw,xattr,dev=43c0004    1167864831</pre>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
ogfs.store.path	<p><b>Linux:</b> on the server hosting the OGFS (Slice Component bundle), check the value in the file <code>/etc/fstab</code>. The entry is specified as follows:</p> <pre># Begin Global Filesystem mounts &lt;ogfs.store.host&gt;:&lt;ogfs.store.path&gt; /var/opt/OPSWmnt/store nfs &lt;ogfs.audit.host&gt;:&lt;ogfs.audit.path&gt; /var/opt/OPSWmnt/audit nfs # End Global Filesystem mounts</pre> <p><b>Solaris:</b> on the server hosting the OGFS (Slice Component bundle), check the value in the <code>/etc/mnttab</code> file. The entry is specified as follows:</p> <pre>&lt;ogfs.store.host&gt;:&lt;ogfs.store.path&gt; /var/opt/opsware/ogfs/mnt/storenfs intr,bg,xattr,dev=43c0003 1167864831  &lt;ogfs.audit.host&gt;:&lt;ogfs.audit.path&gt; /var/opt/opsware/ogfs/mnt/auditnfs rw,xattr,dev=43c0004      1167864831</pre>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
ogfs.audit.host	<p><b>Linux:</b> on the server hosting the OGFS (Slice Component bundle), check the value in the file <code>/etc/fstab</code>. The entry is specified as follows:</p> <pre># Begin Global Filesystem mounts &lt;ogfs.store.host&gt;:&lt;ogfs.store.path&gt; /var/opt/OPSWmnt/store nfs &lt;ogfs.audit.host&gt;:&lt;ogfs.audit.path&gt; /var/opt/OPSWmnt/audit nfs # End Global Filesystem mounts</pre> <p><b>Solaris:</b> on the server hosting the OGFS (Slice Component bundle), check the value in the <code>/etc/mnttab</code> file. The entry is specified as follows:</p> <pre>&lt;ogfs.store.host&gt;:&lt;ogfs.store.path&gt; /var/opt/opsware/ogfs/mnt/storenfs intr,bg,xattr,dev=43c0003 1167864831  &lt;ogfs.audit.host&gt;:&lt;ogfs.audit.path&gt; /var/opt/opsware/ogfs/mnt/auditnfs rw,xattr,dev=43c0004      1167864831</pre>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
ogfs.audit.path	<p><b>Linux:</b> on the server hosting the OGFS (Slice Component bundle), check the value in the file <code>/etc/fstab</code>. The entry is specified as follows:</p> <pre># Begin Global Filesystem mounts &lt;ogfs.store.host&gt;:&lt;ogfs.store.path&gt; /var/opt/OPSWmnt/store nfs &lt;ogfs.audit.host&gt;:&lt;ogfs.audit.path&gt; /var/opt/OPSWmnt/audit nfs # End Global Filesystem mounts</pre> <p><b>Solaris:</b> on the server hosting the OGFS (Slice Component bundle), check the value in the <code>/etc/mnttab</code> file. The entry is specified as follows:</p> <pre>&lt;ogfs.store.host&gt;:&lt;ogfs.store.path&gt; /var/opt/opsware/ogfs/mnt/storenfs intr,bg,xattr,dev=43c0003 1167864831  &lt;ogfs.audit.host&gt;:&lt;ogfs.audit.path&gt; /var/opt/opsware/ogfs/mnt/auditnfs rw,xattr,dev=43c0004    1167864831</pre>
truth.detuserpwd	<p>On the server hosting the SAS Web Client, check the value in the file</p> <pre>/var/opt/opsware/crypto/twist/ detuserpwd</pre>
windows_util_loc	<p>The directory in which the Windows Patch Management utilities are located. See “Preparation for Windows Patch Management for All Upgrades” on page 25.</p>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
cgw_admin_port	<p>On the server hosting the Core Gateway, check the files:</p> <pre>/etc/opt/opsware/opswgw-cgws- &lt;truth.dcNm&gt;/opswgw.properties  /var/opt/opsware/crypto/opswgw- cgws-&lt;truth.dcNm&gt;/opswgw.pem</pre>
cgw_address	<p>On the server hosting the Core Gateway, check the files:</p> <pre>/etc/opt/opsware/opswgw-cgws- &lt;truth.dcNm&gt;/opswgw.properties  /var/opt/opsware/crypto/opswgw- cgws-&lt;truth.dcNm&gt;/opswgw.pem</pre>
cgw_proxy_port	<p>On the server hosting the Core Gateway, check the files:</p> <pre>/etc/opt/opsware/opswgw-cgws- &lt;truth.dcNm&gt;/opswgw.properties  /var/opt/opsware/crypto/opswgw- cgws-&lt;truth.dcNm&gt;/opswgw.pem</pre>
agw_proxy_port	<p>On the server hosting the Core Gateway, check the files:</p> <pre>/etc/opt/opsware/opswgw-agw0- &lt;truth.dcNm&gt;/opswgw.properties  /var/opt/opsware/crypto/opswgw- agw0-&lt;truth.dcNm&gt;/opswgw.pem</pre>

Table 2-3: Locating Parameter Values to Verify the Response File (continued)

PARAMETER	HOW TO FIND THE CURRENT VALUE
cgw_tunnel_listener_port	<p>On the server hosting the Core Gateway, check the files:</p> <pre>/etc/opt/opsware/opswgw-cgws- &lt;truth.dcNm&gt;/opswgw.properties</pre> <pre>/var/opt/opsware/crypto/opswgw- cgws-&lt;truth.dcNm&gt;/opswgw.pem</pre> <p><b>NOTE:</b> The file might contain two entries for opswgw.TunnelDst. Use the value from the line that specifies opswgw.pem.</p>
hub.ip	<p>On the server hosting the SAS Web Client, check the file:</p> <pre>/etc/opt/opsware/opswgw-lb/ opswgw.properties</pre> <pre>opswgw.LoadBalanceRule=tcp:hub:ssh: STICKY:&lt;hub.ip&gt;:2222</pre>

## The Multimaster State Monitoring Utility

During a Multimaster upgrade, you will be required to shut down all components that make changes to the Model Repository database and ensure that all remaining transactions in the Mesh have been sent and received and any conflicts resolved.

In previous SAS versions, this required inspecting the Model Repository Multimaster Component log files. SA now provides the Multimaster State monitoring utility to assist you in this task.

You must invoke the utility on the server that hosts the Primary Data Access Engine (spin) host.



## Running the MSM Utility

To run the MSM utility, you must first set the environment:

For BASH/SH:

```
# LD_LIBRARY_PATH=/opt/opsware/lib; export LD_LIBRARY_PATH
```

For CSH/TCSH:

```
# setenv LD_LIBRARY_PATH /opt/opsware/lib
```

Now you can enter the following to invoke the MSM utility:

```
# cd /opt/opsware/spin/util
# /opt/opsware/bin/python ./mm_state.pyc
```

The default for the MSM utility is to refresh the data display in near real time.

The MSM utility uses the Data Access Engine's library layer, therefore the Data Access Engine itself need not be running. However, the Model Repository and the Management and First Core gateways (if your Net10/Net11 traffic is tunneled) must be running.

Once the MSM utility is started, you will see a screen similar to this:

```
# Transactions Conflicting
From\To|    832    834 |
-----+-----+
      832 |      --      0 |
      834 |      0      -- |
-----+-----+
```

The screen above is the Transaction Conflict screen. It shows the source of the transaction for which a conflict has occurred in the left column and the destination in the top row.

If you press `h` at this screen, you will see the following options:

```
>>> Help:
      'a' for all counts
      'u' for unpublished counts
      'n' for not received counts
      'c' for conflict counts
      'e' for error counts
      'q' to exit
```

Press any key to continue

The MSM utility provides several monitoring options:

- `u` – show the count of transactions waiting to be published at each core.
- `n` – show the count of transactions published, but not received by the destination core.
- `c` – show the count of unresolved transaction conflicts at each core.
- `e` – show the count of all errors reading data from each core.
- `a` – show `u`, `n` and `c` data presented together. Note that, if the number of transaction is large, the column alignment may not be maintained.
- `q` – exit the MSM utility.

Select the optional views by pressing the associated key. Press `q` to exit.

# Chapter 3: Single (First) Core Upgrade from SAS 6.x to SA 7.50

## IN THIS DOCUMENT

This section discusses the following topics:

- SAS 6.x to SA 7.50 Upgrade Scripts
- Single Core SAS 6.x to 7.50 Upgrade Phases
- Upgrading a Single Core from SAS 6.x to SA 7.50

## SAS 6.x to SA 7.50 Upgrade Scripts

Unlike previous upgrades, because of the architectural change from *non-bundled* to *bundled* Core Components, the SA 7.50 upgrade requires that you apply three upgrade scripts:

Table 3-4: SA 7.50 Non-Bundled to Bundled Component Upgrade Scripts

UPGRADE SCRIPT	DESCRIPTION
<code>convert_to_sliced_part1.sh</code>	Begins the conversion of all SAS 6.x components.
<code>convert_to_sliced_part2.sh</code>	Upgrades the Model Repository
<code>convert_to_sliced_part3.sh</code>	Completes the conversion of the Core Components to the SA 7.50 bundled architecture.

## Single Core SAS 6.x to 7.50 Upgrade Phases

The SAS 6.x to SA 7.50 Single Core upgrade process has the following phases. You can use the right-hand column to check off phases as you complete them:

Table 3-5: SAS 6.x to SA 7.50 Upgrade Phases

PHASE	DESCRIPTION	COMPLETED
<b>Pre-Upgrade Phase</b>	Remove Duplicate Virtual Column Values  <b>Upgrade script:</b> <code>/opt/opsware/spin/util/fix_6.0_data/bz133180.pyc</code>	
<b>Phase 1</b>	Shut down and begin the conversion of SAS 6.x Components/Archive data to SA 7.50.  During this phase, you will shut down and begin the conversion of all SAS 6.x components except the Model Repository and will archive Agent crypto and other material.  <b>Upgrade Script:</b> <code>convert_to_sliced_part1.sh</code>	
<b>Phase 2</b>	Convert Standalone Core to Multimaster.  <b>Upgrade Script:</b> <code>install_opsware.sh</code> <i>(from the SAS 6.x distribution media)</i>	
<b>Phase 3</b>	Add Two New Tablespaces to Oracle Database.  Two new tablespaces, STRG_DATA and STRG_INDXX are required for SA 7.50 and must be added manually before upgrading the Model Repository.  <b>Upgrade Script:</b>  None. However, you must be able to log on to and use SQL*Plus.	

Table 3-5: SAS 6.x to SA 7.50 Upgrade Phases (continued)

PHASE	DESCRIPTION	COMPLETED
<b>Phase 4</b>	Upgrade the Model Repository and update DNS or etc/hosts. You must  <b>Upgrade Script:</b> convert_to_sliced_part2.sh	
<b>Phase 5</b>	Install and complete conversion to new SA 7.50 Core Components.  <b>Upgrade Script:</b> convert_to_sliced_part3.sh	
<b>Phase 6</b>	Upload Software Repository content and OS Provisioning (optional) Stage 2 Images  <b>Upgrade Script:</b> install_opsware.sh.	
<b>Phase 7</b>	Restore SAS 6.x Configuration Customizations, if any.  <b>Upgrade Script:</b> None	
<b>Phase 8</b>	Verify Core Functionality.  <b>Upgrade Script:</b> None	
<b>Phase 9</b>	Turn on Table Monitoring  <b>Upgrade Script:</b> None	

## Upgrading a Single Core from SAS 6.x to SA 7.50

The following procedures describe how to upgrade a SAS 6.x Standalone Core to SA 7.50:

### Pre-Upgrade Phase: Remove Duplicate Virtual Column Values

As of SA 7.50, objects cannot have more than one value for a virtual column. Previously, the Oracle database allowed more than one value for a virtual column. *If you do not complete this phase, the Model Repository upgrade will fail.*

This script can be run while the core is up. It should only be run on one Core/Model Repository. The Multimaster replication process will remove the duplicate values from the other cores. To remove the duplicate virtual column values, perform the following steps:

- 1 Before running the script to remove duplicate virtual column values in the Model Repository, you must set the following environment variables:

For BASH/SH:

```
# LD_LIBRARY_PATH=/opt/opsware/lib; export LD_LIBRARY_PATH
```

For CSH/TCSH:

```
# setenv LD_LIBRARY_PATH /opt/opsware/lib
```

- 2 On the server that hosts the *Data Access Engine*, run this script as `root` to remove duplicate virtual column values in the Model Repository:

```
# /opt/opsware/bin/python /opt/opsware/spin/util \  
/fix_6.0_data/bz133180.pyc
```

The script may produce the following output, which you can ignore:

```
Process id <x> was not bound, now <y>
```

- 3 To ensure that the duplicate rows have been removed, run the following command immediately after the script completes:

- For BASH/SH:

```
# echo $?
```

- For CSH/TCSH:

```
# echo $status
```

If a value other than 0 or a traceback is displayed, rerun the script or contact your SA support representative.



The steps in Phases 1 and 2 require the *SAS 6.x Product Software DVD* and response file used to install the SAS 6.x Core that you are upgrading. If the response file used to install the SAS 6.x Core is not available, you must invoke the SAS Installer with no command-line arguments, and complete the interview manually specifying the parameter values for your SAS 6.x core.

---

### **Phase 1: Shut down and Begin Conversion of SAS 6.x Components/Archive SAS 6.x Model Repository Data.**

- 1 On all servers hosting a *Command Center (OCC)*, shut down the OCC to prevent users from logging in.
- 2 On the server(s) where you will upgrade the new SA Core Components, mount the *SA Product Software DVD* or NFS-mount a directory that contains a copy of the DVD contents.
- 3 Invoke the first SA Installer upgrade script with the `-r` argument (specify response file). You must specify the response file used to install SAS 6.x.

```
# /<distro>/opsware_installer/convert_to_sliced_part1.sh -r \  
<full_path_to_response_file>
```

If you are not sure where the response file is, use the latest file from:

```
/var/opt/opsware/install_opsware/resp.
```

---

You may see a warning about uninstalling an earlier version of the software. You can disregard this and continue.

---

- 4 The upgrade script will display a list of components to shut down and uninstall. The order the components in the list is variable depending on your specific SA configuration. Part of the conversion process to the SA 7.50 bundled architecture is the uninstallation of the SAS 6.x components. The components must be uninstalled in the order they are displayed:

```
Welcome to the Opsware Installer.  
Please select the components to uninstall.
```

- 1 ( ) Add OS Provisioning Stage2 Images to Software Repository
- 2 ( ) Software Repository - Content (install once per mesh)
- 3 ( ) OS Provisioning Boot Server
- 4 ( ) Opsware Gateway
- 5 ( ) OS Provisioning Build Manager
- 6 ( ) OS Provisioning Media Server
- 7 ( ) Opsware Command Center (OCC)
- 8 ( ) Opsware Global Filesystem Server (OGFS)
- 9 ( ) Software Repository (word)
- 10 ( ) Command Engine (way)
- 11 ( ) Data Access Engine (spin)

Enter a component number to toggle ('a' for all, 'n' for none).

When ready, press 'c' to continue, or 'q' to quit.

If all SAS 6.x components are on the same host, press a for all then c to continue.

If you have distributed your SAS 6.x components over multiple servers, you will need to uninstall the components in the order they are displayed on the Uninstall Component menu.

For example if you have installed the OS Provisioning Boot Server on a separate host, you must (based on the list above) select components 1 and 2, then press c to uninstall only those two components.

You must then log on to the server hosting the OS Provisioning Boot Server, run `convert_to_sliced_part1.sh` (with response file) on that host, select the OS Provisioning Boot Server, press c to remove it, then log into the original host, rerun `convert_to_sliced_part1.sh` (with response file) and remove the remaining components.



---

If you have installed a 6.61.x patch on the SAS 6.x core you are upgrading, the following message is displayed when `convert_to_sliced_part1.sh` is executed:

ATTENTION: This system contains a version of Opsware that has been patched since original installation. Upgrading or uninstalling Opsware will remove the patch (if this is an upgrade, then the new version will include all of the changes that were originally in the patch.)



Continue? [y/n]

If you enter `n`, the install will be aborted. If you enter `y`, the patch is uninstalled before removing the standard Core Components. In order to uninstall the patch, all core services (other than the Command Center (OCC)) must be running or the removal will fail.

---



The content of the Software Repository, including OS Provisioning Stage 2 images, is preserved.

---

- 5 After the script completes the component uninstallation, you will find a tar archive of the Agent certificates generated by the primary Data Access Engine in:

```
/var/opt/opsware/E-Fupgrade/spin/cadb.tar
```

- 6 Verify that all components have been removed, that there are no SAS processes still running, and that the inventory file

```
/var/opt/opsware/install_opsware/inv/install.inv
```

is empty and no SAS-specific RPMs are installed. To verify, you can run:

```
# rpm -qa | grep OPSW
```



At this point, you should have no components installed in your *First Core* other than the Model Repository and any non-top-level components you may have manually installed (such as a secondary Data Access Engine, an extra Gateway, or an Agent on the Model repository host).

---

### **Phase 2: Convert SAS 6.x Standalone Core to SAS 6.x Multimaster**

If you have a SAS 6.x Standalone Core that you are upgrading to SA 7.50, you must first convert that core to a Multimaster Core by adding the Multimaster components. This process requires that you have the *SAS 6.x Product Software DVD* or have NFS-mounted a directory that contains a copy of the DVD contents. Follow the instructions in your *SAS 6.x Planning and Installation Guide*, Chapter 8, *Multimaster Installation*, to convert your SAS 6.x Core to Multimaster.

### **Phase 3: Add Two New Tablespaces to Oracle Database**

Two new Oracle tablespaces, STRG\_DATA and STRG\_INDX, are required for SA 7.50. The following section shows sample SQL for creating the new tablespaces. The SQL script you run to add these tablespaces differs based on your Oracle version.

To determine your Oracle version, log on to SQL\*Plus and run the following SQL command:

Log on to your Oracle host:

```
# su - oracle
# sqlplus "/" as sysdba"
SQL> select * from v$version;
```

To find information on tablespaces and data files run the following SQL. Note the file\_name for each tablespace. This information is used to set the path/filename for the new tablespaces:

```
SQL>select tablespace_name, file_name from dba_data_files;
```

#### **Oracle 9i**

For Oracle 9i, based on your filename paths, run one of the following:

#### **If filename paths are not set to /u0x/oradata/...:**

```
# su - oracle
# sqlplus "/" as sysdba"
```

```
SQL> select tablespace_name, file_name from dba_data_files;
```

```
SQL> CREATE TABLESPACE "STRG_DATA" LOGGING DATAFILE SIZE
128M AUTOEXTEND ON NEXT 128M MAXSIZE UNLIMITED EXTENT
MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO ;
```

```
SQL> CREATE TABLESPACE "STRG_INDX" LOGGING DATAFILE SIZE
128M AUTOEXTEND ON NEXT 128M MAXSIZE UNLIMITED EXTENT
MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO ;
```

```
SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_DATA;
```

```
SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_INDX;
```

**If filename paths are set to /u0x/oradata/...**

```
SQL> CREATE TABLESPACE "STRG_DATA" LOGGING DATAFILE
'/u01/oradata/truth/strg_data01.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE UNLIMITED EXTENT MANAGEMENT LOCAL SEGMENT
SPACE MANAGEMENT AUTO;
```

```
SQL> CREATE TABLESPACE "STRG_INDX" LOGGING DATAFILE
'/u01/oradata/truth/strg_indx01.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE UNLIMITED EXTENT MANAGEMENT LOCAL SEGMENT
SPACE MANAGEMENT AUTO;
```

```
SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_DATA;
```

```
SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_INDX;
```

To verify that the tablespace quota was adjusted correctly for Oracle 9i, run the following:

```
SQL> select * from DBA_TS_QUOTAS where USERNAME = 'TRUTH' and
TABLESPACE_NAME like 'STRG%'
```

**For Oracle 10g:**

Substitute the filename path /u01/oradata/truth/strg\_data01.dbf with the appropriate path/filename in the commands below. Log on to your Oracle host:

```
# su - oracle
# sqlplus "/" as sysdba"
```

```
SQL> select tablespace_name, file_name from dba_data_files;
```

```
SQL> CREATE TABLESPACE "STRG_DATA" LOGGING DATAFILE
'/u01/oradata/truth/strg_data01.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE 4000M EXTENT MANAGEMENT LOCAL SEGMENT SPACE
MANAGEMENT AUTO ;
```

```
SQL> CREATE TABLESPACE "STRG_INDX" LOGGING DATAFILE '
/u02/oradata/truth/strg_indx01.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE 4000M EXTENT MANAGEMENT LOCAL SEGMENT SPACE
MANAGEMENT AUTO ;
```

```
SQL> ALTER TABLESPACE "STRG_DATA" ADD DATAFILE
'/u02/oradata/truth/strg_data02.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE 4000M;
```

```
SQL> ALTER TABLESPACE "STRG_INDX" ADD DATAFILE
'/u03/oradata/truth/strg_indx02.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE 4000M;
```

```
SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_DATA;
```

```
SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_INDX;
```

To check if the tablespace quota was adjusted correctly for Oracle 10g, run the following:

```
SQL> select * from DBA_TS_QUOTAS where USERNAME = 'TRUTH' and
TABLESPACE_NAME like 'STRG%';
```



---

If you do not create these new tablespaces, during the upgrade you may see the following error:

```
[INFO] Working on validation phase java.lang.Exception: The
following tablespace(s) are missing or not online: STRG_DATA
STRG_INDX [ERROR] Aborting.
```

---

#### Phase 4: Upgrade the Model Repository

---



If the database for this upgrade is Oracle 10g, SA 7.50 now validates whether the `opsware_admin` user has the required `CREATE JOB` permission. If the `opsware_admin` user does not have the `CREATE JOB` permission, the Model Repository upgrade fails with the error:

Error given by TIU: "The opsware\_admin user has not been granted the following required privileges: CREATE JOB"

See See "CREATE JOB Permission Required for Oracle 10g" on page 26.

---

- 1 On the SAS 6.x Model Repository host, from the *SA 7.50 Product Software DVD*, invoke the second SA Installer upgrade script with the `-r` (specify response file) argument. You must use the response file you created when converting the SAS 6.x Standalone Core to Multimaster in Phase 2, (default: `oiresponse.stand_to_mm`).

```
# /<distro>/opsware_installer/convert_to_sliced_part2.sh -r \  
<full_path_to_response_file>
```

- 2 The *Install Components* menu is displayed:

```
Welcome to the Opsware Installer. Please select one of the  
following installation options:
```

```
1 - Multimaster Core - First Core  
2 - Multimaster Installation: Define New Facility; Export  
Model Repository  
3 - Multimaster Core - Subsequent Core
```

```
Please enter a choice from the menu, 'h' for help, 'q' to  
quit: 1
```

```
Select Multimaster Core - First Core.
```

- 3 The following is displayed:

```
1 - Typical Component Layout Mode  
2 - Custom Component Layout Mode
```

```
Select Typical or Custom mode. Typical mode uses a default layout for the  
components, Custom allows you to choose the servers you want to install the  
components on.
```

- 4 The following is displayed:

- 1 - Simple Interview Mode
- 2 - Advanced Interview Mode

Option 1 uses default values for many of the configuration parameters.

Option 2 allows you to specify all configuration parameters during the interview.



---

You will see the following warning messages. You can safely disregard them, they are generated because you are upgrading a core that only has the Model Repository installed:

```
[Oct-25-2007 18:50:41] INFO: gateway_master is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: way_mm is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: word_mm_slice is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: slice is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: osprov_media is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: osprov_boot_slice is not listed in
the inventory.
[Oct-25-2007 18:50:41] INFO: word_uploads is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: osprov_stage2s is not listed in the
inventory
```

---

- 5 Complete the interview process, accepting the default parameter values which are taken from the SAS 6.x response file you specified.

There is one new parameter, `mgw_address` during the Simple Interview. Specify the IP of the host where you plan to install the *Infrastructure component bundle*. During the Advanced Interview, in addition to `mgw_address`, there is `mgw_tunnel_listener_port`, specify the port on which the core's Management Gateway will listen for connections from other gateways.

For more information about the Installer prompts, see the *SA Planning and Installation Guide*.



1. If you will be moving the *OS Provisioning Boot Server* to a different host, you must also update the `bootagent.host` parameter.

2. If you will be moving the *Software Repository* to a different host and you are using the hostname rather than the IP address in `ogfs.store.host` or `ogfs.audit.host` to point to the Software Repository, you must update DNS or modify `ogfs.store.host` or `ogfs.audit.host` to point to the right host

6 Save the response file and copy it to all the servers in the core that will host an SA component. The default response file name for a Typical Interview is:

```
/var/tmp/oiresponse.slices_master_typical
```

or for a Custom Interview:

```
/var/tmp/oiresponse.slices_master_custom
```

7 If you want to continue the installation using the response file you just created, press `y` to continue and go to Step 8. You can press `n` to stop the upgrade at this point. If so, you will need to run the `convert_to_sliced_part2.sh` script on this server again to restart the upgrade process at Step 8.

8 The *Upgrade Component* menu is displayed:

```
Welcome to the Opware Installer.
Please select the components to upgrade.
1 (*) Model Repository, First Core
Enter a component number to toggle ('a' for all, 'n' for
none).
When ready, press 'c' to continue, or 'q' to quit.
```

Select Model Repository, First Core. Press `c` to continue.

The SA Installer upgrades the Model Repository. During the upgrade process, you may see a series of dialogues similar to the following:

```
1/6) ServiceLevel.Opware.way way.max_remediations:
    Deployed value: 100
```

```
New value: 50
Action: Change to new value (recommended)
Enter 't' to toggle behavior or 'c' to continue. c
```

Other Service Level dialogues you may see are:

- ServiceLevel.Opsware.way way.max\_remediations.action
- ServiceLevel.Opsware.word cache\_max\_size
- ServiceLevel.Opsware.word cache\_min\_size
- ServiceLevel.Opsware.buildmgr bm.reprovision\_attributes\_to\_preserve
- ServiceLevel.Opsware.vault LedgerReaderInterval

You should accept the defaults for these dialogues by pressing `c` to continue.

A screen similar he following is displayed:

```
Summary of changes to be made:
1) ServiceLevel.Opsware.way way.max_remediations: Change
from 100 to 50.
2) ServiceLevel.Opsware.way way.max_remediations.action:
Change from 300 to 100.
3) ServiceLevel.Opsware.word cache_max_size: Change from
2097152 to 10485760.
4) ServiceLevel.Opsware.word cache_min_size: Change from
1572864 to 8388608.
5) ServiceLevel.Opsware.buildmgr bm.reprovision_attributes_
to_preserve: Leave as boot_kernel boot_options kernel_
arguments ksdevice nfsv4_domain reboot_command system_locale
timezone.
6) ServiceLevel.Opsware.vault LedgerReaderInterval: Change
from 200000 to 600000.
```

```
Enter 'b' to go back or 'c' to continue with the above
action(s). c
```

Press `c` to continue.

- 9 Update your DNS and/or `/etc/hosts` files. See “DNS Considerations” on page 19.



## Phase 5: Install the SA 7.50 Components

### Install the Infrastructure Components

- 1 Copy the tar file containing your archived certificates from `/var/opt/opsware/E-Fupgrade/spin/cadb.tar` on the server that hosted the *Primary Data Access Engine* (`spin`) to the same location on the host where you will install the SA 7.50 *Infrastructure Component bundle*.
- 2 From the SA 7.50 *Product Software DVD* and on the server where you will install the *Infrastructure Component bundle*, invoke the third SA Installer upgrade script with the `-r` (specify response file) argument.

```
<distro>/opsware_installer/convert_to_sliced_part3.sh -r
<full_path_to_response_file>
```

The response file is the file you created in Phase 4, step 6 (default: Typical Interview: `/var/tmp/oiresponse.slices_master_typical` or Custom Interview: `/var/tmp/oiresponse.slices_master_custom`).

- 3 In **Typical Component Layout Mode**, the following screen displays:

```
Welcome to the Opsware Installer.
Please select the components to install.
1 ( ) Model Repository, First Core
2 ( ) Core Infrastructure Components
3 ( ) Slice
4 ( ) OS Provisioning Components
Enter a component number to toggle ('a' for all, 'n' for
none).
When ready, press 'c' to continue, or 'q' to quit
```

Select `Core Infrastructure Components`, then press `c` to continue. The component installation process begins.



Ensure that you do not have the Model Repository selected for installation at this point. Installing the Model Repository at this point would cause the installation to fail.

- In **Custom Component Layout Mode**, the following screen displays:

```
Welcome to the Opsware Installer.
```

Please select the components to install.

- 1 ( ) Model Repository, First Core
- 2 (\*) Multimaster Infrastructure Components
- 3 ( ) Software Repository (word), Multimaster Component
- 4 ( ) Slice
- 5 ( ) OS Provisioning Media Server
- 6 ( ) OS Provisioning Boot Server, Slice version

Enter a component number to toggle ('a' for all, 'n' for none).

When ready, press 'c' to continue, or 'q' to quit.

Select Multimaster Infrastructure Component and press c to install the component.



Ensure that you do not have the Model Repository selected for installation at this point. Installing the Model Repository at this point would cause the installation to fail.

---

### ***Install the Software Repository (Custom Component Layout Mode only)***

- 4 Log into the server on which you will install the Software Repository, and repeat Steps 2 and 3 above, but select `Software Repository (word)`, `Multimaster Component`. Press `c` to install the component.

### ***Install the Slice Component Bundle***



You must install the Slice Component bundle on the host where the Core Gateway (CGW)/Agent Gateway (AGW) pair was installed *in your SAS 6.x environment*, otherwise, all managed devices will lose connectivity to the core.

---

- 5 Log on to the host on which you will install the Slice Component bundle and repeat Steps 2 and 3 above but select `slice`. Press `c` to install the component.



If you are installing multiple Slice Component bundles, they must be installed one-at-a-time. Simultaneous installation is not supported.

---

### **Install the OS Provisioning Component Components**

- 6 Dependent on the Layout Mode you selected.

#### **Typical Component Layout Mode**

Log on to the host on which you will install the OS Provisioning Component bundle and repeat Steps 2 and 3 above, but select OS Provisioning Components. Press `c` to install the component.

#### **Custom Component Layout Mode**

1. Log on to the host on which you will install the OS Provisioning Media Server and repeat Steps 2 and 3 above, but select OS Provisioning Media Server. Press `c` to install the component.
2. Log on to the host on which you will install the OS Provisioning Boot Server and repeat Steps 2 and 3 above, but select OS Provisioning Boot Server, `slice version`. Press `c` to install the component.

### **Phase 6: Upload Software Repository Content and Stage 2 Images**

- 1 Now you must add the Software Repository Content and, optionally, the OS Provisioning Stage 2 Images. On the server where you installed the Software Repository, mount the *Agent and Utilities DVD* or NFS-mount the directory that contains a copy of the DVD contents.
- 2 Invoke the Installer script with the `-r` (specify response file) argument. The response file is the file you created in Phase 4, step 6 (default: Typical Interview: `/var/tmp/oiresponse.slices_master_typical` or Custom Interview: `/var/tmp/oiresponse.slices_master_custom`).

```
# /<distro>/opsware_installer/install_opsware.sh -r \  
<full_path_to_response_file>
```

- 3 The *Upgrade Components* menu is displayed:

```
Welcome to the Opsware Installer.  
Please select the components to install.
```

```
( ) Software Repository - Content (install once per mesh)  
( ) Add OS Provisioning Stage2 Images to Software Repository
```

```
Enter a component number to toggle ('a' for all, 'n' for  
none).
```

When ready, press 'c' to continue, or 'q' to quit.

Select Software Repository - Content. Press c to continue. SA uploads the Software Repository content.

- 4 [Optional] To install the OS Provisioning Stage 2 images, re-invoke the `install_opsware.sh` with the same response file. Select Add OS Provisioning Stage2 Images to Software Repository. Press c to continue. SA uploads the OS Provisioning Stage 2 images.

### **Phase 7: Restore SAS 6.x Configuration Customizations**

If you created customized configuration files for your SAS 6.x installation and want to continue using them with SA 7.50, the SA Installer saves the configuration files in `/var/opt/opsware/install_opsware/config_file_archive/`.

The files saved are:

- `/opt/opsware/oi_util/startup/components.config`
- `/opt/opsware/oi_util/startup/opsware_start.config`
- `/etc/opt/opsware/occ/psrvr.properties`
- `/etc/opt/opsware/dhcpd/dhcpd.conf`
- `/etc/opt/opsware/spin/spin.args`
- `/etc/opt/opsware/spin/srvrgrps_attr_map.conf`
- `/etc/opt/opsware/twist/twist.conf`
- `/etc/opt/opsware/twist/loginModule.conf`
- `/etc/opt/opsware/twist/twistOverrides.conf`
- `/etc/opt/opsware/vault/vault.conf`
- `/opt/opsware/waybot/etc/waybot.args`
- `/etc/opt/opsware/mm_wordbot/mm_wordbot.args`

The SA Installer does not automatically restore customizations made in configuration files; you must do that manually. If you move components to different hosts during the upgrade, you will want to copy your customized configuration files to the new host.



To use WinPE-based Windows OS Provisioning on an upgraded core, make sure that the authoritative keyword in the `/etc/opt/opsware/dhcpd/dhcpd.conf` file on the OS Provisioning Boot Server is uncommented. If you modify the `dhcpd.conf` file, you must restart the DHCP server: `/etc/init.d/opsware-sas restart dhcpd`.

---

### Phase 8: Verify Core Functionality

- 1 Verify that the Core upgraded successfully. Log in to the SAS Web Client as a member of the *SA System Administrator group* and run the System Diagnosis tool on the core (from the navigation panel, click **Administration** ► **System Diagnosis**. The *System Diagnosis: Begin Diagnosis* page appears.
- 2 Select the components that you want to test. By default, all components are selected (the Data Access Engine, the Software Repository, Command Engine, and Web Services Data Access Engine).

You should test all components. See the *SA Administrators Guide* for information about running the SA System Diagnosis tool and interpreting the results.



After you upgrade SA, you need to upgrade the Agent on each managed server in the facility. The latest version of the Agent enables you to use new SA features in the core. See the *SA User's Guide: Server Automation* for information about the Agent Upgrade Tool.

---

### Phase 9: Turn on Table Monitoring

Turn on table level monitoring for `dbms_stats` collection. Run the following SQL to turn the monitoring on:

#### Oracle 9i:

```
# su - oracle
# sqlplus "/ as sysdba"
```

```
SQL> exec dbms_stats.alter_schema_tab_monitoring
(ownname=>'AAA',monitoring=>TRUE);
```

```
SQL> exec dbms_stats.alter_schema_tab_monitoring
(ownname=>'TRUTH',monitoring=>TRUE);
```

```
SQL> exec dbms_stats.alter_schema_tab_monitoring
(ownname=>'LCREP',monitoring=>TRUE);
```

**Oracle 10g:**

Table monitoring is turned on in Oracle 10g by default. To ensure that table monitoring is on, run the following SQL:

```
# su - oracle
# sqlplus "/" as sysdba"
```

```
SQL> select owner, table_name, monitoring from dba_tables where
owner in ('AAA');
```

```
SQL> select owner, table_name, monitoring from dba_tables where
owner in ('TRUTH');
```

```
SQL> select owner, table_name, monitoring from dba_tables where
owner in ('LCREP');
```

# Chapter 4: Multimaster Upgrade from SAS 6.x to SA 7.50

## IN THIS DOCUMENT

This section discusses the following topics:

- SAS 6.x to SA7.50 Multimaster Core Upgrade Phases
- Upgrading a Multimaster Mesh's Secondary Core from SAS 6.x to SA 7.50

## SAS 6.x to SA7.50 Multimaster Core Upgrade Phases

This section provides a summary of the Multimaster Core upgrade process. You can use the right-hand column to indicate that a phase is completed.

Table 4-6:

PHASE	DESCRIPTION	COMPLETE
<b>Pre-Upgrade Phase</b>	Remove Duplicate Virtual Column Values. <b>Upgrade script:</b> /opt/opsware/spin/util/fix_6.0_data/bz133180.pyc	
<b>Phase 1</b>	Synchronize the Multimaster Mesh  During this phase you ensure that all transactions have completed and that there are no unresolved conflicts.  <b>Upgrade Script:</b> None	
<b>Phase 2</b>	Begin conversion of all <i>Secondary Core</i> Components except the Model Repository to bundled component architecture. During this phase all 6.x components are uninstalled except for the Model Repository.  <b>Upgrade Script:</b> convert_to_sliced_part1.sh	

Table 4-6:

PHASE	DESCRIPTION	COMPLETE
<b>Phase 3</b>	<p>Begin conversion of all <i>First (primary)</i> Core Components except for the Model Repository to the bundled component architecture. During this phase all 6.x components will be uninstalled except for the Model Repository.</p> <p><b>Upgrade Script:</b> <code>convert_to_sliced_part1.sh</code></p>	
<b>Phase 4</b>	<p>Modify DNS and/or <code>/etc/hosts</code> entries.</p> <p>If you choose to install components on different hosts than in 6.x, your DNS and <code>/etc/hosts</code> file entries must be updated to reflect the change.</p> <p><b>Upgrade Script:</b> None</p>	
<b>Phase 5</b>	<p>Add Two New Tablespaces to Oracle Database</p> <p><b>Upgrade Script:</b> None, but you must be able to log in to and use SQL*Plus.</p>	
<b>Phase 6</b>	<p>Upgrade the Model Repository on the <i>First (primary)</i> Core.</p> <p><b>Upgrade Script:</b> <code>convert_to_sliced_part2.sh</code></p>	
<b>Phase 7</b>	<p>Install the SA 7.50 Components on the <i>First (primary)</i> Core.</p> <p><b>Upgrade Script:</b> <code>convert_to_sliced_part3.sh</code></p>	
<b>Phase 8</b>	<p>Recreate Tibco Neighbor entries and Gateway egress filters for Secondary Cores on the <i>First (primary)</i> Core.</p> <p><b>Upgrade Script:</b> <code>install_opsware.sh</code></p>	
<b>Phase 9</b>	<p>Upgrade the Model Repositories of the <i>Secondary Cores</i>.</p> <p><b>Upgrade Script:</b> <code>convert_to_sliced_part2.sh</code></p>	



Table 4-6:

PHASE	DESCRIPTION	COMPLETE
<b>Phase 10</b>	Install the SA 7.50 Components for the <i>Secondary Cores</i> . <b>Upgrade Script:</b> <code>convert_to_sliced_part3.sh</code>	
<b>Phase 11</b>	Upload the Software Repository Content and Stage2 Images. <b>Upgrade Script:</b> <code>install_opsware.sh</code>	
<b>Phase 12</b>	Restore 6.x Configuration Customizations.	
<b>Phase 13</b>	Verify Core Functionality. <b>Upgrade Script:</b> None	
<b>Phase 14</b>	Turn on Table Monitoring <b>Upgrade Script:</b> None	



OS Provisioning Stage 2 images must be installed in *every core* in the mesh, while Software Repository content is only installed in the *First (primary) Core*.

## Upgrading a Multimaster Mesh's Secondary Core from SAS 6.x to SA 7.50

The following procedure describes how to upgrade a SAS 6.x Multimaster Mesh's Secondary Cores to SA 7.50.

To upgrade the components, perform the following steps:

### Pre-Upgrade Phase: Remove Duplicate Virtual Column Values

As of SA 7.50, objects cannot have more than one value for a virtual column. Previously, the database allowed more than one value for a virtual column. On the Web Services Data Access Engine (*spin*) host, run this script as `root` to remove duplicate virtual column values in the Model Repository:

```
# /opt/opsware/bin/python /opt/opsware/spin/util \
/fix_6.0_data/bz133180.pyc
```

If you do not run this script, the Model Repository upgrade will fail.



---

This script can be run while the core is up. It should only be run on the Web Services Data Access Engine (*spin*) host of one core in the Mesh. Multimaster replication process will remove the duplicate values from the other cores.

---

### Phase 1: Synchronize the Multimaster Mesh

- 1 Examine the **Multimaster State** page in the SA Client or use the Multimaster State Monitoring Utility (see the “The Multimaster State Monitoring Utility” on page 40) to ensure that there are no outstanding transactions or conflicts (resolve any outstanding conflicts).
- 2 In all cores of the mesh, shut down all components that make changes to the Model Repository database: Command Centers (OCC), Data Access Engines, and Web Services Data Access engines.
  1. Log into each server in the Core that hosts a Command Center (OCC) and run the following command:

```
# /etc/init.d/opsware-sas stop occ.server twist spin
```
  2. Log into each server in the Core that hosts a Global File Server (OGFS) and run the following command:

```
# /etc/init.d/opsware-sas stop twist spin
```

Then verify the status to insure these components have been stopped:

```
# /etc/init.d/opsware-sas status twist spin
```

**Note:** As of SA 7.50, the OGFS is no longer an independent component, its functionality is now provided as part of the Slice Component bundle.

3. Log into the Primary Data Access Engine host and run the following command:

```
# /etc/init.d/opsware-sas stop spin
```

- 3 [This step runs the Multimaster State Monitoring Utility] Allow time for all remaining transactions in the mesh to be sent and received. You can use the `mm_state` tool in `/<distro>/opsware_installer/tools152/mm_state.pyc` to confirm that the transactions are synchronized in all cores.

1. Log in to the Primary Data Access Engine host and run the following commands:

```
# cp /<distro>/opsware_installer/tools152/mm_state.pyc  
/opt/opsware/spin/util
```

2. Set the following environment variable:

For BASH/SH:

```
# LD_LIBRARY_PATH=/opt/opsware/lib; export LD_LIBRARY_PATH
```

For CSH/TCSH:

```
# setenv LD_LIBRARY_PATH /opt/opsware/lib
```

3. Issue the following command:

```
# cd /<distro>/opt/opsware/spin/util  
# /opt/opsware/bin/python ./mm_state.pyc
```

See “The Multimaster State Monitoring Utility” on page 40 for information about interpreting the MSM results and for commands available while running the utility.

- 4 After the mesh is synchronized, stop the `vaultdaemon`. Run the following command on the `vaultdaemon` hosts in each core:

```
# /etc/init.d/opsware-sas stop vaultdaemon
```

- 5 Restart the Data Access Engine on all hosts on which they were stopped in step 2 of this phase.

Log in to each host and run the following command:

```
# /etc/init.d/opsware-sas startsync spin
```



This step must be completed successfully or the installation will fail.

---

### **Phase 2: Begin the Conversion of the Secondary Core Components (except the Model Repository) to Bundled Architecture**

- 1 On all Secondary Cores on which you will upgrade the SA Core Components, mount the *SA Product Software DVD* or NFS-mount a directory that contains a copy of the DVD contents.
- 1 On each Secondary Core in the mesh, invoke the first SA Installer upgrade script with the `-r` (specify response file) argument. You must specify the response file used to install SAS 6.x:

```
# /<distro>/opsware_installer/convert_to_sliced_part1.sh -r \  
<full_path_to_response_file>
```

If you are not sure where the response file is, use the latest file from the SAS 6.x Core:

```
/var/opt/opsware/install_opsware/resp.
```



The first thing the SA Installer does is check for Multimaster conflicts. If it finds conflicts, the Installer displays a message similar to the following:

```
[root@yellow1 root]# /var/opsware/<distro>/opsware_installer/
upgrade_opsware.sh -r /OPSW/yellow_mm_601.resp
```

```
Distribution version = opsware_xx.x
```

```
Verifying no conflicts exist in DB "yellow_truth": FAILURE
(multiple rows selected)
```

```
Conflicts were detected in the Truth database. Please re-start
the core and resolve the conflicts before attempting to perform
this upgrade.
```

```
Upgrade aborted.
```

Where `yellow_truth` is the `tnsname` of the database. If you see this message, see the *SA Administrators Guide* for information about resolving conflicts. Resolve the conflicts and invoke the installer again.

You may see a warning message that you are attempting to uninstall components. Press `y` to continue.

2 A Component List similar to the following is displayed:

```
Welcome to the Opsware Installer.
```

```
Please select the components to uninstall.
```

```
1 ( ) Add OS Provisioning Stage2 Images to Software Repository
2 ( ) OS Provisioning Boot Server
3 ( ) Opsware Gateway, Secondary Core
4 ( ) OS Provisioning Build Manager
5 ( ) OS Provisioning Media Server
6 ( ) Command Center (OCC), Multimaster Component
7 ( ) Global Filesystem Server (OGFS), Multimaster Component
8 ( ) Software Repository (word), Multimaster Component
9 ( ) Command Engine (way), Multimaster Component
10 ( ) Multimaster Infrastructure Components (vault)
11 ( ) Data Access Engine (spin), Multimaster
```

12 ( ) Model Repository (truth), Secondary Core

Enter a component number to toggle ('a' for all, 'n' for none).  
When ready, press 'c' to continue, or 'q' to quit.



Do not uninstall the Model Repository.

---

Based on your specific Core Component layout, the order of the component list can vary, however, you must uninstall the components in the order they are displayed on your Uninstall Menu. If your *components are on a single host*, you can select all components (except the Model Repository) and press c. The uninstaller will remove the components in the correct order.

However, if your *components are distributed over several hosts*, you must log on to the server that host each component in the order displayed and run the `convert_to_sliced_part1.sh` script to remove the components in the correct order.

For example, if your Software Repository is located on a separate server from the other components, using the example list above, you must uninstall components 1 through 7, then log on to the Software Repository server and uninstall the Software Repository (8), then log back on to the original host to remove the remaining components (9 - 11).



Software Repository Content will be preserved although the component itself is uninstalled.

---

Press c to continue.

When the uninstallation is completed, you will find a tar archive of the agent certificates generated by the Primary Data Access Engine in

`/var/opt/opsware/E-Fupgrade/spin/cadb.tar`.



At this point, you will have no components installed in your core other than the Model Repository. If you've installed any non-top-level components manually (such as a secondary Data Access Engine, an extra Gateway, or an Agent on the Model repository host), be sure to uninstall them before continuing the upgrade.

### Phase 3: Begin the Conversion of the First (primary) Core Components except for the Model Repository to Bundled Architecture

- 1 On each First (primary) Core in the mesh, from the *SA 7.50 Product Software DVD*, invoke the first SA Installer upgrade script with the `-r` (specify response file) argument. You must specify the response file used to install SAS 6.x.

```
# /<distro>/opsware_installer/convert_to_sliced_part1.sh -r \  
<full_path_to_response_file>
```

If you are not sure where the response file is, use the latest file from the SAS 6.x Core:

```
/var/opt/opsware/install_opsware/resp.
```



The SA Installer checks for conflicts right after you run the upgrade script. If conflicts are present, the Installer displays the a message similar to the following:

```
[root@yellow1 root]# /var/opsware/<distro>/opsware_installer/  
upgrade_opsware.sh -r /OPSW/yellow_mm_601.resp
```

```
Distribution version = opsware_xx.x
```

```
Verifying no conflicts exist in DB "yellow_truth": FAILURE  
(multiple rows selected)
```

Conflicts were detected in the Truth database. Please re-start the core and resolve the conflicts before attempting to perform this upgrade.

Upgrade aborted.

Where `yellow_truth` is the `tnsname` of the database. If you see this message, see the *SA Administrators Guide* for information about resolving conflicts. Resolve the conflicts and invoke the installer again.

---

You may see a warning message that you are attempting to uninstall components. Press `y` to continue.

2 A Component List similar to the following is displayed:

```
Welcome to the Opsware Installer.
```

```
Please select the components to uninstall.
```

```
1 ( ) Add OS Provisioning Stage2 Images to Software Repository
2 ( ) Software Repository - Content (install once per mesh)
3 ( ) OS Provisioning Boot Server
4 ( ) Gateway
5 ( ) OS Provisioning Media Server
6 ( ) Software Repository (word), Multimaster Component
7 ( ) Command Engine (way), Multimaster Component
8 ( ) Multimaster Infrastructure Components (vault)
9 ( ) Data Access Engine (spin), Multimaster Component
```

```
Enter a component number to toggle ('a' for all, 'n' for none).
When ready, press 'c' to continue, or 'q' to quit.
```

Based on your specific Core Component layout, the order of the component list can vary, however, you must uninstall the components in the order they are displayed on the Uninstall Menu. If your *components are on a single host*, you can select all components (except the Model Repository) and press `c`. The uninstaller will remove the components in the correct order.

However, if your *components are distributed over several hosts*, you must log on to the server that host each component in the order displayed and run the `convert_to_sliced_part1.sh` script to remove the components in the correct order.

For example, if your Software Repository is located on a separate server from the other components, using the example list above, you must uninstall components 1 through 5, then log on to the Software Repository server and uninstall the Software Repository (6), then log back on to the original host to remove the remaining components (7 - 9).





Software Repository Content will be preserved although the component itself is uninstalled.

Press `c` to continue.

When the uninstallation is completed, you will find a tar archive of the agent certificates generated by the Primary Data Access Engine in

```
/var/opt/opsware/E-Fupgrade/spin/cadb.tar.
```



At this point, you should have no components installed in your *First Core* other than the Model Repository and any non-top-level components you may have manually installed (such as a secondary Data Access Engine, an extra Gateway, or an Agent on the Model repository host).

#### **Phase 4: Modify DNS and/or /etc/hosts entries**

Update your DNS and/or `/etc/hosts` files. See "DNS Considerations" on page 19.

#### **Phase 5: Add Two New Tablespaces to Oracle Database**

Two new Oracle tablespaces, `STRG_DATA` and `STRG_INDX`, are required for SA 7.50. The following section shows sample SQL for creating the new tablespaces. The SQL script you run to add these tablespaces differs based on your Oracle version.

To determine your Oracle version, log on to SQL\*Plus and run the following SQL command:

Log on to your Oracle host:

```
# su - oracle
# sqlplus "/" as sysdba"
```

```
SQL> select * from v$version;
```

To find information on tablespaces and data files run the following SQL. Note the `file_name` for each tablespace. This information is used to set the path/filename for the new tablespaces:

```
SQL>select tablespace_name, file_name from dba_data_files;
```

## Oracle 9i

For Oracle 9i, based on your filename paths, run one of the following:

### **If filename paths are not set to something like /u0x/oradata/...:**

```
# su - oracle
# sqlplus "/" as sysdba

SQL> select tablespace_name, file_name from dba_data_files;

SQL> CREATE TABLESPACE "STRG_DATA" LOGGING DATAFILE SIZE
128M AUTOEXTEND ON NEXT 128M MAXSIZE UNLIMITED EXTENT
MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO ;

SQL> CREATE TABLESPACE "STRG_INDX" LOGGING DATAFILE SIZE
128M AUTOEXTEND ON NEXT 128M MAXSIZE UNLIMITED EXTENT
MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO ;

SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_DATA;

SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_INDX;
```

### **If filename paths are set to something like /u0x/oradata/...**

```
SQL> CREATE TABLESPACE "STRG_DATA" LOGGING DATAFILE
'/u01/oradata/truth/strg_data01.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE UNLIMITED EXTENT MANAGEMENT LOCAL SEGMENT
SPACE MANAGEMENT AUTO;

SQL> CREATE TABLESPACE "STRG_INDX" LOGGING DATAFILE
'/u01/oradata/truth/strg_indx01.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE UNLIMITED EXTENT MANAGEMENT LOCAL SEGMENT
SPACE MANAGEMENT AUTO;

SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_DATA;

SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_INDX;
```

To verify that the tablespace quota was adjusted correctly for Oracle 9i, run the following:

```
SQL> select * from DBA_TS_QUOTAS where USERNAME = 'TRUTH' and
TABLESPACE_NAME like 'STRG%'
```

**For Oracle 10g:**

Substitute the filename path `/u01/oradata/truth/strg_data01.dbf` with the appropriate path/filename in the commands below. Log on to your Oracle host:

```
# su - oracle
# sqlplus "/" as sysdba

SQL> select tablespace_name, file_name from dba_data_files;

SQL> CREATE TABLESPACE "STRG_DATA" LOGGING DATAFILE
'/u01/oradata/truth/strg_data01.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE 4000M EXTENT MANAGEMENT LOCAL SEGMENT SPACE
MANAGEMENT AUTO ;
SQL> CREATE TABLESPACE "STRG_INDX" LOGGING DATAFILE '
/u02/oradata/truth/strg_indx01.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE 4000M EXTENT MANAGEMENT LOCAL SEGMENT SPACE
MANAGEMENT AUTO ;

SQL> ALTER TABLESPACE "STRG_DATA" ADD DATAFILE
'/u02/oradata/truth/strg_data02.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE 4000M;

SQL> ALTER TABLESPACE "STRG_INDX" ADD DATAFILE
'/u03/oradata/truth/strg_indx02.dbf' SIZE 32M AUTOEXTEND ON
NEXT 128M MAXSIZE 4000M;

SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_DATA;

SQL> ALTER USER TRUTH QUOTA UNLIMITED ON STRG_INDX;
```

To check if the tablespace quota was adjusted correctly for Oracle 10g, run the following:

```
SQL> select * from DBA_TS_QUOTAS where USERNAME = 'TRUTH' and
TABLESPACE_NAME like 'STRG%';
```



If you do not create these new tablespaces, during the upgrade you may see the following error:

```
[INFO] Working on validation phase java.lang.Exception: The
following tablespace(s) are missing or not online: STRG_DATA
STRG_INDX [ERROR] Aborting.
```

## Phase 6: Upgrade the Model Repository on the First (primary) Core

- 1 From the *SA 7.50 Product Software DVD*, invoke the second SA Installer upgrade script with the `-r` (specify response file) argument. You must specify the response file used to install SAS 6.x.

```
# /<distro>/opsware_installer/convert_to_sliced_part2.sh -r \  
<full_path_to_response_file>
```

- 2 The following is displayed:

```
Welcome to the Opsware Installer. Please select one of the  
following installation options:
```

```
1 - Multimaster Opsware Core - First Core  
2 - Multimaster Installation: Define New Facility; Export  
Model Repository  
3 - Multimaster Opsware Core - Subsequent Core
```

```
Please enter a choice from the menu, 'h' for help, 'q' to  
quit: 1
```

```
Select 1: Multimaster Core - First Core.
```

- 3 The following is displayed:

```
1 - Typical Component Layout Mode  
2 - Custom Component Layout Mode
```

```
Select Typical or Custom mode. Typical mode uses a default layout for the  
components, Custom allows you to distribute your components on different hosts.
```

- 4 The following is displayed:

```
1 - Simple Interview Mode  
2 - Advanced Interview Mode
```

```
Option 1 uses default values for many of the configuration parameters.
```

```
Option 2 allows you to specify all configuration parameters during the interview.
```



You will see the following warning messages. You can safely disregard them, they are generated because you are upgrading a core that only has the Model Repository installed:

```
[Oct-25-2007 18:50:41] INFO: gateway_master is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: way_mm is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: word_mm_slice is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: slice is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: osprov_media is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: osprov_boot_slice is not listed in
the inventory.
[Oct-25-2007 18:50:41] INFO: word_uploads is not listed in the
inventory.
[Oct-25-2007 18:50:41] INFO: osprov_stage2s is not listed in the
inventory
```

---

- 5 Accept the defaults for the parameter values (which are taken from the SAS 6.x response file you specified). For information about the Installer prompts, see the *SA Planning and Installation Guide*.

There is one new parameter, `mgw_address` during the Simple Interview. Specify the IP of the host where you plan to install the *Infrastructure component bundle*. During the Advanced Interview, in addition to `mgw_address`, there is `mgw_tunnel_listener_port`, specify the port on which the core's Management Gateway will listen for connections from other gateways.



1. If you will be moving the OS Provisioning Boot Server to a different host, you must also update the `bootagent.host` parameter.
  2. If you will be moving the Software Repository to a different host and you are using the hostname rather than the IP address in `ogfs.store.host` or `ogfs.audit.host` to point to the Software Repository, you must update DNS or modify `ogfs.store.host` or `ogfs.audit.host` to point to the right host
-

- 6 The SA Installer displays this message:

```
All parameters have values. Do you wish to finish the
interview (y/n):
```

If you are satisfied with the parameter values, press *y*.

If you want to review or change your answers, press *n*. The installer displays the prompts again, showing in brackets [ ] the values that you previously entered.

- 7 When you are finished with the interview, the installer prompts you for the name of the response file (default for Typical upgrade: `oiresponse.slices_master_typical`, default for Custom upgrade: `oiresponse.slices_master_custom`):

```
Name of response file to write
[/usr/tmp/oiresponse.slices_master_typical]
```

Save the response file and copy it to all the servers in the core that will host an SA 7.50 component.

- 8 On the First Core Model Repository host, re-invoke `convert_to_sliced_part2.sh` and specify the response file you created in step 7:

```
# /<distro>/opsware_installer \
/convert_to_sliced_part2.sh -r <oiresponse.slices_master_typical>
```

- 9 The Component menu is displayed. It will have a single entry:

```
Welcome to the Opsware Installer.
Please select the components to upgrade.
```

```
1 ( ) Model Repository, First Core
```

```
Enter a component number to toggle ('a' for all, 'n' for
none).
```

```
When ready, press 'c' to continue, or 'q' to quit.
```

```
Select Model Repository, First Core. Press c to continue.
```

During the Model Repository installation, you may see a series of dialogues similar to the following:

```
1/6) ServiceLevel.Opsware.way way.max_remediations:
    Deployed value: 100
    New value: 50
```

Action: Change to new value (recommended)  
Enter 't' to toggle behavior or 'c' to continue. c

Other Service Level dialogues you may see are:

- ServiceLevel.Opsware.way way.max\_remediations.action
- ServiceLevel.Opsware.word cache\_max\_size
- ServiceLevel.Opsware.word cache\_min\_size
- ServiceLevel.Opsware.buildmgr bm.reprovision\_attributes\_to\_preserve
- ServiceLevel.Opsware.vault LedgerReaderInterval

You can accept the defaults for these dialogues.

## Phase 7: Install the SA 7.50 Components on the First (primary) Core

### **Install the Multimaster Infrastructure Components**

- 1 Copy the tar file containing your archived certificates from `/var/opt/opsware/E-Fupgrade/spin/cadb.tar` from the server that hosted the Primary Data Access Engine (`spin`) to the same location on the host where you will install the Infrastructure Component bundle.
- 2 From the *SA 7.50 Product Software DVD* and on the server where you want to install the *Infrastructure Component bundle*, invoke the third SA Installer upgrade script with the `-r` (specify response file) argument:

```
<distro>/opsware_installer/convert_to_sliced_part3.sh -r \  
<full_path_to_response_file>
```

The response file is the file you created in Phase 5, step 7 on page 78.

- 3 In **Typical Component Layout Mode**, a screen similar to the following displays:

```
Welcome to the Opsware Installer.  
Please select the components to install.  
1 ( ) Model Repository, First Core  
2 ( ) Core Infrastructure Components  
3 ( ) Slice  
4 ( ) OS Provisioning Components  
Enter a component number to toggle ('a' for all, 'n' for  
none).  
When ready, press 'c' to continue, or 'q' to quit
```

Select `Core Infrastructure Components`, then press `c` to continue. The installation process begins.



---

Ensure that you do not have the `Model Repository` selected for installation at this point. Installing the `Model Repository` at this point would cause the installation to fail and require major effort to undo.

---

In **Custom Component Layout Mode**, screen similar to the following displays:

```
Welcome to the Opsware Installer.
Please select the components to install.
1 ( ) Model Repository, First Core
2 ( ) Multimaster Infrastructure Components
3 ( ) Software Repository (word), Multimaster Component
4 ( ) Slice
5 ( ) OS Provisioning Media Server
6 ( ) OS Provisioning Boot Server, Slice version
Enter a component number to toggle ('a' for all, 'n' for
none).
When ready, press 'c' to continue, or 'q' to quit.
```

Select `Multimaster Infrastructure Component` and press `c` to install the component.

#### ***Install the Software Repository (Custom Component Layout Mode only)***

- 4 Log into the server on which you will install the `Software Repository`, and repeat Steps 2 and 3 above, but select `Software Repository (word)`, `Multimaster Component`. Press `c` to install the component.

#### ***Install the Slice Component Bundle***

- 5 Log on to the host on which you will install the `Slice Component bundle` and repeat Steps 1 and 2 above but select `slice` in both `Typical` and `Custom Component Layout Mode`. Press `c` to install the component.



---

If you are installing multiple `Slice Component bundles`, they must be installed one-at-a-time. Simultaneous installation is not supported.

---



## Install the OS Provisioning Component Components

6 Dependent on the Layout Mode you selected:

### Typical Component Layout Mode

Log on to the host on which you will install the OS Provisioning Component bundle and repeat Steps 2 and 3 above, but select `OS Provisioning Components`. Press `c` to install the component.

### Custom Component Layout Mode

1. Log on to the host on which you will install the OS Provisioning Media Server and repeat Steps 2 and 3 above, but select `OS Provisioning Media Server`. Press `c` to install the component.
2. Log on to the host on which you will install the OS Provisioning Boot Server and repeat Steps 2 and 3 above, but select `OS Provisioning Boot Server, Slice version`. Press `c` to install the component.

## Phase 8: Recreate Tibco Neighbor entries and Gateway egress filters for Secondary Cores on the First (primary) Core

To do this, you will run the Installer **Define New Facility** option, but will not perform the Model Repository export.



You must perform this task for *every Secondary Core* in the mesh. Note also that this step requires the `install_opsware.sh` installation script.

- 1 On the First Core Model Repository host, from the *SA 7.50 Product Software DVD*, invoke the second Installer upgrade script with the `-r` (specify response file) and `--interview` (force interview mode) arguments. You must use the response file you created in Phase 5, step 7 on page 78.

```
# /<distro>/opsware_installer/install_opsware.sh \  
--interview -r <full_path_to_response_file>
```

- 2 The following is displayed:

```
Welcome to the Opsware Installer. Please select one of the  
following installation options:
```

- 1 - Multimaster Opsware Core - First Core
- 2 - Multimaster Installation: Define New Facility; Export Model Repository
- 3 - Multimaster Opsware Core - Subsequent Core

Please enter a choice from the menu, 'h' for help, 'q' to quit: 2

Select Multimaster Installation: Define New Facility; Export Model Repository.

Since your facilities have already been defined, no new facility will be created, nor will the Model Repository be exported, but your Tibco Neighbor entries and egress filters will be updated.

- 3 At the interview mode prompt, select one of the following options:

- 1 - Simple Interview Mode
- 2 - Advanced Interview Mode

Choose Option 1 to use the default values for certain configuration parameters.

Choose Option 2 to specify all configuration parameters during the interview.

- 4 Follow the on screen instructions to complete the interview. You should accept the defaults for the parameter values (which are taken from the response file you specified).

The installer displays default parameter values in square brackets [ ].

During this interview, you will need to provide values for certain parameters that were not previously specified. Those parameters are:

- The IP address of the device where you are planning to install the Model Repository in the new facility (`slaveTruth.truthIP`).
- The IP address of the device where you are planning to install the Infrastructure component in the new facility (or where the management gateway will be installed) (`slaveTruth.mgwIP`).
- The subdomain for the facility you are about to create (`slaveTruth.dcSubDom`).
- The `tnsname` of the Model Repository instance that you will be installing in the new facility (`slaveTruth.servicename`).
- The short name of the facility where Installer is being run (`truth.dcNm`).

- 5 Complete the interview. When you have completed entering all of the required information, the Installer displays this message:

```
All parameters have values. Do you wish to finish the
interview (y/n):
```

If you are satisfied with your answers, press `y`.

If you want to review or change your answers, press `n`. The installer displays the prompts again, showing in brackets [ ] the values that you just entered during the interview.

After modifying your responses, press `y` to finish the interview.

- 6 Save the response file. After completing the interview, the installer prompts you to provide a filename for the response file (default: `oiresponse.add_dc_to_mesh`):

```
Name of response file to write
[/usr/tmp/oiresponse.add_dc_to_mesh]
```

The response file is a text file that contains the answers you entered during the interview. You can enter a path and name for the response file or accept the default location and name. In either case, write down the location and name of the response file for future reference.

- 7 The Installer prompts you to indicate whether you want to continue the installation by using the current response file. Select one of the following options:

- If you are satisfied with the responses you entered in the interview and you are ready to define the new Facility now, enter `y` to continue.
- If you do not want to define the new Facility now, enter `n`.
- If the First Core's Management Gateway is on a different server than the First Core's Model Repository, enter `n`. Copy the response file to the First Core's Management Gateway server and go to step 8.

- 8 *If you entered `y` in the previous step, skip this step and go to step 9.* If you entered `n` in the previous step, when you are ready to complete the installation, log in to the server running the First Core's Management Gateway and invoke the Installer using the `-r` (specify response file) argument. Be sure to specify the name and fully qualified path to the response file. For example:

```
# /<distro>/opsware_installer/install_opsware.sh -r \  
/usr/tmp/oiresponse.add_dc_to_mesh
```

- 9 The Components menu appears:

```
Please select the components to install.  
1 ( ) Define New Facility, Update Gateway Config  
2 ( ) Export Model Repository (truth)  
Enter a component number to toggle ('a' for all, 'n' for  
none).  
When ready, press 'c' to continue, or 'q' to quit.
```

Select Define New Facility, Update Gateway Config. Press c to continue.

Wait for the installer to finish this operation before continuing with the Phase 9.

### Phase 9: Upgrade the Model Repositories of the Secondary Core(s)



If the database for this upgrade is Oracle 10g, SA 7.50 now validates whether the `opsware_admin` user has the required CREATE JOB permission. If the `opsware_admin` user does not have the CREATE JOB permission, the Model Repository upgrade fails with the error:

```
Error given by TIU: "The opsware_admin user has not been granted  
the following required privileges: CREATE JOB"
```

See See "CREATE JOB Permission Required for Oracle 10g" on page 26.

- 1 On each Secondary Core in the Mesh, from the *SA 7.50 Product Software DVD*, invoke the second Installer upgrade script with the `-r` (specify response file) argument. You must use the response file you used to install SAS 6.x.

```
# /<distro>/opsware_installer/convert_to_sliced_part2.sh -r \  
<full_path_to_response_file>
```

- 2 The *Install Components* menu is displayed:

```
Welcome to the Opsware Installer. Please select one of the  
following installation options:
```

```
1 - Multimaster Core - First Core
2 - Multimaster Installation: Define New Facility; Export
Model Repository
3 - Multimaster Core - Subsequent Core
```

Please enter a choice from the menu, 'h' for help, 'q' to quit: 3

Select 3: Multimaster Core - Subsequent Core.

3 The following is displayed:

```
1 - Typical Component Layout Mode
2 - Custom Component Layout Mode
```

Select Typical or Custom mode. Typical mode uses a default layout for the components, Custom allows you to choose the servers you want to install the components on.

4 The following is displayed:

```
1 - Simple Interview Mode
2 - Advanced Interview Mode
```

Choose Option 1 to use the default values for certain configuration parameters.

Choose Option 2 to specify all configuration parameters during the interview.



You will see the following warning messages. You can safely disregard them, they are generated because you are upgrading a core that only has the Model Repository installed:

```
[Oct-25-2007 18:50:41] INFO: gateway_master is not listed in the
inventory.
```

```
[Oct-25-2007 18:50:41] INFO: way_mm is not listed in the
inventory.
```

```
[Oct-25-2007 18:50:41] INFO: word_mm_slice is not listed in the
inventory.
```

```
[Oct-25-2007 18:50:41] INFO: slice is not listed in the
```

inventory.

```
[Oct-25-2007 18:50:41] INFO: osprov_media is not listed in the
inventory.
```

```
[Oct-25-2007 18:50:41] INFO: osprov_boot_slice is not listed in
the inventory.
```

```
[Oct-25-2007 18:50:41] INFO: word_uploads is not listed in the
inventory.
```

```
[Oct-25-2007 18:50:41] INFO: osprov_stage2s is not listed in the
inventory
```

---

- 5 Follow the on screen instructions to complete the interview. In most cases, you can accept the defaults for the parameter values (which are taken from the response file you specified).

The installer displays default parameter values in square brackets [ ].

SA 7.50 has three new prompts:

- `mgw_address`: specify the IP address of the server that will host the Infrastructure Component bundle.
- `mgw_tunnel_listener_port`: specify the port on which the Secondary Core's Management Gateway will listen for connections from other gateways.
- `masterCore.mgw_tunnel_listener_port`: enter the port on which the Management Gateway in the First (Primary) Core listens for connections from other Gateways.



1. If you will be moving the OS Provisioning Boot Server to a different host, you must also update the `bootagent.host` parameter.

2. If you will be moving the Software Repository to a different host and you are using the hostname rather than the IP address in `ogfs.store.host` or `ogfs.audit.host` to point to the Software Repository, you must update DNS or modify `ogfs.store.host` or `ogfs.audit.host` to point to the right host

---

- 6 When you are finished with the interview, the installer prompts you for the name of the response file (default for Typical upgrade: `oiresponse.slices_slave_typical`, default for Custom upgrade: `oiresponse.slices_slave_custom`):

```
Name of response file to write
[/usr/tmp/oiresponse.slices_slave_typical]
```

Save the response file and copy it to all the servers in the core that will host an SA 7.50 component.

- 7 On the all Secondary Core Model Repository hosts, re-invoke `convert_to_sliced_part2.sh` and specify the response file you created in the previous step:

```
# /<distro>/opsware_installer/ \
convert_to_sliced_part2.sh -r <oiresponse.slices_slave_typical>
```

- 8 The component menu is displayed. It will have a single entry:

```
Welcome to the Opsware Installer.
Please select the components to upgrade.
```

```
1 ( ) Model Repository, First Core
```

```
Enter a component number to toggle ('a' for all, 'n' for
none).
```

```
When ready, press 'c' to continue, or 'q' to quit.
```

```
Select Model Repository, First Core. Press c to continue. SA upgrades the
Model Reposessor.
```

- 9 Update your DNS and/or `/etc/hosts` files. See “DNS Considerations” on page 19.

### **Phase 10: Install the SA 7.50 Components for the Secondary Core(s)**

- 1 Copy the tar file containing your archived certificates from `/var/opt/opsware/E-Upgrade/spin/cadb.tar` from the server that hosted the SAS 6.x Primary Data Access Engine (`spin`) to the same location on the host of the SA 7.50 *Infrastructure Component bundle*.
- 2 For each Secondary Core in the Mesh, from the SA 7.50 *Product Software DVD* and on the server where you will install the *Infrastructure Component bundle*, invoke the third SA Installer upgrade script with the `-r` (specify response file) argument.

```
# /<distro>/opsware_installer/convert_to_sliced_part3.sh -r |  
<full_path_to_response_file>
```

The response file is the file you created in Phase 9, step 6 on page 87.

- 3 The *Install Components* menu is displayed.

In **Typical Component Layout Mode**, you see a menu similar to the following:

```
Welcome to the Opsware Installer.  
Please select the components to install.
```

```
1 ( ) Model Repository, First Core  
2 ( ) Core Infrastructure Components  
3 ( ) Slice  
4 ( ) OS Provisioning Components
```

```
Enter a component number to toggle ('a' for all, 'n' for  
none).
```

```
When ready, press 'c' to continue, or 'q' to quit
```

```
Select Core Infrastructure Components. Press c to continue. SA installs the  
components.
```



Ensure that you do not have the Model Repository selected for installation at this point. Installing the Model Repository at this point would cause the installation to fail and require major effort to undo.

---

In **Custom Component Layout Mode**, you see a menu similar to the following:

```
Welcome to the Opsware Installer.  
Please select the components to install.
```

```
1 ( ) Model Repository, First Core  
2 ( ) Multimaster Infrastructure Components  
3 ( ) Software Repository (word), Multimaster Component  
4 ( ) Slice  
5 ( ) OS Provisioning Media Server  
6 ( ) OS Provisioning Boot Server, Slice version
```

```
Enter a component number to toggle ('a' for all, 'n' for  
none).
```



When ready, press 'c' to continue, or 'q' to quit.

Select Multimaster Infrastructure Component. Press c to continue. SA installs the components.



---

If you see the following TIBCO error:

```
WARNING: could not establish neighbor connection with router
facility_name on host host_ip_address. Please see the
Installation Guide about manually configuring TIBCO neighbors.
ERROR: could not establish neighbor connections to any other
data center in the mesh. Please see the Installation Guide about
manually configuring TIBCO neighbors. [timestamp] Component
installation script encountered an error (exit status 1)
[timestamp] Exiting Installer.
```

Ensure that you have successfully completed “Phase 8: Recreate Tibco Neighbor entries and Gateway egress filters for Secondary Cores on the First (primary) Core” on page 81 and the gateway.properties file has the correct entries.

---

### ***Install the Software Repository (Custom Component Layout Mode only)***

- 4 Log into the server on which you will install the Software Repository, and repeat Steps 2 and 3 above, but select `Software Repository (word)`, `Multimaster Component`. Press c to install the component.

### ***Install the Slice Component Bundle***

- 5 Log on to the host on which you will install the Slice Component bundle and repeat Steps 1 and 2 above but select `slice` in both **Typical** and **Custom Component Layout Mode**. Press c to install the component.



---

If you are installing multiple Slice Component bundles, they must be installed one-at-a-time. Simultaneous installation is not supported.

---

### **Install the OS Provisioning Component Components**

- 6 Dependent on the Layout Mode you selected:

#### **Typical Component Layout Mode**

Log on to the host on which you will install the OS Provisioning Component bundle and repeat Steps 2 and 3 above, but select `OS Provisioning Components`. Press `c` to install the component.

#### **Custom Component Layout Mode**

1. Log on to the host on which you will install the OS Provisioning Media Server and repeat Steps 2 and 3 above, but select `OS Provisioning Media Server`. Press `c` to install the component.
2. Log on to the host on which you will install the OS Provisioning Boot Server and repeat Steps 2 and 3 above, but select `OS Provisioning Boot Server, Slice version`. Press `c` to install the component.

### **Phase 11: Upload Software Repository Content and Stage 2 Images**

- 1 Now you must add the Software Repository Content and, optionally, the OS Provisioning Stage 2 Images. On the server where you installed the Software Repository, mount the *Agent and Utilities DVD* or NFS-mount the directory that contains a copy of the DVD contents.



The Software Repository must be installed in all cases, the Stage2 Images need only be installed if you had them installed for SAS 6.x.

---

- 2 Invoke `install_opsware.sh` with the `-r` (specify response file) argument. You must specify the response file you created in Phase 9, step 6 on page 87.

```
# /<distro>/opsware_installer/install_opsware.sh -r \  
<full_path_to_response_file>
```

- 3 The *Install Components* menu is displayed:

```
Welcome to the Opsware Installer.  
Please select the components to install.
```

```
( ) Software Repository - Content (install once per mesh)  
( ) Add OS Provisioning Stage2 Images to Software Repository
```

Enter a component number to toggle ('a' for all, 'n' for none).

When ready, press 'c' to continue, or 'q' to quit.

Select Software Repository - Content. Press c to continue. SA uploads the Software Repository content.

- 4 [Optional] To install the OS Provisioning Stage 2 images, re-invoke the `install_opsware.sh` with the same response file. Select Add OS Provisioning Stage2 Images to Software Repository. Press c to continue. SA uploads the OS Provisioning Stage 2 images.

### **Phase 12: Restore SAS 6.x Configuration Customizations**

If you created customized configuration files for your SAS 6.x installation and want to continue using them with SA 7.50, the SA Installer saves the configuration files in `/var/opt/opsware/install_opsware/config_file_archive/`.

The files saved are:

- `/opt/opsware/oi_util/startup/components.config`
- `/opt/opsware/oi_util/startup/opsware_start.config`
- `/etc/opt/opsware/occ/psrvr.properties`
- `/etc/opt/opsware/dhcpd/dhcpd.conf`
- `/etc/opt/opsware/spin/spin.args`
- `/etc/opt/opsware/spin/srvrgrps_attr_map.conf`
- `/etc/opt/opsware/twist/twist.conf`
- `/etc/opt/opsware/twist/loginModule.conf`
- `/etc/opt/opsware/twist/twistOverrides.conf`
- `/etc/opt/opsware/vault/vault.conf`
- `/opt/opsware/waybot/etc/waybot.args`
- `/etc/opt/opsware/mm_wordbot/mm_wordbot.args`

The SA Installer does not automatically restore customizations made in configuration files; you must do that manually. If you move components to different hosts during the upgrade, you will want to copy your customized configuration files to the new host.



---

To use WinPE-based Windows OS Provisioning on an upgraded core, make sure that the authoritative keyword in the `/etc/opt/opsware/dhcpd/dhcpd.conf` file on the OS *Provisioning Boot Server* is uncommented. If you modify the `dhcpd.conf` file, you must restart the DHCP server:

```
/etc/init.d/opsware-sas restart dhcpd.
```

---

### Phase 13: Verify Core Functionality

- 1 Verify that the Core upgraded successfully. Log in to the SAS Web Client as a member of the *SA System Administrator group* and run the System Diagnosis tool on the core (from the navigation panel, click **Administration** ► **System Diagnosis**. The *System Diagnosis: Begin Diagnosis* page appears.
- 2 Select the components that you want to test. By default, all components are selected (the Data Access Engine, the Software Repository, Command Engine, and Web Services Data Access Engine).

You should test all components. See the *SA Administrators Guide* for information about running the SA System Diagnosis tool and interpreting the results.



---

After you upgrade SA, you need to upgrade the Agent on each managed server in the facility. The latest version of the Agent enables you to use new SA features in the core. See the *SA User's Guide: Server Automation* for information about the Agent Upgrade Tool.

---

## Phase 14: Turn on Table Monitoring

Turn on table level monitoring for `dbms_stats` collection. Run the following SQL to turn the monitoring on:

### Oracle 9i:

```
# su - oracle
# sqlplus "/ as sysdba"
```

```
SQL> exec dbms_stats.alter_schema_tab_monitoring
(ownname=>'AAA',monitoring=>TRUE);
```

```
SQL> exec dbms_stats.alter_schema_tab_monitoring
(ownname=>'TRUTH',monitoring=>TRUE);
```

```
SQL> exec dbms_stats.alter_schema_tab_monitoring
(ownname=>'LCREP',monitoring=>TRUE);
```

### Oracle 10g:

Table monitoring is turned on in Oracle 10g by default. To ensure that table monitoring is on, run the following SQL:

```
# su - oracle
# sqlplus "/ as sysdba"
```

```
SQL> select owner, table_name, monitoring from dba_tables where
owner in ('AAA');
```

```
SQL> select owner, table_name, monitoring from dba_tables where
owner in ('TRUTH');
```

```
SQL> select owner, table_name, monitoring from dba_tables where
owner in ('LCREP');
```



# Chapter 5: Upgrading a Satellite from SAS 6.x to SA 7.50

## IN THIS DOCUMENT

This section discusses the following topics:

- SAS 6.x to SA 7.50 Satellite Upgrade Phases
- Upgrading a Satellite from SAS 6.x to SA 7.50
- Post Satellite Upgrade Tasks

This section describes upgrading Satellites from SAS 6.x to SA 7.50.

## SAS 6.x to SA 7.50 Satellite Upgrade Phases

Table 5-7: Phases of a Satellite Upgrade

PHASE	DESCRIPTION	COMPLETE
<b>Phase 1</b>	Invoke the Upgrade Script and Complete the Interview	
<b>Phase 2</b>	Upgrade the Satellite Gateway	



You are not required to upgrade your Satellites immediately after an SA Core upgrade. Satellite upgrades can be delayed and the mesh will function properly.

## Upgrading a Satellite from SAS 6.x to SA 7.50

Satellite layouts have not changed in SA 7.50, so satellite upgrades procedure are the same as in previous releases. You can point the Satellite Gateway to the Management Gateway, but it is not a requirement. If you install the Slice Component bundle on the same host as the Core Gateway and Agent gateway pair was installed in SAS 6.x, it will continue to listen on the same port.

### Phase 1: Invoke the Upgrade Script and Complete the Interview

- 1 Mount the *SA 7.50 Satellite Base DVD* (or *Satellite Base Including OS Provisioning DVD* if you have the OS Provisioning feature installed in the Satellite) and invoke the SA Installer upgrade script with the `-r` (specify response file) argument. You must specify the response file used to install SAS 6.5.1.x or 6.6.

```
<distro>/opsware_installer/upgrade_opsware.sh -r \  
<full_path_to_response_file>
```

- 2 At the Interview mode prompt, select one of the following options:

- 1 - Simple Interview Mode
- 2 - Advanced Interview Mode

Choose Option 1 to use the default values for certain configuration parameters.

Choose Option 2 to specify all configuration parameters during the interview.

- 3 Follow the on screen instructions to complete the interview. You can accept the interview parameter value defaults (which are taken from the response file you specified).

- 4 When you have supplied all required values, the Installer displays this message:

```
All parameters have values. Do you wish to finish the  
interview (y/n):
```

If you are satisfied with the parameter values, press `y`.

If you want to review or change your answers, press `n`. The installer displays the prompts again, showing in brackets [ ] the values that you previously entered.

- 5 Save the response file. After completing the interview, the installer prompts you to provide a filename for the response file (default: `oiresponse.satellite`):



```
Name of response file to write  
[/usr/tmp/oiresponse.satellite]
```

The response file is a text file that contains the parameter values you specified during the interview. You can enter a path and name for the response file or accept the default location and name (`/usr/tmp/oiresponse.satellite`). In either case, write down the location and name of the response file for future reference.

- 6 The Installer prompts you to indicate whether you want to continue the installation by using the current response file. Select one of the following options:
  - If you are satisfied with the responses you entered in the interview and you are ready to install the Satellite now, enter `y` to continue. Go to Phase 2.
  - If you do not want to install the Satellite now, enter `n`. To restart the Satellite upgrade process repeat step 1 on page 96 but specify the `/usr/tmp/oiresponse.satellite` response file. Go to Phase 2.

## Phase 2: Upgrade the Satellite Gateway

- 1 The *Upgrade Components* menu is displayed:

```
Welcome to the Opsware Installer.  
Please select the components to upgrade.
```

```
1 ( ) Opsware Gateway (Interactive Install)  
2 ( ) Software Repository Cache (wordcache)  
3 ( ) OS Provisioning Boot Server  
4 ( ) OS Provisioning Media Server
```

```
Enter a component number to toggle ('a' for all, 'n' for  
none).
```

```
When ready, press 'c' to continue, or 'q' to quit.
```



The selections for the OS Provisioning Boot Server and OS Provisioning Media Server only appear if you are running the installation from the *Satellite Base Including OS Provisioning DVD*.

---

Select all components for upgrade, whether upgrading OS Provisioning or not. Press `c` to continue.

- 2 The Installer launches the Gateway Installer, which displays the following:  
Are you ready to proceed? [y/n] y  
  
Press y to continue.
  
- 3 The Installer then displays the following and asks you to confirm that you want to upgrade the Satellite Gateway:  
This server has version XX.x.x.x.x of the Opsware Gateway installed. Do you want to uninstall that version and install version XX.x.x.x.xx.xx? [y/n] y  
  
Press y to continue.  
  
If the Satellite has already been upgraded, a screen similar to the following displays:  
This server has the current version, xx.x.x.x.xx.xx, installed.  
  
This Opsware Gateway is already running the current version. Would you like to continue and either add a new instance on this server or edit the configuration of an existing instance? [y/n] n
  
- 4 You will be prompted to confirm the shutdown of any existing Gateways for the upgrade:  
There seem to be 1 instances of the Gateway configured for this server.  
  
/etc/opt/opsware/startup/opswgw-GOLD\_SAT  
  
Should I try and shut them all down before the upgrade? [y/n] y  
  
Press y to continue. The Installer upgrades the Satellite Gateway.
  
- 5 After the Satellite Gateway has been upgraded, you are asked whether you want to add more Satellite Gateways. Press n to complete the upgrade.
  
- 6 The following is displayed:  
This Opsware Gateway has been upgraded to the current version. Would you like to continue and either add a new instance on this server or edit the configuration of an existing instance? [y/n] n

Press n to continue and the following is displayed.  
You are done!

## Post Satellite Upgrade Tasks

Perform these tasks to verify the upgrade was successful.

### System Diagnosis

Run system diagnosis on all cores again (serially). Verify that no new failures occur.

- 1 Log in to the SAS Web Client as a member of the *SA System Administrator group* and run the System Diagnosis tool on the core (from the navigation panel, click **Administration ► System Diagnosis**. The *System Diagnosis: Begin Diagnosis* page appears.
- 2 Select the components that you want to test. By default, all components are selected (the Data Access Engine, the Software Repository, Command Engine, and Web Services Data Access Engine).

You should test all components. See the *SA Administrators Guide* for information about running the SA System Diagnosis tool and interpreting the results.

### Test the SAS Web Client

Launch the SAS Web Client and connect to the Cores in the Mesh. The SAS Web Client depends on many Core Components, therefore, it is a quick way to determine if anything is not working properly.



# Chapter 6: Single (First) Core Upgrade from SAS 7.0 to SA 7.50

## IN THIS DOCUMENT

This section discusses the following topics:

- SAS 7.0 to SA 7.50 Single Core Upgrade Phases
- Upgrading a Single Core from SAS 7.0 to SA 7.50

This section describes how to upgrade a SAS 7.0 Single (First) Core to SA 7.50. The upgrade path includes SA 7.50 patch releases.

## SAS 7.0 to SA 7.50 Single Core Upgrade Phases

This section provides a summary of the Single Core upgrade process. You can use the right-hand column to indicate that a phase is completed

Table 6-8:

PHASE	DESCRIPTION	COMPLETE
<b>Pre-Upgrade Phase</b>	Remove all CORD patches.	
<b>Phase 1</b>	Complete the Interview and Save the Response File	
<b>Phase 2</b>	Shut down the SAS 7.0 Core Components	
<b>Phase 3</b>	Upgrade the Core Components	
<b>Phase 4</b>	Install the SA 7.50 Content	
<b>Phase 5</b>	Verify Core Functionality	

## Upgrading a Single Core from SAS 7.0 to SA 7.50

To upgrade the components, perform the following tasks:

### Pre-Upgrade Phase: Remove All CORD Patches

If you have applied a CORD patch to any hosts in your Core (for example, SA CORD Patch release 7.0.01), you must uninstall the patch from all hosts before beginning the upgrade procedure or the upgrade will fail. This step should be done one core at a time (but can be performed in parallel for each machine in a single core). The uninstall is performed by the script `patch_opsware.sh` located in your SA 7.x.xx CORD patch release distribution DVD or download.

To remove any applied patches, perform the following tasks:

- 1 Run the SA 7.x.xx CORD patch installer:

```
<distro>/disk001/opsware_installer/patch_opsware.sh --verbose
```

- 2 If this is a patched system, the following will be displayed:

```
Welcome to the Opsware Installer.  
It appears that you have previously completed installation of  
this patch on this system.
```

```
Press 'r' to remove this patch.  
Press 's' to show patch contents.  
Press 'q' to quit.  
Selection:
```

```
Enter "r" at the prompt to begin the patch removal.
```

The script will display progress of the uninstallation and a success message upon completion. If the CORD patch uninstall is not successful, contact your HP Support Representative.



All core services on the target machine must be running to remove a patch otherwise the patch uninstall process will fail.

---



Failure to remove any CORD patches from all core systems before beginning the upgrade can cause severe damage to your core.

---

**Phase 1: Complete the Interview and Save the Response File**

- 1 From the *SA 7.50 Product Software DVD*, invoke the SA Installer upgrade script using the `-r` (specify response file) argument. You must specify the response file used to install SAS 7.0.

```
# /<distro>/opsware_installer/upgrade_opsware.sh -r \  
<full_path_to_response_file>
```

If you are not sure where on the SAS 7.0 host the response file is, use the latest file from `/var/opt/opsware/install_opsware/resp`.

- 2 The *Install Components* menu is displayed:

```
Welcome to the Opsware Installer. Please select one of the  
following installation options:
```

```
1 - Multimaster Core - First Core  
2 - Multimaster Installation: Define New Facility; Export  
Model Repository  
3 - Multimaster Core - Subsequent Core
```

```
Please enter a choice from the menu, 'h' for help, 'q' to  
quit: 1
```

- 3 Select `Multimaster Core - First Core`



Even if you are installing a Single Core and do not plan a Multimaster installation with Secondary Cores, you select `Multimaster Core - First Core`. All Single Cores are fully Multimaster ready, even if they are not a part of a Multimaster Mesh.

---

- 4 The following is displayed:

```
1 - Typical Component Layout Mode  
2 - Custom Component Layout Mode
```

Select Typical or Custom mode. Typical mode uses a default layout for the components, Custom allows you to choose the servers you want to install the components on.

5 The following is displayed:

- 1 - Simple Interview Mode
- 2 - Advanced Interview Mode

Option 1 uses default values for many of the configuration parameters.

Option 2 allows you to specify all configuration parameters during the interview.

6 Complete the interview process, accepting the default parameter values which are taken from the SAS 7.0 response file you specified. There will be one new parameter, `mgw_address`, enter the IP of the host where you plan to install the *First Core's Management Gateway* (part of the *Infrastructure Component bundle*).

7 Save the response file and copy it to all the servers in the core that will host an SA component. The default response file name for a Typical Interview is:

```
/var/tmp/oiresponse.slices_master_typical
```

or for a Custom Interview:

```
/var/tmp/oiresponse.slices_master_custom
```

## Phase 2: Shut down the SAS 7.0 Core Components

1 Stop all SAS 7.0 Core Components including the Core Gateway with the command:

```
# /etc/init.d/opsware-sas stop <component>
```

2 After all components are stopped:

1. On the *Infrastructure Component* bundle host, start the Management Gateway (`opswgw-mgw`):

```
# /etc/init.d/opsware-sas start opswgw-mgw
```

2. On all *Slice Component* bundle hosts, start the Core Gateways (`opswgw-cgws`):

```
# /etc/init.d/opsware-sas start opswgw-cgws
```



### Phase 3: Upgrade the Core Components

In **Typical Mode**, you must upgrade the SAS Components to SA 7.50 in the following order:

1. Model Repository
2. Infrastructure Component bundle
3. Slice Component bundle (includes the Software Repository)
4. OS Provisioning Component bundle

In **Custom Mode** you must upgrade the SAS Components to SA 7.50 in the following order:

1. Model Repository
  2. Infrastructure Components
  3. Software Repository
  4. Slice Component bundle (these components cannot be unbundled)
  5. OS Provisioning Media Server
  6. OS Provisioning Boot Server
- 1 On all servers that will host components for this core, invoke the SA 7.50 upgrade script with the `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 7 on page 104:

```
/<distro>/opsware_installer/upgrade_opsware.sh -r \  
<full_path_to_response_file>
```

- 2 In **Typical Component Layout Mode**, the following screen displays:

```
Welcome to the Opsware Installer.  
Please select the components to install.
```

- ```
1 ( ) Model Repository, First Core  
2 ( ) Infrastructure Components  
3 ( ) Slice  
4 ( ) OS Provisioning Components
```

```
Enter a component number to toggle ('a' for all, 'n' for  
none).
```

```
When ready, press 'c' to continue, or 'q' to quit
```

Select Core Infrastructure Components, then press c to continue. The component installation process begins.

In **Custom Component Layout Mode**, the following screen displays:

```
Welcome to the Opware Installer.
Please select the components to install.
```

```
1 ( ) Model Repository, First Core
2 ( ) Infrastructure Components
3 ( ) Software Repository (word)
4 ( ) Slice
5 ( ) OS Provisioning Media Server
6 ( ) OS Provisioning Boot Server
```

```
Enter a component number to toggle ('a' for all, 'n' for
none).
```

```
When ready, press 'c' to continue, or 'q' to quit.
```

- 3 For both **Typical and Custom** layout, select Model Repository. Press c to install the component.



If the database for this upgrade is Oracle 10g, SA 7.50 now validates whether the `opsware_admin` user has the required CREATE JOB permission. If the `opsware_admin` user does not have the CREATE JOB permission, the Model Repository upgrade fails with the error:

```
Error given by TIU: "The opsware_admin user has not been granted
the following required privileges: CREATE JOB"
```

See See "CREATE JOB Permission Required for Oracle 10g" on page 26.

---

During the upgrade process, you may see a series of dialogues similar to the following:

```
1/6) ServiceLevel.Opware.way way.max_remediations:
    Deployed value: 100
    New value: 50
```

Action: Change to new value (recommended)  
Enter 't' to toggle behavior or 'c' to continue. c

Other Service Level dialogues you may see are:

- ServiceLevel.Opsware.way way.max\_remediations.action
- ServiceLevel.Opsware.word cache\_max\_size
- ServiceLevel.Opsware.word cache\_min\_size
- ServiceLevel.Opsware.buildmgr bm.reprovision\_attributes\_to\_preserve
- ServiceLevel.Opsware.vault LedgerReaderInterval

You should accept the defaults for these dialogues by pressing c to continue. The following is displayed:

Summary of changes to be made:

- 1) ServiceLevel.Opsware.way way.max\_remediations: Change from 100 to 50.
- 2) ServiceLevel.Opsware.way way.max\_remediations.action: Change from 300 to 100.
- 3) ServiceLevel.Opsware.word cache\_max\_size: Change from 2097152 to 10485760.
- 4) ServiceLevel.Opsware.word cache\_min\_size: Change from 1572864 to 8388608.
- 5) ServiceLevel.Opsware.buildmgr bm.reprovision\_attributes\_to\_preserve: Leave as boot\_kernel boot\_options kernel\_arguments ksdevice nfsv4\_domain reboot\_command system\_locale timezone.
- 6) ServiceLevel.Opsware.vault LedgerReaderInterval: Change from 200000 to 600000.

Enter 'b' to go back or 'c' to continue with the above action(s). c

Press c to continue.

- 4 For both **Typical and Custom** layout, re-invoke the `upgrade_opsware.sh` script, specifying the same response file and select `Infrastructure Components`. Press c to install the components. In Custom Layout, all infrastructure components are installed except for the *Software Repository*. This is typically so the Software Repository can be installed on a separate host.

- 5 For **Custom Layout** only: log on to the server that will host the Software Repository and re-invoke the `upgrade_opsware.sh` script, specifying the same response file and select Software Repository. Press `c` to continue. SA installs the component.
- 6 For both **Typical and Custom** layout, re-invoke the `upgrade_opsware.sh` script, specifying the same response file and select `slice`. Press `c` to continue. SA installs the Slice Component bundle.
- 7 For **Typical** layout only, re-invoke the `upgrade_opsware.sh` script, specifying the same response file and select `OS Provisioning Components`. Press `c` to continue. SA installs the OS Provisioning components.
- 8 For **Custom** layout only, re-invoke the `upgrade_opsware.sh` script, specifying the same response file and select `OS Provisioning Media Server`. Press `c` to continue. SA installs the OS Provisioning Media Server.
- 9 For **Custom** layout only, re-invoke the `upgrade_opsware.sh` script, specifying the same response file and select `OS Provisioning Boot Server`. Press `c` to continue. SA installs the OS Provisioning Boot Server



---

As of SA 7.50, the Command Engine (way) is part of the *Slice Component bundle*. The migration of the Command Engine into the Slice Component bundle is handled automatically during the upgrade in most cases. However, if, in your SAS 7.0 installation, you have installed the Command Engine on a host with no other Core Components or it is installed on a host that has none of the following components installed, the Slice Component bundle or the Infrastructure Component bundle, you must uninstall the Command Engine manually. If the Installer cannot uninstall the Command Engine, it will present this message:

```
You must first uninstall "Command Engine (way)"
before performing an upgrade
```

If you must uninstall the Command engine manually, you must mount the *SAS 7.0 Product DVD* on the Command Engine Host, run `uninstall_opsware.sh`, and select the Command Engine for uninstallation.

After the Command Engine is uninstalled, run the following utility (found on the SA 7.50 Product Software DVD) on the Web Services Data Access Engine host

For BASH/SH:

```
# env PYTHONPATH=/opt/opsware:/opt/opsware/pylibs2 \  
/opt/opsware/bin/python2 \  
<distro>/tools/disable_way_srvc_inst.pyc \  
--certfile /var/opt/opsware/crypto/spin/spin.srv
```

For CSH/TCSH:

```
# setenv PYTHONPATH /opt/opsware:/opt/opsware/pylibs2  
#/opt/opsware/bin/python2 \  
<distro>/tools/disable_way_srvc_inst.pyc \  
--certfile /var/opt/opsware/crypto/spin/spin.srv
```

---

#### **Phase 4: Install the SA 7.50 Content**

Install the SA 7.50 content by performing the following tasks

- 1 From the Software Repository server, mount the SA 7.50 Agent and Utilities DVD and invoke `upgrade_opsware.sh` script with `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 7 on page 104.

```
# /<distro>/opsware_installer/upgrade_opsware.sh -r \  
<full_path_to_response_file>
```

- 2 The *Install Components* menu is displayed:

```
Welcome to the Opsware Installer.  
Please select the components to install.
```

```
1 ( ) Software Repository Content (install once per mesh)  
2 ( ) Add OS Provisioning Stage2 Images to Software  
Repository
```

```
Enter a component number to toggle ('a' for all, 'n' for  
none).
```

When ready, press 'c' to continue, or 'q' to quit.

Select `Software Repository Content`. Press `c` to continue. SA uploads the Software Repository content.

- 3 [Optional] To install the OS Provisioning Stage 2 images, re-invoke the `install_opsware.sh` with the same response file. Select `Add OS Provisioning Stage2 Images to Software Repository`. Press `c` to continue. SA uploads the OS Provisioning Stage 2 images.

### Phase 5: Verify Core Functionality

- 1 Verify that the Core upgraded successfully. Log in to the SAS Web Client as a member of the *SA System Administrator group* and run the System Diagnosis tool on the core (from the navigation panel, click **Administration** ► **System Diagnosis**. The *System Diagnosis: Begin Diagnosis* page appears.
- 2 Select the components that you want to test. By default, all components are selected (the Data Access Engine, the Software Repository, Command Engine, and Web Services Data Access Engine).
- 3 You should test all components. See the *SA Administrators Guide* for information about running the SA System Diagnosis tool and interpreting the results.



After you upgrade to SA, 7.50 you must upgrade the Server Agent on each managed server in the facility. The latest version of the Server Agent enables you to use new SA features. See the *SA User's Guide: Server Automation* for information about the Agent Upgrade Tool.

---

# Chapter 7: Multimaster Core Upgrade from SAS 7.0 to SA 7.50

## IN THIS DOCUMENT

This section discusses the following topics:

- SAS 7.0 to SA 7.50 Multimaster Mesh Upgrade Phases
- Upgrading Multimaster Mesh Cores from SAS 7.0 to SA 7.50

This section describes upgrading Multimaster Mesh Cores from SAS 7.0 to SA7.50. The upgrade path includes SA 7.50 patch releases.

## SAS 7.0 to SA 7.50 Multimaster Mesh Upgrade Phases

This section provides a summary of the Multimaster Mesh upgrade process. You can use the right-hand column to indicate that a phase is completed

Table 7-9:

| PHASE                    | DESCRIPTION                                                              | COMPLETE |
|--------------------------|--------------------------------------------------------------------------|----------|
| <b>Pre-Upgrade Phase</b> | Remove all CORD patches.                                                 |          |
| <b>Phase 1</b>           | Complete the Interview on First and Secondary Cores                      |          |
| <b>Phase 2</b>           | Stop All Core Components/Start SA 7.0 Core Gateway                       |          |
| <b>Phase 3</b>           | Upgrade Secondary Core Model Respositories                               |          |
| <b>Phase 4</b>           | Start the vaultdaemon and Stop the Data Access Engine on Secondary Cores |          |
| <b>Phase 5</b>           | Upgrade the First Core Model Repository and Core Components              |          |

Table 7-9:

| PHASE          | DESCRIPTION                                                                   | COMPLETE |
|----------------|-------------------------------------------------------------------------------|----------|
| <b>Phase 6</b> | Upgrade the Secondary Core(s) Core Components                                 |          |
| <b>Phase 7</b> | Upload the SA 7.50 Software Repository Content/OS Provisioning Stage 2 Images |          |
| <b>Phase 8</b> | Verify Core Functionality                                                     |          |

## Upgrading Multimaster Mesh Cores from SAS 7.0 to SA 7.50

Perform the following tasks to upgrade cores in a Multimaster Mesh.

### Pre-Upgrade Phase: Remove All CORD Patches

If you have applied a CORD patch to any hosts in your Mesh (for example, SA CORD Patch release 7.0.01), you must uninstall the patch from all hosts before beginning the upgrade procedure or the upgrade will fail. This step should be done one core at a time (but can be performed in parallel for each machine in a single core). The uninstall is performed by the script `patch_opsware.sh` located in your SA 7.x.xx CORD patch release distribution DVD or download.

To remove any applied patches, perform the following tasks:

- 1 Run the SA 7.x.xx CORD patch installer:

```
<distro>/disk001/opsware_installer/patch_opsware.sh --verbose
```

- 2 If this is a patched system, the following will be displayed:

```
Welcome to the Opsware Installer.
It appears that you have previously completed installation of
this patch on this system.
```

```
Press 'r' to remove this patch.
Press 's' to show patch contents.
Press 'q' to quit.
Selection:
```

Enter "r" at the prompt to begin the patch removal.



The script will display progress of the uninstallation and a success message upon completion. If the CORD patch uninstall is not successful, contact your HP Support Representative.



---

All core services on the target machine must be running to remove a patch otherwise the patch uninstall process will fail.

---



---

Failure to remove any CORD patches from all core systems before beginning the upgrade can cause severe damage to your core.

---

### **Phase 1: Complete the Interview on First and Secondary Cores**

- 1 From the **First Core's Model Repository server**, mount the *SA 7.50 Product Software DVD* and invoke the SA Installer upgrade script with the `-r` (specify response file) argument. You must have the response file used to install SAS 7.0.

```
# /<distro>/opsware_installer/upgrade_opsware.sh -r \  
<full_path_to_response_file>
```

If you are not sure where on the SAS 7.0 host the response file is, use the latest file from `/var/opt/opsware/install_opsware/resp`.

- 2 The *Install Components* menu is displayed:

```
Welcome to the Opsware Installer. Please select one of the  
following installation options:
```

```
1 - Multimaster Core - First Core  
2 - Multimaster Installation: Define New Facility; Export  
Model Repository  
3 - Multimaster Core - Subsequent Core
```

```
Please enter a choice from the menu, 'h' for help, 'q' to  
quit: 1
```

- 3 On the **First Core**, perform the following steps to complete the interview process:

1. Select `Multimaster Core - First Core`. Press `c` to continue.

2. The following is displayed:

```
1 - Typical Component Layout Mode
```

2 - Custom Component Layout Mode

Select Typical or Custom mode. Typical mode uses a default layout for the components, Custom allows you to choose the servers you want to install the components on.

3. The following is displayed:

- 1 - Simple Interview Mode
- 2 - Advanced Interview Mode

Option 1 uses default values for many of the configuration parameters. Option 2 allows you to specify all configuration parameters during the interview.

- 4. Complete the interview process, accepting the default parameter values which are taken from the SAS 7.0 response file you specified.
- 5. Save the response file and copy it to all the servers in the core that will host an SA 7.50 component. The default *First Core response file name* for a Typical Interview is:

```
/var/tmp/oiresponse.slices_master_typical
```

or for a Custom Interview:

```
/var/tmp/oiresponse.slices_master_custom
```

4 For **each Secondary core** in the mesh, perform the following steps to complete the interview process:

- 1. From each *Secondary Core's Model Repository server*, mount the *SA 7.50 Product Software DVD* and invoke the SA Installer upgrade script with the `-r` (specify response file) argument. You must have the response file used to install SAS 7.0.

```
# /<distro>/opsware_installer/upgrade_opsware.sh -r \  
<full_path_to_response_file>
```

2. The *Install Components* menu is displayed:

Welcome to the Opsware Installer. Please select one of the following installation options:

- 1 - Multimaster Core - First Core
- 2 - Multimaster Installation: Define New Facility; Export Model Repository
- 3 - Multimaster Core - Subsequent Core

Please enter a choice from the menu, 'h' for help, 'q' to quit:

Select Multimaster Core - Subsequent Core. Press c to continue.

3. The following is displayed:

- 1 - Typical Component Layout Mode
- 2 - Custom Component Layout Mode

Select Typical or Custom mode. Typical mode uses a default layout for the components, Custom allows you to choose the servers you want to install the components on.

4. The following is displayed:

- 1 - Simple Interview Mode
- 2 - Advanced Interview Mode

Option 1 uses default values for many of the configuration parameters.

Option 2 allows you to specify all configuration parameters during the interview.

5. Complete the interview process, accepting the default parameter values which are taken from the SAS 7.0 response file you specified.
6. Save the response file and copy it to all the servers in the Secondary Core that will host an SA component. The default *Secondary Core response file name* for a Typical Interview is:

```
/var/tmp/oiresponse.slices_slave_typical
```

or for a Custom Interview:

```
/var/tmp/oiresponse.slices_slave_custom
```

## **Phase 2: Stop All Core Components/Start SA 7.0 Core Gateway**

- 1 In **all cores**, stop all Core Components except the SAS 7.0 Core Gateway and Model Repository (Oracle database).

1. On each core server in each core, run the following command:

```
# /etc/init.d/opsware-sas stop
```

2. After all components are stopped:

- On the *Infrastructure Component* bundle host, start the Management Gateway (opswgw-mgw):

```
# /etc/init.d/opsware-sas start opswgw-mgw
```

- On all *Slice Component* bundle hosts, start the Core Gateways (opswgw-cgws):

```
# /etc/init.d/opsware-sas start opswgw-cgws
```

- 2 After all Core Components have been stopped, if necessary, unmount the Global Shell audit file system (if this file system is NFS mounted).

To determine whether the audit file system is NFS mounted, enter the following command (*the path for your system may be different, see the value for `ogfs.audit.path` and/or `ogfs.audit.store`*):

```
# df -k /var/opt/opsware/ogfs/mnt/audit.
```

To unmount the file system, enter the following command (*the path for your system may be different, see the value for `ogfs.audit.path` and/or `ogfs.audit.store`*):

```
# umount /var/opt/opsware/ogfs/mnt/audit.
```

Because the file system is remounted by the Installer, there is no requirement to manually remount it.

### Phase 3: Upgrade Secondary Core Model Repositories



If the Model Repository Oracle database for this upgrade is Oracle 10g, SA 7.50 now validates whether the `opsware_admin` user has the required CREATE JOB permission. If the `opsware_admin` user does not have the CREATE JOB permission, the Model Repository upgrade fails with the error:

```
Error given by TIU: "The opsware_admin user has not been granted
the following required privileges: CREATE JOB"
```

See See "CREATE JOB Permission Required for Oracle 10g" on page 26.

- 1 On **all Secondary Cores Model Repository hosts**, invoke `upgrade_opsware.sh` with the `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 4, substep 6 on page 115 (default: `oiresponse_slave_typical` or `oiresponse_slave_custom`).

```
# /<distro>/opsware_installer/upgrade_opsware.sh -r \
<full_path_to_response_file>
```

- 2 The *Install Components* menu is displayed. Select `Model Repository` from the menu. Press `c` to continue.

While you upgrade the Model Repository, you might be prompted to confirm the SA configuration values.

### Phase 4: Start the Vault on Secondary Cores

- 1 On the **Secondary Core Infrastructure Component bundle host**, start the `rvrdscrip`t and the Vault:

```
# /etc/init.d/opsware-sas start rvrdscrip vaultdaemon
```

### Phase 5: Upgrade the First Core Model Repository and Core Components

On the **First Core** upgrade all components in the following order:

- Model Repository
- Infrastructure Component bundle

- Slice Component bundle
  - OS Provisioning Component bundle
- 1 On the *Model Repository (truth)* host, invoke `upgrade_opsware.sh` with the `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 5 on page 114 (default: `oiresponse_master_typical` or `oiresponse_master_custom`)
  - 2 Select `Model Repository (truth)`. Press `c` to continue. SA upgrades the component.  
  
During the upgrade of the Model Repository, you may be prompted to confirm certain SA configuration values.



---

If the database for this upgrade is Oracle 10g, SA 7.50 now validates whether the `opsware_admin` user has the required `CREATE JOB` permission. If the `opsware_admin` user does not have the `CREATE JOB` permission, the Model Repository upgrade fails with the error:

Error given by TIU: "The `opsware_admin` user has not been granted the following required privileges: `CREATE JOB`"

See See "CREATE JOB Permission Required for Oracle 10g" on page 26.

---

- 3 On the *Infrastructure Component bundle* host, re-invoke `upgrade_opsware.sh` with the `-r` (specify response file) argument specifying the same response file, select `Infrastructure Components` from the *Install Components* menu. Press `c` to continue. SA upgrades the component.
- 4 On each server hosting a *Slice Component bundle*, re-invoke `upgrade_opsware.sh` with the `-r` (specify response file) argument specifying the same response file and select `slice` from the *Install Components* menu. Press `c` to continue. SA upgrades the component.
- 5 On the server hosting the *OS Provisioning Component bundle*, re-invoke `upgrade_opsware.sh` with the `-r` (specify response file) argument specifying the same response file. Select `OS Provisioning components`. Press `c` to continue. SA upgrades the components.



If the upgrade takes more than an hour from the time Web Services Data Access Engine (`spin`) starts up, some managed devices may be marked as `unreachable`. Run the communications test to resolve this. See the *SA Administrators Guide* for information about running communications tests.

---

- 6 Allow Multimaster Mesh traffic to propagate to all cores in the mesh.

On the **First Core**, log in to `https://<hostname or IP address of the Web Services Data Access Engine (spin)>:1004`, click **Administration ► Mesh State** to see the status of transactions. The transactions should all appear in black (not yellow, red, or green).

To access the above link, you need to have either the browser certificate `browser.p12` or `spin-developer.p12` installed.

---



It is essential to wait for all transactions to be received and published at all cores. Upgrading the First Core, for example, can generate 5000 transactions that must be sent to all Secondary Cores in the Mesh. If you do not wait long enough for these transactions to be published before continuing, multimaster conflicts are likely.

---

## Phase 6: Upgrade the Secondary Core(s) Core Components

On **all Secondary Core(s)**, upgrade all components in the following order:

- Infrastructure Component bundle
- Slice Component bundle
- OS Provisioning Component bundle

- 1 On the *Infrastructure Component bundle* host, invoke `upgrade_opsware.sh` with the `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 6 on page 115 (default: `oiresponse_slave_typical` or `oiresponse_slave_custom`).

Select `Infrastructure Components` from the *Install Components* menu. Press `c` to continue. SA upgrades the component.



When upgrading the Multimaster Infrastructure Component bundles on a Secondary Core, the following message may be repeatedly displayed:

```
Waiting for multimaster transactions to arrive from the master
core...
```

This message is normal and may be repeated for up to three minutes. If the required transactions have not arrived after three minutes, the following message will be displayed:

```
Multimaster transactions have not arrived after 3 minutes...
abort
```

Causes for this error include: Traffic is flowing, but the data may not have arrived at the Secondary Core. Traffic is *not* flowing between the cores. The First and Secondary Cores are running different SA versions.

---

- 2 On each server hosting a *Slice Component bundle*, invoke `upgrade_opsware.sh` with the `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 6 on page 115 (default: `oiresponse_slave_typical` or `oiresponse_slave_custom`).

Select `slice` from the *Install Components* menu. Press `c` to continue. SA upgrades the component.

- 3 On the server hosting the *OS Provisioning Component bundle*, invoke `upgrade_opsware.sh` with the `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 6 on page 115 (default: `oiresponse_slave_typical` or `oiresponse_slave_custom`).

Select `OS Provisioning components` from the *Install Components* menu. Press `c` to continue. SA upgrades the component.

## Phase 7: Upload the SA 7.50 Software Repository Content/OS Provisioning Stage 2 Images

- 4 Install the SA 7.50 Software Repository content on the **First Core** by performing the following tasks:



1. On the server hosting the *Infrastructure Component bundle*, mount the *Agent and Utilities DVD* and invoke `upgrade_opsware.sh` script with the `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 4, substep 6 on page 115.

```
# /<distro>/opsware_installer/upgrade_opsware.sh -r /  
<full_path_to_response_file>
```

2. The *Install Components* menu is displayed:

```
Welcome to the Opsware Installer.  
Please select the components to install.
```

```
1 ( ) Software Repository Content (install once per mesh)  
2 ( ) Add OS Provisioning Stage2 Images to Software  
Repository
```

```
Enter a component number to toggle ('a' for all, 'n' for  
none).
```

```
When ready, press 'c' to continue, or 'q' to quit.
```

3. Select `Software Repository Content`. Press `c` to continue. SA uploads the `Software Repository` content.



If you encounter communication timeout errors when installing the content, restart the Multimaster Software Repository component by entering the following commands; then repeat Phase 7, sub-step 2 and sub-step 3:

```
# /etc/init.d/opsware-sas restart mm_wordbot
```

If restarting the Multimaster Software Repository component does not solve the problem, restart all the SA components on the Software Repository server by entering the following command; then repeat Phase 7, sub-step 2 and sub-step 3:

```
# /etc/init.d/opsware-sas restart
```

---



You need to perform this step only once when upgrading the cores in a Multimaster Mesh; for example, if you installed the Software Repository content in the First Core, you do *not* need to install the content in each Secondary core. The content is replicated automatically.

---

- 5 [Optional] On the **First Core**, re-invoke `upgrade_opsware.sh` script with the `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 4, substep 6 on page 115. Select `Add OS Provisioning Stage2 Images to Software Repository`. The Stage2 Images must be added to the server hosting the *Infrastructure Component bundle*.
- 6 [Optional] On the **Secondary Cores**, re-invoke `upgrade_opsware.sh` script with the `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 4, substep 6 on page 115. Select `Add OS Provisioning Stage2 Images to Software Repository`. The Stage2 Images must be added to each server hosting an *Infrastructure Component bundle*.

### Phase 8: Verify Core Functionality

- 1 Verify that the Core upgraded successfully. Log in to the SAS Web Client as a member of the *SA System Administrator group* and run the System Diagnosis tool on the core (from the navigation panel, click **Administration ► System Diagnosis**. The *System Diagnosis: Begin Diagnosis* page appears.
- 2 Select the components that you want to test. By default, all components are selected (the Data Access Engine, the Software Repository, Command Engine, and Web Services Data Access Engine).

You should test all components. See the *SA Administrators Guide* for information about running the SA System Diagnosis tool and interpreting the results.



After you upgrade to SA, 7.50 you must upgrade the Server Agent on each managed server in the facility. The latest version of the Server Agent enables you to use new SA features. See the *SA User's Guide: Server Automation* for information about the Agent Upgrade Tool.

---

# Chapter 8: Satellite Upgrade from SAS 7.0 to SA 7.50

## IN THIS DOCUMENT

This section discusses the following topics:

- SAS 7.0 to SA 7.50 Satellite Upgrade Phases
- Upgrading a Satellite from SAS 7.0 to SA 7.50
- Post Satellite Upgrade Tasks

This section describes upgrading Satellites from SAS 7.0 to SA 7.50. The upgrade path includes SA 7.50 patch releases.

## SAS 7.0 to SA 7.50 Satellite Upgrade Phases

Table 8-10:

| PHASE          | DESCRIPTION                                          | COMPLETE |
|----------------|------------------------------------------------------|----------|
| <b>Phase 1</b> | Invoke the Upgrade Script and Complete the Interview |          |
| <b>Phase 2</b> | Upgrade the Satellite Gateway                        |          |



You are not required to upgrade your Satellites immediately after an SA Core upgrade. Satellite upgrades can be delayed and the mesh will function properly.

## Upgrading a Satellite from SAS 7.0 to SA 7.50

To upgrade a SAS 7.0 Satellite to SA 7.50, perform the following tasks:

### Phase 1: Invoke the Upgrade Script and Complete the Interview

- 1 Mount the *SA 7.50 Satellite Base DVD* (or *Satellite Base Including OS Provisioning DVD* if you have the OS Provisioning feature installed in the Satellite core) and invoke the SA Installer upgrade script with the `-r` (specify response file) argument. You must have the response file used to install SA 7.0.

```
# /<distro>/opsware_installer/upgrade_opsware.sh -r \  
<full_path_to_response_file>
```

- 2 At the Interview mode prompt, select one of the following options:

- 1 - Simple Interview Mode
- 2 - Advanced Interview Mode

Choose Option 1 to use the default values for certain configuration parameters.

Choose Option 2 to specify all configuration parameters during the interview.

- 3 Accept the interview prompt defaults.

For more information on the Installer prompts, see [Chapter 5, "Prerequisites for the Installer Interview"](#).

- 4 Complete the interview. When you have completed entering all of the required information, the Installer displays this message:

```
All parameters have values. Do you wish to finish the  
interview (y/n):
```

If you are satisfied with your answers, press `y`.

If you want to review or change your answers, press `n`. The installer displays the prompts again, showing in brackets [ ] the values that you just entered during the interview.

After modifying your responses, press `y` to finish the interview.

- 5 Save the response file. After completing the interview, the installer prompts you to provide a filename for the response file:

Name of response file to write  
[/usr/tmp/oiresponse.satellite]

The response file is a text file that contains the answers you entered during the interview. You can enter a path and name for the response file or accept the default location and name. In either case, write down the location and name of the response file for future reference.

- 6 The Installer prompts you to indicate whether you want to continue the installation by using the current response file. Select one of the following options:
  - If you are satisfied with the responses you entered in the interview and you are ready to install the Satellite now, enter *y* to continue. Go to Phase 2.
  - If you do not want to install the Satellite now, enter *n*. When you are ready to restart the Satellite upgrade, go to step 7.
- 7 *If you entered y in the previous step, skip this step and go to Step 8.* If you entered *n* in the previous step, when you are ready to complete the installation later, log in to the server on which you will install the Satellite Gateway and invoke the Installer using the `-r` (specify response file) argument. You must specify the response file you created in Phase 1, step 5 on page 124. Go to Phase 2:

```
/<distro>/opsware_installer/upgrade_opsware.sh -r \  
<full_path_to_oiresponse.satellite>
```

## Phase 2: Upgrade the Satellite Gateway

- 1 The *Upgrade Components* menu is displayed:

```
Welcome to the Opsware Installer.  
Please select the components to upgrade.
```

```
1 ( ) Opsware Gateway (Interactive Install)  
2 ( ) Software Repository Cache (wordcache)  
3 ( ) OS Provisioning Boot Server  
4 ( ) OS Provisioning Media Server
```

```
Enter a component number to toggle ('a' for all, 'n' for  
none).
```

```
When ready, press 'c' to continue, or 'q' to quit.
```



---

The selections for the OS Provisioning Boot Server and OS Provisioning Media Server only appear if you are running the installation from the *Satellite Base Including OS Provisioning DVD*.

---

Select all components for upgrade, whether upgrading OS Provisioning or not. Press `c` to continue.

- 2 The Installer launches the Gateway Installer, which displays the following:  
Are you ready to proceed? [y/n] `y`

Press `y` to continue.

- 3 The Installer then displays the following and asks you to confirm that you want to upgrade the Satellite Gateway:

```
This server has version XX.x.x.x.x of the Opsware Gateway
installed. Do you want to uninstall that version and
install version XX.x.x.x.xx.xx? [y/n] y
```

Press `y` to continue.

If the Satellite has already been upgraded, a screen similar to the following displays:

```
This server has the current version, xx.x.x.x.xx.xx,
installed.
```

```
This Opsware Gateway is already running the current
version. Would you like to continue and either add a new
instance on this server or edit the configuration of an
existing instance? [y/n] n
```

- 4 You will be prompted to confirm the shutdown of any existing Gateways for the upgrade:

```
There seem to be 1 instances of the Gateway configured
for this server.
```

```
/etc/opt/opsware/startup/opswgw-GOLD_SAT
```

```
Should I try and shut them all down before the upgrade? [y/n]
y
```

Press `y` to continue. The Installer upgrades the Satellite Gateway.

5 After the Satellite Gateway has been upgraded, you are asked whether you want to add more Satellite Gateways. Press `n` to complete the upgrade.

6 The following is displayed:

```
This Opsware Gateway has been upgraded to the current
version.  Would you like to continue and either add a new
instance on this server or edit the configuration of an
existing instance? [y/n] n
```

Press `n` to continue and the following is displayed.

You are done!

## Post Satellite Upgrade Tasks

Perform these tasks to verify the upgrade was successful.

### System Diagnosis

Run system diagnosis on all cores again (serially). Verify that no new failures occur.

1 Log in to the SAS Web Client as a member of the *SA System Administrator group* and run the System Diagnosis tool on the core (from the navigation panel, click **Administration ► System Diagnosis**. The *System Diagnosis: Begin Diagnosis* page appears.

2 Select the components that you want to test. By default, all components are selected (the Data Access Engine, the Software Repository, Command Engine, and Web Services Data Access Engine).

You should test all components. See the *SA Administrators Guide* for information about running the SA System Diagnosis tool and interpreting the results.

### Test the SAS Web Client

Launch the SAS Web Client and connect to the Cores in the Mesh. The SAS Web Client depends on many Core Components, therefore, it is a quick way to determine if anything is not working properly.





# Chapter 9: Post SA Core Upgrade Tasks

## IN THIS DOCUMENT

This section discusses the following topics:

- Re-import Linux/ESX Stage 2 Images
- Post-Upgrade Migration of Windows Server Objects
- Apply Fix Scripts

The following sections describe tasks that must be performed after a core has been upgraded to 7.50. Note that some tasks are only required if you have upgraded from a specific version of SAS to SA 7.50.

### Re-import Linux/ESX Stage 2 Images

If you are using Linux/ESX OS Provisioning, after an upgrade to SA 7.50, you must re-import the Linux/ESX OS media to update the SA Stage 2 Images. If you do not re-import the Stage 2 images, Linux/ESX OS Provisioning will fail.

### Post-Upgrade Migration of Windows Server Objects

**[Upgrade from SAS 7.0 or 7.0.1 only]** After upgrading from SAS 7.0 or 7.0.1 to SA 7.50, if there are any Windows Server Objects in the Library (including Windows Registry, Windows Services, IIS Metabase, and COM+ objects), you must perform a manual migration step to upgrade these objects so that they are compatible with SA 7.50.

The migration is performed by a script called `ssr-migrate.sh`.

*Usage*

```
/opt/opsware/twist/migration/ssr-migrate.sh -u detuser
```

## Options

Table 9-11: Windows Server Objects Migration Utility Options

| OPTION      | DESCRIPTION                                                                                                                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -u username | Specifies the username to use when authenticating to SA. Use <code>detuser</code> under normal circumstances.                                                     |
| -p password | Allows the password to be given on the command line. If a password is not given on the command line, the program will prompt you for the password.                |
| -f          | Forces the script to perform the migration on all Windows Server Objects, even if the object appears to have been previously migrated.                            |
| -m maxsize  | Specify the maximum size (in mb) for Windows Server Objects to be migrated. By default, the utility will not attempt to migrate objects larger than 50 megabytes. |
| -h          | Display help.                                                                                                                                                     |

To migrate the Window Server objects, perform these tasks:

- 1 Log in to any server that hosts a Slice Component bundle.
- 2 Run the following command:
 

```
/opt/opsware/twist/migration/ssr-migrate.sh -u detuser
```
- 3 The `ssr-migrate.sh` utility prompts you for the password for the `detuser` account. Enter the password
- 4 The utility then migrates all Windows Server Objects, making them compatible with SA 7.50.



You can run the migration multiple times. For example, if the migration is interrupted for any reason, you can run it again to complete the migration.

In a Multimaster Mesh, it is only necessary to run the migration on a single core; you do not need to run it in each core on your mesh, the changes will be propagated to other cores automatically.

---

## Apply Fix Scripts

**[All Upgrades]** The following scripts will apply several fixes for specific problems:

### **Bug ID: 152990**

**Description:** Remediate preview is missing Windows patches that need to be installed.

**Platform:** Windows

**Subsystem:** Patch Management

**Symptom:** Although certain patches appear as Needed Patches, they do not appear under Preview Remediate as Pending Installation.

### **Apply the Fix Script:**

On any server in the Multimaster Mesh that has a Data Access Engine installed:

1 After logging in, set the following environment variable:

For BASH/SH:

```
LD_LIBRARY_PATH=/opt/opsware/lib; export LD_LIBRARY_PATH
```

For CSH/TCSH:

```
setenv LD_LIBRARY_PATH /opt/opsware/lib
```

2 Run the bz152990.pyc script to preview any data that may need to be fixed:

```
# /opt/opsware/bin/python2 \  
/opt/opsware/spin/util/fix_6.5.1_data/bz152990.pyc -p \  
| tee /usr/tmp/bz152990.preview
```

3 After previewing the data that needs to be fixed, this script will perform a trial fix of the data without committing the changes to ensure that no constraints are violated. If any constraints are violated, contact your support representative.

```
# /opt/opsware/bin/python2 \  
/opt/opsware/spin/util/fix_6.5.1_data/bz152990.pyc -n \  
| tee /usr/tmp/bz152990.trial
```

4 If no constraints have been violated, run this script to fix the data and commit.

```
# /opt/opsware/bin/python2 \  
/opt/opsware/spin/util/fix_6.5.1_data/bz152990.pyc \  
| tee /usr/tmp/bz152990.real
```

### **Bug ID: 153784**

**Description:** Errors parsing the MBSA patch database result in invalid patch unit records being created and missing patch unit records.

**Platform:** Windows

**Subsystem:** Patch Management

**Symptom:** The MBSA parser does not create unit records for Windows 2000, Windows Server 2003, Windows Server 2003 x64, and Windows XP.

#### **Apply the Fix Script:**

On any server in the Multimaster Mesh that has a Data Access Engine installed:

- 1 After logging in, set the following environment variable:

For BASH/SH:

```
LD_LIBRARY_PATH=/opt/opsware/lib; export LD_LIBRARY_PATH
```

For CSH/TCSH:

```
setenv LD_LIBRARY_PATH /opt/opsware/lib
```

- 2 Run this script to apply and commit the fixes necessary to prevent invalid MBSA patch database results:

```
/opt/opsware/bin/python2 /opt/opsware/spin/util/fix_6.5.1_  
data/bz153784.pyc
```