

# HP Cloud Service Automation for Matrix

Software Version: 2012, February

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## Configuration Guide

Document Release Date: March 2012  
Software Release Date: March 2012



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# Contents

1	Installation Overview	7
	Required Information Before Installation	9
2	Assessing Your Environment	11
3	Installing and Configuring the Management Server Software	15
	Installing and Configuring SA	15
	Prerequisites	16
	Build the SA Environment	16
	DHCP Configuration	17
	Update HP SA Security and Roles	17
	Verify the SA OS Sequence and Application Policy Inventory	19
	OS Provisioning APX Extensions	21
	Guidelines for Provisioning Operating Systems to Servers on Distinct Networks	23
	Configure HP Insight Dynamics to Work with CSA for Matrix	24
	Configure Notification Properties While Installing HP Insight Dynamics	24
	Identify Existing SIM MxNode Registrations	25
	Registering an HP SA Primary Core via SIM MxNode Security	25
	Verifying HP SA Deployment Server Access	26
	Configuration on the SiteScope Server	27
	Enable Monitoring	27
4	Installing CSA for Matrix	29
	Workflows	29
	SiteScope Templates	30
	Infrastructure Monitor Deployment Script	31
	Prerequisites	31
	Installing Workflows on the OO System	32
	Applying Patches and Hotfixes for HP Insight Dynamics 6.3	33
	Installing the CSA for Matrix Templates on the SiteScope Server	34
	Multiple SiteScope Servers	35
	Additional Prerequisites	35
	Installation	35
	Manually Importing SiteScope Templates	36
	Installing the Consolidated Activity Portal	36
	Prerequisites	36
	Install the Consolidated Activity Portal	37
	Install the Server and Agents Together	37
	Install Agents at a Later Time	38
	Install Only the Consolidated Activity Portal Server	40

Installing Workflows for HP Storage Essentials . . . . .	41
Verifying Installation of Workflows and Templates . . . . .	42
Check Workflows in the OO Studio . . . . .	43
Check Workflows for Storage Essentials . . . . .	43
Check Monitor Templates in SiteScope . . . . .	44
Configuring User Credential Profiles . . . . .	45
Configuring Workflows in the OO Studio . . . . .	46
Preconfiguration Steps for Upgrade . . . . .	46
Configuration Steps . . . . .	46
Configure HP Storage Essentials Workflows . . . . .	49
Post-Configuration Steps for Upgrade . . . . .	51
Configuring HP Insight Dynamics to Work with SA . . . . .	51
For MOE 7.x with CSA for Matrix 2012, February . . . . .	51
For HP Insight Dynamics version 6.3 or Later with CSA for Matrix 2012, February . . . . .	52
For HP Insight Dynamics version 6.3 or Later with CSA for Matrix 2011, June . . . . .	53
Installing and Configuring HP Storage Essentials Workflows at a Later Time . . . . .	53
Migrating to a Standalone OO Installation . . . . .	54
<b>5 Upgrading to CSA for Matrix 2012, February . . . . .</b>	<b>55</b>
<b>6 Installing Infrastructure Monitor Deployment Scripts on the CMS . . . . .</b>	<b>57</b>
Deploy Infrastructure Monitors . . . . .	58
Disable Monitors . . . . .	59
Delete Monitors . . . . .	60
<b>7 Adding Workflows to the IO Templates . . . . .</b>	<b>61</b>
<b>8 Deploying Applications on Virtual Machines with SA Policies . . . . .</b>	<b>65</b>

# 1 Installation Overview

This guide provides high-level information on installing HP Cloud Service Automation for Matrix (CSA for Matrix), high-level information on the processes involved in setting up an integrated environment, and specific information on installing and configuring CSA for Matrix within that environment.

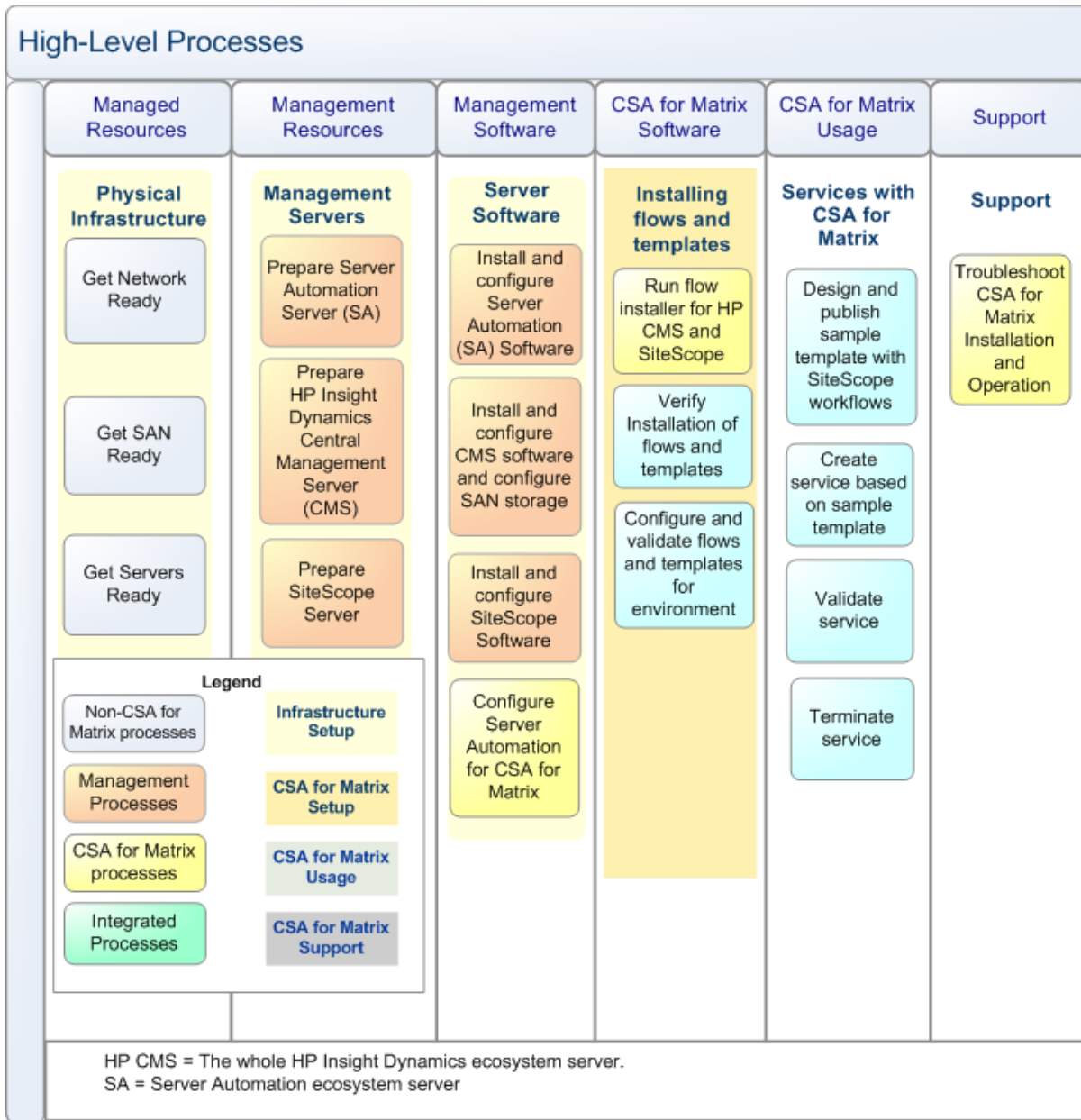
Successful implementation of CSA for Matrix requires knowledge of the component products, as well as the CSA for Matrix solution. Information in this guide augments information provided in the component product documentation, but is not intended to replace that documentation.

[Table 1](#) identifies the high-level processes required to set up an integrated cloud environment. This figure provides the context for the primary integration processes listed in the CSA for Matrix Software column in the [Figure 1](#).

**Table 1 Overview of High-Level Tasks**

Task	Description
Prepare managed resources	Prepare the network, SAN, and server infrastructure for the CSA for Matrix installation.
Prepare management resources	Set up the HP Insight Dynamics CMS, SiteScope server, Server Automation (SA) server, ( <i>optional</i> ) HP Storage Essentials infrastructure.
Install and configure management software	Install, configure, and integrate the HP Insight Dynamics CMS, SiteScope, SA. CSA for Matrix includes optional content to integrate Insight Dynamics with HP Storage Essentials to access a variety of non-Virtual Connect-enabled SAN arrays. For this integration to work, you must purchase and install HP Storage Essentials separately.
Install and configure CSA for Matrix workflows and templates	Install and configure the CSA for Matrix workflows.

**Figure 1 High-Level Processes**





## Required Information Before Installation

Before installing CSA for Matrix, refer to the information in the following table.

**Table 2 Required Documentation**

Product	Go to...
CSA for Matrix	<b>Release Notes:</b> <a href="http://support.openview.hp.com/selfsolve/manuals">http://support.openview.hp.com/selfsolve/manuals</a>
	<b>Support matrix:</b> <a href="http://support.openview.hp.com/selfsolve/manuals">http://support.openview.hp.com/selfsolve/manuals</a>
	<b>Manuals:</b> <a href="http://support.openview.hp.com/selfsolve/manuals">http://support.openview.hp.com/selfsolve/manuals</a>
HP Server Automation	<b>Support matrix:</b> <a href="http://support.openview.hp.com/selfsolve/manuals">http://support.openview.hp.com/selfsolve/manuals</a> NOTE: Search on Server Automation; select Version 9.02 or 9.03 along with the target operating system.
	<b>Manuals:</b> <a href="http://support.openview.hp.com/selfsolve/manuals">http://support.openview.hp.com/selfsolve/manuals</a>
HP Insight Software,	<b>Support Matrix:</b> <a href="http://www.hp.com/go/insightsoftware/docs">http://www.hp.com/go/insightsoftware/docs</a>
	<b>Manuals:</b> <a href="http://www.hp.com/go/insightsoftware/docs">http://www.hp.com/go/insightsoftware/docs</a>
HP SiteScope	<b>Support matrix:</b> <a href="http://support.openview.hp.com/sc/support_matrices.jsp">http://support.openview.hp.com/sc/support_matrices.jsp</a>
	<b>Manuals:</b> <a href="http://support.openview.hp.com/selfsolve/manuals">http://support.openview.hp.com/selfsolve/manuals</a>



## 2 Assessing Your Environment

Before installing and configuring the CSA for Matrix solution, you must assess the resources in your environment that you want to manage with CSA for Matrix. The infrastructure that is used and managed by CSA for Matrix includes network, physical and virtual servers, and storage arrays.

### Task 1: Review the Support matrix

The CSA for Matrix Support Matrix lists the versions HP Software products that are supported with CSA for Matrix 2011 June. The document also provides a list of supported hardware types for managed systems. The Support Matrix document is available here:

**[http://h20230.www2.hp.com/sc/support\\_matrices.jsp](http://h20230.www2.hp.com/sc/support_matrices.jsp)**

### Task 2: Assess and Prepare the Network

Getting the network ready is a prerequisite for installing and configuring CSA for Matrix, and involves installing the necessary hardware and software, and creating the connections (physical or logical) between switches and managed devices. Setting up the network involves installing physical components, configuring the logical network, and documenting and verifying connections. Perform the following tasks to make sure the network is ready for installation.

- 1 Plug in cables and switches.
- 2 Set up VLANs.
- 3 Record physical connections.
- 4 Verify connections and VLANs.

### Task 3: Assess the Storage Area Network (SAN)

SAN preparation, if a SAN is used, involves installing hardware and creating the physical connections between switches and storage arrays.

#### **SAN Prerequisites**

Enterprise Virtual Array (EVA) is required for physical SAN support. In addition, you can use the “Dynamic” SAN volume automation feature for the HP EVA, HP XP, EMC CLARiiON, and HDS SAN arrays if you choose to use the optional integration between HP IO and HP Storage Essentials available with CSA for Matrix.

#### **Supported SAN Arrays**

HP EVA

- HP EVA
- HP XP arrays (If integrated with Storage Essentials)
- EMC-CLARiiON (If integrated with Storage Essentials)
- HDS (If integrated with Storage Essentials)

If you use EMC-CLARiiON, make sure the following requirements are met:

- An initiator port must be registered with the CLARiiON storage array before you use the initiator port while creating the Storage Pool Entry (SPE).
- If a server has multiple initiator ports, each initiator port must be registered with the CLARiiON storage array with a unique IP address. If multiple initiator ports are registered with the same IP address, the Selective Storage Presentation or creation of SPE will fail.

### Set up the SAN Environment

Logical connections can be discovered after management software has been installed, if you are using Virtual Connect (VC). Some configuration of VSANs, zones, and switch fabrics may be required at this stage. The storage management interface needs to be ready during the discovery setup of configuration and before the first OS provision. The following steps are a high-level summary; component documentation should be used for specific instructions.

- 1 Set up SAN components.
  - a Set up EVA for physical SAN support. If you want to use the “Dynamic” SAN volume automation feature, set up the SAN arrays of your choice (HP EVA, HP XP, EMC CLARiiON, or HDS).
  - b Set up SAN switches (such as Brocade, Cisco, or Mcddata).
- 2 Set up VC-enabled components (optional).
  - a Set up blade servers.
  - b Set up HBAs.
  - c Set up switches.
- 3 Configure VSANs, zones, and switch fabrics, as needed.
- 4 Record physical and logical connections that cannot be discovered by VC and Virtual Connect Enterprise Manager (VCEM).
  - Virtual Connect when used with VCEM, allows administrators to discover and manage server connections from a console. When using hardware that is non-VC-enabled, physical and logical connections must be manually recorded in the `ServerInfo.xml` file.

### 5 Verify.

CSA for Matrix uses the following approaches:

- Insight Dynamics Static SAN approach; for more information about this configuration see the white paper: Insight Dynamics —Automated Storage Provisioning: Static SAN volume automation via multi-initiator NPIV at [http:// h18004.www1.hp.com/products/solutions/insightdynamics/ info-library.html](http://h18004.www1.hp.com/products/solutions/insightdynamics/info-library.html).
- “Dynamic” SAN volume automation approach; for more information about this feature, see the HP Insight Orchestration User Guide.

### Task 4: Assess and Prepare the Servers

CSA for Matrix operates on VC-enabled blade servers, ProLiant servers, and virtual machine (VM) hosts on ProLiant and Blade servers.

The following steps are a high-level summary; component documentation should be used for specific instructions.

- 1 Set up server components.

- 2 Establish connections between servers and switches.
- 3 Record logical and physical connections.
- 4 Verify.



### 3 Installing and Configuring the Management Server Software

Before installing the CSA for Matrix templates and workflow, make sure all the component products are installed and configured. The CSA for Matrix deployment consists of the following key servers:

- SA (running on one or more servers in a single core installation.)
- HP CMS (which also includes HP Insight Software and HP Operation Orchestration)
- SiteScope
- HP Operation Orchestration (OO) (if you use the version of OO that is embedded with HP Insight Dynamics, you need not include a separate OO server in the deployment)
- *Optional.* HP Storage Essentials (SE) (only when you want to use the optional integration with SE).

➤ HP Storage Essentials workflows do not work in the HP Insight Dynamics 7.0 environment.

#### Installing and Configuring SA

This version of CSA for Matrix supports the following configurations:

**Table 3 HP BladeSystem Matrix Topology**

SA Component Topology	Supported
Managed servers on the same subnet of an SA primary core with no Slice Component bundles	Yes
Managed servers on the same subnet of an SA primary core with multiple Slice Component bundles	Yes
Managed servers behind SA Satellites	Yes
Managed servers on the same subnet as that of the HP SA Satellite host (the OS provisioning component must be available on the Satellite host).	Yes
Multimaster Mesh: managed servers on the same subnet as that of the SA primary core <i>that is registered</i> with the HP Insight Dynamics CMS	Yes

**Table 3 HP BladeSystem Matrix Topology**

SA Component Topology	Supported
Multimaster Mesh: managed servers on the same subnet as that of an SA primary core <i>that is not registered</i> with the HP Insight Dynamics CMS	No
Multimaster Mesh: managed servers on the same subnet as that of the HP SA Satellite host <i>that is registered</i> with the HP Insight Dynamics CMS.	Yes
Multimaster Mesh: managed servers on the same subnet as that of the HP SA Satellite host <i>that is not registered</i> with the HP Insight Dynamics CMS.	No

Even though an SA installation may contain multiple cores, the CSA for Matrix installation must be configured to register the primary core with the CMS. In an environment with multiple Slice Component bundle instances, BladeSystem Matrix cannot auto-failover to any Slice Component bundle installation that is not registered with the CMS. If you change the SA primary core that is registered with the HP Insight Dynamics CMS, you must update all existing service templates to correctly identify the new software location.

In addition, if there are create service requests that have been submitted to the system for a future time (a future reservation), these requests must be cancelled explicitly and then re-submitted with an updated service template that contains the new software location. Failure to perform this step results in the request failing when the system tries process the old software location.

## Prerequisites

- When you install SA, you must retain a copy of the `oiresponse.omdb` file after the installation is complete. This file is typically kept in `/usr/tmp`. Be sure to save a copy because the file is deleted upon reboot.
- CSA for Matrix requires that SA act as the DHCP server for the managed environment.
- Determine the account name of the SA user to connect between HP IO and HP SA. This HP SA user name is used in the following locations:
  - After HP SA is installed, you set up an HP SA account for this user name.
  - You supply this account name during the HP IO or Insight Dynamics installation.
- HP IO can support SA satellite configurations. In addition, network configuration utilizing a DHCP relay (such as IP Helper) can be configured so that the SA build manager no longer has to reside on the same subnet as the target servers.

## Build the SA Environment

- Install `opsware-patch`
- Install `opsware-patch_upload`



## DHCP Configuration

CSA for Matrix assumes that SA acts as a DHCP server for the managed environment. To enable the SA DHCP server functionality, follow these steps:

- 1 Log in to the SA primary core using the root account.
- 2 In any text editor, open the following file:  
`/etc/opt/opsware/dhcpd/dhcpd.conf`
- 3 Uncomment the “authoritative” line by removing the number sign (#).
- 4 Save the file.
- 5 Run the following command:

```
/opt/opsware/dhcpd/sbin/dhcpdtool
```

Follow the prompts to fully enable the DHCP service.

Set up the OS provisioning images and software policies. Consult the *SA User Guide: Application Automation* document for version 9.0x. Validate the SA Installation without CSA for Matrix.

It is strongly recommended that you validate your installation of HP SA before integrating CSA for Matrix. Follow normal procedures for incorporating an operating system into HP\_Server Automation; then deploy an operating system directly from HP SA to a target server or servers in your environment.


## Update HP SA Security and Roles

### Task 1: Create a CSA for Matrix Account Group

- 1 Log in to the SAS Web Client as an HP SA Administrator.
- 2 In the navigation pane, under Administrators, click **Users & Groups**.
- 3 On the **Groups** tab, click **New Group**.
- 4 Enter a group name, for example: **HPIO Administrators**.
- 5 Set the following customer permissions:

Customer Name	Permission
HP Administrators	Read&Write
Not Assigned	Read&Write
Opsware	Read or Read&Write
Any other customers	None

- 6 Save the new group.
- 7 On the **Groups** tab, open the newly created group and apply the following settings:
  - a On the **Facilities** tab, set Read&Write access to the facility where the BladeSystem Matrix managed servers are assigned.
  - b On the **Devices Groups** tab, select the **Select all device groups** check box.

- c On the **Features** tab, select at least the following features:
    - Facilities**
    - Managed Servers and Group**
    - Model: **Opware**
  - d On the **Client Features** tab, set the following permissions. (Leave all other features set to No or None)
    - Policy Management: *<Policy>*
    - Manage Windows Patch Policy: **Yes**
    - Manage Software Policy: **Read**
    - Allow Attach/Detach Software Policy: **Yes**
    - OS Sequence Management: *<OS Sequence Management>*
    - Manage OS Sequence: **Read**
    - Allow Execute OS Sequence: **Yes**
    - Allow Configuration of Networking Booting: **Yes**
    - Servers: *<Servers>*
    - Allow Remediate Servers: **Yes**
    - OS Build Plan Management
    - Manage OS Build Plan: **Yes**
    - Allow Execute OS Build Plan: **Yes**
    - Audit and Remediation
    - Allow Remediate Audit/Snapshot Results: **Yes**
    - Allow Modification Of Audit Check Metadata: **Yes**
    - Manage Audit: **Read&Write**
    - Manage Audit Result: **Read&Write**
    - Manage Audit Policy: **Read&Write**
    - Unmanaged Servers
    - Allow Manage Server: **Yes**
-  This permission is required to use the Application Management Using SA workflow ([Deploying Applications on Virtual Machines with SA Policies](#) on page 65).
- 8 Under **Manage API Permissions** on the **Other Permissions** tab, select the **Manage Virtual Columns** check box.
  - 9 To use the Application Management Using SA workflow, set the OGFS permission as follows:
    - a Click the **OGFS Permissions** tab.
    - b Click **Add Permission**. This opens the Add OGFS Permissions dialog box.
    - c Select **Launch Global Shell** from the **Features** list box.

d Click **Grant**.

➤ These steps are required to use the Application Management Using SA workflow ([Deploying Applications on Virtual Machines with SA Policies](#) on page 65).

Do not set anything on the **OGFS Permissions** tab if you do not want to use the Application Management Using SA workflow feature.

## Task 2: Create Custom Attributes for OS Build Plans

To make the OS Build Plan available for CSA for Matrix, create the following custom attributes on each OS Build Plan:

- **OSType:** Set this to one of the following values:
  - The OS Build Plan is supported only on Windows for SA 9.03 and on Windows and Red Hat Enterprise Linux for SA 9.10.
    - Windows Server 2003
    - Windows Server 2003 x64
    - Windows Server 2008
    - Windows Server 2008 x64
    - Windows Server 2008 R2 x64
  - You cannot use the following values if you are using SA 9.03.
    - Red Hat Enterprise Linux Server 5
    - Red Hat Enterprise Linux Server 5 X86\_64
    - Red Hat Enterprise Linux Server 6
    - Red Hat Enterprise Linux Server 6 X86\_64
    - VMware ESX 4.x
- **archType:** x86 (for 32-bit systems) or x64 (for 64-bit systems).

See the *HP Server Automation User Guide: Application Automation* for more details on creating custom attributes.

## Task 3: Create an Account for HP BladeSystem Matrix to access SA

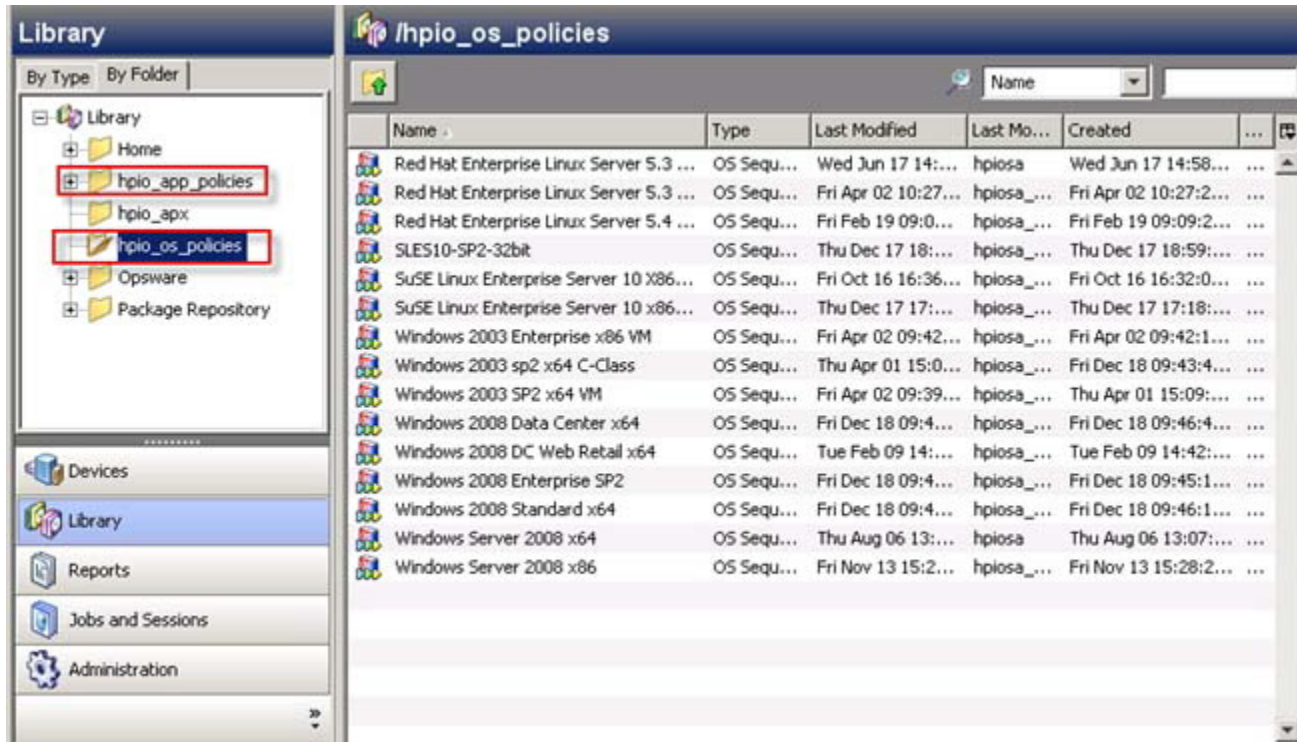
Use this account name when completing the CMS configuration steps below. CSA for Matrix uses this account name during HP SA OS and Application policy provisioning. You must use the *same* account name and password in both HP SA and CSA for Matrix.

- 1 In the SAS Web Client, create a new user, for example: **hpiossa**.
- 2 Assign this new user to the user group that you created in [Task 1: Create a CSA for Matrix Account Group](#).

## Verify the SA OS Sequence and Application Policy Inventory

To make SA OS Sequences and Application Policies available to CSA for Matrix, you create a basic folder structure to which you assign CSA for Matrix Group Permissions. [Figure 2](#) illustrates one example of this approach.

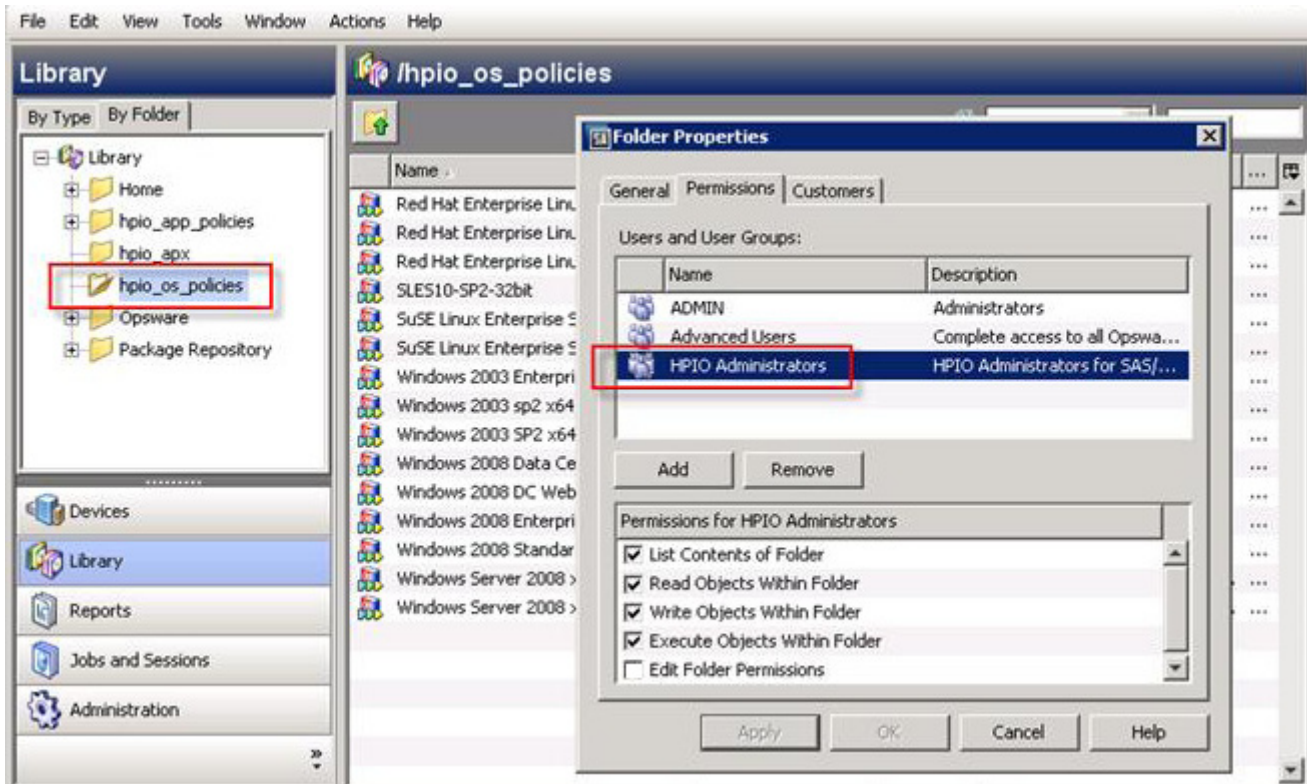
**Figure 2 OS Sequences and Application Policies**



In this example, two folders are created. One to house the OS Sequences and one to house the Application Policies that are accessible to CSA for Matrix. The folder permissions must be set to permit CSA for Matrix Group access. For the example below, the group name used for this purpose is **HPIO Administrators**.

- 1 Right click on the folder name: **hpio\_os\_policies**.
- 2 Add the **HPIO Administrators** group.
- 3 Ensure that the following permissions are selected:
  - a List Contents of Folder
  - b Execute Objects Within Folder
  - c Read Objects Within Folder
  - d Write Objects Within Folder

**Figure 3 Setting Group Permissions for a Policy Folder**

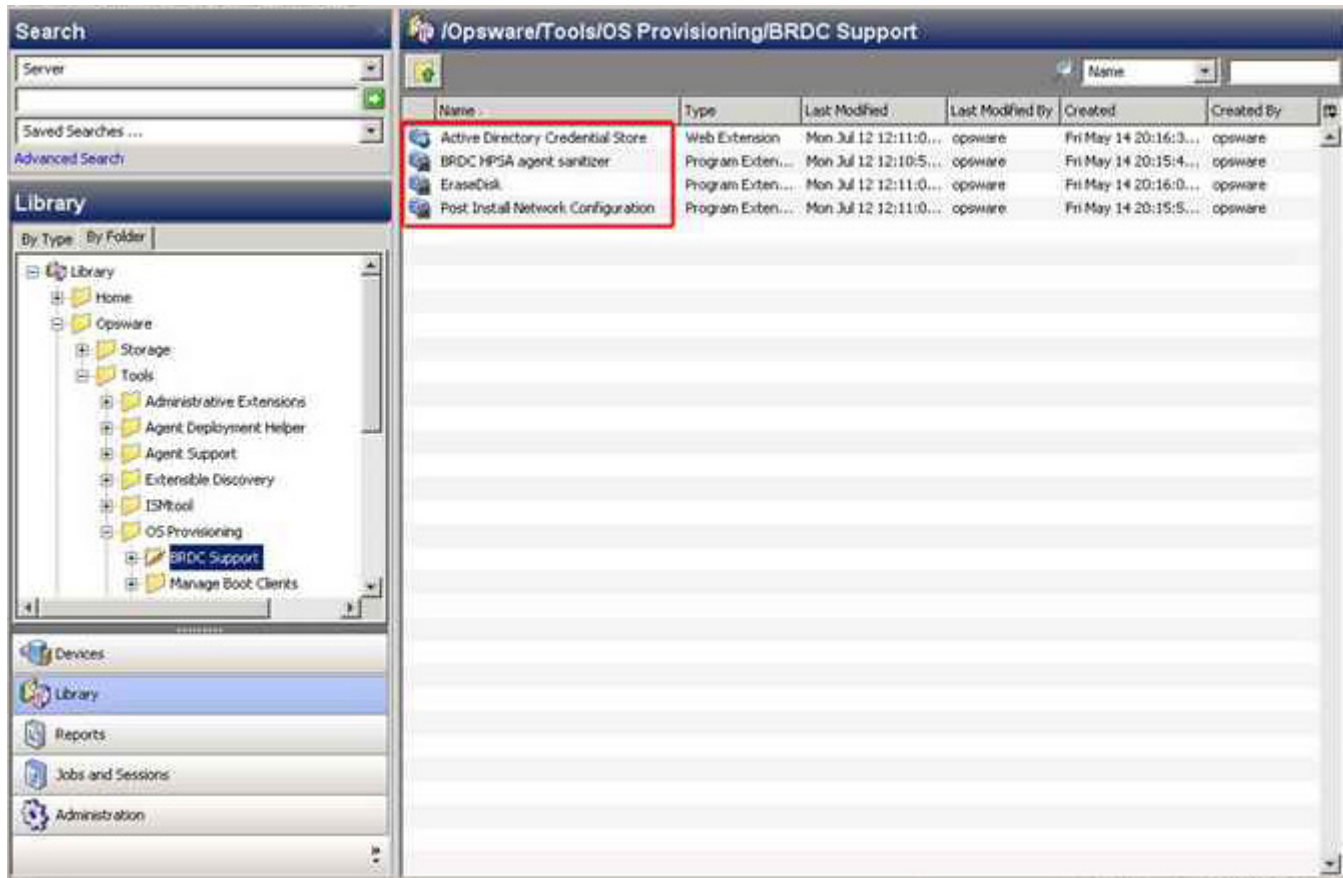


After completing the process above, any OS Sequences or Application Policies that are assigned to the folders become available to CSA for Matrix for use in service provisioning operations. Specifically, OS Sequences and Application Policies begin to show up within CSA for Matrix as available software inventory.

## OS Provisioning APX Extensions

The service provisioning process makes use of several HP SA APX extensions to perform its lifecycle operations.

**Figure 4 Required HP SA APX Extensions**



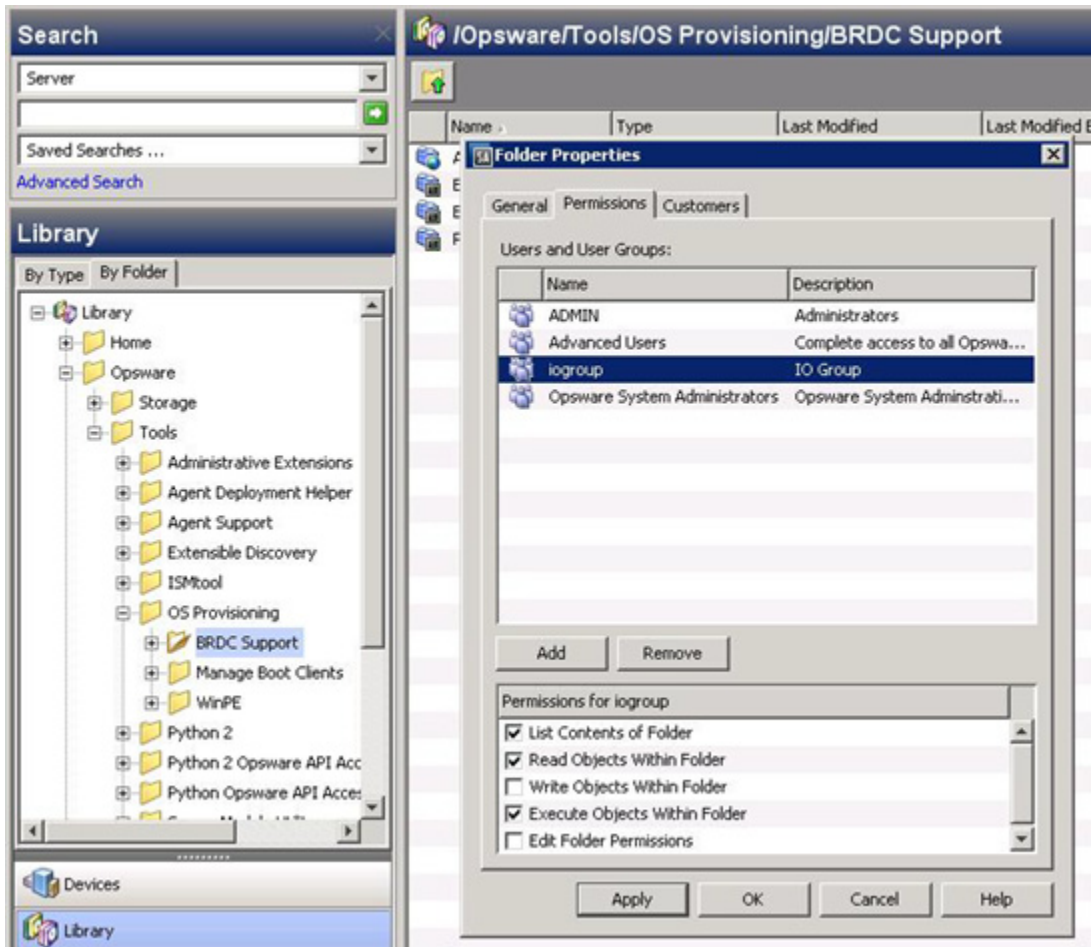
- 1 The EraseDisk APX is used to clean a server during the service delete process. All storage that is visible to the server is erased prior to the server (and its storage) being returned to the inventory for a future provisioning request.
- 2 The Post Install Network Configuration APX is used to perform OS level personalization of the server at the end of the OS provisioning process.

As is the case with OS Build Plans, OS Sequence, and Application Policy folders, it is also necessary to set the folder permissions to permit Group access. For the example below, the group name for this purpose is **HPIO Administrators**.

- 1 Right click on the folder name: **BRDC Support**.
- 2 Add the **HPIO Administrators** group.
- 3 Ensure that the following permissions are selected:
  - a **List Contents of Folder**
  - b **Execute Objects Within Folder**
  - c **Read Objects Within Folder**
- 4 *For OS Build Plans:*
  - a Right click on the folder name: **OS Provisioning**.
  - b Ensure that the **Execute Objects Within Folder** permission is selected.



**Figure 5 Setting Group Permissions for the OS Provisioning APX Extensions**



## Guidelines for Provisioning Operating Systems to Servers on Distinct Networks

You can use CSA for Matrix to provide operating system provisioning and network boot services to distinct networks by using one of the following setups:

- [SA Satellite Host](#)
- [DHCP Relay](#)

### [SA Satellite Host](#)

You can use the SA Satellite host to provision operating systems to servers on multiple distinct networks. Make sure that the CMS and SiteScope server can communicate with the managed systems under the SA Satellite.

### [DHCP Relay](#)

You can use DHCP relays to provision operating systems to servers on multiple distinct networks.

If you want to use this method, you must perform the following configuration tasks:

- 1 Configure a Layer 3 switch, router, or dual-homed system to transmit BOOTP and DHCP broadcast to the SA Core or Satellite.

- 2 Configure a single SA Core or Satellite host to run the SA OS Provisioning Boot Server component. This system must be routable by each target network.

Configure the DHCP service to cater to DHCP requests from the remote network.



This can be configured by using the `dhcpcd` tool or by manually editing the `/etc/opt/opsware/dhcpcd/dhcpcd_subnets.conf` file.

For example:

```
subnet 192.168.10.0 netmask 255.255.255.0 {
    range dynamic-bootp 192.168.10.100 192.168.10.250;
    option broadcast-address 192.168.10.255;
    option domain-name "vlan10.example.com";
    option domain-name-servers 192.168.10.2;
    option routers 192.168.10.1;
}

subnet 192.168.11.0 netmask 255.255.255.0 {
    range dynamic-bootp 192.168.11.100 192.168.11.250;
    option broadcast-address 192.168.11.255;
    option domain-name "vlan11.example.com";
    option domain-name-servers 192.168.11.2;
    option routers 192.168.11.1;
}

subnet 192.168.12.0 netmask 255.255.255.0 {
    range dynamic-bootp 192.168.12.100 192.168.12.250;
    option broadcast-address 192.168.12.255;
    option domain-name "vlan12.example.com";
    option domain-name-servers 192.168.12.2;
    option routers 192.168.12.1;
}
```

- 3 Make sure that the CMS, SiteScope server, and SA servers are able to communicate with remote networks.

## Configure HP Insight Dynamics to Work with CSA for Matrix

### Configure Notification Properties While Installing HP Insight Dynamics

When you install HP Insight Dynamics, the installer prompts you to specify the email address and the SMTP server that must be used while sending notifications. By default, the installer sets the value of the SMTP server to `localhost`. This value is set in the OO Studio as a system property.



CSA for Matrix uses the SMTP server and the email address specified during the installation of HP Insight Dynamics to communicate errors handled during the execution of flows. Make sure that you configure the following system properties in OO Studio correctly if you want to enable reception of the errors handled during flow execution:

- `HpioNotificationSender`
- `HpioNotificationRecipients`
- `HpioSmtpHost`
- `HpioSmtpPort`

You must also make sure that the system account `HpioSmtpCredentials` is configured.



You can set `HpioSmtpHost` to a blank value if you do not want to configure the SMTP server settings while installing HP Insight Dynamics. Failure to configure system properties in OO Studio after specifying the SMTP server or leaving the SMTP server with the default value, results in a pause in the execution of the flows and subsequently to a time out in the execution of the flows.

## Identify Existing SIM MxNode Registrations

During the installation of the Insight Dynamics CMS, a placeholder may have been used to point to an HP SA server. To see if an HP SA server was set up, open a command shell and enter the following:

```
mxnodesecurity -l
```

Scan through the list and see if the `PROTOCOL` of `dsc_sas` exists. See [Figure 6](#) on page 26 for an example of the `mxnodesecurity` output.

## Registering an HP SA Primary Core via SIM MxNode Security

If the protocol exists and the IP address of the HP SA server is correct, change the credentials to those set up in [Task 3](#) on page 19:

```
mxnodesecurity -a -p dsc_sas -c <username>:<password> -n <SA primary core IP Address>
```

If the protocol exists and the IP address is incorrect, remove the entry with the following command:

```
mxnodesecurity -r -p dsc_sas -n <SA primary core IP Address>
```

If the protocol does not exist or has just been removed, add the SA entry with the following command:

```
mxnodesecurity -a -p dsc_sas -c <username>:<password> -n <SA primary core IP Address>
```



It is important that the same account information that was entered in the [Task 3](#) on page 19 be used for this step. The username and password values of this account grant CSA for Matrix access to the HP SA primary core OS Sequences and Application Policies and allow basic server operations through HP SA.

Verify the account that was just added to the CMS using the following command:

```
mxnodesecurity -l
```

To make sure HP Systems Insight Manager uses these new credentials immediately, restart the HP SIM server.

- 1 Make sure there is no activity on the HP SIM server during the restart.
- 2 Restart the HP SIM from the control panel or by running the following commands.

To stop HP SIM:

**mxstop**

To start HP SIM:

**mxstart**

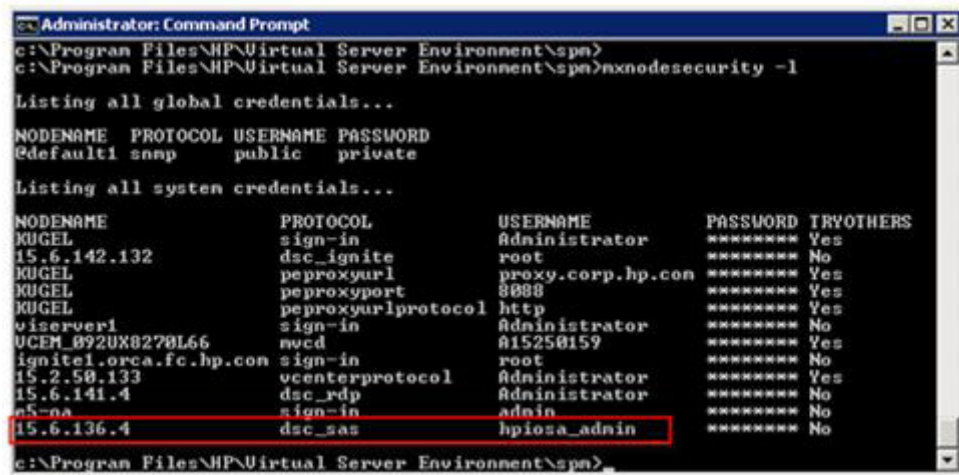
HP SIM requires some time to restart. To monitor the status of the HP SIM restart run:

**mxstatus -w -v**

Upon completion, **mxstatus** returns SIM status: Ready.

Figure 6 shows a sample listing. In this case, the account name that was used for CSA for Matrix access is **hpiosa\_admin** and the IP address of the HP SA primary core is **15.6.136.4**.

**Figure 6 mxnodesecurity example**



## Verifying HP SA Deployment Server Access

Once the HP SA primary core has been registered the system begins receiving software inventory directly from the HP SA primary core. Go to the HP IO operations console and refresh the software inventory to verify that HP IO lists the inventory.

Figure 7 shows both operating systems (OS) sequences, build plans, and application policy (App) inventory in the Type column with HP SA (shown as SA) in the Source column. The Location column (not shown) should show the HP SA primary core IP address that was registered in [Registering an HP SA Primary Core via SIM MxNode Security](#) on page 25.

**Figure 7 Verifying HP SA Software Inventory**

The screenshot shows the HP Insight Orchestrator web interface. The top navigation bar includes tabs for Tools, Deploy, Configure, Diagnose, Optimize, Reports, Tasks & Logs, and Options. The main header reads 'Insight Orchestrator' with the subtitle 'Planning, design, and automated provisioning of servers and infrastructure.' Below this is a secondary navigation bar with Home, Templates, Requests, Services, Servers, Storage, and Us. The main content area is titled 'View and annotate software.' and includes a 'Setup Tasks: Create Hyper-V VM Templ.' link. A red box highlights a 'Click to refresh software resources.' button. Below this is a table of software resources.

Name	Source	Type	OS Type	Processor Arch	Notes
<input type="radio"/> RH4u7_x32	SA	OS	Linux	x86 32-bit	
<input type="radio"/> RH4u7_x64	SA	OS	Linux	x86 64-bit	
<input type="radio"/> RH4u8_x32	SA	OS	Linux	x86 32-bit	
<input type="radio"/> RH4u8_x64	SA	OS	Linux	x86 64-bit	
<input type="radio"/> RH5.3_x32	SA	OS	Linux	x86 32-bit	
<input type="radio"/> RH5.3_x64	SA	OS	Linux	x86 64-bit	
<input type="radio"/> RH5.4_32bit	SA	OS	Linux	x86 32-bit	
<input type="radio"/> RH5.4_64bit	SA	OS	Linux	x86 64-bit	
<input type="radio"/> RH_app1	SA	App	Linux	x86 32-bit	
<input type="radio"/> RH_app2	SA	App	Linux	x86 32-bit	
<input type="radio"/> RH_app3	SA	App	Linux	x86 32-bit	
<input type="radio"/> RH_app4	SA	App	Linux	x86 32-bit	
<input type="radio"/> Suse10sp2_x32	SA	OS	Linux	x86 32-bit	

## Configuration on the SiteScope Server

### Enable Monitoring

Perform the following steps to enable monitoring using SiteScope:

- 1 Stop the SiteScope service using the following command: `<drive> net stop SiteScope`
- 2 Open the SiteScope master configuration file (`master.config`) located at `<drive>\SiteScope\groups\`
- 3 Change the value of the `_accessControlled` property from `true` to `false`. For example,
- 4 `"_accessControlled=false"`
- 5 Save the file.
- 6 Restart the SiteScope service using the following command: `<drive> net start SiteScope`

If you want to monitor Oracle 10g and Microsoft SQL Server 2008 R2 with the help of CSA for Matrix, follow these steps:

- 1 To monitor Oracle 10g:
  - a Go to the Oracle server.
  - b Obtain the `classes12.jar` file from the `$ORACLE_HOME/jdbc/lib` directory.
  - c Place the `classes12.jar` file into the `<SITESCOPE_HOME>\WEB-INF\lib` directory on the SiteScope server.
  - d Restart the SiteScope service.
- 2 To monitor Microsoft SQL Server 2008 R2:

- a Go to the Microsoft SQL Server.
- b Obtain the `db2jcc.jar` file. See the *HP SiteScope Monitor Reference* for more information on obtaining the `db2jcc.jar` file
- c Place the `db2jcc.jar` file into the `<SITESCOPE_HOME>\java\lib\ext` directory on the SiteScope server.
- d Restart the SiteScope service.

## 4 Installing CSA for Matrix

The *Cloud Service Automation for Matrix Product Software and Documentation* media provides you with installer programs to install the CSA for Matrix solution in your environment.

The CSA for Matrix installer installs the following components:

- CSA for Matrix workflows on the OO system
- CSA for Matrix templates on the SiteScope server
- CSA for Matrix infrastructure monitor deployment script on the CMS

In addition, you can install the Consolidated Activity Portal by using the installer program for the Consolidated Activity Portal, which is available on the *Cloud Service Automation for Matrix Product Software and Documentation* media. The Consolidated Activity Portal enables you to view SA and SiteScope log files.

### Workflows

The *Cloud Service Automation for Matrix Product Software and Documentation* media provides you with the following workflows:

- **Workflows for SiteScope Monitors**

The `CSA4M.zip` file, available on the *Cloud Service Automation for Matrix Product Software and Documentation* CD, includes necessary files to install the workflows.

CSA for Matrix provides pre-configured OO workflows, which are typically paired in an HP IO service template to perform monitoring tasks on managed servers.

#### **Managed system monitoring workflows**

- Deploy/Delete monitors
  - Deploy HP SiteScope monitors to a managed system
  - Delete HP SiteScope monitors from a managed system (to delete every monitor of the service)
- Disable/Enable monitors
  - Disable HP SiteScope monitors from a managed system (when the system is deactivated or powered off)
  - Enable HP SiteScope monitors from a managed system (when the system is activated or powered on)
- ESX Server monitor

#### **Infrastructure monitoring workflow**

The Infrastructure Monitor Action workflow enables you to monitor the health and performance of the CMS, SiteScope server, OO system, and SA Core server.

#### **Application monitoring workflow**

These workflows help you deploy SiteScope monitors for monitoring the following applications that run on managed systems:

- Exchange 2007 Monitor Action
- IIS 7 Monitor Action
- Oracle 10g Monitor Action
- MSSQL 2008R2 Monitor Action

- **Compliance and remediation workflows**

These workflows help you use the compliance and remediation feature on the managed systems:

- Check Server Audit Compliance
- Check Server Patch Compliance
- Check Server Software Compliance
- Remediate Server Non-Compliance
- Remediate Server Patch Policies
- Remediate Server Software Policies

- **Application management workflow**

This group includes the Application management Using SA workflow, which enables you to provision applications using SA while creating virtual machines from the HP Insight Dynamics VM templates. This process uses HP Insight Dynamics VM templates for creating virtual machines and SA policies for deploying applications on target virtual machines.

- **HP Storage Essentials workflows**

The *Cloud Service Automation for Matrix Product Software and Documentation* CD presents the `OO-SE.zip` file, which includes the necessary files to install the HP Storage Essentials flows.



HP Storage Essentials workflows do not work in the HP Insight Dynamics 7.0 environment.

## SiteScope Templates

The *Cloud Service Automation for Matrix Product Software and Documentation* CD provides you with necessary templates for the monitors that are deployed on the managed systems. The CSA for Matrix installer installs the following templates on the SiteScope server:

- For monitoring managed systems:
  - WINDOWS
  - LINUX



CSA for Matrix uses the `CSA_LINUX_TARGET_SERVER` and the `CSA_WINDOWS_TARGET_SERVER` OO system accounts to monitor Linux and Microsoft Windows servers using SiteScope. You must make sure that these system accounts are configured with the same user name and password configured for the SiteScope credential profiles for Linux (`LINUX-CSA-TARGETS`) and Microsoft Windows (`WINDOWS-CSA-TARGETS`).

- For monitoring ESX targets:

## VMware Host



- You must obtain an additional license to enable the deployment of the monitor on ESX target servers.
- CSA for Matrix uses the SiteScope credential profile `LINUX-CSA-TARGETS` during the deployment of ESX server monitor. The monitoring fails if you use any other user credential during ESX provisioning.
- For monitoring applications on the managed systems:
  - IIS 7
  - Oracle 10g
- To use the monitors, you must obtain a SiteScope extension license for each application that you want to monitor.
  - CSA for Matrix uses SiteScope's default solution templates (which are available with the SiteScope installation) for monitoring Microsoft Exchange 2007 and Microsoft SQL Server 2008 R2.
- For monitoring the CSA for Matrix infrastructure:
  - CMS
  - OO
  - SA
  - SiS



## Infrastructure Monitor Deployment Script

The infrastructure monitor deployment script enables you to deploy the SiteScope monitors for the CSA for Matrix infrastructure monitoring across the OO system, SiteScope server, CMS, and SA Core server.

## Prerequisites

- Verify that SA is installed.
  - Verify that OO is installed
  - Verify that SiteScope is installed.
  - Verify that the Java plug-in is installed for any client browser that runs the HP SiteScope dashboard.
  - Complete HP SiteScope licensing configuration, if necessary.
  - *Optional.* Verify that HP Storage Essentials 9.4 is installed and configured in the environment.
- HP Storage Essentials workflows do not work in the HP Insight Dynamics 7.0 environment.



- Verify that HP Insight Dynamics 6.3, 6.3 Update 1, or HP Insight Dynamics 7.0 is installed on the CMS. The following table lists additional requirements and limitations for supporting these versions of HP Insight Dynamics/HP Insight Dynamics.

HP Insight Dynamics/ HP Insight Dynamics Version	Additional Requirements	Limitations
6.3	<p>You must install an additional patch and a hotfix for HP Insight Dynamics to support the following features:</p> <ul style="list-style-type: none"> <li>• ESX provisioning and monitoring</li> <li>• SA policy-based application deployment at the time of creating virtual machines from VM templates (see <a href="#">Deploying Applications on Virtual Machines with SA Policies</a> on page 65)</li> </ul> <p>See <a href="#">Configure HP Storage Essentials Workflows</a> on page 49.</p>	None
6.3 Update 1	None	None
7.0	None	HP Storage Essentials workflows are not supported with HP Insight Dynamics 7.0.

## Installing Workflows on the OO System

To install CSA for Matrix workflows on the OO system:

- 1 Log on as Administrator to the system where OO is available.
- 2 Make sure you have placed the `CSA4M.zip` file on the OO system from the *Cloud Service Automation for Matrix Product Software and Documentation* media. The file is available in the `content` directory on the media.
- 3 Extract the contents of the `CSA4M.zip` file to a temporary folder on the OO system.
- 4 Configure installation parameters.

The `CSA4M.zip` file provides you with the `properties` file to set installation parameters.

To configure the properties, follow these steps:



- a Go to the folder where you extracted the ZIP file, and then open the `csa4mInstall.properties` file with a text editor.
- b Configure the properties in the file according to the values specified in the following table:

Property	Value
centralURL	URL of the OO Central. Specify this value in the following format: <code>https://&lt;OO-Central_FQDN&gt;:&lt;port&gt;</code> In this instance, <code>&lt;OO-Central_FQDN&gt;</code> is the fully qualified domain name of the OO system and <code>&lt;port&gt;</code> is the port used by OO Central.
centralUsername	The administrator user name for OO Central.
centralPassword	The password for the above user.
ooDir	OO installation directory
ioDir	HP IO installation directory. If you are using MOE 7.x., make sure that you change this property to point to the installation directory of MOE 7.x.
sisDir	SiteScope installation directory



Retain a copy of this file. The installer will require this file while installing SiteScope templates and installing infrastructure monitors.

- 5 In a Command window, change to the temporary folder where you extracted the contents of the `CSA4M.zip` file.
- 6 Run the following command:  
**`install.bat`**

## Applying Patches and Hotfixes for HP Insight Dynamics 6.3

*Skip this section if you want to use HP Insight Dynamics 6.3 Update 1 (or higher) or HP Insight Dynamics 7.0.*

If you do not apply the latest patches and hotfixes for your HP Insight Dynamics 6.3 environment, the following features of CSA for Matrix 2012, February will not work:

- ESX provisioning and monitoring
- SA policy-based application deployment at the time of creating virtual machines from VM templates (see [Deploying Applications on Virtual Machines with SA Policies](#) on page 65)

## Installing the CSA for Matrix Templates on the SiteScope Server

*Skip this section if SiteScope is installed on the OO system.*

If HP SiteScope is not installed on the OO system, you must install the templates on the SiteScope server.

To install the SiteScope templates, follow these steps:

- 1 Log on to the SiteScope server as Administrator.
- 2 Make sure you have placed the `CSA4M.zip` file on the SiteScope server from the *Cloud Service Automation for Matrix Product Software and Documentation* media. The file is available in the `content` directory on the media.
- 3 Extract the contents of the `CSA4M.zip` file to a temporary folder on the SiteScope server.
- 4 Configure installation parameters.

The `CSA4M.zip` file provides you with the properties file to set installation parameters.

To configure the properties, follow these steps:

- a Go to the folder where you extracted the ZIP file, and then open the `csa4mInstall.properties` file with a text editor.
- b Configure the properties in the file according to the values specified in the following table:

Property	Value
<code>centralURL</code>	URL of the OO Central. Specify this value in the following format: <code>https://&lt;OO-Central_FQDN&gt;:&lt;port&gt;</code> In this instance, <code>&lt;OO-Central_FQDN&gt;</code> is the fully qualified domain name of the OO system and <code>&lt;port&gt;</code> is the port used by OO Central.
<code>centralUsername</code>	The administrator user name for OO Central.
<code>centralPassword</code>	The password for the above user.

Property	Value
ooDir	OO installation directory
ioDir	HP IO installation directory. If you are using MOE 7.x., make sure that you change this property to point to the installation directory of MOE 7.x.
sisDir	SiteScope installation directory

Alternatively, transfer the `csa4mInstall.properties` file from the OO system onto the SiteScope server (the file that you configured in [step 4](#) on page 32).

- 5 Save the `csa4mInstall.properties` file into the directory where you extracted the ZIP file.
- 6 Go to the directory where you extracted the ZIP file.
- 7 Run the following command:

```
install.bat
```

## Multiple SiteScope Servers

You can install multiple SiteScope servers in the CSA for Matrix environment to monitor the health and performance of the CSA for Matrix infrastructure, target systems, and applications deployed on target systems. Using multiple SiteScope instances enables you to distribute the load of monitoring across a group of SiteScope servers and build a scalable solution.

However, for the CSA for Matrix infrastructure monitoring, you can use only one SiteScope server. CSA for Matrix identifies this dedicated SiteScope server from the configuration information provided in [Configuring Workflows in the OO Studio](#) on page 46.

### Additional Prerequisites

- All SiteScope servers must have the same administrative user name and the same password.
- SiteScope must be configured to use the same port on all SiteScope servers.
- All SiteScope servers must be accessible to all target systems in the environment.

### Installation

Perform [step 1](#) on page 34 through [step 7](#) on page 35 on each SiteScope server to install necessary SiteScope templates.

## Manually Importing SiteScope Templates

You can manually import SiteScope templates if the installer fails to install templates on the SiteScope server ([Installing the CSA for Matrix Templates on the SiteScope Server](#) on page 34). Also, you must import SiteScope templates manually when you CSA for Matrix to the version 2012, February from an older version. In a multiple SiteScope deployment, you must import the templates on each SiteScope server.

To import SiteScope templates (that are packaged with CSA for Matrix 2012, February) manually, follow these steps:

- 1 On the *Cloud Service Automation for Matrix Product Software and Documentation* media, go to the `content` directory.
- 2 Extract the contents of the `CSA4M.zip` file into a local directory.
- 3 Go to the SiteScope user interface.
- 4 Click **Templates**. The Template page opens.
- 5 In the template tree, right-click **SiteScope**, and then click **Import**. The HP SiteScope Import Template dialog box opens.
- 6 Click **File Name**, navigate to the directory where you extracted the contents of the `.zip` file (in [step 2](#)), select the `CSA4M-Templates.tmp1` file, and then click **Open**.
- 7 Select the Override Existing Instances check box.
- 8 Click **OK**.

## Installing the Consolidated Activity Portal

The Consolidated Activity Portal consists of the following key components:

- **Server:** The Consolidated Activity Portal server provides you with a centralized console to view log files originating from the SA and SiteScope servers. The Consolidated Activity Portal server is supported only on Windows.
- **Agent:** The Consolidated Activity Portal agent facilitates the transmission of log messages from the SA or SiteScope servers to the Consolidated Activity Portal. The Consolidated Activity Portal agent is supported on Windows and Linux.

In the CSA for Matrix environment, you must install the Consolidated Activity Portal agent on every SA and SiteScope system and the Consolidated Activity Portal server on a dedicated server. If you choose not to install the Consolidated Activity Portal agent on an SA or SiteScope server, the log files originating from the server will not be visible in the portal.

### Prerequisites

- **JDK:** The system where you install the Consolidated Activity Portal server or agent must have JDK 6.0 (or higher) installed. In addition:
  - The environment variable `%JAVA_HOME%` must be set.
  - The `%PATH%` environment variable must point to `%JAVA_HOME%\bin`.

- **Operating system:** The Consolidated Activity Portal server must be installed on a Windows system. The Consolidated Activity Portal agent is supported on Linux as well. You must always run the installer on a Windows system.
- **Ports:** The following ports on the system where you install the Consolidated Activity Portal server must be available:
  - 18080
  - 18005
  - 18009
  - 18443

## Install the Consolidated Activity Portal

### Install the Server and Agents Together

The installer enables you to specify the details of SiteScope and SA servers in the `SVPInstallConfig.xml` file and the installer remotely installs the agent on those servers. Although the installer runs only on Windows, you can remotely install the agent on SA servers on Linux.

To install the Consolidated Activity Portal server and agents, follow these steps:

- 1 Log on to the dedicated server from where you want to run the Consolidated Activity Portal installer. You must log on as an administrator.
- 2 Make sure that all SA and SiteScope servers in the CSA for Matrix environment are accessible from the server. If you want to install the Consolidated Activity Portal server on a remote system (and not on the local system), make sure the remote system is accessible from this system.
- 3 From the *Cloud Service Automation for Matrix Product Software and Documentation* media, transfer the `content\SVP` directory to a local directory.
- 4 With a text editor, open the `SVPInstallConfig.xml` file from the SVP directory.
- 5 Modify the following elements:

- **SVPServer:** This element contains details of the dedicated Consolidated Activity Portal server.

Under this element, specify **localhost** within the `Hostname` elements if you are going to install the server on the local system. If you are going to install the Consolidated Activity Portal server on a remote system, specify the fully qualified domain name or IP address of the remote system.

Within the `Username` and `Password` elements, specify the administrative user name and password of the system where you want to install the Consolidated Activity Portal server. If you are installing the Consolidated Activity Portal server on the local system, you can leave these elements blank.

- **SVPAgent:** This element contains sub-elements that contain the information about the SA and SiteScope servers—servers on which you want to install the Consolidated Activity Portal agent.



You can specify as many SA and SIS elements as you like under the `SVPAgent` element.

- **SA:** This element contains information about the SA servers. The following elements are present under this group:

➤ Specifying SA server details is mandatory for the installation of the Consolidated Activity Portal server.

**Hostname:** Specify the FQDN or IP address of the SA server within the `Hostname` element.

**Username:** Specify root within the `Username` element.

**Password:** Specify the password of the root user of the SA server within the `Password` element.

*Optional.* **TwistUsername:** Specify the administrative user name of the Web Services Data Access Engine host within the `Username` element.

*Optional.* **TwistPassword:** Specify the password of the above user within the `Password` element.

You can specify the above two parameters even after installing the Consolidated Activity Portal server. The Web Services Data Access Engine host details help the Consolidated Activity Portal display SA job events.

- **SIS:** This element contain information about the SiteScope servers.

➤ You can also install the agent on the SiteScope server at a later time (see [Install Agents at a Later Time](#) on page 38).

**Hostname:** Specify the FQDN or IP address of the SiteScope server within the `Hostname` element.

**Username:** Specify administrative user name within the `Username` element.

**Password:** Specify the password of the above user within the `Password` element.

- 6 Save the file.
- 7 Open the command prompt.
- 8 Go to the `SVP` directory.
- 9 Run the following command:

#### **SVPInstaller**

The command installs the Consolidated Activity Portal server on the local system and installs the Consolidated Activity Portal agent on all SiteScope and SA servers that were specified in the `SVPInstallConfig.xml` file.

## [Install Agents at a Later Time](#)

After installing the Consolidated Activity Portal server, if you add additional SiteScope servers in your CSA for Matrix environment, you can install the Consolidated Activity Portal agent on newly added SiteScope servers and start monitoring log files originating from those servers. You can also

To install the Consolidated Activity Portal agent on a SiteScope server, follow these steps:

- 1 Log on a Windows system on the network as an administrator.
- 2 From the *Cloud Service Automation for Matrix Product Software and Documentation* media, transfer the `content\SVP` directory to a local directory.
- 3 With a text editor, open the `SVPInstallConfig.xml` file from the `SVP` directory.

- 4 If you want to install the agent only on the SA server and not on the SiteScope server, skip to [step 6](#) on page 39.

To install the agent on a SiteScope system, modify the following elements under the `SIS` sub-element, which is present under the `SVPAgent` element:

**Hostname:** Specify the fully qualified domain name or IP address of the SiteScope server. Specify `localhost` if SiteScope is running on this system.

**Username:** Specify the administrative user name. Do not specify anything if SiteScope is running on this system.

**Password:** Specify the password of the above user. Do not specify anything if SiteScope is running on this system.



To install the agent component on multiple SiteScope servers, add additional `SIS` elements. You can specify as many `SIS` elements as you want under the `SVPAgent` element.

You can install the agent on multiple SiteScope servers. Add a `sisconfig` element for each SiteScope server.

- 5 Add the following content under the logger element with the required parameters after installing the agent on the SiteScope server:

```
<sisconfig>
<server name="SI_IP_Address">
<ip> SIS_IP_Address </ip>
<logport>18080</logport>
<clientport>SIS_port</clientport>
<username>user_name_to_access_SIS_UI</username>
<password>password_of_above_user</password>
</server>
<logpath name="Error"> C:\SiteScope\logs\error.log </logpath>
</sisconfig>
```

- 6 To install the agent on an SA server, modify the following elements under the `SA` sub-element, which is present under the `SVPAgent` element:

**Hostname:** Specify the fully qualified domain name or IP address of the SA server. Specify `localhost` if SiteScope is running on this system.

**Username:** Specify `root`.

**Password:** Specify the password of the above user.

*Optional.* **TwistUsername:** Specify the administrative user name of the Web Services Data Access Engine host within the `Username` element.

*Optional.* **TwistPassword:** Specify the password of the above user within the `Password` element.

You can specify the above two parameters even after installing the Consolidated Activity Portal server. The Web Services Data Access Engine host details help the Consolidated Activity Portal display SA job events.

- 7 Make sure that sub-elements under the `SVPServer` element in the `SVPInstallConfig.xml` file do not contain any values.

- 8 Save the file.
- 9 Open the command prompt.
- 10 Go to the `SVP` directory.
- 11 Run the following command:

#### **SVPInstaller**

The command installs the Consolidated Activity Portal agent on systems specified in the configuration file.

- 12 After installing the agent, go to the following location on the server:  
<Drive>:\CSA4M\SVP\Apache\Jetspeed-2.2.2\webapps\j2-admin\WEB-INF\classes
- 13 Open the `serverconfig.xml` file with a text editor.  
Add the following content under the logger element with the required parameters:

```
<saconfig>
<server name="SA_IP_Address">
<ip> SA_IP_Address </ip>
<logport>18080</logport>
<clientport>SA_port</clientport>
<username>user_name_to_access_SA_web_client</username>
<password>password_of_above_user</password>
</server>
<logpath name="ogfs">/opt/opsware/var/log/agent</logpath>
</saconfig>
```
- 14 Save the file.
- 15 Restart the Tomcat service.

## Install Only the Consolidated Activity Portal Server

The Consolidated Activity Portal installer enables you to install only the Consolidated Activity Portal server on a dedicated system without installing the agent component on SiteScope and SA servers. After installing only the server component, you can install the agent instances on SiteScope and SA servers at a later time (see [Install Agents at a Later Time](#) on page 38).

To install the Consolidated Activity Portal server, follow these steps:

- 1 Log on to the dedicated server from where you want to run the Consolidated Activity Portal installer. You must log on as an administrator.
- 2 Make sure that all SA servers in the CSA for Matrix environment are accessible from the server. If you want to install the Consolidated Activity Portal server on a remote system (and not on the local system), make sure the remote system is accessible from this system.
- 3 From the *Cloud Service Automation for Matrix Product Software and Documentation* media, transfer the `content\SVP` directory to a local directory.
- 4 With a text editor, open the `SVPInstallConfig.xml` file from the `SVP` directory.
- 5 Modify the following elements:



- **SVP****Server:** This element contains details of the dedicated Consolidated Activity Portal server.

Under this element, specify **localhost** within the `Hostname` elements if you are going to install the server on the local system. If you are going to install the Consolidated Activity Portal server on a remote system, specify the fully qualified domain name or IP address of the remote system

Within the `Username` and `Password` elements, specify the administrative user name and password of the system where you want to install the Consolidated Activity Portal server. If you are installing the Consolidated Activity Portal server on the local system, you can leave these elements blank.

- **SVP****Agent:** This element contains sub-elements that contain the information about the SA and SiteScope servers—servers on which you want to install the Consolidated Activity Portal agent.
  - **SIS:** This element contains information about the SiteScope servers. Leave this element empty.
  - **SA:** This element contains information about the SA servers.

➤ Specifying SA server details is mandatory for the installation of the Consolidated Activity Portal server.

**Hostname:** Specify the FQDN or IP address of the SA server within the `Hostname` element.

Leave all other elements (`Username`, `Password`, `TwistUsername`, and `TwistPassword`) blank. Leaving these elements empty ensures that the agent is not installed on the SA server.

- 6 Save the file.
- 7 Open the command prompt.
- 8 Go to the `SVP` directory.
- 9 Run the following command:

**SVP****Installer**

The command installs the Consolidated Activity Portal server on the system specified in the configuration file.

## Installing Workflows for HP Storage Essentials

➤ HP Storage Essentials workflows do not work in the HP Insight Dynamics 7.0 environment. Skip this section if you want to use HP Insight Dynamics 7.0.

*This is an optional section. Skip this section if you do not want to use HP Storage Essentials with CSA for Matrix.*

Install the HP Storage Essentials workflow if you want to use CSA for Matrix to dynamically provision SAN arrays.

To install the HP Storage Essentials workflows, follow these steps:

- 1 Log on to the OO system as Administrator.

- 2 Make sure you have placed the `OO-SE.zip` file on the OO system from the Cloud Service Automation for Matrix Product Software and Documentation media. The file is available in the `optional` directory on the media.
- 3 Extract the contents of the `OO-SE.zip` file to a temporary folder on the OO system.
- 4 Configure installation parameters.

The `OO-SE.zip` file provides you with the properties file to set installation parameters.

To configure the properties, follow these steps:

- a Go to the folder where you extracted the ZIP file, and then open the `OOSEInstall.properties` file with a text editor.
- b Configure the properties in the file according to the values specified in the following table:

Property	Value
<code>centralURL</code>	URL of the OO Central. Specify this value in the following format: <i>https://</i> <i>&lt;OO-Central_FQDN&gt;:&lt;port&gt;</i> In this instance, <i>&lt;OO-Central_FQDN&gt;</i> is the fully qualified domain name of the OO system and <i>&lt;port&gt;</i> is the port used by OO Central.
<code>centralUsername</code>	The administrator user name for OO Central.
<code>centralPassword</code>	The password for the above user.

- 5 Save the file.
- 6 Run the following command:

```
install.bat
```

## Verifying Installation of Workflows and Templates

After installation is complete, check the availability of the following items:

- 1 Check that workflows that you installed on the OO system appear in the OO Studio.
- 2 Check that templates that you installed on the SiteScope server appear in the SiteScope dashboard.

## Check Workflows in the OO Studio

- 1 Log on to OO Studio.
- 2 Navigate to **Library > Hewlett-Packard > Insight Orchestration > Service Actions > Server Monitors**.
- 3 Confirm that the following workflows appear:
  - Delete Monitor
  - Deploy Monitor
  - Enable Monitor
  - Disable Monitor
  - ESX Server Monitor Action
- 4 Navigate to **Library > Hewlett-Packard > Insight Orchestration > Service Actions > Compliance and Remediation**.
- 5 Confirm that the following workflows appear:
  - Check Server Audit Compliance
  - Remediate Server Non-Compliance
  - Check Server Patch Compliance
  - Check Server Software Compliance
  - Remediate Server Patch Policies
  - Remediate Server Software Policies
- 6 Navigate to **Library > Hewlett-Packard > Insight Orchestration > Service Actions > Application Monitors**.
- 7 Confirm that the following application monitoring workflows appear:
  - IIS7 Monitor Action
  - Exchange 2007 Monitor Action
  - Oracle 10g Monitor Action
  - MSSQL 2008R2 Monitor Action
- 8 Navigate to **Library > Hewlett-Packard > Insight Orchestration > Service Actions > Application Management**.
- 9 Confirm that the following workflow appears:

Application Management Using SA

## Check Workflows for Storage Essentials



HP Storage Essentials workflows do not work in the HP Insight Dynamics 7.0 environment. Skip this section if you want to use HP Insight Dynamics 7.0.

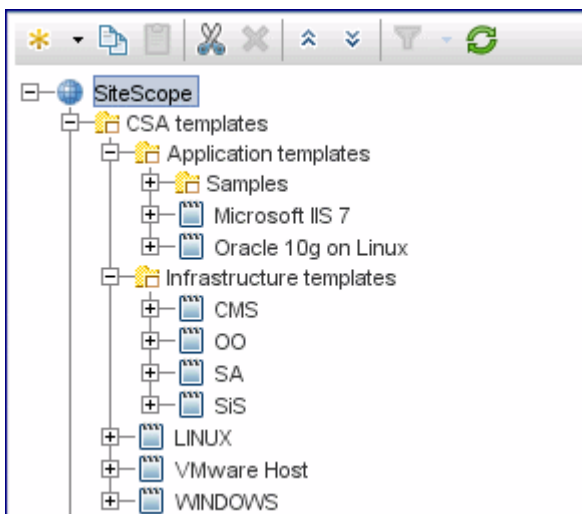
*This is an optional section. Skip this section if you do not want to use HP Storage Essentials with CSA for Matrix.*

- 1 Log on to OO Studio.

- 2 Navigate to **Library > Hewlett-Packard > CSA > SESANStorage > Flows**, and make sure the following flows appear:
  - SE Discover Arrays
  - SE Enumerate Pools
  - SE Enumerate Volumes
  - SE Get Device Information
  - SE Get Volume Info
  - SE Present Volume
  - SE Set Host Mode
  - SE Un-present Volume

## Check Monitor Templates in SiteScope


- 1 Log on to SiteScope dashboard.
- 2 Click **Templates**. The Templates page opens.
- 3 In the Navigation tree, expand **SiteScope > CSA templates**.
- 4 Check that the CSA template group includes the following items:
  - **Application templates:** This Template Container includes the following templates for application monitoring on managed systems:
    - Microsoft IIS 7
    - Oracle 10g on Linux
  - ▶ An additional Template Container—**Samples**—provides example configuration for the Microsoft IIS 7 and Oracle 10g on Linux templates
  - **Infrastructure templates:** This Template Container includes the following templates for monitoring the CSA for Matrix infrastructure:
    - CMS: For monitoring the CMS
    - OO: For monitoring the OO system
    - SA: For monitoring the SA server
    - SiS: For monitoring the SiteScope server
  - **Templates for managed systems:**
    - WINDOWS: For Windows managed systems
    - LINUX: For Linux managed systems
  - **ESX target servers:**
    - VMware Host



## Configuring User Credential Profiles

Either a SiteScope specific account needs to be created on each target Windows OS and each target Linux OS, or all response files to install operating systems must include the root password that matches the credentials entered into SiteScope. CSA for Matrix does not support different passwords for each Windows server or for each Linux server within SiteScope.

To configure user credential profiles for CSA for Matrix templates:

- 1 In Preferences context, click **Credential Preference**.
- 2 On the Credential Preferences page, the following user profiles appear:
  - WINDOWS-CSA-TARGETS
  - LINUX-CSA-TARGETS
  - CSA-SiS
  - CSA-SA
  - CSA-OO
  - CSA-CMS
- 3 On the Credential Preferences page, select a user.
- 4 Click **Edit Credential Profile** (  ).
- 5 In the Edit Credential Profile dialog box, type the following information:
  - Login: Specify the name of the administrative user for Windows managed systems, the OO system, SiteScope server, or CMS. Specify root for Linux managed systems and the SA Core server.
  - Password: Specify the password for the above users.
- 6 Click **Save**.

# Configuring Workflows in the OO Studio

After installing the workflows, you must configure them in the OO Studio by providing necessary access information for each server.

## Preconfiguration Steps for Upgrade

If you are not upgrading an existing installation of CSA for Matrix 2011, June, skip this section and go to [Configuration Steps](#) on page 46.

The installation of CSA for Matrix 2012, February overwrites the settings of system properties and accounts of CSA for Matrix in the OO Studio. To retain the old settings of all CSA for Matrix properties and accounts, follow these steps:

- 1 Log on to the OO system.
- 2 Start OO Studio.
- 3 Right-click the folder that includes all CSA for Matrix properties and accounts, click **Repository**, and then click **Export as New Repository**. The Select Repository Directory dialog box opens.
- 4 Select the location where you want to store the exported repository, and then click **Save**. The Export Options dialog box opens.
- 5 In the Export Options dialog box, exclude the items that you do not want to exclude. You can select only System Properties and System Accounts in this dialog box (since only these two items can be customized for CSA for Matrix).
- 6 Click **OK**.

This procedure ensures that customizations done to CSA for Matrix 2011, June properties and accounts are not lost after upgrade.

## Configuration Steps

To configure workflows in the OO Studio, follow these steps:



At the end of this procedure, account details of CSA for Matrix infrastructure servers, managed systems, and monitored applications are stored in the OO repository in clear text.

- 1 Log on to the OO system.
- 2 Start OO Studio.
- 3 In the Repository pane, expand **Configuration > System Properties**.
- 4 Change the following input properties to values corresponding to your environment:



Before modifying a default property, click **Check Out** (  ) in the Authoring pane.

After saving every property (step 6), click **Check In** (  ) in the Authoring pane.

- **CSA\_DEBUG**: This property is set to `true` by default and it enables CSA for Matrix to log diagnostic messages into a log file on the OO system.

- **CSA\_DEBUG\_LOGDIR:** If the **CSA\_DEBUG** property is set to `true`, set this property to the directory where you want to place the log file. By default, this is set to `/csa4m/logs`.
- **CSA\_DEBUG\_LOGNAME:** If the **CSA\_DEBUG** property is set to `true`, set this property to the log file name. By default, this is set to `csa4m.log`.
- **CSA\_NOTIFY\_ONLY\_FAILURE:** If you set this property to `true`, notification is sent only in the event of failure. Otherwise, notification is sent for all events.
- **CSA\_SIS\_HOSTS\_FQDN:** Fully qualified domain name of the SiteScope server. If you want to use multiple SiteScope servers, specify a comma-separated list of FQDNs of all SiteScope servers. This is a new property introduced in CSA for Matrix version 2012, February.
- **SiSFQDN:** Fully qualified domain name of the SiteScope server. You must not modify this value if you are upgrading from version 2011, June to version 2012, February.
- **SiSIPPort:** Port of your SiteScope service
- **SiSProtocol:** HTTP access protocol to your SiteScope server
- **SiSCSATemplateFolder:** CSA templates folder on your SiteScope server
- **SiSDefaultMonitorFrequency:** Monitor frequency in seconds for your CSA monitors
- **CSA\_SA\_AUDIT\_TASKNAME\_LIN:** The name of the SA audit task for Linux servers that will be used for audit compliance and remediation in CSA for Matrix.
- **CSA\_SA\_AUDIT\_TASKNAME\_WIN:** The name of the SA audit task for Windows servers that will be used for audit compliance and remediation in CSA for Matrix.
- **CSA\_SA\_AUDIT\_TIMEOUT:** Time-out duration for an SA audit task.
- **CSA\_SA\_FQDN:** Fully qualified domain name or IP address of your SA server

In addition, if you are upgrading from CSA for Matrix 2011, June, delete the following properties:

- **SiSUserName**
- **SiSPassword**




You must configure **CSA\_SIS\_ADMINISTRATOR** as described in *step 8* of this procedure.

- 5 Change the following input properties for monitoring applications running on managed systems:
  - For managed systems with Microsoft Exchange Server
    - **CSA\_EXCH2007\_DOMAIN:** The name of the domain that contains the Microsoft Exchange host.
    - **CSA\_EXCH2007\_MAILBOX:** The hostname of the system that hosts the Microsoft Exchange mailbox.
    - **CSA\_EXCH2007\_PSCONSOLEFILE:** The complete path to the PowerShell Console file on the Microsoft Exchange mailbox system.
  - For managed systems with Microsoft SQL Server
    - **CSA\_MSSQL\_INSTANCE\_LOGIN:** Login name of the Microsoft SQL Server database instance.
    - **CSA\_MSSQL\_INSTANCE\_NAME:** Microsoft SQL Server instance name.

- CSA\_MSSQL\_INSTANCE\_PASSWORD: Password to access the Microsoft SQL Server database instance.
- CSA\_MSSQL\_INSTANCE\_PORT: The port used by the Microsoft SQL Server database instance.
- For managed systems with Oracle
  - CSA\_ORACLE\_DBPASSWORD: Password to access the Oracle database instance.
  - CSA\_ORACLE\_DBPORT: The port used by the Oracle database.
  - CSA\_ORACLE\_DBUSER: The name of an Oracle user account.
  - CSA\_ORACLE\_HOME: The Oracle home directory on the system that hosts the Oracle database.
  - CSA\_ORACLE\_SID: The system ID of the Oracle database instance.
- 6 Click **File > Save** after modifying every property.
- 7 In the Repository pane, expand **Configuration > System Accounts**.
- 8 Change the following account details to values corresponding to your environment:



Before modifying a default property, click **Check Out** (  ) in the Authoring pane.

After saving every property (step 9), click **Check In** (  ) in the Authoring pane.

- CSA\_EXCH2007\_ADMINISTRATOR: The administrative user name and password of the Exchange 2007 system.
  - CSA\_IIS\_ADMINISTRATOR: The administrative user name and password of the IIS system.
  - CSA\_MSSQL\_ADMINISTRATOR: The administrative user name and password of the Microsoft SQL Server host.
  - CSA\_WINDOWS\_TARGET\_SERVER: (*New in CSA for Matrix 2012, February*) The administrative user name and password of Windows target servers.
  - CSA\_LINUX\_TARGET\_SERVER: (*New in CSA for Matrix 2012, February*) The root user name and password of Linux target servers.
  - CSA\_ESX\_ADMINISTRATOR: (*New in CSA for Matrix 2012, February*) The user name and password to log on to the ESX host that you want to provision.
  - HpioCmsCredentials: The administrative user name and password of the CMS.
  - HpioSACredentials: The SA user name and password that were configured with Insight Dynamics ([Create an Account for HP BladeSystem Matrix to access SA](#) on page 19).
  - CSA\_SIS\_ADMINISTRATOR: (*New in CSA for Matrix 2012, February*) The user name and password of the administrator user of the SiteScope server.
- 
- Make sure that you use the system administrator account credentials configured for the SiteScope host, to log on to the SiteScope application.
  - CSA for Matrix uses the administrator account configured for the server on which SiteScope is installed. The monitoring might fail if you configure the SiteScope application with the same administrator credentials configured for the server on which SiteScope is installed.




- 9 Click **File > Save** after modifying every property.

## Configure HP Storage Essentials Workflows

- ▶ HP Storage Essentials workflows do not work in the HP Insight Dynamics 7.0 environment. Skip this section if you want to use HP Insight Dynamics 7.0.


*This is an optional section. Skip this section if you do not want to use HP Storage Essentials with CSA for Matrix.*


- ▶ At the end of this procedure, account details of Storage Essentials are stored in the OO repository in clear text.

- 1 Log on to the OO system.
- 2 Start OO Studio.
- 3 In the Repository pane, expand **Configuration > System Properties**.
- 4 Select the SECMSIP input property.
- 5 In the Authoring pane, click **Check Out** (  ).
- 6 Set the property value to the IP address of the HP Storage Essentials management server in the Property Value box. If the HP Storage Essentials management server is configured to use a non-default port, type the IP address in the following format:

`<IP_Address>:<Port>`


In this instance, `<IP_Address>` is the IP address of the HP Storage Essentials management server and `<Port>` is the non-default port.

- 7 Click **File > Save**.
- 8 In the Authoring pane, click **Check In** (  ).
- 9 In the Repository pane, expand **Configuration > System Accounts**.
- 10 Select SECredentials.

- 11 In the Authoring pane, click **Check Out** (  ).
- 12 Change the SECredentials account details:

In the Authoring pane, type the user name and password of the HP Storage Essentials user.

- 13 Click **File > Save**.

- 14 In the Authoring pane, click **Check In** (  ).

Edit the `esa.properties` File

- ▶ HP Storage Essentials workflows do not work in the HP Insight Dynamics 7.0 environment. Skip this section if you want to use HP Insight Dynamics 7.0.

*This is an optional section. Skip this section if you do not want to use HP Storage Essentials with CSA for Matrix.*

If you have installed the HP Storage Essentials flows on the CMS, you must edit the `esa.properties` file to add references to the HP Storage Essentials flows.

To edit the `esa.properties` file, follow these steps:

- 1 Log on to the CMS as Administrator.
- 2 Go to the following directory:  
`C:\Program Files\HP\Virtual Server Environment\conf`
- 3 Open the `esa.properties` file with a text editor program.
- 4 Go to the section `#STORAGE WorkFlows`.
- 5 Edit the following properties:

Property	Set the value to...
<code>esa.oo.get.device.info.flow.path</code>	Hewlett-Packard/CSA/ SESANStorage/Flows/ SE Get Device Informa- tion
<code>esa.oo.enumerate.pools.flow.path</code>	Hewlett-Packard/CSA/ SESANStorage/Flows/ SE Enumerate Pools
<code>esa.oo.enumerate.volumes.flow.path</code>	Hewlett-Packard/CSA/ SESANStorage/Flows/ SE Enumerate Volumes
<code>esa.oo.get.volume.info.flow.path</code>	Hewlett-Packard/CSA/ SESANStorage/Flows/ SE Get Volume Info
<code>esa.oo.get.volume.info.flow.timeout</code>	1200000
<code>esa.oo.present.volume.flow.path</code>	Hewlett-Packard/CSA/ SESANStorage/Flows/ SE Present Volume
<code>esa.oo.present.volume.flow.timeout</code>	2400000
<code>esa.oo.un-present.volume.flow.path</code>	Hewlett-Packard/CSA/ SESANStorage/Flows/ SE Un-present Volume
<code>esa.oo.un-present.volume.flow.timeout</code>	2400000
<code>esa.oo.set.host.mode.flow.path</code>	Hewlett-Packard/CSA/ SESANStorage/Flows/ SE Set Host Mode
<code>esa.oo.set.host.mode.flow.timeout</code>	2400000
<code>esa.oo.discover.arrays.flow.path</code>	Hewlett-Packard/CSA/ SESANStorage/Flows/ SE Discover Arrays

- 6 Save the file.
- 7 *For XP and HDS only.* If the storage array has four or more ports on the fabric, you must increase the operation time-out value.
  - a On the CMS, open the `wrapper.conf` file with a text editor. The file is available in the directory `C:\Program Files\HP\Operations Orchestration\Central\conf`.
  - b Add the following line in the file:
 


```
wrapper.java.additional.3=-Dras.client.timeout=24000
```
  - c Save the file.
  - d Restart the RSCentral service from the Services window.
- 8 Restart the HP Extensible Storage & Server Adapter service from the Services window.

## Post-Configuration Steps for Upgrade

If you are not upgrading an existing installation of CSA for Matrix 2011, June, skip this section and go to [Configuring HP Insight Dynamics to Work with SA](#) on page 51.

To restore the customization done to CSA for Matrix 2011, June properties and accounts, you must import the repository that you exported in [Preconfiguration Steps for Upgrade](#) on page 46. To import the saved repository, follow these steps:

- 1 Log on to the OO system.
- 2 Start OO Studio.
- 3 Click **Repository > Import Repository**. The Select Repository Directory dialog box opens.
- 4 In the Select Repository Directory dialog box, select the folder where the repository is stored, and then click **Open**. The Importing from... dialog box opens.
- 5 In the Importing from ... dialog box, resolve conflicts that were introduced by the upgrade.

You can click the  (**View Conflicts Only**) button. This step helps you retain the customizations that you had done before you upgraded to CSA for Matrix 2012, February.

## Configuring HP Insight Dynamics to Work with SA

### For MOE 7.x with CSA for Matrix 2012, February

If you have provided the required deployment details for SA during the installation of MOE 7.x, the required configuration for SA to work with MOE 7.x is performed automatically. If you had not provided the required deployment details for SA, then you must run the `SAAL-0.8-setup.exe` installer present at the following location to configure MOE 7.x to work with SA: `<SIM_INSTALL_PATH>\bin\SA\`



If you are using SA version 9.10, you can perform the required configuration by running the `SAAL-0.8-setup.exe` installer. If you are using any other version of SA, you must specify the `SAIPAddress` parameter while running the `SAAL-0.8-setup.exe` installer. See the following section for more details.

By default, the SAAL-0.8-setup.exe installer installs the SA 9.10 opswclient.jar and the saplugin.jar. Perform the following steps if you are using SA 9.10:

- 1 Stop the HP System Insight Manager service.
- 2 Run the command SAAL-0.8-setup.exe from a command prompt. (You can replace this step with the following step if you are using a different version of SA: Run the command SAAL-0.8-setup.exe /SAIPAddress=<SA IP Address> /VERYSILENT from a command prompt.)
- 3 Start the HP System Insight Manager service.



With MOE 7.x, the SAAL-0.8-setup.exe installer is available at the SIM\_INSTALL\_PATH>\bin\SA\ location. The saplugin\_helper.bat file is removed permanently with this release.

You can also download the opswclient.jar from SA at the following location: <https://<SA IP Address>:1032/twist/opswclient.jar>

## For HP Insight Dynamics version 6.3 or Later with CSA for Matrix 2012, February

- 1 Log on to the CMS as administrator.
- 2 Stop the HP System Insight Manager service.
- 3 Insert the *Cloud Service Automation for Matrix Product Software and Documentation* CD into CD-ROM.
- 4 Go to the SAPLugin directory on the *Cloud Service Automation for Matrix Product Software and Documentation* CD.
- 5 Run the SAAL-0.8-setup.exe file
- 6 Start the HP System Insight Manager service.



If you are using SA version 9.10, you can perform the required configuration by running the SAAL-0.8-setup.exe installer. If you are using any other version of SA, you must specify the SAIPAddress parameter while running the SAAL-0.8-setup.exe installer. See the following section for more details.

By default, the SAAL-0.8-setup.exe installer installs the SA 9.10 opswclient.jar and the saplugin.jar. Perform the following steps if you are using SA 9.10:

- 1 Stop the HP System Insight Manager service.
- 2 Run the command SAAL-0.8-setup.exe from a command prompt. (You can replace this step with the following step if you are using a different version of SA: Run the command SAAL-0.8-setup.exe /SAIPAddress=<SA IP Address> /VERYSILENT from a command prompt.)
- 3 Start the HP System Insight Manager service.



With MOE 7.x, the SAAL-0.8-setup.exe installer is available at the SIM\_INSTALL\_PATH>\bin\SA\ location. The saplugin\_helper.bat file is removed permanently with this release.

You can also download the opswclient.jar from SA at the following location: <https://<SA IP Address>:1032/twist/opswclient.jar>

## For HP Insight Dynamics version 6.3 or Later with CSA for Matrix 2011, June

Insight Dynamics 6.3 (or higher) or HP Insight Dynamics 7.0 works with SA 9.0x by default. If you want to use SA 9.10, or if you want to use the OS Build Plan feature of SA with CSA for Matrix, you must perform this configuration task. Skip this section if you want to use SA 9.03 and do not want to use the OS Build Plan feature.

To use the OS Build Plan feature, follow these steps:

- 1 Log on to the CMS as administrator.
- 2 Stop the HP System Insight Manager service.
- 3 Insert the *Cloud Service Automation for Matrix Product Software and Documentation* CD into CD-ROM.
- 4 Go to the `SAPLugin` directory on the *Cloud Service Automation for Matrix Product Software and Documentation* CD.
- 5 If you want to use SA 9.03, go to the `SA 9.0x support` directory, and then run the `SAAL-0.8-setup.exe` file.
- 6 If you want to use SA 9.10, go to the `SA 9.1 support` directory, and then run the `SAAL-0.8-SA-9.1-setup.exe` file.
- 7 Start the HP System Insight Manager service.

If you do not want to use the OS Build Plan feature and want to use SA 9.10, follow these steps:

- 1 On the CMS, go to `<SIM_INSTALL_PATH>\lib`.
- 2 Run the following command:  
`saplugin_helper.bat`

## Installing and Configuring HP Storage Essentials Workflows at a Later Time



HP Storage Essentials workflows do not work in the HP Insight Dynamics 7.0 environment. Skip this section if you want to use HP Insight Dynamics 7.0.

You can choose to install HP Storage Essentials workflows at a later time—after installing and configuring other workflows.

To install and configure HP Storage Essentials workflows at a later time, follow these steps:

- 1 Verify that HP Storage Essentials is installed and configured in the environment.
- 2 Follow the steps in [Installing Workflows for HP Storage Essentials](#) on page 41.
- 3 Verify the installation by following the steps in [Check Workflows for Storage Essentials](#) on page 43.
- 4 Follow the steps in [Configure HP Storage Essentials Workflows](#) on page 49.
- 5 Follow the steps in [Edit the `esa.properties` File](#) on page 49.

## Migrating to a Standalone OO Installation

HP Insight Dynamics embeds a special version of HP OO and contains a limited edition of the OO content. You can use the CSA for Matrix solution with the OO installation that is embedded with HP IO. If you like, at a later time, you can migrate to a complete, standalone version of OO (Windows only).

To migrate to a standalone OO installation from the embedded OO, follow these steps:

- 1 Complete the installation of OO on a standalone server (Windows only).
- 2 Migrate the embedded OO configurations to the standalone OO server. For necessary instructions, contact your HP Insight Dynamics representative.
- 3 Install CSA for Matrix workflows on the OO system by following the steps in [Installing Workflows on the OO System](#) on page 32.
- 4 After completing the migration steps, log on to the standalone OO server, and then follow the steps in [Configuring Workflows in the OO Studio](#) on page 46.

---

## 5 Upgrading to CSA for Matrix 2012, February

You can upgrade the previous version of CSA for Matrix to the version 2012, February without having to uninstall and reinstall the complete solution. Upgrading from a version older than 2011, June is not supported. CSA for Matrix 2012, February is supported on HP Insight Dynamics 6.3 or 6.3 Update 1 or HP Insight Dynamics 7.0. [Table 4](#) lists the steps that you must perform to upgrade CSA for Matrix to the version 2012, February.

**Table 4 Upgrade Paths for CSA for Matrix**

Base Setup	Upgraded to	Steps
CSA for Matrix 2011, June with HP Insight Dynamics 6.3	CSA for Matrix 2012, February with HP Insight Dynamics 7.0 <b>Note:</b> You cannot use HP Storage Essentials workflows with HP Insight Dynamics 7.0.	<ol style="list-style-type: none"> <li>1 Upgrade HP Insight Dynamics to HP Insight Dynamics 7.0.</li> <li>2 Install CSA for Matrix 2012, February (<a href="#">Installing CSA for Matrix</a> on page 29).</li> <li>3 Manually import the SiteScope templates for CSA for Matrix 2012, February (<a href="#">Manually Importing SiteScope Templates</a> on page 36).</li> </ol>
CSA for Matrix 2011, June with HP Insight Dynamics 6.3	CSA for Matrix 2012, February with HP Insight Dynamics 6.3	<ol style="list-style-type: none"> <li>1 Install CSA for Matrix 2012, February (<a href="#">Installing CSA for Matrix</a> on page 29).</li> <li>2 Manually import the SiteScope templates for CSA for Matrix 2012, February (<a href="#">Manually Importing SiteScope Templates</a> on page 36).</li> <li>3 If you want to use HP Insight Dynamics 6.3 (and <i>not</i> 6.3 Update 1 or higher or HP Insight Dynamics 7.0), you must apply necessary patch and hotfix in the HP Insight Dynamics environment. See <a href="#">Configure HP Storage Essentials Workflows</a> on page 49.  If you do not perform this step, you will not be able to use the following features of CSA for Matrix 2012, February: <ul style="list-style-type: none"> <li>• ESX provisioning and monitoring</li> <li>• SA policy-based application deployment at the time of creating virtual machines from VM templates (see <a href="#">Deploying Applications on Virtual Machines with SA Policies</a> on page 65)</li> </ul> </li> </ol>
CSA for Matrix 2011, June with HP Insight Dynamics 7.0	CSA for Matrix 2012, February with HP Insight Dynamics 7.0 <b>Note:</b> You cannot use HP Storage Essentials workflows with HP Insight Dynamics 7.0.	<ol style="list-style-type: none"> <li>1 Install CSA for Matrix 2012, February (<a href="#">Installing CSA for Matrix</a> on page 29).</li> <li>2 Manually import the SiteScope templates for CSA for Matrix 2012, February (<a href="#">Manually Importing SiteScope Templates</a> on page 36).</li> </ol>



## 6 Installing Infrastructure Monitor Deployment Scripts on the CMS

This version of CSA for Matrix provides you with SiteScope monitors that help you monitor the CSA for Matrix infrastructure (the CMS, SiteScope server, OO system, and SA server).

If you use the OO installation available on the CMS (the OO instance embedded with HP IO), [Installing Workflows on the OO System](#) on page 32 ensures that infrastructure monitor deployment scripts are installed and available for use and you can skip this section. If you use a standalone OO system, you must install infrastructure monitoring scripts on the CMS.

To install infrastructure monitor deployment scripts on the CMS:

- 1 Log on to the CMS as Administrator.
- 2 Make sure you have placed the `CSA4M.zip` file on the HP SiteScope server from the Cloud Service Automation for Matrix Product Software and Documentation media. The file is available in the `content` directory on the media.
- 3 Extract the contents of the `CSA4M.zip` file to a temporary folder on the CMS.
- 4 Configure installation parameters.

The `CSA4M.zip` file provides you with the properties file to set installation parameters.

To configure the properties, follow these steps:

- a Go to the folder where you extracted the ZIP file, and then open the `csa4mInstall.properties` file with a text editor.
- b Configure the properties in the file according to the values specified in the following table:

Property	Value
<code>centralURL</code>	URL of the OO Central. Specify this value in the following format: <code>https:// &lt;OO-Central_FQDN&gt;:&lt;port&gt;</code> In this instance, <code>&lt;OO-Central_FQDN&gt;</code> is the fully qualified domain name of the OO system and <code>&lt;port&gt;</code> is the port used by OO Central.
<code>centralUsername</code>	The administrator user name for OO Central.
<code>centralPassword</code>	The password for the above user.

Property	Value
ooDir	OO installation directory
ioDir	HP IO installation directory. If you are using MOE 7.x., make sure that you change this property to point to the installation directory of MOE 7.x.
sisDir	SiteScope installation directory  In a multiple SiteScope environment, you must specify the installation directory of the SiteScope server that is dedicated for monitoring the CSA for Matrix infrastructure monitoring.

Alternatively, transfer the `csa4mInstall.properties` file from the OO system onto the CMS (the file that you configured in [step 4](#) on page 32).

- 5 Save the `csa4mInstall.properties` file into the directory where you extracted the ZIP file.
- 6 Go to the directory where you extracted the ZIP file.
- 7 Run the following command:

```
install.bat
```

The installer creates the `<HPIO_Install>\csa4m` directory on the CMS and places the monitor script into the `<HPIO_Install>\csa4m\bin` directory.

## Deploy Infrastructure Monitors

The `install.bat` program enables you to place the infrastructure monitor deployment script on the CMS. The deployment script can deploy the SiteScope monitors on all the servers that CSA for Matrix is comprised of. You must now run the deployment script to deploy SiteScope monitors on the CMS, OO system, SA Core server, and SiteScope server.

- 1 On the CMS, go to the `<HPIO_Install>\csa4m\conf` directory.
- 2 Open the `csa4mInfraMonitors.properties` file with a text editor.

- 3 Configure the properties in the file according to the values specified in the following table:

Property	Value
centralURI	URI of the OO Central. Specify this value in the following format: <OO-Central_FQDN>:<port> In this instance, <OO-Central_FQDN> is the fully qualified domain name of the OO system and <port> is the port used by OO Central.
centralUsername	The administrator user name for OO Central.
centralPassword	The password for the above user.
ooDir	OO installation directory
monitorAction	Deploy
CMSIPs	IP address of the CMS
OOIPs	IP address of the OO system.
SiSIPs	IP address of the SiteScope server dedicated for the CSA for Matrix infrastructure monitoring.
SAIPs	IP address of the SA Core server.

- 4 Save the file.
- 5 Go to the <HPIO\_Install>\csa4m\bin directory.
- 6 Run the following command:

**csa4mRunInfraMonitor.bat**

The command deploys SiteScope monitors on the OO system, CMS, SA Core, and SiteScope servers.

Alternatively, run the following command on the CMS:

<HPIO\_Install>\csa4m\bin\csa4mRunInfraMonitor.bat deploy

## Disable Monitors

After deploying the monitors on the servers, if you want to disable them, follow these steps:

- 1 On the CMS, go to the <HPIO\_Install>\csa4m\conf directory.
- 2 Open the csa4mInfraMonitors.properties file with a text editor.

- 3 Set the `monitorAction` property to disable.
- 4 Save the file.
- 5 Go to the `<HPIO_Install>\csa4m\bin` directory.
- 6 Run the following command:

**`csa4mRunInfraMonitor.bat`**

The command disables SiteScope monitors on the OO system, CMS, SA Core, and SiteScope servers.

Alternatively, run the following command on the CMS:

`<HPIO_Install>\csa4m\bin\csa4mRunInfraMonitor.bat disable`

### Enable Monitors

To enable the monitors again, set the `monitorAction` property to `enable` in the `<HPIO_Install>\csa4m\conf\csa4mInfraMonitors.properties` file, and then run the `<HPIO_Install>\csa4m\bin\csa4mRunInfraMonitor.bat` script.

Alternatively, run the following command:

`<HPIO_Install>\csa4m\bin\csa4mRunInfraMonitor.bat enable`

## Delete Monitors

If you want to delete the monitors from the servers, follow these steps:

- 1 On the CMS, go to the `<HPIO_Install>\csa4m\conf` directory.
- 2 Open the `csa4mInfraMonitors.properties` file with a text editor.
- 3 Set the `monitorAction` property to `delete`.
- 4 Save the file.
- 5 Go to the `<HPIO_Install>\csa4m\bin` directory.
- 6 Run the following command:

**`csa4mRunInfraMonitor.bat`**

The command deletes SiteScope monitors on the OO system, CMS, SA Core, and SiteScope servers. To use the infrastructure monitors again, you must follow [Deploy Infrastructure Monitors](#) on page 58.

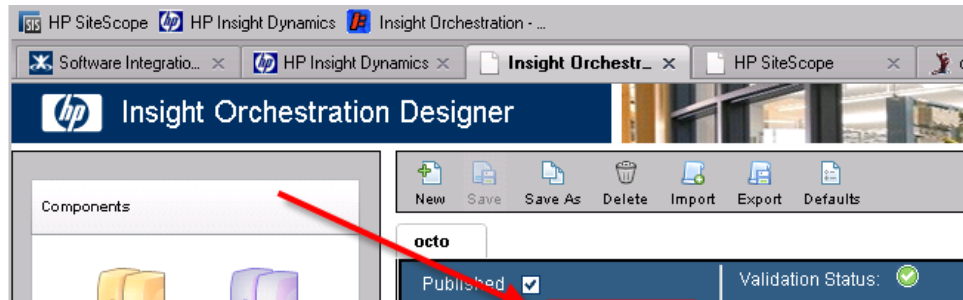
Alternatively, run the following command on the CMS:

`<HPIO_Install>\csa4m\bin\csa4mRunInfraMonitor.bat delete`

## 7 Adding Workflows to the IO Templates

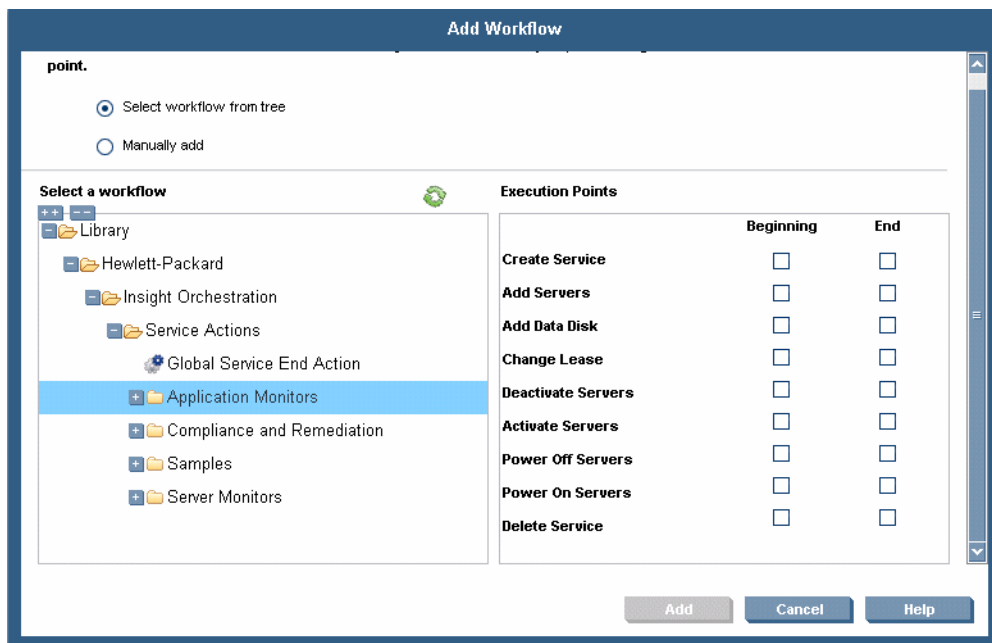
To add workflows to IO Templates, follow these steps:

- 1 In the IO Designer when editing the template, select **Workflows...**



The Workflows dialog box opens.

- 2 In the Workflows dialog box, click **Add**. The Add Workflow dialog box opens.



CSA for Matrix workflows are available under the following groups:

- Application Monitors:  
Includes the following workflows:
  - Exchange 2007 Monitor Action
  - IIS 7 Monitor Action
  - MSSQL 2008R2 Monitor Action

- Oracle 10g Monitor Action
  - Compliance and Remediation
 

Includes the following workflows:

    - Check Server Audit Compliance
    - Check Server Patch Compliance
    - Check Server Software Compliance
    - Remediate Server Non-Compliance
    - Remediate Server Patch Policies
    - Remediate Server Software Policies
  - Server Monitors
 

Includes the following workflows:

    - Delete Monitors
    - Deploy Monitors
    - Disable Monitors
    - Enable Monitors
    - ESX Server Monitor Action
  - Application Management
 

Application Management Using SA
- 3 Follow this table while linking these workflows with execution points:
- Follow the given order.

Workflow	Execution Point
Deploy Monitors	<ul style="list-style-type: none"> <li>• Create Service: End</li> <li>• Add Servers: End</li> </ul>
Enable Monitors	<ul style="list-style-type: none"> <li>• Activate Servers: End</li> <li>• Power On: End</li> </ul>
Disable Monitors	<ul style="list-style-type: none"> <li>• Deactivate Servers: Beginning</li> <li>• Power Off: Beginning</li> </ul>
Delete Monitors	Delete Service: Beginning

<b>Workflow</b>	<b>Execution Point</b>
Exchange 2007 Monitor Action	<ul style="list-style-type: none"> <li>• Create Service: End</li> <li>• Add Servers: End</li> <li>• Activate Servers: End</li> <li>• Power On: End</li> <li>• Deactivate Servers: Beginning</li> <li>• Power Off: Beginning</li> <li>• Delete Service: Beginning</li> </ul>
IIS 7 Monitor Action	<ul style="list-style-type: none"> <li>• Create Service: End</li> <li>• Add Servers: End</li> <li>• Activate Servers: End</li> <li>• Power On: End</li> <li>• Deactivate Servers: Beginning</li> <li>• Power Off: Beginning</li> <li>• Delete Service: Beginning</li> </ul>
MSSQL 2008R2 Monitor Action	<ul style="list-style-type: none"> <li>• Create Service: End</li> <li>• Add Servers: End</li> <li>• Activate Servers: End</li> <li>• Power On: End</li> <li>• Deactivate Servers: Beginning</li> <li>• Power Off: Beginning</li> <li>• Delete Service: Beginning</li> </ul>
Oracle 10g Monitor Action	<ul style="list-style-type: none"> <li>• Create Service: End</li> <li>• Add Servers: End</li> <li>• Activate Servers: End</li> <li>• Power On: End</li> <li>• Deactivate Servers: Beginning</li> <li>• Power Off: Beginning</li> <li>• Delete Service: Beginning</li> </ul>
ESX Server Monitor Action	<ul style="list-style-type: none"> <li>• Create Service: End</li> <li>• Add Servers: End</li> <li>• Activate Servers: End</li> <li>• Power On: End</li> <li>• Deactivate Servers: Beginning</li> <li>• Power Off: Beginning</li> <li>• Delete Service: Beginning</li> </ul>

Workflow	Execution Point
Check Server Audit Compliance	Power On Servers: End Activate Servers: End
Check Server Patch Compliance	Power On Servers: End Activate Servers: End
Check Server Software Compliance	Power On Servers: End Activate Servers: End
Remediate Server Non-Compliance	Power On Servers: End Activate Servers: End
Remediate Server Patch Policies	Power On Servers: End Activate Servers: End
Remediate Server Software Policies	Power On Servers: End Activate Servers: End
Application Management Using SA <b>Note:</b> This workflow helps you deploy applications by using SA policies on virtual machines at the time of creating virtual machines with HP Insight Dynamics VM templates. For more information, see <a href="#">Deploying Applications on Virtual Machines with SA Policies</a> on page 65.	Create Service: End Add Servers: End Delete Service: End

- 4 Click **Add**.
- 5 Click **OK**.



## 8 Deploying Applications on Virtual Machines with SA Policies

With CSA for Matrix, you can create virtual machines and deploy applications on those machines once they are created. This process uses HP Insight Dynamics VM templates for creating virtual machines and SA policies for deploying applications on target virtual machines. The Application Management Using SA workflow, which is available under the group Application Management, facilitates deployment of applications based on SA policies on virtual machines that were create by HP Insight Dynamics VM templates.

To deploy applications based on SA policies on virtual machines that were created by HP Insight Dynamics VM templates, follow these steps:

### 1 Create SA policies.

Create SA policies to define the list of applications that you want to deploy on target virtual machines. For more information on creating SA policies, see *HP Server Automation User Guide*.

### 2 Create the HP Insight Dynamics template.

The Application Management Using SA workflow, provided by CSA for Matrix, establishes the connection between the HP Insight Dynamics template and SA for deploying applications on target virtual machines. While creating the IO template, make sure to add the Application Management Using SA workflow to the IO template with the following execution points:

- Create Service: End
- Add Servers: End
- Delete Service: End



While creating the IO template, you must use the VMWare template to provision the operating system. Make sure to add the application management using SA workflow to the HP IO template using the following steps.

### 3 Modify the configuration file.

The CSA for Matrix installer places the `HPIOTemplateSoftwarePoliciesConfig.xml` file on the CMS. After creating the template, you must edit the `HPIOTemplateSoftwarePoliciesConfig.xml` file to specify the details of SA policies that you want to use for application deployment.

To edit the `HPIOTemplateSoftwarePoliciesConfig.xml` file, follow these steps:

- Note down the following details. Attached is a sample configuration file snippet below for a template:

```
<Template name="Template-1">
  <ServerGroups>
    <ServerGroup name="Group1">
      <SoftwarePolicies>
        <SoftwarePolicy>Software Policy 1</SoftwarePolicy>
      </SoftwarePolicies>
    </ServerGroup>
  </ServerGroups>
</Template>
```

```

        <SoftwarePolicy>Software Policy 2</SoftwarePolicy>
        <SoftwarePolicy>Software Policy 3</SoftwarePolicy>
    </SoftwarePolicies>
    <IgnoreOnWarning>FALSE</IgnoreOnWarning>
</ServerGroup>
<</ServerGroups>
</Template>

```

- Name of the HP IO template that you are going to use for creating virtual machines.
- Name of the server groups that are included in the HP IO template.
- Names of SA software policies that you want to use for application deployment.

**b** Log on to the CMS as an administrator.

**c** Go to the following location:

*<HP Insight Dynamics\_Install\_Dir>\conf\00*

In this instance, *<HP Insight Dynamics\_Install\_Dir>* is the directory where you installed HP Insight Dynamics.

**d** Open the `HPiOTemplateSoftwarePoliciesConfig.xml` file with a text editor.

**e** Within the `TemplateName` element, specify the name of the HP IO template that you are going to use.

**f** Within the `ServerGroup` element, specify the name of the server group included in the HP IO template. You can have multiple server groups under an HP IO template.

**g** Within the `SoftwarePolicy` element, specify the name of the SA policy that you are going to use. If you want to use multiple policies for the HP IO template, add multiple `SoftwarePolicy` elements and specify policy names within those elements.

**h** Change the `IgnoreonWarning` element to `True` if you want the warnings to be ignored during the SA policy remediation at the time of application deployment and mark the status of the policy remediation as a success. If you retain this element as `False` or remove this element as this is an optional parameter, CSA for Matrix logs the warnings encountered during the policy remediation and marks the status of the policy remediation as a failure.



For each set of software policies remediated, SA maintains a unique job ID. Results of unsuccessful SA jobs are logged in the default log file. You can use the job ID to find the status of the policy execution from the log file.

**i** If you want to use multiple HP IO templates, create additional `TemplateName` elements, specify the server groups, and the SA policy names within the `SoftwarePolicy` element underneath each `ServerGroup` element.

**j** Save the file.

You can now start using the HP IO template to create virtual machines. Application deployment starts automatically and immediately after the virtual machines are created.

#### **4 Test the validity of the HP IO templates and the associated software policies**

CSA for Matrix provides the utility named **Application Management Configuration Check**. This is an OO workflow that you can use to check the validity of the HP IO templates and the associated software policies. This utility verifies if the defined HP IO templates in the configuration file are available in HP IO. The utility also verifies if the software policies defined for each HP IO template are available in SA.

You can access this utility from the HP OO Studio as follows:

- a Log on to the OO Studio.
- b Navigate to **Library > Hewlett-Packard > CSA > Server Automation > Application Management > Utility**.
- c Select the **Utility - Application Management Configuration Check** utility and run the utility. The utility opens the Status Message dialog box prompting for the following optional parameters:
  - **Path for the Application Management Configuration File:** Specify the path to the application management configuration XML file if the `HPIOTemplateSoftwarePoliciesConfig.xml` file is not present at the default location (`<HP_Insight_Dynamics_Install_Dir>\conf\OO`) where `HP_Insight_Dynamics_Install_Dir` signifies the directory where you have installed HP Insight Dynamics.
  - **HP IO Template List:** Specify the HP IO template names that you want the utility to validate. You can leave this parameter blank if you want the utility to validate all the HP IO templates in the application management configuration XML file.



You can specify multiple templates by separating them with two semicolons (;).

After running the utility, you can view the results of the validation of the application management configuration XML file in the *SaAppConf.rst* file present at the following location: `<OO_Install_Directory>\csa4m\logs`. A sample of the validation results in the *SaAppConf.rst* file is given below for your reference.

```
HPIO Template 1 (Valid)
    SA Software Policy 1 (Valid)
    SA Software Policy 2 (Invalid)
HPIO Template 2 (Valid)
    SA Software Policy 2 (Invalid)
    SA Software Policy 3 (Invalid)
```

