# HP Scalable Visualization Array, V2.0 Software Installation Guide

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# About This Document

This document tells you how to install the SVA Software Kit. See the *SVA System Administration Guide* for additional cluster configuration topics.

## 1 Intended Audience

HP Manufacturing and system administrators.

## 2 Typographic Conventions

This document uses the following typographical conventions:

| | |
|---|---|
| `%`, `$`, or `#` | A percent sign represents the C shell system prompt. A dollar sign represents the system prompt for the Bourne, Korn, and POSIX shells. A number sign represents the superuser prompt. |
| *audit*(5) | A manpage. The manpage name is *audit*, and it is located in section 5. |
| `Command` | A command name or qualified command phrase. |
| `Computer output` | Text displayed by the computer. |
| **Ctrl+x** | A key sequence. A sequence such as **Ctrl+x** indicates that you must hold down the key labeled **Ctrl** while you press another key or mouse button. |
| `ENVIRONMENT VARIABLE` | The name of an environment variable, for example, `PATH`. |
| [ERROR NAME] | The name of an error, usually returned in the `errno` variable. |
| **Key** | The name of a keyboard key. **Return** and **Enter** both refer to the same key. |
| **Term** | The defined use of an important word or phrase. |
| **`User input`** | Commands and other text that you type. |
| *`Variable`* | The name of a placeholder in a command, function, or other syntax display that you replace with an actual value. |
| [] | The contents are optional in syntax. If the contents are a list separated by a pipe ( `\|` ), you must choose one of the items. |
| {} | The contents are required in syntax. If the contents are a list separated by a pipe ( `\|` ), you must choose one of the items. |
| ... | The preceding element can be repeated an arbitrary number of times. |
| ⊚ | Indicates the continuation of a code example. |
| `\|` | Separates items in a list of choices. |
| WARNING | A warning calls attention to important information that if not understood or followed will result in personal injury or nonrecoverable system problems. |
| CAUTION | A caution calls attention to important information that if not understood or followed will result in data loss, data corruption, or damage to hardware or software. |
| IMPORTANT | This alert provides essential information to explain a concept or to complete a task. |
| NOTE | A note contains additional information to emphasize or supplement important points of the main text. |

# 3 Related Information

Related documentation is available from links from the online SVA Documentation Library home page. The Documentation Library also includes links to third party documentation available on the Web that is relevant to users of SVA.

# 4 Publishing History

The document printing date and part number indicate the document's current edition. The printing date will change when a new edition is printed. Minor changes may be made at reprint without changing the printing date. The document part number will change when extensive changes are made. Document updates may be issued between editions to correct errors or document product changes. To ensure that you receive the updated or new editions, subscribe to the appropriate product support service. See your HP sales representative for details. You can find the latest version of this document online at:

http://www.docs.hp.com.

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# 1 Installing Software Components

## 1.1 Kit Summary

This section describes the current distribution and setup for the software components of the SVA.

### 1.1.1 Supported Platforms

The following platforms are supported with SVA:

| | |
|---|---|
| Clustering Software | HP XC System Software V3.1 |
| Base Operating System | HP XC System Software V3.1 is compatible with Red Hat Enterprise Linux Advanced Server V4.0 Update 2 |

### 1.1.2 Kit Options

Your system typically comes with HP XC System Software V3.1 and all the SVA software installed.

You received media consisting of an HP XC DVD and an SVA CD. These are typically all you need to do a full installation.

### 1.1.3 Determining Installed HP SVA Software Version

To find out what HP SVA Software you currently have installed, run the following command:

```
% cat /etc/sva-release
```

For example, SVA V1.1 produces the following types of output:

```
HP SVA V1.1-0 200601231630
```

SVA V1.1 Patch Kit 1 produces the following output:

```
HP SVA V1.1.1 200604132111
```

Note that you can ignore the numerical date identifier (`2006...`), which varies with each build.

### 1.1.4 BIOS Requirements

The versions of the installed xw8200, xw8400, xw9300, and DL 140 G3 BIOS or higher are the only supported versions.

For xw9300 systems, the minimum supported BIOS level is 2.05 or higher. Use of older versions of the BIOS results in network problems that prevent the cluster from working properly.

If you need to upgrade for some reason (for example, HP Field Service recommendation), you can find the latest BIOS versions on the HP web site.

### 1.1.5 Installing Online Documentation

You can wait until the cluster is up and running and view the online SVA Documentation Library already installed on all the nodes. The documentation files are in the `/var/www/html/sva` directory. The `/var/www/html` directory is where Apache stores HTML files on Red Hat systems. The documentation can be accessed from any cluster node at `https://nh/sva`. (`nh` is the default name for the head node as specified by HP XC.) If you are trying to access the documentation from outside the cluster, you need to replace `nh` with the full IP name for the head node. Open `index.htm` to view the Table of Contents, which displays all the online books. Most documents are available in `html` and `pdf`.

You can also view the full set of online documentation directly from the SVA CD using a Windows or Linux system. The main navigation page for the Documentation Library is located on the CD at the following location:

`sva/index.htm`

Because all the documentation is contained in a tree of Web-compatible files, you can also copy the tree to any Web server root directory (Windows, UNIX®, or Linux). It can then be viewed from its URL by anyone with access to that Web server.

The SVA Documentation Library is a set of files bundled into a single compressed `tar` file for convenience. You can install the `tar` file manually at any time on an existing Linux or Windows machine; for example, before you set up all the cluster hardware and complete the installation of the cluster software.

1. Mount the SVA CD in the CD-ROM drive on an existing Windows machine or Linux machine (not part of the SVA).
2. Locate the `sva_docs.tar.gz` file, which contains the Documentation Library files in the `root` level of the CD.
3. Follow the instructions for the target system:
   - Linux

     The `/var/www/html` directory is where Apache stores HTML files on Red Hat systems. You can install the files in `/var/www/html/sva`. If you install the Documentation Library files on a system which has Apache running, you can access the documentation from that system at `https://localhost/sva`. Use the `tar` utility to extract and install the Documentation Library.
   - Windows

     Use WinZip to extract the entire tree for the Documentation Library to a local file system on disk, or a Web server `root` directory for viewing from a URL address.
4. In either case, open `index.htm` to view the main navigation window. It lists all the online books, including the *SVA Software Installation Guide*.

## 1.2 Hardware Preparation

Refer to the *HP XC Hardware Preparation Guide* for these and any other hardware preparation requirements.

If your cluster has xw8400 systems with SATA drives, you need to make changes to the BIOS setttings before starting the HP XC installation.

1. Bring up the BIOS Setup by pressing `F10` when booting the system.
2. Select `Storage: Storage Options` from the available menu items.
3. Under `SATA Emulation`, change the entry to `Separate IDE Controller`. Make sure that the Primary and Secondary SATA Controllers are enabled.
4. Enter F10 to Accept.
5. Save and Exit.

If your cluster has DL 140 G3 systems, you need to make one change to the BIOS settings before starting the HP XC installation.

1. Bring up the BIOS Setup by pressing `F10` when booting the system.
2. Select `Advanced` from the available menu options.
3. Disable the `8042 Emulation Support` item.
4. Save and Exit.

## 1.3 Installing HP XC and SVA Licenses

HP ships SVA systems with the software and XC and SVA licenses already installed. The cluster is ready to use.

There are several situations that involve installing licenses:

- Initially installing licenses by HP Manufacturing before shipping to customers.
- Re-installing an SVA Software Kit.
- Installing an SVA Software Kit for the first time on an existing HP XC cluster.
- Upgrading an existing SVA cluster with additional nodes or new versions of the SVA Software Kit.

Contact HP Field Support if you are unable to install or recover a license.

HP SVA and HP XC license management is provided by the industry-standard FLEXlm™ license management utility developed by Macrovision (formerly Globetrotter). See the FLEXlm documentation for information about modifying a license key file. A link to their documentation is included in the SVA Documentation Library.

### 1.3.1 Initial Installation by HP Manufacturing

HP Manufacturing installs and tests XC and SVA customer licenses when they build the cluster. The cluster arrives at the customer site with these licenses installed.

### 1.3.2 Reinstalling an SVA Software Kit

If you are reinstalling an SVA Software Kit, you need the HP XC and SVA licenses that are installed on your cluster when it arrives. Copy the licenses from their installed locations to another machine outside the cluster so you can access them later if needed. They are located on the cluster at:

```
/opt/hptc/etc/license/XC.lic
/opt/sva/etc/license/SVA.lic
```

Alternatively, you can use the HP SVA license key file that was sent to you in an e-mail or printed letter. Save the license information into a file named `SVA.lic`, a sample of which is shown in Example 1-1. Place this file in the appropriate directory during the system configuration process, as described in Section 1.4.3. Create and save this file on another machine, and record the location for use later.

HP XC license information follows a similar process. For details, see the *HP XC Installation Guide*.

**Example 1-1 SVA License File Content**

```
Hewlett Packard Company -- This message in its entirety may be
placed into your license file. Use an ASCII Text Editor to avoid introducing
characters which will invalidate the license file. If you have any problems
installing this license key, contact the parties listed on the associated
license  documentation or web site. SERVER nh ANY VENDOR HPQ USE_SERVER INCREMENT
SVA HPQ 2.0 permanent 8 NOTICE="License \  number=A123GTXH456Y"
SIGN=B340321038E8
```

### 1.3.3 Initial Installation of an SVA Software Kit on an HP XC Cluster

If you are adding SVA to an existing HP XC cluster, use the SVA license key file that was sent to you in an e-mail or printed letter. You need to save the license information into a file named `SVA.lic`, a sample of which is shown in Example 1-1. You must place this file in the appropriate directory during the system configuration process, as described in Section 1.4.3. Create and save this file on another machine, and record the location for use later.

HP XC license information follows a similar process. Details are provided in the *HP XC Installation Guide*.

### 1.3.4 Customer Site Upgrade

If you upgrade your cluster (additional nodes or new versions of SVA software), HP issues an upgrade license. You or HP Field Service append the new license text to the existing `/opt/sva/etc/license/SVA.lic` file.

Check with your HP Representative or HP Field Service if you need information on your type of upgrade license.

## 1.4 Full Software Installation from Scratch

A full software installation means installing the HP XC software and the HP SVA software. A full installation of a small cluster, for example, less than eight nodes, is relatively fast. A full cluster installation takes approximately three hours. A full installation is recommended if your cluster becomes unstable.

The following installation supplements the HP XC installation procedure. See the HP XC documentation for the full installation process. The online SVA Documentation Library has a link to the HP XC documentation set. HP recommends that you have a copy of the HP XC *Installation Guide* on hand; review it before you start the SVA installation.

Keep the HP XC DVD and the SVA CD handy. You also need a copy of your HP XC and SVA licenses. See Section 1.3.

**Note:**

Only the version of the NVIDIA driver that comes with your cluster is supported. Do not upgrade graphic drivers.

### 1.4.1 Initial HP XC Installation

Use the *HP XC Installation Guide: Installing Software on the Head Node* for the first stage of your installation. Depending on your site requirements, also install any additional software required for your cluster as documented in the same *HP XC Installation Guide* section. Once you complete these steps, you are ready to begin the installation of the SVA software on the head node.

### 1.4.2 Optional Remote Graphics Software Notes

HP RGS is an optional package that you can use to display images created on the SVA on a display device that is remote to the cluster. HP RGS requires some additional configuration and installation steps that are not documented in the HP RGS installation instructions. If you plan to install HP RGS, see Section 1.8 for details before you continue with the HP XC and SVA installation. There are additional steps that you must follow during the HP XC and SVA installation.

### 1.4.3 Initial SVA Installation on the Head Node

Follow these steps after completing Section 1.4.1. (See Appendix A (page 21) for a summary of options to several commands used in this section.)

1. Log in as `root` on the head node if you've not already done so.
2. Load the RPMs as follows:
   a. Insert the SVA CD. Alternatively, download the SVA tar file (`sva-fullkit-2.0.0.tar.gz`) from its location to a temporary directory, for example, `/root/temp`.
   b. Open a terminal window using MB3 and selecting *Open Terminal* from the popup menu.
   c. The CD mounts automatically. If it does not, to mount the CD, enter the following:

      ```
      # mount /dev/cdrom
      ```

You may receive a warning that the CD is already mounted. Ignore this message.

Alternatively, if you are using a tar file rather than the SVA CD, open the tar file from its directory (for example, `/root/temp`) using the following command:

```
# tar zxvf sva-fullkit-2.0.0.tar.gz
```

**d.** If you are using the SVA CD, begin loading the RPMs, by entering the following command:

```
# /media/cdrom/load_rpms
```

Depending on the CD/DVD drive, the mounted CD can be `/media/cdrecorder` rather than `/media/cdrom`.

Alternatively, if you are using the SVA tar file rather than the CD, load the RPMs by entering the following command from its directory (for example, `/root/temp`):

```
# ./load_rpms
```

**e.** When prompted, remove the SVA CD (if you are using one) and insert the XC DVD. At this point, additional RPMs are installed from the XC DVD that are not normally installed.

Remove the XC DVD when prompted.

**3.** This step only applies to cases in which the head node is an Intel system (workstation or server) (xw8200, xw8400, DL 140 G3) with a supported NVIDIA graphics card. Reboot the head node. You can do so with the following command:

```
# /sbin/shutdown -r now
```

Once the node reboots, proceed directly to the next step.

**4.** Installing the graphics drivers shuts down the X Server. This makes it difficult to install from the console. To continue the installation conveniently, switch to one of the Linux virtual consoles on the head node using the key sequence `Ctrl+Alt+F#` (where # is 2...6). Switching to one of these virtual consoles lets you log in to the system using a normal terminal-like interface that is unaffected by the X Server state.

**5.** Log in as `root`.

**6.** Execute the installation with the following command:

```
# /opt/sva/kit_contents/2.0.0/install
```

(The `2.0.0` string in the command reflects the SVA version number and changes with each release.)

This install process takes several minutes to complete. As part of starting and stopping the X Server, some services run, which produce error messages, for example, license warnings. You can typically ignore these messages.

**7.** At this point, there are two possibilities for switching back to the head node's X server:

- For workstation head nodes: The system switches back to the head node X Server automatically. You should then switch back to the alternate console, and log out. Switch back to the head node's X Server using `Ctrl+Alt+F7` and log in as root again.
- For server head nodes: Log out of the alternate console. Switch back to the head node's X Server using `Ctrl+Alt+F7`.

8. Put the SVA License Key File in the correct location.

   You should have the license in a back-up location as described in Section 1.3. If you inadvertently lost your license, contact HP Field Support.

   a. Begin this procedure as the `root` user on the head node.
   b. Choose a utility to copy or move the `SVA.lic` file to the `/opt/sva/etc/license` directory on the head node.
   c. Make sure the file permissions are set to allow only `root` to have read and write access:

      ```
      # chmod 644 /opt/sva/etc/license/SVA.lic
      ```

   During the system configuration procedure, the `SVA.lic` file is discovered in the `/opt/sva/etc/license` directory. There is nothing else needed to install the license.

### 1.4.4 Configuring and Imaging the HP XC System

Follow all the steps in the *HP XC Installation Guide: Configuring and Imaging the System* up to but not including the *Run the start_sys Utility to Start the System and Propagate the Golden Image* section. During those steps, be aware of the following:

1. The discovery process asks you for the number of nodes in the cluster and the number of workstation nodes in the cluster. For clusters with only workstations, these two numbers are the same.
2. The switch discovery process takes about ten minutes. When prompted, switch on the nodes without console ports; that is, all the render and display workstations. When prompted, switch off the same nodes, leaving the head node on.
3. There is an additional step needed after finishing the discovery process if the cluster has any xw8400 nodes. This step makes sure that HP XC correctly identifies these systems in its database. Execute the following script command from the head node:

   ```
   # cd /opt/hptc/config/sbin
   # ./modify_node_type "hp workstation xw8200" "HP xw8400 Workstation" <nodelist>
   ```

   `<nodelist>` represents the list of all nodes that are xw8400 nodes. Use the XC `nodelist` format, for example, `n[1-3,5]` represents nodes `n1, n2, n3, n5`. Once you have completed the `modify_node_type` command, continue with installation. Be sure to always list all xw8400 nodes that are on the cluster, even if you have previously run this command on the cluster, for example, if you add more xw8400 nodes to the cluster.

   Make sure you already changed the BIOS settings for xw8400s in Section 1.2.

4. As part of this stage of installation, HP recommends that you configure the external Ethernet devices on the SVA nodes; that is, the external NICs. This is important if you plan to install the optional HP Remote Graphics Software kit (RGS). You will need the IP addresses and the fully-qualified name domains. Refer to the *HP XC Installation Guide* for details on configuring external Ethernet devices.
5. As you work through the *HP XC Installation Guide*: *Respond to Configuration Questions* section, indicate whether you are using a KVM, the names of the display nodes in the SVA, and the names of the HP RGS nodes (if any). This information is needed for the cluster configuration.

Note that you can use the Node Configuration tool to change node type after the installation at any time. See the *HP SVA System Administration Guide* for more information.

6. This step only applies to the installation of the SVA Software Kit on an existing HP XC cluster. This step is needed only if the number of SVA nodes exceeds the maximum number as specified during the `cluster_prep` installation task. Run the following command immediately before the HP XC `cluster_prep` step:

   ```
   # /opt/hptc/sbin/reset_db
   ```

### 1.4.5 Additional SVA Configuration

After you have completed the *Configuring and Imaging* steps as described in Section 1.4.4, follow these SVA-specific steps:

1. Modify the default SLURM partition configuration. This is different than the step in the *HP XC Installation Guide: Finalize the Configuration of Compute Resources*. Make one of two changes to the `/hptc_cluster/slurm/etc/slurm.conf` file, depending on whether you intend to use LSF on the cluster.

   - If you are using SLURM only and not LSF, change `/hptc_cluster/slurm/etc/slurm.conf` as follows:

     ```
     PartitionName=lsf RootOnly=YES Shared=FORCE Nodes=<nodelist>
     ```

     To:

     ```
     PartitionName=lsf Default=yes RootOnly=NO Shared=NO Nodes=<nodelist>
     ```

     Note: Do not include the head node (head node is the highest numbered node) as one of the nodes in the `<nodelist>`.

     You also need to add an entry to the `prolog/epilog` section of the `slurm.conf` file:

     ```
     Epilog=/opt/sva/sbin/sva_epilog.clean
     ```

   - To use LSF, create two partitions, one for visualization jobs and one for LSF jobs. Each of the nodes in the cluster must only be present in one partition. For example, assume a cluster has five nodes in which node 5 is the head node; nodes 1 and 2 are visualization nodes; and nodes 3 and 4 are compute nodes. Change `/hptc_cluster/slurm/etc/slurm.conf` as follows:

     ```
     PartitionName=lsf RootOnly=YES Shared=FORCE Nodes=n[1-5]
     ```

     To:

     ```
     PartitionName=lsf RootOnly=YES Shared=FORCE Nodes=n4
     PartitionName=vis Default=yes RootOnly=NO Shared=NO Nodes=n[1-3]
     ```

     Note: Do not include the head node (head node is the highest numbered node) as one of the nodes in either partition (`lsf` or `vis`).

     In this example, compute nodes that you assign to the `vis` partition are not available for jobs using LSF. The effect in this example is to have a single compute node (3) in the `vis` partition and a single compute node (4) in the `lsf` partition.

     You also need to add an entry to the `prolog/epilog` section of the `slurm.conf` file:

     ```
     Epilog=/opt/sva/sbin/sva_epilog.clean
     ```

2. Set the protections on the `jobacct.log` file using the following command:

```
# chmod a+r /hptc_cluster/slurm/job/jobacct.log
```

3. You must reboot the head node. You can do so with the following command:

   ```
   # /sbin/shutdown -r now
   ```

   A reboot allows a variety of services to restart and use NIS. This is faster than restarting the services manually.

   For workstation head nodes, the Kudzu Hardware Discovery Utility automatically starts during the next reboot. To properly deal with this, press any key when prompted to do so. Then select the *Ignore the device* option. This allows the NVIDIA driver installed by SVA to be used without further interruption.

### 1.4.6 Golden Image the Render/Display Nodes

This process propagates the image from the head node to the render and display nodes in the cluster. Complete the imaging process as documented in the *HP XC Installation Guide: Configuring and Imaging the System*. Begin at the *Run the startsys Utility to Start the System and Propagate the Golden Image* section, with the following exception.

This next step only applies to the specific case of installing the SVA Software Kit on an existing HP XC cluster. Run the following command immediately before you begin the *Run the startsys Utility to Start the System and Propagate the Golden Image* section:

```
# setnetboot --node n[1-8]
```

In this command, `n` represents the default prefix for the cluster. For example, enter `viz[1-8]` assuming you specified `viz` for your cluster prefix at an earlier stage of the installation and have eight visualization nodes to image (not counting the head node).

### 1.4.7 Generating an SVA Site Configuration File

This process is documented in detail in the *SVA System Administration Guide*.

From the head node, enter the following command (requires root privileges):

```
# svaconfigure
```

### 1.4.8 Verifying the HP XC System

See the *HP XC Installation Guide: Verifying the System...* for the steps to run the HP XC Operation Verification Procedure (OVP). Use the OVP to verify that HP XC is installed correctly.

### 1.4.9 Main Installation Is Complete

At this point, you have completed the main parts of the installation of HP XC and SVA. There are some additional verification and configuration steps that are SVA-specific. These are documented in Section 1.6.

## 1.5 Installing the SVA Software Kit on an Existing HP XC Cluster

This section explains how to install the SVA Software Kit for the first time on an existing HP XC cluster; that is, when SVA nodes are fully integrated into a compute cluster running HP XC.

There are several prerequisites to beginning this process:

- You have a fully installed and configured HP XC cluster.
- You physically added and cabled a number of visualization nodes and support hardware to the HP XC cluster. See the HP XC hardware installation documentation available at `www.docs.hp.com`, or contact HP Field Service.
- You powered down the cluster with the exception of the head node, on which you will install the SVA Software Kit.

You must reimage the cluster nodes as part of this process.

There are three possible installation scenarios:

- The SVA nodes are new to the HP XC cluster, and exceed the maximum number of nodes set during the `cluster_prep` step of the HP XC installation.
- The SVA nodes already exist in the HP XC cluster and do not exceed the maximum number of nodes set during the `cluster_prep` steps.
- The SVA nodes are new to the HP XC cluster and do not exceed the maximum node number set during the `cluster_prep` steps.

### 1.5.1 New SVA Nodes Exceeding Maximum Number

The installation process for installing the SVA Software Kit on new nodes in an existing HP XC cluster is similar to installing the SVA Software Kit from scratch as documented in Section 1.4. Follow those steps, noting the following differences:

1. Begin the installation using the instructions in Section 1.4.2.
2. In Section 1.4.4, there is an item that is specific to installing on an existing HP XC cluster.

   This step only applies if you are installing the SVA Software Kit on an existing HP XC cluster. Run the following command immediately before the HP XC `cluster_prep` steps:

   ```
   # /opt/hptc/sbin/reset_db
   ```

3. In Section 1.4.6, there is an item that is specific to installing on an existing HP XC cluster.

   This step only applies if you are installing the SVA Software Kit on an existing HP XC cluster. Run the following command immediately before beginning the *Run the start_sys Utility to Start the System and Propagate the Golden Image* section in the *HP XC Installation Guide*:

   ```
   # setnetboot --node n[1-8]
   ```

   The `n` represents the default prefix for the cluster. For example, enter `viz[1-8]` assuming you specified `viz` for your cluster prefix at an earlier stage of the installation and have eight visualization nodes to image (not counting the head node).

### 1.5.2 SVA Nodes Already Exist in Cluster

This scenario is less complicated. The high level steps are the following:

1. Install the SVA Software Kit from the CD following the instructions starting with Section 1.4.2 and continuing through and including Section 1.4.9.

   When you reach Section 1.4.4, modify its instructions as follows:

**a.** Begin at *Task 7: Run the cluster_config Utility to Configure the System* in the *HP XC Installation Guide: Configuring and Imaging the System* section.

**b.** Refer only to Steps 4 and 5 in Section 1.4.4 of the *SVA Software Installation Guide*.

### 1.5.3 New SVA Nodes Not Exceeding Maximum Number

This scenario is less complicated. The high level steps are the following:

**1.** Install the SVA Software Kit from the CD following the instructions starting with Section 1.4.2 and continuing through and including Section 1.4.9.

When you reach Section 1.4.4, modify its instructions as follows:

**a.** Begin at *Task 5: Run the discover Command to Discover System Components* in the *HP XC Installation Guide: Configuring and Imaging the System* section.

## 1.6 Additional Configuration Tasks

After completing the SVA installation, you typically have several additional tasks to configure your cluster.

**1.** Configure Display Nodes.

**2.** Configure additional Display Surfaces.

**3.** (Optional) Run the SVA OVP.

### 1.6.1 Configure Display Nodes

The initial system configuration done by HP defines one or more Display Surfaces, each of which maps a single display node to a single, corresponding cabled display device. Consequently, all the default Display Surfaces are single tile. In fact, your system may contain xw9300 display nodes, each of which are capable of driving up to four display devices. The xw8200, xw8400, and the DL 140 G3 can drive two display devices.

The Node Configuration Tool lets you map one or two graphics cards in a display node, including both ports, to individual tiles in a display block. It also lets you specify the relative orientation of the tiles that make up the display block. The Node Configuration Tool also lets you change a node role from display to render or vice versa. The tool — along with SVA-specific setup and cabling information for display devices — is documented in detail in the *SVA System Administration Guide*. It's a good idea to review the information there before configuring nodes and Display Surfaces.

To invoke the tool, use the following command from a `root` account:

```
# svaconfigurenode
```

### 1.6.2 Configure Display Surfaces

The initial system configuration done by HP has one or more Display Surfaces, each of which maps a single display node to a single, corresponding cabled display device. Consequently, all the default Display Surfaces are single tile.

To create other named Display Surfaces; for example, Display Surfaces that use the output from multiple display nodes, use the Display Surface Configuration Tool. Use of this tool to create or delete Display Surfaces requires `root` privileges.

The Display Surface Configuration Tool — along with SVA-specific setup and cabling information for display devices — is documented in the *SVA System Administration Guide*, available from the online SVA Documentation Library.

To invoke the Display Surface Configuration Tool, use the following command from a `root` account:

```
# svadisplaysurface
```

The Display Surface Configuration Tool configures Display Surfaces in the Site Configuration File. It interactively prompts for basic information about a Display Surface; for example, its name, and the width and height in tiles. It also asks you to specify which display nodes are associated with each display block in the Display Surface, and then populates the Site Configuration File with the appropriate information.

The Display Surface Configuration Tool also lists the named Display Surfaces currently defined on the cluster. Root privileges are not required for this.

You can re-run the Display Surface Configuration Tool at any time.

### 1.6.3 Running the SVA OVP

If you successfully run the HP XC OVP, you can use the SVA OVP to verify the installation. It runs a series of Chromium demo applications on all the defined Display Surfaces at all the supported resolutions. As each demo appears, press the `Esc` key to continue on to the next demo in the series until the OVP finishes. See the *SVA System Administration Guide* for detailed information on the options for this command.

If you use the X Server on the head node for the DMX Console window, run the following command before running the SVA OVP:

```
# xhost +
```

To start the SVA OVP, enter the following command on the head node:

```
# sva_ovp
```

## 1.7 Upgrading SVA Software on an Existing HP XC Cluster

This section explains how to upgrade SVA Software on an existing HP XC cluster; that is, when upgrading HP XC 3.0 and HP SVA V1.1 to HP XC 3.1 and HP SVA V2.0. The instructions assume that you have not added nodes to the cluster.

You need to follow the *HP XC Installation Guide* instructions for a minor upgrade in the *Upgrading an HP XC System* chapter. HP XC distinguishes between major and minor upgrades; this is a minor upgrade from HP XC 3.0 to HP XC 3.1. Here is a summary of the upgrade process:

1. Work your way through the HP XC upgrade process until you reach the *Minor Upgrade: Upgrade RPMs* section.
2. Complete the `upgraderpms` step. Then unmount the DVD and eject it as described in the *HP XC Installation Guide*.
3. Do not reboot the head node at this point. Instead, complete Steps 1 and 2 only of the SVA installation procedure as described in Section 1.4.3 (page 12) of the *HP SVA Software Installation Guide*.
4. You now continue with the HP XC upgrade procedure in the *HP XC Installation Guide*, starting at Step 5 (Reboot the head node...) in the *Minor Upgrade: Upgrade RPMs* section. Continue up to and including Step 1 (`upgradesys`) in section, *Task 8: Configure the System and Propagate the Golden Image*.
5. Continue with Steps 4 through 7 in Section 1.4.3 (page 12) of the *HP SVA Software Installation Guide*.
6. Continue with Step 2 in section, *Task 8: Configure the System and Propagate the Golden Image* of the *HP XC Installation Guide*, up to but not including the section, *Task 11: Verify the Upgrade*.
7. The HP XC upgrade configuration process made changes to the SLURM partition configuration. You need to modify this configuration so that it works with HP SVA. Follow the instructions described in the *HP SVA Software Installation Guide*, Section 1.4.5 (page 15), Step 1. Note that there is a backup copy of the SVA-compatible SLURM configuration file at `/hptc_cluster/slurm/etc/slurm.conf.bck`. You may want to merge its content with the newly created version created during the upgrade process.

8. You do not need to repeat the post-imaging steps described in the *HP SVA Software Installation Guide*, Section 1.6 (page 18).
9. Verify the upgrade as documented in the *HP XC Installation Guide*, section *Task 11: Verify the Upgrade.*. As part of your verification process, run the SVA OVP, which is documented in the *HP SVA Software Installation Guide*, Section 1.6.3 (page 19).

## 1.8 Installing Remote Graphics Software

If you plan to use RGS on an HP XC cluster, you must do several things in addition to the normal HP RGS installation steps.

1. Install HP RGS on the cluster head node. If you are doing an initial installation of an HP XC cluster, follow the *Installing Third-Party Software* step of the HP XC installation.
2. Follow the normal RGS sender installation instructions.
3. Carry out the HP XC `cluster_config` steps and golden image update procedures. Note the following:
   - You must use `cluster_config` to configure an external NIC on each node on which you want to use RGS.
   - After the `cluster_config` process asks you about display nodes, it asks about remote graphics nodes. Enter here the names of cluster nodes that you want to use with HP RGS. You are also asked if you want to use HP RGS on the head node.
   - You are also asked if you want to continue using HP RGS V3.0 Receivers. The current version of HP RGS is V4.*. V4.* Receivers require a single port opened in the firewall. If you choose to continue using previously installed HP RGS V3.0 Receivers, multiple ports are opened in the firewall. You can use only V4.* Receivers or a mix of V4.* and V3.0 Receivers. The *SVA System Administration Guide* has more information on HP RGS and its use of firewalls.

# A HP SVA Installation Command Options Reference

## A.1 HP SVA Installation Command Options Reference

This appendix documents the options to the `load_rpms` and `install` commands, which are used in Section 1.4.3.

### A.1.1 load_rpms Command

The `load_rpms` command only installs files that are not installed already or over an older version. It's safe to do this more than once.

The following list summarizes the command options.

`--xc=`*<directory>* Takes the RPMs that SVA normally installs from the XC DVD from the specified directory on the hard drive. If they are not present in this directory, this option looks in appropriate subdirectories by assuming the directory is the root of an XC DVD. If the directory is not specified, the XC DVD is used.

`--kernel=`*<directory>* Takes the kernel RPMs that SVA normally installs from the XC DVD from the specified directory on the hard drive. If the directory is specified, the option gets the kernel RPMs either from the specified directory or an appropriate subdirectory by assuming the directory is the root of an XC DVD.

If the directory is not specified, this option gets the RPMs from the *--xc* directory (if that was specified), or the XC DVD.

### A.1.2 install Command

The following list summarizes the command options.

`--verbose` Produces more detailed messages about what is going on during the installation.

`--force` Installs RPMs even if the same version of the RPM is already installed.