

Part Number 313482603

# Shared Virtual Array Administrator

Version 3.1.0

for Linux

Quick Start Guide

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# SYSTEM REQUIREMENTS

Before beginning the installation, you should verify that your site meets the following minimum requirements.

Host hardware:	250MHz Intel-compatible processor with 128MB memory.
Host software:	<ul style="list-style-type: none"><li>• RedHat 7.1</li><li>• Linux Kernel level: 2.4.2, plus a StorageTek-supplied kernel patch</li><li>• Runtime library level: glibc 2.2+</li></ul>
Host disk space:	15MB free space in the directory where the SVAA server will be installed.
SVA subsystem microcode:	<ul style="list-style-type: none"><li>• For 9500 subsystems, E02.04.15.00 or higher.</li><li>• For V960 subsystems, A01.02.24.00 or higher.</li><li>• For V2X subsystems, B01.02.00.00 or higher.</li></ul> <p>For information on the most current microcode level, see the StorageTek Customer Resource Center (CRC) website at: <a href="http://www.support.storagetek.com">www.support.storagetek.com</a>.</p>

## PATCH THE LINUX KERNEL FOR SVA USAGE

The StorageTek-supplied Linux kernel patch fixes a bug in the Linux kernel and also modifies the kernel timeout value as specified in the *V960 Shared Virtual Array Planning* guide. Use the following procedure to install the kernel patch.

**Note:** When the RedHat system was installed, the source for the kernel may also have been installed. If it was not, you must install it from the Linux CD-ROM before continuing.

- 1 Login as `root` to the host system where the SVAA software will be installed.
- 2 Copy the `bin/SVA_2.4.2.patch` file from the SVAA software CD-ROM to the `/usr/src/` directory:

```
cp cdrom_dir/bin/SVA_2.4.2.patch /usr/src
```

- 3 Change to the `/usr/src` directory:

```
cd /usr/src
```

- 4 Copy the kernel source tree:

```
cp -rp linux-2.4.2 linux-2.4.2.orig
```

**Note:** If for some reason the `linux-2.4.2/` directory has been renamed, you must name it back to `linux-2.4.2/` for this patch process.

- 5 Install the kernel patch:

```
patch -p0 < SVA_2.4.2.patch
```

**Note:** This command installs patches against the `linux-2.4.2/` directory only, so you must make sure the directory exists.

6 Change the kernel to reflect your hardware configuration. Use one of the following methods to ensure that SVAA for Linux works with the custom kernel.

- If you are comfortable editing the kernel's `.config` file directly, make the following modifications:

```
CONFIG_SCSI=y
CONFIG_BLK_DEV_SD=y
CONFIG_SD_EXTRA_DEVS=256
CONFIG_SCSI_MULTI_LUN=y
CONFIG_CHR_DEV_SG=y
CONFIG_SCSI_QLOGIC_FC=y
```

- If you would prefer to use the `make` utility to configure the kernel options, perform the following steps:

- Change to the kernel source directory:

```
cd /usr/src/linux-2.4.2
```

- Start the `make` utility:

```
make menuconfig
```

-OR-

```
make xconfig
```

- Select “SCSI support”.

Increase the “Maximum number of SCSI disks that can be loaded as modules” to 256.

Enable “Probe all SCSI LUNs” on each device.

Go back (select EXIT) one level.

- Select “SCSI low-level driver”.

Enable “Qlogic ISP FC SCSI support”.

**Note:** Do not enable “Qlogic QLA 2100 FC SCSI support”.

- 7 Build the kernel following your normal process (for example, make dep; make bzlilo).
- 8 Create a LILO entry (/etc/lilo.conf) to point to the newly created kernel files (that is, /vmlinuz and /System.map).
- 9 Run lilo and reboot the system with the new kernel.

# INSTALLATION

**Note:** SnapShot is automatically installed with SVAA for Linux V3.1.0.

## VERIFY FREE SPACE

In order to complete the installation, you must have the following amount of free space on the Linux host:

- At least 15MB of free space in the file system where you plan to install the SVAA server software (`/opt/storagetek/SVAA3.1.0` is the default directory).
- For a graphical installation, at least 20MB of free space on the mount point defined as `TEMP`. If you have not defined `TEMP`, the Install Shield uses the directory `/usr/tmp` (in which case, you must have at least 20MB of free space on `/usr/tmp`). A graphical installation also requires X Windows; see “Installation Modes” for details.
- For a text-only installation, `TEMP` is not used.

## INSTALLATION MODES

The SVAA V3.1.0 installation can run in two modes: graphical or text-only. The mode is automatically determined based on the presence of the X Windows manager and how your `DISPLAY` environment variable is set. Essentially, the installation is designed to run in graphical mode if the machine to which you are installing SVAA is X Windows-capable, and in text-only mode if the machine is not X Windows capable.

Some details:

- If `DISPLAY` (where the X Windows display will be routed/displayed) is set correctly on your machine, then graphical mode is executed.
- If `DISPLAY` is not set on your machine, then your terminal is assumed to be non-graphics capable, and text-only mode is executed.

- If `DISPLAY` is not set correctly on your machine (that is, your terminal does not match what is specified by `DISPLAY`), then text-only mode is executed.
- If you are using a dummy terminal, in order for text-only mode to execute flawlessly, you must make sure that the `TERM` environment variable is set to match your monitor type and no `DISPLAY` variable is set.

Regardless of mode, the installation outcome is exactly the same; that is, the same files are installed to the same locations.

## GRAPHICAL INSTALLATION

Use the following steps to use the graphical mode to install the SVAA server files on the Linux host. See “Text-only Installation” on page 7 for the text-only mode.

- 1 In an X Windows terminal, log in as `root`.
- 2 Insert the SVAA software CD-ROM in the drive.
- 3 If the Volume Manager is installed, it displays the contents of your CD-ROM. Close this window.
- 4 Open a console or terminal window.
- 5 Change to your CD-ROM:

```
# cd cdrom_dir
```

Where *cdrom\_dir* is the full pathname of your CD-ROM (such as `/cdrom` or `/cdrom0`).

- 6 Start the installation:

```
# ./install
```

- 7 The installation script begins. It displays some messages as it determines your display capabilities, then some extraction notices which you can ignore.

Then the Install Shield begins. Depending on your X Windows configuration, it may display a warning message having to do with fonts; you can ignore this.

- 8 On the StorageTek splash screen, click Next.
- 9 On the Welcome screen, read the information and click Next.
- 10 On the README Information screen, read the information and click Next.
- 11 On the Choose Destination Directory screen, you can accept the default installation directory (`/opt/storagetek/SVAA3.1.0`), or you can enter the full pathname of a different one. Then click Install.

**Note:** If you enter a different directory (including one that is NFS-mounted), `root` must have read/write access to it.

- 12 If the installation directory does not already exist, you are prompted to confirm its creation. Click Yes.
- 13 On the Installation Complete screen, click Finish.
- 14 Remove the CD-ROM from the drive.

The installation is now complete. See “Configure the SVAA Server” on page 11 for instructions on running the `sibconfig` utility to configure the SVAA server.

## TEXT-ONLY INSTALLATION

Use the following steps to use the text-only mode to install the SVAA server files on the Linux host. See “Graphical Installation” on page 6 for the graphical mode.

**Note:** If for some reason you have an X Windows-capable machine but want to run the installation in text-only mode, you can force text-only mode by unsetting the `DISPLAY` variable and setting the `TERM` variable to a dummy terminal (`VT100` or equivalent). See “Installation Modes” on page 5 for details.

- 1 Log in as `root`.
- 2 Insert the SVAA software CD-ROM in the drive.
- 3 Change to your CD-ROM:

```
# cd cdrom_dir
```

Where *cdrom\_dir* is the full pathname of your CD-ROM (such as `/cdrom` or `/cdrom0`).

- 4 Start the installation:

```
# ./install
```

- 5 The installation script begins. It displays some messages as it determines your display capabilities.
- 6 Answer the prompts as instructed below:
  - a. Please hit enter to view README file.  
Use ‘f’, ‘b’ and ‘q’ to forward, rewind and quit the README file respectively...  
?

Press Enter to view the README file which contains important information regarding the SVAA 3.1.0 installation. The file will be displayed through the `more` command.

When the file reaches the end, or you enter `q`, the following message appears.

- b. If you did not get to read all parts of the README file, then manually view the `cdrom_dir/README_SVAA_Linux` file.

Please hit enter to start the actual installation process ...

?

Press Enter to continue with the installation. You can either view the README file on the CD-ROM after the installation is complete, or if you want to view the file now, you can press Ctl-C to exit the installation (you will need to return to Step 4 to restart the installation when you are done with the file).

- c. SVAA for Linux installation directory

Default: `/opt/storagetek/SVAA3.1.0`

Type path or hit enter for default

?

Specify the directory to which you want to install the SVAA server software. Press Enter to accept the default (`/opt/storagetek/SVAA3.1.0`), or enter the full pathname of a different directory and press Enter.

If the directory does not exist you will see the following message as the directory is created:

```
Directory does not exist. Creating directory.
```

If the directory does already exist you will see the following prompt:

```
Warning: install_dir directory already exists  
Do you still want to continue [(y)es/(n)o]
```

Default: (n)o

?

Press **y** to overlay the SVAA server software on top of the existing directory. Press **n** or **Enter** to exit the installation script (you will need to return to Step 4 to restart the installation).

- d. You will see the following messages as the software is installed:

Preparing to untar files to *install\_dir* ...

*file1*

*file2*

...

*filen*

.....

Setting up JRE ...

Installation of SVAA for Linux is now complete (assuming, no abnormal termination occurred).

If successful, then please “cd *install\_dir/bin*” and run *./sibconfig* to configure your SVAA server or refer to the user manual for more details.

## 7 Remove the CD-ROM from the drive.

The installation is now complete. See “Configure the SVAA Server” on page 11 for instructions on running the *sibconfig* utility to configure the SVAA server.

## INSTALL NECESSARY PATCH(ES)

Before continuing to the next procedure, you should install the latest SVAA for Linux patch level. To do so, access the StorageTek Customer Resource Center (CRC) website at [www.support.storagetek.com](http://www.support.storagetek.com) and download any necessary patches, then install them according to the given instructions.

## CONFIGURE THE SVAA SERVER

Use the following steps to configure the SVAA server for your installation.

- 1 In a terminal or console window, change to the installation directory:

```
# cd install_dir
```

By default, *install\_dir* is `/opt/storagetek/SVAA3.1.0`.

- 2 Start the configuration utility:

```
# cd bin
```

```
# ./sibconfig
```

- 3 Answer the prompts as instructed below:

- a. Enter Unique Name for SVAA Server:

```
Default: Server 31
```

```
Type name or hit enter for default
```

```
?
```

Each SVAA server must have a unique name. The default is:

Server31 The following characters are accepted, even as the first one: a to z, A to Z, 0 to 9, \$, @, #, -, \_, +, &, ., and /.

**Note:** You must not have two SVAA servers with the same name, even if they are running on different hardware platforms, as this can have unpredictable results.

- b. Enter Pathname for SVAA:  
Default: /opt/storagetek/SVAA3.1.0  
Type path or hit enter for default  
?

This is the SVAA installation directory. The default is:  
/opt/storagetek/SVAA3.1.0.

Enter a full pathname, or press Enter to accept the default.

- c. Enter Location where Configuration File Stored:  
Default: /opt/storagetek/SVAA3.1.0/Server31/  
Type path or hit enter for default  
?

This is the location where the SVAA server's `config.dat` file will be stored. This file contains the answers to the questions asked by this utility, as well as other configuration information. (Refer to the *SVAA for Linux User's Guide* for a complete explanation of the `config.dat` file.) The default is `install_dir/server_name/` (for example, `/opt/storagetek/SVAA3.1.0/Server31/`).

Enter a full pathname, or press Enter to accept the default.

**Note:** If you will be running multiple SVAA servers on this host, each server must have its own `config.dat` file.

- d. Enter Unique Log File Name:  
Default: /opt/storagetek/SVAA3.1.0/Server31/

Server31Log

Type name or hit enter for default

?

This is the name of the file where the SVAA server will write error messages. Refer to the *SVAA for Linux User's Guide* for a complete explanation of the server log. The default is

*install\_dir/server\_name/server\_nameLog* (for example, /opt/storagetek/SVAA3.1.0/Server31/Server31Log).

Enter the full pathname for the file, or press Enter to accept the default.

**Note:** If you will be running multiple SVAA servers on this host, each server should have its own log file.

- e. The valid security modes are active, warn or none, enter a security mode:

Default is: ACTIVE

Type a security mode or hit enter for default

?

This is the security mode for the SVAA server; the SVAA server will come up in this mode whenever it is started (until you explicitly change the mode). See the *SVAA for Linux User's Guide* for a complete explanation of the security modes. The default is "active" (SVAA security is in full force).

Enter a mode (active, warn, or none), or press Enter to accept the default.

- f. Enter a user group name to be the SVAA administrator group:

Type name or hit enter for the system default admin group name

?

This is the user group authorized to have SVAA administrator privileges. When SVAA security is in “active” mode, all SVAA server administration functions are limited to the user “root” and to users in the SVAA server administrator group. Refer to the *SVAA for Linux User’s Guide* for a complete explanation of the SVAA administrator group.

The group you enter here must be a valid UNIX group, as defined in the `/etc/group` file. The default is the default Linux administrator group.

Enter the group, or press Enter to accept the default.

- g. Enter Unique Server Port:

Default: 41248

Type port number or hit enter for default

?

This is the port number for the SVAA server. The default is 41248.

Enter any integer between 1025 and 64567, or press Enter to accept the default.

**Note:** If you will be running multiple SVAA servers on this host, each server must have its own unique port number.

h. Enable Web Interface? (y/n)

The utility asks if you want to enable the SVAA Web-based interface. The Web-based interface is currently used to generate detailed point-in-time reports of SVA subsystem activity.

Enter *y* if you want to enable the Web-based interface for this SVAA server. Enter *n* if you do not.

i. Enter Unique Web Interface Port:

Default: 65535

Type port number or hit enter for default  
?

This prompt appears if you entered *y* or pressed Enter at the previous prompt. This is the port number by which the SVAA server will communicate with the Web-based interface.

Enter any integer between 1025 and 64567, or press Enter to accept the default.

**Note:** This entry must be different from the Server Port number entered above. Also, if you will be running multiple SVAA servers on this host, this entry must be different from the Server Port number(s) and Web-based interface port number(s) of the other server(s).

j. Add an ECAM device to Server configuration (y/n)?

The utility asks if you want to add an ECAM device to the SVAA server.

Enter *y* if you want to add an ECAM device. Enter *n* if you do not.

- k. Enter device specification:

This prompt appears if you entered `y` or pressed `Enter` at the previous prompt. This is the pathname of an ECAM device which the SVAA server will use for communicating with the SVA subsystem.

Enter the full pathname of the device. It should look something like:

```
/dev/sdb1
```

**Note:** You should have written down the of the device during SVAA pre-installation .

- l. Add another ECAM device (y/n)?

The utility asks you if you want to add another ECAM device to the SVAA server.

Enter `y` if you want to add another ECAM device. Enter `n` if you do not.

- m. Write startup daemon to `/etc/rc.d/rc3.d/` directory (y/n)?

The utility asks you if you want to add scripts to your system that will automatically run at system startup and shutdown.

The startup script, called `/etc/rc.d/rc3.d/S98SVAA`, starts the SVAA server before starting any applications that rely on the SVA subsystem. The shutdown script, called `/etc/rc.d/rc3.d/K98SVAA`, shuts down the SVAA server after shutting down any applications that rely on the SVA subsystem.

Enter `y` if you want to install the scripts now. Enter `n` if you do not.

- n. Server Name: *server\_name*  
Server Home: *installation\_directory\_path*  
Configuration Path: *config.dat\_file\_path*  
Log File Name: *log\_file\_path*  
Security Mode: *mode*  
Admin Group Name: *svaa\_admin\_group*  
Server Port: *server\_port\_number*  
Web Interface: *wbi\_status*  
Web Interface Port: *wbi\_port\_number*  
ECAM device: *device\_path*

Are all values correct (y/n)?

The utility displays all the values you have entered and asks you to confirm them.

Enter *y* if all the values are correct.

Enter *n* if any of the values are not correct, and all the prompts will be displayed again (after first prompting you if you want to overwrite the existing *sibserv* and *sibadmin* files).

SVAA server configuration is now complete.

## **VALIDATE THE SVAA SERVER AND CLI**

Use the following steps to start the SVAA server and the CLI (command line interface) and verify that they are running correctly.

**Note:** The SVAA server requires `localhost` to be defined; if it is unable to resolve `localhost`, the SVAA server will not start. Therefore, if necessary, you should define `localhost` prior to starting the SVAA server.

- 1 Log in as `root`, if you aren't already.
- 2 Bring up a terminal or console window.
- 3 Change to the SVAA server installation directory:

```
# cd install_dir
```

Where *install\_dir* is the pathname of the installation directory you specified during SVAA server configuration (typically `/opt/storagetek/SVAA3.1.0`).

- 4 Start the SVAA server:

```
# cd bin  
# ./sibserv
```

**Note:** Refer to the *SVAA for Linux User's Guide* for a complete explanation of the `sibserv` command and its options.

As soon as you see the message `Running SVAA Server`, proceed to the next step.

- 5 To verify that the server is communicating with the SVA subsystem, open another terminal or console window and type the following:

```
# cd install_dir/bin  
# ./sibadmin querysubsystem
```

The display should appear similar to the following example:

```
SVAA Server: Server31      Date/Time: 01-24-2001 22:20:07 MDT  
SubsysDev  
SubsysProd  
SubsysTest
```

- 6 In this same console or terminal window, start the CLI (command line interface):

```
# ./sibadmin
```

**Note:** Refer to the *SVAA for Linux User's Guide* for a complete explanation of the `sibadmin` command and its options.

- 7 To verify that the CLI is communicating with the SVAA server, type the following at the CLI prompt:

```
SIB> queryversion
```

The display should appear similar to the following example:

```
SVAA Server: Server31    Date/Time: 12-12-2001 17:01:33 MDT
```

```
Shared Virtual Array Administrator 3.1.0 PPFinfo PTF=L2P004J Patch=12 Fix=0  
Issue=695582 for Linux
```

- 8 Shut down the SVAA server:

```
SIB> shutdownserver  
SIB9862D: Halt the SVAA server Server31 (y/n)? y  
SIB9604I: Disconnected with server.
```

- 9 Exit from the CLI:

```
SIB> exit
```

Validation is now complete.

## **SVAA SERVER SECURITY CONSIDERATIONS**

SVAA server administration functions are limited to the user “root” and to users in the SVAA server administrator group (which you have defined with the `sibconfig` utility).

**Note:** SVAA administrator privileges apply only to SVAA server administration functions. In order for any user (including members of the

SVAA administrator group and `root`) to be able to perform functions that modify the SVA subsystem (such as defining devices or forming arrays), the user must have write-access to a privileged ECAM device. Other restrictions apply for specific functions, such as snapping a partition. For complete details, see the following sections in the *SVAA User's Guide*:

- “Chapter 2, Security”—Describes the SVAA server security system.
- “Chapter 5, SVAA CLI Commands”—Describes how to use the CLI and provides detailed reference on all commands.