

# Sun StorEdge™ Instant Image™ 2.0 Installation Guide

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**Sun Microsystems, Inc.**  
901 San Antonio Road  
Palo Alto, CA 94303-4900 USA  
650 960-1300 Fax 650 969-9131

Part No. 806-4004-10  
February 2000, Revision A

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# Sun StorEdge Instant Image 2.0 Software Installation

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The Sun StorEdge™ Instant Image™ Installation Guide describes installation procedures and product considerations for the Sun StorEdge Instant Image software. The Instant Image software is a point-in-time volume copy facility for the Solaris™ operating environment. With Instant Image software, you create a *volume group*: a point-in-time logical volume copy (*shadow*) from the original logical volume (*master*) that you specify. Once the shadow is established, you can read from and write to this shadow volume and the master volume. An Instant Image volume group contains the master and shadow volumes, with an associated *bitmap* volume, used to track differences between the volumes.

The Instant Image software lets you quickly update the shadow volume from the master volume, or restore the master volume from the shadow. The Instant Image software also supports *fast resynchronization*, which enables you to create a new point-in-time volume copy by updating the specified volume with only the changed data.

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# Related Documentation

TABLE 1      Related Documentation

Application	Title	Part Number
man Pages	svadm(1SV)	N/A
	iiadm(1M)	
	ii_control(1M)	
	ii_config(1M)	
	ii_health(1M)	
System Administration	<i>Sun StorEdge Instant Image 2.0 System Administrator's Guide</i>	806-0230-05
Release	<i>Sun StorEdge Instant Image 2.0 Release Notes</i>	806-xxxx

# Reading Instant Image Man Pages

- **Set the MANPATH environment variable to include /usr/opt/SUNWesm/man:**

```
# setenv MANPATH $MANPATH:/usr/opt/SUNWesm/man
```

- **To read the legacy CLI Instant Image iiadm(1M) man page, type:**

```
# man -M /usr/opt/SUNWesm/SUNWii/man iiadm
```

- **To read the Instant Image management service man pages, type:**

```
# man -M /usr/opt/SUNWesm/SUNWiimsu/man manpagename
```

where *manpagename* is *iiadm*, *ii\_control*, *ii\_config*, or *ii\_health*.

# Product Considerations

**TABLE 2** Product Considerations

Item	Consideration
Enable, copy, and update operations	Do not perform Instant Image enable, copy, or update operations on mounted target volumes. Always unmount the target volume before issuing these commands.
Using the CLI for copy and update operations	Always specify the shadow volume name of the volume pair when using the copy or update commands.
Length of the volume names	Master, shadow, and bitmap volume names (including the path name) are currently limited to a maximum of 64 characters.
Creating a shadow volume	<p>It requires three devices:</p> <ol style="list-style-type: none"> <li>1. A master volume to be shadowed.</li> <li>2. A shadow volume where the copy will reside. This volume must be equal to or larger than the master volume.</li> <li>3. An administration bitmap volume file for tracking differences between the shadow and master volumes. This volume must be at least 24 KBytes; 8KBytes for each GByte (or part thereof) of master volume size plus 8KBytes for overhead. For example, to shadow a 3 GByte master volume, the bitmap volume must be <math>8 \text{ KBytes} + (3 * 8 \text{ KBytes}) = 32 \text{ KBytes}</math>.</li> </ol>
Location of the bitmap volume file	<p>The Instant Image management service GUI automatically creates the bitmap volume; refer to the <i>Sun StorEdge Instant Image System Administrator's Guide</i> for more information about the bitmap volume.</p> <p>The bitmap volume cannot be located on the shadow volume. Put the bitmap volume in the root (/) or /usr directories, or on a dedicated filesystem that gets pre-mounted early in the boot sequence. Make sure that the bitmap volume is on a mirrored volume or filesystem.</p>
Shadowing the root device	You cannot make a shadow volume copy of the root device (/).
Shadowing encapsulated volumes	Instant Image software does not support encapsulated volumes; you cannot create a shadow volume of an encapsulated volume.
sd_stats(1M)	Note that the Instant Image installation script also installs storage device software maintenance utilities such as sd_stats(1M). These utilities are for use by Sun Enterprise Services personnel only.

**TABLE 2**    Product Considerations *(Continued)*

Item	Consideration
Dependent master and shadow volumes	<p>In a dependent volume group, when a write operation to the mounted master occurs:</p> <ol style="list-style-type: none"><li>1. The new data is written to the mounted master volume.</li><li>2. The old data is written to the mounted shadow volume.</li></ol> <p>The shadow volume does not contain the new data until you issue an update command.</p>
Disk label and format information	<p>If your shadow volume disk partition has its default cylinder starting at 0 and is the first cylinder of the disk, the Instant Image software overwrites your disk formatting and labeling information during enable and full volume copy operations. To avoid losing your disk formatting and labeling information, exclude that cylinder when partitioning the disk.</p>
Clustered environments	<p>The Sun StorEdge Instant Image software is not supported in a clustered environment.</p>
reboot command	<p>If you need to execute the <code>reboot</code> command after you have established a normal operation with valid data written to the shadow volumes, ensure that all Instant Image volumes are suspended, then use <code>shutdown</code> instead.</p>
MANPATH	<p>Set/extend the <code>MANPATH</code> environment variable to include <code>/usr/opt/SUNWesm/man</code> by entering:</p> <pre># setenv MANPATH /usr/opt/SUNWesm/man</pre>

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## Installation Requirements

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**Note** – The Sun StorEdge Instant Image software is not supported in a clustered environment.

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- Solaris 7 5/99 operating environment or a subsequent compatible version
- Supported Sun hardware platforms:
  - Sun Enterprise™ Server models ES250 and ES450
  - Sun Enterprise Server models ES3x00 through ES10000
- The Instant Image package requires approximately 2 MBytes of disk drive space; supporting packages require approximately 70 MBytes of additional disk space

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# Installing the Instant Image Software

These procedures describe how to perform a clean install of the Instant Image software. The procedures assume you have not previously installed any versions of Instant Image software.

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**Note** – Before you enable and use Instant Image software, you must add the Instant Image volumes to the Storage Volume driver configuration file and reconfigure the driver. Add the volumes after you install Instant Image software. See “Adding Instant Image Volumes to the Storage Volume Driver Configuration File” on page 10.

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## ▼ Mount the CD-ROM

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**Note** – If your CD-ROM is already mounted, go to “Install the Instant Image Software” on page 8.

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1. **Become superuser (root).**
2. **Insert the Instant Image CD into the CD-ROM drive connected to your system.**
3. **Make sure that Volume Manager is running:**

```
# ps -e | grep vold
```

If the Volume Manager is running, output similar to the following is displayed:

```
239 ?    0:00    vold
```

4. **If Volume Manager is not running, start it by typing:**

```
# /etc/init.d/volmgt start
```

**5. Confirm that the CD-ROM is mounted by typing:**

```
# /etc/mount |grep cdrom
```

Output similar to the following is displayed:

```
/cdrom/sun_ultra_1_series_hw_ab on /vol/dev/dsk/c0t6d0/  
sun_ultra_1_series_hw_ab read only/setuid on Tue Jan 12 15:05:57  
1999
```

**6. Mount the CD-ROM:**

```
# /etc/mount -F hsfs -o ro /dev/dsk/device /mnt
```

where *device* is the CD-ROM drive device name (for example, c0t6d0s0).

## ▼ Install the Instant Image Software

- 1. Become superuser (root).**
- 2. If the Instant Image CD is not already in the CD-ROM, insert it into the CD-ROM drive connected to your system.**
- 3. Start the Instant Image installation.**

```
# cd /cdrom/cdrom0  
# ./install_ii
```

**4. The license agreement is displayed; type Y:**

```
This product provides a graphical interface to the monitoring and  
configuring of Instant Image. It is assumed that you agree to  
legal terms explained in  
http://www.sun.com/share/text/SMICopyright.html  
  
DO YOU AGREE TO THE ABOVE TERMS AND WISH TO INSTALL THIS ON TO YOUR  
SYSTEM?  
Do you agree to the above license terms? [yes or no] Y
```



**5. Type `y` in response to all prompts.**

If a package to be installed already exists on your server, make sure you install the most recent version.

When the entire installation finishes, the installation script displays:

```
Installation of Sun StorEdge Instant Image was successful.
```

```
The System must now be rebooted to complete product installation  
An un-install script has been generated to aid in the removal of  
this software.
```

```
The location of the un-install script is:  
/var/tmp/uninstall_ii
```



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**Caution** – Do not reboot at this point. Go to the next step.

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**6. shutdown your server to perform the reboot.**

Enter:

```
shutdown -y -i 6 -g <grace-period>
```

Before enabling and using the Instant Image software, see “Adding Instant Image Volumes to the Storage Volume Driver Configuration File” on page 10.

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# Adding Instant Image Volumes to the Storage Volume Driver Configuration File

Before you can enable and use the Instant Image software, you must add the Instant Image volumes to the Storage Volume (SV) driver configuration file and reconfigure the driver.

You cannot enable and use the Instant Image software on volumes that are not in the SV driver configuration file and enabled by the SV driver. The SV driver provides a simple layer of volume management for the Instant Image software.

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**Tip** – If you want to add devices later, repeat the steps in “To Add Instant Image Volumes” on page 10”.

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## ▼ To Add Instant Image Volumes

1. **Decide which volumes you are going to use with the Instant Image software.**
2. **Using a text editor, add the volumes to the Storage Volume (SV) driver configuration file** `/etc/opt/SUNWspsv/sv.cf`.

This file includes two fields per line for each volume: the resource name field and access mode field. Separate the fields in the file with spaces.

The resource name field contains the name of a raw device for which the SV driver is to be enabled. *It must be the full path to the raw device node and cannot be the block device node.*

The access mode field can be `cache` or `raw`. This field specifies how this device volume is accessed: through the Storage Cache Management module `cache` or directly through the raw device.

The following example shows four master and four shadow devices, two of each type to be accessed directly and two of each type to be cached.

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**Note** – The example file shown shows volume names placed in order in the file: master followed by shadow. This is not required; you can place the volume names in any order.

---

```
# devices c1t3d0s0 to master02 are master volumes
/dev/rdisk/c1t3d0s0 cache
/dev/rdisk/c1t3d0s1 cache
/dev/vx/rdsk/master01 raw
/dev/vx/rdsk/master02 raw
#
# devices c1t3d0s4 to shadow02 are shadow volumes
/dev/rdisk/c1t3d0s4 cache
/dev/rdisk/c1t3d0s5 cache
/dev/vx/rdsk/shadow01 raw
/dev/vx/rdsk/shadow02 raw
```

3. **Save and exit** `/etc/opt/SUNWspsv/sv.cf`.
4. **Use the `svadm(1SV)` utility to reconfigure the SV driver to add the new volumes in the configuration file to the SV layer.**

```
# /usr/opt/SUNWesm/SUNWspsv/sbin/svadm -r
```

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## Starting the Sun StorEdge Management Console

If you have shut your server down and restarted after fully installing Instant Image software (see Step 6 of “Installing the Instant Image Software” on page 7), start the Sun StorEdge™ Management Console (Management Console).

1. **Become superuser (root).**
2. **Start the Management Console. The console window is displayed; see FIGURE 1.**

```
# /usr/opt/SUNWesm/bin/esm_gui &
```

3. **Double-click the server name ('monty' in FIGURE 1).**  
Instant Image is displayed. The tabs are not highlighted.
4. **Click Instant Image.**  
The GUI tabs are highlighted. The Instant Image software is ready for use.

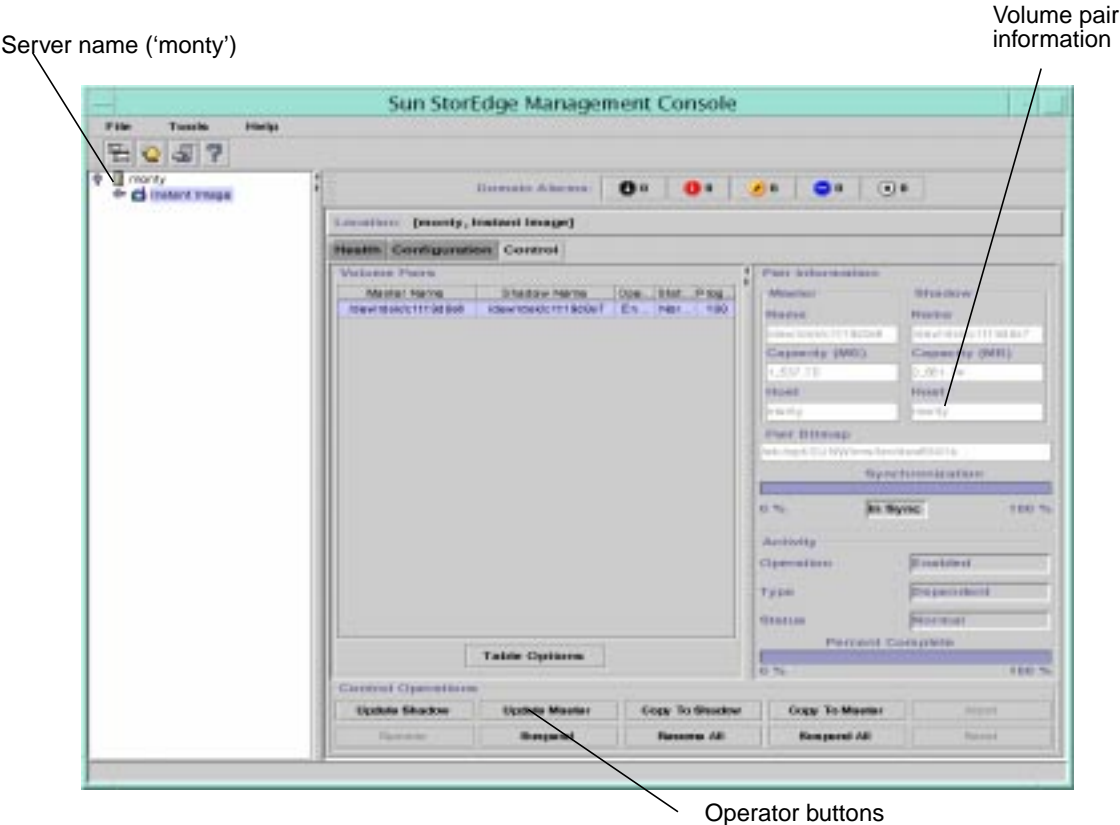


FIGURE 1 Instant Image Control Tab

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# Reinstalling or Upgrading Instant Image Software

This section describes how to reinstall or upgrade Install Instant Image software and its related packages.

## ▼ To Reinstall the Instant Image Management Services SUNWiimsu and SUNWiimsr

1. Become superuser (root).
2. Suspend any currently enabled volume pairs.
  - Using the Management Console, click the Control tab (FIGURE 2), then click the Suspend All button.
  - Using the CLI, type:

```
# /usr/opt/SUNWesm/bin/esm_cli
> cd InstantImage
> control -s -a
```

3. Reinstall the packages according to the steps in “Installing the Instant Image Software” on page 7. Reply yes to all prompts by typing **y**.
4. shutdown your server to perform a reboot.

Enter:

```
shutdown -y -i 6 -g <grace-period>
```

The Instant Image software automatically resumes the suspended volume pairs after you reboot your server.

## ▼ To Upgrade From the Legacy CLI Version (SUNWii)

1. Become superuser (root).
2. Suspend any currently enabled Instant Image volume pairs.

```
# iiadm -s all
```

3. Install the Instant Image software and related packages as described in “Installing the Instant Image Software” on page 7.
4. Make sure that the Instant Image management service packages copy /etc/iitab to /etc/opt/SUNWii/iitab.old.

```
# ls -l /etc/opt/SUNWii/iitab*
```

5. Check the /usr/opt/SUNWesm/sbin/sh\_upgrade file to make sure it includes the enabled volume pairs.

```
# pg /usr/opt/SUNWesm/sbin/sh_upgrade
```

6. Start the Management Console.

```
# /usr/opt/SUNWesm/bin/esm_gui
```

7. Run the upgrade script.

```
# sh /usr/opt/SUNWesm/sbin/sh_upgrade
```

The Instant Image interface shows any currently-enabled volume pairs.

8. shutdown your server to reboot.

Enter:

```
shutdown -y -i 6 -g <grace-period>
```

The Instant Image software automatically resumes the suspended volume pairs after you reboot your server.

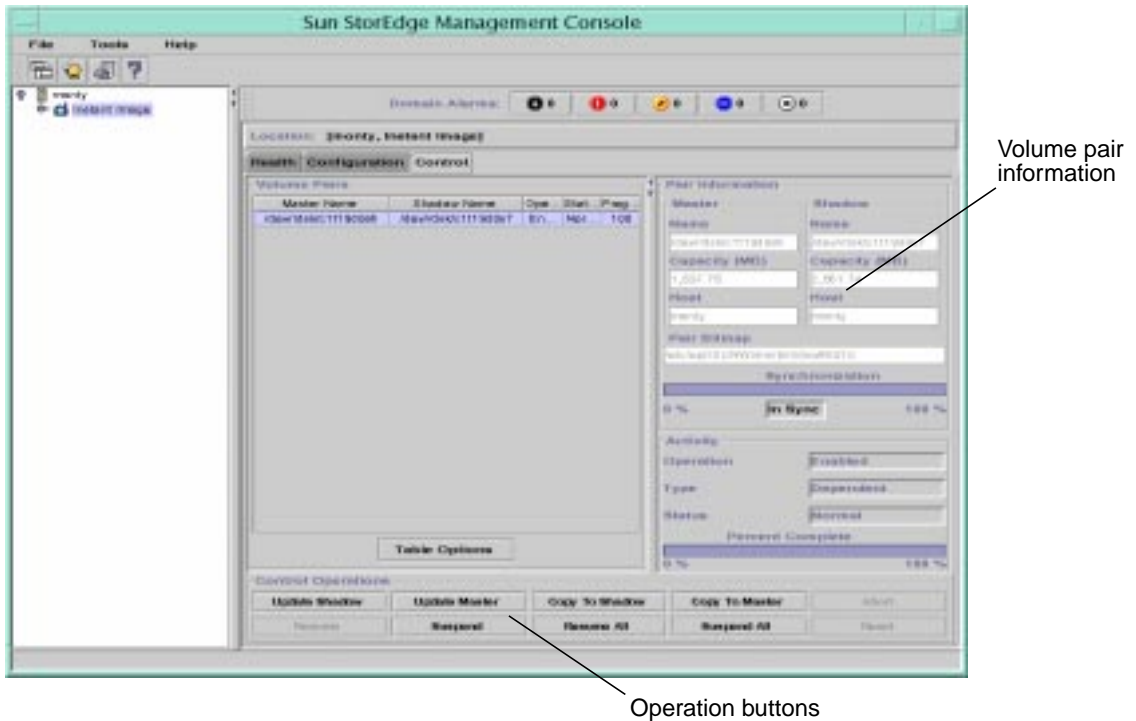


FIGURE 2 Instant Image Control Tab

## Uninstalling and Configuration Files

Bitmap files are created in the `/etc/opt/SUNWesm/SUNWms/bm` directory when Instant Image pairs are created. Therefore, when you uninstall Instant Image, you must disable all Instant Image pairs; otherwise, the bitmap files will not be removed by the uninstall.

If you are removing all management services, you may remove all of their current configuration information by removing the bitmap, persistence, log, and trace files. If you remove the bitmap files without removing the persistence files, you will have pairs configured without associated bitmaps. Persistence files for all management services are kept in the `/var/opt/SUNWesm/mo/persistence` and `/var/opt/SUNWesm/mc/persistence` directories. Log and trace files are in `/var/opt/SUNWesm/log`.

