Chapter 10

SDA Configuration Files

This chapter describes the system directories and files that contain SDA configuration information. These include

- **`/etc/cm/configuration/sda.install`** — This file identifies the SDA resources within a CM-5 system and defines how those resources are allocated among logical devices. It is described in Section 10.1.
- **`/etc/cm/configuration/hardware.install`** — This file describes the hardware resources of a CM-5 system. The SDA portion of this file is described in Section 10.2. See Appendix A for a fuller description of **`hardware.install`**.
- **`/etc/cm/configuration/sda.parameters`** — This file contains hardware descriptions of the SDA's disk drives. See Section 10.3.
- **`/dev`** — This directory contains the names of all logical devices in the SDA system. See Section 10.4.
- **`/etc/exports`** — This file lists the NFS mount-point directories. See Section 10.5.

10.1 Description of sda.install

10.1.1 Creating sda.install

If **`sda.install`** does not already exist, you create an initial version by executing **`sda_install`**.

```
# /usr/etc/sda_install > /etc/cm/configuration/sda.install
```


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This produces a template file that resembles the example shown in Figure 35. This template is organized into three sections: **DISKS**, **SPARES**, and **LOGICAL_DEVICES**.

The first section, **DISKS**, is a table listing all the disks in the SDA system. It identifies the physical location of each disk in terms of the SCN board that controls it. The following parameters are used in this description:

- The **CBS** entry identifies the cabinet, backplane, and slot location of the SCN that controls the corresponding disk. The slot values for SCN boards can be 0, 1, or 2, with the rightmost board assigned 0 and the leftmost board assigned 2.
- The **NI** entry specifies the network address of that drive's SCN board.
- The **Interface** entry refers to the SCSI channel to which the drive is connected. Each SCN board has four SCSI channels under its control, numbered 0–3.
- The **Target** entry refers to one of two disks connected to the channel called out by the **Interface** entry. This can be 0 or 1, corresponding to the two disks in a caddy. The disk closer to the caddy front panel is 0; the other disk is 1.

The example in Figure 35 shows 24 disk drives, all located in backplane 5 of cabinet 0. The SCN boards are at NI addresses 160, 161, and 162.

Figure 36 shows the relationship of the entries in the **DISKS** table to their physical counterparts.

The other two sections in **sda.install**, **SPARES** and **LOGICAL_DEVICES**, are empty in a newly generated file. You edit these sections to tailor SDA resources to meet specific file system storage requirements. Details regarding editing **sda.install** are presented in Section 11.3 of Chapter 11.

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```
DISKS {
  { Id = 0    CBS = (0 5 0)    NI = 160   Interface = 0 Target = 0 }
  { Id = 1    CBS = (0 5 0)    NI = 160   Interface = 1 Target = 0 }
  { Id = 2    CBS = (0 5 0)    NI = 160   Interface = 2 Target = 0 }
  { Id = 3    CBS = (0 5 0)    NI = 160   Interface = 3 Target = 0 }
  { Id = 4    CBS = (0 5 0)    NI = 160   Interface = 0 Target = 1 }
  { Id = 5    CBS = (0 5 0)    NI = 160   Interface = 1 Target = 1 }
  { Id = 6    CBS = (0 5 0)    NI = 160   Interface = 2 Target = 1 }
  { Id = 7    CBS = (0 5 0)    NI = 160   Interface = 3 Target = 1 }
  { Id = 8    CBS = (0 5 1)    NI = 161   Interface = 0 Target = 0 }
  { Id = 9    CBS = (0 5 1)    NI = 161   Interface = 1 Target = 0 }
  { Id = 10   CBS = (0 5 1)    NI = 161   Interface = 2 Target = 0 }
  { Id = 11   CBS = (0 5 1)    NI = 161   Interface = 3 Target = 0 }
  { Id = 12   CBS = (0 5 1)    NI = 161   Interface = 0 Target = 1 }
  { Id = 13   CBS = (0 5 1)    NI = 161   Interface = 1 Target = 1 }
  { Id = 14   CBS = (0 5 1)    NI = 161   Interface = 2 Target = 1 }
  { Id = 15   CBS = (0 5 1)    NI = 161   Interface = 3 Target = 1 }
  { Id = 16   CBS = (0 5 2)    NI = 162   Interface = 0 Target = 0 }
  { Id = 17   CBS = (0 5 2)    NI = 162   Interface = 1 Target = 0 }
  { Id = 18   CBS = (0 5 2)    NI = 162   Interface = 2 Target = 0 }
  { Id = 19   CBS = (0 5 2)    NI = 162   Interface = 3 Target = 0 }
  { Id = 20   CBS = (0 5 2)    NI = 162   Interface = 0 Target = 1 }
  { Id = 21   CBS = (0 5 2)    NI = 162   Interface = 1 Target = 1 }
  { Id = 22   CBS = (0 5 2)    NI = 162   Interface = 2 Target = 1 }
  { Id = 23   CBS = (0 5 2)    NI = 162   Interface = 3 Target = 1 }
}

SPARES {
 { }
}

LOGICAL_DEVICES {

   { }
}
```

Figure 35. A sample `sda_install` template.

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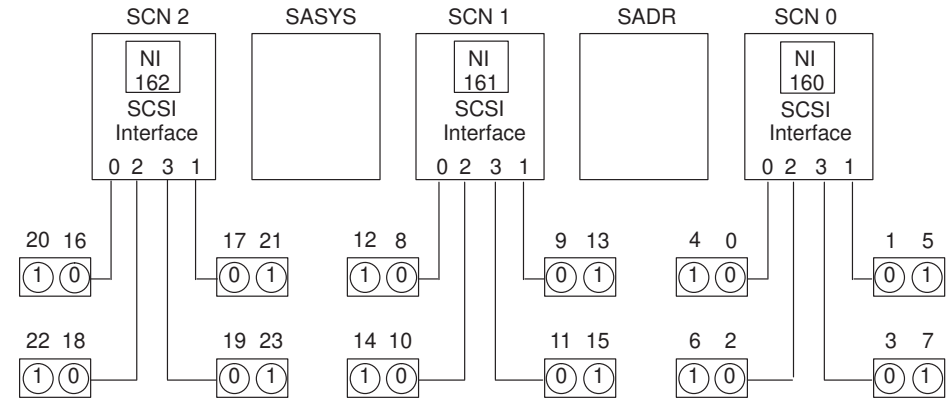


```
DISKS {
  { Id = 0    CBS = (0 5 0)    NI = 160   Interface = 0 Target = 0 }
  { Id = 1    CBS = (0 5 0)    NI = 160   Interface = 1 Target = 0 }
  { Id = 2    CBS = (0 5 0)    NI = 160   Interface = 2 Target = 0 }
  { Id = 3    CBS = (0 5 0)    NI = 160   Interface = 3 Target = 0 }
  { Id = 4    CBS = (0 5 0)    NI = 160   Interface = 0 Target = 1 }
  { Id = 5    CBS = (0 5 0)    NI = 160   Interface = 1 Target = 1 }
  { Id = 6    CBS = (0 5 0)    NI = 160   Interface = 2 Target = 1 }
  { Id = 7    CBS = (0 5 0)    NI = 160   Interface = 3 Target = 1 }
  { Id = 8    CBS = (0 5 1)    NI = 161   Interface = 0 Target = 0 }
  { Id = 9    CBS = (0 5 1)    NI = 161   Interface = 1 Target = 0 }
  { Id = 10   CBS = (0 5 1)    NI = 161   Interface = 2 Target = 0 }
  { Id = 11   CBS = (0 5 1)    NI = 161   Interface = 3 Target = 0 }
  { Id = 12   CBS = (0 5 1)    NI = 161   Interface = 0 Target = 1 }
  { Id = 13   CBS = (0 5 1)    NI = 161   Interface = 1 Target = 1 }
  { Id = 14   CBS = (0 5 1)    NI = 161   Interface = 2 Target = 1 }
  { Id = 15   CBS = (0 5 1)    NI = 161   Interface = 3 Target = 1 }
  { Id = 16   CBS = (0 5 2)    NI = 162   Interface = 0 Target = 0 }
  { Id = 17   CBS = (0 5 2)    NI = 162   Interface = 1 Target = 0 }
  { Id = 18   CBS = (0 5 2)    NI = 162   Interface = 2 Target = 0 }
  { Id = 19   CBS = (0 5 2)    NI = 162   Interface = 3 Target = 0 }
  { Id = 20   CBS = (0 5 2)    NI = 162   Interface = 0 Target = 1 }
  { Id = 21   CBS = (0 5 2)    NI = 162   Interface = 1 Target = 1 }
  { Id = 22   CBS = (0 5 2)    NI = 162   Interface = 2 Target = 1 }
  { Id = 23   CBS = (0 5 2)    NI = 162   Interface = 3 Target = 1 }
}
```

NOTES:

1. Disks within caddies are numbered 0 and 1, with 0 closer to the SCSI cable connector.
2. The number above each disk is the disk's ID, as listed in the **DISKS** section.

Figure 36. `sda.install` DISKS section vs. physical disk organization.

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10.2 hardware.install

The **/etc/cm/configuration/hardware.install** file ordinarily contains entries that specify the hosts for **cmsa-server** and **jtagserver**. These entries have the following form:

JTAG_SERVER = *"jtagserver_hostname"*
CMSA_SERVER = *"cmsa-server_hostname"*

If these entries are not in **hardware.install**, they can be set at the UNIX prompt using **setenv**:

% **setenv JTAG_SERVER** *jtagserver_hostname*
% **setenv CMSA_SERVER** *cmsa-server_hostname*

The **/etc/cm/configuration/hardware.install** file defines the hardware for an SDA file system in a section labeled **IO_Backplane *N***, where ***N*** is the number of the backplane being defined. This data structure specifies the circuit boards residing within that backplane, namely, SASYS (system), SCN (control), and SADR (DR interface).

For example, if backplane 0 contains an SASYS, SADR, and three SCN boards, it would be represented as follows:

```
IO_Backplane 0
    {
      SADR    0
      SASYS   0
      SCN     0-2
    }
```

The **SADR** and **SASYS** entries are always **0**. The SCN entry can be **0**, **0-1**, or **0-2**.

See Appendixes A and B for a full description of **hardware.install**.

10.3 sda.parameters

The **/etc/cm/configuration/sda.parameters** file, which describes certain parameters of the disk drives used by the SDA, is used by the **set-config** (**sc**) command.

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sda.parameters is identical for every system, regardless of the system's particular configuration. It is created at the factory and need never be edited by a system administrator. If the operating system reports that it cannot find **sda.parameters**, notify your Thinking Machines Customer Support representative for assistance in restoring the file.

10.4 /dev/sda*N*a

All logical devices must be defined in **/dev** with names having the form **sda***N***a** (**rsda***N***a** for raw special devices), where *N* is an integer that corresponds to the device's relative position in the **LOGICAL_DEVICES** section of **sda.install**. The first logical device listed is named **sda1a**, the second is **sda2a**, and so forth. (**sda0a** is reserved for internal development use.)

Ordinarily, CM-5 software installation scripts include **/dev/MAKEDEV**. This is a shell script that automatically generates a full complement of logical device names, **sda1a** through **sda8a**. Unless logical devices are deleted from **/dev** at some point following installation, all logical devices that might be created will be defined in **/dev** by default.

10.5 /etc/exports

Mount-point directories must be defined in the **/etc/exports** file for all SDA file systems. **/etc/exports** resides on the IOCP.

The basic format for an **/etc/exports** entry is

/*mount_point options*

where *mount_point* is the mount-point directory for a file system. In addition, any standard NFS access and usage options can be included with the mount-point directory entry.

/etc/exports entries can be created by hand or you can specify the contents of this file using command-line arguments to **/usr/etc/exportfs**. This command makes the local SDA file systems available to NFS clients (including partition managers) over the network. Refer to the **exportfs**(8) manual page for details.

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