iiop

Tricord ES5000 Motherboard host adapter driver

Description

iiop is the boot-time loadable driver (BTLD) for Tricord ES5000 Motherboards. Use **iiop** on machines configured with these SCSI controller boards:

Intelligent I/O Processor Board (IIOP)	2-bus
Enhanced IIOP with PowerRAID (EIIOP)	2-bus
Intelligent Storage Subsystem (ISS) with PowerRAID	2 or 4-bus

iiop directly supports:

PowerFrame 30/40
PowerFrame 300/400
PowerFrame ES3000/4000/5000

Refer to the *SCO Hardware Compatibility Handbook* to determine the support status of your host adapter, or contact your system supplier.

IIOP/EIIOP SCSI subsystem

The IIOP/EIIOP manages two SCSI buses, numbered 0 and 1. On each SCSI bus, the IIOP itself reserves ID 0; therefore, SCSI IDs 1 through 7 can be used for devices. One IIOP/EIIOP can support a maximum of 14 SCSI devices. The IIOP/EIIOP driver can support a maximum of 2 IIOPs/EIIOPs (numbered 0 and 1) and therefore a maximum of 28 SCSI devices. An additional IIOP or EIIOP can be added to your system by configuring the additional board with the EISA Configuration Utility. The IIOP/EIIOP driver will automatically recognize the new board when the system is booted. You cannot mix IIOPs and EIIOPs in the same machine. If you are installing two IIOP/EIIOPs in a machine, they must have the same firmware revision number. IIOP/EIIOPs and ISSs cannot co-exist in the same machine.

ISS SCSI subsystem

The ISS manages two or four SCSI buses, depending on the model. These buses are numbered 0 and 1 or 0, 1, 2 and 3 respectively. On each SCSI bus, the ISS itself reserves ID 0; therefore, SCSI IDs 1 through 7 can be used for devices. The maximum number of ISSs that can be configured into your ES3000/4000/5000 depends on the number of available system slots. Additional ISS boards can be added to your system using the EISA configuration utility. The ISS driver will automatically recognize the new board when the system is booted. Multiple ISSs in the same machine must have the same firmware revision number. The firmware revision can be determined by booting the PowerRAID diskette. IIOP/EIIOPs and ISSs cannot co-exist in the same machine.

Using the iiop BTLD diskette

The BTLD diskette is used to link the IIOP/EIIOP/ISS driver into the SCO OpenServer kernel during installation.

The default configuration expected on a Tricord PowerFrame is a hard disk configured on SCSI controller 0, bus 0, with SCSI ID 1. Mirroring of the boot drive is allowed if you have an EIIOP or ISS SCSI controller. Check your hardware manuals and the *Release Notes* for more information.

To install using the BTLD:

1. Familiarize yourself with installation procedure in the *SCO OpenServer Handbook*.
2. If you want to mirror your boot drive, boot the system using the PowerRAID Administrator diskette and create a mirrored boot drive. Installation on logical drives is allowed. Logical identifier 0 will always represent the boot drive.
3. The installation device (cartridge tape or CD-ROM) may be configured on a secondary controller such as an Adaptec 2740. The BIOS for these controllers must be disabled using the EISA configuration utility. Do not put hard drives on a secondary controller as the kernel will get confused about the boot controller and panic the system. You can use tapes and CD-ROMs on a secondary controller without any problem.
4. Insert the boot diskette and reboot the machine.
5. At the boot prompt (Boot:) type **link** and press **<**Enter**>**.
6. When prompted, enter the package name type **iiop** and any other package you need to link at boot-time, and press ⟨Esc⟩, regardless of which SCSI controller is present.
7. Follow the installation instructions.

Fresh installation

A fresh installation of SCO OpenServer™ Release 5 is the only installation type supported by this BTLD. If you are upgrading from a SCO® UNIX® Release 3.2v4 system to SCO OpenServer Release 5 and you want to take advantage of the new High Throughput File System (HTFS), you must back up your filesystems and restore them to the new filesystems once created. If you are currently using the U/FT RAID 1 product, refer to “Upgrading U/FT RAID 1 mirrors” (page 000).

If you want to retain your current AFS or EAFS filesystems, you can move your hard drives intact to your SCO OpenServer Release 5 system. The following procedure works for physical drives or logical drives created with the PowerRAID utility:

1. Create configuration entries for your drive(s) under SCO OpenServer Release 5 using the **mkdev** utility **hd_iiop**. The first time the utility is run, an entry is created in the file */etc/conf/cf.d/mscsi*. *Do not* create these entries by editing the *mscsi* file. You must use **mkdev hd_iiop**.
2. Relink the kernel, and reboot the system.
3. Now run **mkdev hd_iiop** for the second time to create a device node for the drive. At the prompt to continue, answer **y**.

   You now see the **fdisk** menu.
4. There should already be a partition table on your hard disk, so enter **q**.

   You will be prompted to create a division table.
5. There should already be a division table defined for this drive, so answer **y** to this question and the division table will be displayed on the system console. Name the divisions that have filesystems on them. Do not create new filesystems on any divisions that contain valid data. After naming the divisions, enter **q** to quit. Install the division table by entering **i** at the next menu.
6. Installing the division table creates block and character device nodes in */dev* for your divisions. You can now create filesystem mount entries in */etc/default/filesys* by running the **mkdev fs** utility or the **Filesystem Manager**.

Using the Software Manager after a BTLD installation

We recommend that you not install using the **Software Manager** after the BTLD installation. If you use the **Software Manager**, your kernel relink will fail, and you will need to follow the steps below. You will not be able to remove the driver subsequently.

When you see the message:

```
Driver <driver name> is already installed.
Do you want to overwrite the installed driver (note: it will
not be backed up)?"
```

Answer **no** for each driver in the Tricord package. If you do not, you cannot relink the kernel.

If the kernel relink fails:

1. Switch to another multiscreen.
2. Enter:

   cp /var/opt/K/SCO/OS_drivers/perm_save_dir/tpic/space.c /etc/conf/pack.d/pic/space.c.
3. Switch to the original multiscreen to proceed with the installation.
4. Type **r** to retry the kernel link and finish the installation.

Upgrading U/FT RAID 1 mirrors

The U/FT RAID 1 product is not supported under SCO OpenServer. SCO now provides the **Virtual Disk Manager**, which includes the functionality of U/FT RAID. The virtual disk system is incompatible with disk divisions created with **divvy**, meaning that existing filesystems cannot be directly used with the virtual disk product. If you have filesystem data that resides on a U/FT mirror and you intend to restore the data to a virtual disk RAID device, save the filesystem data to a backup device and restore it to the virtual disk RAID after it is created.

SCSI configuration viewing utility

The **rview** utility provides a visual representation of SCSI devices attached to the SCSI controller. To run **rview**:

/usr/bin/rview

Adding SCSI devices

The SCO OpenServer Release 5 BTLD diskette contains modified **mkdev** scripts for configuring SCSI devices on a Tricord SCSI controller. Use **mkdev hd_iiop** for configuring disk devices, **mkdev tape_iiop** for configuring tape devices, and **mkdev cdrom_iiop** for configuring CD-ROM devices. These **mkdev** scripts use the SCSI configuration viewing utility (**rview**) to display SCSI devices for selection.

Kernel message logging daemon (imsd)

This release of the BTLD includes a message logging daemon, **imsd**. This daemon provides the following major functions:

- generic, high speed, kernel message logging
- Management Console remote shutdown (for systems configured with an Intelligent Management Subsystem)

imsd starts when the system enters multiuser mode. If, for any reason, this daemon is killed when in multiuser mode, restart it by entering:

/bin/sh /etc/idrc.d/ims

Remote console feature

For systems configured with an Intelligent Management Subsystem, the Management Console software supports a remote console window. All output to the console appears on this Management Console window. The last 4KB of console output are buffered by the Intelligent Management Processor and are available when the remote console window is brought up.

The remote console window also supports limited functionality for issuing shell commands. Since the window emulates a dumb terminal, no UNIX commands requiring ANSI terminal support can be successfully issued (for example **vi**). Since this interface provides a direct pipeline into console input and output, system administrators with security concerns might want to disallow any input from this Management Console window.

Both input and output to this window are configurable by modifying variables in the file */etc/conf/pack.d/ims/space.c* according to the following bit defines, and then relinking the kernel:

`IMS_REMOTE_CON_KIN 1 /* Bit 0 */`

If set to a 1 (default), kernel input is enabled. If set to a 0, kernel input is disabled.

`IMS_REMOTE_CON_KOUT 2 /* Bit 1 */`

If set to a 2 (default), all kernel output is forwarded to the Management Console. This includes all system error messages. If set to 0, no output generated by the kernel will be forwarded to the Management Console.

`IMS_REMOTE_CON_UIN 4 /* Bit 2 */`

If set to a 4 (default), all input from the Management Console will be forwarded to the operating system for processing. Since this is the mechanism for logging into the operating system from the Management Console, setting this to 0 disables the issuing of all administration commands.

`IMS_REMOTE_CON_UOUT 8 /* Bit 3 */`

If set to a 8 (default), all console output originating from the operating system will be forwarded to the remote Management Console. If set to 0, all process-level console output will not be sent to the management console.

The remote console window also supports an option for local echo. A suggested setting for local echo is “off” if running the debugger and “on” when not in the debugger.

Configuring the iiop driver

You can configure the **iiop** driver using entries in */etc/conf/cf.d/mdevice* and */etc/conf/sdevice.d/iiop*. See *mdevice*(F) and *sdevice*(F). Changes to these files will only take effect if the kernel is relinked using **link_unix**(ADM) and the machine rebooted.

Configure **iiop** driver-specific characteristics by editing the */etc/conf/pack.d/iiop/space.c* file.

Boot time configuration of SCSI

Use the **bootstring**(HW) parameters to override the default hardware configuration information. Of special interest are the **adapter=** parameter that specifies information for the host adapter card that plugs into or is part of the motherboard, and the ***periph=*** parameter that specifies information about the host adapter being used by one of the generic peripheral interfaces (**Sdsk**, **Srom**, or **Stp**).

ioctl commands

The **iiop** driver supports all standard SCSI ioctls that are defined in the <*sys/scsicmd.h*> header file and documented on the **scsi**(HW) manual page.

Diagnostics

See **messages**(M) for general information about kernel error messages, including a list of generic device driver errors.

Files

/usr/include/sys/scsicmd.h
SCSI interface header files

See also

boot(HW), **link_unix**(ADM), **mdevice**(F), **mkdev**(ADM), **sconf**(ADM), **scsi**(HW), **sdevice**(F)

Chapter 16, "Adding SCSI host adapters and peripherals" in the *SCO OpenServer Handbook*
SCO OpenServer *System Administration Guide*