Lucent Technologies
Bell Labs Innovations

585-215-877
Comcode 108501883
Issue 2
January 2000

CentreVu® *Sun*® *Enterprise*™ 3500 Computer Connectivity Diagram

Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions, warnings, and instructions marked on the equipment.
- Never push objects of any kind through openings in the equipment as they may touch dangerous voltage points or short out components that could result in fire or electric shock.
- Refer servicing of equipment to qualified personnel.

To protect both yourself and the equipment, observe the following precautions:

Item	Problem	Precaution
Wrist or foot strap	ESD	Wear a conductive wrist strap or foot strap when handling printed circuit boards.
Cover panels	System damage and overheating	Re-install all cabinet cover panels after performing any service work on the system.
Card cage slot filler panels	System damage and overheating	Make sure all empty board slots have a filler panel installed.

System Precautions

Wear antistatic wrist straps when handling any magnetic storage devices, CPU/Memory+ boards, or other printed circuit boards.

The *Enterprise* 3500 computer has an auto-sensing power supply using nominal input voltage of 100-240 Volts AC. Ensure that the voltage and frequency of the power outlet to be used matches the electrical rating labels on the equipment.

Sun products are designed to work with single-phase power systems having a grounded neutral conductor under safety precautions. To reduce the risk of electrical shock, do not plug *Sun* products into another type of power source. Contact your facilities manager or qualified electrician if you are unsure what type of power is supplied to your building.

The Enterprise 3500 should be powered by a properly-grounded, non-switched, dedicated 15-amp circuit.

Each of the following items requires access (by way of a separate power cord): *Enterprise* 3500 computer, external peripherals, and monitor.

Warning - DO NOT make mechanical or electrical modifications to the cabinet. Sun Microsystems® is not responsible for regulatory compliance of modified cabinets.

Tools Required

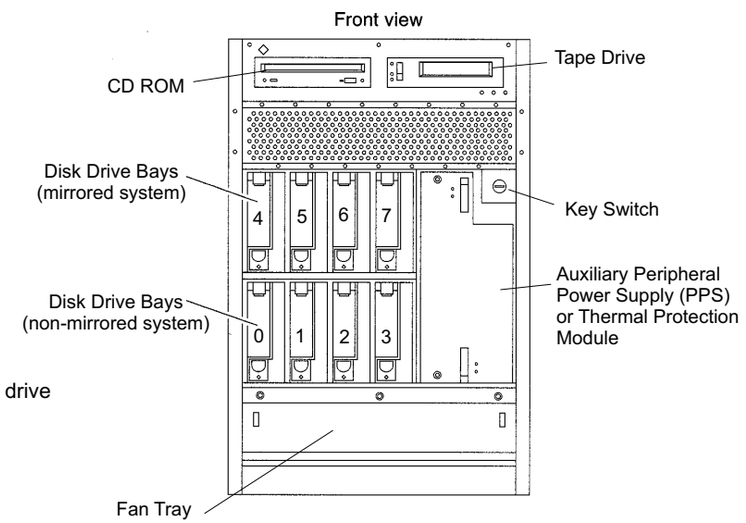
This list represents the minimum of tools and test equipment you will need:

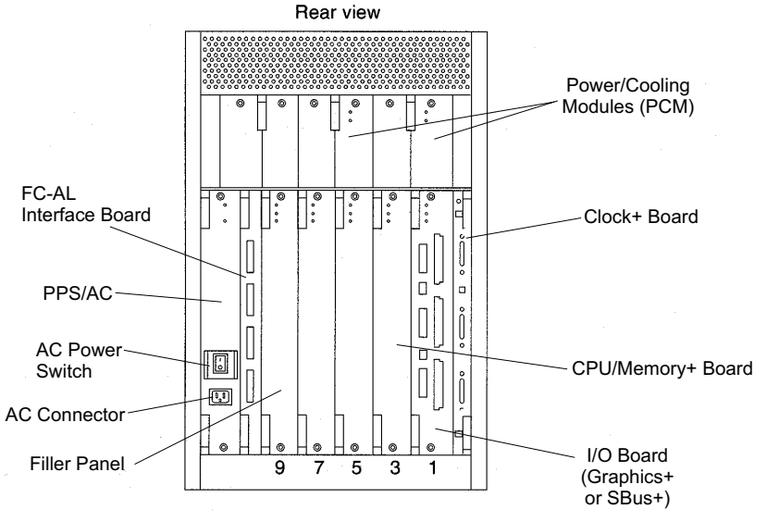
- Screwdriver, *Phillips*® #2
- Screwdriver, *Phillips* #1
- Grounding wrist strap
- Needlenose pliers
- Hex driver, 3/32

Minimum Configuration

The minimum configuration for the computer is:

- Power/cooling modules (PCMs) or PCM filler panels
- Fan tray
- Clock+ board
- CPU/Memory+ board (with UltraSPARC™ II CPU modules)
- Main memory
- I/O board, either a Graphics+ I/O board or an SBus+ I/O board
- Fiber Channel-Arbitrated Loop (FC-AL) interface board
- Board filler panels for any unpopulated board slots
- Peripheral power supply (PPS) w/AC power sequencer
- Auxiliary PPS or thermal protection module (TPM)
- Media tray for removable media, including CD-ROM drive and tape drive





The slot directly above a CPU/Memory+ board or I/O Board must contain a PCM, because the fans in the PCM are the only source of cooling air for the board slot.

Internal Options

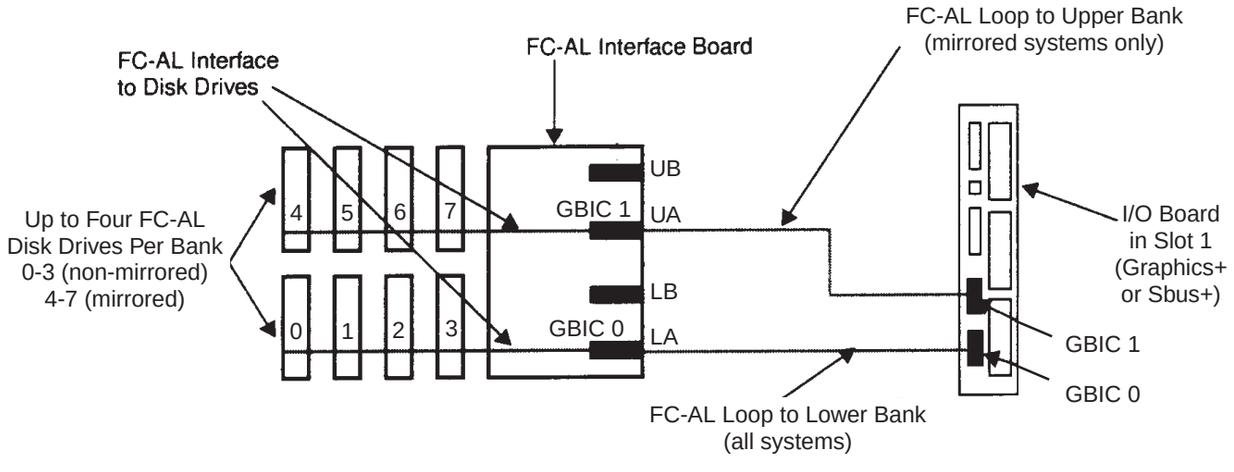
Option	Quantity	Comments
CPU/Memory+ board and I/O boards	5 total per system	Each slot can accept a CPU/Memory+ or I/O board (Graphics+ or SBus+). Combinations can vary. Since slot 1 connects to the onboard SCSI devices, however, this slot should be reserved for the first I/O board. One system board becomes the system master automatically. Jumper changes are not needed.
UltraSPARC II CPU modules	8 per system	There may be 0-2 modules on each CPU/Memory+ board.
Memory modules	0, 8, or 16 SIMMs per CPU/Memory+ board	SIMM sizes are 32, 128, or 256 Mbytes. Do not mix sizes within the same bank. Add 8 SIMMs at a time. Install SIMMs in all bank 0 sockets first on each CPU/Memory+ board, from the lowest slot to the highest. Once bank 0 is full, install remaining SIMMs in bank 1 sockets in the same order.
SBus cards	11-to-12 per system	There may be 0-3 cards per SBus+ I/O board, or 0-2 cards per Graphics+ I/O board.
Media tray	CD-ROM drive and tape drive	The media tray holds removable-media drives only. One *Sun* CD-ROM drive and one tape drive is standard equipment.
FC-AL interface board	1 per system	.
Disk drives	4 disks max non-mirrored; 8 disks max mirrored	Each bank can hold 4 disk drives. For a non-mirrored system, install disks in the bottom bank only from left to right, starting with bay 0 (the farthest bay to the left as you face the front of the system is bay 0). NOTE: Bay 0 is reserved for the boot disk. Install disks in top bank from left to right only when using disk mirroring.

Fiber Channel Disk Cabling

The following diagram shows the overall fiber channel cable connectivity between the FC-AL interface board and an I/O board. Use this diagram when installing the fiber channel cables. For a non-mirrored system, you would install only one cable, the lower cable. For a mirrored system, you would install both cables.

Warning: Plastic dust caps on the ends of the fiber cables must remain intact until ready for installation. Ensure that the fiber-optic cable minimum bend radius rule (1.0 inch) is observed while handling the cables.

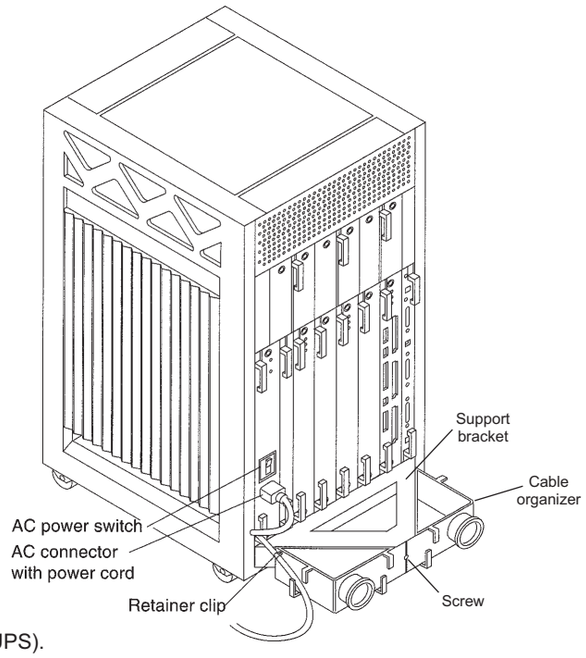
Caution: For proper *UNIX* disk drive naming, the FC-AL interface board LA port must be connected to fiber cable 0 (port A GBIC) and the FC-AL interface board UA port must be connected to fiber cable 1 (port B GBIC) on the I/O board.



Installing the Fiber Cable Organizer and AC Power Cord

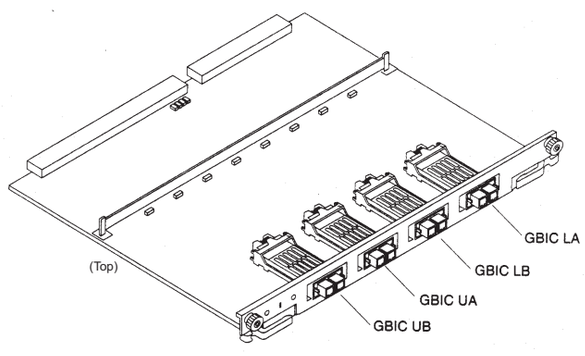
Use the fiber cable organizer to route the fiber-optic cable to connect the interface board and the I/O board. A 2-meter cable is required when utilizing the internal FC-AL disk drives. The cable organizer can help prevent damage to the fiber-optic cable by ensuring the 1.0 inch minimum bend radius rule is observed. The kit includes two organizer sections and one screw.

1. Remove the screw securing the power cord retainer clip to the support bracket at the rear of the system.
2. Orient one of the fiber cable organizer sections with the spool facing toward you. Set the hooks on the back of the organizer into the corresponding cutouts on the right side of the support bracket. The top of the brace should be flush with the top of the support bracket. The organizer will extend below the bracket.
3. Secure the organizer by pushing it outward along the support bracket until the snap at the rear of the organizer clicks audibly into place.
4. Install the left spool brace by repeating steps 2 and 3.
5. Using the screw included in the kit, fasten the spool braces to the support bracket through the center-front cutout formed when both braces are in place.
6. Remount the retainer clip through the hex nut at the notch on the side of the organizer.
7. Set the retainer clip screw into the hex nut.
8. Unlock and open the front door of the computer.
9. Locate the key switch in the upper right corner, insert the key, and turn the key switch to the standby (O) position.
10. Turn the AC power switch on the back of the computer off.
11. Connect the female end of the power cord to the AC connector.
12. Route the power cord through the power cord retainer clip on the cable organizer.
13. Connect the power cord to a grounded outlet (dedicated 15-amp circuit or a UPS).



Connecting a Fiber Cable to the FC-AL Interface Board

Internal FC-AL disk drives require an interface board to communicate to an I/O board. This figure identifies the GBIC modules on the FC-AL interface board, and the table identifies the GBIC associated with each disk drive. The GBIC modules are preinstalled from the factory. Though the figure shows a GBIC module in every position, only GBIC modules in positions LA and UA are used.



Warning: Plastic dust caps on the ends of the fiber cables must remain intact until ready for installation. Ensure that the fiber-optic cable minimum bend radius rule (1.0 inch) is observed while handling the cables.

GBIC Controllers for Disk Drive Ports

Disk Drives	Drive Port	GBIC Name and Location
0, 1, 2, 3	A	GBIC LA (Lower Bank) Default for all systems
0, 1, 2, 3,	B	GBIC LB (Lower Bank) (not used)
4, 5, 6, 7	A	GBIC UA (Upper Bank) Used for mirrored systems
4, 5, 6, 7	B	GBIC UB (Upper Bank) (not used)

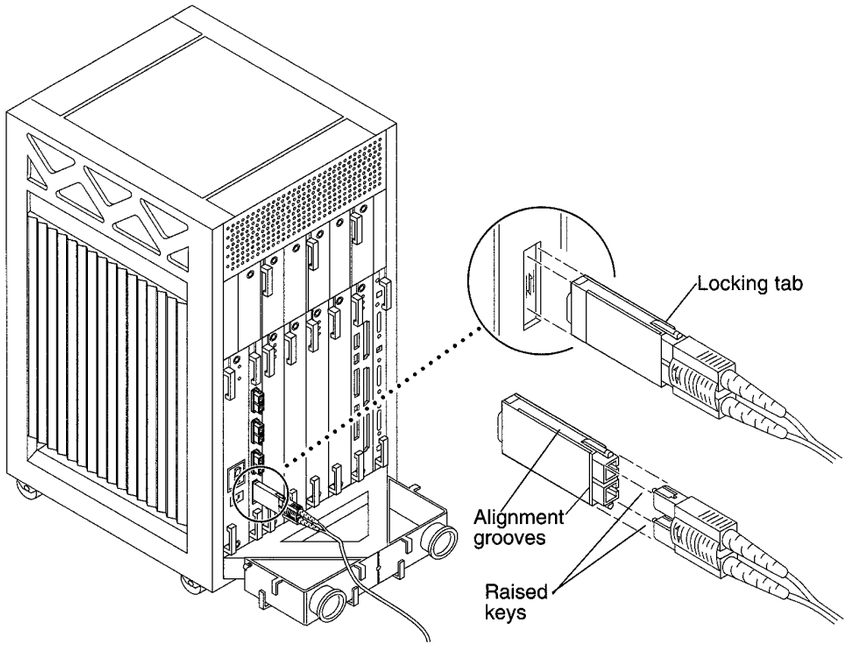
Note: Disk bay 0 must be reserved for the boot disk.

Wrapping the Fiber Cable on the Organizer

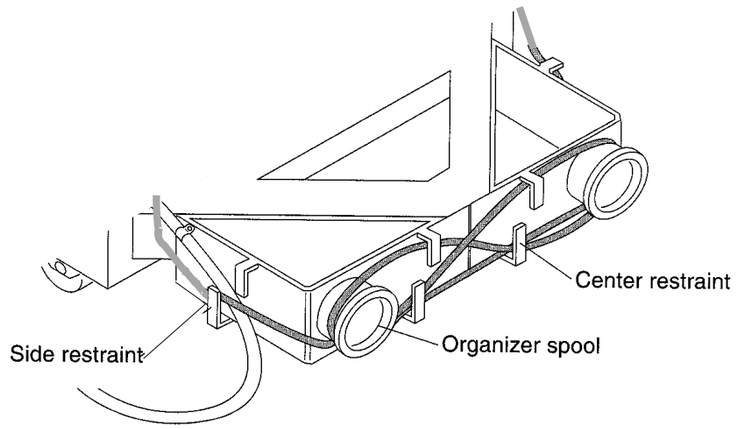
Warning: Plastic dust caps on the ends of the fiber cables must remain intact until ready for installation. Ensure that the fiber-optic cable minimum bend radius rule (1.0 inch) is observed while handling the cables.

To ensure that the fiber optic cable minimum bend radius rule (1.0 inch) is observed, use this procedure to wrap the cable around the spool organizer.

1. Remove the two plastic caps that cover the cable connector on the GBIC module(s). The GBIC modules are preinstalled from the factory.
2. Remove the plastic cap covering one end of the fiber cable.

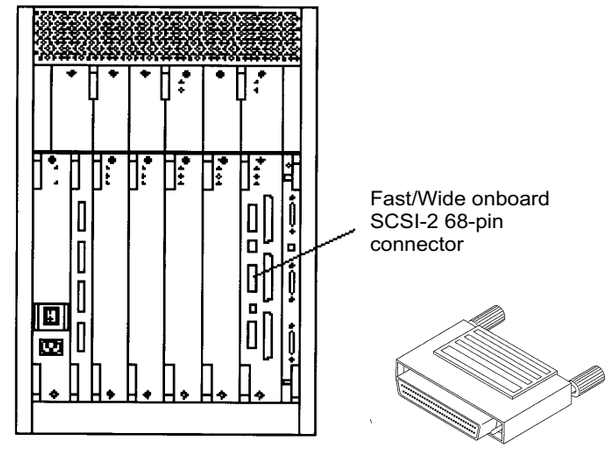


3. Connect that end of the fiber cable into the GBIC module installed on the FC-AL interface board.
4. Route the fiber cable down toward the bottom of the system, placing it through the left side restraints on the organizer.
5. Using a “figure 8” pattern, wrap the cable around the bottom of the left spool and then up and around the right spool, threading the cable through the center restraints on the organizer.
6. Repeat step 5 until the cable is the desired length, finishing on the right side. Thread the cable through the right side restraints and connect it to the I/O board as described below.



Attaching the SCSI Terminator

The SCSI connector on the I/O board in slot 1 of any *Enterprise* 3500 computer must be terminated if not used for another purpose. This SCSI Bus connects to the internal CD-ROM drive and the internal tape drive. The SCSI bus on an I/O board in any other slot must be terminated only if SCSI devices are connected to that board. A SCSI port can be used to connect an external tape drive for data migration.

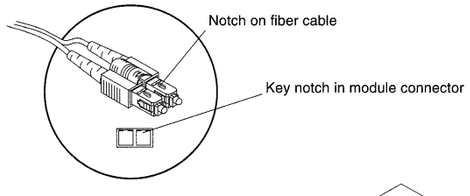


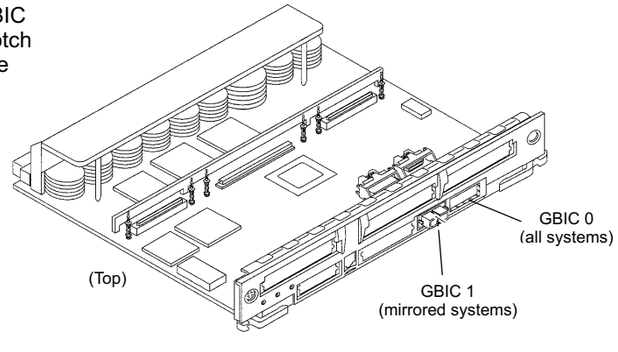
Note: The SCSI terminator is packaged with the fiber channel cable in a plastic bag.

Connecting the Fiber Cable to the I/O Board

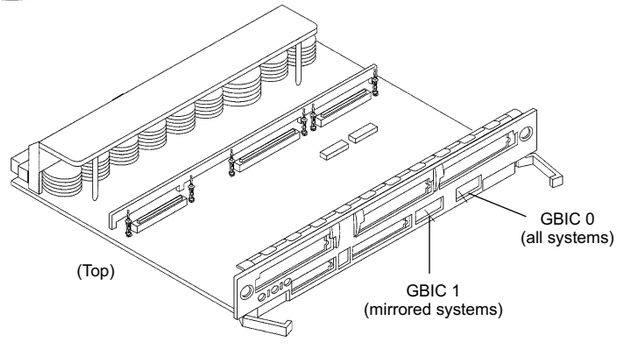
Warning: Plastic dust caps on the ends of the fiber cables must remain intact until ready for installation. Ensure that the fiber-optic cable minimum bend radius rule (1.0 inch) is observed while handling the cables.

1. Remove the two plastic caps that cover the cable connector on the GBIC module.
2. Remove the plastic cap covering the other end of the fiber cable.
3. Connect that end of the fiber cable into the GBIC module installed on the I/O board. Align the notch in the cable connector with the key notch in the module connector.





Graphics+ I/O Board

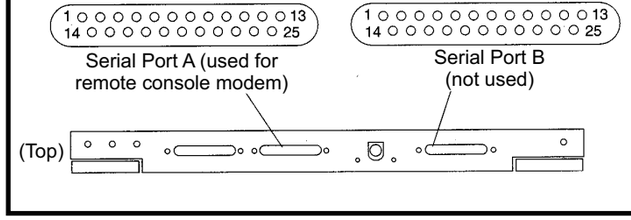


SBus+ I/O Board

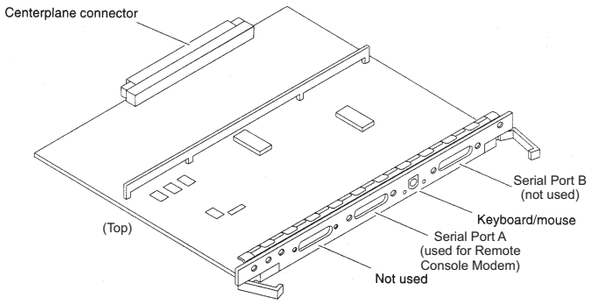
Connector Pinouts

Serial Port A and B Connector Pinouts

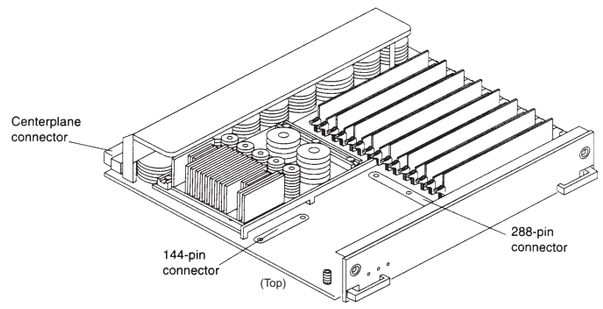
		1				1	
	14	2	TXDA		14	2	TXDB
DBA	15	3	RXDA	DBB	15	3	RXDB
	16	4	RTSA		16	4	RTSB
DDA	17	5	CTSA	DDB	17	5	CTSB
	18	6	DSRA		18	6	DSRB
	19	7	GND		19	7	GND
DTRA	20	8	DCDA	DTRB	20	8	DCDB
	21	9			21	9	
	22	10			22	10	
	23	11			23	11	
DAA	24	12		DAB	24	12	
	25	13			25	13	



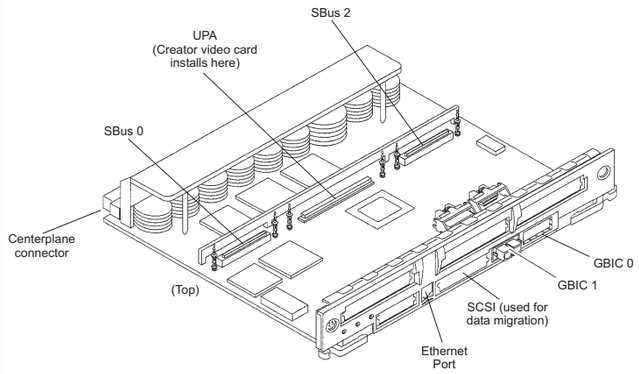
Clock+ Board



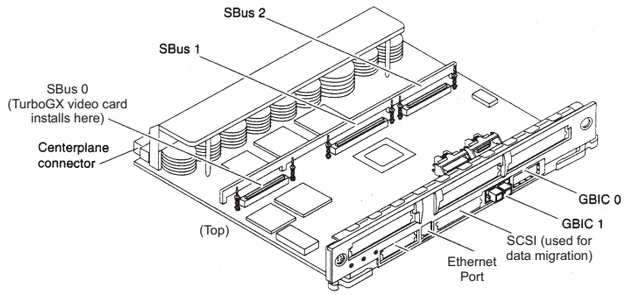
CPU/Memory+ Board

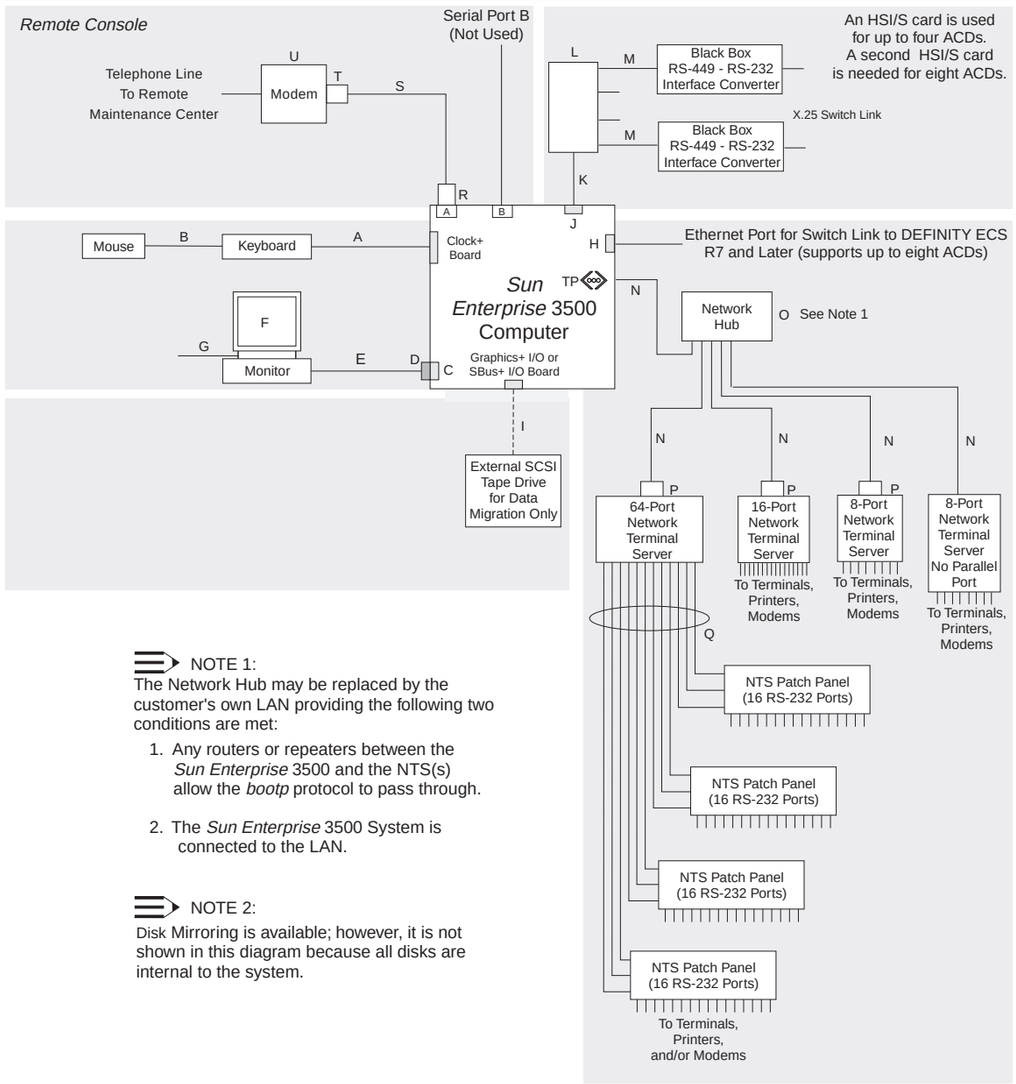


Graphics+ I/O Board



SBus+ I/O Board





NOTE 1:
The Network Hub may be replaced by the customer's own LAN providing the following two conditions are met:

1. Any routers or repeaters between the *Sun Enterprise* 3500 and the NTS(s) allow the *bootp* protocol to pass through.
2. The *Sun Enterprise* 3500 System is connected to the LAN.

NOTE 2:
Disk Mirroring is available; however, it is not shown in this diagram because all disks are internal to the system.

Connectivity Diagram and Parts List

Connectivity Diagram Call Out	Comcode, or Part of Comcode	Vendor Part Number	Description
A*	407361815	F530-2154-xx	Keyboard extender cable (15 feet, 4 meters)
B*	108361767†	370-1586-xx	Mouse with cable
C*	NA† 108361767†	595-3217-xx 596-2522-xx	Turbo GX+ video card (Sbus+ I/O port 0), or Creator video card (Graphics+ I/O port 1)
D*	108361767†	F130-3034-xx	13W3 9-pin to 25-pin adapter
E*	407361807	F530-2020-xx	Monitor extender cable (15 feet, 4 meters)
F*	108361767†	X7126	17-inch monitor
G*	108361767†	F180-1179-xx	Monitor AC power cord
H*	407068337	595-2724-xx	FSBE SBus SCSI card
I*	407579986	F530-2115-xx	SCSI cable, 50-to-68 pin (for migration only)
J*	408128239	X1145	HSI/S Card
K*		530-1685-xx Rev 52	HSI/S Cable (10 feet, 3 meters)
L*		540-2191	HSI/S patch panel
M	407086818	EDN37J-0010-MM	RS-449 cable (10 feet, 3 meters)
N	407086826	ANIXTER #143987	Category 5 UTP cable (10 feet, 3 meters)
O	407086735	AT-MR820T	*CentreCOM*® 10Base-T hub
P	407086859	AT-210S	*CentreCOM* 10Base-T transceiver
Q	407068329	460-093-900 Rev 2	PBX champ cable for 64-Port NTS
R	846362754	ED3P00170G-1306	DB25-to-RJ45 ACU modem adapter
S	846983039		Modular cable (10 feet, 3 meters)
T	846362770	ED3P00170G-1308	RJ45-to-DB25 remote console adapter
U	407633999 Varies	Model 839 Model 3910	*Sportster*® 33.6 remote console modem *Comsphere*® 3910 remote console modem

* *Sun Microsystems* provides maintenance sparing for these parts..
† This comcode is a bundle that includes the processor, peripherals, and so on, and is not orderable for maintenance spares..