

5ESS[®] Switch
Very Compact Digital Exchange (VCDX)
User's Guide

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The CTAM center is staffed 24 hours a day, 7 days a week.

Acknowledgment

Developed by Lucent Technologies Customer Training and Information Products.

1. ABOUT THIS INFORMATION PRODUCT

1.1 Purpose

This 5ESS[®] Switch Very Compact Digital Exchange (VCDX) User's Guide is designed to act as an information source to assist office personnel in understanding and maintaining the VCDX switch. This guide contains descriptive material and procedures necessary to prompt routine and corrective maintenance, provisioning, and switch administration.

1.2 Update Information

Lucent is changing its terminology for "generic program" and "Broadcast Warning Message" to "software release" and "software update." This document employs the new terminology except in those situations where screen displays and Input/Output (I/O) messages still include the term BWM. For the purpose of clarity and to avoid confusion, BWM is shown in these screen displays and I/O messages and is included in the text describing them.

This 5ESS[®] switch document may contain references to the 5ESS[®] switch, the 5ESS[®]-2000 switch, and the 5ESS[®] AnyMedia switch. The official name of the product has been changed back to the 5ESS[®] switch. The documentation will not be totally reissued to change these references. Instead, the changes will be made over time, as technical changes to the document are required. In the interim, assume that any reference to the 5ESS[®]-2000 switch or the 5ESS[®] AnyMedia switch is also applicable to the 5ESS[®] switch. It should be noted that this name change may not have been carried forward into software-influenced items such as input and output messages, master control center screens, and recent change/verify screens.

In accordance with the 5ESS[®] Switch Software Support Plan, the 5E11 software release is rated Discontinued Availability (DA) as of November 13, 1999. The information supporting 5E11 and earlier has been removed from this information product.

If you are supporting offices that use a software release prior to 5E12 and you have a need for the information that has been removed, retain an earlier copy of the CD-ROM.

As of March 18, 1999, Bellcore officially changed its name to Telcordia Technologies. In this information product, the Bellcore name is used only to identify items that were produced under the Bellcore name. Exceptions may exist in software-influenced elements such as input/output messages, master control screens, and recent change/verify screens. Where these elements are shown, there may be references to the Bellcore name until such time as they are changed in the software code.

The 235-120-110, 5ESS[®] Switch Very Compact Digital Exchange (VCDX) Reference Manual has been integrated into this information product to make it more user friendly. With the release of the 5E14 software release the 235-120-110 is no longer available as a separate information product.

This information product has been reissued (Issue 6.00) to reflect editorial changes and to include information associated with the 5E14 software release.

1.3 Guide Organization

This user's guide contains the following chapters:

- **CHAPTER 1 — ABOUT THIS INFORMATION PRODUCT:** Contains an introduction to 235-120-120, 5ESS[®] Switch Very Compact Digital Exchange (VCDX) User's Guide.
- **CHAPTER 2 — 5ESS[®] SWITCH VERY COMPACT DIGITAL EXCHANGE:** Provides an overview of the VCDX switch including terminal interfaces and VCDX specific MCC screens.

- **CHAPTER 3 — ADMINISTRATIVE WORKSTATION:** Presents procedures used to maintain the AW.
- **CHAPTER 4 — ROUTINE MAINTENANCE:** Provides routine administrative and maintenance procedures, such as software updates, that are performed on a regularly scheduled basis.
- **CHAPTER 5 — CORRECTIVE MAINTENANCE:** Provides maintenance procedures for software and hardware that need to be performed when conditions warrant intervention to restore the switch to proper operation.
- **CHAPTER 6 — SYSTEM RECOVERY:** Provides the necessary procedures for recovering switch operation after a fault.
- **CHAPTER 7 — GROWTH AND DEGROWTH:** Provides general information concerning the overall growth process for an switch.
- **APPENDIX 1 — SUN[®] CONSOLE/MASTER CONTROL CENTER (MCC) TERMINAL SETTINGS:** Provides a table listing the correct terminal settings for the Sun[®] and MCC terminals.
- **APPENDIX 2 — RECEIVE-ONLY PRINTER (ROP) SETTINGS:** Provides a configuration printout that illustrates the correct settings for the ROP.
- **APPENDIX 3 — PROCESSOR RECOVERY MESSAGES:** Provides the necessary procedures for system recovery.
- **APPENDIX 4 — 5E11 ADMINISTRATIVE WORKSTATION (AW) 2.1GB to 4.2GB DISK CONVERSION:** Provides the necessary procedures to configure the 5E11 AW disks in preparation for a 5E11 to 5E12 software release retrofit.
- **APPENDIX 5 — 5E11 TO 5E12 EMULATOR AND Sun[®] OS RETROFIT:** Provides the necessary procedures to perform a software release retrofit from 5E11 to 5E12.
- **APPENDIX 6 — 5E12 VCDX SWITCH TO 5ESS[®] SWITCH CONVERSION PROCESS GUIDELINES:** This appendix covers the process of converting a 5E12 software release VCDX switch to a 5ESS[®] switch.
- **APPENDIX 7 — 5E12 ADMINISTRATIVE WORKSTATION (AW) MEMORY GROWTH:** Provides the procedures to install and configure 64 Megabytes (Mb) of additional dynamic random access memory (DRAM) into the AW. This procedure is a requirement for all VCDX offices prior to the retrofit from 5E12 to 5E13.
- **APPENDIX 8 — 5E12 TO 5E13 EMULATOR AND Sun[®] OS RETROFIT:** Provides the necessary procedures to perform a software release retrofit from 5E12 to 5E13.
- **APPENDIX 9 — ADMINISTRATIVE WORKSTATION (AW) SERIAL PARALLEL INTERFACE CONTROLLER (SPC) GROWTH:** Provides the necessary procedures to install and configure the second Serial Parallel Interface Controller (SPC) card into the AW.
- **APPENDIX 10 — ADMINISTRATIVE WORKSTATION (AW) SERIAL ASYNCHRONOUS INTERFACE (SunSAI/P) BOARD GROWTH:** Provides the necessary procedures to install and configure the Serial Asynchronous Interface (SunSAI/P) board into the AW.

1.4 Distribution

This manual is distributed by the Lucent Technologies Customer Information Center (CIC) in Indianapolis, Indiana. Most operating telephone companies should place orders through their documentation coordinator. Some companies may allow customers to order directly from the CIC, however, the majority do not. Companies that use documentation coordinators to manage their orders receive a significant discount. If you do not know the

name/number of the documentation coordinator for your company, you may call **1-888-LUCENT-8 (1-888-582-3688)** to obtain their name and telephone number.

Customers not represented by a documentation coordinator and Lucent employees can order the documentation for the VCDX switch directly from the CIC. Proper billing information must be provided.

Mail these orders to the following address:

Lucent Technologies
Customer Information Center Order Entry
2855 N. Franklin Road
Indianapolis, IN 46219

Orders may also be called in on **1-888-LUCENT-8 (1-888-582-3688)** or faxed in on **1-800-566-9568**.

1.5 Technical Assistance

Technical assistance for the VCDX switch can be obtained by calling the North American Regional Technical Assistance Center (NARTAC) at **1-800-225-RTAC**. This telephone number is monitored 24 hours a day, 7 days a week. During regular business hours, your call will be answered by your local NARTAC. Outside of normal business hours, all calls will be answered at a centralized technical assistance center where service-affecting problems will be dispatched immediately to your local NARTAC. All other problems will be referred to your local NARTAC on the next regular business day.

1.6 Spares Exchange Service

The purpose of the Spares Exchange Service (SES) is to provide customers with immediate replacement of plug-in materials while minimizing total customer spares inventory. This includes both 5ESS[®] switch circuit packs and Sun[®] Workstation and peripherals (DAT drives, hard disks) found to be defective. To utilize this service, customers must obtain an account number. The regional sales office for the customer's area will help in the completion of an Account Requisition form for this purpose.

To place an order for replacement of materials through SES call: **1-800-325-9890**.

Customers will be requested to provide the following information:

- Account number
- Customer "Ship To" address
- Item description, comcode number if applicable (see Table 1-1), and quantity
- Desired "On Job" date
- Shipping Instructions
- Caller name and number
- Pertinent billing and accounting information (purchase order number, etc.)

See Table 1-1 for the comcode number of the product that needs to be replaced. The workstation vintage (70, 110, 170) can be found on the back of the workstation. The workstation will be replaced with the same or higher MHz vintage.

Table 1-1 VCDX Equipment Comcode Numbers

Description	Comcode Number
VCDX SPARC5 WorkStation (110Mhz)	075640234
VCDX SPARC5 WorkStation (170Mhz)	407730431
VCDX DAT Tape Drive	407560267
VCDX DAT Tape Drive	407786060
VCDX Disk Drive 2.1GB	407550938
VCDX Disk Drive 4.2GB	407730449

The delivery service charge will be waived for *Sun*[®] Workstation equipment replaced while under the two year warranty.

For more information, refer to 235-105-110, *System Maintenance Requirements and Tools*.

1.7 User Feedback

The producers of this IP are constantly striving to improve quality and usability. Please use the enclosed user feedback form for your comments and to advise us of any errors. If the form is missing or your comments will not fit, you can write to us at the following address:

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Please include the issue number and/or date of this IP, your complete mailing address, and telephone number. We will attempt to answer all correspondence within 30 days, informing you of the disposition of your comments.

You may also call our documentation HOTLINE if you need an immediate answer to a documentation question. This HOTLINE is not intended to eliminate the use of the user feedback form, but rather to enhance the comment process. The HOTLINE number is **1-800-645-6759** and it is available from 7:30 a.m. to 6:00 p.m., Eastern Standard time. Outside of those hours, the line is serviced by an answering machine. You can leave a message on the answering machine and someone will return your call the following business day.

Also, IP users who have access to *UNIX*[®] system electronic mail facilities may send comments via electronic mail. The electronic address is **hotline5@wrddo.lucent.com**. Please make sure that the IP title, number, and issue number are included in the mail along with the sender's name, phone number, and address.

1.8 Maintenance of Vendor Equipment

The 235-xxx-xxx documentation does not provide maintenance procedures for the repair of equipment manufactured by vendors other than Lucent (for example, tape drives, disk drives). To identify the appropriate maintenance document for other vendor equipment, refer to 235-001-001, *5ESS*[®] *Switch Documentation Description and Ordering Guide*.

1.9 Training

Self paced multimedia training courses such as ES5M11, "*5ESS*[®] Switch VCDX Maintenance Training: System Fundamentals," are available. For course information, access the Lucent Product Training Catalog on-line at <http://www.lucent.product-training.com/index.html>.

To order the multimedia courses or to register for the hands on maintenance course ES5882, "*5ESS*[®] Switch VCDX, Provisioning and Maintenance Training: Hands On," which is delivered at the Hickory Ridge Conference Center in Lisle, IL, call **1-888-LUCENT8 (1-888-582-3688)**, prompt 2.

1.10 Documentation

Table 1-2 cross-references the 235-120-120, *5ESS*[®] *Switch Very Compact Digital Exchange (VCDX) User's*

Guide, procedures to the 5ESS[®] switch core documentation.

Table 1-2 Documentation Cross-Reference

VCDX USER'S GUIDE			5ESS [®] SWITCH CORE DOCUMENTATION
#	Section Name	Procedure	Document #
4	ROUTINE MAINTENANCE	Load Software Update(s) from SCANS	235-105-210
		Load Software Update(s) from Tape	235-105-210
		Make Software Update(s) Official	235-105-210
		Install Operating System Software Update	235-105-210
		Backout Last Official Software Update(s)	235-105-210
		Backout Software Update	235-105-210
		Compact Switch Processor Patch Space	235-105-210
		Activate/Deactivate Balance Feature	235-105-210
5	CORRECTIVE MAINTENANCE	Respond to and Restore a Locked-Up Video Terminal	235-105-220
		Perform Office Terminal Software Initialization	235-105-250
6	SYSTEM RECOVERY	Establish Communication With An Isolated Switching Module	235-105-250
		All	235-105-231 and 235-105-331

NOTE: The procedures in 235-120-120, 5ESS[®] Switch Very Compact Digital Exchange (VCDX) User's Guide, have been customized for VCDX and therefore may be different from those appearing in the 5ESS[®] switch core documentation.

The following documents are referenced at various locations within this document:

- 235-040-100, *Operations, Administration, and Maintenance Planning Guide*
- 235-070-100, *Administration and Engineering Guidelines*
- 235-080-100, *Translations Guide (TG-5)*
- 235-100-125, *System Description*
- 235-105-110, *System Maintenance Requirements and Tools*
- 235-105-210, *Routine Operations and Maintenance Procedures*
- 235-105-220, *Corrective Maintenance Procedures*
- 235-105-231, *Hardware Change Procedures - Growth*
- 235-105-331, *Hardware Change Procedures - Degrowth*
- 235-118-2XX, *Recent Change Reference and Recent Change Procedures*
- 235-190-103, *Business and Residence Feature Descriptions*
- 235-190-104, *ISDN Feature Descriptions*
- 235-190-115, *Local and Toll System Feature Descriptions*
- 235-190-120, *Common Channel Signaling Service Feature Descriptions*
- 235-190-130, *Local Area Signaling Services*

- 235-600-112, *Translations Data Manual*
- 235-600-312, *ECD/SG Database Manual*
- 235-600-400, *Audits Manual*
- 235-600-500, *Asserts Manual*
- 235-600-700, *Input Messages Manual*
- 235-600-750, *Output Messages Manual*
- 235-700-100, *Interface/Compatibility Guide*
- 235-700-200, *UNIX[®] System Reference Manual.*

2. 5ESS[®] SWITCH VERY COMPACT DIGITAL EXCHANGE (VCDX)

2.1 Overview

Lucent Technologies' 5ESS[®] Switch Very Compact Digital Exchange (VCDX) economically brings advanced digital services, including wideband data and video capabilities, to all telecommunication service providers. Lucent Technologies enables service providers to effectively serve rural and suburban locations with standard and advanced digital telecommunication services.

Recent studies of rural markets revealed a need for a switch that provides advanced telecommunication services that are compatible with today's evolving networks. The 5ESS[®] switch product is considered "best in class" in terms of overall quality and system reliability, but may be too large for these rural markets. Therefore, Lucent has developed the VCDX switch, a reduced capacity 5ESS[®] switch targeted for smaller applications markets.

The VCDX switching product is a stand-alone configuration that efficiently provides services such as Plain Old Telephone Service (POTS), equal access, Integrated Services Digital Network (ISDN) and Centralized Telephone Communications Exchange Service (CENTREX) to areas serving as few as 100 subscribers. The VCDX switch has been Rural Electrification Administration (REA) "listed" and can be provisioned as a Defense Switched Network (DSN) office.

Lucent's VCDX switch provides a new cost-effective configuration with the same quality and call processing reliability as the largest metropolitan switch and uses the same software and similar hardware architectures. Sharing the same common distributed architecture as the large 5ESS[®] switch, the VCDX switch can easily evolve into a full-sized 5ESS[®] switch to satisfy large line size applications (see "VCDX to 5ESS[®] Switch Conversion," Appendix 6).

The Administrative Workstation (AW) is the key distinction between the VCDX switch, the 5ESS[®] switch, and the CDX switch. By condensing the functions of the Administrative Module (AM) and the Communication Module (CM) into a single workstation, and by taking advantage of state-of-the-art levels of integration, the VCDX switch for the small office significantly reduces cost.

The VCDX switch provides:

- Virtually non-blocking access between non-concentrated switch terminations
- Integration of voice and digital data services into a single switch
- Direct digital interfacing with digital facility terminations
- Signaling and transmission treatment by an interface unit
- Testing access to modular metallic facilities as an integral part of the interface units
- Conversion potential to full-size 5ESS[®] switch/or remote.

2.1.1 Using 5ESS[®] Switch Core Documentation

This user's guide should always be referenced first by VCDX switch owners. This document contains all VCDX switch specific procedures which do not appear anywhere else. If further detail or explanation is required or if needed information does not appear in this document, the 5ESS[®] switch core documentation provided on CD-ROM may be examined. The primary usage of the CD-ROM documentation by VCDX switch personnel will most likely be for referencing the 235-600-700, *Input Messages Manual* and the 235-600-750, *Output Messages Manual*.

Note that while the VCDX switch emulates the hardware of the AM and simulates the functions of the CM, the software associated with the AM and CM/CMP hardware is still present in the AW. Portions of this document refers to the AM and CM/CMP. The reader should note that references to these items are not referring to the hardware, but rather the software associated with the AM and CM/CMP.

Whenever the 5ESS[®] switch core documentation is referred to, the reader must be advised that the documentation was **not** modified to reflect that the VCDX switch utilizes an emulated AM and CM and does not have the actual AM and CM hardware. Furthermore, procedures that deal with AM/CM hardware will be present on the CD-ROM and should be ignored by VCDX switch personnel.

2.2 VCDX Switch Architecture

The VCDX switch architecture is the result of re-engineering the 5ESS[®] switch to reduce hardware components without sacrificing switch features. To best understand the VCDX switch architecture, a brief description of the architectural evolution from 5ESS[®] switch to CDX switch to VCDX switch is appropriate. The 5ESS[®] switch is composed of three major components:

- **3B21D Administrative Module (AM)** - provides administration and maintenance capabilities.
- **Communications Module (CM)** - interconnects the AM to the switching modules and provides a sophisticated switching and message network.
- **Switching Module** - provides terminations of lines and trunks to a switching fabric which has the flexibility to support Plain Old Telephone Service (POTS), Integrated Services Digital Network (ISDN), Operator Services Position System (OSPS), Signaling System 7 (SS7), and tandem and wireless applications.

The 5ESS[®] Switch Compact Digital Exchange (CDX) replaces the CM with a compact version (CM2C). As a result, the CM2C handles fewer switching modules while still providing the full range of features, and is thus targeted at smaller markets.

The VCDX switch combines the functions of the AM and CM onto an AW which uses an *emulated* AM while running the same AM and CM software. The VCDX switch supports a single switching module, which contains special hardware to allow it to communicate with the AW. In addition, all call processing functions have been migrated to the VCDX switching module so that all calls can complete should the AW become unavailable.

For the VCDX switch, the terminal interfaces connect to the AW. The 5ESS[®] switch and the CDX switch have terminal interfaces connected to the AM's Input/Output Processor (IOP). The IOP contains the hardware to provide front end processing for the various terminal devices. For the VCDX switch, the emulated AM on the AW contains assist processes which convert I/O messages sent to the AM IOP by the AM software to messages which can be sent to the terminal interfaces attached to the AW.

Figure 2-1 depicts the switch architecture of the three 5ESS[®] switch offerings.

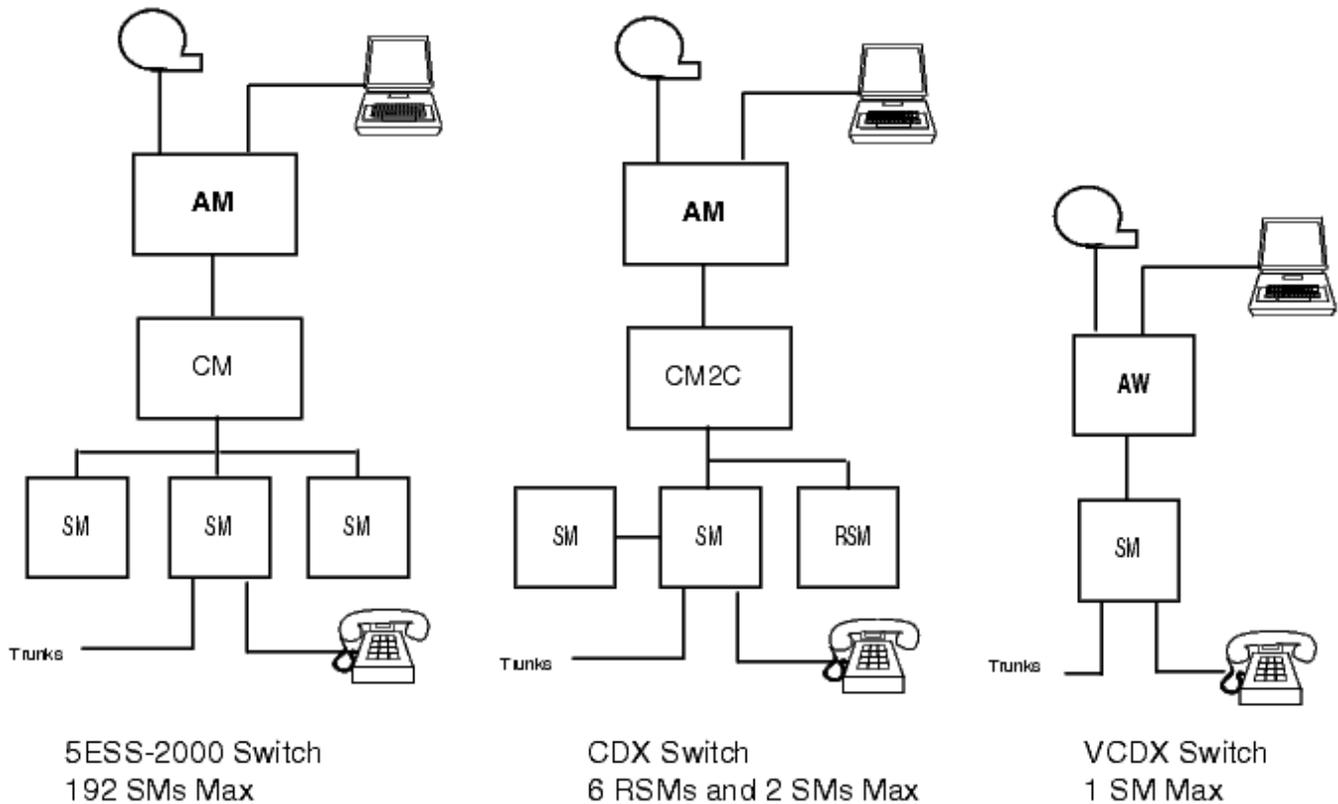


Figure 2-1 5ESS Switch, CDX Switch, and VCDX Switch System Architectures 5ESS Switch: architecture Architecture: 5ESS switch

2.3 VCDX Switch Hardware

The VCDX switch is composed of two major components:

- **Administrative Workstation (AW)** - provides administrative and maintenance capabilities and consists of a desk top workstation running the AM and CM emulated software.
- **Switching Module** - performs all call processing functions and has the flexibility to support Plain Old Telephone Service (POTS), Integrated Services Digital Network (ISDN), and tandem applications.

Figure 2-2 illustrates the system architecture for the VCDX switch.

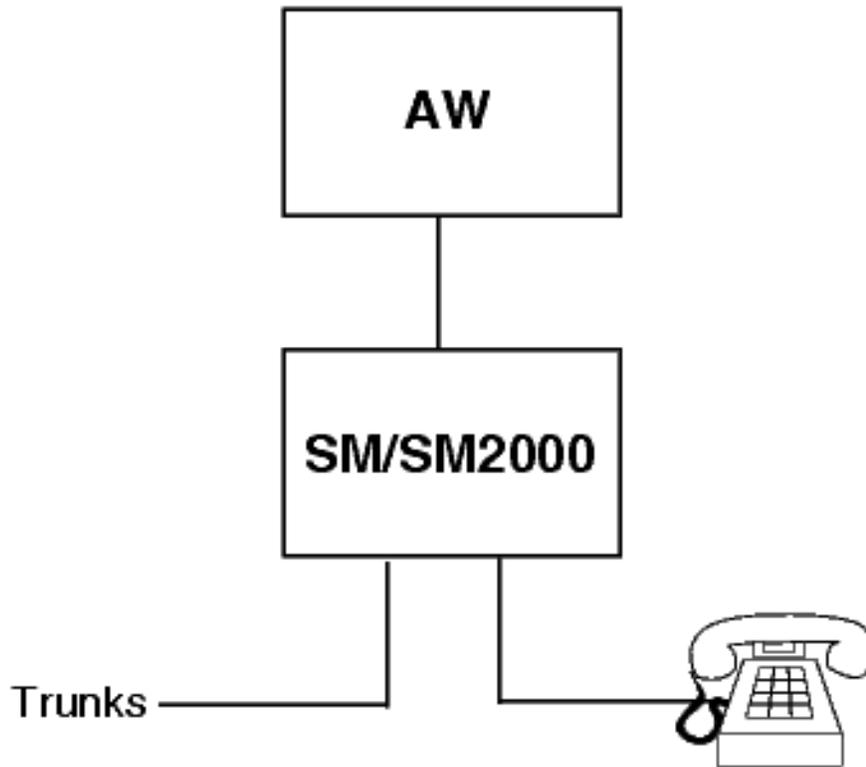


Figure 2-2 VCDX Switch System Architecture

2.3.1 Administrative Workstation (AW) Hardware

The AW consists of a Master Control Center (MCC), a workstation CPU with keyboard, two hard disk units, and a DAT tape drive unit. All tape procedures utilize the DAT tape drive unit (see Figures 2-3 and 2-4). The AW can be one of two types: the SPARC5 workstation or the *Netra*TM workstation. The disk units and DAT tape drive unit associated with the SPARC5 are external where the *Netra* is equipped with internal drives. The SCSI hard disk drives have 2.1GB storage capacity prior to 5E12. For 5E12 and later, the SPARC5 has 4GB capacity while the *Netra*TM has 9GB. Both workstations have an *Ethernet*[®] Interface for terminal interfaces and a High Speed Interface (HSI) for data links.

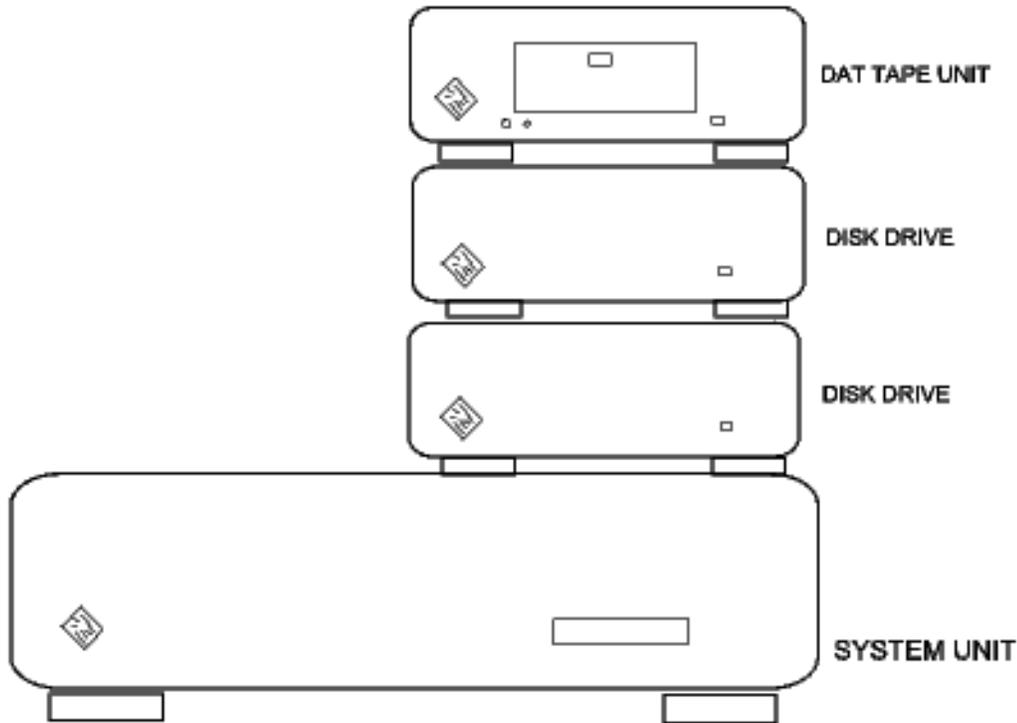


Figure 2-3 Administrative Workstation (SPARC5)

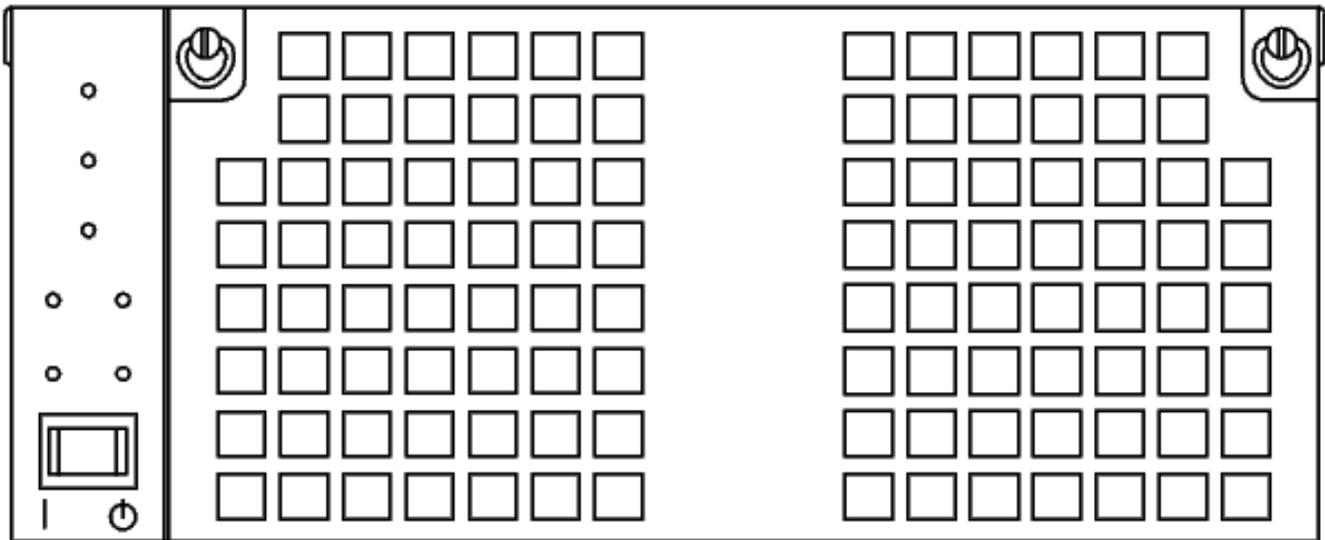


Figure 2-4 Administrative Workstation (Netra Sun Microsystems, Inc. t)

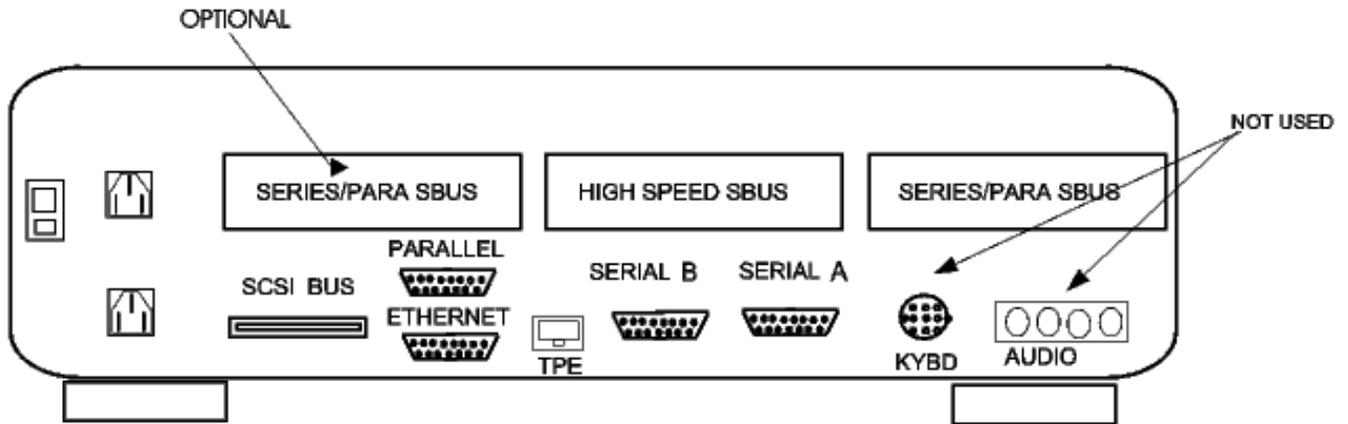
Overall Unit Function

The AW provides administrative and maintenance support for the VCDX switch. It is equipped with a mirrored disk for reliable storage of software applications and data. The AW contains the AM emulator and the simulated CM as would be found on the CDX and 5ESS® switches. The AW oversees many of the global administrative operations required in the VCDX switch. These operations include storing AMA, monitoring system configurations, providing backup storage for application programs, and providing human-machine interface with the VCDX switch. The AW is not involved in call processing. Therefore, there is no call processing impact if the AW were to encounter a fault

during operation.

In case of an AW outage, the switching module is capable of storing 72 hours of Automatic Message Accounting (AMA) data before requiring download to the AW for permanent storage on the hard disk. A switching module circular AMA data buffer protects AMA data by ensuring that certain pointers in the AMA storage area are not updated until the AMA data can be retrieved once the AW is restored.

ADMINISTRATIVE WORKSTATION (REAR VIEW)



SYSTEM UNIT

Figure 2-5 Administrative Workstation Interface Configuration (SPARC5)

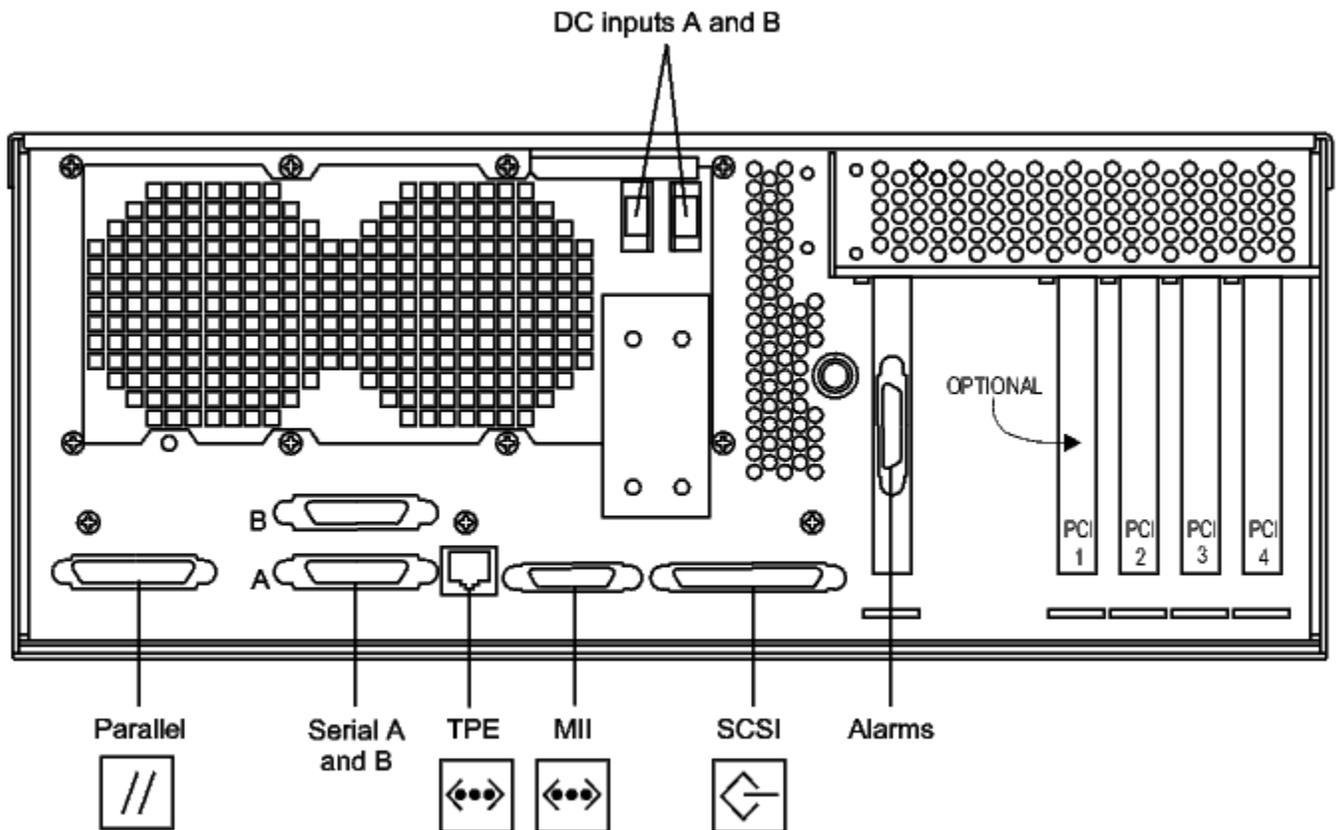


Figure 2-6 Administrative Workstation Interface Configuration (Netra Sun Microsystems, Inc. t)

The following interface connectors, which are depicted in Figures 2-5 and 2-6 allow peripheral devices and terminals to be interfaced to the AW:

- SCSI Bus interface - interfaces hard disk drives and the DAT tape drive unit. The SCSI bus is terminated at the last device on the daisy chain using a terminator plug. Refer to Figure 2-7 .
- *Ethernet*[®] - An *Ethernet*[®] cable from the switching module. The *Ethernet*[®] cable uses a tee-connector to interface to both sides of the MCTSI.
- High Speed Serial/Parallel bus connections interface terminal devices to the AW along with the Serial A and Serial B ports and the parallel port on the rear of the *Netra*[™] workstation. See "Terminal Interfaces," Section 2.5 , for more information on terminal devices.
- The keyboard and audio connectors are not used on the AW.

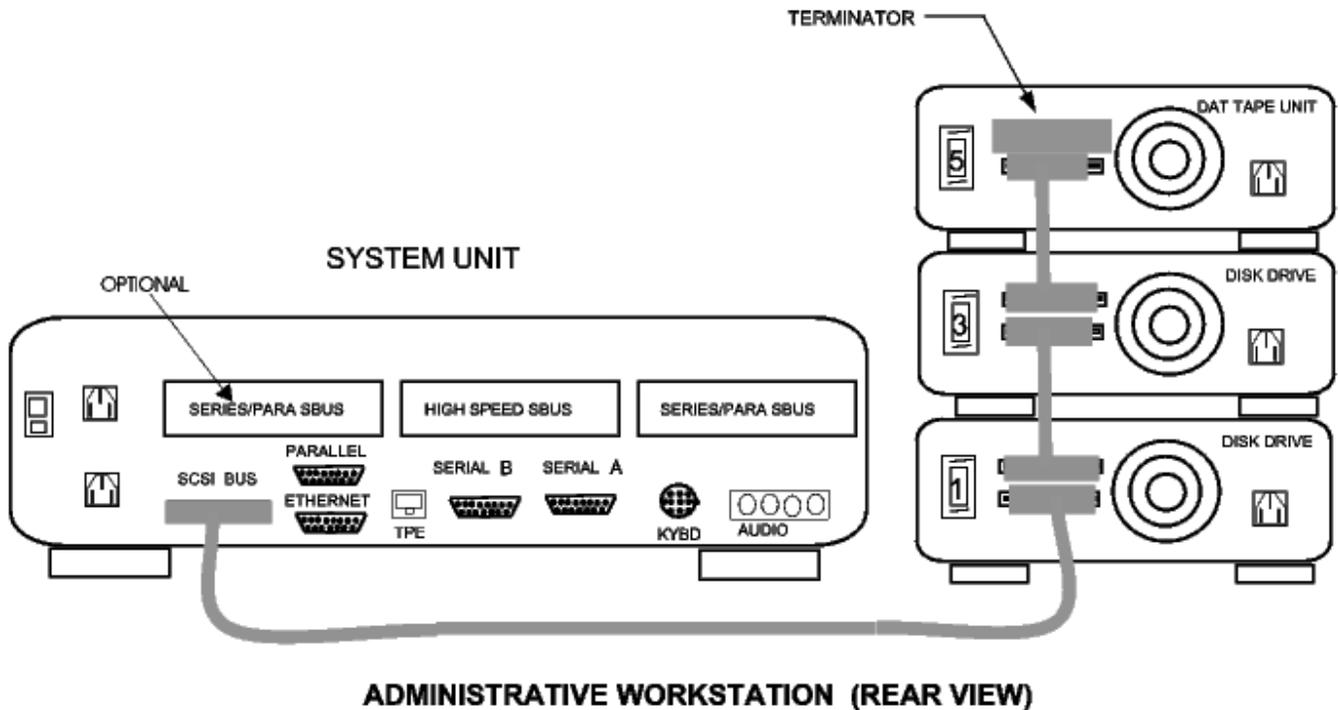


Figure 2-7 SCSI Bus Cable Configuration (SPARC5)

2.3.2 Switching Module Hardware

Common Units (CUs) are those units required in a switching module. The CUs include:

The Module Controller/Time Slot Interchange (MCTSI)

The MCTSI can be one of the following:

- The Module Controller/Time Slot Interchange Unit 3 (MCTU3) contains two MCTSI's. The MCTU3 is a duplex hardware unit which controls all the call processing and maintenance functions in the switching module. It operates in an active/standby configuration so that in the event of a fault, the active processor switches to the standby side without losing any stable calls. The MCTSI also provides time division switching of time slots

between the peripheral units and the network. All peripheral units receive control from the MCTSI. The MCTSI terminates the control and data buses from the peripheral units.

- SM-2000 Processor Unit 5 (SMPU5) and Time Slot Interchange Unit 4, Version 2 (TSIU4-2) which provides all necessary call processing and maintenance functions in the switching module. It operates in an active/standby configuration so that in the event of a fault, the active processor switches to the standby side without losing any stable calls. The SMPU5 and TSIU4-2 in combination provide greater call capacity than the MCTU3.

The *Ethernet*[®] Interface (EI)

All communications and data transfers between the AW and the switching module take place over the *Ethernet*[®] Interface.

- An *Ethernet*[®] Interface Board and an *Ethernet*[®] Interface paddle board are located in the MCTSI shelf in the MCTU3 and are duplexed to provide communications with the AW.
- The MCTU3 requires only an *Ethernet*[®] Interface paddleboard for communications with the AW.
- The SM-2000 utilizes an EIB Message Handler circuit pack to provide communications between the module and the AW.

For the MCTU3 and SM-2000 the *Ethernet*[®] link is terminated on an *Ethernet*[®] paddleboard (982AAH) connected to the backplane of SB20 CORE for SM and MHE1B for SM-2000. The *Ethernet*[®] Interface paddleboard is a small square circuit board that contains circuitry and a coaxial connector jack used to connect the EIB. *Ethernet*[®] communications are handled internally by the SMP. Refer to Figures 2-8 and 2-9.

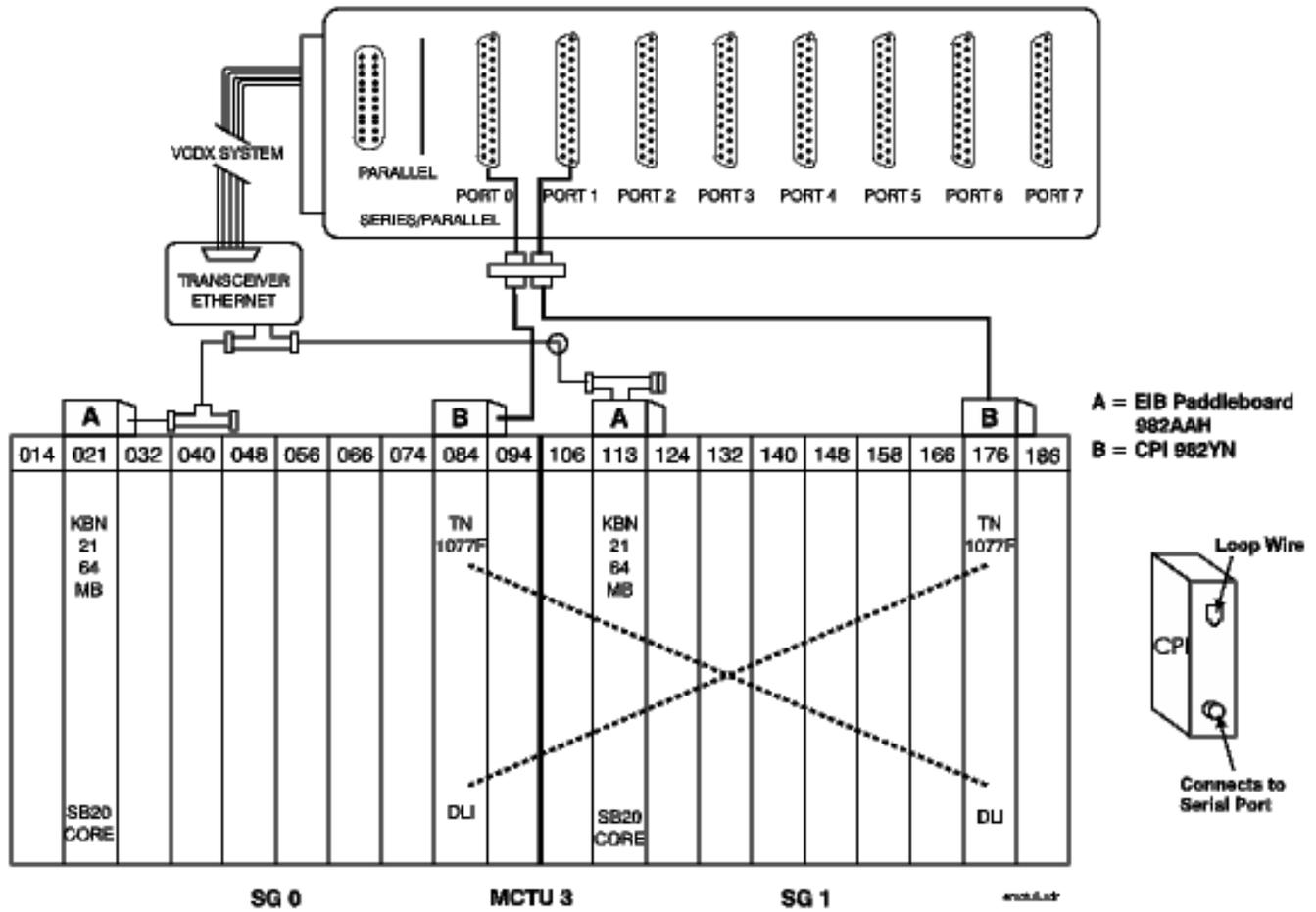


Figure 2-8 Ethernet Xerox Corporation and CPI Interface (MCTU3)

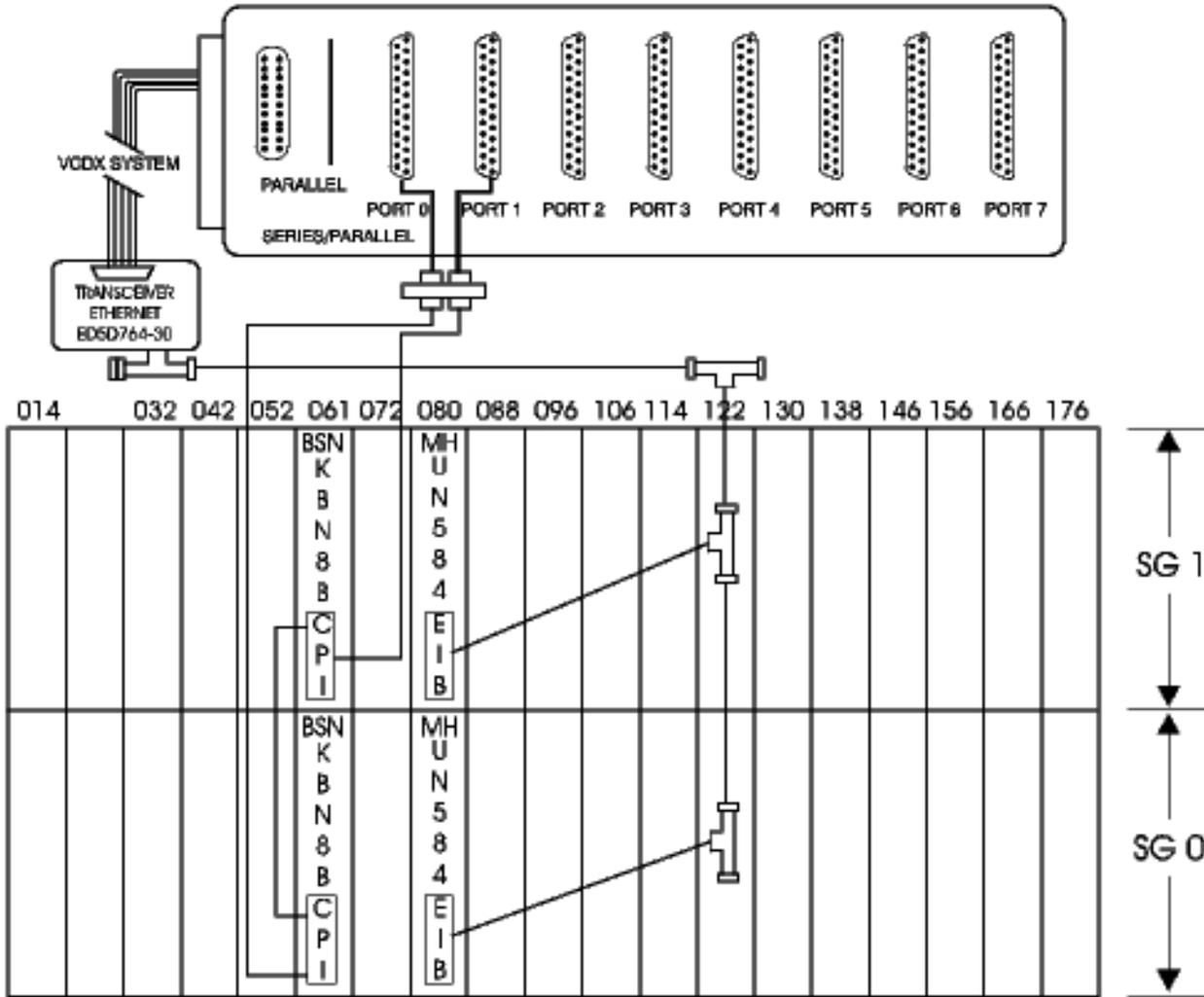


Figure 2-9 Ethernet Xerox Corporation and CPI Interface (SM-2000)

Central Processor Intervention (CPI)

Central Processor Intervention (CPI) is a high priority method of communication between the workstation and the SM that bypasses the normal communication protocol.

For MCTU3 and SM-2000, CPI messages are sent over the workstation's RS-232 ports (ports 0/1) to the CPI paddleboards (982YN) on the SM backplane. The CPI is a square circuit board that contains circuitry and connects through the SM's backplane into its respective circuit pack. Additionally, on its outside edge there are two connection points, one for coaxial cable and the other a modular telephone jack receptacle. The CPI's primary functions are to control forcing/clearing conditions on the MCTSI, control the sanity timer and provide for TMS switching. Refer to Figures 2-8 and 2-9.

The CPI paddleboards' top jacks are cross-connected between service groups to allow for mirroring of information being sent to it.

For more information about CPI, see 235-100-125, *5ESS® Switch System Description* or 235-600-700/750, *Input/Output Messages Manual*.

T1/E1 External Reference Timing

The T1/E1 external reference timing is provided by a DLI pack (TN1077F) which duplicates the timing requirements provided by the CSC along with providing the capabilities of the Dual Link Interface (DLI).

The DLI, which resides in the MCTU3 and is not part of the MCTSI, provides the clock and timing signals to the TSI and SM processor. Along with determining the destination of time slots, the DLI performs some error detection and reformatting of data.

The TN1077F circuit pack contains the DLI circuitry, power converter and all control and display indicators for the DLI. When a fault is detected in a DLI, the active/standby status is switched. The configuration will switch to Standby Degraded or possibly OOS in severe cases. There should be no impact upon call processing when operating with at least one DLI active major.

External Timing References

For synchronization with the network, an external timing source should be connected to the TSICOM. The source can either be the incoming digital trunks, or a BITS box (if the office is so equipped). Without proper synchronization, timing slips may occur leading to digital facilities being taken out of service.

The cable used to connect the external clock reference to the VCDX/SM-2000 switch is ordered from ED5D500-21. Depending on the application, one of the cable types from Table 2-1 must be ordered.

Table 2-1 TSICOM External Timing Reference Cables

Cable Type	Application
G454	Links TSICOM (UM74C) to a BITS clock or DSX Bridging Repeater. Non-EMC, 24 channels, 100 ohms, 0.772 Mb/s. (References ED5D675-17 G26 and G27 for the actual cables for Side 0 and Side 1).
G455	Same as G454 but with EMC treatment.

Digital Service Control Unit

- The Digital Service Control (DSC) provides the tone generation (for example, audible ring and dial tone) and tone decoding (for example, digit interpretation) functions required by every switching module.

Peripheral Units (PUs) are those units that are engineered into the switching module to meet the needs of the customers. Optional PUs include:

- Line Unit 3 (LU3) - provides the termination of up to 640 analog lines capable of providing 4:1, 6:1, 8:1 and 10:1 line concentration.
- Trunk Unit (TU) - provides termination of up to 64 analog trunks.
- Digital Service Unit 2 (DSU2) - provides Recorded Announcement Functions (RAF), Integrated Services Test Functions (ISTF), and Voice Path Assurance (VPA).
- Digital Line and Trunk Unit 2 (DLTU2) - provides termination for T1 digital trunk facilities.
- Modular Metallic Service Unit (MMSU) - provides access to perform metallic testing of lines and trunks and provides miscellaneous scan and distribute points.
- Global Digital Service Unit (GDSU) - provides transmission test functions and conference circuits.
- Integrated Digital Carrier Unit (IDCU) - provides termination of the following Digital Service (DS1) facilities:
 - TR08 SLC[®] 96 SLC[®] Series 5 FPB SLC[®] Access System

- TR303 SLC[®] Series 5 FP303 SLC[®] Access System Release 4 (Nov 94)
- PUB43801 D4/D5 DACS II
- Packet Switching Unit (PSU) provides SS7 capabilities.
- Integrated Services Digital Network (ISDN)
 - Integrated Services Line Unit (ISLU) provides 512 terminations for a combination of digital and analog lines.
 - PSU provides packet switching functions.
 - Remote Integrated Services Line Unit (RISLU) provides ISDN services to customers beyond maximum ISLU loop boundaries.
- Access Interface Unit (AIU)/Enhanced AIU (EAIU) provides the termination of analog customer lines.

2.3.3 Alarm Status Unit (ASU)

The Alarm Status Unit (ASU) provides audible and visual indication of the office alarms with LEDs for the alarm levels critical, major, and minor. There is an Alarm Retire key at the ASU which retires the audible alarms and clears the alarm level LEDs at the ASU.

2.4 Capacities

The VCDX switch, like the 5ESS[®] switch, is engineerable in terms of line capacity, trunk capacity, and applications/features. With the 5E12 software release and the introduction of AIU and DNUS, line capacity of the VCDX switch has increased to a maximum of 28,800 and 16,000 DS0s.

2.4.1 Switching Modules

The VCDX switch supports one switching module (SM or SM-2000).

2.4.2 Lines and Trunks

The line and trunk capacities of a VCDX switch vary based upon:

- Line to trunk ratio
- Line concentration
- Features.

This list is not all inclusive. For additional details see 235-070-100, 5ESS[®] *Switch Administration and Engineering Guidelines*.

2.5 Terminal Interfaces

This section identifies and describes the various Input/Output (I/O) channel interfaces provided for the VCDX switch. These interfaces allow administrative and maintenance personnel and Operations Systems (OSs) to communicate with the VCDX switch. This section also describes the functions provided by the I/O facilities to assist the switch

administrator.

Terminal devices are used by maintenance and administrative personnel for typing input messages and displaying both input and output messages. Examples of terminal devices are teletypewriters, cathode ray tube (CRT) terminals, and Receive-Only Printer (ROP). Interfaces are also provided to Operational Support (OS) computer systems for additional administrative and/or maintenance support as needed.

Further information concerning the operations and functions provided by these interface facilities is provided in 235-190-1XX series of feature description documents.

For the VCDX switch, the terminal interfaces connect to the AW as shown in Figures 2-10 and 2-11. Of the connectors on the rear of the workstation, the serial interface connections (SBUS for the SPARC5; PCI for the *Netra*TM t), the high speed interface (SBUS for the SPARC5; PCI for the *Netra*TM t), and the A and B ports are used to connect terminal devices. In addition to terminal devices, the serial connector also interfaces the Central Processor Intervention (CPI) using serial ports 0 and 1 to establish a high priority level of communication between the AW and the switching module.

The Small Computer Serial Interface (SCSI) connectors are reserved for SCSI devices such as Digital Audio Tape (DAT) tape drive unit and hard disk drives, and an *Ethernet*[®] connection to the switching module. The keyboard, video, and audio connectors on the system unit are not used.

SPARC5 ADMINISTRATIVE WORKSTATION (AW) - Rear View

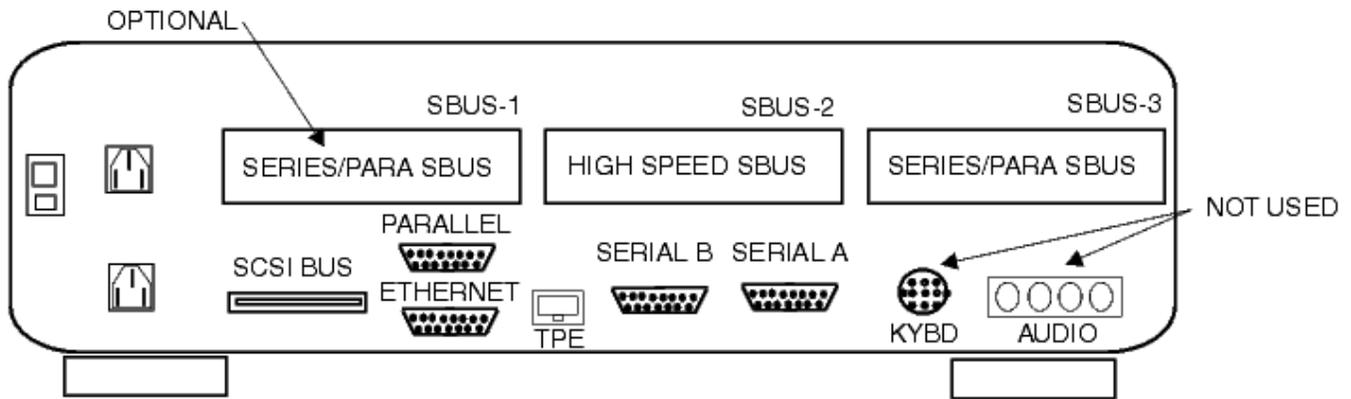


Figure 2-10 Administrative Workstation Terminal Interface Connections (SPARC5)

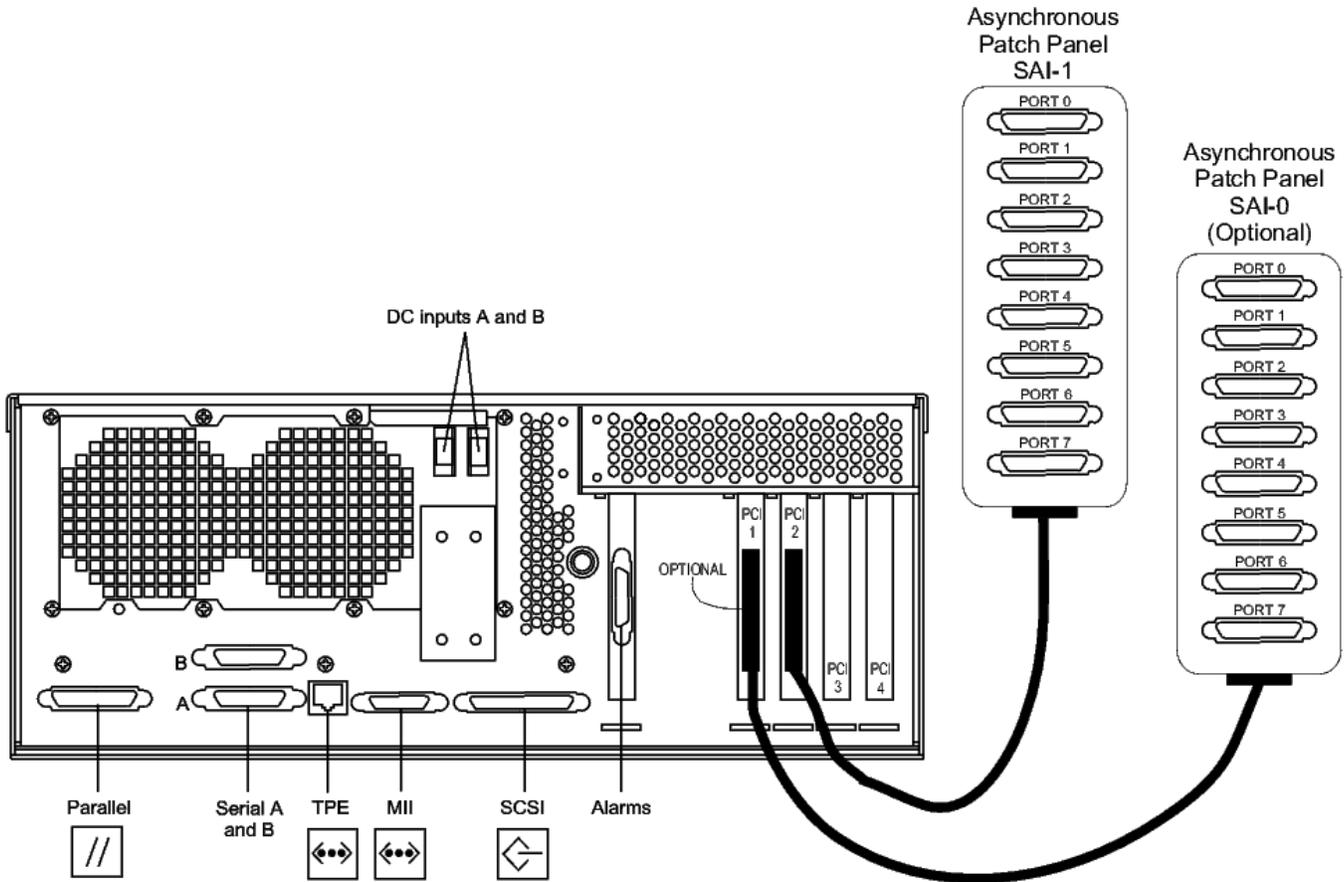


Figure 2-11 Administrative Workstation Terminal Interface Connections (Netra Sun Microsystems, Inc. t)

2.6 Types of Terminal Interfaces and Operating Support Systems

This section will cover the following terminal interfaces:

- Master Control Center (MCC)
- Receive-Only Printer (ROP)
- Supplemental Trunk Line Work Station (STLWS)
- Recent Change (RC/V) Terminal
- Automatic Message Accounting (AMA) Data Link
- SCANS Data Link.

Refer to the documents listed in Table 2-2 for more information about additional terminal interfaces available for the VCDX switch.

Table 2-2 Terminal Interface Devices

Name	Description	Document
TRAFFPRT	Local Traffic Measurements Channel	235-070-100A1 235-105-231
OFFRECRPT	On-line Office Record Print Channel is used to print office	235-118-2XX

	record forms.	235-900-304
CALEASAS	Electronic Surveillance Terminal	235-200-400
		235-200-410
CALEAPRT	Electronic Surveillance Printer	235-200-400
		235-200-410

2.6.1 Serial Interfaces

The VCDX switch uses a serial adapter card to interface multiple serial devices such as terminals and printers to the AW. The interface in the SPARC5 is the Serial/Parallel Controller (SPC), an SBUS interface. The *Netra*TM t interface is the Serial Asynchronous Interface (SAI), a PCI interface. Figures 2-24 and 2-25 provide illustrations of these connections and their connection to the AW system unit. Tables 2-3 and 2-4 list the port assignments for terminal devices interfaced via the SPC or SAI.

The Supplemental Trunk Line Workstation (STLWS) can be installed in any of the SPC/SAI ports 2 through 7 on S/PI No. 0 on the SPARC5 or No. 1 on the *Netra*TM t and ports 0-7 on S/PI No. 1 on the SPARC5 or No. 0 on the *Netra*TM t. While Figures 2-24 and 2-25 show the STLWS in SPC Port 5 on S/PI No. 0 and ports 0 and 1 on S/PI No. 1, it can occupy any available non-reserved port.

Table 2-3 SPARC5 Terminal Port Assignments

S/PI No.	AW SBUS SLOT No.	SPC PORT	Terminal Device
0	3	PARALLEL	Receive-Only Printer (ROP)
0	3	0	Reserved (CPI Side 0)
0	3	1	Reserved (CPI Side 1)
0	3	2	a
0	3	3	a
0	3	4	a
0	3	5	a
0	3	6	a
0	3	7	a
1	1	PARALLEL	UNUSED
1	1	0	a
1	1	1	a
1	1	2	a
1	1	3	a
1	1	4	a
1	1	5	a
1	1	6	a
1	1	7	a

Notes:
a. Terminal devices can be STLWS, RC/V Terminal, Traffic Printer, or Office Record Printer.

Table 2-4 NetraTM t Terminal Port Assignments

AW PCI SLOT No.	SAI PORT	Terminal Device
Parallel Port on rear of workstation		Receive-Only Printer (ROP)
2	0	Reserved (CPI Side 0)
2	1	Reserved (CPI Side 1)
2	2	Note a
2	3	Note a
2	4	Note a
2	5	Note a
2	6	Note a
2	7	Note a

1	0	Note a
1	1	Note a
1	2	Note a
1	3	Note a
1	4	Note a
1	5	a
1	6	Note a
1	7	Note a

Notes:
a. Terminal devices can be STLWS, RC/V Terminal, Traffic Printer, or Office Record Printer.

2.6.2 High-Speed Bus Interface Controller

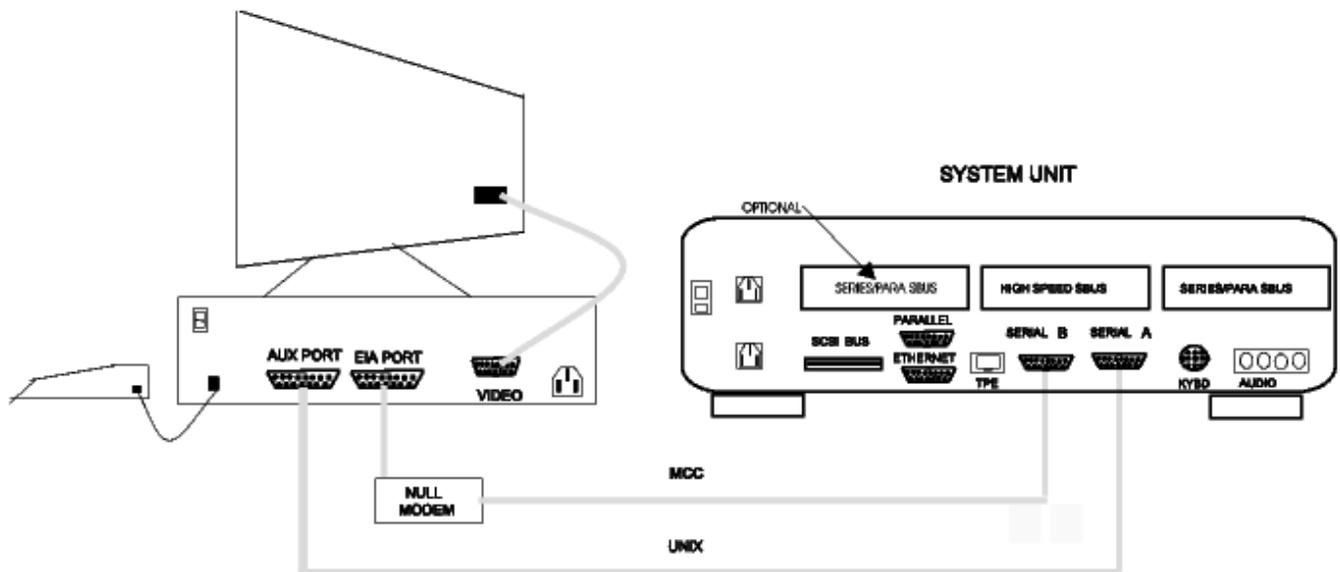
The High-Speed Bus Interface (HSI) Controller is used to interface certain high speed terminal devices to the AW. For SPARC5 workstations, the controller is located in SBUS slot 2 of the AW and for *Netra*TM t workstations, the controller is located in PCI slot 3 of the AW. Figures 2-26 and 2-27 provide illustrations of the High-Speed Bus Interface Controller and its connection to the AW. Table 2-5 lists terminal devices that can be interfaced using this controller.

Table 2-5 High-Speed Bus Port Assignment

Controller Port	Terminal Device
0	SCANS Data Link
1	AMA Data Link
2	SCC Data Link
3	Not assigned

2.6.3 Master Control Center (MCC)

The Master Control Center (MCC) is the primary communication link between on site maintenance personnel and the VCDX switch. It connects to the AW via the A & B serial port connectors on the rear of the system unit. Figures 2-12 and 2-13 illustrate the cable connections for the MCC.



ADMINISTRATIVE WORKSTATION (REAR VIEW)

Figure 2-12 MCC Interface to Administrative Workstation (SPARC5)

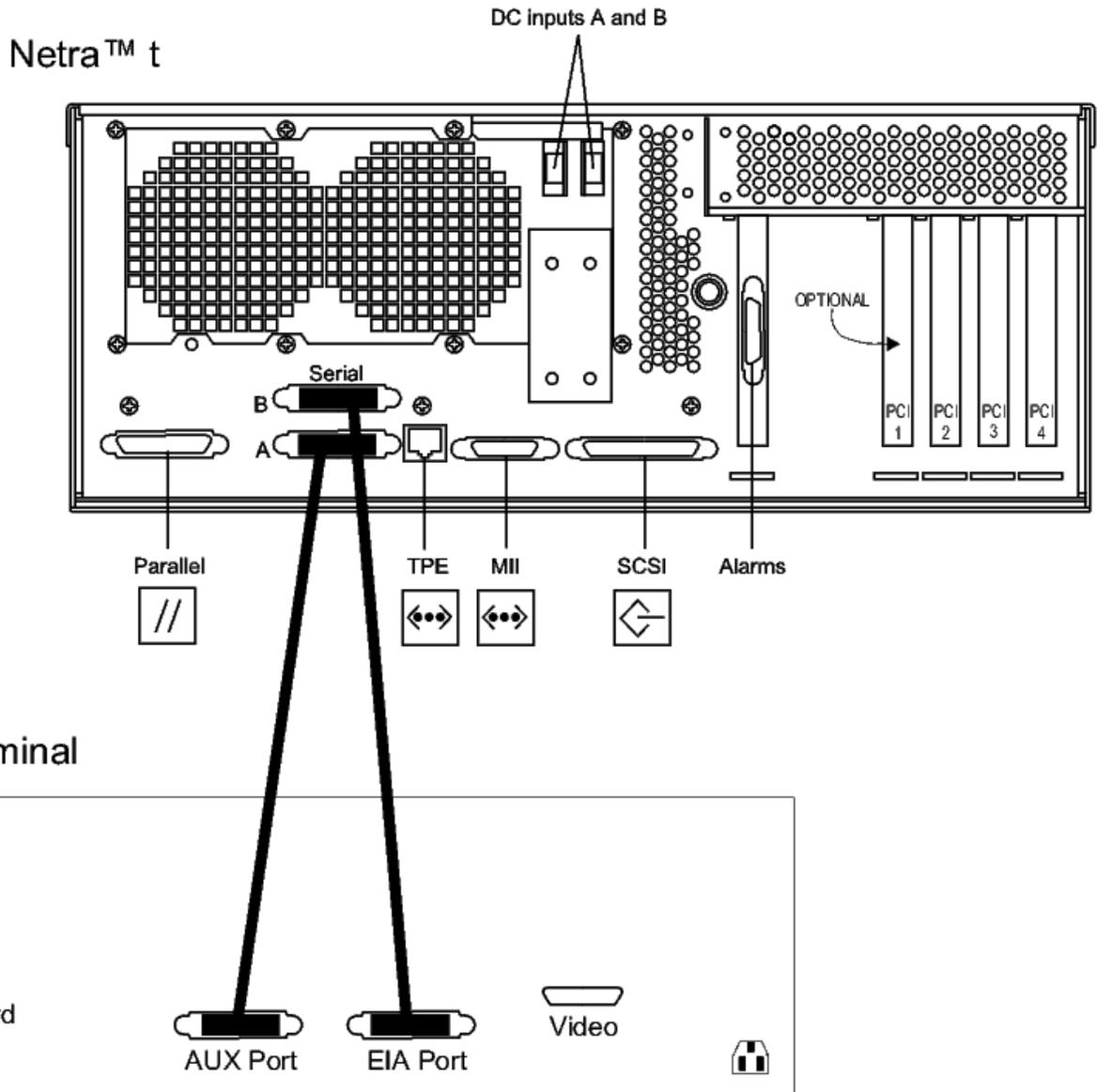


Figure 2-13 MCC Interface to Administrative Workstation (Netra Sun Microsystems, Inc. t)

The MCC provides maintenance personnel with real-time system status indications, control and display capabilities, and input/output messages. Refer to Figure 2-14 . The MCC also provides manual emergency recovery capabilities, Recent Change functions, and the ability to request reports. The major components of the MCC consist of the following:

- Video Display Terminal (VDT)
 - The VDT display pages provide the status and control information needed to perform maintenance tasks. Maintenance requests are input using a keyboard.
- Receive-Only Printer (ROP)
 - The ROP provides a hardcopy of input and output messages, creating a record for future reference. Traffic

measurement data can also be directed to the ROP.

- Key Telephone Set
 - The key telephone set is used to communicate with work areas outside the office. This telephone set can be used independently of the VCDX switch, thereby ensuring outside communication if an office outage occurs. A speakerphone is provided for communication at times when maintenance personnel need the use of both hands.

2.6.3.1 Video Display

The MCC video display terminal provides the local office maintenance personnel with a means to interface with the VCDX switch for system status indications, configuration controls, and human-machine interface messages. The MCC video display terminal is not duplicated. For functional purposes, the video display terminal is divided into the following units:

- Display
- Alphanumeric keyboard
- Numeric/function keypad.

The MCC (MTTY or MCRT) provides a split-screen effect (see Figure 2-14). The video display has a general layout that consists of an identification line, a system summary area, a control and display page area, and an input message entry area.

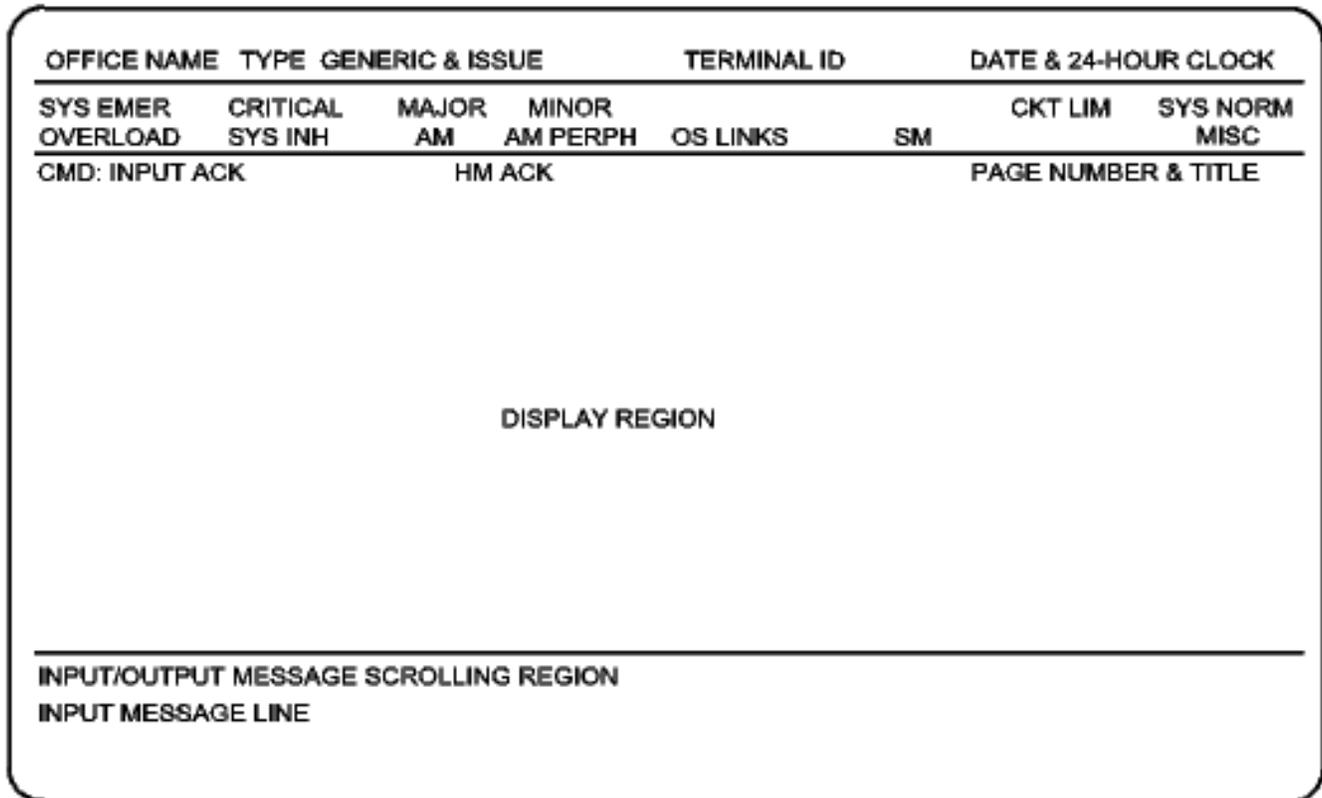


Figure 2-14 MCC Page Display Design

The identification line is present at all times and displays the office name, system type, and the current date and time.

The system status display provides an indication of the overall status of the office. This includes:

- Individual unit status
- Abnormal load conditions
- Significant controls in effect
- Alarms and other abnormalities.

The various conditions are shown in distinctive graphics and type faces.

The color video display at the MCC uses a variety of colors to indicate the status of individual units in the VCDX switch.

The control and display area is provided to give the maintenance personnel the interface necessary to operate and maintain the system. This area displays information pertinent to the office and provides the controls for maintaining and operating the system.

The various screen formats are referred to as control and display pages. Each control and display page shows the operating condition and possible input commands for each subsystem. An index page is provided to allow quick access to the display pages. A blank page is displayed whenever other control and display information is not required. For additional information on the MCC display pages, see 235-105-110 , *5ESS[®] Switch System*

Maintenance Requirements and Tools. Figure 2-15 shows a typical MCC display page.

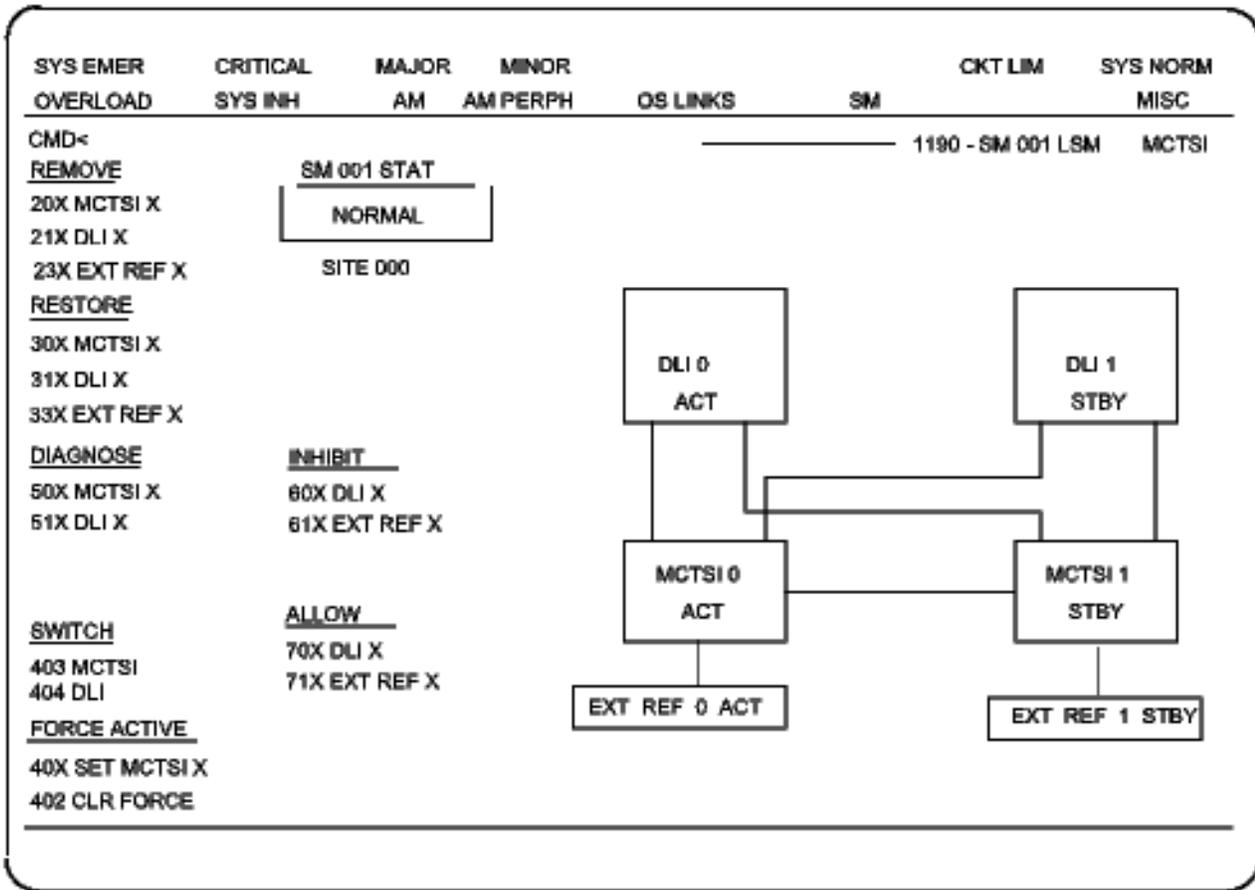


Figure 2-15 Typical MCC Display Page

The bottom two lines of the video display are used for message entry. This area displays the input messages from the MCC keyboard.

2.6.3.2 Emergency Action Interface (EAI)

The primary function of the EAI is to provide manual recovery capabilities during periods of system emergency. This interface enables configuring a working system when normal recovery procedures prove inadequate. The emergency page has a menu of control and initialization functions that can be forced on the system. Figure 2-16 shows a typical MCC display page.

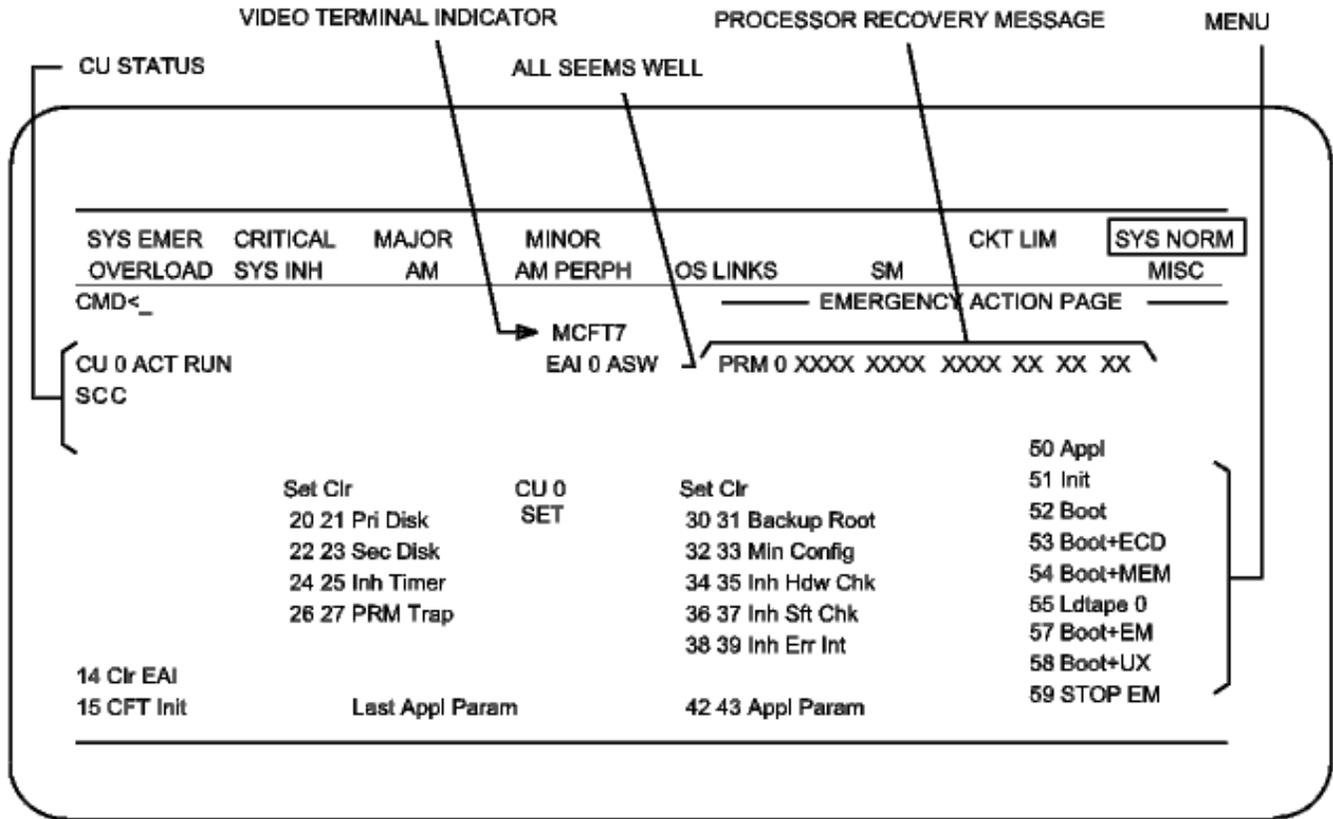


Figure 2-16 Emergency Action Interface (EAI) Page Manual recovery capabilities Emergency Action Interface (EAI) page

Each function is defined and input by a 2-digit command code. The codes are shown with their associated functions on the display. These functions can be used to do the following:

- Recover from duplex-processor failures.
- Disable the sanity timer.
- Disable hardware checks.
- Boot the system from other devices.

The conventions used for displaying data and selecting functions are similar to those used by other control and display pages. Due to the crucial functions provided, maintenance personnel **must** be familiar with these commands and their use.

NOTE: There is a sequence of EAI commands that can reduce downtime during periods of system emergency. This command sequence, the **42;9;54** and **42;9;50** pokes, executes a full office initialization (FOI) with full pump of the switching modules and CMPs in two parts. The 42;9;54 poke must be entered first and causes a full initialization of the AM. When the AM has completed the initialization process, the 42;9;50 poke must be entered next within 30 minutes of the entry of the 42;9;54. The 42;9;50 poke performs a full initialization with full pump of the switching module. If the 42;9;50 poke is entered before the 42;9;54 or after the 30-minute window, the initialization of the switching module does not occur. Refer to 235-105-250, *5ESS® Switch System Recovery Manual*, for detailed procedures on the use of this poke sequence and for information and procedures on other FOI variations.

An in-progress FOI can be cancelled by executing pokes 42;q;50 or 42;Q;50. The execution of these pokes results in the cancellation of the full initialization with or without pump. The pending initialization of the switching module can be cancelled by input command **INIT:SM=a,NOINIT;**. See 235-600-700, *Input Messages Manual*, for additional information on this command.

2.6.3.2.1 Emergency Action Interface (EAI) Validity

After requesting the emergency action display page by depressing the EMER DISP function key, the **video terminal digit indicator** must be checked to ensure a valid display. The video terminal indicator is located in the upper center portion of the display (Figure 3.5.1-1). The video terminal digit indicator consists of the maintenance teletypewriter (MTTY) or maintenance cathode ray tube/terminal (MCRT) followed by a numeric digit displayed in dynamic text. The digit is incremented every 2 seconds. If this indicator is not displayed and is not incrementing, the **entire** display is invalid.

Once the validity of the display is determined, other indicators are used to qualify EAI and emergency functions. Table 2-6 summarizes these indicators.

NOTE: The rest of the indicators on the display are valid only for EAI's indicating All Seems Well (**ASW**).

2.6.3.2.2 Emergency Action Interface Indicator Area

The EAI indicators reflect the progress of the emergency action. The emergency action is progressing successfully if the ASW indication is present (Figure 3.5.1-1).

The Control Unit (CU) status area is located at the upper left portion of the EAI page display (Figure 3.5.1-1). This area informs the maintenance personnel which of the CUs is active and which is on- or off-line. The term CU refers to the control unit or the AW.

At the upper right portion of the EAI page display is the Processor Recovery Message (PRM) area (Figure 3.5.1-1). The PRMs display the systems coded failure/success recovery information. The PRMs change continuously during an initialization, reflecting the current state.

Table 2-6 Emergency Action Indications and Qualifiers

INDICATIONS	MEANING
EAI INDICATIONS	MEANING WHEN DISPLAYED IN REVERSE VIDEO
ASW	(1) 3B21 emulator is communicating with EAI. (2) EAI reports all seem well (ASW).
ERR	(1) 3B21 emulator is communicating with the EAI. (2) EAI reports internal EAI problem.
OOS	(1) 3B21 emulator is not communicating with the EAI. (2) Displayed EAI status is unreliable.
CU INDICATIONS	MEANING WHEN DISPLAYED IN REVERSE VIDEO
ACT	Control unit (CU) Software is on-line (active).
FONL	Emergency action has forced hardware on-line.
FOFL	Emergency action has forced hardware off-line.
RUN	CU is running under software release control.
RCVRY	CU has begun recovery.
SET	Associated function is set.
INH	Associated function is inhibited.
PRM DIGITS	MEANING OF THE DIGITS
rrrr rrrr rrrr rrrr	Indicates the Processor Recovery Message (PRM).
ss ss	Indicates the emergency action status at the time the PRM was received.
nn	Indicates the low-priority PRM state at the time the PRM was received.
PRM TEXT DISPLAYED	MEANING WHEN IN PARTICULAR TEXT
rrrr rrrr rrrr rrrr ss ss nn	Trapped failure PRM.

(bold reverse video) rrrr rrrr rrrr rrrr ss ss nn	Last PRM received from the EAI.
(dynamic text)	

2.6.3.2.3 Emergency Action Interface (EAI) Menu

Emergency functions are entered by typing the appropriate 2-digit command code and executing it. Table 2-7 provides a list of the EAI commands with a description of their actions. For more details of how to use these functions, refer to 235-105-250, *5ESS® Switch System Recovery*. The carriage return is used to execute emergency functions.

The menu commands can be grouped into the following categories:

- **Commands 14 and 15:** These commands have a direct and immediate effect on the system. Some commands force the AM into a particular configuration and some release a forced configuration.
- **Commands 20 through 43:** These commands are preparation commands that specify certain conditions prior to a system initialization. These conditions do not take effect until an initialization command is given.
- **Commands 50 through 58:** These are the initialization commands. These commands cause the conditions that were specified previously with commands 20 through 43 to take effect.
- **Command 59:** This command stops the 3B21 emulator, thus stopping the AM.

NOTE: This command should NOT be executed unless under the direction of Customer Technical Support.

The severity of the initialization increases with the command number (command 54 has the greatest impact). The system can automatically trigger commands 50 through 53 during an initialization.

Command 54 can only be triggered manually and causes an AM initialization. This takes these processors completely off-line.

Command 55 is normally required during the initial installation interval or when an initialization from tape is required due to a massive corruption of disk data. During this tape load, the system is off-line and call processing is disabled for a considerable period of time.

The 51 through 58 commands when entered on the command line cause the system to immediately enter an emergency action mode.

Once the emergency action has completed, the system is restored (automatically) to a stable state and call processing resumes. The EAI page display disappears and the MCC Page Display 111/112, AM Peripherals, is automatically displayed.

CAUTION: Commands from the EAI page display should only be used under the direction of your technical assistance group. Improper use of the commands on the EAI page can have a very negative impact on the integrity of the system.

Each command executed is acknowledged either **OK** or **NG**. This acknowledgment appears adjacent to the command entry area in the top left line of the display. After entering a command, the input and response are displayed until the next character is typed. Errors may be erased a character at a time by pressing the backspace key or by pressing **Ctrl h**.

Table 2-7 Emergency Action Interface (EAI) Maintenance Commands

COMMAND	DESCRIPTION
---------	-------------

14	Clears all of the following which may be in effect: forces on- or off-line, sets on primary or secondary disk and timer inhibits.
15	Used together with the application parameters (1, 2, or 3) to produce three levels of craft initialization.
20	Inhibits automatic processor recovery disk unit selection and forces both processors to access their primary disk units on a boot.
21	Removes force on primary disk unit select.
22	Same as 20, except forces the processors to access their secondary disks.
23	Removes force on secondary unit select.
24	Inhibits the sanity timer from expiring and initiating automatic recovery action.
25	Removes the sanity timer inhibit.
26	Releases any trapped failure Processor Recovery Messages (PRM) and causes the next failure PRM to be displayed in reverse video and to remain displayed until released.
27	Releases any trapped failure PRMs and allows further PRMs to be displayed.
30 a	Forces the processor to initialize from the backup root file system.
31	Allows the processor to initialize from the primary root file system.
32	Forces the processor to initialize only the <i>UNIX</i> [®] RTR (Real-Time Reliable) operating system. The application software is not initialized.
33	Allows the processor to initialize both the <i>UNIX</i> [®] RTR operating system and the application software.
34	Inhibits hardware checks from initiating automatic recovery action.
35	Allows the hardware checks to initiate automatic recovery action.
36	Inhibits software checks from initiating automatic recovery action.
37	Allows software checks to initiate automatic recovery action.
38	Inhibits error interrupts.
39	Allows error interrupts.
42	Allows the setting of a parameter which is made available to application software.
43	Clears the application parameter.
50	Signals the application software to initialize.
51 b	Forces initialization of the <i>UNIX</i> [®] RTR operating system (level 1 initialization).
52	Reloads the <i>UNIX</i> [®] RTR operating system from disk (level 2 initialization).
53	Same as 52, plus reloads Equipment Configuration Data (level 3 initialization).
54	Same as 53, plus clears the memory (level 4 initialization).
55 c	Loads selected disk from tape unit 0.
57	Same as 54 plus reboots the 3B21 emulator.
58	Same as 57 plus reboots <i>UNIX</i> [®] System V Release 4 OS
59	Stops the 3B21 emulator, thus stopping the AM.
Notes:	
a. Commands 30 through 43 generate the next state of the maintenance teletypewriter (MTTY) peripheral control information which is sent to the processor the next time commands 50 through 56 are executed.	
b. Commands 51 through 55, in addition to the description given, cause the current next state information to be sent to the processor.	
c. Command 55 requires a disk unit to be selected (commands 20 or 22).	

2.6.3.3 MCC Page 111/112 - AM, AM Peripherals

The purpose of the 111/112 display page is to report the status of the AW (shown as AM on the screen) and its peripherals. The AW peripherals are the MHDs, MT, MTTY, ROP and the link to the switching module.

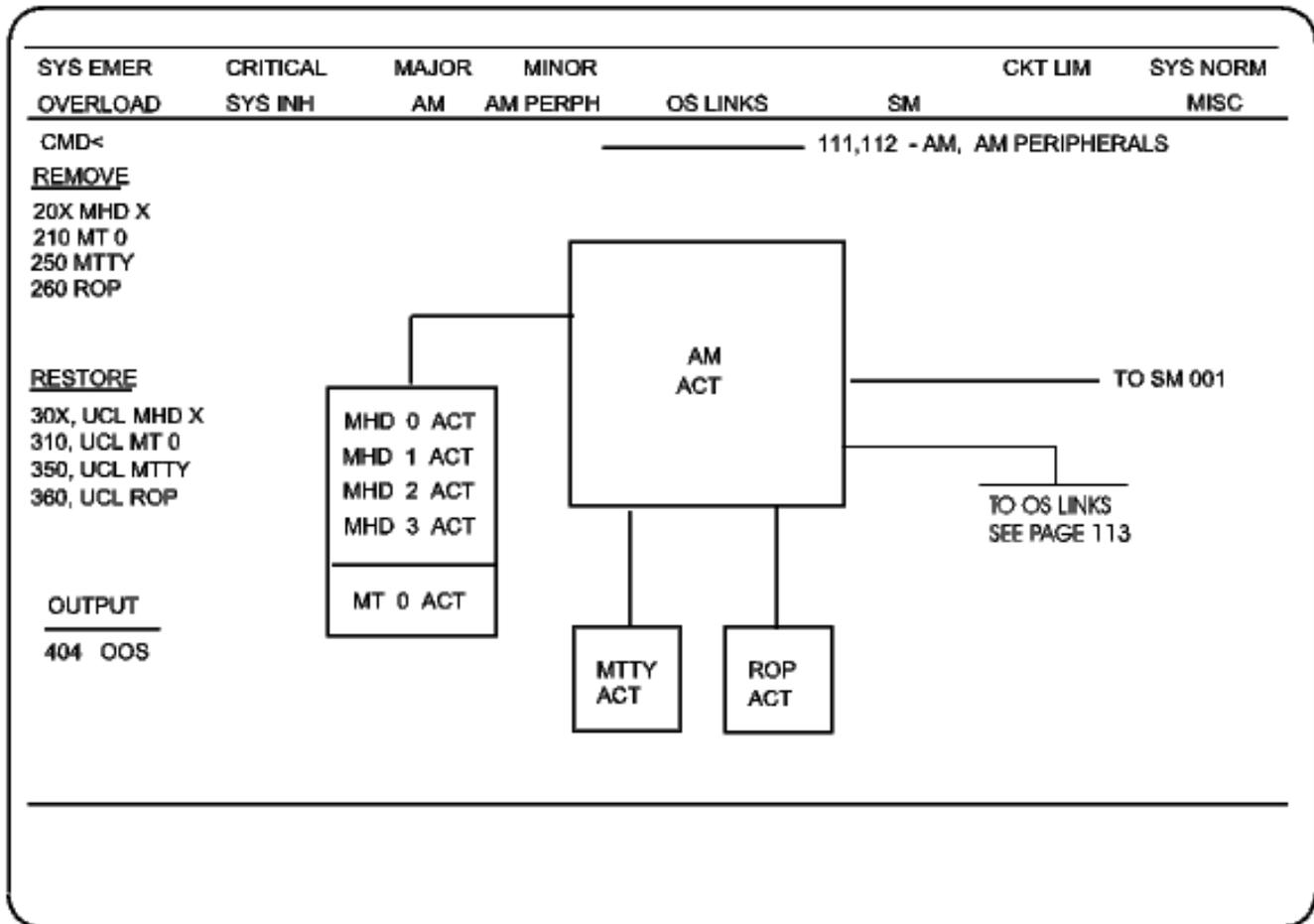


Figure 2-17 MCC Display Page 111,112 AM, AM Peripherals

Figure 2-17 is an example of the VCDX switch version of the 111/112 display page. Note that the unconditional option (UCL) is required for all restore pokes.

An off-normal condition on this page will cause the AM or AM PERPH indicator at the top of the screen to backlight. In this case, the appropriate alarm level (CRITICAL, MAJOR, MINOR) will also backlight.

2.6.3.3.1 Abbreviations

OOS	Out Of Service
ACT	Active
MTTY	Maintenance Teletypewriter
ROP	Receive-Only Printer
UCL	Unconditional

2.6.3.3.2 Commands

The 111/112 page provides command to remove, restore, diagnose, and switch the various units. Also, output commands are available for out-of-service and diagnostic listings.

CMD	RESULT
20X	MHD X is removed (RMV: MHD=X)
210	MT 0 is removed (RMV:MT=0)
250	MTTY 0 is removed (RMV:MTTY=0)
260	ROP 0 is removed (RMV:ROP=0)
30X,UCL	MHD X is unconditionally restored (RST:MHD=X,UCL)
310,UCL	MT 0 is unconditionally restored (RST:MT=0,UCL)
350,UCL	MTTY 0 is unconditionally restored (RST:MTTY=0,UCL)
360,UCL	ROP 0 is unconditionally restored (RST:ROP=0,UCL)
404	OOS units are listed at ROP (OP:CFGSTAT, OOS)

2.6.3.4 MCC Page 113 - Operations Systems Links

The 113 display page provides a listing of Operations Systems links and their status.

SYS EMER OVERLOAD	CRITICAL SYS INH	MAJOR AM	MINOR AM PERPH	OS LINKS	SM	CKT LIM	SYS NORM MISC
CMD: _____ 113 - OPERATIONS SYSTEMS LINKS							
OS	LINK	TYPE	DEVICE		TIME BUFF	DATA BUFF	
AMADL1	PRIMARY	DIAL-UP	SDL 13 ACT		N/A	N/A	
SCANS	PRIMARY	DIAL-UP	SDL 0 ACT		N/A	N/A	
SCC	PRIMARY	DEDICATED	SDL 1 ACT		N/A	N/A	

Figure 2-18 MCC Display Page 113

Figure 2-18 shows an example of display page 113 for the VCDX switch.

The Software Change Administration and Notifications System 2 (SCANS2) is used to transmit Software Updates (SUs) to both the office and the Switching Control Center (SCC).

The Automatic Message Accounting Data Link (AMADL) connects the Automatic Message Accounting Teleprocessing System (AMATPS) with a Revenue Accounting Office (RAO). The AMATPS assembles billing data.

The SCC connects the office to the SCC system (SCCS) which monitors and administers the office.

2.6.3.5 MCC Page 116 - Miscellaneous Status

The 116 display page provides a status display for various units/activities which do not fall under any other grouping. For VCDX switch configurations, miscellaneous alarms are shown on display page 1400. Figure 2-19 shows the 116 display.

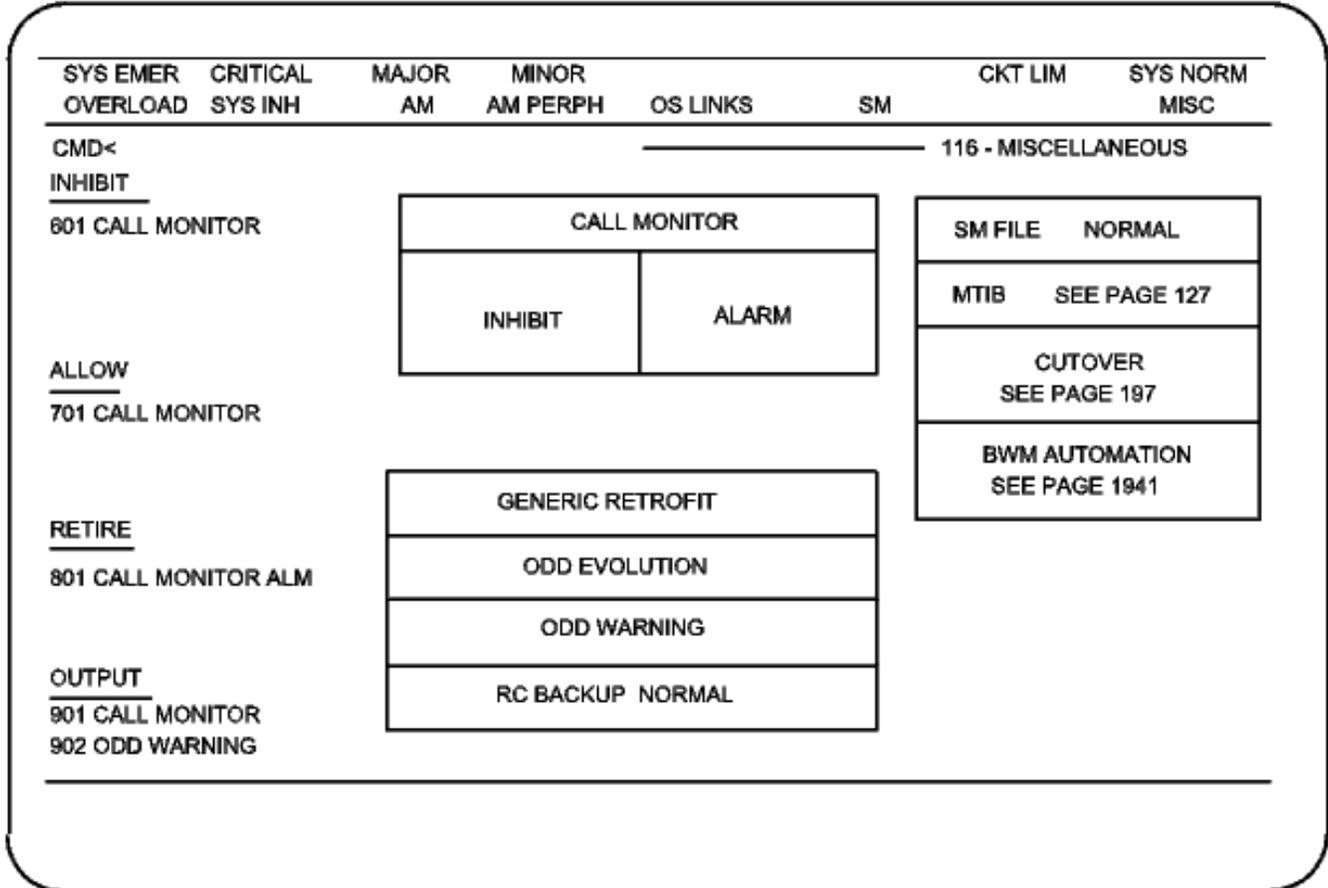


Figure 2-19 Miscellaneous Status Summary - MCC Display Page 116

The CALL MONITOR indicator shows whether the Call Monitor is inhibited or allowed. Entering the command 601 generates the message **INH:CALLMON** which will inhibit the monitor from making test calls and performing call completion analysis. This also clears the monitor's history data. The command 701 generates the message **ALW:CALLMON** which allows the monitor to start the cycle of making test calls and performing call completion analysis. Command 801 generates the message **RTR:CALLMON,ALARM** which retires the alarm indicator in the Call Monitor box. Command 901 generates the message **OP:CALLMON** which generates the OP CALLMON PAST 15 MINUTE REPORT on the ROP.

The indicator GENERIC RETROFIT will backlight and change to GENERIC RETROFIT ACTIVE when software release (generic) retrofit is in progress.

The indicator ODD EVOL will backlight and change to ODD EVOL ACT when ODD Evolution is in progress. ODD Evolution is initiated by the command **BKUP:ODD,ODDEVOL** and stays in effect until the actual software release cutover takes place.

The indicator ODD WARNING will backlight when either the amount of ODD space being used has exceeded the engineering recommendations for the AM or the automatic relation engineering reorganization process has failed

on one or more relations in the AM. Entering the command **902** generates the input message **OP:ODDWARN,AM** which will generate the OP ODDWARN output message on the ROP.

The RC BACKUP indicator normally shows NORMAL on the right part of the indicator. If RC Backup fails in the AM, the text NORMAL changes to FAILURE and the entire indicator backlights.

The next indicator, MTIB, will backlight if an off-normal condition exists on the MTIB display. Enter command **127** for further details.

In the CUTOVER indicator, the word ACTIVE will backlight if an off-normal condition exists on the CUTOVER display (cutover enabled, for example). Further information can be found on display 197 - CUTOVER.

The indicator BWM AUTOMATION will backlight when the BWM automation process is halted for any reason.

The indicator SM FILE shows NORMAL (in the right portion of the indicator) while the system is operating normally. If the UPD:HSCHK audit finds hashsum errors on any of the SM/SM peripheral, the indicator will backlight and NORMAL changes to HASHERR. For more information, analyze the last output message from the UPD:HSCHK command (on the ROP) or request a summary report of the errors via the UPD:HSCHK,REPT option of the command. The indicator is cleared when the cause if the disk hashsum error has been corrected and the UPD:HSCHK audit is re-run.

2.6.3.5.1 Abbreviations

HASHERR Hashsum Error

MTIB Metallic Test Interface Bus

2.6.3.5.2 Commands

Commands are provided to inhibit and allow the call monitor, output the past 15-minute interval history for the call monitor, retire a call monitor alarm or output ODD WARNING information.

Also, all available displays can be accessed from the 116 display page.

CMD	RESULT
601	Call Monitor is inhibited (INH:CALLMON)
701	Call Monitor is allowed (ALW:CALLMON)
801	Call Monitor alarm is retired (RTR:CALLMON,ALARM)
901	Call Monitor history is output (OP:CALLMON)
902	ODD WARNING information is output (OP:ODDWARN,AM)

2.6.3.6 MCC Page 1190 - MCTSI Status

The purpose of the 1190 page display is to show status and provide maintenance commands for the Module Controller/Time Slot Interchanger (MCTSI), dual link interface (DLI), and the external timing references.

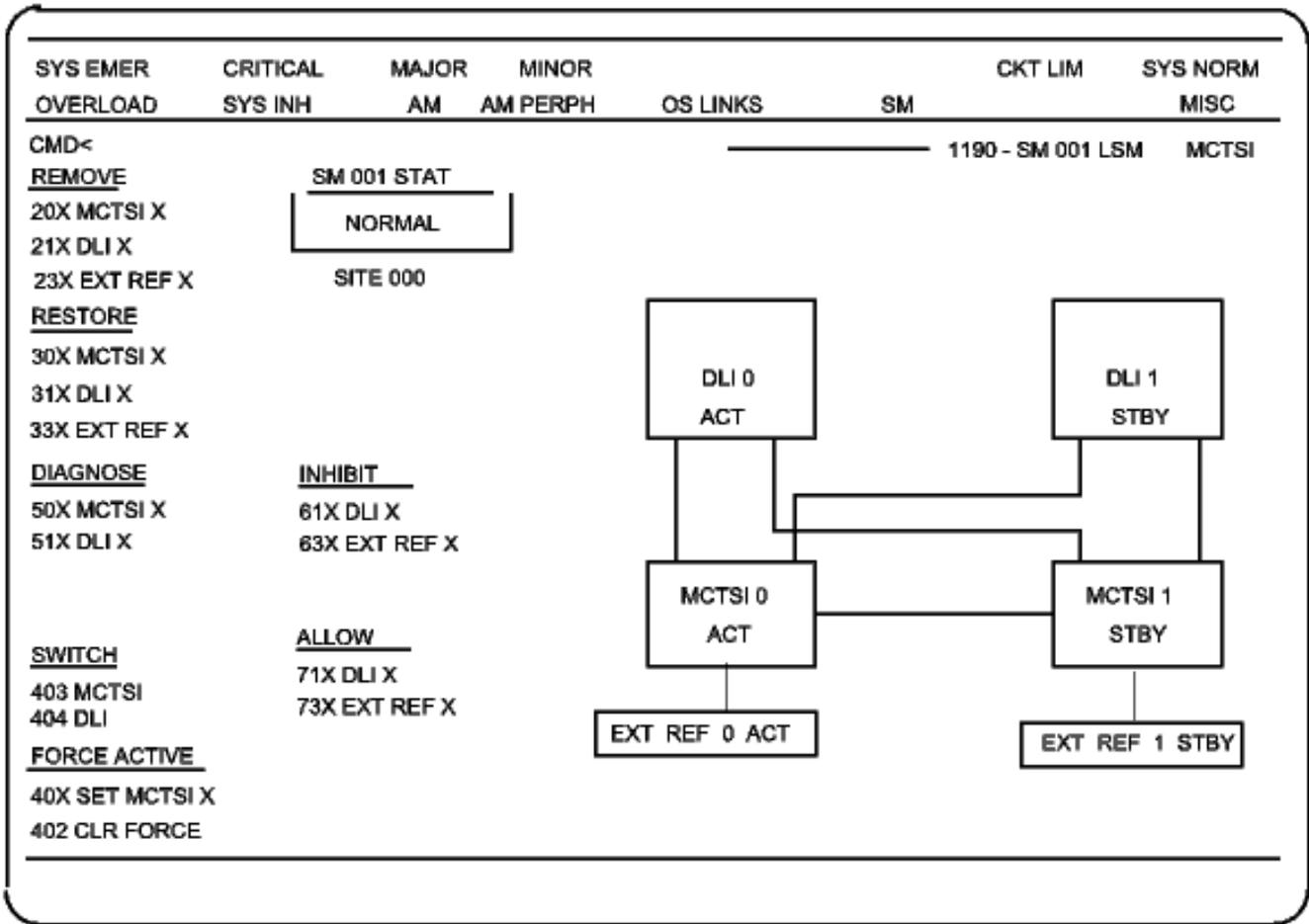


Figure 2-20 MCC Display Page 1190

Figure 2-20 shows the switching module 1190 page for the VCDX switch using a switching module equipped with the MCTU3. For switching module versions equipped with the MCTU2 and the TN1077F, a slightly different version appears with lines linking the external references directly to their respective DLIs. Figure 2-21 shows the 1190 page for the SM-2000.

When an off-normal condition occurs, the indicator for the condition backlights. On Page 1010,X, the MCTSI indicator backlights. On Page 114, the indicator for the switching module backlights; and on the appropriate 141, 142, 143, or 144 page, the indicator for the switching module backlights, and a phrase describing the problem is written, unless a more critical condition exists. In the SUMMARY STATUS AREA, the switching module critical indicator and the alarm level (CRITICAL, MAJOR, or MINOR), if applicable, are backlit.

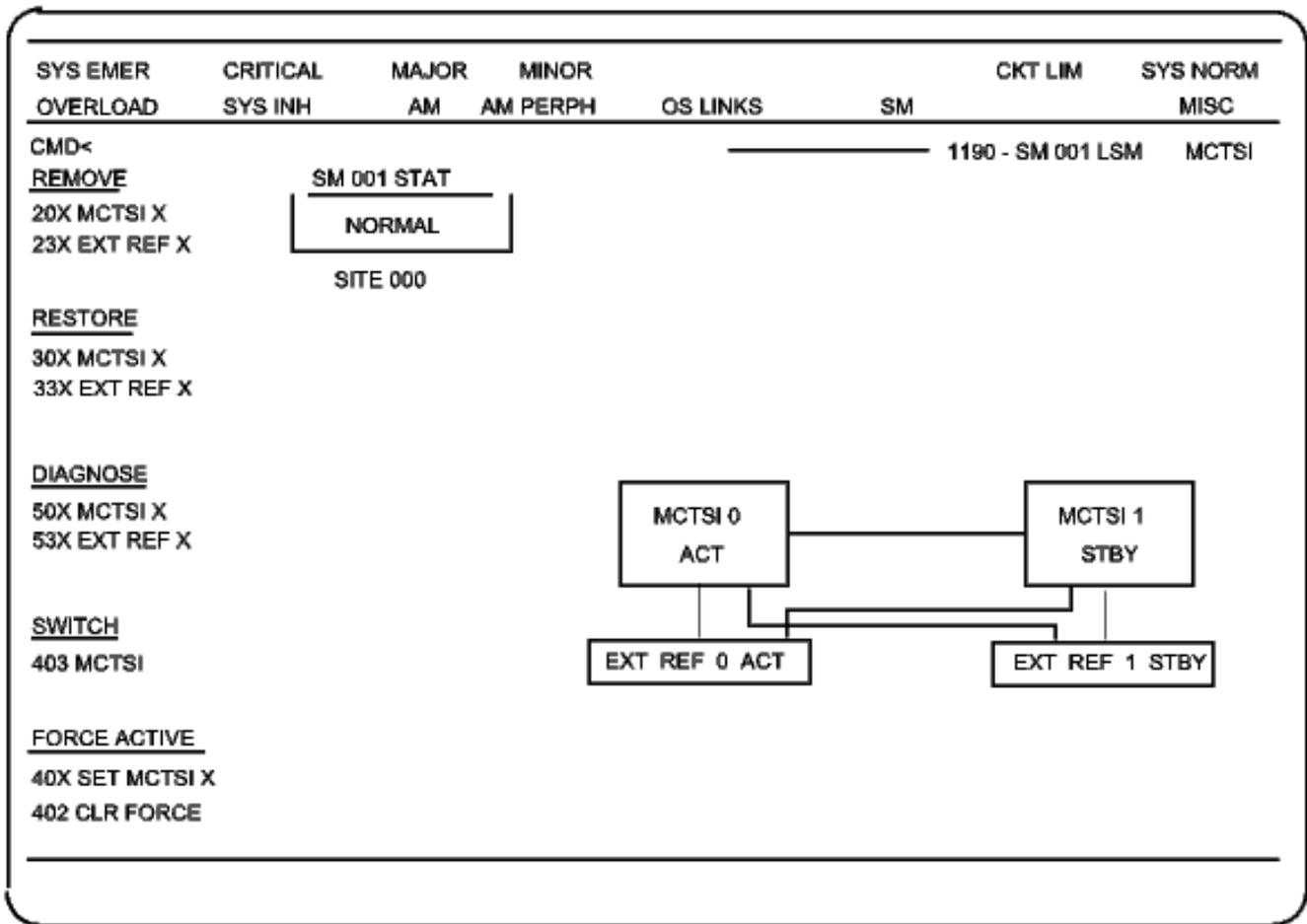


Figure 2-21 MCC Display Page 1190 (SM-2000 Version)

If the switching module is initializing and this display is requested, it displays, but only the status of the DLIs fills in, and the switching module X STAT indicator shows ISOLATED. The DLI status data is maintained in the AM and is available for display. The MCTSI status data is stored in the switching module.

2.6.3.6.1 Commands

Commands are given to remove, restore, and diagnose the MCTSI, DLIs, or external timing references and to switch the MCTSI or to force active the MCTSI. Any available paging commands can be entered from the 1190 page.

CMD	RESULT	
20X	MCTSI X is removed.	(RMV:MCTSI=SM#-X) [,UCL]
21X	DLI X is removed.	(RMV:DLI=SM#-X) [,UCL]
23X	EXT REF is removed	(RMV:SMREF=SM#-X)
30X	MCTSI X is restored.	(RST:MCTSI=SM#-X) [,UCL] [,STBY]
31X	DLI X is restored.	(RST:DLI=SM#-X) [,UCL]
33X	EXT REF is restored.	(RST:SMREF=SM#-X)
50X	MCTSI X is diagnosed.	(DGN:MCTSI=SM#-X,RAW,TLP) [,UCL] [,GROW] [,RPT] Test is repeated 32,767 times. [,RPT=a] The "a" is the number of times the test is to be repeated (1-32,767). [,PH=b b&&c] The "b" is the diagnostic phase or "b&&c" is the range of phases to be performed. (DGN:ONTC=X,DLI,SM#,RAW,TLP) [,UCL]
51X	DLI X is diagnosed.	

	Same options as 50X	
40x	MCTSIx is forced active.	
402	MCTSI forces cleared.	
403	MCTSI is switched.	(SW:MCTSI=SM#)
404	DLI is switched	(SW:DLI=SM#)
60X	DLI hardware checks are inhibited	(INH:HDWCHK, SMREF=SM#-X)
61X	EXT REF hardware checks are inhibited	(INH:HDWCHK, SMREF=SM#-X)
70X	DLI Hardware checks are allowed	(ALW:HDWCHK, DLI=SM#-X)
71X	EXT REF hardware checks are allowed	(ALW:HDWCHK, SMREF=SM#-X)

2.6.3.7 MCC Page 1400 - Switching Module BLDG/PWR Alarm Status

The purpose of the 1400,X page is to display all building/power alarm status and assignment and the alarm retire mode. It also provides inhibit/allow controls for building alarms.

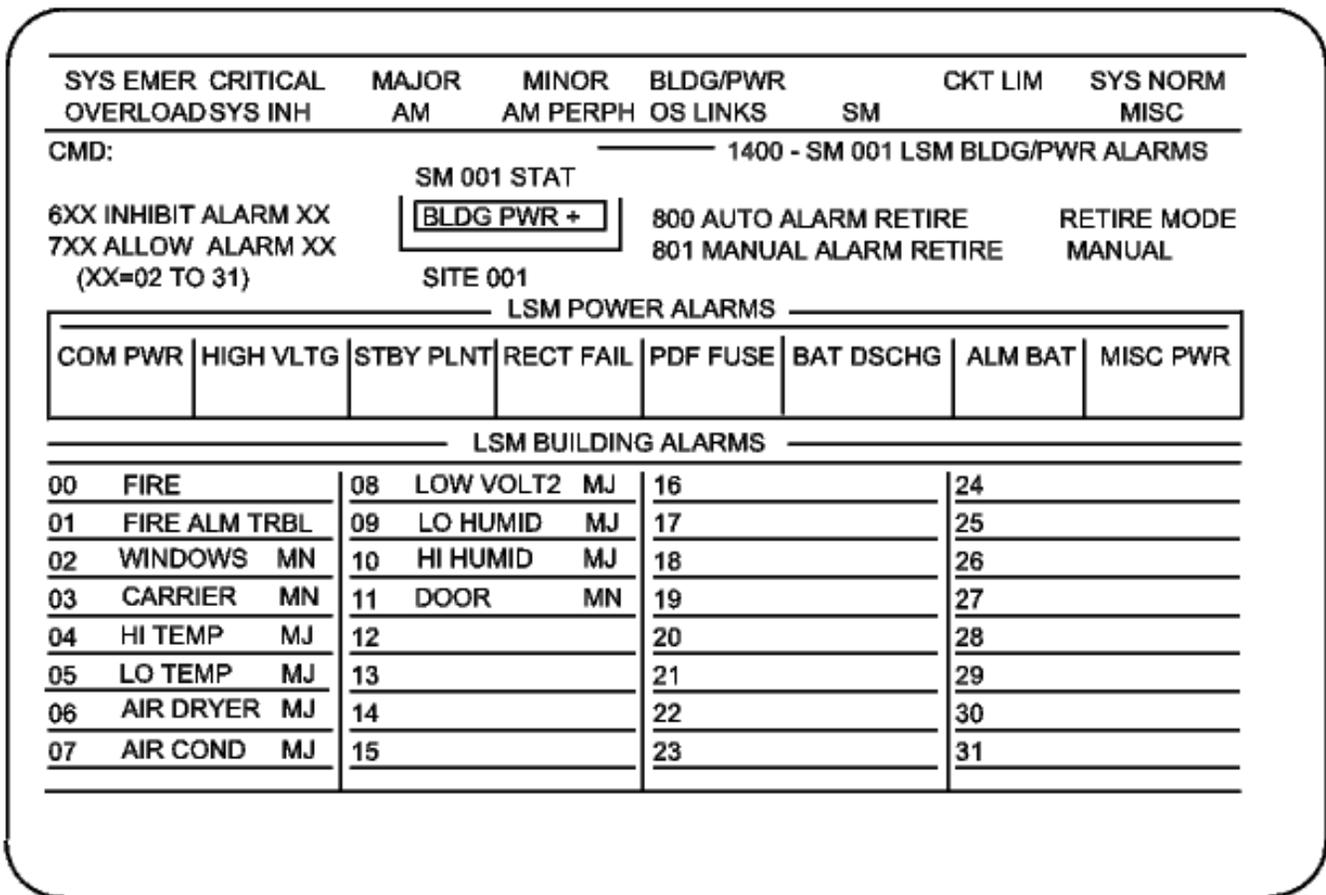


Figure 2-22 MCC Display Page 1400

The Alarm Status Unit (ASU) provides audible and visual indication of the office alarms with LEDs for the alarm levels (critical, major, minor). There is an Alarm Retire key at the ASU which retires the audible alarms and clears the alarm level LEDs at the ASU with no effect on the SSA of the terminal.

A normal alarm indicator is displayed in normal video (white on black). Figure 2-22 provides a view of the 1400 page.

Building alarms 02-31 and their alarm levels are office assignable. Doors, windows, humidity, etc. are types of applications. The alarm level and text in these indicators are initially filled in using RC/V. Once these indicators are filled in, they are protected from loss if the system is booted.

2.6.3.7.1 Commands

The following commands are available to inhibit, allow, or retire alarms.

CMD	RESULT
6XX	Inhibit Alarm XX
7XX	Allow Alarm XX
800	Auto Alarm Retire
801	Manual Alarm Retire

2.6.3.8 MCC Keyboard

The MCC Keyboard keys are used in a normal fashion to enter numeric codes, input messages, and alphanumeric responses to the system. Certain keys are used for administration as explained in the remainder of this section.

The MCC uses five function keys. When one of these keys (see Figure 2-23) is depressed, the system performs the corresponding function. The keys are as follows:

- ALM RLS: alarm release
- CMD/MSG: input command or input message
- NORM DISP: normal display
- EMER DISP: emergency action display
- Control + ENTER (*not the return key*): UNIX[®] mode key (switches between VCDX switch mode and UNIX[®] mode on the MCC).

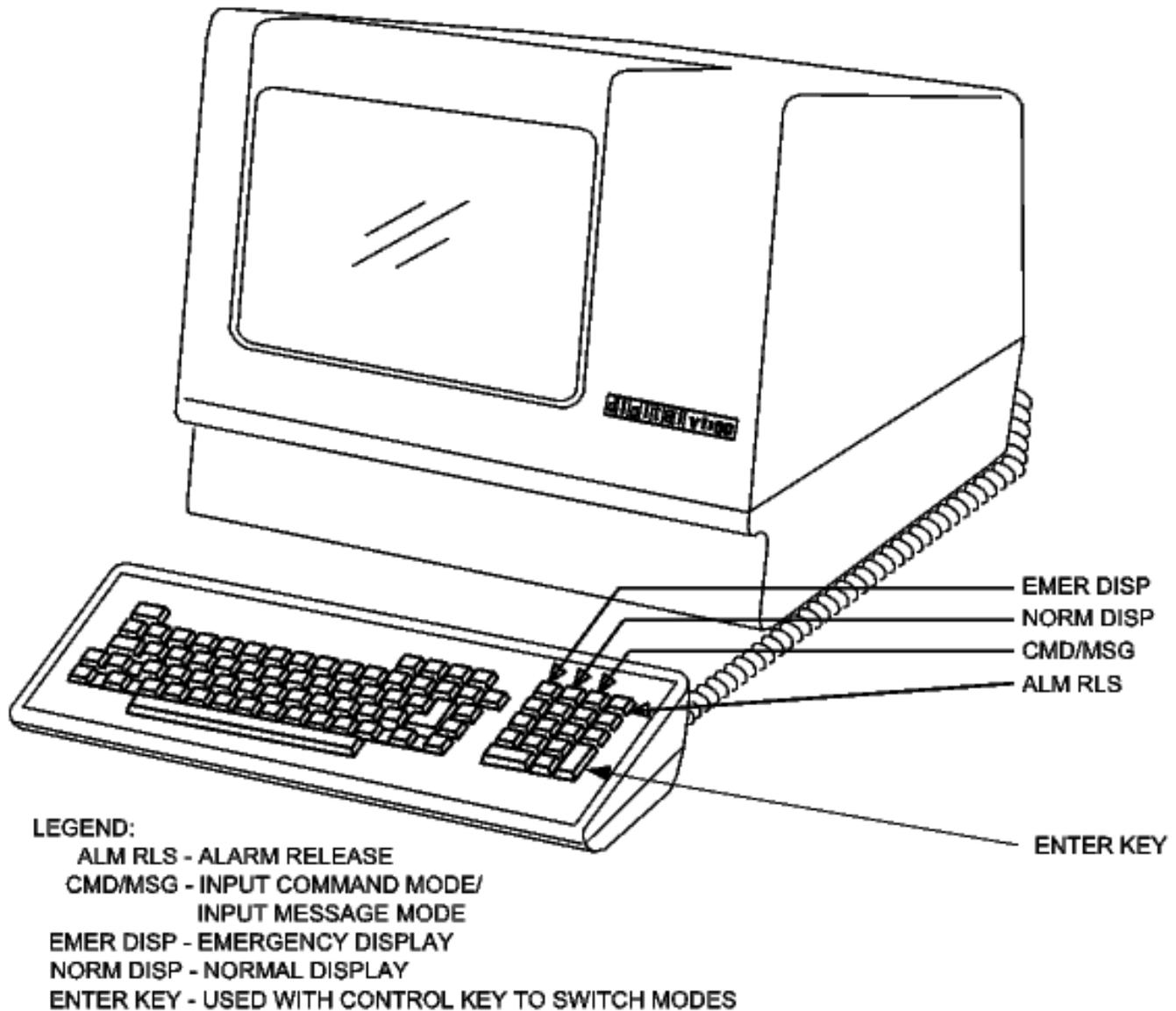


Figure 2-23 MCC Video Terminal With Function Keys

2.6.3.8.1 Alarm Release Function Key

There are two system alarm release modes: automatic alarm release and manual alarm release. If the system is in the automatic alarm release mode, the audible alarm and the flashing alarm conditions are released 5 seconds after initialization. If the system is in the manual alarm release mode, the audible alarm and flashing alarm conditions are released by depressing the ALM RLS function key on the video terminal keyboard. Minor audible alarms are retired after 5 seconds in either mode. Released alarms and controls in effect remain in the alarm condition until the system has been restored to normal operating condition. The alarm release mode is changed via a maintenance command available on MCC display page 1400, or an input message. Refer to 235-105-110, 5ESS[®] *Switch System Maintenance Requirements and Tools*, for a complete listing of MCC status indicators and their meanings.

2.6.3.8.2 Input Command Or Message Function Key

The command/message (CMD/MSG) function key configures the MCC to accept either input CMDs or input MSGs. The key acts as a toggle and allows input in one mode or the other. Personnel may switch between either mode after acknowledgment of the previously entered message. Any unexecuted data in either area is lost if a switch is made before an acknowledgment is received. The position of the cursor on the video display indicates which input mode the MCC is in. The cursor resides in the input message line area while in the MSG mode. If the MCC is in the CMD mode, the cursor resides at the CMD entry area (at the top left of the control and display area). Whenever the display is brought on line or a new page is selected, the input mode will remain unchanged.

2.6.3.8.3 Normal Display Function Key

The NORM DISP function key places a page controlled from the emulated AM on the display screen. The page displayed will be the previously displayed page. Depressing the NORM DISP function key again will redraw a clean display without aborting any processes in progress.

2.6.3.8.4 Emergency Action Display Function Key

The EMER DISP function key enables the emergency action mode and displays the EAI page on the screen. See "Emergency Action Interface (EAI)," Chapter 2.6.3.2. This page is used during a system emergency for system recovery functions. To exit the EAI page, press the NORM DISP key.

2.6.3.8.5 Control + Enter Key

Press the Control + Enter key to switch between the *UNIX*[®] system mode and the VCDX switch mode on the MCC display. The Enter key is located on the right side of the keyboard in the numeric keypad section. Do not confuse the Enter key with the Return key on the main keyboard.

2.6.3.8.6 Data Entry Functions

Most other keyboard keys are used in a normal fashion to enter numeric codes, input messages, and alphanumeric responses to the system.

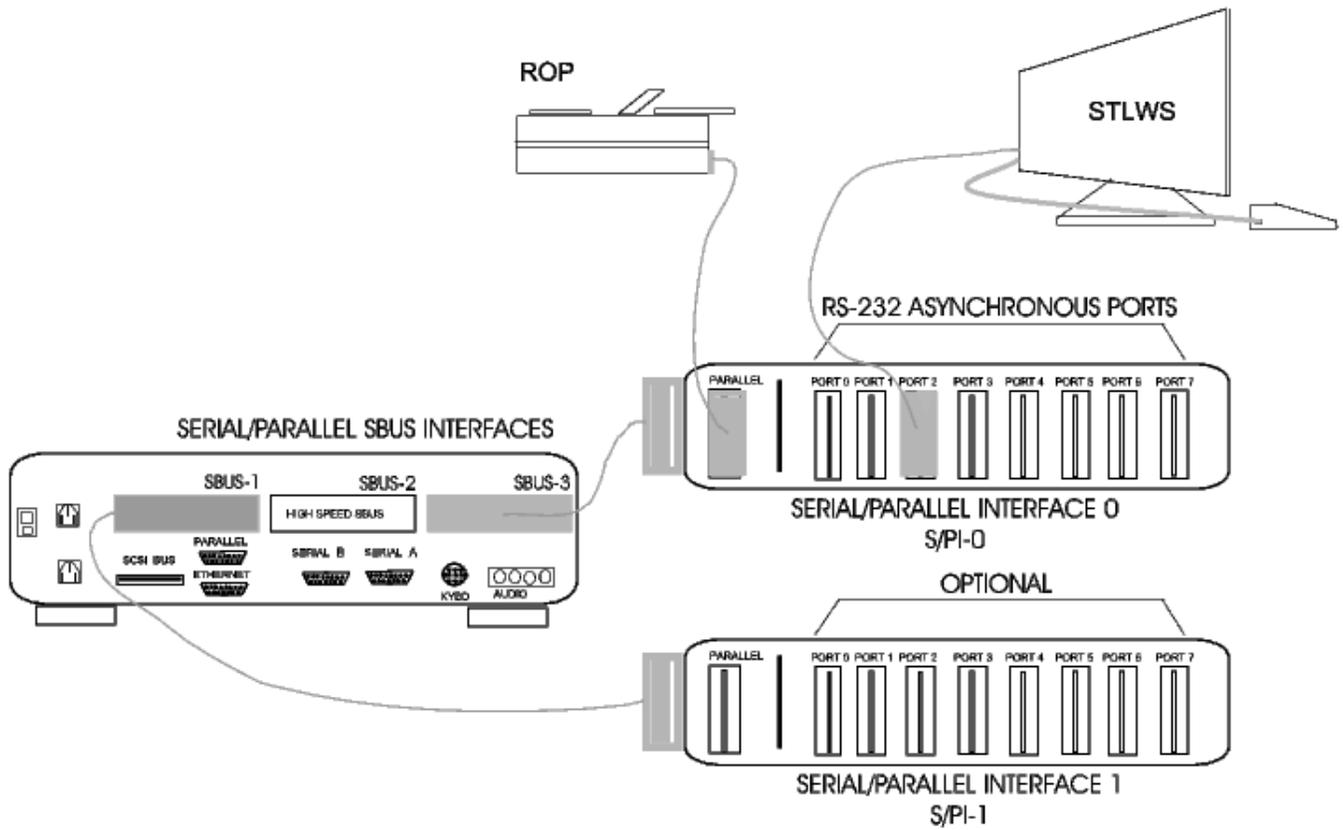
2.6.4 Receive-Only Printer (ROP)

The ROP provides the local office personnel with a means for obtaining a hardcopy printout of system messages. This printout provides a permanent copy of messages for future reference. Since the message may not always be displayed on the MCC video display, the printout may be the only copy of the message available to the maintenance personnel.

Every message the system generates is not necessarily printed at the ROP. Some messages are logged, while some are only printed at the originating terminal in response to an input message. Because of the large number of output messages that may be generated by the system, controls are available to the maintenance personnel to limit the volume of messages printed.

Figures 2-24 and 2-25 illustrate the interface connection between the ROP and the AW.

For further information on *5ESS*[®] switch output messages, see 235-600-750, *Output Messages Manual*.



ADMINISTRATIVE WORKSTATION (REAR VIEW)

Figure 2-24 STLWS and ROP Interface (SPARC5) STLWS and ROP: interface

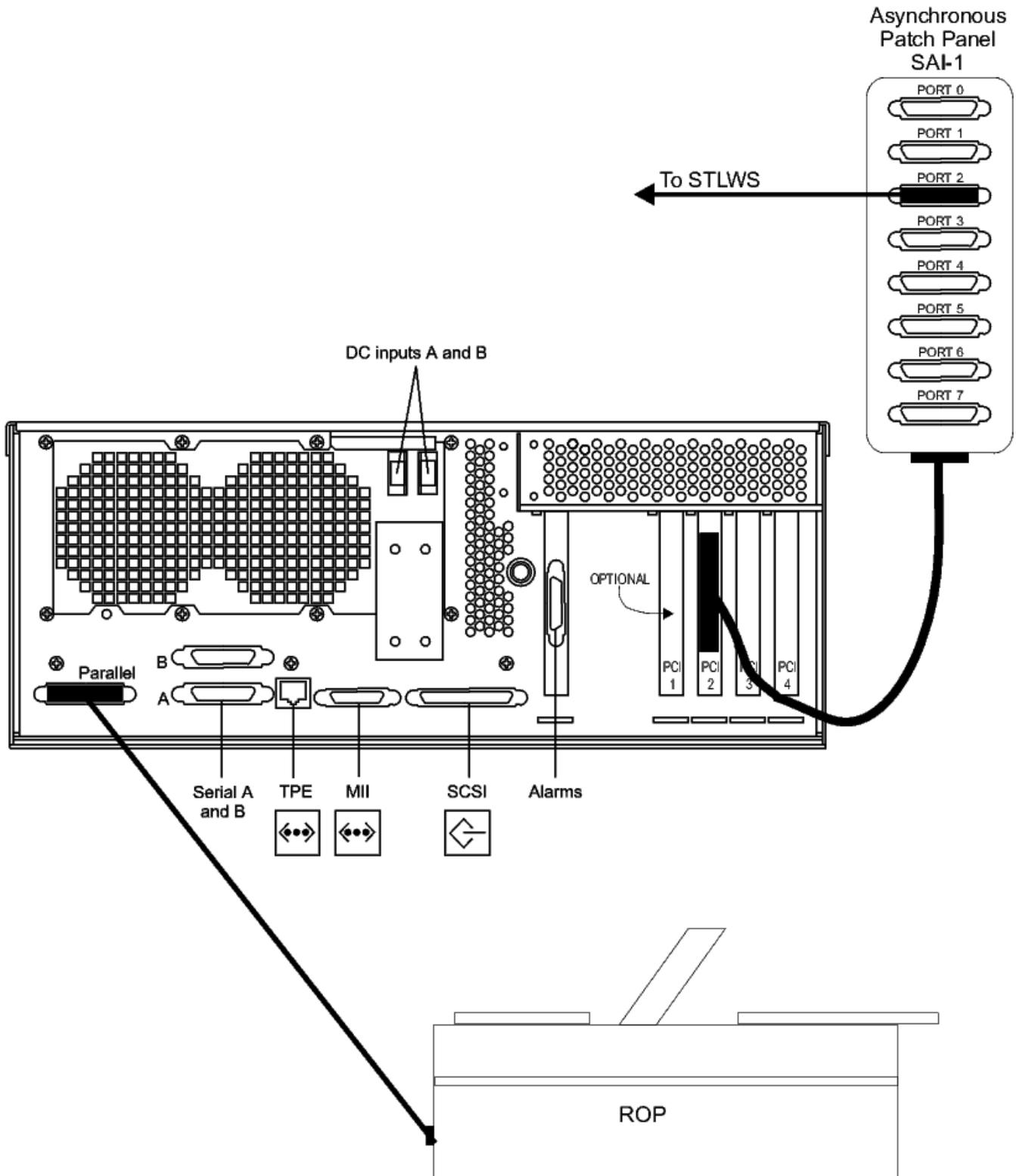


Figure 2-25 STLWS and ROP Interface (Netra Sun Microsystems, Inc. t)

2.6.5 Supplemental Trunk and Line Work Station (STLWS)

The Supplementary Trunk and Line Work Station (STLWS) is an interactive menu interface used to test, monitor, or measure trunks and lines. The STLWS terminal is a Display Administration Process (DAP) type terminal. This means the office personnel can perform the same functions or commands from the STLWS that can be performed from the MCC, with the exception of being able to access the EAI page display.

Some of the operations that may be performed using the STLWS are as follows:

- Controlling lines and trunks being tested
- Monitoring a short circuit
- Measuring/sending frequencies
- Making continuous metallic measurements
- Providing remove or restore commands used for testing.

2.6.6 Recent Change (RC/V) Terminal

Recent Change and Verify (RC/V) is a process used to modify the Office Dependent Data (ODD). The RC/V terminal:

- isolates the administrative process from the actual modification-of-the-data-base process
- provides a user-friendly view of the database.

The RC/V system is composed of many user interfaces which allow personnel to modify or verify the contents of the ODD on the VCDX switch. The RC/V facility currently provides the following interfaces:

- RC/V Menu Interface - immediate and batch release
- RC/V Text Interface - immediate and batch release
- Office Records (OFR)
- Recent Change Operations Systems (RCOS) Interface
- Facility Management (FM).

The RC/V system is a function that allows maintenance personnel access to the VCDX switch database. The RC/V system is used to add to, delete from, update, or verify the database. A stand-alone RC/V subsystem is provided at the VCDX switch. Therefore, Operation Support System (OSS) interfaces are not required to use RC/V capabilities. The stand-alone RC/V enables office and/or maintenance personnel to change or verify the database using video displays and menu selection. For detailed information applicable to RC/V procedures, see 235-118-XXX (where XXX = the document number associated to the applicable software release), *5ESS[®] Switch Recent Change Manual*, 235-000-000, *5ESS[®] Switch Division 235 Numerical Index*, and associated documents.

2.6.7 SCANS Data Link

The Software Change Administration and Notification System (SCANS) is a software support package provided by Lucent Technologies. SCANS provides the following services:

- Distributing emergency software fixes

- Distributing bulletins, or information about generic software fixes
- Distributing Software Updates (SUs)
- Introducing new software features.

The VCDX switch supports a SCANS data link interface. Figures 2-26 and 2-27 show the interface connection of the SCANS terminal to the AW.

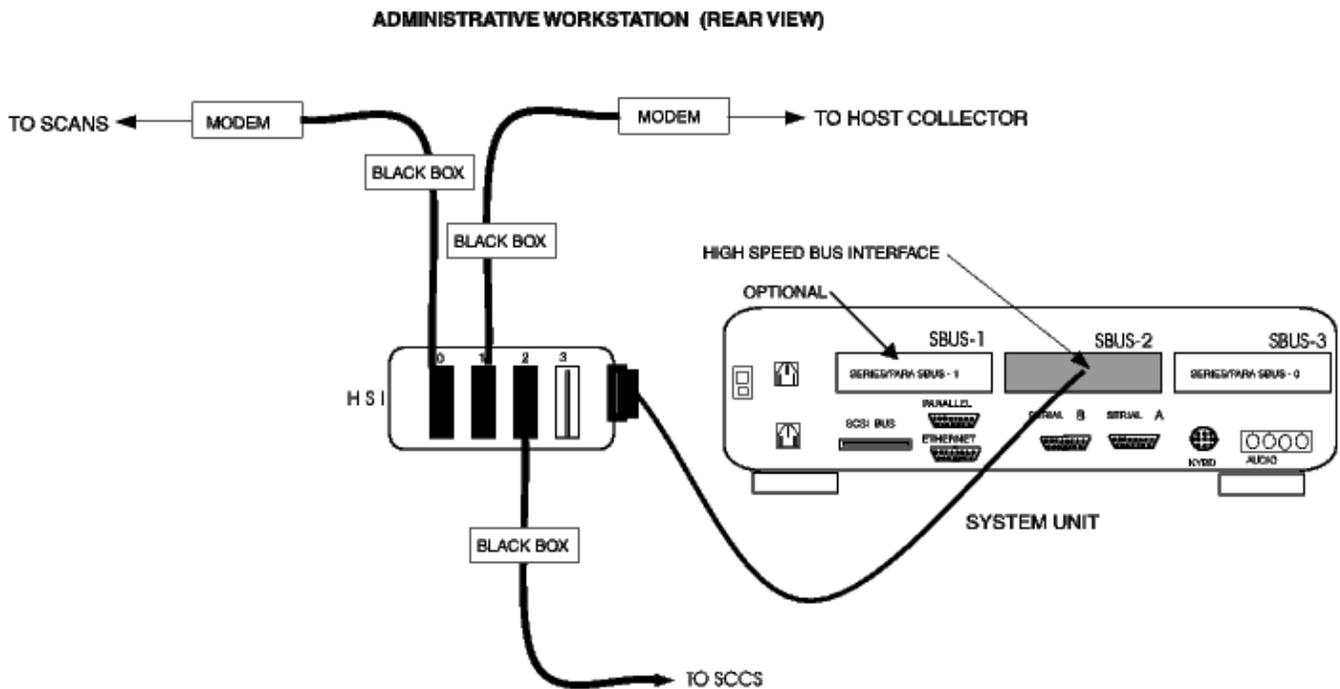


Figure 2-26 SCANS/AMA/SCCS Interface (SPARC5) SCANS/AMA/SCCS: interface

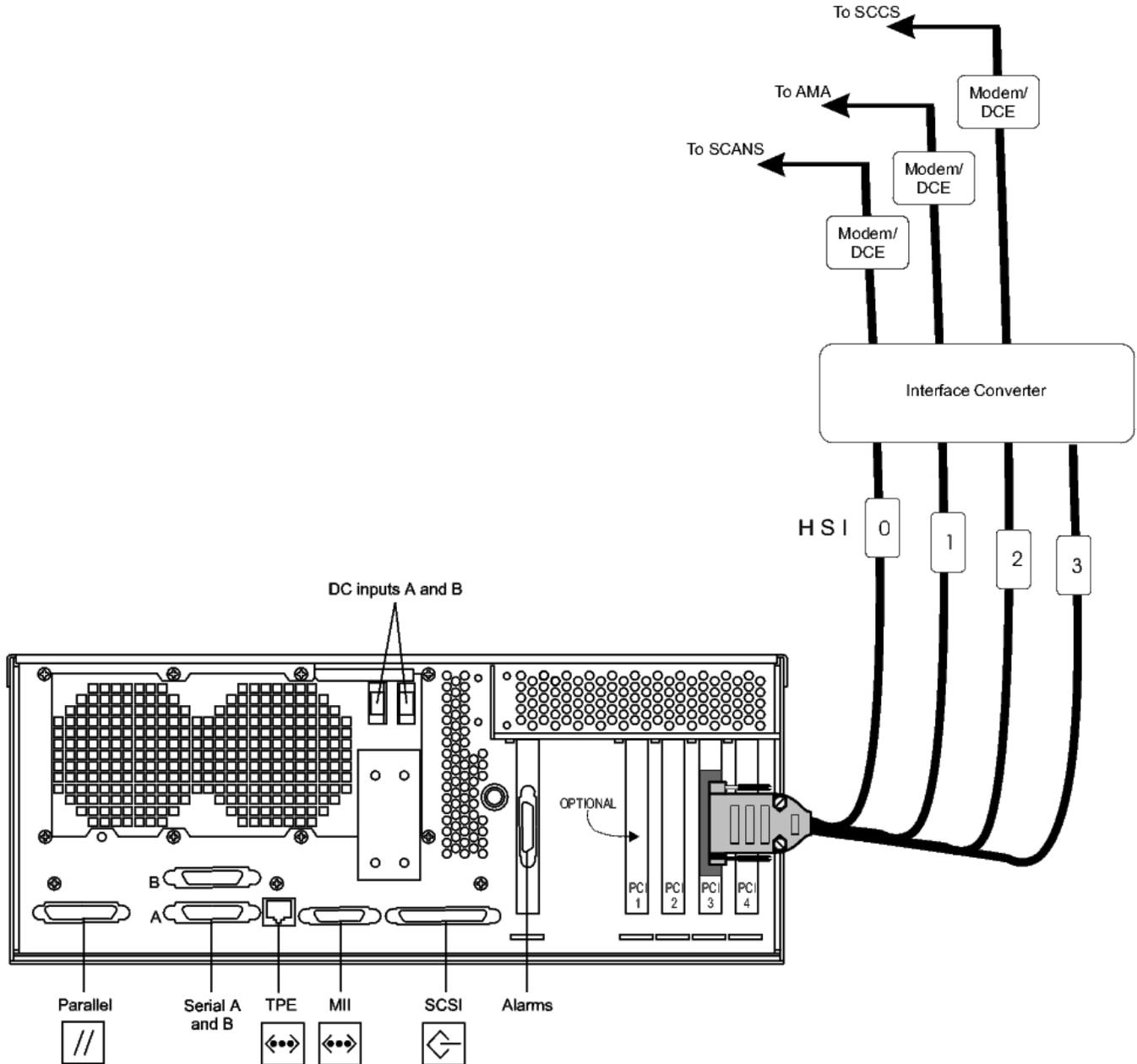


Figure 2-27 SCANS/AMA/SCCS Interface (Netra Sun Microsystems, Inc. t)

2.6.8 Automatic Message Accounting (AMA) Data Link

The Billing and Data Systems (*BILLDATS*[®]) is a software system whereby a host collector receives billing data from the VCDX switch. Figures 2-26 and 2-27 show the AMA data link which provides the hardware interface requirements for the *BILLDATS*[®] system. For more information about the AMA data link, see 235-070-100, *5ESS*[®] *Switch Administration and Engineering Guidelines* and 235-190-300, *5ESS*[®] *Switch Billing Features and Specifications*.

2.6.9 System Control Center System (SCCS) Data Link

The SCCS is a remote office control system. It allows centralized control of many offices in remote locations. The

SCCS provides service providers with capabilities nearly identical with those described for the MCC in "Master Control Center (MCC)", Section 2.6.3 .

These capabilities include; removing and restoring hardware units, performing recent changes, applying SUs, and commanding an initialization. Figures 2-26 and 2-27 illustrate the SCCS connections to the AW.

2.7 Terminal Security

Certain commands in the VCDX switch can be password protected to restrict access to authorized personnel. Refer to 235-700-200, *UNIX® RTR Operating System Reference Manual*. Also, any terminal except the MCC channel can be modified to require a login by making the necessary Equipment Configuration Data (ECD) changes. Access to RC/V can be limited by using the **SET:RCAC** message. Refer to 235-118-XXX (where XXX = the document number associated to the applicable software release) , *5ESS® Switch Recent Change Reference Manual*.

2.8 VCDX Switch Software

The VCDX switch software is composed of the AW software and the switching module software.

2.8.1 Administrative Workstation (AW) Software

The architecture of the AW software appears in Figure 2-28 .

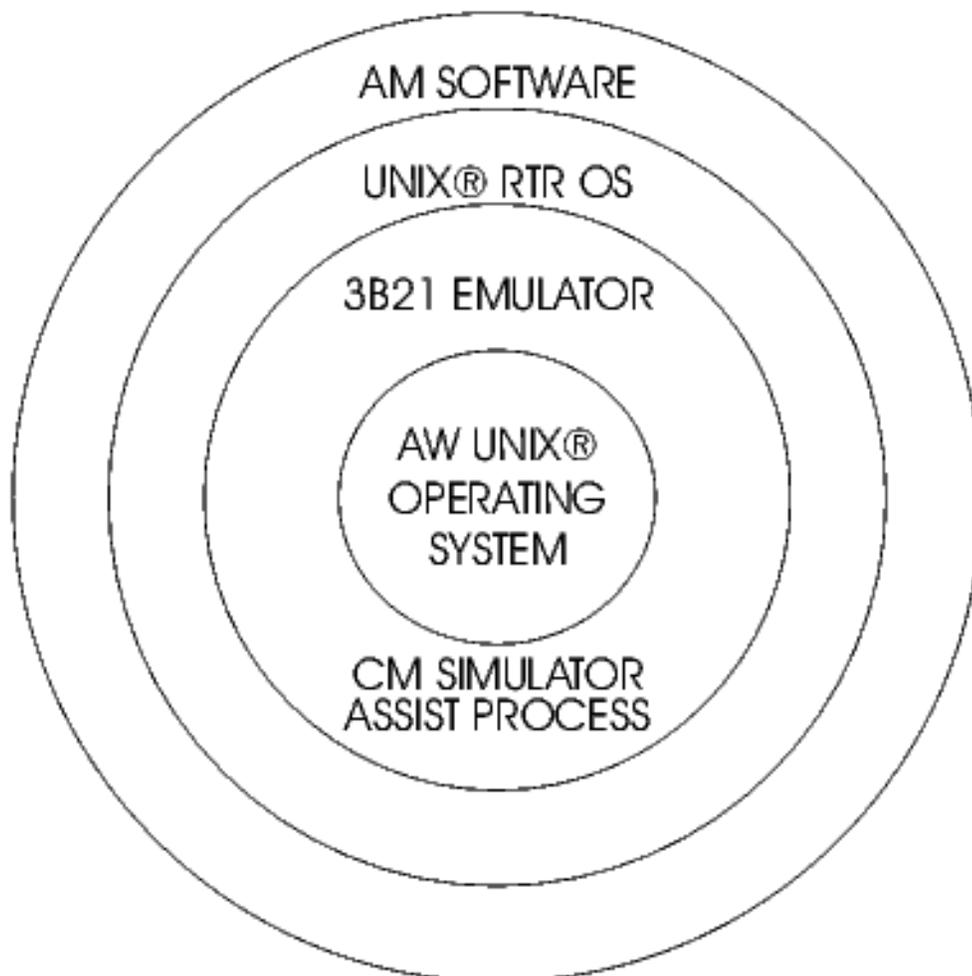


Figure 2-28 AW Software Architecture

The AW provides the same functions provided by the AM. These are those functions that are best performed out of the call processing environment:

- Administrative
- Maintenance.

In addition, the AW provides the CM function of passing messages from the AM to the switching module.

The AW contains special software which allows the functionality of the AM and CM to be economically provided for the single-switching-module VCDX switch. At the center of the software is the AW's *UNIX*[®] Operating System (see Figure 2-28).

Running on the next layer is the 3B21 emulator, assist processes, and the CM simulator. This layer of software is essentially mimicking, or emulating, the actions of the AM's 3B21D computer. The 3B21D computer is a highly reliable - fault tolerant computer capable of providing administrative and maintenance functions for up to 192 switching modules. This level of sophisticated hardware is not necessary for the single-switching-module VCDX switch, nor is it cost-effective. Thus the hardware has been replaced by a software program which emulates its actions. The CM simulator simulates the actions of the CM in passing messages from the AM software to the switching module. Again, in the single-switching-module VCDX switch, the CM is not necessary. Its primary role was to perform switching between switching modules, and in the case of the VCDX switch, there is only one switching module.

Running on the next layer is the *UNIX*[®] Real Time Reliable (RTR) Operating System. This operating system normally runs on the 3B21D computer and provides the functions needed for the AM software to run on the 3B21D.

Running on the outer layer is the AM software. This is the same feature-rich software which runs on the *5ESS*[®] switch and CDX switch AM.

2.8.2 Switching Module Software

The switching module software provides all call processing and the necessary control software to allow the switching module to communicate and pass data to and from the AW.

2.9 Features

The VCDX switch supports most of the features (for example, ISDN, Centrex) of the *5ESS*[®] switch.

2.9.1 Signaling System 7 (SS7)

Signaling is provided by the Packet Switching Unit (PSU). For detailed information on SS7, see 235-190-120, *5ESS*[®] Switch Common Channel Signaling Service Features Feature Descriptions.

2.9.2 Automatic Message Accounting (AMA)

The AMA feature is a billing feature that provides control, collection, and recording of AMA data.

In case of an AW outage, the switching module is capable of storing 72 hours of Automatic Message Accounting (AMA) data before requiring download to the AW for permanent storage on the hard disk.

A switching module circular AMA data buffer protects AMA data by ensuring that certain pointers in the AMA storage area are not updated until the AMA data can be retrieved once the AW is restored.

For more information on AMA, see 235-190-300, *5ESS[®] Switch Billing Features and Specifications*.

2.9.3 Software Release Retrofit

A software release retrofit is performed to transition from one software release to another. To perform a retrofit, see 235-120-13X (where X = the document number associated to the applicable software release), *5ESS[®] Switch Very Compact Digital Exchange (VCDX) Software Retrofit Procedures*. The appendices in this IP relating to retrofit are high level outlines and are intended only as a supplement to the retrofit manual.

2.9.4 Software Release Update

A software release update is performed to transition from one software release text load to another. To perform a software release update, see 235-120-15X (where X = the document number associated to the applicable software release), *5ESS[®] Switch Very Compact Digital Exchange (VCDX) Software Release Update Procedures*.

2.9.5 Features Not Supported in the VCDX Switch

Table 2-8 provides a list of features not supported in the VCDX switch. For a complete list of *5ESS[®]* switch features, see 235-100-125, *5ESS[®] Switch System Description*.

Table 2-8 Features Not Supported in the VCDX Switch

FEATURE GROUP	NUMBER	NAME
ACD/MIS	99-5E-4086	ACD on VCDX
ANS	99-5E-0835	Advanced Services Interface - Proxy (ASI-Proxy)
	99-5E-1501	Remote Access to ASI Proxy
CCS	25-01-0500	Common Channel Interoffice Signaling (CCIS)
CNI	99-5E-0679	Support for CNI Features
	99-5E-0825	CCS7 ISDN User Part Enhancements
	99-5E-1101	CNI Data Structure Documentation/Modification of CNIDBOC
	99-5E-1136	Improvement - DLN30
	99-5E-1243	Improved DLN Overload Control Strategy
	99-5E-1282	Critical Node Restore Phase 2
DSN/AUTOVON	99-5E-0239	Polygrid Routing
Leased Network	99-5E-0480	Leased Network 100-Second Scan
	99-5E-0505	Leased Network 8-Hour Past MDR
	99-5E-0506	Leased Network MDR for Released Link Trunk
	99-5E-0557	Leased Network Action Point Routing & Billing
	99-5E-0558	Leased Network Action Point Screening
	99-5E-0560	ISDN Access to Leased Network Features
Network Management	99-5E-0685	Leased Network Service Selective Trunk Reservation (SSTR)
	99-5E-0777	NM Data Collection for 2000 Trunk Group
OSPS	99-5E-XXXX	All OSPS Features

3. ADMINISTRATIVE WORKSTATION

Overview

The Administrative Workstation (AW) requires very little corrective maintenance and no routine maintenance.

In the event of a complete workstation failure, the entire AW should be replaced. Once the new workstation is installed with the appropriate interface cable connections, the software must be reloaded from backup tapes and the SunOS + emulator tape that accompanies the initial switch installation.

The following tapes were provided with the switch hardware and contain all the necessary software to operate the switch:

- (1) SUN OS + Emulator - contains the SUN OS software and the 3B21 emulator software resident on the AW (provided during switch installation).
- (2) TOP (Tape Operating Procedure) - contains the necessary tape loading software.
- (3) Switching Module Text - contains the switching module text data normally resident in the switching module.
- (4) AM Text - Contains the emulated Administrative Module (AM) text data. There may be 1 or 2 AM text tapes.
- (5) AM ODD/ECD - Contains the emulated AM Office Dependent Data (ODD) and the necessary Equipment Configuration Database (ECD).
- (6) Switching Module ODD - Contains the switching module ODD necessary for call processing.

NOTE: Tapes 2 through 6 provided for installation will **NOT** work for office recovery resulting from workstation replacement. These tapes must be made after initial installation and kept current using the backup procedures in 235-105-210, *5ESS[®] Switch Routine Operations and Maintenance Procedures*.

See "Perform Office Dead Start Recovery," Procedure 6.1 , for loading the software from the tape to the AW.

Digital Audio Tape (DAT) Tape Drive Unit

The Digital Audio Tape (DAT) tape drive unit connected to or built into the AW provides permanent storage for switch data. The DAT tape drive unit uses a tape cassette that loads and unloads from the unit in a simple manner.

The DAT tape drive unit is designed to use 4mm data-grade DDS cartridge media. Look for the DDS label on the tape cartridge to be sure you are using data-grade tape and not audio-grade tape. DDS2 or DDS3 tapes should be used with the *Netra*[™] t internal DDS3 tape drive. The tape cartridge should be of the same temperature as the drive for 24 hours prior to use.

The media used by the DAT tape drive unit is capable of storing up to 3.25 Gbytes of data on a 60 meter tape and 5 Gbytes of data on a 90 meter tape. *Netra*[™] t's DDS3 tape drive can store 12 Gbytes of data on a 125 meter DDS3 tape. When handling and storing tape cartridges, observe the following precautions:

- Keep cartridges away from anything magnetic.
- Store in a clean, dust-free environment, upright on edge rather than flat.
- Store in protective covers when not in use.
- Keep out of direct sunlight and away from extreme heat, cold or humidity.

- Cartridge must be at room temperature before using.
- Never open the tape access door on the cartridge and touch the magnetic recording surface.

To maintain reliability in the DAT tape drive unit, regular head cleaning is required. After every 25 hours of tape operation the unit should be cleaned using a DDS cleaning cartridge. See "Clean the DAT Tape Drive Unit Head," Procedure 3.20 .

Procedure 3.1: Halt the Administrative Module (AM) Emulator

OVERVIEW

Before performing a number of critical maintenance tasks on the AW, ensure that the emulator has been properly halted. This shutdown operation of the emulator ensures that all processes will correctly restart when the emulator is returned to service.

PROCEDURE

1. If the *UNIX*[®] console is displayed, switch to the MCC page of the AW by holding down the Ctrl key and pressing **Enter** (not Return).
2. Ensure there is no Recent Change/Verify (RC/V) activity in progress.
3. Ensure there is no SCANS session in progress.
4. Ensure there is no Automatic Message Accounting (AMA) teleprocessing or tape writing sessions in progress.
5. Isolate the switching module from the AW.
 - (a) Go to the **Switching Module Inhibit and Recovery Control Page**. Type and enter command **1800**.
 - (b) Set switching module manual isolation. Type and enter: **403**.
Response: ISOLATE? (Y/N)
 - (c) Type and enter **Y** to the confirmation.
Response: SET ISOL SM=x COMPLETED
Where:
 x = The switching module number.
 - (d) If the switching module cannot be isolated, **seek technical assistance**.
6. Write the AMA data from memory to disk.
 - (a) Enter the following input command:
WRT:AMADATA
Response:
 WRT AMA DATA HAS BEEN WRITTEN TO DISK
 READY TO TRANSFER DATA FROM DISK TO OUTPUT MEDIUM
7. Enter poke **59** on the MCC EAI page to halt the AM emulator.
Response: Terminate emulator (y/n)?
8. Type and enter **Y** to the confirmation.

9. STOP. YOU HAVE COMPLETED THIS PROCEDURE.

Procedure 3.2: Halt the Administrative Workstation

OVERVIEW

Before performing any type of maintenance on the AW, ensure that the workstation has been properly halted. This shutdown operation for the software ensures that all processes will correctly restart when the workstation is returned to service.

PROCEDURE

1. Halt the AM emulator.

NOTE: These are the same procedures as outlined in "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .

- (a) If the *UNIX*[®] console is displayed, switch to the MCC page of the AW by holding down the Ctrl key and pressing **Enter** (not Return).
- (b) Ensure there is no Recent Change/Verify (RC/V) activity in progress.
- (c) Ensure there is no SCANS session in progress.
- (d) Ensure there is no Automatic Message Accounting (AMA) teleprocessing or tape writing sessions in progress.

- (e) Isolate the switching module from the AW.

- (a) Go to the **Switching Module Inhibit and Recovery Control Page**. Type and enter command **1800**.

- (b) Set switching module manual isolation. Type and enter: **403**.

Response: **ISOLATE? (Y/N)**

- (c) Type and enter **Y** to the confirmation.

Response: **SET ISOL SM=x COMPLETED**

Where:

x = The switching module number.

- (d) If the switching module cannot be isolated, **seek technical assistance**.
- (f) Write the AMA data from memory to disk.
 - (a) Enter the following input command:

WRT:AMADATA

**WRT AMA DATA HAS BEEN WRITTEN TO DISK
READY TO TRANSFER DATA FROM DISK TO OUTPUT MEDIUM**

(g) Enter poke **59** on the MCC EAI page to halt the AM emulator.

Response: Terminate emulator (y/n)?

(h) Type and enter **Y** to the confirmation.

2. Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
3. If a login prompt does not appear, press **Return** repeatedly until one appears.
4. At the login prompt, login as **awadmin**, for example:

```
attaws console login: awadmin
```

5. From the menu, select "Halt the Workstation," Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the main menu will return.)

Response:

```
You have chosen to halt the workstation. If the
emulator is running, it must be halted before
continuing. Refer to the main menu item of
Halt the emulator.
```

```
Do you want to continue (y/n) yes
```

6. Wait for one of the following prompts. When one of these prompts appears, the workstation has been successfully halted.

```
Program Terminated

Type help for more information

ok
```

7. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.3: Restore Administrative Workstation

OVERVIEW

This procedure provides the steps to take when the AW locks up and fails to respond to input commands or pokes entered on the MCC terminal.

The following items could cause the AW to lock up:

- The MCC terminal is powered down
- A Reset/Break key or key sequence is inadvertently entered
- The cables between the MCC and the AW are detached.

This procedure contains steps to restore the AW to operation.

PROCEDURE

1. Verify the MCC terminal is powered on and is properly connected to the Sun[®] workstation.
2. If an MCC page is displayed, switch to the UNIX[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return).

If the "ok" prompt appears, proceed to Step 3.

If a "console login:" appears, proceed to Step 7.

3. Type and enter: **go**. Press the RETURN key several times.
4. If the "console login:" prompt then appears, switch back to the MCC by holding down the Ctrl key and pressing **Enter** (not Return).
5. If the response is "Program terminated," at the "ok" prompt, type and enter: **boot**.

Response: Wait for the boot sequence to complete then switch back to the MCC by holding down the Ctrl key and pressing **Enter** (not Return).

6. Does the MCC now accept input commands and pokes?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, contact the next level of technical support.

7. At the login prompt, log in as awadmin.
8. From the main menu, select "Boot the Workstation."

Response:

```
You have chosen to boot the workstation. If the
emulator is running, it must be halted before
continuing. Refer to the main menu item of
halt the emulator.
```

Do you want to continue?

9. Type and enter: **yes**.

Response: Response: Wait for the boot sequence to complete and then switch back to the MCC by holding down the Ctrl key and pressing **Enter** (not Return).

10. Does the MCC now accept input commands and pokes?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, contact the next level of technical support.

Procedure 3.4: Backup Administrative Workstation Operating System

OVERVIEW

This procedure should be run following an update to the AW operating system or the 3B21 emulator. This procedure should be used whenever a software update is applied which has **TARGET=EMULATOR**.

PROCEDURE

1. If an MCC page is displayed, switch to the *UNIX*® console of the AW, by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
2. If a login prompt does not appear, press **Return** repeatedly until one appears.
3. At the login prompt, login as **awadmin**, for example:

```
console login: awadmin
```

4. From the **Administrative Workstation main menu**, select "Backup the workstation operating system/emulator to disk." (If you select a task by mistake, answer **no** to the confirmation, and the main menu will return.)
5. From the **operating system/emulator backup to secondary disk menu**, select "Execute backup of the workstation operating system/emulator to disk." Answer **yes** to the confirmation.

Response:

```
You have chosen to backup the workstation
operating system/emulator to disk.
```

```
Do you want to continue? (y/n) yes
```

6. This task will take approximately 15 minutes. When it is completed, you will be prompted to press **Return**. When the prompt appears, press **Return**.
7. If you wish to view the output of this OS backup, select "View output from the most recent operating system/emulator backup to disk." While viewing the output, use the following keys:

space	see the next screen of output
b	see the previous screen of output
h	see a list of available keys
q	quit viewing output

8. Select "Return to main menu."
9. Insert a 4mm tape that may be overwritten into the DAT tape drive unit using "Load Tape in DAT Tape Drive Unit," Procedure 3.16 .
10. From the **main menu**, select "Backup the workstation operating system/emulator to Tape."
11. From the **operating system/emulator backup to tape menu**, select "Execute backup of the workstation operating system/emulator to tape." Answer yes to the confirmation. (If you select a task by mistake, answer no to the confirmation.)


```
You have chosen to backup the workstation
operating system/emulator to tape. Please
```

ensure that there is a 4mm tape cartridge in the Digital Audio Tape (DAT) drive.

This task will take approximately 20 minutes. When it is completed, you will be prompted to press Return. When the prompt appears, press Return.

12. If you wish to view the output of this OS backup to tape, select "View output from the most recent operating system/emulator backup to tape." While viewing the output, use the following keys:

space	see the next screen of output
b	see the previous screen of output
h	see a list of available keys
q	quit viewing output

13. Select "Return to the main menu."
14. From the main menu, select "Exit."
15. Unload the 4mm tape from the DAT tape drive unit using the procedure "Unload Tape from DAT Tape Drive Unit," Procedure 3.17. Be sure to protect the tape from being accidentally overwritten by sliding the white write-protect tab to the write protection side.
16. Label the tape with the following information:

Date: _____
Generic: _____
BWM Level: _____
Tape Type: Emulator and Sun OS
Tape Seq Number: _____
Comments: _____

The workstation operating system/emulator has been successfully backed up.

17. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.5: Boot Administrative Workstation From Alternate Disk

OVERVIEW

This procedure should be used to replace a defective primary disk drive on the AW. On the SPARC5, both the primary disk (SCSI target 3) and the secondary disk (SCSI target 1) are external drives. On the *Netra*TM t, both the primary disk (SCSI target 0) and the secondary disk (SCSI target 1) are internal drives. It is assumed that the secondary disk has been kept in sync with the primary drive by performing a backup to it recently.

PROCEDURE

1. Change or remove the defective hardware (see Subprocedure 3.5.1 for SPARC5 or Subprocedure 3.5.2 for *Netra*TM t).
2. Partition and propagate the system to the new secondary disk (see Subprocedure 3.5.3).

Procedure 3.5.1: Change or Remove the Defective Hardware (SPARC5)

PROCEDURE

1. Halt the system (see "Halt the Administrative Workstation," Procedure 3.2).
2. Remove power to all workstation units (see "Remove Power to Administrative Workstation Units (SPARC5)," Procedure 3.6).
3. Disconnect the power cable from the back of the primary disk unit.

The Primary Disk Unit can be identified by checking the target address located on the left side on the rear panel of the disk unit. The target address of the Primary Disk Unit is 3. Grasp the power cable plug and pull it out away from the disk unit. There is no need to disconnect the power cable from the power source.

4. Disconnect the SCSI Bus cables from the back of the primary disk unit by squeezing the levers in the sides of the connector or unscrewing the connector. Note which cable connects to which socket. See Figure 3.5.1-1.
5. Is a replacement unit on hand?

If **NO**, proceed with Step 7.

If **YES**, proceed with Step 6.

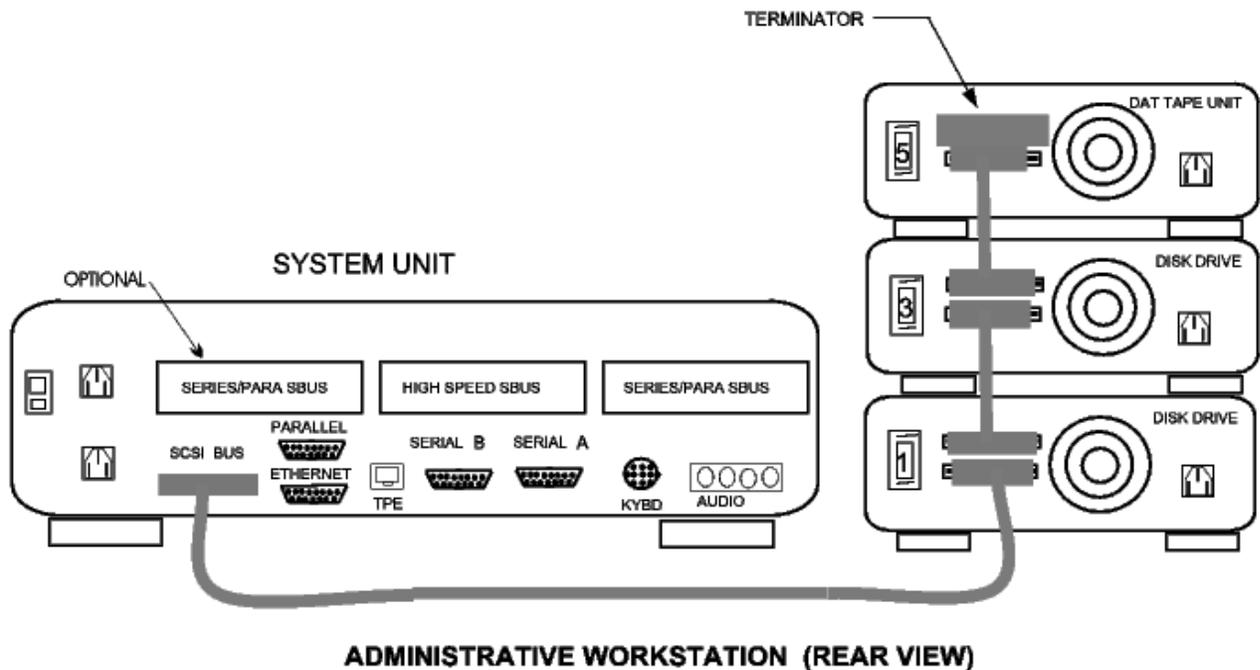


Figure 3.5.1-1 Administrative Workstation Disk Drive Interface (SPARC5)

6. Connect the new disk unit by following these substeps:
 - (a) Connect the SCSI Bus cables disconnected from the Primary Disk Unit in Step 4 to the new disk unit.

NOTE: Reconnect the SCSI Bus cables to the rear of the disk unit by carefully aligning the trapezoidal pin protector on the cable plug with the same shape socket on the back of the disk unit.

Gently push until the plug snaps in.

- (b) Set the target address of the new unit to "1" by pressing the "+" or "-" buttons next to the target address display on the rear panel as many times as necessary.
 - (c) Connect the power cable for the new disk unit to the back of the disk unit and then to the power source.
 - (d) Go to Step 8.
7. This step should only be performed if the removed disk is **not** being replaced immediately. Reconnect the SCSI Bus "daisy-chain" without the removed unit:
- (a) Disconnect the other end of one of the two cables that had been connected to the removed unit.
 - (b) Connect the currently non-terminated end of the remaining cable, (the end removed from the defective unit) to the SCSI Bus socket opened up in Step 7a. Make the connection by carefully lining up the trapezoidal pin protector on the cable plug with the similarly shaped socket on the back of the disk unit and gently push in until the plug snaps in.
8. Change the target address of the other disk. When replacing or removing the primary disk unit, the secondary disk (the one not replaced or removed) must have its target address changed to act as the primary disk:
- (a) Press the "+" button next to the target address display on the rear panel two times until the target address changes from "1" to "3".
9. Restore power to the workstation units (see "Restore Power to Administrative Workstation (SPARC5)," Procedure 3.7).
10. The emulated AM environment is restored automatically, verify that this has occurred.
11. Has a replacement (new) disk been installed (Step 6)?
- If **YES**, proceed to "Partition and Propagate the System to the New Secondary Disk," Subprocedure 3.5.3 .
- If **NO**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE**

Procedure 3.5.2: Change or Remove the Defective Hardware (Netra™ t)**PROCEDURE**

1. Halt the system (see "Halt the Administrative Workstation," Procedure 3.2).
2. Remove power to the system unit by locating the power switch and switching it to **off**.
3. Remove the primary disk unit from the lower drive bay (see "Remove a Disk Drive (Netra™ t)," Procedure 3.10).
4. Remove the secondary disk unit from the upper drive bay (see "Remove a Disk Drive (Netra™ t)," Procedure 3.10) and install it into the lower drive bay (see "Install a Disk Drive (Netra™ t)," Procedure 3.11).
5. Is a replacement unit on hand?
If **NO**, proceed with Step 7.
If **YES**, proceed with Step 6.
6. Install the new disk unit into the upper drive bay as a secondary disk (see "Install a Disk Drive (Netra™ t)," Procedure 3.11).
7. Restore power to the system unit by locating the power switch and switching it to **on**.
8. The emulated AM environment is restored automatically, verify that this has occurred.
9. Has a replacement (new) disk been installed (Step 6)?
If **YES**, proceed to "Partition and Propagate the System to the New Secondary Disk," Subprocedure 3.5.3 .
If **NO**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE**

Procedure 3.5.3: Partition and Propagate the System to the New Secondary Disk

PROCEDURE

1. Halt the VCDX Emulator (see "Halt the VCDX Administrative Module (AM) Emulator," Procedure 3.1).
2. Switch to the *UNIX*[®] console of the AW by holding down the **Ctrl** key and pressing **Enter** (not Return).
3. If a login prompt does not appear, press **Return** repeatedly until a login prompt appears.
4. At the login prompt, login as **awadmin**:
console login: **awadmin**
5. From the main menu, select "Initialize a new workstation disk."
6. From the Disk Initialization menu, select "Execute initialization of a new workstation disk." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation.)

You have chosen to initialize a new workstation disk.

If the emulator is running, it should be halted before continuing.

Do you want to continue? (y/n) **yes**

7. This task will take approximately 30 minutes. When it is completed, you will be prompted to press Return. When the prompt appears, press **Return**.
8. If you wish to view the output of this disk initialization, select "View output from the most recent disk initialization." While viewing the output, use the following keys:

space	see the next screen of output
b	see the previous screen of output
h	see a list of available keys
q	quit viewing output

9. Select "Return to main menu."
10. If the "Execute initialization of a new workstation disk" task completed successfully, proceed to Step 27.
11. If the "Execute initialization of a new workstation disk" task failed with the message:
Partition 0 not aligned on cylinder boundary
Cannot format secondary disk
the new disk must first be initialized from tape and then updated from the primary disk.
12. From the main menu, select "Halt the workstation" and answer **yes** to the confirmation.
13. Load the 'VCDX 3B Emulator and Operating System DAT' into the DAT tape drive.
14. If the "ok" prompt does not appear, press **Return** repeatedly until an "ok" prompt appears.
15. At the "ok" prompt, type and enter input command:
boot tape1 -v -l -t1 -p2

WARNING: Be sure the command is entered exactly as shown. Failure to enter command exactly as shown could result in complete loss of data on the primary disk.

16. Answer **y** to the warning. It will take about 80 minutes to read the tape

```

Resetting ...
SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
Keyboard not present.
Using tty for input and output.

SPIF/stc FCode initialization complete

SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 64 MB memory installed, Serial #yyyyyyy.
Ethernet address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.

Initializing Memory
Rebooting with command: tapel -v -l -t3 p2
Boot device: /iommu/sbus/espdma@5,8400000/esp@5,8800000/
st@5,0 File and args: -v -l -t3 p2
Standalone IPL (check [ok] load relocate)
Stand-alone copy program (1.0).
Reading tape information (program label control).
Processing 1 volume(s).
Searching for SCSI target 3 ...<AVAILABLE>.
*WARNING* Disk and Tape labels have different partitions.
Continue (y/n)? y

```

17. When the "ok" prompt appears, tape reading is complete. Type and enter input command:
setenv boot-device disk3
18. At the "ok" prompt, type and enter input command:
boot.
- The boot should start the 3B21 emulator.
19. If the Sun[®] console is displayed, switch to the MCC of the AW by holding down the **Ctrl** key and pressing **Enter** (not Return).
20. Halt the emulator by entering poke **59** on the MCC EAI page and answering **y** to the confirmation.
21. Switch to the Sun[®] console of the AW by holding down the **Ctrl** key and pressing **Enter** (not Return).
22. If a login prompt does not appear, press **Return** repeatedly until one does.
23. At the login prompt, login as **awadmin**:
console login: **awadmin**
24. From the main menu, select "Backup the workstation operating system/emulator to disk." Answer **yes** to the confirmation.
25. This task will take approximately 15 minutes. When it is completed you will be prompted to press Return. When the prompt appears, press **Return**.
26. Select "Return to the main menu."

27. From the main menu, select "Boot the workstation." This will restart the emulator.
28. Switch to the MCC by holding down the **Ctrl** key and pressing **Enter** (not Return). Wait for page 111 to be redisplayed. This will take approximately 15 minutes.
29. Go to MCC page 111/112 and use the **30X** command to restore MHD 1 and 3 to service.
30. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.6: Remove Power to Administrative Workstation Units (SPARC5)

OVERVIEW

The order in which power is removed from the AW is important to ensure all units will come up properly when the power is restored.

PROCEDURE

1. Be sure the AW has been "halted." If this has not already been done, see "Halt the Administrative Workstation," Procedure 3.2 .
2. Remove power to the AW units by locating the power switch on each unit and switching them off in the following order:
 - DAT Tape Drive Unit
 - External Drive 2
 - External Drive 1
 - The System Unit.
3. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.7: Restore Power to Administrative Workstation Units (SPARC5)

OVERVIEW

Power is restored in a specific order to ensure the software goes through a proper initialization.

PROCEDURE

1. Apply power to the AW units by locating the power switch on each unit and switching them on in the following order:
 - DAT Tape Drive Unit
 - External Drive 2
 - External Drive 1
 - The System Unit.

2. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.8: Replace System Unit

OVERVIEW

NOTE: This procedure assumes that the system unit is being replaced with a unit of the same architecture (that is, a SPARC5 workstation replaced with a SPARC5 workstation and a *Netra*TM t workstation replaced with a *Netra*TM t workstation).

The system unit may be replaced as a separate unit to the AW. This procedure does not include replacing the disk drives. Separate procedures exist for that purpose.

Before replacing a System Unit, preliminary checks should be performed to ensure that the cause of failure has not resulted from power becoming unavailable to the unit, the power switch inadvertently placed to the off position, or the failure of the *Ethernet*[®] interface cable.

PROCEDURE

1. Backup the AW operating system (see "Backup Administrative Workstation Operating System," Procedure 3.4).
2. Make full office backup tapes (see 235-105-210, *5ESS*[®] *Switch Routine Operations and Maintenance Procedures*).
3. Halt the system (see "Halt the Administrative Workstation," Procedure 3.2).
4. Remove power to all workstation units:
SPARC5 — see "Remove Power to Administrative Workstation Units (SPARC5)," Procedure 3.6 .
*Netra*TM t — locate the power switch and switch it to **off**.
5. Remove the cables connected to the rear of the system unit:
 - Power
 - Serial A and Serial B cables
 - SCSI bus cable
 - Serial/Parallel cables:
 - SPARC5 - Serial/Parallel SBUS controller cable (one or two equipped)
 - *Netra*TM t - Serial Asynchronous interface cable (one or two equipped).
 - High Speed Bus cable (if applicable)
 - *Ethernet*[®] interface cable.
6. Replace the System Unit.
7. Reconnect the workstation cables removed in Step 5.
8. Restore power to all workstation units:

SPARC5 — see "Restore Power to Administrative Workstation Units (SPARC5)," Procedure 3.7 .
*Netra*TM t — locate the power switch and switch it to **on**.

9. The AW environment is restored automatically, verify that this has occurred.
10. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.9: Replace a DAT Tape Drive Unit (SPARC5)

OVERVIEW

The DAT tape drive unit is a stand-alone tape unit that can easily be replaced for service. However, since the DAT tape drive unit shares the SCSI bus with the system disk drive, the AW must be halted before any maintenance can be performed on the unit.

PROCEDURE

1. Halt the system. (see "Halt the Administrative Workstation," Procedure 3.2).
2. Remove power to all workstation units (see "Remove Power to Administrative Workstation Units (SPARC5)," Procedure 3.6).
3. Disconnect the power cable from the back of the DAT tape drive unit by grasping the plug and pulling out away from the unit.
4. Disconnect the SCSI Bus cable from the back of the DAT tape drive unit by squeezing the levers in the sides of the connector. See Figure 3.5.1-1 . If the DAT tape drive unit is the last device on the daisy chain, it may contain the terminator plug for the SCSI bus. Some versions of the DAT tape drive unit are self-terminating. If a terminator is required, it must be installed on the replacement unit.
5. Physically remove the DAT tape drive unit and position the new unit in its place.
6. Reconnect the SCSI Bus cable to the back of the DAT tape drive unit by carefully lining up the trapezoidal pin protector on the cable plug with the similarly shaped socket on the back of the DAT tape drive unit and gently pushing in until the plug snaps in. Reconnect the terminator plug to the replacement unit.
7. Change the target address of the DAT tape drive unit. Press the "-" or "+" button next to the target address display on the rear panel until the target address changes to "5".
8. Reconnect the power cable to the back of the DAT tape drive unit by gently pressing in.
9. Restore power to the workstation units (see "Restore Power to Administrative Workstation Units (SPARC5)," Procedure 3.7).
10. The AW environment is restored automatically, verify that this has occurred.
11. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.10: Remove a DAT or CD-ROM Drive (*Netra*TM t)

OVERVIEW

The DAT tape drive unit and the CD-ROM drive is built into the AW. Therefore, the AW must be halted before any maintenance on these drives can be performed.

PROCEDURE

1. Halt the system. (see "Halt the Administrative Workstation," Procedure 3.2).
2. Remove power to the system unit by locating the power switch and switching it to **off**.
3. Open the top cover of the workstation.

NOTE: If the top cover is not accessible when mounted, the unit may need to be completely removed from the shelf. See "Replace System Unit," Procedure 3.8 .

- (a) Remove the two screws from the front of the top cover (see Figure 3.10-1).
 - (b) Pull the tab and lift the top cover off.
4. Open the front cover.

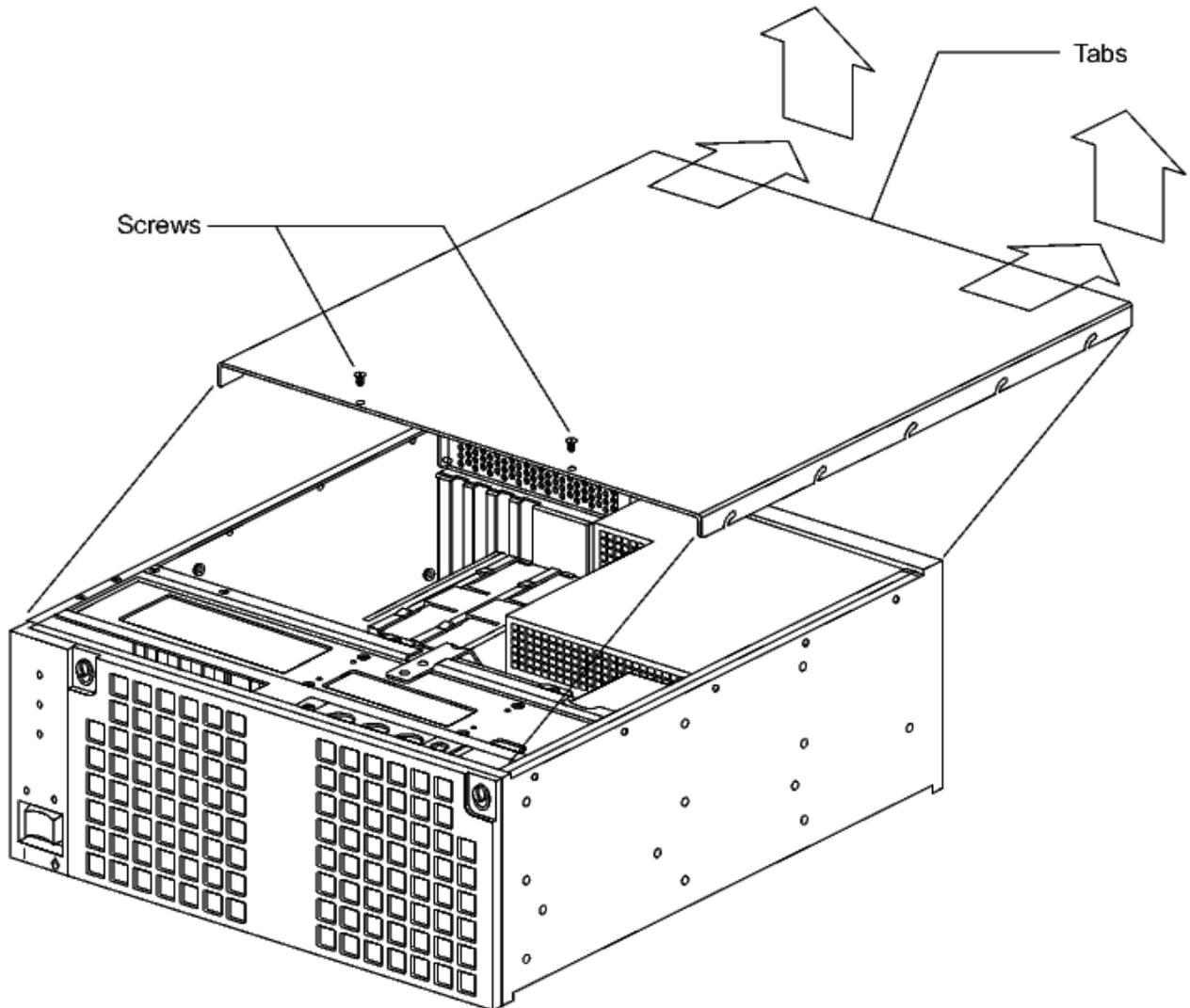


Figure 3.10-1 Removal of the Netra Sun Microsystems, Inc. t Top Cover

5. Remove the front ESD plate (see Figure 3.10-2). Use a No.1 Phillips-head screwdriver to undo the two or three captive screws.

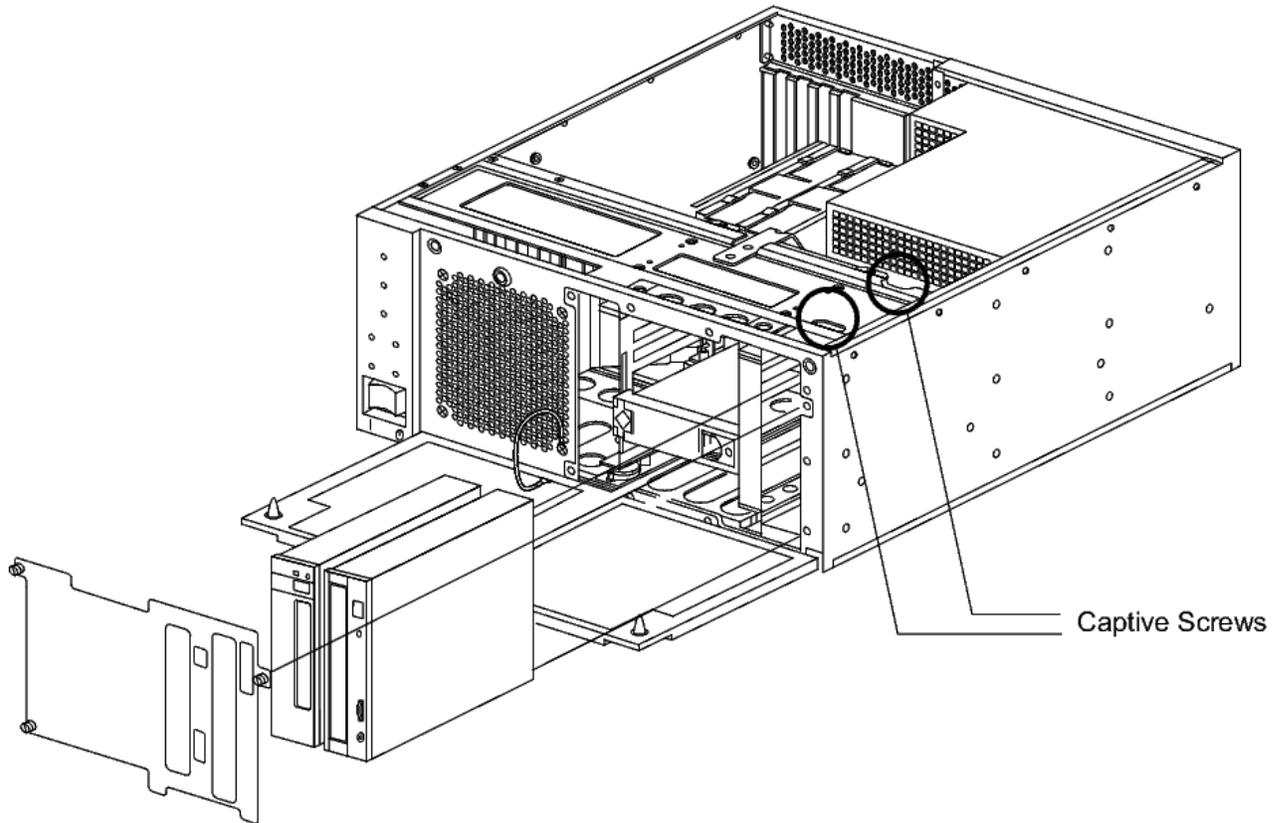


Figure 3.10-2 Removal of the Netra Sun Microsystems, Inc. t Front Cover and Tapes

6. Undo the four captive screws on top of the tape/CD-ROM drive using the screwdriver.
7. Partially remove the tape/CD-ROM drive from the assembly.
8. Disconnect the SCSI and power connectors from the rear of the drive.
9. Remove the drive from the chassis.
10. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.11: Install a DAT or CD-ROM Drive (Netra™ t)**PROCEDURE**

1. Halt the system (see "Halt the Administrative Workstation," Procedure 3.2).
2. Remove power to the system unit by locating the power switch and switching it to **off**.
3. Open the top cover of the workstation.

NOTE: If the top cover is not accessible when mounted, the unit may need to be completely removed from the shelf. See "Replace System Unit," Procedure 3.8.

- (a) Remove the two screws from the front of the top cover (see Figure 3.11-1).
 - (b) Pull the tab and lift the top cover off.
4. Open the front cover.

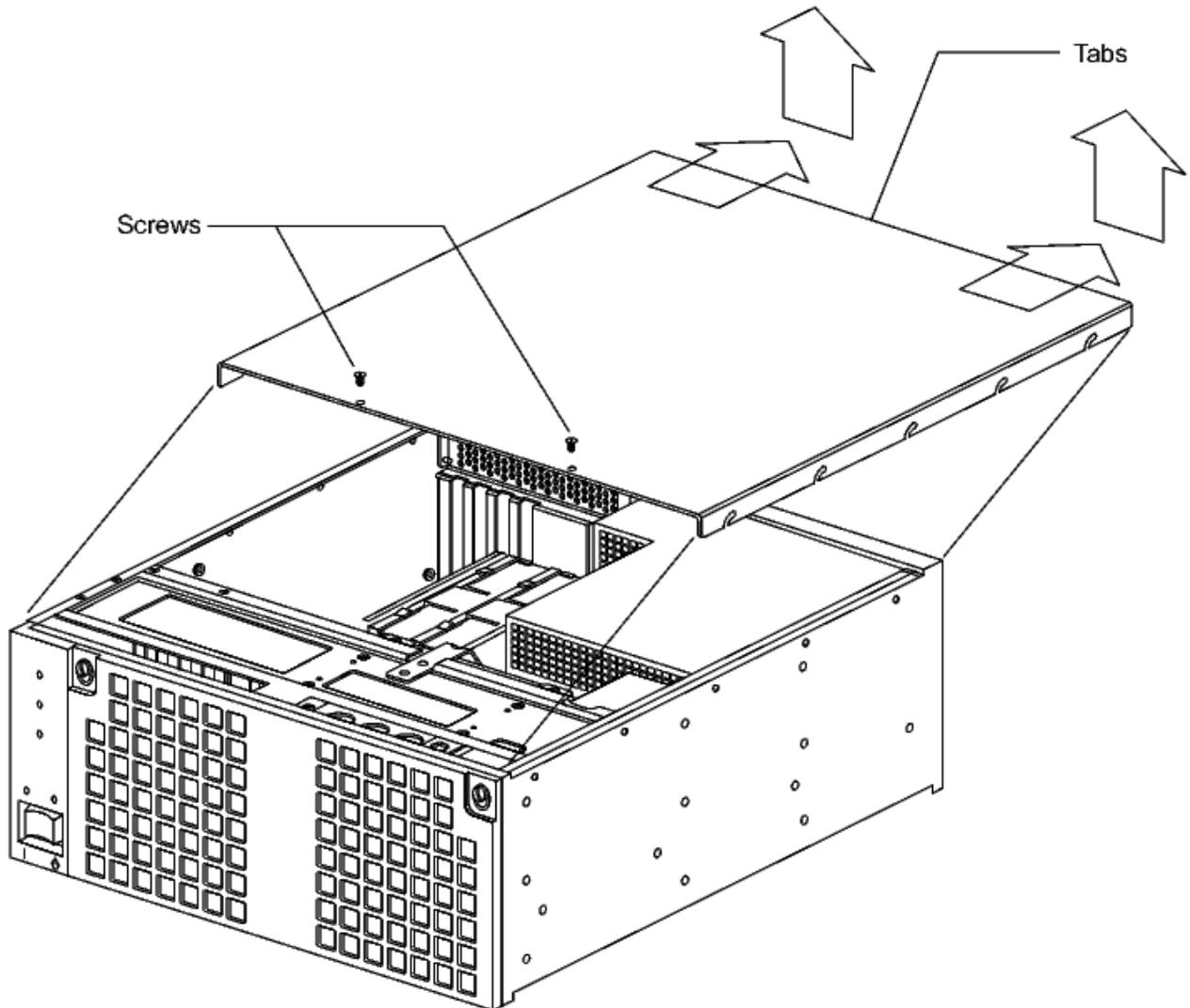


Figure 3.11-1 Removal of the Netra Sun Microsystems, Inc. t Top Cover

5. Remove the front ESD plate (see Figure 3.11-2). Use a No.1 Phillips-head screwdriver to undo the two or three captive screws.

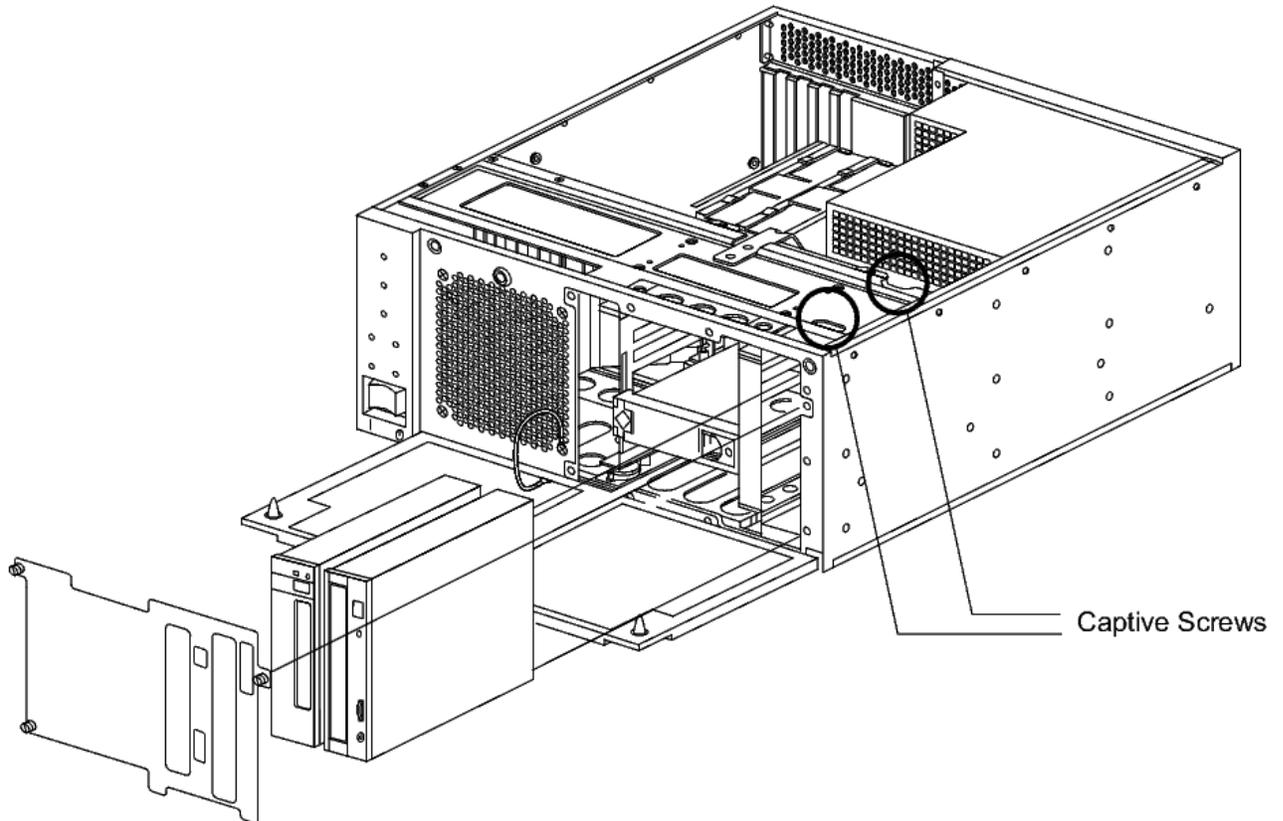


Figure 3.11-2 DAT Tape and CD-ROM Location

6. If necessary, remove the blanking plate.
7. Partially insert the tape/CD-ROM drive with the release button at the top right hand side.
8. Connect the SCSI and power cables to the rear of the drive (see Figure 3.11-3).

○○○○○○○○○ ○ SCSI ID0	○○○○○○●● ○ SCSI ID1	○○○○●●○○ ○ SCSI ID2	○○○○●●●● ○ SCSI ID3
○○●●○○○○○ ○ SCSI ID4	○○●●○○●● ○ SCSI ID5	○○●●●●○○ ○ SCSI ID6	○○●●●●●● ○ SCSI ID7

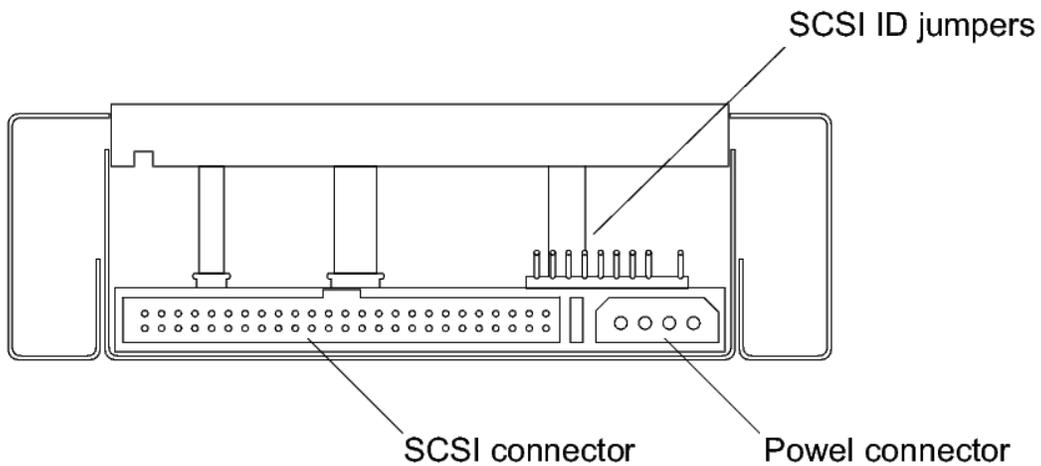


Figure 3.11-3 Tape Drive Rear View

9. Using the screwdriver, replace the four captive screws securing the drive to the drive assembly on top of the tape/CD-ROM drive.
10. Replace the ESD plate.
11. Replace the top cover.
12. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.12: Remove a Disk Unit (SPARC5)

PROCEDURE

1. Halt the system (see "Halt the Administrative Workstation," Procedure 3.2).
2. Remove power to all workstation units (see "Remove Power to Administrative Workstation Units (SPARC5)," Procedure 3.6).
3. Disconnect the power cable from the back of the disk unit by grasping the plug and pulling out away from the disk unit. There is no need to disconnect the power cable from the power source.
4. Disconnect the SCSI Bus cables from the back of the disk unit by squeezing the levers in the sides of the connector.
5. Reconnect the SCSI Bus "daisy-chain" without the removed unit:
 - (a) Disconnect the other end of one of the two cables that used to connect to the removed unit.
 - (b) Connect the currently non-terminated end of the remaining cable, that used to connect to the removed unit, to the SCSI Bus socket opened up in Step 5a. Make the connection by carefully lining up the trapezoidal pin protector on the cable plug with the similarly shaped socket on the back of the disk unit and gently push in until the plug snaps in.
 - (c) If the removed unit was the last device on the SCSI bus, it may have the terminator plug installed on it. Some versions of SCSI units are self-terminating. If the terminator is required, it must be reinstalled on the end of the daisy chain to properly terminate the SCSI bus. See Figure 3.5.1-1 .
6. Restore power to the workstation units (see "Restore Power to Administrative Workstation Units (SPARC5)," Procedure 3.7).
7. The AW environment is restored automatically, verify that this has occurred.
8. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.13: Remove a Disk Unit (*Netra™ t*)

PROCEDURE

1. Halt the system (see "Halt the Administrative Workstation," Procedure 3.2).
2. Remove power to the system unit by locating the power switch and switching it to **off**.
3. Open the front cover of the workstation.
4. Remove the front ESD plate (see Figure 3.13-1). Use a No.1 Phillips-head screwdriver to undo the two or three captive screws.

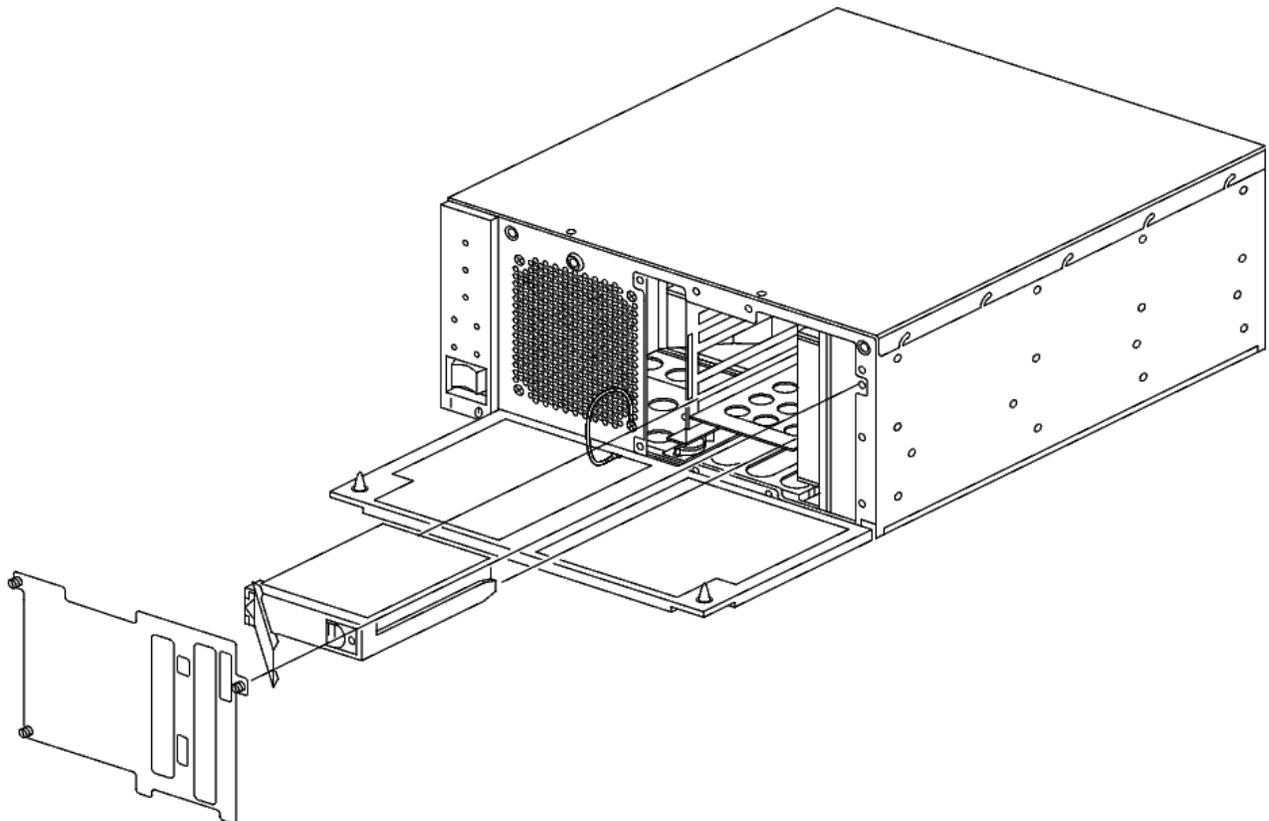


Figure 3.13-1 Hard Disk Drive Location

5. Push the handle latch to the right to open the drive handle.
6. Extend the drive handle to disconnect the drive from the system.
7. Holding the drive handle, remove the drive from the drive bay.

NOTE: The hard disk drive rear connector is disconnected when the drive is ejected.

8. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.14: Install a New Disk Unit (SPARC5)

PROCEDURE

1. Halt the system (see "Halt the Administrative Workstation," Procedure 3.2).
2. Remove power to all workstation units (see "Remove Power to Administrative Workstation Units (SPARC5)," Procedure 3.6).
3. Locate the SCSI Bus cable that runs from the single disk unit to the DAT tape drive unit. Disconnect this cable from the DAT tape drive unit. See Figure 3.5.1-1 .
4. If the DAT tape drive unit is installed after the disk on the SCSI bus, physically remove the DAT tape drive unit from the unit stack.
5. Place the new disk unit on the unit stack and replace the DAT tape drive unit on top of it.
6. Connect the cable disconnected from the DAT tape drive unit in Step 3 to the lower SCSI Bus socket on the new disk unit.

NOTE: Reconnect the SCSI Bus cables to the back of the disk unit by carefully lining up the trapezoidal pin protector on the cable plug with the similarly shaped socket on the back of the disk unit and gently push in until the plug snaps in. If the disk unit replaced was the last device on the SCSI bus, it will have the terminator plug installed on it. Some versions of the disk units are self-terminating. If a terminator is required, it must be reinstalled on the replacement disk unit.

7. Connect the SCSI Bus cable provided with the new disk unit to the upper SCSI Bus socket on the new disk unit following the directions in the NOTE in Step 6.
8. Connect the other end of the new cable to the SCSI Bus socket on the DAT tape drive unit that was opened up in Step 3. Make the connection by following the instructions in the Note in Step 6.
9. Connect the power cable for the new disk unit to the back of the disk unit and then to the power source.
10. Restore power to the workstation units (see "Restore Power to Administrative Workstation Units (SPARC5)," Procedure 3.7).
11. The AW environment is restored automatically, verify that this has occurred.
12. Execute "Partition and Propagate the System to the New Secondary Disk," Subprocedure 3.5.3 .
13. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.15: Install a New Disk Unit (Netra™ t)**PROCEDURE**

- 1.
2. Halt the system (see "Halt the Administrative Workstation," Procedure 3.2).
3. Remove power to the system unit by locating the power switch and switching it to **off**.
4. Open the front cover of the workstation.
5. Remove the front ESD plate (see Figure 3.13-1). Use a No.1 Phillips-head screwdriver to undo the two or three captive screws.
6. Holding the drive handle, insert the drive into the drive bay.
7. Push the front of the drive to connect it to the SCSI bus.
8. Close the drive handle to lock the drive into the system.
9. Replace the front ESD plate.
10. Replace the front cover.
11. Restore power to the system unit by locating the power switch and switching it to **on**.
12. The emulated AM environment is restored automatically, verify that this has occurred.
13. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.16: Load Tape in DAT Tape Drive Unit

OVERVIEW

This procedure contains steps to insert a 4mm tape cartridge into the DAT tape drive unit.

PROCEDURE

1. Verify that the tape cartridge's write-protect switch is set correctly.
For write-protection, the light-colored tab should NOT be visible. For write-enable, the tab should be visible.
2. Check the LEDs on the tape drive front panel to make sure the drive isn't functioning at present.
Both the green and amber LEDs should not be illuminated. It is not recommended to interrupt the tape drive if the green LED is blinking. A steady green LED indicates a data cartridge is in the drive and the drive is ready for activity. There is a problem if the amber LED is blinking.
3. Insert the tape cartridge so the manufacturer's label is facing; up on the SPARC5 or left on the *Netra*TM, and the write-enable switch on the cartridge is facing toward you.
4. Gently push the tape cartridge into the tape drive until the end with the write-enable switch is flush with the tape drive front panel. The tape drive is auto-loading and will pull the tape cartridge the remainder of the way into the drive. DO NOT force the cartridge into the drive. The green LED will blink for a few seconds while the tape is loading then remain steady once the loading process is complete.
5. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.17: Unload Tape from DAT Tape Drive Unit

OVERVIEW

This procedure contains steps to unload a tape cartridge from the DAT tape drive unit.

PROCEDURE

1. Check the LEDs on the tape drive front panel to make sure you do not abort a tape drive activity.

CAUTION: Do not press the unload button while the drive is in motion as this will interrupt the drive's ability to accurately store the data. Wait until the green LED is on and not blinking before pressing the unload button.

2. If green LED is blinking, wait for tape to stop.
3. Press the **UNLOAD** button on the front panel of the tape drive and hold it down for at least one full second, or until the green LED starts flashing.
4. Within 90 seconds, the drive rewinds the tape, ejects the cartridge and the green LED will stop flashing and remain off. If the cartridge does not eject after 90 seconds, execute the **Emergency Tape Ejection** procedure.
5. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.18: Emergency Tape Ejection (SPARC5)

OVERVIEW

The operating system can apply a prevent media removal condition to the tape drive. If this condition is active and the system fails, you cannot remove the tape in any of the normal ways (either using the unload button on the front panel or by using a software command).

You can reset the prevent media removal condition by the following this procedure.

PROCEDURE

1. Power cycle the DAT tape drive unit by:
 - (a) Safely powering off the DAT tape drive unit
 - (b) Waiting at least 10 seconds
 - (c) Powering on the DAT tape drive unit.

Wait for the drive to power on completely. This will take about 30 seconds and the LEDs will flash while the drive performs its power on self-test procedure.

2. Press the **UNLOAD** button.
3. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.19: Emergency Tape Ejection (*Netra*TM t)

OVERVIEW

The operating system can apply a prevent media removal condition to the tape drive. If this condition is active and the system fails, perform this procedure to remove the DAT tape drive unit and reset the prevent media removal condition.

PROCEDURE

1. Halt the system (see "Halt the Administrative Workstation," Procedure 3.2).
2. Remove power to the system unit by locating the power switch and switching it to **off**.
3. Press the **UNLOAD** button.
4. Restore power to the system unit by locating the power switch and switching it to **on**.
5. The emulated AM environment is restored automatically, verify that this has occurred.
6. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 3.20: Clean the DAT Tape Drive Unit Head

OVERVIEW

The tape drive head must be cleaned regularly to maintain its reliable operation. Clean the tape drive after every 25 hours of actual tape operation and only with a DDS cleaning cartridge. These cleaning cartridges have the same shape and size as regular media cartridges. No fluids or other preparations are necessary with the use of these cartridges.

Failure to regularly clean the tape drive may result in an accumulation of debris that cannot be removed with the cleaning cartridge. This could result in unreliable read/write operations on the drive.

PROCEDURE

1. Insert the cartridge into the DAT tape drive unit as you would a data tape cartridge.
2. Observe the green LED blinking slowly to indicate that the tape drive is automatically performing the cleaning cycle.

If the cartridge has been used for more than 30 cleaning cycles (depending on the brand), the amber LED will blink rapidly. Press the UNLOAD button to eject the cartridge and discard it.

NOTE: If the amber LED is flashing at a rate of approximately four flashes per second during the cleaning operation, it indicates the cleaning tape is worn.

3. Remove the cleaning cartridge after it is automatically ejected following the cleaning cycle. The tape drive is immediately available for use.

CAUTION: Do not use cleaning cartridges or types of fluids designed for use in audio devices as these can damage the tape drive.

4. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

4. ROUTINE MAINTENANCE

Overview

Routine maintenance consists of activities that are performed to maintain a high degree of switch performance. Preventative maintenance is performed on a specified schedule to ensure continuing peak overall performance of the network.

Since peak load periods, features, recent change activities, growth, etc., vary widely in different offices, some tests, such as Routine Exercise (REX), may not have specific test schedules that are best for all offices. In cases of this type, the Equipment Test List (ETL) gives references where procedures, recommendations, and/or guidelines can be found for the listed test(s).

For more information on software updates, backup procedures, and the ETL, see 235-105-210, *5ESS[®] Switch Routine Operations and Maintenance Procedures*.

NOTE: Tape backup of the entire office should be done at least once a month or more often if many software updates are being added to the office. See *Make Full Office Backup Tape*, 235-105-210, *Routine Operations and Maintenance Procedures*.

Procedure 4.1: Load Software Update(s) from SCANS

OVERVIEW

In order to load a software update using the Software Change Administration and Notification System (SCANS), a terminal and dial-up modem are needed along with a SCANS login. When the SCANS login is obtained, the SCANS User's Guide and the Training Manual are also provided.

SCANS provides menu driven access to informational Bulletins and software updates (SUs). The basic process of loading an overwrite from SCANS is as follows:

- Set up the AW to receive an SU from SCANS.
- Log in to the SCANS system and request the software update.
- Log out from SCANS and wait for the SCANS system to send the SU(s) over the SCANS Datalink (connected to port 0 on the High Speed Bus Interface [HSI]). This could take up to 24 hours.
- Monitor the status of the SCANS download.
- Verify Download is complete.
- Proceed to the "Make Software Update(s) Official," Procedure 4.3, to apply the SU. Be sure to review the SU and follow any supplied instructions.

NOTE: Become completely familiar with the SCANS system prior to running this procedure.

There is a 24-hour time limit imposed from the time the switch is primed until SCANS must begin the data session. If SCANS puts the software update load request in the queue, it may take up to that 24-hour limit to start sending data to the switch. **IN REMOTE STARTED** is output to indicate the start of the data session. The **IN REMOTE REPT** message may be output periodically during the session to indicate download progress. Termination of the session is indicated by an **IN REMOTE REPT** output message followed immediately by the **IN REMOTE STOPPED** output message.

PROCEDURE

1. At Master Control Center (MCC), type in message:

IN:REMOTE:START;

Purpose

Requests that the Administrative Workstation (AW) be put in the remote-file-receive mode. This message should be entered immediately before ordering delivery of software update files from the Software Change Administration and Notification System (SCANS-2), so that the transaction ID displayed in the IN REMOTE output message can be supplied in the order to SCANS-2. Software updates must begin to arrive at the Administrative Workstation within 24 hours. Responsive messages are printed when they are initially received or when this time limit is reached.

Response: **IN REMOTE INITIALIZED**
 TRANSACTION ID: a TIME: b

Where:

- a = transaction ID to be supplied to SCANS. **This ID value is required in Step 3.**
 b = time at which 24-hour timer began in the format hours:minutes.

2. At the SCANS terminal, log in to SCANS per local instructions. Your SCANS password will be required.
3. Using the SCANS menu-driven system, request a load of the software update(s). Refer to the *SCANS User's Guide* and *SCANS Training Manual* supplied with the SCANS login for further detail.
4. SCANS will download the requested SU(s) sometime within the next 24 hours. Monitor the progress of the download using **IN:REMOTE:REPT;**

The possible responses are:

```
IN REMOTE WAITING
```

indicates SCANS has yet to download the requested SU(s).

or

```
IN REMOTE                               IN PROGRESS
FILES RECEIVED: x                         IN PROGRESS
ELAPSED TIME xx:xx  SPACE REMAINING xxxxx IN PROGRESS
INODES REMAINING xxxxx
```

indicates the download is in progress.

or

```
IN REMOTE ERROR 12
```

indicates the download completed either successfully or unsuccessfully.

5. Have the following messages printed on the ROP?

```
IN REMOTE STOPPED x
REPT RCVRY SDL 0 COMPLETED
```

If **YES**, go to Step 6. If **NO**, continue to monitor SCANS using Steps 4 and 5.

NOTE: SCANS will download the software update (SU) within 24 hours. Users can reenter SCANS to verify downloading has started or to see where the SU is in the queue. If SCANS indicates the SU has been downloaded and the previous messages have not been printed, continue with Step 6.

6. At the MCC, enter message:

OP:STATUS:LISTDIR, fn="/etc/bwm";

```
total 10
1 drwxrwxrwx      2 root          48      Jan 21 13:56
9 drwxr -xr -x    2 root        4176     Jan 26 09:40
```

NOTE: The output will contain the contents of the */etc/bwm* directory.

7. The SU number requested should appear on this list.

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, **seek technical assistance.**

Procedure 4.2: Load Software Update(s) from Tape

PROCEDURE

1. Mount the software update tape on tape drive.

Reference: "Load Tape in DAT Tape Drive," Procedure 3.16 .

2. At Master Control Center (MCC), type in message:

COPY:TAPE:IN,TD="/dev/mt00",BSDIR="/etc/bwm";

Response: COPY TAPE IN COMPLETED

3. Unmount software update tape.

Reference: "Unload Tape from DAT Tape Drive," Procedure 3.17 .

4. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.3: Make Software Update(s) Official

OVERVIEW

This procedure takes the software update(s) previously loaded into the /etc/bwm from either SCANS or tape, and verifies the files, then applies the software update in "temporary" mode. Next the update enters into a soak period during which time any problems with the update may be discovered. This soak period may last a day or more. Following the soak period, the overwrite is made official and the files are removed from /etc/bwm.

WARNING: During the execution of the Make Software Update(s) Official procedure, an Administrative Workstation (AW) initialization may be required. If this is necessary, the AW initialization process is NOT service-impacting, however, video terminal and datalink access will be unavailable and the switching module will be ISOLATED for about 4 to 5 minutes.

PROCEDURE

1. Using listing of software updates, pick software update with lowest sequence number.
2. On Master Control Center (MCC) Page **1960**, to start the software update process, enter the following command:

Enter: **9000,"yyyyyyyyyy"**

Where:

y . . . y = 6-digit or 10-digit software update number, craft (CFT) software update number, or temporary (TMP) software update number.

Response: ENTER 9010 TO VERIFY BWM

3. On MCC Page **1960**, enter command **9010** to verify software update and build executable message file.

Response: VERIFY BWM COMPLETED Apply section displayed under "SECTION EXECUTION STATUS."

4. On MCC Page **1960**, enter command **9250** to print entire message file.

Response: Message file printed at Receive-Only Printer (ROP).

5. Review message file for events that will take place during activation, or any special actions which must be accomplished manually.

6. On MCC Page **1960**, enter command **9310** to apply software update in a temporary mode.

Response: EXECUTE ALL COMPLETED: APPLY SECTION

NOTE: If the software update contains an update with TARGET=EMULATOR, an initialization is required to activate the update.

Response: EXECUTE UPD:INIT:EMULATOR TO ACTIVATE UPDATE

- (a) Using the RESPONSE field of the MCC Page 1960, is an initialization of the emulator required?

If **YES**, do Step **6b**

If **NO**, continue with Step 7.

- (b) Write AMA data to disk. Enter:

WRT: AMADATA;

Response: **REPT AMA DISK WRITER FOR STREAM ST1
RECORDING TO DISK SUSPENDED**

**REPT AMA DISK WRITER FOR STREAM ST1
RECORDING TO DISK RESUMED**

- (c) Request 3B21 emulator initialization. Enter:

UPD:INIT:EMULATOR;

Response: AW completes emulator initialization. MCC displays EAI page followed by display of the 111 page.

- (d) After initialization completes, return to MCC page **1960**. Enter poke **9310** to resume application of the software update.

7. On MCC Page **1960**, enter command **9320** to execute SOAK section of message file.

Response: **EXECUTE ALL COMPLETED: SOAK SECTION**

8. Using information from the soak indicator on MCC Page 1960, has the soak interval for this software update completed?

If **YES**, do Step 10.

If **NO**, continue with Step 9.

9. Wait for software update soak interval to complete.

10. Is the software update being activated a TMP software update?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, continue with the next step.

11. On MCC Page **1960**, enter command **9330** to make software update permanent.

Response: **EXECUTE ALL COMPLETED: OFFICIAL SECTION**

12. On MCC Page 1950, enter command **9600**, "**yyyyyyyyyy**" where y...y = 6-digit or 10-digit software update number just made official.

Response: **COMPLETED** appears to the right of the 9600 .

- (a) If the software update included an emulator update (see Step **6a**), then perform "Backup Administrative Workstation Operating System," Procedure 3.4 .

NOTE: Tape backup of the entire office should be done at least once a month or more often if many software updates are being added to the office. See *Make Full Office Backup Tape*, 235-105-210, *Routine Operations and Maintenance Procedures*.

13. Are there any other software updates that need to be activated?

If **YES**, continue with Step **14**.

If **NO**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

14. Pick software update with the next higher sequence number.

15. Now repeat from Step **2**.

16. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.4: Install Operating System Software Update

PROCEDURE

1. Halt the AM emulator (see "Halt the Administrative Module (AM) Emulator," Procedure 3.1).
2. Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return).
3. If a login prompt does not appear, press **Return** repeatedly until one appears.
4. At the login prompt, login as **awadmin**, for example:


```
attaws console login: awadmin
```
5. From the **Administrative Workstation menu**, select "Halt the emulator" and read the information.
6. Enter CARRIAGE RETURN to continue.
7. From the **main menu**, select "Install operating system software update."
8. From the **operating system software update installation menu**, select "Execute installation of an operating system software update." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation.)

Response:

You have chosen to install an operating system software update.
 If the emulator is running, it must be halted before continuing.
 Refer to the main menu item **halt the emulator**.

NOTE: If you continue, expect several lines of printout, some of which may say: 'tar: problem reading group entry'. This is normal and should be disregarded.
 Do you want to continue? (yes/no) **yes**

9. This task will take approximately 2 minutes. When it is completed, you will be prompted to press **Return**. When the prompt appears, press **Return**.

The operating system software update installation has completed. At this time the workstation must be rebooted.

10. To view the output of this operating system software update, select "View output from the most recent operating system software update installation." While viewing the output, use the following keys:

space	see the next screen of output
b	see the previous screen of output
h	see a list of available keys
q	quit viewing output

11. Select "Return to the main menu."
12. From the **main menu**, select "Boot the Workstation." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation.)
 You have chosen to boot the workstation.
 If the emulator is running, it must be halted before continuing. Refer to the main menu item of **halt the emulator**.

Do you want to continue? (yes/no) **yes**

13. The emulated AM environment is restored automatically, verify that this has occurred.
14. If the *UNIX*[®] console page is displayed, switch to the **MCC** of the AW by holding down the Ctrl key and pressing **Enter** (not Return).
15. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.5: Backout Last Official Software Update(s)

OVERVIEW

This procedure allows up to three software updates previously made official to be backed out. If the update files in /etc/bwm were cleared, it will not be possible to re-apply these overwrites without first replacing the files in /etc/bwm from SCANS or tape.

WARNING: *During the execution of the Backout Last Official Software Update(s) procedure, an Administrative Workstation (AW) initialization may be required. If this is necessary, the AW initialization process is NOT service-impacting, however, video terminal and datalink access will be unavailable and the switching module will be ISOLATED for about 4 to 5 minutes.*

PROCEDURE

1. Access MCC Page **1950** Program Update Maintenance.
2. Enter the command **9900**.

After the command is entered, you will be asked to confirm your decision by typing **Y/N**. **IN PROGRESS** appears if response is **Y**.

Response: **IN PROGRESS** appears next to **9900** command line.

NOTE: If the software update contains updates with TARGET=EMULATOR, an initialization is required to deactivate the update.

3. Go to **MCC** 1960 page:

Response: **EXECUTE UPD:INIT:EMULATOR TO DEACTIVATE UPDATE**

- (a) Using the RESPONSE field of the MCC Page 1960, is an initialization of the emulator required?

If **YES**, do Step **3b**.

If **NO**, continue with Step **4**.

- (b) Write AMA data to disk. Enter:

WRT: AMADATA;

Response: **REPT AMA DISK WRITER FOR STREAM ST1
RECORDING TO DISK SUSPENDED**

**REPT AMA DISK WRITER FOR STREAM ST1
RECORDING TO DISK RESUMED**

- (c) Request 3B21 emulator initialization. Enter:

UPD:INIT:EMULATOR;

Response: AW completes emulator initialization. MCC displays EAI page followed by display of the 111 page.

(d) After initialization completes, return to **MCC** page **1960**. Enter poke **9310** to resume application of the software update.

4. Did command complete successfully and is **COMPLETED** displayed next to the **9900** command?

If **YES**, continue with the next step.

If **NO**, **repeat Step 2**. If command continues to fail, **seek technical assistance**.

(a) If the software update backout included an emulator update (see Step **3a**), then perform "Backup Administrative Workstation Operating System," Procedure 3.4 .

5. If the "new" last official software update needs to be backed out, go to Step **2**.

NOTE: No more than three official software updates can be removed this way.

6. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.6: Backout Software Update

OVERVIEW

This procedure can be used to backout software updates which are in the temporary or soaking state.

WARNING: During the execution of the Backout Software Update procedure, an Administrative Workstation (AW) initialization may be required. If this is necessary, the AW initialization process is NOT service-impacting, however, video terminal and datalink access will be unavailable and the switching module will be ISOLATED for about 4 to 5 minutes.

NOTE: To backout the last official software update, refer to "*Backout Last Official Software Update(s)*," Procedure 4.5.

PROCEDURE

1. Access **MCC Page 1960** - BWM INSTALLATION MENU.

Is software update number displayed to the right of **BWM** = the software update that needs to be backed out?

If **YES**, do Step 3.

If **NO**, continue to Step 2.

2. On MCC Page **1960**, in order to start the software update process, enter command:

9000,"yyyyyyyyyy"

Where:

y . . . y = 6-digit or 10-digit software update number.

Response: On MCC Page 1960, status of software update is displayed under "SECTION EXECUTION STATUS."

Message file displayed for next section to be executed.

3. On MCC Page 1960, enter command **9340** to backout software update.

Response: EXECUTE ALL COMPLETED: BACKOUT SECTION

NOTE: If the software update contains an update with TARGET=EMULATOR, an initialization is required to deactivate the update.

Response: EXECUTE UPD:INIT:EMULATOR TO DEACTIVATE UPDATE

- (a) Using the RESPONSE field of the MCC Page 1960, is an initialization of the emulator required?

If **YES**, do Step 3b.

If **NO**, continue with Step 4.

- (b) Write AMA data to disk. Enter:

WRT: AMADATA;

Response: **REPT AMA DISK WRITER FOR STREAM ST1
RECORDING TO DISK SUSPENDED**

**REPT AMA DISK WRITER FOR STREAM ST1
RECORDING TO DISK RESUMED**

(c) Request 3B21 emulator initialization. Enter:

UPD:INIT:EMULATOR;

Response: AW completes emulator initialization. MCC displays EAI page followed by display of the 111 page.

(d) After initialization completes, return to MCC page **1960**. Enter poke **9310** to resume application of the software update.

4. Using printout of messages file, does the software update affect any of the following switching module pumpable peripherals?

- Local Digital Services Unit, model 2 (LDSU)
- DSU2 Recorded Announcement Function (RAF).

If **YES**, continue with the next step.

If **NO**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

5. Download updates to the affected switching module pumpable peripheral units.

Reference: 235-105-210, *Routine Operations and Maintenance*.

(a) If the software update backout included an emulator update (see Step **3a**), then perform the "Backup Administrative Workstation Operating System," Procedure 3.4 .

6. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.7: Backout Operating System Software Update

PROCEDURE

1. Halt the AM emulator (see "Halt the Administrative Module [AM] Emulator," Procedure 3.1).
2. Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return).
3. If a login prompt does not appear, press **Return** repeatedly until one appears.
4. At the login prompt, login as **awadmin**, for example:


```
attaws console login: awadmin
```
5. From the **Administrative Workstation main menu**, select "Halt the emulator" and read the information.
6. Enter CARRIAGE RETURN to continue.
7. From the **main menu**, select "Backout operating system software update."
8. From the **operating system software update backout menu**, select "Execute backout of an operating system software update." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation.)

Response:

```
You have chosen to backout the most recent operating system
software update.  If the emulator is running, it must be
halted before continuing.  Refer to the main menu item
Halt the emulator.
```

```
Do you want to continue? (yes/no) yes
```

9. This task will take approximately 2 minutes. When it is completed, you will be prompted to press **Return**. When the prompt appears, press **Return**.

The operating system software update backout has completed. At this time the workstation must be rebooted.

10. To view the output of this backout operating system software update, select "View output from the most recent backout operating system software update installation." While viewing the output, use the following keys:

space	see the next screen of output
b	see the previous screen of output
h	see a list of available keys
q	quit viewing output

11. Select "Return to the main menu."
12. From the **main menu**, select "Boot the workstation." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation.)

```
You have chosen to boot the workstation.
If the emulator is running,
it must be halted before continuing.
Refer to the main menu item of
```

halt the emulator.

Do you want to continue? (yes/no) **yes**

13. The emulated AM environment is restored automatically, verify that this has occurred.
14. If the *UNIX*[®] console page is displayed, switch to the **MCC** of the AW by holding down the Ctrl key and pressing **Enter** (not Return).
15. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.8: Compact Switch Processor Patch Space

OVERVIEW

The patch space compaction is normally used when the target's switching module patch space becomes insufficient and failed the program update process. The patch space compaction operation will try to increase the size of the target's patch space and make the program update process successful.

NOTE: If there is a need to backout of patch space compaction after it has been made official, the backout last official (BOLO) process can be used for backout. See "Backout Last Official Software Update(s)," Procedure 4.5 .

The target's patch space may become so fragmented or insufficient that even this procedure will be unable to generate sufficient patch space for a successful program update process.

PROCEDURE

1. Enter the following command:

UPD:PATCH:TARGET=a,ACTION=b;

Where: a = **SM**, **SM2K**, or **CMP**

b = **APPLY**, **OFC**, or **BKOUT**.

APPLY = Execute patch space compaction and **APPLY** on requested target.

OFC = make official for **APPLY**ed target.

BKOUT = Backout previously requested **APPLY**'ed target.

The system responds with:

NG = No good.

PF = Printout follows. The **ALW:TRFC30** output message will be printed.

INPROG = In progress. The message was accepted and the action is in progress.

CMPL,action = complete action's process. The valid values for action are: **APPLY**, **OFC** or **BKOUT**.

2. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.9: Activate/Deactivate Balance Feature

OVERVIEW

This procedure activates the ability to provide data for blocked-call identification on analog line units (LU1, LU2, and LU3) in a switching module. The data (high CCS users that cause blocking) is delivered to the Administrative Module (AM) by human machine messages. But to collect the data the balance feature must be activated.

The balance data may be directed to either the TTY port or the 3B21 emulator log files. Activity in the ECD accomplishes this. It is assumed the TTY port has already been defined in the ECD.

Once the ECD is populated, the balance feature is activated, deactivated, and re-activated with Recent Change/Verify (RC/V). The ECD update is a one-time effort.

There are variations in the software release. These differences are noted in the procedure.

PROCEDURE

1. Select the type of activity to be performed from Table 4.9-1 .

Table 4.9-1 Activate/Deactive Balance Feature Activity Selection

Activity	Go to . . .
First time activation with data directed to 3B21 emulator log file.	Subprocedure 4.9.1
First time activation with data directed to non-balance specific TTY Port.	Subprocedure 4.9.2
Activate balance session	Subprocedure 4.9.4
Deactivate balance session	Subprocedure 4.9.5

Procedure 4.9.1: Populate Low Level ECD Forms for Log File Retrieval

PROCEDURE

NOTE: The following low level ECD activity allows the balance output to be redirected to a 3B21 emulator log file.

1. At the master control center (MCC) terminal, type and enter: **199** to access the Equipment Configuration Database (ECD).

Response: 1. database_name:

2. Type and enter: **incore**

Response: review only:

3. Type and enter: **n**

Response: journaling:

4. Type and enter: *****

Response: Enter Form Name (or ?):

5. Type and enter: **trbegin**

Response: tr_name:

6. Enter CARRIAGE RETURN.

Response: Enter Execute, Change. . .

7. Type and enter: **e**

Response: Enter Form Name (or ?):

8. For 5E12, continue with the **next Step**.

For 5E13 and later, go to **Step 25**.

9. Type and enter: **device**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

10. Type and enter: **i**

Response: logical_devname

11. Type and enter: **BALANCE**

Response: path

12. Type and enter: **//log/log/BALANCELOG**

Response: seqn

13. Type and enter: **n**
Response: logfile
14. Type and enter: **y**
Response: temp
15. Type and enter: **n**
Response: priority
16. Type and enter: **n**
Response: maxq
17. Type and enter: **50**
Response: blksize
18. Type and enter: **512**
Response: linelen
19. Type and enter: **0**
Response: logflimit
20. Type and enter: **1048576**
Response: time_stamp
21. Type and enter: **dontcare**
Response: multiple_msg
22. Type and enter: **y**
Response: msg_head
23. Type and enter: *****
Response: FORM INSERTED
logical_devname
24. Type and enter: **<**
Response: Enter Form Name:
25. Type and enter: **classdef**
Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete
26. Type and enter: **u**
Response: class_name

27. Type and enter:
109 (For 5E12)
or
196 (For 5E13 and later)
Response: Enter Update, Change . . .
28. Type and enter: **c**
Response: Change Field
29. Type and enter: **3**
Response: row
30. Type and enter:
1 (if row 1 value is null or value is being replaced)
or
20 (if additional devices are being added to the current list)
Response: 1) or 20)
31. Type and enter: **BALANCE**
Response: row
32. Type and enter: **<ret>**
Response: Change field
33. Type and enter: **<ret>**
Response: Enter Update, Change . . .
34. Type and enter: **u**
Response: class_name
35. Type and enter: **<**
Response: **Enter Form Name:**
36. Type and enter: **trend**
Response: tr_name
37. Type and enter: **<ret>** 4 times
Response: Enter Execute, Change. . .
38. Type and enter: **e**
Response: **Enter Form Name:**
39. Type and enter: **<**

Response: Transaction ended successfully

40. Go to "Backup Incore ECD to Disk," Subprocedure 4.9.3 .

Procedure 4.9.2: Populate Low Level ECD Forms for TTY Port

PROCEDURE

NOTE: The following low level ECD activity allows the balance output to be directed to an existing TTY port.

1. At the MCC terminal, type and enter: **199** to access the Equipment Configuration Database (ECD).

Response: 1. database_name:

2. Type and enter: **incore**

Response: 2. review only

3. Type and enter: **n**

Response: 3. journaling

4. Type and enter: *****

Response: Enter Form Name (or ?):

5. Type and enter: **trbegin**

Response: tr_name

6. Type and enter: **<ret>**

Response: Enter Execute, Change. . .

7. Type and enter: **e**

Response: Enter Form Name (or ?):

8. Type and enter: **classdef**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

9. Type and enter: **u**

Response: class_name

10. Type and enter:

109 (For 5E12)

or

196 (For 5E13 and later)

Response: Enter Update, Change . . .

11. Type and enter: **c**

Response: Change field

12. Type and enter: **3**

Response: row

13. Type and enter:

1 (if row 1 value is null or value is being replaced)

or

20 (if additional devices are being added to the current list)

Response: 1) or 20)

14. Type and enter: (logical device port assignment, for example, rop0)

NOTE 1: To redirect balance output to the ROP, the logical device port assignment would be **rop0**.

NOTE 2: To determine the logical device for other existing TTY ports, refer to 235-600-3XX, *Equipment Configuration Data/System Generation (ECD/SG)*, where XX = the manual number associated with the applicable software release.

Response: row

15. Enter CARIAGE RETURN.

Response: Change field

16. Type and enter: <ret>

Response: Enter Update, Change . . .

17. Type and enter: u

Response: class_name

18. Type and enter: <

Response: Enter Form Name:

19. Type and enter: trend

Response: tr_name

20. Type and enter: <ret> 4 times

Response: Enter Execute, Change. . .

21. Type and enter: e

Response: Enter Form Name:

22. Type and enter: <

Response: Transaction ended successfully

23. Continue with "Backup Incore ECD to Disk," Subprocedure 4.9.3 .

Procedure 4.9.3: Backup Incore ECD to Disk**PROCEDURE**

1. At the MCC terminal, to access the ECD, type and enter: **199**
Response: 1. database_name:
2. Type and enter: **incore**
Response: 2. review only
3. Type and enter: **n**
Response: 3. journaling
4. Type and enter: *****
Response: Enter Form Name (or ?):
5. Type and enter: **activate**
Response: 1.copy_inc_to_disk:
6. Enter CARRIAGE RETURN.
Response: ODIN requests action desired.
7. Type and enter: **e**
Response: ODIN returns to the DATA ENTRY page.
8. Type and enter: **<**
Response: Transaction ended successfully
9. Continue with "Activate Balance Feature," Subprocedure 4.9.4 .

Procedure 4.9.4: Activate Balance Feature

PROCEDURE

1. Select and prepare terminal for Recent Change and Verify (RC/V) activities using the following steps:
 - (a) At MCC or STLWS, ensure terminal is in command mode.
 - (b) Is RECENT CHANGE AND VERIFY view displayed?
If **YES**, proceed to Step **e**.
If **NO**, continue with Step **c**.
 - (c) At MCC, do Steps **d** through **g**.
 - (d) Type and enter command: **196**
Response: RECENT CHANGE AND VERIFY view is displayed with cursor at **PRINT OPTION**.
 - (e) Type and enter: **n**
Response: Cursor at **DETAIL OPTION**.
 - (f) Type and enter: **n**
Response: Cursor at **VERBOSE OPTION**.
 - (g) Type and enter: **y**
Response: **RECENT CHANGE AND VERIFY CLASSES** page is displayed.
YOU HAVE COMPLETED SELECT AND PREPARE TERMINAL FOR RECENT CHANGE AND VERIFY (RC/V).
2. At the RC/V terminal, type and enter **8.31U**
Response: **OPTIONED FEATURES** page displayed. Cursor at FEATURE ID attribute.
3. To activate the balance feature, type and enter the values for each KEY attribute.

OPTIONED FEATURES 8.31

```
*1. FEATURE ID    723
*2. MODULE      OFC
 3. ACTIVE
   FEATURE NAME  _____
   RELEASE      _____
```

Response: System completes remainder of view.
Enter Update, Change, Validate, or Print:

4. Type and enter: **C**

Response: Change Field:

5. Type and enter: **ACTIVE** or field number 3.

Response: Cursor at ACTIVE attribute.

6. Type and enter: **Y**

Response: Change Field:

7. Enter CARRIAGE RETURN.

Response: Enter Update, Change, Validate, or Print:

8. Type and enter: **U**

Response: updatingFORM UPDATED

9. Exit Recent Change and Verify.
10. Backup Office Dependent Data using Subprocedure 4.9.6 .
11. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.9.5: Deactivate Balance Feature

PROCEDURE

1. Select and prepare terminal for Recent Change and Verify (RC/V) activities using the following steps:
 - (a) At MCC or STLWS, ensure terminal is in command mode.
 - (b) Is RECENT CHANGE AND VERIFY view displayed?
If **YES**, proceed to Step **e**.
If **NO**, continue with Step **c**.
 - (c) At MCC, do Steps **d** through **g**.
 - (d) Type and enter command: **196**
Response: RECENT CHANGE AND VERIFY view is displayed with cursor at **PRINT OPTION**.
 - (e) Type and enter: **n**
Response: Cursor at **DETAIL OPTION**.
 - (f) Type and enter: **n**
Response: Cursor at **VERBOSE OPTION**.
 - (g) Type and enter: **y**
Response: **RECENT CHANGE AND VERIFY CLASSES** page is displayed.
YOU HAVE COMPLETED SELECT AND PREPARE TERMINAL FOR RECENT CHANGE AND VERIFY (RC/V).
2. At the RC/V terminal, type and enter: **8.31U**
Response: **OPTIONED FEATURES** page displayed. Cursor at FEATURE ID attribute.
3. To deactivate the balance feature, type and enter the values for each KEY attribute.

OPTIONED FEATURES 8.31

```
*1. FEATURE ID   723
*2. MODULE      OFC
 3. ACTIVE
   FEATURE NAME  _____
   RELEASE      _____
```

Response: System completes remainder of view.
Enter Update, Change, Validate, or Print:

4. Type and enter: **C**

Response: Change Field:

5. Type and enter: **ACTIVE** or field number 3.

Response: Cursor at ACTIVE attribute.

6. Type and enter: **N**

Response: Change Field:

7. Enter CARRIAGE RETURN.

Response: Enter Update, Change, Validate, or Print:

8. Type and enter: **U**

Response: updatingFORM UPDATED

9. Exit Recent Change and Verify.
10. Backup Office Dependent Data using Subprocedure 4.9.6 .
11. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.9.6: Backup Office Dependent Data

PROCEDURE

1. **Note 1:** Prior to the response, there will be completed responses for the switching module, the AM, and the CMP.

At the MCC, type and enter the following command:

BKUP:ODD,NRODD=xx,RODD,AM,CMP=0;

Where:

xx = The switching module number.

Response: BKUP NRODD COMPLETED

Note 2: Database backup will take several minutes to complete.

2. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.10: Integrate Vendor Stratum 3 Bits Timing Source — 5E13 and Later

OVERVIEW

This procedure performs the following three major activities:

- Verifies that the timing references are connected for the vendor BITS (Building Integrated Timing Supply) clock (referred to later in this procedure as the "BITS box"), with Stratum 3 capability.
- Installs error detection scan points.
- Upgrades the TSICOM circuit pack with UM74D.

This procedure applies to an office configured with an SM-2000. For offices configured with an EXM-2000 (Extended Switch Module-2000) refer to 235-105-210, *5ESS® Switch Routine Operations and Maintenance Procedures*.

This procedure applies to offices operating on software release 5E13 and later.

PROCEDURE

4.10.1 Safe Stop Point

1. Safe Stop Points are provided in the procedure set where progress in the performance of a procedure may be suspended temporarily without causing degradation in the operation of the equipment. Execution of the procedure can be halted at one of these points only if all prior steps within the procedure have been successfully completed.

4.10.2 Prerequisite Conversion Conditions

1. The following prerequisites must be satisfied before performing this procedure.
 - The vendor supplied BITS clock:
HP55400A™ or *Telecom Solutions®* DCD-523 is installed and operational and is supplying a reference signal for the existing SM-2000.

NOTE: This procedure is based on the use of a *Telecom Solutions®* BITS clock being in place.
 - The following cables must be connected (see Figure 4.10-1):
 - (a) Input clock reference cables (2).
 - (b) Output clock reference cables (2) to TSIU4/TSIU4-2.
 - (c) Scan points wired to the Main Distribution Frame (MDF) for the BITS box.
 - (d) Scan point alarm cable (1) from the MDF to the Modular Metallic Service Unit (MMSU).
 - Two UM74D circuit packs must be available.
 - The user must be familiar with Electrostatic Discharge (ESD) protection requirements.

- Customer-supplied Recent Change Verify (RC/V) view for view 8.11 must be available.

4.10.3 PRECONDITIONING

4.10.3.1 Verify and Set Initial Conditions

1. At the MCC, observe Summary Status Area for a SYS NORM indication.
2. If a SYS NORM indication is not obtained, type and enter the following command:
OP:SYSSTAT;
3. At MCC, type and enter:
OP:OFFNORM,SM=a;

Where:

a = SM-2000 number.

Comment: Evaluate system response to determine if system status is acceptable to continue. Specific attention is required for areas that can cause an SM-2000 isolation or service impact during this conversion procedure. Correct any deficiency as required.

CAUTION: Steps 4 through 6 are recommended but not required. Local practices should control their use. If routine exercise (REX) is inhibited, it must be allowed at the conclusion of this conversion procedure.

4. At MCC, type and enter:
INH:REX,SM=a;

Where:

a = SM-2000 number.

Response: OK

5. At MCC, type and enter:
OP:REXINH;

Response: The inhibit status will be printed. Verify this printout.

6. To backup ODD, at the MCC, type and enter:
BKUP:ODD,NRODD=a,RODD,AM;

Where:

a = SM-2000 number.

NOTE: Prior to the response there will be completed responses for the SM-2000, and the AM.

Response: BKUP NRODD COMPLETED

NOTE: Database backup will take several minutes to complete.

4.10.3.2 Turn On Fault Recovery Reports

1. At MCC, either:
type and enter: **SET:PERPH,SM=a,VERBOSE;**
or
enter input command **412** (1800,a CMD)

Where:

a = SM-2000 number.

Response: OK

4.10.3.3 Save Office Message Class Print Options

1. At MCC, type and enter:
CHG:LPS,MSGCLS=ALL,TOBKUP;

Response: OK (with exception)

4.10.3.4 Allow All Message Classes to Print

1. At MCC, type and enter:
CHG:LPS,MSGCLS=ALL,PRINT=ON,LOG=ON;

Response: OK (with exception)

4.10.3.5 Inhibit Brevity Control

CAUTION: Brevity control should not be inhibited for more than ten SM-2000s, concurrently. This can cause the loss of receive-only printer (ROP) messages.

1. At MCC, either:
type and enter: **INH:BREVC,SM=a;**
or
enter input command **609** (1800,a CMD)

Where:

a = SM-2000 number.

Response: OK

4.10.4 SAFE STOP POINT

1. This is a **Safe Stop Point**.

4.10.5 VERIFY TIMING REFERENCE CONNECTIONS

1. Verify that timing reference cables are installed (see Figure 4.10-1):
 - Input clock reference cables to BITS box.
 - Output clock reference cables between BITS box and TSIU4/TSIU4-2.

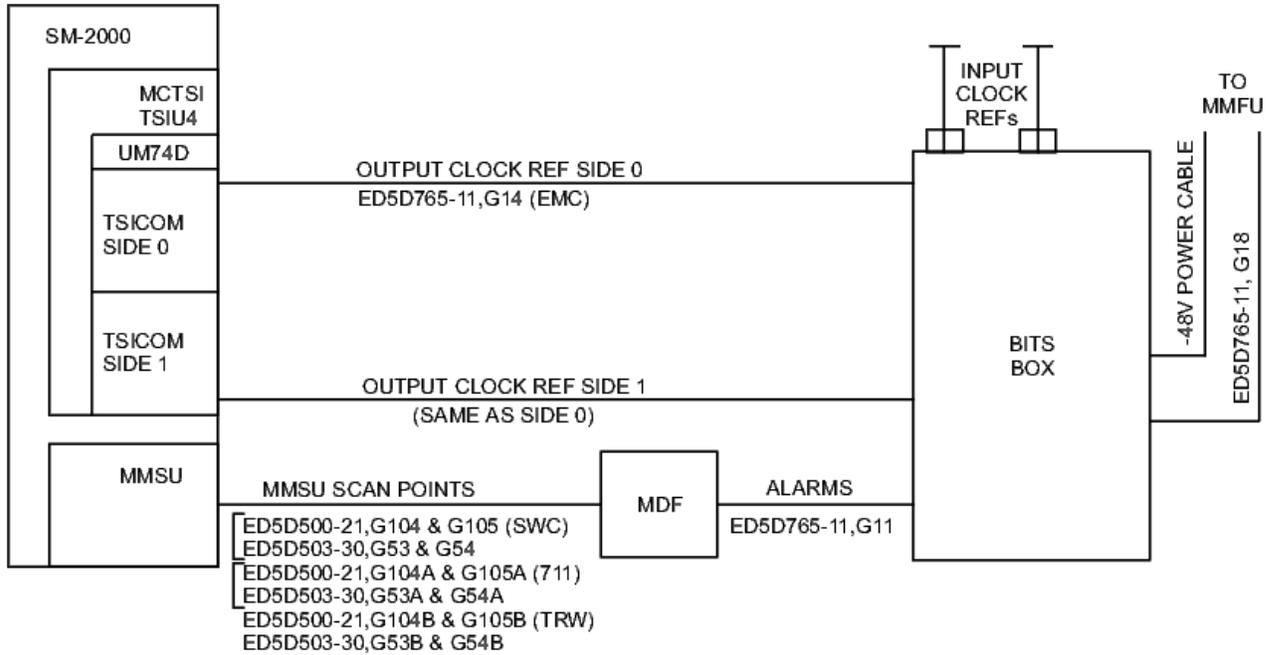


Figure 4.10-1 BITS BOX Cabling

- At MCC page 1190, verify that both Module Controller/Time Slot Interchange (MCTSI) 0 and 1 are ACT/STBY.

4.10.5.1 Verify Timing Reference Connections for MCTSI Side 1

- With MCTSI-0 active, remove MCTSI-1 from service:
enter input command **201** (1190,a CMD)

Response: RMV MCTSI = a-1 COMPLETED

Where:

a = SM-2000 number.

- At the MCTSI cabinet, side 1, Power and Control Display (PCD) pack, depress: **OFF** button.

Response: REPT PWR OFF MCTSI = a-1

Where:

a = SM-2000 number.

- Visually verify connection of output clock reference cable as shown below.

FROM	TO
BITS BOX	TSICOM-1
(see Figure 4.10-2)	(see Figure 4.10-3)
	EQL 62-116 (TSIU4), 353 (Berg Connector) EQL 53-017 (TSIU4-2), 353 (Berg Connector)

BITS BOX TELECOM SOLUTIONS®
DCD-523

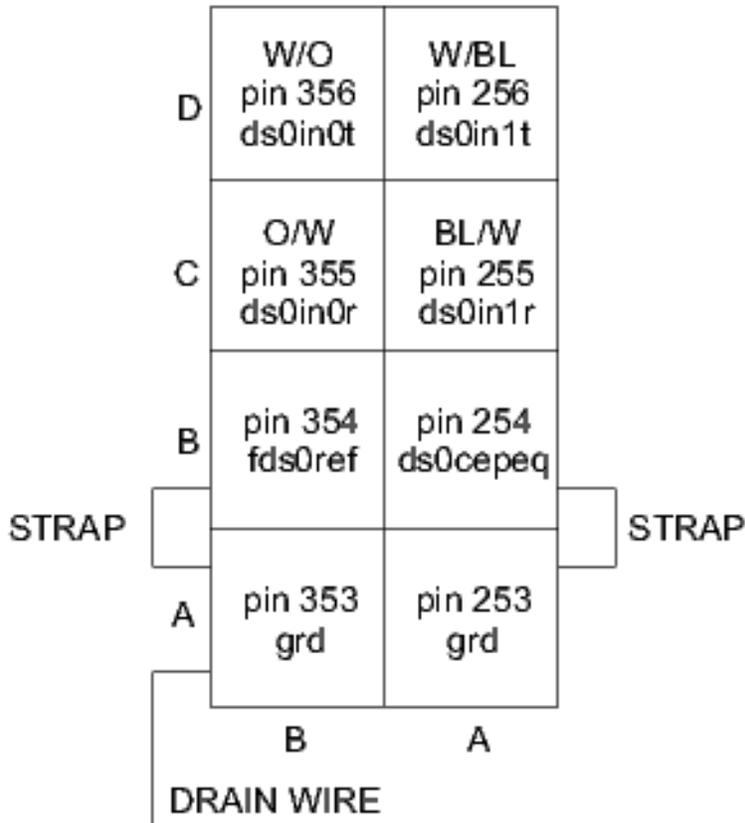


OUTPUT MODULE (N)
(WIREWRAPE VERSION)

OUTPUT MODULE (N+1)
(WIREWRAPE VERSION)

Figure 4.10-2 Telecom Solutions Telecom Solutions is a registered trademark of Symmetric Com, Inc. in the United States and other countries. Symmetric Com, Inc. BITS BOX Cabling Connection

	SIDE 0	SIDE 1
TSIU 4	EQL 62-020	EQL 62-116
TSIU4-2	EQL 45-017	EQL 53-017



**MCTSI CABLE CONNECTOR
LAYOUT - TSIU END
(ED5D765-11,G13 OR G14)**

Figure 4.10-3 TSICOM Cabling Connection

4. Perform BITS Box acceptance tests. Refer to vendor documentation.
5. At the MCTSI cabinet, side 1 PCD pack, depress the **ON** button.

Response: REPT PWR ON MCTSI=a-1

Where:

a = SM-2000 number.

6. At MCC page 1190 diagnose MCTSI-1, enter input command **501**
7. Did MCTSI-1 pass all diagnostics?
If, **YES**, continue with next Step.
If, **NO**, resolve problem, contact next level of technical support as required. Do not continue until problem is

resolved.

8. At MCC page 1190, are MCTSI-1 external references 0 and 1 in **STBY** state?
 If, **YES**, continue with next Step.
 If, **NO**, resolve problem, contact next level of technical support as required. Do not continue until problem is resolved.

4.10.5.2 Verify Timing Reference Connections for MCTSI Side 0

1. At MCC page 1190 switch MCTSI-1 to active side, enter command **403**.

Response: MCTSI-1 REF 0 and 1 ACTIVE
 MCTSI-0 REF 0 and 1 STBY

2. Observe a 15-minute soak period.

NOTE: Should problems occur, contact the next level of technical support and resolve problem. Do not continue until problem is resolved.

3. At MCC page 1190, with MCTSI-1 active remove MCTSI-0 from service: enter input command **200**

Response: RMV MCTSI = a-0 COMPLETED

Where:

a = SM-2000 number.

4. At the MCTSI cabinet, side 0 PCD pack, depress the **OFF** button.

Response: REPT PWR OFF MCTSI = a-0

Where:

a = SM-2000 number.

5. Visually verify connection of output clock reference cable as shown here.

	FROM	TO
BITS BOX (see Figure 4.10-2)		TSICOM-0 (see Figure 4.10-3)
		EQL 62-020 (TSIU4), 353 (Berg Connector) EQL 45-017 (TSIU4-2), 353 (Berg Connector)

6. Perform BITS Box acceptance tests. Refer to vendor documentation.

7. At the MCTSI cabinet, side 0 PCD pack, depress the **ON** button.

Response: REPT PWR ON MCTSI=a-0

Where:

a = SM-2000 number.

8. At MCC page 1190 diagnose MCTSI-0, enter input command **500**

9. Did MCTSI-0 pass all diagnostics?

If, **YES**, continue with next Step.

If, **NO**, resolve problem, contact next level of technical support as required. Do not continue until problem is resolved.

10. At MCC page 1190, are MCTSI-0 external clock references 0 and 1 in **STBY** state?

If, **YES**, continue with next Step.

If, **NO**, resolve problem, contact next level of technical support as required. Do not continue until problem is resolved.

11. Observe a 15-minute soak period.

NOTE: Should problems occur, contact the next level of technical support and resolve problem. Do not continue until problem is resolved.

4.10.5.3 Install MMSU Scan Points

1. Select customer-supplied RC/V 8.11 forms identifying BITS BOX scan points.
2. From the DCD-523, cross connect terminals (two audible **minor** alarms), connect to an available pair of scan leads from the MMSU. Record scan point used for the minor alarm connection.
3. From the DCD-523, cross connect terminals (two audible **major** alarms), connect to an available pair of scan leads from the MMSU. Record scan point used for the major alarm connection.
4. Select and prepare terminal for RC/V activities.

NOTE: The identification of the scan points should be known before continuing with the RC/V activity.

5. To provision the first alarm scan point, at the RC/V terminal type and enter: **8.11i**

Response: The REMOTE ALARM ASSIGNMENT page is displayed. The cursor is positioned at the REMOTE MODULE field.

6. To assign alarms, type and enter data for the following fields:

REMOTE MODULE _____
ALARM POINT _____ (000-054, refer to completed 8.11 form for assignment)

SCAN POINT = aaabcddee

Where:

aaa =	SM-2000 number
b =	Metallic service unit (MSU) number, 0,1
c =	MSU service group, 0,1
dd =	MSU board number, 00-31
ee =	MSU scan point number, 00-31.

Response: Enter Insert, Change, Validate, or Print:

7. To insert, type and enter: i

Response: inserting . . . FORM INSERTED.

8. Repeat Steps 6 and 7 to insert additional scan point.

9. With all scan points assigned, exit RC/V.
10. To backup ODD, at the MCC, type and enter:
BKUP:ODD,NRODD=a,RODD,AM;

Where:

a = SM-2000 number.

NOTE: Prior to the response, there will be completed responses for the SM-2000 and the AM.

Response: BKUP NRODD COMPLETED

NOTE: Database backup will take several minutes to complete.

4.10.5.4 Test BITS Box Alarms

1. Disconnect one of the input clocks from the BITS box.

Response: A **MINOR** alarm output message is generated.
MINOR alarm LED on the BITS Box **SAI/MTS** card is lighted.

2. Reconnect the clock input that was disconnected in the previous Step.
3. At the BITS Box press the **ACO** switch on the **SAI/MTS** card to clear the **MINOR** alarm.

Response: **MINOR** alarm LED on the BITS box **SAI/MTS** card is off.

4. **WARNING:** An antistatic wrist strap must be worn while handling circuit packs or system cables to prevent damage to components by static electricity.

At the BITS Box temporarily remove the active **CI** card.

Response: A **MAJOR** alarm output message is generated.
MAJOR alarm LED on the BITS box **SAI/MTS** card is lighted.

5. Re-install the **CI** card and press the **ACO** switch on the **SAI/MTS** card to clear the **MAJOR** alarm.

Response: **MAJOR** alarm LED on the BITS box **SAI/MTS** card is off.

4.10.6 UPGRADE TSICOM PACK

4.10.6.1 Remove MCTSI 0 From Service

1. With MCTSI-1 active, remove (MCTSI) side 0 from service: at MCC, either:
type input message: **RMV:MCTSI=a-0;**
or
enter input command **200** (1190,a CMD)

Where:

a = SM-2000 number.

Response: RMV MCTSI=a-0 COMPLETED

4.10.6.2 Update TSICOM 0 CLI

1. Select and prepare terminal for RC/V activities.
2. At the RC/V terminal, type and enter: **18.1U**
Response: **SWITCHING MODULE (RC_EQIM) 18V1** page displayed.
Cursor at **SM** attribute.
3. Type and enter SM-2000 number.
Response: System populates remainder of view.
Enter Update, Change, Validate, or Print:
4. Type and enter: **C**
Response: **Change field:**
5. Type and enter **TSICOM 0 CLI** or field number.
Response: Cursor at **TSICOM 0 CLI** attribute.
6. Type and enter the appropriate hex value:

DESCRIPTION	HEX VALUE
TSIU4 with external clock reference	23
TSIU4-2 with external clock eference	33

- Response:** **Change field:**
7. Enter **CARRIAGE RETURN**
Response: **Enter Update, Change, Validate, or Print:**
 8. Type and enter: **U**
Response: **updating...FORM UPDATED**
SWITCHING MODULE (RC_EQIM) 18V1 page displayed.
Cursor at **SM** attribute.
 9. Type and enter: **<**
Response: **18.0 SM & REMOTE TERMINALS VIEWS** page displayed.
 10. Type and enter **Q**
Response: **RCV-196 COMPLETED**

4.10.6.3 Power Down MCTSI Side 0 And Replace Circuit Pack

1. At the MCTSI cabinet, side 0 PCD pack, depress the **OFF** button.
Response: **REPT PWR OFF MCTSI=a-0**
Where:
a = SM-2000 number.
2. **WARNING:** An antistatic wrist strap must be worn while handling circuit packs or system cables

to prevent damage to components by static electricity.

Remove the UM74B/UM74C circuit pack from MCTSI side 0 (per EQL) and replace with UM74D.

EQL 62-020	TSIU4
EQL 45-017	TSIU4-2

4.10.6.4 Power Up MCTSI Side 0

1. At the MCTSI cabinet, Side 0 PCD pack, depress the **ON** button.

Response: REPT PWR ON MCTSI=a-0

Where:

a = SM-2000 number.

4.10.6.5 Diagnose MCTSI Side 0

1. At MCC, either:
type input message: **DGN:MCTSI=a-0,PH=33,RAW,TLP;**
or
enter input command **500,PH=33** (1190,a CMD)

Where:

a = SM-2000 number.

Response: DGN MCTSI=a-0 COMPLETED ATP

4.10.6.6 Unconditionally Restore MCTSI Side 0

1. At MCC, either:
type input message: **RST:MCTSI=a-0,UCL;**
or
enter input command **300,UCL** (1190,a CMD)

Where:

a = SM-2000 number.

Response: RST MCTSI=a-0 COMPLETED

4.10.6.7 Remove MCTSI 1 From Service

1. Switch MCTSI-0 to active side, enter input command **403**
2. With MCTSI-0 active, remove (MCTSI) Side 1 from service: at MCC, either:
type input message: **RMV:MCTSI=a-1;**
or
enter input command **201** (1190,a CMD)

Where:

a = SM-2000 number.

Response: RMV MCTSI=a-1 COMPLETED

4.10.6.8 Update TSICOM 1 CLI

1. Select and prepare terminal for RC/V activities.
2. At the RC/V terminal, type and enter: **18.1U**

Response: SWITCHING MODULE (RC_EQIM) 18V1 page displayed.
Cursor at **SM** attribute.

3. Type and enter SM-2000 number.

Response: System populates remainder of view.
Enter Update, Change, Validate, or Print:

4. Type and enter: **C**

Response: Change field:

5. Type and enter: **TSICOM 1 CLI** or field number.

Response: Cursor at TSICOM 1 CLI attribute.

6. Type and enter the appropriate hex value:

DESCRIPTION	HEX VALUE
TSIU4 with external clock reference	23
TSIU4-2 with external clock eference	33

Response: Change field:

7. Enter **CARRIAGE RETURN**

Response: Enter Update, Change, Validate, or Print:

8. Type and enter: **U**

Response: updating...FORM UPDATED
SWITCHING MODULE (RC_EQIM) 18V1 page displayed.
Cursor at **SM** attribute.

9. Type and enter: **<**

Response: 18.0 SM & REMOTE TERMINALS VIEWS page displayed.

10. Type and enter: **Q**

Response: RCV-196 COMPLETED

4.10.6.9 Power Down MCTSI Side 1 And Replace Circuit Pack

1. At the MCTSI cabinet, side 1 PCD pack, depress the **OFF** button.

Response: REPT PWR OFF MCTSI=a-1

Where:

a = SM-2000 number.

2. **WARNING:** An antistatic wrist strap must be worn while handling circuit packs or system cables to prevent damage to components by static electricity.

Remove the UM74B/UM74C circuit pack from MCTSI side 1 (per EQL) and replace with UM74D.

EQL 62-116	TSIU4
EQL 53-017	TSIU4-2

4.10.6.10 Power Up MCTSI Side 1

1. At the MCTSI cabinet, side 1 PCD pack, depress the **ON** button.

Response: REPT PWR ON MCTSI=a-1

Where:

a = SM-2000 number.

4.10.6.11 Diagnose MCTSI Side 1

1. At MCC, either:
type input message: **DGN:MCTSI=a-1,PH=33,RAW,TLP;**
or
enter input command **501,PH=33** (1190,a CMD)

Where:

a = SM-2000 number.

Response: DGN MCTSI=a-1 COMPLETED ATP

4.10.6.12 Unconditionally Restore MCTSI Side 1

1. At MCC, either:
type input message: **RST:MCTSI=a-1,UCL;**
or
enter input command **301,UCL** (1190,a CMD)

Where:

a = SM-2000 number.

Response: RST MCTSI=a-1 COMPLETED

4.10.7 SAFE STOP POINT

1. This is a **Safe Stop Point**.

4.10.8 RESTORE CONTROLS

4.10.8.1 Allow Brevity Control

1. At MCC, either:

type input message: **ALW:BREVC,SM=a;**
or
enter input command **709** (1800,a CMD)

Where:

a = SM-2000 number.

Response: OK

4.10.8.2 Return Message Classes to Previous Print Status

1. At MCC, type input message:
CHG:LPS,MSGCLS=ALL,FROMBKUP;

Response: OK

4.10.8.3 Turn Off Fault Recovery Reports

1. At MCC, either:
type input message: **CLR:PERPH,SM=a,VERBOSE;**
or
type and input command **512** (1800,a CMD)

Where:

a = SM-2000 number.

Response: OK

4.10.8.4 Allow Routine Exercises

CAUTION: All routine exercises inhibited earlier in the procedure must be allowed. Failure to do this may result in office degradation over time.

1. At MCC, type input message
ALW:DMQ,SRC=REX;

Response: ALW DMQ ENABLED REX

2. At MCC, either:
type input message: **ALW:REX,SM=a;**
or
enter input command **702** (1800,a CMD)

Where:

a = SM-2000 number.

Response: OK

4.10.8.5 BackUp Office Dependent Data

1. At the MCC, type and enter:
BKUP:ODD,NRODD=a,RODD,AM;

Where:

a = SM-2000 number.

NOTE: Prior to the response, there will be completed responses for the SM-2000, and the AM.

Response: BKUP NRODD COMPLETED

NOTE: Database backup will take several minutes to complete.

4.10.8.6 Reschedule Automatic Office Dependent Data Backup, If Necessary

1. At MCC, type input message: **BKUP:ODD,EVERY=c,AT=d;**

Where:

c = interval in days (0-90) between successive ODD backup runs
d = Time of day in hours and minutes (0-2359).

Response: OK

4.10.8.7 Recommended Soak Period

1. Monitor the ROP output for any peripheral fault recovery error messages. If any such messages occur within a period of 30 minutes take appropriate action to determine the reason; and, correct the reported error(s), if necessary, before continuing.
2. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 4.11: Replace Fan Unit Air Filter

OVERVIEW

NOTE: Service air filters at least every six months per equipment test list or more often if conditions dictate.

CAUTION: Do not vacuum the used air filter. The used air filter should be replaced with a new air filter. This prevents metal filings from getting into circuit packs.

PROCEDURE

1. Obtain the following apparatus or equivalent:
 - One Model UAF 233 replacement air filter per cabinet (order from: Universal Air Filter Company, P.O. Box 853, East St. Louis, IL 62203).
 - Three fan blockers (part number 22785DP) per cabinet (order from: Auburn Plastics, Chicago, IL).
2. Open cabinet front door to expose fan unit air filter.
3. Open cabinet rear door.
4. Place fan blockers on all three rear fans to restrict the air flow while the air filter is being changed. The fan blockers keep unfiltered air out of the cabinet.

NOTE: Fan blockers should not be placed on fans that are located at the front of the cabinet.
5. Remove old air filter from the front of the cabinet by sliding filter (which is located horizontally above the fans) out until it clears mounting channels.
6. Insert new air filter in mounting channels.
7. Slide filter forward until it is fully seated.
8. Remove the three fan blockers that were installed in Step 5.
9. Close rear cabinet door.
10. Close front cabinet door.
11. Dispose of old air filter per local procedures.
12. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

5. CORRECTIVE MAINTENANCE

Overview

Corrective maintenance procedures are only performed when hardware fault conditions warrant intervention to restore the switch to proper operation.

Before performing any maintenance procedure, become familiar with the procedure steps and pay particular attention to any **Notes**, **Cautions**, or **Dangers** that accompany a maintenance operation.

Ethernet[®] Interface Board (EIB)

The *Ethernet[®]* Interface Board (EIB) section consists of two corrective maintenance procedures. The first set of procedures are used to replace the EIB when the Module Controller/Time Slot Interchange (MCTSI) diagnostics Trouble Location Procedure (TLP) indicate that the EIB board is the source of the problem. The second set of procedures are for the replacement of the EIB paddle board, which is installed on the backplane of the shelf.

When handling circuit packs, **ALWAYS** observe the following cautions:

CAUTION 1: Handle circuit packs by their edges or face plate to avoid deforming components and leads or scratching the gold plated connector contacts. Contact damage or contamination can cause poor connections.

CAUTION 2: Before removing or inserting a circuit pack, power down the circuit, unless otherwise specifically directed in a maintenance procedure.

CAUTION 3: When changing circuit packs in an attempt to locate a trouble, always restore a pack to its original location if the replacement pack does not clear the trouble. This will aid in isolating the trouble by returning the circuit to its original configuration which existed at the time the failure was first detected.

CAUTION 4: When handling circuit packs, always use care to avoid static discharges. Circuit packs should remain in the antistatic shipping container or in some other antistatic container until they are to be inserted. When inserting or removing circuit packs, personnel should be properly grounded, using a wrist strap connected to a frame ground or a designated ground connect point.

Procedure 5.1: Respond to and Restore a Locked-Up Video Terminal

OVERVIEW

This procedure restores a video terminal not responding to keystrokes. For this procedure, personnel need a good understanding of terminal configurations and should know how to use the Master Control Center (MCC) video terminal to locate the display page(s) that can be helpful in restoring the locked-up video terminal.

For *Sun*TM and MCC console terminal settings, see "*Sun*[®] Console/Master Control Center (MCC) Terminal Settings," Appendix 1 .

PROCEDURE

1. Determine if this is the only terminal not responding to keystrokes.
 If this is the only terminal that is locked-up, go to step 4.
 If all terminals are failing to respond, continue with step 2.
2. Can the EAI page be displayed on the MCC terminal?
 If all terminals are locked-up but the EAI page can be displayed on the MCC, go to step 8.
 If all terminals including the MCC are locked-up, continue with step 3.
3. Verify the MCC terminal option settings (see "*Sun*[®] Console/Master Control Center (MCC) Terminal Settings," Appendix 1).
4. Identify the locked up terminal's Teletypewriter (TTY) member number. In this procedure the TTY member number and the video terminal number are synonymous. The video terminal number is probably at the top of the status indicator on the MCC or the STLWS.
5. Locate another operational video terminal that is assigned to the same switch as the locked-up video terminal.
6. At the operational video terminal, enter either (a) or (b) to restore the faulty video terminal to service. If the terminal to be restored is the MCC, enter (b), otherwise enter (a).

(a) **RST: TTY=a[,UCL];**

(b) **RST:MTTY=a[,UCL];**

Where:

a = TTY member number (0-255).

Response: A PF entry (on the same line as the input message), followed by a **RST TTY** output message.

7. Does the **RST TTY** output message and video terminal being restored indicate restoration? (For example, the **RST TTY** output message contains the TTY member number (0-255), followed by **COMPLETED**.) The restored video terminal should display a **CFTSHL TERMINAL IN SERVICE** message.

If these two conditions do not exist, go to Step 5.

If these two conditions do exist, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

NOTE: Step 5 is performed **ONLY** when the **RST** input messages (**RST:TTY** and **RST:TTYC**) fail to restore the locked-up terminal. To perform Step 8, the video terminal at the MCC must be operational.

8. Go to "Perform Office Terminal Software Initialization," Procedure 5.2 .

Procedure 5.2: Perform Office Terminal Software Initialization

OVERVIEW

WARNING: Performing the following procedure will disable the terminal equipment until initialization is completed.

PROCEDURE

1. At Master Control Center (MCC) video terminal, is the **EMERGENCY ACTION INTERFACE (EAI) PAGE** displayed?

If **YES**, proceed to Step 3

If **NO**, continue with next step.

2. At MCC video terminal, depress **EA DISP** key to display **EMERGENCY ACTION PAGE**

Response: **EMERGENCY ACTION PAGE** is displayed.

3. On the **EAI PAGE** type and enter on the command line: **42; n; 15**; where **n** is the level of craft initialization 1, 2, or 3 (start with level 1 and escalate to level 3).

1	Craft initialization level 1 terminates and restarts all craft processes and also restarts MTTY controllers.
2	Craft initialization level 2 terminates and restarts all killable nonessential user and supervisor processes and also restarts all MTTY and TTY controllers.
3	Craft initialization level 3 terminates and restarts all killable essential and non-essential user and supervisor processes.

Response: **craft initialize? (y/n)**

4. Type and enter: **y**.

Response: **PRM vBda 7400 xxyy zzzz hh hh hh** printed on ROP.

Where:

v =	E or F
xx =	craft initialization level (0103o 03)
yy =	craft initialization phase (0104o 04)
zzzz =	0000 - current phase proceeds normally, 0001 - phase timed out, 0002 - craft initialization aborted, 0003 - craft initialization failed, 0004 - craft initialization completed successfully.

NOTE: **PRM EBda 7500 0000 0000 hh hh hh** indicates that craft initialization was denied because another craft initialization is already in progress.

5. Is craft terminal initialization successful?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, continue with next step.

6. Was **APPLICATION PARAMETER = 3**?

If **YES**, continue with next step.

If **NO**, increase **APPLICATION PARAMETER** by one and repeat from Step 3.

7. On the **EAI PAGE**, type and enter on the command line: **43**

8. Enter command **15** on **EAI PAGE** to perform Craft Terminal Initialization.

9. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 5.3: Remove and Insert Line Unit (LU) Circuit Packs

OVERVIEW

This procedure provides the proper sequence(s) for removal (or unseating) and insertion (or reseating) of Line Unit (LU) circuit packs. Unseating of all grid and Gated Diode Crosspoints Access (GDXACC) packs is required before -48 V DC is restored if the LU is not equipped for Line Unit Auto Power Recovery (LUARP). Unseating and reseating in the proper sequence(s) is/are required to avoid potential damage to certain packs that can occur when other packs are missing or not powered up. For this reason, the following **Cautions** should be observed. Also, for personal safety, observe the following **DANGER**.

CAUTION 1: Do not remove any -48 V DC fuse at the LU cabinet or at the Power Distribution Frame (PDF) or in any other way interrupt the -48VDC power to the LU packs as a troubleshooting technique.

CAUTION 2: Removal of an entire LU from service should only be done when necessary (rarely). Once power is lost, the system may remove working lines, marking them "OOS, MAN." These lines must be restored via Step 9 to complete this procedure and minimize the interruption of service on those lines connected to the LU.

DANGER: Hazardous voltages are present on LU packs (even shortly after they are removed from the cabinet). Do not touch exposed components or wiring paths on the pack. When removing or inserting a pack, use the latch and hold the pack at its edges without touching components or paths.

PROCEDURE

1. For LU Model 3 (J5D004AD):
 - (a) For the entire LU, perform Step 3.
 - (b) For a TN832(B) pack only, remove the GDXACC circuit in the SG from service with the appropriate **RMV** input messages and unseat the TN831(B) (first) and then the TN832(B) pack.
 - (c) **STOP. YOU HAVE COMPLETED THE PACK REMOVAL PORTION OF THIS PROCEDURE.**

2. For insertion or reseating of LU packs:
 - (a) For LU Model 3 (J5D004AD):
 - (1) For the entire LU, perform Step 3.
 - (2) For a TN832(B) pack only, insert and latch the TN832(B) pack and (last) the TN831(B) pack. Unconditionally restore the packs with the appropriate **RST** input messages.
 - (3) **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

3. Before removing/unseating any LU packs, verify that the LU's equipment groups (Service Group SG 0 and SG 1) and GRIDs (0-7/9) are out of service (OOS). Use of the appropriate **RMV** input messages with the unconditional (UCL) option may be required to remove the entire LU from service.

4. Use the appropriate pack removal/unseat procedure as follows:

- (a) Circuit Pack Removal Sequence for LU Model 3 (J5D004AD):
 - (1) For each equipped GRID (GRID 0 - GRID 9), unseat the two GRID packs [TN838s, TN1048s, TN1058(B,C)s].
 - (2) For each equipment group (SG 0 and SG 1), unseat the TN831(B) (first) and the TN832(B) (last).

5. **STOP. YOU HAVE COMPLETED THE PACK REMOVAL PORTION OF THIS PROCEDURE.**

6. Before inserting or reseating the packs in the LU, verify that no fuses are blown for the -48 V DC power to the LU (either at the LU cabinet or at the Power Distribution Frame (PDF)).

NOTE: In Step 7, when inserting the packs (one at a time), be alert to a fuse blowing at the LU cabinet or at the PDF. The blowing of the fuse may be due to a faulty pack being inserted or some other trouble causing excessive current load that should be cleared before proceeding with the pack insertion procedure.

7. Use the appropriate pack inserting/reseating procedure as follows (be alert for the blowing of a fuse):

- (a) Circuit Pack Insertion Sequence for LU Model 3 (J5D004AD):
 - (1) Insert and latch (one at a time, in the order specified) the UN322(B), TN335(C,E)s, TN844s, TN832(B), and (last) the TN831(B).
 - (2) For each equipped GRID (GRID 0 - GRID 9), insert and latch (one at a time) the GRID packs [TN838s, TN1048s, TN1058(B,C)s].

8. Unconditionally restore both SGs and all GRIDs of the LU to service, using the appropriate **RESTORE** commands at the Master Control Center (MCC) display pages or via the appropriate **RST** input messages.

9. List the OOS lines by entering input message:

OP:LIST,LINES,FULL:OOS.

Use the **RST:LINE** input message to restore the OOS lines. Sample test for dial tone.

10. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 5.4: Invoke the Automatic Circuit Pack Return Tag Tool

OVERVIEW

The automatic circuit pack Return Tag (RTAG) tool allows maintenance personnel to display and print recent diagnostic and fabric test faults, as well as generate (in an interactive fashion) circuit pack return tags to be used in returning faulty circuit packs to the Lucent Technologies factory for repair. The following shows the basic menu of the tool.

PROCEDURE

1. The return tag tool can be invoked by any of the following three methods:
 - (a) At the *UNIX*[®] system terminal, type in `/usr/bin/rtag` at the prompt
 - (b) At the STLWS terminal, type in **RCV:MENU: RTAG**; at the prompt.
 - (c) At the Master Control Center (MCC) terminal, poke Page **194**; then select **RTAG**. On the MCC screen, the following interface menu is first printed:

```
Depress PF3 key twice to reconnect to the SCREEN process if
the Command Message Key (PF3) has been used during this procedure.
```

```
What is the desired command?
```

```
o) ODBE          c) CNIDBOC
a) ACCED         r) RTAG
u) UNIX SHELL   Q) TO QUIT
```

```
Please enter o,a,u,c, r, or Q:
```

```
Character mappings
\:, \1, \s, \8, -, \a, \/, \\", \
;, !, $, &, -, @, ?, \,
```

NOTE: When RTAG is invoked from the MCC, the screen will not be drawn exactly like those shown on the following pages. This is due to the unique display capabilities of the MCC. The screens shown will scroll on the MCC rather than be redrawn. This may cause some confusion when entering selections. For this reason it is strongly recommended that this tool be invoked from an STLWS, if available.

2. After the RTAG tool is invoked, the following interface header is printed:

```
WELCOME TO THE AUTOMATED CIRCUIT PACK RETURN TAG TOOL
```

If running RTAG from the MCC and not an STLWS, press **RETURN**. The following menu is displayed:

Please select one of the following commands:

- (1) Select diagnostic failure(s) by circuit identifier
- (2) Select diagnostic failure(s) by circuit identifier and number
- (3) Select diagnostic failure(s) by date
- (4) Select diagnostic failure(s) by number of last fault(s)
- (5) Select diagnostic failure(s) by all faults
- (6) Generate a circuit pack return tag for update
- (7) Empty the fault database and/or change password

(! to go back, h for Help, q to quit)

- (a) For selection 1, the following display is shown:

Please enter the circuit identifier
(e.g., MCTSI, MASC):
(! to go back, h for Help, q to quit)

- (b) Go to Step 3.

- (c) For selection 2, the following display is shown:

Please enter the circuit identifier and number
(e.g., MCTSI=15-1, CU=0 MASC=2):
(! to go back, h for Help, q to quit)

- (d) Go to Step 3.

- (e) For selection 3, the following display is shown:

Please enter the date
(Format mm-dd-y):
(! to go back, h for Help, q to quit)

- (f) Go to Step 3.

- (g) For selection 4, the following display is shown:

Please enter the number of last faults to review
(Valid number is 1 - n):
(! to go back, h for Help, q to quit)

Where:

n = Number of existing fault entries in the circular database.

Go to Step 3.

- (h) For selection **5**, the menu in Step **3** is displayed

Go to Step **3**.

- (i) For selection **6**, the five questions in Step **4b** are asked, then an update tag is printed on the Receive-Only Printer (ROP). The menu is redisplayed.
- (j) For selection **7**, if there is no password (initially), the following will be displayed.

NOTE: This initial condition indicates when the software release is first retrofitted or the database file is removed by **rm** command from a *UNIX*[®] system terminal.

Otherwise, the following will be displayed:

```
There is no password.
Please enter a password
(NOTE: The length of the password cannot exceed 6 characters)
(! to go back, h for Help, q to quit)
Enter the password again:
```

```
Please enter the password
```

If the password does not match, the access of this command to empty the database is denied, and the main menu is redisplayed. If the password matches, then the following will be displayed:

```
Do you want to flush the fault database?
Please enter y for yes, or n for no, or q to quit
default is no
(! to go back, h for Help, q to quit)
```

If the answer is **y**, the fault database is flushed. Then, the following will be displayed:

```
Do you want to change the password?
Please enter y for yes, or n for no, or q to quit:
```

If the answer is **y**, the following will be displayed:

```
Please enter the new password:
Enter the new password again:
```

and go back to main menu.

3. The following menu is displayed:
-

Please select one of the following commands:

- (1) Print the summary of the fault entries on ROP
- (2) Display the summary of the fault entries

(! to go back, h for Help, q to quit)

- (a) For selection **1**, the summary of the fault entries that satisfy the selection is first dumped into a temporary file. Then the file is printed at the ROP. The menu is redisplayed.
 - (b) For selection **2**, the fault entries are displayed as follows:
-

The following shows the fault entries that satisfy the selected key (YYY):

- (1) M 04-10-94 12:50 PSUPH=8-0-1-7 STF PH 1 SEG 2 TEST 19 MM H'fa72
- (2) A 03-12-94 01:05 MCTSI=10-0 STF PH 4 SEG 1050 TEST 1 MM H'2

.
.
.

- (10) M 10-15-94 03:45 MCTSI=10-0 STF PH 4 SEG 1050 TEST 1 MM H'2

To display a tag, enter the fault number.

To page down the fault list, hit the <ENTER> key.

To page up the fault list, enter u.

To print the current screen to the ROP, enter p.

(! to go back, h for Help, q to quit)

- (c) After selecting a tag, go to Step 4.

4. The selected tag is displayed as follows:
-

```
OFFICE BASE: T9997-d7
SOFTWARE RELEASE: 5e11
REASON FOR RETURN: DEFECT
EQUIPMENT STATUS:
24 HOUR INDICATOR:
SOURCE OF DIAGNOSTIC REQUEST: AUTOMATIC
DATE/TIME FAILED: 03-12-94 01:05
MCTSI=10-0 PH 4 SEG 1050
TEST      MM
1        H'2
CIRCUIT PACK CODE:
SERIES:
SERIAL NUMBER:
```

NOTE: The previous step shows an unedited tag. Then, the next prompt is as follows:

Please enter the number that corresponds to your selection:

- (1) Print the tag
- (2) Edit the tag
- (3) Select another fault

(! to go back, h for Help, q to quit)

- (a) For selection **1**, the OP TAG REPORT output message is printed on ROP. This will take the dialogue flow back to Step **3**.
- (b) For selection **2**, the following questions are displayed:
-

QUESTION 1:

Equipment status (default XXX)?

- (1) INSTALLING
- (2) PRE-CUT
- (3) IN SERVICE

Please enter the selected number, or <ENTER> for no change:

QUESTION 2:

24 hour indicator (default XXX)?

- (1) YES
- (2) NO

Please enter the selected number, or <ENTER> for no change:

QUESTION 3:

Circuit Pack Code (default XXX)

Please enter new circuit pack code or <ENTER> for no change:

QUESTION 4:

Series (default XXX)

Please enter new series/version number or <ENTER> for no change:

QUESTION 5:

Serial number (default XXX)

Please enter new serial number for the circuit pack
or <ENTER> for no change:

Where:

XXX = shows the respective current default data.

After getting all the answers to the five questions, redisplay what the user has entered. Then the following will be displayed:

Do you want to save these changes?

Please enter y for yes, or n for no, or q to quit:

This will take the dialogue flow back to Step **4**.

- (c) For selection **3**, this will take the dialogue flow back to Step **3**.
- (d) For selection **4**, quit the RTAG user interface.

5. STOP. YOU HAVE COMPLETED THIS PROCEDURE.

Procedure 5.5: Analyze and Clear Non-Diagnosable Switching Module Memory Errors

OVERVIEW

This procedure contains information for clearing an intermittent memory fault in the Module Controller/Time Slot Interchange (MCTSI) in a switching module.

Typically, the fault causes either "REPT SM HWLVL MP PARITY-ERROR," "CORRBITERR," or "MEMSYSTEM" interrupts when the affected side of the MCTSI is active (ACT) or an attempt to restore that side of the MCTSI is failing with an "REPT SM HASHSUM FAILURE" printout. However, the fault is so intermittently "soft" that it cannot be detected by the normal MCTSI diagnostics.

The switching module may have degenerated to a very undesirable state where the ACT side of the MCTSI is detecting memory errors, but it cannot be removed from service because the standby side is out of service (OOS) and cannot be restored due to the errors in the ACT side. Step 3 of the procedure addresses this special case.

PROCEDURE

1. Collect the associated "REPT SM HWLVL" interrupt or "REPT SM HASHSUM FAILURE" printouts.
2. Using the printouts, determine which side of the MCTSI and which memory pack (TN1661) is most likely causing the problem. To identify a switching module memory board from an address, refer to the appropriate Figures and Tables in 235-600-750, *Output Messages Manual*, for the "REPT SM HWLVL" and the "REPT SM HASHSUM" output messages.
3. Determine the status of the affected MCTSI side and its mate side. At the MCC, type and enter: **1190**.
 - (a) If the affected side is OOS and the mate side is ACT, proceed to Step 4.
 - (b) If the affected side is standby (STBY) and the mate side is ACT, using the **REMOVE** poke (or **RMV** input message), remove the affected MCTSI side from service and proceed to Step 4.
 - (c) If the affected side is ACT and the mate side is STBY, using the **SWITCH** poke (or **SW** input message), switch the MCTSI, then remove the affected (now STBY) side and proceed to Step 4.
 - (d) If the affected side is ACT and the mate side is OOS, take the following action:
 - (1) Diagnose the mate side and verify it is All Tests Passed (ATP).
 - (2) Using the **INH** input message, temporarily inhibit hardware (HW) error checks in the ACT side.

NOTE: Inhibiting hardware checks may degrade switching module capacity.
 - (3) Using the **RST:MCTSI** input message with the unconditional (UCL) and STBY options, request an unconditional restore of the mate (OOS) side to STBY. Wait for the restore to complete.
 - (4) Using the **ALW** input message, remove the HW check inhibits previously activated.
 - (5) Using the **SWITCH** poke (or **SW:MCTSI** input message), switch the MCTSI.
 - (6) Using the **REMOVE** poke (or **RMV:MCTSI** input message), remove the STBY (affected) side from service and proceed to Step 4.

CAUTION: Updating the STBY MCTSI from an active MCTSI with errors could potentially

corrupt the STBY MCTSI memory.

4. On the affected MCTSI, execute the MCTSI diagnostic demand Phase 7 (with the Trouble Locating Procedure [TLP] option) several times. Type and enter:

DGN:MCTSI=a-b, PH=7,RPT=3,TLP;

Where:

a = The switching module number.
b = The MCTSI number (0 or 1).

5. Perform Substep (a) or (b) as follows:
 - (a) If the Phase 7 result is ATP, replace the suspected faulty memory pack (as determined in Steps 1 & 2), repeat Step 4, and verify that Phase 7 of the MCTSI diagnostic runs consistently ATP.
 - (b) If the Phase 7 result is not ATP, using the SUSPECTED FAULTY EQUIPMENT printout, determine which pack is most likely causing the failure, replace this pack, and verify that Phase 7 of the MCTSI diagnostic now runs consistently ATP.
6. Once the previous steps have been completed successfully, using the **RESTORE** poke command or the **RST:MCTSI** input message, restore the MCTSI.
7. Verify that the MCTSI restored successfully (no hashsum failure after memory update).

NOTE: If after restoring the MCTSI the switching module errors continue, the UN517 circuit pack could be the faulty pack.

If the MCTSI restores successfully, perform Substep (a). If the MCTSI does not restore successfully, perform Substep (b).

- (a) Hold the interrupt and diagnostic printouts along with the suspected faulty memory pack for a few days to verify that the memory errors have cleared. Once it is determined that the memory errors have been cleared, attach the interrupt and diagnostic printouts to the faulty memory pack and return the pack to the appropriate repair center.
 - (b) Hold the interrupt and diagnostic printouts along with the suspected faulty memory pack and seek the next higher level of technical assistance to clear the problem.
8. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 5.6: Replace *Ethernet*[®] Interface Board (EIB) — MCTU2

OVERVIEW

This procedure is used to replace the *Ethernet*[®] Interface Board (EIB) when the Module Controller/Time Slot Interchange (MCTSI) diagnostics Trouble Location Procedure (TLP) has indicated that the EIB is the source of the problem.

PROCEDURE

1. At the MCC terminal, type and enter **1190**.
2. Is MCTSI unit out of service (OOS)?
If **Yes**, go to Step 4. If **No**, continue with Step 3.
3. To remove the suspected MCTSI Service Group (SG) from service, type and enter:

20x

Where:

x = MCTSI number (0 or 1).

4. Hit the CMD/MSG key.
5. After the MCTSI is removed from service, diagnose the suspected unit. Type and enter:

DGN:MCTSI=a-b,TLP,PH=2010,RAW;

Where:

a = The switching module number.

b = The MCTSI number (0 or 1).

2010 - Verifies the entire operation of the EIB board.

Using the option, **RAW**, requests the diagnostic print raw data. If the Diagnostic Phase Description is either 2001 or 2010, then the EIB is at fault.

NOTE: If the MCTSI diagnostics fail (DUPLEX FAIL is displayed), there is most likely a problem at some point from the cabling T-connector back to the Administrative Workstation.

6. Does the TLP output list the UN362 EIB circuit pack?

If **YES**, continue with next step.

If **NO**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE**

7. Power down the MCTSI for the SG which is OOS.
8. Locate the EIB board for the affected side from the following:

The UN362 for MCTSI SG 0 is at position 019-050.

The UN362 for MCTSI SG 1 is at position 028-050.

9. Operate circuit pack latch and remove the pack.
10. Verify replacement circuit pack is the correct type and issue number, then carefully align the circuit pack with the upper and lower guide slots. Insert the circuit pack into the guide slots and seat it by pushing firmly on the tabs located on the faceplate.
11. Restore power to the MCTSI.
12. Diagnose the MCTSI EIB circuit by entering:

DGN:MCTSI=a-b,TLP,PH=2010,RAW;

Where:

a = The switching module number.
b = The MCTSI number (0 or 1).

13. Are diagnostic phases ATP?
If **YES**, continue with next step.
If **NO**, seek technical assistance.
14. Hit the CMD/MSG key.
15. Restore the MCTSI to service. Type and enter:

30x

Where:

x = MCTSI number (0 or 1).

16. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 5.7: Replace EI Paddle Board — MCTU2

OVERVIEW

This procedure provides the necessary steps to replace the *Ethernet*[®] Interface (EI) paddle board and should only be used when the Module Controller/Time Slot Interchange (MCTSI) Trouble Location Procedure (TLP) has indicated the 982YD EIB paddle board for MCTU2. See Figure 5.7-1 .

PROCEDURE

- At the front of the cabinet, go to the SG of the MCTSI that is OOS. This will be the SG with the OOS lamp lit on the UN516B circuit pack.
 - The UN516B for MCTSI SG 0 is at position 019-026.
 - The UN516B for MCTSI SG 1 is at position 028-026.

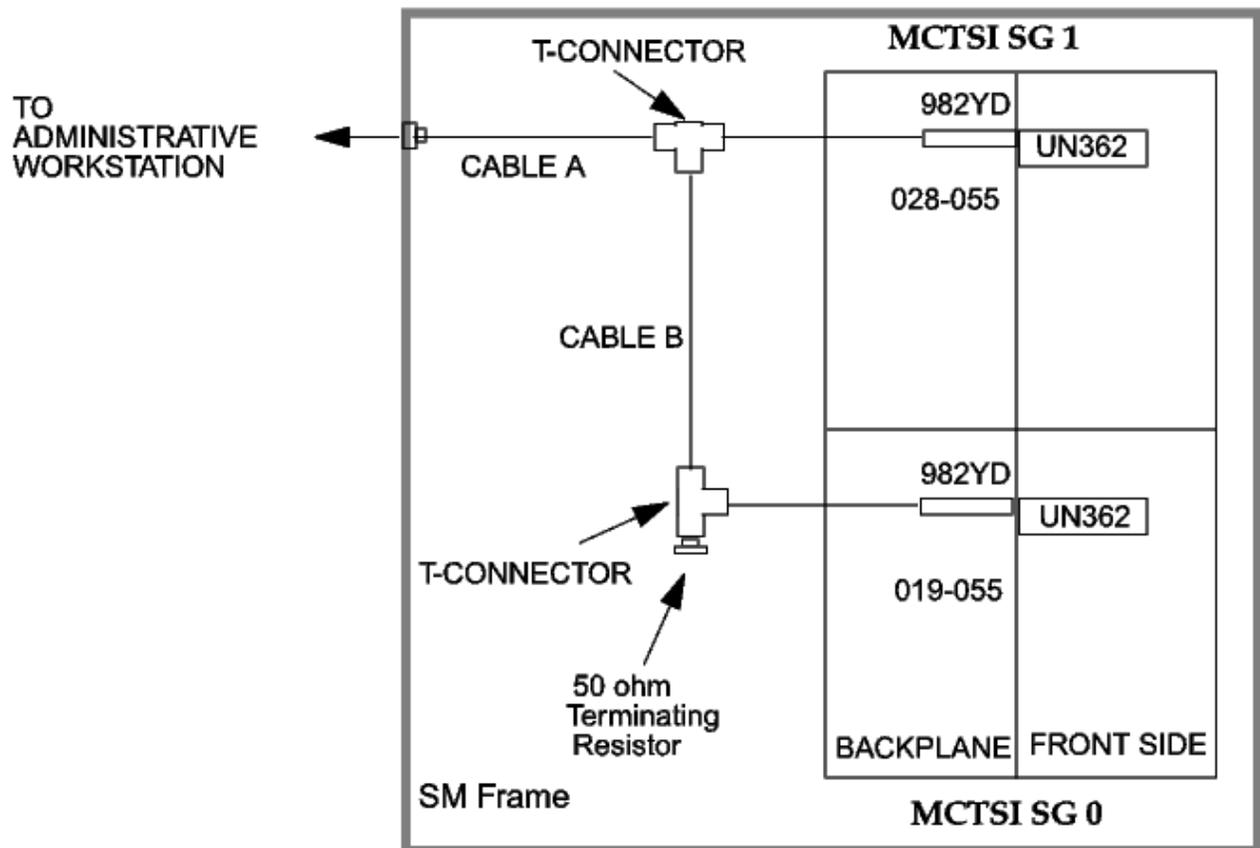


Figure 5.7-1 Ethernet Xerox Corporation Interface Circuit Pack and Paddle Board Diagram

WARNING: The static discharge wrist strap must be used to prevent damage to the sensitive circuit pack components from static charges. The wrist strap should be tested before it is used.

- At the equipment frame, attach the static discharge wrist strap securely to the Electro-Static Discharge (ESD) lug mounted at the top of the frame.

3. Power down OOS SG of the MCTSI. To do this, press the OFF button on the UN516B.

Response: UN516B OFF lamp lights.

4. Unseat the corresponding UN362 EIB circuit pack. This will prevent possible damage to this circuit pack during the EIB paddle board replacement.

— The UN362 for MCTSI SG 0 is at position 019-050.

— The UN362 for MCTSI SG 1 is at position 028-050.

CAUTION: Do not disconnect the coaxial cables from the T-connectors.

5. At the MCTSI backplane, disconnect the coaxial EIB bus cable that connects to the 982YD EIB paddle board.

— The 982YD for MCTSI SG 0 is at position 019-055.

— The 982YD for MCTSI SG 1 is at position 028-055.

WARNING: The EIB paddle boards are very thin. Handle with care!

6. Gently remove the EIB paddle board.

NOTE: The paddle board contains the *Ethernet*[®] address, verify that the new board's DIP switches are set to the same address as the one being replaced.

7. Using the same degree of caution, install the new EIB paddle board. Be careful not to bend the pins or damage the backplane.

8. Connect the coaxial EIB bus cable to the new EIB paddle board.

9. At the front of the frame, reseal the UN362 circuit pack.

10. At the out-of-service UN516B, power up the MCTSI SG by pressing the ON button.

Response: The OFF lamp goes out.

11. Test the new paddle board. At the MCC terminal, type and enter input command:

DGN:MCTSI=a-b,PH=2010,TLP;

Where:

a = The switching module number.
b = The MCTSI number (0 or 1).

12. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE**

If **NO**, continue with Step 13.

13. Replace the T-connector of the new paddle board.

14. Test the new T-connector. To do this, type and enter the input command of Step 11.

15. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE**

If **NO**, continue with Step 16.

16. Repeat steps 3 and 4, then replace the other T-connector.

17. Test the second new T-connector. To do this, type and enter the input command of Step 11.

18. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, continue with Step 19.

19. Replace Cable B.

20. Test Cable B. To do this, type and enter the input command of Step 11.

21. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, **seek technical assistance.**

Procedure 5.8: Replace EI Paddle Board — MCTU3

OVERVIEW

This procedure provides the necessary steps to replace the *Ethernet*[®] Interface (EI) paddle board and should only be used when the Module Controller/Time Slot Interchange (MCTSI) Trouble Location Procedure (TLP) has indicated the 982AAH *Ethernet*[®] Interface paddle board for MCTU3. See Figure 5.8-1 .

PROCEDURE

- At the front of the cabinet, go to the Power/Display pack (TN1424) of the SG for the MCTSI that is OOS.
 - The TN1424 for MCTSI SG 0 is at position 014.
 - The TN1424 for MCTSI SG 1 is at position 106.

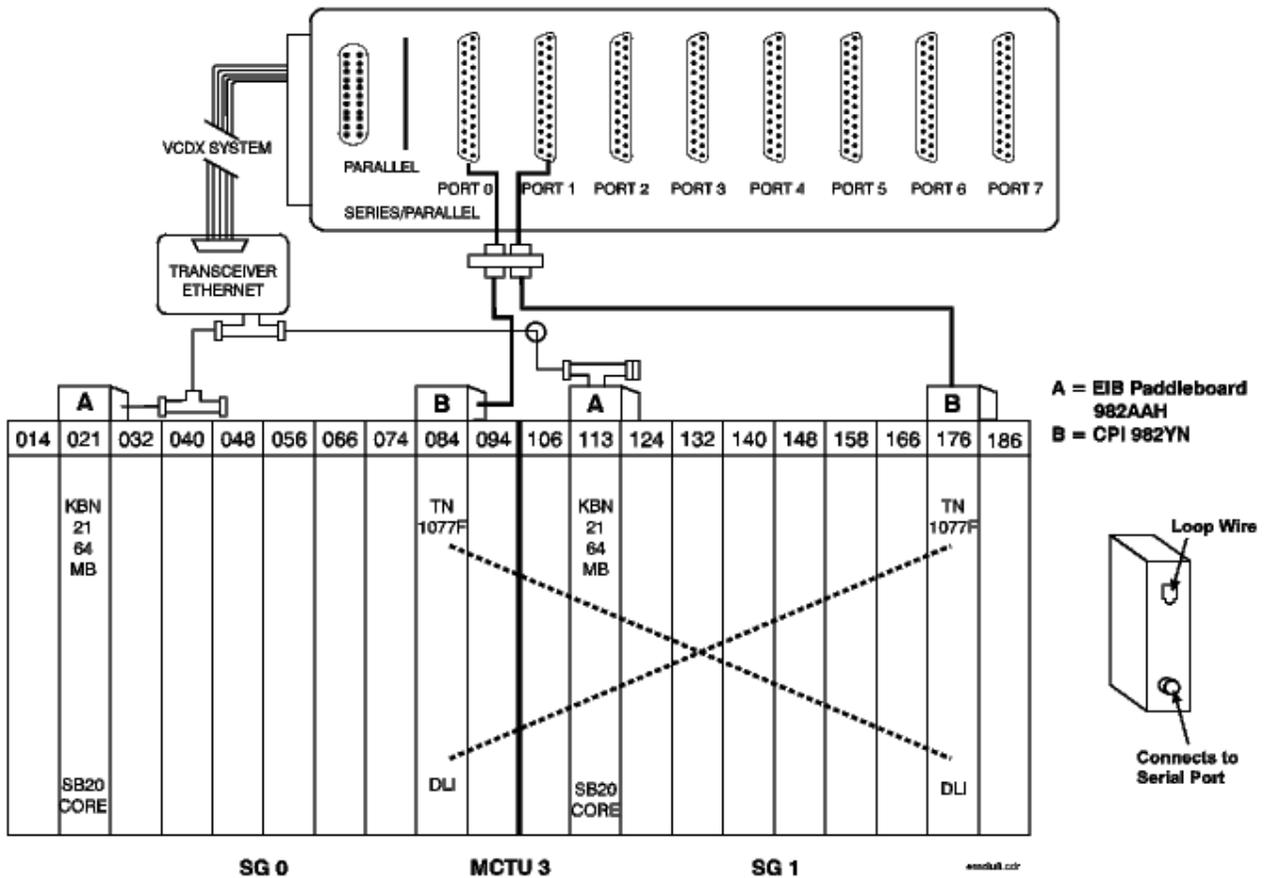


Figure 5.8-1 Ethernet Xerox Corporation Interface Paddle Board (MCTU3)

WARNING: The static discharge wrist strap must be used to prevent damage to the sensitive circuit pack components from static charges. The wrist strap should be tested before it is used.

- At the equipment frame, attach the static discharge wrist strap securely to the ESD lug mounted at the top of the frame.

- Power down OOS SG of the MCTSI. To do this, press the OFF button on the TN1424.

Response: TN1424 OFF lamp lights.

NOTE: The KBN circuit pack referred to in this procedure may be either the KBN20, KBN21, or KBN22.

- Unseat the corresponding KBN20 (KBN21 or KBN22) circuit pack. This will prevent possible damage to this circuit pack during the EI paddle board replacement.
 - The KBN20 for MCTSI SG 0 is at position 021.
 - The KBN20 for MCTSI SG 1 is at position 113.

WARNING: Do not disconnect the coaxial cables from the T-connectors. Doing so will cause communication loss between the workstation and the switching module.

- At the MCTSI backplane, disconnect the coaxial EI bus cable that connects to the 982AAH EI paddle board.
 - The 982AAH for MCTSI SG 0 is at position 021.
 - The 982AAH for MCTSI SG 1 is at position 113.

WARNING: The EI paddle boards are very thin. Handle with care!

- Gently remove the EI paddle board.

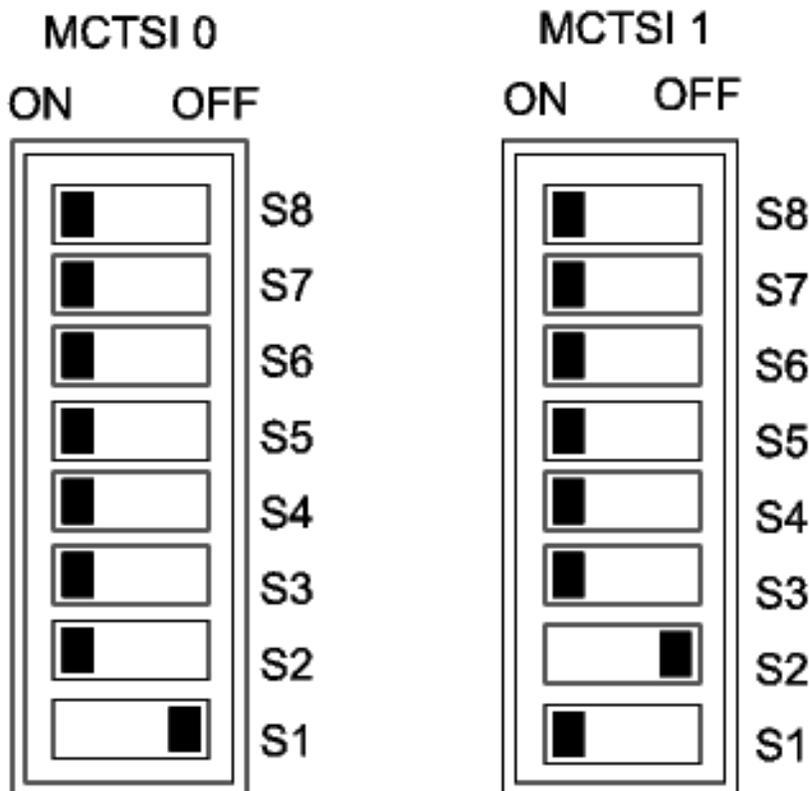


Figure 5.8-2 MCTU3 DIP Switch Settings

NOTE: The paddle board contains the *Ethernet*[®] address, verify that the new board's DIP switches are set to the same address as the one being replaced. See Figure 5.8-2 and Table 5.8-1 .

Table 5.8-1 MCTU3 DIP Switch Settings

MCTSI	SWITCH SETTINGS
0	S1=OFF, S2-S8=ON
1	S1=ON, S2=OFF, S3-S8=ON

7. Using the same degree of caution, install the new EI paddle board. Be careful not to bend the pins or damage the backplane.
8. Connect the coaxial EI bus cable to the new EI paddle board.
9. At the front of the frame, reseal the KBN20 circuit pack.
10. At the out-of-service TN1424, power up the MCTSI SG by pressing the ON button.

Response: The OFF lamp is extinguished.

11. Test the new paddle board. At the MCC terminal, type and enter input command:

DGN:MCTSI=a-b,PH=12,TLP;

Where:

- a = The switching module number.
b = The MCTSI number (0 or 1).

12. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, continue with Step 13.

13. **WARNING:** The following step will cause an expected loss of communication between the switching module and the workstation.

Replace the T-connector of the new paddle board.

14. Test the new T-connector. To do this, type and enter the input command of Step 11.

15. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, continue with Step 16.

16. **WARNING:** The following step will cause an expected loss of communication between the switching module and the workstation.

Repeat steps 3 and 4, then replace the other T-connector.

17. Test the second new T-connector. To do this, type and enter the input command of Step 11.

18. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, continue with Step **19**.

19. **WARNING:** The following step will cause an expected loss of communication between the switching module and the workstation.

Replace Cable B.

20. Test Cable B. To do this, type and enter the input command of Step **11**.
21. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, **seek technical assistance.**

Procedure 5.9: Replace EI Paddle Board — SM-2000

OVERVIEW

This procedure provides the necessary steps to replace the *Ethernet*[®] Interface (EI) paddle board and should only be used when the Module Controller/Time Slot Interchange (MCTSI) Trouble Location Procedure (TLP) has indicated the 982YP *Ethernet*[®] Interface paddle board for SM-2000. See Figure 5.9-1 .

PROCEDURE

1. At the front of the cabinet, go to the Power/Display pack (410AA) of the SG for the MCTSI that is OOS.
 - The 410AA for MCTSI SG 0 is at position 019-162.
 - The 410AA for MCTSI SG 1 is at position 028-162.

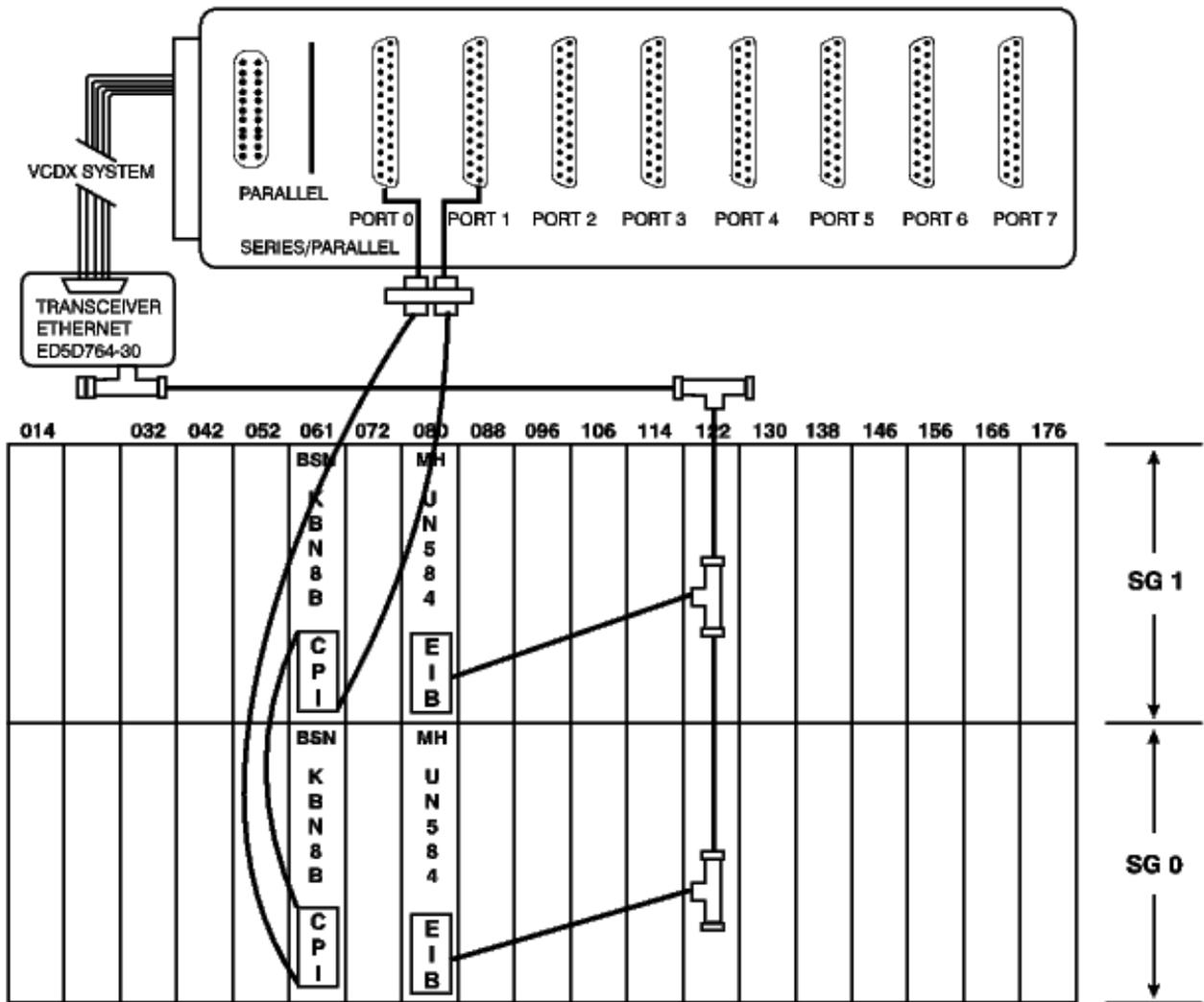


Figure 5.9-1 Ethernet Xerox Corporation Interface Paddle Board (SM-2000)

WARNING: The static discharge wrist strap must be used to prevent damage to the sensitive circuit pack components from static charges. The wrist strap should be tested before it is used.

2. At the equipment frame, attach the static discharge wrist strap securely to the ESD lug mounted at the top of the frame.
3. Power down OOS SG of the MCTSI. To do this, press the OFF button on the 410AA.

Response: 410AA OFF lamp lights.

4. Unseat the corresponding UN584 circuit pack. This will prevent possible damage to this circuit pack during the EI paddle board replacement.
 - The UN584 for MCTSI SG 0 is at position 019-088.
 - The UN584 for MCTSI SG 1 is at position 028-088.

WARNING: Do not disconnect the coaxial cables from the T-connectors. Doing so will cause communication loss between the workstation and the switching module.

5. At the MCTSI backplane, disconnect the coaxial EI bus cable that connects to the 982YP MHEIB paddle board.
 - The 982YP for MCTSI SG 0 is at position 019-088.
 - The 982YP for MCTSI SG 1 is at position 028-088.

WARNING: The MHEIB paddle boards are very thin. Handle with care!

6. Gently remove the MHEIB paddle board.

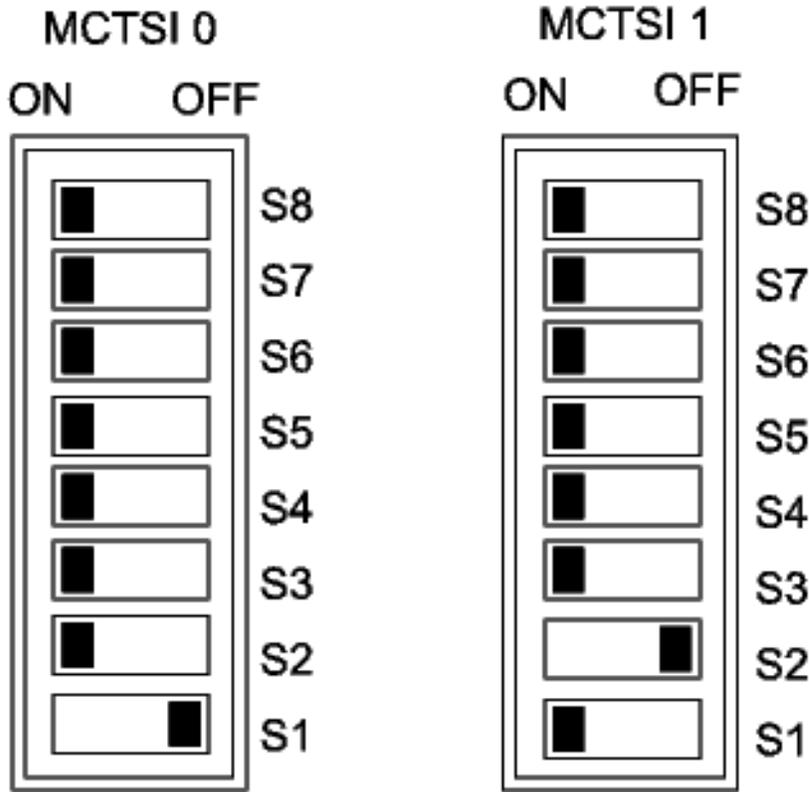


Figure 5.9-2 SM-2000 DIP Switch Settings

NOTE: The paddle board contains the *Ethernet*® address, verify that the new board's DIP switches are set to the same address as the one being replaced. See Figure 5.9-2 and Table 5.9-1 .

Table 5.9-1 SM-2000 DIP Switch Settings

MCTSI	SWITCH SETTINGS
0	S1=OFF, S2-S8=ON
1	S1=ON, S2=OFF, S3-S8=ON

7. Using the same degree of caution, install the new EI paddle board. Be careful not to bend the pins or damage the backplane.
8. Connect the coaxial EI bus cable to the new EI paddle board.
9. At the front of the frame, reseal the UN584 circuit pack.
10. At the out-of-service 410AA, power up the MCTSI SG by pressing the ON button.

Response: The OFF lamp is extinguished.

11. Test the new paddle board. At the MCC terminal, type and enter input command:

DGN:MCTSI=a-b,PH=12,TLP;

Where:

- a = The switching module number.
- b = The MCTSI number (0 or 1).

12. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE**

If **NO**, continue with Step **13**.

13. **WARNING:** The following step will cause an expected loss of communication between the switching module and the workstation.

Replace the T-connector of the new paddle board.

14. Test the new T-connector. To do this, type and enter the input command of Step **11**.

15. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE**

If **NO**, continue with Step **16**.

16. **WARNING:** The following step will cause an expected loss of communication between the switching module and the workstation.

Repeat steps **3** and **4**, then replace the other T-connector.

17. Test the second new T-connector. To do this, type and enter the input command of Step **11**.

18. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, continue with Step **19**.

19. **WARNING:** The following step will cause an expected loss of communication between the switching module and the workstation.

Replace Cable B.

20. Test Cable B. To do this, type and enter the input command of Step **11**.

21. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, **seek technical assistance.**

Procedure 5.10: Replace CPI Paddle Board — MCTU3

OVERVIEW

This procedure provides the necessary steps to replace the Central Processor Intervention (CPI) paddle board and should only be used when the Module Controller/Time Slot Interchange (MCTSI) Trouble Location Procedure (TLP) has indicated the CPI paddle board for MCTU3. See Figure 5.10-1 .

PROCEDURE

1. At the front of the cabinet, go to the Power/Display pack (410AA) of the SG for the MCTSI that is OOS.
 - The 410AA for SG 0 is at position 19-021.
 - The 410AA for SG 1 is at position 28-021.

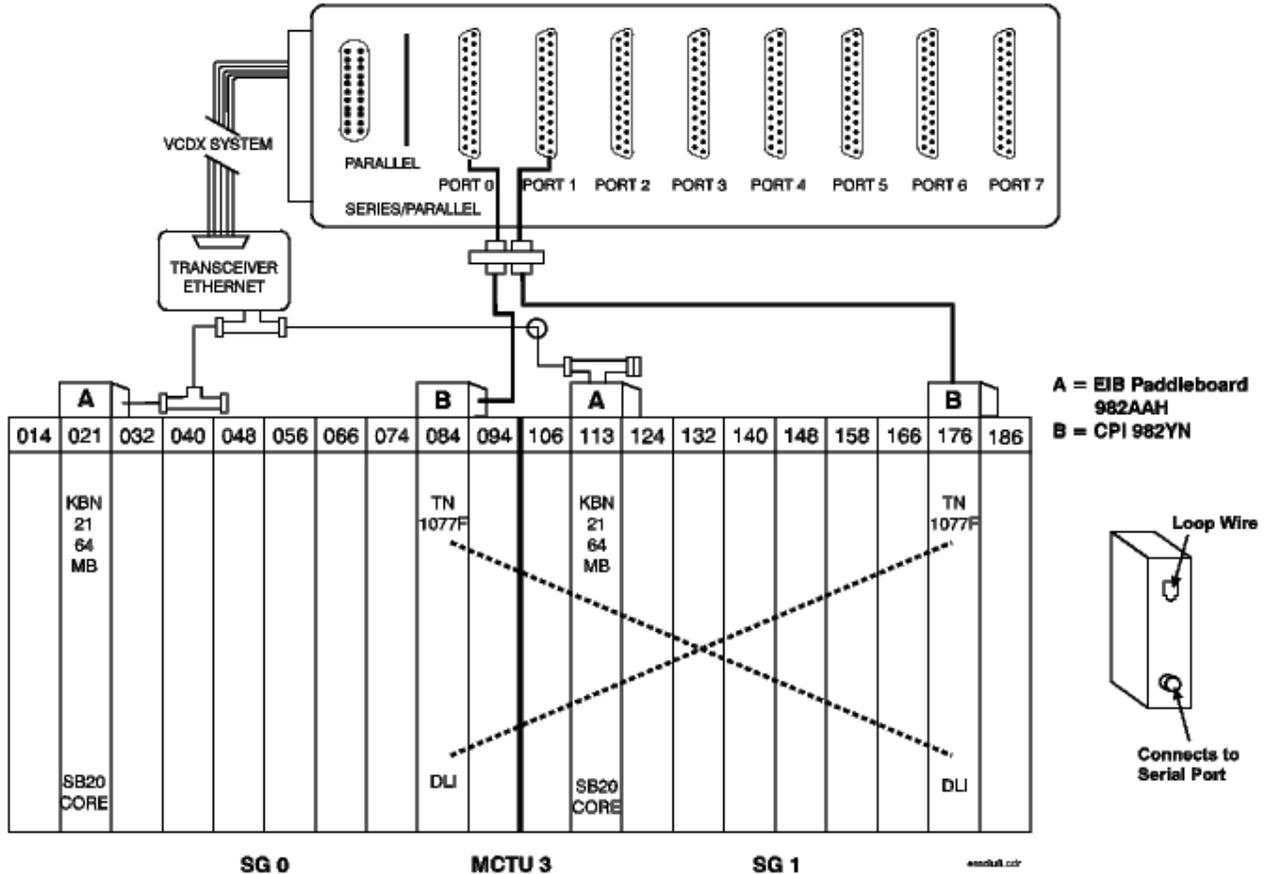


Figure 5.10-1 CPI Paddle Board (MCTU3)

WARNING: The static discharge wrist strap must be used to prevent damage to the sensitive circuit pack components from static charges. The wrist strap should be tested before it is used.

2. At the equipment frame, attach the static discharge wrist strap securely to the ESD lug mounted at the top of the frame.

3. Power down OOS SG of the MCTSI. To do this, press the OFF button on the 410AA.

Response: 410AA OFF lamp lights.

4. Unseat the corresponding KBN8 circuit pack. This will prevent possible damage to this circuit pack during the CPI paddle board replacement.

— The KBN8 for MCTSI SG 0 is at position 28-084.

— The KBN8 for MCTSI SG 1 is at position 19-084.

5. At the MCTSI backplane, disconnect the CPI cable that connects to the 982AAH CPI paddle board.

— The 982AAH for MCTSI SG 0 is at position 28-084.

— The 982AAH for MCTSI SG 1 is at position 19-084.

WARNING: *The CPI paddle boards are very thin. Handle with care!*

6. Gently remove the CPI paddle board.
7. Using the same degree of caution, install the new CPI paddle board. Be careful not to bend the pins or damage the backplane.
8. Connect the CPI cable to the new CPI paddle board.
9. At the front of the frame, reseal the KBN8 circuit pack.
10. At the out-of-service 410AA, power up the MCTSI SG by pressing the ON button.

Response: The OFF lamp goes out.

11. Test the new paddle board. At the MCC terminal, type and enter input command:

DGN:MCTSI=a-b,PH=9,TLP;

Where:

a = The switching module number.
b = The MCTSI number (0 or 1).

12. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, continue with Step 13.

13. Replace the appropriate CPI Cable.
14. Test the new cable. To do this, type and enter the input command of Step 11.
15. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, **seek technical assistance.**

Procedure 5.11: Replace CPI Paddle Board — SM-2000

OVERVIEW

This procedure provides the necessary steps to replace the Central Processor Intervention (CPI) paddle board and should only be used when the Module Controller/Time Slot Interchange (MCTSI) Trouble Location Procedure (TLP) has indicated the CPI paddle board for SM-2000. See Figure 5.11-1 .

PROCEDURE

1. At the front of the cabinet, go to the Power/Display pack (410AA) of the SG for the MCTSI that is OOS.
 - The 410AA for SG 0 is at position 19-021.
 - The 410AA for SG 1 is at position 28-021.

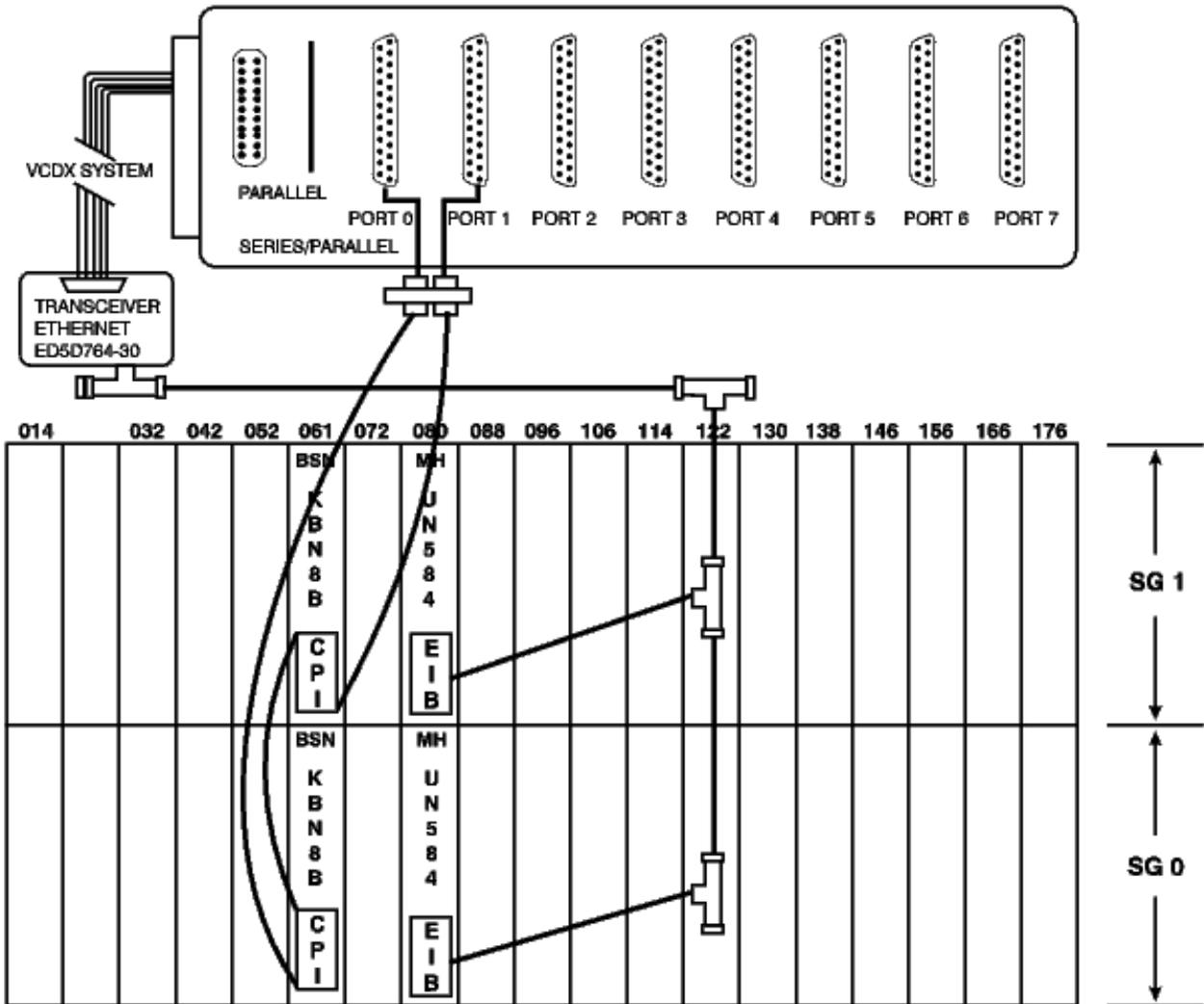


Figure 5.11-1 CPI Paddle Board (SM-2000)

WARNING: The static discharge wrist strap must be used to prevent damage to the sensitive circuit pack components from static charges. The wrist strap should be tested before it is used.

2. At the equipment frame, attach the static discharge wrist strap securely to the ESD lug mounted at the top of the frame.
3. Power down OOS SG of the MCTSI. To do this, press the OFF button on the 410AA.

Response: 410AA OFF lamp lights.

4. Unseat the corresponding KBN8 circuit pack. This will prevent possible damage to this circuit pack during the CPI paddle board replacement.
 - The KBN8 for MCTSI SG 0 is at position 28-084.
 - The KBN8 for MCTSI SG 1 is at position 19-084.
5. At the MCTSI backplane, disconnect the CPI cable that connects to the 982AAH CPI paddle board.
 - The 982AAH for MCTSI SG 0 is at position 28-084.
 - The 982AAH for MCTSI SG 1 is at position 19-084.

WARNING: The CPI paddle boards are very thin. Handle with care!

6. Gently remove the CPI paddle board.
7. Using the same degree of caution, install the new CPI paddle board. Be careful not to bend the pins or damage the backplane.
8. Connect the CPI cable to the new CPI paddle board.
9. At the front of the frame, reseal the KBN8 circuit pack.
10. At the out-of-service 410AA, power up the MCTSI SG by pressing the ON button.

Response: The OFF lamp is extinguished.

11. Test the new paddle board. At the MCC terminal, type and enter input command:

DGN:MCTSI=a-b,PH=9,TLP;

Where:

a = The switching module number.
b = The MCTSI number (0 or 1).

12. ***Is the diagnostic response ATP?***

If **NO**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, continue with Step 13.

13. Replace the appropriate CPI cable to the workstation.
14. Test the new cable. To do this, type and enter the input command of Step 11.

15. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, continue with Step **16**.

16. Replace the cross-couple CPI cable between the two CPI paddle boards.

17. Test the new cable. To do this, type and enter the input command of Step **11**.

18. Is the diagnostic response ATP?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, **seek technical assistance.**

6. SYSTEM RECOVERY

Overview

This chapter contains system recovery procedures that are unique to the VCDX switch. For more information regarding system recovery, see 235-105-250, *5ESS[®] Switch System Recovery Manual*.

Problems that are associated with service outage should be escalated to Lucent Technologies support, either the North American Regional Technical Assistance Center (NARTAC) at 1-800-225-RTAC (1-800-225-7822) or Customer Technical Support (CTS) at 1-800-225-4672, as soon as possible. It is understood that some local recovery efforts may be attempted before contacting Lucent Technologies support.

Procedure 6.1: Perform Office Dead Start Recovery

OVERVIEW

The text and Office Dependent Data (ODD) tapes used in this procedure should be the latest set of backup tapes made for the office.

The AM text tape for the system disk pair must be at the same software update level as the *smttext* partition on the switching module text tape for vtoc1-MHD2/MHD3.

The first part of this procedure deals with loading the OS/3BEM, Tape Operating Procedure (TOP), text (and ODD) backup tapes, and booting the emulated Administrative Module (AM). The recovery of a completely powered down system may require software and hardware checks being set during the AM recovery. If the ODD is recovered from the backup tape, the Recent Change log files may no longer be consistent with the recovered ODD and a text mismatch may be created between the AM and the switching module.

The second part of the recovery is to have the AM running on the root configuration. This is required because after booting the AM, the AM is running on the backup root partitions. The backup root partitions are normally used for recovery situations; therefore, it is necessary to copy the backup root partitions to the root partitions and reboot the AM.

- Load the VCDX 3B21 Emulator and Operating System DAT and Boot the Administrative Workstation (AW).
- Propagate primary disk to secondary disk.
- Reload the emulator and OS backup tape to secondary disk.
- Switch the primary and secondary disks.
- Propagate the new primary disk to the secondary disk.
- Load TOP, AM text, and AM ODD backup tape(s).
- Try recovery boot (in backup root) with 54 (on all configurations).
- If AM recovers, check */no5text/rcv/aimrc* files, and reload AM ODD if needed.
- The following post-AM recovery actions are performed by "Post AM Recovery Cleanup," Procedure 6.2 :
 - Recover the vtoc of any outboard MHD that is new or duplex failed.
 - Initialize AMA disk writer.
 - Recover the switching module text on the second disk pair if software update levels of AM text and switching module text are not matched.
 - Restore switching module ODD from switching module ODD tape(s).
 - Clear Recent Change Logs and RC Backout flag.
 - If the switching module is not running, initialize the switching module.
 - Restore MHDs to duplex.
 - LATER: Copy backup partitions to root partitions (duplexes disks) and boot the AM on root configuration with EAI poke 53.

NOTE: In the event that errors are detected during this procedure, take appropriate corrective action using the output messages manual as a first-level reference; and then if necessary, **seek technical assistance**.

PROCEDURE

1. For a SPARC5 based AW, begin office dead start recovery with "Load the 3B21 Emulator and Operating System DAT and Boot the AW — SPARC5," Procedure 6.1.1 .
2. For a *Netra*TM t based AW, begin office dead start recovery with "Load the 3B21 Emulator and Operating System DAT and Boot the AW — *Netra*TM t," Procedure 6.1.2 .

Procedure 6.1.1: Load the 3B21 Emulator and Operating System DAT and Boot the AW (SPARC5)

OVERVIEW

This part of the procedure provides a description for recovering the Administrative Workstation (AW) operating system and the 3B21 emulator. It uses the "VCDX 3B21 Emulator and Operating System DAT" tape set to restore the AW system boot disk. The tape set contains one bootable tape for the SPARC5 based AW.

PROCEDURE

1. Stop the AW. See "Halt the Administrative Workstation," Procedure 3.2 .

Response: **ok** prompt appears when system shutdown has completed.

2. Load the 3B21 emulator and operating system DAT into the DAT tape drive. It takes about 80 minutes to read the tape.

CAUTION: Booting from this tape will completely initialize the AW boot disk and wipe out the switch generic data. After this procedure is executed, load the remaining generic backup tapes.

3. Enter the following command at the **ok** prompt:

boot tape1 -v -l -t3 -p2

Response:

```
Resetting ....
SPIF/stc FCode initialization complete
screen not found
Can't open input device
keyboard not present. Using tty for input and output.
SPIF/stc FCode initialization complete
SPARCstation 5, No Keyboard
RCM Rev V.VV Pilot, XXX MB Memory installed, Serial #xxxxxxx
Ethernet® address 8:0:20:1f:cc:69, Host ID 80343a68.
Initializing Memory
Rebooting with command: tape1 -v -l -t3 p2
Boot device: /iommu/sbus/espdma@5, 8400000/esp@5, 0800000/
std@5,0 File and args: -v -l -t3 p2
Standalone IPL
(check [ok] load relocate)
Stand-alone copy program (1.0)
Reading tape information (program label control).
Processing 1 volume(s).
Searching for SCSI target 3 ... <AVAILABLE>
Checking 8 (8) parts
Disk and Tape lables compare identically
Partition Table (from tape):
Part      Tag      Flag      Cylinders      Size
0         root     wm        0 - 66          ~70MB
1         swap     wu        67 - 351        ~300MB
2         backup   wm        0 - 3879        ~-3MB
```

```

3      var      wm      352 - 446      ~100MB
4  unassigned  wm      447 - 873      ~450MB
5  unassigned  wm      874 - 2233     ~1GB
6      usr      wm      2234 - 2518     ~300MB
7  unassigned  wm      2519 - 3879     ~1GB
Total of data in this tape set = 8380800 blocks.
Destination partition size     = 8380800 blocks.
OMB /
OMB OMB |
OMB -
....
....
4092MB /
4092MB 4092MB |
4092MB -
Original disk label has been written
Type 'go' to resume Type 'help' for more information

```

When the **ok** prompt appears, tape reading is complete. Now boot the system onto the newly refreshed disk.

4. Enter the following command:

```
setenv boot-device disk3
```

Response: boot-device = disk3

5. Enter: **boot**

Response:

```

Resetting....
SPIF/stc FCode initialization complete
screen not found
Can't open input device
keyboard not present. Using tty for input and output.

SPIF/stc FCode initialization complete
SPARCstation 5, No Keyboard
ROM Rev. V.VV Pilot, XXX MB Memory installed,
Serial #xxxxxxx
Ethernet® address 8:0:20:1f:cc:69, Host ID 80343a68.

Initializing Memory
Rebooting with command:
Boot device: /iommu/sbus/espdma@5,
8400000/esp@5, 8800000/std@3,0 File and args:
SunOS Release 5.X Version Generic_101674-01
[UNIX System V Release 4.0]
(Copyright (c) 1983-1993, Sun Microsystems, inc.)
stc0: board revision: 0x5
stc0: CD-180 Firmware Revision Level: 0x82
stc0: softinit pri 128 driver
id V2.0.1_FCS
Confiuring network interfaces: 1e0
Hostname: attaws

```

```
The system is coming up. Please Wait.
checking filesystems
/dev/rdisk/c0t3d0s6: is clean.
/dev/rdisk/c0t3d0s6 mounted
Starting process accounting
Flushing routing table
add net default: gateway attaws
Mon Sep 12 20:39:50 1994
Starting rpc services: rpcbind keyserv kerbd done.
Setting default interface for multicast: add net 224.0.0.0:
gateway attaws
syslog service starting
Print services started
Starting License Manager Daemon
```

```
ATT3bem      Lucent Technologies UNIX RTR 3B Emulator
              (SPARC) 2.5.1
Copyright (c) 1997 Lucent Technologies
All rights reserved.
3bem: Tape process started, pid = 233
3btape: initialization completed
3bem: Disk process started, pid = 234
3bdfc: initialization completed
3bem: Tape process started, pid = 235
3bem: Disk process started, pid = 236
3btape: initialization completed
3bdfc: initialization completed
The system is ready.
```

The boot should start the 3B21 emulator. Since the switch generic information on the disk has been initialized, the 3B21 emulator will now wait until the TOP and AM text backup tapes are loaded.

WARNING: Recent changes should not be made to the root or rootdmly copies of the ECD/SG database until this procedure is completed.

Procedure 6.1.2: Load the 3B21 Emulator and Operating System DAT and Boot the AW (Netra™ t)

OVERVIEW

This part of the procedure provides a description for recovering the Administrative Workstation (AW) operating system and the 3B21 emulator. It uses the "VCDX 3B21 Emulator and Operating System DAT" tape set to restore the AW system boot disk. The tape set contains two tapes, one master and one data, for the Netra™ t based AW.

PROCEDURE

1. Stop the AW. See "Halt the Administrative Workstation," Procedure 3.2 .

Response: `ok` prompt appears when system shutdown has completed.

2. Load the 3B21 Emulator and Operating System Master tape into the DAT tape drive.

CAUTION: Booting from this Master tape and restoring from the following Data tape will completely initialize the AW boot disk and wipe out the switch generic data. After this procedure is executed, load the remaining generic backup tapes.

3. If the primary disk has been formatted for the AW, skip to step 7. If the primary disk is new or not formatted for the AW, the Data tape cannot be restored to it and needs to be formatted first from the bootable Master tape. Enter the following command at the `ok` prompt:

boot tape -E

If the tape device cannot be recognized, type and enter:

devalias

Verify that the tape device is defined as follows:

```
tape /pci@1f,4000/scsi@3/tape@4,0
```

If "tape" is not defined correctly, use the following command:

nvalias tape /pci@1f,4000/scsi@3/tape@4,0

The AW starts to boot from the Master tape in an interactive manual mode:

```
Resetting ...
```

```
screen not found
```

```
Can't open input device
```

```
Keyboard not present. Using ttya for input and output.
```

```
Sun Ultra 60 UPA/PCI (UltraSPARC-II 296 MHz), No keyboard
```

```
OpenBoot 3.17, 256 MB memory installed, Serial #10182820
```

```
Ethernet address 8:0:20:9b:60:94, Host ID: 809b60a4.
```

```
Initializing Memory
```

```
Rebooting with command: boot tape -E
```

```
Boot device: /pci@1f,4000/scsi@3/tape@4,0 File and args: -E
```

```
Standalone Copy Restore Program
```

```
Can't read disk label.
```

```
Can't open disk label package.
```

This system is Ultra-60 with 2 disk drives.

```

help          display help message
quit          quit this menu
disk          current disk sub-menu
current       show current disk
label         label sub-menu
type          disk type sub-menu
partition     partition sub-menu
execute       execute the work list
worklist      display the work list
information   print tape set information
reboot        exit and reboot machine

```

main>

4. Go to disk sub-menu, list available disks, select and add the primary disk to the current working list:

main> **disk**

```

help          display help message
quit          quit this menu
current       show current disk
assign        assign current disk
disklist      list all disks

```

disk> **disklist**

```

0 c0t0d0
1 c0t1d0

```

disk> **assign 0**

disk> **quit**

5. Go to disk type sub-menu, list available disk labels and select the predefined 9.0GB disk label:

main> **type**

```

help          display help message
quit          quit this menu
disk          change current disk
assign        assign label to a disk
delete        remove label assignment
print         print a label
labellist     print predefined label list
worklist      print the label work list

```

type> **labellist**

```

0 SUN9.0G cyl 4924 alt 2 hd 27 sec 133
1 Quantum ProDrive 80S cyl 832 alt 2 hd 6 sec 34
2 CDC Wren VII 94601-12G cyl 1703 slt 2 hd 15 sec 80
3 Quantum ProDrive 105S cyl 3662 alt 2 hd 6 sec 35
4 CDC Wren IV 94171-344 cyl 1545 alt 2 hd 9 sec 46
5 SUN0104 cyl 974 alt 2 hd 6 sec 35
6 SUN0207 cyl 1254 alt 2 hd 9 sec 36

```

```

7 SUN0327 cyl 1545 alt 2 hd 9 sec 46
8 SUN0340 cyl 1538 alt 2 hd 6 sec 72
9 SUN0424 cyl 1151 alt 2 hd 9 sec 80
10 SUN0535 cyl 1866 alt 2 hd 7 sec 80
11 SUN0669 cyl 1644 alt 2 hd 15 sec 54
12 SUN1.0G cyl 1073 alt 2 hd 15 sec 80
13 SUN1.05 cyl 2036 alt 2 hd 14 sec 72
14 SUN1.3G cyl 1965 alt 2 hd 17 sec 80
15 SUN2.1G cyl 2733 alt 2 hd 19 sec 80
16 SUN2.9G cyl 2734 alt 2 hd 21 sec 99

```

```
type> print 0
```

```

<SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
Part      Tag      Flag      Cylinders      Size
0         root      wm        0 - 171        ~301MB
1         swap      wu        172 - 457      ~501MB
2         backup    wu        0 - 4923      ~8GB
3         unassigned wm        458 - 515      ~101MB
4         unassigned wm        516 - 1029    ~901MB
5         unassigned wm        1030 - 2199   ~2GB
6         usr       wm        2200 - 2371   ~301MB
7         unassigned wm        2372 - 3541   ~2GB

```

```
type> assign 0
```

```
type> quit
```

6. Label/format the primary disk:

```
main> worklist
```

```
label work list:
```

Id	Source	Destination	Comment
0	SUN9.0G cyl 4924 alt 2 hd 27 sec 133	c0t0d0	N/A

```
partition work list:
```

```
(empty list)
```

```
main> execute
```

```
main> quit
```

```
Type 'go' to resume
```

```
ok
```

7. To start booting and loading from the tape set, make sure the Master tape is in the DAT drive and enter the following command at the **ok** prompt:

```
boot tape
```

If the tape device cannot be recognized, enter:

```
devalias
```

Verify that the tape device is defined as follows:

```
tape /pci@1f,4000/scsi@3/tape@4,0
```

If "tape" is not defined correctly, use the following command:
nvalias tape /pci@1f,4000/scsi@3/tape@4,0

The AW starts to boot from the Master tape and the following message should be displayed on the system console:

```
Resetting ...
screen not found
Can't open input device
Keyboard not present. Using ttya for input and output.

Sun Ultra 60 UPA/PCI (UltraSPARC-II 296 MHz), No keyboard
OpenBoot 3.17, 256 MB memory installed, Serial #10182820
Ethernet address 8:0:20:9b:60:94, Host ID: 809b60a4.
```

```
Initializing Memory
Rebooting with command: boot tape
Boot device: /pci@1f,4000/scsi@3/tape@4,0 File and args:
Standalone Copy Restore Program
Can't read disk label.
Can't open disk label package.
This system is Ultra-60 with 2 disk drives.
```

```
list of available partitions:
0 c0t0d0s0 from: Ultra-60,SUN9.0G
1 c0t0d0s3 from: Ultra-60,SUN9.0G
2 c0t0d0s4 from: Ultra-60,SUN9.0G
3 c0t0d0s6 from: Ultra-60,SUN9.0G
```

```
list of available labels:
0 SUN9.0G cyl 4924 alt 2 hd 27 sec 133
```

WORK LIST:

```
label work list:
Id Source                               Destination Comment
0 SUN9.0G cyl 4924 alt 2 hd 27 sec 133 c0t0d0      N/A
```

```
partition work list:
Id Source Destination Comment
0 c0t0d0s0 c0t0d0s0 from: Ultra-60, SUN9.0G
1 c0t0d0s3 c0t0d0s3 from: Ultra-60, SUN9.0G
2 c0t0d0s4 c0t0d0s4 from: Ultra-60, SUN9.0G
3 c0t0d0s6 c0t0d0s6 from: Ultra-60, SUN9.0G
```

```
I need data tape number: 0
Press return when the tape is inserted into
  /pci@1f,4000/scsi@3/tape@4,0 device
```

8. Load the VCDX 3B21 Emulator and Operating System Data Tape into the DAT drive and press the Return key.

Loading from this Data tape takes about 40 minutes.

9. The system will reboot after loading the data tape:

Rebooting...
Resetting ...

screen not found
Can't open input device
Keyboard not present. Using ttya for input and output.

Sun Ultra 60 UPA/PCI (UltraSPARC-II 296 MHz), No keyboard
OpenBoot 3.17, 256 MB memory installed, Serial #10182820
Ethernet address 8:0:20:9b:60:94, Host ID: 809b60a4.

Initializing Memory
Boot device: disk File and args:
SunOS Release 5.6 Version Generic_105181_05
[UNIX(R) System V Release 4.0]
Copyright (c) 1983-1997, Sun Microsystems, Inc.

saip:0 using default configuration for saip8 #0
Saip port:0x0 mem:0x8c00000 ports:8 PCI SAI/8 V2.0

Hostname: attaws
The system is coming up. Please wait.
checking ufs filesystems
/dev/rdisk/c0t0d0s4 is clean
PCI serial board configuration initialized
Device names created in dev/saip directory
Downloading PCI Async firmware

starting routing daemon
Starting rpc services: rpcbind keyserv done.
Setting default interface for multicast:
add net 224.0.0.0: gateway attaws

syslog service starting
Print services started
volum management starting

ATT3bem Lucent Technologies UNIX RTR 3B Emulator
(SPARC,Ultra) 2.6
Copyright (c) 1997 Lucent Technologies
All rights reserved.

-n rarpd

3bem: Tape process started, pid = 309
3btape: initialization completed
3bem: Disk process started, pid = 313
3bdfc: initialization completed
3bdlk 0: initialization completed

The system is ready.

attaws console login:
The boot should start the 3B21 emulator. Since the generic information on the disk has been initialized, the

3B21 emulator will now wait until the TOP and AM text backup tapes are loaded.

WARNING: Recent changes should not be made to the root or rootdmly copies of the ECD/SG database until this procedure is completed.

10. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 6.1.3: Propagate Primary Disk to Secondary Disk

PROCEDURE

1. If the *UNIX*[®] console page is displayed, switch to the MCC of the AW, by holding down the Ctrl key and pressing Enter (not Return).
2. If the emulator is running, halt the emulator. See "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .
3. Switch to the *UNIX*[®] Console of the AW by holding down the Ctrl key and pressing Enter (not Return).
4. If a login prompt does not appear, press Return repeatedly until one appears.
5. At the login prompt, login as **awadmin**, for example:

attaws console login: **awadmin**

6. From the main menu, select "Initialize a new workstation disk."
7. From the Disk Initialization menu, select "Execute initialization of a new workstation disk." Answer yes to the confirmation. (If you select a task by mistake, answer no to the confirmation.)

```
You have chosen to initialize a new workstation
disk. If the emulator is running, it should be
halted before continuing.
```

Do you want to continue? (y/n) **yes**

This task will take approximately 30 minutes. When it is completed, you will be prompted to press Return. When the prompt appears, press Return.

8. If you wish to view the output of this new workstation disk initialization, select "View output from the most recent disk initialization." While viewing the output, use the following keys:

space	see the next screen of output
b	see the previous screen of output
h	see a list of available keys
q	quit viewing output

9. Select "Return to the main menu."

Procedure 6.1.4: Reload the Emulator and Operating System Backup Tape to Secondary Disk

PROCEDURE

1. Insert the emulator and OS backup tape into the DAT tape drive using "Load Tape in DAT Tape Drive Unit," Procedure 3.16 .
2. From the main menu, select "Recover the workstation operating system/emulator from tape."
3. From the "Operating system/emulator recovery from tape menu," select "Execute recovery of the workstation operating system/emulator from tape." Answer yes to the confirmation. (If you select a task by mistake, answer **no** to the confirmation.)

```
You have chosen to recover the workstation
operating system/emulator from tape. Please
ensure that the most recent backup of the
emulator and OS tape cartridge is in the
Digital Audio Tape (DAT) drive.
```

```
Do you want to continue? (y/n) yes
```

This task will take approximately 20 minutes. When it is completed, you will be prompted to press Return. When the prompt appears, press Return.

4. If you wish to view the output of this operating system/emulator recovery from tape, select "View output from the most recent OS recovery from tape." While viewing the output, use the following keys:

space	see the next screen of output
b	see the previous screen of output
h	see a list of available keys
q	quit viewing output

5. Unload the tape from the DAT tape drive using "Unload Tape from DAT Tape Drive," Procedure 3.17 . Be sure to protect the tape from being accidentally overwritten by sliding the white write-protect tab to the write protection side.
6. Select "Return to the main menu."
7. Halt the workstation (see "Halt the Administrative Workstation," Procedure 3.2).
8. Remove power to all workstation units. For SPARC5 based units, see "Remove Power to Administrative Workstation Units," Procedure 3.6). For *Netra*TM t based units, remove power to the system unit by locating the power switch and switching it to **off**.

Procedure 6.1.5: Switch the Primary and Secondary Disks (SPARC5)

PROCEDURE

1. Change the target address of the primary disk. Press the "-" button next to the target address display on the rear panel two times until the target address changes from "3" to "1".
2. Change the target address of the secondary disk. Press the "-" button next to the target address display on the rear panel two times until the target address changes from "1" to "3".
3. Restore power to the workstation units (see "Restore Power to Administrative Workstation Units," Procedure 3.7).

The emulated AM environment is restored automatically, verify that this has occurred.

Procedure 6.1.6: Switch the Primary and Secondary Disks (*Netra*TM t)

PROCEDURE

1. Remove both primary and secondary disks from the drive bays. See "Remove a Disk Unit (*Netra*TM t)," Procedure 3.13 . The disk in the lower bay is the primary and the upper is the secondary.
2. Swap the two disks by placing the upper disk into the lower bay as the new primary and the lower disk into the upper bay as the new secondary. See "Install a New Disk Unit (*Netra*TM t)," Procedure 3.15 .
3. Restore power to the system unit by locating the power switch and switching it to **on**.

The emulated AM environment is restored automatically, verify that this has occurred.

Procedure 6.1.7: Propagate the New Primary Disk to Secondary Disk

PROCEDURE

1. If the *UNIX*[®] console page is displayed, switch to the MCC of the Administrative Workstation (AW), by holding down the Ctrl key and pressing Enter (not Return).
2. If the emulator is running, halt the emulator. See "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .
3. Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing Enter (not Return).
4. If a login prompt does not appear, press Return repeatedly until one appears.
5. At the login prompt, login as awadmin, for example:

attaws console login: **awadmin**

6. From the main menu, select "Backup the workstation operating system/emulator to disk."
7. From the OS backup menu, select "Execute backup of the workstation operating system/emulator to disk." Answer yes to the confirmation. (If you select a task by mistake, answer no to the confirmation.)

```
You have chosen to backup the workstation
operating system/emulator.
```

```
Do you want to continue? (y/n) yes
```

This task will take approximately 15 minutes. When it is completed, you will be prompted to press Return. When the prompt appears, press Return.

8. If you wish to view the output of this OS backup, select "View output from the most recent OS backup." While viewing the output, use the following keys:

space	see the next screen of output
b	see the previous screen of output
h	see a list of available keys
q	quit viewing output

9. Select "Return to the main menu."
10. From the main menu, select "Boot the workstation." This will restart the emulator.

Procedure 6.1.8: Load TOP, AM Text, and AM ODD from Single Volume Formatted Backup Tapes

OVERVIEW

This procedure is only for offices on a 5E13 or earlier software release that use single volume formatted backup tapes. Prior to the 5E14 software release, five or more tapes were required to dead start an office. Each tape was made as a single volume tape (one logical volume per tape). In some instances, two tapes were required to backup one logical volume, such as SM ODD. The steps in this procedure loads AM text first; then if needed, loads the AM ODD.

PROCEDURE

1. Switch to the MCC by holding down the Ctrl key and pressing Enter (not Return) key.

Load TOP Tape and AM Text backup tapes.

2. In the following step, select the first configuration from Table 6.1.8-1 .

Table 6.1.8-1 Configurations for Dead Start

No.	Configuration to Enter	Configuration
1	20,30,33	CU0 MHD0 Pri Disk
2	22,30,33	CU0 MHD1 Sec Disk

NOTE: If the tape loading fails the initial loading, try rewinding the tape and entering another **55**. If the tape operation continues to fail, take action described in 235-600-601, *Process Recovery Manual*, and/or seek technical assistance.

3. Enter the EAI page commands for the selected configuration from Table 6.1.8-1 .

Response: Disk indicators are **SET**,
Backup indicator is **SET**, **Min Config** indicator is clear.

4. Obtain the latest AM ODD and AM text backup tapes.
5. Mount TOP tape on tape drive.
6. On EAI page, type and enter command **55**.
7. Did the EAI Page respond with **Boot? (y/n)** or **BkRt Set! Boot (y/n)**?

If **YES**, then type and enter **y** and continue with the next step.

If **NO**, then continue with the next step.

8. If the response is **ignored**, enter **55** again.

9. Response:

TOP tape moves.

PRM_0 E15x 993B 10AD 10AD xx xx xx displayed on EAI page (when completed and TOP tape rewinds).

NOTE: PRM_0 F0da zz00 0000 0000 xx xx xx (Where zz = 27, 28, 29, 2A) Indicates a bad TOP tape.

The following provides LDFT descriptions applicable to PRMs encountered during this procedure.

PRM	Description
PRM_x E151 54xx xxxx xx xx xx	Tape version
PRM_x E151 57xx xxxx xx xx xx	Tape loading in progress
PRM_x E151 58xx xxxx xx xx xx	Mount next tape
PRM_x E151 59xx xxxx xx xx xx	Tape load complete
PRM_x F151 xxxx xxxx xx xx xx	Tape load problem

10. Is **PRM_0 E15x 993B 10AD 10AD xxxx xx** present on EAI page? Note: the PRM displayed on the EAI Page may take from 2 to 5 minutes.

If **YES**, then continue with the next step.

If **NO**, then consult 235-600-601, *Process Recovery Manual*. Using Table 6.1.8-1 in Step 2, select the next configuration and repeat from Step 3.

11. Remove TOP tape from tape drive, and mount the AM text backup tape on tape drive.

12. On EAI page, type and enter command: **55**

13. Did the EAI Page respond with **Boot? (y/n)** or **BkRt Set! Boot (y/n)**?

If **YES**, then type and enter **y** and continue with the next step.

If **NO**, then continue with the next step.

14. Response:

Tape version **PRM_0 E15x 5400 xxxx xxxx xx xx xx**

PRM_0 E15x 57xx xxxx xxxx xx xx xx (approximately every 10 seconds while reading tape)

PRM_0 E15x 59xx xxxx xxxx xx xx xx (when completed and text backup tape rewinds)

NOTE: PRM_0 F0da 3000 0000 0000 xx xx xx Indicates no TOP tape loaded (TOP tape must be reloaded).

15. Was **PRM_0 E15x 59xx xxxx xxxx xx xx xx** output after the tape rewind?

If **YES**, proceed to Step 19.

If **NO**, continue with next step.

16. Was **PRM_0 E15x 58xx xxxx xxxx xx xx xx** output when the tape rewind?

If **YES**, continue with next step.

If **NO**, **seek technical assistance** or consult 235-600-601, *Process Recovery Manual*.

17. Remove AM text tape from tape drive and load the next AM text backup tape

18. Repeat from Step 12.

At this point in the procedure, the loading of the AM text tape is complete.

19. At this point in the procedure, the loading of the AM text tape is complete. Is the AM ODD on the disk loaded known to be bad (that is, this disk has just been replaced and never been on line or is known to be corrupted)?

If **YES**, proceed to Step 21.

If **NO**, continue with the next step.

20. Has the configuration being loaded been tried unsuccessfully while loading AM text only?

Load AM ODD

If **YES**, continue with the next step.

If **NO**, proceed to "Attempt Recovery Boot," Section 6.1.10, Step 4.

21. Now load AM ODD tape(s). Mount TOP tape on tape drive.
22. On EAI page, type and enter command **55**.
23. Did the EAI page respond with **Boot? (y/n)** or **BkRt Set! Boot (y/n)**?

If **YES**, type and enter **y** and continue with the next step.

If **NO**, continue with the next step.

24. Response:

TOP tape moves.

PRM-0 E15x 993B 10AD 10AD xx xx xx (when completed and TOP tape rewinds).

25. Is **PRM_0 E15x 993B 10AD 10AD xxxx xx** present on EAI page?

If **YES**, continue with the next step.

If **NO**, **seek technical assistance** or consult 235-600-601, *Process Recovery Manual*.

26. Remove TOP tape from tape drive and mount the AM ODD backup tape.
27. On EAI page, type and enter command **42;d;55**
28. Did the EAI page respond with **Boot? (y/n)** or **BkRt Set! Boot (y/n)**?

If **YES**, type and enter **y** and continue with the next step.

If **NO**, continue with the next step.

29. Response:

Tape version **PRM_0 E15x 5400 xxxx xxxx xx xx xx**.

PRM_0 E15x 57xx xxxx xxxx xx xx xx (approximately every 10 seconds while reading tape).

PRM_0 E15x 59xx xxxx xxxx xx xx xx (when completed and AM ODD tape rewinds).

30. Was **PRM_0 E15x 59xx xxxx xxxx xx xx xx** output?

If **YES**, continue with the next step.

If **NO**, **seek technical assistance**.

31. Remove the AM ODD tape from tape drive.
32. At this point in the procedure, the loading of the AM text and AM ODD tapes is completed. The next step is to perform a system initialization while requesting a backout of recent changes. The reason for requesting the backout of AM recent changes is that any recent change log files which may exist on the disk will be inconsistent with the Office Dependent Data (ODD) disk image just read into the system. Before performing the system initialization, be sure that the **Backup Root** indicator is **SET** and the **Min Config** indicator is clear on the EAI page.

NOTE: If the system has been thrashing because of switching module communication problems or if communication to the switching module is known to be bad, then set hardware and software checks on the EAI page (Poke **34** and **36**).

Procedure 6.1.9: Load TOP, AM Text, and AM ODD from Multi-Volume Formatted Backup Tapes

OVERVIEW

This procedure is only for offices on a 5E14 and later software release that use multi-volume formatted DAT backups. 5E14 and later software releases are able to store all of the media required to dead start the office on one DAT. The steps in this procedure loads AM text first; then if needed, loads the AM ODD. A multi-volume DAT should contain all of the software media needed to dead start the office (TOP, AM text, and AM ODD logical volumes).

PROCEDURE

1. Switch to the MCC by holding down the Ctrl key and pressing Enter (not Return) key.

Load the backup tape.

2. In the following step, select the first configuration from Table 6.1.9-1 .

Table 6.1.9-1 Configurations for Dead Start

No.	Configuration to Enter	Configuration
1	20,30,33	CU0 MHD0 Pri Disk
2	22,30,33	CU0 MHD1 Sec Disk

NOTE: If the tape loading fails the initial loading, try rewinding the tape and entering another **55**. If the tape operation continues to fail, take action described in 235-600-601, *Process Recovery Manual*, and/or seek technical assistance.

3. Enter the EAI page commands for the selected configuration from Table 6.1.9-1 .

Response: Disk indicators are **SET**,
Backup indicator is **SET**, **Min Config** indicator is clear.

4. Obtain the latest AM ODD and AM text backup tape.
5. Mount the DAT backup that contains AM text into the tape drive.
6. On EAI page, type and enter command **55**.
7. Did the EAI Page respond with **Boot? (y/n)** or **BkRt Set! Boot (y/n)**?

If **YES**, then type and enter **y** and continue with the next step.

If **NO**, then continue with the next step.

8. If the response is **ignored**, enter **55** again.

9. Response:
DAT moves.

PRM_0 E15x 993B 10AD 10AD xx xx xx displayed on EAI page (when completed and DAT tape rewinds).

NOTE: PRM_0 F0da zz00 0000 0000 xx xx xx (Where zz = 27, 28, 29, 2A) Indicates a bad TOP tape.

The following provides LDFT descriptions applicable to PRMs encountered during this procedure.

PRM	Description
PRM_x E151 54xx xxxx xx xx xx	Tape version
PRM_x E151 57xx xxxx xx xx xx	Tape loading in progress
PRM_x E151 58xx xxxx xx xx xx	Mount next tape
PRM_x E151 59xx xxxx xx xx xx	Tape load complete
PRM_x F151 xxxx xxxx xx xx xx	Tape load problem

10. Is **PRM_0 E15x 993B 10AD 10AD xxxx xx** present on EAI page? Note: the PRM displayed on the EAI Page may take from 2 to 5 minutes.

If **YES**, then continue with the next step.

If **NO**, then consult 235-600-601, *Process Recovery Manual*. Using Table 6.1.9-1 in Step 2, select the next configuration and repeat from Step 3.

11. Does the multi-volume DAT contain more than one backup session?

If **YES**, continue with the next step.

If **NO**, go to Step 13.

12. Enter the application parameter to output the DAT header.

Enter the following poke: **42**.

Enter the following parameter type: **h**.

NOTE: Be patient. A series of PRMs should be displayed (or printed) that list the backup sessions and logical volumes on the DAT. Decode the record the DAT session/volume numbers. Once the header dump is completed, PRMs print that indicate the tape load program is waiting for the next request. The volume numbers, which are fixed values, correspond to the following logical volumes:

Waiting For Next Request: **PRM_x E151 33xx EEEE EEEE**

Where:

SS = Session number.
 vv = Volume number.
 mm = Month (in hex) of session.
 dd = Day (in hex) of session.
 yy = Year (in hex) of session.

Where:

vv =

Where:

0 = TOP TAPE
 1 = AM TEXT
 2 = AM ODD
 3 = SM TEXT
 4 = SM ODD 1
 5 = SM ODD 2
 6 = SM ODD 3
 7 = SM ODD 4

13. Is the DAT header information displayed (or printed)?

If **YES**, wait for the next request PRM; then continue with next step.

If **NO**, enter EAI poke **43** (clear application parameters), then repeat from Step 3. If tape read problems continue, **seek technical assistance**.

14. Enter the parameters for the AM text session/volume you want to load (perform the following substeps, then observe Notes 1, 2, and 3).

(a) Enter the following poke: **42**

(b) Enter the following parameter type (session): **s**

(c) Enter the following poke: **42**

(d) Enter the session number for the AM text you want to load: **2**

Observe the session **PRM_x E151 3331 FF01 EEEE** displayed on the EAI page. (See Note 1.)

(e) Enter the following poke: **42**

(f) Enter the following parameter type (volume): **v**

Observe the volume **PRM_x E151 3376 FF01 FFEE** displayed on the EAI page.

(g) Enter the following poke: **42**

(h) Enter the following volume number (AM text=1): **1**

Observe the volume **PRM_x E151 3331 FF01** displayed on the EAI page.

(i) Observe **PRM_x E151 3600 FF01 FF01**.

Sample Volume Search Results: **PRM_x E151 36xx FFss FFvv**

Where:

xx = 00 for volume was found.
 xx = ff for volume was not found.
 ss = Session number entered.
 vv = Volume number entered.

NOTE 1: Step 14.d assumes that this is a single session multi-volume DAT. If other session is to be used, enter the correct session number.

NOTE 2: If the session/volume request PRM is never printed, enter EAI poke **43** to clear all application parameters, then repeat this step.

NOTE 3: If the volume was found, it takes approximately 20 minutes to load AM text. A progression PRM prints while the tape is being loaded. If the volume is not found, check the values entered or select another session/volume, or **seek technical assistance**.

Tape Version	PRM_x E151 54xx xxxx xxxx xx xx xx
Tape Load Progression	PRM_x E151 57xx xxxx xxxx
Tape Load Completion	PRM_x E151 59xx xxxx xxxx

Ready for Next Request	PRM_x E151 33xx EEEE EEEE hh hh hh
Tape Load Problem	PRM_x E151 xxxx xxxx xxxx
Disk Initialization	PRM_x E151 88xx xxxx xxxx

15. Did the tape load completion PRM print after the progression PRMs?

If YES, AM text has been loaded, continue with the next step.

If NO, analyze any failure PRMs. **Seek technical assistance.**

16. Is the AM ODD on the disk being loaded known to be bad (that is, this disk has just been replaced and never been on line or is known to be corrupted)?

If YES, proceed to Step **18**.

If NO, continue with the next step.

17. Has the configuration being loaded been tried unsuccessfully while loading AM text only?

Load AM ODD

If **YES**, continue with the next step.

If **NO**, proceed to "Attempt Recovery Boot," Section 6.1.10, Step **4**.

18. With the DAT that contains the AM ODD in DAT drive, enter the EAI parameters to load AM ODD (perform the following substeps, then observe Notes 1, 2, and 3).

(a) Enter the following poke: **42**

(b) Enter the following parameter type (database): **d**

Observe the database **PRM_x E151 3364 EEEE EEEE** displayed on the EAI page.

(c) Enter the following poke: **42**

(d) Enter the following parameter type (session): **s**

Observe the session **PRM_x E151 3373 FFEE EEEE** displayed on the EAI page.

(e) Enter the following poke: **42**

(f) Enter the session number for the AM ODD you want to load: **1**

Observe the session **PRM_x E151 3331 FF01 EEEE** displayed on the EAI page. (See Note 1.)

(g) Enter the following poke: **42**

(h) Enter the following parameter type (volume): **v**

Observe the volume **PRM_x E151 3376 FF01 FFEE** displayed on the EAI page.

(i) Enter the following poke: **42**

(j) Enter the following volume number for AM ODD: **2**

Observe the volume **PRM_x E151 3332 FF02** displayed on the EAI page.

- (k) Observe **PRM_x E151 3600 FF01 FF02**.

Sample Volume Search Results: **PRM_x E151 36xx FFss FFvv**

Where:

xx = 00 for volume was found.
 xx = ff for volume was not found.
 ss = Session number entered.
 vv = Volume number entered.

NOTE 1: Step **18.d** assumes that this is a single session multi-volume DAT. If other session is to be used, enter the correct session number.

NOTE 2: If the session/volume request PRM is never printed, enter EAI poke **43** to clear all application parameters, then repeat this step.

NOTE 3: If the volume was found, it takes approximately 10 minutes to load AM ODD. A progression PRM prints while the tape is being loaded. If the volume is not found, check the values entered or select another session/volume, or **seek technical assistance**.

Tape Version	PRM_x E151 54xx xxxx xxxx xx xx xx
Tape Load Progression	PRM_x E151 57xx xxxx xxxx xx xx xx
Tape Load Completion	PRM_x E151 59xx xxxx xxxx xx xx xx
Ready for Next Request	PRM_x E151 33xx EEEE EEEE hh hh hh
Tape Load Problem	PRM_x E151 xxxx xxxx xxxx xx xx xx

- 19. Did the tape load completion PRM follow the progression PRMs?

If YES, AM ODD has been loaded., continue with the next step.

If NO, analyze any failure PRMs. **Seek technical assistance**.

- 20. At this point in the procedure, the loading of the AM text and AM ODD tapes is completed. The next step is to perform a system initialization while requesting a backout of recent changes. The reason for requesting the backout of AM recent changes is that any recent change log files which may exist on the disk will be inconsistent with the Office Dependent Data (ODD) disk image just read into the system. Before performing the system initialization, be sure that the **Backup Root** indicator is **SET** and the **Min Config** indicator is clear on the EAI page.

NOTE: If the system has been thrashing because of switching module communication problems or if communication to the switching module is known to be bad, then set hardware and software checks on the EAI page (Poke **34** and **36**).

Procedure 6.1.10: Attempt Recovery Boot

PROCEDURE

1. On the EAI page, type and enter command 42;h;54; to boot the AM.
2. Did the EAI page respond with **Boot? (y/n)** or **BkRt/Boot (y/n)**?

If **YES**, type and enter **y** and continue with the next step.

If **NO**, continue with the next step.

3. Did the AM initialization complete (Page 111/112 displayed)?

If **YES**, proceed to Step 47

If **NO**, proceed to Step 7.

4. The next step is to perform an AM initialization.

NOTE 1: If the system has been thrashing because of switching module communication problems or if communication to the switching module is known to be bad, then set hardware and software checks on the EAI page (Poke 34 and 36).

NOTE 2: Forces must not be changed.

Before performing the AM initialization, be sure that the **Backup Root** indicator is **SET** and the **Min Config** indicator is clear on the EAI page.

On EAI page, type and enter command 54 to initialize the AM.

5. Did the EAI page respond with **Boot? (y/n)** or **BkRt Set! Boot (y/n)**?

If **YES**, type and enter **y** and continue with the next step.

If **NO**, continue with the next step.

6. Did the AM initialization complete (Page 111-112 displayed)?

If **YES**, proceed to Step 9.

If **NO**, analyze the initialization failure and continue with the next step.

7. Have both configurations in "Load TOP, AM Text, and AM ODD from Single Volume Formatted Backup Tapes," Section 6.1.8, Step 2, or "Load TOP, AM Text, and AM ODD from Multi-Volume Formatted Backup Tapes," Section 6.1.9, Step 2, been tried?

If **YES**, continue with the next step.

If **NO**, using Table 6.1.8-1, select the next configuration, and repeat "Load TOP, AM Text, and AM ODD from Single Volume Formatted Backup Tapes," Section 6.1.8, Step 3.

8. Have both configurations in "Load TOP, AM Text, and AM ODD from Single Volume Formatted Backup Tapes," Section 6.1.8, Step 2, or "Load TOP, AM Text, and AM ODD from Multi-Volume Formatted Backup Tapes," Section 6.1.9, Step 2, been tried loading both AM text and AM ODD?

If **YES**, **seek technical assistance** or consult 235-600-601, *Process Recovery Manual*.

If **NO**, select the other configuration using Table 6.1.8-1, select the next configuration, and repeat "Load TOP, AM Text, and AM ODD from Single Volume Formatted Backup Tapes," Section 6.1.8, Step 3, loading both AM text and AM ODD backup tapes.

9. The AM has booted with only AM text being loaded from backup tape. The AM ODD and **ALL** disks containing switching module ODD must be recovered from tape if any MHD pairs that contain switching module ODD are shown as duplexed failed. On MCC Page 111, is the MHD pair that contains switching module ODD shown as duplexed failed so that the switching module ODD on that disk is known to be bad?

If **YES**, proceed to Step 20.

If **NO**, continue with the next step.

10. When the system booted, ODD1 partitions were loaded. However, the system may have been running on ODD2 before the recovery of the AM TEXT from tape. Verify which is the more recent AM ODD file.
11. Read the backup ODD pointer from the ODD partition.

Enter message:	DUMP:FILE:ALL, FN="/no5odd/data0/bk.aimrc";
Response:	DUMP FILE ALL COMPLETED x no5doddx is the current disk odd
Where:	x = Indicator of previously active odd (1 or 2).

12. What was the previously active ODD?

If **1**, proceed to Step 47.

If **2**, continue with the next step.

13. Pointers to the AM ODD files must be switched and the AM rebooted.

Type in message:

COPY:FILESYS:FILE, SRC="/no5text/rcv/aimrc", DEST="/no5text/rcv/aimrc.tmp";

Response: COPY FILESYS FILE COMPLETED

14. Type in message:

COPY:FILESYS:FILE, SRC="/no5text/rcv/aimrc2", DEST="/no5text/rcv/aimrc";

Response: COPY FILESYS FILE COMPLETED

15. Type in message:

COPY:FILESYS:FILE, SRC="/no5text/rcv/aimrc.tmp", DEST="/no5text/rcv/aimrc2";

Response: COPY FILESYS FILE COMPLETED

16. Type in message:

CLR:FILESYS:FILE, FN="/no5text/rcv/aimrc.tmp";

Response: CLR FILESYS FILE COMPLETED

17. On EAI page, type and enter command **53** to boot the AM.

18. Did the EAI Page respond with **Boot? (y/n)** or **BkRt Set! Boot (y/n)**?

If **YES**, type and enter **y** and continue with the next step.

If **NO**, continue with the next step.

19. Did the AM initialization complete successfully?

If **YES**, proceed to Step **47**.

If **NO**, **seek technical assistance** and analyze the initialization failure.

20. Since switching module ODD must be loaded from tape because of a duplex outboard disk failure, AM ODD must be loaded from tape.

Inhibit Recent Change. Enter Poke **605** on Page 110, or type in message:

INH:CORCS!

21. Enter Poke **606** on Page 110, or type in message:

INH:RC!

22. Type in message:

INH:REORG!

23. Access MCC Page **120**.

NOTE: If the AM boots before the tapes are read in, the AM ODD that will become active is the ODD BEFORE the last AM Backup.

24. Unmount the active partition (/dev/no5aodd1). Type in message:

INH:FILESYS:UMOUNT,FN="/dev/no5aodd1";

Response: INH FILESYS UMOUNT COMPLETED

25. To determine if the no5aodd1 partition is mounted, type in message:

OP:STATUS:FILESYS;

26. Is the inactive partition /dev/no5aodd1 shown as mounted on /no5odd/data0?

If **YES**, **seek technical assistance**

If **NO**, continue with the next step.

27. Make the active partitions inactive and the inactive partitions active. Type in message:

COPY:FILESYS:FILE,SRC="/no5text/rcv/aimrc", DEST="/no5text/rcv/aimrc.tmp";

Response: COPY FILESYS FILE COMPLETED

28. Type in message:

COPY:FILESYS:FILE,SRC="/no5text/rcv/aimrc2", DEST="/no5text/rcv/aimrc";

Response: COPY FILESYS FILE COMPLETED

29. Type in message:

COPY:FILESYS:FILE, SRC ="/no5text/rcv/aimrc.tmp "DEST="/no5text/rcv/aimrc2";

Response: COPY FILESYS FILE COMPLETED

30. Type in message:

CLR:FILESYS:FILE, FN="/no5text/rcv/aimrc.tmp";

Response: CLR FILESYS FILE COMPLETED

31. Load AM ODD. Type in message:

Response: DUMP:FILE:ALL, FN ="/no5text/bkup/aodd.ptn";

32. Does contents of /no5text/bkup/aodd.ptn agree line-for-line with either of the following:

/dev/no5aodd1/
dev/no5dodd1

If **YES**, continue with the next step.

If **NO**, **seek technical assistance**.

33. Type in message:

COPY:FILESYS:FILE, SRC="/no5text/bkup/aodd.ptn", DEST ="/tmp/tmpodd.ptn";

Response: COPY FILESYS FILE COMPLETED

34. Mount the AM ODD backup tape on the tape drive.

35. To read the AM ODD backup tape into the ODD partitions, type in message:

EXC:ENVIR:UPROC, FN= "/etc/mkdsk", ARGV= "-i"-"/dev/mt00"-"-d"-"/dev/vtoc"-"-p"-"/tmp/tmpodd.ptn";

Response: EXC ENVIR UPROC COMPLETED

36. Was the set of AM ODD backup tapes read into the AM ODD partitions successfully?

If **YES**, continue with the next step.

If **NO**, **seek technical assistance**

37. Type in message:

CLR:FILESYS:FILE, FN ="/tmp/tmpodd.ptn";

Response: CLR FILESYS FILE COMPLETED

38. Type in message:

COPY:FILESYS:FILE, SRC="/no5text/rcv/aimrc", DEST="/no5text/rcv/aimrc.tmp";

Response: COPY FILESYS FILE COMPLETED

39. Type in message:

COPY:FILESYS:FILE,SRC="/no5text/rcv/aimrc2", DEST="/no5text/rcv/aimrc";

Response: COPY FILESYS FILE COMPLETED

40. Type in message:

COPY:FILESYS:FILE,SRC="/no5text/rcv/aimrc.tmp", DEST="/no5text/rcv/aimrc2";

Response: COPY FILESYS FILE COMPLETED

41. Type in message:

CLR:FILESYS:FILE,FN="/no5text/rcv/aimrc.tmp";

Response: CLR FILESYS FILE COMPLETED

42. Type in message:

DUMP:FILE:ALL,FN="/no5text/rcv/aimrc";

Response: DUMP FILE ALL COMPLETED 1 no5dodd1 is the current disk odd

43. Was no5dodd1 printed in the previous step?

NOTE: At this point in the procedure, the loading of the AM text and AM ODD tapes is completed. The next step is to perform a system initialization while requesting a backout of recent changes. The reason for requesting the backout of AM recent changes is that any recent change log files which may exist on the disk will be inconsistent with the Office Dependent Data (ODD) disk image just read into the system. Before performing the system initialization, be sure that the **Backup Root** indicator is **SET** and the **Min Config** indicator is clear on the EAI page.

If **YES**, continue with the next step.

If **NO**, **seek technical assistance**.

44. On the EAI page, type and enter command **42;h;54;** to boot the AM.

45. Did the EAI page respond with **Boot? (y/n)** or **BkRt Set! Boot (y/n)**?

If **YES**, type and enter **y** and continue with the next step.

If **NO**, continue with the next step.

46. Did the AM initialization complete (Page 111/112 displayed)?

If **YES**, continue with the next step.

If **NO**, **seek technical assistance**.

47. The AM is now running on the backup root file system with a different AMODD. Now do post-AM recovery actions to recover the switching module ODD and switching module text (if necessary), and return to the primary root file system.

Go to "Post AM Recovery Cleanup," Procedure 6.2 .

48. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 6.2: Post AM Recovery Cleanup

OVERVIEW

You have reached this point because the Administrative Module (AM) was booted such that further recovery action is required. This procedure will deal with switching module related recoveries. This procedure will also deal with outboard disks that have experienced failures that have rendered those disks unusable (duplex disk failure).

The overall objective of this procedure is to have the AM running in the root configuration on the system moving head disks (MHD). If the AM was booted from a disk that was loaded from tape, the AM is running on the backup root partitions. The backup root partitions are normally used for recovery from tape situations; therefore, it is necessary to copy the backup root partitions to the root partitions and reboot the AM. If the AM was booted from a disk that was a software backup disk, the system MHDs must be restored to normal and the software backup disk returned to backup status.

Once the office is processing calls and has stabilized, the AM and disks should be returned to a duplex configuration. Also, the AM backout indicator on Master Control Center (MCC) Page 110 should be returned to normal. This is accomplished by first clearing the recent change log files and then clearing the AM recent change backout indicator. Also, switching module ODD of the same vintage as the AM ODD must be loaded in from tape so there is consistency between the AM and switching module ODDs.

If no MHD2/MHD3 text tape (switching module text tape) at the same software update level as the AM text restored from the backup media is available, install an older switching module text tape now and obtain a tape of the same software update level as the AM text to install later. The Backout Last Overwrite (BOLO) feature may not be usable following an AM recovery from tape or Software Backup (SWBU) disk and will not be usable if MHD2/MHD3 must be replaced with a new disk.

Table 6.2-1 Recovery Actions

AM RECOVERY FROM:	RECOVERY ACTION SM TEXT, PUMP SM	SM TEXT, SM ODD PUMP SM	RECOVER BASE MHD	RESTORE ROOT & REBOOT
Original Disk	—	—	—	Z
AM Text Tape	X	—	—	X
AM Text & ODD Tapes	—	X	—	X
X = Actions that are required.				
Z = Actions that are required if AM recovered on the backup root.				

Post AM Recovery Subprocedure Overview

- Recover the Volume Table Of Contents (VTOC) of any outboard MHD that is new or duplex failed, and initialize Automatic Message Accounting (AMA) Disk Writer.
- Recover the switching module text on the second disk pair if necessary to maintain consistent software update levels between AM text and switching module text.
- If AM recovered from backup tape or disk, restore switching module ODD from switching module ODD tape(s), and pump the switching module.
- Restore primary MHDs.
- If AM recovery was from a software backup disk, restore that disk to spare status.
- Allow Power Switch Monitor scanning of software backup disks.
- Restore control units (CU) and all MHDs to duplex.

— LATER: If the AM recovered on the backup root file system, copy backup partitions to root partitions. Then after duplexing the disks, reboot the AM on root configuration with 53.

PROCEDURE

1. Follow these subprocedures in the order in which they are presented.
 - "Post AM Recovery Cleanup," Subprocedure 6.2.1 .
 - "Restore Switching Module Text on Outboard MHDs," Subprocedure 6.2.2 .
 - "Restore the Switching Module ODD," Subprocedure 6.2.3 .
 - "Recover from BROOT Configuration," Subprocedure 6.2.4 .

Procedure 6.2.1: Post AM Recovery Cleanup

PROCEDURE

1. Inhibit diagnostic sources until disk restore activities are complete. Type in messages:

```
INH:DMQ:SRC=ADP;  
INH:AUD=SODD,FULL;
```

2. Clear any active diagnostics from the system. Type in message:

```
OP:DMQ;
```

```
Response:  REQUEST ACTIVE  
           DFC 1 RST  
           REQUEST WAITING  
           MHD 2 RST  
           INHIBIT SOURCED ADP
```

3. If MHD actions are active or waiting, type in message:

```
STP:DMQ:MHD=x,zzzzzz;
```

Where:

x = Unit number of MHD
zzzzzz = **ACTIVE** and/or **WAITING** as per output message from previous step.

4. On MCC Page 111, are MHD 2/3 shown as duplexed failed?

If **YES**, continue with the next step.

If **NO**, continue with Step 8.

5. At the MCC, write the VTOC file to the MHD being recovered by typing and entering:

```
EXC:ENVIR:UPROC,FN="/etc/rcvtoc",ARGS=2;
```

Where:

2 = MHD number to be restored

```
Response:  EXC ENVIR UPROC COMPLETED  
           vcp: disk copy completed  
           vcp: disk copy completed  
           /etc/rcvtoc VTOC READ AND COMPARE  
           SUCCESSFUL
```

6. Restore MHD 2. Type and enter:

```
RST:MHD=2
```

Where:

2 = MHD number to be restored

Response: RST MHD 2 TASK y MSG STARTED
RST MHD 2 IN PROGRESS
RST MHD 2 COMPLETED

7. The AMA partitions must now be cleaned up. Initialize AMA Disk Writer. Type in message:

INIT:AM,AMDW1,FPI;

Response: REPT AMA DISK WRITER FOR STREAM ST1
RECORDING TO DISK SUSPENDED
REPT AMA DISK WRITER FOR STREAM ST1
TERMINATION CODE 2
REPT AMA DISK WRITER FOR STREAM ST1
ERROR CODE 6
REPT AMA DISK WRITER FOR STREAM ST1
INITIALIZATION COMPLETE
REPT AMA DISK WRITER FOR STREAM ST1
RECORDING TO DISK RESUMED

8. Verify software update levels of AM text (/no5text) and switching module (/no5text/im). Type in message:

OP:VERSION;

Response:

OP VERSION	mmm dd, yyyy	
PARTITION	VERSION	BWM
ECD	5ex(x)xx.xx	
/	5ex(x)xx.xx	BWMnn-nnnn
/etc	5ex(x)xx.xx	BWMnn-nnnn
/unixa	5ex(x)xx.xx	BWMnn-nnnn
/no5text/im	5ex(x)xx.xx	BWMnn-nnnn
/no5text	5ex(x)xx.xx	BWMnn-nnnn

9. Are the software update levels of /no5text and /no5text/im the same?

If **YES**, continue with the next step.

If **NO**, go to "Restore Switching Module Text on Outboard MHDs," Subprocedure 6.2.2, to recover switching module text, then return to the next step.

10. **ALL** disks containing switching module ODD must be recovered from tape if any of the following conditions exist:

- AM ODD recovered on an MHD restored from AM ODD backup tapes,
- Any outboard MHD containing switching module ODD was duplexed failed so that the switching module ODD on that disk is known to be bad.

Do any of these conditions exist?

If **YES**, go to "Restore the Switching Module ODD," Subprocedure 6.2.3, to recover switching module ODD, then return to the next step.

If **NO**, continue with the next step.

11. Obtain status from Page 141, or type in message:

OP:SYSSTAT:SM=x;

Response:	OP SYSSTAT L LSM n,n:	SUMMARY rrr	LAST RECORD
-----------	--------------------------	----------------	-------------

Where:

rrr = Switching module off-normal status.

12. Using the response from the previous step, does the switching module have a progress marker status of:

Any Init-in-progress state?

INIT ISOL

COMM LOST

ISOLATED

STNDALONE

If **YES**, continue with the next step.

If **NO**, proceed to Step 17.

13. For the switching module: type and enter Poke **923** on Page 1800, or type in message:

INIT:SM=a,FI,PUMP;

Where:

a = The switching module number.

**Response: INIT SM=a LVL=FI SUMMARY EVENT = xxxxx
CALL PROCESSING DOWNTIME=x:xx:xx
CALLS LOST: STABLE=x TRANSIENT=x**

14. Clear forces on MHD and allow the CU to be restored. On EAI page, type and enter commands **21** and **23**.

15. Allow MHD diagnostics again and restore MHDs to duplex operation. Type in message:

ALW:DMQ:SRC=ADP;

16. Restart diagnostics if necessary. Type in message:

OP:DMQ;

or

17. If MHD diagnostics are not active or waiting, from MCC page **111** use poke**30x** to restore the MHDs.

Where:

x = MHD Number

**Response: RST MHD x TASK y MSG STARTED
RST MHD x IN PROGRESS
(will be output every 2 minutes)
RST MHD x COMPLETED**

18. Was either switching module text or switching module ODD reloaded from tape?

If **YES**, use "Off-Line Pump for Recovery of a Functional Switching Module," 235-105-250, 5ESS[®] *Switch System Recovery*, to off-line pump and switch the switching module, then return to the next step.

If **NO**, continue with the next step.

19. On the EAI Page, is the **INH** indicator for **Inh Hdw Chk** or **Inh Sft Chk** backlighted?

If **YES**, type and enter Pokes **35** and **37**

If **NO**, continue with the next step.

20. On the EAI Page, is the **Backup Root** indicator **SET**?

If **YES**, use "Recover from BROOT Configuration," Subprocedure 6.2.4 , to recover root file system, and return to next step.

If **NO**, continue with next step.

21. Type in message:

ALW:AUD=SODD,FULL;

22. Reschedule ODD Backup. Type in message:

BKUP:ODD:EVERY=a,AT=b;

Where:

a = number of days between ODD backups
b = time of day in hours and minutes (for example 2330 = 11:30 p.m.)

23. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 6.2.2: Restore Switching Module Text on Outboard MHDs

OVERVIEW

If an MHD2/MHD3 switching module text tape (/dev/vtoc1) at the same software update level as the AM text (/dev/vtoc) restored from the backup media is not available, install an older tape now and obtain a tape of the same software update level as the /no5text partition to install later.

PROCEDURE

1. Is an STLWS available?

If **YES**, go to Step 8.

If **NO**, continue with the next step.

2. From the MCC, type and enter: **194**

Response:

```
Depress PF3 key twice to reconnect to the SCREEN process if
the Command Message Key (PF3) has been used during this procedure.
```

```
What is the desired command?
```

```
o) ODBE           c) CNIDBOC
a) ACCED          r) RTAG
u) UNIX SHELL    Q) TO QUIT
```

```
Please enter o,a,u,c, r, or Q:
```

```
Character mappings
\:, \1, \s, \8, \-, \a, \/, \\", \
;, !, $, &, -, @, ?, \,
```

3. Enter the *UNIX*[®] mode. Type and enter: **u**
4. Invoke rldft. Type and enter: **/usr/bin/rldft**

NOTE: When using the MCC, the screens displayed by rldft will not paint as it does when used with an STLWS. Some lines in the screens which follow may not be displayed. Commands are entered in the upper left corner and displayed next to the rldft prompt after pressing the **RETURN** key.

5. Go to Step 2.
6. Clear the screen with a **120** poke.
7. The tape to be mounted is the switching module text tape for MHD2/MHD3 (/dev/vtoc1) with the same software update level marking on the tape label as the software update level of the AM text that was just booted.

Type in message:

RCV:MENU:RDLDFT;

Response:

Please enter the letter 'x' for SM TEXT or
the letter 's' for SM ODD:

8. Type and enter: **x**

Response:

What tape volume format is to be used?
Please enter 'm' for Multi-volume format or
's' for Single-volume format:

9. Type and enter: **s**

Response:

What tape density is to be used?
Please enter the number '8' for low or
the number '0' for high:

10. Type and enter: **0**

Response:

RDLDFT: SM TEXT tape sequence chosen for /dev/vtocl on /dev/mt00
RDLDFT: Please mount the backup tape on the tape drive
Please enter 'go' after the tape is mounted:

11. After loading the tape and ensuring the green LED is steadily illuminated, type and enter: **go**

Response:

```
Tue Nov 8 09:04:33 CST 1994 (Current date and time )
..... (one dot every 30 seconds)
Tue Nov 8 09:04:33 CST 1994 (Current date and time)
RDLDFT: Completed.
RCV MENU RDLDFT COMPLETED (only on STLWS)
```

12. Was rldft invoked from the MCC?

If **YES**, exit from *UNIX*[®] mode - type and enter: **Q** and exit from page **194** - type and enter: **Q**.

If **NO**, continue with next step.

13. Did the switching module text backup tape read into the text partitions successfully?

If YES, STOP. YOU HAVE COMPLETED THIS PROCEDURE.

If NO, seek technical assistance.

Procedure 6.2.3: Restore the Switching Module ODD

OVERVIEW

The following steps will install the switching module ODD disk image from backup switching module ODD tapes.

PROCEDURE

1. Is an STLWS available?

If **YES**, go to Step **6**

If **NO**, continue with the next step.

2. From the MCC, type and enter: **194**

Response:

```
Depress PF3 key twice to reconnect to the SCREEN process if
the Command Message Key (PF3) has been used during this procedure.
```

```
What is the desired command?
```

```
o) ODBE                c) CNIDBOC
a) ACCED              r) RTAG
u) UNIX SHELL        Q) TO QUIT
```

```
Please enter o,a,u,c, r, or Q:
```

```
Character mappings
\:, \1, \s, \8, \-, \a, \/, \\\, \
;, !, $, &, -, @, ?, \,
```

3. Enter the *UNIX*[®] mode. Type and enter: **u**
4. Invoke rldft. Type and enter: **/usr/bin/rldft**

NOTE: When using the MCC, the screens displayed by rldft will not paint as it does when used with an STLWS. Some lines in the screens which follow may not be displayed. Commands are entered in the upper left corner and displayed next to the rldft prompt after pressing the **RETURN** key.

5. Go to Step **9**.
6. Clear the screen with a **120** poke.
7. The Volume Table Of Contents (VTOC) to be selected must be the same as the /dev/vtocx on each of the switching module ODD backup tape labels. The switching module ODD tape must have been made in the same software release backup session as the AM ODD tape which was used in the recovery.

Type in message:

RCV:MENU:RDLDFt;

Response:

Please enter the letter 'x' for SM TEXT or
the letter 's' for SM ODD:

8. Type and enter: **s**

Response:

What tape volume format is to be used?
Please enter 'm' for Multi-volume format or
's' for Single-volume format::

9. Type and enter: **s**

Response:

What tape density is to be used?
Please enter the number '0' for /dev/mt00 or
the number '8' for /dev/mt08:

10. Type and enter: **0**

What vtoc is to be used?
Please enter ONLY one number for the below choices:
1 for /dev/vtoc1
2 for /dev/vtoc2
3 for /dev/vtoc3
4 for /dev/vtoc4
5 for /dev/vtoc5
6 for /dev/vtoc6:

Please enter either '1','2','3',
'4','5','6':

11. Type and enter: **1**

Response:

RDLDFt: SM ODD tape sequence chosen for /dev/vtoc1 on /dev/mtxx
RDLDFt: Please mount the first backup tape on the tape drive
and insure that the ONLINE button is ON.
Please enter 'go' after the tape is mounted:

12. After mounting the tape, type and enter: **go**

Response:

```

Tue Nov  8 09:04:33 CST 1994 (Current date and time )
..... (One dot every 30 seconds)
Tue Nov  8 09:04:33 CST 1994 (Current date and time)
RDLDFLT: Completed.
RCV MENU RDLDFLT COMPLETED (only on STLWS)

```

13. Was rlddft invoked from the MCC?

If **YES**, exit from *UNIX*[®] mode - type and enter: **Q** and exit from page **194** - type and enter: **Q**.

If **NO**, continue with next step.

14. Did the switching module ODD backup tape read into the ODD partitions successfully?

If **YES**, continue with the next step.

If **NO**, **seek technical assistance**.

15. Type in message:

NOTE: The Recent Change (RC) and Customer-originated Recent Change (CORC) log files in the system are no longer consistent with the ODD just read in from tape. The AM Backout indicator should be returned to normal. This is accomplished by first clearing the RC and CORC recent change log files (AM and switching module) and then clearing the AM recent change backout indicator.

EXC:ENVIR:UPROC, FN="/no5text/bkup/clrlg";

Response: EXC ENVIR UPROC /no5text/bkup/clrlg STOPPED rm:cni directory

OR

EXC ENVIR UPROC STOPPED (If log files do not exist) rm * non-existent

16. Type and enter:

STP:EXC:ANY, FN="/no5text/rcv/lglg", UCL;

Response: REPT ULARP ATTEMPTING TO RESTART LGLOG xx STOP EXC ANY COMPLETED

17. Clear backup schedule. Type in message:

CLR:ODDBKUP;

Response: CLR ODDBKUP COMPLETED

18. Type in message:

WARNING: Inappropriate use of this message may interrupt or degrade application service. Refer to 235-600-700/750, *Input/Output Messages Manual*.

EXC:ODDRCVY=SKIPLOG,AM;

Response: EXC ODDRCVY=SKIPLOG AM COMPLETED.

19. Type and enter Poke **521** to clear RC BKOUT box on MCC Page **110**.

Response: RC BKOUT box clears.

NOTE: The AM is currently running on a different version of the ODD than the switching module. To correct this situation, the switching module must be initialized.

20. **STOP. YOU HAVE COMPLETED THIS PROCEDURE. RETURN TO "Post AM Recovery Cleanup," Subprocedure 6.2.1 .**

Procedure 6.2.4: Recover from BROOT Configuration

OVERVIEW

WARNING: The AM is currently running on the backup root configuration. Therefore, ECD recent changes should not be made to the root or rootdmlly copies of the ECD/SG database until this procedure is completed.

NOTE: The following steps should be performed during a low-traffic period. The objective is to have the AM running on the root configuration. This is accomplished by copying the backup root partitions to the root partitions and booting the AM.

PROCEDURE

1. Type in message:

DUMP:FILE:ALL,FN="/no5text/bkup/prim.ptn";

Response: DUMP FILE ALL COMPLETE
 Contents of /no5text/bkup/prim.ptn printed:
 /dev/root /dev/db
 /dev/etc /dev/boot

2. Type in message:

DUMP:FILE:ALL,FN="/no5text/bkup/bkup.ptn";

Response: DUMP FILE ALL COMPLETE
 Contents of /no5text/bkup/bkup.ptn printed:
 /dev/broot /dev/bdb
 /dev/betc /dev/bboot

3. Do the contents of /no5text/bkup/prim.ptn and /no5text/bkup/bkup.ptn agree with the responses listed in Steps 1 and 2?

If **YES**, continue with the next step.

If **NO**, **STOP. DO NOT CONTINUE. Seek technical assistance.**

4. Both MHD0 and MHD1 must be active at this point. Type in message:

**COPY:PTN:ALL,SRC="/no5text/bkup/bkup.ptn",
 DEST="/no5text/bkup/prim.ptn";**

Response: RMV MHD x TASK y MSG STARTED
RMV MHD x COMPLETED
RST MHD x TASK y MSG STARTED
RST MHD x IN PROGRESS (is output every 2 minutes)
RST MHD x COMPLETED
COPY PTN FILE COMPLETED
 xxxx **BLOCKS COPIED** (repeated 4 times)

5. On EAI page, type and enter command **31** to clear the backup configuration.

6. On EAI page, type and enter command **53** to boot the AM.
7. Is the response to the previous step **boot? (y/n)**
If **YES**, type and enter **y** and continue.
If **NO**, continue with the next step.
8. Did the initialization complete?
If **YES**, continue with the next step.
If **NO**, analyze the initialization failure.
9. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 6.3: Establish Communication with an Isolated Switching Module

OVERVIEW

This procedure is used to recover an isolated switching module. The loss of communication can be indicated on MCC display Page **1800,x** by one of the following status indications: COMM LOST, INIT PEND, STNDALONE, or ISOLATED. To simplify this procedure, all of these states will be referred to as COMM LOST.

It should be noted that MCC display Page **1800,x** is partially updated from the switching module. When AW/switching module communication is lost, this page will display the AW's stored information about the switching module. Therefore, not all indicators on the page will reflect the true status of the unit when the switching module has lost communication. When AW/switching module communication is restored, the page will be updated to reflect the current status of the unit. Following each recovery action specified by this procedure, pause briefly to allow the switching module to reestablish communication (if possible) and update the MCC display.

PROCEDURE

1. Perform a visual check to ensure that the *Ethernet*[®] cabling between the switching module and the Administrative Workstation is intact.
2. On Master Control Center (MCC) display page **111/112**, is the communication link to the switching module broken?

If **YES**, continue with Step 3.

If **NO**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE**

3. On MCC display page **1800,x**, enter command **403** to manually isolate the switching module. The terminal will respond with **ISOLATE? (y/n)**. Type and enter: **y**

Response: SET present in box 03.

4. On MCC display Page **1800,x**, enter command **503** to clear the manual isolation. Wait 3 minutes.

Response: SET cleared in box 03.

5. On MCC display Page **111/112**, is the communication link to the switching module broken?

If **YES**, continue with Step 6.

If **NO**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

6. On MCC display Page **1800,x**, enter the following command on the input message line to clear forces on the switching module:

ORD:CPI=x,CMD=CLR,UCL;

Where:

x = The switching module number.

Perform this command even if the MCC display page **1800,x** does not indicate forces are there. There can be two different responses:

Response: ORD CPI x CMD CLR COMPLETED
 OR
 ORD CPI x CMD CLR NOT COMPLETED
 UNIT RESULT x STATUS UNKNOWN

Where:
 x = The switching module number.

7. On MCC display page **1800,x**, enter the poke command **705,UCL** to allow the sanity timer. Perform this command even if the MCC display page 1800,X does not indicate the sanity timer has been inhibited. There can be two different responses to this command.

Response: ORD CPI x CMD ALW COMPLETED
 OR
 ORD CPI x CMD ALW NOT COMPLETED
 UNIT RESULT
 x STATUS UNKNOWN

Where:
 x = The switching module number.

8. On MCC page **111/112**, is the communication link to the switching module broken?

WARNING: Steps 9-13 will stop all call processing and will drop all stable calls! Do you wish to proceed?

If **YES**, continue with Step **9**.

If **NO**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

9. At MCTSI 0 control and display pack, power down MCTSI 0.
 10. At MCTSI 0 control and display pack, power up MCTSI 0.
 11. At MCTSI 1 control and display pack, power down MCTSI 1.
 12. At MCTSI 1 control and display pack, power up MCTSI 1.
 13. On MCC display Page **111/112**, is the communication link to the switching module no longer broken?

If **YES**, **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

If **NO**, **seek technical assistance.**

7. GROWTH AND DEGROWTH

Overview

The term growth, relative to switch hardware, refers to the addition of equipment units to the office and/or the expansion of equipment units already present. The term degrowth refers to the removal of equipment units and the removal of packs or circuits from an equipment unit. All of the equipment which may be grown must also be considered for degrowth.

For more information on switch growth and degrowth, see 235-105-231, *5ESS[®] Switch Hardware Change Procedures - Growth* and 235-105-331, *5ESS[®] Switch Hardware Change Procedures - Degrowth*.

Procedure 7.1: Perform STLWS Growth

PROCEDURE

1. Enter *UNIX*[®] RTR Recent Change and Verify.

(a) Is MCC or STLWS terminal to be used?
For MCC, proceed to Step **b**.
For STLWS proceed to Step **i**.

(b) At MCC, ensure terminal is in command mode.

(c) At MCC, do Steps **d** through **h**.

(d) Type and enter: **199**.

Response: RCV PARAMETER INFO page displayed with cursor at **1. database_name**

(e) Type and enter: **incore**.

Response: **2. review only**

(f) Type and enter: **n**.

Response: **3. journaling**

(g) Type and enter: *****

Response: RCV INITIALIZATION IN PROGRESS message displayed.
UNIX RTR RCV (ODIN) - Data Entry page displayed.

(h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **2**.

(i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**

Response: RCV ECD PARAMETER INFO page displayed with cursor at **1. database_name**

(j) Type and enter: **incore**.

Response: **2. review only**

(k) Type and enter: **n**.

Response: **3. journaling**

(l) Type and enter: *****

Response: RCV INITIALIZATION IN PROGRESS message displayed.
UNIX RTR RCV (ODIN) - Data Entry page displayed. Cursor at Enter Form Name:

2. Enter high-level forms.

(a) Type and enter: **toggle**

Response: Will take you to the high-level forms.

3. Insert TTY data.

NOTE: An ! may be entered any time prompted to abort the form and return to the state when the form was started.

(a) Type and enter: **ttyadd**

Response: ttyadd form displayed. Cursor at **1. tty_name:**

NOTE: Fields not specified receive the default value by entering CARRIAGE RETURN.

(b) Type and enter the following data:

1. tty_name ^a :	enter TTY terminal name (TTY9-TTY14, TTY28-TTY34, or TTY50)
2. baud_rate:	enter (as specified or CARRIAGE RETURN)
3. login_term:	enter (as specified or CARRIAGE RETURN)
4. auth_chk:	enter (as specified or CARRIAGE RETURN)
5. term_type:	enter (as specified or CARRIAGE RETURN)
6. line_mode:	enter (as specified or CARRIAGE RETURN)
7. port:	enter 2 or 3 for TTYC port (see Tables 7.1-1 and 7.1-2)
8. ttyc_number:	enter TTYC number base on SPC/SAI port (see Tables 7.1-1 and 7.1-2)
9. plu_unit_name:	enter CARRIAGE RETURN
10. plu_unit_number:	enter CARRIAGE RETURN
Notes:	
a.	tty name must be entered in all capital letters.

NOTE: Entering **STLWS** will choose the first available STLWS type terminal and grow it automatically.

Table 7.1-1 SPARC5 Terminal Locations

S/PI No.	AW SBUS SLOT No.	SPC PORT	TTYC PORT	TTYC No.
0	3	2	2	11
0	3	3	3	11
0	3	4	2	12
0	3	5	3	12
0	3	6	2	13
0	3	7	3	13
1	1	0	2	14
1	1	1	3	14
1	1	2	2	15
1	1	3	3	15
1	1	4	2	16
1	1	5	3	16
1	1	6	2	17
1	1	7	3	17

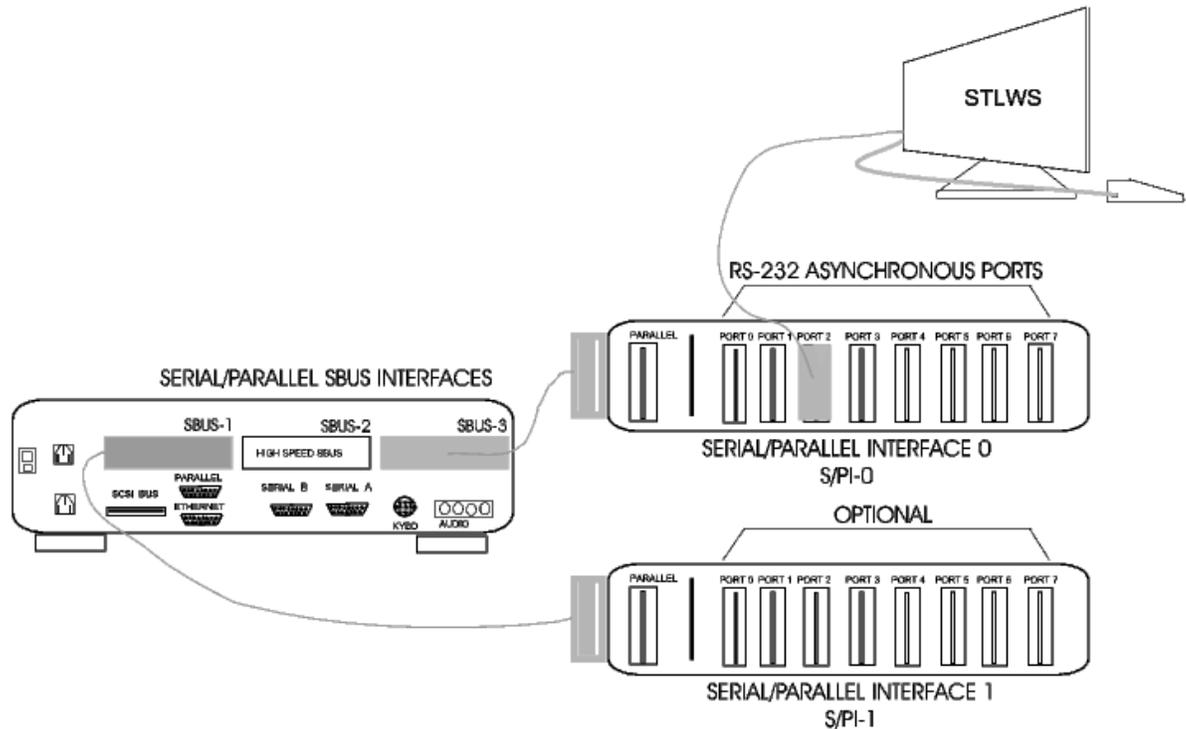
Table 7.1-2 Netra™ t Terminal Locations

AW PCI SLOT No.	SAI PORT	TTYC PORT	TTYC No.
2	2	2	11
2	3	3	11
2	4	2	12
2	5	3	12
2	6	2	13
2	7	3	13
1	0	2	14
1	1	3	14
1	2	2	15
1	3	3	15
1	4	2	16
1	5	3	16
1	6	2	17
1	7	3	17

(c) Type and enter: **i**

NOTE: When growing a TTY terminal a defensive check failure message REPT CONFIG FAULT Assert = 412 may be received. This failure message may be ignored.

4. Install the STLWS to the SAI/SPC port corresponding to the TTYC port and TTYC number chosen in Tables 7.1-1 and 7.1-2 (see Figures 7.1-1 and 7.1-2).
 - (a) Enter CARRIAGE RETURN.



ADMINISTRATIVE WORKSTATION (Rear View)

Figure 7.1-1 STLWS Installation (SPARC5)

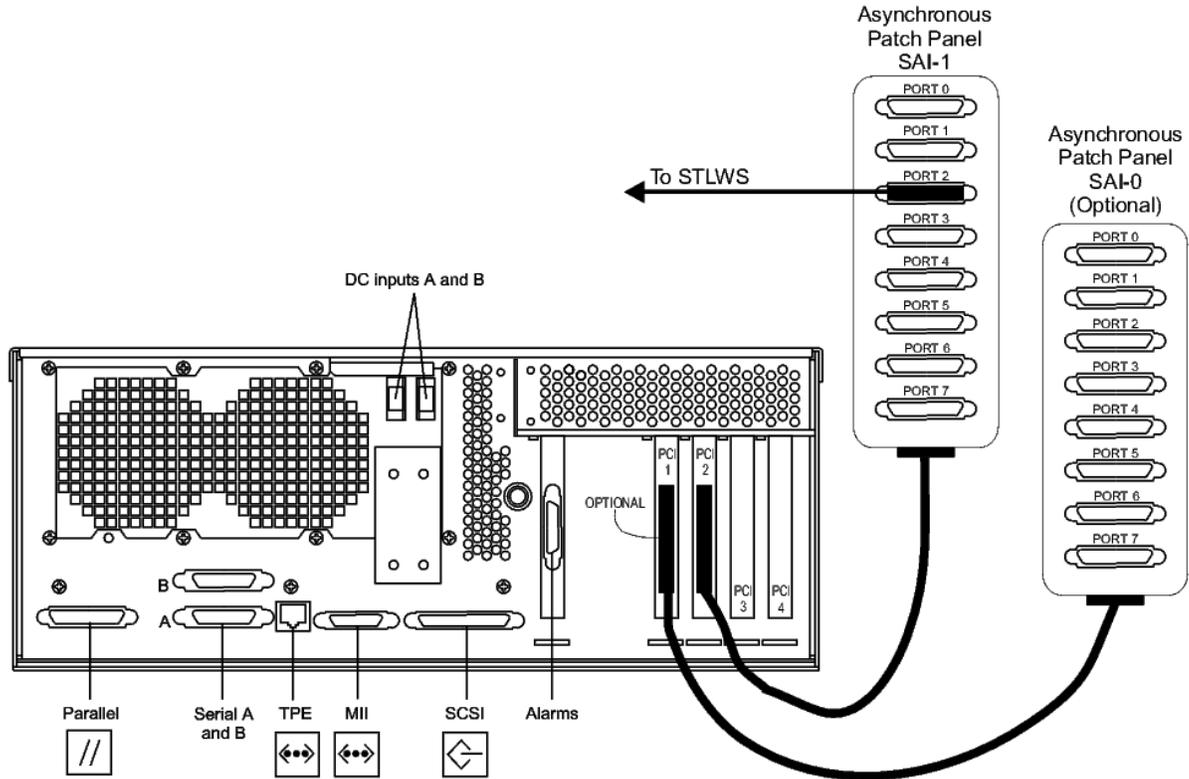


Figure 7.1-2 STLWS Installation (Netra Sun Microsystems, Inc. t)

5. Restore TTY x to service.

(a) At MCC, type and enter the appropriate message:

RST:TTY=x

Where:

x = appropriate TTY number.

If the TAU is not being added to the STLWS, continue with Step 11.

(b) Enter CARRIAGE RETURN.

Response: FORM INSERTED

(c) Type and enter: <

Response: Exit the ttyadd form.

(d) Type and enter: <

Response: Exit this recent change session.

If the TAU is not being added to the STLWS, continue with Step 11.

6. Define the STLWS trunk group.

(a) Select and prepare terminal for Recent Change and Verify activities.

- (1) Is MCC or STLWS terminal to be used?

If MCC, proceed to substep **a2**.

If STLWS, proceed to substep **a9**.

- (2) At MCC, ensure terminal is in command mode.
- (3) At MCC, do substeps **a4** and **a8**.
- (4) Type and enter: **196**

Response: **RCV PARAMETER INFO** page displayed with cursor at PRINT OPTION.

- (5) Type and enter: **Y**

Response: Cursor at DETAIL OPTION

- (6) Type and enter: **N**

Response: Cursor at VERBOSE OPTION

- (7) Type and enter: **Y**

Response: **RECENT CHANGE AND VERIFY CLASSES** menu page displayed.

- (8) You have completed the Select and Prepare Terminal for the MCC, proceed to Step **b**.

- (9) At the RC/V terminal, type and enter the following message:

RCV:MENU:APPRC:VERBOSE,PRINT

Response: **RECENT CHANGE AND VERIFY CLASS** menu page displayed.

- (b) Type and enter **5.1**.

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

- (c) Type and enter **i**

Response: TRUNK GROUP page displayed. Cursor at TGN attribute.

- (d) Using the Translation Guide (TG-5) and Office Records, select and enter a TGN and the following characteristics for an STLWS trunk group:

TGN - Number from View 8.1, field 10

TRK DIR - INCOM

HUNT TYPE - NONE

TRK CLASS - ACJACK

IAPT - Y

RMK - ACJ FOR STLWS 1

INPLS - MF

Response: Enter Insert, Change, Validate, or Print

(e) Type and enter: **i**

Response: inserting.....FORM INSERTED TRUNK GROUP page displayed.

(f) Type and enter: **<**

Response: 5.0 TRUNKS -- TGN & MEMBER VIEWS page displayed.

7. Define the STLWS trunk group members.

(a) Type and enter: **5**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

(b) Type and enter: **I**

Response: TRUNK MEMBER page displayed. Cursor at TGN attribute.

(c) Using the Translation Guide TG-5 and Office Records, enter the STLWS TGN and the following characteristics for an STLWS trunk group member.

TGN	-	(STLWS Trunk Group Number)
MEMB NBR	-	(1 to 4)
TEN	-	(Selected Trunk Equipment Number)
CLEI code	-	E54E100AXX
SUPV	-	EM2

Response: Enter Insert, Change, Validate, or Print:

(d) Type and enter: **I**

Response: inserting.....FORM INSERTED TRUNK MEMBER page displayed. Cursor at TGN attribute.

(e) Repeat Steps **c** and **d** for second member number.

(f) Type and enter: **<**

Response: 5.0 TRUNKS -- TGN & MEMBER VIEWS page displayed.

(g) Type and enter: **q**

8. Update the STLWS trunk group.

(a) Select and prepare terminal for Recent Change and Verify activities.

Reference: Step 6a, substeps 1 through 9

(b) Type and enter: **5.1**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

(c) Type and enter: **U**

Response: **TRUNK GROUP** page displayed. Cursor at TGN attribute.

- (d) Type and enter the appropriate TGN.

Response: System completes remainder of view. **Enter Update, Change, Validate, or Print:**

- (e) Type and enter: **C**

Response: **Change Field:**

- (f) Update the following characteristics for an STLWS trunk group:

TRK DIR	-	OUTGO
TRK CLASS	-	LTPDCJCK
RMK	-	DCJ FOR STLWS 1

Response: **Enter Insert, Change, Validate, or Print:**

- (g) Type and enter: **U**

Response: **updating.....FORM UPDATED TRUNK GROUP** page displayed.

- (h) Type and enter: **<**

Response: **5.0 TRUNKS -- TGN & MEMBER VIEWS** page displayed.

9. Update the STLWS trunk group members.

- (a) Type and enter: **5**

Response: **Enter Database Operation**
I=Insert, R=Review, U=Update, D=Delete

- (b) Type and enter: **U**

Response: **TRUNK MEMBER** page displayed. Cursor at TGN attribute.

- (c) Input the appropriate TGN and MEMB NBR.

Response: System completes remainder of view. **Enter Update, Change, Validate, or Print:**

- (d) Type and enter: **C**

Response: **Change Field:**

- (e) Using the Translation Guide TG-5 and Office Records, update the following characteristics for an STLWS trunk group member.

Response: **Enter Insert, Change, Validate, or Print:**

- (f) Type and enter: **U**

Response: **updating.....FORM UPDATED TRUNK MEMBER** page displayed. Cursor at TGN attribute.

- (g) Repeat Steps **c** through **f** for second member number.

- (h) Type and enter: **<**

Response: 5.0 TRUNKS -- TGN & MEMBER VIEWS page displayed.

(i) Type and enter: **q**

10. Restore the AC and DC jacks.

(a) At MCC, type and enter the following message:

**RST:TRK,TKGMN=a-b ,UCL:OOS,CADN;
RST:TRK,TKGMN= a-b,UCL:OOS,PPSRV;**

Where:

a = trunk group
b = member number.

Response: RST TRK OOS CADN COMPLETED
a b IS MAN
RST TRK OOS PPSRV COMPLETED
a b IS MAN

(b) Repeat Step **a** for each trunk group member.

If the talk and monitor hardware is not being added to the STLWS, continue with Step 13

11. Update the T/M number view.

(a) Select and prepare terminal for Recent Change and Verify activities.

Reference: Step 6a, substeps 1 through 9.

(b) Type and enter: **1.6**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

(c) Type and enter: **U**

Response: INDIVIDUAL LINE (LINE ASSIGNMENT) page displayed. Cursor at TN attribute.

(d) Type and enter the appropriate TN.

Response: System completes remainder of view. Enter Update, Change, Validate, or Print:

(e) Type and enter: **C**

Response: Change Field:

(f) Update the following attributes.

LEN	-	assigned locally
LCC	-	must be the same as the LCC of the MCC
SUSO	-	Y

Response: Enter Update, Change, Validate, or Print:

(g) Type and enter: **U**

Response: updating.....FORM UPDATED INDIVIDUAL LINE (LINE ASSIGNMENT) page displayed.

(h) Type and enter: <

Response: 1.0 LINES -- TN VIEWS page displayed.

12. Update STLWS office data.

(a) Select and prepare terminal for Recent Change and Verify activities.

Response: Step 6a, substeps 1 through 9.

(b) Type and enter: 14.3

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

(c) Type and enter: U

Response: TRUNK LINE WORK STATION page displayed. Cursor at DEVICE ID attribute.

(d) Type and enter the appropriate DEVICE ID.

Response: System completes remainder of view. Enter Update, Change, Validate, or Print:

(e) Type and enter: C

Response: Change Field:

(f) Update this view as required.

Response: Enter Update, Change, Validate, or Print:

(g) Type and enter: U

Response: updating.....FORM UPDATED TRUNK LINE WORK STATION page displayed.

(h) Type and enter: <

Response: 14.0 LINE & TRUNK TEST VIEWS page displayed.

13. Backup Incore ECD to disk.

(a) At MCC, do Steps b through i.

(b) Type and enter: 199

Response: RCV PARAMETER INFO page displayed with cursor at 1. database_name

(c) Type and enter: incore

Response: 2. review only

(d) Type and enter: n

Response: 3. journaling

(e) Type and enter: *

Response: UNIX RTR (ODIN) - Data Entry page displayed.

(f) Type and enter: **activate**

Response: activate form displayed with cursor at **1. copy_inc_to_disk:**

(g) Type and enter: **yes**

Response: ODIN will request the action desired.

(h) Type and enter: **e**

Response: UNIX RTR (ODIN) - Data Entry page displayed.

(i) Type and enter: <

Response: RCV MENU RCV ECD COMPLETED

14. Backup Office Dependent Data.

NOTE: Prior to the response there will be completed responses for the switching module and the AM.

(a) At MCC, type and enter: **BKUP:ODD**

Response: BKUP ODD COMPLETED

It is recommended that primary disk be backed up and that a shelf copy of the disks be made.

15. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.2: Perform RC/V Terminal Growth

PROCEDURE

1. Enter *UNIX*[®] RTR Recent Change and Verify.
 - (a) Is MCC or STLWS terminal to be used?
For MCC, proceed to Step **b**.
For STLWS proceed to Step **i**.
 - (b) At MCC, ensure terminal is in command mode.
 - (c) At MCC, do Steps **d** through **h**.
 - (d) Type and enter: **199**
Response: RCV PARAMETER INFO page displayed with cursor at **1. database_name**
 - (e) Type and enter: **incore**
Response: **2. review only**
 - (f) Type and enter: **n**
Response: **3. journaling**
 - (g) Type and enter: *****
Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.
 - (h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **2**.
 - (i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**
Response: RCV ECD PARAMETER INFO page displayed with cursor at **1. database_name**
 - (j) Type and enter: **incore**
Response: **2. review only**
 - (k) Type and enter: **n**
Response: **3. journaling**
 - (l) Type and enter: *****
Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed. Cursor at Enter Form Name:
2. Enter high-level forms.
 - (a) Type and enter: **toggle**

Response: Will take you to the high-level forms.

3. Insert TTY data.

NOTE: An ! may be entered any time prompted to abort the form and return to the state when the form was started.

(a) Type and enter: **ttyadd**

Response: ttyadd form displayed. Cursor at 1. **tty_name:**

NOTE: An ! may be entered any time prompted to abort the form and return to the state when the form was started.

(b) Type and enter the following data:

1. tty_name ^a :	enter TTY terminal name (TTY18, TTY19, or TTY21)
2. baud_rate:	enter (as specified or CARRIAGE RETURN)
3. login_term:	enter (as specified or CARRIAGE RETURN)
4. auth_chk:	enter (as specified or CARRIAGE RETURN)
5. term_type:	enter (as specified or CARRIAGE RETURN)
6. line_mode:	enter (as specified or CARRIAGE RETURN)
7. port:	enter 2 or 3 for TTYC port (see Tables 7.2-1 and 7.2-2)
8. ttyc_number:	enter TTYC number base on SPC/SAI port (see Tables 7.2-1 and 7.2-2)
9. plu_unit_name:	enter CARRIAGE RETURN
10. plu_unit_number:	enter CARRIAGE RETURN
Notes:	
a.	tty name must be entered in all capital letters.

Table 7.2-1 SPARC5 Terminal Locations

S/PI No.	AW SBUS SLOT No.	SPC PORT	TTYC PORT	TTYC No.
0	3	2	2	11
0	3	3	3	11
0	3	4	2	12
0	3	5	3	12
0	3	6	2	13
0	3	7	3	13
1	1	0	2	14
1	1	1	3	14
1	1	2	2	15
1	1	3	3	15
1	1	4	2	16
1	1	5	3	16
1	1	6	2	17
1	1	7	3	17

Table 7.2-2 Netra™ t Terminal Locations

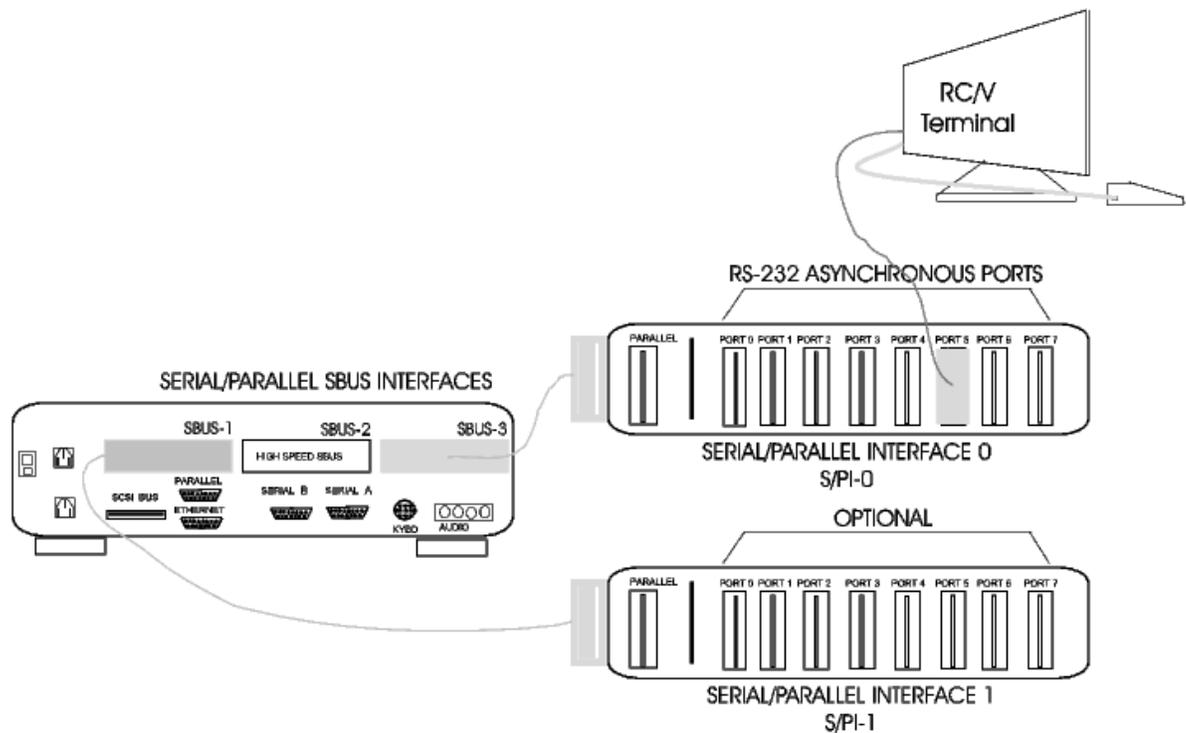
AW PCI SLOT No.	SAI PORT	TTYC PORT	TTYC No.
2	2	2	11
2	3	3	11
2	4	2	12
2	5	3	12
2	6	2	13
2	7	3	13
1	0	2	14
1	1	3	14
1	2	2	15
1	3	3	15
1	4	2	16
1	5	3	16
1	6	2	17
1	7	3	17

- (c) Type and enter: i

NOTE: When growing a TTY terminal a defensive check failure message REPT CONFIG FAULT Assert = 412 may be received. This failure message may be ignored.

4. Install the RC/V terminal to the SAI/SPC port corresponding to the TTYC port and TTYC number chosen in Tables 7.2-1 and 7.2-2 (see Figures 7.2-1 and 7.2-2).

- (a) Enter CARRIAGE RETURN.



ADMINISTRATIVE WORKSTATION (Rear View)

Figure 7.2-1 Recent Change Terminal Installation (SPARC5)

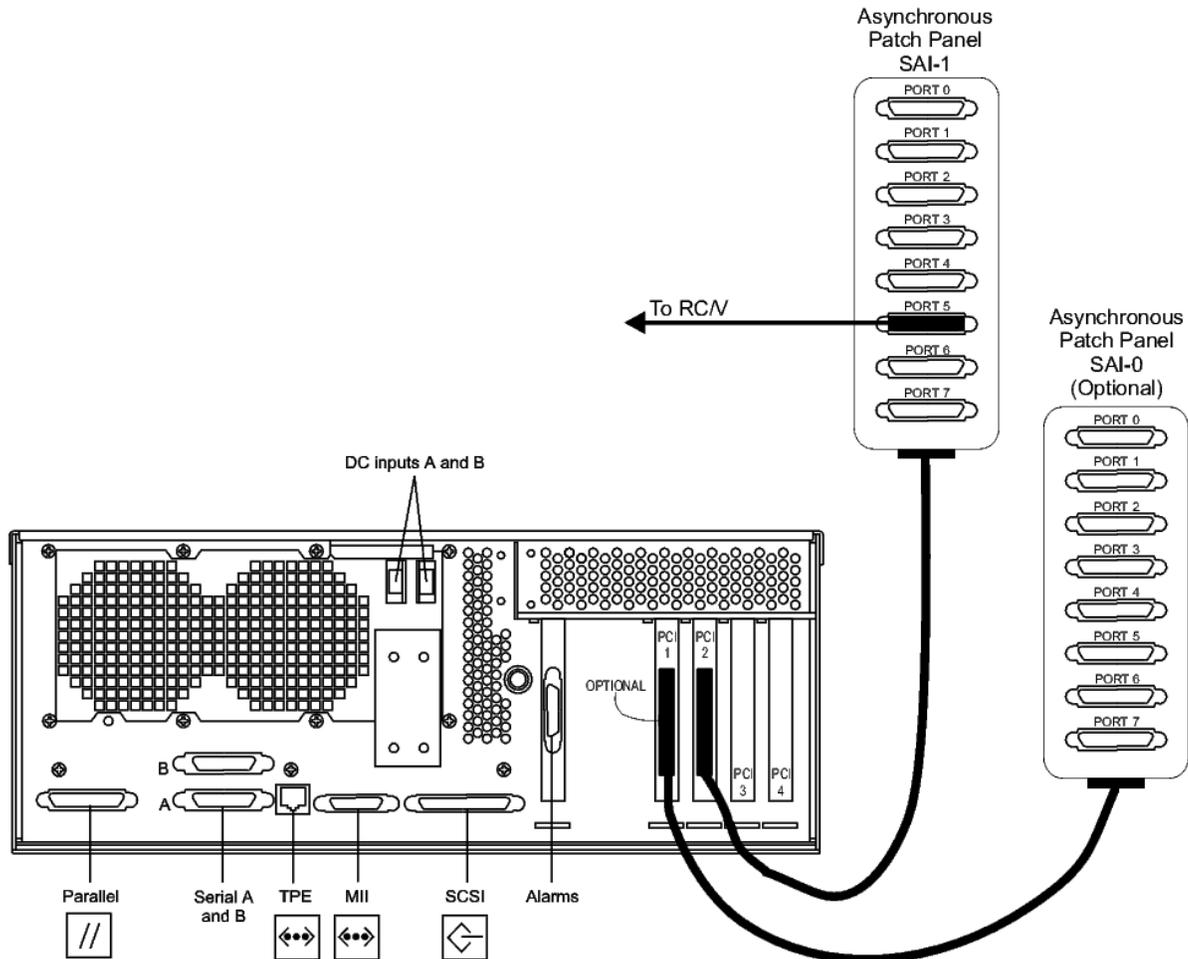


Figure 7.2-2 Recent Change Terminal Installation (Netra Sun Microsystems, Inc. t)

5. Restore TTY x to service.
 - (a) At MCC, type and enter the appropriate message:

RST:TTY=x

Where:
x = appropriate TTY number.

Response: RST TTY x COMPLETED
 - (b) Enter CARRIAGE RETURN.

Response: FORM INSERTED
 - (c) Type and enter: <

Response: Exit the ttyadd form.
 - (d) Type and enter: <

Response: Exit this recent change session.

6. Backup Incore ECD to disk.

(a) At MCC, do Steps **b** through **i**.(b) Type and enter: **199****Response:** **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**(c) Type and enter: **incore****Response:** **2. review only**(d) Type and enter: **n****Response:** **3. journaling**(e) Type and enter: *******Response:** **UNIX RTR (ODIN) - Data Entry** page displayed.(f) Type and enter: **activate****Response:** activate form displayed with cursor at **1. copy_inc_to_disk:**(g) Type and enter: **yes****Response:** ODIN will request the action desired.(h) Type and enter: **e****Response:** ODIN returns to the **UNIX RTR (ODIN) - Data Entry** page.(i) Type and enter: **<****Response:** **RCV MENU RCV ECD COMPLETED**

7. Change Security

(a) At MCC, type and enter message:

SET:RCACCESS,TTY=a,ACCESS=b**Where:**

a = ttys, ttyt, or ttyv

Where:

ttys = TTY18

ttyt = TTY19

ttyv = TTY21

Where b is obtained from INPUT/OUTPUT Manual.

(b) To check on the access code, type and enter message:

OP:RCACCESS,TTY=a

Where:

a = ttys, ttyt, or ttyv

Where:

ttys =	TTY18
ttyt =	TTY19
ttyv =	TTY21

Response: Access code returned in hexadecimal

8. Backup Office Dependent Data.

NOTE: Prior to the response there will be completed responses for the switching module and the AM.

- (a) At MCC, type and enter: **BKUP:ODD**

Response: BKUP ODD COMPLETED

It is recommended that primary disk be backed up and that a shelf copy of the disks be made.

9. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.3: Perform SCANS Data Link Growth

PROCEDURE

1. Enter *UNIX*[®] RTR Recent Change and Verify.
 - (a) Is MCC or STLWS terminal to be used?
For MCC, proceed to Step **b**.
For STLWS proceed to Step **i**.
 - (b) At MCC, ensure terminal is in command mode.
 - (c) At MCC, do Steps **d** through **h**.
 - (d) Type and enter: **199**
Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**
 - (e) Type and enter: **incore**
Response: **2. review only**
 - (f) Type and enter: **n**
Response: **3. journaling**
 - (g) Type and enter: *****
Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.
 - (h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **2**.
 - (i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**
Response: **RCV ECD PARAMETER INFO** page displayed with cursor at **1. database_name**
 - (j) Type and enter: **incore**
Response: **2. review only**
 - (k) Type and enter: **n**
Response: **3. journaling**
 - (l) Type and enter: *****
Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.
2. Enter high-level forms.
 - (a) Type and enter: **toggle**

Response: Will take you to the high-level forms.

3. Insert SDL data.

NOTE: An ! may be entered any time prompted to abort the form and return to the state when the form was started.

NOTE: Fields not specified receive the default value by entering CARRIAGE RETURN.

(a) Type and enter: **sdldd**

Response: ttyadd form displayed. Cursor at **1. sdl_name:**

(b) Type and enter the following data:

1. sdl_name:	enter SDL0 .
2. port:	enter 0
3. SCANS baud rate:	enter CARRIAGE RETURN

(c) **Type and enter: i**

(d) The low-level forms will now be added automatically.

4. Install the SCANS Data Link. (See Figures 7.3-1 and 7.3-2 for hardware connection information.)

(a) Enter CARRIAGE RETURN.

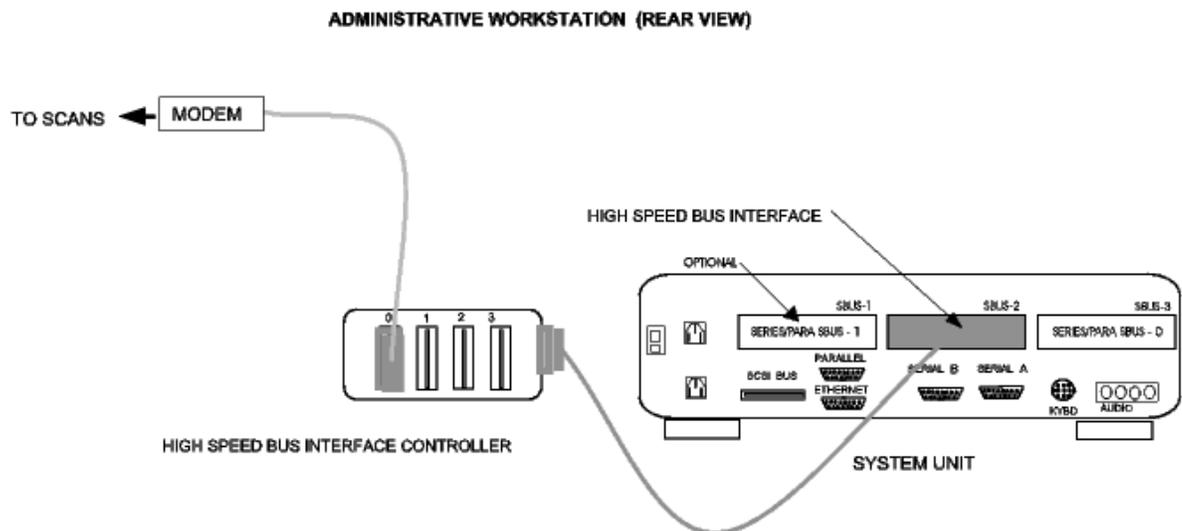


Figure 7.3-1 SCANS Terminal Installation (SPARC5)

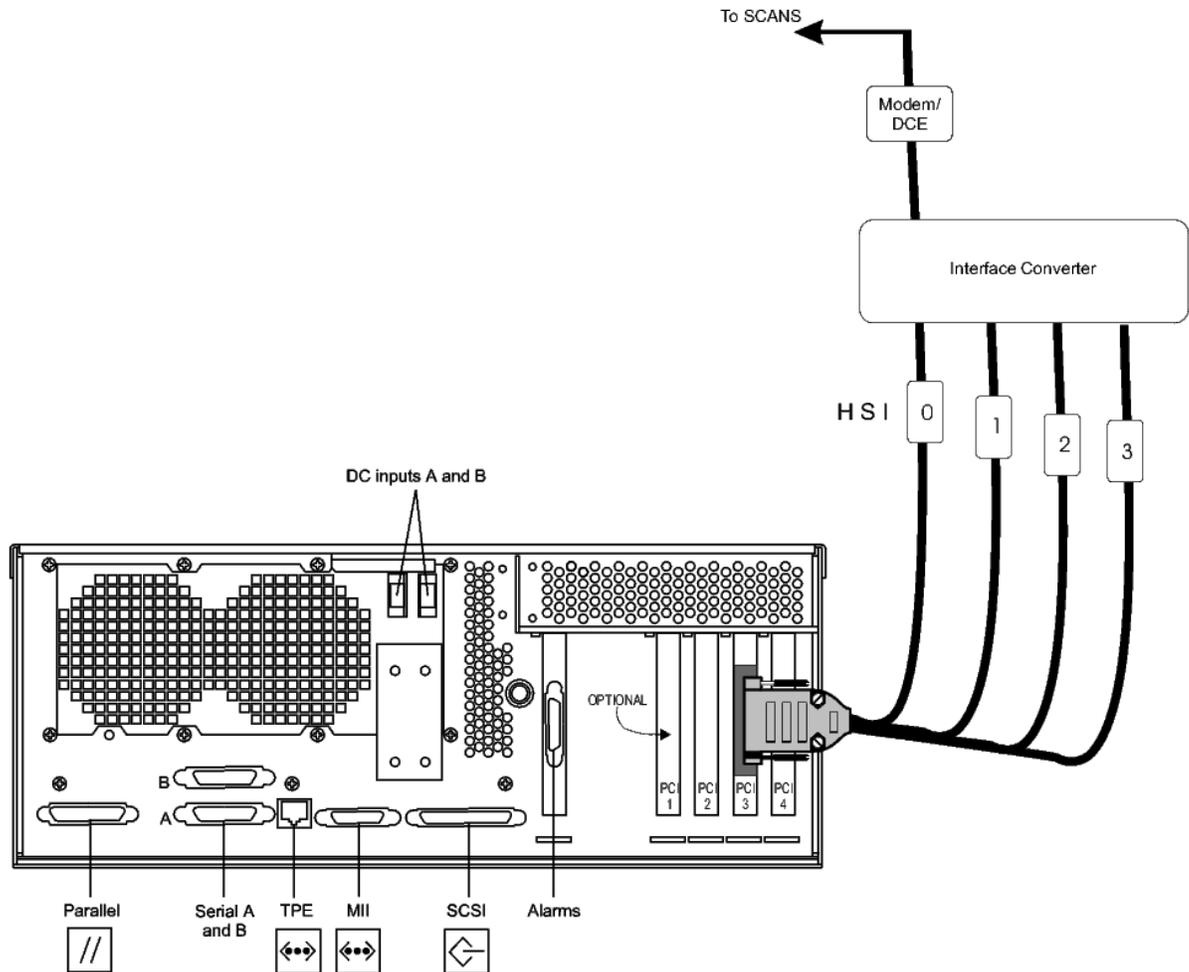


Figure 7.3-2 SCANS Terminal Installation (Netra Sun Microsystems, Inc.)

5. Restore SDL0 to service.
 - (a) At MCC, type and enter the appropriate message:

RST:SDL=0

Response: RST SDL0 COMPLETED
 - (b) Enter CARRIAGE RETURN.

Response: FORM INSERTED
 - (c) Type and enter: <

Response: Exit the sdladd form.
 - (d) Type and enter: <

Response: Exit this recent change session.
6. Backup Incore ECD to disk.

- (a) At MCC, do Steps **b** through **i**.
- (b) Type and enter: **199**
Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**
- (c) Type and enter: **incore**
Response: **2. review only**
- (d) Type and enter: **n**
Response: **3. journaling**
- (e) Type and enter: *****
Response: **UNIX RTR (ODIN) - Data Entry** page displayed.
- (f) Type and enter: **activate**
Response: activate form displayed with cursor at **1. copy_inc_to_disk:**
- (g) Type and enter: **y**
Response: ODIN will request the action desired.
- (h) Type and enter: **e**
Response: ODIN will return to the **UNIX RTR (ODIN) - Data Entry** page.
- (i) Type and enter: **<**
Response: **RCV MENU RCV ECD COMPLETED**

7. Backup Office Dependent Data.

NOTE: Prior to the response there will be completed responses for the switching module and the AM.

- (a) At MCC, type and enter: **BKUP:ODD**
Response: **BKUP ODD COMPLETED**

It is recommended that primary disk be backed up and that a shelf copy of the disks be made.

- 8. Go to MCC display page **113** and verify that the data link shows up there.
- 9. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.4: Perform AMA Data Link Growth

OVERVIEW

The AMA data link provides the hardware interface for the *BILLDATS*[®] software used to transmit AMA data to a host collector.

PROCEDURE

1. Enter *UNIX*[®] RTR Recent Change and Verify.
 - (a) Is MCC or STLWS terminal to be used?

For MCC, proceed to Step **b**.
For STLWS proceed to Step **i**.
 - (b) At MCC, ensure terminal is in command mode.
 - (c) At MCC, do Steps **d** through **h**.
 - (d) Type and enter: **199**

Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**
 - (e) Type and enter: **incore**

Response: **2. review only**
 - (f) Type and enter: **n**

Response: **3. journaling**
 - (g) Type and enter: *****

Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.
 - (h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **2**.
 - (i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**

Response: **RCV ECD PARAMETER INFO** page displayed with cursor at **1. database_name**
 - (j) Type and enter: **incore**

Response: **2. review only**
 - (k) Type and enter: **n**

Response: **3. journaling**
 - (l) Type and enter: *****

Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) -**

Data Entry page displayed.

2. Enter high-level forms.

(a) Type and enter: **toggle**

Response: Will take you to the high-level forms.

3. Insert SDL data.

(a) Type and enter: **sdladd**

Response: ttyadd form displayed. Cursor at **1. sdl_name:**

NOTE: An ! may be entered any time prompted to abort the form and return to the state when the form was started.

(b) Type and enter the following data:

1. sdl_name:	enter SDL13 .
2. port:	enter 1
3. AMA_baud_rate:	enter one of the following: 4800DIAL 9600DIAL 9600PRI 5600PRI 5600SW

NOTE: Fields not specified receive the default value by entering CARRIAGE RETURN.

(c) Type and enter: **i**

(d) The low-level forms will now be added automatically.

4. Install the AMA Data Link. The AMA Data Link consists of a modem and modem cable connected to the High Speed Bus controller interface. (Figures 7.4-1 and 7.4-2 provide an illustration of the hardware connection information for the AMA Data Link.)

(a) Enter CARRIAGE RETURN.

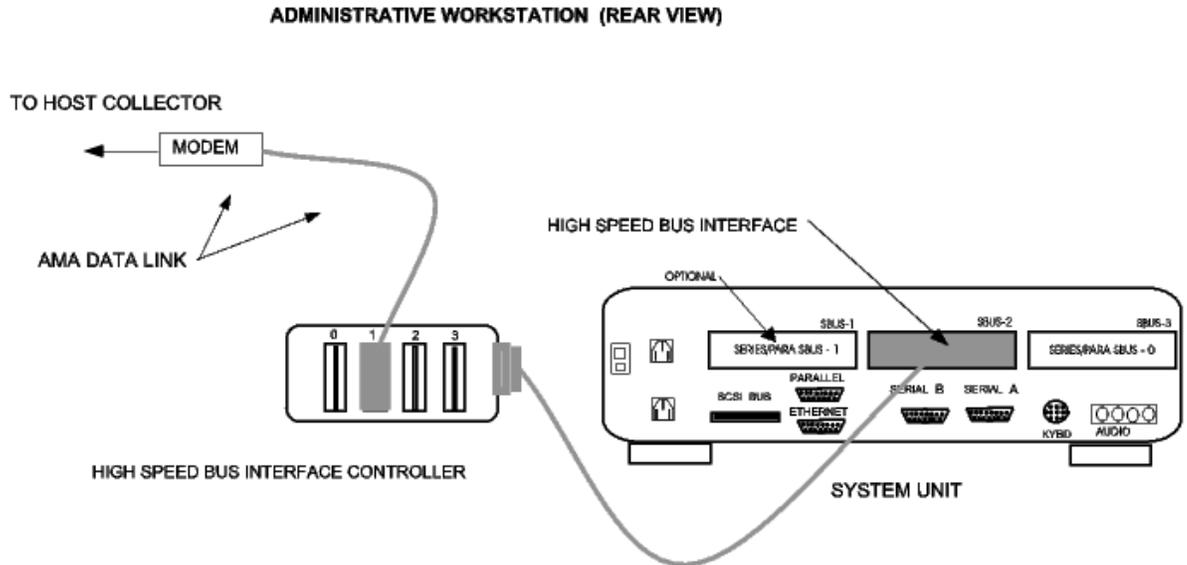


Figure 7.4-1 AMA Data Link Hardware Connection (SPARC5)

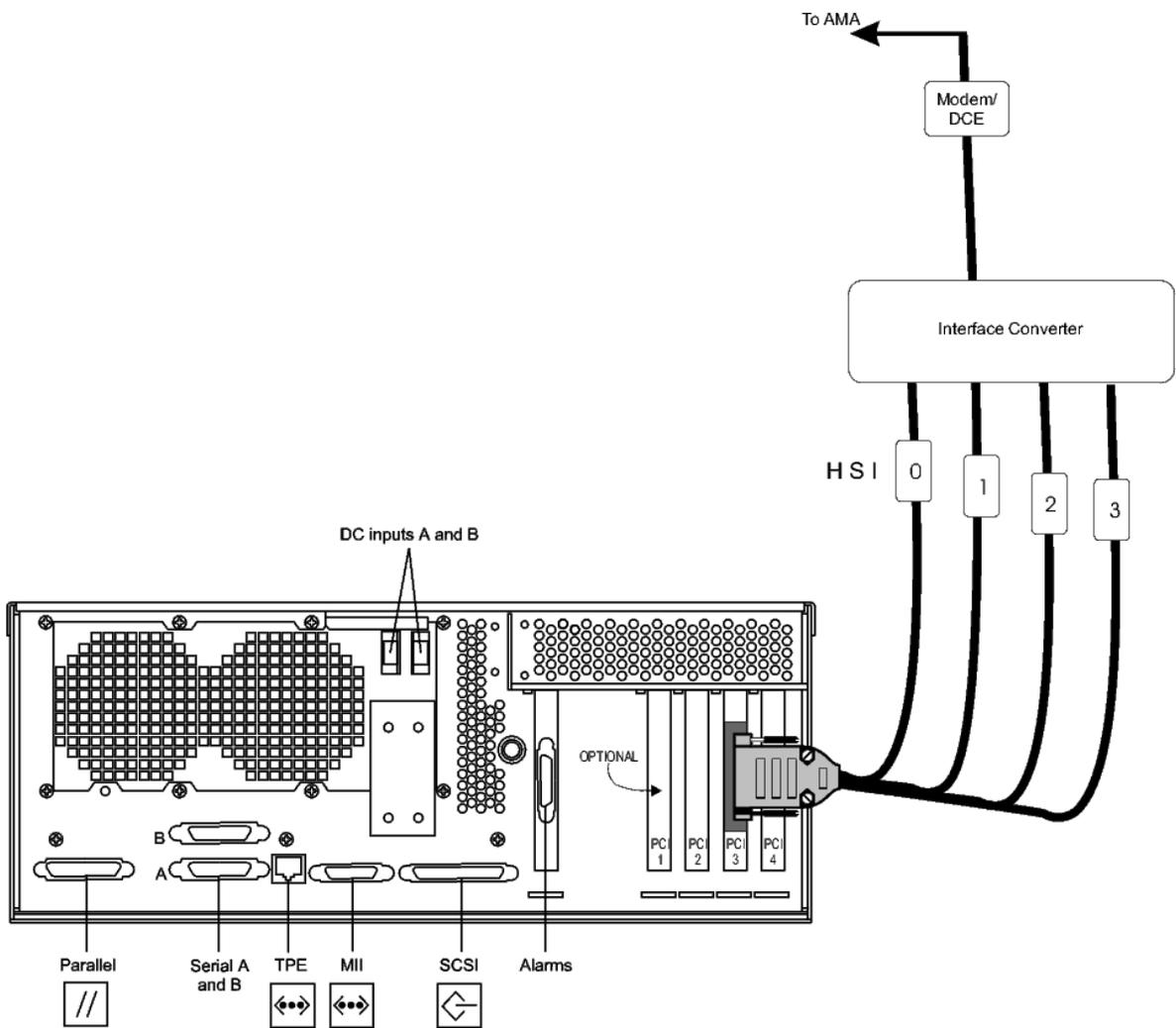


Figure 7.4-2 AMA Data Link Hardware Connection (Netra Sun Microsystems, Inc. t)

5. Restore SDL13 to service.
 - (a) At MCC, type and enter the appropriate message:
RST:SDL=13
Response: RST SDL13 COMPLETED
 - (b) Enter CARRIAGE RETURN.
Response: FORM INSERTED
 - (c) Type and enter: <
Response: Exit the sdladd form.
 - (d) Type and enter: <
Response: Exit this recent change session.
6. Backup Incore ECD to disk.
 - (a) At MCC, do Steps **b** through **i**.
 - (b) Type and enter: **199**
Response: RCV PARAMETER INFO page displayed with cursor at **1. database_name**
 - (c) Type and enter: **incore**
Response: 2. review only
 - (d) Type and enter: **n**
Response: 3. journaling
 - (e) Type and enter: *****
Response: UNIX RTR (ODIN) - Data Entry page displayed.
 - (f) Type and enter: **activate**
Response: activate form displayed with cursor at 1. copy_inc_to_disk:
 - (g) Type and enter: **y**
Response: ODIN will request the action desired.
 - (h) Type and enter: **e**
Response: ODIN will return to the UNIX RTR (ODIN) - Data Entry page.
 - (i) Type and enter: <
Response: RCV MENU RCV ECD COMPLETED

7. Backup Office Dependent Data.

NOTE: Prior to the response there will be completed responses for the switching module and the AM.

- (a) At MCC, type and enter: **BKUP:ODD**

Response:**BKUP ODD COMPLETED**

It is recommended that primary disk be backed up and that a shelf copy of the disks be made.

8. Go to MCC display page 113 and verify that the data link shows up there.
9. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.5: Perform SCC Data Link Growth

PROCEDURE

1. Type and enter: **incore**
Response: 2. review only
2. Type and enter: **n**
Response: 3. journaling
3. Type and enter: *****
Response: Enter Form Name:
4. Type and enter: **toggle**
Response: Enter Form Name:
High-level mode displayed.
5. Type and enter: **sdladd**
Response: 1. sdl_name
6. Type and enter: **SCC** or **SDL1**
Response: 2. port
7. Type and enter: **2**
Response: 3. ama_baud_rate
8. Enter CARRIAGE RETURN.
NOTE: This field does not apply for SDL1.
Response: Enter Insert, Change . . .
9. Type and enter: **i**
The low-level forms will now be added automatically.
Response: 1. sdl_name
10. Type and enter: **<**
Response: Enter Form Name:
11. Type and enter: **<**
Response: Exit this recent change session.
12. To verify SDL1 has been inserted, view the **113** page. SDL1 should appear on this page.

NOTE 1: To save the incore ECD changes made in Steps 1 through 11, execute Steps 16 through 23, otherwise continue with Step 13.

NOTE 2: SCC must also be grown into the MIN ECD. Execute Steps 13 through 15 to test the MIN ECD growth capability.

13. Type and enter: **199**

Response: RCV PARAMETER INFO page displayed with cursor at 1. database_name

14. Type and enter: **rootdmly**

Response: 2. review only

15. Repeat Steps 2 through 11.

16. Save Incore ECD changes to disk:

Type and enter: **199**

Response: RCV PARAMETER INFO page displayed with cursor at 1. database_name

17. Type and enter: **incore**

Response: 2. review only

18. Type and enter: **n**

Response: 3. journaling

19. Type and enter: *****

Response: Enter Form Name:

20. Type and enter: **activate**

Response: 1. copy_inc_to_disk:

21. Enter CARRIAGE RETURN.

Response: Enter Execute, Change. . .

22. Type and enter: **e**

Response: Enter Form Name:

23. Type and enter: **<**

Response: Exit this recent change session.

- (a) Install the SCC Data Link. The SCC Data Link consists of a dataset and cable connected to the High Speed Bus controller interface. (Figures 7.5-1 and 7.5-2 provide an illustration of the hardware connection information for the SCC Data Link.)

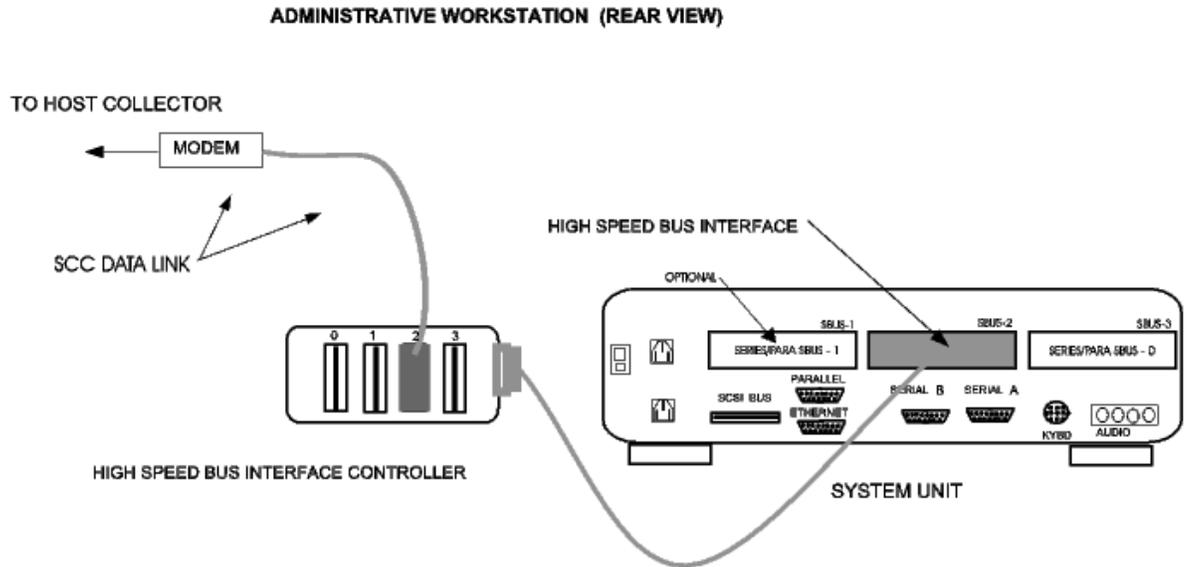


Figure 7.5-1 SCC Data Link Hardware Connection (SPARC5)

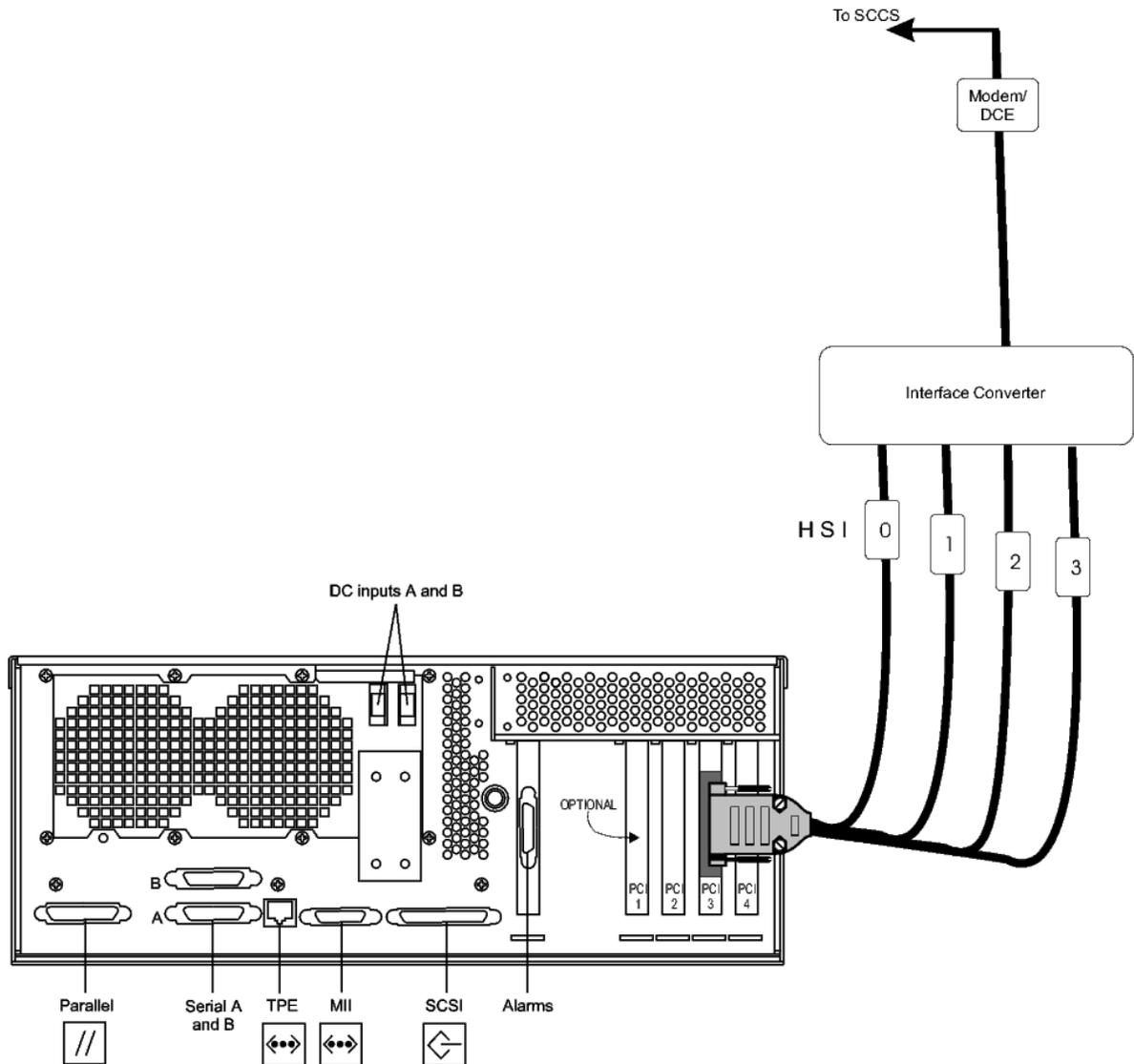


Figure 7.5-2 SCC Data Link Hardware Connection (Netra Sun Microsystems, Inc. t)

24. Restore SDL1 to service:

At MCC, type and enter: **RST:SDL=1**

Response: RST SDL 1 COMPLETED

25. Restart ULARP processes:

At MCC, type and enter: **INIT:ULARP**

Response: INIT ULARP COMPLETED

26. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.6: Perform TDMS/EADAS Data Link Growth

OVERVIEW

This procedure is used to grow in the TDMS/EADAS BX.25 data link using ECD low-level forms. The TDMS/EADAS data link supports Lucent's TDMS operations system that is used to collect traffic data from the switch.

This procedure assumes the TDMS/EADAS link is to be grown on port 3 of the VCDX's high speed interface (HSI). This procedure also assumes that the SCANS link is on HSI port 0 and the AMA link is on HSI port 1. This procedure makes adjustments based on whether the optional SCC data link is grown in on HSI port 2.

The following hardware must be on site:

- RS422 to RS232 converter (Black Box part # IC456A)
- RS422 cable (Black Box part # EDN37J-00XX-MM; where XX is the cable length in feet)
- RS232 cable (Black Box part # ECM25C-0010-MM)

For 5E12 offices, SU 98-0026 is required.

The base loads for 5E13 and later support the VCDX TDMS/EADAS data link.

This procedure takes approximately 2 to 3 hours to complete.

PROCEDURE

1. This process is a combination of procedures. Perform these procedures in the order in which they are presented.
 - (1) "Grow in TDMS/EADAS Data Link in ECD," Procedure 7.6.1 .
 - (2) "Update RC/V 8.1," Procedure 7.6.2 .
 - (3) "Connect Hardware for TDMS/EADAS Data Link," Procedure 7.6.3 .
 - (4) "Define TDMS/EADAS Port on TDMS System," Procedure 7.6.4 .
 - (5) "Initialize TDMS/EADAS Processes," Procedure 7.6.5 .
 - (6) "Restore TDMS/EADAS Data Link to Service," Procedure 7.6.6 .
 - (7) "Verify Operation of TDMS/EADAS Data Link," Procedure 7.6.7 .

Procedure 7.6.1: Grow in TDMS/EADAS Data Link in ECD

OVERVIEW

WARNING: ECD forms are case sensitive. Use capital letters where shown.

PROCEDURE

1. **Grow in UCB for SDLC3**

At MCC, type and enter: **199 to access ECD RC/V.**

Response: RCV PARAMETER INFO page displayed with cursor at 1. database_name

2. Type and enter: **incore**

Response: 2. review only

3. Type and enter: **n**

Response: 3. journaling

4. Type and enter: *****

Response: RCV INITIALIZATION IN PROGRESS message displayed. UNIX RTR RCV (ODIN) - Data Entry page displayed. Cursor at Enter Form Name:

5. Type and enter: **trbegin**

Response: Transaction Begin
1.tr_name: TRBEGIN

6. Enter CARRIAGE RETURN.

Response: Enter Execute, Change. . .

7. Type and enter: **e**

8. Type and enter: **ucb**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

9. Type and enter: **i**

10. Populate the fields of the UCB record according to the following UCB form:

```

ucb          (1/4)
Information About Each Physical Device          (Recent Change and Verify)

```

```

1.k_complex_name:_____ 2.k_complex_number:_____

```

```

3.k_unit_name:SDLC      4.k_unit_number:3

```

ucb_type 5.essential:Never 6.top:n 7.unique_unit:y
 8.pseudo_node:n 9.restorable:y 10.removable:y
 11.device_port:EMUDL 12.device_type:SDLC
 13.internal_device:3 14.plant:y
 15.critical:y 16.portswitch:n 17.posswitch:

ucb (2/4)

minor_device_status 18.boot:n 19.rexinh:n 20.errlog:n
 21.major_status:UNEQIP 22.equipage:
 23.device_num:6 24.channel_num:11
 25.hv:_____ 26.mt:_____ 27.mv:_____
 28.interrupt_num: 29.service_intrpt:____
 30.pathname:pu/sdlc
 31.location
 32.floor:1 33.aisle:a 34.plate:1 35.pack:1

ucb (3/4)

complex_name	complex_number	unit_name	unit_number
36.down	37) _____	38) _____	39) _____
40) _____			
41.side	42) _____	43) _____	44) _____
45) _____			
46.cntrl_0	47) _____	48) _____	49) __IOP__
50) __2__			
51.cntrl_1	52) _____	53) _____	54) _____
55) _____			
56.error_table:ioperr	57.option_name:		
58.pcid:_3__	59.pcsdid:0	60.h_type:____	
61.handler_id:sdl			

ucb (4/4)

62.packcode:t075 63.issue:___ 64.version:
 65.cvaddr:0x5517 66.u_model:

11. After updating field 65 on the UCB form, enter CARRIAGE RETURN twice.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

12. Type and enter: **i**

Response: FORM INSERTED

13. Complete steps 14-30 if the SCC data link is not equipped on HSI port 2. Otherwise, if the SCC data link is equipped on HSI port 2, skip to step 31.

14. **WARNING:** Only execute steps 14-30 if no data link is provisioned on HSI port 2.

Type and enter: **<**

Response: Enter Form Name:

15. Type and enter: **ucb**

Response: Enter Database Operation
 I=Insert, R=Review, U=Update, D=Delete

16. Type and enter: **u**

Response: Cursor at K_UNIT_NAME

17. Type and enter: **SDLC**

Response: Cursor at K_UNIT_NUMBER

18. Type and enter: **1**

Response: Reading...

19. Type and enter: **3** to view screen # 3.

20. Type and enter: **c** to change a field.

Response: Cursor at Change field:

21. Type and enter: **44**

22. Type and enter: **SDLC**

Response: Cursor at Change field:

23. Type and enter: **45**

24. Type and enter: **3** and then enter a CARRIAGE RETURN.

Response: Enter Database Operation
 I=Insert, R=Review, U=Update, D=Delete

25. Type and enter: **u** to update the ucb record.

Response: FORM UPDATED

26. Type and enter: **<**

Response: Cursor at Enter Form Name:

27. Type and enter: **trend**

Response: 1. tr_name: TREND
2. dis_cf_checks:n
3. apply_tr:y
4. o_missing_links:n

28. Enter CARRIAGE RETURN 4 times.

Response: Enter Execute, Change. . .

29. Type and enter: **e**

Response: Executing
Enter Form Name:

30. Go to "Update UCB for SDLC3 to GROW State," Step **47**.

31. **WARNING:** Only execute steps 31-46 if a data link is provisioned on HSI port 2.

Type and enter: **<**

Response: Enter Form Name:

32. Type and enter: **ucb**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

33. Type and enter: **u**

Response: Cursor at K_UNIT_NAME

34. Type and enter: **SDLC**

Response: Cursor at K_UNIT_NUMBER

35. Type and enter: **2**

Response: Reading...

36. Type and enter: **3** to view screen # 3.

37. Type and enter: **c** to change a field.

Response: Cursor at Change field:

38. Type and enter: **44**

39. Type and enter: **SDLC**

Response: Cursor at Change field:

40. Type and enter: **45**

41. Type and enter: **3** and then enter a CARRIAGE RETURN.

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

42. Type and enter: **u** to update the ucb record.

Response: FORM UPDATED.

43. Type and enter: **<**

Response: Cursor at Enter Form Name:

44. Type and enter: **trend**

Response: 1. tr_name: TREND
2. dis_cf_checks:n
3. apply_tr:y
4. o_missing_links:n

45. Enter CARRIAGE RETURN 4 times.

Response: Enter Execute, Change. . .

46. Type and enter: **e**

Response: Executing
Enter Form Name:

47. **Update UCB for SDLC3 to GROW State**

Type and enter: **trbegin**

Response: Transaction Begin
1.tr_name: TRBEGIN

48. Enter CARRIAGE RETURN.

Response: Enter Execute, Change. . .

49. Type and enter: **e**

50. Type and enter: **ucb**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

51. Type and enter: **u**

Response: Cursor at K_UNIT_NAME

52. Type and enter: **SDLC**

Response: Cursor at K_UNIT_NUMBER

53. Type and enter: **3**

Response: Reading...

54. Type and enter: **2** to view screen # 2.

55. Type and enter: **c** to change a field.

Response: Cursor at Change field:

56. Type and enter: **21** to change the MAJOR_STATUS field.

57. Type and enter: **GROW** and enter CARRIAGE RETURN.

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

58. Type and enter: **u** to update the ucb record.

Response: FORM UPDATED.

59. Type and enter: **<**

Response: Cursor at Enter Form Name:

60. Type and enter: **trend**

Response: 1. tr_name: TREND
2. dis_cf_checks:n
3. apply_tr:y
4. o_missing_links:n

61. Enter CARRIAGE RETURN 4 times.

Response: Enter Execute, Change. . .

62. Type and enter: **e**

Response: Executing
Enter Form Name:

63. **Insert UCB and CPBLX3 for SDL3 and Update SDLC3 to Down Reference Sidle**

Type and enter: **trbegin**

Response: Transaction Begin
1.tr_name: TRBEGIN

64. Enter CARRIAGE RETURN.

Response: Enter Execute, Change. . .

65. Type and enter: **e**

66. Type and enter: **ucb**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

67. Type and enter: **i**

68. Populate the fields of the UCB record according to the following UCB form:

ucb (1/4)
Information About Each Physical Device (Recent Change and Verify)

1.k_complex_name:_____ 2.k_complex_number:____
3.k_unit_name:SDL 4.k_unit_number:3
ucb_type 5.essential:NEVER 6.top:n 7.unique_unit:y
8.pseudo_node:n 9.restorable:y 10.removable:y
11.device_port:EMUDL 12.device_type:SDL
13.internal_device:2 14.plant:y
15.critical:y 16.portswitch:n 17.posswitch:

ucb (2/4)
minor_device_status 18.boot:n 19.rexinh:n 20.errlog:n
21.major_status:UNEQIP 22.equipage:
23.device_num:6 24.channel_num:11
25.hv:_____ 26.mt:_____ 27.mv:_____
28.interrupt_num: 29.service_intrpt:____
30.pathname:pu/sdl
31.location
32.floor:1 33.aisle:a 34.plate:1 35.pack:1

ucb (3/4)
complex_name complex_number unit_name unit_number
36.down 37) _____ 38) ____ 39) _____ 40) ____
41.side 42) _____ 43) ____ 44) _____ 45) ____

46.cntrl_0 47)_____ 48)_____ 49)_SDLC_____ 50)_3__
 51.cntrl_1 52)_____ 53)_____ 54)_____ 55)_____

56.error_table:ioperr 57.option_name:cpblx33

58.pcid:_3__ 59.pcsdid:2 60.h_type:____

61.handler_id:sdl

ucb (4/4)

62.packcode:_____ 63.issue:___ 64.version:___
 65.cvaddr:_____ 66.u_model:

69. After updating field 59 on the UCB form, enter CARRIAGE RETURN or > until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

70. Type and enter: i

Response: FORM INSERTED

71. Type and enter: <

Response: Enter Form Name:

72. Type and enter: **cpblx3**

Response: Enter Database Operation
 I=Insert, R=Review, U=Update, D=Delete

73. Type and enter: i

74. Populate the fields of the CPBLX3 record according to the following CPBLX3 form.

NOTE: Field 2 (speed) should be set to the required baud rate of 110, 300, 1200, 2400, 4800, 9600, 56000, or 64000.

cpblx3 (1/4)
 Communications Protocol Option Block (Recent Change and Verify)

1.option_name:cpblx33
 2.speed: "See Note*" 3.duplex:full 4.ds_type:2024A
 5.carrier:c 6.line_access:private 7.mode_op:b
 8.pdtime1:60 9.pdtime2:100 10.window:4

11.rexmit:7 12.dcedte:0 13.pcsd_stat:active
 14.config:simplex

cpblx3 (2/4)

15.ldtel sid tlim telno
 1) _____
 2) _____
 3) _____
 4) _____

19.security:n 20.link_id:0
 21.feid_len:0 22.neid_len:0 23.password_len:0

24.feid.fend
 1) _____ 4) _____ 7) _____ 10) _____ 13) _____
 2) _____ 5) _____ 8) _____ 11) _____ 14) _____
 3) _____ 6) _____ 9) _____ 12) _____ 15) _____

cpblx3 (3/4)

35.neid.nend
 1) _____ 4) _____ 7) _____ 10) _____ 13) _____
 2) _____ 5) _____ 8) _____ 11) _____ 14) _____
 3) _____ 6) _____ 9) _____ 12) _____ 15) _____

46.pswrd.pwrd
 1) _____ 4) _____ 7) _____ 10) _____ 13) _____
 2) _____ 5) _____ 8) _____ 11) _____ 14) _____
 3) _____ 6) _____ 9) _____ 12) _____ 15) _____

57.perm_state:allow 58.outscrsiz:4062 59.outpktsiz:259
 60.inscrsiz:4062 61.inpktsiz:259

cpblx3 (4/4)

62.hup:n 63.spckt:0 64.x3wsize:2 65.x3psize:256

66.x3pvcn.ldinno
 1) _____ 6) _____ 11) _____ 16) _____ 21) _____ 26) _____ 31) _____
 2) 1 7) _____ 12) _____ 17) _____ 22) _____ 27) _____ 32) _____
 3) 3 8) _____ 13) _____ 18) _____ 23) _____ 28) _____
 4) 2 9) _____ 14) _____ 19) _____ 24) _____ 29) _____
 5) _____ 10) _____ 15) _____ 20) _____ 25) _____ 30) _____

81.time_ti:180 82.time_tj:60 83.time_tf:60 84.time_tl:60
85.time_td:180 86.time_ts:180 87.time_ack:5

75. After updating field 87 on the UCB form, enter CARRIAGE RETURN.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

76. Type and enter: **i**

Response: FORM INSERTED

77. Type and enter: **<**

Response: Enter Form Name:

78. Type and enter: **ucb**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

79. Type and enter: **u**

Response: Cursor at K_UNIT_NAME

80. Type and enter: **SDLC**

Response: Cursor at K_UNIT_NUMBER

81. Type and enter: **3**

Response: Reading...

82. Type and enter: **3** to view screen # 3.

83. Type and enter: **c** to change a field.

Response: Cursor at Change field:

84. Type and enter: **39**

85. Type and enter: **SDL**

Response: Cursor at Change field:

86. Type and enter: **40**

87. Type and enter: **3** and then enter a CARRIAGE RETURN.

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

88. Type and enter: **u** to update the ucb record.

Response: FORM UPDATED

89. Type and enter: <

Response: Cursor at Enter Form Name:

90. Type and enter: **trend**

Response: 1. tr_name: TREND
2. dis_cf_checks:n
3. apply_tr:y
4. o_missing_links:n

91. Enter CARRIAGE RETURN 4 times.

Response: Enter Execute, Change. . .

92. Type and enter: **e**

Response: Executing
Enter Form Name:

93. **Insert MDCT, LOGDEV, and ULARP Forms**

Type and enter: **trbegin**

Response: Transaction Begin
1.tr_name: TRBEGIN

94. Enter CARRIAGE RETURN.

Response: Enter Execute, Change. . .

95. Type and enter: **e**

Response: FORM EXECUTED

96. Type and enter: **mdct**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

97. Type and enter: **i**

98. Populate the fields of the MDCT record according to the following MDCT form.

NOTE: In the following form, Field 3 (mdct_type) is set to the lower case letter l, and Field 4 (mdct_id_char) is set to the number 1.

mdct (1/3)
Logical To Physical Device Transaction (Recent Change and Verify)

1.mdct_name:EADAS 2.logical_device:io

3.mdct_type:l 4.mdct_id_char:1

5.active_devices

6.complex_name	7.complex_number	8.unit_name	9.unit_number
1) _____	_____	SDL	3
2) _____	_____	_____	_____
3) _____	_____	_____	_____
4) _____	_____	_____	_____

mdct (2/3)

10.backup_devices

11.complex_name	12.complex_number	13.unit_name	14.unit_number
1) _____	_____	_____	_____
2) _____	_____	_____	_____
3) _____	_____	_____	_____
4) _____	_____	_____	_____

15.spare_devices

16.complex_name	17.complex_number	18.unit_name	19.unit_number
1) _____	_____	_____	_____
2) _____	_____	_____	_____
3) _____	_____	_____	_____
4) _____	_____	_____	_____

mdct (3/3)

20.oos_devices

21.complex_name	22.complex_number	23.unit_name	24.unit_number
1) _____	_____	_____	_____
2) _____	_____	_____	_____
3) _____	_____	_____	_____
4) _____	_____	_____	_____

25.gettyid:getty0

99. After updating field 25 on the MDCT form, enter CARRIAGE RETURN.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

100. Type and enter: i

Response: FORM INSERTED

101. Type and enter: <

Response: Enter Form Name:

102. Type and enter: logdev

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

103. Type and enter: i

104. Populate the fields of the first LOGDEV record according to the following LOGDEV form.

```

logdev          (1/1)
Logical Device Information          (Recent Change and Verify)

1.logical_name:/dev/eadlo          2.partition:0x2
3.mdct_name:EADAS                  4.channel_id:___
5.dcn:23                            6.driver_type:c
7.gettyid:_____                  8.usr:rw-
9.grp:rw-                            10.other:---

```

105. After updating field 9 on the LOGDEV form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

106. Type and enter: i

Response: FORM INSERTED

107. Populate the fields of the second LOGDEV record according to the following LOGDEV form.

```

logdev          (1/1)
Logical Device Information          (Recent Change and Verify)

1.logical_name:/dev/eadmed          2.partition:0x3
3.mdct_name:EADAS                  4.channel_id:___
5.dcn:23                            6.driver_type:c
7.gettyid:_____                  8.usr:rw-
9.grp:rw-                            10.other:---

```

108. After updating field 9 on the LOGDEV form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

109. Type and enter: i

Response: FORM INSERTED

110. Populate the fields of the third LOGDEV record according to the following LOGDEV form.
-

```

logdev          (1/1)
Logical Device Information      (Recent Change and Verify)

1.logical_name:/dev/eadhi      2.partition:0x1

3.mdct_name:EADAS             4.channel_id:___

5.dcn:23                     6.driver_type:c

7.gettyid:_____            8.usr:rw-

9.grp:rw-                    10.other:---

```

111. After updating field 9 on the LOGDEV form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

112. Type and enter: **i**

Response: FORM INSERTED

113. Type and enter: **<**

Response: Enter Form Name:

114. Type and enter: **ularp**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

115. Type and enter: **i**

116. Populate the fields of the first ULARP record according to the following ULARP form.

```

ULARP ECD Record    ularp          (1/1)
                    (Recent Change and Verify)
1.rec_name:ECR3    2.exec_no:1710

3.child_priority:50  4.boot_prm:0x0      5.sleep:0

6.utilid:0x4e0     7.rdtype:PROCESS    8.run_config:FULL

9.craft:n         10.cruc_craft:n     11.uniq_child:n     12.wait_for_run:n

13.proc_path:/no5text/as/ECr3

14.proc_args:_____

15.shell_cmd:

```

117. After updating field 13 on the ULARP form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

118. Type and enter: i

Response: FORM INSERTED

119. Populate the fields of the second ULARP record according to the following ULARP form.

```

ULARP ECD Record      ularp          (1/1)
                      (Recent Change and Verify)
1.rec_name:ECR4   2.exec_no:1715

3.child_priority:50  4.boot_prm:0x0      5.sleep:0

6.utilid:0x4f0   7.rdtype:PROCESS  8.run_config:FULL

9.craft:n       10.cruc_craft:n    11.uniq_child:n    12.wait_for_run:n

13.proc_path:/no5text/as/ECr4

14.proc_args:_____

15.shell_cmd:

```

120. After updating field 13 on the ULARP form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

121. Type and enter: i

Response: FORM INSERTED

122. Populate the fields of the third ULARP record according to the following ULARP form.

```

ULARP ECD Record      ularp          (1/1)
                      (Recent Change and Verify)
1.rec_name:ECR5   2.exec_no:1720

3.child_priority:50  4.boot_prm:0x0      5.sleep:0

6.utilid:0x780   7.rdtype:PROCESS  8.run_config:FULL

9.craft:n       10.cruc_craft:n    11.uniq_child:n    12.wait_for_run:n

13.proc_path:/no5text/as/ECr5

14.proc_args:_____

15.shell_cmd:

```

123. After updating field 13 on the ULARP form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

124. Type and enter: i

Response: FORM INSERTED

125. Populate the fields of the fourth ULARP record according to the following ULARP form.

```

ULARP ECD Record      ularp          (1/1)
                      (Recent Change and Verify)
1.rec_name:ECR6  2.exec_no:1725

3.child_priority:50  4.boot_prm:0x0      5.sleep:0

6.utilid:0x781  7.rdtype:PROCESS  8.run_config:FULL

9.craft:n      10.cruc_craft:n      11.uniq_child:n      12.wait_for_run:n

13.proc_path:/no5text/as/ECr6

14.proc_args:_____

15.shell_cmd:

```

126. After updating field 13 on the ULARP form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

127. Type and enter: i

Response: FORM INSERTED

128. Populate the fields of the fifth ULARP record according to the following ULARP form.

```

ULARP ECD Record      ularp          (1/1)
                      (Recent Change and Verify)
1.rec_name:ECAP  2.exec_no:1690

3.child_priority:50  4.boot_prm:0x0      5.sleep:0

6.utilid:0x4b0  7.rdtype:PROCESS  8.run_config:FULL

9.craft:n      10.cruc_craft:n      11.uniq_child:n      12.wait_for_run:n

13.proc_path:/no5text/as/ECap

14.proc_args:_____

15.shell_cmd:

```

129. After updating field 13 on the ULARP form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

130. Type and enter: i

Response: FORM INSERTED

131. Populate the fields of the sixth ULARP record according to the following ULARP form.

```
ULARP ECD Record    ularp          (1/1)
                    (Recent Change and Verify)
 1.rec_name:ECW3   2.exec_no:1735

 3.child_priority:50  4.boot_prm:0x0      5.sleep:0

 6.utilid:0x4e0    7.runtpe:PROCESS   8.run_config:FULL

 9.craft:n        10.cruc_craft:n    11.uniq_child:n    12.wait_for_run:n

13.proc_path:/no5text/as/ECw3

14.proc_args:_____

15.shell_cmd:
```

132. After updating field 13 on the ULARP form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

133. Type and enter: i

Response: FORM INSERTED

134. Populate the fields of the seventh ULARP record according to the following ULARP form.

```
ULARP ECD Record    ularp          (1/1)
                    (Recent Change and Verify)
 1.rec_name:ECW4   2.exec_no:1740

 3.child_priority:50  4.boot_prm:0x0      5.sleep:0

 6.utilid:0x4f0    7.runtpe:PROCESS   8.run_config:FULL

 9.craft:n        10.cruc_craft:n    11.uniq_child:n    12.wait_for_run:n

13.proc_path:/no5text/as/ECw4

14.proc_args:_____
```

15.shell_cmd:

135. After updating field 13 on the ULARP form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

136. Type and enter: i

Response: FORM INSERTED

137. Populate the fields of the eighth ULARP record according to the following ULARP form.
-

```
ULARP ECD Record    ularp          (1/1)
                    (Recent Change and Verify)
  1.rec_name:ECW5   2.exec_no:1745

  3.child_priority:50  4.boot_prm:0x0      5.sleep:0

  6.utilid:0x790    7.runtpe:PROCESS  8.run_config:FULL

  9.craft:n        10.cruc_craft:n    11.uniq_child:n    12.wait_for_run:n

13.proc_path:/no5text/as/ECw5

14.proc_args:_____

15.shell_cmd:
```

138. After updating field 13 on the ULARP form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

139. Type and enter: i

Response: FORM INSERTED

140. Populate the fields of the ninth ULARP record according to the following ULARP form.
-

```
ULARP ECD Record    ularp          (1/1)
                    (Recent Change and Verify)
  1.rec_name:ECW6   2.exec_no:1730

  3.child_priority:50  4.boot_prm:0x0      5.sleep:0

  6.utilid:0x781    7.runtpe:PROCESS  8.run_config:FULL

  9.craft:n        10.cruc_craft:n    11.uniq_child:n    12.wait_for_run:n

13.proc_path:/no5text/as/ECw6
```

14. proc_args: _____

15. shell_cmd:

141. After updating field 13 on the ULARP form, enter CARRIAGE RETURN until the following response is observed.

Response: Enter Insert, Change, Substitute, Validate, screen#, or Print:

142. Type and enter: **i**

Response: FORM INSERTED

143. Type and enter: **<**

Response: Cursor at Enter Form Name:

144. Type and enter: **trend**

Response: 1. tr_name: TREND
2. dis_cf_checks:n
3. apply_tr:y
4. o_missing_links:n

145. Enter CARRIAGE RETURN 4 times.

Response: Enter Execute, Change. . .

146. Type and enter: **e**

Response: Executing
Enter Form Name:

147. **Update UCB for SDL3 to GROW**

Type and enter: **trbegin**

Response: Transaction Begin
1.tr_name: TRBEGIN

148. Enter CARRIAGE RETURN.

Response: Enter Execute, Change. . .

149. Type and enter: **e**

150. Type and enter: **ucb**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

151. Type and enter: **u**

Response: Cursor at K_UNIT_NAME

152. Type and enter: **SDL**

Response: Cursor at K_UNIT_NUMBER

153. Type and enter: **3**

Response: Reading...

154. Type and enter: **2** to view screen # 2.

155. Type and enter: **c** to change a field.

Response: Cursor at Change field:

156. Type and enter: **21** to change the MAJOR_STATUS field.

157. Type and enter: **GROW** and enter CARRIAGE RETURN.

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

158. Type and enter: **u** to update the ucb record.

Response: FORM UPDATED.

159. Type and enter: **<**

Response: Cursor at Enter Form Name:

160. Type and enter: **trend**

Response: 1. tr_name: TREND
2. dis_cf_checks:n
3. apply_tr:y
4. o_missing_links:n

161. Enter CARRIAGE RETURN 4 times.

Response: Enter Execute, Change. . .

162. Type and enter: **e**

Response: Executing
Enter Form Name:

163. **Update UCB for SDLC3 and SDL3 to OOS State**

Type and enter: **trbegin**

Response: Transaction Begin
1.tr_name: TRBEGIN

164. Enter CARRIAGE RETURN.

Response: Enter Execute, Change. . .

165. Type and enter: **e**

166. Type and enter: **ucb**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

167. Type and enter: **u**

Response: Cursor at K_UNIT_NAME

168. Type and enter: **SDLC**

Response: Cursor at K_UNIT_NUMBER

169. Type and enter: **3**

Response: Reading...

170. Type and enter: **2** to view screen # 2.

171. Type and enter: **c** to change a field.

Response: Cursor at Change field:

172. Type and enter: **21** to change the MAJOR_STATUS field.

173. Type and enter: **OOS** and enter CARRIAGE RETURN.

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

174. Type and enter: **u** to update the ucb record.

Response: FORM UPDATED.

175. Type and enter: **SDL**

Response: Cursor at K_UNIT_NUMBER

176. Type and enter: **3**

Response: Reading...

177. Type and enter: **2** to view screen # 2.

178. Type and enter: **c** to change a field.

Response: Cursor at Change field:

179. Type and enter: **21** to change the MAJOR_STATUS field.

180. Type and enter: **OOS** and enter CARRIAGE RETURN.

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

181. Type and enter: **u** to update the ucb record.

Response: FORM UPDATED.

182. Type and enter: <

Response: Cursor at Enter Form Name:

183. Type and enter: **trend**

Response: 1. tr_name: TREND
2. dis_cf_checks:n
3. apply_tr:y
4. o_missing_links:n

184. Enter CARRIAGE RETURN 4 times.

Response: Enter Execute, Change. . .

185. Type and enter: **e**

Response: Executing
Enter Form Name:

186. **Save ECD Changes to Disk**

Type and enter: **activate** to save the ECD changes to disk.

Response: 1.copy_inc_to_disk:YES

187. Enter CARRIAGE RETURN.

Response: Enter Execute, Change. . .

188. Type and enter: **e**

Response: Executing...

189. Type and enter: < to exit ECD RC/V.

Procedure 7.6.2: Update RC/V 8.1 for TDMS/EADAS Data Link**PROCEDURE**

1. At the MCC or STLWS, type and enter **196** to enter Recent Change and Verify.

Response: PRINT OPTION CR = N ____
DETAIL OPTION CR = N ____
VERBOSE OPTION CR = N ____

INPUT Y or N

2. Enter CARRIAGE RETURN 3 times to get to the RECENT CHANGE AND VERIFY CLASSES page.

3. Type and enter: **8.1u** to update recent change view 8.1.

Response: OFFICE PARAMETERS (MISCELLANEOUS) page displayed. Cursor at OFFICE ID attribute.

4. Type and enter the appropriate **OFFICE ID** for field 1.

Response: System completes remainder of form.
Enter Insert, Change, Validate, or Print:

5. Type and enter: **c**

Response: Change Field:

6. Type and enter: **59**

Response: Cursor at EADAS LINK attribute.

7. Type and enter: **Y**

Response: Change Field:

8. Enter CARRIAGE RETURN.

Response: Enter Update, Change, Validate, or Print:

9. Type and enter: **u**

Response: updating.....FORM UPDATED
OFFICE PARAMETERS (MISCELLANEOUS) page displayed. Cursor at OFFICE ID attribute.

10. Type and enter: **<**

Response: 8.0 OFFICE MISCELLANEOUS AND ALARMS VIEWS page displayed.

11. Type and enter: **q** to quit Recent Change.

Response: RCV-196 COMPLETED

THIS IS A SAFE STOPPING POINT.

Procedure 7.6.3: Connect Hardware for TDMS/EADAS Data Link

PROCEDURE

1. Verify that the internal jumpers of the RS422 to RS232 converter (ED5D764-30 G17A, Black Box # IC456A-R4) are set as illustrated in Figure 7.6.3-1

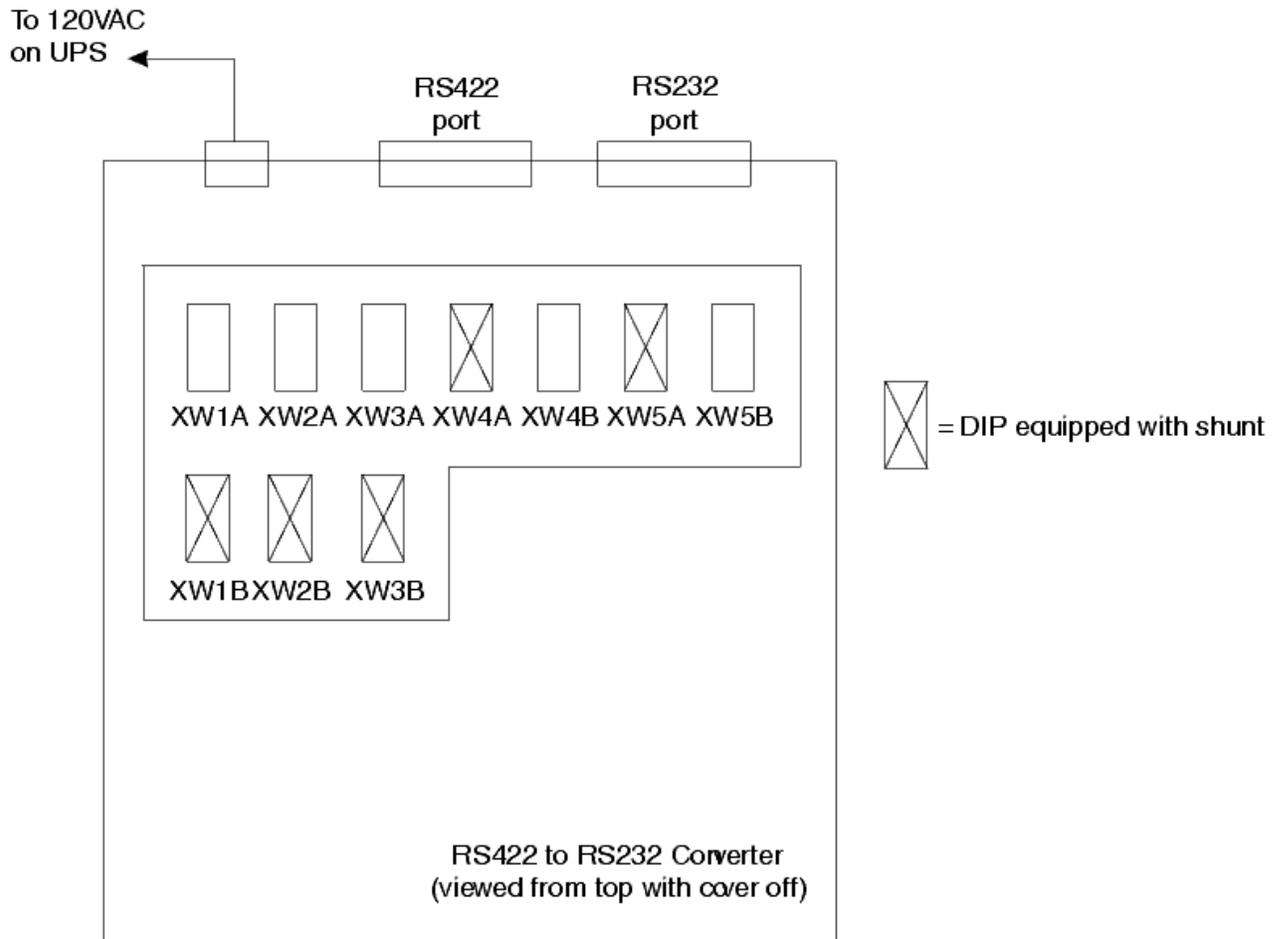


Figure 7.6.3-1 DIP Shunt Settings for IC456A-R2.

2. Connect the RS422 cable (ED5D764-30 G106, Black Box # EDN37J-00XX-MM; where XX is the cable length in feet) between port 3 on the High Speed Interface (HSI) and the RS422 port on the converter.
3. Connect the RS232 male to male cable (Black Box # ECM25C-0010-MM) from the RS232 port on the converter to the Data Communication Equipment (DCE), which may be a modem, DSU, or router.
4. Plug the converter's AC power adapter into a UPS 120VAC outlet. Refer to Figures 7.6.3-2 and 7.6.3-3 for an illustration of the wiring configuration for the TDMS/EADAS data link.

THIS IS A SAFE STOPPING POINT.

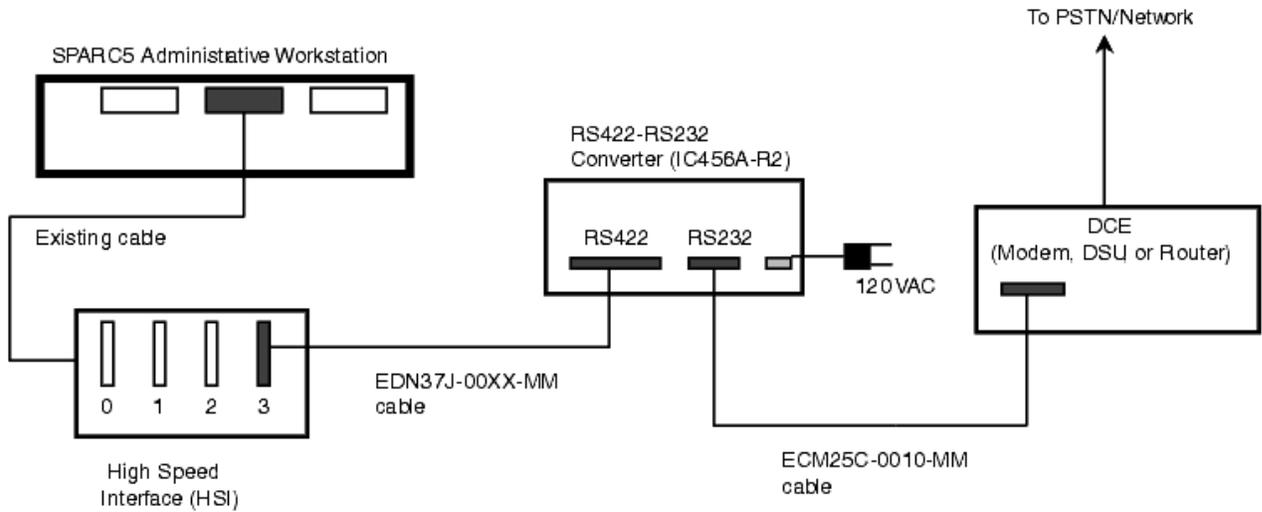


Figure 7.6.3-2 Wiring Diagram for TDMS/EADAS Data Link (SPARC5)

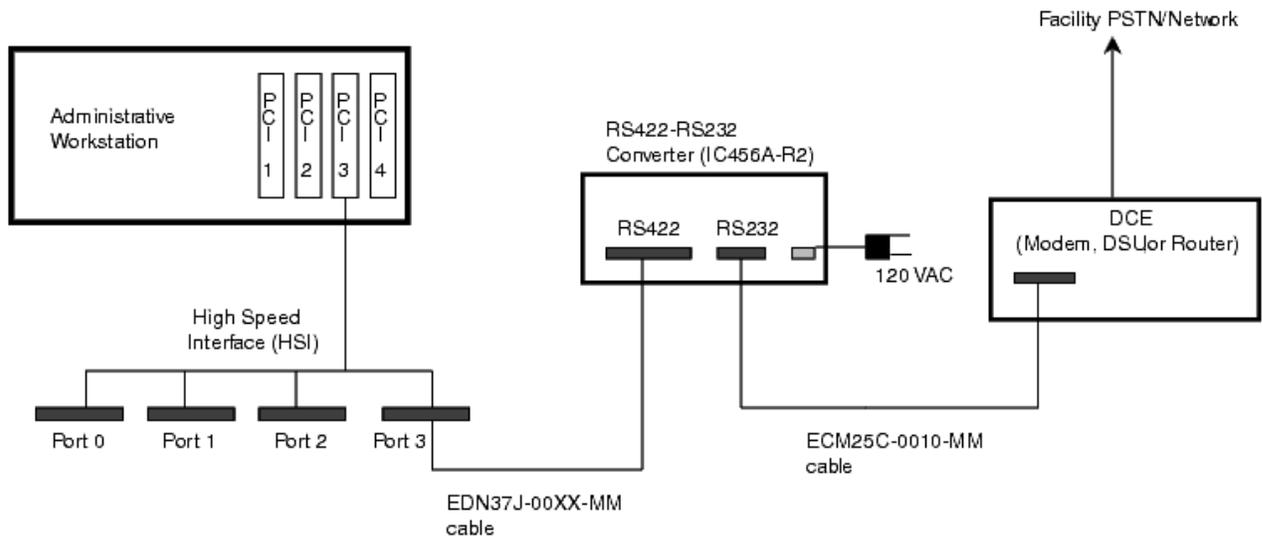


Figure 7.6.3-3 Wiring Diagram for TDMS/EADAS Data Link (Netra Sun Microsystems, Inc. t)

Procedure 7.6.4: Define TDMS/EADAS Port on TDMS System

PROCEDURE

1. At this point, the VCDX should be defined in the TDMS system. If necessary, the VCDX can be defined in TDMS by following the same procedures used for the 5ESS[®] switch.

THIS IS A SAFE STOPPING POINT.

Procedure 7.6.5: Initialize TDMS/EADAS Processes

PROCEDURE

1. At the MCC, type and enter: **INIT:ULARP**

Response: INIT ULARP COMPLETED

2. At the MCC, type and enter the following commands:

INIT:AM,OKP,SPP,PID=27

INIT:AM,OKP,SPP,PID=19

INIT:AM,OKP,SPP,PID=80

NOTE: The following steps are optional but can be used to verify that the correct processes are running on the VCDX to support the EADAS/TDMS data link. These steps can be used at anytime to verify the processes are active.

3. At the MCC, type and enter poke **194** to go to the SCREEN view. If a STLWS terminal is being used, enter the **120** poke to clear the screen, enter the **rcv:menu:sh** input command, and then skip to step **5**.
4. Type and enter: **u** to request access to the *UNIX*TM Shell.
5. At the *UNIX*TM prompt, type and enter the following command:

ps -axkp | grep "as"

Response: The expected response should be (not necessarily in this order):

```

10  ?          78  /no5text/as/ECap
1   ?          98  /no5text/rcv/RCasrsys
10  ?    4784235  /no5text/as/ECr3
10  ?    1638508  /no5text/as/ECr4
10  ?          110 /no5text/as/AScotsys
10  ?    262258  /no5text/as/ECr6
10  ?    65651  /no5text/as/ECw6
10  ?    65652  /no5text/as/ECw3
10  ?    65653  /no5text/as/ECw4
10  ?          120  grep as

```

6. In order for the EADAS/TDMS data link to function properly, the ECap, ECr3, ECr4, ECr6, ECw3, ECw4, and ECw6 processes must be listed in the report indicating that those processes are running.
7. Type and enter: **exit** at the *UNIX*TM prompt.
8. If you are using the MCC, type and enter: **q** to exit out of the 194 SCREEN view.

Procedure 7.6.6: Restore TDMS/EADAS Data Link to Service

PROCEDURE

1. At the MCC, type and enter: **RST:SDLC=3** to restore SDLC3 to service.

Response: RST SDLC 3 COMPLETED

THIS IS A SAFE STOPPING POINT.

Procedure 7.6.7: Verify Operation of TDMS/EADAS Data Link

PROCEDURE

1. After SDLC 3 is restored to service, verify that the link goes ACT on MCC page 113.

NOTE: It may take a minute or more for the link to go active.

2. Activate the collection of the TRFC30 data on the VCDX by entering the following input command on the MCC/STLWS:

```
ALW:TRFC30,CLCT;
```

3. At the MCC enter the **OP:CLK** command to verify that the VCDX clock minute is the same as the TDMS clock +/- 1 minute. If the VCDX's clock is off by more than 1 minute, use the **SET:CLK** command to get it in sync with the TDMS clock.

4. Wait at least 30 minutes for the reports to get generated and then verify that TDMS received the data.

NOTE: The next set of steps can be optionally executed to monitor the X.25 protocol exchange between the VCDX and the EADAS/TDMS OS.

WARNING: In order to monitor the X.25 protocol on the EADAS/TDMS data link, all of the other synchronous data links on the VCDX must be temporarily removed from service. The following steps must not be performed if the VCDX is being polled for AMA billing data, if the SCANS link is active, or if the TNM/SCCS data link is required to be active.

5. Remove all data links from service except the EADAS/TDMS data link by typing and entering the following input command on the MCC/STLWS for each data link except the EADAS/TDMS data link:

```
RMV:SDL=X; (where X= 0 for SCANS, 13 for AMA, etc)
```

6. Switch to the *Sun*TM console by holding down the **Control Key** and depressing the **Enter Key** on the MCC's numeric keypad.
7. Enter CARRIAGE RETURN until the "console login:" prompt appears.
8. Login to the *Sun*TM console as root.
9. Type and enter the following command to activate the X.25 protocol analyzer built into the VCDX:

```
/opt/SUNWconn/bin/x25trace -i /dev/lapb x25
```

Response: Parsed: x25
Time Protocol

10. At this point, any X.25 packets sent between the VCDX and the EADAS/TDMS OS will be displayed on the *Sun*TM console.
11. To exit out of the X.25 protocol analyzer, enter **Control c** or hit the **Delete Key**.
12. To go back to the MCC hold down the **Control Key** and depress the **Enter Key** on the MCC's numeric keypad.
13. Backup Office Dependent Data.

At the MCC, type and enter: **BKUP:ODD**

Response: BKUP ODD COMPLETED

14. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.7: Perform Traffic Printer Growth

PROCEDURE

1. Enter *UNIX*[®] RTR Recent Change and Verify.
 - (a) Is MCC or STLWS terminal to be used?
For MCC, proceed to Step **b**.
For STLWS proceed to Step **i**.
 - (b) At MCC, ensure terminal is in command mode.
 - (c) At MCC, do Steps **d** through **h**.
 - (d) Type and enter: **199**
Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**
 - (e) Type and enter: **incore**
Response: **2. review only**
 - (f) Type and enter: **n**
Response: **3. journaling**
 - (g) Type and enter: *****
Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.
 - (h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **2**.
 - (i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**
Response: **RCV ECD PARAMETER INFO** page displayed with cursor at **1. database_name**
 - (j) Type and enter **incore**
Response: **2. review only**
 - (k) Type and enter: **n**
Response: **3. journaling**
 - (l) Type and enter: *****
Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed. Cursor at Enter Form Name:
2. Enter high-level forms.
 - (a) Type and enter: **toggle**

Response: Will take you to the high-level forms.

3. Insert TTY data.

(a) Type and enter: **ttyadd**

Response: ttyadd form displayed. Cursor at **1. tty_name:**

NOTE: An ! may be entered any time prompted to abort the form and return to the state when the form was started.

(b) Type and enter the following data:

1. tty_name ^a :	enter TTY7
2. baud_rate:	enter (as specified or CARRIAGE RETURN)
3. login_term:	enter (as specified or CARRIAGE RETURN)
4. auth_chk:	enter (as specified or CARRIAGE RETURN)
5. term_type:	enter (as specified or CARRIAGE RETURN)
6. line_mode:	enter (as specified or CARRIAGE RETURN)
7. port:	enter 2 or 3 for TTYC port (see Tables 7.7-1 and 7.7-2)
8. ttyc_number:	enter TTYC number base on SPC/SAI port (see Tables 7.7-1 and 7.7-2)
9. plu_unit_name:	enter CARRIAGE RETURN
10. plu_unit_number:	enter CARRIAGE RETURN
Notes:	
a.	tty_name must be entered in all capital letters.

Table 7.7-1 SPARC5 Terminal Locations

S/PI No.	AW SBUS SLOT No.	SPC PORT	TTYC PORT	TTYC No.
0	3	2	2	11
0	3	3	3	11
0	3	4	2	12
0	3	5	3	12
0	3	6	2	13
0	3	7	3	13
1	1	0	2	14
1	1	1	3	14
1	1	2	2	15
1	1	3	3	15
1	1	4	2	16
1	1	5	3	16
1	1	6	2	17
1	1	7	3	17

Table 7.7-2 Netra™ t Terminal Locations

AW PCI SLOT No.	SAI PORT	TTYC PORT	TTYC No.
2	2	2	11
2	3	3	11
2	4	2	12
2	5	3	12
2	6	2	13
2	7	3	13
1	0	2	14
1	1	3	14
1	2	2	15
1	3	3	15
1	4	2	16
1	5	3	16
1	6	2	17
1	7	3	17

NOTE: Fields not specified receive the default value by entering CARRIAGE RETURN.

NOTE: When growing a TTY terminal a defensive check failure message REPT CONFIG FAULT

Assert = 412 may be received. This failure message may be ignored.

4. Install the traffic printer to the SAI/SPC port corresponding to the TTYC port and TTYC number chosen in Tables 7.7-1 and 7.7-2 (see Figures 7.7-1 and 7.7-2).
 - (a) Enter CARRIAGE RETURN.

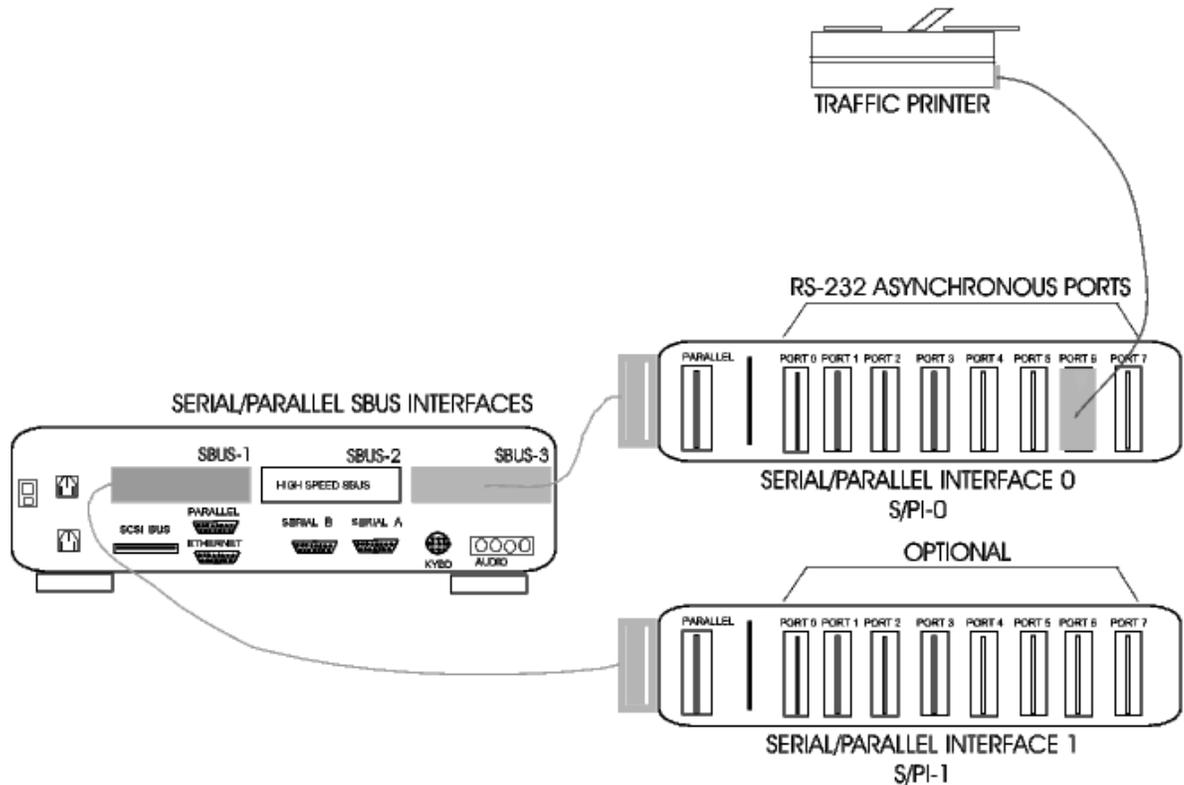


Figure 7.7-1 Traffic Printer Installation (SPARC5)

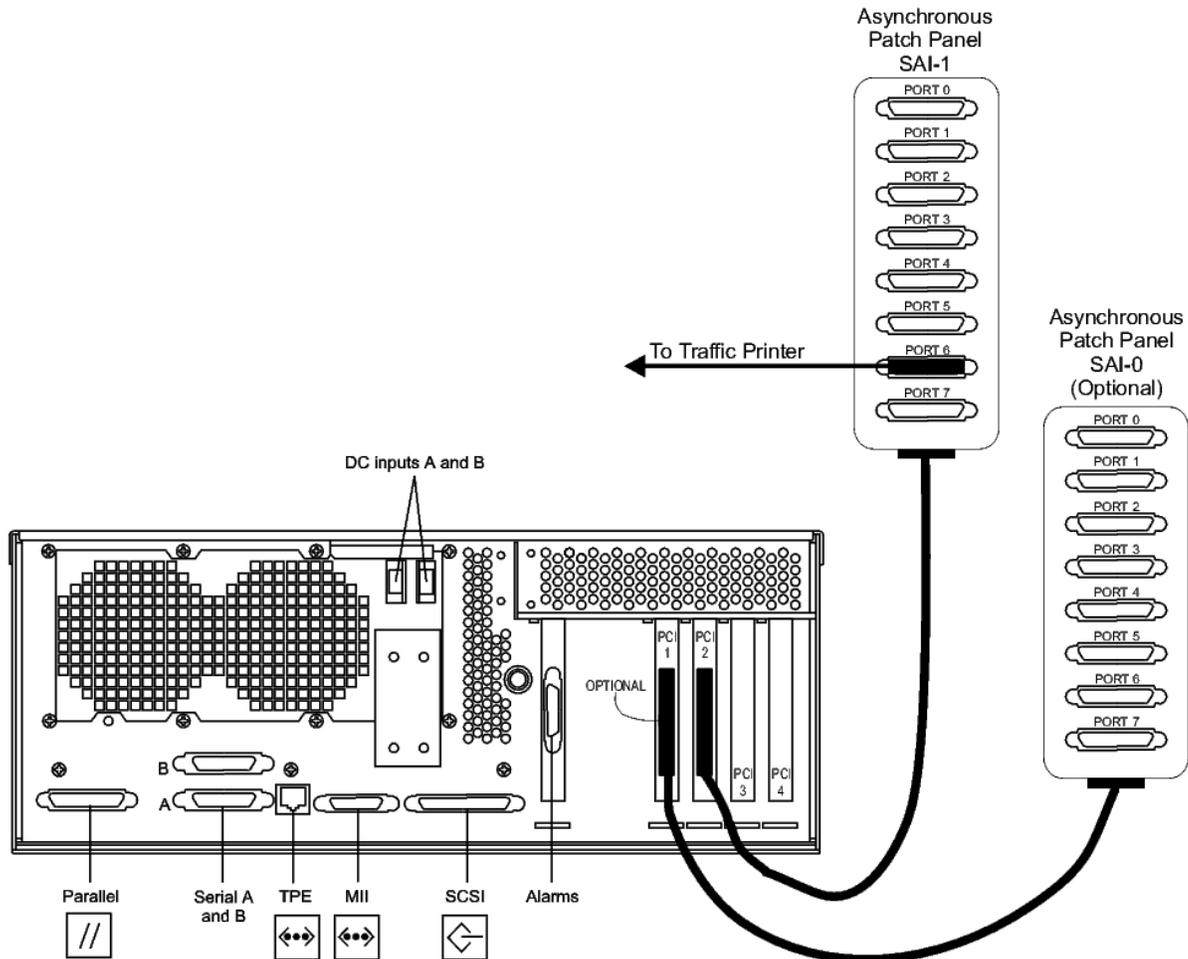


Figure 7.7-2 Traffic Printer Installation (Netra Sun Microsystems, Inc. t)

5. Restore TTY x to service.
 - (a) At MCC, type and enter the appropriate message:

RST:TTY=x

Where:
x = appropriate TTY number.

Response: RST TTY x COMPLETED
 - (b) Enter CARRIAGE RETURN.

Response: FORM INSERTED
 - (c) Type and enter: <

Response: Exit the ttyadd form.
 - (d) Type and enter: <

Response: Exit this recent change session.

6. Backup Incore ECD to disk.

(a) At MCC, do Steps **b** through **i**.

(b) Type and enter: **199**

Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**

(c) Type and enter: **incore**

Response: **2. review only**

(d) Type and enter: **n**

Response: **3. journaling**

(e) Type and enter: *****

Response: **UNIX RTR (ODIN) - Data Entry** page displayed.

(f) Type and enter: **activate**

Response: activate form displayed with cursor at **1. copy_inc_to_disk:**

(g) Type and enter: **yes**

Response: ODIN will request the action desired.

(h) Type and enter: **e**

Response: ODIN returns to the **UNIX RTR (ODIN) - Data Entry** page.

(i) Type and enter: **<**

Response: **RCV MENU RCV ECD COMPLETED**

7. Backup Office Dependent Data.

NOTE: Prior to the response there will be completed responses for the switching module and the AM.

(a) At MCC, type and enter: **BKUP:ODD**

Response: **BKUP ODD COMPLETED** It is recommended that primary disk be backed up and that a shelf copy of the disks be made.

8. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.8: Perform Office Record Printer Growth

PROCEDURE

1. Enter *UNIX*[®] RTR Recent Change and Verify.
 - (a) Is MCC or STLWS terminal to be used?
For MCC, proceed to Step **b**.
For STLWS proceed to Step **i**.
 - (b) At MCC, ensure terminal is in command mode.
 - (c) At MCC, do Steps **d** through **h**.
 - (d) Type and enter: **199**
Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**
 - (e) Type and enter: **incore**
Response: **2. review only**
 - (f) Type and enter: **n**
Response: **3. journaling**
 - (g) Type and enter: *****
Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.
 - (h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **2**.
 - (i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**
Response: **RCV ECD PARAMETER INFO** page displayed with cursor at **1. database_name**
 - (j) Type and enter **incore**
Response: **2. review only**
 - (k) Type and enter: **n**
Response: **3. journaling**
 - (l) Type and enter: *****
Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed. Cursor at Enter Form Name:
2. Enter high-level forms.
 - (a) Type and enter: **toggle**

Response: Will take you to the high-level forms.

3. Insert TTY data.

(a) Type and enter: **ttyadd**

Response: ttyadd form displayed. Cursor at **1. tty_name:**

NOTE: An ! may be entered any time prompted to abort the form and return to the state when the form was started.

NOTE: Fields not specified receive the default value by entering CARRIAGE RETURN.

(b) Type and enter the following data:

1. tty_name ^a :	enter TTY43
2. baud_rate:	enter CARRIAGE RETURN ^b
3. login_term:	enter CARRIAGE RETURN
4. auth_chk:	enter CARRIAGE RETURN
5. term_type:	enter CARRIAGE RETURN
6. line_mode:	enter CARRIAGE RETURN
7. port:	enter 2 or 3 for TTYC port (see Tables 7.8-1 and 7.8-2)
8. ttyp_number:	enter TTYC number base on SPC/SAI port (see Tables 7.8-1 and 7.8-2)
9. plu_unit_name:	enter CARRIAGE RETURN
10. plu_unit_number	enter CARRIAGE RETURN
Notes:	
a.	tty_name must be entered in all capital letters.
b.	The default baud rate is 1200. If a different baud rate is desired, "Update the Office Record Printer Baud Rate," Subprocedure 7.8.1, can be performed after Step 4 of this procedure is complete.

Table 7.8-1 SPARC5 Terminal Locations

S/PI No.	AW SBUS SLOT No.	SPC PORT	TTYC PORT	TTYC No.
0	3	2	2	11
0	3	3	3	11
0	3	4	2	12
0	3	5	3	12
0	3	6	2	13
0	3	7	3	13
1	1	0	2	14
1	1	1	3	14
1	1	2	2	15
1	1	3	3	15
1	1	4	2	16
1	1	5	3	16
1	1	6	2	17
1	1	7	3	17

Table 7.8-2 Netra™ t Terminal Locations

AW PCI SLOT No.	SAI PORT	TTYC PORT	TTYC No.
2	2	2	11
2	3	3	11
2	4	2	12
2	5	3	12
2	6	2	13
2	7	3	13
1	0	2	14
1	1	3	14
1	2	2	15
1	3	3	15
1	4	2	16
1	5	3	16
1	6	2	17

1	7	3	17
---	---	---	----

(c) Type and enter: i

NOTE: When growing a TTY terminal a defensive check failure message REPT CONFIG FAULT Assert = 412 may be received. This failure message may be ignored.

4. Install the office record printer to the SAI/SPC port corresponding to the TTYC port and TTYC number chosen in Tables 7.8-1 and 7.8-2 (see Figures 7.8-1 and 7.8-2).

(a) Enter CARRIAGE RETURN.

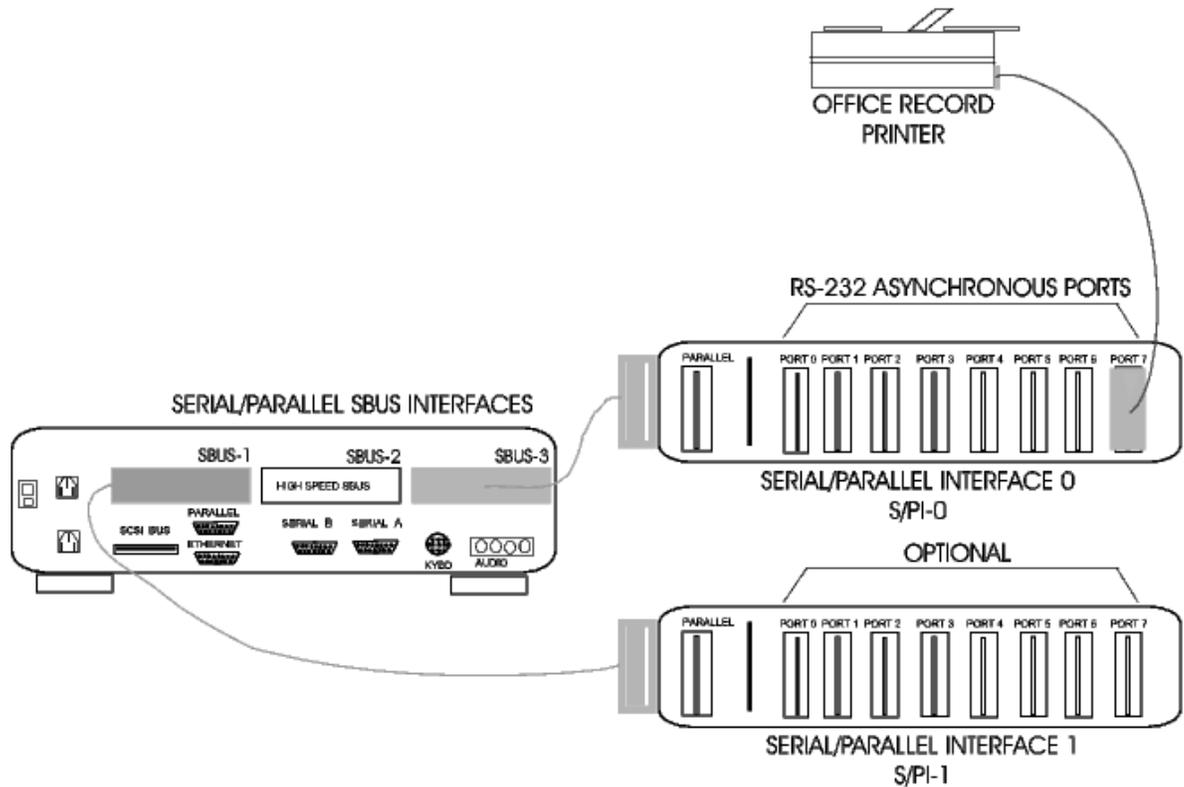


Figure 7.8-1 Office Record Printer Installation (SPARC5)

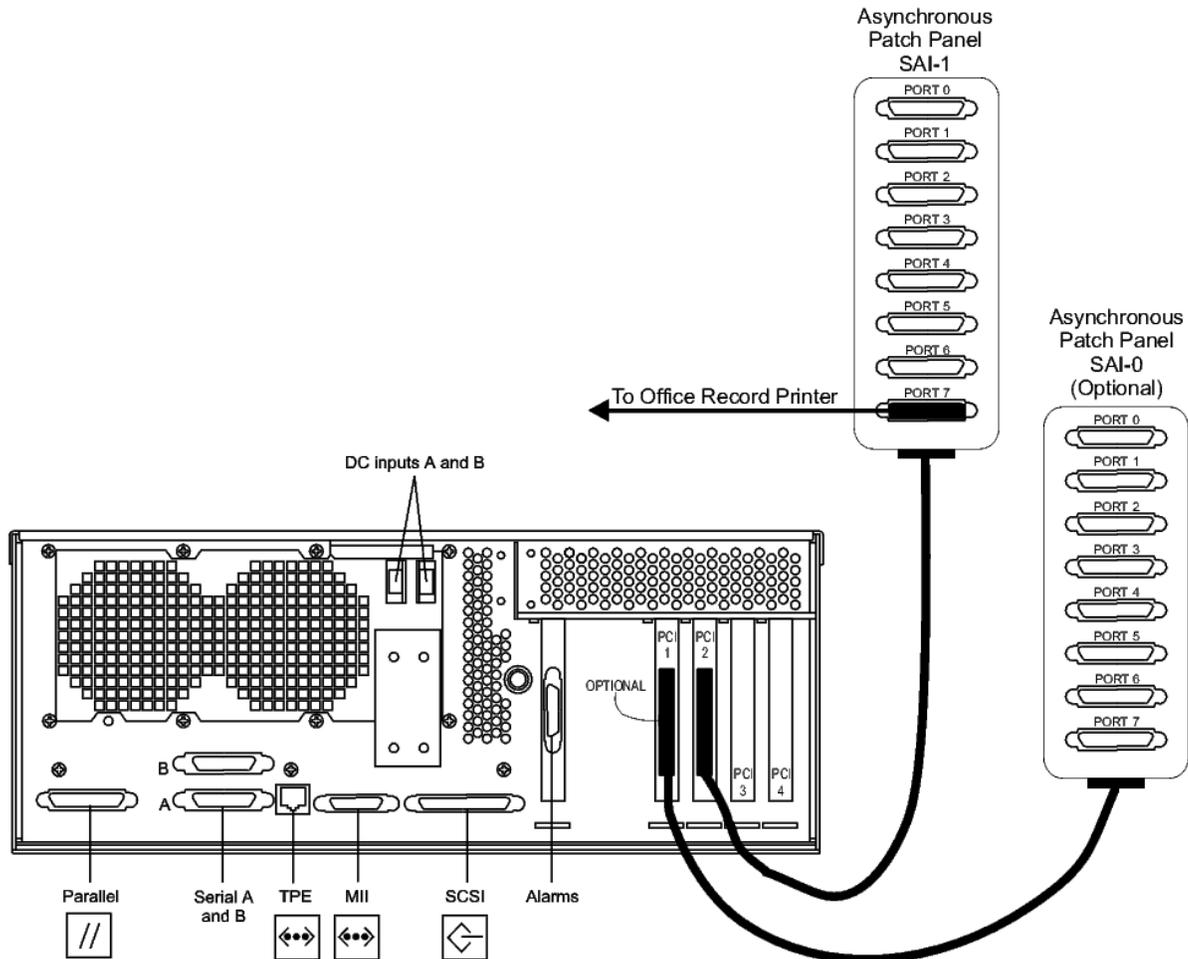


Figure 7.8-2 Office Record Printer Installation (Netra Sun Microsystems, Inc. t)

5. Restore TTY x to service.

NOTE: If a baud rate other than 1200 is desired, "Update the Office Record Printer Baud Rate," Subprocedure 7.8.1, should be performed before restoring the TTY to service.

- (a) At MCC, type and enter the appropriate message:

RST:TTY=x

Where:

x = appropriate TTY number.

Response: RST TTY x COMPLETED

- (b) Enter CARRIAGE RETURN.

Response: FORM INSERTED

- (c) Type and enter: <

Response: Exit the ttyadd form.

(d) Type and enter: <

Response: Exit the recent change session.

6. Backup Incore ECD to disk.

(a) At MCC, do Steps **b** through **i**.

(b) Type and enter: **199**

Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**

(c) Type and enter: **incore**

Response: **2. review only**

(d) Type and enter: **n**

Response: **3. journaling**

(e) Type and enter: *****

Response: **UNIX RTR (ODIN) - Data Entry** page displayed.

(f) Type and enter: **activate**

Response: activate form displayed with cursor at **1. copy_inc_to_disk:**

(g) Type and enter: **yes**

Response: ODIN will request the action desired.

(h) Type and enter: **e**

Response: ODIN returns to the **UNIX RTR (ODIN) - Data Entry** page.

(i) Type and enter: <

Response: **RCV MENU RCV ECD COMPLETED**

7. Backup Office Dependent Data.

NOTE: Prior to the response there will be completed responses for the switching module and the AM.

(a) At MCC, type and enter: **BKUP:ODD**

Response: **BKUP ODD COMPLETED**

It is recommended that primary disk be backed up and that a shelf copy of the disks be made.

8. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.8.1: Update the Office Record Printer Baud Rate

OVERVIEW

When performing an office record printer growth, the office record printer baud rate defaults to 1200. This subprocedure allows maintenance personnel to update the baud rate to a range between 1200 and 9600.

PROCEDURE

1. Enter *UNIX*[®] RTR Recent Change and Verify.
 - (a) Is MCC or STLWS terminal to be used?
For MCC, proceed to Step **b**.
For STLWS proceed to Step **i**.
 - (b) At MCC, ensure terminal is in command mode.
 - (c) At MCC, do Steps **d** through **h**.
 - (d) Type and enter: **199**
Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**
 - (e) Type and enter: **incore**
Response: **2. review only**
 - (f) Type and enter: **n**
Response: **3. journaling**
 - (g) Type and enter: *****
Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.
 - (h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **2**.
 - (i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**
Response: **RCV ECD PARAMETER INFO** page displayed with cursor at **1. database_name**
 - (j) Type and enter **incore**
Response: **2. review only**
 - (k) Type and enter: **n**
Response: **3. journaling**
 - (l) Type and enter: *****
Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) -**

Data Entry page displayed. Cursor at Enter Form Name:

2. Type and enter: **trbegin**
Response: Transaction Begin
1.tr_name:TRBEGIN
3. Enter CARRIAGE RETURN.
Response: Enter Execute, Change. . .
4. Type and enter: **e**
5. Type and enter: **ttopt**
Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete
6. Type and enter: **u**
7. Type and enter: **ofr0tt**
8. Type and enter: **c**
9. Type and enter: **16**
10. Type and enter the desired baud rate (**1200, 2400, 4800, or 9600**).
11. Enter CARRIAGE RETURN.
12. Type and enter: **u**
Response: Form Updated
13. Type and enter: **<**
14. Type and enter: **trend**
Response: 1. tr_name:TREND
2. dis_cf_checks:n
3. apply_tr:y
4. o_missing_links:n
15. Enter the CARRIAGE RETURN 4 times.
Response: Enter Execute, Change...
16. Type and enter: **e**
17. Type and enter: **activate**
Response: 1. copy_inc_to_disk:YES
18. Enter CARRIAGE RETURN.
Response: Enter Execute, Change...

19. Type and enter: **e**

Response: Executing

20. Type and enter: **<**

21. At the MCC or STLWS, type and enter: **RST:TTY=43**

22. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.9: Perform STLWS Degrowth

PROCEDURE

1. Remove TTY x from service. At MCC, type and enter the appropriate message:

RMV:TTY=x

Where:

x = appropriate TTY number.

Response: RMV TTY x COMPLETED

2. Enter *UNIX*[®] RTR Recent Change and Verify.

- (a) Is MCC or STLWS terminal to be used?

For MCC, proceed to Step **b**.

For STLWS proceed to Step i.

- (b) At MCC, ensure terminal is in command mode.

- (c) At MCC, do Steps **d** through **h**.

- (d) Type and enter: **199**

Response: RCV PARAMETER INFO page displayed with cursor at **1. database_name**

- (e) Type and enter: **incore**

Response: **2. review only**

- (f) Type and enter: **n**

Response: **3. journaling**

- (g) Type and enter: *****

Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.

- (h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **3**.

- (i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**

Response: RCV ECD PARAMETER INFO page displayed with cursor at **1. database_name**

- (j) Type and enter: **incore**

Response: **2. review only**

- (k) Type and enter: **n**

Response: **3. journaling**

- (l) Type and enter: *

Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed. Cursor at Enter Form Name:

3. Enter high-level forms.

- (a) Type and enter: **toggle**

Response: Will take you to the high-level forms.

4. Delete TTY data.

- (a) Type and enter: **ttydel**

Response: ttydel form displayed. Cursor at **1. tty_name:**

- (b) Type and enter the key value for the identified degrowth unit: **TTY9-TTY14, TTY28-TTY34, or TTY50.**

Response: Remainder of fields will automatically be completed.

- (c) Type and enter: **d**

NOTE: When degrowing a TTY terminal a defensive check failure message REPT CONFIG FAULT Assert = 412 may be received. This failure message may be ignored.

- (d) The low level forms will now be deleted automatically, and the user will be prompted to perform certain functions.

- (e) Type and enter: **<**

Response: Exit the ttydel form.

- (f) Type and enter: **<**

Response: Exit this recent change session.

If a TAU is not being degrown with the STLWS, continue with Step 10.

5. Delete trunk group members associated with the TAU.

- (a) Select and prepare terminal for Recent Change and Verify activities.

- (1) Is MCC or STLWS terminal to be used?

If MCC, proceed to substep **a2**. If STLWS, proceed substep **a9**?

- (2) At MCC, ensure terminal is in command mode.

- (3) At MCC, do Steps **a4** to **a8**.

- (4) Type and enter: **196**

Response: **RCV PARAMETER INFO** page displayed with cursor at PRINT OPTION.

- (5) Type and enter: **Y**

Response: Cursor at DETAIL OPTION

- (6) Type and enter: **N**

Response: Cursor at VERBOSE OPTION

- (7) Type and enter: **Y**

Response: **RECENT CHANGE AND VERIFY CLASSES** menu page displayed.

- (8) You have completed the Select and Prepare Terminal for the MCC, proceed to Step **b**.

- (9) At the RC/V terminal, type and enter the following message:

RCV:MENU:APPRC:VERBOSE,PRINT

Response: **RECENT CHANGE AND VERIFY CLASS** menu page displayed.

- (b) Type and enter **5.5**

**Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete**

- (c) Type and enter: **D**

TRUNK MEMBER page displayed. Cursor at TGN attribute.

- (d) Input the appropriate TGN and MEMB NBR:

Response: System completes remainder of view. Enter Delete, Change, Validate, or Print:

- (e) Type and enter: **D**

Response: Deleting....FORM Deleted TRUNK MEMBER page displayed. Cursor at TGN attribute

- (f) Repeat Steps **b** through **e** for each member number. This deletion may have to be done four times because there can be two MEMB NBR entries for both ac and dc jacks

- (g) Type and enter: **<**

Response: 5.0 TRUNKS -- TGN & MEMBER VIEWS page displayed.

6. Delete the STLWS trunk group.

- (a) Type and enter: **5.1**

**Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete**

- (b) Type and enter: **D**

Response: TRUNK GROUP page displayed. Cursor at TGN attribute.

- (c) Type and enter the appropriate TGN

Response: System completes remainder of view. **Enter Delete, Change, Validate, or Print:**

(d) Type and enter: **D**

Response: **Deleting.....FORM DELETED TRUNK GROUP** page displayed. Cursor at TGN attribute.

(e) Type and enter: **<**

Response: **5.0 TRUNKS -- TGN & MEMBER VIEWS** page displayed.

(f) Type and enter: **q**

7. Remove the AC and DC jacks.

If the talk and monitor hardware is not being degrown the STLWS, continue with Step 10.

8. Delete the T/M number.

(a) Select and prepare terminal for Recent Change and Verify activities.

Response: Step 6a, substeps **1** through **9**.

(b) Type and enter: **1.1**

Response: **Enter Database Operation**
I=Insert, R=Review, U=Update, D=Delete

(c) Type and enter: **D**

Response: **INDIVIDUAL LINE (LINE ASSIGNMENT)** page displayed. Cursor at TN attribute.

(d) Type and enter the appropriate TN.

Response: System completes remainder of view. **Enter Update, Change, Validate, or Print:**

(e) Type and enter: **D**

Response: **Deleting...FORM DELETED INDIVIDUAL LINE (LINE ASSIGNMENT)** page displayed. Cursor at TN attribute.

(f) Type and enter: **D**

Response: **Deleting.....FORM DELETED INDIVIDUAL LINE (LINE ASSIGNMENT)** page displayed.

(g) Type and enter: **<**

Response: **1.0 LINES -- TN VIEWS** page displayed.

9. Remove Talk and Monitor (T/M) telephone hardware.

10. Update STLWS office data.

(a) Select and prepare terminal for Recent Change and Verify activities.

Response: Step 6a, substeps **1** through **9**.

- (b) Type and enter: **14.3**

Response: Enter Database Operation
I=Insert, R=Review, U=Update, D=Delete

- (c) Type and enter: **U**

Response: TRUNK LINE WORK STATION page displayed. Cursor at DEVICE ID attribute.

- (d) Type and enter the appropriate DEVICE ID.

Response: System completes remainder of view. Enter Update, Change, Validate, or Print:

- (e) Type and enter: **C**

Response: Change Field:

- (f) Update this view as required.

Response: Enter Update, Change, Validate, or Print:

- (g) Type and enter: **U**

Response: updating.....FORM UPDATED TRUNK LINE WORK STATION page displayed.

- (h) Type and enter: **<**

Response: 14.0 LINE & TRUNK TEST VIEWS page displayed.

11. Backup Incore ECD to disk.

- (a) At MCC, do Steps **b** through **i**.

- (b) Type and enter: **199**

Response: RCV PARAMETER INFO page displayed with cursor at **1. database_name**

- (c) Type and enter: **incore**

Response: 2. review only

- (d) Type and enter: **n**

Response: 3. journaling

- (e) Type and enter: *****

Response: UNIX RTR (ODIN) - Data Entry page displayed.

- (f) Type and enter: **activate**

Response: activate form displayed with cursor at **1. copy_inc_to_disk:**

- (g) Type and enter: **yes**

Response: ODIN will request the action desired.

(h) Type and enter: **e**

Response: ODIN returns to the **UNIX RTR (ODIN) - Data Entry** page.

(i) Type and enter: **<**

Response: **RCV MENU RCV ECD COMPLETED**

12. Backup Office Dependent Data.

NOTE: Prior to the response there will be completed responses for the switching module and the AM.

(a) At MCC, type and enter: **BKUP:ODD**

Response: **BKUP ODD COMPLETED**

It is recommended that primary disk be backed up and that a shelf copy of the disks be made.

13. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.10: Perform RC/V Terminal Degrowth

PROCEDURE

1. Change Security

- (a) At MCC, type and enter message:

SET:RCACCESS,TTY=a,ACCESS=b

Where:

a = ttys, ttyt, or ttyv

Where:

ttys =	TTY18
ttyt =	TTY19
ttyv =	TTY21

Where b is obtained from INPUT/OUTPUT manual.

- (b) To check on the access code, type and enter message:

OP:RCACCESS,TTY=a

Where:

a = ttys, ttyt, or ttyv

Where:

ttys =	TTY18
ttyt =	TTY19
ttyv =	TTY21

Response: Access code returned in hexadecimal

2. Remove TTY x from service.

- (a) At MCC, type and enter the appropriate message:

Where:

x = appropriate TTY number.

Response: RMV TTY x COMPLETED

3. Enter *UNIX*[®] RTR Recent Change and Verify.

- (a) Is MCC or STLWS terminal to be used?

For MCC, proceed to Step **b**.

For STLWS proceed to Step **i**.

- (b) At MCC, ensure terminal is in command mode.

(c) At MCC, do Steps **d** through **h**.

(d) Type and enter: **199**

Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**

(e) Type and enter: **incore**

Response: **2. review only**

(f) Type and enter: **n**

Response: **3. journaling**

(g) Type and enter: *****

Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.

(h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **4**.

(i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**

Response: **RCV ECD PARAMETER INFO** page displayed with cursor at **1. database_name**

(j) Type and enter: **incore**

Response: **2. review only**

(k) Type and enter: **n**

Response: **3. journaling**

(l) Type and enter: *****

Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed. Cursor at Enter Form Name:

4. Enter high-level forms.

(a) Type and enter: **toggle**

Response: Will take you to the high-level forms.

5. Delete TTY data.

(a) Type and enter: **ttydel**

Response: **ttydel** form displayed. Cursor at **1. tty_name:**

(b) Type and enter the key value for the identified degrowth unit: **TTY18, TTY19, or TTY21.**

Response: Remainder of fields will automatically be completed.

(c) Type and enter: **d**

NOTE: When degrowing a TTY terminal a defensive check failure message REPT CONFIG FAULT Assert = 412 may be received. This failure message may be ignored.

(d) The low level forms will now be deleted automatically, and the user will be prompted to perform certain functions.

(e) Type and enter: <

Response: Exit the ttydel form.

(f) Type and enter: <

Response: Exit this recent change session.

6. Backup Incore ECD to disk.

(a) At MCC, do Steps **b** through **i**.

(b) Type and enter: **199**

Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**

(c) Type and enter: **incore**

Response: **2. review only**

(d) Type and enter: **n**

Response: **3. journaling**

(e) Type and enter: *****

Response: **UNIX RTR (ODIN) - Data Entry** page displayed.

(f) Type and enter: **activate**

Response: activate form displayed with cursor at **1. copy_inc_to_disk:**

(g) Type and enter: **yes**

Response: ODIN will request the action desired.

(h) Type and enter: **e**

Response: ODIN returns to the **UNIX RTR (ODIN) - Data Entry** page.

(i) Type and enter: <

Response: **RCV MENU RCV ECD COMPLETED**

7. Backup Office Dependent Data.

NOTE: Prior to the response there will be completed responses for the switching module and the AM.

(a) At MCC, type and enter: **BKUP:ODD**

Response: **BKUP ODD COMPLETED**

It is recommended that the primary disk be backed up and that a shelf copy of the disks be made.

8. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.11: Perform SCC Data Link Degrowth

PROCEDURE

1. Type and enter: **incore**
Response: 2. review only
2. Type and enter: **n**
Response: 3. journaling
3. Type and enter: *****
Response: Enter Form Name:
4. Type and enter: **toggle**
Response: Enter Form Name:
High-level mode displayed.
5. Type and enter: **sdl del**
Response: 1. sdl_name
6. Type and enter: **SCC** or **SDL1**
Remainder of fields will automatically be populated.
Response: Enter Delete, Validate . . .
7. Type and enter: **d**
The low-level forms will now be deleted automatically and you will be prompted to perform certain functions.
Response: 1. sdl_name
8. Type and enter: **<**
Response: Enter Form Name:
9. Type and enter: **<**
Response: Exit this recent change session.
10. To verify SDL1 has been deleted, view the **113** page. SDL1 should not appear on this page.
NOTE 1: To save the incore ECD changes made in Steps **1** through **9**, execute Steps **15** through **22**, otherwise continue with Step **11**.
NOTE 2: SCC must also be degrown into the MIN ECD. Execute Steps **11** through **14** to test the MIN ECD degrowth capability.
11. Type and enter: **199**

Response: RCV PARAMETER INFO page displayed with cursor at 1. database_name

12. Type and enter: rootdmly

Response: 2. review only

13. Repeat Steps 2 through 9.

14. Save Incore ECD changes to disk:

Type and enter: 199

Response: RCV PARAMETER INFO page displayed with cursor at 1. database_name

15. Type and enter: incore

Response: 2. review only

16. Type and enter: n

Response: 3. journaling

17. Type and enter: *

Response: Enter Form Name:

18. Type and enter: activate

Response: 1. copy_inc_to_disk:

19. Enter CARRIAGE RETURN.

Response: Enter Execute, Change. . .

20. Type and enter: e

Response: Enter Form Name:

21. Type and enter: <

Response: Exit this recent change session.

22. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.12: Perform Traffic Printer Degrowth

PROCEDURE

1. Remove TTY x from service.

- (a) At MCC, type and enter the appropriate message:

RMV:TTY=x

Where:

x = appropriate TTY number.

Response: RMV TTY x COMPLETED

2. Enter *UNIX*[®] RTR Recent Change and Verify.

- (a) Is MCC or STLWS terminal to be used?

For MCC, proceed to Step **b**.

For STLWS proceed to Step **i**.

- (b) At MCC, ensure terminal is in command mode.

- (c) At MCC, do Steps **d** through **h**.

- (d) Type and enter: **199**

Response: RCV PARAMETER INFO page displayed with cursor at **1. database_name**

- (e) Type and enter: **incore**

Response: **2. review only**

- (f) Type and enter: **n**

Response: **3. journaling**

- (g) Type and enter: *****

Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.

- (h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **3**.

- (i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**

Response: RCV ECD PARAMETER INFO page displayed with cursor at **1. database_name**

- (j) Type and enter: **incore**

Response: **2. review only**

- (k) Type and enter: **n**

Response: 3. journaling

- (l) Type and enter: *

Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed. Cursor at Enter Form Name:

3. Enter high-level forms.

- (a) Type and enter: **toggle**

Response: Will take you to the high-level forms.

4. Delete TTY data.

- (a) Type and enter: **ttydel**

Response: ttydel form displayed. Cursor at **1. tty_name:**

- (b) Type and enter: **TTY7**

Response: Remaining fields will automatically be completed.

- (c) Type and enter: **d**

NOTE: When degrowing a TTY terminal a defensive check failure message REPT CONFIG FAULT Assert = 412 may be received. This failure message may be ignored.

- (d) The low-level forms will now be deleted automatically, and the user will be prompted to perform certain functions.

- (e) Type and enter: **<**

Response: Exit the ttydel form.

- (f) Type and enter: **<**

Response: Exit this recent change session.

5. Backup Incore ECD to disk.

- (a) At MCC, do Steps **b** through **i**.

- (b) Type and enter: **199**

Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**

- (c) Type and enter: **incore**

Response: **2. review only**

- (d) Type and enter: **n**

Response: **3. journaling**

- (e) Type and enter: *

Response: UNIX RTR (ODIN) - Data Entry page displayed.

(f) Type and enter: **activate**

Response: activate form displayed with cursor at **1. copy_inc_to_disk:**

(g) Type and enter: **yes**

Response: ODIN will request the action desired.

(h) Type and enter: **e**

Response: ODIN returns to the **UNIX RTR (ODIN) - Data Entry** page.

(i) Type and enter: **<**

Response: **RCV MENU RCV ECD COMPLETED**

6. Backup Office Dependent Data.

NOTE: Prior to the response there will be completed responses for the switching module and the AM.

(a) At MCC, type and enter: **BKUP:ODD**

Response: **BKUP ODD COMPLETED**

It is recommended that primary disk be backed up and that a shelf copy of the disks be made.

7. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Procedure 7.13: Perform Office Record Printer Degrowth

PROCEDURE

1. Remove TTY x from service.

- (a) At MCC, type and enter the appropriate message:

RMV:TTY=x

Where:

x = appropriate TTY number.

Response: RMV TTY x COMPLETED

2. Enter *UNIX*[®] RTR Recent Change and Verify.

- (a) Is MCC or STLWS terminal to be used?

For MCC, proceed to Step **b**.

For STLWS proceed to Step **i**.

- (b) At MCC, ensure terminal is in command mode.

- (c) At MCC, do Steps **d** through **h**.

- (d) Type and enter: **199**

Response: RCV PARAMETER INFO page displayed with cursor at **1. database_name**

- (e) Type and enter: **incore**

Response: **2. review only**

- (f) Type and enter: **n**

Response: **3. journaling**

- (g) Type and enter: *****

Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed.

- (h) You have completed Enter *UNIX*[®] RTR Recent Change and Verify, proceed to Step **3**.

- (i) At STLWS terminal, type and enter: **RCV:MENU:DATA,RCVECD**

Response: RCV ECD PARAMETER INFO page displayed with cursor at **1. database_name**

- (j) Type and enter: **incore**

Response: **2. review only**

- (k) Type and enter: **n**

Response: 3. journaling

(l) Type and enter: *

Response: RCV INITIALIZATION IN PROGRESS message displayed. **UNIX RTR RCV (ODIN) - Data Entry** page displayed. Cursor at Enter Form Name:

3. Enter high-level forms.

(a) Type and enter: **toggle**

Response: Will take you to the high-level forms.

4. Delete TTY data.

(a) Type and enter: **ttydel**

Response: ttydel form displayed. Cursor at **1. tty_name:**

(b) Type and enter: **TTY43**

Response: Remaining fields will automatically be completed.

(c) Type and enter: **d**

NOTE: When degrowing a TTY terminal a defensive check failure message REPT CONFIG FAULT Assert = 412 may be received. This failure message may be ignored.

(d) The low-level forms will now be deleted automatically, and the user will be prompted to perform certain functions.

(e) Type and enter: **<**

Response: Exit the ttydel form.

(f) Type and enter: **<**

Response: Exit this recent change session.

5. Backup Incore ECD to disk.

(a) At MCC, do Steps **b** through **i**.

(b) Type and enter: **199**

Response: **RCV PARAMETER INFO** page displayed with cursor at **1. database_name**

(c) Type and enter: **incore**

Response: **2. review only**

(d) Type and enter: **n**

Response: **3. journaling**

(e) Type and enter: *

Response: UNIX RTR (ODIN) - Data Entry page displayed.

(f) Type and enter: **activate**

Response: activate form displayed with cursor at 1. copy_inc_to_disk:

(g) Type and enter: **yes**

Response: ODIN will request the action desired.

(h) Type and enter: **e**

Response: ODIN returns to the UNIX RTR (ODIN) - Data Entry page.

(i) Type and enter: **<**

Response: RCV MENU RCV ECD COMPLETED

6. Backup Office Dependent Data.

NOTE: Prior to the response there will be completed responses for the switching module and the AM.

(a) At MCC, type and enter: **BKUP:ODD**

Response: BKUP ODD COMPLETED

It is recommended that primary disk be backed up and that a shelf copy of the disks be made.

7. **STOP. YOU HAVE COMPLETED THIS PROCEDURE.**

Appendix 1: SUN[®] CONSOLE/MASTER CONTROL CENTER (MCC) TERMINAL SETTINGS

1.1 Overview

Table 1-1 lists terminal settings that should be set when growing a Sun[®] console or MCC terminal. Table 1-1 should also be used to verify terminal option settings in the case of a terminal lock-up.

Table 1-1 Sun[®] Console/MCC Terminal Settings

Session 1 (MCC-EIA)		
F1 Screen		
Emulation = VT100	Comm Mode = Full Duplex	EIA Baud Rate = 9600
Aux Baud Rate = 9600	Enhanced = off	EIA Data Format = 7/1/E
Format = 8/1/N	Sessions = 2	Host/Printer = EIA/None
F2 Screen		
Emulation = VT100	Enhanced = off	Auto Wrap = on
Auto Font Load = on	Auto Pager = off	Auto Scroll = on
Monitor Mode = off	Screen Saver = off	Bell Volume = 09
Warning Bell = on	Host/Printer = EIA/None	Sessions = 2
Session 2 (Sun Console-AUX)		
F1 Screen		
Emulation = VT100	Comm Mode = Full Duplex	EIA Baud Rate = 9600
Aux Baud Rate = 9600	Enhanced = off	EIA Data Format = 7/1/E
Format = 8/1/N	Sessions = 2	Host/Printer = AUX/None
F2 Screen		
Emulation = VT100	Enhanced = off	Auto Wrap = on
Auto Font Load = on	Auto Pager = off	Auto Scroll = on
Monitor Mode = off	Screen Saver = off	Bell Volume = 09
Warning Bell = on	Host/Printer = AUX/None	Sessions = 2
Session 1/2		
F3 Screen		
Page Length = 24	Screen Length = 26 Lines	Screen Video = Normal
Display Cursor = on	Cursor = Steady Black	Auto Adjust Cursor = on
Columns = 80	Width Change Clear = off	Speed = Normal
F4 Screen		
Char Set Mode = ANSI	Key Mode = ASCII	Keyclick = off
Key Repeat = off	Margin Bell = off	Key Lock = Caps
F5 Screen		
Enter Key = <CR>	Return Key = <CR>	Backspace = <BS>/<BS>
Alt Key = Alt	,< and .> = < and .>	Esc Key = Esc
'~ Key = ' and ~	F1 to F5 Deys = Fkeys	Pound Key = U.S.
F6 Screen		
EIA Baud Rate = 9600	EIA Data Format = 7/1/E	EIA Parity Check = off
Aux Baud Rate = 9600	Aux Data Format = 8/1/N	Aux Parity Format = off
EIA Xmt = Xon-Xoff	EIA Recv = Xon-Xoff (XPC)	EIA Xmt Pace = Baud
Aux Xmt = Xon-Xoff	Aux Recv = Xon-Xoff (XPC)	Aux Xmt Pace = Baud
EIA Break = 250 ms	EIA Modem Control = off	EIA Disconnect = 60 ms
Aux Break = 250 ms	Aux Modem Control = off	Aux Disconnect = 60 ms
F7 Screen		
Comm Mode = Full Duplex	Local = off	Recv <CR> = <CR>
Recv = Destruct BS	Send ACK = off	Send Block Term = None
Send Region = Screen	Send End = Region	Null Suppress = on
F8 Screen		
Prnt Mode = Normal	Prnt Region = Screen	Prnt Block Term = None
Secondary Recv = off		
F9 Screen		
Numeric Kpd = Numeric	Cursor Kpd = Cursor	Send Data = All
Print = Multinational	ANSI-ID = VT100	Function Key Lock = on
UPSS = ANSI-Supplemental	Feature Lock = off	Status Line = off
F11 Screen		
Answerback Mode = off		
F12 Screen		
Key = F1	Program = F/Key	Key Dir = Comm Dependent
NOTE: To get into the options page press CNTL-ALT-F3. Toggle between sessions with CNTL Enter (on numeric pad). To exit press F14.		

Appendix 2: RECEIVE-ONLY PRINTER (ROP) SETTINGS

2.1 Overview

The following is a configuration printout. It lists settings that should be used when growing a ROP.

AT&T 577

PROG ROM Version : S004-Z05

CG ROM Version : S100-Z22

Field	Function	Menu
--	Select User No.	No.0
00	Emulation mode	02 DEC Emulation
01	Emulation level	01 LA210 mode
02	EEPROM store	01 Enable
10	Form length	66 lines
12	Line spacing	01 6 LPI
13	Character pitch	01 10 CPI
14	Print quality	01 DP
17	Left margin	2/10 inch
18	Right margin	80/10 inch
19	Print direction	02 Bidirectional
21	Font for zero	02 Slashed zero
22	Skip perforation	01 None
23	Wraparound	02 Autowrap
24	Data error	01 Reverse question mark
25	LQ CG selection	01 Built-in CG
26	Define GL,G0	01 U.S.ASCII
27	Define G1	01 U.S.ASCII
28	Define GR,G2	01 U.S.ASCII
29	Define G3	01 U.S.ASCII
31	Alarm tone	01 On
33	Top margin	01 None
34	TOF position	03 1/3 inch
35	Switch tone	01 Enable
40	Interface	01 Centronics
41	Data bits	01 7 bits
42	Protocol	04 XON/XOFF (ON/OFFLINE)
43	Stop bits	01 1 bits
44	Parity	04 Even
45	Baud rate	05 1200 BPS
46	RTS	01 ON/OFFLINE
47	OFFLINE Deselect	01 Deselect
50	PE detection	01 PE Valid
62	Overrun buffer	03 1024 Bytes
63	Initial state	01 ONLINE
70	A.S.F.	01 Disable
71	Auto loading	02 Disable
72	FF Speed	01 12 IPS
73	Online paper feed	02 Enable
74	Reset + TEAR FORM	01 Normal
80	Automatic CR on LF	02 LF + CR
81	Automatic LF on CR	01 CR only

82	CAN code	01 Normal
90	Hex dump	01 Normal mode
91	Test print pattern	02 Sliding pattern
92	Test print character	H

NOTE: For the *Netra*TM, Field 80 is 02 LF + CR. For the SPARC5, Field 80 is 02 LF only.

Appendix 3: PROCESSOR RECOVERY MESSAGES

3.1 Overview

This appendix is a guide to Processor Recovery Messages (PRMs) unique to the VCDX switch initialization and recovery. For a complete listing of PRMs, consult 235-600-601, *5ESS® Switch Processor Recovery Messages*. The following list of PRMs are described in this section:

5F06	FF05
60xx	FF06
CB00	FF1B
FF03	FF1F

This section will help the user interpret the messages and correct faults.

Processor Recovery Messages are one-line, fixed-format messages that use hexadecimal notation to print critical switch initialization and recovery information. PRMs are associated with the recovery of the following system entities: AM and CM/CMP.

PRMs are not associated with the recovery of the switching module. The switching module initialization information is displayed via MCC display pages.

PRMs are printed on the ROP and on the Emergency Action Interface (EAI) page at the MCC.

PRMs are used to report various events associated with AM initializations and AM fault recovery. The types of events reported include:

- Successful beginning or end of an initialization step.
- Failure of a software initialization step.
- An initialization phase trigger (that is, high-level reason for initializing).
- An ASSERT or error report.
- Lack of AM resources (for example, real time or message buffers).

Each PRM is associated with a unique five-digit key that appears at the top of the PRM's page.

When a digit in a key position is a literal, that is, will never change value, it is shown in uppercase in the key. When a digit in a key position is variable, it may change values, it is written in lowercase. The lowercase *v* is usually reserved for the special case of a variable in the first letter of the format, such as in the following example:

```
PRM_p EEda 5F06 xxxx yyzz hh hh hh
```

If the leading character of a PRM identifier is E, as in the previous example, then it reports problems that do not involve AM initialization.

If the leading character of the identifier is F, then it reports a problem that usually involves system-wide initialization.

If the leading character is a *v*, then some versions of that PRM message begin with either an E or an F.

Each PRM listing provides the following information:

Format - Shows format of possible outputs for this PRM.

Source - Lists software program originating the PRM

Function - Details why the PRM was generated.

Expansion - Defines all variables used in the PRM

Explanation - Provides additional information about the PRM.

Corrective Action - Gives instructions on corrective measures available or reference to other documents.

If software inhibits are turned on, the switch may have lost critical functionality and this fact may not be readily apparent. For more information, see 235-105-250, *5ESS® Switch System Recovery Manual*.

During a processor recovery, each common *UNIX*® RTR operating system process produces a 16-digit hexadecimal success or failure PRM after execution. Approximately every 2 seconds, a PRM can be printed out on the MCC and ROP.

Success PRMs are considered low priority and are therefore not always output. However, the system will guarantee that the first (oldest) failure PRM will be output to all devices (MCC and ROP).

If a failure PRM is output, it identifies the process encountering the failure, the reason for the failure, and in some cases, failure information.

3.2 Processor Recover Messages

3.2.1 PRM:EE 5F06

3.2.1.1 PRM Format

```
PRM_p EEda 5F06 xxxx yzzz hh hh hh
```

3.2.1.2 PRM Source

Application Integrity Monitor (AIM).

3.2.1.3 Function

AIM initialization timeout (associated with the specified *UNIX*® RTR operating system application process) occurred, but initialization has completed anyway.

3.2.1.4 PRM Expansion

p	=	Active control unit (CU): 0 -- CU 0 1 -- CU 1
E	=	Informational PRM.
E	=	Application software generated this PRM.
d	=	Level of most recent <i>UNIX</i> ® RTR operating system initialization: 0 -- No initialization or D0 initialization. 1 -- D1 initialization. 2 -- D2 initialization. 3 -- D3 initialization. 4 -- D4 initialization. These initializations are explained in 235-105-250, <i>5ESS® Switch System Recovery Manual</i> .
a	=	Application initialization level within the <i>UNIX</i> ® RTR operating system initialization specified in field 'd'.
5F06	=	Application function = initialization timeout and completion.
xxxx	=	<i>UNIX</i> ® RTR operating system application process utility ID: 017 -- First in-first out (FIFO) driver (FDA).

		0C0 -- Input/output driver (IODRV).
		0C2 -- Scan and signal distributor administration (SCSD).
		0CC -- DMERT Data Link Drive for VCDX
		117 -- Plant measurement database monitor (PLDMON).
		186 -- Kernel level overload monitor (KLMON)
		188 -- <i>UNIX</i> [®] RTR operating system supervisor overloadmonitor process (SUOVRPC).
		406 -- Process to load ODD onto Disk (PLOD).
		407 -- Application data link (APDL).
		410 -- Switch maintenance kernel process (switching moduleKP).
		411 -- Switch maintenance power switch monitor (SMPSM).
		420 -- Communications kernel process (CMKP).
		430 -- Message switch kernel process (MSKP).
		450 -- Pump control (PUCR).
		451 -- Automatic message accounting disk writer (AMDW).
		460 -- Operational kernel process (OKP).
		590 -- Process for loading ODD into PAS (PLOP).
		710 -- Switch Maintenance Diagnostic Input Message Processor (SMDIMP). SMDIMP is also referred to as deferred maintenance administrator and monitor (DMAM).
		7ED -- Communications Module Processor Kernel Process (CMPKP)
		7DD -- Automatic message accounting disk writer 1 (AMDW1).
		7CE -- Automatic message accounting disk writer 2 (AMDW2).
yy	=	Failed process sequence state.
		00 -- Created (booted from disk).
		01 -- Software initialization.
		02 -- Hardware initialization.
		03 -- Communication link initialization.
		04 -- Enable fault recovery.
		05 -- Essential jobs operational.
		06 -- Fully operational.
		07 -- Aborting.
zz	=	Process run state.
		00 -- process was still performing initialization step.
		01 -- process had completed initialization step.
		02 -- process timed out.
hh hh hh	=	Hardware status digits. Refer to Figure 3-1 for definition of the digits.

3.2.1.5 Explanation

At this point, all *UNIX*[®] RTR operating system application processes should have completed sequencing to the fully operational state. However, the specified process did not. If this is an essential process, the HW/SW inhibits must be on. If so, no initialization will occur; however, the system will not have essential functionality. If this is a non-essential process, the HW/SW inhibit state is a don't care; non-critical functionality is lost and AIM will automatically attempt to Full Process Initialization (FPI) the specified process.

3.2.1.6 Corrective Action

Monitor the system for lost functionality associated with the specified process. If significant periods of times (that is, several minutes) elapse without this functionality, attempt to manually recover this functionality. The situation should be dealt with as follows: apply Master Control Center (MCC) controls (for example, inhibits); request processor reconfiguration (for example, force CU/Disks); request higher manual initializations (for example, 53); for more information, see 235-105-250, *5ESS*[®] *Switch System Recovery Manual* or **seek technical assistance**.

3.2.2 PRM:EE 60XX-B

3.2.2.1 PRM Format

```
PRM_a EEbc 60de fggg ijkk hh hh hh
```

3.2.2.2 PRM Source

Application Integrity Monitor (AIM).

3.2.2.3 Function

UNIX[®] RTR operating system application process initialization progress.

3.2.2.4 PRM Expansion

a	=	Active control unit (CU): 0 -- CU 0 1 -- CU 1
E	=	Informational PRM.
E	=	Application software generated this PRM.
b	=	Level of most recent UNIX [®] RTR operating system initialization: 0 -- No initialization or D0 initialization. 1 -- D1 initialization. 2 -- D2 initialization. 3 -- D3 initialization. 4 -- D4 initialization. These initializations are explained in 235-105-250, 5ESS [®] Switch System Recovery Manual.
c	=	Application initialization level within the UNIX [®] RTR Operating System initialization specified in field 'd'.
60	=	Application function =VCDX switch general initialization progress.
d	=	Administrative Module (AM) Software initialization level: 0 -- S0 (no AW SW initialization). 2 -- S2 (D1 = single process purge (SPP) on all UNIX [®] RTR operating system application processes). 4 -- S4 (CI initialization). 5 -- S5 (application full process init (FPI)). 6 -- S6 (AM SW init w/o clearing phase protected data.) 7 -- S7 (AM SW init with phase protected data cleared.)
e	=	Not significant for VCDX.
f	=	Not significant for VCDX.
999	=	UNIX [®] RTR operating system application process utility ID: 017 -- First in-first out (FIFO) driver (FDA). 0C0 -- Input/output driver (IODRV). 0C2 -- Scan and signal distributor administration (SCSD). 0CC -- DMERT Data Link Drive for VCDX 117 -- Plant measurement database monitor (PLDMON). 186 -- Kernel level overload monitor (KLMON) 188 -- UNIX [®] RTR operating system supervisor overloadmonitor process (SUOVPRC). 406 -- Process to load ODD onto Disk (PLOD). 407 -- Application data link (APDL). 410 -- Switch maintenance kernel process (SMKP). 411 -- Switch maintenance power switch monitor (SMPSM). 420 -- Communications kernel process (CMKP). 430 -- Message switch kernel process (MSKP). 450 -- Pump control (PUCR). 460 -- Operational Kernel Process (OKP) 590 -- Process for loading ODD into PAS (PLOP). 710 -- Switch Maintenance Diagnostic Input Message Processor (SMDIMP). SMDIMP is also referred to as deferred maintenance administrator and monitor (DMAM). 7ED -- Communications Module Processor Kernel Process (CMPKP) 7DD -- Automatic Message Accounting Disk Writer 1 (AMDW1). 7CE -- Automatic Message Accounting Disk Writer 2 (AMDW2).
i	=	Initialization sequence state: 00 -- Created (booted from disk). 01 -- Software initialization. 02 -- Hardware initialization. 03 -- Communication link initialization. 04 -- Enable fault recovery 05 -- Essential jobs operational. 06 -- Fully operational. 07 -- Aborting
j	=	Success/failure indication: 0 -- Initialization step completed successfully. 1 -- Initialization step failed.

		2 — Initialization step timeout.
		3 — Initialization step in-progress.
		4 — Initialization step not attempted.
		A — Process abort or re-initialization starting.
		B — Initialization step beginning (use EAI page poke 42;J;50to turn on.).
		D — Death of child received for this process.
kk	=	Initialization progress points:
		00 -- Normal operation (no initialization or safe interval).
		01 -- AIM created.
		02 -- 5E critical creations requested (phase 1 creations in progress).
		03 -- DB/DD initialization complete.
		06 -- SMKP SOFTINIT completed.
		07 -- MSKP SOFTINIT completed.
		08 -- OKP SOFTINIT completed.
		10 -- VCDX switch call processing on.
		40 -- Call support creations requested (phase 4 creations in progress)
		60 -- ULARP HM processes created.
		80 -- ULARP MTCE processes created.
		A0 -- VCDX switch/ <i>UNIX</i> [®] RTR operating system non-critical creations requested (phase 5 creations in progress).
		E4 -- ULARP RC/DB processes created.
		F4 -- ULARP AS/TM processes created.
		FF -- ULARP deferred processes created (begin safe interval).
hh hh hh	=	Hardware status digits. Refer to Figure 3-1 for definition of the digits.

3.2.2.5 Explanation

AIM prints these PRMs as the *UNIX*[®] RTR operating system application processes complete (or fail to complete) each of their required initialization sequence states.

3.2.2.6 Corrective Action

None. These PRMs are informational only. Other failure PRMs will be printed if operator actions are required.

3.2.3 PRM:EE-CB00-B

3.2.3.1 PRM Format

```
PRM_p EEda CB00 xxxx yyzz hh hh hh
```

3.2.3.2 PRM Source

Application Integrity Monitor (AIM).

3.2.3.3 Function

AIM *UNIX*[®] RTR operating system application process initialization failure.

3.2.3.4 PRM Expansion

p	=	Active control unit (CU):
		0 -- CU 0
		1 -- CU 1
E	=	Informational PRM.
E	=	Application software generated this PRM.
d	=	Level of most recent <i>UNIX</i> [®] RTR operating system initialization:
		0 -- No initialization or D0 initialization.
		1 -- D1 initialization.
		2 -- D2 initialization.
		3 -- D3 initialization.
		4 -- D4 initialization.
		These initializations are explained in 235-105-250, <i>5ESS</i> [®] Switch System Recovery

		<i>Manual.</i>
a	=	Application initialization level within the <i>UNIX</i> [®] RTR operating system initialization specified in field 'd'.
CB00	=	Application function = AIM killable process initialization failure.
xxxx	=	<i>UNIX</i> [®] RTR operating system application process utility ID: 0017 -- First in-first out (FIFO) driver (FDA). 00C0 -- Input/output driver (IODRV). 00C2 -- Scan and signal distributor administration (SCSD). 0CC -- DMERT Data Link Drive for VCDX 0117 -- Plant measurement database monitor (PLDMON). 0186 -- Kernel level overload monitor (KLMON) 0188 -- <i>UNIX</i> [®] RTR operating system supervisor overloadmonitor process (SUOVPRC). 0406 -- Process to load ODD onto Disk (PLOD). 0407 -- Application data link (APDL). 0410 -- Switch maintenance kernel process (SMKP). 0411 -- Switch maintenance power switch monitor (SMPSM). 0420 -- Communications kernel process (CMKP). 0430 -- Message switch kernel process (MSKP). 0450 -- Pump control (PUCR). 0460 -- Operational kernel process (OKP). 0590 -- Process for loading ODD into PAS (PLOP). 0710 -- Switch Maintenance Diagnostic Input Message Processor (SMDIMP). SMDIMP is also referred to as deferred maintenance administrator and monitor (DMAM). 7ED -- Communications Module Processor Kernel Process (CMPKP) 07DD -- Automatic message accounting disk writer 1 (AMDW1). 07CE -- Automatic message accounting disk writer 2 (AMDW2).
yy	=	Failed process sequence state: 00 -- Created (booted from disk). 01 -- Software initialization. 02 -- Hardware initialization. 03 -- Communication link initialization. 04 -- Enable fault recovery. 05 -- Essential jobs operational. 06 -- Fully operational. 07 -- Aborting.
zz	=	Reason for failure. 0b -- initialization time limit exceeded. 0c -- initialization sequence state failed or timed out (INSEQSTFL)
hh hh hh	=	Hardware status digits. Refer to Figure 3-1 for definition of the digits.

3.2.3.5 Explanation

The AIM process produces this PRM when a killable process reports the failure of an initialization sequence state, or when a killable process times out while initializing.

3.2.3.6 Corrective Action

The killable process that failed should be re-initialized manually.

3.2.4 PRM:vE-FF03

3.2.4.1 PRM Format

```
PRM_p vEda FF03 yyyy zzzz hh hh hh
```

3.2.4.2 PRM Source

Application Integrity Monitor (AIM) Phase Trigger.

3.2.4.3 Function

Failure of the Process Manager (PMGR) to create an essential process for AIM.

3.2.4.4 PRM Expansion

p	=	Active control unit (CU): 0 -- CU 0 1 -- CU 1
v	=	E - Administrative Module (AM) software checks are inhibited (see "Explanation," Section 3.2.4.5). F - AM software checks allowed. A high level AM initialization will follow immediately.
E	=	Application software generated this PRM.
d	=	Level of most recent <i>UNIX</i> [®] RTR operating system initialization: 0 -- No initialization or D0 initialization. 1 -- D1 initialization. 2 -- D2 initialization. 3 -- D3 initialization. 4 -- D4 initialization. These initializations are explained in 235-105-250, <i>5ESS</i> [®] <i>Switch System Recovery Manual</i> .
a	=	Application initialization level within the <i>UNIX</i> [®] RTR operating system initialization specified in field 'd'.
FF03	=	Application function = VCDX switch phase trigger = Process Manager (PMGR) essential process creation failure.
yyyyx	=	<i>UNIX</i> [®] RTR operating system application process utility ID: 0017 -- First in-first out (FIFO) driver (FDA). 00C0 -- Input/output driver (IODRV). 00C2 -- Scan and signal distributor administration (SCSD). 0CC -- DMERT Data Link Drive for VCDX 0117 -- Plant measurement database monitor (PLDMON). 0186 -- Kernel level overload monitor (KLMON) 0410 -- Switch maintenance kernel process (SMKP). 0420 -- Communications kernel process (CMKP). 0430 -- Message switch kernel process (MSKP). 0450 -- Pump control (PUCR). 0455 -- Recent Change Kernel Process (RCKP). 0460 -- Operational kernel process (OKP). 7ED -- Communications Module Processor Kernel Process (CMPKP)
zzzz	=	Failed process sequence state: 000A -- AIM timed out waiting for a PMGR response. yyyy -- PMGR failure code. See <i>UNIX</i> [®] RTR PMGR error codes in Appendix C, 235-600-700, <i>Input Messages Manual</i> , or convert from hexadecimal to decimal and consult the REPT:PMGR output message in 235-600-750, <i>Output Messages Manual</i> , for an explanation.
hh hh hh	=	Hardware status digits. Refer to Figure 3-1 for definition of the digits.

3.2.4.5 Explanation

AIM prints this PRM to report that it was unable to create an essential process.

If AM software checks are allowed, AIM will immediately trigger a high-level AM initialization. Otherwise, no initialization will occur. However, the system may not support essential functionality (such as call processing, maintenance, or input/output).

3.2.4.6 Corrective Action

If several minutes elapse without recovery, go into *UNIX*[®] RTR operating system minimum configuration. Using the process manager error code and the process identity, check that the disk files necessary for process creation are in their correct directory locations and contain the correct header information.

If this fails to correct the problem, see "Analyze AM Initialization Failure," 235-105-250, *5ESS*[®] *Switch System Recovery Manual*.

3.2.5 PRM:vE FF05

3.2.5.1 PRM Format

```
PRM_p vEda FF05 xxxx yyzz hh hh hh
```

3.2.5.2 PRM Source

Application Integrity Monitor (AIM) Phase Trigger.

3.2.5.3 Function

AIM essential *UNIX*[®] RTR operating system application process initialization failure.

3.2.5.4 PRM Expansion

p	=	Active control unit (CU): 0 -- CU 0 1 -- CU 1
v	=	E - Administrative Module (AM) software checks are inhibited (see "Explanation," Section 3.2.5.5). F - AM software checks allowed. A high level AM initialization will follow immediately.
E	=	Application software generated this PRM.
d	=	Level of most recent <i>UNIX</i> [®] RTR operating system initialization: 0 -- No initialization or D0 initialization. 1 -- D1 initialization. 2 -- D2 initialization. 3 -- D3 initialization. 4 -- D4 initialization. These initializations are explained in 235-105-250, <i>5ESS</i> [®] <i>Switch System Recovery Manual</i> .
a	=	Application initialization level within the <i>UNIX</i> [®] RTR operating system initialization specified in field 'd'.
FF05	=	Application function = VCDX phase trigger = essential process initialization failure..
xxxx	=	<i>UNIX</i> [®] RTR operating system application process utility ID: 0017 -- First in-first out (FIFO) driver (FDA). 00C0 -- Input/output driver (IODRV). 00C2 -- Scan and signal distributor administration (SCSD). 0CC -- DMERT Data Link Drive for VCDX 0117 -- Plant measurement database monitor (PLDMON). 0186 -- Kernel level overload monitor (KLMON) 0410 -- Switch maintenance kernel process (SMKP). 0420 -- Communications kernel process (CMKP). 0430 -- Message switch kernel process (MSKP). 0455 -- Recent Change Kernel Process (RCKP). 0460 -- Operational kernel process (OKP). 7ED -- Communications Module Processor Kernel Process (CMPKP)
yy	=	Failed process sequence state. 00 -- Created (booted from disk). 01 -- Software initialization. 02 -- Hardware initialization. 03 -- Communication link initialization. 04 -- Enable fault recovery. 05 -- Essential jobs operational. 06 -- Fully operational. 07 -- Aborting.
zz	=	Process run state. 00 -- process was still performing initialization step. 01 -- process had completed initialization step. 02 -- process timed out.
hh hh hh	=	Hardware status digits. Refer to Figure 3-1 for definition of the digits.

3.2.5.5 Explanation

An essential application process has failed to initialize successfully by either calling INcomplete () indicating a failure

or by timing out.

If AM software checks are allowed, AIM will immediately trigger a high-level AM initialization. Otherwise, no initialization will occur. However, the system may not support essential functionality (such as call processing, maintenance, or input/output).

3.2.5.6 Corrective Action

If several minutes elapse without recovery or escalation to higher levels of initialization, see "Analyze AM Initialization Failure," 235-105-250, *5ESS[®] Switch System Recovery Manual*.

3.2.6 PRM:vE FF06

3.2.6.1 PRM Format

```
PRM_p vEda FF06 xxxx yyzz hh hh hh
```

3.2.6.2 PRM Source

Application Integrity Monitor (AIM) Phase Trigger.

3.2.6.3 Function

AIM essential *UNIX[®]* RTR operating system application process initialization timeout.

3.2.6.4 PRM Expansion

p	=	Active control unit (CU): 0 -- CU 0 1 -- CU 1
v	=	E - Administrative Module (AM) software checks are inhibited (see "Explanation," Section 3.2.6.5). F - AM software checks allowed. A high level AM initialization will follow immediately.
E	=	Application software generated this PRM.
d	=	Level of most recent <i>UNIX[®]</i> RTR operating system initialization: 0 -- No initialization or D0 initialization. 1 -- D1 initialization. 2 -- D2 initialization. 3 -- D3 initialization. 4 -- D4 initialization. These initializations are explained in 235-105-250, <i>5ESS[®] Switch System Recovery Manual</i> .
a	=	Application initialization level within the <i>UNIX[®]</i> RTR operating system initialization specified in field 'd'.
FF06	=	Application function = initialization timeout.
xxxx	=	<i>UNIX[®]</i> RTR operating system application process utility ID: 0017 -- First in-first out (FIFO) driver (FDA). 00C0 -- Input/output driver (IODRV). 00C2 -- Scan and signal distributor administration (SCSD). 0CC -- DMERT Data Link Drive for VCDX 0117 -- Plant measurement database monitor (PLDMON). 0186 -- Kernel level overload monitor (KLMON) 0410 -- Switch maintenance kernel process (SMKP). 0420 -- Communications kernel process (CMKP). 0430 -- Message switch kernel process (MSKP). 0455 -- Recent Change Kernel Process (RCKP) 0460 -- Operational kernel process (OKP). 7ED -- Communications Module Processor Kernel Process (CMPKP)
yy	=	Failed process sequence state. 00 -- Created (booted from disk). 01 -- Software initialization.

		02 -- Hardware initialization.
		03 -- Communication link initialization.
		04 -- Enable fault recovery.
		05 -- Essential jobs operational.
		06 -- Fully operational.
		07 -- Aborting.
zz	=	Process run state.
		00 -- process was still performing initialization step.
		01 -- process had completed initialization step.
hh hh hh	=	Hardware status digits. Refer to Figure 3-1 for definition of the digits.

3.2.6.5 Explanation

AIM prints this PRM to report that initialization of an essential process failed to complete within the allotted time.

If AM software checks are allowed, AIM will immediately trigger a high-level AM initialization. Otherwise, no initialization will occur. However, the system may not support essential functionality (such as call processing, maintenance, or input/output).

3.2.6.6 Corrective Action

If several minutes elapse without recovery or escalation to higher levels of initialization, see "Analyze AM Initialization Failure," 235-105-250, *5ESS® Switch System Recovery Manual*.

3.2.7 PRM:VE FF1B-B

3.2.7.1 PRM Format

PRM_p vEda FF1B wwww xyzz hh hh hh

3.2.7.2 PRM Source

Application Integrity Monitor (AIM) Phase Trigger.

3.2.7.3 Function

Essential *UNIX®* RTR operating system application process full process initialization (FPI) timeout.

3.2.7.4 PRM Expansion

p	=	Active control unit (CU): 0 -- CU 0 1 -- CU 1
v	=	E - Administrative Module (AM) software checks are inhibited (see "Explanation," Section 3.2.7.5). F - AM software checks allowed. A high level AM initialization will follow immediately.
E	=	Application software generated this PRM.
d	=	Level of most recent <i>UNIX®</i> RTR operating system initialization: 0 -- No initialization or D0 initialization. 1 -- D1 initialization. 2 -- D2 initialization. 3 -- D3 initialization. 4 -- D4 initialization.
a	=	These initializations are explained in 235-105-250, <i>5ESS® Switch System Recovery</i> . Application initialization level within the <i>UNIX®</i> RTR operating system initialization specified in field 'd'.
FF1B	=	Application function = VCDX switch phase trigger = essential process FPI timeout.
wwww	=	<i>UNIX®</i> RTR operating system application process utility ID: 0017 -- First in-first out (FIFO) driver (FDA). 00C0 -- Input/output driver (IODRV).

		00C2 -- Scan and signal distributor administration (SCSD).
		0CC -- DMERT Data Link Drive for VCDX
		0117 -- Plant measurement database monitor (PLDMON).
		0186 -- Kernel level overload monitor (KLMON)
		0410 -- Switch maintenance kernel process (SMKP).
		0420 -- Communications kernel process (CMKP).
		0430 -- Message switch kernel process (MSKP).
		0455 -- Recent Change Kernel Process (RCKP)
		0460 -- Operational kernel process (OKP).
		7ED -- Communications Module Processor Kernel Process (CMPKP)
x	=	Failed process sequence state.
		0 -- Created (booted from disk).
		1 -- Software initialization.
		2 -- Hardware initialization.
		3 -- Communication link initialization.
		4 -- Enable fault recovery.
		5 -- Essential jobs operational.
		6 -- Fully operational.
		7 -- Aborting.
y	=	Process run state.
		0 -- Running.
		1 -- Step done.
zz	=	Error code:
		21 -- Initialization timeout
hh hh hh	=	Hardware status digits. Refer to Figure 3-1 for definition of the digits.

3.2.7.5 Explanation

AIM prints this PRM to report that it was unable to successfully complete an essential process full process initialization (FPI). The FPI, also known as an S5 initialization, failed because of a timeout.

AIM will select a recovery action based on the severity of the problem, the state of the system, and the extent of previous recovery attempts. If the problem persists (recovery thresholds are exceeded), and AM software checks are allowed, AIM will trigger a high-level AM initialization. Otherwise, no initialization will occur. However, the system may not support essential functionality (such as call processing, maintenance, or input/output).

3.2.7.6 Corrective Action

If several minutes elapse without recovery or escalation to higher levels of initialization, see "Analyze AM Initialization Failure," 235-105-250, 5ESS® Switch System Recovery Manual.

3.2.8 PRM:VE FF1F-B

3.2.8.1 PRM Format

```
PRM_p vEda FF1F wwww xyzzz hh hh hh
```

3.2.8.2 PRM Source

Application Integrity Monitor (AIM) Phase Trigger.

3.2.8.3 Function

UNIX® RTR operating system application process Full Process Initialization (FPI) request.

3.2.8.4 PRM Expansion

p	=	Active control unit (CU):
		0 -- CU 0
		1 -- CU 1
v	=	E - Administrative Module (AM) software checks are inhibited (see "Explanation," Section

		3.2.8.5).
E	=	F - AM software checks allowed. A high level AM initialization will follow immediately.
d	=	Application software generated this PRM.
		Level of most recent <i>UNIX</i> [®] RTR operating system initialization:
		0 -- No initialization or D0 initialization.
		1 -- D1 initialization.
		2 -- D2 initialization.
		3 -- D3 initialization.
		4 -- D4 initialization.
		These initializations are explained in 235-105-250, <i>5ESS</i> [®] <i>Switch System Recovery Manual</i> .
a	=	Application initialization level within the <i>UNIX</i> [®] RTR operating system initialization specified in field 'd'.
FF1B	=	Application function = VCDX switch phase trigger = FPI request.
www	=	<i>UNIX</i> [®] RTR operating system application process utility ID:
		0017 -- First in-first out (FIFO) driver (FDA).
		00C0 -- Input/output driver (IODRV).
		00C2 -- Scan and signal distributor administration (SCSD).
		0CC -- DMERT Data Link Drive for VCDX
		0117 -- Plant measurement database monitor (PLDMON).
		0186 -- Kernel level overload monitor (KLMON)
		0188 -- <i>UNIX</i> [®] RTR operating system supervisor overloadmonitor process (SUOVPRC).
		0406 -- Process to load ODD onto Disk (PLOD).
		0407 -- Application data link (APDL).
		0410 -- Switch maintenance kernel process (SMKP).
		0411 -- Switch maintenance power switch monitor (SMPSM).
		0420 -- Communications kernel process (CMKP).
		0430 -- Message switch kernel process (MSKP).
		0450 -- Pump Control (PUCR)
		0451 -- Automatic mEessage Accounting Disk Writer (AMDW).
		0460 -- Operational kernel process (OKP).
		0590 -- Process for loading ODD into PAS (PLOP).
		0710 -- Switch Maintenance Diagnostic Input Message Processor (SMDIMP). SMDIMP is also referred to as deferred maintenance administrator and monitor (DMAM).
		7ED -- Communications Module Processor Kernel Process (CMPKP)
		07DD -- Automatic message accounting disk writer 1 (AMDW1).
		07CE -- Automatic message accounting disk writer 2 (AMDW2).
x	=	Failed process sequence state.
		0 -- Created (booted from disk).
		1 -- Software initialization.
		2 -- Hardware initialization.
		3 -- Communication link initialization.
		4 -- Enable fault recovery.
		5 -- Essential jobs operational.
		6 -- Fully operational.
		7 -- Aborting.
y	=	Run state.
		0 -- Running.
		1 -- Step done.
zz	=	Error code:20 - INcomplete () failure or timeout (s5 or lower).
		22 -- Manual "INIT:AM,FPI" request was made. See 235-600-700, <i>Input Messages Manual</i> .
		23 -- Process Manager (PMGR) death of child message received.
		24 -- FPI retry requested on process that failed duringAdministrative Module (AM) initialization.
hh hh hh	=	Hardware status digits. Refer to Figure 3-1 for definition of the digits.

3.2.8.5 Explanation

AIM prints this PRM to report a request to perform a Full Process Initialization (FPI) on the specified *UNIX*[®] RTR operating system application process. This level of initialization is also known as an S5 initialization.

If the FPI was not manually requested, AIM may select a more severe recovery action based on the state of the system and the extent of previous recovery attempts. If the number of attempted FPIs exceeds a threshold and AM software checks are allowed, AIM will trigger a high-level AM initialization. Otherwise, no initialization will occur.

However, the system may not support essential functionality (such as call processing, maintenance, or input/output).

3.2.8.6 Corrective Action

If several minutes elapse without recovery or escalation to higher levels of initialization, see "Analyze AM Initialization Failure," 235-105-250, *5ESS® Switch System Recovery Manual*.

Digits = These digits represent the hardware status of the FRM. All digits are active in the transistor/transistor logic (TTL) high state. The layout of these digits is as follows.

Digit 10 - Emergency action interface (LAI) status digit. The bits are numbered from right to left as follows:

BIT	3	2	1	0
	POWER UP (RST)	ENTER LUNIKJL (LU) UNIT FJK	CC ACTIVE	EMERGENCY SFEMS WF I (ADM)

BIT 3: RST - Indicates that the LAI has gone through a power-up restart. This bit will remain set until being read by the maintenance teletypewriter (TTY) controller.

BIT 2: RHH - Indicates that the associated administrative module (AM) is executing main store instructions. This bit is defined as the logical AND of HCT stopped (system status register (SSR) bit 23) and NOT halted (SSR bit 17).

HARDWARE STATUS BITS (1 OF 6)

- JLI 1: ALLYL Indicates that the associated administrative module (AM) is on-line (SBF bit 16).
- JLI 0: ASK - Indicates that the LAI thinks that all seems well (that is, no internal faults or FA output errors have been detected by EMI circuit or self-test firmware).

Digit 17 - LAI status digit.

The bits are numbered from right to left as follows:

JLI	3	2	1	0
	NEW FRK	MRP START	PROF POINT REGISTER BIT 23	PROF POINT REGISTER BIT 22

- BIT 3: PRK Indicates that a processor recovery message has been received from the administrative module (AM). This bit will remain set until being read by the MIIY controller.
- BIT 2: SPF Indicates that a processor recovery maintenance reset function (MRP) has started. This bit will remain set until being read by the MIIY controller.

FIELDWARE STATUS BITS (2 OF 6)

- JLI 1: ALLYL Indicates that the associated administrative module (AM) is on-line (SBF bit 16).
- JLI 0: ASK - Indicates that the LAI thinks that all seems well (that is, no internal faults or FA output errors have been detected by EMI circuit or self-test firmware).

Digit 17 - LAI status digit.

The bits are numbered from right to left as follows:

JLI	3	2	1	0
	NEW FRK	MRP START	PROF POINT REGISTER BIT 23	PROF POINT REGISTER BIT 22

BIT 3: PRK Indicates that a processor recovery message has been received from the administrative module (AM). This bit will remain set until being read by the MIIY controller.

BIT 2: SPF Indicates that a processor recovery maintenance reset function (MRP) has started. This bit will remain set until being read by the MIIY controller.

FIELDWARE STATUS BITS (2 OF 6)

- BIT 2; IALN - Indicates a force function to the AM is active or the I/L is non-zero.
- BIT 1; FBOP - Indicates that a subsequent system bootstrap will be forced from the primary boot device.
- BIT 0; IOBS - Indicates that a subsequent system bootstrap will be forced from the secondary boot device.

Digit 19 - EAI status digit.

The bits are numbered from right to left as follows:

EIT	3	2	1	0
	IF FORCED ON LINE	IF FORCED OFF LINE	TIME DISABLED	CC NRF

- BIT 3; FONI - Indicates the AM central control (CC) associated with the EAI is to remain on-line CC. The mate CC will concurrently be forced off-line (OIL).
- BIT 2; IJL - Indicates the AM CC associated with the IAI is to remain the off-line CC. The mate CC will concurrently be forced on line (FONI).

FAILURE STATUS BITS (1 of 6)

- BIT 1: DTIM Indicates the associated AM DC sanity timer is disabled.
- BIT 0: MRF Indicates that a processor recovery maintenance reset function (MRF) had started. This bit is similar to the MRF START bit, except that it is tied to the hardware signal (it does not need to be read to be cleared).

Light 20 - Current status of inhibits.

The bits are numbered from right to left as follows:

3	2	1	0
HARDWARE CHECK INHIBITED	UNIX SYS LM ERROR INTERUPTS INHIBITED	CACHE BYPASSED (NOT USED)	SIM INHIBITED

- BIT 3: Indicates the AM's automatic hardware checks have been inhibited. The specific checks inhibited are: parity checking (on the Address Translation Bus, Instruction Bus, Source Bus, Micro Controller, Cache), clock checking errors, My Store Error A, Main Store timeout error, Data Manipulation Unit error, and Store Address Controller error.
- BIT 2: Indicates that reporting of non-fatal errors has been inhibited for all units.

HARDWARE LIGHTS DL 5 (5 of 5)

BIT 1: The AM's high speed cache unit is not being used.
 BIT 0: Indicates the System Integrity Monitor process (SIM) has been prevented from initiating any action to recover from a fault.

Digit 21 = Configuration control actions.
 The bits are numbered from right to left as follows:

BIT	3	2	1	0
	BACKUP FILE SYSTEM REPAIR USEFUL	MINIMUM CONFIGURATION REPAIR USEFUL	MIN-FI	UNUSED

BIT 3: Indicates the AM has been enabled using the backup root file system.
 BIT 2: Indicates the AM has been booted in the minimum configuration mode. Application software and hardware has been disabled.
 BIT 1: UNUSED (also undefined - may be 0 or 1).
 BIT 0: UNUSED (also undefined - may be 0 or 1).

Hardware Status Bits (2 of 6)

Figure 3-1 Hardware Status Bits

Appendix 4: 5E11 ADMINISTRATIVE WORKSTATION (AW) 2.1GB TO 4.2GB DISK CONVERSION

4.1 Introduction

This appendix outlines the procedural steps necessary to install and configure the new 4.2 Giga-Byte (GB) 5ESS[®] Switch VCDX 5E11 Administrative Workstation (AW) disks in preparation for a 5E11 to 5E12 software release retrofit. This is necessary because the 5E11 AW disk layout, size, and partitioning is configured to handle a 600MB and 600MB disk pair. The 5E12 3B20D disk layout requires a 1 GB and 1 GB disk pair which cannot be handled on the 5E11 AW disks' capacity. The new 5E12 AW disks and layout will handle a 1 GB and 1 GB 3B20D disk layout strategy.

4.2 Procedure Overview

The first part of this procedure describes the *preconditions* necessary prior to execution. The second part of this procedure describe the *AW preparation* necessary for the disk conversion. The third part of this procedure deals with conversion of the *primary* disk. The fourth part of this procedure deals with conversion of the *secondary* disk. The final section of this procedure provides the necessary *Equipment Configuration Database (ECD)* changes.

The following outlines general steps executed in this procedure.

- (1) Meet the required preconditions
- (2) Administrative Workstation (AW) Preparation
 - Backup the Administrative Workstation (AW).
 - Restore all Moving Head Disks (MHDs).
 - Isolate the switching module.
 - Write and transfer all Automatic Message Accounting (AMA) data off the switch.
- (3) Primary Disk Conversion:
 - Halt the AW.
 - Determine the Read Only Memory (ROM) version and update.
 - Determine the size of the current disks.
 - Replace existing primary AW disk with new AW disk, if necessary.
 - Load new emulator and SUN OS tape to the primary disk.
 - Boot on the secondary disk pair (MHDs 1 and 3).
 - Restore all Moving Head Disks (MHDs).
 - Boot on the primary disk pair (MHDs 0 and 2).
- (4) Secondary Disk Conversion:
 - Halt the AW.

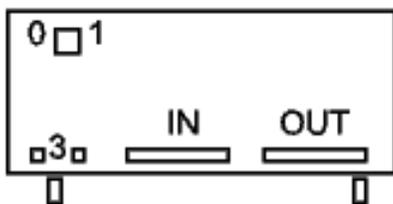
- Replace existing secondary AW disk with new AW disk, if necessary.
- Load new emulator and SUN OS tape to the secondary disk.
- Boot on the primary disk pair (MHDs 0 and 2).
- Restore all Moving Head Disks (MHDs).

(5) Make ECD changes to an unequipped MHD 8 for retrofit purposes.

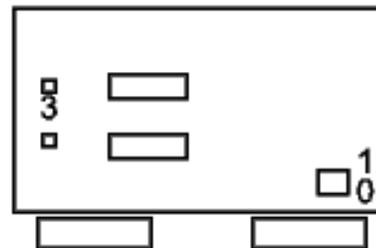
4.2.1 Preconditions

The following **preconditions** must be met before executing this procedure.

- (1) Approximate Execution Time: **7 - 8 Hours**
- (2) Current Software Release: **5E11**
- (3) Administrative Workstation: **Fully Operational**
- (4) Complete set of **Generic Backup** tapes for the following:
 - AM Text
 - AM ODD
 - SM Text
 - SM ODD
 - Emulator and Sun OS.
- (5) BWM/SU Level: At least **97-00xx** (determined by the retrofit team).
- (6) Digital Audio Tape (DAT): **5E11(1)02.00-VCDX Emulator and SUN OS 4G J5D052D-1 List 7 E/W List M15 TP5D052D-15.**
- (7) Zero, one, or two additional 50-68 pin SCSI cable(s) depending upon the current DAT and disks configuration. See Figure 4-1 to determine type of disks/DAT currently installed. Use Table 4-1 to determine the number of 50-68 pin SCSI cables required.



68 Pin Disk/DAT Drive



50 Pin Disk/DAT Drive

Figure 4-1 50-68 Pin SCSI Cable Requirements

Table 4-1 58-68 Pin SCSI Cable Requirements

Number of Current 50 Pin Disk/DAT Drives	Number of Current 68 Pin Disk/DAT Drives	Additional 50-68 Pin Cables Required
3	0	2
2	1	2
1	2	1
0	3	0

- (8) Two new 4.2 GB disks.

CAUTION: If you do not complete this procedure and make the appropriate Equipment Configuration Database (ECD) changes, any attempts to retrofit from 5E11 to 5E12 will fail.

4.3 AW Preparation

- (1) Backup the Administrative Workstation

NOTE: These are the same procedures as outlined in "Backup Administrative Workstation Operating System," Procedure 3.4 .

- (a) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
- (b) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (c) At the console prompt, login as **awadmin**, for example:
attaws console login: **awadmin**
- (d) From the **Administrative Workstation main menu**, select the task, "Backup the workstation operating system/emulator to disk." (If you select a task by mistake, answer **no** to the confirmation, and the menu will return.)
- (e) From the **operating system/emulator backup to secondary disk menu**, select task 1, "Execute backup of the workstation operating system/emulator to disk." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the operating system/emulator backup to secondary disk menu will return.)

Response:

```
You have chosen to backup the workstation operating
system/emulator to disk.
```

```
Do you want to continue (yes/no) yes
```

- (f) Wait for the **operating system/emulator backup to secondary disk menu** to return. This will take about 15 minutes to complete.
- (g) When the **operating system/emulator backup to secondary disk menu** returns, select task 4, "Return to the main menu."
- (h) When the **Administrative workstation main menu** returns, select, "Exit."
- (i) Switch over to the MCC page of the AW by holding down the Ctrl key and pressing **Enter** (not Return)

on the **MCC**. Wait for the MCC display to appear.

- (2) Restore all Moving Head Disks (MHD).

NOTE: It takes about 20 minutes to restore an MHD.

- (a) Go to the **AM, AM Peripherals page**, type and enter command: **111**.

- (b) Are any of the MHDs out of service (OOS)?

If **YES**, continue.

If **NO**, go to step 3.

- (c) Enter the appropriate pokes to restore all OOS MHDs. Type and enter command:

30X

Where:

X = MHD number that is OOS.

Response: **RST MHD x IN PROGRESS**

- (d) Wait until all MHDs are fully restored to the ACT state.

Response: **RST MHD x COMPLETED**

- (e) If any MHD cannot be restored, **seek technical assistance**.

- (3) Isolate the switching module from the AW.

- (a) Go to the **Switching Module Inhibit and Recovery Control Page**. Type and enter command:

1800.

- (b) Set switching module manual isolation. Type and enter:

403.

Response: **ISOLATE? (Y/N)**

- (c) Type and enter: **Y**

Response: **SET ISOL SM=x COMPLETED**

Where:

x = The switching module number.

- (d) If the switching module cannot be isolated, **seek technical assistance**.

- (4) Write the Automatic Message Accounting (AMA) data from memory to disk.

- (a) Enter the following input command:

WRT:AMADATA

Response: **WRT AMA DATA HAS BEEN WRITTEN TO DISK
READY TO TRANSFER DATA FROM DISK TO
OUTPUT MEDIUM**

- (5) Transfer the AMA data from disk to the output medium, see 235-105-210, *Routine Operations and Maintenance Procedures*.

4.4 Primary Disk Conversion Procedures

- (1) Halt the AW.

NOTE: These are the same procedures as outlined in "Halt the Administrative Workstation," Procedure 3.2 .

- (a) If the emulator is running, halt the emulator. See "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .
- (b) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
- (c) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (d) At the console prompt, login as **awadmin**, for example:
- attaws console login: **awadmin**
- (e) From the **Administrative Workstation main menu**, select "Halt the Workstation." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the Administrative Workstation main menu will return.)

Response:

You have chosen to halt the workstation.
If the emulator is running, it must be halted
before continuing. Refer to the main menu item
of halt the emulator.

Do you want to continue (yes/no) **yes**

- (f) Wait for the prompts shown here. When these prompts appear, the workstation has been successfully halted.

Response:

Program terminated
Type help for more information
ok

- (2) Determine the Read Only Memory (ROM) version and update.
- (a) Enter the following **banner command at the ok** prompt to determine what version of the ROM is currently installed.

banner

Response:

```
SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 64 MB memory installed, Serial #yyyyyyy.
Ethernet® address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.
```

ok

- (b) Is the **ROM Rev.** number 2.25 or greater?

If **YES**, go to step3, "Primary Disk Conversion Procedures," Section 4.4 , to determine the size of the current disks.

If **NO**, continue.

- (c) Enter the following **printenv** command at the **ok** prompt to determine if the **deblocker** patch to the ROM is currently installed.

printenvResponse if the **deblocker** patch is installed:

```
Parameter Name  Value Default Value tpe-link-test?
      true           true
. . . . .
. . . . .
. . . . .
use-nvramrc?    true           false
nvramrc         cd /deblocker
                : u/ u/mod ...
sunmon-compat?  false          false
. . . . .
. . . . .
ok
```

Response if the **deblocker** patch is **NOT** installed:

```
Parameter Name  Value Default Value tpe-link-test?
      true           true
. . . . .
. . . . .
. . . . .
use-nvramrc?    false          false
nvramrc
sunmon-compat?  false          false
. . . . .
. . . . .
. . . . .
```

- (d) Is the **deblocker** patch installed?

If **YES**, go to **step 2f** of this section to verify the **deblocker** patch. If **NO**, continue.

- (e) Update the Central Processor Unit (CPU) ROM to give it the ability to boot onto a 4.2 GB disk. The following is a patch to the **deblocker** package.

CAUTION: The following sequence of keystrokes must be entered EXACTLY as they are listed here.

Pay particular attention to blank spaces and how each line is entered in relation to the line before it. Any typographical errors could prevent your AW from properly booting.

NOTE 1: Any areas that are blank are spaces and can be entered by using the space bar and **NOT** the tab key.

NOTE 2: The prompts 0: , 1: , 2: , 3: , 4: , 5: , 6: , and 7: , are line numbers and are **not** entered by the user.

NOTE 3: The ^ symbol on line 7: means to hold down the **CONTROL** key while entering the letter **C**.

- (f) Enter the following **set-defaults** and **nvquit** commands at the **ok** prompt to initialize the NVRAMRC area.

Command:

```
ok set-defaults
```

Response:

```
Setting NVRAM parameters to default values.
```

Command:

```
ok nvquit
```

Response:

```
Discard edits [y/n]? y
```

When the **Discard edits [y/n]?** appears, it is asking to initialize the NVRAMRC area. Type and enter: **Y**.

- (g) Enter the NVRAMRC editor by entering the **nvedit** command and the deblocker patch exactly as shown here.

```
ok nvedit
```

```
0: cd /deblocker
1: : u/ u/mod nip ;
2: : patch/ ( n -- )
3:   ['] u/ ['] / rot ['] open >body swap ta+ token@ (patch
4: ;
5: h# 31 patch/ h# 35 patch/
6: device-end
7: ^c
```

Command:

```
ok nvstore
```

Response:

```
ok
```

Command:

```
ok setenv use-nvramrc? true
```

Response:

```
use-nvramrc? = true
```

Command:

```
ok setenv boot-device disk3
```

Response:

```
boot-device = disk3
```

- (h) Verify the **deblocker** patch by entering **nvedit**.

ok **nvedit**

Response:

```
0: cd /deblocker
```

List all of the lines in the NVRAMRC by holding down the **Control** key while entering the letter **L**.

Response for an AW with the appropriate **deblocker** patch installed:

```
0: cd /deblocker
1: : u/ u/mod nip ;
2: : patch/ ( n -- )
3:   ['] u/ ['] / rot ['] open >body swap ta+ token@ (patch
4: ;
5: h# 31 patch/ h# 35 patch/
6: device-end
7:
0: cd /deblocker
```

Exit **nvedit** by holding down the **Control** key while entering the letter **C**.

Is the **deblocker** patch installed properly?

If **YES**, go to step 3, "Primary Disk Conversion Procedures," Section 4.4, to determine the size of the current disks.

If **NO**, go to step 2e.

- (3) Determine the size of the current disks.

- (a) Enter the following **probe-scsi** command at the **ok** prompt to verify what type of disks are currently installed.

ok **probe-scsi**

Response for 4.2GB disks:

```
Target 1
Unit 0  Disk  FUJITSU  M2954ESP  SUN4.2GB254597  . . .
Target 3
Unit 0  Disk  FUJITSU  M2954ESP  SUN4.2GB254597  . . .
Target 5
Unit 0  Removable Tape  ARCHIVE Python . . . .
. . . . .
```

Response for 2.1GB disks (option 1):

```
Target 1
Unit 0  Disk  SEAGATE  ST12400N  SUN2.1GB87200  . . .
Copyright(c) 1994 Seagate
All rights reserved 0000
```

```

Target 3
Unit 0   Disk      SEAGATE  ST12400N  SUN2.1GB87200 . . .
                Copyright(c) 1994 Seagate
                All rights reserved 0000

Target 5
Unit 0   Removable Tape  ARCHIVE Python . . . .
        . . . . .

```

Response for 2.1GB disks (option 2):

```

Target 1
Unit 0   Disk  FUJITSU  M2954ESP  SUN2.1GB254597 . . .
Target 3
Unit 0   Disk  FUJITSU  M2954ESP  SUN2.1GB254597 . . .
Target 5
Unit 0   Removable Tape  ARCHIVE Python . . . .
        . . . . .

```

- (b) Are these 4.2GB disks?

If **YES**, go to Step **8** of this section, **Primary Disk Conversion**, to load the DAT tape. If **NO**, continue.

- (4) Remove power to the AW units.

NOTE: Procedures on how to remove power to the AW units can be found in "Remove Power to Administrative Workstation Units," Procedure 3.6 .

- (5) Remove the old Primary Disk Unit

- (a) Locate the disk unit with the target address of "**3**" on the display on the rear panel of the unit.
- (b) Label this disk unit with the following information:
 - 5e11 Primary Disk Unit
 - Target Address 3
 - Size 2.1GB
- (c) Disconnect the power cable from the back of the disk unit by grasping the plug and pulling out away from the disk unit. There is no need to disconnect the power cable from the power source.
- (d) Disconnect the two SCSI Bus cables from the back of the disk unit by squeezing the levers in the sides of the connector or unscrewing the connector from the plug.
- (e) Remove the old primary disk unit from the line up.

- (6) Install the new Primary Disk Unit

- (a) Place the new primary disk unit into the line up.
- (b) Connect the SCSI Bus cables disconnected from the old Primary Disk Unit in the previous step to the new disk unit.

NOTE 1: If these SCSI Bus cables do not fit into the SCSI Bus slots on the new disk unit,

replace these SCSI Bus cables with the ones received as indicated in "Preconditions," Section 4.2.1 .

NOTE 2: Reconnect the SCSI Bus cables to the rear of the disk unit by carefully aligning the trapezoidal pin protector on the cable plug with the same shape socket on the back of the disk unit. Gently push until the plug snaps in or is seated firmly. If the SCSI Bus cable has screws, tighten the screws to hold the SCSI Bus cable firmly in place.

- (c) Set the target address of the new Primary Disk Unit to **"3"** by pressing the "+" or "-" buttons next to the target address display on the rear panel as many times as necessary.
- (d) Connect the power cable for the new disk unit to the back of the disk unit.

(7) Restore power to the AW units.

NOTE 1: Procedures to restore power to the AW units can be found in "Restore Power to Administrative Workstation Units," Procedure 3.7 .

NOTE 2: Once you see the "ROM Rev." message, you should immediately halt the boot operation by holding down the **Control** key and pressing **F5**:

Response:

```
Resetting...
SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
Keyboard not present.
Using tty for input and output.

SPIF/stc FCode initialization complete

SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 64 MB memory installed, Serial #yyyyyyy.

Ethernet® address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.

Initializing Memory
```

Halt the boot operation by holding down the **Control** key and pressing **F5**:

<Control><F5>

Wait for the prompts shown here. When these prompts appear, the workstation has been successfully halted.

Response:

```
Program terminated
Type help for more information
ok
```

(8) Load DAT Tape

- (a) Load the TP5D052D-15 **5E11(1)02.00-VCDX Emulator and SUN OS** Digital Audio Tape (DAT) into the DAT tape drive.

NOTE: Procedures to load a tape into the DAT drive can be found in "Load Tape in DAT Tape Drive,"

Procedure 3.16 .

(9) Read the DAT Tape to the Primary Disk

NOTE: This tape is read into the Administrative Workstation (AW) disk that has a SCSI target of 3 as indicated in the target address display on the rear panel of the disk drive.

- (a) Enter the following command at the **ok** prompt to read this tape to disk:

NOTE: It takes about 120 to 150 minutes to read this tape.

boot tape1 -v -l -t3 -p2

Response:

```
Resetting...
SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
Keyboard not present.
Using tty for input and output.
SPIF/stc FCode initialization complete
SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 64 MB memory installed,
Serial #yyyyyyyy.
Ethernet® address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.
```

Initializing Memory

```
Rebooting with command: tape1 -v -l -t3 p2
Boot device:
  /iommu/sbus/espdma@5,8400000/esp@5,8800000/st@5,0
File and args: -v -l -t3 p2
Standalone IPL
(check [ok] load relocate)
Stand-alone copy program (1.0).
Reading tape information (program label control).
Processing 1 volume(s).
Searching for SCSI target 3 ...<AVAILABLE>.
*WARNING* Disk and Tape labels have different partitions.
```

Continue (y/n)? y

If this ***WARNING*** appears, it is asking to continue.

- (b) Type and enter: **Y**

NOTE 1: In the following response, the size calculation of **-3MB** for partition number 2 is printed wrong. This does not affect functionality of the boot.

NOTE 2: In the following response, the size of partitions 5 and 7 **MUST** indicate **~1GB**. If the partition size is incorrect, **seek technical assistance**.

Response:

```
Partition Table (from tape):
Part      Tag      Flag  Cylinders      Size
  0        root     wm       0 - 66      ~70MB
```

```

1      swap    wu    67 - 351    ~300MB
2      backup  wm    0 - 3879   ~-3MB
3      var     wm    352 - 446   ~100MB
4      unassigned wm  447 - 873   ~450MB
5      unassigned wm  874 - 2233  ~1GB
6      usr     wm    2234 - 2518  ~300MB
7      unassigned wm  2519 - 3879  ~1GB
Total of data in this tape set = 8380800 blocks.
Destination partition size     = 8380800 blocks.
0MB /
0MB
0MB |
0MB -
....
....
4092MB /
4092
4092 |
4092 -

Original disk label has been written.
Type 'go' to resume
Type help for more information
ok

```

(10) Boot System onto the Newly Refreshed Disk

- (a) When the **ok** prompt appears, tape reading is complete. Now boot the system onto the newly refreshed disk. Enter the following command: **boot**

Response:

```

ok boot
Resetting ...
SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
Keyboard not present. Using tty for input and output.

SPIF/stc FCode initialization complete

SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 64 MB memory installed, Serial #yyyyyyy.
Ethernet address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.

Initializing Memory
Rebooting with command:
Boot device: /iommu/sbus/espdma@5,8400000/esp@5,8800000/
sd@3,0 File and args:
SunOS Release x.x Version Generic_101674-01 [UNIX System V
Release 4.0]
Copyright (c) 1983-1996, Sun Microsystems, Inc.
stc0: board revision: 0x5
stc0: CD-180 Firmware Revision Level: 0x82

```

```

stc0: softint pri 128 driver id V2.0.1_FCS
configuring network interfaces: le0.
Hostname: attaws
The system is coming up. Please wait.
checking filesystems
/dev/rdisk/c0t3d0s6: is clean.
/dev/dsk/c0t3d0s6 mounted
Starting process accounting
Flushing routing table:
add net default: gateway cisco
Mon Jun 9 20:39:50 1997
starting rpc services: rpcbind keyserv kerbd done.
Setting default interface for multicast: add net 224.0.0.0:
gateway attaws
syslog service starting.
Print services started.
Starting License Manager

```

```

Daemon ATT3bem      Lucent Technologies UNIX RTR 3B Emulator
                    (SPARC) 2.3.0

```

```

Copyright (c) 1997 Lucent Technologies
All Rights Reserved
3bem: Tape process started, pid = 233
3btape: initialization complete
3bem: Disk process started, pid = 234
3bdfc: initialization complete
The system is ready.

```

```

attaws console login:
3bem: Tape process started, pid = 235
3btape: initialization complete
3bem: Disk process started, pid = 236
3bdfc: initialization complete
. . . . .
. . . . .
. . . . .

```

NOTE: The sequence of 3bem:, 3btape:, and 3bdfc: messages continue to repeat until an action is taken on the EAI page. At this time, the MCC EAI page is accessible and one can continue with the next step.

(11) Boot onto the Secondary Disk Pair (MHD 1/3)

- (a) Switch over to the MCC page of the Administrative Workstation (AW) by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**. Wait for the EAI page to appear.
- (b) Once the EAI page appears, boot onto the secondary disk pairs, MHD 1 and MHD 3. On the EAI page, type and enter **22; 31; 33;**.

NOTE: The entering of these pokes should be timed between the beeps of the MCC.

Response: Sec Disk indicators are **SET**.

Backup Root is clear.

Min Config is clear.

- (c) On the EAI page, type and enter command **42; b; 54;** to boot the AM with the switching module isolated.

- (d) Did the EAI page respond with **Boot? (y/n)?**

If **YES**, then type and enter **Y** and continue with the next step. If **NO**, then repeat the previous step to boot the AM with the switching module isolated (**42; b; 54;**).

- (e) Did the AM initialization complete (Page 111/112 displayed)?

If **YES**, then continue with the next step. If **NO**, **seek technical assistance**.

- (12) Restore all Moving Head Disks (MHD).

NOTE: It takes about 20 minutes to restore an MHD.

- (a) Go to the **AM, AM Peripherals** page, type and enter command **111**.

Response: MHDs 0 and 2 should be OOS.

- (b) Enter the appropriate pokes to restore all OOS MHDs. Type and enter command **30X**

Where:

X = MHD number that is OOS (0 and 2).

Response: **RST MHD x IN PROGRESS**

- (c) Wait until all MHDs are fully restored to the ACT state.

Response: **RST MHD x COMPLETED**

- (d) If any MHD cannot be restored, **seek technical assistance**.

- (13) Boot onto the Primary Disk Pair (MHD 0/2)

- (a) On the **EAI** page, boot onto the primary disk pairs, MHD 0 and MHD 2. On the EAI page, type and enter **23; 20; 31; 33;**.

NOTE: The entering of these pokes should be timed between the beeps of the MCC.

Response: Pri Disk indicators are **SET**.

Backup Root is clear.

Min Config is clear.

- (b) On the EAI page, type and enter command **42; b; 54;** to boot the AM with the switching module isolated.

- (c) Did the EAI page respond with **Boot? (y/n)?**

If **YES**, then type and enter **Y** and continue with the next step.

If **NO**, then repeat the previous step to boot the AM with the switching module isolated (**42; b; 54;**).

- (d) Did the AM initialization complete (Page 111/112 displayed)?

If **YES**, continue with "Secondary Disk Conversion Procedures," Section 4.5 .

If **NO**, seek technical assistance.

4.5 Secondary Disk Conversion Procedures

- (1) Halt the AW.

NOTE: These are the same procedures as outlined in "Halt the Administrative Workstation," Procedure 3.2 .

- (a) If the emulator is running, halt the emulator. See "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .
- (b) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
- (c) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (d) At the console prompt, login as **awadmin**, for example:
- attaws console login: **awadmin**
- (e) From the **Administrative Workstation main menu**, select "Halt the Workstation." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the Administrative Workstation main menu will return.)

Response:

```
You have chosen to halt the workstation. If the
emulator is running, it must be halted before
continuing. Refer to the main menu item of Halt
the emulator.
```

```
Do you want to continue (yes/no) yes
```

- (f) Wait for the prompts shown here. When these prompts appear, the workstation has been successfully halted.

Response:

```
Program terminated
Type help for more information
ok
```

- (2) Are these 4.2GB disks as determined in the **Primary Disk Conversion Step 2**?

If **YES**, go to **step 7** of this section, **Secondary Disk Conversion**. If **NO**, continue.

- (3) Remove power to the AW units.

NOTE: Procedures on how to remove power to the AW units can be found in "Remove Power to Administrative Workstation Units," Procedure 3.6 .

- (4) Remove the old Secondary Disk Unit
 - (a) Locate the disk unit with the target address of "1" on the display on the rear panel of the unit.
 - (b) Label this disk unit with the following information:
 - 5e11 Secondary Disk Unit
 - Target Address 1
 - Size 2.1GB
 - (c) Disconnect the power cable from the back of the disk unit by grasping the plug and pulling out away from the disk unit. There is no need to disconnect the power cable from the power source.
 - (d) Disconnect the two SCSI Bus cables from the back of the disk unit by squeezing the levers in the sides of the connector or unscrewing the connector from the plug.
 - (e) Remove the old secondary disk unit from the line-up.

- (5) Install the new Secondary Disk Unit
 - (a) Place the new secondary disk unit into the line-up.
 - (b) Connect the SCSI Bus cables disconnected from the old Secondary Disk Unit in the previous step to the new disk unit.

NOTE 1: If these SCSI Bus cables do not fit into the SCSI Bus slots on the new disk unit, replace these SCSI Bus cables with the ones received as indicated in "Preconditions," Section 4.2.1 .

NOTE 2: Reconnect the SCSI Bus cables to the rear of the disk unit by carefully aligning the trapezoidal pin protector on the cable plug with the same shape socket on the back of the disk unit. Gently push until the plug snaps in or is seated firmly. If the SCSI Bus cable has screws, tighten the screws to hold the SCSI Bus cable firmly in place.

- (c) Set the target address of the new Secondary Disk Unit to "1" by pressing the "+" or "-" buttons next to the target address display on the rear panel as many times as necessary.
 - (d) Connect the power cable for the new disk unit to the back of the disk unit.
- (6) Restore power to the AW units.

NOTE 1: Procedures to restore power to the AW units can be found in "Restore Power to Administrative Workstation Units," Procedure 3.7 .

NOTE 2: Once you see the "ROM Rev." message, you should immediately halt the boot operation by holding down the **Control** key and pressing **F5**:

Response:
Resetting ...

```
SPIF/stc FCode initialization complete  
screen not found.
```

Can't open input device.
Keyboard not present. Using tty for input and output.

SPIF/stc FCode initialization complete

SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 64 MB memory installed, Serial #yyyyyyyy.

Ethernet® address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.

Initializing Memory

Halt the boot operation by holding down the **Control** key and pressing **F5**:

<Control><F5>

Wait for the prompts shown here. When these prompts appear, the workstation has been successfully halted.

Response:

```
Program terminated
Type help for more information
ok
```

(7) Load DAT Tape

- (a) Load the TP5D052D-15 **5E11(1) 02.00-VCDX Emulator and SUN OS** Digital Audio Tape (DAT) into the DAT tape drive.

NOTE: Procedures to load a tape into the DAT drive can be found in "Load Tape in DAT Tape Drive," Procedure 3.16 .

(8) Read the DAT Tape to the Secondary Disk

NOTE: This tape is read into the Administrative Workstation (AW) disk that has a SCSI target of 1 as indicated in the target address display on the rear panel of the disk drive.

- (a) Enter the following command at the **ok** prompt to read this tape to secondary disk:

NOTE: It takes about 120 to 150 minutes to read this tape.

boot tape1 -v -l -t1 -p2

Response:

Resetting ...

```
SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
Keyboard not present. Using tty for input and output.
```

```
SPIF/stc FCode initialization complete
SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 64 MB memory installed,
Serial #yyyyyyyy.
Ethernet® address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.
```

```

Initializing Memory
Rebooting with command: tapel -v -l -t1 p2
Boot device:
  /iommu/sbus/espdma@5,8400000/esp@5,8800000/
st@5,0 File and args: -v -l -t1 p2
Standalone IPL
(check [ok] load relocate)
Stand-alone copy program (1.0).
Reading tape information (program label control).
Processing 1 volume(s).
Searching for SCSI target 1 ...<AVAILABLE>.
*WARNING* Disk and Tape labels have different partitions.

Continue (y/n)? y
If this *WARNING* appears, it is asking to continue.

```

(b) Type and enter Y.

NOTE 1: In the following response, the size calculation of **-3MB** for partition number 2 is printed wrong. This does not affect functionality of the boot.

NOTE 2: In the following response, the size of partitions 5 and 7 MUST indicate **~1GB**. If the partition size is incorrect, **seek technical assistance**.

Response:

Partition Table (from tape):

Part	Tag	Flag	Cylinders	Size
0	root	wm	0 - 66	~70MB
1	swap	wu	67 - 351	~300MB
2	backup	wm	0 - 3879	~-3MB
3	var	wm	352 - 446	~100MB
4	unassigned	wm	447 - 873	~450MB
5	unassigned	wm	874 - 2233	~1GB
6	usr	wm	2234 - 2518	~300MB
7	unassigned	wm	2519 - 3879	~1GB

Total of data in this tape set = 8380800 blocks.

Destination partition size = 8380800 blocks.

0MB /

0MB

0MB |

0MB -

....

....

4092MB /

4092MB

4092MB |

4092MB -

Original disk label has been written.

Type 'go' to resume

Type help for more information

ok

(9) Boot the System

- (a) When the **ok** prompt appears, tape reading is complete. Now boot the system. Enter the following command: **boot**

Response:

ok boot

Resetting ...

SPIF/stc FCode initialization complete

screen not found.

Can't open input device.

Keyboard not present. Using tty for input and output.

SPIF/stc FCode initialization complete

SPARCstation 5, No Keyboard

ROM Rev. 2.xx, 64 MB memory installed, Serial #yyyyyyy.

Ethernet® address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.

Initializing Memory

Rebooting with command:

Boot device:

/iommu/sbus/espdma@5,8400000/esp@5,8800000/sd@3,0

File and args:

SunOS Release 2.x Version Generic_101674-01 [UNIX System V Release 4.0]

Copyright (c) 1983-1996, Sun Microsystems, Inc.

stc0: board revision: 0x5

stc0: CD-180 Firmware Revision Level: 0x82

stc0: softint pri 128 driver id V2.0.1_FCS

configuring network interfaces: le0.

Hostname: attaws

The system is coming up. Please wait.

checking filesystems

/dev/rdisk/c0t3d0s6: is clean.

/dev/dsk/c0t3d0s6 mounted

Starting process accounting

Flushing routing table:

add net default: gateway cisco

Mon Jun 9 20:39:50 1997

starting rpc services: rpcbind keyserv kerbd done.

Setting default interface for multicast:

add net 224.0.0.0: gateway

attaws

syslog service starting.

Print services started.

Starting License Manager Daemon

ATT3bem

Lucent Technologies UNIX RTR 3B Emulator
(SPARC) 2.5.1

Copyright (c) 1997

```

Lucent Technologies All Rights Reserved
3bem: Tape process started, pid = 233
3btape: initialization complete
3bem: Disk process started, pid = 234
3bdfc: initialization complete
The system is ready.

```

```
attaws console login:
```

(10) Check the EAI Parameters

- (a) Switch over to the MCC page of the Administrative Workstation (AW) by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**. Wait for the EAI page to appear.

- (b) Once the EAI page appears, the following should be set on the EAI

Response: Pri Disk indicators are **SET**.

Backup Root is clear.

Min Config is clear.

- (c) Are the EAI page indicators properly set?

If **YES**, continue with **step 13**.

If **NO**, continue with the next step.

(11) Boot onto the Primary Disk Pair (MHD 0/2)

- (a) Boot onto the primary disk pairs, MHD 0 and MHD 2. On the EAI page, type and enter **20; 31; 33; 54;**.

- (b) Did the EAI page respond with **Boot? (y/n)?**

If **YES**, type and enter **Y** and continue with the next step.

If **NO**, repeat the previous step to boot the AM (**20; 31; 33; 54;**).

(12) Did the AM initialization complete (Page 111/112 displayed)?

If **YES**, then continue with the next step. If **NO**, **seek technical assistance**.

(13) Restore all Moving Head Disks (MHD).

NOTE: It takes about 20 minutes to restore an MHD.

- (a) Go to the **AM, AM Peripherals page**, type and enter command **111**.

Response: MHDs 1 and 3 should be OOS.

- (b) Enter the appropriate pokes to restore all OOS MHDs. Type and enter command **30X**

Where:

X = MHD number that is OOS (1 and 3).

Response: **RST MHD x IN PROGRESS**

- (c) Wait until all MHDs are fully restored to the ACT state.

Response: **RST MHD x COMPLETED**

- (d) If any MHD cannot be restored, **seek technical assistance**.

4.6 Equipment Configuration Database (ECD) Preparation

NOTE: A flag must be set to indicate to the software release retrofit procedures that the previous procedures, repartitioning, and new disks have been installed. The flag will be a value in the ECD which will be verified by the On-Switch ECD Audit as well as the ECD Evolution. Complete the following steps to set the repartitioning flag.

CAUTION: The previous steps of this procedure, Administrative Workstation Preparation, Primary Disk Conversion, and Secondary Disk Conversion **MUST** have been successfully completed prior to executing these procedures.

- (1) At **MCC**, ensure terminal is in **CMD** mode.

- (2) Type and enter: **199**.

Response: MCC page 199 (RCV ECD Parameter Info) is displayed. Cursor at **1. database_name:**

- (3) Type and enter: **incore**

Response: Cursor at **2.reviewonly:**

- (4) Type and enter: **n**

Response: Cursor at **3. journaling:**

- (5) Type and enter: *****.

Response: Cursor at **Enter Execute, Change, Substitute, Validate, or Print:**

- (6) Type and enter: **e** (for execute)

Response: UNIX RTR RCV (ODIN) - Data Entry page is displayed. Cursor at **Enter Form Name:**

- (7) Type and enter: **trbegin**

Response: Cursor at **1. tr_name:**

- (8) Hit **CARRIAGE RETURN** 1 time

Response: Cursor at **Enter Execute, Change, Substitute, Validate or Print:**

- (9) Type and enter: **e** (for execute)

Response: Cursor at **Enter Form Name:**

- (10) Type and enter: **ucb**

Response: Cursor at **I=Insert R=Review U=Update D=Delete:**

(11) Type and enter: **u** (for update)

(12) Type and enter: *****

Response: Cursor at **3.k_unit_name:**

(13) Type and enter: **MHD**

Response: Cursor at **4.k_unit_number:**

(14) Type and enter: **8**

Response: **Enter Update, Change, Substitute, Validate, screen#, or Print:**

(15) Type and enter: **c** (for change)

Response: **Change field:**

(16) Type and enter: **equipage**

Response: **22.equipage:0xe**

(17) Type and enter: **0xf**

Response: **Change field:**

(18) Hit **CARRIAGE RETURN** 1 time

Response: Cursor at **Enter Update, Change, Substitute, Validate, screen#, or Print:**

(19) Type and enter: **u** (for update)

Response: **1. k_complex_name:**

(20) Type and enter: **<**

Response: UNIX RTR RCV (ODIN) - Data Entry page is displayed. Cursor at **Enter Form Name:**

(21) Type and enter: **trend**

(22) Type and enter: *****

Response: Cursor at **Enter Execute, Change, Substitute, Validate or Print:**

(23) Type and enter: **e (for execute)**

Response: Cursor at **Enter Form Name:**

(24) Type and enter: **activate**

Response: Cursor at **1.copy_inc_to_disk:**

(25) Type and enter: **YES**

Response: Cursor at **Enter Execute, Change, Substitute, Validate or Print:**

(26) Type and enter: **e** (for execute)

Response: **incore copied to disk**

(27) Type and enter: **<**

Response: Cursor at **Enter Form Name:**

(28) Hit **CARRIAGE RETURN** 1 time

Response: **CMD<** prompt is returned.

STOP. YOU HAVE COMPLETED THIS PROCEDURE

Appendix 5: 5E11 TO 5E12 EMULATOR AND SUN[®] OS RETROFIT

5.1 Introduction

To perform this retrofit, see 235-120-131, *5ESS[®] Switch Very Compact Digital Exchange (VCDX) Software Retrofit Procedures*. This appendix is a high level outline of the steps necessary to software release retrofit the emulator and Sun[®] OS from 5E11 to 5E12 and is intended only as a supplement to the retrofit manual.

5.2 Procedure Overview

The first part of this procedure deals with the *preconditions* necessary prior to execution. The second part of this procedure deals with the *AW preparation* necessary for the retrofit. The third part of this procedure deals with retrofit of the *primary* disk. The fourth part of this procedure deals with retrofit of the *secondary* disk.

The following outlines the general steps executed in this procedure.

- (1) Meet the required preconditions
- (2) AW Preparation
 - Isolate the switching module.
 - Write and transfer all Automatic Message Accounting (AMA) data off the switch.
- (3) Primary Disk Conversion Procedures
 - Halt the AW and load in the new emulator and Sun[®] OS tape to the primary disk.
 - Boot on the secondary disk pair (MHDs 1 and 3).
 - Restore all Moving Head Disks (MHDs).
 - Boot on the primary disk pair (MHDs 0 and 2).
- (4) Secondary Disk Conversion Procedure
 - Backup the AW.

5.2.1 Preconditions

The following **preconditions** must be met before executing this procedure.

- (1) Approximate Execution Time: **5 - 6 Hours**
- (2) Current Software Release: **5E12**
- (3) Administrative Workstation: **Fully Operational**
- (4) Complete set of **Generic Backup** tapes for the following:
 - AM Text
 - AM ODD

- SM Text
- SM ODD
- Emulator and Sun OS.

(5) Digital Audio Tape (DAT): **5E12(1)02.00-VCDX Emulator and Sun OS**

5.3 AW Preparation

- (1) Isolate the switching module from the AW.
- (a) Go to the **Switching Module Inhibit and Recovery Control Page** . Type and enter command **1800**.
- (b) Set switching module manual isolation. Type and enter **403**.

Response: **ISOLATE? (Y/N)**

- (c) Type and enter **Y** to the confirmation.

Response: **SET ISOL SM=x COMPLETED**

Where:

x = The switching module number.

- (d) If the switching module cannot be isolated, **seek technical assistance**.
- (2) Write the Automatic Message Accounting (AMA) data from memory to disk.
- (a) Enter the following input command:

WRT:AMADATA

Response: **WRT AMA DATA HAS BEEN WRITTEN TO DISK READY TO TRANSFER DATA FROM DISK TO OUTPUT MEDIUM**

- (3) Transfer the AMA data from the disk to the output medium, see 235-105-210, *Routine Operations and Maintenance Procedures*.

5.4 Primary Disk Conversion Procedures

- (1) Halt the Administrative Workstation.

NOTE: These are the same procedures as outlined in "Halt the Administrative Workstation," Procedure 3.2 .

- (a) If the emulator is running, halt the emulator. See "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .
- (b) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return)

on the **MCC**.

- (c) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (d) At the console prompt, login as **awadmin**, for example:

```
attaws console login:awadmin
```

- (e) From the **Administrative Workstation main menu**, select "Halt the Workstation", Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the Administrative Workstation main menu will return.)

Response:

```
You have chosen to halt the workstation. If the
emulator is running, it must be halted before
continuing. Refer to the main menu item of
halt the emulator.
```

```
Do you want to continue (yes/no)yes
```

- (f) Wait for one of the following prompts. When one of these prompts appear, the workstation has been successfully halted.

Response:

```
Program terminated
Type help for more information
ok
```

(2) Load DAT Tape

- (1) Load the **5E12(1)02.00-VCDX Emulator and Sun OS** Digital Audio Tape (DAT) as indicated in "Preconditions," Section 5.2.1, into the DAT tape drive.

NOTE: Procedures to load a tape into the DAT drive can be found in "Load Tape in DAT Tape Drive," Procedure 3.16.

(3) Read the DAT Tape to the Primary Disk

NOTE: This tape is read into the Administrative Workstation (AW) disk that has a SCSI target of 3 as indicated in the target address display on the rear panel of the disk drive.

- (a) Enter the following command at the **ok** prompt to read this tape to disk:

NOTE: It takes about 120 to 150 minutes to read this tape.

```
boot tape1 -v -l -t3 -p2
```

Response:

```
Resetting ...
```

```
SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
Keyboard not present.
```

Using tty for input and output

SPIF/stc FCode initialization complete

SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 64 MB memory installed, Serial #yyyyyyyy.
Ethernet® address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.

Initializing Memory

Rebooting with command: tape1 -v -l -t3 p2

Boot device:

/iommu/sbus/espdma@5,8400000/esp@5,8800000/

st@5,0 File and args: -v -l -t3 p2

Standalone IPL

(check [ok] load relocate)

Stand-alone copy program (1.0).

Reading tape information (program label control).

Processing 1 volume(s).

Searching for SCSI target 3 ...<AVAILABLE>.

WARNING Disk and Tape labels have different partitions.

Continue (y/n)? y

If this ***WARNING*** appears, it is asking to continue.

(b) Type and enter: **Y**

NOTE: In the following response, the size calculation of **-3MB** for partition number 2 is printed wrong.
This does not affect functionality of the boot.

Response:

Partition Table (from tape):

Part	Tag	Flag	Cylinders	Size
0	root	wm	0 - 66	~70MB
1	swap	wu	67 - 351	~300MB
2	backup	wm	0 - 3879	~-3MB
3	var	wm	352 - 446	~100MB
4	unassigned	wm	447 - 873	~450MB
5	unassigned	wm	874 - 2233	~1GB
6	usr	wm	2234 - 2518	~300MB
7	unassigned	wm	2519 - 3879	~1GB

Total of data in this tape set = 8380800 blocks.

Destination partition size = 8380800 blocks.

0MB /

0MB

0MB |

0MB -

....

....

4092MB /

4092MB

4092MB |

4092MB -

```
Original disk label has been written.
Type 'go' to resume
Type help for more information
ok
```

(4) Boot System onto the Newly Refreshed Disk

- (a) When the **ok** prompt appears, tape reading is complete. Now boot the system onto the newly refreshed disk.

Enter the following command:**boot**

Response:

```
ok boot
Resetting ...
```

```
SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
```

```
Keyboard not present. Using tty for input and output.
```

```
SPIF/stc FCode initialization complete
```

```
SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 64 MB memory installed, Serial #yyyyyyy.
Ethernet address 8:0:20:1f:cc:69, Host ID: xxxxxxxx.
```

```
Initializing Memory
```

```
Rebooting with command:
```

```
Boot device:
```

```
 /iommu/sbus/espdma@5,8400000/esp@5,8800000/sd@3,0
```

```
File and args:
```

```
SunOS Release 5.5.1 Version Generic_101674-01
```

```
[UNIX System V Release 4.0]
```

```
Copyright (c) 1983-1996, Sun Microsystems, Inc.
```

```
stc0: board revision: 0x5
```

```
stc0: CD-180 Firmware Revision Level: 0x82
```

```
stc0: softint pri 128 driver id V2.0.1_FCS
```

```
configuring network interfaces: le0.
```

```
Hostname: attaws
```

```
The system is coming up. Please wait.
```

```
checking filesystems
```

```
/dev/rdisk/c0t3d0s6: is clean.
```

```
/dev/dsk/c0t3d0s6 mounted
```

```
Starting process accounting
```

```
Flushing routing table:
```

```
add net default: gateway cisco
```

```
Mon Sep 12 20:39:50 1994
```

```
starting rpc services: rpcbind keyserv kerbd done.
```

```
Setting default interface for multicast: add net 224.0.0.0:
```

```
gateway attaws
```

```
syslog service starting.
Print services started.
Starting License Manager Daemon
```

```
ATT3bem          Lucent Technologies UNIX RTR 3B Emulator
                  (SPARC) 2.5.1
```

```
Copyright (c) 1997 Lucent Technologies
All Rights Reserved
3bem: Tape process started, pid = 233
3btape: initialization complete
3bem: Disk process started, pid = 234
3bdfc: initialization complete
The system is ready.
```

```
attaws console login:
3bem: Tape process started, pid = 235
3btape: initialization complete
3bem: Disk process started, pid = 236
3bdfc: initialization complete
. . . . .
. . . . .
. . . . .
```

NOTE: The sequence of 3bem:, 3btape:, and 3bdfc: messages continue to repeat until an action is taken on the EAI page. At this time, the MCC EAI page is accessible and one can continue with the next step.

(5) Boot onto the Secondary Disk Pair (MHDs 1 and 3):

- (a) Switch over to the MCC page of the Administrative Workstation (AW) by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**. Wait for the EAI page to appear.
- (b) Once the EAI page appears, boot onto the secondary disk pairs, MHD 1 and MHD 3. On the EAI page, type and enter **22; 31; 33;**.

NOTE: The entering of the pokes should be timed between the beeps of the MCC.

Response: Sec Disk indicators are **SET**.

Backup Root is clear.

Min Config is clear.

- (c) On the EAI page, type and enter command **42; b; 54;** to boot the AM with the switching module isolated.
- (d) Did the EAI page respond with **Boot? (y/n)**?

If **YES**, then type and enter **Y** and continue with the next step.

If **NO**, then repeat the previous step to boot the AM with the switching module isolated (**42; b; 54;**).

- (e) Did the AM initialization complete (Page 111/112 displayed)?

If **YES**, then continue with the next step.

If **NO**, seek technical assistance.

- (6) Restore all Moving Head Disks (MHDs).

NOTE: It takes about 15 minutes to restore an MHD.

- (a) Go to the **AM, AM Peripherals** page, type and enter command: **111**.

Response: MHDs 0 and 2 should be OOS.

- (b) Enter the appropriate pokes to restore all OOS MHDs. Type and enter command **30X**

Where:

X = MHD number that is OOS (0 and 2).

Response: **RST MHD x IN PROGRESS**

- (c) Wait until all MHDs are fully restored to the ACT state.

Response: **RST MHD x COMPLETED**

- (d) If any MHD cannot be restored, **seek technical assistance**.

- (7) Boot onto the Primary Disk Pair (MHDs 0 and 2):

- (a) On the **EAI** page, boot onto the primary disk pairs, MHD 0 and MHD 2. On the EAI page, type and enter **23; 20; 31; 33**;

Response: Pri Disk indicators are **SET**.

Backup Root is clear.

Min Config is clear.

- (b) On the EAI page, type and enter command **42; b; 54**; to boot the AM with the switching module isolated.

- (c) Did the EAI page respond with **Boot? (y/n)**?

If **YES**, then type and enter **Y** and continue with the next step.

If **NO**, then repeat the previous step to boot the AM with the switching module isolated (**42; b; 54**);).

- (d) Did the AM initialization complete (Page 111/112 displayed)?

If **YES**, go to **Secondary Disk Conversion**.

If **NO**, **seek technical assistance**.

5.5 Secondary Disk Conversion Procedures

- (1) Backup the AW.

NOTE: These are the same procedures as outlined in "Backup the Administrative Workstation Operating

System," Procedure 3.4 .

- (a) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
- (b) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (c) At the login prompt, login as **awadmin**, for example:

```
console login: awadmin
```

- (d) From the **Administrative Workstation main menu**, select "Backup the workstation operating system/emulator to disk." (If you select a task by mistake, answer **no** to the confirmation, and the main menu will return.)
- (e) From the **operating system/emulator backup to secondary disk menu**, select "Execute backup of the workstation operating system/emulator to disk." Answer **yes** to the confirmation.

Response:

```
You have chosen to backup the workstation operating  
system/emulator to disk.
```

```
Do you want to continue? (y/n) yes
```

- (f) Wait for the **operating system/emulator backup to secondary disk menu** to return. This will take about 15 minutes to complete.
- (g) When the **operating system/emulator backup to secondary disk menu** returns, select "Return to the main menu."
- (h) When the **Administrative Workstation main menu** returns, select "Exit".
- (i) Switch over to the MCC page of the AW by holding down the Ctrl key and pressing Enter (not Return) on the **MCC**. Wait for the MCC display to appear.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.

Appendix 6: 5E12 VCDX SWITCH TO 5ESS[®] SWITCH CONVERSION PROCESS GUIDELINES

6.1 OVERVIEW

This appendix covers the process of converting a 5E12 software release VCDX switch to a 5ESS[®] switch (for example, the Administrative Workstation [AW] is being replaced by a 3B21D AM and CM2). This conversion was first made available in the 5E12 software release. Before the VCDX switch to 5ESS[®] switch conversion can proceed, the AM and CM of the 5ESS[®] switch must already be installed, tested, and cycling at the VCDX switch site.

This conversion supports SM-2000 VCDX switch offices.

While this conversion supports VCDX switch SM-2000 conversion to an LSM, it does not support VCDX switch SM-2000 conversion to an RSM, HSM, TRM, etc.

This conversion does not support office growth. All planned growth including QLPS and switching module is to be done after a successful conversion.

NOTE: Upon successful completion of this conversion, the Signaling System 7 (SS7) platform must be changed from Packet Switch Unit (PSU) to Common Network Interface (CNI) before any call processing functions can be performed. Contact your local NARTAC for assistance.

The VCDX switch to 5ESS[®] switch conversion procedures applies to a working office while limiting any adverse impact on service and reliability.

6.2 ENGINEERING GUIDELINES

The standard ordering process is to be followed for the AM and CM2 hardware. Table 6-1 lists hardware that must be ordered and the related technical drawing.

Table 6-1 Hardware Drawings

COMPONENT	DRAWING NUMBER	DRAWING TITLE
3B20D with DAT Tape Drive Unit	J3T061A-1	Common Systems Specification for 3B21D Computer System
CM2	J5D020A-2	5ESS [®] Switching Equipment Specification for Communication Module Model 2 Cabinet (Bays 5 and 6)
	J5D020B-2	5ESS [®] Switching Equipment Specification for Communication Module Model 2 Cabinet (Bays 4 and 7, 3 and 8, 2 and 9, 1 and 10, or 0 and 11)
CMP	J5D020A-2	5ESS [®] Switching Equipment Specification for Communication Module Model 2 Cabinet (Bays 5 and 6)
MCC	J3T061A-1	Common Systems Specification for 3B21D Computer System
ROP	J3T061A-1	Common Systems Specification for 3B21D Computer System
KBD1 NLI Paddleboard (quantity 4)	J5D003NB-1	5ESS [®] Switching Equipment Specification for Time Slot Interchange Unit Model 4, or
	J5D003NB-2	5ESS [®] Switching Equipment Specification for Time Slot Interchange Unit Model 4, Version 2
UN538 MH Pack (quantity 2)	J5D003NA-1	5ESS [®] Switching Equipment Specification for Switching Module Processor Unit Model 4, Version 2, or
	J5D003NG-1	5ESS [®] Switching Equipment Specification for Switching Module Processor Unit Model 5

982 ET Connector (quantity 2)	J5D003NA-1 J5D003NG-1	5ESS [®] Switching Equipment Specification for Switching Module Processor Unit Model 4, Version 2, or 5ESS [®] Switching Equipment Specification for Switching Module Processor Unit Model 5
Fiber-Optic Cable with Connections on Each End (quantity 8)	ED5D518-30	5ESS [®] Switching Equipment Arranged with 2-Wire Features Fiber-Optic Lightguide Cable Assemblies
SCANs Cable for 3B21D	ED5D500-21	Intercabinet Cabling for 5ESS [®] Switch
AMA Cable for 3B21D	ED5D500-21	Intercabinet Cabling for 5ESS [®] Switch
TTY Cable for 3B21D	ED5D500-21	Intercabinet Cabling for 5ESS [®] Switch

6.3 DOCUMENTATION REFERENCES

The following is a list of documents to reference during the conversion process:

- For VCDX Conversion Procedures, see *5ESS[®] Switch Growth/Degrowth/Conversion - U.S. Software Releases, SIG-C-WU-100, Section 9602.*
- For AM/CM2 hardware installation, see appropriate sections of *5ESS[®] Switch Installation (Mechanical Assembly) - World Wide Applications, SIG-I-WW-100.*
- For AM/CM2 hardware testing, see the minimum number of sections listed here in the *5ESS[®] Switch Installation (New Start Test) - U.S. Software Releases, SIG-T-WU-100:*

2506 Power Verification - Processor Cabinet and Peripheral Growth Cabinet (3B21D)

2509 Power Verification - CM2 with Modular FFU

3503 AM Test - Magnetic Tape Units (3B21D Only)

3506 AM Test - Diagnostic and Testing Procedures (3B21D Only)

3509 AM Test - IOP Diagnostic Procedures (3B21D Only)

3512 AM Test - Magnetic Tape Unit Exerciser Test

3515 AM Test - Recovery Testing Procedures (3B21D Only)

3518 AM Test - Alarm Generation (3B21D Only)

3524 AM Test - Beltline TTY Installation and Test

3527 AM Test - Scans Link

4503 CM2 Test.

- For loading ECD, ODD, and TEXT tapes on the AM, see *5ESS[®] Switch Installation (New Start Test) - U.S. Software Releases, SIG-T-WU-100, Section 0536 — Receiving, Replacing, and Updating Software Releases and ECDs.*
- 235-080-100, *Translations Guide (TG-5).*

6.4 PLANNING

6.4.1 Intervals and Timing Constraints

Figure and Table 6-2 show a high level time line and should be used as guides for site activity planning. The conversion interval will be approximately five weeks.

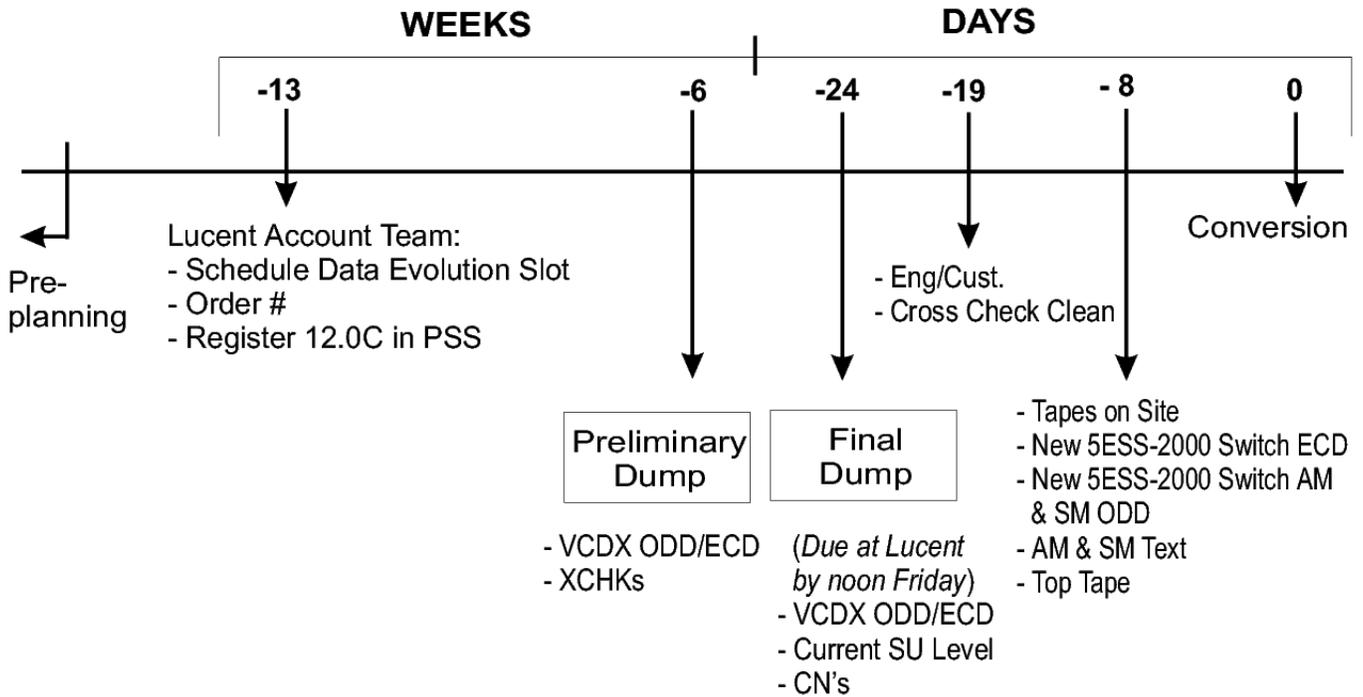


Figure 6-1 VCDX Switch to 5ESS Switch Conversion Time Line

Table 6-2 VCDX Switch to 5ESS® Switch Conversion Time Line

CONVERSION STAGE	TIMEFRAME	ACTIVITY
Advance Preparation	-9 weeks	Switch Owner: <ul style="list-style-type: none"> Critical item list reviewed DAT unit available and functional
	-6 weeks	Lucent: <ul style="list-style-type: none"> 5ESS® switch AM/CM installation complete and cycling Switch Owner: <ul style="list-style-type: none"> Hardware CNs completed Full office backups performed Preliminary Office Dependent Data (ODD) and Equipment Configuration Database (ECD) dumped to tape Tapes shipped to Lucent Lucent: <ul style="list-style-type: none"> Preliminary ODD and ECD results reviewed Switch Owner: <ul style="list-style-type: none"> Acceptance test plan prepared

	-4 weeks	Switch Owner: <ul style="list-style-type: none"> • Office records checked • Software updates completed • Non-essential breakpoints removed • Trunk status verified • Full office backups performed • Final ODD and ECD dumped to tape • RC and CORC double logging started • Tapes shipped to Lucent
	-7 days	Lucent: <ul style="list-style-type: none"> • Load AM TEXT, ODD, and ECD and switching module TEXT and ODD on 5ESS[®] switch • Test AM/CM • Copy switching module pump files from 3B21D to tape
Implement Conversion		
Begin	0 days	Lucent: <ul style="list-style-type: none"> • MCTSI side 1 diagnosed • MCTSI simplexed • Conversion hardware installed on MCTSI side 1 • Communication path diagnosed
Enter		Lucent: <ul style="list-style-type: none"> • Customer alarm scan points recorded • RC inhibited • Full office backups performed • RC log dumped to tape • OOS trunk log dumped to tape • Odd numbered VCDX switch disks taken off-line • Copy switching module pump files from tape to VCDX switch disks
Pump		Lucent: <ul style="list-style-type: none"> • Switching module pump files off-line pumped to MCTSI side 1
Proceed		Lucent: <ul style="list-style-type: none"> • AMA data written and polled • VCDX switch AMA and SCANS data links disconnected • 5ESS[®] switch AMA and SCANS data links connected • CORC's inhibited • Full office backups performed • CORC log dumped to tape • 5ESS[®] switch initialized on MCTSI side 1 • Communication established on MCTSI side 1 • AMA data collected • CORCs and RCs applied on 5ESS[®] switch • OOS trunk differences resolved
Soak		Lucent: <ul style="list-style-type: none"> • Acceptance test plan executed

Commit	Lucent: <ul style="list-style-type: none"> • Conversion hardware installed on MCTSI side 0 • Diagnostics completed • ONTC duplexed • MCTSI duplexed • Customer alarm scan points reassigned • Scan points connected
--------	--

6.5 IMPACT

6.5.1 Data Impact

Database dumps are part of the advance preparation for this conversion.

Three to five weeks prior to the begin stage of the conversion, a preliminary Office Dependent Data (ODD) and Equipment Configuration Database (ECD) dump will be performed. The existing VCDX switch ODD and ECD will be dumped to tape. These tapes will be shipped to Lucent Technologies for the standard Office Data Assembler (ODA) cross check clean process.

Twenty-four days prior to the begin stage of the conversion, a final ODD and ECD dump will be performed. The existing VCDX switch ODD and ECD will be dumped to tape. These tapes will be shipped to Lucent Technologies for ODA processing and data conversion from the VCDX switch to the 5ESS[®] switch.

All tapes are shipped to:

5ESS[®] Switch ODD/ECD Tape Processing Department
 Lucent Technologies
 2600 Warrenville Road
 Lisle, IL 60532

The following forms are affected as part of the ODA conversion process. Refer to 235-080-100, *Translations Guide (TG-5)*.

form name	attribute	value or action
<i>ecdopt</i>	all attributes	fill out form
<i>eqcore</i>	VCDX	N
	NC CLI	a
	AUTO CLI	a
	TMS CLI	a
	TMS SHELF	insert shelf 0 and 1
	CLOCK TYPE	a
	OSC TYPE	a
<i>nclhref</i>	REFERENCE	a
	REFERENCE TYPE	a
<i>ofcopt</i>	AM MEMORY	10240
	PRODUCT	5ESS
<i>eqim</i>	NCT EVEN	02
	TS1COM 0 CLI	0x1
	TS1COM 1 CLI	0x1
	SA BILL	N
	MH 0 CLI	0x0
	MH 1 CLI	0x0
<i>eqnli</i>	EVEN NLI	insert form
	ODD NLI	insert form
<i>eqtmslink</i>	SM1 NCT	insert forms for links 2,3,6, and 7
<i>eqrau</i>	SM1 ALARM TYPE ASC	delete form
<i>ralm</i>	SM1	delete forms
<i>rxschd</i>	ENTITY	insert form ENTITY = 000

<i>tkgrp</i>	Local switching module	insert form ENTITY = 001 blank out local switching module field for announcement trunks only
<i>eqpc</i>		insert PPC, FPC, MMP
Notes:		
a. office dependent		

Prior to the begin stage, the site should have received the following tapes from Lucent for loading onto the 5ESS[®] switch:

- TOP tape
- 2 copies of AM and SM TEXT
- 2 copies of AM and SM ODD
- 2 copies of the ECD.

6.5.2 Feature Impact

Signalling System 7 (SS7) is supported in the VCDX switch conversion; however after the conversion, SS7 cannot be grown unless CNI is installed on the 5ESS[®] switch.

6.5.3 Service Impact

Following is the impact on service during the conversion:

- The SM-2000 will be simplexed during the BEGIN conversion interval.
- The magnetic hard disks will be simplexed during the ENTER conversion interval. The time is determined by several factors which include tape reading time, office size, and the duration of the acceptance testing during the SOAK interval.
- Recent changes (RCs) and all customer originated recent changes (CORCs) will be reapplied on the 5ESS[®] switch. RCs will be inhibited. CORCs will be inhibited briefly prior to initialization.
- RCs will be applied at a rate of approximately 400 to 700 per hour using the RC batch insert mechanism. Reapplication time is dependent on the complexity of the RC views to be updated, the number of RCs to be applied, and the amount of traffic. OFFRCR is not supported.
- CORCs will be applied at a rate of approximately 3000 to 8000 per hour depending on office size and equipage.
- During the conversion initialization the following port calls in the "talking" state are maintained:
 - analog voice and data line calls
 - analog or digital trunk calls
 - Integrated Services Digital Network (ISDN) BRI circuit switched voice and data calls
 - ISDN Primary Rate Interface (PRI) circuit switched voice and data calls
- All other calls will be routed to reorder. Packet switched calls are not saved during initialization. All calls that are saved can only disconnect, they cannot activate features and cannot be billed.

- Transient call processing will be suspended for approximately 3 to 6 minutes. ISDN call processing may not be available for a longer period of time depending on equipage. New originations will be routed to reorder.
- All pending billing data residing in buffers which have not been written to disk will be lost.
- All pending traffic and plant measurement data will be lost.
- Out-of-service (OOS) status for all faulty equipment will be lost. Lists, dumped during the ENTER conversion interval, can be used to remove the previous OOS equipment after the system recovers.

6.6 OFFICE PREPARATION AND SUPPORT

6.6.1 Critical Item List

The following items are critical to performing this conversion. The operating company has responsibility for ensuring that all items listed are ordered and are on hand for the conversion.

- Scratch DAT Tapes
- Current 5E12 Software Update Level
- AM TEXT and converted AM ODD and ECD Tapes
- SM TEXT and converted SM ODD Tapes

6.6.2 Circuit Pack Spares

Before starting the conversion, verify that there is an adequate number of circuit pack spares at the office.

6.6.3 Software Update (SU) and CN Levels

The office must attain a level of software updates (SUs) and hardware change notices (CNs) to ensure successful conversion. In general, SU and CN application should be finished before starting this conversion procedure.

6.6.4 Growth Items

All required growth must be completed before starting this conversion so that any database errors introduced by the growth can be detected and corrected. If any units are in a growth state, these units will be OOS after ODD conversion.

If any units are in any growth state (for example, unequipped, grow, special grow), there are two available options:

- (a) Make the unit fully operational
- (b) Degrow the unit.

6.6.5 Test Lines

At least one test line in the SM-2000 should be defined in the office before the final database dump. These lines should be single-party lines. Do not use multiline hunt lines.

As a further check, at least one line from every NXX exchange in the office should be tested.

6.6.6 FX Lines

Two foreign exchange (FX) lines (one for the VCDX and one for the 3B21D) are recommended for the central office remote Receive-Only Printer (ROP) monitoring on the night of the conversion. The FX lines are used for voice and data communication with off-site support centers during the conversion. Cellular phones should also be used to insure communication between the office and remote monitoring sites. Plans should be made now to have these lines available one day before the conversion.

Data sets may be required to support FX lines. The following data set, adapter, and cable (or equivalents) is needed for the 3B21D:

- ITE-6134 212AR data set
- ITE-9839A Adapter for 212A data set
- ITE-8962 ROP data cable.

The following is needed for the VCDX:

- EDSD764-30 group 46 cable and modem.

6.6.7 Staffing

The operating company should plan to staff the central office for at least one full shift on the day of the conversion and one to two shifts the following day. The office should also be closely monitored after the conversion to include one day of normal office traffic (for example, one normal business day).

The operating company should designate a "conversion coordinator." This person will be on site during the conversion and will have final authority over the conversion.

6.6.8 Trunk Status Information

Trunk status mapping (TSM) maps OOS trunk data across an SM-2000 conversion initialization.

Before the initialization, the craft builds a file containing a current list of OOS trunks by entering a command. The craft dumps this file to tape. After initialization, the craft copies this file onto the 5ESS[®] switch and executes a command to build a file containing a summary of OOS trunk mismatches, which also get dumped to the ROP. The craft can enter another command which will remove all the trunks in the mismatch file.

Table 6-3 provides a list of supported and unsupported trunk statuses.

Table 6-3 Trunk Status Mapping

STATUS BEFORE INITIALIZATION ^a	AFTER INITIALIZATION ^b
OOS BLKD - - MAN	Same
OOS BLKD - DM_REC'D AUTO	Same
OOS BLKD - IDLE AUTO	Same
OOS CADN DSBLD - AUTO	Same
OOS CADN DSBLD - MAN	Same
OOS CADN LKDO - AUTO	Same
OOS CADN LKDO - MAN	Same
OOS MTCE DSBLD - MAN	Same
OOS MTCE DSBLD CAMA AUTO	Same
OOS MTCE DSBLD CAMA MAN	Same
OOS MTCE DSBLD ERATC AUTO	Same
OOS MTCE DSBLD ERATP AUTO	Same
OOS MTCE DSBLD SCC MAN	Same

OOS MTCE LKDO - MAN	Same
OOS MTCE LKDO ERATP AUTO	Same
OOS MTCE LKDO TRBL MAN	Same
OOS MTCE LKDO RO MAN	Same
OOS MTCE RAP - MAN	Same
OOS MTCE RAP ORSP AUTO	Same
OOS BLKD - - AUTO	Same
OOS MTCE CCSINIT - AUTO	Same
OOS MTCE COT ORIG AUTO	Same
OOS MTCE COT TERM AUTO	Same
OOS TMT - - MAN	Same
OOS MTCE CCSINIT STARTUP AUTO	Same
OOS BLKD X X MAN	OOS BLKD - - MAN
OOS CADN X X MAN	OOS CADN DSBLD - MAN
OOS MTCE DSBLD X MAN	OOS MTCE DSBLD - MAN
OOS MTCE LKDO X MAN	OOS MTCE LKDO - MAN
Notes:	
a. The dash (-) indicates a "null" field; X indicates a field of any value.	
b. If a trunk status appears in this column, the trunk status in "before initialization" will be mapped to this default value, except when the trunk status exactly matches another status shown.	
Same indicates the trunk status is directly mapped across the initialization and the status of the trunk is saved.	
Not mapped indicates the trunk status will not be saved across the initialization and will therefore come up ACTIVE .	

6.6.9 OOS-CADN Trunks

Table 6-4 provides a list of OOS-CADN trunk statuses.

Table 6-4 OOS-CADN Trunk Status

AT TIME OF FINAL DATABASE TAPE DUMP	DURING -2 WEEK INTERVAL	AFTER INITIALIZATION
In-service	OOS-CADN OOS (non-CADN)	OOS-CADN ^a OOS (non-CADN) ^a
OOS (non-CADN)	OOS-CADN OOS (non-CADN)	OOS-CADN ^a OOS (non-CADN) ^a
OOS-CADN	OOS-CADN	OOS-CADN ^a
OOS-CADN	In-service	OOS-CADN
Notes:		
a. Mapped by TSM.		

6.6.10 RC/CORC Reapplication

Once double-logging is started 3 weeks before conversion, RCs and CORCs are double-logged at the end of each ODD backup. Before initialization the craft dumps the double-logged RC and CORCs files to tape. After initialization the craft copies these files onto the 5ESS[®] switch, after which commands are executed to reapply these RCs and CORCs.

Appendix 7: 5E12 ADMINISTRATIVE WORKSTATION (AW) MEMORY GROWTH

7.1 Introduction

WARNING: Prior to performing this growth procedure, contact the North American Regional Technical Assistance Center (NARTAC) at 1-800-225-RTAC for the minimum required Software Update Level.

This appendix outlines the steps necessary to install and configure 64 Megabytes (Mb) of additional dynamic random access memory (DRAM) into a 5ESS[®] Switch VCDX Administrative Workstation (AW). This will give the AW a total of 128 Mb of DRAM. This memory growth is a requirement for all VCDX offices prior to the retrofit from 5E12 to 5E13.

7.2 Procedure Overview

The first part of this procedure outlines the necessary *preconditions* that must be met before the actual memory growth is performed. The second part of this procedure is performing the *AW preparation* necessary for the memory growth. The third part of this procedure is the installation of the new *DRAM memory module* (DSIMM). The fourth and final part of this procedure is the installation of the required *software* changes to the Equipment Configuration Database (ECD).

The following outlines the general steps executed in this procedure.

- (1) Meet the required preconditions.
- (2) Prepare the Administrative Workstation (AW).
 - Isolate the switching module.
 - Write the Automatic Message Accounting (AMA) data from memory to disk.
 - Transfer the AMA data from the disk to the output medium.
- (3) Install DRAM Memory Module (DSIMM). Execute the procedure to install DSIMM memory modules that is found in the Sun[®] Microsystems **DSIMMs Installation Guide** that is supplied with the DSIMMs.

The following steps should be executed:

- Halt the operating system.
- Turn off the power to the units.
- Detach cables.
- Open the SPARC5 workstation.
- Attach the Wrist Strap.
- Identify the memory slots.
- Install the DSIMMs.
- Close the SPARC5 workstation.
- Reattach all existing cables.

- Restore power to all hardware units and allow system to re-boot.
- (4) Install the software.
- Apply the ECD changes and boot the changes into AM memory.

7.2.1 Preconditions

The following **preconditions** must be met before executing this procedure.

- (1) Approximate Execution Time: **1.5 Hours**
- (2) Current Software Release: **5E12**
- (3) Administrative Workstation: **Fully Operational**
- (4) Complete set of **Generic Backup** tapes for the following:
 - AM Text
 - AM ODD
 - SM Text
 - SM ODD
 - Emulator and Sun OS.
- (5) BWM/SU Level: The BWM/SU level should contain the 3B20D Emulator Expansion Feature, 97-5E-4804, SU level 99-0006.

Contact the North American Regional Technical Assistance Center (NARTAC) at 1-800-225-RTAC for the **minimum required Software Update Level**.

- (6) Two 32 Mb SPARC5 DSIMMs (ED5D764-30 Group 35 or 36)
- (7) Anti-static wrist strap (should be provided with DSIMMs)
- (8) Phillips screwdriver
- (9) Reference Documentation: 235-120-120, *5ESS[®] Switch Very Compact Digital Exchange (VCDX) User's Guide*
- (10) *Sun[®]* Microsystems Reference Documentation: **DSIMMs Installation Guide** (provided with DSIMMs)

7.3 AW Preparation

- (1) Isolate the switching module from the AW.
 - (a) Go to the **Switching Module Inhibit and Recovery Control Page (1800)**, type and enter command **1800**.

- (b) Set switching module manual isolation. Type and enter: **403**.

Response: **ISOLATE? (Y/N)**

- (c) Type and enter: **Y** to the confirmation.

Response: **SET ISOL SM=x COMPLETED**

Where:

x = The switching module number.

- (d) If the switching module cannot be isolated, **seek technical assistance**.

- (2) Write the Automatic Message Accounting (AMA) data from memory to disk.

- (a) Enter the following input command:

WRT:AMADATA

Response: **WRT AMA DATA HAS BEEN WRITTEN TO DISK
READY TO TRANSFER DATA FROM DISK TO OUTPUT MEDIUM**

- (3) Transfer the AMA data from the disk to the output medium, see 235-105-210, *Routine Operations and Maintenance Procedures*.

7.4 DRAM Memory Module (DSIMM) Installation Procedures

- (1) Halt the AW.

NOTE: These are the same procedures as outlined in "Halt the Administrative Workstation," Procedure 3.2 .

- (a) If the emulator is running, halt the emulator. See "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .
- (b) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
- (c) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (d) At the console prompt, login as **awadmin**, for example:

```
attaws console login:awadmin
```

- (e) From the **Administrative Workstation main menu**, select "Halt the Workstation". Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the **Administrative Workstation main menu** will return.)

Response:

```
You have chosen to halt the workstation. If the
emulator is running, it must be halted before
continuing. Refer to the main menu item of
halt the emulator.
```

Do you want to continue (yes/no) **yes**

- (f) Wait for the following prompts. When these prompts appear, the workstation has been successfully halted.

Response:

```
Program terminated
Type help for more information
ok
```

- (2) Remove power to the AW units according to the procedures found in "Remove Power to Administrative Workstation Units," Procedure 3.6 .

NOTE: The following procedures require the use of the Sun[®] Microsystems **DSIMMs Installation Guide**.

- (3) Execute the **DSIMMs Installation Guide** procedures beginning with **Step 5** of the *Opening the System* section; Steps 1 through 4 of the section have already been covered here. Continue to execute **all** steps in the guide including the sections *Installing the DSIMMs* and *Closing the System*.

This will include the following steps:

- Detaching cables
- Opening the SPARC5 workstation
- Attaching the Wrist Strap
- Identifying the memory slots
- Installing the DSIMMs
- Closing the SPARC5 workstation
- Reattaching all existing cables
- Restoring power to all hardware units and allowing system to boot.

NOTE: *Figure 1* of the **DSIMMs Installation Guide** indicates there may be four, five, or six slots provided in the workstation for DSIMMs. In the AW, Slots 0 and 1 located nearest to the rear panel of the workstation should be occupied by DSIMMs. Add the additional two DSIMMs to the next two adjacent unoccupied Slots 2 and 3.

When the workstation is powered-up in the final step of the guide, watch for the system banner to verify that the additional memory is recognized. It should show that **128 MB** of memory is installed. If this is not the case, **seek technical assistance**. The following output should appear on boot:

```
Resetting ...
```

```
SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
Keyboard not present. Using tty for input and output.
```

```

SPIF/stc FCode initialization complete

SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 128 MB memory installed, Serial #yyyyyyy.

Ethernet address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.

Initializing Memory ...

```

- (4) Did the AM initialization complete (Page 111/112 displayed)?

If **YES**, then continue with the next step.

If **NO**, **seek technical assistance**.

- (5) Restore all Moving Head Disks (MHD).

NOTE: It takes about 20 minutes to restore an MHD.

- (a) Go to the **AM, AM Peripherals page**, type and enter command **111**.
- (b) Are any of the MHDs out of service (OOS)?
If **YES**, continue.
If **NO**, go to "Equipment Configuration Database (ECD) Preparation," Section 7.5 .
- (c) Enter the appropriate pokes to restore all OOS MHDs. Type and enter command **30X**

Where:

X = MHD number that is OOS.

Response: **RST MHD x IN PROGRESS**

- (d) Wait until all MHDs are fully restored to the ACT state.

Response: **RST MHD x COMPLETED**

- (e) If any MHD cannot be restored, **seek technical assistance**.

7.5 Equipment Configuration Database (ECD) Preparation

7.5.1 ROOT ECD Updates for AM Memory

- (1) At **MCC**, ensure terminal is in **CMD** mode.
- (2) Type and enter: **199**.

OR

At RC/V terminal, type and enter:

RCV:MENU,RCVECD;

Response: RCV ECD Parameter Info is displayed. Cursor at **1. database_name:**

- (3) Type and enter: **root**
Response: Cursor at **2.reviewonly:**
- (4) Type and enter: **n**
Response: Cursor at **3. jounaling:**
- (5) Type and enter: *****
Response: UNIX RTR RCV (ODIN) - Data Entry page is displayed. Cursor at **Enter Form Name:**
- (6) Type and enter: **trbegin**
Response: Cursor at **1. tr_name:**
- (7) Hit **CARRIAGE RETURN** 1 time
Response: Cursor at **Enter Execute, Change, Substitute, Validate or Print:**
- (8) Type and enter: **e** (for execute)
Response: Cursor at **Enter Form Name:**
- (9) Type and enter: **btparm**
Response: Cursor at **I=Insert, R=Review, U=Update, D=Delete:**
- (10) Type and enter: **u** (for update)
Response: Cursor at **1. btparmname:**
- (11) Type and enter: **BTPARM**
Response: System populates remainder of view. Cursor at **Enter Update, Change, Substitute, Validate, screen#, or Print:**
- (12) Type and enter: **c** (for change)
Response: Cursor at **Change field:**
- (13) Type and enter: **7**
Response: Cursor at **pages** field.
- (14) Type and enter: **32768**
Response: Cursor at **Change field:**
- (15) Hit **CARRIAGE RETURN** 1 time
Response: Cursor at **Enter Update, Change, Substitute, Validate, screen#, or Print:**
- (16) Type and enter: **u** (for update)
Response: Cursor at **1. btparmname:**

(17) Type and enter: <

Response: UNIX RTR RCV (ODIN) - Data Entry page is displayed. Cursor at **Enter Form Name:**

(18) Type and enter: **ucb**

Response: Cursor at **I=Insert, R=Review, U=Update, D=Delete:**

(19) Type and enter: **u** (for update)

Response: Cursor at **1. k_complex_name:**

(20) Type and enter: **CU**

Response: Cursor at **2. k_complex_number:**

(21) Type and enter: **0**

Response: Cursor at **3.k_unit_name:**

(22) Type and enter: **MASC**

Response: Cursor at **4.k_unit_number:**

(23) Type and enter: **0**

Response: Cursor at **Enter Update, Change, Substitute, Validate, screen#, or Print:**

(24) Type and enter: **c** (for change)

Response: Cursor at **Change field:**

(25) Type and enter: **22**

Response: Cursor at **22.equipage:0xffff**

(26) Type and enter: **0xffff**

Response: Cursor at **Change field:**

(27) Hit **CARRIAGE RETURN** 1 time

Response: Cursor at **Enter Update, Change, Substitute, Validate, screen#, or Print:**

(28) Type and enter: **u** (for update)

Response: Cursor at **1. k_complex_name:**

(29) Type and enter: <

Response: UNIX RTR RCV (ODIN) - Data Entry page is displayed. Cursor at **Enter Form Name:**

(30) Type and enter: **trend**

(31) Hit **CARRIAGE RETURN** 4 times

Response: Cursor at **Enter Execute, Change, Substitute, Validate or Print:**

(32) Type and enter: **e** (for execute)

Response: Cursor at **Enter Form Name:**

(33) Hit **CARRIAGE RETURN** 1 time

Response: RCV MENU RCVECD COMPLETED
CMD< prompt is returned

7.5.2 ROOTDMLY ECD Updates for AM Memory

(1) At **MCC**, ensure terminal is in **CMD** mode.

(2) Type and enter: **199**.

OR

At RCV terminal type and enter:

RCV:MENU,RCVECD;

Response: RCV ECD Parameter Info is displayed. Cursor at **1. database_name:**

(3) Type and enter: **rootdmlly**

Response: Cursor at **2.reviewonly:**

(4) Type and enter: **n**

Response: Cursor at **3. jounaling:**

(5) Type and enter: *****

Response: UNIX RTR RCV (ODIN) - Data Entry page is displayed. Cursor at **Enter Form Name:**

(6) Type and enter: **trbegin**

Response: Cursor at **1. tr_name:**

(7) Hit **CARRIAGE RETURN** 1 time

Response: Cursor at **Enter Execute, Change, Substitute, Validate or Print:**

(8) Type and enter: **e** (for execute)

Response: Cursor at **Enter Form Name:**

(9) Type and enter: **btparm**

Response: Cursor at **I=Insert, R=Review, U=Update, D=Delete:**

(10) Type and enter: **u** (for update)

Response: Cursor at **1. btparmname:**

(11) Type and enter: **BTPARM**

Response: System populates remainder of view. Cursor at **Enter Update, Change, Substitute, Validate, screen#, or Print:**

(12) Type and enter: **c** (for change)

Response: Cursor at **Change field:**

(13) Type and enter: **7**

Response: Cursor at **pages** field.

(14) Type and enter: **32768**

Response: Cursor at **Change field:**

(15) Hit **CARRIAGE RETURN** 1 time

Response: Cursor at **Enter Update, Change, Substitute, Validate, screen#, or Print:**

(16) Type and enter: **u** (for update)

Response: Cursor at **1. btparmname:**

(17) Type and enter: **<**

Response: UNIX RTR RCV (ODIN) - Data Entry page is displayed. Cursor at **Enter Form Name:**

(18) Type and enter: **ucb**

Response: Cursor at **I=Insert, R=Review, U=Update, D=Delete:**

(19) Type and enter: **u** (for update)

Response: Cursor at **1. k_complex_name:**

(20) Type and enter: **CU**

Response: Cursor at **2. k_complex_number:**

(21) Type and enter: **0**

Response: Cursor at **3.k_unit_name:**

(22) Type and enter: **MASC**

Response: Cursor at **4.k_unit_number:**

(23) Type and enter: **0**

Response: Cursor at **Enter Update, Change, Substitute, Validate, screen#, or Print:**

(24) Type and enter: **c** (for change)

Response: Cursor at **Change field:**

(25) Type and enter: **22**

Response: Cursor at **22.equipage:0xffff**

(26) Type and enter: **0xffff**

Response: Cursor at **Change field:**

(27) Hit **CARRIAGE RETURN** 1 time

Response: Cursor at **Enter Update, Change, Substitute, Validate, screen#, or Print:**

(28) Type and enter: **u** (for update)

Response: Cursor at **1. k_complex_name:**

(29) Type and enter: **<**

Response: UNIX RTR RCV (ODIN) - Data Entry page is displayed. Cursor at **Enter Form Name:**

(30) Type and enter: **trend**

(31) Hit **CARRIAGE RETURN** 4 times

Response: Cursor at **Enter Execute, Change, Substitute, Validate or Print:**

(32) Type and enter: **e** (for execute)

Response: Cursor at **Enter Form Name:**

(33) Hit **CARRIAGE RETURN** 1 time

Response: RCV MENU RCVECD COMPLETED
CMD< prompt is returned

7.5.3 Boot To Activate Update

(1) At MTTY, access the Emergency Action Interface (EAI) page:
53 - (Level 3 Initialization)
y - (Boot y/n)?

7.5.4 Update Backup Databases

(1) At MCC, RCV, or STLWS terminal, type and enter:

IN:FILESYS,DIR,FN="/bdb";

Response: IN FILESYS DIR COMPLETED

(2) At MCC, RCV, or STLWS terminal, type and enter:

ALW:FILESYS,MOUNT,FN="/dev/bdb",BSDIR="/bdb";

Response: ALW FILESYS MOUNT COMPLETED

NOTE: PRM_x E800 xxxx xxxx xx xx xx should also be seen indicating a successful mount.

(3) At MCC, RC/V, or STLWS terminal, type and enter:

COPY:FILESYS,FILE,SRC="/database/ecd",DEST="/bdb/ecd";

Response: COPY FILESYS FILE COMPLETED

(4) At MCC, RC/V, or STLWS terminal, type and enter:

COPY:FILESYS,FILE,SRC="/database/appecd",DEST="/bdb/appecd";

Response: COPY FILESYS FILE COMPLETED

(5) At MCC, RC/V, or STLWS terminal, type and enter:

COPY:FILESYS,CFILE,FN="/bdb/ecd";

Response: COPY FILESYS CFILE COMPLETED

(6) At MCC, RC/V, or STLWS terminal, type and enter:

COPY:FILESYS,CFILE,FN="/bdb/appecd";

Response: COPY FILESYS CFILE COMPLETED

(7) At MCC, RC/V, or STLWS terminal, type and enter:

INH:FILESYS,UMOUNT,FN="/dev/bdb";

Response: INH FILESYS UMOUNT COMPLETED

(8) At MCC, RC/V, or STLWS terminal, type and enter:

CLR:FILESYS,DIR,FN="/bdb";

Response: CLR FILESYS DIR COMPLETED

STOP. YOU HAVE COMPLETED THIS PROCEDURE.

Appendix 8: 5E12 TO 5E13 EMULATOR AND SUN[®] OS RETROFIT

8.1 Introduction

To perform this retrofit, see 235-120-132, *5ESS[®] Switch Very Compact Digital Exchange (VCDX) Software Retrofit Procedures*. This appendix is a high level outline of the steps necessary to software release retrofit the emulator and Sun[®] OS from 5E12 to 5E13 and is intended only as a supplement to the retrofit manual.

NOTE: All VCDX offices are required to perform the "5E12 Administrative Workstation (AW) Memory Growth Procedure," Appendix 7 , **prior** to the retrofit from 5E12 to 5E13.

8.2 Procedure Overview

The first part of this procedure deals with the *preconditions* necessary prior to execution. The second part of this procedure deals with the *Administrative Workstation (AW) preparation* necessary for the retrofit. The third part of this procedure deals with retrofit of the *primary* disk. The fourth part of this procedure deals with retrofit of the *secondary* disk.

The following outlines the general steps executed in this procedure.

- (1) Meet the required preconditions
- (2) AW Preparation
 - Isolate the switching module.
 - Write and transfer all Automatic Message Accounting (AMA) data off the switch.
- (3) Primary Disk Conversion Procedures
 - Halt the AW and load in the new emulator and Sun[®] OS tape to the primary disk.
 - Boot on the secondary disk pair (MHDs 1 and 3).
 - Restore all MHDs.
 - Boot onto the Primary Disk Pair (MHDs 0 and 2).
- (4) Secondary Disk Conversion Procedure
 - Backup the AW.

8.2.1 Preconditions

The following **preconditions** must be met before executing this procedure.

- (1) Approximate Execution Time: **3 - 4 Hours**
- (2) Current Software Release: **5E13**
- (3) AW: **Fully Operational**

- (4) Complete set of **Generic Backup** tapes for the following:
- AM Text
 - AM ODD
 - SM Text
 - SM ODD
 - Emulator and Sun OS.
- (5) Digital Audio Tape (DAT): **5E13(1)02.00-VCDX Emulator and Sun OS**
- (6) Reference Documentation: 235-120-1325ESS[®] *Switch Very Compact Digital Exchange (VCDX) Software Release Retrofit Guide.*

8.3 AW Preparation

- (1) Isolate the switching module from the AW.
- (a) Go to the **Switching Module Inhibit and Recovery Control Page** . Type and enter command **1800**.
- (b) Set switching module manual isolation. Type and enter **403**.
- Response: **ISOLATE? (Y/N)**
- (c) Type and enter **Y** to the confirmation.
- Response: **SET ISOL SM=x COMPLETED**
- Where:**
x = The switching module number.
- (d) If the switching module cannot be isolated, **seek technical assistance**.
- (2) Write the Automatic Message Accounting (AMA) data from memory to disk.
- (a) Enter the following input command:
- WRT:AMADATA**
- Response: **WRT AMA DATA HAS BEEN WRITTEN TO DISK READY TO TRANSFER DATA FROM DISK TO OUTPUT MEDIUM**
- (3) Transfer the AMA data from the disk to the output medium, see 235-105-210, *Routine Operations and Maintenance Procedures*.

8.4 Primary Disk Conversion Procedures

(1) Halt the AW.

NOTE: These are the same procedures as outlined in "Halt the Administrative Workstation," Procedure 3.2 .

- (a) If the emulator is running, halt the emulator. See "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .
- (b) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
- (c) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (d) At the console prompt, login as **awadmin**, for example:

```
attaws console login:awadmin
```

- (e) From the **Administrative Workstation main menu**, select "Halt the Workstation", Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the **Administrative Workstation main menu** will return.)

Response:

```
You have chosen to halt the workstation. If the
emulator is running, it must be halted before
continuing. Refer to the main menu item of
halt the emulator.
```

```
Do you want to continue (yes/no)yes
```

- (f) Wait for the following prompts. When these prompts appear, the workstation has been successfully halted.

Response:

```
Program terminated
Type help for more information
ok
```

(2) Load DAT Tape

- (a) Load the **5E13(1)02.00-VCDX Emulator and Sun OS** Digital Audio Tape (DAT) as indicated in the **Precondition** section into the DAT tape drive.

NOTE: Procedures to load a tape into the DAT drive can be found in "Load Tape in DAT Tape Drive," Procedure 3.16 .

(3) Read the DAT Tape to the Primary Disk

NOTE: This tape is read into the AW disk that has a SCSI target of 3 as indicated in the target address display on the rear panel of the disk drive.

- (a) Enter the following command at the **ok** prompt to read this tape to disk:

NOTE: It takes about 120 to 150 minutes to read this tape.

```
boot tape1 -v -l -t3 -p2
```

Response:

Resetting...

SPIF/stc FCode initialization complete
 screen not found.
 Can't open input device.
 Keyboard not present. Using tty for input and output

SPIF/stc FCode initialization complete

SPARCstation 5, No Keyboard
 ROM Rev. 2.xx, 128 MB memory installed, Serial #yyyyyyy.
 Ethernet@ address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.

Initializing Memory

Rebooting with command: tapel -v -l -t3 p2

Boot device:

/iommu/sbus/espdma@5,8400000/esp@5,8800000/

st@5,0 File and args: -v -l -t3 p2

Standalone IPL

(check [ok] load relocate)

Stand-alone copy program (1.0).

Reading tape information (program label control).

Processing 1 volume(s).

Searching for SCSI target 3 ...<AVAILABLE>.

WARNING Disk and Tape labels have different partitions.

Continue (y/n)? y

If the ***WARNING*** appears, it is asking to continue.

(b) Type and enter: **Y**

NOTE: In the following response, the size calculation of **-3MB** for partition number 2 is printed wrong. This does not affect functionality of the boot.

Response:

Partition Table (from tape):

Part	Tag	Flag	Cylinders	Size
0	root	wm	0 - 66	~70MB
1	swap	wu	67 - 351	~300MB
2	backup	wm	0 - 3879	~-3MB
3	var	wm	352 - 446	~100MB
4	unassigned	wm	447 - 873	~450MB
5	unassigned	wm	874 - 2233	~1GB
6	usr	wm	2234 - 2518	~300MB
7	unassigned	wm	2519 - 3879	~1GB

Total of data in this tape set = 8380800 blocks.

Destination partition size = 8380800 blocks.

0MB /

0MB

0MB |

0MB -

```

.....
.....
4092MB /
4092MB
4092MB |
4092MB -

Original disk label has been written.
Type 'go' to resume
Type help for more information
ok

```

(4) Boot System onto the Newly Refreshed Disk

- (a) When the **ok** prompt appears, tape reading is complete. Now boot the system onto the newly refreshed disk. Enter the following command: **boot**

Response:

```
ok boot
Resetting ...
```

```
SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
```

```
Keyboard not present. Using tty for input and output.
```

```
SPIF/stc FCode initialization complete
```

```
SPARCstation 5, No Keyboard
ROM Rev. 2.xx, 128 MB memory installed, Serial #yyyyyyy.
Ethernet address 8:0:20:1f:cc:69, Host ID: xxxxxxxx.
```

```
Initializing Memory
```

```
Rebooting with command:
```

```
Boot device:
```

```
 /iommu/sbus/espdma@5,8400000/esp@5,8800000/sd@3,0
```

```
File and args:
```

```
SunOS Release 5.5.1 Version Generic_101674-01
```

```
[UNIX System V Release 4.0]
```

```
Copyright (c) 1983-1996, Sun Microsystems, Inc.
```

```
stc0: board revision: 0x5
```

```
stc0: CD-180 Firmware Revision Level: 0x82
```

```
stc0: softint pri 128 driver id V2.0.1_FCS
```

```
configuring network interfaces: le0.
```

```
Hostname: attaws
```

```
The system is coming up. Please wait.
```

```
checking filesystems
```

```
/dev/rdisk/c0t3d0s6: is clean.
```

```
/dev/dsk/c0t3d0s6 mounted
```

```
Starting process accounting
```

```
Flushing routing table:
```

```
add net default: gateway cisco
```

```

Mon Sep 12 20:39:50 1994
starting rpc services: rpcbind keyserv kerbd done.
Setting default interface for multicast: add net 224.0.0.0:
gateway attaws
syslog service starting.
Print services started.
Starting License Manager Daemon

```

```

ATT3bem          Lucent Technologies UNIX RTR 3B Emulator
                  (SPARC) 2.5.1

```

```

Copyright (c) 1997 Lucent Technologies
All Rights Reserved
3bem: Tape process started, pid = xxx
3btape: initialization complete
3bem: Disk process started, pid = xxx
3bdfc: initialization complete
The system is ready.

```

```

attaws console login:
3bem: Tape process started, pid = xxx
3btape: initialization complete
3bem: Disk process started, pid = xxx
3bdfc: initialization complete
. . . . .
. . . . .
. . . . .

```

NOTE: The sequence of 3bem:, 3btape:, and 3bdfc: messages continue to repeat until an action is taken on the EAI page. At this time, the MCC EAI page is accessible and one can continue with the next step.

(5) Boot onto the Secondary Disk Pair (MHDs 1 and 3)

- (a) Switch over to the MCC page of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**. Wait for the EAI page to appear.

NOTE: The entering of the following pokes should be timed between the beeps of the MCC.

- (b) Once the EAI page appears, boot onto the secondary disk pairs, MHD 1 and MHD 3. On the EAI page, type and enter **22; 31; 33;**.

Response: Sec Disk indicators are **SET**.

Backup Root is clear.

Min Config is clear.

- (c) On the EAI page, type and enter command **54** to boot.

If **YES**, then continue with the next step.

If **NO**, then type and enter command **54** again.

(6) Restore all MHDs.

NOTE: It takes about 15 minutes to restore an MHD.

- (a) Go to the **AM, AM Peripherals page**, type and enter command **111**.

Response: MHDs 0 and 2 should be OOS.

- (b) Enter the appropriate pokes to restore all OOS MHDs. Type and enter command **30X**

Where:

X = MHD number that is OOS (0 and 2).

Response: **RST MHD x IN PROGRESS**

- (c) Wait until all MHDs are fully restored to the ACT state.

Response: **RST MHD x COMPLETED**

- (d) If any MHD cannot be restored, **seek technical assistance**.

- (7) Boot onto the Primary Disk Pair (MHDs 0 and 2):

- (a) On the **EAI** page, boot onto the primary disk pairs, MHD 0 and MHD 2. On the EAI page, type and enter **23; 20; 31; 33;**

Response: Pri Disk indicators are **SET**.

Backup Root is clear.

Min Config is clear.

- (b) On the EAI page, type and enter command **42; b; 54;** to boot the AM with the switching module isolated.

- (c) Did the EAI page respond with **Boot? (y/n)**?

If **YES**, then type and enter **Y** and continue with the next step.

If **NO**, then repeat the previous step to boot the AM with the switching module isolated (**42; b; 54;**).

- (d) Did the AM initialization complete (Page 111/112 displayed)?

If **YES**, go to **Secondary Disk Conversion**.

If **NO**, **seek technical assistance**.

8.5 Secondary Disk Conversion Procedures

- (1) Backup the AW.

NOTE: These are the same procedures as outlined in "Backup the Administrative Workstation Operating System," Procedure 3.4 .

- (a) Switch to the **UNIX**® console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.

- (b) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (c) At the login prompt, login as **awadmin**, for example:

```
console login: awadmin
```

- (d) From the **Administrative Workstation main menu**, select "Backup the workstation operating system/emulator to disk." (If you select a task by mistake, answer **no** to the confirmation, and the main menu will return.)
- (e) From the **operating system/emulator backup to secondary disk menu**, select "Execute backup of the workstation operating system/emulator to disk." Answer **yes** to the confirmation.

Response:

```
You have chosen to backup the workstation operating  
system/emulator to disk.
```

```
Do you want to continue? (y/n) yes
```

- (f) Wait for the **operating system/emulator backup to secondary disk menu** to return. This will take about 15 minutes to complete.
- (g) When the **operating system/emulator backup to secondary disk menu** returns, select "Return to the main menu".
- (h) When the **Administrative Workstation main menu** returns, select "Exit".
- (i) Switch over to the MCC page of the AW by holding down the Ctrl key and pressing Enter (not Return) on the **MCC**. Wait for the MCC display to appear.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.

Appendix 9: ADMINISTRATIVE WORKSTATION (AW) SERIAL PARALLEL INTERFACE CONTROLLER (SPC) GROWTH

9.1 Introduction

The purpose of this appendix is to outline the steps necessary to install and configure the second Serial Parallel Interface Controller (SPC) card into a 5ESS[®] Switch VCDX Administrative Workstation (AW). The second SPC card would be used for those offices that require more than 6 asynchronous TTY ports.

9.2 Procedure Overview

The first part of this procedure deals with the *preconditions* necessary prior to execution. The second part of this procedure deals with the *AW preparation* necessary for the SPC growth. The third part of this procedure deals with installation of the new SPC hardware. The fourth part of this procedure deals with installation of the new SPC software. The fifth part of this procedure deals with backing up the AW operating system.

The following outlines the general steps executed in this procedure.

- (1) Meet the required preconditions.
- (2) Prepare the Administrative Workstation (AW).
 - Backup the Administrative Workstation (AW).
 - Restore all Moving Head Disks (MHDs).
 - Isolate the switching module.
 - Write the Automatic Message Accounting (AMA) data from memory to disk.
 - Transfer the AMA data from the disk to the output medium.
- (3) Install serial parallel interface controller hardware.
 - Halt the AW.
 - Remove power to all AW hardware units.
 - Detach all cables and label them if necessary.
 - Execute the **Installing the Serial Parallel Controller** procedures in the **Sun[®] Microsystems Serial Parallel Controller User's Guide**.
 - Execute the following procedures found in the **Sun[®] Microsystems Installing SBus Cards in Desktop SPARCstations Manual**.
 - Prepare to Install.
 - Open the 3 SBus Slot SPARCstation.
 - Attach the Wrist Strap.
 - Identify the SBus Slot.
 - Remove the Filler Panel from a 3 SBus Slot or 2 SBus Slot System.

- Prepare the SBus Card.
- Install the SBus Card in a 3 SBus Slot or 2 SBus Slot SPARCstation.
- Close the 3 SBus Slot SPARCstation.

— Reattach all existing cables.

— Attach the new Serial Parallel Interface Controller cable to the new SBus card installed in SBus slot 1.

— Attach the **new** Serial Parallel Interface Controller patch panel to the cable attached to SBus slot 1.

— Restore power to all hardware units and halt the AW.

(4) Install serial parallel interface controller software.

— Boot with the device reconfiguration command.

— Halt the AM emulator.

(5) Diagnose the new serial parallel interface controller hardware.

— Switch to the *UNIX*[®] console of the AW.

— Login as root.

— Diagnose the new SPC.

— Reboot the AW.

— Restore all Moving Head Disks (MHDs).

(6) Backup AW operating system.

9.2.1 Preconditions

The following **preconditions** must be met before executing this procedure.

- (1) Approximate Execution Time: **1.5 - 2 Hours**
- (2) Current Software Release: **5E12 or later.**
- (3) Administrative Workstation: **Fully Operational**
- (4) Complete set of **Generic Backup** tapes for the following:
 - AM Text
 - AM ODD
 - SM Text
 - SM ODD

- Emulator and Sun OS

- (5) BWM/SU Level (BWM/SU level should contain the Additional Serial Ports Feature, 99-5E-4085)
- (6) One additional Serial Parallel Interface Controller SBus card (ED5D764-30 Group 4A)
- (7) One additional Serial Parallel Interface Controller patch panel (ED5D764-30 Group 4A)
- (8) One additional Serial Parallel Interface Controller cable (ED5D764-30 Group 4A)
- (9) Anti-static wrist strap
- (10) Phillips screwdriver
- (11) The root password for the AW which can be obtained from the 5ESS[®] Switch Customer Technical Support organization
- (12) Reference Documentation: 235-120-120, 5ESS[®] Switch Very Compact Digital Exchange (VCDX) User's Guide
- (13) Sun[®] Microsystems Reference Documentation: **Installing SBus Cards in Desktop SPARCstations**
- (14) Sun[®] Microsystems Reference Documentation: **Serial Parallel Controller User's Guide**

9.2.2 Administrative Workstation (AW) Preparation

- (1) Backup the AW.

NOTE: These are the same procedures as outlined in "Backup Administrative Workstation Operating System," Section 3.4 .

- (a) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing Enter (not Return) on the MCC.
- (b) If a login prompt does not appear, press Return repeatedly until one appears.
- (c) At the console prompt, login as **awadmin**, for example:


```
attaws console login: awadmin
```
- (d) From the **Administrative Workstation main menu**, select the task, "Backup the workstation operating system/emulator to disk". (If you select a task by mistake, answer no to the confirmation, and the AW menu will return.)
- (e) From the **operating system/emulator backup to secondary disk menu**, select task 1), "Execute backup of the workstation operating system/emulator to disk." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the operating system/emulator backup to secondary disk menu will return.)

Response:

```
You have chosen to backup the workstation operating
system/emulator to disk.
```

```
Do you want to continue (yes/no) yes
```

- (f) Wait for the **operating system/emulator backup to secondary disk menu** to return. This will take about 20 minutes to complete.
- (g) When the **operating system/emulator backup to secondary disk menu** returns, select task 4), "Return to the main menu."
- (h) When the **Administrative Workstation main menu** returns, select, "Exit".
- (i) Switch over to the MCC page of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**. Wait for the MCC display to appear.

(2) Restore all Moving Head Disks (MHD).

NOTE: It takes about 20 minutes to restore an MHD.

- (a) Go to the **AM, AM Peripherals page** by typing and entering command **111**.
- (b) Are any of the MHDs out of service (OOS)? If **YES**, continue. If **NO**, go to **step 3** of "Administrative Workstation (AW) Preparation," Section 9.2.2 .
- (c) Enter the appropriate pokes to restore all OOS MHDs. Type and enter command **30X**.

Where:

X = MHD number that is OOS.

Response: **RST MHD x IN PROGRESS**

- (d) Wait until all MHDs are fully restored to the ACT state.

Response: **RST MHD x COMPLETED**

NOTE: If any MHD cannot be restored, **seek technical assistance**.

(3) Isolate the switching module from the AW.

- (a) Go to the **Switching Module Inhibit and Recovery Control Page** . Type and enter command **1800**.
- (b) Set switching module manual isolation. Type and enter **403**.

Response: **ISOLATE? (Y/N)**

- (c) Type and enter **Y** to the confirmation.

Response: **SET ISOL SM=x COMPLETED**

Where:

x = The switching module number.

- (d) If the switching module cannot be isolated, **seek technical assistance**.

(4) Write the AMA data from memory to disk.

- (a) Enter the following input command:

WRT:AMADATA

Response: **WRT AMA DATA HAS BEEN WRITTEN TO DISK
READY TO TRANSFER DATA FROM DISK TO/OUTPUT MEDIUM**

- (5) Transfer the AMA data from the disk to the output medium, see 235-105-210, *Routine Operations and Maintenance Procedures*.

9.2.3 Serial Parallel Interface Controller Hardware Installation

- (1) Halt the AW.

NOTE: These are the same procedures as outlined in "Halt the Administrative Workstation," Procedure 3.2 .

- (a) If the emulator is running, halt the emulator. See "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .
- (b) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
- (c) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (d) At the console prompt, login as **awadmin**, for example:

```
attaws console login:awadmin
```

- (e) From the **Administrative Workstation main menu** , select "Halt the Workstation", Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the AW main menu will return.)

Response:

```
You have chosen to halt the workstation. If the
emulator is running, it must be halted before
continuing. Refer to the main menu item of
halt the emulator.
```

```
Do you want to continue (yes/no) yes
```

- (f) Wait for the following prompts. When these prompts appear, the workstation has been successfully halted.

Response:

```
Program terminated
Type help for more information

ok
```

- (2) Remove power to the AW units according to the procedures found in "Remove Power to Administrative Workstation Units," Procedure 3.6 .

- (3) Detach all cables from the AW System Unit paying particular attention where each cable attaches. If necessary, label each cable and where it attaches to the back of the AW System Unit.

NOTE: The following procedures require the use of the **Sun[®] Microsystems Serial Parallel Controller User's Guide** and the **Sun[®] Microsystems Installing SBus Cards in Desktop SPARCstations** manuals.

- (4) Execute the Installing the Serial Parallel Controller procedures in the **Sun[®] Microsystems Serial Parallel Controller User's Guide**.

NOTE: The card **MUST** be installed using the jumper settings for a **RS-232** configuration. Failure to set the jumpers for a RS-232 configuration will make the additional TTY serial ports unusable.

- (5) Execute the following procedures found in the **Sun[®] Microsystems Installing SBus Cards in Desktop SPARCstations** manual.

- (a) Preparing to Install
- (b) Opening the 3 SBus Slot SPARCstation
- (c) Attaching the Wrist Strap
- (d) Identifying the SBus Slot
- (e) Removing the Filler Panel from a 3 SBus Slot or 2 SBus Slot System
- (f) Preparing the SBus Card
- (g) Installing the SBus Card in a 3 SBus Slot or 2 SBus Slot SPARCstation
- (h) Closing the 3 SBus Slot SPARCstation

- (6) Re-attach all the cables to the system unit that were previously removed in Step 3.
- (7) Attach the new Serial Parallel Interface Controller cable to the new SBus card installed in SBus slot 1.
- (8) Attach the new Serial Parallel Interface Controller patch panel to the cable attached to SBus slot 1.
- (9) Restore power to the AW units according to the procedures found in "Restore Power to Administrative Workstation Units," Section 3.7 .

NOTE: Once you see the "ROM Rev." message, you should immediately halt the boot operation by sending a **break** sequence to the AW. For example, on the **UNIX[®]** console you should hold down the **Control** key and pressing **F5**.

Response:

```
Resetting ...
```

```
SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
Keyboard not present. Using tty for input and output.
```

```
SPIF/stc FCode initialization complete
```

```

SPARCstation 5, No Keyboard
ROM Rev. 2.xx, MMM MB memory installed, Serial #yyyyyyyy.

Ethernet® address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.

Initializing Memory ...

```

By this time, the boot operation should have been halted. If the boot operation is continuing, halt the boot operation by sending a **break** sequence to the AW by holding down the **Control** key and pressing **F5**.

Wait for the following prompts. When these prompts appear, the workstation has been successfully halted.

Response:

```

Program terminated
Type help for more information
ok

```

9.2.4 Serial Parallel Interface Controller Software Installation

- (1) Enter the following **boot -r** command at the **ok** prompt to boot the system and reconfigure the software devices to detect the installation of the new Serial Parallel Interface Controller (SPC) card.

boot -r

Response:

```

Resetting ...

SPIF/stc FCode initialization complete
screen not found.
Can't open input device.
Keyboard not present. Using tty for input and output.

SPIF/stc FCode initialization complete

SPARCstation 5, No Keyboard
ROM Rev. 2.xx, MMM MB memory installed, Serial #yyyyyyyy.
Ethernet® address 8:0:20:1f:cc:69, Host ID: xxxxxxxx.

Initializing Memory

Rebooting with command:

Boot device: /iommu/sbus/espdma@5,8400000/esp@5,8800000/
sd@3,0 File and args:

SunOS Release 5.5.1 Version Generic_101674-01 [UNIX System V
Release 4.0]

Copyright (c) 1983-19yy, Sun Microsystems, Inc.

stc0: board revision: 0x5

stc0: CD-180 Firmware Revision Level: 0x82

```

```
stc0: softint pri 128 driver id V2.0.1_FCS

configuring network interfaces: le0.

Hostname: attaws
Configureing the /devices directory

hih0: reset

hih0: up and running at 1536000 baud, mode=fdx txc=txc rxc=rxo

hih1: reset

hih1: up and running at 1536000 baud, mode=fdx txc=txc rxc=rxo

hih2: reset

hih2: up and running at 1536000 baud, mode=fdx txc=txc rxc=rxo

hih3: reset

hih3: up and running at 1536000 baud, mode=fdx txc=txc rxc=rxo

The system is coming up. Please wait.

Configuring the /dev directory

Configuring the /dev directory (compatibility devices)

The system is coming up. Please wait.

checking filesystems

/dev/rdisk/c0t3d0s6: is clean.

/dev/dsk/c0t3d0s6 mounted
Starting process accounting

Flushing routing table:
add net default: gateway cisco

Day Month Day mm:hh:ss year

starting rpc services: rpcbind keyserb kerbd done.

Setting default interface for multicast: add net 224.0.0.0:
gateway attaws

syslog service starting.

Print services started.
Starting License Manager Daemon
```

```
ATT3bem          Lucent Technologies UNIX RTR 3B Emulator
                  (SPARC) 2.5.1
```

```
Copyright (c) 1997 Lucent Technologies
All Rights Reserved
```

```
3bem: Tape process started, pid = xxx
3btape: initialization complete
3bem: Disk process started, pid = yyy
3bdfc: initialization complete
The system is ready.
```

```
attaws console login:
```

- (2) Immediately halt the AM emulator using the procedures outlined in "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .

9.2.5 Diagnose New Serial Parallel Interface Controller Hardware

- (1) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
- (2) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (3) At the console prompt, login as **root**, for example:

```
attaws console login: root
```

```
password: Can be obtained from 5ESS® switch CTS.
```

- (4) Execute the *Sun*[®] Microsystems diagnostic of the newly installed SPC card. At the # prompt, enter the following eight commands one at a time. You should get the response shown here. Each diagnostic test takes approximately 15 seconds to complete.

```
/opt/SUNWvts/bin/spif -v -f -o dev=/dev/term/13,M=Internal
/opt/SUNWvts/bin/spif -v -f -o dev=/dev/term/14,M=Internal
/opt/SUNWvts/bin/spif -v -f -o dev=/dev/term/15,M=Internal
/opt/SUNWvts/bin/spif -v -f -o dev=/dev/term/16,M=Internal
/opt/SUNWvts/bin/spif -v -f -o dev=/dev/term/17,M=Internal
/opt/SUNWvts/bin/spif -v -f -o dev=/dev/term/18,M=Internal
/opt/SUNWvts/bin/spif -v -f -o dev=/dev/term/19,M=Internal
/opt/SUNWvts/bin/spif -v -f -o dev=/dev/term/20,M=Internal
```

Response:

```
"spif: Started."
"Begin spif test"
"Baud rate = 9600, character size = 8, stop bit = 1,
parity = none, control flow = rtscts"
"data pattern = 0xaaaaaaaa"
"Internal Test"
"End spif test"
"spif: Stopped successfully"
```

- (5) Did all of the SPC diagnostics complete successfully?

If **YES**, continue with next **step**.

If **NO**, **seek technical assistance**.

- (6) Enter the following **reboot** command at the **#** prompt to boot the system:

reboot

Response:

```
Resetting ...
```

```
SPIF/stc FCode initialization complete
```

```
SPIF/stc FCode initialization complete  
screen not found.
```

```
Can't open input device.
```

```
Keyboard not present. Using tty for input and output.
```

```
SPIF/stc FCode initialization complete
```

```
SPIF/stc FCode initialization complete
```

```
SPARCstation 5, No Keyboard
```

```
ROM Rev. 2.xx, MMM MB memory installed, Serial #yyyyyyy.
```

```
Ethernet address 8:0:20:1f:cc:69, Host ID: zzzzzzzz.
```

```
Initializing Memory
```

```
Rebooting with command:
```

```
Boot device: /iommu/sbus/espdma@5,8400000/esp@5,8800000/  
sd@3,0 File and args:
```

```
SunOS Release 2.x Version Generic_101674-01 [UNIX System V  
Release 4.0]
```

```
Copyright (c) 1983-19yy, Sun Microsystems, Inc.
```

```
stc0: board revision: 0x5
```

```
stc0: CD-180 Firmware Revision Level: 0x82
```

```
stc0: softint pri 128 driver id V2.0.1_FCS
```

```
configuring network interfaces: le0.
```

```
Hostname: attaws
```

```
The system is coming up. Please wait.
```

```
checking filesystems
```

```
/dev/rdisk/c0t3d0s6: is clean.
```

```
/dev/dsk/c0t3d0s6 mounted
```

```
Starting process accounting
```

```
Flushing routing table:
```

```
add net default: gateway cisco
```

```
Day Month Day mm:hh:ss year
```

```
starting rpc services: rpcbind keyserd kerbd done.
```

```
Setting default interface for multicast: add net 224.0.0.0:
```

```
gateway attaws
```

```
syslog service starting.
```

```
Print services started.
```

```
Starting License Manager Daemon
```

```
ATT3bem          Lucent Technologies UNIX RTR 3B Emulator
                  (SPARC) 2.5.1
```

```
Copyright (c) 1997 Lucent Technologies
All Rights Reserved
```

```
3bem: Tape process started, pid = xxx
3btape: initialization complete
3bem: Disk process started, pid = yyy
3bdfc: initialization complete
The system is ready.
```

```
attaws console login:
```

- (7) Did the AM initialization complete (Page 111/112 displayed)?

If **YES**, continue with next **step**.

If **NO**, **seek technical assistance**.

- (8) Restore all Moving Head Disks (MHD).

NOTE: It takes about 20 minutes to restore an MHD.

- (a) Go to the **AM, AM Peripherals** page by typing and entering command **111**.

- (b) Are any of the MHDs out of service (OOS)?

If **YES**, continue with next **step**.

If **NO**, go to "Backup Administrative Workstation Operating System," Section 9.2.6 .

- (c) Enter the appropriate pokes to restore all OOS MHDs. Type and enter command **30X** where:

X = MHD number that is OOS.

Response: **RST MHD x IN PROGRESS**

- (d) Wait until all MHDs are fully restored to the ACT state.

Response: **RST MHD x COMPLETED**

- (e) If any MHD cannot be restored, **seek technical assistance**.

9.2.6 Backup Administrative Workstation Operating System

- (1) Backup the AW.

NOTE: These are the same procedures as outlined in "Backup Administrative Workstation Operating System," Section 3.4 .

- (a) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the MCC.

- (b) If a login prompt does not appear, press Return repeatedly until one appears.

- (c) At the console prompt, login as **awadmin**, for example:

```
attaws console login: awadmin
```

- (d) From the **Administrative Workstation main menu**, select the task, "Backup the workstation operating system/emulator to disk." (If you select a task by mistake, answer **no** to the confirmation, and the AW menu will return.)
- (e) From the **operating system/emulator backup to secondary disk menu**, select task 1), "Execute backup of the workstation operating system/emulator to disk." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the operating system/emulator backup to secondary disk menu will return.)

Response:

```
You have chosen to backup the workstation operating  
system/emulator to disk.
```

```
Do you want to continue (yes/no) yes
```

- (f) Wait for the **operating system/emulator backup to secondary disk menu** to return. This will take about 20 minutes to complete.
- (g) When the **operating system/emulator backup to secondary disk menu** returns, select task 4), "Return to the main menu"
- (h) When the **Administrative Workstation main menu** returns, select, "Exit."
- (i) Switch over to the MCC page of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the MCC. Wait for the **MCC** display to appear.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.

Appendix 10: ADMINISTRATIVE WORKSTATION (AW) SERIAL ASYNCHRONOUS INTERFACE (SunSAI/P) BOARD GROWTH

10.1 Introduction

The purpose of this appendix is to outline the steps necessary to install and configure the second Serial Asynchronous Interface (SunSAI/P) board into a 5ESS[®] Switch VCDX Administrative Workstation (AW). The second SunSAI/P board would be used for those offices that require more than 6 asynchronous TTY ports.

10.2 Procedure Overview

The first part of this procedure deals with the *preconditions* necessary prior to execution. The second part of this procedure deals with the *AW preparation* necessary for the SunSAI/P growth. The third part of this procedure deals with installation of the new SunSAI/P hardware. The fourth part of this procedure deals with diagnosis of the new SunSAI/P hardware.

The following outlines the general steps executed in this procedure.

- (1) Meet the required preconditions.
- (2) Prepare the Administrative Workstation (AW).
 - Backup the Administrative Workstation (AW).
 - Restore all Moving Head Disks (MHDs).
 - Isolate the switching module.
 - Write the Automatic Message Accounting (AMA) data from memory to disk.
 - Transfer the AMA data from the disk to the output medium.
- (3) Install serial asynchronous interface board hardware.
 - Halt the AW.
 - Remove power to all AW hardware units.
 - Detach all cables and label them if necessary.
 - Add secondary PCI card to PCI Slot 1.
 - Restore power to all hardware units.
- (4) Diagnose the new serial asynchronous interface board hardware.
 - Switch to the *UNIX*[®] console of the AW.
 - Login as root.
 - Diagnose the new SunSAI/P.
 - Switch over to the MCC page of the AW.

10.2.1 Preconditions

The following **preconditions** must be met before executing this procedure.

- (1) Approximate Execution Time: **1.5 - 2 Hours**
- (2) Current Software Release: **5E14 or later.**
- (3) Administrative Workstation: **Fully Operational**
- (4) Complete set of **Generic Backup** tapes for the following:
 - AM Text
 - AM ODD
 - SM Text
 - SM ODD
 - Emulator and Sun OS
- (5) One additional Serial Asynchronous Interface Broad PCI card (ED5D764-35 Group 15 #X1156A)
- (6) One additional EIA-232 Connector Box (ED5D764-35 Group 15 #X1156A)
- (7) One additional EIA-232 Cable (ED5D764-35 Group 15 #X1156A)
- (8) Anti-static wrist strap
- (9) Phillips screwdriver
- (10) The root password for the AW which can be obtained from the 5ESS[®] Switch Customer Technical Support (CTS) organization
- (11) Reference Documentation: 235-120-120, 5ESS[®] *Switch Very Compact Digital Exchange (VCDX) User's Guide*
- (12) Sun[®] Microsystems Reference Documentation: **Netra[™] t 1120/1125 Service Manual**
- (13) Sun[®] Microsystems Reference Documentation: **SunSAI/P User's Guide**

10.2.2 Administrative Workstation (AW) Preparation

- (1) Backup the AW.

NOTE: These are the same procedures as outlined in "Backup Administrative Workstation Operating System," Section 3.4 .

- (a) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing Enter (not Return) on the MCC.
- (b) If a login prompt does not appear, press Return repeatedly until one appears.

- (c) At the console prompt, login as **awadmin**, for example:

```
attaws console login: awadmin
```

- (d) From the **Administrative Workstation main menu**, select the task, "Backup the workstation operating system/emulator to disk". (If you select a task by mistake, answer no to the confirmation, and the AW menu will return.)
- (e) From the **operating system/emulator backup to secondary disk menu**, select task 1), "Execute backup of the workstation operating system/emulator to disk." Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the operating system/emulator backup to secondary disk menu will return.)

Response:

```
You have chosen to backup the workstation operating
system/emulator to disk.
```

```
Do you want to continue (yes/no) yes
```

- (f) Wait for the **operating system/emulator backup to secondary disk menu** to return. This will take about 20 minutes to complete.
- (g) When the **operating system/emulator backup to secondary disk menu** returns, select task 4), "Return to the main menu."
- (h) When the **Administrative Workstation main menu** returns, select, "Exit".
- (i) Switch over to the MCC page of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**. Wait for the MCC display to appear.

- (2) Restore all Moving Head Disks (MHD).

NOTE: It takes about 20 minutes to restore an MHD.

- (a) Go to the **AM, AM Peripherals page** by typing and entering command **111**.
- (b) Are any of the MHDs out of service (OOS)? If **YES**, continue. If **NO**, go to **step 3** of "Administrative Workstation (AW) Preparation," Section 9.2.2 .
- (c) Enter the appropriate pokes to restore all OOS MHDs. Type and enter command **30X**.

Where:

X = MHD number that is OOS.

Response: **RST MHD x IN PROGRESS**

- (d) Wait until all MHDs are fully restored to the ACT state.

Response: **RST MHD x COMPLETED**

NOTE: If any MHD cannot be restored, **seek technical assistance**.

- (3) Isolate the switching module from the AW.

- (a) Go to the **Switching Module Inhibit and Recovery Control Page** . Type and enter command **1800**.
- (b) Set switching module manual isolation. Type and enter **403**.

Response: **ISOLATE? (Y/N)**

- (c) Type and enter **Y** to the confirmation.

Response: **SET ISOL SM=x COMPLETED**

Where:

x = The switching module number.

- (d) If the switching module cannot be isolated, **seek technical assistance**.
- (4) Write the AMA data from memory to disk.
- (a) Enter the following input command:

WRT:AMADATA

Response: **WRT AMA DATA HAS BEEN WRITTEN TO DISK
READY TO TRANSFER DATA FROM DISK TO/OUTPUT MEDIUM**

- (5) Transfer the AMA data from the disk to the output medium, see 235-105-210, *Routine Operations and Maintenance Procedures*.

10.2.3 Serial Asynchronous Interface Board Hardware Installation

- (1) Halt the AW.

NOTE: These are the same procedures as outlined in "Halt the Administrative Workstation," Procedure 3.2 .

- (a) If the emulator is running, halt the emulator. See "Halt the Administrative Module (AM) Emulator," Procedure 3.1 .
- (b) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
- (c) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (d) At the console prompt, login as **awadmin**, for example:

attaws console login:**awadmin**

- (e) From the **Administrative Workstation main menu** , select "Halt the Workstation", Answer **yes** to the confirmation. (If you select a task by mistake, answer **no** to the confirmation, and the AW main menu will return.)

Response:

You have chosen to halt the workstation. If the emulator is running, it must be halted before continuing. Refer to the main menu item of

halt the emulator.

Do you want to continue (yes/no) **yes**

- (f) Wait for the following prompts. When these prompts appear, the workstation has been successfully halted.

Response:

```
Program terminated
Type help for more information
```

```
ok
```

- (2) Remove power to the AW units according to the procedures found in "Remove Power to Administrative Workstation Units," Procedure 3.6 .
- (3) Detach all cables from the AW System Unit paying particular attention where each cable attaches. If necessary, label each cable and where it attaches to the back of the AW System Unit.

NOTE: The following procedures require the use of the **Sun[®] Microsystems SunSAI/P User's Guide** and the **Sun[®] Microsystems Netra[™] t 1120/1125 Service Manual**.

- (4) Add secondary PCI card to PCI Slot 1.

NOTE: Use the **Installing SunSAI/P Boards** procedures in the **Sun[®] Microsystems SunSAI/P User's Guide** for reference during this step.

Execute the following steps of the sub-procedure **To Replace a PCI Card** in the **Sun[®] Microsystems Netra[™] t 1120/1125 Service Manual**

- Attach a wrist strap
 - Remove the top access cover (see "Install a DAT or CD-ROM Drive (*Netra[™] t*)", Section 3.11 Step 3 and 4 of this document).
 - Identifying the PCI Slot 1.
 - Lower the PCI card so that it touches its associated slot on the motherboard.
 - From the two upper corners of the card, push the card straight downwards into the slot until it is fully seated.
 - Using a No.2 Phillips-headed screwdriver, insert and tighten the screw securing the card bracket tab to the system chassis.
 - Replace the top access cover.
- (5) Reattach all existing cables.
 - (6) Attach the **new** EIA-232 cable to the **new** PCI card installed in PCI slot 1
 - (7) Attach the **new** EIA-232 Connector box to the cable attached to PCI slot 1.

- (8) Restore power to the AW units according to the procedures found in "Restore Power to Administrative Workstation Units," Section 3.7 .

10.2.4 Diagnose New Serial Asynchronous Interface Board Hardware

- (1) Switch to the *UNIX*[®] console of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the **MCC**.
- (2) If a login prompt does not appear, press **Return** repeatedly until one appears.
- (3) At the console prompt, login as **root**, for example:

```
attaws console login: root
```

```
password: Can be obtained from 5ESS® switch CTS.
```

- (4) Execute the *Sun*[®] Microsystems diagnostic of the newly installed SPC card. At the # prompt, enter the following command. The response should be as shown here. The diagnostic test takes approximately 15 seconds to complete.

```
/opt/SUNWvts/bin/spif -v -f -o dev=saip1,M=Internal,sp=b
```

Response:

```
"saiptest: Started."
.3 97/01/30 SMI"
"Baud rate = 9600, character size = 8, stop bit = 1,
parity = none, control flow = rtscts"
"data pattern = 0xaaaaaaaa"
"Internal Test"
"Testing device /dev/sad/saip1"
"Testing device /dev/term/b000"
"Testing device /dev/term/b001"
"Testing device /dev/term/b002"
"Testing device /dev/term/b003"
"Testing device /dev/term/b004"
"Testing device /dev/term/b005"
"Testing device /dev/term/b006"
"Testing device /dev/term/b007"
"End saiptest test"
"saiptest: Stopped successfully"
```

- (5) Did all of the SunSAI/P diagnostics complete successfully?

If **YES**, continue with next **step**.

If **NO**, **seek technical assistance**.

- (6) Switch over to the MCC page of the AW by holding down the Ctrl key and pressing **Enter** (not Return) on the MCC. Wait for the **MCC** display to appear.

STOP. YOU HAVE COMPLETED THIS PROCEDURE.

GLOSSARY

This section provides acronyms, terms, and abbreviations used in this information product.

-- GLOSSARY --

1 Packet Switching System (1PSS)

A high capacity, high-reliability, X.25 packet switch produced by Lucent Technologies.

3B20D/3B21 Emulator

Software contained in the Administrative Workstation that emulates the operation of the 3B21D computer.

Access Line

The sequence of functions that makes it possible for one end user not only to be physically connected to another end user, but also to communicate with the other user in spite of errors or differences in the choices of speed, format, patterns of intermittently etc., which are natural to each individual end user.

Access Tandem (AT)

A switch used to provide carrier access to end offices, and sometimes to collocated stations, by the station user to directly control, in stages, the routing of an outgoing tie trunk call through the originating, as well as any intermediate switches. The user is said to "cut-through" these offices. These trunks are referred to as "nonsenderized" or "tandem" tie trunks.

Administrative Workstation

The VCDX switch *Sun*[®] workstation that provides global operations, administration, and switch maintenance.

AMA

Automatic Message Accounting.

American Standard Code for Information Interexchange (ASCII)

An 8-bit (seven bits plus parity) code for data transfer adopted by the American Standards Association to achieve compatibility between data devices. It is also called USASCII. There are also other versions. Unless otherwise indicated, 1PSS assumes that International Alphabet No. 5 is used.

ANSI[®]

An organization that develops and distributes standards for a wide range of commercial products.

ASC

Automatic Storage Circuit.

ASU

Alarm Status Unit.

Asynchronous

A form of communications where each transmitted character has self-contained beginning and ending indications, so that individual characters can be transmitted at arbitrary times.

Basic Rate Interface (BRI)

The ISDN digital services line that combines two B channels and one D channel on a single line. Also called the basic access rate.

Basic Rate Interface (BRI) Card

The customer's interface to the ISLU. Three types of BRI cards exist:

- U-Type for 2 wire
- T-Type for 4 wire.

The U and T type cards provide the customer with the 2B+D capabilities. The Z card performs the analog to digital conversion similar to the CODEC function in the Analog Line Unit. These cards are mounted in groups of 32 and can be mixed, or later, interchanged (with appropriate translation updates). The only restriction is that the T card requires four-wire cabling to the distributing frame.

BILLDATS®

Billing and Data System.

Bit

Contraction of Binary Digit. A single symbol, (1 or 0), that when used in groups, represents the numbers, letters, and other symbols of communications. Generally combined in groups of 5, 8, or 16.

Bits Per Second (bps)

Sometimes written as B/S or b/s. A measure of the speed with which data communications can move over a line. The prefixes K (for thousand) or M (for millions) are often used to represent higher speeds.

Blocking

A phenomenon in a communications network where one user cannot reach another due to any one, or a combination of, network resource limitations.

Buffer

Part of a communications processor or switch used to store information temporarily.

Byte

A sequence of successive bits (most often a group of eight) handled as a unit in computer manipulation or data transmission.

Call

A complete, 2-way interexchange of information between two or more parties in a network. It will generally consist of a number of sequential messages or transactions passed over communications circuits in each direction.

Call Request

A message from a network addressable entity to the network requesting the establishment of a virtual call between that network addressable entity and another network addressable entity. In the specific case of an X.25 interface, a call request packet is sent from a data terminal equipment to a data circuit terminating equipment. This packet contains a logical channel number, the calling and called data terminating equipment addresses, and (optionally) a user facility indication and call user data.

Capacity

The ultimate limitation of any resource in a network to hold or move information.

Cathode Ray Tube (CRT)

Used in a generic sense to refer to data terminals that display transmitted and received information on a television-like screen.

CCS

Traffic usage measurement equating to 100 call seconds.

CDX

Compact Digital Exchange.

Central Office (CO)

Switching equipment in a building that provides exchange telephone service for a given location. In some cases, there is more than one central office serving the same area. A central office may include more than

one Central Office Code.

Channel

A single, physical communications medium capable of moving intelligence from one point to another. Specific physical or logical and electrical parameters generally define its capacity. Also see group or link.

Coder/Decoder (CODEC)

The device that turns analog signals into digital signals and vice-versa.

Common Carrier

An organization, generally franchised by a governmental body, that provides communications services to the general public.

Communications Module (CM)

The VCDX switch's fully duplicated time multiplexed switch which acts as a distribution hub for calls and control signals.

Concentration

The effect of having more inputs than outputs for a given system.

Control Fanout (CF)

The Control Fanout (CF) is the control interface in the PSU. It terminates PICBs from the CI in the MCTU3 and the Control Interface Bus from the DFs and PFs. The CF also transfers control messages for the B Channels over the PB.

Control Interface Data Bus (CIDB)

Carries control information from the CC to the LIDBs.

CORC

Customer Originated Recent Change.

CPU

Central Processing Unit.

CU

Control Unit.

Customer Data Link (CDL)

The customer data link is a data communication path that connects the customer premises with a remote packet module. The customer data link may be a physical data link or a derived data channel via data SLC[®] carrier system on the customer loop.

Customer Logical Channel (CLC)

A customer logical channel is a logical channel on a customer data link. Depending on implementation, a customer logical channel may be either statically or dynamically associated with a physical terminal output (application) on the premises controller.

Customer-Originated Recent Changes (CORC)

A customer-controlled database change caused by a change in the lines, trunks, equipment, and/or features associated with telephone numbers of a particular telephone office.

Customer Premises Equipment (CPE)

The general term for any equipment that resides on the end-user's side of the network interface boundary established by Computer Inquiry II.

DAT Tape Drive

Digital Audio magnetic tape format device for permanent storage of information.

Data Circuit Terminating Equipment

The network side of the user/network (DCE) interface. The CCITT recommendation X.25 specifies the interface between data circuit terminating equipment and data terminal equipment.

Data Fanout (DF)

The Data Fanout (DF) acts like a small TSI. It can switch any DPIDB time slot to any Protocol Handler (PH). The DF uses the Protocol Handler Data Bus (PHDB) to communicate with PHs.

Data Link

A communication path directly connecting two entities. Also an ensemble of terminal installations and the interconnecting network operating in a particular mode that permits information to be exchanged between terminal installations.

Data Link Protocol

Guarantees error-free communication between two devices by ensuring that sender and receiver agree on initialization, error detection, and recovery procedures.

Dataphone[®] Digital Service

Service that provides for direct connection of digital sources to a communications medium and, thereby, to each other.

Dataphone[®] Switched Digital Service

A limited service of the Bell System for high-capacity digital Service) circuits switched among major cities; charged by time and distance of the connections.

Data Terminal Equipment (DTE)

The user equipment that is joined to a data communication network. It could be anything from a simple terminal to a large computer system. The CCITT recommendation X.25 specifies the interface between data terminal equipment and data circuit terminating equipment.

Data Transfer Rates

The speed at which data can be sent across a communication path.

D Channel

The packet-switched channel on a DSL at 16 Kbps, or an PRI at 64 Kbps that carries signaling messages and packet switched user data.

Dedicated Line

A communications circuit between two end points that is permanently connected and always available.

Dedicated Resources

Equipment reserved for the exclusive use of a single function or organizations

Delay

As applied to packet switching, the additional time introduced by the network in delivering a packet's worth of data compared to the time the same information would take on a direct line.

Destination Address

Identification showing where a data packet is to be sent.

DFC

Disk File Controllers.

Digital Carrier Line Unit (DCLU)

The VCDX switch's DCLU provides integrated access to the switch for SLC[®] 96 carrier in a pre-ISDN environment. The DCLU-5 extends this access to ISDN service.

Digital Line and Trunk Unit (DLTU)

The VCDX switch's DLTU provides the interface to digital trunks and lines such as T1, EDSL, and remote line units.

Digital Subscriber Line (DSL)

See Basic Rate Interface.

Digital Subscriber Line Card

See Basic Rate Interface Card.

Direct Connect PIDB (DPIDB)

An interface in the ISLU that carries user and control messages from the ISLU to the PSU.

Direct Distance Dial Network (DDD)

The major nationwide long-distance network (provided mainly by the Bell System) that permits users to complete connections to distant users without the assistance of an operator.

Directory Routing

Technique for routing information through a network based on directories (instructions) kept in the memory of each switch.

Distinctive Ringing

DR applies a distinctive ringing pattern that enables a station user to determine the source of an incoming call.

Distributed Control

See Decentralized Control.

DMA

Direct Memory Access.

DNIC

Data Network Identifier Code.

Downlink

The transmission path from a satellite to the satellite earth station to which it is transmitting.

DS1

The common terminology for T-carrier that multiplexes 24 channels into a single 1.544 Mbps bit stream.

DSI

Data Subscriber Interface.

DSL

Digital Subscriber Line.

DSU

Digital Service Unit.

Duplex Channel

A communications channel capable of transmitting information in both directions at the same time.

EAI

Emergency Action Interface.

ECD

Equipment Configuration Database.

Electronic Industries Association (EIA)

The EIA is a trade organization that represents a large number of U. S. electronic manufacturers.

EMI

Electromagnetic Interface.

Encoded Character

The numerical or binary representation of a character.

Encryption

The scrambling of messages on a transmission facility to provide security.

End-to-End Data Transport

Protocols associated with four layers in the ISU model providing the assurance that complete messages are received across a network. Lucent's internal protocol is an example.

Equal Access (EA)

This is a point where inter-LATA customers access the exchange to request connection across the network boundaries. This is sometimes referred to as "Equal Access."

Error Detection

The process of using information added to a data transmission to detect the presence of errors in the received information.

ESM

External Sanity Monitor.

ESSTM Switching System

A generic term for the switching facilities in commercial networks utilizing computer-like processors rather than purely electromechanical switching relays.

Ethernet[®]

A form of contention protocol being commercially deployed by the Xerox Corporation that is used to tie facilities together in local geographic areas.

Extended Digital Subscriber Line (EDSL)

A limited service of the Bell System Fast Select. An information-bearing call request packet for a virtual call. It may be followed by normal virtual call packet transmissions or may be followed by an information-bearing call-clearing packet with no intervening data packet transmissions.

FAC

Facility Administration and Control.

FAX Machine

A facsimile machine whose purpose is to transmit printed material over telephone lines.

Federal Communications Commission (FCC)

The principal regulatory body in the United States responsible for interstate communications and common carrier services.

First Office Application (FOA)

The site of the initial test of a new generic software package on a customer location.

Flow Control

The mechanism which ensures that the transmitting entity does not overrun the receiving entity with more data than it can accept.

Frame

The unit of information transferred between two link level protocol entities. Also, a set of consecutive time slots in which the position of each time slot can be identified by reference to a frame alignment signal.

Frame Level

Level 2 of the 1980 CCITT Recommendation X.25 interface specification (also called link level). It provides the packet level with an error-free, variable delay link between the data terminal equipment and the network. The functions performed at frame level include: (1) the transfer of data in an efficient and timely fashion, (2) the synchronization of the link to ensure that the receive is in step with the transmission, (3) the detection of transmission errors and recovery from such errors, and (4) the identification and reporting of procedural errors to higher layers for recovery.

Frequency Spectrum

The total available bandwidth in Hertz available for use.

Front-End Processor (FEP)

A specialized computer processor, generally used in conjunction with a larger mainframe computer, that interfaces the computer to communications facilities and remote users.

A device which sits between a host computer and the terminals or cluster controllers connected to it and performs the multiplexing which allows many data communications lines to access a single host computer port. Abbreviated FEP.

Full Duplex-Channel

See Duplex Channel.

Full-Period

A circuit that is always available to a particular pair of users and is generally paid for on a fixed monthly basis without regard to total usage.

Gateway

A node or switch that permits communication between two dissimilar networks.

GDC

Generic Digital Channel.

GDSF

Global Digital Service Function.

GDSU

Global Digital Service Unit.

GRC

Global Recent Change.

Group

A number of communications channels handled as a single entity.

Group Interface Data Bus (GIDB)

Connects the BRI cards to Line Group Controllers.

GSU

General Service Unit.

GTE Telenet

The Packet Switching subsidiary of General Telephone and Electronics. It provides nationwide common user data communications service through Packet Switching.

Half Duplex-Channel

A communications circuit capable of carrying traffic in either direction but only one way at a time.

Header

The initial part of a data block or packet that provides basic information about the handling of the rest of the block.

High-Level Data Link Control (HDLC)

A generic name for the digital link control procedure specified by ITU-TS standards. ADCCP is one United States implementation.

HLSC

High-Level Service Circuit.

Hold and Forward

A switching technique where each message is held at intermediary switches long enough for them to check the accuracy of the received information before relaying it on to the next switch.

Holding Time

The duration of a call in the network that is measured from the time connection is established until all requirements for the connection are completed.

Host

An intelligent processor or device connected to a network that satisfies the needs of remote users.

HRCL

Host Remote Communications Links.

Hunt Groups

A group of telephone numbers that are checked in sequence to find the next idle.

Individualized Dialing Plan (IDP)

Feature that allows dialed digits to be interpreted according to a line or trunk personalized dialing plan (Based on the customer wishes) instead of through the regular digit interpreter.

Integrated Analog Network (IAN)

A telephone network with all analog components.

Integrated Services Digital Network (ISDN)

An international plan by the ITU-TS to standardize a public communication network to handle circuit switched digital voice, circuit switched data, and packet switched data.

Integrated Services Line Unit (ISLU)

The unit terminates T cars, U cards, and Z cards on the VCDX switch.

Intelligent Terminal

A data communications terminal that has sufficient intelligence (processing power) to perform fairly complex interface functions and local formatting and processing.

Interexchange Carrier (IEC)

A long distance telephone company chartered to provide service between LATAs.

Interface

The place at which independent systems or devices communicate with each other.

Interface Units

Provide the subscriber interface to the switching module

Internal Protocol (IP)

The protocol used by Lucent packet switches to communicate with each other. It also permits the *Datakit*[®] VCS and the VCDX switch to communicate with the 1PSS.

International Standards Organization (ISO)

An international body that standardizes goods and services. The ISO works in conjunction with the ITU-TS for standards that impact communications.

Inward Wide Area Telecommunications Service (INWATS)

A feature that allows a customer a form of distance dialing in consideration of a monthly charge. The customer may receive calls from a specific geographical area with no charge to the originating caller.

I/O

Input/Output.

IOP

Input/Output Processor.

ISTF

Integrated Services Test Function.

I Series Recommendations

ITU-TS recommendations on standards for ISDN services, ISDN networks, user-network interfaces, and under work and maintenance principles.

ITU-TS

International Telecommunication Union — Telecommunication Standardization Sector (formerly the CCITT)

Kbps

Kilobits per second; sometimes written as Cab/s.

Keyboard CAT

A data terminal device that combines a typewriter-like keyboard for data input with a TV-like screen for data output.

LAPB

Link Access Procedures Balanced.

Layer

A partition of a layered architecture that performs a defined set of functions and presents those functions to the layer above via a defined interface. A layer uses the functions of the set of layers beneath it to perform its functions. The term layer is synonymous with the term level.

LED

Light Emitting Diode.

LEN

Line Equipment Number.

Level

See Layer.

Limited Distance Modem

A modem used to extend the range of the RS232 interface from 50 to 4000 feet.

Line Group Controller (LGC)

The Line Group Controller in the ISLU is responsible for placing the switched information on the Line Interface Data Bus (LIDB). Each LGC has two LIDBs, one to each Service Group. The LGC can also provide concentration, since only 44 time slots are available for switched information. The group of 32 BRIs or cards is connected to a Line Group Controller (LGC) by a Duplicated Group Interface Data Bus (GIDB). In an ISLU, you can have a maximum of 16 LGCs equipped with 32 BRIs (512 customer terminations).

Line Interface Data Bus (LIDB)

A 32 time slot bus to connect the Line Group Controller and the Common Data boards in an ISLU.

Link

A physical or electrical connection between two end points; for communications purposes, may consist of one or more channels.

Link Access Procedures (LAP)

The ITU-TS implementation of a link level protocol.

Link Level

The second level of a layered architecture. The purpose of the level is to provide the functional and procedural means to establish, maintaining, and release data links. The level also provides techniques to recover from transmission errors and other abnormal conditions such as invalid or no responses and lost of synchronization.

LNA

Logical Network Address.

Local Access and Transmit Area (LATA)

A defined geographical area where equal access end offices and/or access tandem offices can provide carrier access to the local exchange.

Local Area Network (LAN)

A high-volume data transmission facility interconnecting a number of data devices, generally within a building or a campus.

Local Area Signaling Services (LASS)

This is a signaling service that supports features such as, automatic callback and automatic recall. This is done from the VCDX switch using the SS7 signaling protocol.

Logical Channel (LC)

A point-to-point data communication path that shares a physical transmission medium via packet interleaved statistical multiplexing. In packet switching, a packet typically contains a logical channel number that identifies the packet with a particular virtual call.

Logical Connection

A communication relationship between two end points that utilizes a virtual circuit connection between the associated Network Addressable Entities (NAEs).

Loop (Local)

Telephone terminology that refers to the local connection between a network switch and the subscribers end instrument.

Loop (Routing)

The undesirable condition in a network where traffic gets routed in a circular path due to an anomaly of the software or address information.

LU

Line Unit.

Main Distributing Frame (MDF)

The interconnect between the outside plant facilities and the C.O. wire.

Mbps

Megabytes per second.

MCC

Master Control Center.

MCTSI

Module Controller/Time Slot Interchanger.

Messages

The logical unit of information passed between two session level protocol entities. A block of text that the user of a communication network wishes to have transported as a whole. The unit of communication as seen by the user may be segmented into several packets to traverse the network. In some circumstances, several messages can be carried in one packet.

Message Switching

Switching technique where messages are stored in their entirety at each intervening switch.

MHD

Moving Head Disk.

MHDD

Moving Head Disk Drive.

Midpoint

See Multigrid.

MMSU

Modular Metallic Service Unit.

Modem

MOdulator-DEModulator. A device that allows digital signals to be transmitted over analog facilities.

Modem Pooling

Pooling modems at the central office eliminates the need for one-to-one correspondence with casual terminal users, and reduces data service costs.

Modular Feature Construction (MFC)

A VCDX switch capability which permits telephone operating companies to create new features by varying the way in which existing features work.

MOH

Music On Hold.

MT

Magnetic Tape.

MTTY

Maintenance Teletypewriter.

Multifrequency (MF)

A signaling convention used for sending digits to common control switching systems. Each digit is represented by a combination of two tones selected from a group of six frequencies. Voice transmission from the calling customer is inhibited during MF pulsing.

Multiline Hunt Groups (MLHG)

A group of customer facilities that are identified as a group in translations. When calls are placed to the MLHG, the VCDX switch hunts for an idle member of the group beginning with the dialed Directory Number (DN).

Multiplexer

A device that combines a number of low-speed channels into a single, higher speed channel.

Multiplexing

See Logical Multiplexing.

NA

Network Administration.

NCT Links

Network Control and Timing Links. Fiber optic NCT links connect the switching module in a VCDX switch with the AW.

Negotiated Throughput Class

Permits negotiation on a per-call basis of the throughput classes for each direction of transmission.

Network

A communication system to interconnect various devices.

Network Address

Coded data that identifies the location of a network addressable entity on a 1PSS.

Network Addressable Entity (NAE)

Any entity directly connected to the network that supports the access interface protocol(s). Every network addressable entity is identified by a network address. These network addressable entities may include such items as user computers, intelligent terminals, host (vendor) computers, Electronic Switching System switching equipment processors, certain network functions, and 1PSS provided virtual terminals.

Network Channel Terminating (NCTE)

The general name for equipment that provides line Equipment transmission termination from the network to a customer's premises.

Network Control

Sends control messages to the switching module.

Network Control Center System (NCCS)

A centralized system for network administration of multiple packet switching nodes. This system consists of a packet administrative module and a packet switching unit. The Network Control Center System typically performs such functions as system initialization (program download), fault recognition, diagnostics, routine testing, data collection, presentation of information to human operators, etc.

Network Control Program (NCP)

The software that must be executed by a front-end computer in order to interface with a Packet Switched Network in the full packet mode.

Network Terminal 1 (NT1)

The ITU-TS label for ISDN NCTE; it provides the functions of line transmission termination and layer-1 maintenance and multiplexing, terminating a two-wire U interface and providing a 2 to 4 wire interface.

Network Terminal 2 (NT2)

Terminates the four-wire T interface (for example, PBX, LAN, or terminal controller).

NM

Network Maintenance.

Node

A point of a network where various links come together; generally containing a switching element used to direct traffic.

No. 1 PSS

Number 1 Packet Switching System.

Numbering Plan

The addressing scheme adapted by a switch manufacturer or standard setting organization.

OA&M Functions

Operation, Administration, and Maintenance functions.

OCC

Other Common Carrier.

ODD

Office Dependent Data.

Open System Interconnection Reference Model (OSI)

Established by the International Standards Organization, the model describes seven functional layers that define how interconnected telecommunications systems, especially data systems, should interface.

Optically Remote Module (ORM)

A switching module located away from the VCDX machine and using optical cable as the umbilical to the VCDX switch.

OSI Reference Model

A seven layered pattern to provide a common basis for standards development in data communication.

OSS

Operations Support Systems.

OTC

Operating Telephone Company.

Out-of-Band Signaling

A system employed to transmit control and signaling information for a circuit switched call in a separate channel on the same circuit.

Overhead

Information required by a network for its operation over and above the basic information that is being moved on behalf of the subscribers.

Packet

The unit of information passed between two packet level protocol entities. It consists of a group of bits including data and control elements and routing information in a specified format. Also, a block of data handled by a network in a well defined format including a header and having a maximum size of data field. The unit of information passed between levels 2 and 3.

Packet Assembler/Disassembler (PAD)

A device that assembles/disassembles packets by grouping asynchronous input characters into packets.

Packet Bus (PB)

An interface in the ISLU that carries packet information throughout the PSU.

Packet Level

Level 3 of the 1980 CCITT Recommendation X.25 interface specification. It specifies the way control information and user data are structured into packets and the elements of procedure for use of control information.

Packet Level Protocol

See Packet Level.

Packet Switch

The equipment in a node that is responsible for accepting and routing packets and ensuring their correct arrival at an adjacent node.

Packet Switched Data

Data transmitted over a Packet Switched network.

Packet Switched Networks (PSN)

The interconnection of two or more packet switches to transfer data.

Packet Switching

A network technique that divides user messages into relatively short blocks and uses geographically distributed switching nodes, to achieve low end-to-end delay for real-time, bursty data traffic.

PC

Peripheral Controller.

PD

Power Distribution.

PDN

Packet Data Network.

Peripheral Control and Data Bus (PCADB)

Carries control information between the CC and the Common Shelf peripherals.

Peripheral Interface Data Bus (PIDB)

An interface in the ISLU that provides PSU timing and a path to other switching modules and carries circuit switched information from the SG to the TSI (MCTU3).

Peripheral Interface Control Bus (PICB)

An interface in the ISLU that is the control bus from the MCTU3 to the Control Fanouts (CF).

Permanent Virtual Circuit (PVC)

A virtual circuit established for the duration of an agreement between the subscriber and the network authority and is available to send packets in either direction at any time. It has all the features of a virtual call without

the call setup and release procedures.

Physical Level Protocol

A protocol following the guidelines established in the first layer of the OSI model.

Polling

A technique that permits a large number of terminals to share a common channel. A central controller asks each terminal, in turn, to transmit any information it may currently have queued.

POTS

Plain Old Telephone Service.

PPS

Traffic usage measurement equating to the number of packets switched per second.

Primary Access Rate

23 B channels and one 64-Kbps D channel over an Extended Digital Subscriber Line (EDSL).

Primary Rate Interface (PRI)

A 1.544 Mbps digital interface containing twenty-three 64 Kbps B-channels for the transport of end-user information (such as voice and data), plus one 64 Kbps D-channel for control signaling. The PRI serves relatively large customer premises equipment such as private branch exchanges (PBX) or mainframe computers.

Private Data Network

A network designed to transport data and owned by a private entity.

Protocol

A set of rules for conducting interactions between two or more entities. These rules consist of syntax (for example, header structure), semantics (the actions and reactions that are supposed to occur), and timing (the relative ordering and duration of events and states).

Protocol Handler (PH)

The Protocol Handler (PH) switches control messages from the BRIs to the SMP (MCTU3).

The PH stores packet information and determines the packet's destination. The PH uses the Packet Bus (PB) to send the packet information to the Packet Fanout.

PSU

Packet Switch Unit.

PTN

Packet Transport Network.

Public Switch Network (PSN)

A communication network operating in the public domain.

Pulse Code Modulation (PCM)

A technique for coding analog signals for transmission on a digital circuit by sampling the analog signal at regular intervals and converting each sample into a digital code word.

Queuing

Any process that combines elements of storage and delay together with a number of servers is queuing. The delay experienced by the users of the process can be estimated on the basis of statistical behavior of the various queuing elements involved.

RAF

Recorded Announcement Feature.

Random Routing

Routing technique that moves information through the network in a statistically random matter.

RBOC

Regulated Bell Operating Company.

RCVP

Recent Change and Verify Process.

Recent Change (RC)

This system function allows maintenance personnel access to the VCDX switch database. Recent change is used to add to or delete from databases and update or verify the database using select/mark format.

Recovery Procedures

A set of actions designed to restore a device to normal operations.

Remote Access Concentrator

A device that combines several inputs into a single output to a switch.

Resource Allocation

Allocates central resources, such as time slots, memory, data storage, and global service circuits.

Retrofit

The ability to upgrade a VCDX switch without impairing service to the subscriber.

REX

Routine Exerciser.

ROP

Receive-Only Printer.

Routing

The process of finding a suitable path to move information through the network. (See Adaptive Directory Routing, Directory Routing, and Random Routing.)

Routing Table

A set of instructions stored at each switch indicating the path to move a given packet to a given destination.

RS232 (RS232C)

Technical specifications set by the Electronic Industries Association (EIA) which define electrical and mechanical interfaces between terminals, modems, computer, and communications lines.

RTU

Right-To-Use.

SCANS

Software Change Administration and Notification System.

SCCS

Switching Control Center System.

SCH

Serial Channel.

Segment

A part of an overall information exchange that is transmitted between the user device and the network. It may be the same length as or longer than a packet, depending on the protocol implementation.

Serial Transmission

The transmission of bits sequentially along a single transmission path.

Service Group (SG)

An ISLU has two Service Groups (SG) that operate active/active to switch information in the Common Data Circuits (2 per SG) to the appropriate paths. These paths are:

- The LIDBs to the LGCs.
- The PIDBs to the TSI (MCTU3).

Direct Connect PIDBs (DPIDBs) to the PSU. The number of PIDBs and DPIDBs is an engineered quantity, while each LGC has two LIDBs.

Service Provisioning

The function of arranging and connecting existing equipment and facilities to meet the customer service demands.

Service Units

Provide call processing and testing functions within the switching module.

Session

A cooperative relationship between two application entities characterizing the communication of data between them.

Shared Resources

The use of communication equipment by multiple users resulting in the sharing of costs.

Shared Trunk

The use of a trunk to transmit information from multiple users.

Signal Regeneration

A method of conveying signals over a circuit that restores the signal to its original shape at each node.

Signal Transfer Point (STP)

This is a general purpose high-capacity packet switch that performs signaling and message switching and CCS network management functions. This STP routes signaling messages to and from network control points/service control points (NCP/SCP), action points/service switching points (ACP/SSP) and to other STPs. This is the point where the CNI accesses the CCS network.

Simplex Transmission

Transmission in one direction only along a communication path.

SLC[®] Carrier System

The SLC[®] carrier system provides duplex data link capability simultaneously with voice usage on the existing subscriber voice loops at data rates up to 4800 bps

SM

Switching Module.

SMPU

Switching Module Processor Unit.

SPU

SCSI Peripheral Unit.

Statistical Time Division Multiplexing (STATDM)

The combining of multiple inputs into a single, narrow band time divided output by a sampling technique that transmits only data, ignoring idle inputs.

STLWS

Supplementary Trunk Line Workstation

SU

Software Update.

Switched Virtual Circuits (SVC)

A logical connection across a Packet Switched Network. It is established on an as-needed basis and can provide connection to any other switched user in the network.

Switching Module

The VCDX switch switching module provides call-processing intelligence and complete switching for intra-switching-module calls.

Switching Node

A location in a network where switching takes place.

Synchronous

A form of communications where characters or bits are sent in a continuous stream with the beginning of one contiguous with the end of the preceding one. Separation of one from another requires the receiver to maintain synchronism to a master timing signal. Abbreviated Sync.

Synchronous Data Link Control (SDLC)

IBM's version of the ADCCP link control technique. A full-duplex protocol developed by IBM.

Synchronous Time Division Multiplexing (STDM)

The combining of multiple inputs into a single narrow band time divided output by a sampling technique that transmits all inputs including idles.

Systems Network Architecture (SNA)

The computer network architecture developed by IBM.

T1

A digital transmission standard in North America that carries traffic at the DS1 rate of 1.544 Mbps.

TAC

Test Access Circuit.

Tandem Switches

Switches in a network that provide a path between other switching nodes rather than originating or terminating traffic.

Tariffs

The formalized charges for telecommunications services that are filed and approved by state and federal regulatory organizations.

TAU

Test Access Unit.

TDM

Time Division Multiplexing. A means whereby a number of separate communications circuits are combined over a common facility by dividing the common facility into discrete time intervals.

TE

Terminal Equipment.

Telenet

See GTE Telenet.

Telepak

A nationwide AT&T tariff that provided substantial discounts for the lease of 60 to 240 channels in one facility.

Terminal

Any device capable of sending and receiving information over a communication channel. It is used to enter data into a computer system and to communicate the outputs of the system to the affected environment. Terminal devices include computers, teleprinters, special keyboards, light displays, cathode-ray tubes, thermocouples, pressure gauges and other instrumentation, radar units, telephones, etc.

Terminal Adapter (TA)

A device that provides protocol conversion from standard non-ISDN interfaces (for example, X.25 or RS232) to ISDN interfaces.

Time-Out Period

The length of time a switch will wait for an expected action (such as an acknowledgment) before it takes unilateral action.

Time Slot

An identifiable increment in the output of a multiplexing scheme.

Time Slot Interchange (TSI)

A device on the VCDX switch which performs the time switching function.

T Interface

The four-wire physical interface between an NT1 and either an NT2 or ISDN terminal gear. This interface can be only about one kilometer long.

TMS

Time Multiplexed Switch.

Topology

The physical arrangement of nodes and links to form a network including the connectivity pattern of the network elements.

Traffic Service Position System (TSPS)

Operator control service position.

Transaction

A computer-based message that represents a complete unidirectional transfer of information between two points on a data network.

Transaction Capabilities

This is a signaling feature that serves as an interface between the Number Services features and the Signaling Connection Control Part (SCCP) of Signaling System No. 7 (SS7). Application Part (TCAP).

Transmission Directions

Simplex One direction of transmission only. Half-Duplex Transmission in both directions, but only one direction at a time. Full Duplex Transmission in both directions simultaneously.

Transmission Modes

See Serial or Parallel Transmission Modes.

Transparent Switching

A network switching technique that handles information by providing a logical or physical end-to-end connection.

TRFC15

15 Minute Traffic Report.

TRFC30

30 Minute Traffic Report.

Trunk

The communications circuit between two network nodes or switches.

TSIU

Time Slot Interchange Unit.

TTYC

Teletype Controller.

Tymnet

A nationwide data service with Packet Switching-like characteristics although it is not literally a packet switched network.

U Interface

The two-wire physical interface between the switch and an NT1. The U interface has an initial range of 32 dB at 80 kHz.

Universal Information Services (UIS)

TSPS which network providers will be able to give any customer any kind of voice, data, or image service any where, any time, in any combination with maximum convenience and economy.

UTD

Universal Tone Decoder.

UTG

Universal Tone Generator.

V.35

The ITU-TS standard protocol for transmitting 56/64 kb.

Value-Added Network (VAN)

The class of public network that leases facilities in the form of basic transmission from one carrier, adds intelligence, and provides more "valuable" services to end users.

VCDX

Very Compact Digital Exchange.

Videotex Networks

Video graphics service in which telecommunications networks are used for transmission of the user's

requirements as well as the answer to the request.

Virtual Call (VC)

A user facility in which a call setup procedure and a call clearing procedure determine a period of communication between two data terminal equipments in which user data is transferred in the network in the packet mode of operation. All user data is delivered from the network in the same order in which it is received by the network.

Virtual Circuit

A logical, rather than physical, path for a call. For example, one call's packetized data may be sent over different physical paths through a network to one destination.

Voltage Levels

The specific voltages specified by level 1 protocols to identify the changes in state from 0 to 1.

VPA

Voice Path Assurance.

VTC

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Wide Area Telephone Service (WATS)

A nationwide long distance phone service where users contract for 10 to 240 hours of use per month rather than paying for each call individually.

Window

The major element of the flow control mechanism used to prevent the overload of a packet network. The window size indicates the number of packets a given user can have outstanding in the network at any given time.

X.25

A ITU-TS recommendation that specifies the interface between data terminal equipment and data circuit terminating equipment for terminals operating in the packet mode on public data networks. This user to network interface includes physical, frame, and packet levels of protocol. Network services provided to the user across the X.25 interface currently include virtual calls and permanent virtual circuits. Proposed revisions would provide the transaction-oriented datagram and fast select features.

X.75

The X.75 packet switch interface is characterized as a high throughput and a high flexibility interface. It supports virtual call service and the X.75 utilities necessary to provide the essential facilities of X.25 as well as some additional features.

X.75 Prime

A modification of X.75 by Bellcore to allow the interconnection of dissimilar equipment in the same network.

Z Interface

Designed as a high use analog line, it functions exactly like the analog line today.

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