AMOS 8.x Server Owner's Manual

For Eagle 800
& AM-8000 Servers

DSM-00226-00 Rev B00

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To re-order this document, request part number DSM-00226-00

FCC Notice

This equipment is assembled from components that have been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian Department of Communications Compliance Statement

This equipment does not exceed Class A limits per radio noise emissions for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps are necessary to correct the interference.

Avis de Conformité aux Normes du Ministère des Communications du Canada

Cet équipment ne deapsse pas les limits de Classe A d'émission de bruits radioélectriques pour les appareils numeriques tels que prescrites par le Règlement sur le brouillage radioélectrique établi par le ministère des Communications du Canada. L'exploitation faite en milleu résidential peut entrainer le brouillage des réceptions radio et tele, ce qui obligerait le propriétaire ou l'opératour à pendre les dispositions nécessaires pour en éliminer les causes.

Battery Warning

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

ATTENTION: Il y a danger d'explosion s'il y a replacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rébut les batteries usagées conformément aux instructions du fabricant.

This computer contains a 3-volt lithium battery. When necessary, replace the battery with Panasonic or Ray-O-Vac CR2032 only. Use of other batteries may present a risk of fire or explosion. Replacement batteries may be ordered from your authorized Alpha Micro reseller.

Safety Warning

This computer contains no user-configurable components that require opening the computer case. Because the power supply in this computer is capable of outputting high current levels hazardous to your safety, the computer case should only be opened by an authorized service technician.

Cet ordinateur ne contient aucune pièce configurable par l'utilisateur qui nécessite l'ouverture du boitier. L'alimentation de cet ordinateur peut preduire des nivaeux de tensions dangereux, le boitier ne devrait donc être ouvert que par un technician autoriaé.

SOFTWARE SECURITY DEVICE IDENTIFICATION NUMBER: _____

The Alpha Micro Software Security Device (SSD) is a customized integrated circuit that personalizes the computer, providing identity verification for it. Certain Alpha Micro and non-Alpha Micro software may require that your computer contain an SSD in order to run software that has been customized to run only on your computer.

Please enter the identification of your SSD above. The SSD identification number should be on your computer ID label under "SSD Serial No." (Another way of finding the number is to look at the SSD itself. The SSD is located in an integrated circuit location on the AM-113-XX board; its identification number is printed on the SSD itself.) Software vendors may ask you for the SSD number if they are customizing software to run only on your computer.

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Chapter 1 - Introducing AMOS 8.x Servers

SYSTEM OVERVIEW

Alpha Micro has developed a series of high performance computer systems (Servers) that are based on the AMOS 8.x Operating System. These Servers are designed to run a wide range of applications in business headquarters, departmental facilities, and professional offices. AMOS 8.x has the power to support many users simultaneously, in local or networked configurations. The AMOS 8.x Servers lend themselves to virtually any business data processing environment. The AM8000 Series I, II and III are a dual processor system aimed at larger business applications. The Series I , II, III Eagle 800 and 800LC are single processor systems targeted at smaller, more cost sensitive installations. These Servers are many times faster than previous generation AMOS computers, yet compatible with legacy application software.

The AMOS 8.x Servers are constructed in modular fashion. Your organization can start with just the features and capacity needed, then expand the system as processing demands increase. The system can be field upgraded to provide more disk storage, memory, and tape backup capacity, to add more local cable-connected terminals and printers, to exchange data over a local area network with personal computers and other data processing systems and to communicate through modems with remote data centers.

The AMOS 8.x Server enclosures fit neatly next to a desk and can interface to RAID subsystems, USB disk devices, and USB serial devices. These Servers support DVD-RAM and CD-RW peripheral devices as well as SCSI tape and SCSI or IDE disk drives. For high performance the AM-8000 includes a SCSI 320 disk drive and the Eagle 800 series I & II includes an ATA 133 disk drive as standard equipment.

Figure 1-1: Series1 AM-8000 Deskside Chassis Chassis

Figure 1-2: Series1 Eagle 800 Deskside

All system types can be optionally configured in a rack mountable chassis instead of the standard pedestal style shown in the previous figures. The rack mountable chassis is a 4U chassis configuration with slides; optional dual redundant hot swappable 400-watt power supplies, cooling fans and two removable drive bays.

Figure 1-3: AM-8000 Rack Mount Server

The AM-8000 Series II Full Tower chassis is taller than the previous deskside model. The AM-8000 Series II main-board CPU heat sink clearance for peripheral device mounting needed a different internal design. This chassis can mount 5 full size devices and up to two 3 ½ drives.

Special peripheral drive mounting brackets are required to use the two lower drive-mounting positions at the bottom of the peripheral mounting bay.

Figure 1-4: AM-8000 Series II Full Tower Chassis

For configurations requiring more serial peripheral devices, either the AM-3501 or AM-905-31 Serial I/O subsystem is available as an expansion option for the AM-8000, providing expansion capability beyond that contained in the AM-8000 enclosure. You also may run the Eagle 450TX terminal Server or older Alpha Micro computer models as terminal Servers, which can ”Telnet” into the AMOS 8.x Server.

Series III AM8000 systems come in a new Tower/Rack mount chassis as described in the marketing announcement.

HARDWARE DETAILS

The AM-8000 Series I , II, III and Eagle 800 Series I, II, III systems use state of the art high performance hardware that, when combined with our multi-user AMOS operating system software, provide a new level of performance and added versatility. There are a number of physical components that go into the construction of your AMOS 8.x Server that provide the ability to process, input, display, and store data. Some of these components are interchangeable between systems. These include internal serial ports, disk drives, RAID subsystems, tape drives, CD-RW and DVD-RAM devices. The following sections highlight the major hardware components of the AMOS 8.x Server family. For technical information on these devices, refer to the specification sheet supplied with your Server.

AM-8000 Series III Multi-Processor System Board

The Multi-Processor system board provides the AM-8000 with:

- One Dual core Opteron™ high speed processor (2nd processor optional)
- SAS controller with up to 8 SAS drives.
- Optional SCSI controller, with support for two Ultra 320 SCSI busses
- Six SATA connectors for up to six SATA disk drives
- Two Gigabit (1000/100/10 Mbps) and Fast Ethernet (100/10 Mbps) communication ports
- Sixteen DDR DIMM sockets for support of up to 64GB of PC5300 Registered DDRII RAM
- Support for ATA-100/66/33 IDE and ATAPI devices
- BluRay multi media DVD-RAM drive
- Two 9-pin serial I/O ports (with modem control)
- Integrated video graphics controller for system display console
- PS/2 keyboard and mouse ports
- CPU temperature and voltage monitoring
- Expansion slots for additional serial I/O and other specialized functions
- Two USB ports on the back, Two USB ports on the front panel
- CMOS BIOS setup for configuration and boot options

AM-8000 Series II Multi-Processor System Board

The Multi-Processor system board provides the AM-8000 with:

- One Opteron™ high speed processor (2nd processor optional)
- SCSI controller, with support for two Ultra 320 SCSI busses
- Four SATA connectors for up to four SATA disk drives
- Two Gigabit (1000/100/10 Mbps) and Fast Ethernet (100/10 Mbps) communication ports
- Eight DDR DIMM sockets for support of up to 8GB of PC3200 Registered DDR RAM
- Support for ATA-100/66/33 IDE and ATAPI devices
- Two 9-pin serial I/O ports (with modem control)

- One 25-pin SPP/ECP/EPP parallel port
- Integrated video graphics controller for system display console
- PS/2 keyboard and mouse ports
- CPU temperature and voltage monitoring
- Expansion slots for additional serial I/O and other specialized functions
- Two USB ports on the back
- CMOS BIOS setup for configuration and boot options

AM-8000 Series I Multi-Processor System Board

The Multi-Processor system board provides the AM-8000 with:

- Two Athlon™ MP high speed processors
- SCSI controller, with support for two Ultra 320 SCSI busses
- Gigabit (1000/100/10 Mbps) and Fast Ethernet (100/10 Mbps) communication ports
- Four DDR DIMM sockets for support of up to 4GB of PC2100 Registered DDR RAM
- Support for ATA-100/66/33 IDE and ATAPI devices
- Two 9-pin serial I/O ports (with modem control)
- One 25-pin SPP/ECP/EPP parallel port
- Integrated video graphics controller for system display console
- PS/2 keyboard and mouse ports
- CPU temperature and voltage monitoring
- Expansion slots for additional serial I/O and other specialized functions
- Two USB ports on the back and two on the front. (Deskside Chassis front ports)
- CMOS BIOS setup for configuration and boot options

Eagle 800 Series I Server System Board

The Single Processor system board provides the Eagle 800 with:

- One Athlon™ XP high speed processor
- Two ATA-133 IDE channels for ATAPI Devices
- Fast Ethernet (100/10 Mbps) communication ports
- Three DDR DIMM sockets for support of up to 3GB of PC2700 DDR RAM
- Two 9-pin serial I/O port (with modem control)
- One 25-pin SPP/ECP/EPP parallel port
- Integrated video graphics controller for system display console
- PS/2 keyboard and mouse ports

- CPU temperature and voltage monitoring
- Four USB ports on the back and two on the front
- CMOS BIOS setup for configuration and boot options

Eagle 800 Series II Server System Board

The Single Processor system board provides the Eagle 800 with:

- One Sempron™ high speed processor
- Two ATA-133 IDE channels for ATAPI Devices
- Two SATA connectors for up to four SATA disk drives
- Fast Ethernet (100/10 Mbps) communication ports
- Two DDR DIMM sockets for support of up to 2GB of PC3200 DDR RAM
- One 9-pin serial I/O port (with modem control)
- One 25-pin SPP/ECP/EPP parallel port
- Integrated video graphics controller for system display console
- PS/2 keyboard and mouse ports
- CPU temperature and voltage monitoring
- Four USB ports on the back and two on the front
- CMOS BIOS setup for configuration and boot options

Eagle 800 Series III Server System Board

The Single Processor system board provides the Eagle 800 with:

- One AMD Athlon™ 64 high speed processor
- One ATA-133 IDE channels for ATAPI Devices
- Four SATA connectors for up to four SATA disk drives
- Fast Ethernet (1000/100/10 Mbps) communication ports
- Four DDR DIMM sockets for support of up to 16GB of DDRII RAM
- Two 9-pin serial I/O port (with modem control)
- One 25-pin SPP/ECP/EPP parallel port
- Integrated video graphics controller for system display console
- PS/2 keyboard and mouse ports
- CPU temperature and voltage monitoring
- Four USB ports on the back and Four on the front
- CMOS BIOS setup for configuration and boot options

AM-113-xx Multi-function I/O Board

The AMOS 8.x Servers must have an AM-113 Multi-function board to run the AMOS 8.x system. This board runs a special version of EAMOS, (Embedded AMOS), that provides the following system functions:

- SSD (Software Security Device) chip and a System Security device
- Four high performance serial ports
- Hardware timer
- Optional front panel interface port
- One serial I/O paddle card interface (AM-8000 only)
- Uninterruptible power source (UPS) monitor port for future software enhancement (AM-8000 system only)

The Eagle 800 systems uses the AM-113-45 board, which has no paddle card interface or UPS port, and the AM-8000 systems, uses the AM-113-50 board, which has one serial I/O paddle card bus for externally connecting up to 15 serial I/O cards (8 ports per card) via the AM-3501 or AM-905 I/O expansion chassis

Memory

The AM8000 Series III has the ability up to 64GB of DDR2 ram at 667Mhz. The AM-8000 Series II system board has eight sockets in which main memory DIMMs (Dual Inline Memory Modules PC3200 Registered) are installed. Each processor controls four DIMM sockets. The AM-8000 Series II supports a minimum of 512MB and a maximum of 8GB.

The AM-8000 Series 1 Multiprocessor system board has four sockets in which main memory DIMMs (Dual Inline Memory Modules PC2100 Registered) are installed. The AM-8000 supports a minimum of 512MB and a maximum of 4GB.

The Eagle 800 Series I system board has three sockets in which PC2700 DIMM memory is used to a maximum of 3GB. The Eagle 800 Series II system board has two sockets in which PC3200 DIMM memory is used to a maximum of 2GB. The Series III Eagle 800 has four DDR2 800mhz memory slots up to 16Gb of ram.

Most of this memory is used by the XPE software and allocated for a Disk Caching buffer. Currently the maximum memory allocated to AMOS is 750MB. This is an XPE restriction. Since DCACHE is not needed for AMOS this is not a problem.

See the specification sheet included with your computer for more detailed information on memory capacity, and the *AM-8000 or Eagle 800 Computer Service Manual* for instructions on installing it.

Disk Configurations

The Series I & II AM-8000 servers contain two Ultra 320 SCSI busses. One bus has been configured for high speed hard disk operation utilizing LVD (low voltage differential) technology to provide the highest possible data transfer speed between the processor and the high speed LVD compatible hard disk(s). This ‘A” bus is only used by high-speed LVD disk drives, and does not normally exit the system chassis. If more than one drive is installed and both have bootable XPE partitions, the BIOS setup can select any

bootable drive to boot up the Server. Additionally, the second SCSI channel disk drives or RAID subsystem can also be made bootable.

The AM-8000 Series II standard system drive is a 36GB Ultra 320 SCSI drive, partitioned with the C:\SysVolume of 4.1GB and E:\DataVolume 30Gb. The AM-8000 Server standard system drive is a 17.5GB Ultra 320 device. This drive is partitioned into two logicals. The C:\SystemVolume is 4.15GB and contains the XPE software and utility programs such as Norton Ghost™, UltraVNC or TightVNC, Adobe 5.0 reader, and the AMOS 8.x Operating System Software. The E:\DataVolume drive is 12.94GB in size and is made available for the customer to create **AMD** disk files for their application programs. Additionally, the E: drive has a Backup folder with an image of the C: SystemVolume as shipped from Alpha Micro. This file can be moved to other drives after the Server is installed. It is provided as a restorable backup in case you damage the system software configuration. This software configuration is also available on the AMOS 8.x Bootable Recovery CD provided with the system.

The AM-8000 Server's second SCSI bus can been configured to interface with any lower speed SCSI devices, such as tape drives, and other general purpose SCSI devices. This bus exits the system at the top rear so that external SCSI devices can be attached. Using the proper adapters, you can attach both wide and narrow disk drives, and tape drives to this second wide bus. External RAID Subsystems may also be attached to this bus. The RAID subsystem can also be made bootable with the customer data installed. The external RAID can be configured as RAID Level 1, 3 or 5. These RAID units are LVD SCSI-160 devices so plugging a single ended tape drive drops the transfer rate to 40MB/sec. We highly recommend that you install an AM652 tape drive that has a LVD compatible interface to take advantage of the SCSI 160MB/Sec speed.

In the AM-8000 Servers, the number of devices you can attach to the SCSI bus can be limited by three factors: the legal number of SCSI IDs, cabling limitations—total length and device spacing—and the number of drive bays available in the chassis. See Appendix E, *SCSI Configuration Details,* for further information regarding SCSI bus considerations.

The Series III Am8000 has a high speed 73GB SAS hard drive. This is partitioned with a SASBoot C: volume size of 7569Mb and the D: DataVolume is 62432Mb in size. This system model can use SCSI or SATA or SAS Raid systems connected to PCI-X internal controllers. The D: DataVol has GhostBackup folder with the VolC system software backup. The AM8000 folder is used for customer AMD files. The AMOSBackups folder has the AM8000 system software release.

The Series I Eagle 800 Server comes standard with a 40GB IDE-133 Drive. This drive is partitioned into two logical drives. The C: SystemVolume is 4.8GB and contains the XPE software and utility programs such as Norton Ghost™, UltraVNC, Adobe 5.0 reader, and the AMOS 8.x Operating System Software. The D: DataVolume drive is 34GB in size and is made available for the customer to create an **AMD** disk files for their operating application programs. Additionally, this volume contains a Backup folder with an image backup of the C: SystemVolume as shipped from Alpha Micro.

The Series III Eagle 800 Server has a 160GB SATA 300 drive standard. This drive is partitioned into two logical drives. The C:System Volume is 7577Mb and the D:DataVol is 145047Mb. On the D: DataVol you have GhostBackup folder for Ghost Backup files, AM8000 folder for AMD files and AMOSBackups folder for a backup of the AM8000 software release.

All AMOS 8.x Servers only boot from {**AMD**} pseudo disk files. This will be detailed in Chapter 3.

All Eagle 800 Servers have the option for a SCSI interface controller normally used to provide a SCSI bus for an internally mounted streaming tape drive. This controller also has two SCSI busses. The

second bus is available externally through the rear panel for external SCSI devices through a VHDCI connector.

An internally mounted IDE RAID system is optionally available for customer requirements. This unit takes up two 5” drive bays in the chassis. The RAID is a Level 1 mirror RAID device. The standard internal disk drive is moved from the lower drive bay into the first drive tray of the RAID system. Then flip the front panel switch from “Single” to “Default” and the RAID 1 controller does the rest. It will mirror the first drive to the second drive in about two hours for a 40GB drive. This provides a complete drive backup at all times. If one of the drives fails the controller switches to the second drive and continues to run. It creates an audible alert to notify the system operator of a failure. Once the operator replaces the defective drive the RAID controller automatically mirrors from the remaining working drive to the new replacement. With this type of RAID controller, use the same type and size IDE 133 disk drives. This is only a two-drive system. Additional details are shown in Appendix H.

With respect to the XPE system the RAID looks like ONE disk drive with two partitions C: & E: The CD/DVD drive is always the D: disk device.

Serial I/O Capability

In addition to the standard serial I/O ports previously described, other serial I/O ports can be added to the AMOS 8.x Server in a variety of ways.

1. On any AM-8000 system, you can include up to 120 serial I/O ports housed in the Alpha Micro AM-905-31 chassis or 56 serial ports in the AM-3501 I/O expansion chassis. The serial I/O boards that are supported are the AM-359-00 optically isolated 8-port serial I/O board and the AM-359-01 non-isolated 8-port serial I/O board. These subsystems are interconnected with a 68-pin, 34-twisted paired cable to the AM-113-50 Multifunction board housed inside the AM-8000 system chassis. These serial ports provide RJ-45 connector interfaces to mate with your serial port cables.

2. All AMOS 8.x Servers can add additional serial ports via an Alpha Micro Eagle 450TX terminal Server attached to the network. You can also convert an existing Alpha Micro computer into a Terminal Server to Telnet into the AMOS 8.x Server.

3. The AM-8000 Series I Server can house up to two PCI 8-port serial I/O cards into the two spare PCI bus slots on the main board, or you may install externally, two 8-port USB Serial I/O boxes. The maximum PC serial ports allowed are 18 in any AMOS 8.x Server. These serial ports provide 9-pin male connectors to mate with your serial devices.

4. The AM8000 Series II Server cannot use the older 32-bit PCI 8-port cards. There is only one 32-bit slot that is reserved for the AM113-50 Multifunction Controller. However, USB serial I/O boxes can be used on the two USB ports on the rear panel.

5. The Eagle 800 Series I has two spare PCI bus slots on the main board, so you can install two 8-port PCI serial boards or one SCSI controller and one 8-port PCI serial board. You can also install two 8-port USB expansion boxes, but the maximum allowable PC serial port count is 18. The Series II Eagle 800 has 5 total PCI slots, one for the AM-113-45 and 4 expansion slots.

Parallel Printer Port

All AMOS 8.x Servers have one industry standard parallel printer port. In most installations network printing is used so there is less need for local LPT ports. Refer to Appendix A for cabling info.

Network Hardware

All models of the AMOS 8.x Servers contain an Ethernet port allowing AMOS access to a network. The AM-8000 Series I main-board has two Ethernet ports. The Gigabit Ethernet (10/100/1000 Mbps) port is next to the AGP slot. This port is enabled and mapped for use with AMOS in the standard configuration. The second (10/100Mbps) port is closest to the Video connector. AM8000 Series II has 3 network ports, two GigaBit ports in the same positions as Series I and one (10/100 bps) ports. This latter port is turned off in the BIOS setup. Series 3 Am8000 has two GigaBit Ethernet ports.

The Eagle 800 system has one (10/100 Mbps) Ethernet port, which is mapped for use by AMOS. Series III Eagle800 system has on 1000/100/10 Mbps Port.

Alpha Micro's latest networking software, AlphaTCP, and AlphaNET software are included within the AMOS 8.x Release. The driver for the Ethernet port allows both AlphaNET and AlphaTCP to function.

All models of the AMOS 8.x Servers have the DHCP client enabled as shipped from Alpha Microsystems. If the user does not have a DHCP Server on site, then the XPE side of the Server must have a unique IP assigned. Refer to Chapter 6 for the procedure to assign an IP to XPE.

System Console & Diagnostic Status Display

A 15", 17" or 19" LCD flat panel system console is included with all AM-8000 systems and is optionally available for Eagle 800 Servers. The console monitor is required for the system operator to interface with AMOS 8.x. The AMOS 8.x system displays diagnostic information in the System Diagnostic window of the AM8000 program. The boot process shows the normal functions of the system in the diagnostic display window, as well as certain system errors. Normal messages appear in Black. Magenta color is for the AM-113-50 status code messages. Blue messages are for the Jobs that the monitor controls. Orange messages are for ports being initialized. The Red messages are errors. These will signify a problem with the Server configuration. These messages describe missing information or processes that have terminated.

There are multiple status diagnostic windows for additional information. The Network window is just for the Network interface and displays the different Ethernet interfaces, and which adapter is mapped for AMOS use. The SCSI window displays the current configured SCSI and ATAPI devices mapped for AMOS use.

Real Time Clock

AMOS 8.x Servers have a Real Time Clock with battery back up. The TIME and DATE may be set from OPR: as on any other Alpha Micro system. See the AMOS Command Reference manual for the format. The clock chip is physically on the main CPU board.

Rear I/O Panel

Refer to the figures in Chapter 2 for the different connectors and their functions.

Add-On Equipment

Since the AMOS 8.x Server is a multi-user business system, you will need to add terminals, PCs or Thin Clients via network connections or hard-wired serial connections to support these devices. You will probably want to also add one or more printers to provide printed copies of reports or documents, and perhaps a modem for serial data transmission via the telephone lines. Your Value Added Reseller (VAR) may have provided these items as part of your computer system purchase.

If you want to expand these Servers in the future by adding additional storage and backup devices, see the *AM-8000 Service Manual or Eagle 800 Service Manual* for a diagram of where additional peripherals should be located in the chassis.

SOFTWARE FEATURES

Computer hardware is all potential and no action until the software programs instruct it to do something. All AMOS 8.x Servers run the same AMOS 8.x dual operating system software. The underlying operating system is Windows XP-Embedded®, which is a componentized subset of Windows XP Professional® and does the low level work for the AMOS 8.x system. This software component is referred to as "**XPE**". XPE provides disk caching, network, serial, USB, LPT ports, SCSI controllers, IDE devices, and video display drivers to AMOS 8.x. The XPE software is hidden from normal users of AMOS. AMOS runs under the control of the AM8000.EXE program on the XPE side. The AMOS 8.x Operating System does all of the other functions that you are normally used to. Additionally, a special version of AMOS, called EAMOS (Embedded AMOS) boots up underneath the AM-8000 system to provide access to AMOS controlled serial ports and the AMOS, Software Security Device {SSD}.

There are small differences in the XPE software for the different system models. You should not restore an Eagle 800 software CD to an AM-8000 and vice versa. The Chipset software drivers are different for the various Series I, II & III AMOS 8.x system models. The peripheral equipment installed will also make software differences between the systems. The setup and administration tasks are still the same for all models.

Some of the features of the standard system software are listed below. Your VAR can provide software packages specifically suited to your needs, such as accounting software, programming languages, e-mail and fax packages, and so on. Those packages are not included in this list. See your VAR for information on service and support for such packages.

- The AMOS 8.x operating system performs many functions, one of which is to manage the Server's resources so multiple users can run on the Server at the same time. Both AMOS and XPE also include all support software for the hardware devices mentioned above.
- XPE software for the control of the main board, including the main CPU & chipset drivers unique to each model.
- Norton Ghost™ 2003 for backup and restore of system volumes.
- EAMOS: Embedded AMOS controls Alpha Micro style serial ports and the SSD device.
- Adobe Acrobat 5.0 or 6.0 Reader to display online documentation.

- UltraVNC software for remote administration of the Server.
- AlphaTCP allows your Alpha Micro Server to communicate using the popular TCP/IP protocol. This software allows you to connect to the Internet, send and receive mail, and transfer files.
- AlphaNET allows the Server to connect to older legacy AMOS computers. Serial and Ethernet networks are supported.
- Programs called "print spoolers" let you use one or more printers at the same time without tying up a user terminal.
- The Task Manager lets you schedule multiple background tasks to run without operator control at preset times and dates.
- A sophisticated command language allows you to invoke a stream of commands and program input (predefined by you) by entering a single command.
- The business-oriented AlphaBASIC and AlphaBASIC PLUS programming languages are uniquely suited to the programming of business applications software packages.
- ISAM (Indexed Sequential Access Method) Plus, a machine language file management system callable from AlphaBASIC or assembly language programs, provides a method for quick information organization and retrieval.
- AlphaFAX is optionally available for faxing documents to clients.
- The VUE screen-oriented text editor provides an easy-to-use tool for creating documents.
- A simple system initialization procedure allows you to quickly change the types of peripheral devices connected to the Server, change user memory allocations, and customize the Server to your exact needs.
- Support for many different kinds of printers and terminals give you the ability to define your own type of terminal or printer to the Server.
- System Firewall has been enabled to protect the XPE system environment.
- Series II AM-8000 and Series II Eagle800 systems now have European language support for the XPE side. English, French, German, Italian and Spanish are selectable from the XPE Control panel from {Regional and Language Options}.
- All Series III Systems have XPe-SP2 patches with dotNet 2.0 with C++ 6.0 & 8.0 libraries installed which is required for AM8000.exe version 1.1(939C3) and later to function.
- Series III Am8000 systems now have a BluRay DVD-Ram drive standard. This is an optional equipment for the Eagle 800.

For an introduction to AMOS software, refer to Chapter 4, AMOS Overview that also provides a list of additional documentation available from Alpha Micro to assist you with specific information in your area of interest.

Software Compatibility

In general, a*ll non-hardware dependent AMOS code should work!*

The full AMOS 68000 instruction set and monitor calls are supported in all cases. When an unsupported (but formerly supported) instruction or monitor call is encountered, a message is displayed in the System

Diagnostic window. Usually, no additional changes are made to registers, etc. Unsupported 68000 instructions will also generate an AMOS "Illegal Instruction" exception.

Important! If the system encounters an unsupported instruction or monitor call, or any other function that should be supported, that is causing a problem, please give Alpha Micro the specific details and why it is important. Since the instructions are emulated, changes could be made. The AMOS 8.x Servers are not limited by the CPU chip instruction set!

AMOS 8.x currently does not support the following AMOS monitor calls (subject to change without notice):

- plock, punlok, prespn, posspn, spawn, kill

AMOS 8.x implements the Motorola 68000 microprocessor architecture with some additional capabilities (subject to change without notice):

- 68020 addressing modes are implemented
- 68020 integer multiply and divide instructions are implemented.
- All other 68020 and 68040 instructions are **not** implemented including:
    - cmp2, cas, cas2
    - pack/unpack (not to be confused with the monitor calls of the same name)
    - callm, rtm, chkxx, bkpt, trapcc
    - All bit field instructions

AMOS 8.x denies 68020 capabilities but will attempt to run programs that have the "required 68020 processor" flag set.

Of course, routines that directly access "I/O Ports" will generally not work, as this is different hardware.

Some system and job information in AMOS memory is either not valid or has different meanings. Most of this is directly related to the internal operation of AMOS 8.x, such as the job run queue. Generally, this is only an issue if you are using custom assembler code and not using pre-existing monitor calls to access the information.

All current AlphaBASIC versions are fully supported with their existing .RUN or .RP files. There is NO advantage to re-compiling. An AMOS 8.x system will generate the same code as on an older AMOS system. The run files can be moved to any system.

As AMOS 8.x assembler libraries have been updated during the AM-8000 development, not all re-assembled programs will have the same hashes. However, they should still work the same even on older AMOS systems.

SSD access via AlphaBASIC still works as before. Configuration and Maintenance: *It will be hard to tell the difference!*

All normal system configuration files are exactly the same structure as on previous AMOS systems. With new hardware, as always, there are new disk and interface drivers. A lot of older, hardware related programs have been removed from the AMOS 8.x release. Their behavior under AMOS 8.0 is unknown and unsupported.

The booting defaults are AM8000.MON and AM8000.INI, so you can keep your old INI files.

All additional AM-8000 specific configuration and maintenance is done from the "System Diagnostic" screen, on the system console.

What Is Hidden?

Actually, there are a number of "hidden" areas that should only be accessed by VARs and system administrators or qualified service technician:

- The <AM8000 System Diagnostic> screen, accessed by using ALT + TAB on the system console.
- "XPE" operating system. Accessed through <System Diagnostic> screen.
- The AM-8000 Series II motherboard BIOS, accessed by pressing DEL during the POST.
- The AM-8000 motherboard BIOS, accessed by pressing **F2** during the POST.
- The Eagle 800 Series I & II motherboard BIOS, accessed by pressing DEL during the POST.
- The AM-113-xx CMOS, accessed by pressing ESC on serial port 0 during the controller reset.
- Embedded AMOS, which starts in a virtual terminal session on the system console.
- The Adaptec SCSI Bios Setup, accessed by typing Ctrl + A on system console during SCSI device scan.
- The LSI SCSI Bios Setup on the Eagle 800, accessed by typing Ctrl + C on the system console keyboard during SCSI device scan.

ABOUT THIS MANUAL

The purpose of this document is to provide you with information on how to operate AMOS 8.x systems. After you've followed the instructions in this book, the 8.x Servers will be set up and running. You will have a good idea of where to go next for information on the software to use on these Servers. A lot of time went into writing this manual due to the fact that AMOS 8.x is slightly different than traditional AMOS computers. Many of the chapters may look like previous manuals, but in reality, every section has been rewritten with AMOS 8.x in mind.

- This chapter contains a software and hardware overview of these systems. It also discusses the configurations available, as well as warranty and service information.
- Chapter 2 has unpacking and Installation information for the Server. It also contains information on choosing an installation site.
- Chapter 3 discusses the AM8000 Configuration program and its options.
- Chapter 4 is the AMOS overview.
- Chapter 5 highlights AMOS software application packages that are available for the Server. To learn more about each subject, we provide a list of Alpha Micro documentation that can be ordered.

- Chapter 6, System Administration, mainly explains the AM8000.INI file changes and XPE administration details and Ghost backup procedures.
- Chapter 7 gives Hints Restrictions and Shortcuts. The minimum system configuration guidelines and general information on the use of the Servers is presented. Some useful utility short cuts are also described.
- Chapter 8 contains information on Preventive Maintenance for the Server.
- Chapter 9 contains the diagnostic display codes which are active under AMOS 8.x
- Chapter 10 contains information on TODOS and FMDOS software.
- Several appendices contain technical information, including SCSI bus configuration details and instructions for serial cabling and installation. The AM-113 info and AMOS INI examples are documented.

The *AM-8000 and Eagle 800 Service Manuals* contain additional information on opening and configuring the Server. The service manuals are intended for authorized technical personnel only.

Graphics Conventions and Definitions

Like other documents in the Alpha Micro documentation library, this manual contains a number of standard symbols to make our text easier to read and understand.

Symbol	Meaning
TEXT or(**text**)	Bold text in an example of user/computer communication represents the characters you type. When the text is all capitals, type exactly what's shown.
TEXT	We use text in this typeface for: characters the Server displays on the screen, program examples, and command format. When showing command format, all capitals indicates a constant part of the command line, such as the command name, while lower case indicates variable information, such as a file name.
Text	Text in this bold, italic typeface is a reference to part of a previous command format description or sample.
	This says "Halt!" and lets you know an important warning or message is being presented that could cause serious damage or inconvenience if ignored.
	This "Hint" symbol indicates a helpful bit of information, or a "short cut" that could save you time or trouble.
	This "Remember" symbol indicates something you should keep in mind while following sets of instructions.
ENTER or RETURN	These key symbols refer to the enter key on the keyboard. The name of the key appears inside the key symbol.

Text Conventions and Definitions

AMD	**A**lpha**M**icro**D**isk is a pseudo disk drive
XPE	Windows XP-Embedded® operating system
Select> [Tools]	With the mouse *select* the program option [Tools] and left *click*.
(**ESC**)	Type the enclosed key, in this case the ESC key.
<Device Manager>	XPE application program or a window title enclosed in < > braces
{Ports}	{Ports} is a program option under the Device Manager example above
{Menu item}	{Menu item} is a title of one item in a menu or application screen

SERVICE INFORMATION

The following sections give support information for the Alpha Micro AMOS 8.x Server Systems.

Post-Sales Support

Alpha Micro provides a comprehensive post-sales support program for its entire product line. Our Technical Support organization is structured to provide the Alpha Micro dealer with fast access to support assistance and information.

Our customer commitment is maintained through the expertise and skills of our competent, professional staff whose dedication assures all Alpha Micro customers the maximum benefits of quality support. Alpha Micro warrants its products through our VAR network. Alpha Micro will repair or replace a defective product under warranty without cost to the purchaser. Should you wish to arrange for factory warranty service for your equipment, you should obtain a Return Authorization Number from the Alpha Micro Order Administration.

For Further Assistance

If you are unable to contact your dealer, Alpha Micro will be glad to refer you to another one. If you relocate and want to learn the name and address of an Alpha Micro dealer near you, please call Alpha Micro at 800-Buy-Alpha (800-289-2574) or write us at the address inside the front cover.

For national field service at your location contact our authorized service provider Birmingham Data Systems at 800-968-0860 (East Coast) or 800-461-8410 (West Coast).

Chapter 2 - Installation

This chapter gives general installation information for the AMOS 8.x Servers. It discusses the following topics:

- Unpacking the Server
- Instructions for re-shipping the Server
- Recording the SSD identification number
- Preparing a site for the Server
- Verifying AC power requirements
- Installing the operator console, mouse, and keyboard
- Turning on the Server
- Initially testing the Server
- Booting AMOS 8.x
- Installing Alpha Micro software
- Turning off the Server
- Expanding hardware capabilities

Your Alpha Micro VAR can assist you with setting up, expanding and servicing your Server.

UNPACKING GUIDELINES

Unpack the Server and ***save all packing material and cartons*** in case the Server ever needs be to transport again. The shipping material was carefully designed to provide optimum cushioning and protection. When re-shipping or otherwise transporting the Server, the original packaging must be used to ensure safe shipment.

When moving the Server, handle it gently. The hard disk in the main unit has moving parts and delicate read/write heads. Rough handling could damage the drive and prevent the Server from operating properly.

If your Server included a monitor, unpack it now and set it aside. The monitor will serve as the operator console. Also set aside the mouse and keyboard that came with the system.

Reporting Shipping Damage

If there is any damage to the shipping container or the main enclosure, or there are missing items from the packing list, please call your VAR immediately. Shipping damage must be reported to the shipping company immediately! Do not power up the system if the Server is **severely damaged**.

Instructions for Reshipping the Server

If shipping damage has occurred or the self-test indicates a problem with the Server, your VAR may recommend that you ship it back.

If for some reason you cannot contact your VAR, please call the Alpha Micro Sales Department. They will give you the name and address of an Alpha Micro VAR near you who can help. See "Service Information" in Chapter 1.

When reshipping or otherwise transporting the Server, you must use the original packaging to ensure safe shipment.

Please include a note to the person who will receive the system containing the following information: your name, address, phone number, the date you shipped the system back, and the reason for return. Please insure the shipment to cover any damages.

Be as specific as possible about the problem experienced—the more information provided, the easier it will be for the service technician to determine the reasons for any problems. If any troubleshooting procedures were done, let the person receiving the system know exactly what procedures were done and what the results were.

What's Included and What Else You Will Need

Unpack the Server and peripherals and identify the following items:

- The software license and warranty cards
- Documentation and System Manuals
- The main enclosure and AC power cord
- LCD Monitor and AC power cord (optional)
- Mouse and keyboard
- AMOS 8.x Bootable CD

In addition to the equipment Alpha Micro has provided and the operator console, the following items are needed:

1. Properly configured cables for connecting additional peripherals, such as terminals, modems and printers to the computer.
2. The manufacturer's operator manuals for any terminals and printers.
3. Ethernet Network Hub or Switch and Ethernet cabling for network connections.
4. If the Server is set for 230 Volt AC, you need a 230 Volt AC power cord with the correct plug for your geographical area. Your local VAR may already have included this power cord with the Server; if not, contact the VAR for information on where to get it.

RECORDING THE SSD IDENTIFICATION NUMBER

The Software Security Device (SSD) is a customized integrated circuit located on the multi-function board inside the AMOS 8.x Server. The SSD uniquely identifies the Server to customized software that has been configured to run only on this system. If customized software was purchased from your VAR or other software vendors, please give them the SSD identification number before they "key" the software to the Server.

The SSD identification number is written on the system ID label on the back of the Server in the area titled "SSD Serial No." Please note the identification number of the SSD at this time and enter the number at the front of this manual.

OVERVIEW OF INSTALLATION PROCEDURES

Installing the Server is a matter of:

1. Choosing and preparing a location for the system that is clean of dirt and dust, and a ventilated environment to cool the system. Please provide at least 6 to 8 inches behind the system and at least 8 inches in front.
2. Making sure the power supply is configured correctly for the local electrical requirements.
3. Connecting the operator console, mouse and keyboard.
4. Running the initial POST diagnostic test to make sure the system is working correctly.
5. Creating a backup tape or backup CD.
6. Connecting additional terminals and printers.
7. Getting assistance.

Some of the sections in this chapter refer to various locations on the front and back panels of the system. The next two sections describe the front and rear panel connectors, controls, and indicators.

AM-8000 Server Front Panel Controls and Indicator s

Figure 2-1, on the next page, shows the front panel on the AM-8000 deskside chassis. The panel has the following controls and indicators:

- The *Power* Indicator light is always lit when power is supplied to the Server.
- The *Disk* Indicator light is lit whenever there is hard disk activity.
- The *Reset* button allows the operator to reset the Server from the front panel. Once the Reset button is pressed, the hardware will be reset and the Server will reboot. To avoid losing any data, make sure there are no applications running before you press the Reset button.
- The front panel *Power On* switch allows you to turn the Server on.

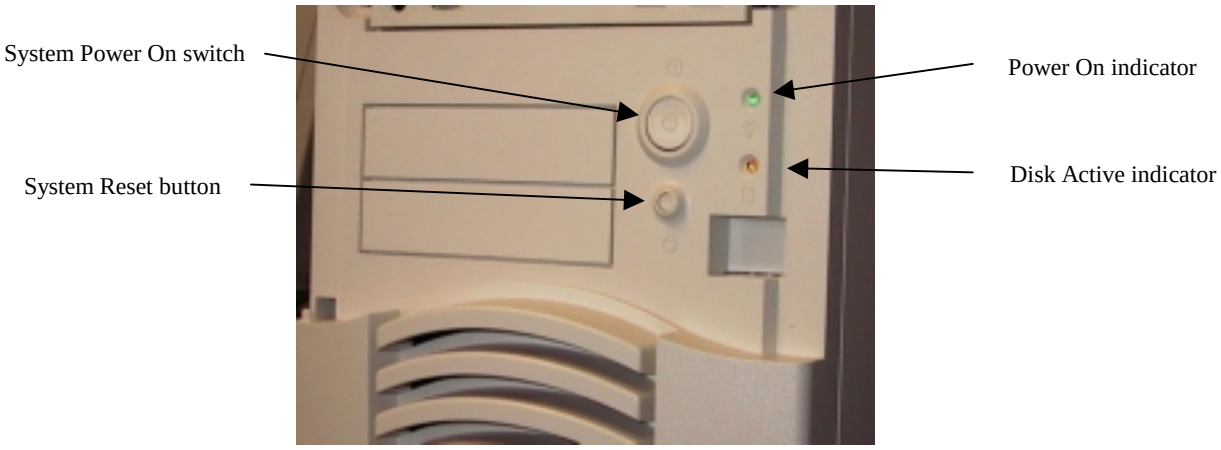
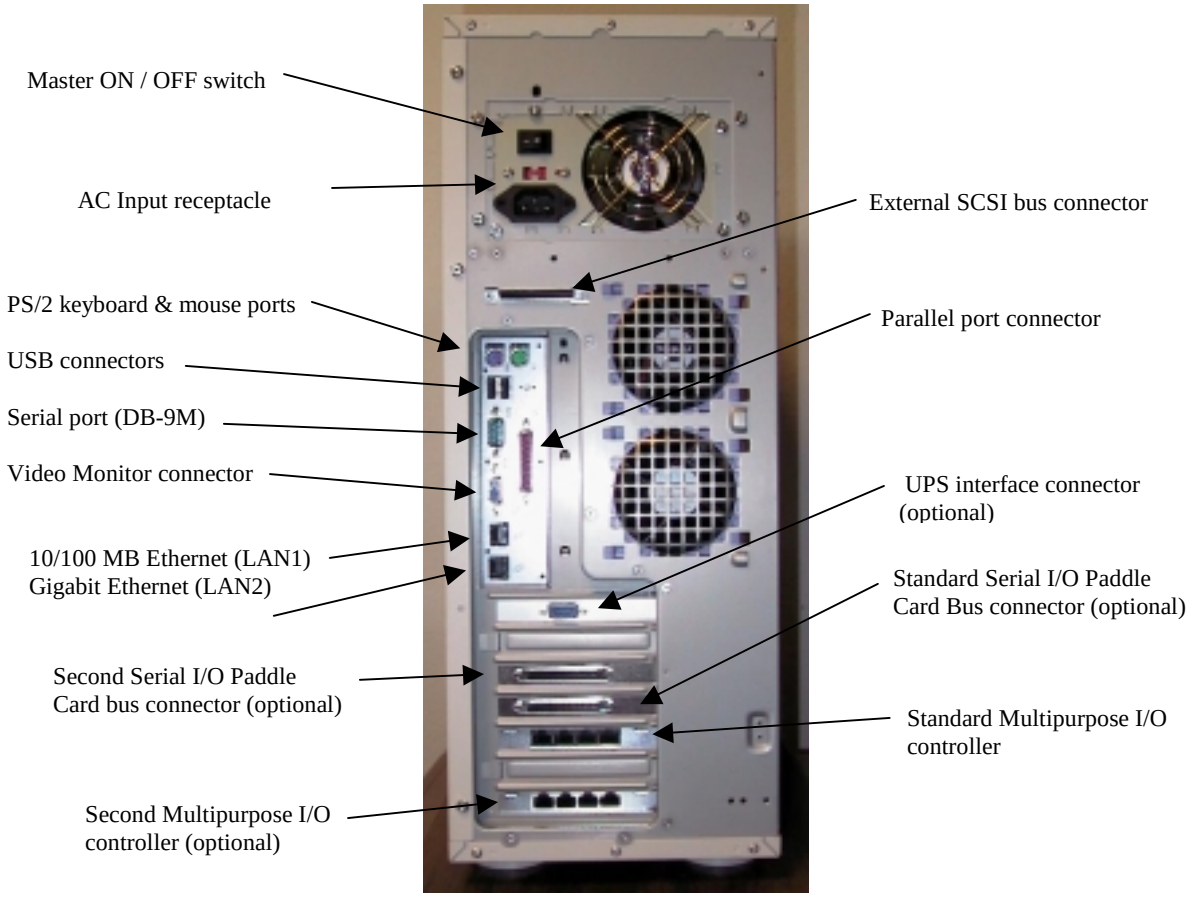


Figure 2-1: Front Panel Controls and Indicators (deskside chassis)

AM-8000 Server Rear I/O Panel

The types and number of connectors on the rear panel of the AM-8000 Server will vary depending on the equipment included with the order. Figure 2-2 shows the standard AM-8000 rear panel configuration:

Figure 2-2: AM-8000 Rear Panel Configuration (Deskside Chassis)



Eagle 800 Front & Rear Panel

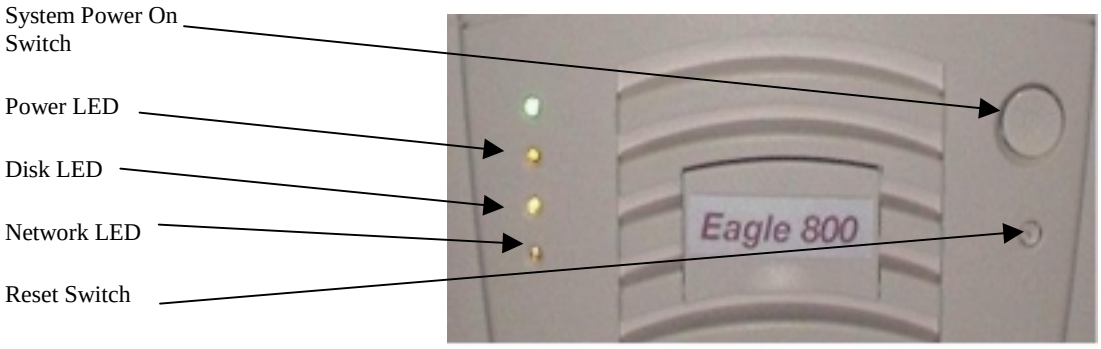


Figure 2-3: Eagle 800 Front panel

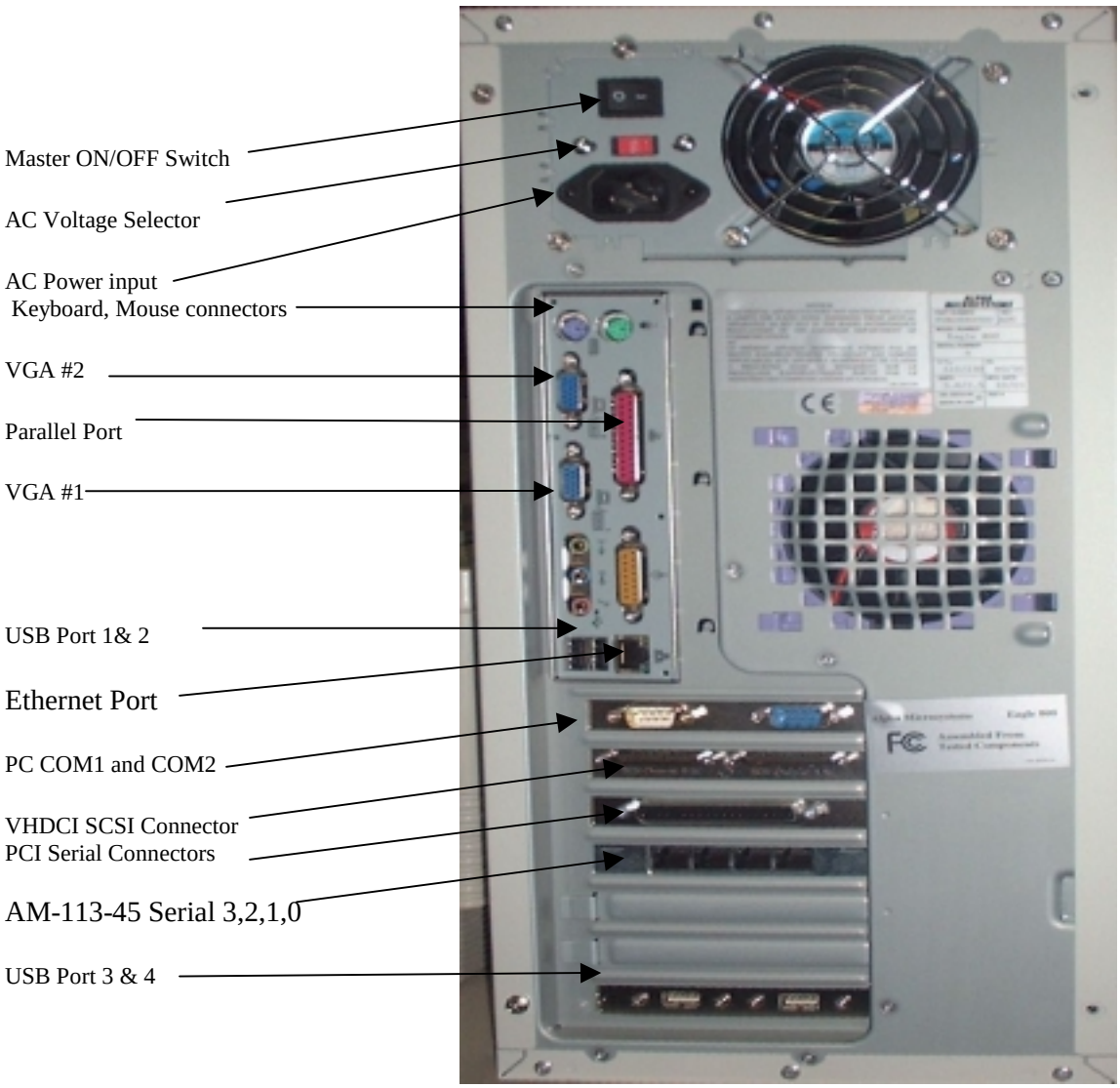


Figure 2-4: Eagle 800 Rear Panel

PREPARING THE SITE

For the Server to do its best job, it must be placed it in a clean environment, and one that meets the temperature specifications of the Server. Extreme temperature or humidity can cause computer failure. But it is not very demanding -- its environmental needs are similar to your own.

Physical Requirements

The first step is to make sure the location for the Server is large enough and sturdy enough to support it. Leave enough room for any local terminals and printers that are needed. Do not place the system in a hallway or other high traffic area. The dirt and dust from these areas end up inside the computer chassis.

Make sure the AC power cord will reach from the back panel to an electrical outlet, and that there are enough electrical outlets for all terminals and printers. Make sure the terminal cabling will reach from the back panel of the Server to the terminals and printers. See the following section on "Power and Cable Connections" for more tips and suggestions.

Environmental Requirements

It is important to remember that the cleaner the environment, the more efficiently the Server performs. Treat the Server with respect. For example, do not place coffee cups or soda cans on top of the main enclosure where they can spill? If spilled liquid happens to reach the circuit boards inside the computer, it could cause a failure.

In general, install the Server in an area where people do not eat, drink, or smoke, since all of these activities can cause contamination problems. Try not to place the Server in a high traffic area. This typically creates more dirt and dust, which can clog the air intakes of the Server chassis. This will cause cooling problems because of the dirt accumulation. A side effect of a high traffic area is static electrical discharge, which can cause system resets. This can be avoided by installing the Server in a better environment. For information on cleaning the Server and taking care of its components, refer to Chapter 8, "Preventive Maintenance."

The selected location for the Server must be within certain temperature and humidity ranges. Air circulation around the system is something that should be considered. Do not put a computer in a closed closet where there is no cooling. See the separate specification sheet for detailed requirements.

It is very important for the health of the Server that its cooling system is not obstructed. The Server takes air in from the front and exhausts air at the rear. Allow **at least** six to eight inches at the rear of the unit for ventilation.

Environmental Specifications

Server external operating temperature: 60 to 90 degrees F (16 to 32.2 degrees C)
10 degrees C per hour maximum fluctuation
Humidity: 20% to 80% (non-condensing)

Static Electricity and Grounding

One of the greatest enemies of computers, terminals, and printers is static electricity. The chief villain is climate: dry winds and dry seasons. On dry and windy days when humidity is low, static electricity could affect the Server. Be aware that both carpets and the plastic mats often used under desks are a prime source of static electricity.

If possible, install the Server in an uncarpeted area. If the Server is placed in a carpeted area where static electricity could be a problem, treat the area with anti-static spray on a regular basis.

If problems occur when equipment near the Server is turned on—for example, if the Server stops functioning when someone uses the photocopier, improper grounding could be the problem. We recommend a low impedance power conditioner be used to filter out these power problems. Alpha Micro offers a variety of appropriate approved power conditioners or UPS systems. Ask your VAR for further details.

Several anti-static sprays on the market can be of considerable help during days when static electricity is a problem. Also, using an air conditioner that controls humidity can greatly reduce a static electricity problem.

Power and Cable Connections

Before selecting a site for the Server, verify the site has adequately regulated AC power. If you request it, many power companies will install test equipment to determine if there is a need for additional line regulation. Test the line voltage using a high-speed line transient recorder. If, over several days of testing, the line voltage varies more than 10 percent from the rated line voltage, a power conditioner or UPS system may need to be installed and a new dedicated AC power circuit. Alpha Micro Servers require a properly grounded power outlet for the system to run correctly.

A "transient free," or smooth and consistent power source and a properly installed earth ground can significantly improve the reliability of the system. While the Server is in use, it is important to maintain a constant line voltage free of power surges, fluctuations, and impulses. Ideally, a separate power circuit should be available for use only by the Server and the subsystems connected to it. However, if this is not possible, a line conditioner capable of suppressing transients or spikes to eliminate power surges and noise will be required.

Make sure the power rating for the power outlet is large enough to power the Server and any future subsystems to be installed. In North America, a standard 15 Amp, 115 Volt grounded connector-type outlet is required for the CPU chassis. In some other countries, the requirement is a 230 Volt AC power source.

The maximum power requirements for the Servers are:

- 115 Volt AC at 5 Amps,
- 230 Volt AC at 2.5 Amps

Additional outlets are required for each I/O chassis and/or peripheral connected to the Server. Alpha Micro Servers come with a standard six-foot power cord. If this is not long enough, be sure any extension cords used are rated for the full 15 Amps—otherwise, the full voltage will not reach the Server. This can

affect the efficient operation of the Server. A point to remember is that the closer the voltage gets to either end of the AC power range, the less efficient the Server will be.

To avoid electrical interference, sources of electrical noise such as air conditioners, copiers, electric typewriters, or cleaning equipment should not be connected to the same power circuit as the Server. All outlets providing power to the Server should have a common grounding point restricted to only those connections coming from the computer installation.

Data cables should not be located near high voltage power lines, power transformer telephone cables, or in elevator shafts. They should not cross walkways. If cables must cross walkways, cover the cables with a cable bridge.

Please consider how long the serial communication cables will be. Single-ended serial circuits are susceptible to all forms of electromagnetic interference. As line length increases beyond fifty feet, the reliability of the RS-232C cable connected to the terminal and printer decreases rapidly. If local terminals are to be located further than fifty feet from the computer, we recommend you use low capacitance twisted-paired overall shielded cables. If this cable does not solve the problem, then use a Terminal Server to extend the reach of serial devices. See Appendix A for more information.

Verifying Voltage Compatibility

Different parts of the world use different standards for electricity. Most areas of the United States use 115- Volt electricity. Many other areas of the world use (220 to 240) Volt electricity.

Power Supply AC Voltage and Receptacle

- The AM-8000 systems power supply is auto sensing, and therefore allows 115 VAC or 240 VAC input without any input selector switch setting. See Figure 2-2.
- The Eagle 800 requires that the Voltage selector switch be set for 115 or 240 VAC for the site. See Figure 2-4.
- The AM448-RAID subsystem must have the Voltage selector set correctly.
- The Serial I/O subsystem must also have the Voltage selector set correctly.

INSTALLING THE OPERATOR CONSOLE, MOUSE AND KEYBOARD

The video display that is used when installing software and running diagnostic programs is called the Operator Console. There are two basic things you must do to install the Operator Console:

- Verify that the AC voltage for the location is compatible with the console specifications and plug the console AC power cord into the AC voltage source.
- Connect the console video cable to the 15-pin VGA output connector on the back panel of the Server.

Install the mouse and keyboard connectors to their respective connectors on the back panel of the Server. See Figure 2-2 & 2-4 for details.

TURNING THE SERVER ON

Once the Server is turned on, be very careful never to move the Server while power is on; doing so could damage the disk drives inside the unit. "Turning the Server Off," at the end of this chapter, will describe how to power down the Server correctly before moving it.

For the AM-8000 Series I Server, verify that a SCSI Terminator is installed on the back panel next to the power supply. If the Server was shipped with a RAID subsystem, make sure it is connected to the SCSI expansion connector and the SCSI Terminator is attached to the second connector on the RAID subsystem. Also, if your AM-8000 Server also includes one or more AM-905 or AM-3501 Serial I/O subsystems, make sure the AC power cords are installed in the I/O subsystems and the signal cables that connect the I/O subsystems to the AM-8000 Server are in place. Apply power to each Serial I/O subsystem prior to turning the power on the AM-8000 Server.

For Eagle 800 Servers equipped with a SCSI controller, these systems do not need a back panel mounted terminator. The sub-system that is connected to the controller must have the terminator. If an internally mounted streamer tape drive is present, the internal SCSI cable must be terminated at the end of the cable either by enabling terminators on the last internal SCSI peripheral or by a separate terminator installed in a cable connector at the end of the SCSI cable.

1. Verify once again that the Server has been configured correctly for the AC power service in your region.
2. Insert the socket end of the AC power cord firmly over the three prongs in the power cord receptacle in the back panel. Then plug the pronged end of the cord into an electrical outlet.
3. Turn on the Server by switching the AC power ON / OFF switch on the rear panel to the ON position. Then push the power button located on the front panel.
4. To verify that the power is on:
   - Are the Power and Run or Disk activity indicator lights on the front panel lit? (See Figure 2-1)
   - Are the cooling fans running? To check the fans, place your hand behind each fan opening in the back panel; you should feel air blowing out.
5. Verify that any RAID subsystem and serial I/O expansion chassis also have their power cords installed and main power switches in the on position.

If the power light and the fans are not on, you have a problem. Call your VAR for troubleshooting help.

BOOTING UP WITH AMOS 8.X

Normally all AMOS 8.x Servers have the system software installed by Alpha Microsystems before the Server leaves the factory. Since this is the case, all you need to do is turn on the Server.

The first thing displayed on the Console is the power on self-test (POST) diagnostic. Once this process is completed, the system software on the hard disk or RAID subsystem will start to load. In a few seconds the ALPHA MICRO logo will display with blue progress dots. Then the AlphaShell program 5-second count down box will be displayed. The AM8000 System Diagnostic window will appear and will execute the AM8000.MON and AM8000.INI as the default settings. Then a terminal emulator will execute and display the system initialization command file. These commands appear in rapid succession on the

operator console VTM1 port as they are executed. VTM stands for Virtual Terminal port using either the AMPCLite or AMPCTerm terminal emulator.

If nothing appears on the Operator Console after a couple of minutes, contact your Alpha Micro VAR. You may need to follow the instructions below to install the operating system onto the System Disk. More than likely you will need to inspect the system for a disconnected power connector, disconnected SCSI cable, or no SCSI Terminator installed. Do these checks before attempting to install any software. If a DVD-R media is in the DVD drive tray, it may take a little longer to go through the boot process since it tries to read the DVD media first to boot from it.

For AM8000 Series II system if a USB drive is plugged in during power up, the Main-board BIOS will change the boot device to the USB drive. Un-plug the USB drive and power back up and it should revert back to booting from the SCSI drive 0. If the USB drive will always be plugged in and turned on, please go and change the boot order in the BIOS setup screen and then restart the system.

INSTALLING AMOS 8.X SOFTWARE

If the AMOS software is not already installed on the hard disk, the system software is provided on an AMOS 8.x Bootable Recovery CD. The Server should have been delivered with the software CD. If no CD was included, contact your VAR for help.

To install the system software, press the eject button on the CD/DVD drive and place the AMOS 8.x Bootable Recovery CD into the drive tray with the printed side UP and close the tray. Hold the reset button in for 7 seconds and release it. The system will then perform a Power On Self Test (POST), and then will display a message asking to boot from CD. Press the space bar and allow the system to boot from CD. The Norton Ghost™ menu will be displayed. If you are not familiar with Ghost™ please STOP here and call your vendor for help. This software will wipe out all the data on the hard drive if you do not understand the functions of this program. Please print out the PDF file from the Norton Ghost CD for further information. See Chapter 6 for backup and restore procedures from Ghost.

Installing the software on the Server involves copying the latest system software image from the AMOS 8.x CD to the hard disk. To install the system software from the CD to a new Server, perform a 'Partition' restore to the first logical of the first physical disk drive of the system. The partition size is written for drive C: on the left side of the CD label. If the wrong number is used, it may wipe out information on the second logical drive of the system. Please refer to the service manual or chapter 6 for the complete restore procedure.

When the software load finishes, eject the AMOS 8.x Bootable Recovery CD, and the Server will restart and boot into AMOS. The system should boot and display the ALPHA MICRO logo, and the AM8000.EXE program should start the system initialization command file.

Expanding the AMOS 8.x Server

Your Alpha Micro VAR can assist with setting up, expanding, or servicing the AMOS Server. Once the Server is configured with the basic components, additional subsystems may need to be installed. Expanding the Server is easy. Changes to the basic configuration to add more users, printers, and serial devices or change memory allocations are accomplished in two steps.

Step one for adding new hardware involves changing the AM-8000 Configuration. Step two is to make the changes to the System Initialization Command File to define the new hardware. Changing the allocation of system resources also requires changing the system initialization file. For information on modifying this file, refer to the *System Operator's Guide to the System Initialization Command File*.

Please read that document carefully. Modifying the system initialization command file without understanding its elements is dangerous. A serious mistake could damage the file and leave the Server unable to boot from the defined System Disk. Instead of modifying the file directly, alter and test a copy, then replace the original file with the validated copy. Please refer to the sample INIs in the last Appendix of this manual for AMOS 8.x specific information that is not contained in the older documentation.

TURNING THE SERVER OFF

Turn off the Server whenever:

- You add to or modify the system hardware configuration
- You move the Server for required servicing
- Add or remove external SCSI devices

To turn off the Server always follow these steps:

1. Make sure all users have exited all programs and are logged off the system
2. Remove any backup media (such as CDs and tapes or USB drives) from the Server
3. From the <AM8000 Diagnostic> screen, *Select*> {File} >{**Shutdown**}.
4. Or, use the xAdmin utility {ShutDn} from any terminal. This utility will power off the Server. Read the on-line help files on the system.
5. If the system will not power down after a few minutes using the above procedures, you should first try pressing and holding the AC power button on the front panel for about ten seconds until it powers off. If the server still will not power off, turn the rocker switch on the rear panel to the OFF position.
6. Data corruption may occur if any data has not been flushed to disk when the server is powered off using the hardware switches.
7. Once the system is off, turn the rocker switch on the rear panel off, if the inside of the chassis will be serviced

GETTING ASSISTANCE

If you have followed all of the instructions in this chapter but the Server is not working, you probably want help. Call your VAR or the Alpha Micro Technical Assistance Center at 800-487-7877.

Chapter 3 - AM8000 Configuration Program

This chapter contains two types of information: basic concepts about the way the AMOS 8.x Server is set up and operates, and general procedures for the configuration of the AM8000 environment. We will cover the following:

- Booting the AMOS 8.x Server
- Configuration Program
- Creating your own System Disk

For the next chapters, below is an additional text description for programs and actions needed by the user.

<Screen or box Title or Application Program top line >
<Selected item> *action for you to do* **(keyboard input) (keyboard key)**
or <Selected item> mouse *Select*> **{menu item}**
<Menu> *action key press* keyboard
or **<Menu>** ***Select***> [menu item] [scroll box] with mouse left click
[Radio Button] mouse *Select* or ENTER
{Action notes and choices}

Select> [program option] or *Select*> <Title> menu1> menu2> menu3> [program option]

To select the last “program option”, you need to make multiple left button selects with the mouse of each menu number to reach the correct program selection.

BOOTING THE AMOS 8.X SERVER

Booting is the process the system goes through whenever the power is turned on or the reset button is pressed. The main CPU board goes through a POST, the SCSI devices are scanned, and the CMOS settings are displayed. The CPU reads from the CMOS to find the selected order of the boot devices. Then the CPU loads from the first listed hard drive the operating system into "RAM," and executes its instructions.

The first program set loaded into memory is the XPE software and drivers. The XPE software also loads configuration information about the specific hardware and other software drivers allowing AMOS to access these resources. Once loaded, the AlphaShell program takes over and executes the AM8000.EXE program, which is the AMOS 8.x operating system. The AlphaShell program displays a 5-second count down message box before it executes the AM8000.EXE program. When this is displayed on the system console, if you press ESC on the console keyboard the XPE software will execute the <Windows Task Manger> instead of AM8000.EXE. If there is a problem with the system configuration, you can fix it from the XPE software environment or execute the AM8000 Configuration program shortcut in the C: AM8000 folder. Once in the XPE environment, you may update the EAMOS software or move, copy or create AMOS disk files to the correct locations. Sometimes a Hard disk or RAID subsystem will be added. These devices must be initialized from the XPE environment first. This process is accomplished

with XPE from the *Select*> <Control panel> Administrative Tools> Computer Management> Storage> [Disk Management] menu. If you are familiar with Windows XP, this is very easy to understand.

The files that are transferred into system memory when initializing AM8000.EXE are the Ethernet library, the SCSI library, and the embedded AMOS files. The SCSI library will scan all SCSI busses to detect any SCSI devices. The AM-113-XX board will be initialized with EAMOS.MON and EAMOS.INI. Then AM8000.MON is loaded and executes the AM8000.INI.

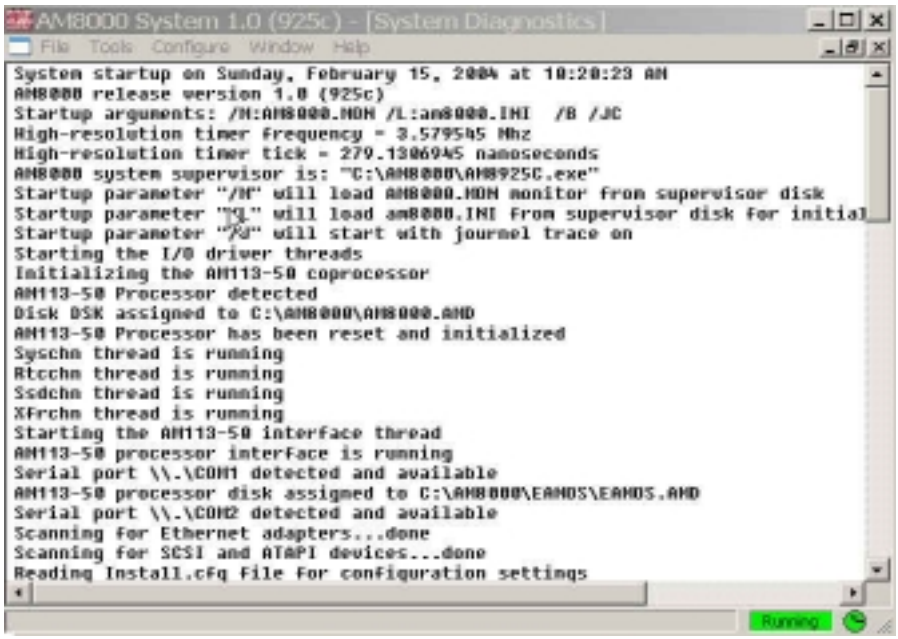


Figure 3-1: AM-8000 System Diagnostic window

The Server is initialized with a special file containing commands that define to the AMOS operating system all hardware and software programs needed from the booted environment.

As the Server boots, it reads the AM8000.INI file and "builds" the operating system in memory.
Changes to the AM8000.INI file are needed whenever hardware is added, like drives, tapes, terminals, printers, or new programs are added into system memory.

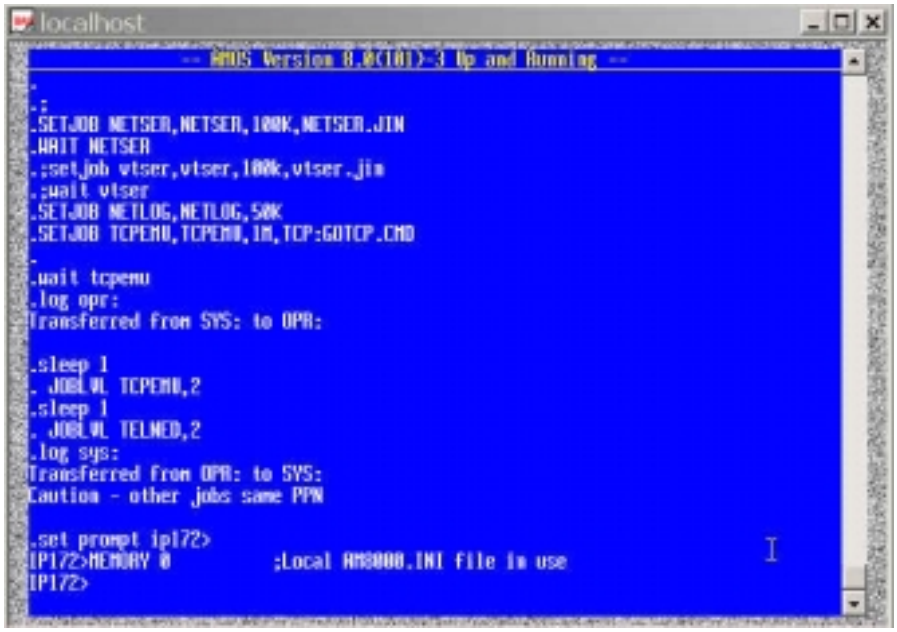


Figure 3-2: Sample Boot Session

The Server processes the commands in the system initialization file. Each line executed is displayed on the operator console. When all of the commands in the initialization file have been processed successfully, the Server is up and running. The last command in any system initialization file is "`MEMORY 0`".

Switching Between AMOS and XPE

Once in AMOS and operating from VTM1, you can switch between AMOS and XPE with just a keystroke on the console keyboard. The standard method is ALT/TAB, to activate the System Diagnostics window.

CONFIGURING AM8000 AND EAGLE 800 SERVERS

On the task bar there are 5 command options. The third one is Configure. With the mouse, select and click on *Configure*. This will launch the AM8000 Configuration Window. We will step through each program option tab in the remainder of this section to initially configure the AM-8000 Environment.

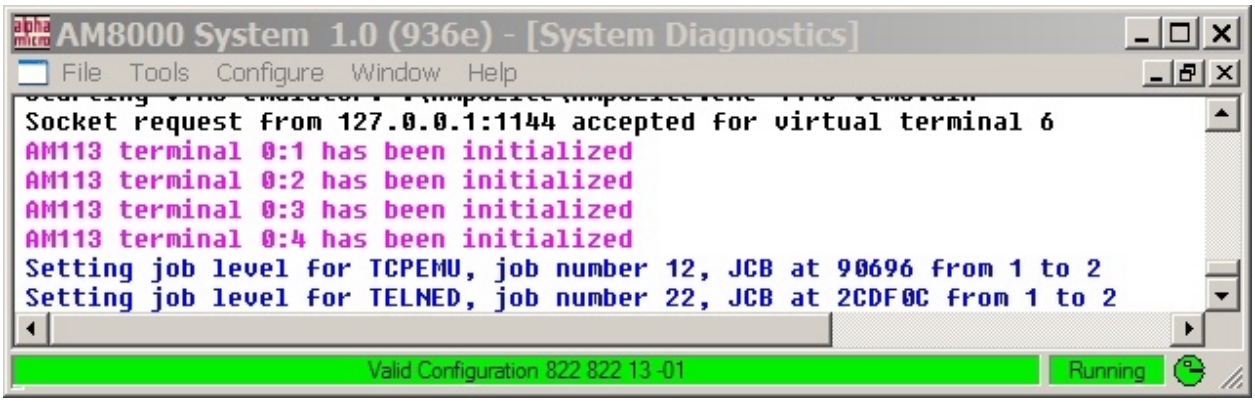


Figure 3-3: System Diagnostics

The General Tab

The first option check box (Figure 3-4) will leave the Diagnostic window displayed or will minimize the diagnostic window after the AM-8000 system boots up. Shutdown will ask for confirmation before proceeding with system shutdown if the next box is checked.

The use Metropolis terminal output for LBasic check box is checked only if your system uses Metropolis and Lightning Basic software.

In the next check box, fill in the amount of RAM you wish to allocate to AMOS, in 1 MB increments. Table 3-1 below lists the recommended AMOS memory sizes for the various types of Servers.

System Type	Recommended Maximum AMOS Memory Size*	Standard Total Server Memory
Eagle 800LC	128 MB	256 MB
Eagle 800	256 MB	512 MB
S3-Eagle800	512 MB	1 GB
AM-8000 1 or 2	512 MB	1 GB
S3-Am8000	750 MB	2 GB

* Absolute maximum AMOS memory size for any system is 750 MB, a restriction of the XPE operating system

Table 3-1: Recommended AMOS Memory Sizes

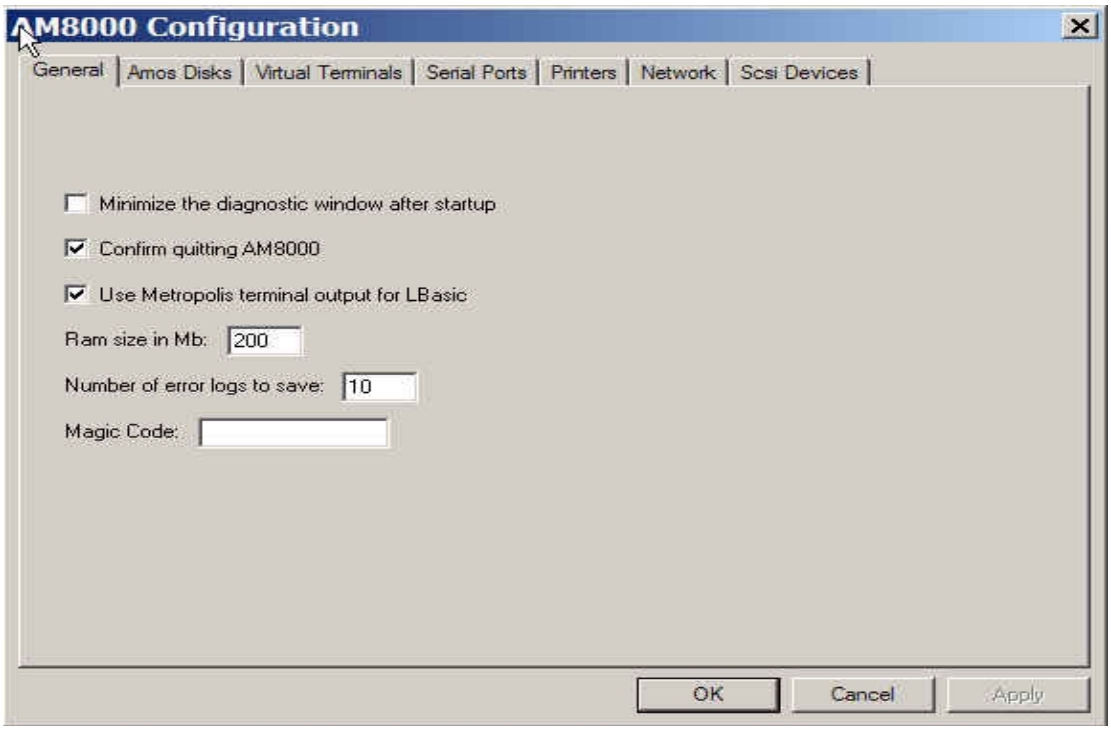


Figure 3-4: AM8000 Configuration General Tab

AMOS 8.x creates Boot Diagnostic Logs, which record the boot process. If the system fails, a complete system memory dump is logged. The next input box allows the administrator to select how many of these logs are to be kept on the disk. If this setting is greater than 2, the oldest file is deleted before a new one is allocated on the hard drive. These files are allocated each time the system boots. These logs are located in the C:\AM8000\Error logs folder.

The Magic Code is keyed into the next input box. This code mates together the AM-113 board and the main system board. The magic code is entered only when the AM-113 board or the main system board is changed. There is a white tag on each main system board with a 12-digit number. This number is branded into the AM-113 board. Once this code is entered it will enable the SSD to function. This only needs to be done once for each installation. All systems shipped from Alpha Micro have this number already installed. In Appendix F, this process is explained in detail.

To save the settings configured, click on the [OK] button or [Cancel] to leave it alone. The save process only needs to be done once after inspecting all Configuration Tabs. To write the changes to the system registry, you are required to *Select*> File>[Exit] from the main diagnostic screen. Then *Select*> [Quit].

AMOS Disks Tab

Now click on the AMOS Disks tab. When AMOS 8.x is installed, the standard system disk "**DSK**" is AM8000.AMD, which has six logicals initially 32 MB each in size. Additional disk subsystems may be defined, as shown below. The alternate boot disk file provided is AM8kSub.AMD.

Up to nine additional disk subsystems can be defined. Use the [Create] button to define your own disk files, or select the [Browse] button to use other existing disk files.

Using the Create button, you will define the number of logicals, the size of each logical drive in MB and the filename of the *.AMD disk. The location of the file is typed into the PC Data File input box. These files are stored on any XPE formatted hard drive connected to the system. Even a disk file on a DVD-RAM media can be accessed through this method. Please do not place the boot disk {the DSK device} on the DVD-RAM media; this is extremely slow compared to regular hard disk drives. DVD-RAM media is used for backups of system data.

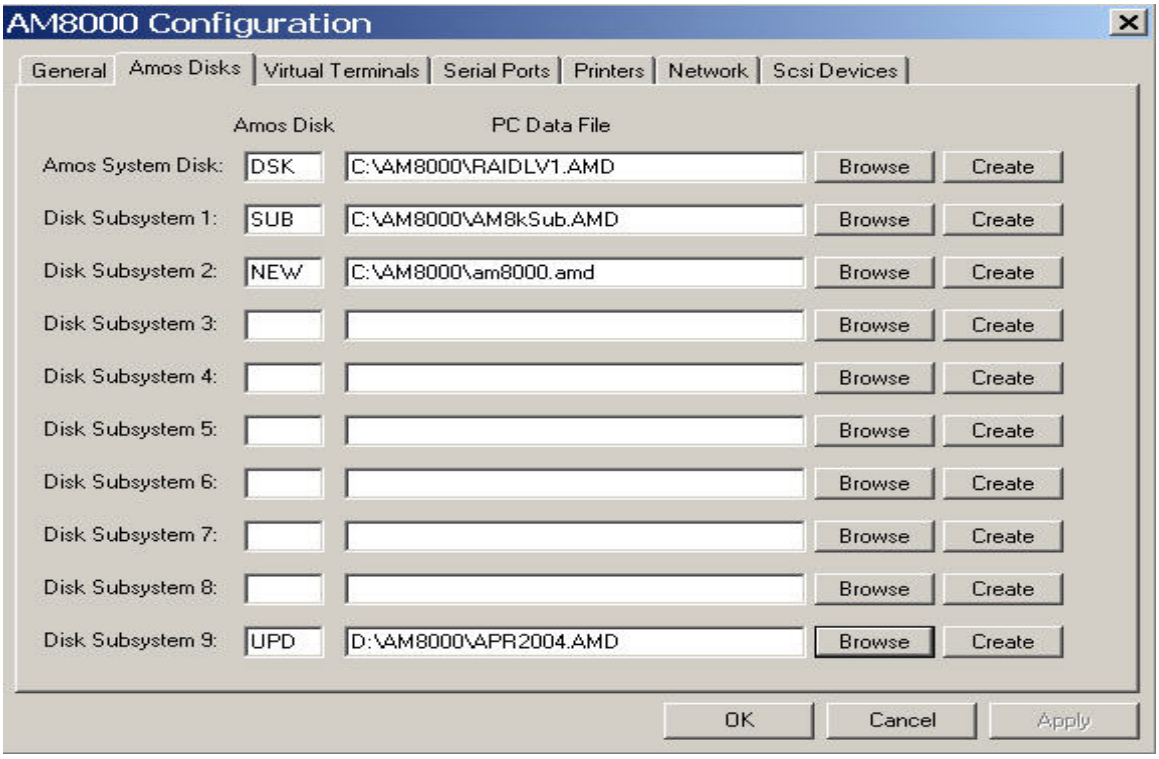


Figure 3-5: AMOS Disks

The 3-letter disk definition for the device must be the same in the DEVTBL, BITMAP, SYSTEM, and MOUNT statements in the AM8000.INI file. The disk driver to use for all definitions in this screen is **PCDSK.DVR**. Log to DVR: and COPY NEW.DVR= PCDSK.DVR in our example. Repeat this process for any other added disk device. In the above example, Drive C: is a RAID Level 1 drive with an RAIDLV1.AMD file created with 12 logicals and 2.56GB per logical. The released operating system was then copied into the new RAIDLV1 disk file to make it bootable. Later in this chapter we will detail the process for building new **AMD** disks.

Virtual Terminals Tab

Next, click on the Virtual Terminals tab. Eight virtual terminal windows can be defined, depending upon the AMOS user license. Two terminal emulators come with AMOS 8.x. With the mouse, select the Down Arrow under the Emulator column to bring up the emulators available. The Virtual terminals only run on the Console of the AMOS 8.x Server. Please note: the system must boot from the VTM1 port.

Terminal emulators provided with AMOS 8.x, are AMPCLiTE, a version of AlphaLAN Lite, or AMPCTerm, a version of the ZTERM terminal emulator. On-line help is available for both terminal emulators by selecting (Help) in the emulator task bar.

VTM8 is reserved for use with EAMOS. The VTM8 port must be active in the EAMOS.INI file during the CPU PIC Mode process. Then the Magic Code can be entered and accepted. The CPU PIC will not be accepted if the AMSIO line for VTM8 in the EAMOS.INI is commented out. Once the code is entered you may re-edit the EAMOS.INI and put it back into “Shipping Mode” with the Pseudo terminal line as active and the VTM8 line inactive with it commented out. See Appendix F for details on the CPU PIC process.

The terminal emulators installed on the system are setup in the “INSTAL.CFG” file in the AM8000 folder. This file is then accessed to select the Emulator for the VTMx channel as shown in Figure 3-6.

Note: Each virtual terminal consumes one AMOS user license if defined in the AM8000.INI. The definition here only reserves which emulator will be used for each VTM session.

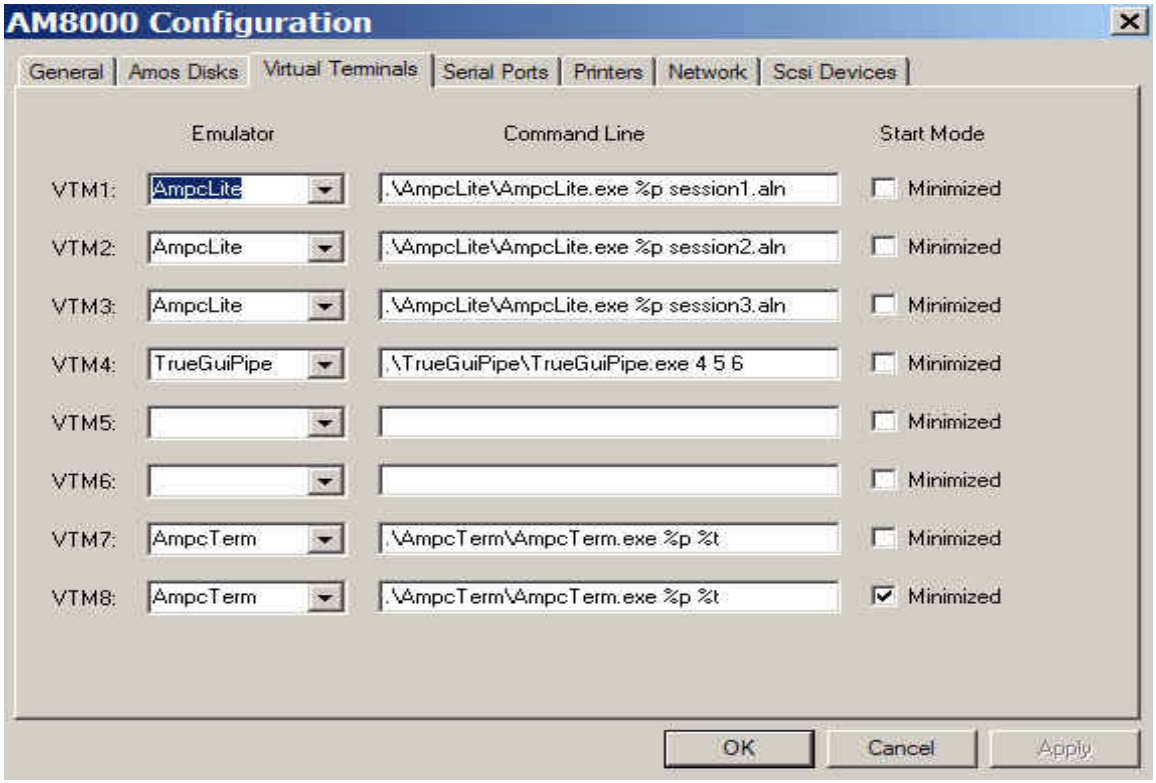


Figure 3-6: Virtual Terminals

Serial Ports Tab

To define the PC serial ports for use by AMOS, click on the Serial Ports tab. Under XPE, if a properly installed PC COM port is detected, the port will show up in the left panel as in Figure 3-7. A red X indicates the port was not detected on the XPE side and is not mapped for AMOS use. The detected ports must be mapped for use with AMOS by assigning them an AMOS COM port. With the mouse drag the selected PC serial port on the left to the AMOS serial port desired on the right. Please map them straight across for clarity.

Note that when a PC serial port is mapped to an AMOS serial port, a yellow double-headed arrow replaces the green check or red X. To un-assign an AMOS serial port on the right, simply drag the double-headed arrow from the right to the left box and drop it.

When installing a new PC serial port, you must do this through the XPE <Device Manager>. To access the Device Manager program from the <AM8000 Diagnostic > window, *Select*> Tools> [Control Panel], then *Select*> [System] and double click. The <System Properties> window will display. *Select*> [Hardware] tab. In the next screen *Select*> [Device Manager] button.

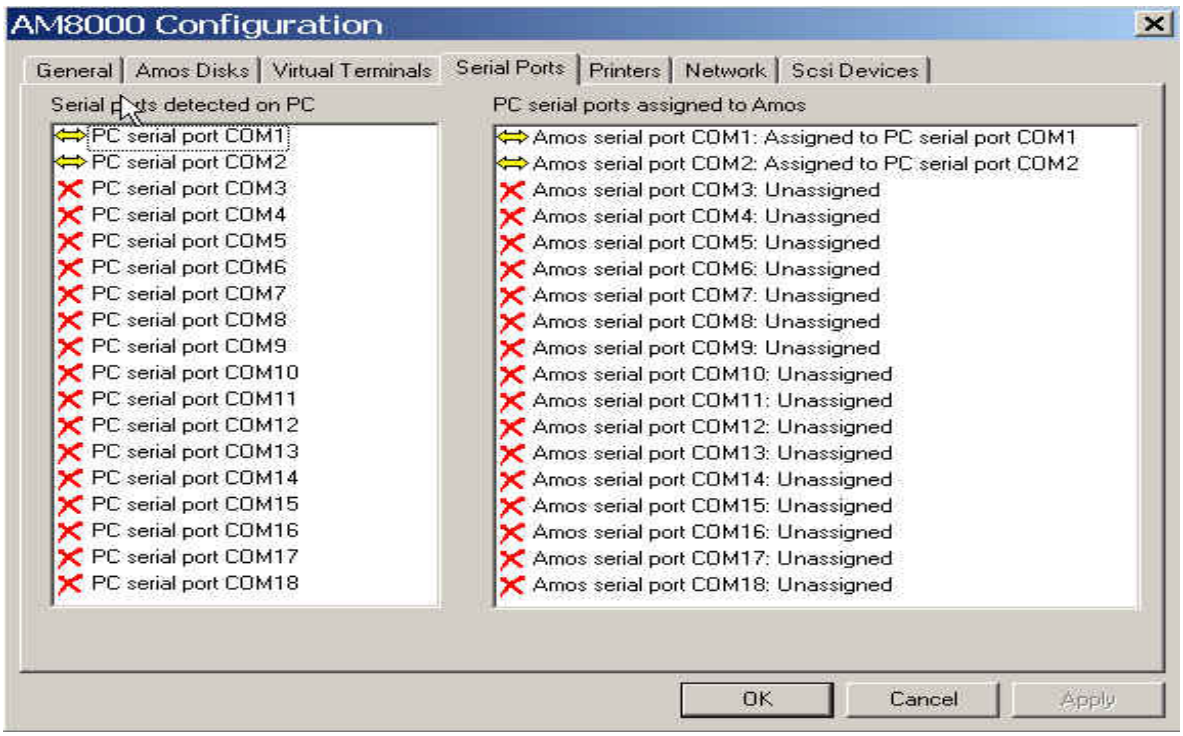


Figure 3-7: Serial Ports for a standard AM-8000 system

Each serial port counts against the AMOS user license if defined in the AM8000.INI. The mapping in this window is only to reserve the ports for AMOS use.

The <Device Manger> window will display the hardware devices in this system. See figure 3-8. Expand out the {Ports}{COM &LPT} entry by left clicking on the [+] box to the left of the menu item. If all the ports are properly installed the numbering will be *Sequential*, {1 to 18}. If not, the ports must be reassigned a sequential port number. First exit the <AM8000 Configuration> program.

The reassignments are done by selecting the port and right click, *Select*> [Properties]. *Select*> [Port Setting] tab. *Select*> [Advanced] button. See chapter 6 for a detailed procedure.

The COM port number input box will be displayed in the <Advanced Setting for the Com Port>. Left click on the [Down arrow], and find the lowest number missing {usually 3} and select it. Now *Select*> [OK] button. Then *Select*> [OK] again.

Repeat this process for all COM ports that are not numbered sequentially. Once this is accomplished close the <Device Manager> window by *Select*> [X] in the upper right hand corner. Then close the <System Properties> window with an [OK].

See Chapter 6 the section titled “PC Serial Port Installation and Renumbering Procedure” for the details on this process.

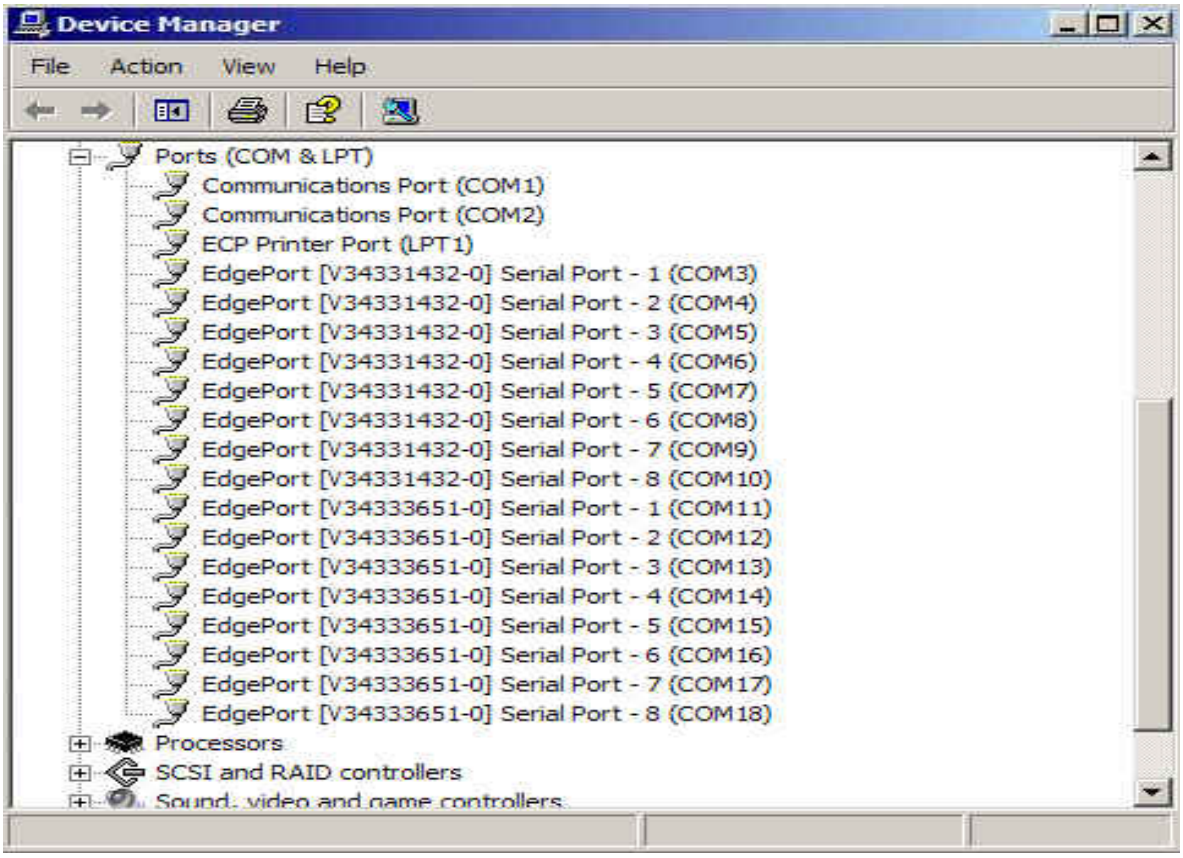


Figure 3-8: Device Manager – Ports assignment.

The XPE side must be done first before the AM8000 program scans the hardware for ports available for use to AMOS. Restart the AM8000 configure program.

Once the ports are installed under XPE correctly, the COM ports on the left can be mapped to the corresponding AMOS COM port on the right with a select, drag and drop technique with the mouse.

Figure 3-9 is an example of a properly configured system setup. Most Eagle 800 systems would look like this if they have two 8-port USB boxes attached. If you unplug the USB boxes, the mapping will still be on the right but the left panel will show COM3 to 18 missing. In the diagnostic window during the COM port scan, the ports must show up in order to be used by AMOS 8.x. If a PCI 8-port board is used, it must also be installed in the same manner as described.

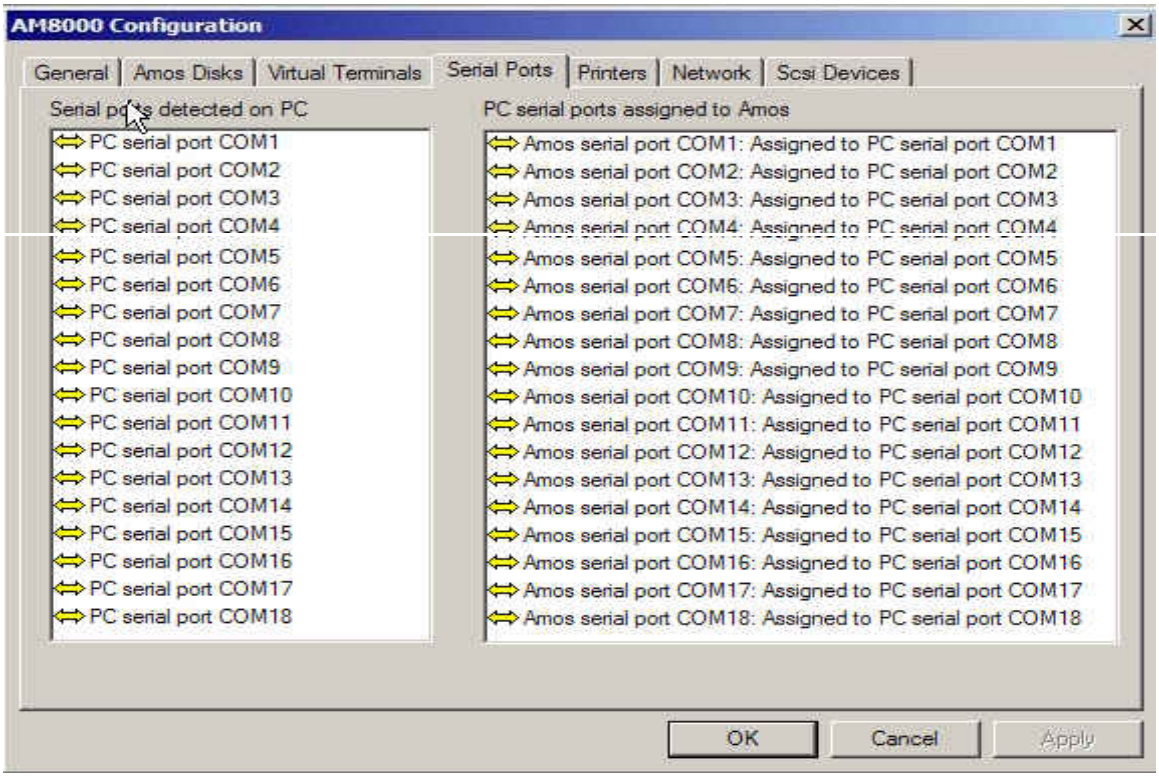


Figure 3-9: Serial Ports assignment.

Printers Tab

Clicking on the Printers tab, sixteen printers can be defined to the AMOS system as shown. All printers must be installed as Windows printers prior to setting them up for use under AMOS.

The "LPT1", "LPT2", etc. parameters here have no relationship to the physical LPT ports on the host. These parameters provide logical references for AMOS 8.x. This assignment is in the AM-8000.INI file as LPT1, LPT2, etc.

Graphics printing from AMOS requires a special setup to bypass the Windows graphic printer driver. This is ONLY supported for the LPTx ports when you check the “Raw Mode” Parameter. See Chapter 6 for more information on this setup.

Any printer seen by XPE, including USB and Network printers, can be defined as an AMOS “LPT” printer. None of these assignments count against the AMOS user license.

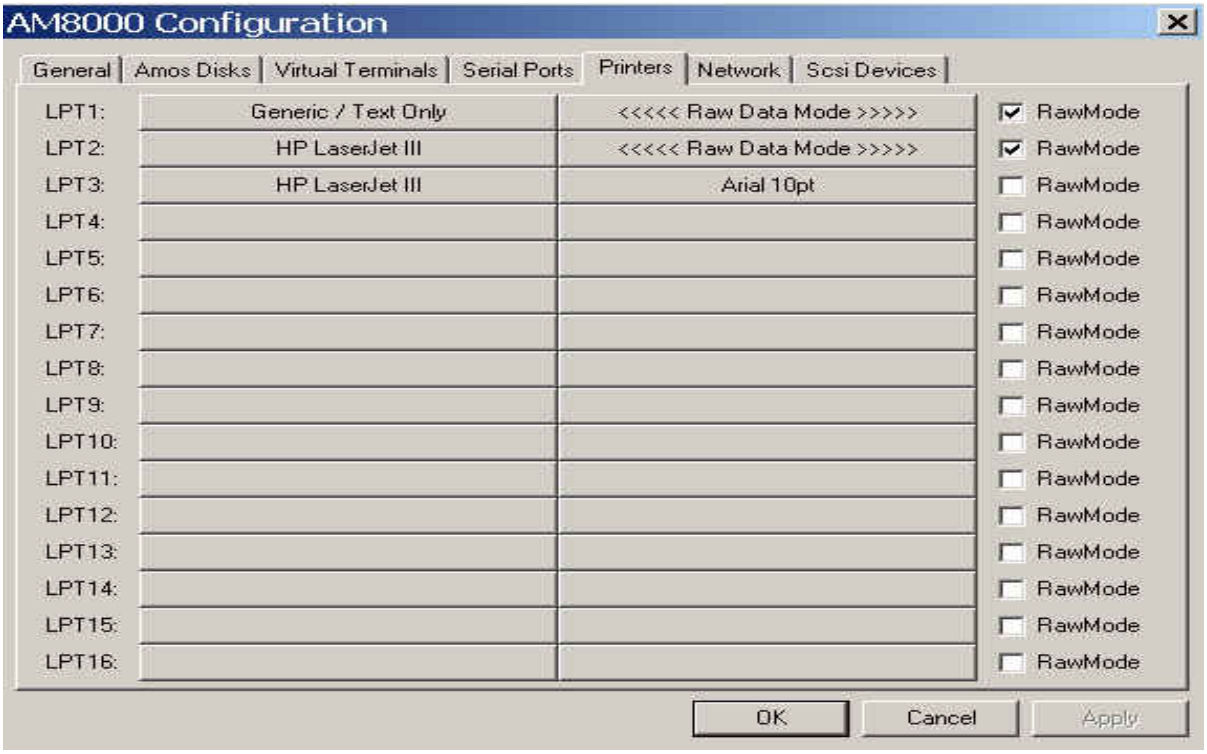


Figure 3-10: LPT Printer assignment

In Figure 3-10, the standard Generic/Text only printer is assigned to LPT1 and the HP LaserJet III is assigned to both LPT2 and LPT3. LPT2 is setup for Raw printing mode and LPT3 is set up for 10-point Arial font.

Any Windows network printer that is added under the <XPE Control Panel> {Printers and Faxes} application can be assigned to AMOS. To add a new printer, LPT4, click on the left box button and the Printer browse window will display. Use the down arrow button to find a local or network printer to assign. To select a Font, Click on the Right hand [box] and the XPE printer properties page will be displayed. Use the scroll boxes to find the font and point size you wish to use.

Network Tab

When AMOS 8.x is installed, the communication network adapters present on the hardware should be identified in the Network menu, as shown in Figure 3-11. If more than one adapter is displayed on the screen, select the one you want to use with AMOS. A yellow double-headed arrow should indicate the selected network adapter.

Figure 3-11 illustrates how the AM-8000 is shipped with the Gigabit port mapped for AMOS use. This high-speed port allows 10/100/1000Mbps connections; depending on your network equipment, Please use the fastest routers and switches for connection to the AM8000 Server.

For Series 3 Am8000 or Eagle 800 the restriction for more that 2 network adapters is allowed. The AM8000.exe 1.1(939B3) and later allow you to select which network adapter is used.

The later version of the AM8000.exe program only uses two network MAC addresses for the system security verification.

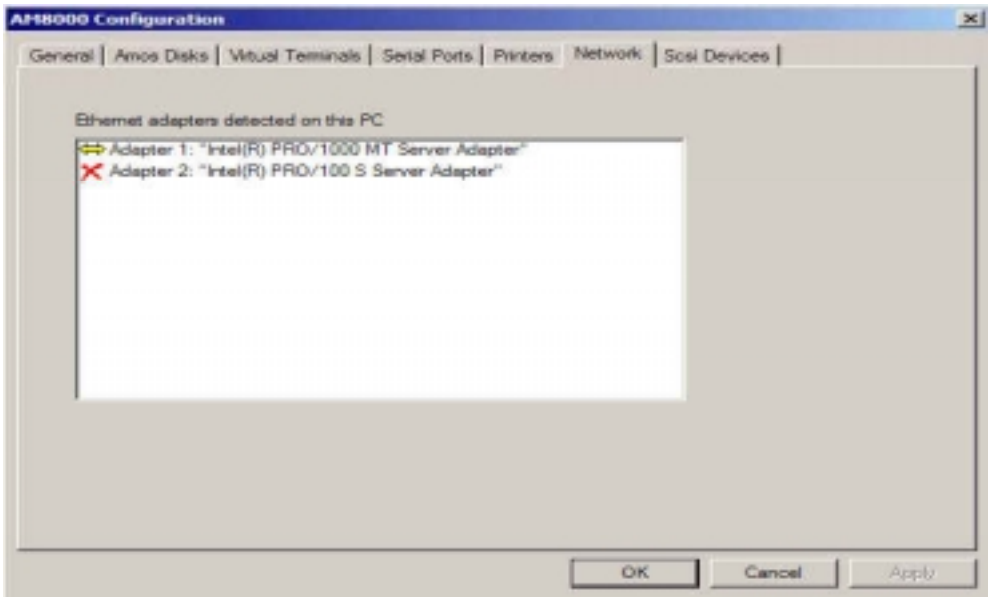


Figure 3-11: Network Tab for AM8000 System

Figure 3-12 illustrates the network mapping for an Eagle 800 system.

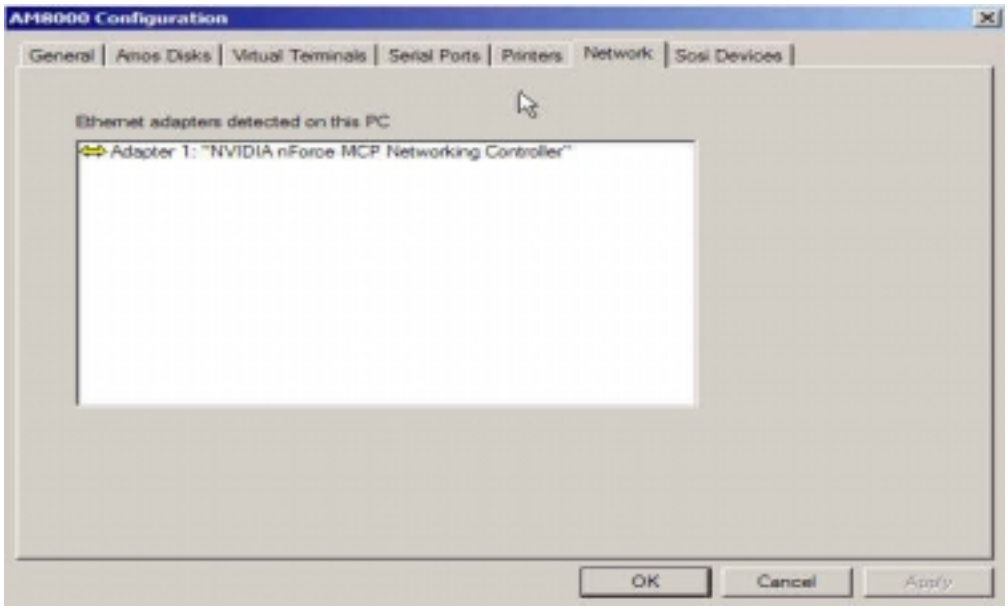


Figure 3-12: Network Tab for Eagle 800 system

Do not disable any Ethernet port in the XPE <Device Manager>. All network adapters must be displayed in the hardware configuration. Only one network adapter needs to be mapped for AMOS use. Only the actively mapped network adapter should have a physical cable connecting it to an Ethernet switch.

SCSI Devices Tab

On an AMOS Server, all installed SCSI and ATAPI compatible devices present on the host should be identified in the upper portion of the SCSI Devices screen, as shown in Figure 3-13. The detected devices can be mapped to an AMOS SCSI device, numbers 0 through 6, by dragging the selected device to the AMOS SCSI device number desired. Tape drives are normally mapped as AMOS device 6 and the CD/DVD, BluRay device is mapped as Device 5. This leaves the other 5 IDs open for AMOS formatted disk drives, which can be attached to the system for data transfer. Normally moving the data from the AMOS formatted drive to an **AMD** disk file is preferred. The AMOS formatted drives are not known to the XPE OS and cannot take advantage of XPE disk caching software.

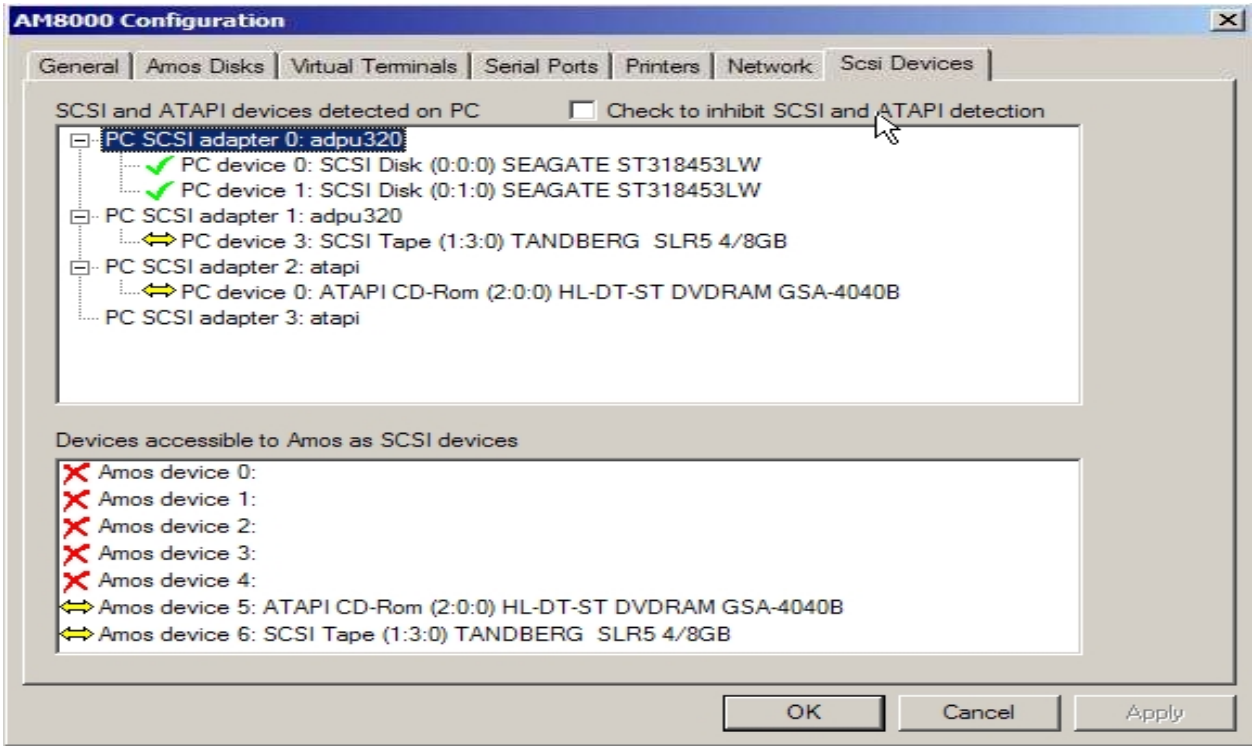


Figure 3-13: SCSI Devices

If you are using AMOS formatted disk drives, it is recommended that you to enable AMOS disk caching for these devices. AMOS 8.x has provided a program to turn off **AMD** drives from being AMOS cached. This is activated by "SET NOCACHE dev:" for the **AMD** disk device in the System Initialization Command File. With this scheme you get the maximum performance from both disk device types. Older RAID systems and disks are plug and play with AMOS 8.x through this method.

The **AMD** disk file always has faster access than the AMOS formatted drive because all access to the AMOS formatted drive is done through a SCSI library, which adds an additional software layer. Once data is moved from the older drive format to an **AMD** disk, the SCSI drive can be unmapped and removed from the system configuration.

Even though other ATAPI compatible devices, such as disk drives and CD drives, may appear in the upper panel, do not map your NTFS formatted SCSI Drive on the AM-8000 or the NTFS formatted IDE disk drive on an Eagle 800 to an AMOS disk device. This will corrupt the data on the drive and make the system not bootable.

The system drive is always formatted as NTFS for use by the XPE system. AMOS only boots from an **AMD** disk file stored in the AM8000 folder of the NTFS system drive. Only map true AMOS formatted drives in the SCSI Devices configuration. Note that ATAPI compatible IDE CD-ROM drives are listed as SCSI devices, even though they are not actually on the SCSI cable.

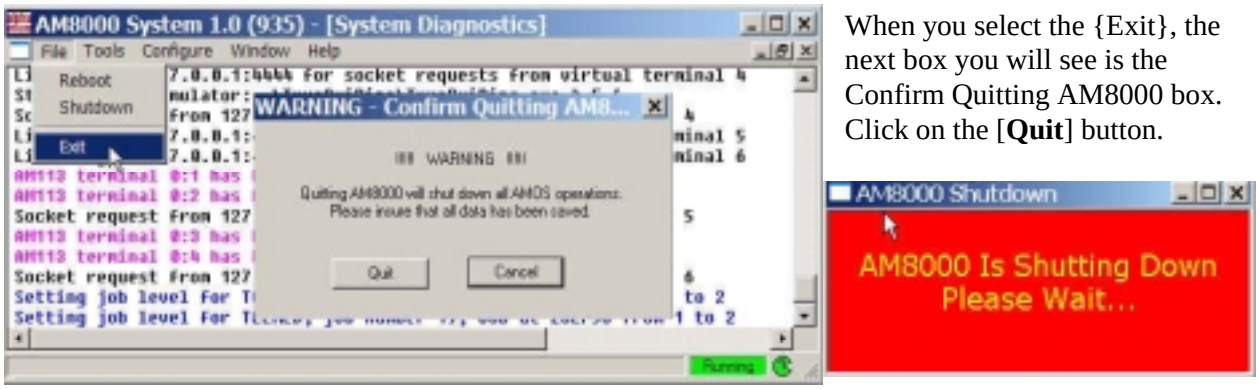
For maximum speed and to take advantage of XPE disk cache you should formatted the system disk drives in the NTFS file system under XPE. To access this go to the <Control panel> find <Administrative Tools> <Computer Management> <Disk Management> program. See Chapter 6 for more details.

To unassign a device, simply drag the yellow double-headed arrow from the lower box to the upper box and drop it. If there is no assignment in the lower panel, the SCSI command from AMOS will show no devices.

The AMOS drive IDs do not need to be the same addresses as the physical device detected under XPE. If you want to add an older AMOS formatted drive to the system configuration, it must be mapped to one of the 5 remaining AMOS device IDs. This mapping must be done first before generating the disk driver. A new disk driver must be generated for this older drive. Log to DVR: and create a driver with FIXLOG, use SCZPC.DVR as the input driver name. Enter the number of logicals and the SCSI ID mapped in the screen above. Save the new driver with a new name like SCZ.DVR. Then modify a TEST.INI and add DEVTBL, BITMAP, SYSTEM & MOUNT statements as with any other AMOS system.

Saving The Configuration

After setting up all the configuration screens described in the previous section, click on [OK]. Then make sure to select {**EXIT**} from the <File menu>. This action will **write** the new configuration for the system into the System Registry on the hard disk.



When you select the {Exit}, the next box you will see is the Confirm Quitting AM8000 box. Click on the [**Quit**] button.

Figure 3-14: Exit to Save the Configuration

When you do select the Quit button, the AM8000 Shutdown warning box will be displayed and the program will exit. The {**Reboot**} selection in the <File menu> will power down the system and restart. The system must go through the system POST phase and the SCSI scan phase, which takes a while. To shut down and power off the Server and stay off, *Select*>[**Shutdown]** from the {File menu}. Both {**Reboot**} and {**Shutdown**} will flush the disk caches.

System Restart

As a faster alternative to a complete reboot, you can restart the Server in order for the new settings to be read and activated from the new System Registry by selecting the <AlphaShell > task in the lower left corner of the console screen and double click on it. The <AlphaShell> message window will display “AM8000 Operating System is running”.

Press ESC on the console keyboard. This will display the <Windows Task Manger>. *Select*> [AlphaShell] in the <Windows Task Manger> screen to highlight it in blue. Double click on the [**End Task**] button to restart AMOS 8.x. Minimize the <Windows Task Manger> by *Select*> [_] in the upper right of the application window.

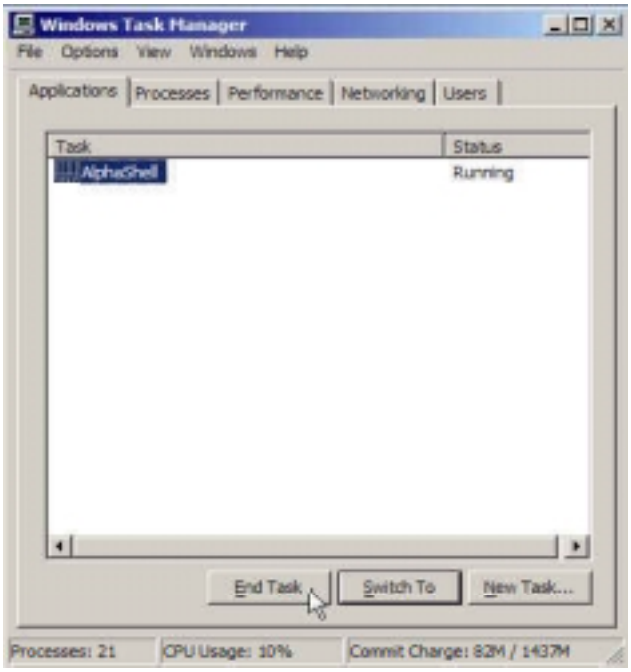


Figure 3-15: End AlphaShell Task to Restart

Other AM8000 Information and Tools

If you select the {Help} item from the AM8000 Diagnostics window you will see the current version of the AM8000 software and information on the software libraries in use.

Figure 3-16: About AM8000

The other diagnostic information windows are accessed through the pull down box under {Window} of the System Diagnostics screen. These are information windows and are not used very often. Most of the important information is in the first System Diagnostics window. To select the other windows move the mouse cursor over window name desired and left click.

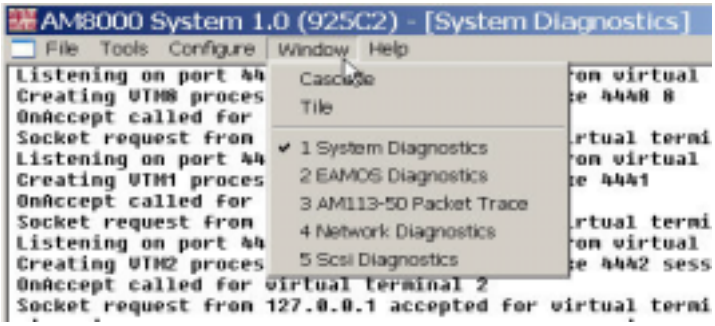
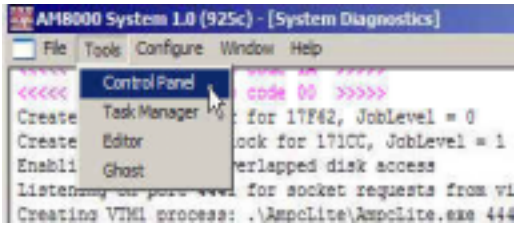


Figure 3-17: Diagnostic Windows

The System Control Panel

To access the XPE system Control Panel select the {Tools} item from the <AM8000 System Diagnostics> window. This is shown in Figure 3-18.



This one window has the greatest power and largest options to control the AMOS 8.x Servers. If you are familiar with XP Professional this will be very easy to understand.

Figure 3-18: System Control Panel

The System Control Panel is also accessed by selecting {System} from the main Control Panel. Please refer to Chapter 6 for a more detailed discussion of these programs. The other tools are used infrequently and should only be performed by the system administrator. The {Control Panel}, {Task Manager}, {Editor} and {Ghost} tools will be covered in Chapter 6.

AMD DISKS AND OTHER HARD DRIVES

AMD Pseudo AMOS Disk

AMOS 8.x only boots from an "**AMD**" {**A**lpha**M**icro**D**isk} file located in any AM8000 folder on any disk volume. XPE controls the NTFS formatted hard drives where the AM8000 folder is placed. The AM8000 folders can contain multiple **AMD** files. Each **AMD** file contains the equivalent of one physical hard drive. Inside the **AMD** disk can be traditional disk formatted for 32MB logical or an Extended disk formatted for larger than 32MB per logical. The **AMD** file contains the label block, bitmap, directory structure and files just like any AMOS formatted physical drive.

To give AMOS 8.x far superior disk performance, XPE's internal disk-caching software is used. AM8000.EXE works with the AM8000 monitor, which makes up the AMOS 8.x operating system. AM8000.EXE opens the **AMD** disk files and reads and writes to these files just like a physical disk

drive. The **AMD** file is created from the AMOS Disks tab of the Configuration screen in the AM8000 program. Since XPE does the disk caching for AMOS, you do not need AMOS disk cache for these pseudo disk devices. Installing AMOS disk cache on top of XPE cache is slower and less efficient; therefore we advise you not do this. You will be double caching data and AMOS must look up the record in both caches before the disk record is returned. To create **AMD** disk files see the procedure "AMD File Creation".

The **AMD** files themselves can be copied, providing a complete image backup. These **AMD** files can reside on any supported file system, normally NTFS, UDF or FAT32. The copies can be defined to AMOS 8.x through the AM8000 configuration program. XPE must perform the copy, which is FAST: about 2 minutes per GB if using an internal hard drive as the destination. This can be slower depending on the drive media being used.

The optional RAID subsystems are formatted in NTFS and made bootable under XPE. This allows the customer to restore their data to **AMD** files created on the RAID subsystem. The SCSI-160 RAID supports Level 1 mirror, or Level 3, or Level 5 with hot swappable drives. The Eagle 800 has an optional IDE RAID Level 1 subsystem. This unit provides an on-line mirrored drive of the operating system and customer data.

Other Hard Drives

Older AMOS formatted SCSI disks can be accessed for compatibility and to do data transfers, but are slower since XPE doesn't know about the AMOS file system. These disk devices are accessed through a SCSI library. The AM8000 monitor disk calls are linked together through the SCSI library with the AM8000.EXE program to provide access. If you are using AMOS formatted disk drives, we do advise you to enable AMOS disk caching for these devices. AMOS 8.x has provided a program to turn off **AMD** drives from being AMOS cached. This is activated by "SET NOCACHE dev:" for the **AMD** disk device in the System Initialization Command File. With this scheme you get the maximum performance from both disk device types. Older RAID systems and disks are plug and play with AMOS 8.x through this method.

AMD FILE CREATION

Since AMD files are used extensively in AMOS 8.x Servers, let's discuss how to create a new AMD file. The first step is to select the Configure option from the System Diagnostics window. As of AM8000.exe version 1.0(936H3) and later, the limitation of 110GB for an AMD file was removed. For Series 3 systems AM8000.exe version 1.1(939C3) and later now allow Terra-Byte AMD files can be generated. You can now use SATA hard drives for system drives and data backups.

How to create a new AMD disk file

Select the AMOS Disks tab. Find an empty disk subsystem line (Disk Subsystem 3 in this example) and place the mouse cursor over *AMOS Disk* and left click. With caps lock on, type (**BIG)** and with the mouse *Select*> [**Create**] button.

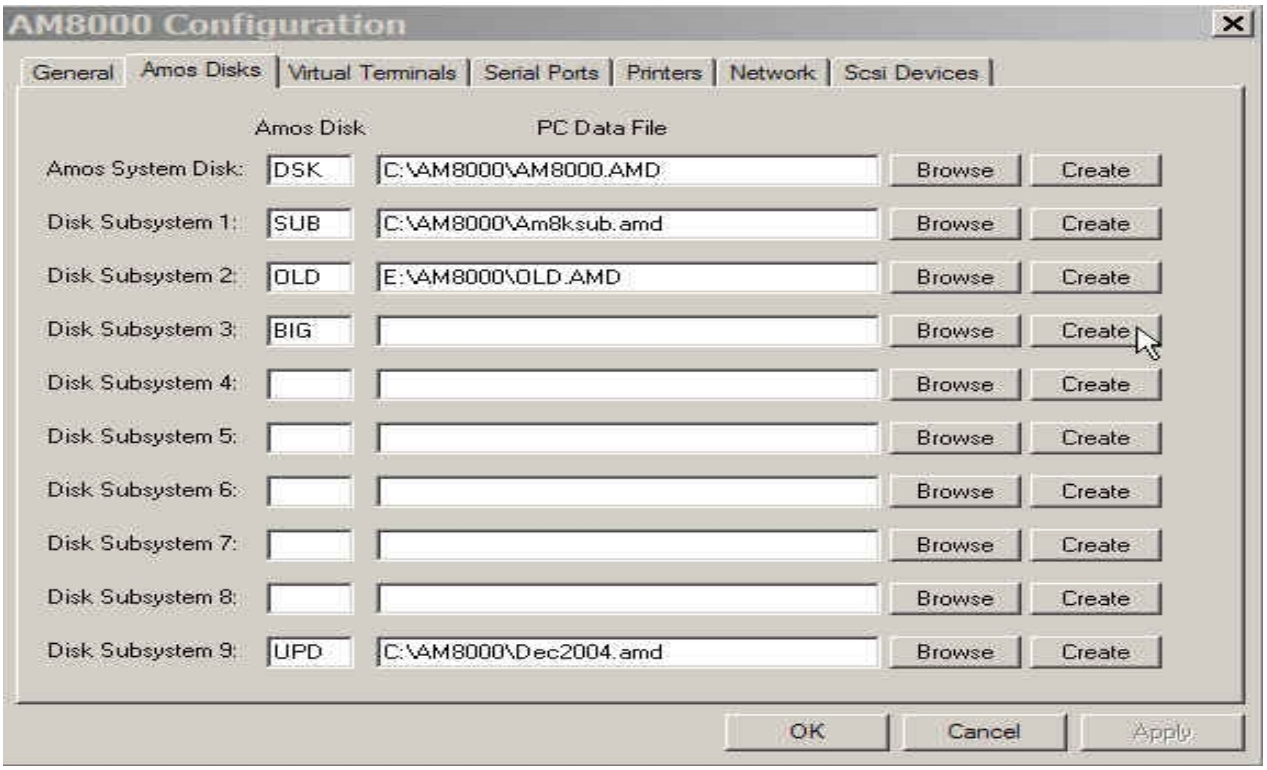
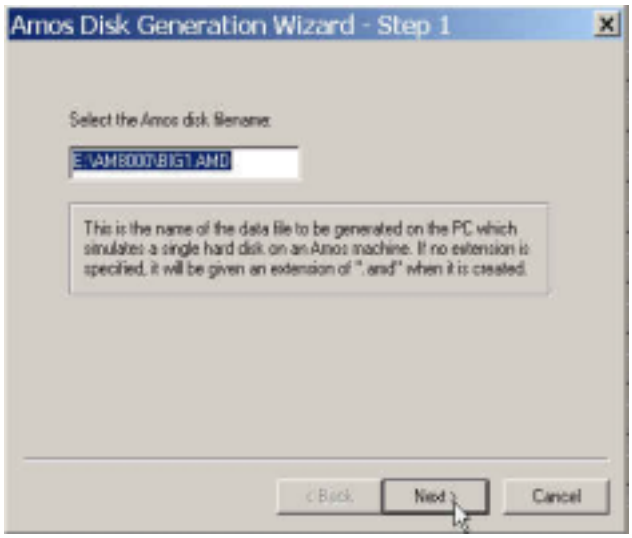
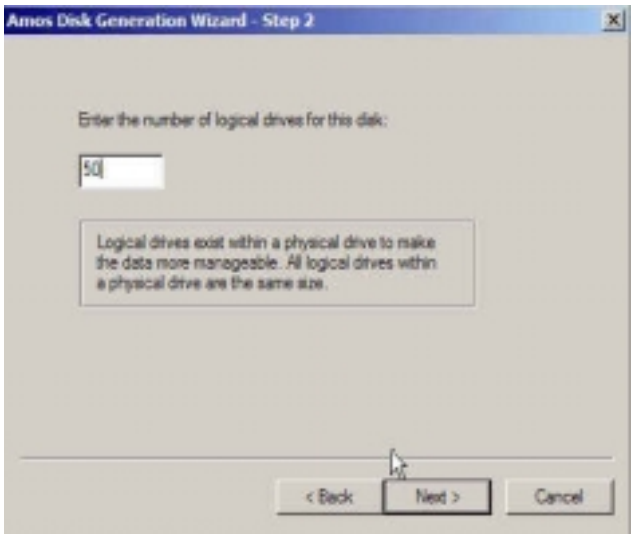


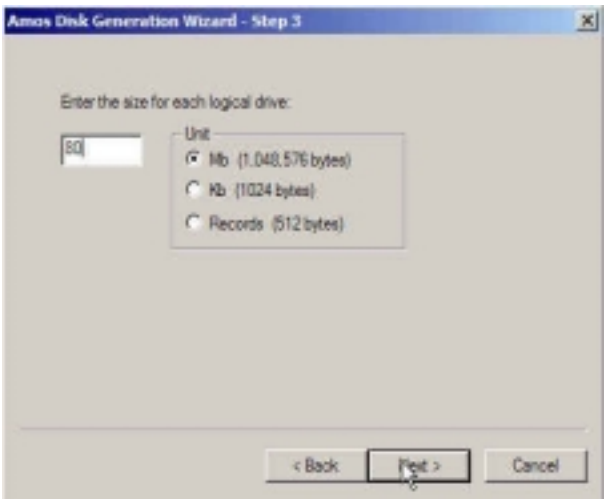
Figure 3-19: Creating an AMD Disk File

In Step 1, specify a location for the **AMD** file and file name. The window will have an input box, so type in the location of the new disk file. The E: drive normally is reserved for the customer disk files and this will be the case for our example. We will create the E:\AM8000\BIG1.AMD file as shown below. To finish step 1, *Select*> [**Next**] button. In Step 2, Input the **number** of logicals and *Select*> [**Next**] button.





Step 3 is to specify the **size** of each logical drive in MB. Fill in the input box and *Select*> [**Next**].



Step 4 finishes the create process, *Select*> [**Finish**] button. The system will create the 4GB disk file on E: as shown on the right. Be patient – this process can take several minutes. This will write the initial AMD disk file on the hard drive.

The generation of the **AMD** file requires 100% of the CPU time. Do not have AMOS 8.x booted during this process. When finished, the system will clear the Step 4 menu off the screen and will show the new file name filled in the input box, as shown in Figure 3-20.

Select> [**OK**] to save this new setup to memory. The next step is to *Select* >File> [**Exit**] then [**Quit**] from the <AM8000 Diagnostic> window to write this new information into the system registry. You must [Quit] the program in order to save the settings.

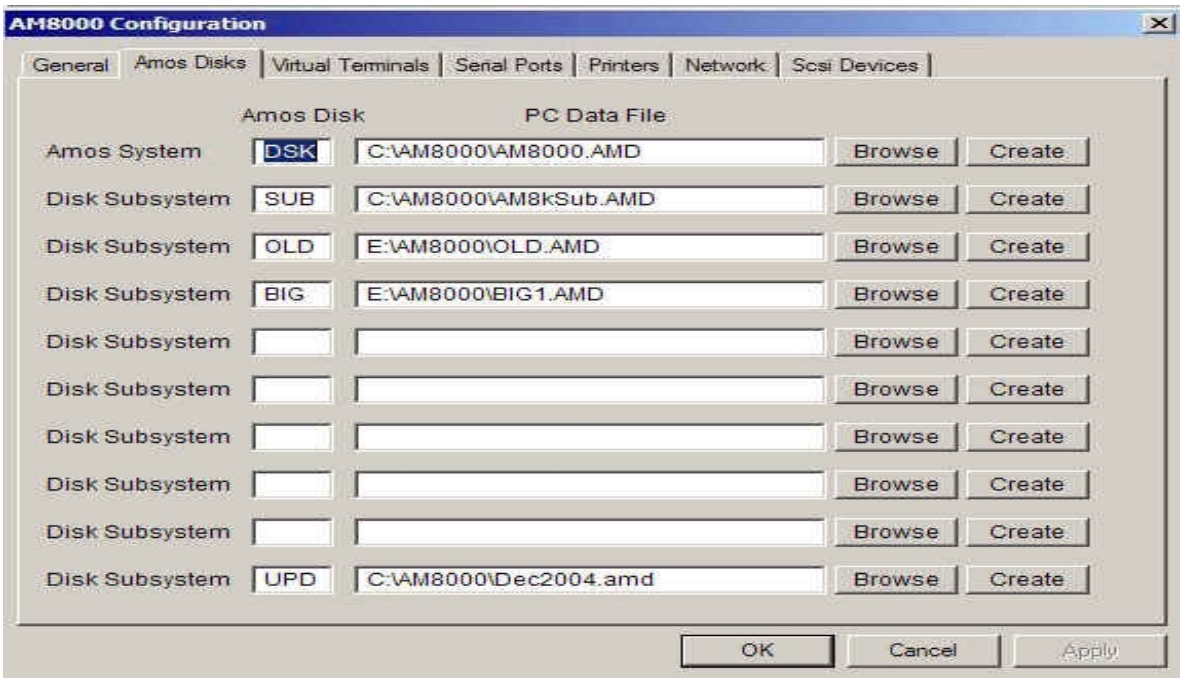


Figure 3-20: AMOS Disks Defined

Once this is done, you can inspect the location of the new AMD disk file. If you select the control panel and browse to the E: drive and find the AM8000 folder you will see the newly created Big1.AMD disk file, as shown in Figure 3-21.

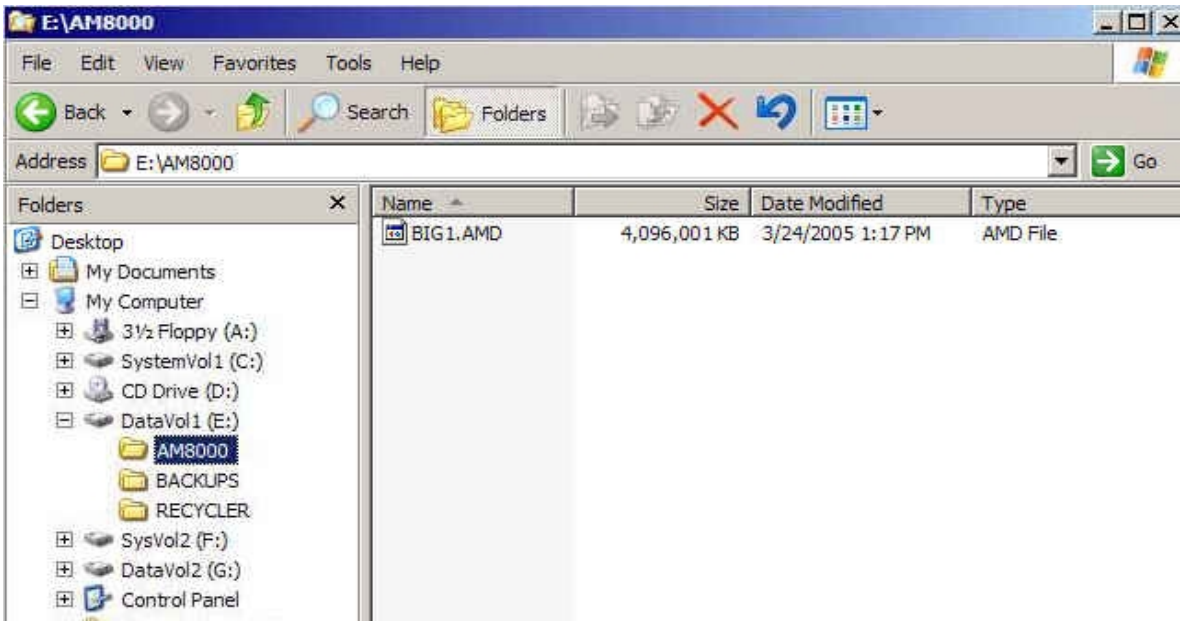


Figure 3-21: Location of BIG1.AMD

Modifying the TEST.INI & Initialize the new Pseudo disk file.

From AMOS, the next step is to modify a TEST.INI file to add the new BIG disk device. Select the {Boot AM8000} shortcut in the <AM8000> folder and boot up AMOS.

```
LOG   SYS:  ENTER
VUE   TEST.INI   ENTER
```

1. Add **DEVTBL BIG**
2. Add **BITMAP BIG**
3. Add **SYSTEM DVR:BIG.DVR**
4. Add **MOUNT BIG: ; After the last system command.**

Finish and save the TEST.INI. Now,

```
LOG   DVR:  ENTER
COPY  BIG.DVR = PCDSK.DVR   ENTER   ;  to create the disk driver.
```

All **AMD** disk files use a copy of the PCDSK.DVR.
Once a copy of the disk drive is in DVR:

```
LOG   OPR:  ENTER

MONTST AM8000,TEST.INI   ENTER
```

Please refer to AM8000.INI in the appendix for the resulting INI file from this discussion. The MONTST will boot the new configuration. When the system finishes the boot,

```
LOG  OPR: ENTER
```

In OPR: find INTNEW.CMD file, which can help initialize all platters of a new device. Edit this file and change the device spec from **NEW** to **BIG** and save the file. Then execute the INTNEW.CMD file to initialize all 50 platters of the BIG: device. The logical platters must be extended format to take advantage of the space allocated in the BIG1 disk file. For an alternate way, see Chapter 7 on the xAdmin utilities for other DO files that can initialize disk platters.

```
INTNEW ENTER
```

XPE's superior disk caching makes Extended Logical disks run at virtually the same speed as Traditional Logicals.

Once all the platters are initialized, you can COPY or MTURES any data to the new disk file. Normally, start by coping DSK0: to BIG0: to create a bootable logical.

```
COPY BIG0:[ ]= DSK0:[ ] ENTER
```

Chapter 4 - AMOS Overview

This chapter is a brief overview of the AMOS operating system. The topics and procedures it discusses are:

- Installing the AMOS 8.x PIC code
- Disk driver used by AMOS 8.x
- System Device names and alternate booting
- AMOS account organization for Server data
- User names and how to log on to AMOS
- The terminal keyboard and correcting typing errors
- Streaming tape drives and capacities

INSTALLING THE AMOS PIC FOR ADDITIONAL AMOS USERS

To enable additional AMOS users, a Product Installation Code {PIC} needs to be entered at the Operator Console. This twenty digit code should be supplied by your VAR when you order additional AMOS users. The PIC code for the number of users you ordered with your system originally is installed at Alpha Micro as a part of the system manufacturing process. To enter PIC, from AMOS command level, type:

```
OSINST/8 ENTER          ; for AM113-45/50 SSD security
```

Figure 4-1 shows a prompt requesting the PIC. First type a down arrow to get to the PIC code field. With Caps Lock on, type in the code, being sure to use the correct letters & numbers. Be sure to include the "-" between the 4 sets of 5 characters, and press ENTER.

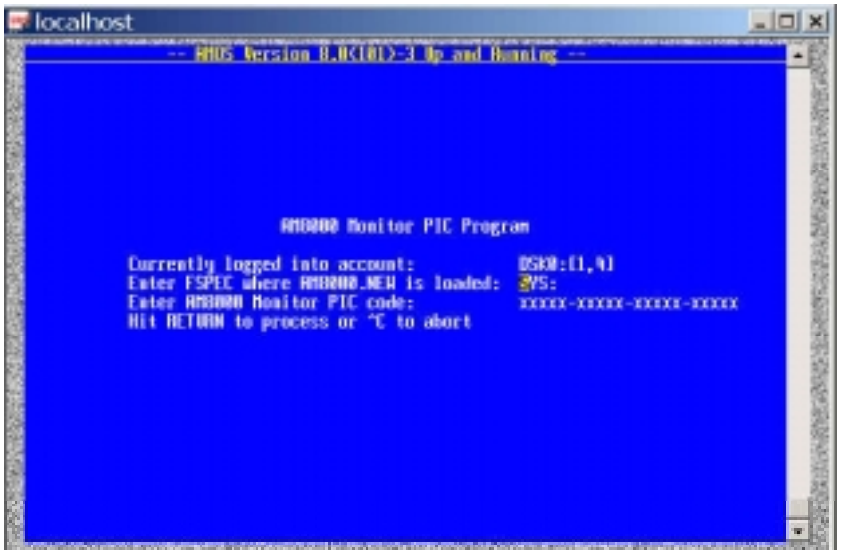


Figure 4-1: AM-8000 PIC Program

Example:

GLE41-51548-576LE-75EFW ENTER.

The next prompt asks to confirm that the entered PIC is correct. Check your entry, and if it's correct, type **Y** ENTER.

DISK DRIVER FOR AM8000.MON

For the AM8000.MON, the main disk driver is different than for other AMOS based systems. When building a new monitor using the MONGEN program, specify the ACE.DVR. Do not use PCDSK.DVR. Additionally, include your Language "LDF" file either ENGLSH, LATIN1, BRITSH or your own when performing the MONGEN process. To place the new version in the AM8000 folder, TODOS AM8000.MON or LOG OPR: and MONTST AM8000. The MONTST executes the TODOS for you.

THE SYSTEM DISK AND ALTERNATE BOOT

The AMOS 8.x system software is always on DSK0: where the operating system looks for most programs during the boot process. Usually the **AMD** file containing DSK0: is on the largest hard disk or RAID subsystem, where the largest pseudo disk file is located.

To *Configure* the system for Alternate Booting change the {**DSK**} device mapping to a different **AMD** filename. Then using the {Boot AM8000} shortcut in the C:\AM8000 folder will boot the system with the newly defined disk file. This procedure replaces the older warm boot process and is more convenient and flexible. A single logical 32MB **AMD** file has been provided for this purpose. The pseudo disk filename is AM8kSub.AMD in the C:\AM8000 folder. Unlike warm boot tapes, this disk has the complete AMOS 8.x operating system release with the system PIC codes installed. No more searching for the correct warm boot tape for the system!

AMOS 8.x Servers have a CD or DVD drive installed. You have the option of booting from this device but NOT into AMOS as you might be used to. Booting from a CD loads the system with Norton Ghost in a PC DOS environment. This program is used to load an empty hard disk drive with the AMOS 8.x and XPE software. This usually is a special circumstance when it is not possible to boot from any pseudo disk drive. This will be covered in detail in Chapter 6.

DEVICE NAMES

AMOS uses device names to identify the different pieces of equipment that make up the Server. Each disk drive and other storage devices have their own device names {terminals and printers are defined somewhat differently}. These device names are defined in the AM8000.INI system initialization file.

Alpha Micro device names conform to a specific format to make it easy for you and the Server to refer to the same piece of equipment. All device names contain three letters and a number, and end with a colon (:). For example, DSK#: where # is a decimal number up to 3 digits, DSK is usually the name for a hard disk device and STR0: is the name of a streaming tape drive. Having names for each device let's you specify which device is to be used for a specific command. This permits you to see a list of files from just one disk drive, or copy data from one disk logical to another drive.

Normally the Servers are setup as two logical drives C: & E: for the first physical hard drive formatted as NTFS under XPE. Each drive should contain an AM8000 folder where multiple **AMD** disk files should be located. The AM-8000 system only boots from the **AMD** pseudo drives. The standard boot drive that is shipped is C:\AM8000\AM8000.AMD which is 6 logical drive of 32MB each, contains logical devices named DSK0: DSK1: DSK2: DSK3: DSK4: & DSK5: The different pseudo disk drives may be generated with different number of logicals.

The example here will be the DSK device with 12 logicals.

- When the Server boots from the AM8000.AMD disk file (the normal occurrence), the system drive will be referenced as 12 disk devices named DSK0: DSK1: … DSK11:
- If you change the Configure menu to boot the Server from a different AMD file, the first pseudo drive might be referenced as disk devices named WIN0: WIN1: to WIN11: and the new pseudo disk drive is named DSK0:

Remember, this is only an example. Your Server may be set up to reference the hard disk as more or less than 12 logical devices.

The disk device containing the system initialization command file and other system software, the device AMOS "boots from," is always called DSK0: Normally this is the first logical device of the pseudo disk AM8000.AMD. When you change the device you boot from, it will also change the names of other devices on the Server. You must change the Configuration to specify each **AMD** file to be assigned a disk device name like DSK or SUB or NEW etc. A different system initialization command file on the alternate drives may define devices differently.

Once the Server is booted, to see a list of the disk devices on the Server, type SYSTAT and press RETURN. The end of the display lists the available disks. DEVTBL can show you the relationship between physical **AMD** devices and logical drives within the **AMD** drive. With original AMOS formatted SCSI drives, the actual disk drive is called the "physical device" and each partition is a "logical device". These disks are still accessible if a new disk driver is generated using FIXLOG. Use SCZPC.DVR as the input driver, specify the number of logicals and the mapped SCSI ID, give the driver a name. Save the resulting driver in the DVR: account.

DISK ACCOUNTS

Disk accounts are an organizational feature the Alpha Micro Server uses to help keep track of data. Instead of searching through one enormous list of files for the specific one you're looking for, the AMOS operating system is designed to group files into "accounts," also know as Project Programmer numbers [P,PN].

A two-part account number identifies accounts. The two numbers are separated by a comma and enclosed in brackets. The first number is called the project number; the second part the programmer number. [1,2], [200,0], and [34,11] are examples of account numbers. Since they are actually octal numbers, the digits 8 and 9 aren't used, and the highest possible number is [377,376] and the lowest is [0,1].

The two-part structure of the account number allows another level of organization. Besides grouping files into accounts, group related accounts in the same project. For example, all accounts containing files dealing with payroll can be in project 50 ([50,0], [50,1], etc.).

Accounts are called "disk accounts" because each account is specific to a particular device—usually a disk. For example, you may have the account [63,1] on both DSK0: and DSK1: Though these accounts have the same account number, since they are on different devices they are different accounts, and contain different files. As a security measure, a password can be assigned to each account on each disk. Anyone who doesn't know the password cannot log into the account. See Chapter 5 for how to assign passwords.

To display a list of all the accounts on any device on the Server, use the PPN command. Type **PPN** and the name of the device you want the list for, and press ENTER. To see all the accounts on DSK0: type:

PPN DSK0: ENTER

To show a list of all the files in any account, use the DIR (short for *directory*) command. To see a list of the files in the account you are currently logged into, type:

DIR/W ENTER

While the DIR command will list the files from any account, to access the files in an account, the user must log into it, as described in the next section. Now that you have a general idea of what disk accounts are and how to use them, you can decide how to organize your own files into accounts. If you want to create more accounts on a hard disk, see Chapter 5.

You can find more information on the PPN and DIR commands in the *System Commands Reference Manual*.

LOGGING ON

The LOG command serves two purposes: it identifies the user to the Server and lets the user choose what disk account to access. The user must log onto the Server after logging off or after booting the system. Enter the disk account desired. For example type:

LOG [25,1] ENTER

Entering your user name instead of an account number is allowable. The user is logged into the root account defined when the user name was set up. For example:

LOG CARRIE SMITH ENTER

This logs into Carrie Smith's root account.

If the account has a password assigned, the user is asked for the password before the account transfer takes place. The account number and password list for each device is separate, so duplicate account numbers on different disks can have different passwords. Once the user is logged onto the system, LOG is used to switch to different accounts. The user name is not needed again, just the account number.

To completely specify which account is desired, enter both the device and account number. For example:

LOG Dsk2:[36,14] ENTER

User Name: **Alex** ENTER

User Password: xxxxxx ENTER

The password above is never echoed on the screen, type the password up to 6 characters long and press return. You only have to enter the device name if the same account exists on more than one device. If the account does not exist, a message is displayed on the screen indicating an invalid account number.

For more details about the LOG command, see the *System Commands Reference Manual*. For information about user names, see the *System Operator's Guide*.

THE TERMINAL KEYBOARD

The first step in communicating with AMOS is to be able to type your instructions on the terminal keyboard. Take a moment to look at your keyboard so you can easily locate these keys later:

KEY	DESCRIPTION
RETURN	RETURN (Sometimes labeled ENTER or with an arrow that curves to the left) is the carriage return key. Just as you press the carriage return on a typewriter to begin a new line on the page, a RETURN tells the computer you are ending a line of input and are beginning a new line. The computer does not normally process an instruction from you until you press RETURN to let it know you are finished with that line.
RUBOUT	RUBOUT Is the deletion key; it backspaces AND deletes. It may be labeled RUB or DEL. If you make a mistake while typing an instruction to AMOS, you can erase it using the RUBOUT key.
SHIFT	The SHIFT key on most keyboards acts much like the shift key on a typewriter. By holding down SHIFT, you can type upper case letters and the symbols on the upper half of the keys with two symbols.
CAPS LOCK	While the CAPS LOCK key is enabled, letters you type appear in upper case. The CAPS LOCK key on most keyboards does not affect keys other than letters.
ESC	This key may be labeled ESCAPE or ALT MODE. It is used with several application programs (such as AlphaVUE) to signal the end of input, or to switch between command modes; however, you do not use ESC at AMOS command level.
CTRL	Use the CTRL (or CONTROL) key with other keys to enter a different kind of character—a "control character." AMOS and much of the software on the computer interpret control characters as special instructions. To type a control character, hold down the CTRL key and press the other key. For example, to type a Control-C, hold down the CTRL key and type the letter C. In this book, we indicate control characters this way: CTRL/C. Appendix B lists some of the control characters AMOS recognizes.

Table 4-1: Special Function Keys on the Terminal Keyboard

Correcting Typing Mistakes

To correct any mistakes you may make while typing a command line as long as you have not yet pressed the ENTER key. You can:

- Press RUBOUT to erase single characters

- Type CTRL/U to move the cursor to the beginning of the line
- Type CTRL/C to tell AMOS to ignore the line

See the table above for explanations of RUBOUT and control characters.

If you press the ENTER key before correcting the mistake, and the command entered was not a valid AMOS command, AMOS informs the user it did not understand the command. For example:

```
PRIMT   ENTER
?PRIMT?
```

(You meant to say PRINT.) After enclosing the unknown command in ? ? the AMOS prompt will display. You can now try again.

If the AMOS line editor is enabled for the terminal, you can recall a previous line to the screen by typing CTRL/R. In the sample conversation above, press CTRL/R at the AMOS prompt to recall the line `PRIMT` to the screen. Use the ← key to move back to the "M" without erasing characters, and then type an "N" to overwrite the "M." Press the ENTER key to enter the command again.

Your particular terminal undoubtedly has many features we haven't covered in this section. For complete information on using your terminal, refer to the owner's manual that accompanied it.

STREAMING TAPE

There are several ¼" streaming tape drives available for the Servers: the AM-629, AM-651 and AM-652. For information on transferring data to and from streaming tape, see the *System Commands Reference Manual*. For information on cleaning tape drive heads, see Chapter 8.

Backup to tape can be executed just like on any other Alpha Micro system using the MTUSAV program. MTUDIR & MTURES will work as on other systems. Warm boot tapes are no longer supported under AMOS 8.x Servers.

The best performing tape drives are the AM-651 and AM-652 drives. These drives have a wide LVD SCSI interface so the data transfer rate is high, 20MB/sec. These drives contain an 8MB buffer for data, so backups are very fast. The wide SCSI tape drives are the preferred tape devices for the AM-8000 and Eagle 800 Systems.

For the Eagle 800 Server, the SCSI disk interface board can support both single ended and wide devices. Both connectors are available for use. Normally, the single ended AM-629 4-8GB tape drive is installed with a narrow cable. Maximum data transfer is 10MB/sec. When installing this drive, make sure the Terminator SIPs are installed in the drive. Optionally, the AM-651 or AM-652 tape drives can be installed in the Eagle 800 system with a wide SCSI cable and internal terminator.

The AM-652 will backup about 21GB/hr. The AM-629 will backup about 2.7GB/hr.

Loading and Unloading Tape Cartridges

To avoid static discharge, always ground yourself by touching the metal chassis before loading or unloading a tape cartridge.

1. Press the button on the drive's front panel to open the tape drive door.
2. Hold the cartridge with the metal side down. The end of the tape cartridge with the write-protect switch will enter the drive first.
3. Insert the cartridge into the drive. Keep pushing until the cartridge stops, and then close the door. After the door closes, the drive positions the tape, after which it is ready for use. With front loader drives the 65x models take the tape from the operator once it is installed about half way into the drive.

Before unloading the tape cartridge, be sure the tape activity light is out. To unload, press the tape door release button and remove the tape from the drive. On front loader drives, press the eject button.

Tape Capacity

The storage capacity of the tapes depends both on the drive installed and the type of tape cartridge being used. The following table shows the different types of tape cartridges available and the corresponding capacity for the AM-629, AM-651, and AM-652 drives.

The tape drive manufacturer has specified which cartridge tapes that may be used. Using tapes other than those recommended might result in excessive head wear.

Device	Data Cartridge	Maximum Capacity
AM-629	DC6525	525MB
	DC9100 (Magnus 1.0)	1.0GB
	DC9120 (Magnus 1.2)	1.2GB
	DC9200 (Magnus 2.0)	2.0GB
	DC9250 (Magnus 2.5)	2.5GB
	SLR5	4 / 8 GB
AM-651	SLR5 (read only)	4 / 8 GB
	SLR7	20 / 40 GB
AM-652	SLR5 (read only)	4 / 8 GB
	SLR40	20 / 40 GB
	SLR50	25 / 50 GB
	SLR60	30 / 60 GB

Table 4-2: Supported ¼" Streamer Data Cartridges

OTHER MOUNTABLE MEDIA

The other types of mountable media for the AMOS 8.x Servers are CD, DVD, BluRay media. The Eagle 800 can be equipped with either a CD-RW or DVD-RAM or BluRay drive. The AM-8000 systems are equipped with a DVD-RAM drive as standard. Series 3 Am8000 come with BluRay multi media drive.

The CD-RW drives will read CD-ROM, CD-R, CD-RW media, and write CD-R & CD-RW media.

The DVD-RAM drives will read CD-ROM, CD-R, CD-RW, DVD-RAM, DVD-ROM, DVD-R and DVD+RW media. This drive will write to CD-R, CD-RW, DVD-RAM, DVD-R and DVD+RW media. The BluRay drive will read all the above and BluRay media.

The AMOS 8.1 Bootable Recovery CDs provided with the Servers are normally written on CD-R media. The larger systems with RAID equipment come with the release written on a DVD-R media.

One of the biggest improvements in AMOS Servers is the ability to use CDs. When either drive type is installed, the drive manufacturer has provided packet writing software. This is normally installed on all AMOS Servers. You are thinking, what can I do with this software? Well, you can use CD-RW and DVD+RW and DVD-RAM media like a big Floppy disk. **AMD** disk files can be copied to the CD for a permanent backup. This task must be performed in the XPE Control panel <Explorer Application>.

Warning! When performing the copy with the packet writing software and AMOS is booted, system performance is impacted greatly. This only happens when accessing the CD. The analogy is, if you are familiar with copying files to a floppy disk when other programs are running, you see a slow sluggish response to the system. The write to CD is no different. The system is only about 1/3 as fast when no access to the CD is being performed. Do not try to eject the media after a write for up to 5 minutes. XPE posted writes are occurring so the media cannot be ejected. Check the CD/DVD access light on the front panel to see if the writes are still occurring. Use the explorer application and right click and select eject after the writes have finished.

Since the new **AMD** files are readable while AMOS is booted, the Console terminal VTM1 can select the XPE control panel task and copy the **AMD** files to CD as a backup. The one restriction is not to have many users on the system during the copy. When the system is finished writing, *select*> Eject from the Explorer application. Label the media and save in a safe location.

The better way to perform backups is Streamer tape with MTUSAV program. This is the fastest way to backup data. The next fastest is using MAKDVD program to write to DVD-RAM media. This media is re-useable to a point. The write to DVD can be selective on a logical basis. Say you wish to only backup 6 out of 10 logical drives. As long as the data will fit onto a 4.7GB DVD-RAM media, you can back up this data. The AMOS system does not have to be rebooted. Once the MAKDVD program finishes the write, Execute the DVD program and it will mount the 6 DVD platters, with the backed up data.

Operator Note: Please label all the disk logicals on the Server before backup. The label blocks will be written to DVD-RAM and displayed when the media is mounted with the DVD.LIT program. This will help in identifying where the data came from. Then restoring a file is simple. Copy the files needed to the original disk location by identifying the correct data platter from the DVD logical drive. File look up and restore from DVD-RAM is faster than tape!

Chapter 5 - AMOS Software Applications

The Alpha Micro Server is extremely versatile and can do many different things. The next step is to learn something about the software that can run on the Server. This chapter deals with some of the questions you may be asking:

- What software is available for Alpha Micro Servers?
- What Alpha Micro documents should I read next?
- What about On-Line Documentation?

AMOS AND DELETING OLD UNSUPPORTED PROGRAMS

AMOS, the Alpha Micro Operating System, supervises all of the programs that run on the Server. Regular updates to the AMOS operating system and its accompanying system software are available from your VAR. There are different revision levels of AMOS. To use the AM-8000 or Eagle 800, these Servers are provided with AMOS 8.0(101)-10 or later.

Please do not mix older versions of AMOS on the new AMOS 8.x Servers. They are not compatible and may cause instability. To eliminate older programs that are not supported under AMOS 8.x, **LOG OPR**: and execute **ERAS8K DSK0:** This will erase all unsupported files that have been named in previous versions of AMOS32 and AMOSL. The only filenames that will not be erased are multiple copies with different filenames that were not released by Alpha Microsystems. Any application software will remain on DSK0: with no change. Clean up of the system can be done after you have tested your applications and are comfortable with the results. The files that should be erased are older versions of the monitors, old VME disk drivers, and SASI disk drivers. Even older INIs, which defined older hardware, should be erased from DSK0: The older program files merely clutter up the disk and take up backup space.

INTRODUCTION TO AMOS SOFTWARE

This section will give you an idea of some of the software available for the AMOS 8.x Servers.

Programming Languages

The AlphaBASIC programming language is a standard part of the software for the Server. AlphaBASIC contains many business-oriented features. AlphaBASIC also provides an ISAM (Indexed Sequential Access Method) interface. AlphaBASIC PLUS, also provided, contains advanced features such as sophisticated data structures and program control constructs. Please see your VAR for information on other programming and assembly languages available for the Server, such as AlphaC.

Networking

The Networking software, AlphaNET and AlphaTCP, are included in the AMOS 8.x release.

AlphaNET is Alpha Micro's 2nd generation software to transfer files, exchange information, and share resources between different models of Alpha Micro computers. It is provided primarily for compatibility with the older AMOS system that might be on a network.

AlphaTCP is Alpha Micro's 3rd generation networking software allows the Server to transfer files, exchange information, and share resources between different computers on the Internet. This package also provides Telnet and network printer services. Web Server and e-mail Server can be set up under AMOS 8.x. Please read the AlphaTCP Administrators Guide for more information on this flexible software.

Text Preparation

To create documents on the Server, there are multiple word processing programs available. AlphaVUE, a screen-oriented text editor, allows the user terminal to create and change documents. The text of your letter or report is displayed on the terminal screen as you enter it with a keyboard. With AlphaVUE, you can move quickly through the document, correcting and adding words, inserting or deleting lines, moving paragraphs, and so on. AlphaXED is a programmers screen editor that has a few different features but still does the same thing as AlphaVUE.

See the section on "Office Information Products" below for information on the AlphaWRITE word processing package.

Utility Programs

The standard AMOS release contains over 200 utility programs and device drivers. In addition, because of the unique way AMOS handles commands, you can easily create your own utility programs.

Some of the standard utility programs allow you to do such functions as: copy, rename, and erase files; sort the data inside files; use a task management system to schedule and perform background tasks that run without operator control; print files while you perform other tasks at the same time; use the ISAM system to organize and retrieve information quickly; and back up data automatically at a convenient time when nobody is using the computer (in the middle of the night, for example).

Application Programs

Your local Alpha Micro VAR has a variety of programs available for these Servers, many of which are aimed at specific business needs such as: general accounting, dental office, legal office, real estate management, manufacturing inventory control, educational learning systems, restaurant management, medical office billing, laboratory analysis, and many others. Please see your VAR for details.

Office Information Products

Several office information products are available separately from your local Alpha Micro VAR. The office information products series includes:

- AlphaMAIL is an electronic mail system for sending and receiving messages and reminders among multiple users and, combined with AlphaTCP, over the Internet.
- AlphaFAX, an easy to use faxing program provides the ability to automatically send faxes from within application programs, just like printing to a local printer.
- MULTI is a window-based environment manager, letting the user access multiple programs on one terminal at the same time, and providing a number of desk accessory features, including a phone list, alarm clock, notepad, and others.
- VersiCOMM is a versatile, general-purpose communications system, capable of performing a broad range of communication services.

See your VAR for more information on these and other Alpha Micro office information products.

When upgrading to AMOS 8.x, please check for update patches to the above software packages. Most software had to be updated to run under AMOS 8.x.

ON-LINE DOCUMENTATION

On-line documentation is installed on each system. The Adobe Acrobat Reader is also installed on the Server. The Reader can be used on the Console to review the on-line PDF documentation files. To access the PDF files, use the Control Panel interface to browse to a directory and find the PDF file you desire to read. Double click on the PDF filename and the Acrobat reader will launch and display the document. Not all documents are on all models of the AMOS 8.x Servers. Only the devices installed on the particular model of the Server have the corresponding documentation. Other documentation is shipped with each Server. These will be the manuals for the installed devices from the peripheral manufacturer. Some documentation files are in TXT, DOC or HTML formats.

AMOS documentation related to the server can be found in C:\AM8000\DOC folder.

Documents that may be included are:

- Acrobat.Pdf on the reader itself
- Norton Ghost Guide - We highly recommend that you read the Norton Ghost Guide on the workings of this useful Backup and Restore utility
- AMPCLiTE documentation can be accessed through {Help} {Contents} from the emulator window
- AMPCTerm documentation is accessed through {Help} {contents} from the emulator window
- DVD-RAM_XP_N_En.pdf
- B-Clips documentation for the packet writing software (in HTML) or the InCD software.
- UltraVNC or TightVNC for remote administration of the Server (in HTML)
- For the Eagle 800, the main board manual. PDF format
- PCI serial port adapters manual
- USB serial port manual
- BluRay Doc files in C:\Am8000\Doc folder

ADDITIONAL DOCUMENTATION

Now that the Server is up and running, you are ready to start exploring the Alpha Micro world. Your guide to the new territory is the Alpha Micro software documentation. This section gives the user an idea of which documentation to consult for directions depending on the path you want to take.

The AM-8000 and Eagle 800 Servers are members of the AMOS family of Alpha Micro computers, and the software documentation that applies to other AMOS based computers applies to these new Servers. But some of the older documentation is out of date with respect to certain process and commands executed on the new AMOS 8.x Servers.

You may purchase any book mentioned in this manual separately; in addition, a multi-volume software documentation library is available containing all the AMOS software books listed below. You can order any of these books by calling your VAR. To find which documents are available, use an Internet browser and look up www.AlphaMicro.com and select [Support> Documentation]. An index into all Alpha Micro documents available will be displayed. Documents can be downloaded and viewed by the Adobe Acrobat PDF Viewer.

Here's an idea of what to look at next:

"I Want To Start At The Beginning"

If you have never used AMOS before, we recommend you read the *AMOS User's Guide*. This book is a practical introduction to the Alpha Micro computer, containing instructions for many of the procedures used every day. It expands on many of the topics discussed in Chapter 4.

"I Want To Learn How To Maintain My Server"

If you are going to be responsible for making data backups, adding new PC's, terminals or printers to the Server, running disk diagnostics, and otherwise managing and maintaining the Server, we highly recommend you read the *System Operator's Guide*, and obtain a copy of the *System Commands Reference Manual* and the *System Operator's Guide to the System Initialization Command File*.

The first manual explains how to perform the maintenance and diagnostic procedures required by the Alpha Micro system software. The second book will prove an invaluable reference tool—it contains short reference sheets on over 200 AMOS programs. The third book describes how to change the system configuration by editing the AM8000.INI file. Please refer to Appendix G for INIs used on AMOS 8.x Servers.

"I Want To Write Computer Programs"

If you have programmed in BASIC before, and want to learn how to use the AlphaBASIC programming language, refer to the *AlphaBASIC User's Manual*. Also refer to the *AlphaBASIC PLUS User's Manual* for information on the enhanced AlphaBASIC PLUS programming language.
If you are an experienced assembly language programmer who wants to write machine language programs for the Alpha Micro computer, we recommend you read these books:

- *Alpha Micro Instruction Set*, which contains information on the assembly language instruction set used by the Alpha Micro computers.

- *AMOS Assembly Language Programmer's Manual* which contains information on the assembler, linkage editor, object file librarian, and global cross reference program used by the assembly language programmer.
- *AMOS Monitor Calls*, which contains information on the interfaces to the AMOS operating system available to the assembly language programmer.
- *AlphaFIX User's Manual*, which contains information on the screen, oriented debugger program, AlphaFIX.

What Third Party programs are known to work on AMOS 8.x?

The following Alpha Micro third party programs have been reported as working, not working, or with special limitations under AMOS 8.0. For more details, contact the software developer.

- AlphaFAX Version 2.0
- Multi Version 2.1(192)-6 with the latest patches for AM8000
- AlphaMAIL Version 1.2B with EMAIL.LIT updated
- AlphaWRITE Version 2.2
- AlphaCALC Version 2.0
- VersiCOMM 3.1(399)
- ZCMP 2.1(105)
- Folders 3.0(109)
- AutoLog Ver 3.5(305) - works with this known restriction:
- SLAVE.LIT - works on the PCCOM ports, does not work on the SIO ports
- MSP
- SSD Protector 2.8 - both PIC.LIT and CODE.LIT
- SFORCE - both Versions 1.0(112) and 2.2(135)
- Metropolis Version 7.5
- VICS Models & Macros Version 7.2
- SuperVUE Version 3.1h
- IMS Version 5.0(18)
- Madics software
- DART, ESP, Glue Version 2.2 from the ESP consortium
- Starr-Accounting Version 4.1
- Ultra-Safe Version 3.5(150)

What Third Party programs do not work on AMOS 8.x?

- DataVUE - does not work. This package does not work on Roadrunner systems either
- TALKTO - does not work

Chapter 6 - System Administration

"System Administrator" is the title we give the person whose job it is to make sure the Server runs efficiently, and who has access to the files and programs that comprise the system software. This chapter explains some of the tasks that the System Administrator should accomplish. The first half of this chapter addresses the AMOS only tasks, and the latter half of the chapter covers the XPE Administrative functions.

AMOS provides many program tools to support system administration functions. This chapter covers many of these procedures, including:

- Alternate Booting the AMOS Server
- Allocating disk accounts
- Modifying the system initialization file to
  - Add Printers & Spoolers
  - Add Jobs and Terminals
  - Change memory allocations
- Defining logical devices
- Disk diagnostic procedures
- Backing up the Server
- XPE Administrative programs and Backup Procedures

ADMINISTRATIVE TASKS

Alternate Booting the AMOS Server

Alternate Booting the Server is an Administrator task. This is a new procedural concept that needs to be understood for all AMOS 8.x Servers. This task is only performed to reconfigure the system or build new pseudo disk files. When building new **AMD** {**A**lpha**M**icro**D**isk} files, the system uses 100% of the CPU time. Do not have the system booted under AMOS 8.x when generating the **AMD** disk files.

As mentioned in previous chapters, be sure to make at least one copy of the System Disk onto another **AMD** file, or copy the AM8000.AMD file to another hard disk drive. This action will provide an alternate boot disk for the Server. As shipped from Alpha Micro, the AM8KSUB.AMD disk file resides in the C: AM8000 folder for this purpose. This **AMD** file is a one logical 32MB disk with just the AMOS 8.x Release. The AM8kSub drive normally has the AMOS 8.0 PIC code and DVD-PIC installed for the system SSD.

If for some reason the Server cannot boot from the current **AMD** file, you can re-define the "**DSK**" device. This is done in the {AMOS Disk} tab of the <AM8000 Configure> program. Change the top first column entry from (DSK) to (SUB). Then change the next definition from (SUB) to (DSK). *Select*> [OK] and then *Select*> File> [Restart] from the AM8000 program. This will save the configuration from RAM to the hard drive. The Server will restart with the Alternate boot disk file as the **DSK** device and the Original DSK device as the SUB drive. You can then do disk maintenance on the SUB0: drive and check out the INI file and system files for errors. Correct any problems on the SUB0: drive. When you are satisfied with your changes, switch tasks from VTM1 to the <AM8000 Configure> program and invert the identities of the DSK and SUB devices, *Select*>[OK] and [File> Restart], and the system should shutdown and reboot from the original DSK device. Remember that the alternate boot file or the AM8000.AMD disk file does not have to be in the C:\AM8000 folder. It may reside on E:\AM8000 or another disk drive or RAID subsystem installed on the Server.

An alternate way to do the same thing is invert the DSK and Sub devices and save the new configuration with the *Select*>[OK], (**ALT**)+(**Tab**) back to VTM1 and LOG OPR: execute a MONTST AM8000. This will shutdown the AM8000 program, write to the system registry and restart AMOS 8.x without having to power down.

If the internal hard drive completely fails and you do not have another hard drive or RAID subsystem to boot from, then the AMOS 8.x Bootable Recovery CD is your only choice to restore the system to a bootable state. First, replace the bad drive with the same size or larger drive. Refer to the hardware service manual for the correct procedures to replace the defective drive. Then follow the Ghost™ restore procedure to load the AMOS 8.x release back onto the replacement hard drive. After the Ghost restore finishes the system should boot up into the standard configuration that left Alpha Microsystems originally. If the System Administrator created an on-site Ghost backup of the C: SystemVolume with all the site-specific settings before a disk failure, then restore that Recovery CD to the new drive and reboot.

Disk Accounts

Theoretically, users could store their files on the disk without any type of organization. A list of all the files—the system software, special application programs, memos, everything—might be several pages long and would be a nightmare to decipher.

As discussed in Chapter 4, a better technique to organize your files is to create "accounts" in which to store as many files as you want. An account is just an arbitrary designation for a group of files. Your system software is already organized into various accounts, and you can add as many or as few additional ones as you need. The following paragraphs describe how to add accounts to your computer.

Passwords

The Administrator should assign passwords to any disk accounts. If the same account exists on multiple disks, each disk can have its own separate password for the account. The password acts as a mild security measure to prevent a casual user from accidentally logging into the wrong account. Passwords do not prevent files from being copied into or out of an account, and can be easily changed or erased using the SYSACT command described below.

Organizing the Disk

Because there is the possibility of logging into the wrong account if you have accounts with the same account numbers on different disks, please establish a different numbering scheme to prevent duplicates. AMOS 8.x operating system has reserved the accounts [1, *],[2,2],[7,*] and [10,1],[10,2] accounts on DSK0: Any application software can use any of the other account number possibilities, [11,*], [100, *], [200, *] and so on. Most software applications have already organized themselves with proper account numbers.

If remembering account numbers is cumbersome, you can substitute a predefined "Ersatz" name for the account number. The ERSATZ.INI file is located on DSK0:[1,4], and contains several predefined ersatz names. The administrator can add more accounts to this file. For example, one of the predefined ersatz account names is OPR: for DSK0: [1,2]. So, whenever you need to log in the account DSK0: [1,2], you can type **`LOG OPR:`** ENTER instead. The *AMOS User's Guide* contains more information on ersatz names and how you can use them.

Adding New Accounts

There is no specific number of accounts the system must have as long as there is room on the disk. When the Server is brand new, the only accounts are the ones the system software has predefined. To add more accounts from time to time as applications are added, use the SYSACT command, following these steps:

1. To see a list of the disk devices on the AMOS 8.x Server, type;

   `SYSTAT` ENTER

   The end of the display lists the available disk devices. Decide which device to add the accounts to.

2. Log into account [1,2] on any disk device, for example, DSK0: Type;

   `LOG DSK0:[1,2]` ENTER

   If the user was not already logged into another account, enter your user name after the LOG command. If there's a password for this account, you'll be asked for it, too.

3. Type **`SYSACT`** followed by the name of the device to add the accounts to. For example:

   `SYSACT DSK1:` ENTER

4. SYSACT responds with its prompt symbol, an asterisk. To list all the program options, type:

   `*H` ENTER

5. The program options that can be performed are listed. To add a new account, type **`A`** and the account number to add and press ENTER. For example:

   `*A 100,5` ENTER

6. SYSACT responds: `Password:`
   SYSACT asks if a password is needed to protect the new account. Enter a password of up to six characters (A - Z, 0-9, $), or just press the ENTER key if no password is desired. If the account has a password assigned, whenever other users try to log into that account, they must type in the password. If the typed password is incorrect, they aren't allowed to log in.

7. To list all the account numbers on the disk device and their passwords, select the L (List) function: **`*`**L ENTER

8. When finished using the SYSACT command, select the **E** (exit) option to return to AMOS command level. ***E** ENTER

For complete information on using the SYSACT command, see the SYSACT reference sheet in the *System Commands Reference Manual*.

Using Virtual Terminals

You will find virtual terminals on the console very easy to use. Switching from one virtual terminal to any other is just like switching from one Window to another. As you switch from one virtual terminal to another, the processing continues for the task running on the virtual terminal you left.

As in any multi-tasking environment, be careful not to run conflicting tasks on multiple virtual terminals. For example, don't use one virtual terminal to run DSKANA on a disk while another virtual terminal is editing a file on that disk. You may damage the file and possibly many files.

MODIFYING THE SYSTEM INITIALIZATION FILE

The name of the system initialization file for the AMOS 8.x Servers is usually AM8000.INI. This special file in account DSK0:[1,4] defines to the AMOS operating system all of the devices connected to the Server, the jobs that will run on the Server, and special programs, which need to be loaded into memory. As requirements change or as devices are added on the Server, you must modify the system initialization file.

NEVER change the system initialization file directly! Always make a copy of it and modify the copy, as described below.

To make a copy of the system initialization file to be modified and tested, execute the following commands.

```
LOG DSK0:[1,4] ENTER
COPY TEST.INI=AM8000.INI ENTER

VUE TEST.INI ENTER
```

Use AlphaVUE or XED to edit TEST.INI. If you are unfamiliar with AlphaVUE, refer to the *AlphaVUE User's Manual*. Make all the necessary changes to TEST.INI. Save the file when exiting AlphaVUE by pressing the ESC key and typing **F**. Some of the common changes you may want to make are discussed in the later sections that follow.

From OPR: use MONTST to insure TEST.INI is working as expected by typing:

```
MONTST AM8000,TEST.INI ENTER
```

After you have successfully tested TEST.INI and are satisfied with the results, copy it back to AM8000.INI and execute **MONTST AM8000**. This will resynchronize the AMOS and XPE copies of the AM8000.INI file.

Be careful not to copy the TEST.INI file too soon. You might want to let the Server run awhile to test out the new configuration. Then, if you decide you don't want to keep the new configuration, you can always reboot with the former system initialization file. Follow this

procedure any time the system initialization file is modified.

Here is a sample simple initialization file:

```
:T                          ; a Simple AM8000.Ini file
JOBS 10
JOBALC VTM1,JOB1,LPT1
QUEUE 10000
TRMDEF VTM1,PCVTM=1,AM62C,200,200,200,EDITOR=15
TRMDEF TRM1,PCSIO=1:19200,AM65,200,200,200,EDITOR=15
TRMDEF LPT1,PCLPT=1,TELTYP,100,100,100
TRMDEF DUMMY,PSEUDO,NULL,80,80,80
TRMDEF                      ; Required
VER                         ; Unlock keyboard
SCZDSP SCZPC.SYS      ; SCSI dispatcher
DEVTBL DSK
DEVTBL TRM,RES,MEM
DEVTBL /STR0                ; Streaming tape device
BITMAP DSK                  ; Paged bitmaps for AMOS 8.X
ERSATZ ERSATZ.INI/B:10      ; reserve 10 blank ersatz slots
MSGINI 50K
SYSTEM SYSMSG.USA
SYSTEM CMDLIN.SYS
SYSTEM SCNWLD.SYS
SYSTEM QFLOCK.SYS
SYSTEM TRM.DVR[1,6]
SYSTEM STR.DVR[1,6]
SYSTEM MEM.DVR[1,6]
SYSTEM RES.DVR[1,6]
SYSTEM UPD.DVR[1,6]         ; for UPDates
SYSTEM DVD.DVR[1,6]         ; for DVD-RAM drive
SYSTEM DBD.DVR[1,6]         ; for new BluRay drive
SYSTEM
SET DSKERR
MOUNT DSK:
SETJOB LPT1,DUMMY,20K, LPTINI LPT1.PIN;LPT1 Printer
WAIT LPT1
SETJOB JOB1,TRM1,500K,VER
MEMORY 0
```

CONFIGURING THE SYSTEM FOR PRINTERS

Defining the Parallel Port

AMOS 8.x Servers contain one parallel port, which is not automatically defined for you. If you want to use the parallel port, make sure that the TRMDEF LPT1 definition is uncommented in the INI file. Verify that the LPT1 Generic printer is defined in the <AM8000 Configure> Printers section.

Graphic Printers

This is only required if graphics is sent to the printer by AMOS, such as bitmap images. If this type of printing is NOT required, then skip down to the next section.

To set up an AMOS compatible graphics printer, do the following:

1. The printer must be added to XPE using the "Generic / Text Only" driver.
2. In the <Printers and Faxes> screen, after the printer is installed, right click on printer name and *Select*> [Properties].
3. *Select* > [Advanced] tab and verify that the {Driver} input box shows "Generic / Text Only". If not, *Select*> [down arrow button] or [New Driver] button to change the driver.
4. While on the <Advanced> tab, *Select*> [Print Processor] button.
5. The {Default data type:} dialog box should display **RAW**.
6. *Select*> [**OK**] to exit these dialog boxes. Then *click* on [**Apply**]
7. *Select*> [**OK**] to exit the <Properties> menu.
8. From the <AM8000 System Diagnostics> window *Select*> [Configure]
9. *Select*> [Printers].
10. For the new printer ***Check*** the RAWMODE check box on the right side of the menu.
11. *Select*>[**OK**]. The printer configurations are always saved to memory and disk.

To finish up, you need to define this printer as "LPT3" in the next section, "*Using XPE Printers*."

Using Windows XPE Printers

Before AMOS can use the XPE printer, it must be fully installed and tested from the XPE side. If the printer will not work from Windows applications, it won't work from AMOS. To test the printer on the XPE side double *click* on any text file and *select {Print}* from the file menu to verify the printer produces output.

To configure AMOS to use an XPE printer, it must be defined in the {Printers tab} of the <AM8000 Configure> (see Chapter 3). Once a XPE printer is mapped to the "LPTx" channel in the AM8000 program, you then need to modify a TEST.INI file to define it to AMOS.

Please recognize the distinction between hardware LPT port vs. the AMOS LPT port assignment. This LPT does not have to be the same as the Server's parallel port, usually referenced as LPT1. Each LPTx can reference any XPE printer, even a network or USB printer. Because each AMOS LPTx configuration also includes the Windows fonts, the SAME XPE printer could have multiple LPTx references. For example, AMOS might be configured to use a network laser printer as LPT2 for Times Roman 10pt for letter printing and as LPT3 for Ariel 8pt for condensed printing and it could be the same physical printer.

For each XPE printer configured for AMOS, activate (or add) the appropriate TRMDEF in the line in the TEST.INI file:

```
TRMDEF LPT3,PCLPT=3,TELTYP,100,100,100
```

The "PCLPT=3" matches the LPT3 in the <AM8000 Configure> {Printers} section. PCLPT=3 matches LPT3, etc. The name given on the TRMDEF line, such as "LPT3" above could be replaced with "LETTER" a name that identifies the function the printer is being used as.

Using Serial Printers

Each serial printer may be defined in either of two distinct ways:

1. As an XPE printer or
2. As an AMOS only serial printer. If it is defined as an AMOS serial printer, it will consume one AMOS users license.

To define it as a XPE serial printer, make sure the PC COM port is not mapped for AMOS use. This information is stored under the {Serial Ports} tab of the <AM8000 Configure> program. (See Chapter 3).

As an AMOS only serial printer, the serial printer can be plugged into one of the AM-113 serial ports or into one of the PC COM ports, which are mapped for AMOS use.

In the AM8000.INI file, make the appropriate changes to the TRMDEF for that COM port to use the TELTYP terminal driver, and remove the EDITOR statement if present. Change the baud rate to one appropriate for the printer that will be used.

Adding a Printer

Additional LPTx ports {up to 16} can include Windows network printers or USB printers connected to the AMOS 8.x Server. Remember to add the printer through the XPE <Control panel> {Printers and Faxes} option. The printer TRMDEF statements for PCLPT={1 to 20 octal} are valid. The PCLPT interface driver is embedded in the AMOS monitor; therefore you do not need to add a DEVTBL line, or a SYSTEM statement to load the printer driver. Verify that the <AM8000 Configure> program has the LPTx device defined before modifying the TEST.INI file.

Setting Up The AMOS Spoolers

The print spooler is a background process that handles the transferring of print files to the printer. Print "jobs" can be queued to the spooler by applications or by the AMOS PRINT command. AMOS offers two types of print spoolers. For this example we will illustrate the original version, which is the memory-based spooler with a background job for each spooler. The job needs a dummy terminal to get the spooler started, followed later by the actual start up command:

Add in the following statements into the TEST.INI file in the appropriate area of the INI. Refer to the Simple Initialization above.

```
JOBALC spool2
TRMDEF LPT2, PCLPT=2,TELTYP,100,100,100
TRMDEF DUMMY,PSEUDO,NULL,80,80,80
SETJOB spool2,DUMMY,20K, LPTINI  LETTER.PIN
WAIT  spool2
```

Change the DEVICE statement in the LETTER.PIN, **P**rinter **IN**itialization file to reference TRM:LPT2. For example:

```
DEVICE= TRM:LPT2
```

Other Windows network printers may be added - just use another number in the Printers tab of the <AM8000 Configure> menu. For more information on printer initialization files and printer spoolers,

refer to the AMOS Users Guide. For information on constructing cables to connect a printer, see Appendix A.

In addition to Windows network printing, AlphaTCP LPR network printers can be defined. AlphaTCP LPR network printers are the same as on any other AMOS system and are not covered in this section.

A large number of processes must work together for this printing to work correctly. These are tied together by logical names, link by link. Many installations use the same logical name for all of the links, thus reducing installation issues. An example of this is using the name "LPT2" for all of the links. Others use names that seem appropriate for that specific process, such as the printer model, application, location, etc. Here we have used different names for each of these logical links so that you can better understand the interdependencies and troubleshoot any problems.

In the above example, the names in lower case are arbitrary, but must match other specific names. The "SPOOL2" must match a JOBALC statement. "DUMMY" in SETJOB must match "DUMMY" in the TRMDEF statement, and "LETTER.PIN" must be the name of the printer initialization file for this printer.

Before using a printer, create a (*.PIN) printer initialization file. This is the "LETTER.PIN" file referred to in the last line above. See your *AMOS System Operator's Guide* for a description of this file, which tells AMOS the characteristics of your printer.

Create the necessary printer initialization file (.PIN) using VUE. Here is a sample "LETTER.PIN" file:

```
DEVICE = TRM:LPT2
NAME = PRINT1
DEFAULT= FALSE
OPERATOR =JOB1
FORMFEED = TRUE
FORMS = NORMAL
BANNER = FALSE
HEADER = FALSE
LPP = 60
WIDTH = 80
```

The "DEVICE = TRM:LPT2" is the connection to the TRMDEF for the printer, either the XPE printer or a TRMDEF for a serial printer.

After booting the TEST.INI file with the spooler added, test the spooler installation with the command:

```
PRINT PRINT1=TEST.INI
```

ADDING JOBS

When the administrator increases the number of terminals connected to the Server, modifications to the system initialization file are needed to define what terminals are attached to which jobs.

The steps below are necessary to add an additional terminal to the Server. However, all the systems shipped from Alpha Micro have multiple INIs as examples to inform the administrator how to set up the system. Please refer to the 8.x INI's in the appendix for more information.

Before adding jobs to the Server, check the number of jobs that remain on your AMOS license. To increase the AMOS user license, contact your VAR.

1. To add jobs to the Server, make a copy of the initialization file, as discussed previously.
2. At the beginning of the TEST.INI file is a JOBS statement. The number following the JOBS statement represents the total number of jobs on your computer.

   If your computer has 25 jobs now and you want to add two more jobs, change the number in the JOBS statement to 27 or more. For example:

   ```
   JOBS 27
   ```

3. On the lines following the JOBS statement, there are one or more JOBALC statements. Each job can be defined in a separate JOBALC statement, or several jobs in the same JOBALC statement by separating the job names with commas. For example:

   ```
   JOBALC JOB4,JOB5,JOB6,JOB7
   ```

   Each job name—which can have up to six characters (A - Z, 0 - 9, $)—defines a job on the Server. The total number of jobs defined in the JOBALC statements must be equal to or less than the number in the JOBS statement above.

4. Define the terminals that will be attached to these jobs. The TRMDEF statement defines the terminal characteristics and tells the Server which port on the back panel it's connected to. Add any new TRMDEF statements after the last TRMDEF statement in the file.

   Here is a sample TRMDEF statement:

   ```
   TRMDEF TRM2, PCSIO=1:19200,AM62C,200,200,200,EDITOR=15
   ```

   Using this sample, here is the information about the terminal:

   - TRM2 is the terminal name. Use any name containing six or fewer letters and/or numbers. Each terminal must have a different name.
   - The next word is the “Interface Driver” (IDV), which has 4 different possible drivers, which can be used with AMOS 8.x.
   - PCSIO is the name of the interface driver for the AM-113-xx multi-function controller the terminal is connected to. The PCSIO interface driver is embedded in the AMOS monitor. The ports on the AM-113-xx board are numbered 1 to 4. The ports on the AM-359 boards are numbered {5 to 174 octal}.
   - PCVTM interface driver is used for Virtual terminals ports {1 to 10 octal}. This interface driver is embedded in the AMOS monitor.
   - PCCOM interface driver is used for PC COM ports {1 to 22 octal}. This interface driver is embedded in the AMOS monitor.
   - PCLPT has been discussed in the printer’s section above.
   - =1 is the octal number of the port the terminal is attached to. Each terminal must be connected to a unique port.
   - :19200 is the baud rate of the terminal.
   - AM62C is the name of the terminal driver. AM62C can be changed to different terminal drivers. Review the TDV’s in the DVR: account for others that may be used.
   - 200,200,200 are buffer sizes, expressed in number of characters. Different situations may require other buffer sizes, but for now just use 200,200,200.

- EDITOR=15 enables the line editor with the ability to store 15 command lines for this terminal. See the *AMOS User's Guide* for more information on the line editor.

For a more extensive explanation of what each of these items represents, see the *System Operator's Guide to the System Initialization Command File*.

5. Use the SETJOB statement to link the terminal defined in the TRMDEF statement with the job defined in the JOBALC statement. SETJOB statements include parameters to:
   - Define how much memory to allocate to a specific job
   - Define the specific disk and account the specific job will log into
   - Unlock the terminal's keyboard (with the VER command)

   SETJOB statements must be entered after the last system statements in the INI file. Here is a sample:

   ```
   SETJOB JOB4, TRM2,500K,LOG DEMO,VER
   ```

   See the *System Operator's Guide to the System Initialization Command File* for information on SETJOB.

6. Only add a WAIT command for jobs that spawn additional tasks or daemons. The pertinent job types are the Print Spooler jobs, Task Manager, NETSER, VTSER, LOGGER, NETLOG and TCPEMU. The WAIT gives the operating system time to initialize the new job and process other commands in the SETJOB statement. For example:

   ```
   WAIT SPOOL1
   ```

7. Three job types on an AMOS 8.x Server require better job servicing. They are TCPEMU, TELNED, and SMTPD. These jobs can have the job scheduling priority changed from 1 (the default for all jobs) to 2 (the recommended setting). At the end of the AM8000.INI file, after the TCPEMU job has been initialized, enter the following statements:

   ```
   LOG OPR:          ;this process must be run from OPR
   SLEEP 1           ;time for tcpemu to finish initializing
   JOBLVL TCPEMU,2   ;set a higher job level
   SLEEP 1           ;allow time for tcpemu to finish JobLvl
   JOBLVL TELNED,2   ;set a higher job level
   JOBLVL SMTPD,2    ;set a higher job level
   LOG SYS:          ;back to sys:
   ```

   The JOBLVL program must be run from the OPR: account. The SLEEP 1, gives time necessary for TCPEMU to login and change its job level before the TELNED job changes its job level.

8. After adding the SETJOB and WAIT statements, you are ready to perform a test reboot, using the procedure described earlier in this chapter.

Changing User Memory

How much of the Server's total available memory assigned to each job is determined by the memory parameters in the SETJOB statement (or the MEMORY command). If you decide to add jobs or alter memory allocations, first refer to the *System Operator's Guide*. Remember that assigning the total memory to AMOS is controlled by the {RAM size in MB} input box of the <AM8000 Configure > program. See chapter 3 for this information.

To see a display of the current memory allocations on the Server, use the SYSTAT command:

```
SYSTAT/N ENTER
```

In addition to many other pieces of information about the status of the Server, SYSTAT shows how much memory is assigned to each job. The SYSTAT command is explained in detail in the *System Commands Reference Manual*.

To permanently change the amount of memory allocated to a job, modify the system initialization file per the instructions below.

1. Make a copy of the initialization file and edit it, as discussed previously.
2. Scan through the file until you find the SETJOB statement that attaches the terminal to the specific job whose memory you want to change. The amount of memory allocated to that job is one of the parameters in the SETJOB statement, immediately following the terminal name.

The number, normally in Kbytes, is reflected in the SETJOB statement following the terminal name, and is the amount of memory currently allocated to the job. This number can be increased or decreased as long as you keep in mind how much total memory the Server has, and how much memory the other jobs need.

3. The last statement in the system initialization file is MEMORY 0. This statement allocates to the System Operator's VTM1 job all the memory not specifically assigned to other jobs.

   If you want to increase the amount of memory assigned to the VTM1 job, the operator console, you need to subtract memory from the SMEM statement. The SMEM size is about 100MB or increases the {RAM size in MB} parameter in the <AM8000 Configure> Menu.

4. Save the TEST.INI file and exit AlphaVUE. Then, perform a test reboot by running MONTST as described earlier in this chapter. You can then use the STAT or SYSTAT command to see how much memory is assigned to each job.

MODIFYING PRE-CONFIGURED NETWORK CONFIGURATION FILES

AMOS 8.x comes configured for network operation, but the network parameters must be modified for your specific network. Before booting a network-enabling configuration, make the following changes to the network configuration files contained in the TCP: account:

Depending upon your complete network configuration, other AMOS files may need to be updated, in addition to the files listed below. Please Consult the AMOS TCP documentation for additional details.

1. All AMOS 8.x Servers use the ETH101.NIN file to enable both AlphaNET and AlphaTCP to function. This is called out in the AM8000.INI file with the NETINI statement. The Ethernet driver is a simple packet driver called PCNDV.NDV. The following statement is incorporated into the AM8000.INI command file to configure your Ethernet hardware for all models of the AMOS 8.x Servers.

   ```
   NETINI ETH101.NIN
   ```

The format of the ETH101.NIN is as follows:

```
DRIVER=PCNDV  ;Network driver for all systems
NETWORK=101
GROUP=2
NODE=100
NODECOUNT=100
GROUPCOUNT=20
NODECHECK=ON
NAME=AM-8000 SYSTEM
```

2. Use VUE to modify the **ETH101.NIN** to reflect your AlphaNET settings defining the Network, Group, and Node numbers. If you are not using AlphaNET, just leave the file as is.
3. In AMOS **`LOG TCP:`**
4. Using VUE, update the following files as indicated below:

   a. **NETWRK.** Update the Ethernet entry to reflect your network IP address. This IP address must be distinct from the host XPE IP address.

   b. **CONFIG.** Update the route IP address at the end of the file to reflect your router IP address. If the AlphaNET network number was changed from **101** in the SYS:ETH101.NIN file, then make the same change to the **101** in the "ifconfig ec0 **101** arpa 100" line.

   c. **MYNAME.** Update the entry to reflect your Internet domain name.

   d. **RESOLV.** Update the desired default Internet domain and name Server (DNS) entries to your particular configuration. If the HOSTS file is being used, then remove the "#" from the " #tryhostfile" line. If you are not using DNS, leave the # in place.

   e. **FTPUSR.** Change the pre-configured user names and passwords for FTP access.

   f. **HOSTS.** Change the hostname information to reflect your particular installation. You do not need the HOSTS. File if you are using just DNS. The original file is provided as an example.

   g. **TIMZON.** Adjust the parameters for your local time zone.

5. Log to SYS: and VUE the **ETH101.ERZ** file. Add any ersatz names for your installation.
6. If your INI file currently does not enable the network, we recommend you use the AM8000.INI or a modified version of AM8000.INI as the TEST.INI.
7. Use MONTST AM8000, TEST.INI to shut down the system and then reboot to test the network-enabling .INI file.

AMOS DISK MAINTENANCE

Analyzing the Disk

A disk diagnostic program reads data from a disk. If the Server cannot read an area of the disk, it reports the problem. Checking the disks frequently with disk diagnostic programs helps prevent data loss—the sooner you catch a malfunction, the less data is likely to be affected. The type of problem found by disk diagnostics is known as a "hard error," because it means data is lost. A "soft error" means the Server had trouble reading the data, but data was not lost. Disk diagnostics do not report soft errors.

If a diagnostic program indicates problems, you may need to restore data from a backup copy or reconstruct the data on a damaged disk. If you have this type of problem, consult the section "Recovering From Disk Errors" in the *System Operator's Guide*.

Before running any of the disk diagnostic tests, especially if you suspect a problem, it is a good idea to use the SET DSKERR command:

SET DSKERR ENTER

SET DSKERR causes the Server to report the location of any hard errors the diagnostic program finds. If you don't use SET DSKERR, the diagnostic tells you only that an error occurred, not where on the disk it happened. You must run the diagnostic program from the same job where the SET DSKERR was executed.

The next two sections discuss two very useful diagnostic programs, REDALL and DSKANA. You can find more information on disk diagnostic programs in the *System Operator's Guide* and the *AMOS User's Guide*.

The REDALL Command

REDALL reads every block of data—or the number of blocks you choose—on the logical disk specified, and reports any hard errors. It does not alter the data on the disk.

REDALL works on all disks. It is a good idea to run REDALL for each disk on the Server occasionally, possibly once a month.

To use REDALL, perform these steps:

1. To read all the blocks on a disk, enter REDALL followed by the device name of the disk desired.

   REDALL DSK2: ENTER

2. If you don't want REDALL to read all blocks on the disk, follow the disk specification with the decimal number of blocks you want read:

   REDALL DSK2:100 ENTER

   The command above tells REDALL to read the first 100 blocks on DSK2:

3. REDALL now tells you the number of blocks it is reading. For example:

   REDALL DSK2: ENTER
   ```
   Reading 13800 blocks
   ```

```
EXIT
```

4. REDALL ends when it finishes reading the blocks. If any errors occur, REDALL displays the appropriate error message on your screen.

The DSKANA Command

The DSKANA command is an important part of your disk maintenance routine. DSKANA analyzes the data on a specified logical disk and reports lost and mis-linked disk blocks, inconsistent block counts, and other file errors.

Each file on the disk is stored in one or more disk blocks. AMOS keeps track of which disk blocks are currently used in files and which are not, by means of a special structure called a "bitmap." Each disk has its own bitmap.

DSKANA compares the information in the bitmap with the actual data on the disk to make sure the bitmap is accurate. For example, if DSKANA finds a disk block that is part of a file, but the bitmap shows the block not in use, DSKANA reports an error. When DSKANA finishes analyzing the disk, it rewrites the bitmap unless you tell it not to.

Use DSKANA frequently on all of the Server's disks. It is a good practice to use DSKANA on every disk just before performing a disk back up to tape.

For more information on DSKANA, see the *System Commands Reference Manual*.

NEVER use DSKANA (unless using the /C option described below) while other users is accessing the specified disk; doing so may damage the bitmap and the files on the disk.

To use DSKANA, follow these steps:

1. Log into OPR: by typing:

   LOG OPR: ENTER

2. Type **DSKANA** followed by the device name of the disk you want to analyze. For example, to analyze DSK1: type:

   DSKANA DSK1: ENTER

   As DSKANA checks the disk, it displays the disk account numbers. When it finishes, it displays the results of its analysis. For example:

```
DSKANA DSK1: ENTER
[Begin analysis of DSK1:]
[1,2]
 .
[100,20]
[The following blocks were marked in use but not in a file]
  1767   1772   2562   3456   6265
[The following blocks were in a file but not marked in use]
[Rewriting BITMAP]
No file errors
```

If you see the "No file errors" message, the file structure on the disk is intact. If DSKANA lists a number of file errors, there is a problem with the disk's file structure. Your next step is to run DSKANA again, using either the /L or /E option—discussed below—to see where the errors are on the disk.

For the complete procedure to follow if DSKANA finds any file errors, see "Recovering From Disk Errors" in the *System Operator's Guide*.

DSKANA Options

Following are the most common DSKANA options. Please see the DSKANA reference sheet in the *System Commands Reference Manual* for a complete listing of options.

Option	Function
None	Displays account numbers on disk and summary only.
/C	Check the Bitmap, but does not rewrite bitmap.
/E	Lists files and blocks in which any errors occurred.
/L	Lists all files and blocks on the disk.

To use one of these options, place it after the DSKANA command like this:

`DSKANA DSK1:/C` ENTER

As mentioned above, use the /L or /E option to find the location of any file errors DSKANA detects. The /C option is discussed in the next section. To see the list of DSKANA options, type **`DSKANA`** ENTER without specifying a device name.

The CHECK Option and Automatic Backups

At times, use DSKANA to examine a disk without re-writing the bitmap, especially when using an "automatic" backup method such as a command file or the Task Manager to perform the backup.

The reason for this is simple: assume you run DSKANA at night as part of an automatic backup procedure. If anyone on the Server leaves a file open —such as an AlphaVUE or AlphaWRITE document—on the device DSKANA is checking, DSKANA doesn't take the open file into account when it rewrites the bitmap for the device. When the person returns in the morning and writes the file to the disk, it causes a bitmap error, because the Server didn't know the file was open. This process could corrupt the disk causing data loss.

To run DSKANA without rewriting the bitmap, use the /C option switch. You see DSKANA's normal display when you use the /C option, except for the [`Rewriting BITMAP`] message.

AMOS Formatted SCSI Drives ONLY

When installing a new AMOS formatted hard drive, follow these steps:

1. Power down the system and install the drive onto the appropriate disk interface channel.
2. Power up the system and verify that the new drive is detected during the Adaptec device scan.
3. Allow the system to boot.
4. *Select* > {Configure} menu of the <AM8000 program> then *Select* > {SCSI devices} tab.
5. Map the new SCSI Disk drive at an unused AMOS SCSI ID. This is done by a *select, drag and drop technique* from the upper panel to the lower panel as described in Chapter 3.
6. *Select*>[OK] and then File>{Exit} to write the system registry.

7. Reboot the AM8000 system and log to the OPR: account.
8. Use the FMTS2 command from the OPR: account to format the drive in AMOS format.
9. Select either Traditional or Extended format. Exit FMTS2. Please refer to the *System Commands Reference Manual* for instructions on FMTS2.
10. Log DVR: and execute FIXLOG and use SCZPC.DVR as the input driver. Input the mapped SCSI ID and the number of logicals. Select a new driver name.
11. Save the new driver to the disk in the DVR: account.
12. Log SYS: and edit the TEST.INI file.
13. For the new device, add DEVTBL, BITMAP, SYSTEM and MOUNT statement to the INI.
14. If the SCSI drive will be a permanent device, Add SYSTEM DCACHE.SYS/N/M/U xxxK to allocate a read ahead cache buffer. Write caching is not allowed or supported under AMOS 8.x systems.
15. Add a SET NOCACHE statement for all accessed **AMD** disk devices. This will improve performance of the Server.
16. Log OPR: and COPY or MTURES data to the new disk drive.

Be extremely careful when using the FMTS2 command. ***Formatting a hard drive will delete all data and system files!*** It is important that only a knowledgeable technician perform these tasks.

BACKING UP THE SERVER DATA

Once the Server is in use, you will soon find yourself operating it with confidence and ease. However, no matter how smoothly everything goes, please remember one important thing—you must keep current copies of the data contained on the Server! This copy is your "backup." Computers and data storage devices are very reliable, but no one can guard against an unforeseen occurrence like a power outage, fire, or hardware malfunction. Such disaster can happen to anyone.

Your data is probably one of your most valuable possessions. How long would it take to re-enter the entire company payroll, all of your accounts receivable invoices, or your inventory, if they were lost? What if you could not reconstruct the information no matter how much time you had?

All Alpha Micro Servers come with some type of data backup device. Whether your backup device is a streaming tape, CD-RW or DVD-RAM device, learn to use it! ***Develop regular backup procedures and follow them!*** If disaster strikes, you'll be glad you had a little foresight.

The administrator should back up some or all of the data on the Server at regular intervals. How often to back up depends on how often data is added or changed. If data is added every day, you should back up the Server each night. Month-end and Year-end backups also make sense. Because both backup and diagnostic procedures usually must be done when only one job is accessing the disks, it is wise to run them when other users are logged off the Server at night or on weekends.

With the Task Manager, or the SLEEPR command within a command file, you can run tape backups in the middle of the night when they won't interfere with other users. See the *Task Manager User's Manual* for details on how to do this.

Backup Data Types

There are three types of DATA BACKUPS with different data structures.

- AMOS Data
- XPE Data
- Ghost Image Data

These data types are not interchangeable. Each backup data type must be used with the program environment in which it was created. Following is an explanation of these types and the programs that created them in more detail.

AMOS Only Data Backups

There are three different programs that can create a data backup, and two programs that can restore the data from the backup.

- COPY to backup and restore
- MTUSAV to backup, use MTURES to restore
- MAKDVD to backup, DVD to mount, and COPY to restore

COPY

When AMOS is booted, the COPY program will move data to other disk drives, which can be AMOS formatted drives or **AMD** pseudo disk drives on hard drives or DVD-RAM media. The data format between these data storage media is the same, and therefore compatible. Moving the data to other drives gives you a backup, but not necessarily on another media type. Copy can restore data to the original location from a backup disk. If you mount a DVD-RAM media created with MAKDVD using the DVD program, the data on this media type can easily be restored back to the your working disk drive.

MTUSAV

When AMOS is booted, you can move disk data to another media type like a “Tape cartridge” using the MTUSAV program. This will backup to Streamer and DAT tapes. The MTURES program will restore the data tapes to a disk drive. The tape format is AMOS MTUSAV format and is only readable by MTUSAV, MTUDIR and MTURES no other program can read this data structure. With MTURES, restoring data to different AMOS systems is a standard way of interchange that is quick and easy. The MTURES and MTUSAV programs cannot restore or backup data in the XPE environment directly.

MAKDVD

Within AMOS, the MAKDVD program can create logical disk backups to a DVD-RAM media in the exact AMOS disk data structure it came from. The DVD program can mount the media as a new disk drive type called DVDx: drives. The DVD drives are images of the disks they were created from. If created on a DVD-RAM media, an individual file could be updated with a COPY command. To restore data from the DVD drive, COPY is used to move the backup data to the original location or to a different disk at the discretion of the operator. Media written in this format cannot be read from the XPE environment.

If the administrator has backed up to a particular DVD-RAM media more that 25 times, you may get a SCSI error code 1. If this happens the physical media has a data error. Remember that the media has a limited life but you may be able to reclaim the media by performing a "Full Format" from the XPE side on the failing media. This takes at least 45 minutes. Use the Explorer application and right click on the DVD drive and select the format utility and use UDF 2.0 format. Once your finished with this process switch back to AMOS and execute the MAKDVD and do your backup. Then verify that the media wrote completely.

XPE Data Types

The XPE data types are numerous but we will discuss only those listed below. There are many XPE/Windows programs that can access these data types. AMOS currently cannot access these data formats directly.

- NTFS data format
- FAT32 data format
- UDF CD formats
- CDFS

NTFS Data

Most hard disks, RAID subsystems, and USB disk drives can be formatted in NTFS. The XPE system can read and write to these drive types with this data format. Backup data files can be written to the disk of choice. AMOS cannot read or write to NTFS drives directly, only through **AMD** disk files. Since the **AMD** disk files reside on an NTFS disk, the **AMD** file can be copied to any data type accessible by XPE. The **AMD** disk file is an image backup of the AMOS data and programs. The image disk files can be copied to any logical drive on the XPE side. AMOS can copy files between the AMOS and XPE environments with TODOS and FMDOS programs.

FAT32 Data

Hard disks, DVD-RAM and USB hard drives can all be formatted in this data type. Any file in the XPE environment can be written to the media formatted in this data type. **AMD** disks files stored under this format are a complete image of the AMOS disk and can be copied to media formatted in other data formats by XPE only. AMOS can only access **AMD** files and cannot access files on the XPE environment directly.

UDF CD Data Format

Universal Disk Format, UDF 1.5 and 2.0, are CD formats which are used by other 3rd party programs to copy files to CDs or DVD media. These are only accessible by Windows XPE programs and not by AMOS directly. **AMD** disk files can be saved in this data format as a backup. One example is the B'sClip packet writing software from BHA. It has its own format utility to format CD+RW, DVD+RW or RAM media. Using the packet writing software, you can create data backups of any Windows XPE files onto CDs or DVD media. If **AMD** files are written to DVD-RAM in this format and the operator follows the XMOUNT procedures, you can create backups that are removable from the system without shutting down AMOS!

The AM8000 Series II & III and Eagle800 Series II & III systems use the InCD packet writing software to support the DVD-RAM drive.

CDFS

CDFS, Compact Disk File System, is accessible under XPE and DOS. Other 3rd party application programs such as Ghost writes the Image backups in CDFS format. Other applications programs can read this CD format.

Ghost Image Data

As the name implies, a complete disk volume image is compressed into a GHO file with file extents of 2GB in size. The image can span multiple CD-R or DVD-R media or be stored on any hard drive, other than the one being backed up. The Ghost Image backups are only readable by the Ghost Backup and Restore utility or the Ghost Explorer. The Ghost Explorer can open and read the GHO file, displaying the files compressed inside. The data backed up are XPE programs, AMOS programs and **AMD** disk files. The operator can then select any file inside the Image and restore it to any location controlled by the XPE operating system. The files cannot be restored to the AMOS operating environment directly. The **AMD** disk files inside the GHO file can be restored but only to an NTFS, UDF or FAT32 formatted disks.

One way to restore the data is to install a UDF formatted DVD-RAM media into the DVD-RAM drive. Using the Ghost Explorer, restore the **AMD** file to DVD-RAM media as long as the selected **AMD** file size is less than 4.2 gigabytes. Then the operator must define the **AMD** file as another AMOS disk device. Modify the TEST.INI and boot the new configuration. Data from the backup is accessible to AMOS, once the disk is mounted.

Any **AMD** disk file of any size can be restored to any internal hard drive or USB hard drive that has space available. Then the same procedure of modifying the AMOS configuration and INI files is used. Reboot AMOS with the backup disk defined. Then mount the device and access the backup as a different disk device.

The Ghost Image backup is the only backup type that will backup and restore complete disk volumes from both environments in one pass. This is a compressed data backup of the disk volume. When writing to a “File” the backup must be stored on a different logical hard drive than the logical selected for backup. Alpha Microsystems ships the Server with a “File Image Backup” stored on the E: DataVolume as a backup of the XPE/AMOS C: SystemVolume. The system administrator can create data volume backups with Ghost onto disk drives or CD/DVD media.

XPE programs and files can be extracted from the Ghost Image, but only files that are not open and in use by the XPE operating system.

Backup Media Types

The following different backup media types are available on the new AMOS Servers.

- Streamer tape
- DAT tape
- CD-R, +RW
- DVD-R, +RW

- DVD-RAM
- RAID Level 1
- RAID Level 5
- USB Disk
- Network File Server
- BluRay Media new for Series III systems

Streamer tapes are the most commonly used backup media. The tape backup is used for incremental and full disk backups of the AMOS Server data. There are multiple backup densities for the tapes. The new tape drives perform very well and have capacities up to 100GB. Most installations use tape for daily backups for the Server data and programs. There are 20/40GB, 60GB and 100GB drives available mainly for the AM-8000 Server. The older 4/8GB drives are popular on the Eagle 800 Servers.

DAT tape drives are quickly disappearing. These older DAT drives from your old system will work on the new Servers but are slower and have a single ended interface limiting the data transfer rate. These devices do work if you follow the SCSI configuration rules and map the tape drive to an AMOS SCSI ID. The typical tape holds about 2 to 4 GB of data. Again these tapes are used for daily incremental backups or contain archived data.

CD-R media is new to AMOS systems. Normally this media is used during a Ghost Image backup of the Server. The Server must shut down AMOS and restart into PC-DOS for Ghost to make the image backup of the selected logical disk. The Ghost CD-R media holds about 900MB of compressed disk data. The initial install of the AMOS software is about 380MB to 500MB of data, depending on the system model. When performing the backup, the operator must feed the CDs to the CD or DVD drive. It will therefore take some time to perform this type of backup. This media is write once, read many.

CD+RW media is new to AMOS systems. Normally this media can only be used with the packet writing software from the XPE environment. This media cannot be used directly with Norton Ghost. After a Ghost file is created on a hard drive, the Ghost Image file can be written to this media for archive copy. This can only be done with the packet writing software once the media is formatted in UDF format.

DVD-R media is new to AMOS systems. Normally this media is used during a Ghost Image Backup of the Server. The Server must shutdown AMOS and restart into PC-DOS for Ghost to make the image backup of the selected logical disk. The DVD-R media holds about 6GB of compressed disk data. If your Server has more data than this, you must feed the DVD drive with more DVD-R media. This is a long procedure to backup a complete Server. This media is write once, read many.

DVD+RW media is new to AMOS systems. This media can be used for both Read and Write operations from XPE. The +RW media can also be used on the XPE side for data backups from the <Explorer> Application. The packet writing software allows you to drag and drop files onto the media if it has been formatted in UDF. The DVD+RW speed is not fast; this takes a lot more time than with DVD-RAM or DVD-R media. This media type does not work with Ghost or MAKDVD.

DVD-RAM media is not totally new to AMOS systems. This media can be used for both Read and Write operations. The media can be used on the XPE side or with AMOS, but not both on the same media. The MAKDVD software gives the greatest flexibility to backup procedures. It is faster to search and retrieve data files, faster than a tape restore. Please refer to the MAKDVD documentation for more information. The DVD-RAM media may be formatted in Fat32 or UDF and used as an alternate disk drive for XPE storage. This media has a longer life than all other media type described but still has a limited life. DVD-

RAM media formatted in UDF is useable with AMOS to store **AMD** files and is faster to update than the MAKDVD format.

RAID Level 1 is an on-line mirrored backup of the system data. Normally the 40GB drive system has two physical 40GB drives installed. The second drive is a Mirror copy of the first. Alpha Microsystems can provide a SCSI 160 RAID system for the AM-8000 Servers and an IDE version for the Eagle 800 Servers. The drive trays can be removed and another hard drive of like size installed. Once installed the IDE Level 1 RAID controller does the rest to mirror the first drive in the system. This gives the administrator a hard disk backup of whole system {XPE and AMOS}. A 40GB drive takes 2 hours to mirror and slows down the operating disk response if booted from the RAID by 30% during the rebuild process. Once finished with the mirror task the speed penalty disappears. The IDE RAID system can also be used as a backup device to internal SCSI drives on the AM-8000 system. This device can also be made the alternate boot device. There is no down time with RAID Level 1 and no system restarts other than Administrative functions.

RAID Level 5 has redundancy built in to provide data security. There are hot spares available to RAID level 5 subsystems. These subsystems are normally quite large depending on the disk drives used. The newer RAID systems can use up to 200GB disk drives. The whole disk subsystem would then be partitioned into logical drives under XPE and formatted in NTFS file system. Then whole logicals could be used for online backups of the Server data. Even with this redundancy, you should still backup the RAID to Streamer tape. The RAID unit, which Alpha Microsystems provides, has a SCSI 160 interface and is normally installed on AM-8000 Servers. This unit is available in 3,4,5,6, 8-drive configurations.

A USB Disk is also new to AMOS systems. These drives can be plugged into the spare USB 2.0 port on the system and are recognized by XPE as a removable volume. Data files can be moved from the active internal drives to the USB drives. Using USB disk is slower than internal drive because the data is converted into a serial stream. This option is faster than using DVD-RAM media with a copy. The USB drive can be used from AMOS as a backup **AMD** device. The **AMD** disk file is even bootable.

The slowest alternative to data backup is moving files via peer to peer networking to a network file Server. The process also requires AMOS to be shutdown to allow the **AMD** disk files to be copied to the file Server.

Formatting and Initializing DVD-RAM Media

There are 4 ways DVD-RAM media can be used on the new AMOS 8.x Servers.

1. Using the media from the XPE side with FAT32 or UDF.
2. Use the packet writing software on the XPE side
3. Use MAKDVD to create DVDx: backup logicals from AMOS.
4. Use FMTDVD from AMOS to create multiple identical sized logicals.

The XPE Side:

Before using a new DVD-RAM media for the first time, it must be formatted. To use the DVD-RAM media only from the XPE environment, format the media as FAT32 or UDF so that the XPE OS and programs may access it. Some media vendors format the DVD-RAM media in UDF 1.5 format. This media can be used with the Packet writing software for data backups. To format media in FAT32 format follow the steps below to initialize a DVD-RAM media. The System Administrator must perform this function on the main system console.

These steps erase any data already on the media! Make sure the media does not contain files you need before formatting.

The Administrator can access the correct tool by selecting in the <AM8000 System diagnostic> window, *Select*> Tools> {Control Panel}.

By using the <Control Panel> with the mouse, *Select*> [Folders], find the DVD device in the left panel and *right click* on it. Next, from the popup menu, *Select*>{**FORMAT}**, *Select*> **FAT32** format type and a name for this volume like "(**DVD-RAM1)**" and *Select*>[**OK**]. The XPE utility will format the media in FAT32 so it can be accessed from the XPE side. Once formatted, *right click* on the D:\DVD-RAM1 media and *create* an AM8000 folder.

This media format allow the system administrator to copy files directly to a Folder on the DVD-RAM media.

For example, from the <Explorer> application, *Select* the {AM8000} folder and *right click*, *Select*> {Copy}. Move the mouse to the {D:} drive, (the DVD-RAM media), and *Right click* and *Select*>*{Paste*}. The whole folder will copy to the DVD-RAM media. Be patient, this can take up to 2 hours if the Folder has 4GB of data.

Packet Writing Software on XPE:

The B'sClip or InCD packet writing software functions under XPE. The CD media must be formatted with the B'Clip or InCD format utility first. For a CD-RW media this takes 30-40 minutes. Then the B'Clip software goes through a file system check, taking another 20-30 minutes. Then the media is ready to use. Folders can be allocated on the media and files can be copied to the media just like a floppy disk. DVD-RAM media may already be formatted in UDF. The packet writing software can use brand new pre-formatted DVD-RAM media.

OPERATOR NOTE: The Server is impacted by the format and writing to CD-RW or DVD+RW media. The system is only 1/3 as fast due to the overhead of the B'sClip software. Please only execute this software when only a couple of users are on the system. This software should not be used during the day with many users on the system. Alpha Microsystems does not warranty this software and it is only provided AS IS for administrator use. Please read the on-line documentation for the B'sClip software package.

AMOS and MAKDVD:

The MAKDVD program copies complete logical AMOS disk drives onto the DVD media in a format that is compatible with the DVD program. A DVD media can contain approximately 4.7 gigabytes of data. MAKDVD program will copy AMOS files and the directory structure to the DVD-RAM media. This software package is our first choice to be used under AMOS 8.0. A big advantage with the MAKDVD software is different sized disk platters can be written to the DVD-RAM media in the same pass. So if the DSK0: to DSK5: platters are 80MB and SUB0: is 32MB, all these platters can be written in one pass. The only disadvantage in this example is the resulting DVD6: is padded with nulls to equal 80MB in size. The last logical for the original 32MB disk is only readable, not re-writeable, with the DVD program. A SYSTAT will show that DVD6 is Bitmap Kaput because of the padded nulls.

The backup can contain one or many disk platters up to the media capacity of 4.7GB. DVD-RAM media is used as the backup media using the MAKDVD program. Label your disk platters with a description of the device and data contained. This label description is written to the DVD media along with the full disk logical being backed up. This process if fairly fast. The MAKDVD formats and writes the data in one pass. This process will extend the life of the media longer than using FMTDVD and COPY.

Another advantage is AMOS does not have to be shut down to access the backup media. The DVD-RAM backup is mountable under AMOS with the DVD program. Once the DVD media is mounted, individual files may be copied to or from the DVD RAM media just like any hard disk drive, just slower on the write to RAM media. Using the DVD is faster to restore individual files or [p,pn]'s than a streamer tape. To change the media, execute (**DVD/U)** (**Enter**), first to un-mount the current DVD media, then install the next AMOS formatted media into the DVD drive. Allow about 30-40 seconds for the drive to recognize the media and then type:

DVD ENTER

The new media will be mounted and can have different logicals. The disk labels of the original hard drive platters will be displayed. The DVD command will add DEVTBL entries and load the BITMAP for each of the new logicals during the mount. See the system command reference sheets for more details on these programs.

AMOS and FMTDVD:

FMTDVD will format the DVD-RAM media into as many logical devices of the same size that you require. After the format is complete, mount the media with the DVD program. Copy files from any disk logical to any of the newly defined DVD logicals. The disk labels are not written with the copy. The LABEL program must be used to label each logical. This must be done manually or through a command file. The copy to the DVD disk logicals is slower than using MAKDVD and will wear out the media faster than MAKDVD. The excessive media wear is due to the fact that the BITMAP must be updated for each file copied. The DVD-RAM media is lifetime is 100,000 read-write cycles. The DVD-RW and CD-RW media lifetime is 1000 read-write cycles. There is no write caching available for this process, so it is slower writing data to the media than having **AMD** files stored on the media formatted in UDF. MAKDVD can create a six logical 32MB disk in about 15 minutes. If you use the FMTDVD / COPY method may take 12 hours for the same task. We strongly recommend not to use FMTDVD/Copy method.

We do not encourage using DVD+RW media for this process because it is only a 2X write speed device. DVD-RAM is 3X write speed.

TYPES OF BACKUPS NEEDED

There are two types of backups needed for every site. They are:

- XPE System Backup
- AMOS Data Backup

XPE System Backup

The XPE System backup should contain all the XPE software and the AM8000 folder with all its contents. This backup should contain all the system settings contained in the XPE Registry. The best way to make sure you have this backed up is to create a Ghost CD of the C: SystemVolume drive. This one backup will restore your system exactly the way it is setup now and working.

AMOS Data Backup

An additional image backup of the E: DataVolume with the current **AMD** disk files is also important. The **AMD** files must be backed up. The **AMD** files contain the programs and customer data running on the Server. This data backup can be a Ghost backup or Network or Disk backup of just **AMD** files. Another option is a Streamer tape backup of the AMOS programs and data files inside of **AMD** files. The System Administrator needs to make the decision as to the media and backup data type that will be used for this important portion of the Server's data.

Backup Considerations

MTUSAV style backups are fully supported on AMOS 8.x Servers. Older tapes written on previous AMOS systems are readable with AMOS 8.x. The newer tape drives are faster than on earlier systems. To significantly reduce the backup time, consider the following, which may influence the disk configuration you select.

- An AMOS **AMD** disk over about 6GB may not be compressible with Ghost onto a 4GB DVD, so for larger AMOS.AMD disks, the 20/40GB (or larger) AM-65X streamer is recommended. The AM-65x drives are considerably faster than the 4/8GB AM-629 streamer. All SCSI-2 streamers work on the AM-8000 installed on Channel B.

- Another choice is splitting the E: drive's 13GB of space into three 4GB AMOS disks. One could be used for quick backups of one of the others. Then any of the 4GB **AMD** disks could be transferred to 4GB DVDs. Any of the these backup DVDs can later be mounted and accessed directly from AMOS 8.0.

- Or, split the 13GB into two 6GB independent NTFS partitions. Place an AMOS.AMD disk on each partition. Then regularly use one to quickly backup the other (about 12 minutes). For off-site backup, the raw backup 6GB partition can usually be compressed with Ghost onto a 4GB DVD. To recover a single AMOS file from the DVD, the whole **AMD** file would be restored, defined to the system, and then the individual AMOS files can be accessed.

- Some administrators may want to add a USB removable hard disk drive. The administrator can copy the **AMD** file(s) to that drive. The drive can then be removed from the system for off-site storage and replaced with another drive for the next backup. The initial copy of the **AMD** file is slow but if you mount the **AMD** disk file from AMOS you may not be able to tell the difference in access speed. Writes are slower than reads. The XPE disk caching helps access time. Remember to execute a Shutdown of the system to flush the disk caches. Use the new XMOUNT utility program to mount removable storage.

- RAID Level 1 disk subsystem can be used for on-line backups or Ghost Image storage.

- Use the new MAKDVD program to backup specific disk logicals or complete sets of DSK devices. Remember not to allocate a disk logical larger than the DVD-RAM media can hold. Limit your disk logical size to 4GB and under.

- Use RAID Level 5 disk subsystem with hot spares to maintain up-time and data backups.

Are the Older AMOS DVD-RAM Backups Compatible?

AMOS DVD-RAMs, as well as CDs and CD-RWs, made on older AMOS systems are readable on the AM-8000. However, DVD-RAMs and similar media written on the XPE side with the **AMD** files are NOT readable on older AMOS systems.

The new version of MAKDVD will work on all models of the AMOS 8.x Servers, which have a DVD-RAM drive. The new MAKDVD provides a better more flexible backup utility. It allows different size "AMOS drives" on the same DVD media. In addition, DVD-R media can be used to create more permanent backups.

Unmountable and Mountable AMD Files

With the Version 925C2 and later of the AM8000.EXE program, along with the XMOUNT.LIT version 8.0(100), AMOS 8.x has the ability to un-mount and mount **AMD** disk files. This results in a whole new way of using **AMD** disk files. Except for the **DSK** device, the other subsystem disk files can be mounted and un-mounted without shutting down AMOS. This process can provide a way to have on line backups without shutting down AMOS to change the disk configuration. To provide this capability follow this procedure.

1. Define the subsystem name and file-name in the {AMOS Disk} tab of the Configuration program. For example : **UPD D:\AM8000\UPDATE.AMD**
   {The **AMD** file must be on a hard drive or DVD-RAM media.}
2. Save the Configuration with the [OK] button.
3. Modify the AM8000.INI and only define the disk subsystem driver, for example:
   SYSTEM UPD.DVR[1,6]
   Do not define the DEVTBL or BITMAP statements in the INI. Allocate SMEM for the Bitmaps so that they will XMOUNT correctly. Start at 20 MB and add more if any other **AMD** files will be used. The amount of SMEM required is proportional to the bitmap size of the **AMD** file being mounted. Save the INI file.
4. Log DVR: and **COPY UPD.DVR=PCDSK.DVR** if it does not already exists.
5. Log OPR: and MONTST the new INI and boot the system normally.
6. From AMOS, execute XMOUNT Dev: for example: **XMOUNT UPD:** ENTER
7. The system will respond with how many logicals the **AMD** disk file contains.
8. Execute MOUNT DEV: for example: **MOUNT UPD:** ENTER
9. The system will respond by mounting the UPD device with as many logical drives as the **AMD** disk file contains.
10. To un-mount the UPD disks, in our example type: **XMOUNT UPD:/U** ENTER

This technique can even be used interactively by changing the Disk filename to another name on a different logical and exit the Configure screen. Then execute XMOUNT UPD: followed by the MOUNT UPD: command. This will mount the new **AMD** disk file.

How this works is a lot like DVD-RAM and the DVD.LIT program. When XMOUNT is executed, the UPD device gets DEVTBL and BITMAP entries in the system. When MOUNT is executed, it will load the bitmap and displays the new disk labels. The drives are then used just like the standard method. **AMD** disk files on removable USB hard disks can then be mounted or un-mounted to provide large data storage. Once the drive is un-mounted (XMOUNT Dev:/U), it can then be removed from the system.

This technique does not allow the **AMD** disk files to be stored on a CD-R, DVD-R media. Only internal hard drives, USB drives and DVD-RAM media that are re-writeable are allowed to store **AMD** disk files that can be accessed. Good news for Eagle 800 users with CD-RW drives. If you format CD-RW media with the packet writing software in UDF format, then write an **AMD** disk file onto this media, it can be accessed from AMOS with the XMOUNT utility. The administrator can backup system data onto the mounted **AMD** file written on the CD-RW media!

In AMOS, copying files to the new UPDx: disk device is faster than copying files to an already created DVDx: disk. Creating a backup with the MAKDVD program is still the fastest full disk backup. The time it takes to create the initial **AMD** file on the backup hard disk is still the same. The reason why the UPDx: disks can be updated quicker is that XPE write caching is helping to write to the **AMD** disk device. Updating the DVDx: disks are slower because there is no write caching to help out.

DVD Software Revisions

The DVD software and device drives have been updated to function under AMOS 8.0. Find the Command Reference sheets for the DVD programs and follow their directions on how to use the DVD programs. The minimum working versions are listed below:

```
Program       PPN      Version or Hash  ;Comments
DVD.LIT      [1,4]     8.0(101)-3       ;updated Jan2008
DVD.DEV      [1,4]     533-707-354-274
DVD000.NEW   [1,4]     8.0(101)         ;updated for AM-8000 systems
FMTDVD.LIT   [1,4]     8.0(102)
MAKDVD.LIT   [1,4]     8.0(101)
DVDRAM.DVR   [1,6]     764-071-753-423  ;for all units except Panasonic
DVDPAN.DVR   [1,6]     151-436-033-442  ;Only the Panasonic LFD-521U
```

To install the both drivers for both models of DVD drives do the following:

LOG DVR: ENTER
COPY DVD.DVR= DVDRAM.DVR ENTER ; for all units except Panasonic or
COPY PAN.DVR= DVDPAN.DVR ENTER ; for the Panasonic LFD-521u
LOG SYS: ENTER

To check if the PIC code is installed type:

DVD/PIC ENTER

The system should display the PIC if installed. If the system response is ”Invalid SSD”, do the following from the SYS: account.

Log SYS: ENTER
COPY DVD000.OVR =DVD000.New ENTER

Then enter the PIC code by typing.

DVD ENTER

Enter the DVD PIC provided by Alpha Micro. Verify that the DVD.DVR is loaded into system memory. If not, VUE the AM8000.INI and add in the drives to system memory.

```
SYSTEM  DVR:DVD.DVR
SYSTEM  DVR:PAN.DVR
```

Finish out and save the file. Test the new file.

```
Log  OPR:  ENTER
MONTST AM8000  ENTER
```

The system should boot up and reach MEMORY 0. Place a DVD-RAM media in the drive and test the DVD device by typing:

DVD ENTER or **DVD /DEV: PAN:** as appropriate

To create a quick backup to the DVD-RAM, LOG OPR: and execute MAKDVD. Enter the device specification for the disk platters to be written, then (Enter). The MAKDVD program will write the data to the media and give a progress report on the % written. When done, it exits to the AMOS dot.
To mount the new backup type:

DVD ENTER

The system will respond by mounting the DVD-RAM media and display the disk labels read from the media.

XPE ADMINISTRATION

There are a few procedures that the System Administrator must set up for an installation. These have to do with Network setup, Disk and RAID setup. These and others are normally controlled through the <Control Panel> program. The XPE system has its own IP address and AMOS 8.x has its own unique IP. If your installation has a DHCP Server, the XPE system will obtain its IP from the DHCP Server. This is the AMOS 8.x Server "Default" as shipped from Alpha Micro.

The System Control Panel

To access the XPE system, go to <Control Panel> *Select*>{Tools} item from the <AM8000 System Diagnostics> window. This is shown in figure 6-1.

This one window has the greatest power and largest options to control the AMOS 8.x Servers settings. If you are familiar with XP Professional, this will be very easy to understand. All the settings are already pre-set for the System Administrator by Alpha Microsystems**.**

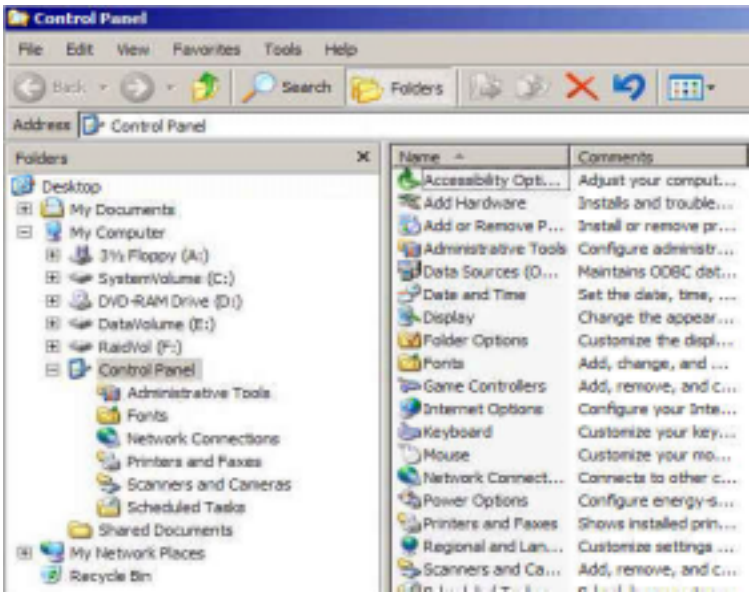


Figure 6-1: System Control Panel

Normally, you do not need to change any of these settings.
The functions or programs you should be concerned with are as follows:

<Control Panel> applications

- {Add or Remove Programs} as of Series II systems both Eagle 800 and AM8000, this feature now functions. Use this to properly Add or Remove program packages on the XPE side.
- {Add Hardware} functions but is rarely used. Most preconfigured systems have all the hardware devices necessary already installed.
- {Date and Time}, and time zone are settable.
- The console {Display} resolution. The default video screen resolution is set to 768x1024. Other display settings are accessed in this program. Do not go below 800x600.
- {Network Connections} The network interface, TCP/IP and firewall settings are accessed through this menu. To set a fixed IP for the XPE side of the Server, use this program.
- {Regional and Language Option} is used to setup the XPE system's language and other format info. As of the Series II AM8000 and Series II Eagle 800 the Languages installed are English, French, German, Italian and Spanish. Regional setting for anywhere in the world is also selectable. Earlier systems only have English installed.
- The {System} selection will allow the administrator to access the Computer name menu, which allows you to change the Workgroup name of the Server. The System Restore menu, the Advance menu, the Remote access menu may also be accessed, but are seldom used. The hardware Device manager also has a menu.
- {Administrative Tools} allows the operator to clear the event logs, start or stop services and get to the {Computer Management} program.
- The {Computer Management} application allows the administrator to Defragment disk drives, add and format, and allocate disk partitions on new hard drives, RAID subsystems or DVD-RAM media. You may also access the hardware Device manager. The Event viewer is accessed from here. The System and Application event logs should be cleared about once every other month.
- The {Device Manager} is used to update device drivers and set up serial ports and other hardware functions. You may add new serial ports; tape, disks or DVD-RAM drives with this utility program.
- {Fonts} to add fonts for printers. Many are already installed.
- {Folder options} Leave the standard setting alone.
- {Internet options}. The Internet browser is not recommended for use on AMOS 8.x for virus protection. All Internet files and temporary directories have been deleted from the AMOS 8.x Servers.
- {Keyboard} The option for key repeat is settable.
- {Mouse} options are accessible, but the standard setting should be used.
- {Power options}. The standard setting should be used. **Never allow the disk to spin down**. **Never allow the system to hibernate**. **Never allow the system into a standby mode**. **The AMOS Server must always be available**. UPS support as of AM8000-Series II has been added.
- {Printers and Faxes} Use this program to add Printers to the system so they can be mapped for AMOS use in the Printers option of the AM8000 program.
- {Scheduled Tasks} Normally not used.
- {User Accounts} As of AM8000-Series II User accounts for the Administrator, and System operators has been added.
- As of AM8000-Series II, Windows XPE –SP2 Service pack 2 patches has been added for greater security.

The functions that are not used for AMOS 8.x Servers or have little use may be disabled in XPE are:
<Control Panel> applications

- {Accessibility Options} not needed.
- {Data Sources (odbc)} has not been tested and may not function.
- {Mail} not allowed on the system for virus protection.
- {Game Controllers} Do not use.
- {Sound and Audio Devices} Do not use this program. Sound and the audio drivers degrade the system response so they should not be used or are disabled.
- {Scanners and cameras} This function is not supported under AMOS 8.x
- {Taskbar and Start Menu} Not supported. There is no desktop or start menu.

Administrative Tools Overview

The <Administrative tools> application is used to defragment disk drives, clean up the event logs, and add, delete or restart Services. Use this tool to add and format new disk drives or RAID controlled subsystems. These programs are only used once in a while by the System Administrator and are not for the general AMOS user. These programs will only run on the Console terminal. To add network printers to the Server, *double click* on the {Printers and Faxes} item to accomplish this task.

Clear Application and System Logs

The Administrator should clear the Event Logs with the <Event Viewer> for the {Application} and the {System} about once a month. This will keep the size of the logs down to about 65k each. These logs keep growing because certain XPE functions that Alpha Micro has disabled may log an entry.

From the <Computer Management > application, *Select*> {Event Viewer}, *Select*> {Application} and right *click. Select*>{Clear all Events}. This is shown in Figure 6-2 and 6-3.

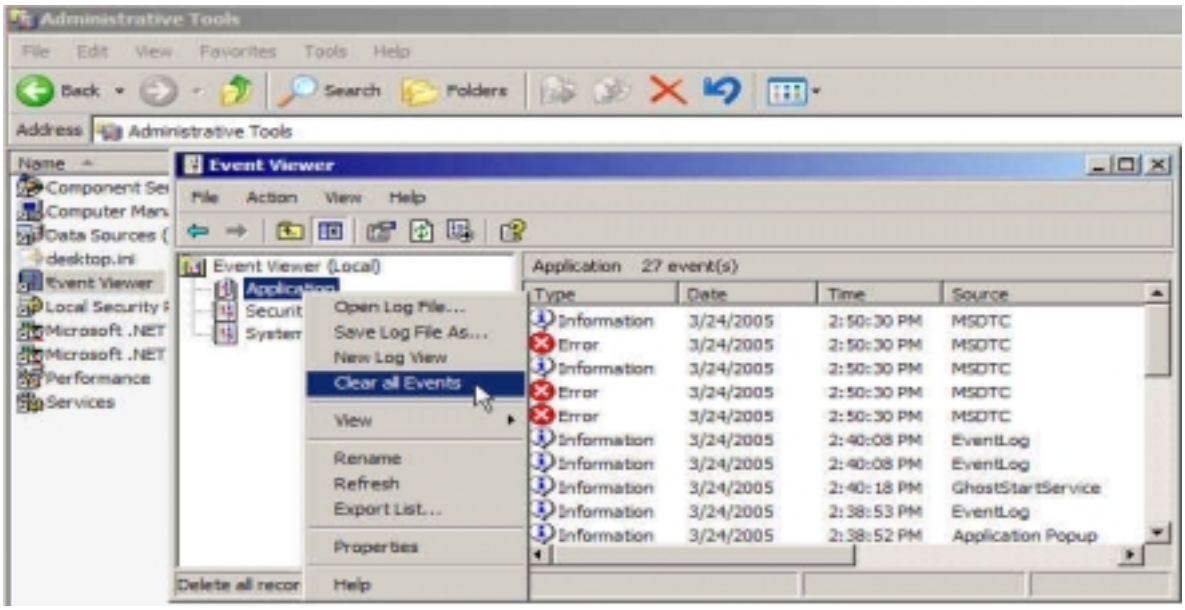


Figure 6-2: Computer Management –Event Viewer (Clear Application Logs)

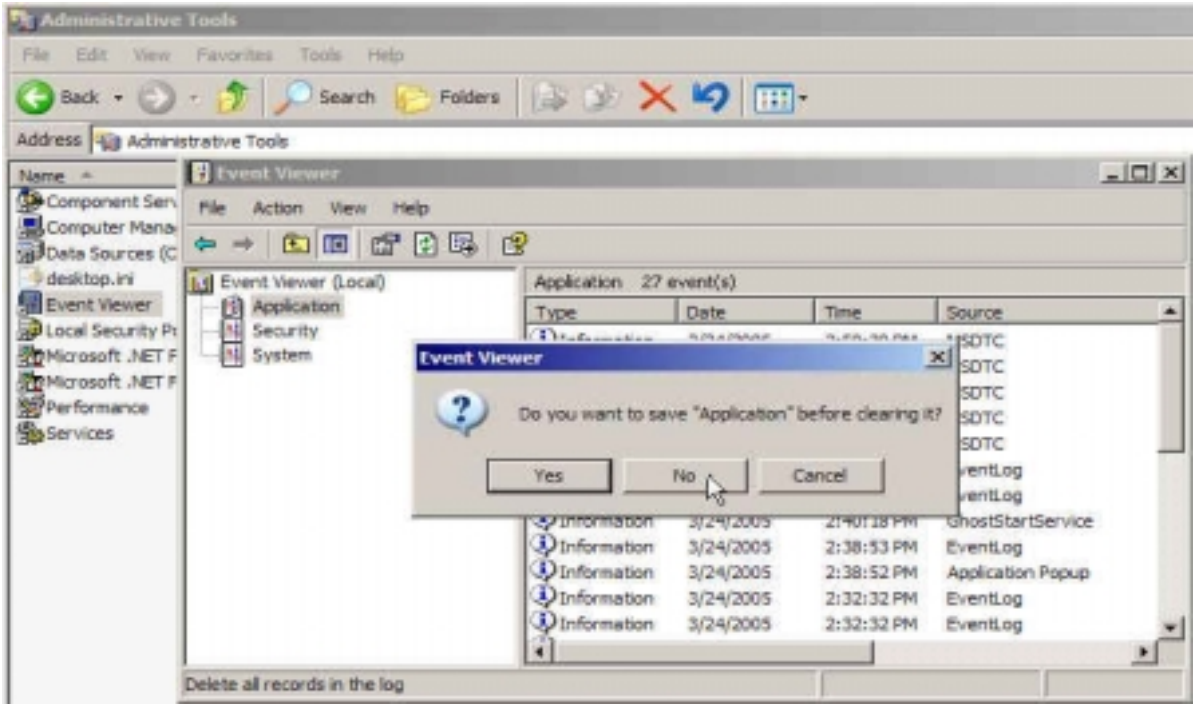


Figure 6-3: Computer Management –Event Viewer (Select No save of the Application logs)

To execute this function, *Select*> [No] button.
Select> {Event Viewer}, *Select*> {System} and right *click Select*>{Clear all Events}. This is shown in Figure 6-4 and 6-5.

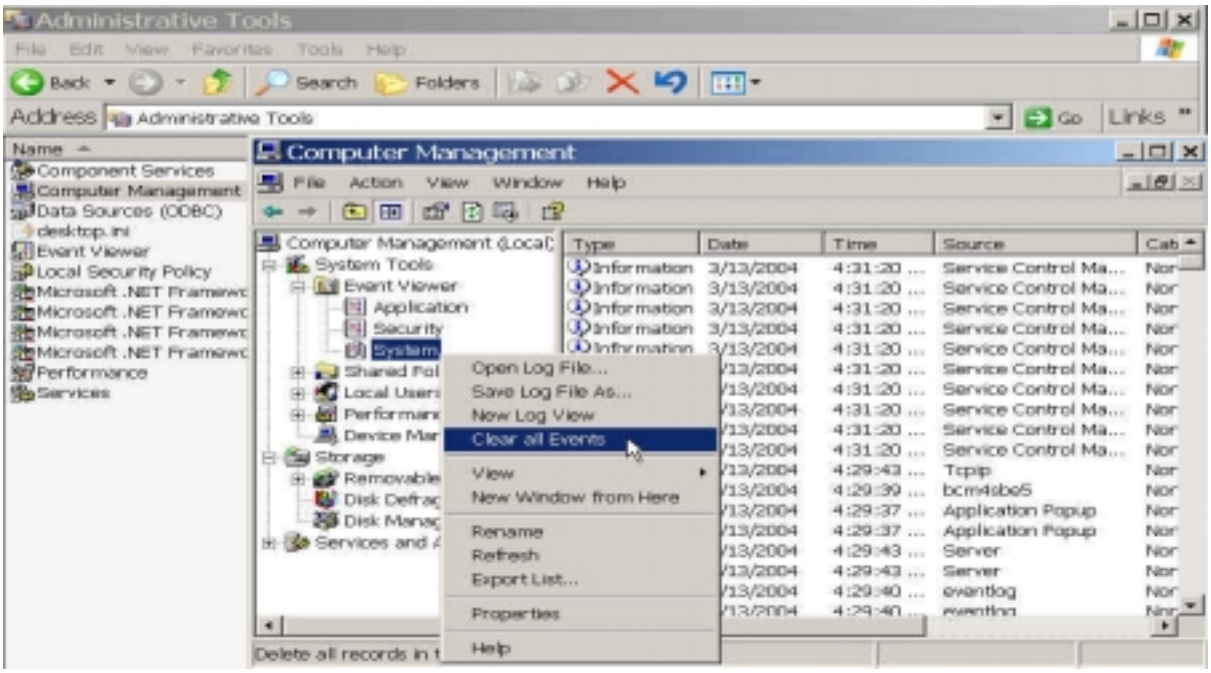


Figure 6-4: Computer Management –Event Viewer (Select System logs to be cleared)

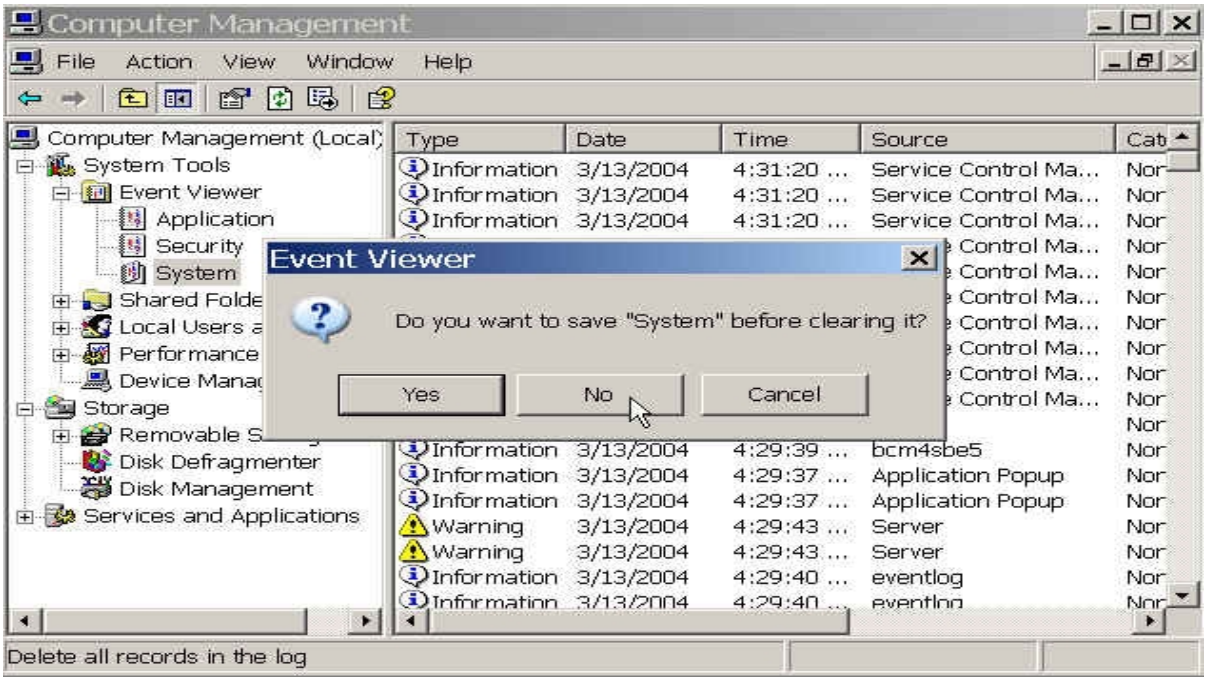
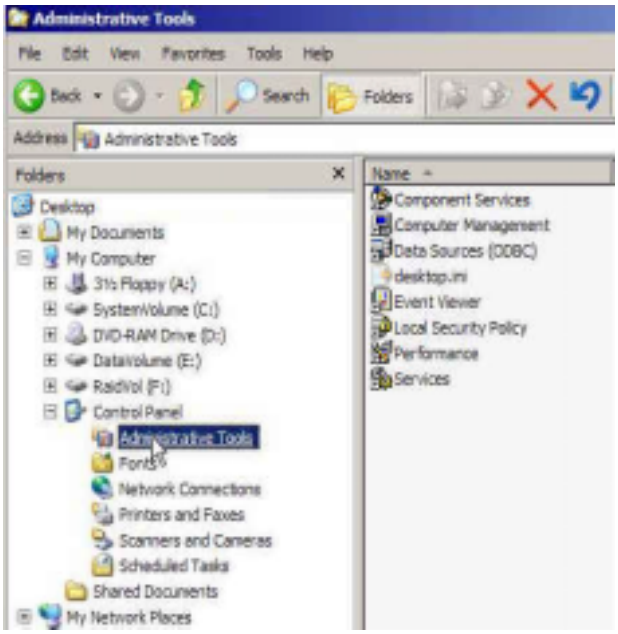


Figure 6-5: Computer Management –Event Viewer (Select No save of the system logs)

To execute this function, *Select*> [No] button

Other Administrative Tools



When adding disk drives to the system you must format and allocate these as storage volumes to XPE. To perform this task, *Select*> {Administrative Tools} and *Select*>{Computer Management} tool in the right panel, as shown in Figure 6-6.

Once the <Computer Management> application is loaded, find {Storage} and *Select*>{Disk Management} application.

To take advantage of the speed of XPE disk caching, the drives must be formatted in NTFS file system and made active to the XPE Operating System. As shown in figure 6-7, on an AM-8000 Server we have the standard SCSI 320 internal drive partitioned as 2 logical volumes. The first partition 4.15GB in size is reserved for the XPE software and the AM8000 folder. The E: DataVolume drive is 12.94GB in size and is used to store the Customer generated AMD disk files.

Figure 6-6: Administrative Tools

On early Eagle 800's, a standard 40GB hard drive was partitioned in half. This results in a 19.6GB C: drive and a 19.6GB E: drive. Later Eagle 800's the drive is partition in a 5GB SystemVolume and 34GB

DataVolume. The primary partition C: drive is where XPE programs and documentation is stored. The C: drive partition includes the AM8000 folder and all the subdirectories. The alternate boot disk file and the original AM8000.AMD file are stored in the {AM8000} folder on the C: SystemVolume. The E: DataVolume is a logical partition of the first physical drive. This drive is where the E: Backups folder is located. The system administrator should build the "**AMD**" disk files in the E: AM8000 folder.

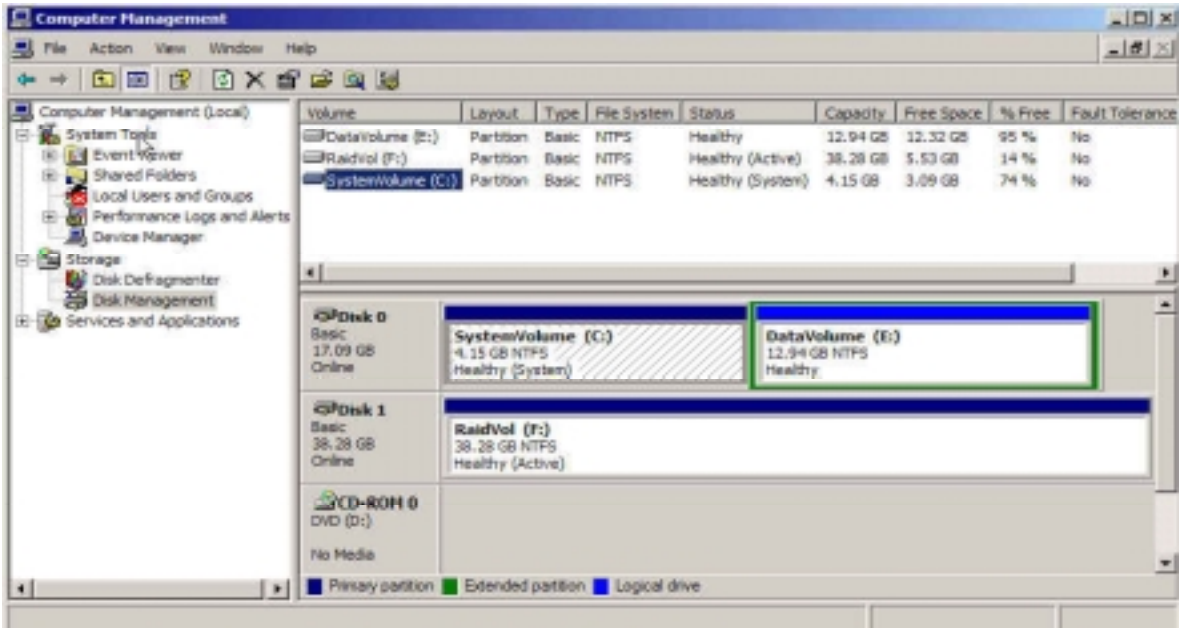


Figure 6-7: Computer Management Tool-Disk Management

Adding a RAID Volume & Selecting the RAID as Bootable for the AM-8000

To make Active and Bootable Drive volumes, the new disk or RAID drives must have a Primary partition. When adding a RAID subsystem, the drive must be allocated as a Primary partition and formatted in NTFS. To format the RAID, *Right click* on the Disk 1 box in the lower panel and go through the Disk Wizard. Follow the on-screen menus for this process. *Right click* when the mouse pointer is over the box in the lower panel to activate the command menu. When finished formatting, *Right click* on the Blue bar and *Select* >{Active} from the pop up menu. The RAID subsystem is not bootable at this point. First exit the <Disk Management> application screen by *Select*> [X].

The RAID does not have a Boot Sector or an XPE operating system on it. To load the XPE OS with a correct boot sector onto the RAID, Alpha Micro has a special "AMOS 8.x Bootable Recovery CD" with an "Image" of this configuration. To load this configuration, place this CD into the DVD-RAM drive and restart the system with Norton Ghost. From the Ghost menu restore the RAID Image from the CD/DVD to the RAID subsystem as a DISK RESTORE. Once this is done, reboot the Server. The RAID system should have an XPE Operating System on it with a bootable **AMD** disk file. You may erase the standard **AMD** disk file after generating your own **AMD** disk file. Make the disk file as large as you want. In our example, we made the **NEW.AMD** disk as 12 logicals and 2650MB in size. This left a few GB of storage for the XPE system software.

Once you have the XPE operating system with the AM8000 folder containing all of AMOS 8.x support programs inside, to make the RAID the "Boot Volume", follow this procedure:

1. Shutdown the Server and Restart.

2. During the POST *press* the F2 key on the AM8000 Series I system console.
3. The <BIOS > window should display.
    a. *Press* ← *to select* {Exit}, *Press* ← *to select* {**Boot**} *press* ENTER.
4. In the <Boot Select Menu> for AM8000 **Series I** you should see,
    CD-ROM Drive
    +Hard Drive
    +Removable Devices.
5. Press ↓ *to select* {+Hard Drive} and *press* ENTER
    {You should see the internal drive and RAID system. To sort the boot order, use the arrow keys and the (+) key to place the RAID first in the list, the internal drive second, and Bootable Add-in cards last.}
    Set the boot order like this:
    a. <Boot Select Menu>
        00, AIC-7902B: 0 Raid
        00, AIC-7902A: 0 Seagate ST318453LW)
        Bootable Add-in cards
6. *Press* ESC *to select* {Exit Saving Changes}
7. *Press* ENTER *to display* {Setup Confirmation- YES}
    Press ENTER this should restart the Server with the RAID disk as the Boot Volume, making it the C: SystemVolume.

1. *For AM8000 Series II systems Press* DEL key to enter BIOS setup during POST.
2. Next *press* ▶ 3 times to *Select*> {Boot Menu} you should see,
    a. {Boot Settings Configuration}
    b. {Boot Device Priortiy}
    c. {Hard Disk Drives}
    d. {Removable Drives}
    e. {CD/DVD Drives}
3. Press ↓ *to select* {Hard Disk Drives} and *press* ENTER. The 1st Drive is highlighted *press* ENTER to select it. A popup menu will show all the drives connected to the system. You should see the internal drive and RAID system. To change the boot order, use the down arrow to *select* the RAID drive and *press* ENTER. The boot order should look like this:
    1. 1st Drive 00, AIC-7902B: 0 Raid
    2. 2nd Drive 00, AIC-7902A: 0 ST336753LW
4. *Press* ESC then press the (**Right Arrow**) 4 times *to select* {Exit}
5. *Press* ENTER *to display* {Save Confirmation- **OK**}
6. *Press* ENTER this should restart the Server with the RAID disk as the Boot Volume, making it the C: SystemVolume.

Verify that the system works correctly and load your application programs onto the **NEW**.**AMD** disk file on the RAID volume.

Disk Defragmenter

To clean up a disk volume and defragment the file system, select the {Disk Defragmenter} tool from the <Computer Management> application. *Select* the volume to clean up from the upper panel. Then *select* the [Defragment] button in the lower panel. A sample session is shown below. This process requires 15% free space on the drive to complete. If you generate a large **AMD** file that consumes all the storage, you cannot defrag that volume. This process is necessary to fit as much data onto the drive and to be able to fit the data onto a CD-R media for a system Ghost backup.

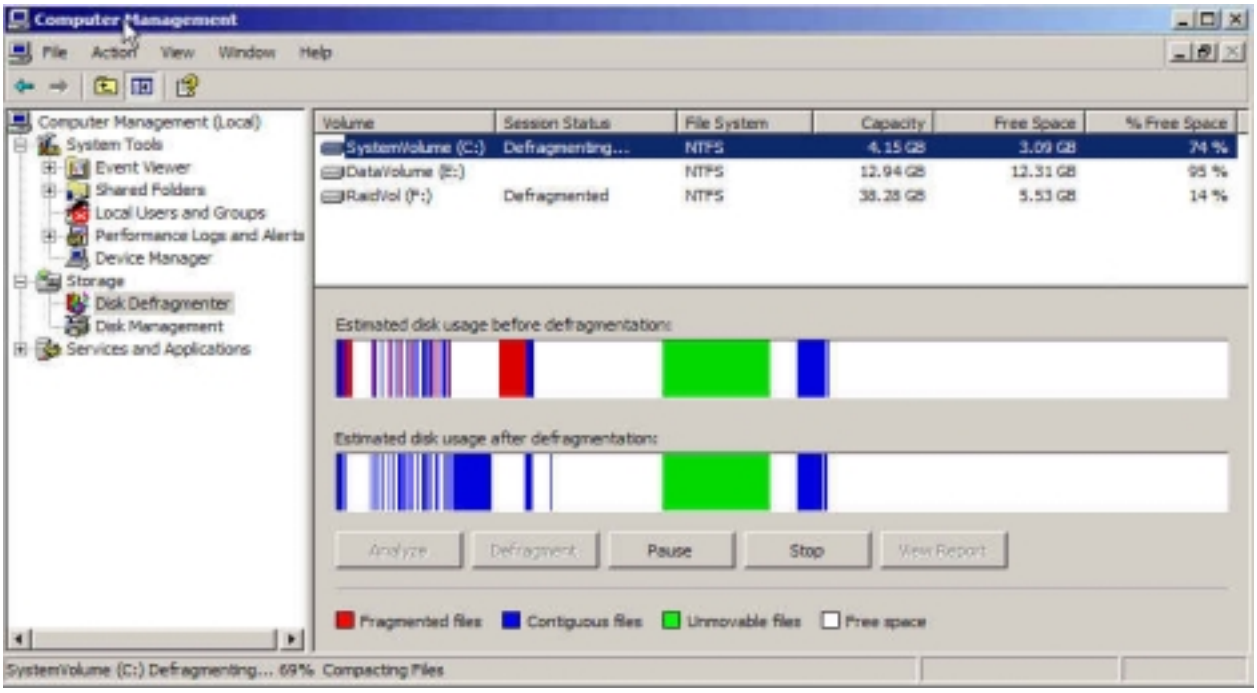
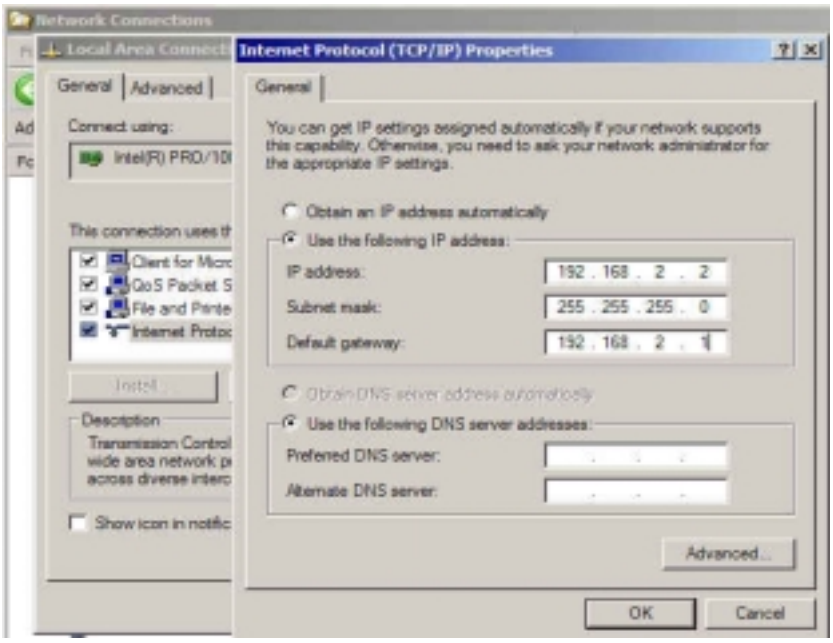


Figure 6-8: Disk Defragmenter

How to set XPE IP's

1. From the AMOS console VTM1 Terminal
2. Enter: ALT TAB to display the <AM8000 Diagnostics window>
    a. *Select*> Tools> [Control Panel]
3. In the <Control Panel> screen
    a. *Enter* **N** or ↓ to *select* {Network Connections} *Press* ENTER
4. In the <Network Connections> screen:
    a. *Press* ↓ *to highlight* {Local Area Connection}
    b. *Press* ALT **F** opens the < File> menu item.
    c. *Press* **R** for {Properties}
5. In the <Networking Properties> screen:
    a. *Press* ↓ *to highlight* {Internet Protocol}
    b. *Press* ALT **R** for {Properties}
6. In the <Internet Protocol (TCP/IP) Properties> screen, set the IP information as desired.

If you do not have a DHCP Server, do not check {Obtain an IP address automatically}. Instead, assign a permanent IP. This IP address is needed for Microsoft Printer and File sharing and for VNC access to troubleshoot system problems. For AMOS to initialize the packet driver, the XPE side must have an IP.



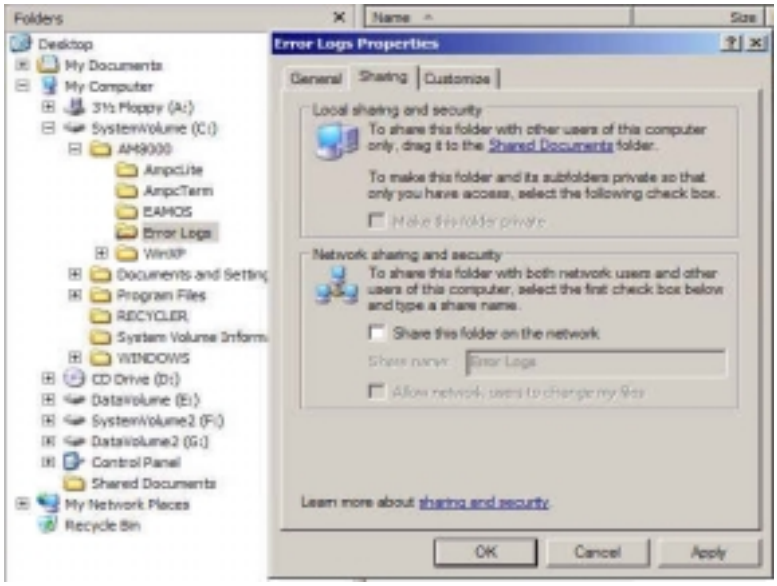
The sample on the left shows this, but your numbers will probably be different. Fill in the DNS addresses if you have any.

When you are done, *Select*> [**OK**]. The Server must be shutdown and restarted to install these changes.

Figure 6-9: Setting XPE's IP

Disabling Folder Shares

To disable a Folder Share use the <Explorer> Application. Search the folders for a little blue hand holding the folder name. In our example below {Error Logs} is shared. To turn off the share *right click* with the mouse cursor over the {Error Logs} folder. From the pop up menu, *Select*> {Sharing & Security}.



In the figure on the left, we clicked on the {Share this folder on the network} to Remove the check in the check box. *Select*>[OK] to finish the disabling procedure.

Figure 6-10: Disabling Folder Shares

Configuration for a Complete Network Firewall

Follow the procedure below to verify that the Network Firewall is enabled with **ALL ports disabled**. This procedure will place the machine setup back into the standard settings as shipped from Alpha Micro for all AMOS 8.x Servers. This firewall protects the XPE operating system from unauthorized intrusion. No ports are allowed. Do not allow any folders to be "Shared". By keeping the system folders "Not Shared", peer-to-peer viruses will be kept off of the Server.

1. From the <AM8000 Diagnostics> window
    a. *Select*> Tools> [**Control Panel**].
2. In the <Control Panel> Right Panel *double click Select*> [Network Connections]
    a. *Select*> [Local Area Connection] and [*Right Click*] and *Select*> [Properties]
    b. *Select*> [Internet Protocol (TCP/IP)] with left mouse click.
    c. *Select*> [**Properties]** button.
    d. The <Internet Protocol (TCP/IP) Properties> window will be displayed.
        i. *Select*> [**Advanced**] button.
    e. The <Advanced TCP/IP Settings> window will display. *Select*>[**Options tab]**.
        i. <TCP/IP Filtering> will be highlighted in Blue.
        ii. *Select*> [**Properties**] button.
    f. In the <TCP/IP Filtering > window.
        i. Verify that the <**Enable TCP/IP Filtering (All adapters)>** check box is **checked**.
        ii. Verify that the {**Permit Only**} for {**TCP Ports**} is **Checked.**
        iii. Verify that the <**TCP Ports**> Window displays NO Port Numbers **{ }**
        iv. If ports exist under that column, *Select* > the {port number} and *Click* on the [**Remove**] button.
        v. Verify that the {**Permit Only**} for {**UDP Ports**} is **Checked.**
        vi. Verify that the <**UDP Ports**> Window displays NO Port Numbers { }
        vii. If ports exist under that column, *Select*> the {port number} and *Click* on the [**Remove**] button.
        viii. Verify that the {**Permit Only**} for {**IP Ports**} is **Checked.**
        ix. Verify that the <**IP Ports**> Window displays NO Port Numbers { }
        x. If ports exist under that column, *Select*> the {port number} and *Click* on the [**Remove**] button.
    g. As shown in Figure 6-11, the <TCP/IP Filtering> application menu is configured for a complete firewall, no ports allowed for TCP, UDP and no IP protocols.
    h. *For the <TCP/IP Filtering window > Select*>**[OK]** button to **apply** these settings. To exit out of < Advanced TCP/IP Setting > *Select*>**[OK]** button.

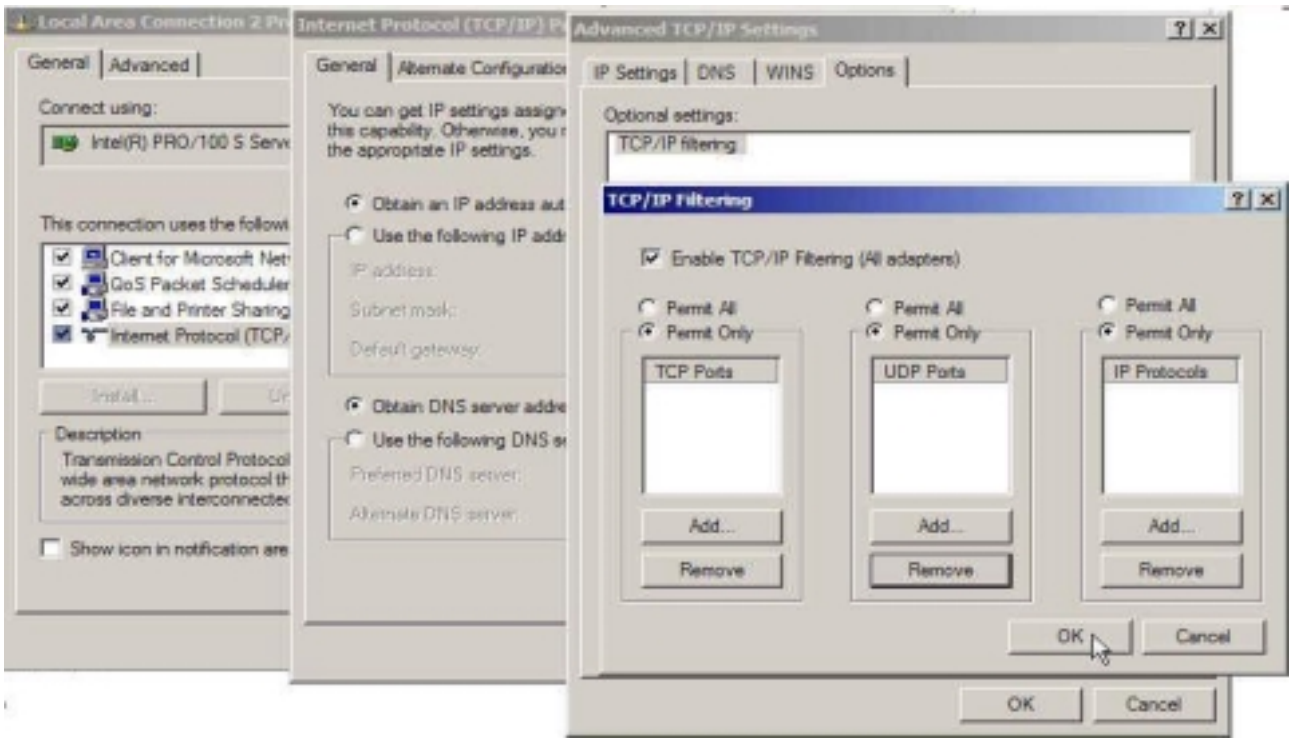
3. To exit out of <Internet Protocol (TCP/IP) Properties> *Select*> **[OK]** button.
4. To exit out of <Local Area Connection> Select> **[Close]** button.
5. This completes the Firewall Enabled section. If you made changes to the system settings, the system will reboot. If no changes were made, you're done.

6. Allow the system to re-start.

Figure 6-11: Complete Firewall Enabled

Network Firewall Changes to Enable Remote Access

The standard settings as shipped from Alpha Micro for all AMOS 8.x Servers is a complete Firewall. No ports are allowed through. Do not allow any folders to be "Shared" on the AMOS 8.x Servers. Keeping the system folders *"not shared"* will keep peer-to-peer viruses off the system. Having said this, let's first discuss what port numbers are needed to allow different access to the XPE side. The list below is a portion of the {Services} file in the Windows directory and shows some ports and their descriptions, which we may need to use.




```
domain          53/tcp                  # Domain Name Server
domain          53/udp                  # Domain Name Server
epmap           135/tcp    loc-srv      #DCE endpoint resolution
epmap           135/udp    loc-srv      #DCE endpoint resolution
netbios-ns      137/tcp    nbname       # NETBIOS Name Service
netbios-ns      137/udp    nbname       # NETBIOS Name Service (name lookup)
netbios-dgm     138/udp    nbdatagram   # NETBIOS Datagram Service (network browsing)
netbios-ssn     139/tcp    nbsession    # NETBIOS Session Service (file shares & printer sessions)
printer         515/tcp    spooler      # shared printers
                5900/tcp                # VNC access
TrueGui         8000/tcp                # AMOS TrueGuiPipe port
```

To enable VNC and allow peer-to-peer network access or network printing, the firewall must allow certain ports through. To set up the firewall to allow the VNC remote administration to function and peer-to-peer network access, follow the procedure below.

1. From the <AM8000 Diagnostics> window
2. *Select*> Tools> [**Control Panel**].
    a. In the Right Panel *double click Select*> [Network Connections]
    b. *Select*> [Local Area Connection] and [*Right Click*] and *Select*> [Properties]
    c. *Select*> [Internet Protocol (TCP/IP)] with left mouse click.
    d. *Select*> [**Properties]** button.
3. The <Internet Protocol (TCP/IP) Properties> window will be displayed.
    a. *Select*> [**Advanced**] button.
    b. The <Advanced TCP/IP Settings> window will display. *Select*>[**Options tab**].
        i. <TCP/IP Filtering> will be highlighted in Blue.
        ii. *Select*> [**Properties**] button.
    c. In the <TCP/IP Filtering > window.
        i. Verify that the <**Enable TCP/IP Filtering (All adapters)>** check box is **checked**.
        ii. Verify that the {**Permit Only**} for {**TCP Ports**} is **Checked.**
        iii. Verify that the <**TCP Ports**> box displays Port Numbers {**137 and 139 for peer to peer network access, or only port 5900 for VNC remote administration}** **{**You may add port 53 if DNS is needed, but most sites do not need this port.}
        iv. If not, under that column *Select* > [**Add**] button and fill in the missing numbers.
        v. Verify that the {**Permit Only**} for {**UDP Ports**} is **Checked.**
        vi. Verify that the <**UDP Ports**> box displays Port Numbers {**137,138**} for peer to peer network access.
        {You may add port 53 if DNS is needed, but most sites do not need this port.}
        vii. If not, under that column *Select*> [**Add**] button and fill in the missing numbers
        viii. Verify that the {**Permit Only**} for {**IP Protocols**} is **Checked.**
        ix. Verify that the <**IP Protocols**> box displays NO Port Numbers { }
    d. *For the <TCP/IP Filtering window > Select*>**[OK]** button to **apply** these settings

4. To exit out of < Advanced TCP/IP Setting > *Select*>**[OK]** button.
5. To exit out of <Internet Protocol (TCP/IP) Properties> *Select*> **[OK]** button.
6. To exit out of <Local Area Connection> *Select*> **[Close]** button.
7. This completes the Firewall Enabled section. If you made changes to the system settings, the system will reboot. If no changes were made you're done.
8. Allow the system to re-start.

If these settings do not work for you try adding TCP port 53. Remember that the system is now open but restricted to the above ports. When you are done with remote administration, it is a good idea to remove the ports defined above to re-enable the complete firewall protection. If you are having problems with DNS, you may enable IP Protocols by selecting {Permit All}. An alternate is to only add IP Protocols 0,1,6 and 17.

To test the VNC connection use the procedure titled "Remote Administration".

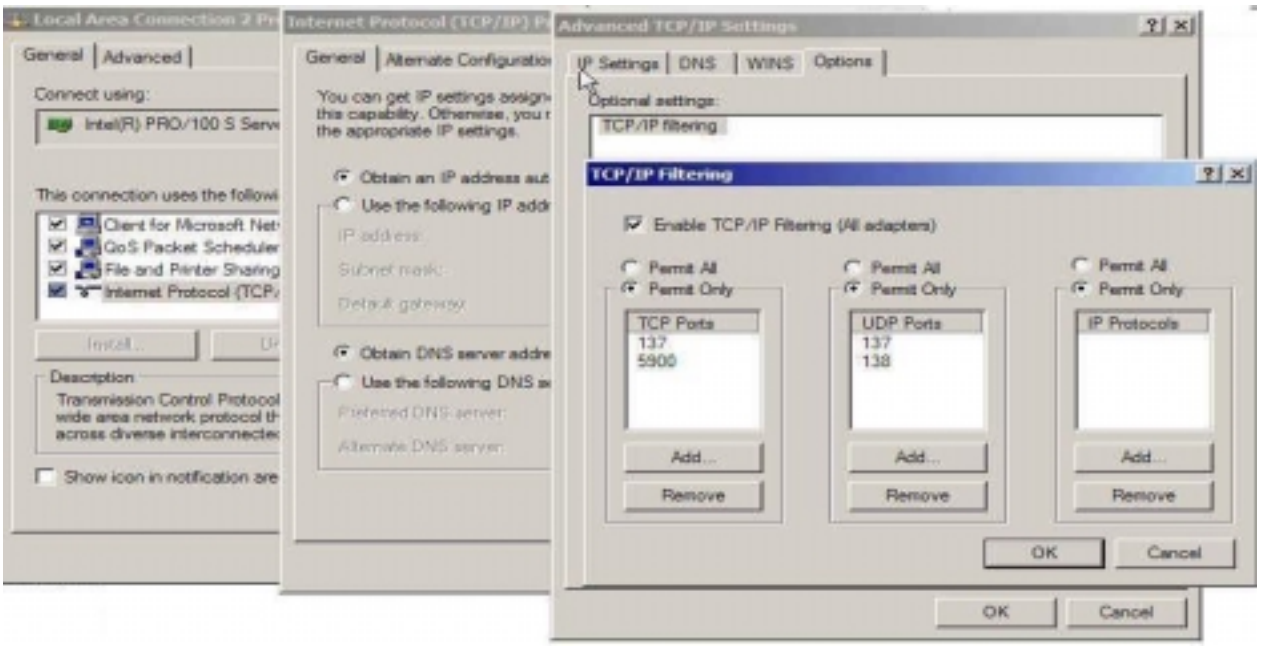


Figure 6-12: Firewall Enable for VNC to Function

Remote Administration

AMOS 8.x Servers may be remotely managed with the **UltraVNC** program. UltraVNC software allows a Virtual Network Connection to the XPE side of the Server. This allows the VAR or system administrator to configure or make minor system changes without being at the Console Terminal. To allow this access, an Ethernet network must be used. The network router must allow TCP port 5900 to pass through. The IP of the XPE side of the Server is what the remote administrator connects to. The remote system must install the UltraVNC viewer and provide the Server's password to gain access to the AMOS Server.

UltraVNC uses the XPE side's IP address, not the AMOS IP address. The default password to the AMOS 8.x Servers is: { **am8k** }. This 4-character password is case sensitive.

To install the UltraVNC viewer on the Remote PC, *browse* to the {C:\AM8000\WINXP} folder. Find the program named "UltraVNC-100-RC18-setup.exe". Transfer this file to your remote PC that is running Window 2003, Windows 2000, or Windows XP. Execute the setup program on the remote system. This will install the help files, PDF files, and the Server and viewer programs. Follow the instructions this program displays.

To gain access to the AMOS 8.x Server, each system has a unique access name in the following formats:

S2AM8Ksn0100	; for Series II AM8000 serial number 0100
AM8000-Sn0075	; for Series I AM8000 serial number 0075
S3AM8KSn0100	; for Series III AM8000 serial number 0100
S3Eagle800Sn0101	; for Series III Eagle 800 serial number 0101
Eagle800-Sn0035	; for Series I Eagle 800 serial number 0035
S2Eagle800sn100	; for Series II Eagle 800 serial number 100

- To change the default password, follow the UltraVNC Server documentation or reinstall the UltraVNC software on the AMOS 8.x Server. Input the new password when the installation program asks for it.
- To terminate a VNC session *Select* >[X] in the VNC program window.
- To disallow VNC access, remove the TCP port 5900 from the network firewall properties.

Defining a Local Workgroup

The AMOS 8.x Server should be part of the local work group so it may be located easily. To change to your installation's workgroup, execute the following procedure:

1. In <Control Panel>, *Select*> [**System**] and *left double click.*
2. The <System Properties> menu will display. *Select*> [**Computer Name**]
3. *Select*> [**Change**] button to
4. Display the <Computer Name Changes> menu.
    a. In the Member of box, the {Workgroup:} input box will display "**APD**"
    b. *Type over* this entry with (**your local workgroup**) name.
    c. *Select*> [**OK**] button. XPE will then join the local workgroup you entered.
    d. *Close* the <System Properties> by *Select*>[**OK**]
    e. *Close* the <Control Panel> *Select* > [**X**]

Browse the {My Network Places} from the <Explorer> application, locate and *double click* on {Microsoft Windows Network}. Under this selection, find the new workgroup name you entered. Double click on that new name. Under this selection you should see the S1AM8000Sn075 or S1Eagle800Sn035 system name along with other systems or workstations in the local workgroup. {Your system will have a different SN000}.

PC Serial Port Installation and Renumbering Procedure

This procedure is required only when you add in a new PCI or USB serial interface to the system. When installing the %Ports_Class%, the driver takes up the next COM port assignment (usually port 3) even though the %Ports_Class% doesn't use COM3. This procedure is for a four-port card. If you are installing an 8-port card, just repeat the reassignment for ports 7 to 10. If you install the second 8-port card, the driver will take COM 13 and you must reassign the ports from port 11 to 18.

1. When the System displays the <5-SEC count down>, *Press* ESC on console keyboard.
2. In < Task manager > *click* on [**NEW TASK**]
    a. In the {Task Box} *type in* (**EXPLORER**) (**Enter**)
    b. Minimize the Task Manager box; *click on* [_] in the upper right hand corner.
3. In the <Explorer application>
    a. *Select*> [Folders] in Task bar to Split screen.
    b. *Select* > [Control Panel]
    c. *Select*> {System} and *double click.*
    d. *Select* > [Hardware> [**Device Manager**]
4. <Device Manger window> Find *the Yellow? under* {MultiFunction Controller}
    a. *Select*> Yellow **?** mark, [unknown hardware], right *click* [**Select Update Driver**] button.
    b. *Select*> {Install from a List or Specific Location (Advanced)} *Select*> [**NEXT**]
    c. Deselect Search Removable media, *Select* > **Browse**>

In the Pull down box, *Browse to* **C:\AM8000\WinXP\ESC100**

a) *Select*> [**OK**]
b) *Select*> [**NEXT**]

d. Let the driver install, *Select*> [**NEXT**] when asked.
e. Now Select under ports *right click Select*> [**UPDATE Driver**]
f. Install from the Recommended Location. *Select*> [**NEXT**]
g. When done *Select*> [**Finish**]

5. When the <Device Manger> is finished, the system should have
   PORTS [COM1] [COM2][COM3][COM4][COM5][COM6]
6. If the ports are numbered 1,2, 4,5,6,7 the ports must be reassigned sequentially.
   a. *Select*> [COM4] *right click* > *Select*> Properties>
   b. *Select*> [Port Settings]
   c. *Select*> [Advanced] button.
   d. *Select* the Com port number [DOWN ARROW]
   e. *Move the Scroll bar up* with the Mouse.
   f. Find and *Select*> [COM3] and *Select*> [OK]
   g. *Select*> [OK]
   h. *Select*> [COM5] *right click* >Select Properties>
   i. *Select*> [Port Settings]
   j. *Select* >[Advanced]
   k. *Select* the Com port number [Down Arrow]
   l. *Move the Scroll bar up* with the Mouse.
   m. Find and *Select*> [COM4] and *Select*> [OK]
   n. *Select*> [OK]
   o. Now *Select*>[COM6] *right click* > *Select*> Properties>
   p. *Select*> [Port Settings]
   q. *Select*> [Advanced]
   r. *Select* the Com port number [Down Arrow]
   s. *Move the Scroll bar up* with the Mouse.
   t. Find and *Select*> [COM5] and *Select*> [OK]
   u. *Select*> [OK]
   v. Now *Select*> [COM7] *right click* > *Select*> Properties>
   w. *Select* >[Port Settings]
   x. *Select*> [Advanced]
   y. *Select* the Com port number [Down Arrow]
   z. *Move the Scroll bar up* with the Mouse.
   aa. Find and *Select*> [COM6] and *Select*> [OK]
   bb. *Select*> [OK]

1. *Close* <Device Manager> with the [**X**] in the upper right with the mouse.
2. *Select*> [**OK**]
3. In the <Explorer > application
   a. *Find* and *Select* the {C:\AM8000} Folder.
   b. *Find* {**Configure AM8000**} and *double click*.
4. In the <AM8000 Configure window>
   a. *Select*> [Serial Ports] Tab.
      Make sure that the serial ports are sequentially numbered from 1 to 7 in the left box. If they are not, you must redo the port assignment task above again.
   b. If all is correct, then *Select* with the mouse and *Drag COM3* in the left box and *Drop onto COM3* assignment in the *right box*.

   c. Repeat these steps for PORTS 4, 5, & 6. (or, as many as may be needed)
   d. *Select*> [**OK**]
   e. *Select* >File >[**Exit]** and [Quit]
5. *Select* your TEST.INI file in the AM8000 folder
   a. Add the PCCOM ports
   b. Add the TRMDEF, JOBALC, SETJOB statements.
   c. *Finish and Save* your TEST.INI file.
6. *Create* a Short Cut in the {AM8000} folder.
   a. *Copy and paste* {E810Sio.Boot} into the {AM8000} Folder
   b. *Right click and Rename* the copy to `E6Sio.Boot` or new name you choose.
   c. *Right click and Select* [Properties].
   d. In the Shortcut Target line *Place cursor over* the /L:E10SIO.INI and Type (`E6SIO.INI`)
   e. *Select*> [**OK**]
7. *Double click* on the boot shortcut and verify that COM1 through 6 are scanned and are assigned to an AMOS port.
8. Test all new COM ports with serial devices and verify operation, then you are done.

GHOST SOFTWARE

To enter the Ghost utility software from the <Diagnostic> window, *Select*> Tools> Ghost and *left click*. The <Norton Ghost Basic> menu will appear, as shown in Figure 6-13.

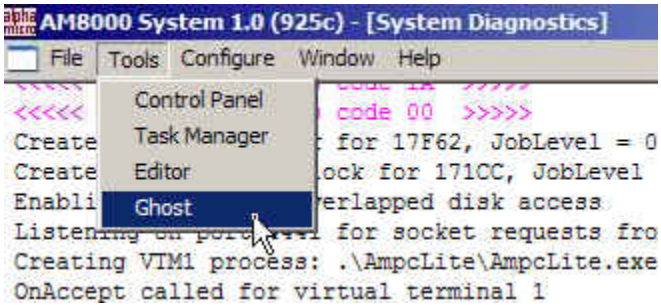


Figure 6-13: Selecting Norton Ghost

From the menu in Figure 6-14, the system administrator can Backup, Restore, and View the Backup log files. Selecting Ghost utilities allows access to the Ghost Explorer. This utility can inspect the Ghost backup files on CDs or disk files. A specific file can be restored out of the compressed Ghost backup by selecting the file name and right click. A popup “Restore To” destination input box will display. With the browse button, select a location to restore the file. Remember that Ghost cannot restore a file if the same filename is open and in use. This could be the case if AMOS is up and running and you selected the **AMD** disk file that the system is booted from. You will not be able to restore the disk file to the original location with the same name. You must select a different location or different folder name. Make sure you have enough disk space to restore the file to the restore location or an error will occur.

Before executing an Image Backup, you **must** shutdown the AM8000.Exe by *selecting*> File [Exit] or [X] and confirm with the [**Quit**] button.

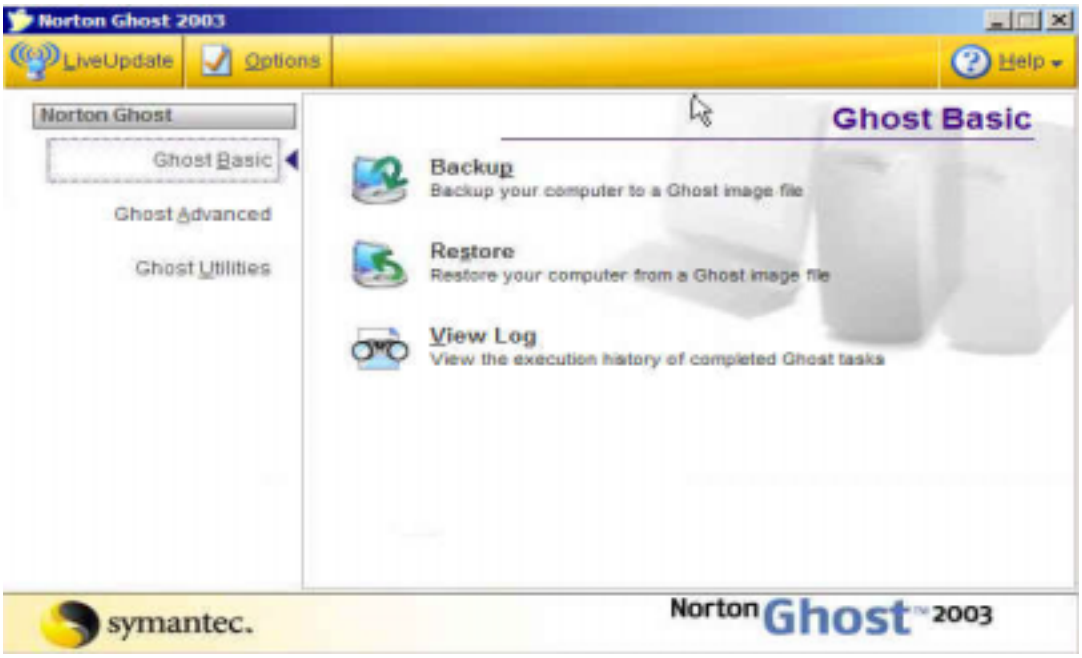


Figure 6-14: Norton Ghost Main Menu

When selecting the Backup option, this will backup entire disk volumes to a file or to CD media. Remember that this is an IMAGE backup of the hard disk. If selecting CD media make sure you have enough CDs to complete the data transfer. DVD-R media has 4.7 GB of space and a standard CD-R media has 700MB of space. Ghost actually backs up more data to the media because it compresses the output file. A typical CD-R media may contain about 940 MB of disk data. The DVD-R media may contain close to 6.4 GB of disk data. This will vary from system to system depending on the data itself. Since Ghost runs from PC-DOS, it creates files of 2GB in size. The Ghost program will span media and will ask the operator to insert the next CD if it cannot fit the backup onto one or more CDs. If you use a USB Disk subsystem the whole backup can be placed on this type of drive. The data transfer rate is a lot slower to the USB device. Please label each CD with the DATE and the Series number 1,2, 3 etc. so that when restoring you feed the correct spanned media when Ghost asks for it.

We strongly suggest that you read and study the on-line Ghost documentation. You may access this by *selecting* {Ghost Utilities} in the above window. Then *select* {Norton Ghost User's Guide}. This will launch the <Adobe Acrobat Reader>. If you have a network printer defined, this document can then be printed.

The restore procedure is easy once you understand Disks, Partitions, Source and Destination devices. This software does a complete image restore of the data that was backed up.

The drive size when performing a partition restore to the C: drive is **Critical**. If you type in a larger size, the extended partition on the same physical drive gets written over. This will destroy the data on the E: or D: drive, so be extremely careful and accurate.

The Ghost utility program is normally used to replace a bad system disk drive with a working copy of the AMOS 8.x software. When adding another disk drive to the Server and you wish to make an exact

working copy of the AMOS 8.x software, use the {Clone tool} under the {Ghost Advanced} heading. Please read the Norton documentation for the specific details.

Ghost Backup Procedure

This process will create a bootable DVD or CD disc with a restorable image of the AMOS Server's software. This backup is a completely restorable image of the hard disk partition. The administrator should create one whenever there have been changes to the Server's setup environment. The AM-8000 System configuration should be fully tested and stable.

The Ghost process is neither "automated" from the AMOS prompt nor "schedulable".

All users must exit AMOS, as this process will reboot the Server twice. The process takes about 15 minutes for each 1 GB of compressed data. Before loading your application software and data, a complete AM-8000 Server's System Volume will compress to about 950MB. {Except for RAID subsystems}. On most Eagle 800s, the system backup of the first drive takes about 600MB of space.

We strongly recommend using one or more DVD-R media for this process. At this time Norton Ghost 2003 will **not** backup to DVD+RW or DVD-RAM media. In addition, writing to a DVD-R is twice as fast as writing to a DVD+RW media.

Norton Ghost has many features and options. These backups also provide the quickest way to load new disks, including fully loading large partitions. In addition, individual, compressed **AMD** drives can be restored for later random access.

Please read the Norton documentation if you wish to deviate from this procedure. Used incorrectly, Ghost could DESTORY your data on the Bootable System Volume or other partitions. You must understand how Ghost defines disk drives and what IMAGE files are before you start writing to drives. The first level of Ghost documentation is available from the <Help> menu item on the Norton Ghost 2003 screen, which the following procedure opens. C:\Program Files \Symantec \Norton Ghost 2003\Ghost_Guide.PDF is a local copy of the Norton Ghost User's Guide.

1. *Press* ALT TAB *to select* <AM8000 System Diagnostics>
    a. *Press* ALT **T** *to open* {Tools}
2. <Tools > menu. *Press* ↓ *to* <Ghost> *Press* ENTER to start Ghost.
3. *Press* ALT TAB *to reselect* <AM8000 System Diagnostics>
    a. *Select*> File> [**Exit**]
    b. *Select*> [**Quit**] to close down AM8000. Make sure users are logged off. AMOS must be shut down to perform the Ghost Backup.
    c. <Norton Ghost 2003 > The <Help> item is in the upper right corner of this screen.
4. <Norton Ghost > application window. {Ghost Basic} item is selected.
    a. *Press* TAB *to Select*> {Backup}, *Press* ENTER
5. <Backup Wizard> application screen. <**Next** > is highlighted, *Press* ENTER
6. <Backup a disk or partition > <**Source**> {we will do just the C partition in this example.}
    <Disk 1 > is (**Selected**) with
    <System Volume (**C:**) > & <Data Volume (**D**:) >
    {You could select both platters, which will backup the whole disk drive, but not in this example}.
    a. With the mouse only *Select*> {**System Volume (C:)**} for this example.

b. On the <Destination > menu side. {*Select* either File or Recordable CD or DVD}
   a. {* File} *Press* ↓ The dot should also move down.
   b. {* Recordable CD or DVD} *Press* ENTER *Does a* <Next>
c. <Create a new backup image > If you like, change the description in the Image description box, type in what is being backed up, the version # and patch level. The date is already displayed.
d. *Press* TAB *to Back and again* TAB *to*
e. <Next > is highlighted, *Press* ENTER
f. <Advanced Settings > screen will display.
g. <Next > is highlighted, *Press* ENTER
h. <Norton Ghost task summary >

Check to see if all looks right. In particular, check the "Approximate size of backup image". If this is over 4000 MB, you may need more than one DVD-R. If using CD-R, then 900 MB of disk data will compress down to the 700MB space on the CD-R media. If your backup is larger than this, you must have more than one CD disc.

CAUTION: When you press ENTER, the system will start a reboot to DOS process. Please be sure all the AMOS jobs are ready to shut down.

7. <Run Now > is highlighted, *Press* ENTER
   a. <Norton Ghost > application screen
   b. <OK> is highlighted, *Press* ENTER

The AMOS Server will now shutdown and restart, booting into PC-DOS to run Norton Ghost. It is important to remember that WHITE letters indicate highlighted items.

<Norton Ghost 2003> application will display. DO NOT TOUCH THE KEYBOARD OR MOUSE.

Ghost should start the backup process automatically unless there is a problem. Ghost will eject the media when it is done, so be sure to leave the door open on the AM-8000 chassis. This should take about 3 minutes for every 1 GB of compressed data written to the DVD-R.

If the backup does not fit on one disc, Ghost will eject the disc and ask for another. When the Ghost backup is complete, the CD will eject, and the system will automatically reboot into AMOS. You can let users back onto the system unless you choose an "Image Integrity Check".

Optional Image Integrity Check

For an extra check of the quality of the backup, the system administrator can do an "Image Integrity Check". This process, like the backup, requires all users be logged off since the Server will reboot into PC-DOS. The integrity check almost takes as long as the original backup. Use the numbered procedure below:

1. *Press* ALT TAB *to select* < AM8000 System Diagnostics>.
   a. *Press* ALT **T** *to open* {Tools}
   b. *Press* ↓ *to select*> {Ghost} *Press* ENTER
2. *Press* ALT TAB *to select*> < AM8000 System Diagnostics>
   a. *Select*> File > [**Exit]**
   b. *Select*> [**Quit**] to close down AM8000.

3. The <Norton Ghost> application will still be on the screen. {Ghost Basic} is displayed.
   a. *Press* ↓ *to* {Ghost Advanced } *Press* ENTER
4. <Ghost Advanced > menu display.
   a. *Press* (**I)** for {Image Integrity Check}.
   A. <Image Integrity Check Wizard > application screen.
      a. <Next> is highlighted, *Press* ENTER
      b. The input box for the Image filename will display <Image file name:>
      c. *Press*
      d. Press TAB *to* <Browse> button and *Press* ENTER.
      e. <Open> application box will display.
      f. Browse with the mouse to the correct device the E: CD-DVD drive. Then *browse* to find the GHO image file and *select* it.
      g. When the file is highlighted, *Select*> [**Open**] button.
      h. The image description box should appear with the description of backup.
      i. *Press* ENTER
      j. <Next> is highlighted, *Press* ENTER
      k. <Next> is highlighted, *Press* ENTER no Advanced settings changes.
      l. <Run Now> *Press* ENTER

From this point, it runs like the backup. In general, ***Press No Keys!*** Normally, the only human intervention needed is to change discs if this was a multi-disc backup.

Ghost Explorer

The Ghost Explorer gives the system administrator the ability to restore files out of a Ghost backup file (GHO).

There are a few restrictions for this process. Please refer to the "Norton Documentation." Any open file, such as (*.**AMD**) files cannot be restored to the hard drive if the <AM8000 program> is active and it is using the disk file. You must [**QUIT**] the AM8000 program to perform the restore. Other files like AM8000.EXE and the terminal emulators also have this restriction. The XPE system files that are open also have the same restriction.

If the operator selects another folder destination on the hard drive, the Ghost Explorer will extract and restore the file, but only if there is enough disk space left on the disk volume selected. {See the Ghost user Manual for more information.}

Ghost Restore Procedure

The Ghost Restore process is normally used when a new replacement hard drive is installed. All system settings and configuration settings must be re-entered for the Server installation. The AMOS Bootable Recovery CD shipped from Alpha Micro has the default settings and the original disk files. Any patches or Customer data applied to the Server after installation will be missing.

The system administrator should perform a Ghost backup to a file of the C: SystemVolume any time there is a configuration change to the Server. This up-to-date backup will then have all the information about the specific installation. Then this backup should be copied to alternate media and labeled for future use.

If the boot **AMD** disk file was on the first disk partition, then the installation's **AMD** disk files will have to be regenerated and the application software MTURES'ed back onto the drive. If the system administrator places the AM8000.AMD boot disk on the D drive, it will also have to be restored from the D: GhostBackups. After a Ghost restore to a new disk drive, if you have additional backups of just the **AMD** disk files then you are safe. These **AMD** files will need to be copied to the correct locations and then Configured in the AM8000 program as described in Chapter 3.

System Software Load from Ghost CD or Disk Image

The numbered procedure below is used to load any hard drive with the AMOS 8.1 Bootable Recovery CD. At the Console, follow the procedure by executing the Keyboard commands. Read the screen titles and responses and take the appropriate action.

Please be very careful with this procedure while entering the C: System Volume disk size when performing a Partition restore. If the disk size is larger than what the hard drive was partitioned for originally, the data on the D: DataVolume drive will get written over! Doing a Disk Restore will also delete the data on the D: DataVolume if the drive was already partitioned. For an empty drive you must do a Disk restore to correctly write the boot sector and drive partition table on the drive to make it bootable.

1. Power system up, place the Bootable CD in the drive and boot the system from the CD/DVD drive.
2. The Console Screen will display
   < Press any key to BOOT from CD/DVD> *Press* SPACE
3. The first screen displayed is < About Norton Ghost> will ask for <OK> *Press* ENTER
   Note: Anything that is highlighted in White is the command that is *selected*.
4. In the <Symantec> menu is selecting <LOCAL > *Press* ENTER .
5. The <Action menu> {DISK} *is highlighted.* Selecting DISK will overwrite all partitions on the Drive selected. Either *Press* ↓ *to* select {Partition} or *Press* ENTER for Disk.
   a. **If selecting** a Disk Restore, in the <Disk menu> *Press* ↓ twice *to select* {**From Image}**, then *press* ENTER
   b. **If selecting** a Partition Restore, Press ENTER to select the <Partition menu> *Press* ↓ twice to *select* {**From Image**}, then *press* ENTER.
6. <Image file Name to Restore from> menu
   a. *Type* SHIFT TAB *to select* < Look in: ><A> press ENTER
   b. Now a pull down menu shows all drives. We must select the { @CD-R drive } or *press* ↓ to select the DataVolume which contains an image save of the C System Volume. *Press* ↓ to select {GhostBackups} and *press* ENTER. The filename of the C volume will have a name like *S3Eagle800sn100VolC.gho*, ↓ to select the most current dated file and *Press* ENTER if not skip this step and select the CD-Rom drive. Go to step 8.
   c. Or *press* ↓ *to* < **@CD-Rom**> *press* ENTER. <Ghost CD/DVD Image> is highlighted in the main window. *Press* ENTER. Go to step {**9**}.
7. For a Partition Restore: If you had selected this option the next menu will be
   <Select source partition from image file> and will display
   {Part 1, Primary, Id=07, Description NTFS, Label SystemVol1, Size 5004} for Series 2
   for Series 3 Eagle800 size is 7577 . For S3-Am8000 size is 7569.
   a. *Press* TAB to select [Ok] and *press* ENTER to continue.
   b. Or *Press* ↓ to select the correct physical drive
   c. Or *Press* ESC to quit.
8. For either a Disk Restore or Partition Restore. The next screen will display
   <Select local destination drive by clicking on the drive number>

If you have more than one drive they both will be displayed so be careful which drive you are selecting.

a. Drive 1 is highlighted either *press* TAB *to select* or
b. *Press* ↓ to select the correct drive number.
c. To select {**OK**}, *press* ENTER.

9. For a Disk Restore skip to the step {**11**} for a Partition Restore the menu will say;
<Select destination partition from Basic Drive: 1>
Either you will have 1 or 2 partitions, Select the Primary one and *press* ENTER.
Skip forward to step {**13**}
10. For Disk Restore. In the <Destination Drive Details> menu
{1 Primary NTFS, Disk Load, New Size 39197} (the size for S3Am8000 is 70007, for S3Eagle800 the size is 152626) an input box is highlighting the New Size or use the Old size number which the drive was partitioned for which is displayed on the right.
{In Destination drive details} –
BACKSPACE to delete new size and *type* in (**your number)** if the number displayed is wrong.
Type the number written on the left side of the CD label. Examples below:
C:**5004** is the S1 & S2 Eagle 800 Volume size.
C:**19602** is the S1 Eagle 800 Volume size for early systems.
C:**19092** is the value of some Eagle 800 Internal RAID systems.
C:**4251** is the S1 & S2 AM-8000 internal drive volume size.
C:**7577** is the S3 Eagle800 internal drive Boot volume size.
C:**7569** is the S3 AM-8000 internal drive Boot volume size.

Press ENTER. If the drives were resized during the manufacturing phase, the new number will be written on the CD label. If the number being entered is larger than the original C: drive size, the next partition the D: drive will get written over and you will loose the D: drive data. Be very careful and accurate. For S1 & S2 systems the drive letter was E:
11. *Press* the TAB key *to select* {**OK**}, *press* ENTER.

12. The message box will display and ask
<Proceed with disk restore?
Destination drive will be permanently overwritten>

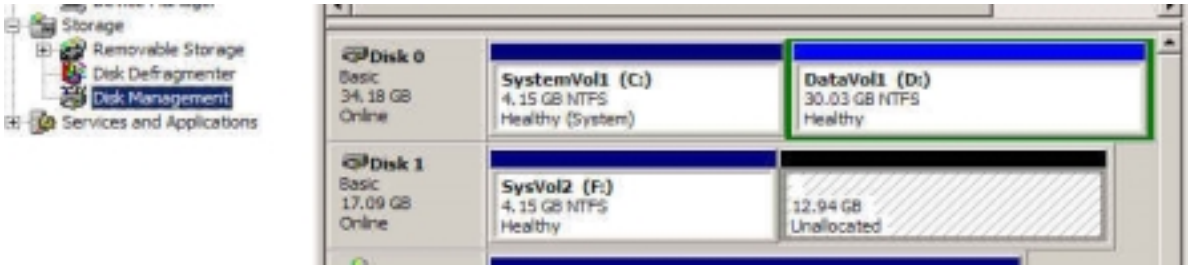
13. Now to start the <Norton Ghost restore>, [No] is highlighted so you can cancel this operation if you wish. *Press* the ← *to* {**YES**}, then *press* ENTER to execute the Restore.
14. Allow the Ghost Software to restore the data. This takes about 10 minutes for the first logical. After the drive is loaded from CD, Ghost will ask to <Reset Computer> *Press* ENTER and allow system to restart.
15. *Eject* the CD and remove it. Place it back in the storage jewel case.
16. When the system restarts, *press* the ESC key on the keyboard during the 5-second count down.

Execute the windows <Explorer> application and inspect the C: and D: volumes. If the drive was empty, the operator must initialize the D: DataVolume drive as described earlier in this document.

New drives – After a Ghost Partition Restore, Initialize Second Logical Partition Procedure

1. From the <AM8000 Diagnostic > window
a. *Select*> Tools> [Control Panel]
b. *Select*> [Folders]

2. In the right panel, *double click* on [**Administrative Tools**]
3. In the right panel, *double click* on [**Computer Management**]
4. A new screen <Computer Management>
    a. *Find* {Under Storage} *double click* on [**Disk Management**]
5. <Disk Management> application
6. For the Disk 0 drive you should have a {C:\SystemVolume} in Blue.
7. To the right of C: you may have an {unallocated black box {12.94GB} = for S1AM-8000, or S1Eagle 800= {34GB}



8. *Move the mouse cursor over the Back bar* and [**Right Click**].
9. *Left click Select* > [**New Partition**]
10. The < New Partition Wizard> will display.
    a. *Click* on [**Next**]
    b. *Select*> [**Extended Partition**]
    c. *Select*> [**Next**]
    d. For the S1AM-8000 the partition size is {13249 MB}; leave it alone, *Select*> [**Next**]
    e. For the S2AM-8000 the partition size is {30749 MB}; leave it alone, *Select*> [**Next**]
    f. For the S3Am8000 the partition size is {62432 MB}; leave it alone, *Select*> [Next]
    g. For the S2 Eagle 800 the partition size is {34200 MB}; leave it alone, *Select*> [**Next**]
    h. For the S3 Eagle800 the partition size is {145047 MB:; leave it alone, *Select*> [**Next**]
11. <Completing the New Partition Wizard> will display *Select*> [**Finish**]
12. Now we must allocate the free space as the [D:] drive. *Move mouse over the Light* Green bar and [**Right Click**].
13. In the < New Partition Wizard>
    a. *Select*> [**New Logical drive**]
    b. *Select*> [**Next**]
    c. <Logical drive > is selected. This is what we want. *Select*> [**Next**].
14. <New partition Wizard> {Partition size} ={13249 MB} for the S1AM-8000, leave it alone
    {Partition size} ={30749 MB} for the S2AM8000, leave it alone
    {Partition size} ={62432MB} for the S3 AM8000, leave it alone
    {Partition size} ={34200 MB} for the Eagle 800, leave it alone
    {Partition size} ={145047 MB} for the S3Eagle 800, leave it alone
    a. *Select*> [**Next**].
    b. <Assign Drive letter> Allow [**D:**] and *Select*> [**Next**]
    c. <Format Partition> menu will display

    Only change the volume label to (**DataVolume**) {no space} with the keyboard.
    d. *Select*> [**Perform a quick format]** is checked.
    e. *Select*> [**Next**]
    f. *Select*> [**Finish**]. Allow system to format the drive in NTFS. Wait until Done.
15. Now close the <Computer Management > screen *click on* the **[X].**
16. In the <Explorer> application *Select*> [**D:\DataVolume]** and *left double click.*

a. In the white space in the right panel [**right click]** *Select*> [**New**]> [**Folder].**
b. A highlighted rename box will display {New Folder} *type over it with* (**AM8000**) (**Enter**).
c. In the white space in the right panel [**right click]** *Select*> [**New**]>[**Folder].**
d. A highlighted rename box will display {New Folder} *type over it with* (**Backups)** (**Enter**).

17. This completes this procedure. Use your incremental backups to restore the D: DataVolume. This can be done with the Ghost Explorer to restore data.

Chapter 7 - Hints, Restrictions & Shortcuts

MINIMUM SYSTEM CONFIGURATION INFORMATION

The AMOS 8.x Server must have the following:

- Keyboard, mouse & system console must be installed.
- Always boots into the VTM1 terminal as the console job.
- Always boots from an **AMD** disk file.
- One Hard Drive formatted in NTFS file system.
- The Windows XPE kernel is installed on the first boot drive.
- AM-113-xx Board with SSD must be installed for AMOS to boot.
- Minimum of 256MB of main system memory installed.
- One CD-RW or DVD-RAM drive installed.
- The minimum memory allocated for AMOS should be 64MB or greater.

MINIMUM BOOT CONFIGURATION

In the AM8000 Folder on the C: drive, the following files must exist to boot the Servers. Even though there are more files in the standard configuration and more directories, please don't experiment erasing any files in the preconfigured systems delivered from Alpha Microsystems. Only erase files, which you place in these directories. Please do not place any user files in the EAMOS folder.

```
C:\AM8000\AM8000.EXE
C:\AM8000\AM8000.MON
C:\AM8000\AM8000.INI
C:\AM8000\AM8000.AMD
C:\AM8000\AM8KSUB.AMD
C:\AM8000\CONFIG AM8000
C:\AM8000\BOOT AM8000
C:\AM8000\Default.aln
C:\AM8000\Install.cfg
C:\AM8000\MONTST.EXE
C:\AM8000\PCANDIS5.SYS
C:\AM8000\PCASP50.SYS
C:\AM8000\RAWETHER.DLL
C:\AM8000\PCANUSER.EXE
C:\AM8000\UmKw30.Dll
C:\AM8000\Umscsi40.Dll
C:\AM8000\Umkw50.Dll
C:\AM8000\Umscsi50.Dll
C:\AM8000\W32N50.Dll
C:\AM8000\W32N55.DLL
C:\AM8000\W32N55.INI
C:\AM8000\AMPCLITE    ;folder with all terminal emulator files
C:\AM8000\AMPCTerm    ;folder with all terminal emulator files
```

```
C:\AM8000\EAMOS            ; folder
C:\AM8000\EAMOS\EAMOS.MON
C:\AM8000\EAMOS\EAMOS.INI
C:\AM8000\EAMOS\EAMOS.AMD
C:\AM8000\Error Logs       ; folder
C:\AM8000\WINXP\           ; folder
C:\WINDOWS DOT NET 2.0 installed with VC++ 6.0 * 8.0 libraries
```

The Windows-XPE operating system folders, files and programs must be present for the Server to boot:

- `C:\Windows` and all its subdirectories and files.
- `C:\Program Files` folder and all sub-directories and programs.
- `C:\Documents and Settings` folder and all sub-folders files and programs.

Please don't erase any programs or files in these folders and sub-folders. The XPE operating system needs these to operate. The XPE kernel is small enough not to concern any person using the AMOS 8.x Servers. The basic size including AMOS and two AMD disk files is not much larger than 1.6GB in total size. The minimum size disk partition is 4.15 GB allowing room for log files, system updates and backups.

SWITCHING BETWEEN AMOS AND XPE

To switch between the VTM1 job and XPE system, press ALT/TAB on the console keyboard. This will display the <AM8000 System Diagnostics> window under the control of AlphaShell. From the <AM8000 Diagnostics > window, *select*> [Tools] to gain access to the {Control Panel}, {Task manager}, {Notepad Editor} or {Norton Ghost}. The Control Panel has been discussed in detail in Chapter 6. The Notepad editor can be used to change text files in the XPE environment. Norton Ghost is a backup and restore utility for disk volumes. The Task Manager is the XPE program that provides information about programs and processes running on the Server. It is also the gateway to the performance monitor. The performance monitor is useful (occasionally) but does slow down the system, so we advise against using this feature. The operator can load multiple programs and use the ALT/TAB keyboard command to select the correct task.

USING MULTIPLE VIRTUAL TERMINALS

You will find virtual terminals on the console very easy to use. Switching from one virtual terminal to any other is just like switching from one Window to another. As you switch from one virtual terminal to another, the processing continues for the task running on the virtual terminal you left. When using AMPCLiTE, to switch VTM jobs press (**Control**)+(**Tab**) on the console keyboard or use the *mouse to click* on the terminal session if the tiled display option is used. To select full screen *click* on the full screen box in the upper right hand corner of the VTM session. Or with the mouse, place the cursor over the window header and *double click*. When using AMPCTerm, *press* (**Alt**)+(**Tab**) to select the correct VTM job.

Many systems have been shipped with the Metropolis function keys enabled for AMPCLiTE. This will cause some function keys, such as Page-up, Page-down, Insert, and Delete, to not send the expected codes to AMOS. If Metropolis function keys enabled is not desired, from the AMPCLiTE window *Select*>Setting> Keyboard> [Miscellaneous] and *uncheck* the Metropolis Function Keys option. Before saving this setting, modify the terminal emulator and *select* one desired from the list. Then this setup must be saved to disk. From the AMPCLiTE window for the session displayed, *Select*> Session> [Save As] and the <Save As> window will appear. With the mouse *select* the {SessionX.Aln }file and *double*

click, *Select* the [YES] box with the mouse or *press* (**Enter**). Then the next time the system boots, the new settings will always be applied to that VTM session. If the settings are not saved, the defaults will be used.

As in any multi-tasking environment, be careful not to run conflicting tasks on multiple virtual terminals. For example, don't use one virtual terminal to run DSKANA to analyze the disk while another virtual terminal is editing a file on that disk, or you may damage one or more files.

See Chapter 3 for more information on setting up virtual terminals and choosing the terminal emulations they use.

RE-STARTING A VTM SESSION

If the operator accidentally closes one of the virtual terminal sessions, what do you do? The operator can restart a closed virtual terminal session without rebooting the system. Follow this procedure:

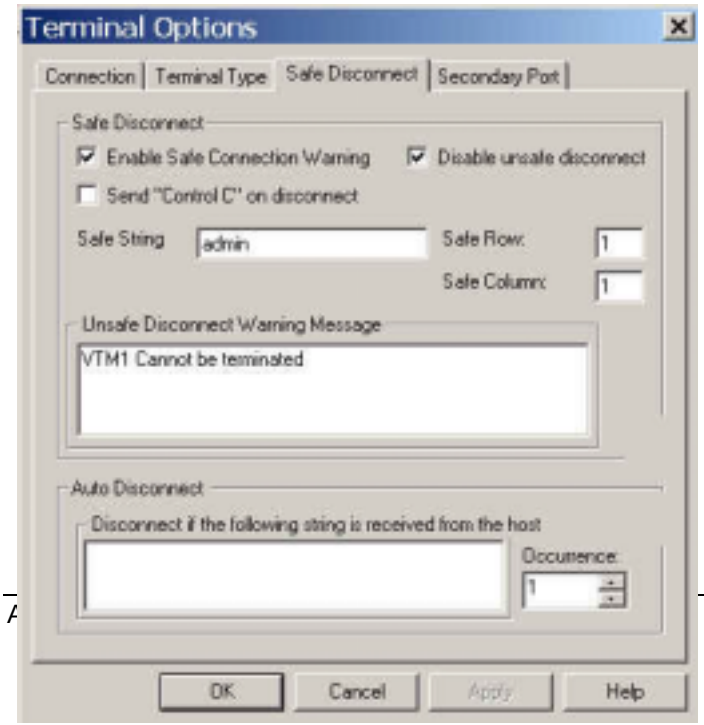
In the <AMPCLiTE window>, *Select*> [Session], and a pop-down window should display 8 boxes. The second from the bottom will list all the SessionX.Aln files in use or that have been used. Using the mouse, *Select* > [*Session1*], which was disconnected and *double click* to restart the VTM1 session. This should restart the session without having to reboot AMOS.

UNSAFE DISCONNECT

Some users may wish to enable the Unsafe Disconnect option of the terminal emulator. This will inhibit anyone from disconnecting the VTM1 terminal accidentally. Follow the procedure below to enable this feature for both terminal emulators.

To enable this feature from the AMPCLiTE window, *Select*> Settings> Terminal> [Safe Disconnect]

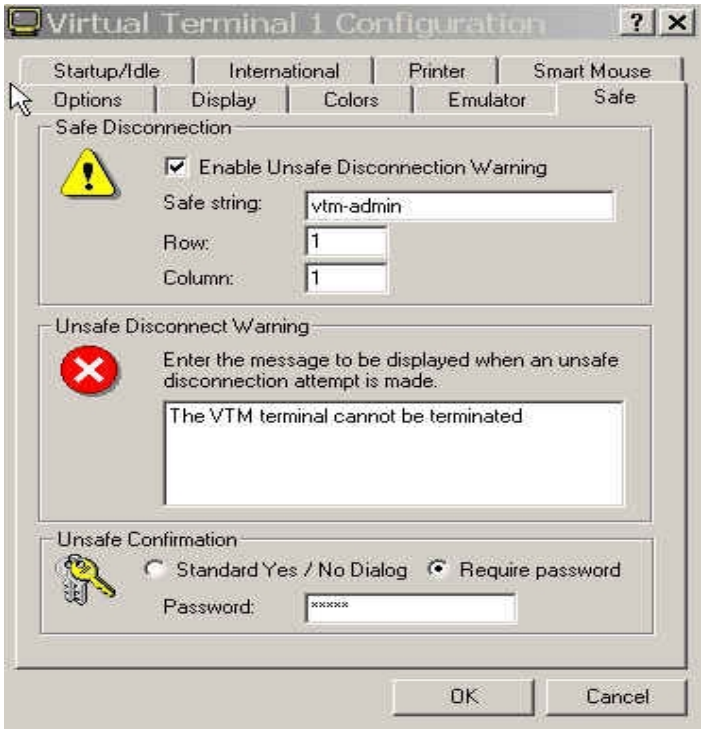
Then *check* the {Enable Safe Connection Warning}. Then *check* the {Disable unsafe disconnect}
For the {Safe String} *Enter (*admin*).*
For the Unsafe Disconnect Warning Message fill in
{VTM1 Cannot be terminated}.
Select> [OK]. Then *Select*> {Session} program option for the terminal emulator and Save Session1.Aln. This will write these settings to the disk.



For further information on this Click on {Help} from the AMPCLiTE screen.

Figure 7-1: AMPCLiTE Enable Unsafe Disconnect

To enable this feature from the AMPCTerm window, *Select*> Configuration> [Safe] tab.



Then *check* the {Enable Unsafe Disconnection Warning} checkbox.

For the {Safe String} *Enter* (**vtm-admin**).

For the Unsafe Disconnect Warning message fill in {The VTM terminal cannot be terminated}.

Then *check* the {Require password}
Fill in a Password: {admin} for example.

Select> [OK]. This will save the new settings in Virtual terminal1.zsc

For further information select the {Help} from the terminal emulator window.

Figure 7-2: AMPCTerm Enable Unsafe Disconnect

ALTERNATE TERMINAL EMULATORS

The AMOS Servers are not limited to just one terminal emulator for the console. The VAR can install other terminal emulators in a separate directory named for the terminal emulator. AMOS will index the

C:\AM8000\Install.CFG file to find which terminal emulator to use. If another terminal emulator needs special Fonts, these files should be installed into the "C:\Windows\Fonts" folder.

The terminal emulator AM8000 directory organization should be as follows:

```
C:\AM8000\AMPCLite      ; contains Ampclite.exe and all supporting files.
C:\AM8000\AMPCTerm      ; contains AMPCTerm.exe and all supporting files.
C:\AM8000\PcLink        ; contains the optional PcLink.Exe and all supporting files.
```

The {C:\AM8000\Install.Cfg} file is shown below. We have modified the standard one showing how to add the 3rd terminal emulator package. (PcLink is a custom package by one of our VARs).

```
[Settings]
DefaultEmulator=AmpcLite
[TerminalEmulators]
Emu1 = AmpcLite     .\AmpcLite\AmpcLite.exe %p
Emu2 = AmpcTerm     .\AmpcTerm\AmpcTerm.exe %p %t
Emu3 = PcLink       .\PcLink\PcLink.exe vtm%t
Emu4 = ALAN c:\Program files\UASystems\AlphaLan++9.0\Alan.exe /local %p vtm1.aln
```

RESTARTING AMOS AFTER EXIT

During the initial boot of the Server, there is no desktop as in XP-Professional. Instead, <**AlphaShell**> controls the Server. If the operator *double clicks* on the [AlphaShell] program box and *presses* the ESC on the console keyboard, the <Windows Task Manger> will appear.

Select the [AlphaShell] task with the mouse and *left click*, which will highlight the {AlphaShell} task in the <Task Manager> window, and *click on* the [**End Task**] button. This will restart AMOS 8.x with the default AM8000.MON and AM8000.INI. Then minimize or close the Task Manger.

Once the terminal emulator starts, the Alpha Micro banner will appear on the screen, followed by the system initialization file. The last statement in the initialization file is `MEMORY 0`. The AMOS system prompt (usually a dot) will then display, allowing the user to Log onto AMOS.

An alternate method is to execute Boot Shortcuts in the AM8000 folder. Alpha Micro has provided several different shortcuts. The two most commonly used are {**Configure AM8000**} and {**Boot AM8000**}. Their names describe what they do. The first will only bring up AM8000 in configuration mode and not boot. This uses the /C switch in the target line of the shortcut properties. The system administrator uses this mode to build new **AMD** files, add serial devices, map SCSI or IDE devices, etc. The {Boot AM8000} shortcut will execute with AM8000.MON and AM8000.INI.

BOOT SHORTCUTS AND SPECIFIC INITIALIZATION FILES

To boot with a specific AMOS initialization file from the XPE environment, simply use the AM8000.EXE /L:FileName option by changing the shortcut properties to include the following line:

```
AM8000.EXE /M:Monitor-file /L:Ini-file (xpe-side)
```

Ini-file is the initialization file (e.g. TEST.INI or AM8000.INI) or other filename. You must specify the file extension. Refer to the appendix for sample INI files.

The initialization file must exist in the C:\AM8000 folder under XPE if the /L switch is used.

{**AMSAFE.Boot**} shortcut will execute the AMSAFE.BOOT.MON and AMSAFE.BOOT.INI file. This is a minimal system configuration for trouble shooting the system if the current AM8000.INI has problems.

For Eagle 800 or AM-8000 Servers we provide {**E18SIO Boot**} will initialize 18 PC serial ports. You can create your own by copying and renaming one of the provided shortcuts. Select the shortcut and right click and select properties. Then change the boot INI in the target line.

GENERAL HINTS & RESTRICTIONS

The following list contains miscellaneous items to watch out for, which may not be AM-8000 specific:

- When working in the BIOS configuration, the flat panel screen may complain about the resolution and ask that you press buttons 1 & 2 to cancel the message. Buttons [1] and [2] are the first and fourth buttons from the left on the lower front of the flat panel.
- Serially connected PCs should always have the terminal emulator (ZTERM, AlphaLAN, etc.) running. (It should be in the PC's Start folder.) If the PC is powered on, but the terminal emulator is not running, it will signal the AMOS system to hold terminal output. In some cases this can (on any AMOS system) cause the boot or other processes to hang.
- The PARITY program is no longer supported because it was a hardware specific program.
- If the AM-3501 or AM-905-30 SIO subsystem is installed, its power switch must be turned ON.
- If the CMOS setup is configured to boot a RAID subsystem as the primary boot device, the RAID must be turned on. The RAID must finish the internal self-test and memory test before the AMOS Server will boot.
- Do not map your NTFS formatted SCSI Drive ID=0 on the AM-8000 or the NTFS formatted IDE disk drive 0 on an Eagle 800 to an AMOS disk device. This will corrupt the data on the drive and make the system not bootable.
- Always keep the system folders as NOT SHARED, which will keep viruses off the system. The only port that is shareable is the printer port.
- Level7 uses virtual console terminal 1 and cannot be used over a modem.
- Booting from tape is not supported. Booting a WRMGEN monitor is not supported. These are erased from the system with the ERAS8K.DO file in the OPR: account.
- Alternate booting is handled with multiple **AMD** disk files in any AM8000 folder on any disk drive. To access these files place the DSK device name in the device column on the AMOS disk tab option of the Configuration program. Save these settings. See Chapter 3.

- DCACHE should not be used with **AMD** disk files but should be used with AMOS Formatted SCSI disks. Using DCACHE with AMOS formatted devices improves disk performance. Using DCACHE with **AMD** disk files, which are already cached by XPE, degrades performance. If both device types are installed, use the SET NOCACHE dev: for the **AMD** disk files. Place a line for each **AMD** file in the AM8000.INI.

- There is no hardware status display. Status display numbers are shown in the system diagnostic window.

- The following have not been tried and functionality is unknown:

    - AMIGOS, OSEXEC, FORTRAN, PASCAL, COBOL, RJE

- The AM-8000's parallel port is not interrupt driven. Using it may degrade system speed.

- If upgrading from a system with two 2GB disks, DSK0: to 4 and DSK5: to -9: *Create* one 4GB **AMD** "pseudo AMOS disk" with a 10 logical split, giving DSK0: to 9: All of your software will work just the same.

- When 2 GB of memory or larger is installed on the AM-8000, only 750MB is actually usable by AMOS. This is a restriction of Windows XPE. Since 750MB is larger than the capacity of any previous AMOS system, this should not be a problem. XPE uses the extra memory for a disk cache buffer. We recommend a maximum of 512 MB for AMOS 8.x on AM-8000 systems. For Eagle 800s with smaller number of jobs, the maximum these systems need is about 256MB. For Eagle 800LCs the maximum these systems need is about 100MB.

- When using the DVD-RAM drive with MAKDVD or DVD programs, do not eject the media before executing a **DVD/U** to un-mount the media. Additionally, make sure that you are not logged into any DVD disk device when un-mounting the DVD-media. The job will be frozen {not able to log out} until the original DVD media is installed and mounted. The same is true for the MAKBD, DIRBD, DBRES programs with either BluRay or DVD-RAM media.

- VersiCOMM considerations: When using TRANS or RETRV with AMOS 8.0 on the remote system, use the /NOHOG switch.

- Within COMM, make sure JWAIT (upper right) is ON and that FLOW HW ON. Usually, this is handled in the TALK.INI with $FLOW ON and $JWAIT.

- With respect to AUTOLOG: "SLAVE.LIT" currently only works correctly on the PC-COM serial ports. Within AUTLOG, be sure to SET FLOW RTS as RTS/CTS hardware flow control is required for reliable behavior. Make sure the cabling supports the flow control signals.

- When MONTSTing, you may notice that the MONTST arguments get TODOS-ed to XPE. This provides backup copies and maintains consistency. When modifying the AM8000.INI file, always MONTST (or TODOS the INI) to update the XPE copy, especially the AM8000.INI, which is used by AM8000.EXE on the first boot.

- The MONTST procedure always transfers using the AMOS file name (6.3 format). Alpha Micro has provided backup copies of the original AM8000.MON. There is an AMSAFE.BOOT.MON and AMSafeBoot.INI in the AM8000 folder as an emergency backup should the AM8000.INI accidentally be erased. This allows the Server to boot and allows the user to TODOS the working AM8000.INI file.

- If during the boot the system hangs with "Initializing the AM-113-50 coprocessor" on the <System Diagnostics> screen, but it will Boot if the Server is NOT connected to the local network. The common cause is:

The system is looking for a DHCP Server on the network, which does not exist. On the primary physical Ethernet interface, there are two systems: AMOS and XP Embedded. Without a DHCP Server on the network, XPE will hang the AM8000.EXE boot.

In the standard system configuration, the XPE's "Network Connection" is set to "Obtain an IP address automatically".

AMOS and Viruses

AMOS 8.x uses Microsoft's XP Embedded® "XPE" operating system for many supporting services, including low level networking. Previous versions of AMOS have been immune to network related viruses.

Many VARs have inquired as to whether AMOS 8.x is now subject to certain virus risks using Microsoft software.

The answer is a simple one: Keep the configuration a purely AMOS system, and AMOS 8.x remains as immune as all other AMOS systems have been.

Specifically, AMOS 8.x uses the same AlphaTCP as other AMOS systems. Any new network-related virus weakness depends upon the Microsoft features we install and activate. We only install and activate Microsoft XPE features needed to support AMOS 8.x. There is no Microsoft Web Server, no Microsoft E-mail, etc.

The XPE firewall configuration

XPE includes a basic firewall. This firewall has no effect on AMOS 8.x network traffic but can be used to totally isolate the XPE from any network traffic. To block network viruses on the XPE environment, we now ship the AMOS Servers with the XPE Firewall enabled for all Ethernet Interfaces. We also disable the Microsoft File and Printer sharing. AMOS 8.x and AlphaTCP work fine without these services enabled. If the system administrator needs a particular function, we have described in Chapter 6 the procedures and ports that may be enabled by the system administrator.

Patches available from Microsoft

As patches are made available from Microsoft, we incorporate them into future builds. However, only a few even apply to the components we have installed. Because the XPE features are "locked down" at build time for each Server, the Server may have to be upgraded at the factory to install most patches.

Alpha Micro's Own In-House Experience

We configured our in-house "AM-8000.alphamicro.com" demonstration system, attached to the Internet, without any firewall for months in 2003. AMOS 8.x was never damaged nor compromised! Among the many attacks, the RPC Service attacks were the only ones that affected XPE. These attacks disabled (rather than opened) some RPC services, having no effect on AMOS 8.x and only a temporary affect on XPE

How To Make AMOS Virus-Proof

Please keep all system folders set to "Not Shared" to keep viruses off the system. For systems manufactured after March 5, 2004, do nothing. For systems manufactured prior to March 5, 2004, make sure the XPE Firewall is fully enabled and neither local XPE paths nor local XPE printers are configured for Microsoft sharing. See chapter 6 for this procedure.

XPE ADMINISTRATIVE UTILITIES

xAdmin utilities are now available on all systems. These AMOS utility programs provide quick shortcuts to XPE commands. The system administrator should be the only user to run these XCMDs. Most of these commands will only run on the VTMx terminals on the Console.

Some XCMDs must be run from the OPR: account, which can be password protected.

We strongly urge using SHUTDN, which will safely shut down the AMOS 8.0 server from any AMOS job. This utility will MONTST the AMOS Server and execute the SHUTDN.EXE program on the XPE side and power off the Server.

Most of these utilities are .DO files (and some BASIC programs), so feel free to create your own variations (with different names). Most of these commands include HELP files (HLP: *.HLP), and command /? will also provide help**.**

The xAdmin Utilities includes the following:

- ShutDn Shuts down AMOS, and powers off the system
- GoDown Does a MONTST and Shuts down the whole System
- xDir Lists XPE files
- xDel Deletes XPE files
- xRen Renames XPE files.
- xIPcfg Reports the XPE IP information
- xDisks Accesses the XPE disk manager
- xPlore Accesses the XPE Explorer
- xDot Accesses the XPE command prompt
- xCP Accesses the XPE Control Panel
- xCMD Creates additional XPE routines
- xTasks Accesses the XPE Task Manager
- xEdit Edits XPE files with MSDOS Edit
- xNoteP Edits XPE files using MS Notepad
- xAMD Handle the .AMD configuration
- InitM.DSK Initialize raw .AMD files (can only be used from OPR:)
- SysSN Get the system type and serial number
- PDF Using local .PDF files
- XCLRLG Clear XPE log files and empty the Recycle Bin
- Xerror Emails log files to support@alphamicro.com
- UPDPAS.Bat
- PASUPD.do These work together to provide and administrator password to the AM8000 configuration menu. If you do not use this command then anyone that has access to the console can change the AM8000 configuration. The password is stored in the Windows Registry.
- XBAKUP This new command allows the Customer to backup the AMD files to other Windows disks or other drive media.

Chapter 8 - Preventive Maintenance

The AMOS Server requires little care. However, preventive maintenance is an integral part of keeping any Server running at peak efficiency. To safeguard your investment, we recommend you establish a regular maintenance schedule for the system. Have your service technician check power supply voltages once a year to check the health of the system. Keep a record of the readings for future comparison. This can head off a power supply failure. Use the main board CMOS hardware monitor to find these readings. Each Server has the capability to display this information.

CD, DVD OR BLURAY MEDIA

In order to protect your data, the CD media must be handled and cared for properly. Depending on the model of drive installed in the Server, the DVD drive can read and write standard CD media as well as DVD media. A CD-RW drive cannot read or write DVD media.

Here are some important hints to remember:

- The recording film of the CD is under the top label. Never try to remove this label. If you do, you will destroy the CD.
- Treat CD and DVD media gently. Scratches, spills, and dirt and fingerprints can ruin them. Handle them by the edges. Do not flex this media, as that can cause various internal layers to start separating.
- Use a soft dry cloth to clean the disc. Do not use solvents. Always wipe from the hole to the edge
- Keep your CD Media in a dust-free environment, like the jewel case or envelope to store them. This helps them stay clean.
- Avoid temperature extremes. Do not expose CD-media to temperatures below 50 degrees Fahrenheit (10 degrees Celsius) or above 125 degrees Fahrenheit (52 degrees Celsius).
- Do not leave your CD next to a window where radiant heat from direct sunlight can cook them. This will warp the plastic and destroy them.
- CDs should be at about the same temperature as your computer.
- Only write on the top surface, and only with a Soft Felt Tip marker!

CD, DVD-RAM OR BLURAY DRIVE

The CD or DVD-RAM, BluRay drive tray needs to be kept clean of dirt and dust. Keep the tray closed when not changing media. Clean the tray with a soft dry cloth at least 4 times a year. Clean the face of the drive with a damp cloth to remove dirt from the door and eject button.

CARE OF STREAMING TAPE CARTRIDGES

A cartridge tape can store data from an entire disk, so it is worth taking care of properly. Here are a few tips to follow:

- Store cartridges with the write-protect switch in the SAFE position.
- Store cartridges on their edges, not laying flat. Storing cartridges flat can cause the tape to slip down on the hub and damage the tape edge.
- Keep magnets away from your tapes. Even weak magnets such as those in paper clip holders can erase data on a cartridge tape.
- Don't expose tapes to very high or low humidity (more than 80% or less than 20%).
- Cartridge tapes should be acclimated to computer-room temperature and humidity conditions before use. If the tape has been stored away from the computer, it should be returned to the computer environment at least eight hours before use. If it has been in a different environment for less than eight hours, it should be kept in the computer location for at least as many hours as it was away from it.

¼" STREAMING TAPE DRIVE CLEANING

It is important to clean the read/write head of your tape drive periodically. We recommend that you clean the drive every 100 hours of use. We also suggest that you clean the drive after using a new tape for the first time, and that you do a complete tape wind/rewind after cleaning. Clean the face of the drive with a damp cloth to remove dirt from the door and eject button.

When you need to clean your tape drive, use only a cleaning cartridge designed for your particular drive type. One is available from Alpha Micro, part number PRA-00229-00. Follow the instructions on the cleaning cartridge.

MAIN ENCLOSURE (STANDARD PEDESTAL STYLE)

The AM-8000 and Eagle 800 main enclosures are sturdy, painted sheet metal and plastic. Clean them as you would any other painted surface, using a gentle detergent on a damp soft cloth. Remember, however, that if any liquid makes its way inside the enclosure, severe damage to the computer could result. So, a light dusting is the safest cleaning procedure, and probably all the main enclosure will require.

Washable Air Filter Maintenance

The Server main enclosure contains a removable air filter mounted inside the lower half of the front bezel. This filter should be washed or cleaned at least twice a year. Not washing the air filter will result in higher system temperatures and possible stability problems. We recommend checking the air filter at least once a month initially. The frequency of checking will change, depending on system usage and on environmental conditions.

To access this filter, move the front panel of the computer over the edge of a table. Underneath the front bezel, as shown in Figure 8-1, locate two plastic fingers. Simply push the two latching tabs (one on each side of the access slot underneath the bezel) towards one another and slide the air filter down and out of the bezel. Carefully observe the orientation of the bezel so that you can re-insert it oriented the same way you removed it. Wash the air filter with soap and water, dry it thoroughly and re-insert it into the bottom of the bezel until the latching tabs click into place.

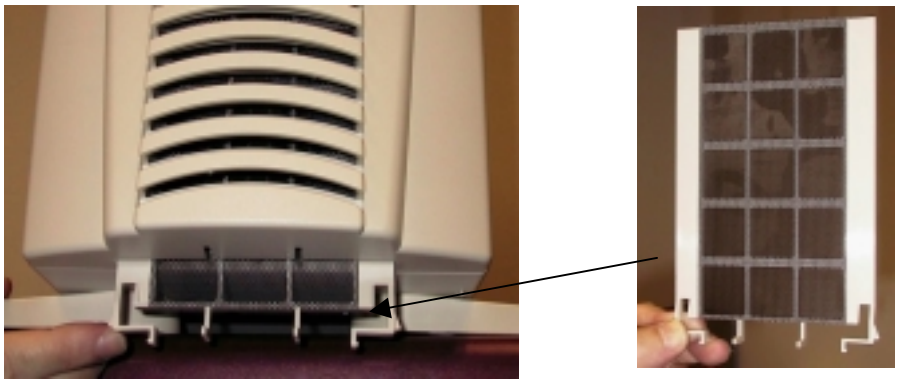


Figure 8-1: Air Filter Removal

The inside of the cabinet should be cleaned twice a year at a minimum. Do so with the system shut down and powered off. Only qualified Alpha Micro service technicians should do this. Service inside the cabinet, if done incorrectly, may damage the system and void the system warranty. Use a clean soft 1" paintbrush to remove dirt from heat sinks, fans, vents, cables and circuit boards. Use canned air to blow out dirt from the chassis and power supply. Use a soft cloth to remove any residue from the tape drive and the CD drive tray.

AM-8000 RACK MOUNT SERVER

The 4U-Rack Mount chassis has multiple air filters, which should be cleaned every six months. These filters are in the front door, and on both left and right sides of the chassis. Removing the filters requires a Phillips screwdriver to remove the screws holding the filter brackets in place. Remove the assembly and clean the filters with canned air or wash them and dry the assemblies. Reinstall the filter assemblies with the original mounting screws.

These chassis have 3 large fans and they move a lot of air, so the filters could get clogged quickly.

The side filters are mounted here.

Figure 8-2: AM8000-Rack Mount Server

To remove the power supply module, slide the latch above the power switch and toward the fans and use the metal handle to pull out the supply.

Figure 8-3: Optional Dual Redundant 400-Watt Power Supply Subsystem

Chapter 9 - Status Display Codes

When the Server boots, a series of codes appears in succession in the System Diagnostics display window. This information is presented here for the System Administrator's use. The diagnostic window has more information than the 2-digit display on previous Alpha Micro systems. If an error occurs during booting, it will display in Red, and a text description may follow. Normal AM-113-50 status codes are displayed in Magenta.

[AMOS Status Display: XX] Any program that writes to the FE00 status display has this message. This is displayed in Orange.

The older status codes that are active in AMOS 8.x are documented here. The status code is indexed on the left with **[xx]** double braces, and a description follows. Different programs in the system can also display a status.

Table 9-1: Diagnostic Display Status Codes

AM8000 AND RELATED PROGRAM - STATUS CODES

[01]	Start AM8000.MON
[04]	AM8000.Mon: Ran out of queue blocks!
[09]	AM8000.Mon: Memory parity error
[10]	The (.IDV) was not found in account [1,6] on the boot device.
[11]	The (.TDV) was not found in account [1,6] on the boot device.
[12]	AMOS (.INI) file not found in account [1,4] on the first logical of the boot device.
[22]	AM8000.MON: DIRREE: CHKUPD SMEM block added!
[88]	Unimplemented SVCA call
[90]	TRMICP: Input buffer (1023) Overflow!
[BB]	Diagnostic TEST
[C1]	Parity error
[C2]	Parity error.
[EE]	PCNDV.NDV: Invalid socket # in Ethernet port
[EF]	Supervisor Stack is 83.3% used!
[B0]	ACE.DVR: No channel control block index!
[B0]	ACESIO.DVR: Unassigned channel packet received!
[EE]	Invalid socket # in Ethernet port from PCNDV.NDV

AM-113-XX BOOT ROM CODES

[33]	Controller boot ROM started, after being reset.
[B1]	Reading the EAMOS.MON from disk and loading into the AM-113 board. An error at this point indicates the file may not exist. (Data that was backed up is not guaranteed!)
[B2]	Reading the EAMOS.INI from disk and loading into the AM-113 board. An error at this point indicates the INI file is missing.
[B4]	Started booting EAMOS
[C5]	Do you want to enter CMOS setup? You have three seconds to press the ESC key on the terminal attached to port 0 of the AM-113-xx board. The terminal must be set at 19200 baud.
[CC]	The AM-113 board detected a CMOS checksum error.
[CE]	CMOS parameter - Checksum Error. This code will flash on the optional status display for several seconds while the board reinitializes the CMOS parameters.

AM-113-XX CONTROLLER DIAGNOSTIC CODES

[00]	AM-113 controller normal and running
[01]	Start EAMOS.Mon
[02]	Blinks between 2 and 0, watch dog reset is functioning.
[03]	Watch Dog reset deactivated.
[04]	EAMOS- Ran out of Queue blocks
[08]	EAMOS- Front panel power failure status
[09]	EAMOS- Memory parity error
[0F]	EAMOS- Controller is clearing memory during boot.
[10]	AMSIO.LIT – Interface driver not found!
[11]	AMSIO.LIT – Terminal driver not found!
[12]	EAMOS *.INI file was not found!
[10]	SIOx.IDV - Type code not supported!
[15]	SIOx.IDV - Bad packet.
[16]	SIOx.IDV - Bad TCB packet.
[17]	SIOx.IDV - No TCB index
[1A]	Novram.sys says SSD passed security, SSD now available.
[22]	EAMOS- DIRREE: CHKUPD SMEM block added!
[33]	Unimplemented EA
[34]	Unimplemented Integer
[40]	Security failure
[41]	Security failure
[42]	Security failure
[43]	Security failure
[44]	Security failure
[45]	Security failure
[46]	Security failure
[62]	Power Failure
[66]	Mount DSK0:
[67]	Loading Novram.Sys
[68]	Novram.Sys initialized

[88]	Unimplemented SVCA call
[89]	Floating point emulation.
[B0]	Replace Batteries!
[B1]	Data that was backed up is not guaranteed!
[BB]	Diagnostic test.
[D0]	6242 Clock calendar chip failed!
[DE]	The DEAD error.
[AD]	The DEAD error meaning the Serial I/O subsystem has no power. Please turn it on.
[E2]	Next byte will be displayed!
[EF]	Supervisor Stack is 83.3% used!
[F0]	Bus error
[F1]	Start of Word Display! / Address error
[F6]	Privilege violation
[FE]	Start of Long Word Display!
[FF]	Next byte will be displayed!

[AM113-50 terminal 1 has been initialized] Any serial port controlled by the AM-113 board has this message.

AM8000 DIAGNOSTIC COMMANDS

There are a few AM8000 Diagnostics commands, which are helpful in troubleshooting a system problem. To execute the command, select the AM8000 Diagnostic window and type on the console keyboard the command and an Input box will be displayed with the command and press (Enter). The following list shows some of the most used commands. Some of the responses will be displayed in the bottom status line of Diagnostic Window or will open a new display window.

`LE`	List the errors into the Test error log.
`Float`	The Float command will toggle between the traditional Floating-point emulation method and the new native code.

Chapter 10 - TODOS and FMDOS

HOW TO COPY FILES BETWEEN OPERATING SYSTEMS

The next section gives some general information about copying files, then specific instructions on using FMDOS and TODOS. Later in the chapter describes how you can copy AMOS files from the Server to other computers. To use these commands, you must be at the AMOS prompt. The command names reflect the action taken. To send files from AMOS to XPE or receive files from XPE into AMOS, the following AMOS commands are used.

- **TODOS** to copy files from AMOS to XPE
- **FMDOS** to copy files from XPE to AMOS

These utilities only support file names containing eight characters and a three-character extension. They do not support long file names.

When using one of these commands, the file is not changed. A copy of the file is moved to the other operating system, and the original file remains where it was.

Contiguous File Transfer

Every file on the system consists of a series of blocks on the disk. AMOS supports two file types: linked or sequential access files, and contiguous or random access files. A contiguous file has all of its disk blocks in adjacent order on the disk, while a linked file's blocks are in various locations on the disk.

XPE does not support contiguous files. When transferring a contiguous file from AMOS to XPE, the file is converted to a linked file. If you transfer such a file back to AMOS, use FMDOS /R—for random access—to convert it back into a contiguous file.

Preparing to Copy

TODOS and FMDOS allow you to specify the XPE directory and AMOS disk account for the source and destination files. Make sure you know what XPE directory the files will end up in. While normally, this is the C:\AM8000 folder, always use full paths, such as **`C:\AM8000\file`** to be sure. To use these programs, LOG into the correct [P,PN] account before executing the command. (While in single-user mode, you are usually in the default directory. However, various other tasks undertaken by other AMOS jobs can cause AM8000.EXE to change paths.)

If you are not careful about the directory and disk account, you may accidentally copy the files to the wrong location. If this happens, it will cause you extra work to get the files to the proper location. The worst problem would be to copy over existing files, erasing needed data.

Command Formats

Both AMOS and XPE command syntax work with both TODOS and FMDOS. Use whichever you're more comfortable with. The general syntax for AMOS commands is:

```
Command Destination=Source{ /option}
```

XPE command syntax has the general format:

```
Command Source Destination{ /option}
```

The source and destination file specifications are in opposite order in AMOS and XPE. When separating the file specifications with a space, AMOS interprets the command according to XPE /DOS syntax; when using an equal sign, AMOS 8.x uses the AMOS syntax. Whichever syntax used, be sure to put the file specifications in the right order or you could copy the wrong file, and possibly erase data you wanted. (Most AMOS commands ignore spaces before and after an "=" sign. This one does not!)

The options at the end of the FMDOS command line in either XPE or AMOS format allows optional command features. The options for FMDOS are described in the FMDOS section. NOTE: Place a space before any option.

AMOS AND XPE FILE NAMES

XPE file names may be very long, but AMOS file names cannot be longer than six characters. Take this difference into account when using FMDOS to copy files from XPE to AMOS. Either assign a new name to the file copied or FMDOS will automatically truncate the names to six characters.

When a file name is truncated, the three-character extension, which follows the file name in both XPE and AMOS, is not affected.

WILDCARDS

TODOS allows the use of ' *' and '?' Wildcards as part of the file name and extension in the XPE and AMOS file specifications. FMDOS allow the use of these characters only in the XPE specification. The ' * ' replaces any number of characters in the file name or extension. The '?' stands for any one character. Wildcards are not allowed in the XPE directory or AMOS device specification, but you can use wildcards in the AMOS account specification (e.g.: [100,*] represents all disk accounts in project 100). For example:

TODOS C:\USER*.* = *.TXT[23,*] ENTER

Transfers all AMOS .TXT files in the accounts in project 23 on the current disk device to the XPE directory C:\USER using the AMOS file names. For more information on the use of wildcards in AMOS file specifications, see the *AMOS User's Guid*e.

SENDING FILES TO XPE FROM AMOS (TODOS)

TODOS copies files from AMOS to XPE. Use either of these formats for TODOS:

```
TODOS {XPE-pathname}=amos-filespec{,amos-filespec,...}
```

or:

```
TODOS amos-filespec{,amos-filespec,...} {XPE-pathname}
```

amos-filespec is the name of the file to be copied to XPE. Leaving out part or all of the file specification, it defaults to the current disk and account, and all files. As shown, multiple specifications can be entered separating them with commas.

The optional ***XPE-pathname*** is the file name and directory to copy the file to. The default is the C:\AM8000 directory, because this is where AMOS 8.x boots from.

TODOS understands only XPE 8.3 file names, not long file names. The destination file name entered must be eight characters or less with a three or less character extension.

If the destination file already exists in the XPE folder, TODOS overwrites it with the file being copied. Be careful not to accidentally overwrite existing files when using TODOS.

Here are a few examples of TODOS:

To send a file from the current AMOS account to the C:\AM8000 folder, and renaming is not needed, enter only the AMOS file name:

TODOS PAYROL.DAT ENTER

To send the file to another directory, and give the file a different name on the XPE side, specify something like this:

TODOS C:\USER\ONETEST.TXT=ONE.TXT ENTER

This example transfers the AMOS file ONE.TXT to XPE with the file name ONETEST.TXT in the directory C:\USER. The C:\USER folder must already exist; TODOS can't create a new directory. If ONETEST.TXT already exists in C:\USER, TODOS overwrites it automatically.

Finally, if the file is not in the current AMOS account, you need to use the complete syntax:

TODOS C:\USER\ONETEST.TXT=DSK2:ONE.TXT[23,4] ENTER

If the file is on the current disk, include just the account number and leave out the device name.
If you are more familiar with Windows syntax, use it instead. The last sample command would then be:

TODOS DSK2:ONE.TXT[23,4] C:\USER\ONETEST.TXT ENTER

RECEIVING FILES FROM XPE INTO AMOS (FMDOS)

The FMDOS command will copy XPE files to AMOS. Use either of these formats:

```
FMDOS {amos-filespec}=XPE-pathname{ /options}
```

This example transfers the AMOS file ONE.TXT to XPE with the file name ONETEST.TXT in the directory C:\USER. C:\USER folder must already exist; TODOS can't create a new directory. If ONETEST.TXT already exists in C:\USER, TODOS overwrites it automatically.

or: FMDOS XPE-pathname {amos-filespec}{ /options}

The ***XPE-pathname*** is the name and directory of the file being copied to AMOS. The default is the device and directory the user is logged into.

FMDOS understands only XPE eight-character file names, not long file names. To copy a file with a long file name to AMOS, either use the XPE version of the name (generally ending with ~1) or change the file name in XPE before using FMDOS. XDIR {XPE pathname} will display both the eight character file names and the long file names.

The optional ***amos-filespec*** is the disk account and file name being copied to. It defaults to the current account and the same name as the XPE file. If the XPE file name has more than six characters refer to the information below for help.

If the destination file already exists, FMDOS copies over it unless the /NOD switch is included. The /NOD switch is described below.

The AMOS account where you want to put the file must already exist—FMDOS cannot create accounts.

The ***options*** let you choose various FMDOS features. Please Note: Place a space before the / that precedes the option. Using any combination of the available options:

/NOD	If an AMOS file exists with same name as the file being copied, do not delete it. FMDOS overwrites the destination file name, if the /NOD switch is left off.
/R	Make the AMOS file a random access (contiguous) file. This specifies how the file is arranged on the disk. See the section "Contiguous File Transfer" earlier in this chapter.

To transfer a file from the C:\AM8000 directory into the current AMOS account, and renaming is not necessary, specify just the XPE file name:

If the "`Protection violation`" error message appears, the user is not logged into [1,2] during the copy to another account. Here are some examples of FMDOS:

`FMDOS PAYROL.DAT` ENTER

To copy a file from a different XPE directory to another AMOS account, or give the file a different name, specify something like this:

```
FMDOS ONE.TXT[23,4]=C:\USER\ONETEST.TXT ENTER
```

This example copies the XPE file ONETEST.TXT from the C:\USER directory to the file ONE.TXT in account [23,4]. If the destination file already exists, FMDOS overwrites it.

If you are more familiar with Windows command syntax, use it. For example, enter the previous command as:

```
FMDOS C:\USER\ONETEST.TXT ONE.TXT[23,4] ENTER
```

FMDOS automatically truncates file names when copying XPE files to AMOS if they are longer than six characters, so let FMDOS shorten the file name for you instead of specifying a destination file:

```
FMDOS [23,4]=NEWSYSTM.TXT ENTER
```

This syntax creates the AMOS file NEWSYS.TXT.

COPYING FILES TO ANOTHER PC COMPUTER

To copy AMOS files to another PC, copy the AMOS files to the XPE partition with the TODOS command. Then copy the files over the network to move them to the other PC.

COPYING FILES TO OTHER ALPHA MICRO COMPUTERS

One way to copy files from computer to computer is to use the AlphaTCP File Transfer Protocol (FTP) across the network. This software must be installed on both computers. See the *AlphaTCP User's Guide* and *AlphaTCP Administrator's Guide* for more information on this protocol.

If the Server has a SCSI tape drive installed, the easiest way to copy files to or from other non-networked AMOS computers is by using the MTUSAV and MTURES commands. See the *AMOS System Commands Reference Manual* for information on these commands

Appendix A - Connector Configurations

The types and number of connectors found on the rear panel of the AM-8000 or Eagle 800 will vary, depending on the hardware configuration ordered. See Figure 2-2 & 2-4 for the position of these connectors on the Server's rear panel.

SERIAL I/O CONNECTORS

The AM-113-50 or -45 multipurpose serial I/O interface board includes four on-board RS-232 serial ports. The Eagle 800 uses the AM-113-45 board; the AM-8000 uses the AM-113-50 board. All four serial ports have standard RJ-45 connectors and use the PCSIO.IDV interface driver for port numbers {1- 4 octal}.

The AM-8000 may also contain a 68-pin interface connector for controlling a serial I/O expansion chassis that can house standard Alpha Micro AM-359 I/O paddle cards. The AM-359 boards use the PCSIO.IDV port numbers {5 to 174 octal} in the AM8000.INI file. The SIO 68-pin expansion connector must mate only to the AM-349-20 SIO buffer board inside the SIO expansion chassis. The cable used is either a 3 or 6 foot 34 twisted paired cable. This cable is identical to the SCSI cable; be very careful where it is plugged into! Additionally, AMOS 8.x Servers are equipped with 2 PC COM ports. Using the DWB-10317-25 modular adapter makes these ports look just like an AM-359 serial port or AM-113-xx ports. The system may also be equipped with the PCI 8-port PC COM port interface and Octopus cable supplied with male DB9 connectors.

The USB 8-port serial interface also can be used with the AMOS 8.x Servers. The USB box has a 4-conductor USB cable. The flat end connector is plugged into the Server rear panel USB port. The square connector is plugged into the USB box. The USB cable supplies 5V power and high-speed data.
All the PC-COM options can use DWB-10317-25 modular adapters for each DB9 port to make the external cabling compatible with AM-359 style connector pin outs.

What Is RS-232?

All AMOS Servers support RS-232. RS-232 is the name of a standard developed by the Electronic Industry Association (EIA) to encourage standardized interfacing of devices to computer systems. The letters RS stand for Recommended Standard. The RS-232 interface standard specifies electrical signal characteristics and names, and defines the functions of the signal and control lines that make up the interface.

Basically, implementing this standard involves assigning standardized signal definitions for the various pins of the RS-232 connector at either end of the terminal or printer cables. For example, the wire attached to Pin #2 carries the signal interpreted on the computer end as "Input Data from the Terminal" and on the terminal end as "Transmit Data To Computer." You enable these specific signals by attaching cable wires to certain connector pins. If a terminal or printer manufacturer says their device is RS-232 or RS-232C compatible, it will probably be easy for you to connect it to your Alpha Micro Servers.

Before constructing the cable to connect a printer or terminal to the Alpha Micro Server, consult the manufacturer's manual accompanying the device. It should describe how to wire the connector on the device end. Few devices use all of the defined signals. In most cases, you need to connect about four pins. Although printer cables are sometimes a little more complicated on the printer end, terminal cables are often the same on both computer and terminal ends.

Alpha Micro uses RJ-45 connectors for RS-232 device connection. The maximum length of RS-232 cables is ***150 feet*** between devices when using Twisted Paired Level 3 CMP cabling.

Important Note

The Federal Communications Commission (FCC) has established rules regarding allowable emission levels of Class **A** computing devices (ref: Subpart J of Part 15 of FCC Rules). The Alpha Micro systems to which this manual applies have been determined to be in compliance with the FCC rules. However, you should be aware that if other devices, such as terminals and printers, are attached to these systems, even if the devices are attached in accordance with the instructions contained in this manual, the resulting configuration may not be in compliance with the referenced FCC rules. Corrective measures, if any are required, are the responsibility of the user. Information on emission levels of peripheral devices should be obtained from the manufacturer of the device.

CABLE CONSTRUCTION GUIDELINES

To construct your own cables, there are a few things to keep in mind before installing a cabling system: Most modern installations are wired for networking. This same cabling system may be used for RS-232 communication. Just the termination of the circuit must not go into Ethernet switches or hubs. Parallel patch cords from the cabling system patch panel connect the serial I/O ports of the Server and then to the remote serial device. The wall plates at the work station locations will have a parallel patch cord to a modular adapter pined out for the serial devices I/O connector. All serial diagrams in this appendix refer to the RJ-45 pin-outs and twisted pair numbering. The high-speed serial lines TX data and RX data must **never** be in the same twisted pair. The RXD is paired with a low speed signal RTS. The TXD signal is paired with DTR. Engineering has tested this cable design scheme up to 300 feet with no transmission or cross talk problems with Level 5 cables.

Cable Length

When using twisted paired shielded cable you may increase the length to 150 feet, using Level 3 or Level 5 Twisted paired cable for RS-232 connections. The premises circuits should all be parallel circuits. Here are some things you can do if the cables absolutely must be longer than what is specified:

1. Signal conditioning equipment (for example, a "short haul modem") can improve signal quality.
2. Use Eagle 450TX terminal Servers to connect RS232 devices.
3. Convert the device to Ethernet and Telnet into the Host Server.
4. For reliability reasons, do not allow PC COM ports to drive cables longer than 100 feet.

Cable Type

We recommend that you use a twisted paired shielded jacketed cable. The cable should be rated at least CMP Level 3, but you can use CMP Level 5 cable for lines longer than 150 feet. Most cities require that

any low voltage communication cable have a CMP, Communication cable Plenum rating. This type of cable should comply with your local fire codes for installation in your facility. Using a high quality twisted paired; overall shielded cable helps minimize electromagnetic interference. Reducing this interference protects the Server from signal noise. It also protects other devices around the Alpha Micro Server (such as a TV or radio) from interference radiated by an improperly shielded system.

Except for the PC COM ports and PC serial port adapters, the AMOS RJ-45 serial ports have a shield ground connection at pin 1. The AM-359 cable adapters and assemblies have the shield ground connection to pin 1. These pre-made cable assemblies are available from Alpha Micro and their part numbers and details are documented in the AM-359 product installation instructions. For pin out and cable construction information, refer to *AM-359 8-Port Serial I/O Installation Instructions*, PDI-00359-00.

SERIAL ADAPTERS

PC-COM Port RS-232 DB-9 Connector Signals DWB-10317-25

For standard PC COM Ports or octopus cable set on PCI Serial interfaces, use the modular adapter below to convert from the Male DB-9 to an RJ-45 pin out that has the same signal pairing as the AM-359 ports that Alpha Micro has historically used. The only difference is RJ45 pin 1 is not connected to any pin in the DB9. This cabling system uses twisted pair parallel patch cords between the Server end and the peripheral device. The following table shows the signal-to-pin orientation applicable to each standard DB-9 serial I/O connector.

Server End	**FDB9**		**RJ-45-pin**		
Signal	**Pin #**	**Direction**	**Pin #**	**Color**	**Pair**
RXD	2	< -- <	5	Grn	P1+
RTS	7	> -- >	4	Red	P1-
TXD	3	> -- >	3	Blk	P2+
DTR	4	> -- >	6	Yel	P2-
CTS	8	< -- <	2	Org	P3+
GND	5	< -- <	7	Brn	P3-
DCD	1	< -- <	8	Wht	P4+
N/C			1	Blu	P4-

Table A-1: PC COM port MDB-9 Modular adapter connector Signals (DWB-10317-25)

Do not drive devices on PC COM ports longer than 100 feet. Some COM ports do not drive the cable with full +12 volts. Some COM ports only output +9V, which can cause reliability problems.

COM Port RS-232 DB-9 Connector Signals DWB-10317-30

For standard PC COM Ports or octopus cable set on PCI Serial interfaces, use the modular adapter below to convert from the Male DB-9 to an RJ-45 pin out that has the same signal pairing as the AM-359 ports that Alpha Micro has historically used. The difference in this adapter was made in 2006 to connected most PC-COM ports to terminals and printers and allow the correct handshake This cabling system uses twisted pair parallel patch cords between the Server end and the peripheral device. The following table shows the signal-to-pin orientation applicable to each standard DB-9 serial I/O connector.

Server End	**FDB9**		**RJ-45-pin**			
Signal	**Pin #**	**Direction**	**Pin #**	**Color**	**Pair**	
RXD	2	< -- <	5	Grn	P1+	
RTS	7	> -- >	4	Red	P1-	
TXD	3	> -- >	3	Blk	P2+	
DTR	4	> -- >	6	Yel	P2-	
CTS,DSR,DCD	8,6,1	+< -- <	2	Org	P3+	3 pins tied
GND	5	< -- <	7	Brn	P3-	
				cut	P4+	
				cut	P4-	

Table A-1: PC COM port MDB-9 Modular adapter connector Signals (DWB-10317-30)

Do not drive devices on PC COM ports longer than 100 feet. Some COM ports do not drive the cable with full +12 volts. Some COM ports only output +9V, which can cause reliability problems.

AM-113-XX or AM-359 RJ-45 Serial Port Connector Signals

This table shows the standard AMOS RJ-45 serial port pin out. The signals are grouped into pairs, which will also allow longer and more reliable communication to the Server. The AM-359-50 Female DB9 adapter pin out is on the right hand side of this table.

Server End	**RJ45**		**FDB-9 modular adapter**		**RJ45**	
Signal	**Pin #**	**Direction**	**Pin #**	**Color**	**Pin #**	**Pair**
RXD	5	< -- <	2	Grn	5	P1+
RTS	4	> -- >	5	Red	4	P1-
TXD	3	> -- >	3	Blk	3	P2+
DTR	6	> -- >	9	Yel	6	P2-
CTS	2	< -- <	4	Org	2	P3+
GND	7	< -- <	7	Brn	7	P3-
DCD	8	< -- <	8	Wht	8	P4+
SHLD GND	1	< -- <	1	Blu	1	P4-

Table A-2: RJ-45 Serial Connector Signals (AM-359-50 Cable adapter)

RS-232 DB-25 Terminal or Printer Adapters

This section documents the signal to pin definition of a standard DB25 modular adapter to allow connection with terminals and printers supported by Alpha Micro. We have grouped the signals into pairs, which will also allow longer and more reliable communication to the Server. The AM-60, AM-62, -62A, -65, -65A, -70, -72, and AM-75 terminals are all RS-232 devices and use the same cabling pin outs. The patch cords used should be internally twisted-pair cable with RJ-45 connectors on both ends. The pin assignments are straight through (pin-for-pin) with no swapped ends.

Server End	**RJ45**		**M-DB-25 modular adapter**		**Terminal**
Signal	**Pin #**	**Direction**	**Pin #**	**Color**	**Signal**
RXD	5	< -- <	2	Grn	TXD
RTS	4	> -- >	5	Red	CTS
TXD	3	> -- >	3	Blk	RXD
DTR	6	> -- >	8	Yel	DCD
CTS	2	< -- <	20	Org	DTR
GND	7	< -- <	7	Brn	GND
DCD	8	< -- <	4	Wht	RTS
SHLD GND	1	< -- <	1	Blu	P.GND

Table A-3: Serial Terminal Connector Signals

The terminal DTR signal (pin 20) is connected to the Server CTS signal (RJ45 pin 2) and serves as 'READY/NOT BUSY' handshake line to prevent 'overrunning' the terminal with data. This protocol is also effective for many printers used by Alpha Micro.

Caution: While this cable configuration enhances the use of the Alpha Micro terminals, it may not work with certain printers if they do not provide a compatible DTR on pin 20. In such cases, consult the manufacturer of the device to find if they moved the NOT READY or Busy signal to Pin 11 or possibly 19.

Serial Modem Modular Adapter

To attach a serial modem to our defined cabling system, use a parallel twisted paired patch cord to connect any serial port on the AMOS Servers. This adapter will handle just about any modem connected to either the RJ-45 serial ports or the PC COM ports. The data signals are Modem TXD out to Server RXD in. Server TXD data out, to Modem RXD in. Flow control is handled by RTS-CTS connections. Server (hang-up) Modem control is DTR out to DTR input on the modem. Modem status output DCD to DCD input on the Server.

Server End	**RJ45**	**M-DB-25 modular adapter**			**Modem**
Signal	**Pin #**	**Direction**	**Pin #**	**Color**	**Signal**
RXD	5	< -- <	3	Grn	TXD
RTS	4	> -- >	4	Red	CTS
TXD	3	> -- >	2	Blk	RXD
DTR	6	> -- >	20	Yel	DTR
CTS	2	< -- <	5	Org	RTS
GND	7	< -- <	7	Brn	GND
DCD	8	< -- <	8	Wht	DCD
SHLD GND	1	< -- <	1	Blu	P.GND

Table A-4: Serial modem modular adapter

Workstation Modular Adapters

For RJ-45 connectors, use the standard parallel RJ-45 patch cords to mate to the modular adapters defined below. Female DB-9 connectors plug into the remote PC/AT serial port.

Workstation Serial I/O Port (Female DB-9)			**Server End FDB-9 Connector**	
SIGNAL	**PIN #**	**DIRECTION**	**PIN #**	**SIGNAL**
TXD	3	> -- >	2	RXD
CTS	8	< -+ <	7	RTS
DSR	6	< - +		
DCD	1	< - +		
RXD	2	< -- <	3	TXD
RTS	7	> -- >	8	CTS
GND	5	< -- <	5	GND

Note: Pins 1, 6 and 8 on the workstation connector are jumpered together.

Table A-5: Pin out for Workstation to Computer Cable - IBM PC/AT and Compatibles

Workstation Serial I/O Port (Male DB-25)			**Server End FDB-9 Connector**	
SIGNAL	**PIN #**	**DIRECTION**	**PIN #**	**SIGNAL**
TXD	2	> -- >	2	RXD
CTS	5	< -+ <	7	RTS
DSR	6	< -+		
DCD	8	< -+		
RXD	3	< -- <	3	TXD
RTS	4	> -- >	8	CTS
GND	7	< -- <	5	GND

Note: Pins 5, 6 and 8 on the workstation connector are jumpered together.

Table A-6: Pin out for Workstation to Computer Cable - IBM PC/XT and Compatibles

PARALLEL PRINTER PORT

AMOS 8.x Servers have one parallel port. The parallel port supports the industry standard Centronics interface. The signal pin outs for the parallel ports are as follows:

To insure the reliability and performance of your parallel ports, avoid using parallel printer cables longer than **six feet.**

PIN #	SIGNAL NAME
1	Data strobe
2	Data 1
3	Data 2
4	Data 3
5	Data 4
6	Data 5
7	Data 6
8	Data 7
9	Data 8
10	Acknowledge
11	Busy
12	Paper error
13	Select
14	Auto line-feed (not used)
15	Error
16	Printer reset
17	Select in
18	Ground
19	Ground
20	Ground
21	Ground
22	Ground
23	Ground
24	Ground
25	Ground

Table A-7: Centronics Interface Cabling Signal Pin out

ETHERNET 10/100 AND 1GB RJ-45 CONNECTORS

The Ethernet RJ-45 ports (both 10/100 and 1 GB) function exactly like other Ethernet ports on other Servers. The following section explains some of the technical aspects of the Ethernet cable pin outs required when using one of these RJ-45 interface connectors. All Ethernet ports must use parallel twisted paired Level 5 patch cords to connect to Ethernet hubs.

10/100BaseT Topology and Cabling

The AM-8000 and Eagle 800 have one 10BaseT/100BaseT Ethernet port. In addition, the AM-8000 has a Gigabit port. Ethernet can be connected via inexpensive twisted pair (Level 5 compliant) cabling, with each computer having its own RJ-45 termination. To use this technology, a central switch or hub is required to perform the task of re-broadcasting the Ethernet data signals to all other computers connected on a network. Such switches are commonly available from commercial sources.

10BaseT and 100BaseT connections use 100 ohm unshielded twisted pairs. Level 5 cable has four twisted pairs. Two of these pairs is used for transmitting and receiving data. These cables terminate in eight pin RJ-45 connectors with the following pin assignments:

RJ-45 Pin	Color	Signal Name
1	W/ORG	TXD+
2	ORG	TXD-
3	W/GRN	RXD+
6	GRN	RXD-
5	W/BLU	P3+
4	BLU	P3-
7	W/BRN	P4+
8	BRN	P4-

Table A-8: TIA-568B 10/100BaseT (RJ-45) Connector Signals

Please consult the 10BaseT and 100BaseT cabling specifications for details on cable lengths, impedance, wiring guidelines and other details to insure that your network configuration is properly designed and configured.

Gigabit Topology and Cabling

The AM-8000 has a Gigabit port, which complies with industry standard 4 twisted pairs. The cable connected to this port must be Level 5e, Level 6 or better. The connector spec is TIA-568B for the RJ-45 connector.

AM-8000 UPS STATUS PORT

The UPS status port is an optional connector that may be located on the back panel of the AM-8000 on a male DB-9 connector. The UPS system also has a male DB-9 connector for its switch contact port. To connect the UPS to the computer you will need a cable with two female DB-9 connectors. The following table shows the pin out connections required to make this cable. You will need an 8-wire cable, and both grounds are necessary.

CPU Signal Name	FDB-9	Cable	FDB-9	UPS Signal Name
FAULT	2	< -- <	1	FAULT
GND	3	< -- <	2	GND
GND	6	< -- <	5	GND
ON BYPASS	8	< -- <	6	ON BYPASS
LOW BATTERY	4	< -- <	7	LOW BATTERY
INVERTER ON	9	< -- <	8	INVERTER ON
AC PWR FAIL	5	< -- <	9	AC PWR FAIL
REMOTE RESET	1		N/C	NO CONNECTION
LOCAL RESET	7		N/C	NO CONNECTION

Table A-9: AM-8000 UPS Status Port Signal Pinouts

Currently there is no software available to run this interface. We suggest you use the Serial UPS monitor software to obtain this information.

INDUSTRY STANDARD DEVICES

The industry standard devices on every AMOS 8.X Server are:

- VGA Video Connector (15-pin), The Eagle 800 has two VGA ports, which are controlled from the XPE Control panel {Display} menu.
- PS2 style Mouse
- PS2 style PC keyboard
- USB ports

Appendix B - The Control Characters

The terminal keyboard allows you to type control characters, which perform special functions. A control character is the signal transmitted to the computer when you hold down the CTRL key and press another key at the same time. The following list contains the most important control characters. The *AMOS User's Guide* contains a complete list of control characters and their functions.

Control-C

Control-C is the system interrupt command. You use it to interrupt whatever program is in progress and return to AMOS command level. After pressing CTRL/C to interrupt a program, you cannot resume execution of that program; you must start it over from the beginning.

Some programs, such as AlphaVUE, do not recognize a Control-C as an exit command; instead you must use the exit command for that program if you want to return to AMOS command level.

Other programs do recognize a Control-C; however, if an exit command exists for a program, it is usually better to use that command than to press CTRL/C. Many programs perform various closing functions when you use their normal exit commands and would not have a chance to perform those procedures for an orderly exit if you bypass them by using a Control-C.

Control-U

At AMOS command level, you may move to the leftmost character of the command line you are typing by pressing CTRL/U.

Control-S

A program or command often displays more data on your terminal than fits on one screen. To stop the screen display, press CTRL/S.

You can now read the data on the screen at your leisure. Not only does the display freeze, but AMOS actually stops sending data to your terminal until you press CTRL/Q (see below); at that point, AMOS resumes sending information where it left off.

While a Control-S is in effect, AMOS stores, but does not act upon, anything you type except for CTRL/Q. There is, however, a limit to how much can be stored. The exact number of characters depends upon your initial system setup.

Control-Q

When you press CTRL/S (described above) to freeze the screen display, you must press CTRL/Q to resume the screen display. If you have typed anything while the Control-S was in effect, a Control-Q tells AMOS it can now go ahead and act upon that input.

Try this: Press CTRL/S, then type DIR RETURN, and then PRINT RETURN. The commands aren't displayed on the screen and it appears that nothing happened. Now press CTRL/Q to release the display, and you see first a list of the files in your account printed on the screen, then a display of the files waiting to print.

Control-R

The command buffer is an area of memory where the computer stores commands that have been entered. Pressing CTRL/R shows you what commands are in your command buffer.

If the line editor is installed on your computer, you can use CTRL/R to call up previous command lines, make changes to them, and then submit them again. This is a great convenience if you want to enter a series of similar commands; you can just keep making minor changes to one command, and reusing it.

Appendix C - Console Function Keys Under AMOS

Many Alpha Micro software packages, such as AlphaWRITE and AlphaCALC, contain function key translation files that let you use the function keys on your terminal to perform actions while using the software. For example, when using AlphaWRITE on an AM-65 terminal, pressing F13 at your document display takes you to the Editing Menu.

Each software package has a separate translation table file for each Alpha Micro terminal driver (AM62.TDV, AM65.TDV, and so on).

When using AlphaWRITE, using the function keys may insert spaces. To avoid this, be sure to set ACKWAIT=TRUE in your AlphaWRITE initialization file.

Unless you are using the AM-70 or WYCOL emulation, the correct translation table for the Console's function keys is the same as the translation table for an AM-62A terminal.

USING FUNCTION KEYS

Both the AM-62A and AM-65 terminals have sixteen function keys. However, most PCs keyboard has twelve. To make up for the "missing" function keys, the PC keyboard uses the CTRL and ALT keys.

AMOS 8.x uses the same function key translation as other popular Alpha Micro communications products, such as *in*Sight and AlphaLAN, except that function keys F11 and F12 are also used.

The following keys (or combinations of keys) on the PC keyboard correspond to the sixteen function keys—and some other keys many PC keyboards lack—on an Alpha Micro keyboard:

AMOS FUNCTION KEY TRANSLATION

AMOS Function Key	PC Key
FUNCT	ALT (For example, for FUNCT/1, press ALT/1)
F1 to F10	F1 to F10
F11 and F12	F11 and F12 or CTRL/F1 and CTRL/F2
F13 to F16	CTRL/F3 to CTRL/F6
SHIFT/F1 to SHIFT/F10	SHIFT/F1 to SHIFT/F10
SHIFT/F11 and SHIFT/F12	SHIFT/F11 and SHIFT/F12 or SHIFT/CTRL/F1 and SHIFT/CTRL/F2
SHIFT/F13 to SHIFT/F16	SHIFT/CTRL/F3 to SHIFT/CTRL/F6
HELP and SHIFT/HELP	CTRL/F7
EXEC	CTRL/F8
NEWLINE and SHIFT/NEWLINE	CTRL/F9
CANCEL and SHIFT/CANCEL	CTRL/F10
INS CHAR	INSERT
INS WORD	SHIFT/INSERT
INS LINE	CTRL/INSERT or CTRL/PAGE UP
DEL CHAR	DELETE
DEL WORD	SHIFT/DELETE
DEL LINE	CTRL/DELETE or CTRL/PAGE UP
PREV SCREEN	PAGE UP
NEXT SCREEN	PAGE DOWN
PREV WORD	CTRL/←
NEXT WORD	CTRL/→
COMPOSE	SHIFT/CTRL/Q

For example, to use AlphaWRITE's menu key F13 on AM-62 terminals, on the PC console, press CTRL/F3.

USING FUNCTION KEYS

Both supplied console terminal emulators, AMPCTerm and AMPCLiTE, included in AMOS 8.x have ADDITIONAL function key support features. Refer to the on-line help information provided with each emulator for information about these additional function key support features.

Appendix D - AMOS 8.x Command Summary

The following table summarizes commands you can enter to use the AM8000.EXE program.

Command	Function
AM8000/option	Launches AMOS from the XPE shortcut.
/C	Launch the Configuration Window - without booting AMOS
/L:{filename}	Boot AMOS using specified file. INI stored in the AM8000 folder
/M:{filename}	Boot AMOS using specified file MON stored in the AM8000 folder. If no /M switch is specified, the default AM8000.MON file is used in the booting process. This file must exist in the AM8000 Folder.
/J	Enables diagnostic message in the EAMOS trace window for diagnostic purposes.

The following table summarizes the AMOS commands specific to AMOS 8.x. For information on other AMOS commands, see the *AMOS System Commands Reference Manual*.

Command	Function
`FMDOS Windows Amos /option` or `FMDOS Amos=Windows /option`	Copies the XPE file ***Windows*** to the AMOS file ***Amos***.
`TODOS Amos Windows /option` or `TODOS Windows=Amos /option`	Copies the AMOS file ***Amos*** to the XPE file ***Windows***.
Options are:	
/NOD	Do not copy over the existing file (no delete)
/D	Overwrite the existing file
/Q	Ask for confirmation
/NOQ	No confirmation

Appendix E - SCSI Configuration Details

Both the AM-8000 and Eagle 800 have dual port SCSI interfaces available. After a discussion of the type of SCSI devices that can be used, the following sections describe configuration rules for the SCSI bus, including mixing device types and termination issues. Later AM8000 systems have a 64-bit controller plugged into the PCI-X buss. This card has both SCSI channels available on the rear panel with VHDCI connectors.

Never plug a SCSI device into the SCSI cable, or remove one from the cables, while system power is on. Doing so could seriously damage the device and the CPU board. The AM-8000 uses LVD and tolerant active negation on the SCSI busses, making the busses sensitive in these situations.

SCSI DEVICE TYPES

You can attach any supported SCSI device to the second wide SCSI bus on the AM-8000 Server, using the appropriate adapter if necessary, as described below. Supported devices include:

- Narrow single ended SCSI Drives (8 bit)
- Wide SCSI single ended SCSI drive (16 bit)
- Ultra wide LVD SCSI disk drives (fast 16 bit)
- ¼" streaming tape drives: AM-625, AM-626, AM-627, AM-628, AM-629 have a single ended interface
- The AM-650, AM-651, AM-652 SLR tape drives all have a Wide LVD SCSI interface.
- The AM-448 RAID subsystem uses a wide LVD interface (SCSI 160) and is normally attached to the first high speed SCSI bus. A special cable adapter can be ordered to make the first high speed SCSI bus accessible externally.

The first SCSI bus on the AM-8000 is reserved for Ultra 320 Disk drives. Normally the AM-65x tape drive is placed on the second SCSI channel.

If you install a slow speed Single Ended interface drive on this channel, the whole bus slows down to the slowest device. Do not mix slow single ended interface devices and fast LVD devices on the SCSI bus.

For the Eagle 800 Server, the narrow bus devices are connected internally, such as the ¼" Streaming Tape drive. External connection to the PCI SCSI card requires a (VHDCI) interface cable. An External SCSI RAID system may be connected. Both busses are available on the rear panel, but do not need a SCSI terminator until an expansion cable is used. Then a terminator must be placed on the external subsystem back panel.

WIDE SCSI CONFIGURATION RULES

Each Wide SCSI bus allows up to 15 SCSI IDs, so the limiting factors are the number of device bays in the chassis and cabling considerations. ***Because of the high performance of each Wide SCSI bus, it is critical to follow the cabling specification strictly, or performance and reliability will suffer.***

The two cabling specifications, which affect the total number of devices, are:

- The total length of the cable cannot exceed three meters (approximately 10 feet).
- Each device must be separated on the SCSI-320 cable by 5.25".

Each standard internal wide SCSI cable for the AM-8000 ensures adequate space between internal devices. One SCSI bus should be dedicated to interconnecting high-speed disk drives. This bus allows up to four internal LVD capable drives plus an internal terminator. The first SCSI bus is reserved for internal devices unless an external RAID subsystem has been ordered along with the Server. A special cable may be purchased to install an external LVD RAID subsystem to the first SCSI channel.

On the AM-8000 the second SCSI bus allows up to three internal SCSI devices, plus an external connector at the rear of the system. This connector is normally used for an active terminator, or you can attach a 3- foot LVD SCSI cable to an LVD RAID device. If you need a longer external cable, use a repeater, as described below.

THE WIDE SCSI REPEATER

As mentioned above, the total allowable bus length for the Wide SCSI bus is 10 feet. This can be limiting, especially in configurations which require more than one external device. The AM-441 Wide SCSI Bus Repeater attaches to the end of the AM-8000's second internal SCSI cable. In effect, it starts a new physical bus. From the repeater, you can have up to ten additional feet of bus cable.

Allowing for the internal cable from the repeater to the external SCSI port, the AM-441 allows up to eight feet of external wide SCSI cabling, with as many devices as you can physically attach, obeying the specification of at least 5.25" between each devices.

The AM-441 occupies an internal 5.25" drive bay. There are 3 available bays for 5.25" devices in an AM-8000 chassis, since the DVD-RAM drive uses one of four. This does reduce the number of internal SCSI devices that can mount in the desk-side chassis.

NARROW DEVICES ON THE WIDE BUS

Any narrow SCSI device may be attached to the second Wide bus by using a 50-pin to 68-pin adapter, PDB-00440-91. The adapter connects the device to the 68-pin cable. However, if you use both a narrow and a wide device, the narrow device's lower transfer rate slows down the entire bus, causing the wide device to lose its performance advantage.

INTERNAL SCSI TERMINATOR

The Eagle 800 requires the internal tape drive to have the terminator SIPs installed and placed at the end of the 50-pin SCSI cable. The second channel does not require a terminator on the back panel. When

installing a SCSI extension cable to the external device, a SCSI terminator needs to be installed on the back panel of the external device.

The AM-8000 first SCSI-320 channel has an internal SCSI terminator mounted at the end of the first cable. Do not remove this terminator.

EXTERNAL SCSI TERMINATOR

The preferred method of terminating the SCSI bus in an AM-8000 Server is the installation of an external terminator. The external terminator ***must be*** an "active LVD model" part number (PRA-00222-20) and is included with the AM-8000. The main CPU board terminates one end of the SCSI bus and the other end of the bus is terminated with the external active terminator. The AM-8000 main CPU board provides the termination power for the SCSI bus. To use the external terminator, make sure none of the SCSI peripherals inside the computer are terminated. To install the terminator, slide it over the connector and screw into place.

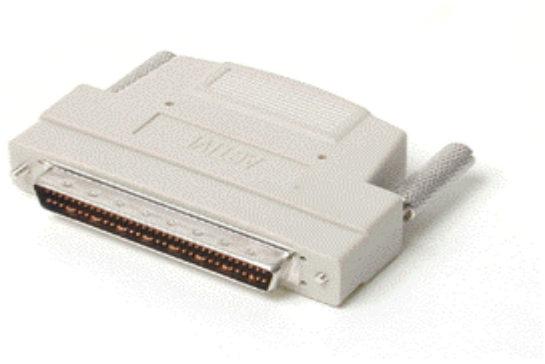


Figure E-1: Active LVD External Terminator

ATTACHING EXTERNAL DEVICES

To attach an external SCSI device, remove the terminator from the external SCSI port of the AM-8000 Server. However, make sure the SCSI bus is still terminated at both ends. To do so, install the external active terminator in the unused SCSI I/O port of the external SCSI device at the physical end of the SCSI bus.

Attaching an external narrow SCSI device, such as a tape drive, to a Server using the Wide SCSI bus is a special case. Any narrow external device must be the last device on the cable, with all wide devices inside the chassis. Make sure all 16 lines of the Wide SCSI bus are terminated with an active terminator. To do so:

1. Use an external wide to narrow SCSI cable which actively terminates the "high" nine lines of the Wide SCSI bus. Alpha Micro offers this cable in both three foot and six-foot lengths (PDB-00440-80 and PDB-00440-81).
2. Plug the narrow active external terminator (PRA-00222-21) into the unused SCSI I/O port of the external device. This terminates the "low" half of the SCSI bus.

Notice that, in this configuration, the Wide SCSI active external terminator (PRA-00222-20), which is normally plugged into the external SCSI port, is not used.

SCSI DISPATCHER SOFTWARE

AMOS 8.x includes a SCSI dispatcher, which controls all SCSI devices in the system. The SCSI dispatcher is set up in the system initialization command file. The following AMOS 8.x specific command is added to the INI file **after** the JOBALC statements, but **before** the first DEVTBL statement:

```
SCZDSP  SCZPC.SYS          ;required
```

AM-8000 RACK MOUNT CHASSIS CONSIDERATIONS

In the Rack Mount chassis available for AM-8000 Servers, the second SCSI bus has a different internal cable than the Deskside chassis for the second channel. This cable will mount to the rear panel, connect to the SCSI Channel–B, and then continue up into the drive mounting area of the chassis where it will end with an Internal SCSI-320 terminator.

VERY IMPORTANT!
You must deactivate the on-board SCSI Controller Termination as follows:

1. Power up the system and during the system POST when it displays the Adaptec Controller self test, *Type* Ctrl + **T** on the console keyboard.
2. *Press* ↓ *to select* the {AIC- 7902-B controller} and *press* ENTER
3. <Configure/View SCSI Controller settings> is highlighter, *press* ENTER**.**
4. *Press* ↓ ↓ *to select* {SCSI Controller Termination} *press* ENTER
5. *Press* ↓ *to select* <**Disabled**>
6. *Press* ESC *to exit*, and *press* ESC *to exit*
7. *Press* ESC *to display* <EXIT Utility >
8. *Press* ↓ *to select* <Yes> *press* ENTER
9. *Press* ENTER to reboot the Server.

On the later AM8000 Series I systems with the Adaptec 39320s controller the new BIOS has automatic termination at the controller end, so disabling termination is not needed.

Appendix F - AM-113-xx Info & CPU PIC Procedure

AM-113-XX CMOS SETUP PROCEDURE

This procedure is currently for diagnostic purposes only. The normal setup of this controller is to boot from the PCI bus. To access the multi-function co-processor setup menu, plug a serial terminal into port 0 of the AM-113-xx. During the boot process, when the message in the <AM8000 Diagnostic> window shows the code "CS", *press* ESC on the terminal connected to Port 0 of the AM-113-xx board. This will interrupt the boot process and access the CMOS Configuration menu. You have approximately three seconds to press the ESC. The CMOS menu looks like this:

```
                ALPHA MICRO
            Configuration Menu

Primary boot device type....... PCI
Primary boot device unit #..... 00

Alternate boot device type..... None
Alternate boot device unit #... 00

Boot monitor file name......... AMOS32.MON
Boot initialization file name.. AMOS32.INI

Serial port 0 speed............ 19200
Display console boot messages.. No
Memory Size - Refresh.......... Auto – 4K

Use [UP], [DOWN], or [TAB] keys to select an item.
Use [LEFT] and [RIGHT] keys to change item.
         Press [ESCAPE] when done.
```

The above shows the default CMOS settings used when initializing the CMOS. As indicated on the screen, you use the ↑, ↓, and [TAB] keys to select a parameter. To change a parameter, use the ← and → keys to cycle through its possible settings. The only exceptions are file names, which you type.

Primary Boot Device Type

This parameter selects the type of device, which the controller will boot from. In all Server configurations, "PCI " must be selected for AMOS 8.x to boot. If you select "Flash", the Controller will boot up in single user diagnostic mode for technician test use only. AMOS 8.x is not active when booted in this state.

Primary Boot Device Unit #	This parameter must always be 0.
Alternate Boot Device Type	This parameter must always be NONE.
Alternate Boot Device Unit #	This parameter must always be 0.

Boot Monitor File Name

This parameter lets you change the name of the monitor file to be loaded during boot from flash only. The standard file name is AMOS32.MON. This monitor file must exist, and reside in account [1,4] on the flash disk.

Boot Initialization File Name

This parameter lets you change the name of the system initialization (INI) file to be used during boot from flash only. The default filename is AMOS32.INI. The INI file must exist and reside in account [1,4] of the flash disk.

Serial Port 0 Speed

By default, CMOS requires a port 0 terminal set to 19200 baud. You can change this to 9600, or 38400. The speed set here should match the port 0 definition in the system initialization file. If the terminal's baud rate does not match this setting, you won't be able to re-enter the CMOS menu, since CMOS will not recognize it when you press ESC. We highly recommend that you do not change this setting from 19200.

Display Console Boot Messages

When set to Yes, this option displays status messages on the port 0 terminal during booting. These messages are equivalent to each of the front panel status codes normally displayed during booting, and are normally only needed if you cannot see the status display. This may interfere with the device connected to this port. For all AMOS 8.x Servers this setting should be **NO**.

Memory Size – Refresh

This is always = Auto – 4K

SAVING THE CMOS SETTINGS

When you are finished making changes, *press* ESC. A message will appear at the bottom of the screen asking if you wish to save any changes made. Enter "**Y**" to save the changes in the CMOS RAM, or "N" to abandon any changes made. After entering your response, the controller will boot using whatever parameters are then in the CMOS setup.

AMOS 8.X AND EMBEDDED AMOS

This section describes the setup of Embedded AMOS. The AM8000.EXE program controls what is loaded into the AM-113-xx board. AM8000.Exe downloads the EAMOS.MON into the AM-113-xx memory. Then it downloads the EAMOS.INI file. This file is very specific to this embedded controller. It looks like a normal AMOS32.INI but is different. The AM-113-xx board uses AMSIO.LIT to reserve a terminal slot for each serial port that could be connected. The Eagle 800 uses an AM-113-45 board, which has no SIO bus expansion. The EAMOS.INI file only reserves 4 SIO slots for the on-board serial ports. The on-board ports are controlled by the SIO0.IDV. These ports are re-assigned to AMOS 8.x when the normal AM8000.INI file executes the TRMDEF line for ports PCSIO=1 to 4.

DO NOT CHANGE the Baud Rate or Terminal Driver in the EAMOS.INI file. The EAMOS.INI file uses 9600 baud and the Null terminal driver for all ports. This allows the AM8000.INI file to set the correct baud rate from either baud rate table and does not perform any keyboard translation or output any boot messages to these ports.

The AM-8000 uses the AM-113-50 board, which supports SIO bus expansion. The SIO bus is connected to the AM-349-50 adapter board using a 68-pin cable. The AM-349-50 cable adapter board is connected to the AM-349-20 SIO Buffer interface board with a 34-twisted paired cable with 68-pin connectors. The AM-349-20 SIO Buffer interface board cleans up and re-buffers all SIO bus signals. A chain of AM-359 boards is then connected with a 60-pin cable. The AM-359 boards are addressed 0 to 14. Only 15 boards are supported in the AM-905-31 SIO-Expansion box.

- The AM-359-00 & -01 boards are the only external serial I/O paddle cards that work properly with the AM-8000.

The EAMOS.INI file for an AM-8000 Server using the AM-113-50 board must reserve 124 SIO slots. The INI file supports the 4 on-board ports and the 15 AM-359 boards. The EAMOS.INI file can be modified to only reserve as many SIO slots as there are physically installed AM-359 boards. This action will decrease the time it takes to boot the controller. This is why there is a “required” 4-second sleep statement at the top of every AM8000.INI file. All this takes is a semi-colon in column 1 in front of the AMSIO line of the EAMOS.INI. The EAMOS.INI file uses SIO0.IDV, port numbers 0-3 for the on-board ports. The AM-359 ports use the SIO1.IDV ports 0 to 167 octal.

The PCSIO.IDV is the only IDV used in the AM8000.INI file to control all the SIO ports on the AM-113-50 board. PCSIO=(1 to 174 octal) link the SIO slot in the EAMOS.INI to the TRMDEF in the AM8000.INI. The AM8000.INI file TRMDEF line controls the terminal driver and baud that the physical terminal uses.

The AM-3501 chassis will hold a maximum of 7 boards. In the EAMOS.INI, SIO1 ports (0 through 67 octal) may be uncommented for use. The AM-905-31 chassis can support the whole range, SIO1 ports (0 through 167 octal). All these ports will then get re-assigned to AMOS 8.x when the normal AM8000.INI file is executed.

CPUPIC Procedure

The only time the system administrator or servicing technician needs to change this EAMOS.INI is when the AM-113-xx board is replaced in the system or the main CPU board is changed. The two boards are branded together with the CPUPIC or Magic Code number.

Modify the EAMOS.INI

1. In <Explorer> locate and *Select*> [**EAMOS.INI**] double *click* on it.
   This will launch the Notepad editor.
2. In the <Notepad > editor
   a) Edit this file and "Comment out" the line { **;**AMSIO VTM8, Pseudo, null} by inserting a **(;)** in column 1.
   b) Now the next line down REMOVE the **(;)** so the { AMSIO VTM8,PCVTM=10,AM62C} line "uncommented".
   c) Below is how the EAMOS.INI file should look when this procedure is complete.

```
;Virtual Terminals
;AMSIO.LIT VTM8,PSEUDO,NULL,100,100,100    ; shipping mode
AMSIO.LIT VTM8,PCVTM=10,AM62c,200,200,200  ; CPUPIC mode
```

   d) *Select* > File > [**Save**]
   e) *Select* > File > [**Exit**]

3. Verify that the VTM8 assignment in the <AM8000 configuration> menu is defined. This is shown in Figure 3-6 of Chapter 3. EAMOS must boot and display in this window for the controller to accept the CPUPIC.

CPUPIC Entry

1. Power up the Server and allow it to boot AMOS 8.x. Verify that the <AmpcTERM > window appears.

2. From the < AM8000 Diagnostic> window, *Select*> [**Configure**] Menu.

3. In the <Configure Menu> General display
   a) In the Magic Code Input box: place the *Mouse cursor over the White box* and [left click].
   b) The operator must type in the 12-digit number on the white tag on the Main CPU board and hit (**Enter**) {Each mother board has a unique CPUPIC number, no two systems are the same}.
   c) For example is: **(373077313033) (Enter)** {twelve numbers no spaces or periods}.
   d) Make sure that the VERIFICATION PASSED message appears in the green bottom status line.

4. You're done!

If no verification message appears, you typed the code in wrong. This must be done correctly or the AMOS PIC code and SSD will not Function. The system will be in single user mode only!

If the system hangs, you did not enable the VTM8 port. The AMPCTerm terminal emulator must be on the console monitor for this procedure to succeed. If both status lights on the AM-113-xx controller are on, all is well. If only one light is on, a problem exists. Restart the Server with a Power Up RESET and try again. Each CPU board shipped from Alpha Micro has a white label with the 12-digit number typed on it. This number is unique for each motherboard of any type.

If an SSD failure message occurs in the Diagnostic Window during Boot, a special file is created during this process. The file created is C**:\AM8000\amcfg.cfg.** This file needs to be EMAILED to Alpha Micro Technical Support for analysis. Technical Support can tell what has gone wrong and provide the correct assistance to re-enable the SSD. Do not change the XPE hardware manager settings for any network interface adapter. This will change the CPUPIC code. There is specific information in the AM-8000 Service manual and Eagle 800 Service manual to set up the CPU board CMOS correctly before this procedure should be attempted.

After CPUPIC is Accepted - Clean UP and Hide VTM8

1. *Type* ALT TAB *to select* the <Alpha Micro icon> *to display* < AM8000 Diagnostic> Window.
   a. *Select*> Tools > [Control Panel]
   b. *Select*> [Folders]
   c. ***Select***> [C:\AM8000\Eamos] and double *click.*

2. In the right panel locate and *Select*> [**EAMOS.INI**] double *click* on it.

3. In the <Notepad > editor.
   a. Edit this file and "UN-Comment" the { AMSIO VTM8,Pseudo, null } line by removing a **(;)** in column 1.
   b. The next line down "Insert" the **(;)** so that the {**;** AMSIO VTM8,PCVTM=10,AM62C} line is commented out.
      1. Below is how the EAMOS.INI file should look when this procedure is complete.

```
;Virtual Terminals
AMSIO.LIT VTM8,PSEUDO,NULL,100,100,100  ; shipping mode
;AMSIO.LIT VTM8,PCVTM=10,AM62c,200,200,200 ; CPUPIC mode
```

   c. *Select* >File > [**Save**]
   d. *Select* >File > [**Exit**]

4. *Type* ALT TAB *to select* the <AMPCLiTE> window.

5. *Type* (**LOG OPR**:) *Press* ENTER .

6. *Type* (**MONTST AM8000**) *Press* ENTER

7. This will boot the system up and the SSD should be active and all ports should be available if the AM8000 PIC code has been entered with INSTA8. (See Chapter 4).

8. VTM8 virtual terminal should be hidden if you corrected the EAMOS.INI file.

AM-113-XX COMPLIANCE INFORMATION STATEMENT

Responsible Party:	Alpha Micro Products
Address:	17534 Von Karman
	Irvine, CA 92614
Telephone:	(949)250-4180
FAX:	(949)250-5870
Type of Product:	PC Co-processor board
Model Name:	AM-113-XX Multi-Function

This device complies with Part 15 of the FCC Rules.
Operation is subject to the following conditions:

1) This device may not cause harmful interference, and

2) This device must accept any interference received including interference that may cause undesired operation.

FCC INFORMATION

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!
   This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Alpha Micro Products may void your authority to use the product.
2. IMPORTANT: When connecting this product to accessories and/or another product, use only high quality shielded cables. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product.
3. NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Appendix G - AMOS 8.x INI's

The following files are sample INI files for AMOS 8.x booting for your reference.
The lines or commands in **BOLD** are AMOS 8.x specific statements.

AMSAFEBOOT.INI

```
; AMSAFE.BOOT INI file for AM-8000 System
:T
LOAD SYSMSG.USA
LOAD TRMDEF.LIT[1,4]
LOAD AMO000.OVR[1,4]
SLEEP 4                 ;allow am113-xx to finish boot REQUIRED!
TRMDEF VTM1,PCVTM=1,AM62c,200,200,200,EDITOR=10 ; console terminal
VER
QUEUE 10000             ; allow plenty of queue blocks
TRMDEF VTM2,PCVTM=2,AM62c,200,200,200,EDITOR=10
;TRMDEF SIO001,PCSIO=001:19200,AM65,200,200,200,EDITOR=10
TRMDEF                  ;required
JOBS 5
JOBALC VTM1,VTM2,JOB1
SCZDSP SCZPC.SYS        ;required!
DEVTBL DSK
DEVTBL SUB
DEVTBL TRM,RES,MEM
DEVTBL /STR0            ;Tandberg streamer
BITMAP DSK
BITMAP SUB
ERSATZ ERSATZ.INI/B:20  ;reserve 20 more blank ersatz slots
MSGINI 50K
SYSTEM SYSMSG.USA
SYSTEM CMDLIN.SYS
SYSTEM DVR:TRM.DVR
SYSTEM DVR:MEM.DVR
SYSTEM DVR:RES.DVR
SYSTEM DVR:ACD.DVR
SYSTEM DVR:STR.DVR
SYSTEM DVR:SUB.DVR
SYSTEM DVR:UPD.DVR      ; for UPDates
SYSTEM DVR:DVD.DVR      ; for MAKDVD & DVD
SYSTEM DVR:DBD.DVR      ; for BlueRay
SYSTEM
SET HEX
SET NOCACHE DSK0:
SET NOCACHE SUB0:
MOUNT DSK:
SETJOB VTM2,VTM2,500K,JOB.JIN
;SETJOB JOB1,SIO001,500K,JOB.JIN
SET PROMPT SAFE.BOOT:
MEMORY 0
```

AM8000.INI

```
; AM8000.INI System Start UP
; Date = 2/11/08 mpw
:T
LOAD SYSMSG.USA             ; ensures error messages displayed as text
```

```
LOAD AMO000.OVR[1,4]
LOAD TRMDEF.LIT[1,4]
SLEEP 4                      ; allow time for am11350 to boot
TRMDEF VTM1,PCVTM=1,AM62C,200,200,200,EDITOR=10 ;Console boot terminal
VER
TRMDEF VTM2,PCVTM=2,AM62C,200,200,200,EDITOR=10
TRMDEF VTM3,PCVTM=3,AM62C,200,200,200,EDITOR=10
TRMDEF VTM4,PCVTM=4,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM5,PCVTM=5,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM6,PCVTM=6,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM7,PCVTM=7,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM8,PCVTM=10,AM62C,200,200,200,EDITOR=10
QUEUE 10000
TRMDEF SIO1,PCSIO=1:19200,AM62C,200,200,200,EDITOR=10 ; am113-50 ports
TRMDEF SIO2,PCSIO=2:19200,AM62C,200,200,200,EDITOR=10
TRMDEF SIO3,PCSIO=3:38400,AM62C,200,200,200,EDITOR=10
;TRMDEF SIO4,PCSIO=4:19200,AM62C,200,200,200,EDITOR=10
;TRMDEF Ser002,PCSIO=4:38400,teltyp,200,200,200,,null ;optional serial-net
;TRMDEF COM1,PCCOM=1:19200,AM62C,200,200,200,EDITOR=10 ; pc com ports
;TRMDEF COM2,PCCOM=2:19200,AM62C,200,200,200,EDITOR=10
TRMDEF LPT1,PCLPT=1,TELTYP,100,100,100                 ; pc lpt port
TRMDEF NETSER,PSEUDO,NULL,80,80,80
TRMDEF TCPEMU,PSEUDO,NULL,80,80,80
TRMDEF NETLOG,PSEUDO,NULL,80,80,80
TRMDEF DUMMY,PSEUDO,NULL,80,80,80
;TRMDEF VTSER,PSEUDO,NULL100,100,100      ;optional alphanet vt Server
;TRMDEF #5 100,100,100,EDITOR=5           ; optional 5 alphanet slots
TDVDEF AM62,AM62A,AM62C,AM65,AM65A,VT100,AM75   ; terminal drivers
TRMDEF                   ; Required
JOBS 40                  ; jobs allocated
JOBALC VTM1,VTM2,VTM3,VTM4,
;JOBALC VTM5,VTM6,VTM7
JOBALC JOB1,JOB2,JOB3,JOB4,JBPC1,JBPC2    ; onboard ports
JOBALC NETSER,TCPEMU,NETLOG,LPT1          ;VTSER

SCZDSP SCZPC.SYS         ;required for amos 8.0
DEVTBL DSK               ; amos boot c:\AM80000\AM8000.AMD file
DEVTBL NEW               ; c:\AM8000\new.amd
DEVTBL BIG               ; e:\AM8000\big1.amd
DEVTBL SUB               ; c:\AM8000\am8ksub.amd
DEVTBL TRM,RES,MEM,/STR0
DEVTBL TLP0
BITMAP DSK
BITMAP NEW
BITMAP BIG
BITMAP SUB
ERSATZ ERSATZ.INI/B:20  ;reserve 20 more blank ersatz slots
MSGINI 100K
NETINI ETH101.NIN        ; Ethernet network for AMOS 8.0
;NETINI SER002.NIN       ; optional serial network 2
;
SYSTEM SYSMSG.USA
SYSTEM AMSORT.SYS
SYSTEM ISAM.SYS
SYSTEM ISAMP.SYS
SYSTEM CMDLIN.SYS
SYSTEM DVR:TRM.DVR
SYSTEM DVR:MEM.DVR
SYSTEM DVR:RES.DVR
SYSTEM DVR:ACD.DVR
SYSTEM DVR:STR.DVR
SYSTEM DVR:DVD.DVR
SYSTEM DVR:DBD.DVR
; AMD pseudo disk drivers  are copies of  PCDSK.DVR
SYSTEM DVR:NEW.DVR
```

```
SYSTEM DVR:BIG.DVR
SYSTEM DVR:SUB.DVR
SYSTEM DVR:UPD.DVR      ; for UPDates
;;  Only use dcache for AMOS formatted disk drives
;;  not necessary for .AMD files
;; SYSTEM DCACHE.SYS/N/M/U 2000K
;;  For AMOS formatted drives,
;;  use FixLog with SCZPC.DVR to create the SCZ driver
;; SYSTEM DVR:SCZ.DVR   ; for AMOS formatted drive
;; other program loads
SYSTEM RPC.SYS/N
SYSTEM RPCLOD.LIT
SYSTEM SYS:RUN.LIT
SYSTEM SYS:ORUN.LIT
SYSTEM BAS:FLOCK.SBR
;TCP stuff
SYSTEM TCP:IPCINI/N 200 200K
SYSTEM TCP:FTPD.LIT
SYSTEM TCP:FTPD.RTI
SYSTEM RTI.LIT
SYSTEM DVR:TLP.DVR
SYSTEM TCP:LPR.LIT
SYSTEM TCP:LPR.RTI
SYSTEM TCP:TAMED.LIT
SYSTEM TCP:TAMED.RTI
SYSTEM TCP:TELNED.LIT
SYSTEM TCP:TELNED.RTI
SYSTEM
SMEM 120M               ;Increase for more telnet jobs
LOG DEMO
SET HEX
SET DSKERR
MOUNT DSK:
MOUNT SUB:
MOUNT BIG:
SET NOCACHE DSK0:       ;for AMD dsk files
SET NOCACHE SUB0:       ;for AMD dsk files
SET NOCACHE BIG0:
;
SETJOB VTM2,VTM2,500K,JOB.JIN
SETJOB VTM3,VTM3,500K,JOB.JIN
SETJOB VTM4,VTM4,500K,JOB.JIN
;SETJOB VTM5,VTM5,500K,JOB.JIN
;SETJOB VTM6,VTM6,500K,JOB.JIN
;SETJOB VTM7,VTM7,500K,JOB.JIN
;;SETJOB VTM8,VTM8,500K,JOB.JIN
;
SETJOB JOB1,SIO1,500K,JOB.JIN
SETJOB JOB2,SIO2,500K,JOB.JIN
SETJOB JOB3,SIO3,500K,JOB.JIN
;SETJOB JOB4,SIO4,500K,JOB.JIN
SETJOB JBPC1,COM1,500K,JOB.JIN
SETJOB JBPC2,COM2,500K,JOB.JIN
SETJOB LPT1,DUMMY,20k,LTPTINI LPT1.PIN
WAIT LPT1
SETJOB NETSER,NETSER,100K,NETSER.JIN
WAIT NETSER
;setjob vtser,vtser,100k,vtser.jin
;wait vtser
SETJOB NETLOG,NETLOG,50K
SETJOB TCPEMU,TCPEMU,3M,TCP:GOTCP.CMD

WAIT TCPEMU
sleep 1
```

```
 JOBLVL TCPEMU,2  ; set the job level to 2 for tcpemu for quicker network
response
sleep 1
 JOBLVL TELNED,2  ; set the job level to 2 for telned for quicker telned
terminal response.
LOG SYS:
SET prompt ip172>
MEMORY 0          ;Local AM8000.INI file in use
```

AM359.INI

```
; AM359 INI file for AM-8000 System
:T
LOAD SYSMSG.USA
LOAD AMO000.OVR[1,4]
LOAD TRMDEF.LIT[1,4]
SLEEP 8           ; more ports, more time to initialize
; Virtual Terminals
TRMDEF VTM1,PCVTM=1,AM65,200,200,200,EDITOR=10
VER
QUEUE 10000
TRMDEF VTM2,PCVTM=2,AM65,200,200,200,EDITOR=10
TRMDEF VTM3,PCVTM=3,AM65,200,200,200,EDITOR=10
TRMDEF VTM4,PCVTM=4,AM65,200,200,200,EDITOR=10
;TRMDEF VTM5,PCVTM=5,AM65,200,200,200,EDITOR=10
;TRMDEF VTM6,PCVTM=6,AM65,200,200,200,EDITOR=10
;TRMDEF VTM7,PCVTM=7,AM65,200,200,200,EDITOR=10
;TRMDEF VTM8,PCVTM=10,AM65,200,200,200,EDITOR=10
;  SERIAL PORTS  AM11350
TRMDEF SIO001,PCSIO=001:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO002,PCSIO=002:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO003,PCSIO=003:19200,AM62A,200,200,200,EDITOR=10
TRMDEF SIO004,PCSIO=004:19200,AM62A,200,200,200,EDITOR=10
; SERIAL PORTS  AM359               0
TRMDEF SIO005,PCSIO=005:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO006,PCSIO=006:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO007,PCSIO=007:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO008,PCSIO=010:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO009,PCSIO=011:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO010,PCSIO=012:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO011,PCSIO=013:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO012,PCSIO=014:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359               1
TRMDEF SIO013,PCSIO=015:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO014,PCSIO=016:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO015,PCSIO=017:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO016,PCSIO=020:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO017,PCSIO=021:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO018,PCSIO=022:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO019,PCSIO=023:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO020,PCSIO=024:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359               2
;TRMDEF SIO021,PCSIO=025:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO022,PCSIO=026:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO023,PCSIO=027:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO024,PCSIO=030:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO025,PCSIO=031:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO026,PCSIO=032:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO027,PCSIO=033:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO028,PCSIO=034:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359               3
;TRMDEF SIO029,PCSIO=035:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO030,PCSIO=036:19200,AM65,200,200,200,EDITOR=10
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;TRMDEF SIO031,PCSIO=037:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO032,PCSIO=040:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO033,PCSIO=041:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO034,PCSIO=042:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO035,PCSIO=043:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO036,PCSIO=044:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS AM359              4
;TRMDEF SIO037,PCSIO=045:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO038,PCSIO=046:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO039,PCSIO=047:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO040,PCSIO=050:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO041,PCSIO=051:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO042,PCSIO=052:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO043,PCSIO=053:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO044,PCSIO=054:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359             5
;TRMDEF SIO045,PCSIO=055:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO046,PCSIO=056:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO047,PCSIO=057:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO048,PCSIO=060:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO049,PCSIO=061:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO050,PCSIO=062:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO051,PCSIO=063:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO052,PCSIO=064:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359             6
;TRMDEF SIO053,PCSIO=065:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO054,PCSIO=066:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO055,PCSIO=067:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO056,PCSIO=070:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO057,PCSIO=071:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO058,PCSIO=072:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO059,PCSIO=073:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO060,PCSIO=074:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359             7
;TRMDEF SIO061,PCSIO=075:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO062,PCSIO=076:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO063,PCSIO=077:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO064,PCSIO=100:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO065,PCSIO=101:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO066,PCSIO=102:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO067,PCSIO=103:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO068,PCSIO=104:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359             8
;TRMDEF SIO069,PCSIO=105:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO070,PCSIO=106:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO071,PCSIO=107:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO072,PCSIO=110:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO073,PCSIO=111:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO074,PCSIO=112:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO075,PCSIO=113:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO076,PCSIO=114:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359             9
;TRMDEF SIO077,PCSIO=115:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO078,PCSIO=116:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO079,PCSIO=117:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO080,PCSIO=120:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO081,PCSIO=121:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO082,PCSIO=122:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO083,PCSIO=123:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO084,PCSIO=124:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359             10
;TRMDEF SIO085,PCSIO=125:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO086,PCSIO=126:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO087,PCSIO=127:19200,AM65,200,200,200,EDITOR=10
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;TRMDEF SIO088,PCSIO=130:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO089,PCSIO=131:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO090,PCSIO=132:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO091,PCSIO=133:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO092,PCSIO=134:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359              11
;TRMDEF SIO093,PCSIO=135:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO094,PCSIO=136:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO095,PCSIO=137:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO096,PCSIO=140:19200,AM65,200,200,200,EDITOR=10
TRMDEF SIO097,PCSIO=141:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO098,PCSIO=142:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO099,PCSIO=143:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO100,PCSIO=144:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359              12
;TRMDEF SIO101,PCSIO=145:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO102,PCSIO=146:19200,AM65,200,200,200,EDITOR=10;
;TRMDEF SIO103,PCSIO=147:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO104,PCSIO=150:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO105,PCSIO=151:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO106,PCSIO=152:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO107,PCSIO=153:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO108,PCSIO=154:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359              13
;TRMDEF SIO109,PCSIO=155:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO110,PCSIO=156:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO111,PCSIO=157:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO112,PCSIO=160:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO113,PCSIO=161:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO114,PCSIO=162:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO115,PCSIO=163:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO116,PCSIO=164:19200,AM65,200,200,200,EDITOR=10
;; SERIAL PORTS  AM359              14
;TRMDEF SIO117,PCSIO=165:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO118,PCSIO=166:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO119,PCSIO=167:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO120,PCSIO=170:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO121,PCSIO=171:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO122,PCSIO=172:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO123,PCSIO=173:19200,AM65,200,200,200,EDITOR=10
;TRMDEF SIO124,PCSIO=174:19200,AM65,200,200,200,EDITOR=10
;
TRMDEF LOGTRM,PSEUDO,NULL,50,50,50
TRMDEF COM1,PCCOM=1:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM2,PCCOM=2:19200,AM62C,200,200,200,EDITOR=10
TRMDEF LPT1,PCLPT=1,TELTYP,100,100,100
TRMDEF NETSER,PSEUDO,NULL,80,80,80
TRMDEF TCPEMU,PSEUDO,NULL,80,80,80
TRMDEF NETLOG,PSEUDO,NULL,80,80,80
TRMDEF DUMMY,PSEUDO,NULL,80,80,80
TRMDEF                           ;Required
JOBS 250
JOBALC VTM1,VTM2,VTM3,VTM4
;JOBALC VTM6,VTM7,VTM5
JOBALC JBPC1,JBPC2,SPOOL1
JOBALC JOB001,JOB002,JOB003,JOB004  ;JOB005,JOB006,JOB007,JOB008
; am359 trm ports
JOBALC JOB200,JOB201,JOB202,JOB203,JOB204,JOB205,JOB206,JOB207
JOBALC JOB208,JOB209,JOB210,JOB211,JOB212,JOB213,JOB214,JOB215
;JOBALC JOB216,JOB217,JOB218,JOB219,JOB220,JOB221,JOB222,JOB223
;JOBALC JOB224,JOB225,JOB226,JOB227,JOB228,JOB229,JOB230,JOB231
;JOBALC JOB232,JOB233,JOB234,JOB235,JOB236,JOB237,JOB238,JOB239
;JOBALC JOB240,JOB241,JOB242,JOB243,JOB244,JOB245,JOB246,JOB247
;JOBALC JOB248,JOB249,JOB250,JOB251,JOB252,JOB253,JOB254,JOB255
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;JOBALC JOB256,JOB257,JOB258,JOB259,JOB260,JOB261,JOB262,JOB263
;JOBALC JOB264,JOB265,JOB266,JOB267,JOB268,JOB269,JOB270,JOB271
;JOBALC JOB272,JOB273,JOB274,JOB275,JOB276,JOB277,JOB278,JOB279
;JOBALC JOB280,JOB281,JOB282,JOB283,JOB284,JOB285,JOB286,JOB287
;JOBALC JOB288,JOB289,JOB290,JOB291,JOB292,JOB293,JOB294,JOB295
;JOBALC JOB296,JOB297,JOB298,JOB299,JOB300,JOB301,JOB302,JOB303
;JOBALC JOB304,JOB305,JOB306,JOB307,JOB308,JOB309,JOB310,JOB311
;JOBALC JOB312,JOB313,JOB314,JOB315,JOB316,JOB317,JOB318,JOB319
;JOBALC JOB320,JOB321,JOB322,JOB323,JOB324,JOB325,JOB326,JOB327
JOBALC LOGJOB
JOBALC NETSER,TCPEMU,NETLOG
SCZDSP SCZPC.SYS        ;Required
DEVTBL DSK
DEVTBL SUB
;DEVTBL OLD
;DEVTBL NEW
DEVTBL TRM,RES,MEM,/STR0
DEVTBL TLP0
BITMAP DSK
BITMAP SUB
;BITMAP OLD
;BITMAP NEW
ERSATZ ERSATZ.INI/B:20  ;reserve 20 more blank ersatz slots
MSGINI 100K
NETINI ETH101.NIN
SYSTEM SYSMSG.USA
SYSTEM CMDLIN.SYS
SYSTEM DVR:TRM.DVR
SYSTEM DVR:MEM.DVR
SYSTEM DVR:RES.DVR
SYSTEM DVR:SUB.DVR
SYSTEM DVR:OLD.DVR
SYSTEM DVR:DVD.DVR      : for DVD & MAKDVD
SYSTEM DVR:DBD.DVR      : for BlueRay
SYSTEM DVR:UPD.DVR      ; for UPDates
SYSTEM DVR:STR.DVR
SYSTEM RPC.SYS/N
SYSTEM RPCLOD.LIT
SYSTEM ISAMP.SYS
SYSTEM AMSORT.SYS
;TCP stuff
SYSTEM TCP:IPCINI/N 200 200K
SYSTEM TCP:FTPD.LIT
SYSTEM TCP:FTPD.RTI
SYSTEM TCP:TELNED.LIT
SYSTEM TCP:TELNED.RTI
SYSTEM TCP:TAMED.LIT
SYSTEM TCP:TAMED.RTI
SYSTEM RTI.LIT
SYSTEM DVR:TLP.DVR
SYSTEM TCP:LPR.LIT
SYSTEM TCP:LPR.RTI
SYSTEM
SMEM 160M
SET HEX
MOUNT DSK:
MOUNT SUB:
LOG SYS:
SETJOB LOGJOB,LOGTRM,50K,LOGJOB.JIN
; Virtual Terminals
SETJOB VTM2,VTM2,500K,JOB.JIN
SETJOB VTM3,VTM3,500K,JOB.JIN
SETJOB VTM4,VTM4,500K,JOB.JIN
;SETJOB VTM5,VTM5,500K,JOB.JIN
;SETJOB VTM6,VTM6,500K,JOB.JIN
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;SETJOB VTM7,VTM7,500K,JOB.JIN
;SETJOB VTM8,VTM8,500K,JOB.JIN
; pc com port jobs
SETJOB JBPC1,COM1,500K,JOB.JIN
SETJOB JBPC2,COM2,500K,JOB.JIN
; SERIAL PORTS A31810
SETJOB JOB001,SIO001,500K,JOB.JIN
SETJOB JOB002,SIO002,500K,JOB.JIN
SETJOB JOB003,SIO003,500K,JOB.JIN
SETJOB JOB004,SIO004,500K,JOB.JIN
;; SERIAL PORTS  AM359              0
SETJOB JOB200,SIO005,500K,JOB.JIN
SETJOB JOB201,SIO006,500K,JOB.JIN
SETJOB JOB202,SIO007,500K,JOB.JIN
SETJOB JOB203,SIO008,500K,JOB.JIN
SETJOB JOB204,SIO009,500K,JOB.JIN
SETJOB JOB205,SIO010,500K,JOB.JIN
SETJOB JOB206,SIO011,500K,JOB.JIN
SETJOB JOB207,SIO012,500K,JOB.JIN
;; SERIAL PORTS  AM359              1
SETJOB JOB208,SIO013,500K,JOB.JIN
SETJOB JOB209,SIO014,500K,JOB.JIN
SETJOB JOB210,SIO015,500K,JOB.JIN
SETJOB JOB211,SIO016,500K,JOB.JIN
SETJOB JOB212,SIO017,500K,JOB.JIN
SETJOB JOB213,SIO018,500K,JOB.JIN
SETJOB JOB214,SIO019,500K,JOB.JIN
SETJOB JOB215,SIO020,500K,JOB.JIN
;; SERIAL PORTS  AM359              2
;SETJOB JOB216,SIO021,500K,JOB.JIN
;SETJOB JOB217,SIO022,500K,JOB.JIN
;SETJOB JOB218,SIO023,500K,JOB.JIN
;SETJOB JOB219,SIO024,500K,JOB.JIN
;SETJOB JOB220,SIO025,500K,JOB.JIN
;SETJOB JOB221,SIO026,500K,JOB.JIN
;SETJOB JOB222,SIO027,500K,JOB.JIN
;SETJOB JOB223,SIO028,500K,JOB.JIN
;; SERIAL PORTS  AM359              3
;SETJOB JOB224,SIO029,500K,JOB.JIN
;SETJOB JOB225,SIO030,500K,JOB.JIN
;SETJOB JOB226,SIO031,500K,JOB.JIN
;SETJOB JOB227,SIO032,500K,JOB.JIN
;SETJOB JOB228,SIO033,500K,JOB.JIN
;SETJOB JOB229,SIO034,500K,JOB.JIN
;SETJOB JOB230,SIO035,500K,JOB.JIN
;SETJOB JOB231,SIO036,500K,JOB.JIN
;; SERIAL PORTS  AM359              4
;SETJOB JOB232,SIO037,500K,JOB.JIN
;SETJOB JOB233,SIO038,500K,JOB.JIN
;SETJOB JOB234,SIO039,500K,JOB.JIN
;SETJOB JOB235,SIO040,500K,JOB.JIN
;SETJOB JOB236,SIO041,500K,JOB.JIN
;SETJOB JOB237,SIO042,500K,JOB.JIN
;SETJOB JOB238,SIO043,500K,JOB.JIN
;SETJOB JOB239,SIO044,500K,JOB.JIN
;; SERIAL PORTS  AM359              5
;SETJOB JOB240,SIO045,500K,JOB.JIN
;SETJOB JOB241,SIO046,500K,JOB.JIN
;SETJOB JOB242,SIO047,500K,JOB.JIN
;SETJOB JOB243,SIO048,500K,JOB.JIN
;SETJOB JOB244,SIO049,500K,JOB.JIN
;SETJOB JOB245,SIO050,500K,JOB.JIN
;;SETJOB JOB246,SIO051,500K,JOB.JIN
;SETJOB JOB247,SIO052,500K,JOB.JIN
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;; SERIAL PORTS  AM359              6
;SETJOB JOB248,SIO053,500K,JOB.JIN
;SETJOB JOB249,SIO054,500K,JOB.JIN
;SETJOB JOB250,SIO055,500K,JOB.JIN
;SETJOB JOB251,SIO056,500K,JOB.JIN
;SETJOB JOB252,SIO057,500K,JOB.JIN
;SETJOB JOB253,SIO058,500K,JOB.JIN
;SETJOB JOB254,SIO059,500K,JOB.JIN
;SETJOB JOB255,SIO060,500K,JOB.JIN;
;; SERIAL PORTS  AM359              7
;SETJOB JOB256,SIO061,500K,JOB.JIN
;SETJOB JOB257,SIO062,500K,JOB.JIN
;SETJOB JOB258,SIO063,500K,JOB.JIN
;SETJOB JOB259,SIO064,500K,JOB.JIN
;SETJOB JOB260,SIO065,500K,JOB.JIN
;SETJOB JOB261,SIO066,500K,JOB.JIN
;SETJOB JOB262,SIO067,500K,JOB.JIN
;SETJOB JOB263,SIO068,500K,JOB.JIN
;; SERIAL PORTS  AM359              8
;SETJOB JOB264,SIO069,500K,JOB.JIN
;SETJOB JOB265,SIO070,500K,JOB.JIN
;SETJOB JOB266,SIO071,500K,JOB.JIN
;SETJOB JOB267,SIO072,500K,JOB.JIN
;SETJOB JOB268,SIO073,500K,JOB.JIN
;SETJOB JOB269,SIO074,500K,JOB.JIN
;SETJOB JOB270,SIO075,500K,JOB.JIN
;SETJOB JOB271,SIO076,500K,JOB.JIN
;; SERIAL PORTS  AM359              9
;SETJOB JOB272,SIO077,500K,JOB.JIN
;SETJOB JOB273,SIO078,500K,JOB.JIN
;SETJOB JOB274,SIO079,500K,JOB.JIN
;SETJOB JOB275,SIO080,500K,JOB.JIN
;SETJOB JOB276,SIO081,500K,JOB.JIN
;SETJOB JOB277,SIO082,500K,JOB.JIN
;SETJOB JOB278,SIO083,500K,JOB.JIN
;SETJOB JOB279,SIO084,500K,JOB.JIN
;; SERIAL PORTS  AM359              10
;SETJOB JOB280,SIO085,500K,JOB.JIN
;SETJOB JOB281,SIO086,500K,JOB.JIN
;SETJOB JOB282,SIO087,500K,JOB.JIN
;SETJOB JOB283,SIO088,500K,JOB.JIN
;SETJOB JOB284,SIO089,500K,JOB.JIN
;SETJOB JOB285,SIO090,500K,JOB.JIN
;SETJOB JOB286,SIO091,500K,JOB.JIN
;SETJOB JOB287,SIO092,500K,JOB.JIN
;; SERIAL PORTS  AM359              11
;SETJOB JOB288,SIO093,500K,JOB.JIN
;SETJOB JOB289,SIO094,500K,JOB.JIN
;SETJOB JOB290,SIO095,500K,JOB.JIN
;SETJOB JOB291,SIO096,500K,JOB.JIN
;SETJOB JOB292,SIO097,500K,JOB.JIN
;SETJOB JOB293,SIO098,500K,JOB.JIN
;SETJOB JOB294,SIO099,500K,JOB.JIN
;SETJOB JOB295,SIO100,500K,JOB.JIN
;; SERIAL PORTS  AM359              12
;SETJOB JOB296,SIO101,500K,JOB.JIN
;SETJOB JOB297,SIO102,500K,JOB.JIN
;SETJOB JOB298,SIO103,500K,JOB.JIN
;SETJOB JOB299,SIO104,500K,JOB.JIN
;SETJOB JOB300,SIO105,500K,JOB.JIN
;SETJOB JOB301,SIO106,500K,JOB.JIN
;SETJOB JOB302,SIO107,500K,JOB.JIN
;SETJOB JOB303,SIO108,500K,JOB.JIN
;; SERIAL PORTS  AM359              13
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;SETJOB JOB304,SIO109,500K,JOB.JIN
;SETJOB JOB305,SIO110,500K,JOB.JIN
;SETJOB JOB306,SIO111,500K,JOB.JIN
;SETJOB JOB307,SIO112,500K,JOB.JIN
;SETJOB JOB308,SIO113,500K,JOB.JIN
;SETJOB JOB309,SIO114,500K,JOB.JIN
;SETJOB JOB310,SIO115,500K,JOB.JIN
;SETJOB JOB311,SIO116,500K,JOB.JIN
;; SERIAL PORTS  AM359              14
;SETJOB JOB312,SIO117,500K,JOB.JIN;
;SETJOB JOB313,SIO118,500K,JOB.JIN
;SETJOB JOB314,SIO119,500K,JOB.JIN
;SETJOB JOB315,SIO120,500K,JOB.JIN
;SETJOB JOB316,SIO121,500K,JOB.JIN
;SETJOB JOB317,SIO122,500K,JOB.JIN
;SETJOB JOB318,SIO123,500K,JOB.JIN
;SETJOB JOB319,SIO124,500K,JOB.JIN
;
SETJOB LOGJOB,LOGTRM,20K,LOGGER 7
SETJOB SPOOL1,DUMMY,20K,LPTINI  LPT1.PIN
SETJOB NETSER,NETSER,100K,NETSER.JIN
WAIT NETSER
SETJOB NETLOG,NETLOG,50K
SETJOB TCPEMU,TCPEMU,3M,TCP:GOTCP.CMD
Log OPR: demo
sleep 1
 JOBLVL TCPEMU,2        ; Set job level to 2 for tcpmeu
sleep 1
 JOBLVL TELNED,2        ; Set job level to 2 for telned for better terminal
response
Log SYS:
SET PROMPT AM8000:
MEMORY 0    ;Local AM359.INI file in use
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E18SIO.INI

```
; E18SIO.INI System Start UP, for 18 PC PC-COM ports, plus Am113 ports,
Normally for Eagle 800
:T
LOAD SYSMSG.USA             ; ensures error messages displayed as text
LOAD AMO000.OVR[1,4]
LOAD TRMDEF.LIT[1,4]
SLEEP  4                    ; allow time for am113 to boot
TRMDEF VTM1,PCVTM=1,AM62C,200,200,200,EDITOR=10
VER
QUEUE 10000
TRMDEF VTM2,PCVTM=2,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM3,PCVTM=3,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM4,PCVTM=4,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM5,PCVTM=5,AM62C,200,200,200,EDITOR=10
;am113-45
TRMDEF SIO1,PCSIO=1:19200,AM62C,200,200,200,EDITOR=10
TRMDEF SIO2,PCSIO=2:19200,AM62C,200,200,200,EDITOR=10
TRMDEF SIO3,PCSIO=3:19200,AM62C,200,200,200,EDITOR=10
TRMDEF SIO4,PCSIO=4:19200,AM62C,200,200,200,EDITOR=10
;on motherboard
TRMDEF COM1,PCCOM=1:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM2,PCCOM=2:19200,AM62C,200,200,200,EDITOR=10
;8-PORT     (cable A to USB1) or PCI board
TRMDEF COM3,PCCOM=3:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM4,PCCOM=4:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM5,PCCOM=5:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM6,PCCOM=6:19200,AM62C,200,200,200,EDITOR=10
```

```
TRMDEF COM7,PCCOM=7:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM8,PCCOM=10:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM9,PCCOM=11:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM10,PCCOM=12:19200,AM62C,200,200,200,EDITOR=10
;8-PORT     (cable B to USB2) or second PCI board
TRMDEF COM11,PCCOM=13:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM12,PCCOM=14:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM13,PCCOM=15:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM14,PCCOM=16:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM15,PCCOM=17:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM16,PCCOM=20:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM17,PCCOM=21:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM18,PCCOM=22:19200,AM62C,200,200,200,EDITOR=10
;TRMDEF LPT1,PCLPT=1,TELTYP,100,100,100
;TRMDEF VTSER,PSEUDO,NULL,80,80,80
TRMDEF NETSER,PSEUDO,NULL,80,80,80
TRMDEF TCPEMU,PSEUDO,NULL,80,80,80
TRMDEF NETLOG,PSEUDO,NULL,80,80,80
TRMDEF DUMMY,PSEUDO,NULL,80,80,80
TRMDEF                                  ;Required
JOBS 40
JOBALC VTM1,VTM2,VTM3,VTM4
;JOBALC VTM6,VTM7,VTM8;VTM5
JOBALC JOB1,JOB2,JOB3,JOB4              ; onboard ports
JOBALC JBPC1,JBPC2
JOBALC JBPC3,JBPC4,JBPC5,JBPC6,JBPC7,JBPC8,JBPC9,JBPC10
JOBALC JBPC11,JBPC12,JBPC13,JBPC14,JBPC15,JBPC16,JBPC17,JBPC18
JOBALC TCPEMU,NETLOG,NETSER             ;VTSER,LPT1
SCZDSP SCZPC.SYS
DEVTBL DSK
;DEVTBL NEW
DEVTBL SUB
DEVTBL TRM,RES,MEM,/STR0
BITMAP DSK
;BITMAP NEW
BITMAP SUB
ERSATZ ERSATZ.INI/B:20          ;reserve 20 more blank ersatz slots
MSGINI 100K
NETINI ETH101.NIN
SYSTEM SYSMSG.USA
SYSTEM AMSORT.SYS
SYSTEM ISAM.SYS
SYSTEM CMDLIN.SYS
SYSTEM DVR:TRM.DVR
SYSTEM DVR:MEM.DVR
SYSTEM DVR:RES.DVR
SYSTEM DVR:NEW.DVR
SYSTEM DVR:SUB.DVR
SYSTEM DVR:UPD.DVR              ; for UPDates
SYSTEM DVR:DVD.DVR              ; for DVD & MAKDVD
SYSTEM DVR:DBD.DVR              ; for BlueRay
SYSTEM DVR:ACD.DVR
SYSTEM DVR:STR.DVR
SYSTEM RPC.SYS/N
SYSTEM RPCLOD.LIT
SYSTEM RUN.LIT
SYSTEM ORUN.LIT
;TCP stuff
SYSTEM TCP:IPCINI/N 200 200K
SYSTEM TCP:FTPD.LIT
SYSTEM TCP:FTPD.RTI
SYSTEM TCP:TELNED.LIT
SYSTEM TCP:TELNED.RTI
SYSTEM RTI.LIT
SYSTEM
```

```
SMEM  80M
LOG DEMO
SET HEX
SET DSKERR
MOUNT DSK:
MOUNT  SUB:
;MOUNT NEW:
SETJOB VTM2,VTM2,500K,JOB.JIN
;SETJOB VTM3,VTM3,500K,JOB.JIN
;SETJOB VTM4,VTM4,500K,JOB.JIN
;SETJOB VTM5,VTM5,500K,JOB.JIN
SETJOB JOB1,SIO1,500K,JOB.JIN
SETJOB JOB2,SIO2,500K,JOB.JIN
SETJOB JOB3,SIO3,500K,JOB.JIN
SETJOB JOB4,SIO4,500K,JOB.JIN
SETJOB JBPC1,COM1,500K,JOB.JIN
SETJOB JBPC2,COM2,500K,JOB.JIN
;
SETJOB JBPC3,COM3,500K,JOB.JIN
SETJOB JBPC4,COM4,500K,JOB.JIN
SETJOB JBPC5,COM5,500K,JOB.JIN
SETJOB JBPC6,COM6,500K,JOB.JIN
SETJOB JBPC7,COM7,500K,JOB.JIN
SETJOB JBPC8,COM8,500K,JOB.JIN
SETJOB JBPC9,COM9,500K,JOB.JIN
SETJOB JBPC10,COM10,500K,JOB.JIN
;
SETJOB JBPC11,COM11,500K,JOB.JIN
SETJOB JBPC12,COM12,500K,JOB.JIN
SETJOB JBPC13,COM13,500K,JOB.JIN
SETJOB JBPC14,COM14,500K,JOB.JIN
SETJOB JBPC15,COM15,500K,JOB.JIN
SETJOB JBPC16,COM16,500K,JOB.JIN
SETJOB JBPC17,COM17,500K,JOB.JIN
SETJOB JBPC18,COM18,500K,JOB.JIN
;
;SETJOB LPT1,DUMMY,20K,LPTINI LPT1.PIN
;WAIT LPT1
;SETJOB NETSER,NETSER,100K,NETSER.JIN
;WAIT NETSER
;SETJOB VTSER,VTSER,100K,VTSER.JIN
;WAIT VTSER
SETJOB NETLOG,NETLOG,50K
SETJOB TCPEMU,TCPEMU,3M,TCP:GOTCP.CMD
LOG OPR: DEMO
sleep 1
 JOBLVL TCPEMU,2  ; Set job level to 2 for tcpemu  for better response
sleep 1
 JOBLVL TELNED,2  ; Set job level to 2 for telned for better terminal response
LOG SYS:
set prompt ip152>
MEMORY 0          ;Local AM8000.INI file in use
```

Appendix H - IDE Internal RAID Option Details

INTERNAL IDE RAID

The AM-452 internal mounted IDE RAID Level 1 subsystem is the best choice for storage for the Eagle 800 Servers. This unit has the primary 40-GB drive placed into the top drive tray. The selector switch should be set to **Single** to start with. Once a drive is placed into the bottom tray and locked into place, move the selector switch to **Default.** The RAID Level 1 controller then mirrors the Primary drive to the new Secondary drive. For a 40-GB drive system, the mirror takes about 2 hours. During this time a 30% reduction in drive response is observed. This is normal for the RAID Level 1 subsystem.

Figure H-1: AM-452 IDE RAID Level 1 Subsystem

Once the drive is mirrored, the speed penalty disappears and the disk response time returns to normal. Before removing the lower drive tray, make sure there is no disk activity by observing the HD LEDs. Unlock the lower tray and, with the handle, pull straight out. Replace the drive tray with another spare drive and slide the tray in until it seats. Lock the drive into place and make sure the selector switch is down in the **Default** position. Then the RAID will rebuild the primary drive to the secondary. During drive removal, or if a drive fails, the audible alarm will be heard. The white push button when pressed IN will turn off the alarm. With the button out, the alarm will sound as the abnormal condition alert.

This RAID subsystem is seen as one disk drive with two partitions to the XPE operating system. Every Eagle 800 has this configuration when it leaves the factory. The drive in the upper tray is formatted and loaded with the system software.

RAID INSTALLATION AND CONFIGURATION INFORMATION

There is one restriction with the AM-452 RAID controller. If both drive trays have no working operating system installed, you cannot load the system software onto an empty drive with the Ghost™ utility. The manufacturer warns that a “Working operating system must be in the upper tray before power up.” The RAID subsystem as shipped from Alpha Micro will have a working operating system installed on the drive and the second drive mirrored.

Alpha Microsystems provides a Bootable Recovery CD as the primary system recovery for the Eagle 800 system. In the unlikely event that both drives fail, do the following. With the power off, take your new disk drive and install it into the lower drive bay of the Eagle chassis. Move the primary IDE channel cable from the RAID chassis and plug it into the new drive. Install a four-pin power connector to power the drive. Install the AMOS 8.x Bootable CD into the CD/DVD drive tray. Power up and boot from the CD. Select the internal drive as the primary disk to restore to from the CD. Restore the system software to the drive. When Ghost is finished, make sure that the system boots from the primary IDE drive. Install any other data from tape or DVD-RAM. Shut down the system and power off. Remove the IDE cable and power connector. Move the new drive from the lower internal drive bay and place it into the RAID drive tray. Use the mounting screws provided. Slide the tray back into the primary slot. Move the primary IDE cable back to the RAID's input connector. Make sure the power connector is installed. Place you new secondary drive in the lower tray. Power up the system and it should boot from the RAID just as it did before. The RAID controller will then mirror the primary to the secondary drive.

When ordering an Eagle 800 system, the user should keep in mind one thing. The AM-452 RAID controller takes up two full size drive slots. The Server is normally equipped with a CD-RW or DVD-RAM drive. This consumes all full sized drive bays in the standard Eagle deskside chassis. If the user wants to mount a full sized Streamer tape drive, the standard chassis cannot accommodate this configuration. To handle this configuration, you can optionally configure the Eagle 800 into the taller 4-drive bay chassis the AM8000 uses. The taller chassis can provide the mounting space required by the AM-452, CD-RW/DVD drive and Streamer tape. The Eagle 800 may also be ordered with the Rack Mount Chassis with the dual hot swappable power supplies.

RAID EXPANSION

The AM-452 RAID system may have the disk capacity expanded by installing larger capacity IDE drives.

Here are a few guidelines to follows:

- For best performance, Place two identical same manufacturer model hard drives in the RAID trays.
- Set the jumpers for both hard drives to MASTER/Single drive mode.
- The normal BIOS setting for the primary IDE channel HDD TYPE is AUTO.
- If the same model is not available use a larger capacity and higher speed from the same manufacturer. Make sure the BIOS HDD TYPE is set to MANUAL and enter the data of the original disk. Always place the source disk in the upper tray before starting the system.
- Have the operating system loaded on the new drive prior to installing in the upper tray.
- If moving to a larger drive, first mount the new larger drive on the secondary IDE channel of the system. Use the Ghost Clone Tool to load the existing disk drive data to a new drive and partition the drive to the size desired. Then power down and mount the new larger drive into the primary drive tray. Mount the second new same size drive in the lower tray.

When replacing drives with different models, the number of heads of the new drive must be the same as that of the original drive. If you select HDD TYPE to AUTO in the BIOS and place the new larger drive in the upper tray, the RAID system will be unable to start and data on the disk will be lost.

Document History

Revision	Date	Description
A00	March 2004	Initial release, rewrite of prototype Aug-2003 Document
A01	May 2004	General update and reformatting for on-line usage. Included on AMOS 8.0 Update CD
A02	Sept 2004	Added information on Network Firewall details and I/O subsystem.
A03	March 2005	Added information on AM-8000 Series II and Eagle800 Series II Systems.
A04	January 2006	Updates for Jan2006 software update. Osinst/8 changed in chapter 4.
B00	January 2008	Updates for Jan2008 software update for Series 3 Systems..

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