

© 1996 Alpha Microsystems

REVISIONS INCORPORATED	
REVISION	DATE

00

October 1996

AMOS 2.3 Release Notes

To re-order this document, request part number DSS-10555-00.

This document applies to AMOS version 2.3.

The information contained in this manual is believed to be accurate and reliable. However, no responsibility for the accuracy, completeness or use of this information is assumed by Alpha Microsystems.

This document may contain references to products covered under U.S. Patent Number 4,530,048.

The following are registered trademarks of Alpha Microsystems, Santa Ana, CA 92799:

AMIGOS	AMOS	Alpha Micro	AlphaACCOUNTING
AlphaBASIC	AlphaCALC	AlphaCOBOL	AlphaDDE
AlphaFORTRAN 77	AlphaLAN	AlphaLEDGER	AlphaMAIL
AlphaMATE	AlphaNET	AlphaPASCAL	AlphaRJE
AlphaWRITE	CASELODE	OmniBASIC	VER-A-TEL
VIDEOTRAX			

The following are trademarks of Alpha Microsystems, Santa Ana, CA 92799:

AlphaBASIC PLUS	AlphaVUE	AM-PC	AMTEC
AlphaDDE	AlphaConnect	DART	<i>inSight/am</i>
<i>inFront/am</i>	ESP	MULTI	

All other copyrights and trademarks are the property of their respective holders.

ALPHA MICROSYSTEMS
2722 S. Fairview St.
P.O. Box 25059
Santa Ana, CA 92799

Table of Contents

ABOUT THIS DOCUMENT	1
NEW FEATURES AND ENHANCEMENTS	2
Single Release for All AMOS Hardware	2
Incorporated Software	2
Easier Conversion from AMOS 1.x	4
Performance Improvements	4
LOKSER Improvements	4
ISAM Enhancements	4
Easier Disk Setup	4
Improved Magnetic Tape Software	5
New LDV Support	6
Support for 2000 and Beyond	8
SPR Fixes	8
AlphaBASIC and AlphaBASIC PLUS Improvements	8
New and Enhanced Printer Drivers	10
AM-PC 4.2	10
Other Improvements	10
Third-Party Software	11
INSTALLATION AND UPGRADE INSTRUCTIONS	12
Preparing for a Software Upgrade	12
Downloading AMOS 2.3	13
Upgrading from AMOS 1.4C to AMOS 2.3	14
Upgrading from AMOS 2.2x to AMOS 2.3	18
COMPATIBILITY NOTES	21
NEW DOCUMENTATION	22

AMOS 2.3 Release Notes

These *Release Notes* describe the differences between the previous AMOS release, 2.2C, and the AMOS 2.3 release. They also cover the upgrade installation procedure.

Since the release of AMOS 2.2C, a great deal of work has gone into AMOS: support for new types of hardware, performance enhancements, new features, and bug fixes. Much of this work has been made available as either patches to the operating system or in limited release versions of AMOS applicable to only a specific type of hardware. AMOS 2.3 consolidates the work done in the past four years and adds new components which have never previously been distributed. Its major features are:

- A single release for all AMOS hardware, including the Falcon.
- Incorporates much software previously distributed separately: AlphaTCP, AlphaDDE, AlphaNET, SuperSort, Super Serial I/O, and the SCSI dispatcher. SuperSort is now a standard feature, and doesn't require a PIC. In AMOS 2.3, all these products are activated by a single PIC.
- Easier conversion from AMOS 1.x.
- Performance improvements: dynamic job scheduling and more.
- LOKSER improvements.
- ISAM.SYS now works on extended devices and supports files larger than 32MB.
- Easier disk drive setup.
- Several improvements to the magnetic tape (MTUxxx) software.
- New LDV (LAN driver) support.
- Support for dates after the year 1999.
- Over two hundred previously unreleased SPR fixes.
- Improvements to AlphaBASIC and AlphaBASIC PLUS.
- New and enhanced printer drivers.
- Many other new and improved capabilities.
- Third-party freeware utilities and other software

All of these features are described in more detail later in this document.

ABOUT THIS DOCUMENT

These *Release Notes* contain sections on these topics:

- New feature descriptions
- Installation and upgrade instructions
- Compatibility notes
- New documentation

For information on other changes to AMOS since the 2.2 release, see these documents:

AMOS 2.2A Release Notes, DSS-10445-00
AMOS 2.2B Release Notes, DSS-10457-00
AMOS 2.2C Release Notes, DSS-10506-00
AMOS 2.2E Release Notes, DSS-10551-00

NEW FEATURES AND ENHANCEMENTS

The following sections briefly describe the new features and enhancements which comprise AMOS 2.3. For more detailed descriptions of these changes, see the updates to the appropriate manual in the AMOS Documentation Library. A list of the documents which have changed for AMOS 2.3 is at the end of these *Release Notes*.

Single Release for All AMOS Hardware

As we've introduced new AMOS platforms, we have released many patches and updates which apply only to the new hardware. In fact, in some cases, the new software worked only on the new hardware, and was not compatible with older AMOS computers. With AMOS 2.3, the myriad AMOS versions for the Roadrunner, AM-4000, Super Eagle, etc., are a thing of the past. AMOS 2.3 runs on all 680x0-based AMOS hardware.

AMOS 2.3 also includes support for the initial release of a new, high-end 68060-based system, currently in development, and for a new, much faster, real time clock.

Incorporated Software

Historically, we've added new types of software to the operating system as the functions they serve became more central to the overall purpose and function of an AMOS computer. In today's computing world, the two things every computer system needs are high performance and the ability to communicate with other computers. So, the following software packages are included with AMOS 2.3: AlphaTCP, AlphaDDE, AlphaNET, Super Serial I/O, SuperSort, and the high-performance SCSI dispatcher. All of these products remain available individually for pre-2.3 versions of AMOS.

All of these products are activated when you enter the single PIC for AMOS, for the same number of users as your AMOS license. Your AMOS license now defines the total number of real terminals you can define in your system initialization command file, plus the number of network connections you can have. See the next section for some examples.

Please note that, while these products no longer require a separate PIC, some of them are stored in their own logical devices on the AlphaCD, and have their own installation procedures which you must follow to enable them.



To get the benefits of single-PIC encoding, you must install the latest releases of these products: PR 10/96 or later.

The Single PIC and the AMOS User License

With AMOS 2.3, you no longer license networking products separately from AMOS, with their own user limits. Instead, your AMOS user license defines a limit for the total number of users you can have on your computer, whether those users are using serially-connected “dumb” terminals, PCs over an Ethernet network, or TELNET over a modem line. Within the number of users you are licensed for, you have complete freedom to choose any type of user: all serial terminals, all networked PCs, or a mix. AMOS uses this formula to determine if you’ve reached your user limit:

$$\text{Number of Defined Physical Ports} + \text{Number of Reserved AlphaNET Type-2 Connections} + \text{Incoming AlphaTCP TELNET Connections}$$

The number of physical ports and AlphaNET connections is set when your computer boots; the number of AlphaTCP connections may go up and down as remote users access your system. If the total users reaches your user limit, any further requests for an AlphaTCP connection will be rejected.



AlphaNET Type-1 connections are not included in this calculation. You can have an unlimited number of incoming Type-1 connections. However, the performance of Type-1 connections degrades quickly as you add more. Note that AMOS 2.3 doesn’t change the treatment of Type-1 connections; operation is the same as with AMOS 2.2C.

Here are some sample AMOS configurations, showing how you can vary the number and type of users on your computer. All these examples assume you have a 16-user AMOS license:

1. **Local ASCII terminals only, via serial connections only**
 AM-65 Terminals, maximum: 16

2. **Local ASCII terminals plus PCs via AlphaTCP**
 Assume that eight AM-65 terminals are connected serially: 8
 Maximum number of PCs connected at any one time via AlphaTCP: 8
 Maximum total users: 16

3. **Local ASCII terminals plus various devices via AlphaNET**
 Assume that eight AM-65 terminals are connected serially: 8
 Maximum number of connections at any one time for both of the following (in any combination):¹ 8
 - Virtual terminal connections from terminals on another AMOS system, connected to this system via AlphaNET, *plus...*
 - PCs connected via AlphaLAN and AlphaNET
 Maximum total users: 16

1: This number is set by the TRMDEF #number statement in your initialization file when AMOS boots. It is *not* the number of users actually connected at any given time.

Easier Conversion from AMOS 1.x

File locking issues which made conversion difficult have been resolved in AMOS 2.3. You can now turn file locking on or off for both traditional and extended format disks.

Performance Improvements

We've put a lot of work into the scheduler, resulting in improved performance and new features:

- Dynamic job priority scheduling
- An added scheduling penalty for disk I/O, with a new utility, SETPEN, to let you set the values for your computer
- Improved throughput during heavy disk I/O
- An improved SLEEP call for time-critical jobs and to prevent a “deadly embrace”
- A new utility, STAT1, to display the operation of the scheduler

LOKSER Improvements

We've made a much-requested addition to LOKSER: it now returns, in the D.ARG field of the file's DDB, the JCB of the job that owns the lock. We've included an example AlphaBASIC .SBR and AlphaBASIC PLUS .XBR, with source code.

We've also added the ability to turn locking off on extended disks to support using FLOCK and traditional ISAM files.

ISAM Enhancements

ISAM.SYS (“old ISAM”) and its associated utilities (such as ISMBLD and ISMDMP) now work on extended devices. You can have ISAM files larger than 32MB. The actual maximum size of any ISAM file depends on a complex expression involving key size blocking factors. In general, the smaller the key, the larger the maximum file size.

Easier Disk Setup

As disk drive capacity has increased, so has the length of DEVTBL, MOUNT, and BITMAP statements in the system initialization file. Using AMOS 2.3 with SCSI disks, you no longer need to list each logical device with these statements. Instead, you can define all the logical devices on a physical drive with one statement. For example, for a subsystem drive named SUB, you can put these lines at the appropriate places in your .INI file:

```
DEVTBL SUB
BITMAP SUB
MOUNT SUB:
```

These statements define the SUBn: devices, regardless of how many logical devices the physical drive is divided into. This format works only with SCSI disk drives; with other types of drives you must still define each logical device or, in some cases, a range of devices, for example: DEVTBL SUB0-9.

Improved Magnetic Tape Software

We've done a great deal of work on the MTUxxx tape backup and restore programs, and the associated driver software. These programs now support additional devices and offer some new features, as detailed below.

The MTUSAV /BRIEF Switch

A new switch, /BRIEF, has been added to MTUSAV. With /BRIEF on, MTUSAV displays only the accounts being backed up and the number of files in each account, not the file names. This lets you see the progress of the backup, without the performance penalty which can be caused by displaying each file name. In our testing, using /BRIEF gave approximately the same performance as /SUPPRESS.

New MTURES Message

MTURES now displays a message when it skips a directory on a tape. This gives you a better indication of the progress of a restore when you are restoring only some of the files from a tape.

Improved Tape Spanning

TAPSER.LIT and the tape driver programs have been enhanced to better support tape spanning, and to report when a tape device doesn't allow spanning of tapes. In general, all supported tape drives allow spanning except the Tandberg 3820 and the SCSI-to-Pertec converter. While these devices will span tapes in some situations, we cannot reliably say in all cases whether or not they allow spanning. Instead of allowing a condition where tape spanning may seem to work even though it really failed, we have decided to disallow tape spanning for these two devices.

New TAPLOG Command

We've added a new command, TAPLOG, which reports about the quality of the tape you're using. TAPLOG works only with the SCSI dispatcher, and only with tape drives that support the LOGSNS command. It does not work with most streamer drives or the Archive Python.

See the TAPLOG sheet in the *System Commands Reference Manual* for details.

Improved Error Reporting

All tape device drivers have been improved to report errors more consistently, and to ensure that errors are reported to the terminal which is using the tape device, rather than to the spawned job created by the backup or restore program.

New Devices Supported

Support for new devices has been added to the following drivers:

- 645DVR.DVR: SCSI-to-Pertec converter for ½ inch magnetic tape
- 647DVR.DVR: Hewlett-Packard 4GB and 8GB DAT drives

Versions and Compatibility

All changes described in the previous sections apply to both AMOS 2.3 and AMOS 1.4C. However, all work and testing was done using the PIC-encoded SCSI dispatcher; this software was not tested using the SASI port; it should work, though without the new features. The new tape devices in the previous section are not supported on the SASI port. We did not test the STRxxx or BACKUP and RESTORE commands using the new drivers.

This table shows version and hash information for the files we updated:

File Name	Hash	Version
MTUSAV.LIT (2.3)	726-111-704-363	3.3(136)
(1.4)	363-564-177-600	3.2(135)
MTURES.LIT (2.3)	105-516-676-341	3.3(139)
(1.4)	445-477-561-503	3.2(139)
TAPSER.LIT	120-274-362-102	3.0(124)
TAPLOG.LIT	235-664-257-452	1.0(100) - new program
625DVR.DVR	773-511-031-490	DNA
645DVR.DVR	461-721-797-413	DNA
647DVR.DVR	017-542-610-213	DNA

New LDV Support

Alpha Micro introduced LDV (LAN driver) files in the AMOS 2.2E release for the Eagle 550 (Super Eagle) system. An LDV is similar to an NDV (network driver); both provide a software interface to a network hardware device. However, LDVs offer several advantages compared to NDVs, and one disadvantage in some situations. The advantages, most of which increase network and system performance, are:

- Gathered write operation: an LDV can gather data to transmit from several non-contiguous buffers; the network software does not have to write a packet to a single buffer before transmission.
- Interrupt driven packet transmission: allows network software to resume processing without waiting for the LDV to actually send the packet.
- Improved received packet handling: results in less time spent with interrupts locked, faster received data movement, and more accurate reporting of job CPU time.
- Simplified installation: each LDV is loaded using a single SYSTEM statement. You do not need a NETINI statement and a NET.INI file to initialize the network hardware.

The disadvantage to LDVs is that they do not support AlphaNET; they work only with AlphaTCP networks. While AlphaTCP is generally a more flexible and powerful network protocol than AlphaNET, if there are situations where you must use AlphaNET for an Ethernet connection, you need to use NDVs rather than LDVs or use AlphaNET tunneling on top of AlphaTCP (see the section on ITC tunneling, below). While the Eagle 550 does not support using AlphaNET with Ethernet, it does support ITC tunneling.

AMOS 2.3 includes the following LDV files to support the indicated hardware interfaces:

AM362.LDV	AM-362 Ethernet card
AM366.LDV	AM-366 card in AM-1600 computers
AM366E.LDV	AM-366 card in Eagle 100/200 computers
AM319.LDV	Onboard Ethernet in Eagle 300/400/500 computers
AM319S.LDV	Onboard Ethernet for Eagle 550 (Super Eagle)
AM190.LDV	Ethernet interface on AM-190 (AM-4000 CPU) and AM-540 boards



You may experience problems if you use LDVs with certain older CPU boards. These boards have a very short bus time-out period, and may cause bus time-out errors. The boards that have exhibited this symptom are:

- AM-1600
- AM-2000M
- AM-2000VME
- Eagle 100 (early production boards only)

On an AM-2000VME, you can fix the problem yourself: move the jumper at W110 from pins 1 and 2 to pins 2 and 3. Fixes exist for the AM-2000M and Eagle 100 boards, and one is in process for the AM-1600. Contact your dealer or the Alpha Micro Technical Assistance Center for more information.

ITC Tunneling

When you use an AlphaNET network using an NDV as your network interface driver, you use a NETINI command in your system initialization file for each network you're connected to. NETINI loads the networking software, NETFAM.SYS, and points to a network initialization file where the network is defined. When you use LDVs instead of NDVs, you don't need to use NETINI. However, if you're using ITC tunneling—that is, using AlphaNET protocol over an AlphaTCP connection—you still need the NETFAM.SYS file loaded into system memory. AMOS 2.3 includes a new command, NETFAM, to do just this. Place a NETFAM statement in your system initialization file where you would have placed NETINI for an NDV-based network.



You do not need either a NETINI or a NETFAM statement if you're using a pure AlphaTCP network and LDVs. Only AlphaNET requires that NETFAM.SYS be loaded in memory.

For more information on AlphaNET tunneling, see the *AlphaTCP Administrator's Guide*.

Support for 2000 and Beyond

We've made sure AMOS 2.3 is ready for the last year of the 20th century by modifying the DATE command and the \$DSTOI, \$IDTIM, and \$ODTIM system library routines, and adding \$IDTIMX and \$ODTIM2.

As you'll see when you follow the installation instructions later in this document, you'll need to reset your system date after installing AMOS 2.3. Once you've done that, AMOS will have no trouble keeping the correct date into the next century. However, your software may need some modification to make the transition successfully.

We've changed the low-level date routine in the AMOS monitor to use 1980 as the base year when talking to the calendar chip in your computer. If you use monitor calls to work with dates, this change should not cause a problem. However, if your programs talk directly to the calendar chip, or if you add 1900 to the year when calculating dates, you'll need to modify your code.

See your new *System Commands Reference Manual* and *Monitor Calls Manual* for more information on the changes to the date software.

SPR Fixes

AMOS 2.3 includes over 200 previously unreleased bug fixes. These fall generally into two categories:

- Priority 3 and 4 bug fixes which were never made available via SPN.
- Priority 1 and 2 fixes which we've made in the last several months in a concerted effort to clear all outstanding priority 1 and 2 SPRs.

We put particular effort into correcting problems in ISAM PLUS, AlphaBASIC, and AlphaBASIC PLUS. AlphaBASIC PLUS, especially, has had many changes and improvements as a result. The major changes to both BASICs are described below.

AlphaBASIC and AlphaBASIC PLUS Improvements

AlphaBASIC

Among the many fixes and improvements in AlphaBASIC 1.4 are:

- The LOOKUP function now returns a value of .5 if the file exists, but has a size of 0 blocks.
- The STR() and VAL() functions are now language aware; they will work with any language definition file. You do not need to change your source code to take advantage of this enhancement, but you must recompile.

Due to these and other changes, programs compiled using version 1.4(307) of the AlphaBASIC compiler will not run under earlier versions of AlphaBASIC. RUN.LIT must also be version 1.4 (307) or later.



The new versions of COMPIL and RUN do not require 2.3. So, if you develop programs using this version of COMPIL, you can run them on pre-2.3 systems by installing the new COMPIL, RUN, and BASIC on the computer running the earlier 2.x operating system. But remember, the versions of COMPIL, RUN, and BASIC on any computer should always match!

AlphaBASIC PLUS Enhancements and Fixes

Clearing the SPRs against AlphaBASIC PLUS has resulted in many benefits, which are listed briefly below. For details on the changes to AlphaBASIC PLUS, see the *AlphaBASIC PLUS 1.0(269) Release Notes*.

- COMPLP now supports the ++PRAGMA statement in your source code, so you no longer have to remember what switches to use when compiling a particular program.
- The string work area size calculation is now more accurate, and can be configured by each developer.
- You can no longer CHAIN from a function or subprogram. This was previously allowed, but caused unrecoverable memory leakage.
- # now works in string comparison statements.
- Old ISAM code 7 now works correctly.
- A DIM() statement works from RES: or MEM:.
- Variables defined by a MAP1 statement always start on even byte boundaries.
- The LOOKUP function now returns a value of .5 if the file exists, but has a size of 0 blocks.
- Linking to a subprogram (.SPG) has been improved.
- COMPLP can now incorporate date, time, and compiler version information into a .RP or .SPG file. RUNP can examine this information using the /R switch.
- ++INCLUDE files have better compile time support for error reporting and processing displays.
- Run time memory requirements are slightly lower. See the *Release Notes* for a detailed discussion of AlphaBASIC PLUS memory use.

These changes all take effect with version 1.0(257) of COMPLP, BASICP, and RUNP. Keep the following compatibility information in mind when updating your programs:

- Programs compiled under 1.0(256) or earlier will run using the new RUNP.LIT, but will not get the benefits of all the fixes and enhancements.
- You should not use RUNP 1.0(256) or earlier to run a program compiled using COMPLP 1.0(257) or later, especially if the program uses a DIM() statement, ISAM code 7, or subprogram (.SPG) files.
- Beta test sites which have been using version 1.0(266) should upgrade to the released version and recompile all programs.
- In general, you should always use matching versions of COMPLP, RUNP and BASICP.

The AlphaBASIC PLUS Debugger has not been changed for this release.

New and Enhanced Printer Drivers

AMOS 2.3 includes new printer drivers, usable from AlphaWRITE 2.2 and AlphaCALC, for the HP4 series. Other printer drivers have been enhanced.

AM-PC 4.2

As mentioned earlier, AMOS 2.3 works across the entire product line, including with AM-PC. A new AM-PC release, AM-PC 4.2, includes AMOS 2.3. As always, certain features which do not apply in the Falcon environment have been removed from the version of AMOS included with AM-PC. See the *AM-PC 4.2 Release Notes* for details.

Also, the new Level 7 diagnostic software, described below, is not supported with AM-PC.

Other Improvements

AMOS 2.3 also gives you these new or improved features:

- **Level 7 Diagnostic Capability:** the new LEVEL7 monitor call allows better diagnostic trapping for problem areas. If you are debugging a particularly troubling problem, and you have an idea where the problem may be, you can place a LEVEL7 call in your code. When the program executes the code, you will be placed in the Level 7 debugger, which should help you find the problem more quickly. This feature is not available on AM-PC or on S-100, AM-1000, and AM-1200 systems.
- **Improved Support for Metropolis and FLiP:** changes to both AMOS and Metropolis/FLiP have greatly improved FLiP support. The AMOS monitor can now stop a job from performing terminal I/O; FLiP uses this capability to support Super I/O and AlphaTCP connections.
- **Improved Handling of Diskette Drives:** with the AM-219 controller and driver, a single driver can now control two drives instead of one. Creating bootable diskettes is easier; you can now specify a diskette driver that is already in system memory when using MONGEN. We've also improved controller error reporting
- **Improved Ersatz Name Administration:** you can now add new ersatz definitions or update existing ones while AMOS is running, without rebooting. In the initialization file, you can specify whether an ersatz file's definitions should override existing definitions. See the new ERSATZ command reference sheet and the *System Operator's Guide* for details.
- **An Interpreted AMOS Prompt:** when defining an AMOS prompt using MUSER or SET, you can use codes to include the user name, logged in device and account, and lots more. See the reference sheets for MUSER and SET for more information. Also, refer to the *Monitor Calls Manual* to see how this could affect programs which calculate prompt length.
- **Enhanced RAID support:** the RADMON program notifies you if there's a fault on a RAID drive. There's a new RADMON reference sheet in the *System Commands Reference Manual*.
- **Enhanced UPS support:** a new version of the UPS serial monitor software. See the *UPS Monitor Software User's Guide*.
- **AMSCFG:** this new command reports on your system configuration. See the *System Commands Reference Manual* for details.

- Fix disassembly has been greatly enhanced to deal with 68030, 68040, and some 68060 opcodes.
- The system event logger now saves more system stack diagnostic information, and allows logging to a specified file.

Third-Party Software

As a convenience for third-party software developers, the AMOS 2.3 release CD includes a number of third-party programs. This software was not developed by, and is not supported by, Alpha Microsystems. It is provided purely as a convenience to our developers and users. If you have any problems using this software, please contact the developer, not Alpha Microsystems. The software provided in this way includes:

- ESP 2.2: the latest version of ESP from the ESP consortium. However, we have not been able to test AlphaCALC with this new software, so we're also including ESP 2.1 for AlphaCALC support.
- Good News SQL: an SQL implementation for AMOS, Good News SQL selects data from random files, ISAM files, and ISAM PLUS files based on queries (criteria) you specify. The results can be displayed or output to a text file.
- BENCH: used in a command file to time the elapsed time of a series of commands
- CHGERZ: temporarily change ersatz definition without rebooting
- D: enhanced directory utility includes ersatz names and has many feature switches, including variable speed display
- DSKUSE: shows blocks/percent in-use and free for all mounted disks
- MOVE: moves files to a different directory (on the same disk)
- NEWTRM: changes terminal driver
- PPNS: like PPN but screen-oriented and also shows ersatz names for accounts
- RELOAD: reloads a file into system or user memory
- REN: renames a module in system memory or user memory
- REPLAC: finds and replaces strings in files
- SEARCH: finds strings in files, outputs matches to your screen or a file
- SHOW: displays a variety of system status information
- TALK: lets two or more terminals converse
- USTAT: enhanced STAT program includes more information
- WHATS: displays the definition of a particular ersatz name

Except for ESP 2.2, documentation on all of these programs is available on the World Wide Web, at this address: <http://www.goodnewssoftware.com/amos23.html>.

INSTALLATION AND UPGRADE INSTRUCTIONS



The following sections describe how to upgrade your AMOS computer from either AMOS version 1.4C or AMOS 2.2x to AMOS 2.3. While the first steps are identical in either case (back up your system, then download the AMOS 2.3 software), from that point on they are very different. Be sure to follow the instructions for the upgrade you are performing! We have tested these procedures and found that performing these steps in the order listed completes the installation with minimum effort and the least chance of problems. Following any other order may cause serious difficulty in completing the upgrade.

The first two steps below, “Preparing for a Software Upgrade” and “Downloading AMOS 2.3” are the same no matter what operating system version you’re starting from. After that, there are separate procedures for the 1.4C to 2.3 and 2.2x to 2.3 upgrades.

Preparing for a Software Upgrade



The following AMOS 2.3 software installation instructions supersede any installation instructions appearing in the release notes for AMOS 2.2, AMOS 2.2A, AMOS 2.2B and AMOS 2.2C.

Before installing the new operating system, carefully read the information outlined in this section:

- **Protect Your Data!** When doing a major upgrade to your computer, you want to be absolutely sure you have a recent and complete system backup. While it is very unlikely data stored on your hard disk drive would be corrupted when upgrading your computer, you should be prepared for anything. **Before you download any new software, make sure all your data is copied onto some form of backup media**, and that the data on your backup media is both readable and restorable!
- **Create a Warm Boot Tape.** A warm boot tape allows you to access the computer in situations where you are not able to boot from the hard disk drive. When doing an upgrade, you'll be configuring new drivers for your peripheral devices and using the MONGEN program to embed a new driver in your AMOS monitor. Either of these two operations, if done incorrectly, could result in a computer that won't boot. If you have a warm boot tape, you will be able to access your hard disk drive and correct the situation which prevented you from booting. Without a warm boot tape, it will be much more difficult to access the computer and correct the problem. See the *Systems Commands Reference Manual* for information on how to create a warm boot monitor and a bootable tape.
- **Get Your Product Installation Code (PIC):** AMOS 2.3 requires a PIC. If you are already using AMOS 2.X, before beginning the installation, use the OSINST/P command to display your PIC, and write it down. If you are upgrading from AMOS 1.X, contact your Alpha Micro dealer or Alpha Micro to get your new PIC.

If All Your Disks Are in Extended Format

If you are downloading AMOS 2.3 from an Alpha Micro VCR tape, the files must be restored to a traditional-format disk using VCRRES. If all of the disks on your computer are configured as extended disks, you have several options:

1. Ask your dealer to create a release tape for you that can be installed on an extended-format disk. That is, ask your dealer to create an AMOS 2.3 tape using BACKUP, so you can restore to your extended-format disk using RESTOR.
2. Use VCRRES to restore the AMOS 2.3 release tape to another AMOS computer with a traditional-format disk, then use the BACKUP program to create a backup tape you can install on your extended-format disk.
3. Set up a standard virtual disk VDK0: logical device on your computer with approximately 23,000 blocks. Use VCRRES to restore the release tape to the VDK0: device, then use the COPY command to copy the files from VDK0: to your extended-format disk. For information on setting up a VDK0: device, see your *System Operator's Guide*.

Downloading AMOS 2.3

Once you begin this procedure, **do not reboot the computer** until you are instructed to do so!



If DSK0: on your computer is close to maximum capacity, you should keep in mind that AMOS 2.3 is 6000 blocks larger than the earlier 2.2C release of AMOS, due to the application software included. Make sure you have enough disk space to download the new release.

There are several different ways to download your AMOS 2.3 operating system. You may download the software from Alpha Micro's software distribution CD-ROM disc (AlphaCD), or from magnetic tape media (e.g., VCR or streaming tape).



If you are upgrading from AMOS 1.4C, **LOAD SYS:LOG.LIT** before downloading AMOS 2.3. The 1.X and 2.3 LOG commands are not compatible; if you do not do this you will not be able to LOG at all.

To download the software using a CD-ROM drive, you will use commands similar to this:

```
LOG OPR: 
COPY DSK0:*. * [ ]=ACDn:*. * [ ] 
```

n is the CD-ROM logical device containing AMOS 2.3.



In order to use a CD-ROM drive, the files ACD.LIT and ACD.DVR must be installed on your hard disk drive. The instruction booklet inserted inside the CD-ROM jewel case contains information on how to connect the CD-ROM drive to your computer, as well as information on how to use the ACD program.

To download from a VCR tape, you will use commands like this:

```
LOG OPR: 
VCRRES DSK0:*. * [ ]=ALL:*. * [ ] 
```

To download from a streaming tape drive (i.e., AM-62x, AM-640, or AM-645), you'll use commands similar to this:

```
LOG OPR:   
MTURES DSK0:*. * [ ]=ALL:*. * [ ] 
```

Allow all the files to copy onto your hard disk drive. Once the copy is complete, use this command to verify all the files transferred correctly:

```
VERIFY AMOS.DIR 
```

This program compares the files transferred to the disk drive with the master list in the AMOS.DIR file. If any files transferred incorrectly or not at all, VERIFY displays them as mismatched files.

Upgrading from AMOS 1.4C to AMOS 2.3

Create USER.SYS

AMOS 2.3 requires a USER.SYS file. Depending on the exact version of AMOS 1.x you are upgrading from, you may not have this file. To make sure you do, while logged into OPR:, enter this command:

```
COPY USER.SYS=USER.NEW/NOD 
```

Because of the /NOD switch, this will not copy over any existing USER.SYS file.

Making a Bootable 2.3 Test Monitor

To create a bootable AMOS 2.3 monitor, you use the MONGEN program to embed the appropriate driver into AMOS.MON.

The new AMOS 2.3 operating system includes the following generic disk drivers for intelligent controllers: 522DVR.DVR and 520DVR.DVR.

AMOS 2.3 also includes the following generic SCSI bus disk drivers:

- SCZ100.DVR, for SCSI drives connected to the AM-405 board in S-100 computers
- SCZDVR.DVR, for SCSI drives connected to the SASI port on AMOS computers with 68030 or earlier processors
- SCZ190.DVR, for SCSI drives connected to the AM-190's high performance SCSI-2 port
- SCZRR.DVR, for SCSI drives connected to an Eagle's or Roadrunner's high performance SCSI-2 port. SCZRR.DVR is used for all Eagle series computers, as well as any standard Alpha Micro system which has been upgraded with a Roadrunner high performance add-on board.



In the following procedure, you will first create your test monitor in the OPR: account, not in SYS:. Be sure to log to the correct account!

Remember, AMOS 2.3 has only one monitor, called AMOS.MON. The basic process used to create and test your bootable monitor as shown below (you must still be logged into OPR:):

```
MONGEN RETURN
```

```
Input monitor name: AMOS.MON RETURN
```

```
New disk driver: SCZDVR.DVR RETURN
```

```
New language definition table name: ENGLISH RETURN (default)
```

```
New monitor name: AMOS32.MON RETURN
```

```
SAVE AMOS32.MON RETURN
```



This example uses the driver SCZDVR.DVR and the American English language definition table. You must use the driver name and language entry for *your* installation. Also, if your system uses AMOSL.MON instead of AMOS32.MON, use that for the new monitor name.

MONTST With the New Monitor

Now, you can reboot your computer using the AMOS 2.3 monitor you just created. Stay logged in to OPR: and type:

```
MONTST DSK0:[1,2]AMOS32.MON,[1,4]AMOS32.INI
```

or:

```
MONTST DSK0:[1,2]AMOSL.MON,[1,4]AMOSL.INI
```



With certain types of disk drive, you may receive a BITMAP kaput message for each of your disk devices at this point. If this happens, simply run DSKANA once for each device to correct the problem.

Reset the System Date

Due to the changes we've made to support dates past 1999 (described earlier in these Release Notes), you need to reset your system date after installing AMOS 2.3. To do so, log into OPR: and use the DATE command:

```
LOG OPR: RETURN  
DATE date RETURN
```

Date is the current date in the correct format for your language.



If you ever return to a pre-2.3 version of AMOS, you'll need to reset the date again.

Copying the Test Monitor

Once you are sure your new monitor is working properly for your configuration, enter the following commands:

```
LOG SYS: 
COPY =OPR:AMOS32.MON/D 
```

or:

```
LOG SYS: 
COPY =OPR:AMOSL.MON/D 
```

After copying the monitor to SYS:, you can log to OPR: and erase the copy in that account.

Updating Drivers for Additional Disk Devices

Earlier in this procedure, you used MONGEN to embed a new driver (applicable to your configuration) into your new monitor. You also need to update the drivers for non-DSK: devices:

1. Log to DSK0:[1,6] (DVR:).
2. To create a new driver for your floppy drive, use FIXFLP if your computer uses an AM-212 or AM-214 floppy controller. Use FIX219 if your computer uses an AM-219 floppy controller. Use FIX210 for all other configurations.
3. Use the FIX420 program to generate new drivers for all conventional Winchester and ST506 disk drives.
4. Use FIXLOG to generate new drivers for all self-configuring disk subsystems. This includes all SCSI, ESDI, and SMD type disk drives.

There are a number of generic driver files used with FIXLOG to create unique subsystem device drivers:

- SCZ100.DVR—For SCSI disk drives attached to the AM-405 adapter board in S-100 bus AMOS computers.
- SCZDVR.DVR—For SCSI hard disk drives connected to the on-board SASI port on older CPU boards.
- SCZ190.DVR—For SCSI disk drives attached to the high-performance SCSI-2 port on the AM-4000's AM-190 CPU board.
- SCZRR.DVR—For SCSI disk drives attached to the high-performance SCSI-2 port on all Eagle systems and Roadrunner upgraded computers.
- 515DVR.DVR—For ST-506 type drives connected to the AM-515 intelligent controller in VME-based computers.
- 515SCZ.DVR—For SCSI disk drives connected to the AM-515 intelligent controller in VME-based computers.
- 520DVR.DVR—For all ESDI and SMD drives connected to the AM-520 intelligent controller in VME-based computers.
- 522DVR.DVR—For all ESDI drives used in AM-2000M or AM-3000M computers.



Remember, the new driver you create is left in system memory only! Be sure to SAVE each new driver to the DVR: account (DSK0:[1,6]) before rebooting the system. For example, if you've created a driver called SUB.DVR, type: **SAVE SUB.DVR**

Updating Drivers for Magnetic Tape Peripherals

When upgrading your computer's software, you want to make sure all your peripheral devices are running from the latest device drivers. After AMOS 2.3 has been downloaded, all the new drivers are located in your DVR: account (DSK0:[1,6]).

To create updated drivers for your magnetic tape devices, log into the DVR: account, then type one or more of these commands:

1. If you are using a DAT drive:

```
COPY DAT.DVR=647DVR.DVR 
```

2. If you are using an AM-625, AM-626, AM-627, or AM-628 Tandberg tape drive:

```
COPY STR.DVR=625DVR.DVR 
```

3. If you are using an AM-640 1/2" magnetic tape drive:

```
COPY MTU.DVR=640DVR.DVR 
```

4. If you are using an Exabyte 8mm tape or Pertec-to-SCSI converter:

```
COPY MTX.DVR=645DVR.DVR 
```

Entering the User License PIC for AMOS 2.3

The AMOS 2.3 monitor is PIC encoded. The default monitor is configured for one user; your PIC is tailored to the number of users you purchased.

At this point, you are running under your new monitor, which is operating in single user mode. To switch over to multi-user mode, you must run the OSINST program and enter the correct PIC. Type these commands:

```
LOG SYS:   
OSINST 
```

The program prompts you to enter the Product Installation Code (PIC). Type in your PIC. The program asks whether the PIC is correct. Once you confirm the PIC is correct, press .

When you reboot the computer, it will come up in multi-user mode.

Booting From AMOS 2.3

Press the reset button and watch your screen carefully for any errors during the boot process. Once the computer has booted, make sure everything is up and running—e.g., subsystem disk and tape devices, printer(s), network software, task manager, etc. Also, check to make sure the system date is correct.



If you have a problem mounting any subsystem drives after rebooting, make sure you are using the regenerated disk drivers. Also, as with your system disk, with certain drives you may receive BITMAP kaput errors. If so, run DSKANA on all of the logical devices on the drive.

As a final step, we strongly recommend you create another bootable tape based on your upgraded (AMOS 2.3) operating system, and test the tape to make sure you can boot from it.

Clearing the System Log File

Under AMOS 2.3, the system event logger stores more of the state of the system stack when an event occurs. This additional information means that log file entries are not compatible between 2.3 and any prior AMOS version. So, you need to clear the log file. Log to OPR: and type:

```
SYSLOG/C 
```

You may see a number of `Invalid opcode` error messages. These are a result of the change in log formats; they do not indicate a problem. They should not appear when you clear the log file in the future.

Upgrading from AMOS 2.2x to AMOS 2.3

Making a Bootable 2.3 Test Monitor

To create a bootable AMOS 2.3 monitor, you use the `MONGEN` program to embed the appropriate driver into `AMOS.MON`.

The new AMOS 2.3 operating system includes the following generic disk drivers for intelligent controllers: `522DVR.DVR`, and `520DVR.DVR`.

AMOS 2.3 also includes the following generic SCSI bus disk drivers:

- `SCZ100.DVR`, for SCSI drives connected to the AM-405 board in S-100 computers
- `SCZDVR.DVR`, for SCSI drives connected to the SASI port on AMOS computers with 68030 or earlier processors
- `SCZ190.DVR`, for SCSI drives connected to the AM-190's high performance SCSI-2 port
- `SCZRR.DVR`, for SCSI drives connected to an Eagle's or Roadrunner's high performance SCSI-2 port. `SCZRR.DVR` is used for all Eagle series computers, as well as any standard Alpha Micro system which has been upgraded with a Roadrunner high performance add-on board.

Remember, AMOS 2.3 has only one monitor, called `AMOS.MON`. The basic process used to create and test your bootable monitor as shown below:

```
LOG SYS: 
MONGEN 
```

```
Input monitor name: AMOS.MON 
New disk driver: SCZDVR.DVR 
New language definition table name: ENGLISH  (default)
New monitor name: TEST.MON 
```

```
SAVE TEST.MON 
```



This example uses the driver `SCZDVR.DVR` and the American English language definition table. You must use the driver name and language entry for *your* installation.

Entering the User License PIC for AMOS 2.3

The AMOS 2.3 monitor is PIC encoded. The default monitor is configured for one user; your PIC is tailored to the number of users you purchased. At this point, you must run the OSINST program and enter the correct PIC. Type these commands:

```
LOG SYS:   
OSINST 
```

The program prompts you to enter the Product Installation Code (PIC). Type in your PIC. The program asks whether the PIC is correct. Once you confirm the PIC is correct, press .

When you reboot the computer, it will come up in multi-user mode.

MONTST With the New Monitor

Now, you can reboot your computer using the AMOS 2.3 monitor you just created. Type:

```
LOG OPR:   
MONTST TEST.MON, [ 1, 4 ] AMOS32.INI
```

or:

```
LOG OPR:   
MONTST TEST.MON, [ 1, 4 ] AMOSL.INI
```



With certain types of disk drive, you may receive a BITMAP kaput message for each of your disk devices at this point. If this happens, simply run DSKANA once for each device to correct the problem.

Reset the System Date

Due to the changes we've made to support dates past 1999 (described earlier in these Release Notes), you need to reset your system date after installing AMOS 2.3. To do so, log into OPR: and use the DATE command:

```
LOG OPR:   
DATE date 
```

Date is the current date in the correct format for your language.



If you ever return to a pre-2.3 version of AMOS, you'll need to reset the date again.

Renaming the Test Monitor

Once you are sure TEST.MON is working properly for your configuration, enter the following commands:

```
LOG SYS: 
RENAME AMOS32.MON=TEST.MON/D 
```

or:

```
LOG SYS: 
RENAME AMOS1.MON=TEST.MON/D 
```

Updating Drivers for Additional Disk Devices

Earlier in this procedure, you used MONGEN to embed a new driver (applicable to your configuration) into a monitor called TEST.MON. You also need to update the drivers for non-DSK: devices:

1. Log to DSK0:[1,6] (DVR:).
2. To create a new driver for your floppy drive, use FIXFLP if your computer uses an AM-212 or AM-214 floppy controller. Use FIX219 if your computer uses an AM-219 floppy controller. Use FIX210 for all other configurations.
3. Use the FIX420 program to generate new drivers for all conventional Winchester and ST506 disk drives.
4. Use FIXLOG to generate new drivers for all self-configuring disk subsystems. This includes all SCSI, ESDI, and SMD type disk drives.

There are a number of generic driver files used with FIXLOG to create unique subsystem device drivers:

- SCZ100.DVR—For SCSI disk drives attached to the AM-405 adapter board in S-100 bus AMOS computers.
- SCZDVR.DVR—For SCSI hard disk drives connected to the on-board SASI port on older CPU boards.
- SCZ190.DVR—For SCSI disk drives attached to the high-performance SCSI-2 port on the AM-4000's AM-190 CPU board.
- SCZRR.DVR—For SCSI disk drives attached to the high-performance SCSI-2 port on all Eagle systems and Roadrunner upgraded computers.
- 515DVR.DVR—For ST-506 type drives connected to the AM-515 intelligent controller in VME-based computers.
- 515SCZ.DVR—For SCSI disk drives connected to the AM-515 intelligent controller in VME-based computers.
- 520DVR.DVR—For all ESDI and SMD drives connected to the AM-520 intelligent controller in VME-based computers.
- 522DVR.DVR—For all ESDI drives used in AM-2000M or AM-3000M computers.



Remember, the new driver you create is left in system memory only! Be sure to SAVE each new driver to the DVR: account (DSK0:[1,6]) before rebooting the system. For example, if you've created a driver called SUB.DVR, type: **SAVE SUB.DVR**

Updating Drivers for Magnetic Tape Peripherals

When upgrading your computer's software, you want to make sure all your peripheral devices are running from the latest device drivers. After AMOS 2.3 has been downloaded, all the new drivers are located in your DVR: account (DSK0:[1,6]).

To create updated drivers for your magnetic tape devices, log into the DVR: account, then type one or more of these commands:

1. If you are using a DAT drive:

```
COPY DAT.DVR=647DVR.DVR 
```

2. If you are using an AM-625, AM-626, AM-627, or AM-628 Tandberg tape drive:

```
COPY STR.DVR=625DVR.DVR 
```

3. If you are using an AM-640 1/2" magnetic tape drive:

```
COPY MTU.DVR=640DVR.DVR 
```

4. If you are using an Exabyte 8mm tape or Pertec-to-SCSI converter:

```
COPY MTX.DVR=645DVR.DVR 
```

Booting From AMOS 2.3

Press the reset button and watch your screen carefully for any errors during the boot process. Once the computer has booted, make sure everything is up and running—e.g., subsystem disk and tape devices, printer(s), network software, task manager, etc. Also, check to make sure the system date is correct.



If you have a problem mounting any subsystem drives after rebooting, make sure you are using the regenerated disk drivers. Also, as with your system disk, with certain drives you may receive BITMAP kaput errors. If so, run DSKANA on all of the logical devices on the drive.

As a final step, we strongly recommend you create another bootable tape based on your upgraded (AMOS 2.3) operating system, and test the tape to make sure you can boot from it.

Clearing the System Log File

Under AMOS 2.3, the system event logger stores more of the state of the system stack when an event occurs. This additional information means that log file entries are not compatible between 2.3 and any prior AMOS version. So, you need to clear the log file. Log to OPR: and type:

```
SYSLOG/C 
```

You may see a number of Invalid opcode error messages. These are a result of the change in log formats; they do not indicate a problem. They should not appear when you clear the log file in the future.

COMPATIBILITY NOTES

Please keep the following things in mind as you upgrade to and use AMOS 2.3

- The STRxxx streaming tape software is included only for compatibility with earlier releases. We strongly recommend that you use the MTUxxx commands for all tape backup and CRT620/B to create warm boot tapes.
- If you need to perform a MONTST using a warm boot file on a SCSI-1 drive, you can do so only from JOB1 (the first job listed in your initialization file).
- The AM-212 and AM-219 diskette controllers are not compatible. If you write a diskette on a drive using one controller, you may not be able to read it on a drive connected to the other. This is true under AMOS 2.2C as well as with 2.3.

NEW DOCUMENTATION

Since the AMOS 2.2 release, we have been documenting changes to AMOS only in the AMOS Release Notes. For AMOS 2.3, we are incorporating all the changes since AMOS 2.2 (for AMOS 2.2A, 2.2B, 2.2C, and 2.2E), plus changes new to AMOS 2.3, into the various manuals of the AMOS Documentation Library. This results in these new and updated documents:

- *Addendum for AlphaBASIC 1.4* - DSO-00047-00
- *AlphaBASIC PLUS User's Manual* - DSO-00045-00
- *AlphaBASIC PLUS 1.0 (269) Release Notes* - DSS-10556-00
- *AlphaBASIC User's Manual* - DSS-10073-00, Rev. A03
- *AlphaBASIC XCALL Subroutine User's Manual* - DSO-00066-00
- *AlphaFIX User's Manual* - DSO-00017-00
- *AlphaMENU User's Manual* - DSS-10044-00, Rev. A01
- *AlphaTCP 1.3B Release Notes* - DSS-10564-00
- *AlphaTCP Administrator's Guide* - DSO-00187-00
- *AlphaTCP User's Guide* - DSO-00181-00
- *AlphaVUE User's Manual* - DSO-00023-00
- *AlphaXED User's Manual* - DSO-00106-00
- *AM-445 RAID Subsystem Installation* - PDI-00445-00, Rev. A01
- *AMOS 2.3 Current Revisions of Software Documentation* - DSS-10276, Rev. A12
- *AMOS Assembly Language Programmer's Manual* - DSO-00052-00
- *AMOS File Locking User's Manual* - DSO-00044-00
- *AMOS Monitor Calls Manual* - DSO-00040-00
- *AMOS System Commands Reference Manual* - DSO-00043-00
- *AMOS System Operator's Guide* - DSO-00001-00
- *AMOS System Operator's Guide to the System Initialization Command File* - DSO-00002-00
- *AMOS Terminal System User's Guide* - DSS-10096-00, Rev. A01
- *AM-PC 4.2 Release Notes* - DSS-10549-00, Rev. A02
- *Compatibility Information for Upgrading from AMOS 1.X to AMOS 2.X* - DSS-10408-00, Rev. A01
- *Level7 User's Guide* - DSS-10550-00, Rev. B00
- *SuperSort User's Guide* - DSO-00195-00
- *UPS Monitor Software User's Guide* - DSS-10394-00, Rev. A02

The new versions of all these manuals are available in Adobe Acrobat format on the PC side of the AlphaCD, and at our World Wide Web site. They are also available in printed form through your Alpha Micro dealer or Sales Order Administration.