Product Positioning

    Q: What is the relative positioning of the Apple Workgroup Servers andAppleShare family of products?

    A:The Apple Workgroup Server 60 runs AppleShare 4.0, uses System 7.1, and istargeted at small business and classroom lab environments.

    The Apple Workgroup Server 80 runs AppleShare 4.0, uses System 7.1, and is targeted at medium-sized business environments and addressing communications server (i.e. Internet Router, SNA•ps, X.25, X.400 gateways) needs.

    The Apple Workgroup Server 95 runs AppleShare Pro, uses A/UX 3.0.1 as the server operating system, and is targeted at large or data-intensive workgroups. The AWS 95 is also ideal for running relational database (RDBMS) products such as Oracle7 Cooperative Server.

    For more details, please refer to the Apple Workgroup Server and AppleShare Product Line Briefs in the March Mailbox.

    Q: What is the positioning the AWS 95 and AppleShare Pro against its competitors?

    A: The AWS 95 with AppleShare Pro is a high-performance AppleShare file and print server. It is designed for Macintosh-mostly AppleTalk workgroups. Therefore, it is

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best to position it against AppleShare 3.0 as opposed to Novell NetWare or UNIX-based file/print solutions. AppleShare Pro on the AWS 95 has 4 times the throughput of AppleShare 3.0 on a Quadra 950 and will be up to 4 times faster for many operations.

For those customers who thought that they needed to move to Novell NetWare or a UNIX-based AFP server to satisfy the performance needs of their Mac-mostly workgroup, the AWS 95 running AppleShare Pro is an ideal choice.

Configurations/Availability

Q: What Server and Services products are available and shipping?

A: All AWS 95 configurations, upgrade kits, and accessories are shipping and available. AppleShare Pro is also shipping and available. NOTE: AppleShare Pro is only bundled with M6875LL/A (AWS 95 with 32MB RAM, 1GB drive, DDS-DC drive, 512KB second level cache). Other AWS 95 configs do NOT currently come bundled with AppleShare Pro (must be purchased separately).

All AWS 60 and 80 configurations will ship in volume on 7/23/93. AppleShare 4.0 will also ship on 7/23/93.

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Dealers need to order AppleShare 4.0 and AppleShare Pro stand-alone kits fro Apple
   software distribution channels.
AppleSearch is scheduled to ship by the end of summer.

Q: What are the configurations and prices for the AWS family?
A: Refer to the latest price list for current configurations and pricing. Note that there
   was a significant pricing action on the AWS95 in early July, 1993.

Q:Why isn't AppleShare Pro bundled with every AWS95 configuration?
A: The AWS95 meets 3 potential server needs: as a high-performance file/print server,
   a database server, and as an application server. Several configurations are offered
   without AppleShare Pro bundled to address customers' database and application
   server needs. We are actively assessing our bundling and configuration strategy for
   the AWS 95. The datasheet and price list has been revised to more clearly highlight
   that only one AWS 95 configuration (M6875LL/A) comes with AppleShare Pro
   bundled and pre-installed.

Q: Why are some customers having problems ordering AppleShare Pro?
A: Apple's hardware and software distribution strategies are very independent.

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Hardware, for most resellers, can be ordered directly from Apple. Software, on the other hand, is ordered through distributors such as Ingram Micro and Merisel. Some customers have been confused by this two-tiered strategy but it is necessary to help Apple build its software business into the future.

Product Information Availability

Q: What third party applications are available for the Workgroup Server 95?

A: Apple Business Systems has recently published a Workgroup Server Solutions Guide that details many of the third party client-server solutions available for Apple servers today. The solutions guide can be ordered from Apple Starting Line (S.LINE.ORDER). The phone number is 1-800-825-2145 and the cost is $6.25 per copy. Apple Starting Line is located in Colorado.

Q: What sales literature is available for the Apple Workgroup Server family of products?

A: AWS and AppleShare datasheets have been updated and are available from Apple InPrint (Starting Line catalog).

A new Apple Workgroup Server Family Brochure will be available soon from Apple InPrint. This brochure will be sent out in the August Mailbox to all field personnel.

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The Apple Workgroup Server Solutions Guide has already been sent to the field via
the July Mailbox.

Q: What Server/Services demos are available to me?

A: Demo software will be provided on CDSN. This will include the Server Load Tool,
customized QuickTime MovieViewer.

General Issues

Q: How does the AWS 95 fit into an AOCE environment ?

A: Although the AOCE server will not run on A/UX 3.0.1, there are some advantages
to having AOCE on a Mac OS-based server in the network with an AWS 95. The
primary advantage is the "key chaining" concept which allows a single network
logon. Future integration with AOCE directory services and the AWS 95 are
currently being investigated.

Q: How do we setup the server if we want to use 4D Server ?

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A: 4D Server performs optimally when run with a large A/UX Buffer Cache and a large Macintosh partition (at least 16 MB of real RAM). Therefore, 4D Server should be run in one of the three file/print configurations (as opposed to th database configurations) although it does not require AppleShare Pro.

Q: What type of caches are used by the on the AWS 95?
A: There are 3 levels of caching on the server: hardware, OS, and software. The hardware cache is called a Level 2 cache and is basically just fast RAM (15 ns). The OS cache, also called the A/UX Buffer Cache, is a backing cache for the entire file system. This means that all applications, including the local Finder, can take advantage of this cache. Files will remain in this cache until they are pushed out by another file. Therefore, the larger the buffer cache, the more likely a commonly used file will remain in the cache, and the better the performance will be. The AppleShare cache comes in 3 flavors: File Cache, Directory Cache, and Icon Cache. The Directory and Icon Caches store information found in the desktop database and information about file sizes, mod dates, etc. Therefore, these caches are helpful in improving the navigation of the file system (especially with the Finder). The File Cache allows the server to "read ahead" and "write behind". An AppleTalk network sends data across the network in very small packets (about 4K). Since it is very

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inefficient for a server to continually go to disk for 4K chunks of data, the read-ahead cache gathers largerblocks of data (up to 128K) before sending it across the network. The write-behind cache does the same for writes by buffering data in the server's RAM before writing to disk. This greatly improves I/O efficiency thereby improving performance.

Q: What kind of network cabling systems are supported on the AWS 95?
A: The AWS 95 currently supports Ethernet and LocalTalk cabling systems. It does not currently support Token Ring networking interfaces. A third-party FDDI card manufacturer has recently announced FDDI support for the AWS 95 and A/UX.

AppleShare Issues
Q: What is the basis for the '4 times the performance of AppleShare 3.0' claim that Apple has been making about the Workgroup Server 95?
A: These issues are discussed in the Technical Note AWS03, AWS93 Performance and Tuning Guide. This document answers all questions regarding AppleShare performance benchmarks.

Q: How do I tune the performance of the Workgroup Server 95?

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A: In general, little performance tuning is necessary as the default cache settings are good for most network environments. However, Apple Business Systems is developing a Performance Tuning Guide for the Workgroup Server 95 and will make it available to all field and support personnel when it is complete.

Q: Is there a way to import UserNames, Groups, and Passwords from a text file to a File/Print AWS 95?
A: Third party developers of AppleShare management program, such as TechWorks, are incorporating tools for importing Users and Groups from text files into their products.These products will allow administrators to create text files in a specific format that can be transformed into a Users and Groups data file.

Q: Is the Appleshare Pro client software backwards compatible? Will it affect those users who try to access an AppleShare 3.0 server?

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A: AppleShare Pro includes version 3.5 of the AppleShare Workstation. We chose the version number 3.5 so that it could live independently of the AppleShare version that it is bundled with. Workstation 3.5 is merely a bug fix of older AppleShare Workstations and is fully compatible with older versions of AppleShare. And, older versions of the AppleShare Workstation are fully compatible with AppleShare Pro. However, we recommend that users upgrade to the latest and greatest.

Q: Performance wise, how will the AWS 95 compare against a Cyclone or PowerPC running AppleShare 3.0?
A: AppleShare 3.0 is not very dependent on the processor speed of the Macintosh on which it is running. That is why you don't see much of a performance gain when moving from an SE/30 to a Quadra 950 with AppleShare 3.0. On a PowerPC you have the added disadvantage of AppleTalk and HFS being run in 68000 emulation mode. So, the performance of AppleShare 3.0 on a PowerPC will likely be worse than on a 68K-based Macintosh. Look for Unix-based PowerPC servers from ABS in FY'94.

Q: Can the Workgroup Server 95 be used as both an NFS server and an AppleShare server?

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A: Good question. The answer is yes and no. While A/UX 3.0.1 does support NFS, we do not recommend using the AWS 95 as both an NFS and AppleShare server. The AWS 95 does not integrate the Users and Groups and Access Privileges between AppleShare and NFS. This makes it extremely difficult to share the same volumes via both applications. However, running NFS on its own (i.e., exporting its own file system for TCP/IP clients) will work fine. We just don't recommend sharing that same file system with Mac clients running AppleTalk. NFS is not pre-installed with the AWS 95 OS Install CD but is available on the A/UX CD that comes with every server.

Q: Can I run AppleShare Pro on any other Macintosh or Workgroup Server platforms?
A: AppleShare Pro will only run on the AWS 95. However, AppleShare 4.0 is essentially the same product as AppleShare Pro and is shipping now. AppleShare 4.0 uses all of the same caching algorithms as AppleShare Pro and runs on the following 6 platforms: Workgroup Server 60, Workgroup Server 80, Centris 610, Quadra 700, Quadra 800, and Quadra 950. Remember, AppleShare Pro gets some of its performance improvements from its own caches, but the rest comes from A/UX and the AWS 95 PDS card. One must look at the whole package (hardware, OS, and software) when evaluating a customer's performance needs.

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A/UX Issues

   Q: What it the "Mac environment" in A/UX? How large is it?

   A: The Mac environment (or virtual Macintosh) is a UNIX process that provides the operating system services required by Macintosh applications. These services include the System 7.0.1 Toolbox, so any well-behaved, 32-bit clean, System 7-aware application can run on the AWS 95 (A "well-behaved" application does not access hardware directly; the A/UX security model prevents user-level access.). The default size of the Mac environment is 16MB in all configurations, but all UNIX processes run in virtual memory so the available memory can be much larger. This default size of the Mac environment can be changed using the "Virtual Memory" setting in the Memory Control Panel.

   Q: How is RAM allocated in A/UX 3.0.1 for a File/Print configuration?

   A: The UNIX kernel takes approximately 4MB of RAM. The remainder of dynamic RAM is divided in half with 50% going to the A/UX Buffer Cache and 50% available for UNIX processes (like the Mac environment). There is also 26MB of swap space available for

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virtual memory for UNIX processes. So, for a 32MB configuration, 4MB would be used by the Kernel, leaving 28MB of dynamic RAM (and 26MB of swap space). The A/UX Buffer Cache would then take 14MB, leaving 14MB of real RAM for UNIX proceses. The Mac environment would then look for 16MB of RAM, taking 14MB of dynamic RAM and 2MB of swap space. This would then leave 24MB of swap space for other UNIX processes. The only caveat here is that the Mac environment does not allocate dynamic RAM for unused portions of it's 16MB heap. Therefore, if only a portion of the 16 MB Mac Partition is being used at any one time, the remaining dynamic RAM will be available for other processes and Mac applications started later may wind up using swap space.

Q: What about the Database configuration?
A: Since high-end databases like Oracle7 maintain their own file system, they don't need a large buffer cache. Therefore all available dynamic RAM, not used by the Kernel, 4MB buffer cache, and the Mac environment, are used by Oracle7. Oracle 7 also takes advantage of large amounts of swap space so the default on the database configuration is 51MB.

Q: What version of AppleTalk runs on the Workgroup Server 95?

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A: The AWS 95 uses a special version of AppleTalk, designed to run on A/UX. The version will report version 56 when polled with Interpol but is actually compatible with the latest AppleTalk version 58. Do NOT try to install the latest Mac OS version of AppleTalk from the Network Software Installer (NSI) as it is not compatible with A/UX.

Hardware

Q: Describe the second-level memory cache on the AWS 95.

A: The second-level memory cache, which allows the microprocessor to gain significantly faster access to frequently accessed data or instructions, is located on the AWS 95 Processor Direct Slot (PDS) card. The cache uses 15ns static RAM. 128KB is on-board the PDS card. The second-level memory cache is expandable to 512KB via SIMM upgrade kits. The second-level cache is a write-through, direct-mapped cache.

Q: Describe the SCSI DMA channels on the AWS 95.

A: Two SCSI DMA (Direct Memory Access) channels are located on the AWS 95 PDS card. SCSI DMA allows for more efficient data transfers between SCSI devices and DRAM (because data transfer is managed by the SCSI controller and SCSI

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DMA control logic instead of the microprocessor).

Q: How many SCSI devices can be attached to the AWS 95, and why?
A: Up to 20 SCSI devices can be attached to the AWS 95.
   Up to 7 SCSI devices can be attached to the PDS card's external SCSI port.
   Up to 7 SCSI devices can be attached to the motherboard's external SCSI port
   Up to 6 internal SCSI devices can be attached to the PDS card's internal SCSI
      port. NOTE: in order to attach 6 internal SCSI devices, special carriers
      would be required.

Q: Is the SCSI interface on the AWS 95 SCSI-1 or SCSI-2?
A: The SCSI interface is still SCSI-1. However, the AWS 95 supports the following
   SCSI enhancements:
Connect/disconnect is supported by A/UX and is available on all 4 SCSI channels.
   The benefit is more efficient use of SCSI bus (less contention). A SCSI device can
   momentarily disconnect from the SCSI bus while it is executing a time consuming
   operation (i.e. a full stroke seek on a CD-ROM drive). This permits other devices on
   the

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bus to execute SCSI commands until the slow device reconnects when it has data available for the initiator of the SCSI command. Applications such as Retrospect A/UX make good use of this feature.

Active termination and active negation technology is supported on the 2 SCSI DMA channels on the PDS card. The benefit is enhanced SCSI signal quality/integrity on the SCSI bus.

SCSI controllers on the PDS card are clocked at 33MHz.

SCSI performance is more efficient because of a combination of A/UX's asynchronous I/O capabilities and the hardware SCSI DMA. Multiple tasks can be queued up and data transfers finish quicker with SCSI DMA.

Q: Does the AWS 95 support fast or wide SCSI-2 options or synchronous transfers? Is there RAID support for the AWS 95?

A: The AWS 95 does not currently support either fast or wide SCSI-2 options. Synchronous transfers are also not currently supported. Work is being done with 3rd party providers for SCSI-2 options and RAID solutions. For more 3rd party information, please refer to the Apple Workgroup Server Solutions Guide.

Q: What kind of DRAM can I use with the AWS 95?

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A: The AWS 95 ships with 4MB parity DRAM (4X9), but non-parity DRAM can also be used (i.e. 1X8, 4X8, 16X8). The DRAM must be at least 80ns and you add DRAM in the same way as you would for the Quadra 900/950 (i.e. you must fill a bank of 4 SIMM slots at a time, with the same DRAM density for each of the SIMMs in the bank). IMPORTANT: if you "mix and match" parity and non-parity DRAM in the AWS 95, make sure that parity checking is disabled in A/UX. To enable or disable parity checking, you should take the following steps, you should, from the Finder, choose Restart from the Special menu. Then, cancel the A/UX Startup process by either clicking the Cancel button or pressing Command-Period while the "Welcome" box is displayed. As a result, the A/UX Startup window opens and the Preferences menu appears in the menu bar. Choose General from the Preferences menu which gives you the check box for memory parity checking.

For more information, refer to Chapter 3, 'Configuring the Software' of "Setting Up and Managing Your Server" manual.

Q: How much data can the DDS-DC 4mm tape drive (sometimes called a DAT drive) back up?

A: The Digital Data Storage-Data Compression (DDS-DC) 4mm tape drive can typically back up 4-6GB of compressed data on a 90m tape. Exactly how much data

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can be backed up depends on the type of data being backed up. The DDS-DC drive can back up 2GB of uncompressed data.

Q: How should hard drives be formatted when they are attached to the AWS 95?
A: Hard drives should be formatted as UFS (Unix File System) drives instead of HFS drives. Be sure to use the A/UX version of HDSC Setup. This special version of HDSC Setup will automatically create a mount point for the hard drive.

Troubleshooting
Q: I have heard of some bugs in the Workgroup Server 95 and even some system crashes. What is being done about these?
A: Apple Business Systems has a team of engineers addressing bugs as they come up. Once the bug count has stabilized, ABS will be releasing a patch for A/UX and AppleShare Pro. A preliminary (partially tested) version of the patch will be made available to Apple Eyes

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Only on Applelink in the 2nd week of August. This final version of this patch will then be made available in early September and will be widely distributed through AUSA Support, AppleLink, SEs, account teams, and resellers. ABS recommends that all owners of the AWS 95 install this patch.

In December, ABS plans to roll the changes from this patch back into the shipping product and build new pre-loaded hard drives and CDs. This patch will be free to all AWS 95 customers.

Q: Why does the file system get "dirty" if the server is not shut down gracefully (i.e., a power interruption)?

A: High performance servers gain most of their performance from caches. However, the data in the cache may not be the same as the data on the disk. It's the servers ability to schedule the writes to disk at a later time that gives the server a big performance boost. The side affect of this is that losing power before the caches are flushed can cause inconsistencies in data or even lost data. The FSCK (file system check) utility in UNIX allows the file system to rebuild itself and minimizes the possibility that data has been lost.

Q: Are there any guidelines in using or adding INITs and CDEVs to the A/UX

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Macintosh virtual machine?

A: Be extremely careful when using INITs or CDEVs that may be considered "hacks" and bypass the Macintosh toolbox interface. For example, applications such as SCSI Probe and Norton Utilities are not compatible with A/UX.

Q: I have been trying to remove INITs from A/UX by holding down the <shift> key as I do with MacOS, but it doesn't seem to work, what am I doing wring ?

A: This works but is a question of timing. The <shift> key should ONLY be pressed after A/UX has loaded and is about to start up the Macintosh environment (that is, you see a spinning watch come up and the white menu bar is displayed). You have about 5 seconds to start holding down (and keep holding down) the <shift> key. INITs will not load, and the you can then go into the System Folder and remove the incompatible INIT.

Q: How do I rebuild the desktop with the Apple Workgroup Server 95, for example, if my icons become generic icons and the desktop needs to be rebuilt ?

A: Right after A/UX has loaded and is about to start up the Macintosh environment (that is, you see a spinning watch come up and the white menu bar is displayed), press the <option> and <cmd> keys simultaneously and keep them depressed until

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you are asked via a dialog box if you want to rebuild the desktop or not.

Q: I heard that there is a known problem with the Apple Workgroup Server 95 video
and was told that I needed to reset the PRAM to reset the video but have not been
successful in resetting the PRAM. How should this work ?
A: This is a question of timing. To do this, you need to depress the <option> <cmd>
<p> <r> keys to reset the Parameter RAM. You should not let go of the keys right
after you see the video come up improperly again. Instead, you should continue
pressing the keys even after seeing the video come up and continue pressing the keys
until you hear the boot-up sound again.

Q: Why should I avoid pushing the RESET button on the AWS 95?
A: Reset the AWS 95 via the front reset button only as a last resort. If certain
commands, such as hard disk writes, are occuring when there is a hardware reset,
A/UX may detect a

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corrupted file system, and you may need to go into the A/UX Command Shell to manually check and/or rebuild the file system. Refer to the question above on 'dirty' file systems.

Q: How do I check or rebuild the file system?
A: If A/UX Startup says the file system is damaged or corrupt, choose AutoRecovery from the Execute menu to perform a file-system check (by executing fsck) on the root file system. Or, you may run fsck manually by executing the following command:
```
fsck /dev/default"
```
,and in general, answer "y" to any questions that come up.
If you want to automatically answer "y" to all questions, use the following command:
```
fsck -y /dev/default"
```
After A/UX has examined and fixed the file system, type <cmd> <L> to relaunch A/UX.

Q: An application running in the Mac environment of A/UX has hung or seems to have crashed. What should I do?
A: If a server application running in the Mac environment of A/UX seems to have hung or crashed, DON'T push the reset button! First, quit and restart the Mac environment by entering the command:
```
<control> <cmd> <e> [NOTE: type all 3 keys simultaneously]
```
Please be patient - wait 10-30 seconds for A/UX to quit and restart the Mac environment.

Q: Who should I contact if I have a question or find a problem with the Workgroup Server 95.
A: The normal chain of technical support should be used to report any problems. This allows the engineering and support

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teams to process the reports in the most efficient manner and ensure that nothing slips through the cracks.

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