

Compelling Reasons Why the Apple Internet Server Solution Should be Your Next Web Server

Many companies have discovered the benefits of extending their corporate presence to the World Wide Web. They are actively establishing Web sites and publishing Web pages. Apple® Computer is well known in the desktop and print publishing markets and now, Apple has made inroads in Web publishing. According to the Georgia Institute of Technology, twenty percent of all World Wide Web servers run on Macintosh® computers.

The Apple® Internet Server Solution for the World Wide Web (AISS) is a complete, integrated Web publishing solution. Based on TCP/IP and other Internet standards, the AISS can connect to your existing Ethernet network, and can serve thousands of client requests per hour. The AISS can serve Windows, UNIX, and Macintosh clients on both the Internet as well as your own internal "Intranet" site.

There are many reasons to choose an AISS for your Web server. We've detailed five of the most compelling reasons below:

- ▶ Price/Performance
- ▶ Security
- ▶ Reliability
- ▶ Value
- ▶ Ease-of-Setup and Administration

Reason #1: Price/Performance

A measure of the effectiveness of a Web site's communication is how much traffic it gets daily. A Web server must be able to accommodate all the visitors who choose to visit the Web site on any given day.

According to the results of independent tests, (citations follow) the Apple Internet Server Solution performs extremely well as a Web server, especially considering its low price point (\$2909 to \$8209*). Since there is not yet a single standard measure of Web server performance, here is how the AISS rates according to the commonly accepted performance measures.

Number of Connections - Most discussions of Web server performance revolve around the number of connections, and/or the amount of data it services. The generally accepted definition of a connection or "hit" is: a request from a client for the transfer of a file. This is not the same thing as a request for a Web page. Any given Web page is comprised of text and multiple other elements (e.g. graphic files). A request to "see a page" with text and 10 graphic elements on it actually requires 11 connections. Given this definition of "connection," it is important to know how many connections your site will serve over a given period of time.

The top 100 sites on the Web entertain hundreds of thousands or even millions of connections per day. However, most Web servers see much less traffic. It has been estimated that most Web servers see less than 30,000-40,000 connections/day.

Apple's preliminary testing indicates that, conservatively, 3,000 to 5,000 connections per hour can be sustained on an AISS server, with file sizes in the 20K to 80K range, which are average file sizes for most Web sites.

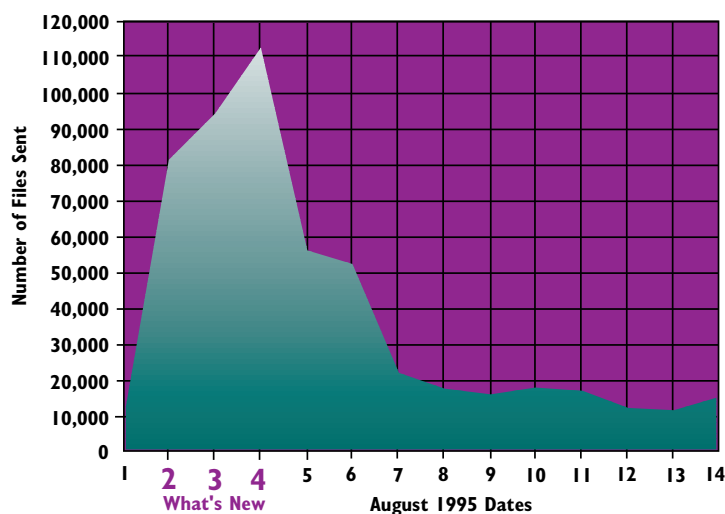
Independent studies confirm these numbers. Both C.J. Holmes at

Net.Dreams and Tim Tuck (a Web consultant) have independently validated over 100,000 connections/day for a MacHTTP/WebSTAR 1.0 server on a network. Mr. Holmes' results are published on the Web at <<http://www.netdreams.com/net.dreams/papers/theTest.html>>. Mr. Tuck's results showed 187,200 connections over 24 hours on an Ethernet network, with throughput of over 2.8 GB.

Pages Served Per Day - Recently, there has been a trend to report server statistics in terms of pages served per day, or per hour, as opposed to number of connections; since a page may include several connections. *MacWEEK* has reviewed the AISS and, using WebSTAR 1.2, has benchmarked the AISS at just under 5,000 pages per hour, and about 140 MB of data transferred per hour. (Davis, J.W., *MacWEEK* "Apple Internet Server, A Low-Cost Workhorse," September 11, 1995)

In addition to these lab tests, there are many "real world" examples of high performance Mac™ OS World Wide Web Servers. In one case, the St. Petersburg Times' Web site drew attention when it was listed by Netscape as "What's New." The site resides on a Power Macintosh® 8100/110 with 64 MB RAM, a T-1 connection to the Internet and WebSTAR 1.2fc2. Fred Reitberger, Systems Manager for the St. Petersburg Times Web site, reported the following volumes for the first week of August, which

St. Petersburg Times Traffic



was when the site was selected.

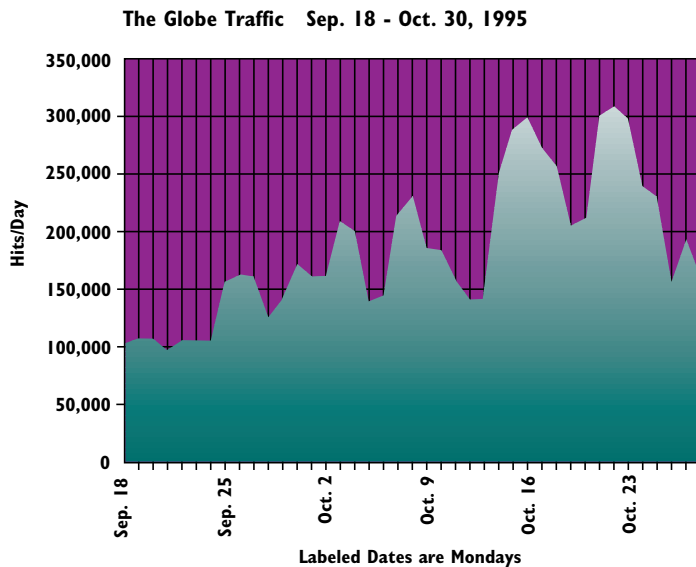
Clearly, a single AISS server can handle the high volumes many commercial sites can expect. However, the Web has a history of explosive growth. Managers should plan for expansion and scalability. Consider multiple AISS servers if you anticipate having a Web site with more than 100,000 connections/day. With multiple servers and Domain Name Server, you can set up content-mirrored Web or distributed servers. This "redundant array of inexpensive computers" (RAIC) can be used to provide scalable performance. As your traffic grows, you can purchase an additional server to increase your site's performance. The extreme affordability of the AISS makes this a viable solution for many sites.

For an example of this RAIC configuration, Apple Computer's own

QuickTime® Continuum server is actually 4 AISS 8150/110 servers. In this RAIC configuration, the site routinely publishes over 800 to 900 MB per server to the Internet daily. A sister site, QuickTime VR, is run on 3 AISS 8150 servers in a RAIC, and is now averaging over 3 GB transmitted per day.

At these sites, multiple Web servers configured with the exact same data, share the load for the Web site. There are significant performance implications for this configuration. A Web site in a RAIC configuration can expect an almost linear boost in performance (e.g. a 2 server RAIC site will almost double the performance of a 1 server site; a 3 server RAIC site will almost triple the performance.)

Another example of a RAIC is WebGenesis' busy entertainment site called The GLOBE. The GLOBE resides on 4 AISS servers. This site handles as many as 5 million hits per month and anywhere from 100,000 to 300,000 hits per day.



The price/performance of the AISS is exceptional. "Two 9150s can match a \$20,000 UNIX box in terms of performance, and the installation, software and maintenance costs are lower." (Jon Wiederspan, Mac Internet consultant as quoted in *MacWEEK*, "Ready, get set, go: Publish a Web site," June 26, 1995).

Reason #2: Security

For Web servers, the key security concern is outside tampering with Web page files. The MacOS and WebSTAR provide significant file protection not available with UNIX. In fact, according to Robert Hess in *MacWEEK*, the MacOS is inherently more secure on the Internet than UNIX. ("Mac servers safer from Internet hackers than UNIX counterparts," March 6, 1995) An AISS server connected to the Internet is not subject to unauthorized access, which is a big UNIX security problem. WebSTAR does not allow random access to the entire document tree, only to those files that you want to publicize.

In general, a UNIX server comes with many documented security risks "pre-installed." To secure it, you must locate and remove some of the

functionality that is provided by the OS. For the Macintosh, you must explicitly add software to create security risks.

Nevertheless, no system on the Internet can be considered "totally secure." System security in a network environment involves a series of trade-offs. The most secure machine is one that is connected to the Internet but not connected to your internal network. This kind of configuration provides maximum security to your internal LAN, but requires "sneaker net" for maintaining, and updating your server. The least secure configuration is an Ethernet cable directly connecting your internal network to the Internet. Anything in between is a trade-off between inconvenience for your users and barriers for outside attackers.

"If your Mac-based Web server will be accessed by the world at large... it should be situated outside your LAN, separated from the inner network by a packet-filtering router and possibly a firewall of some sort." says Simon Higgs, an Internet consultant in Van Nuys, CA. (Streeter, April, "Firewall security: Don't leave your LAN without it", *MacWEEK*, May 8, 1995). For an AISS server, a firewall plus the inherit security in MacOS and WebSTAR, provides as good or better security than is even available for a UNIX Web server.

Reason #3: Reliability

For a number of World Wide Web applications such as online ordering or catalogs, downtime is not just an inconvenience—it costs the company money.

The Apple Internet Server Solution is as reliable as the typical UNIX-based workstation. Mac OS-based systems running as dedicated Web servers have demonstrated the ability to run unattended for months at a time. In fact, Mac OS-based website, Web66, <<http://web66coled.umn.edu/>> run by webmaster Stephen Collins, has served 1 million consecutive hits between August 7, 1995 and October 19, 1995 without any downtime. UNIX-based workstations performing the same functions are forced into periodic reboots by operating system bugs, kernel panics, and administrative downtime, all of which adds to the administrative cost.

However, for less than the cost of a single UNIX-based workstation, you can buy several Apple Internet Servers and establish a very cost-effective redundant site. If your only UNIX-based Web server fails, your application is unavailable until it is fixed. But if one of your Apple Internet Servers goes down, the rest are unaffected. The others can continue to service your customers while you swap out a server. This is analogous to "hot-swapping" a disk drive in a RAID (redundant array of independent disks) array.

In summary, the Apple Internet Server Solution provides reliability without significant administrative overhead. For the price of a UNIX workstation, you can have even more reliability with multiple redundant AISS servers.

Reason #4: Value

With the AISS there is just one part number. This includes everything you need to set up a World Wide Web server and get started publishing Web pages.

The Apple Internet Server Solution consists of an Apple Workgroup Server 6150/66, 8150/110 or 9150/120 and a CD-ROM that combines all the software components necessary for customers to easily establish a presence on the World Wide Web, including:

- ▶ WebSTAR from StarNine Technologies, Inc. (a Quarterdeck company) which turns a Workgroup Server into a Web server, which allows it to serve documents on the World Wide Web.
- ▶ BBEdit from Bare Bones Software Inc., which lets users create and edit the pages they intend to publish on the World Wide Web.
- ▶ Netscape from Netscape Communications Corp., a World Wide Web browser.
- ▶ AppleSearch[®], Apple information search and retrieval software, which indexes unstructured files on a server so World Wide Web clients can search for information stored on it.
- ▶ Adobe[™] Acrobat[™] Pro, which enables documents to maintain their formatting so that when viewed, the image seen is the same image that was posted.
- ▶ Adobe PageMill[™], is easy-to-use Web page authoring software for creating and maintaining professional-looking Web pages without learning Hypertext markup language (HTML).
- ▶ Common Gateway Interfaces (CGIs), which are easy-to-use applications that let WebSTAR interact with other applications in pre-designed ways.
- ▶ FileMaker[™] Pro, Butler SQL and HyperCard[®] run-time "demo" versions, along with CGIs that link them to the WebSTAR server, and sample databases for each application.
- ▶ Apple[®] RAID Software for data protection and disk mirroring.

The AISS is a complete, inexpensive solution which can streamline your company's progression from desktop publishing to Web publishing. You probably already use Apple products for desktop publishing and are comfortable with them. The AISS is a cost effective way to easily move into Web publishing.

Reason #5 Ease of Setup and Ease of Use

Ask anyone who has purchased an Apple Internet Server why they chose to buy it and you'll probably hear something like this, "I wanted to get my Web site up and running very quickly and with Apple it was easy to do that."

The ease of setup and administration of the AISS makes it possible for the departments who are using the server to setup and administer their own Web server without increasing IS resources. There is no need for a full time system administrator to wade through complex installation requirements.

The content creation tools are also easy to use for first time Web site publishers. According to veteran Web publisher Brad Schrick, "A Web page on a UNIX server can be like a software engineering project, while on the Mac it is more like desktop publishing." (Ubois, Jeff "Ready, get set, go: Publish a Web site," *MacWEEK*, June 26, 1995).

Even companies whose networks include an installed base of UNIX and PC systems are choosing the Apple Internet Server Solution for their

Web servers. Target Stores' Elwyn Loomis says that he deliberately chose the Apple solution not only because he wanted to get his Web site up quickly, but because it was easy to connect an Apple server into his network which includes Macintosh computers, UNIX machines and Novell servers. Even though he is accustomed to maintaining and supporting UNIX machines, Loomis chose the Apple Internet Server Solution. "It doesn't require sophisticated system administration," says Loomis, "and the MacOS offers better security in a network environment." It is not only fast and easy to set up a Web site with the Apple Internet Server Solution, "Administering the server is almost as easy as setting it up," says J.W. Davis in his review of the AISS in *MacWEEK* ("Apple Internet Server a Low-cost Web Workhorse," September 11, 1995).

If you are concerned about the "hidden costs" of adding a Web site to your network, the AISS is simple to administer, to update and to upgrade. So simple, that the department who wants it can probably manage it themselves; many of them are successfully doing so today.

"We were able to configure our server in less than 30 minutes... updating and changing Web pages is as simple as using AppleShare[®]. We've probably saved \$5,000 and lots of sleepless UNIX nights," says Mike Wolf, the president of ZigZag Corp., in Northbrook, IL (Robert Hess, "Mac tools up for Internet service," *MacWEEK*, February 20, 1995).

For more elaborate Web applications, which require CGI interaction with back-end processes, AppleScript[®] (a system-level scripting language which is included in the AISS) offers simple rapid prototyping of the CGI scripts. Lower-level languages, such as "C" can be used to develop higher performance CGI's, as required.

Given the advantages of Web publishing on the Macintosh, it is not surprising that the number of MacOS-based Web sites is growing rapidly. A recent survey by the Graphics, Visualization and Usability Center at Georgia Tech found MacHTTP/WebSTAR running on MacOS-based computers to be the second most used Web server software on the Web.

There are many Web sites which are run on Macintosh platforms. In fact, Brad Schrick maintains a registry of MacOS-based Web sites. At last count, he had about 1000 systems registered, although he believes that there are probably about four times as many MacOS-based Web sites. If you are curious to see who is choosing the Apple Internet Server Solution, you can consult the registry of MacOS-based Web sites.

<<http://www.brad.net/>>

Summary

If you are now doing desktop and print publishing with a Macintosh, you can feel equally comfortable choosing the AISS for Web publishing. It is an integrated solution which works reliably and offers excellent price/performance. With the MacOS and WebSTAR, it is inherently secure; it is also easy to setup and maintain. AISS is a solid investment for your Web site. AISS is a good value.

**Retail prices may vary.*




Apple Internet Server Solution



The Apple Internet Server Solution is a virtual World Wide Web (WWW) "server in a box"—an all-in-one WWW solution that consists of a Workgroup Server 6150/66, 8150/110, or 9150/120, and a CD-ROM that contains the software you need to get established on the WWW. This software includes:

- WebSTAR server software from StarNine
- BBEdit from Bare Bones Software, an HTML editor
- Netscape single-user client software, from Netscape Communications, for viewing your content on the WWW
- PageMill from Adobe
- MacDNS software from Apple
- Run-time versions of HyperCard,® Claris FileMaker Pro, and EveryWare Butler server software with sample data for each database
- AppleSearch® and AppleSearch CGI
- Adobe Acrobat Pro
- Clickable maps, e-mail, and database CGIs
- Customizable WWW pages and forms
- Apple RAID, Retrospect Remote,* and AppleShare Client for Windows

The Apple Internet Server Solution is a multiplatform solution, enabling access by all WWW clients, including Mac OS, Windows, and UNIX computers.

	Workgroup Server 6150/66	Workgroup Server 8150/110	Workgroup Server 9150/120
Expansion	Expansion slot for 7-inch NuBus card or processor-direct card (requires adapter)	Three NuBus expansion slots; one processor-direct slot	Four NuBus expansion slots; one processor-direct slot
Storage	 Apple SuperDrive® floppy disk drive; 700MB internal hard disk; quad-speed CD-ROM drive; up to seven SCSI devices supported on one SCSI bus	 Apple SuperDrive floppy disk drive; up to two 1GB, 2GB, or 4GB internal hard disks; quad-speed CD-ROM drive; optional 4-mm DAT drive with data compression (4GB to 14GB per 120-m tape); up to nine SCSI devices supported on two SCSI buses	 Apple SuperDrive floppy disk drive; up to five 1GB, 2GB, or 4GB internal hard disks; quad-speed CD-ROM drive; optional 4-mm DAT drive with data compression (4GB to 14GB per 120-m tape); up to fourteen SCSI devices supported on two SCSI buses
Networking	Built-in LocalTalk® and Ethernet connections; supports TCP/IP; AppleTalk® networking software	Built-in LocalTalk and Ethernet connections; supports TCP/IP; AppleTalk networking software	Built-in LocalTalk and Ethernet connections; supports TCP/IP; AppleTalk networking software
Processor	66-MHz PowerPC 601 RISC processor with integrated math coprocessor, 32K on-chip cache, and 256K second-level memory cache	110-MHz PowerPC 601 RISC processor with integrated math coprocessor, 32K on-chip cache, and 256K second-level memory cache	120-MHz PowerPC 601 RISC processor with integrated math coprocessor, 32K on-chip cache, and 1MB second-level memory cache
Memory	16MB of RAM, expandable to 72MB	16MB of RAM, expandable to 264MB	16MB of RAM, expandable to 264MB
Ports	Two serial ports, SCSI port, Apple Desktop Bus™ (ADB) port, monitor port, 16-bit stereo sound-input/output ports	Two serial ports, two high-performance SCSI ports (one external), ADB port, monitor port, 16-bit stereo sound-input/output ports	Two serial ports, two high-performance SCSI ports (one external), ADB port, monitor port, 16-bit stereo sound-input/output ports
Operating system	System 7.5	System 7.5	System 7.5
File/print server software	AppleShare® 4.1*	AppleShare 4.1*	AppleShare 4.1*
Other software included	AppleShare Client for Windows; Apple RAID; Adobe Acrobat Reader; FileWave from Wave Research; Now Contact and Now Up•to•Date from Now Software; Server Manager* from Santorini; Viper Instant-Access from IT Design <i>*Available in some configurations.</i>	AppleShare Client for Windows; Apple RAID; Adobe Acrobat Reader; FileWave from Wave Research; Now Contact and Now Up•to•Date from Now Software; Retrospect Remote* from Dantz Development; Server Manager* from Santorini; Viper Instant-Access from IT Design	AppleShare Client for Windows; Apple RAID; Adobe Acrobat Reader; FileWave from Wave Research; Now Contact and Now Up•to•Date from Now Software; Retrospect Remote* from Dantz Development; Server Manager* from Santorini; Viper Instant-Access from IT Design