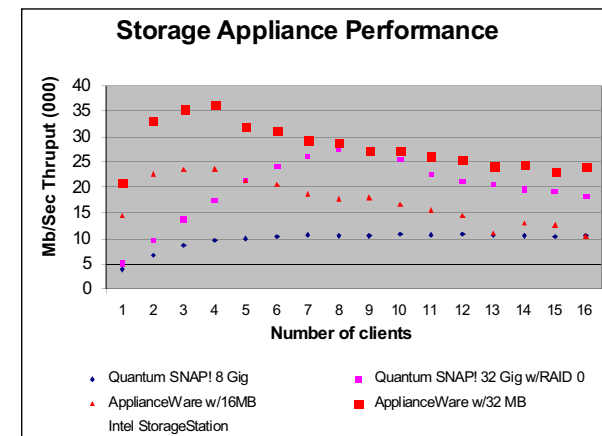


AW Server and ApplianceView

ApplianceWare Performance

Among the benefits of using ApplianceWare's software suite to build application appliances is its exceptional performance compared to other commercially available storage appliances or to an NT Server, even when running on less expensive processor. The chart below shows the results of tests using the Ziff-Davis NetBench 6.0. ApplianceWare enabled hardware out-performed several of its competitors in a similar price range, and out performed a well equipped NT server costing several times as much. One of the highlights of these results demonstrates that adding memory (RAM) to an ApplianceWare product significantly improves its performance. This means that our customers can build hardware that meets a wide range of performance and cost criteria, by merely changing the memory configuration on a given hardware platform.



Tests were performed using NetBench 6.0 with 15 clients running lorem ipsum, etceterum, et redunem tuet. Lorem ut grdiusum et milstrata cum coridore. For more information on these test please contact us via our web site.

How can Service Providers, integrators and OEM manufacturers benefit from ApplianceWare's technology both now and in the future?

Using the ApplianceWare Architecture you will be able to:

- Rapidly deploy new, easy-to-use application appliances to meet market demands.
- Create differentiated networked appliances for NAS (network attached storage), e-mail servers, web caching servers, firewalls and more
- Leverage a single hardware investment to create multiple appliance platforms.
- Create appliance products for remote offices, the customer premise, or the enterprise workgroup environments
- Extend the value of your customer relationships through appliance upgrades, adding new features or brand new services over the internet
- Realize new revenue opportunities through remote management, and application or service deployment, via an Application Service Provider (ASP) model.

Software Specifications

Architecture

- Intelligent framework imbedded into network hardware platforms

Operating Systems

- Red Hat Linux 6.1 (customized)

Network Protocols

- TCP/IP
- UDP/IP
- SMB/CIFS
- NFS over TCP/IP
- HTTP

Management Protocols

- DHCP Client/Server
- BOOTP Client
- WINS Client/Server
- ApplianceWare UDP
- ApplianceWare SDP

File System

- Disk quota support

Host Support

- Windows 95/98/2000
- Linux

User Interface Options

- ApplianceView application
- Web browser (Netscape or Internet Explorer)
- Telnet for hardware RAID configuration

Network Interface Support

- 10/100 Base-T Ethernet, one or two ports (RJ45)

Device Interface Support

- EIDE UDMA/66, supports up to four IDE and ATAPI devices
- SCSI
- Hardware RAID controllers including Mylex, CMD, AMI
- PCI 2.1 expansion slot

RAM

- Supports up to 256 MB SDRAM or EDO
- 32 MB recommended

Software RAID

- RAID levels 0, 1, 5

Security

- User level security
- Share level security



ApplianceWare

The new vision in appliance networking

AW Server and ApplianceView

ApplianceWare Datasheet

The Era of the Server Appliance

The rapid disassembly of the general purpose file server is a powerful paradigm that has inexorably changed the dynamics of network computing. This phenomena which began only a few years ago when printing services were removed from the file server, has quickly led to the new era of server appliances. Network Attached Storage, (NAS) is the clearest example of a server appliance and by all accounts NAS is today a multi-billion dollar industry. It has reached all levels of the mainstream market from low-cost networked drives to highly reliable, highly functional appliances. The demand for "thin" appliances has clearly been fueled by the Internet and the seemingly insatiable appetite for information, ease-of-use and 24x7 access.

Server Appliances and Applications

The server appliance platform will be an excellent way to deploy applications that go beyond what people expect from NAS today. This could include such things as Web caching, e-mail, firewalls, database appliances and more. These new intelligent application appliances will enhance productivity, reduce network traffic, and lower the administrative burden of managing the device and of delivering the application to the end users. Many of these appliances will use some sort of storage mechanism such as CDs, hard drives, tape and so forth. Some will not, and will handle such critical needs as security administration, printing services, internet access, network health monitoring and more. A key component of any future appliance will be the ability to install it onto the network effortlessly, perform the assigned task more quickly and efficiently than a file server, and be significantly less expensive to manage and maintain.

ApplianceWare™ Vision

ApplianceWare is an enabler of this new technology. Today we make intelligent software for NAS appliances. Our goal is to deliver software to OEM partners, system integrators and service providers so that they can build

Internet appliances that facilitate the sharing of data, applications and services. These intelligent networked devices will simplify the deployment of applications and will lower the cost of owning and managing those devices.

The following attributes of server appliances account for this remarkable growth:

Traditional Server	Server Appliance
Difficult to install. Typically requires advanced IT skills.	Plug-Ét-play installation; network ready. An appliance can be installed by non-technical staff.
Systems complexity means poor reliability, frequent service outages.	Optimized "thin" operating systems are designed for high reliability.
Centralization of network services can lead to network bandwidth congestion.	Distributed, stand-alone capability helps cut back on network backbone traffic or WAN traffic.
Difficult to upgrade capacity or add or modify applications. Application conflicts are common.	Easy to add capacity. System upgrades and new applications can be added without shutting down the device.
Maintenance, keeping the system operational and "healthy" is costly.	The cost of maintaining a server appliance is extremely low. They are designed to "set-and-forget" on the network.
Burdened file servers with multiple applications can suffer performance problems.	Properly designed server appliances out perform NT file servers with similar memory and processors, at a much lower initial cost.

AW Server and ApplianceView

Features of ApplianceWare Software Architecture

A complete server appliance is comprised of the hardware platform (with a physical network interface), an operating environment, a system management architecture and a user interface. The ApplianceWare architecture is the middle layer of this system management.

The two components of the ApplianceWare architecture are:

- AW Server - the abstraction layer or "engine" that resides on the appliance.
- ApplianceView™ - the appliance management application that runs on any Windows based PC or workstation. It is the primary user interface to the AW Server.

These components work together to create a unified, managed system of appliance control.

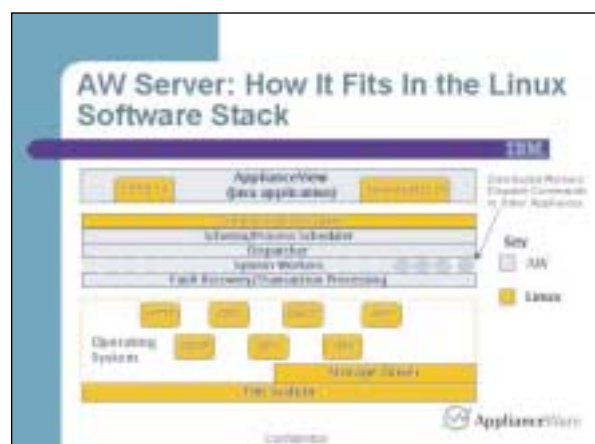


Figure 1 above illustrates the components of a server appliance.

AW Server

The main goal of AW Server is to increase the reliability and performance of the server appliance. It is an abstraction layer that runs on top of a thin operating system and handles the communications between the OS and the applications that end users see. There are several important core functions that provide the inherent stability to an appliance using AW Server:

- Crash recovery from abrupt power failure or other transaction disruption
 - Transaction processing with rollback to an earlier intact state
 - Watchdog timer functions
 - E-mail alert notification
 - Memory leak analysis

ApplianceView™ Management Software

ApplianceView is a Java-based application that is installed on a client PC or workstation. It is used to manage all ApplianceWare devices on the network from a single location. ApplianceView locates appliances using a UDP-based Server Discovery protocol. This same mechanism keeps track of appliances as they come and go on the network.

The benefits of ApplianceView are:

- Single management tool to view multiple ApplianceWare enabled devices
- Remotely manage and upgrade appliances
- Designed for non technical users

A browser interface is also provided for local management of individual appliances.

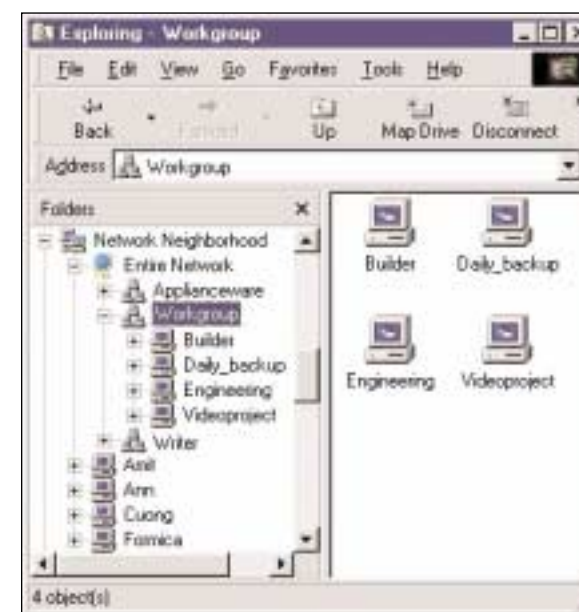


When the user clicks on Connect, ApplianceView asks the appliance for the latest configuration files, then brings up the admin screen for the selected appliance.

Consistent End User Experience

Server appliances are designed to be exceptionally easy to install and easy to use. End users accessing the device are shielded from all of the underlying complexity of the appliance system. Accessing and using a networked appliance is identical to accessing a shared file server on the LAN. Appliances appear as named devices in Windows Explorer and Network neighborhood.

User level security and access rights to the device are the same as for standard Windows NT environments. Security is passed through from the NT server to the appliance.



Appliances appear as normal networked devices in Windows Explorer.

Building Server Appliances

Using the ApplianceWare technology, OEM customers can deploy many different types of server appliances, from network attached storage, to complete intranets-in-a-box. ApplianceWare customers obtain the following general features in the appliances they bring to market:

- Customized user interface based on ApplianceView to match corporate style guidelines
- On-line upgrade capability including performance and system upgrades
- Feature Key options – the ability to have enhanced features included with the appliance that can be "turned on" with a software key.

ApplianceWare General Application Services

The following applications services will be available as turnkey solutions from ApplianceWare to OEM customers. The software configuration consists of AW Server and ApplianceView either running on ApplianceWare's customized Red Hat Linux or the OEM's Linux derivative. A separate configuration screen is available under ApplianceView for each application.

NAS Appliance – Storage networking represents a major market opportunity. ApplianceWare enabled NAS appliances are among the fastest available and are perfect for remote offices, small and medium business, and workgroups in the enterprise. They support multiple client types and are compatible with multiple networking protocols.

Web Server Appliance – Deliver out-of-the-box web servers to deploy on local area network. It provides customers with high speed, scalability and capacity.

Firewall Appliances – A firewall is an important diskless security appliance for protecting corporate networks. It is perfect for small business, remote offices or home office and is especially useful when non-secure DSL connections are being used.

E-Mail Appliances – With the server appliance architecture you can deliver complete SMTP E-mail appliances to your customers. Standard client E-mail software can be used, either commercial or freeware.

Operating system independence.

AW Server has been written to run with various operating systems. Linux and Free BSD are two that are particularly well suited to appliances due to their robustness and compact "footprint". ApplianceWare has optimized the 6.1 Red Hat distribution, which reduces the memory requirements and allows the appliances to run extremely fast.

