

White Paper

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Ensim WEBppliance Hosting Automation Solution on Compaq Systems

Abstract: Ensim WEBppliance is a suite of applications that, when installed on a Compaq *ProLiant* DL320, DL360 or DL380 server running Red Hat Linux 6.1 or Microsoft Windows 2000 Server, transforms the *ProLiant* machine into a "soft" appliance ideally suited for virtual Web hosting. *ProLiant* servers thus enabled offer Service Providers a quickly deployable and cost-effective alternative to dedicated Web appliances. This white paper describes the WEBppliance product line and describes how Compaq *ProLiant* servers provide an ideal platform for this Web browser enabled control panel software from Ensim Corporation.

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Ensim WEBpliance Hosting Automation Solution on Compaq Systems
White Paper prepared by dotCOM and Service Provider Solutions

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Overview

Ensim Corporation (<http://www.ensim.com>) develops hosting automation products that simplify the deployment and management of hosted services for Service Providers, hosting providers, and data center operators. Ensim's flagship product is ServerXchange, which is a complete hosting operations platform. With ServerXchange, Service Providers can provision and manage applications and services, servers, and customers from a central graphical management console across multiple operating systems. Ensim WEBppliance is Web browser enabled control panel software that transforms industry-standard servers into powerful, virtual hosting appliances. A brief overview of the solution is provided in Figure 1.

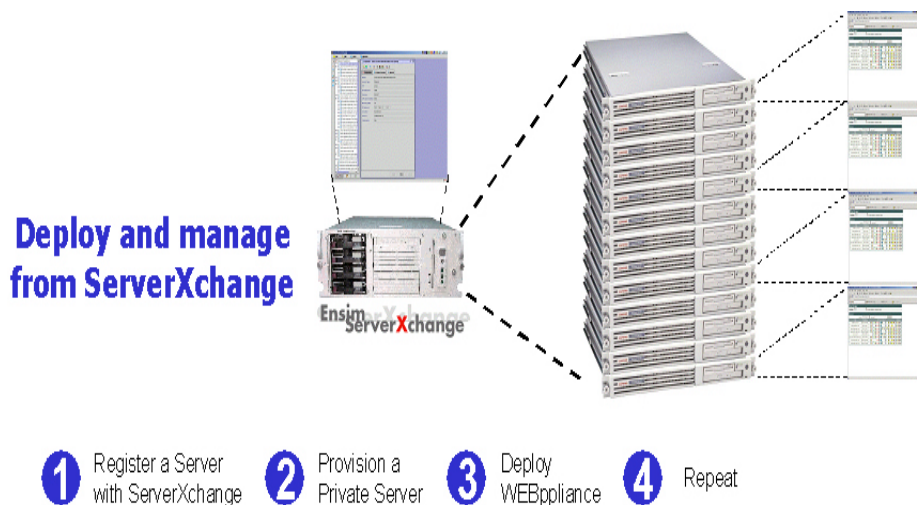


Figure 1. Deploying and managing to multiple servers

WEBppliance comes in two versions that are integrated into the ServerXchange hosting operations platform: WEBppliance LH for servers whose operating system is Red Hat Linux 6.1, and WEBppliance WH for servers whose operating system is Microsoft Windows 2000 Server. There is also a standalone version not integrated into the ServerXchange hosting operations platform, WEBppliance LS, for servers whose operating system is Red Hat Linux 6.2.

WEBppliance transforms Compaq *ProLiant* servers running Red Hat Linux 6.1 or Microsoft Windows 2000 Server into “soft appliances” that can be used for virtual hosting. *ProLiant* servers thus enabled offer Service Providers a quickly deployable and cost-effective alternative to dedicated Web appliances. Using ServerXchange's ability to quickly deploy a bundle of software products, Service Providers can put into service the equivalent of dedicated Web appliances. Since Compaq *ProLiant* servers use industry-standard server technology, they can be redeployed or repurposed at any time.

Service Providers can use the soft appliances described above either to sell virtual domains directly to end-user customers or to sell Reseller plans through Reseller channels. WEBppliance makes it easy for Service Providers to create such channels. They simply create one or more virtual appliances on a *ProLiant* server, then give Resellers the ability to sell virtual domain plans to end-users. At the same time, Resellers benefit from a comprehensive set of intuitive graphical user interfaces (GUIs) that delegate sufficient control for them to manage their own domains while providing their end-users with responsive customer support for end-user websites.

This white paper describes in further detail the WEBpliance product line and describes how Compaq *ProLiant* servers provide an ideal platform for this Web browser enabled control panel software from Ensim Corporation. The paper's targeted audience is Service Providers.

Supplemental Documentation

This white paper has a companion document in the technical guide entitled *Ensim ServerXchange and Compaq Platforms – A Comprehensive Hosting Automation Solution* available on the Compaq *ActiveAnswers* website at <http://www.compaq.com/activeanswers>. The technical guide focuses on network topology, firewall requirements, operating system setup and solution overview. This white paper will focus on the features of the WEBpliance solution.

Ensim has developed extensive documentation to support its ServerXchange solution. It includes frequently asked questions (FAQs) and guides to customization, troubleshooting and administration. For the most current versions of these documents, see the Ensim support website at <http://www.ensim.com/support>. For more detail on the specifications and functionality of WEBpliance, please refer to the appropriate *Ensim WEBpliance User Guide: WEBpliance LH* for Red Hat Linux 6.1 or *WEBpliance WH* for Microsoft Windows 2000.

WEBpliance LS, the standalone version mentioned above, is not the focus of this white paper. More information about WEBpliance LS can be found on the Ensim website at <http://www.ensim.com>.

Hardware Platforms Supported

The WEBpliance solution is supported on the Compaq *ProLiant* server platform and is ideally suited for *ProLiant* models that are optimized for density, including the *ProLiant* DL320, DL360 and DL380 servers. The WEBpliance solution gives Service Providers the flexibility of configuring a server as either a dedicated, shared or soft appliance. Additional information about Compaq *ProLiant* servers can be found on the Compaq website at <http://www.compaq.com/products/servers/platforms>

WEBpliance LH Features on Linux

WEBpliance LH for Red Hat Linux 6.1 provides a suite of popular Web hosting applications and tools that run in the Linux environment. Service Providers can use the standard package or can customize the offering to fit their business model. The standard package includes:

- Apache Web Server with Secure Socket Layer (SSL) support
- Domain Name System (DNS)/BIND name server
- Sendmail Simple Mail Transfer Protocol (SMTP) server
- Majordomo mailing list server
- Post Office Protocol (POP3) and Internet Message Access Protocol (IMAP) server
- Telnet
- ProFTPd File Transfer Protocol (FTP) server
- Vacation tool
- Analog tool

- Mod_perl, Mod_php and SSLc extensions to Apache Web Server
- Microsoft FrontPage extensions
- Web-based file manager tool
- Backup and restore tools

The Appliance Administrator offers Service Providers the option to enable all of the services from the standard package or to create service plans that facilitate rapid creation of customized environments for the sites deployed on the appliance. The service plan option lets the Service Provider build an environment that fits its business model. A service plan can specify the following items for a site:

- Disk quota
- Maximum number of user accounts for e-mail and FTP access
- Enable/Disable items from the list of standard services (for example, disable FTP access, enable mailing list support, etc.)

Note: Disk quota and user account limits are defined on a site basis in the service plan. The appliance Quality of Service (QoS) limits on CPU, network bandwidth and memory are set globally in the definition of the Private Server on the physical server. It is assumed that the user will dedicate a full physical server to the appliance function, allocating 90% of the physical server's resources to the appliance. If a more powerful physical server is used, it may be partitioned into multiple Private Servers with different QoS values.

WEBpliance WH Features on Windows 2000

WEBpliance WH for Microsoft Windows 2000 provides a suite of popular Web hosting applications and tools that run in the Windows 2000 environment. Service Providers can use the standard set of tools or can customize the offering to fit their business model. The standard package includes:

- Microsoft Internet Information Services (IIS) Web Server 5.0
- DNS/BIND name server
- Ensim Mail Server based on Sendmail
- POP3 and IMAP server
- Microsoft IIS FTP Server
- Vacation auto-responder tool
- Analog tool
- Microsoft Secure Web Server with SSL
- Microsoft FrontPage
- Web-based file manager tool
- Microsoft Open Database Connectivity (ODBC)
- Support to deploy Allaire ColdFusion and Microsoft Access

QoS features of WEBppliance WH are divided between what is provided by Microsoft IIS and what is provided by the Ensim software. IIS offers QoS for percent of CPU and network bandwidth. The Ensim software offers QoS for memory allocation and number of processes. This combination provides better control of QoS parameters that can be enabled for each website on the appliance.

The service plan deployment feature set is also available in WEBppliance WH. This feature allows Service Providers to attract site owners with the flexibility to grow and expand.

Enabling WEBppliance Features

WEBppliance LH and WH are software service suites made available by the ServerXchange hosting operations platform. This environment determines what software is needed to convert a Compaq *ProLiant* server into a dedicated Web appliance. ServerXchange also installs a comprehensive set of user interfaces to be used for appliance management. If this software service suite is not available from the Ensim Control Center, it can be downloaded from the Ensim AppXchange Server to the Control Center by the Service Provider using the Control Center management tools.

Once a server is enabled, the Service Provider sets the system time, configures individual services available on the appliance and provides an appliance administrator username and password. All other configuration of the WEBppliance can then be done by the Service Provider or delegated to a Reseller who uses the Web-enabled configuration tools and the appliance administrator username and password.

Initializing WEBppliance Platforms

The ServerXchange hosting operations platform contains tools that help Service Providers initialize and perform basic configuration of the operating system. These tools provide a “kickstart” environment to enable the automatic deployment and configuration of the operating system with required base software. This network installation process, which is started by floppy diskette, also provides site-specific details necessary for configuring the base operating system. The kickstart process also provides the foundation and base operating environment necessary for the WEBppliance technology.

By using the Compaq *Remote Insight Lights-Out Edition* (RILOE) software that is available for *ProLiant* servers, the Service Provider can complete the kickstart process remotely using a virtual presence. RILOE provides a virtual floppy capability for the system operator to upload the kickstart boot floppy to the server being initialized. The system operator also has complete console control as if the system were physically located nearby. The complete specifications and sample installation steps can be found at <http://www.compaq.com/manage/remote-lightsout.html>.

Additional features and necessary procedures for the kickstart process can be found in the ServerXchange solution guide, the Ensim *ServerXchange 2.5 Operating Environment Installation Guide* and the Compaq *How To Use a Compaq Remote Insight Lights-Out Edition for a Headless, Remote Linux Installation Guide*.

WEBpliance LH

A Service Provider can convert any supported Compaq *ProLiant* server running Red Hat 6.1 into a WEBpliance LH server by downloading the WEBpliance LH suite to the *ProLiant* server. Typically, the Service Provider would use a single physical server such as a *ProLiant* DL320 or DL360, and would enable the Ensim Instant Server technology on that server to create a single Ensim Private Server. The Ensim Private Server would then be configured with the WEBpliance software to function as a dedicated Web appliance.

WEBpliance WH

Service Providers can also enable *ProLiant* servers running Microsoft Windows 2000 Server by downloading the WEBpliance WH suite to the physical server. However, the enabling technology for WEBpliance WH is not the Ensim Instant Server technology. WEBpliance WH is a single instance of the environment on a single server platform. The WEBpliance WH suite provides only the provisioning and management tools and not the Ensim Instant Server technology.

Configuring and Managing WEBpliance

With the WEBpliance functionality enabled, the Service Provider using a Web browser must tailor the appliance to the environment. There are three levels of access involved in the configuration management of a WEBpliance system:

- Appliance Administrator access provides the appliance owner, generally a Reseller, with a simple interface with which to manage popular software programs associated with Web hosting such as Apache Web Server, DNS, Mail, and FTP. The interface allows the owner to add Internet Protocol (IP)-based and name-based sites, as well as rapidly create and deploy hosting plans via a template creator, where DNS, Mail, FTP, Microsoft FrontPage, backup/restore, Web logs, file manager, and many other applications can be enabled and disabled. The interface comes with a customizable navigation bar so that custom Common Gateway Interface (CGI) scripts can be introduced into the hosting environment.

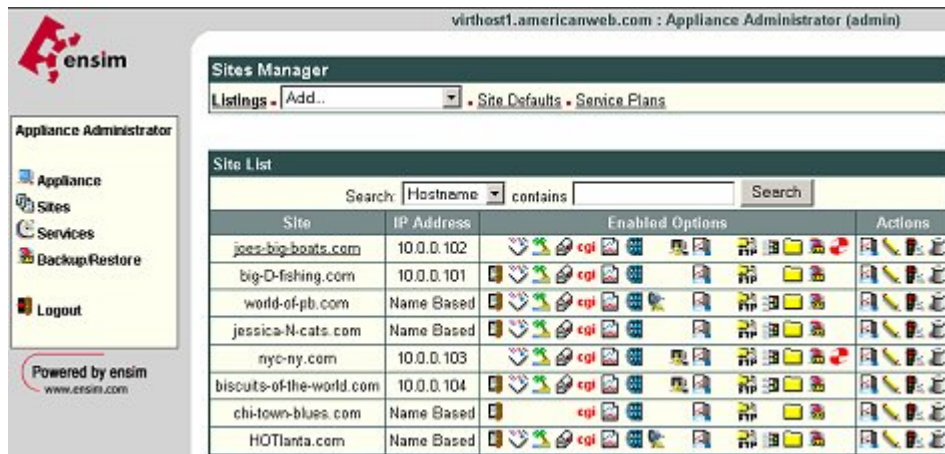


Figure 2. Sample Appliance Administrator GUI

- Site Administrator access enables site owners to perform routine administration tasks and to obtain access to critical management functions such as Web, mail, mailing list, FTP, and database management. The Site Administrator interface equips the site owner for user and file management, and provides site usage reports and backup-and-restore capabilities.

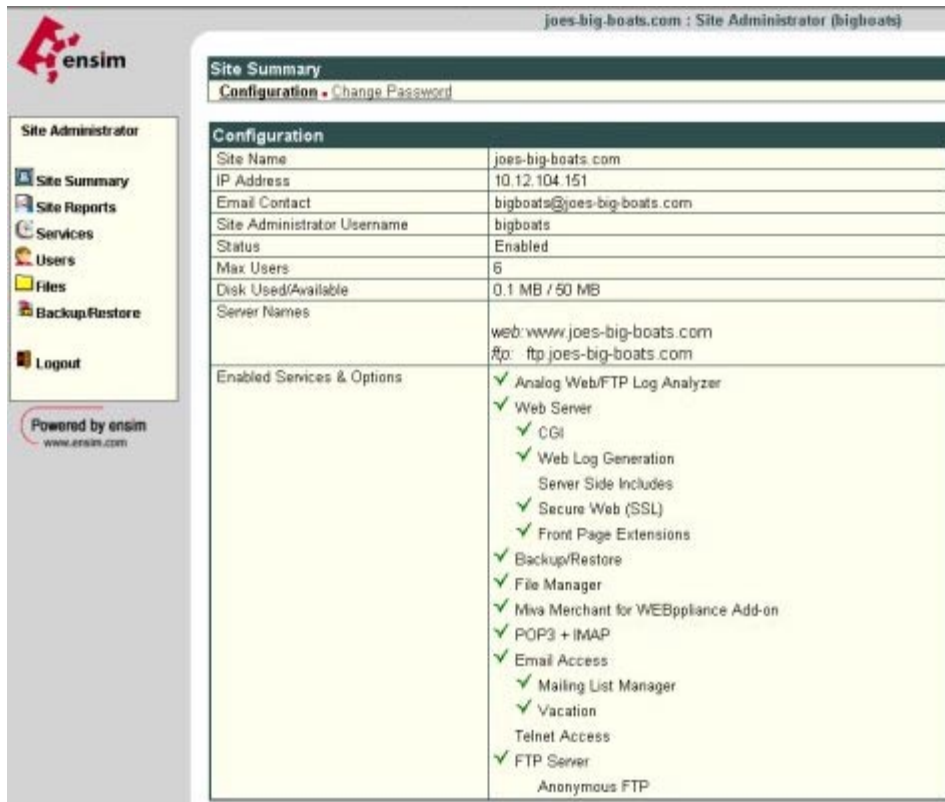


Figure 3. Sample Site Administrator GUI

- User Administrator access gives site users the ability to manage their own accounts. With this interface, users can access management utilities such as user and mail managers, obtain information about site usage, and obtain backup-and-restore capabilities.



Figure 4. Sample User Administrator GUI

The three levels of access discussed above create a hierarchy and must be traversed in the order listed in order to enable the next lower level. See the Ensim documentation for the URL that provides the initial access to the appliance since it is platform dependent.

Backup/Restore Information

A WEBppliance LH server has a built-in GUI for backup and restore. The GUI offers different levels of backup-and-restore functionality depending on which level of access the user has (Appliance Administrator, Site Administrator or User Administrator).

Note: The backup/restore feature is not available in WEBppliance WH (v2.5).

All levels of access to the appliance allow for an immediate backup of selected files. This feature assumes the backup container of the files will be downloaded via the browser interface to the client system. Backup files can become large, and it may take a long time to download the file depending on the speed of the client's network connection. The feature permitting immediate backup of selected files is not designed for large amounts of data.

Appliance and Site Administrators may backup files using three levels of control:

- All server configuration, e-mail and user files
- All server configuration files
- E-mail and user files for a specific user

Backups under Appliance or Site Administrator access can be immediate or scheduled to run at daily, weekly or monthly intervals. If a scheduled backup is specified, the data is sent to a defined FTP server that is configured when the backup is scheduled.

The User Administrator interface for backup allows immediate backup or restore of user files only.

Daily Operations

During scheduled backups, the defined FTP server method allows Service Providers to provide an "off host" location at which to store appliance user data. Use of this location can be incorporated into the Service Provider's daily operations. The locations can be uniquely based on the sites defined on the appliance in order to provide secure repositories.

The Service Provider may already have a defined process in place that can be expanded to include the new appliances. The following applications and tools are examples of backup mechanisms that Compaq has implemented in the past: *rdump*, *rsync*, *rdist*, and commercial products such as *Legato Networker*.

Data Restore

When determining the backup process for the Service Provider, consideration of the restore process is extremely important. The tools provided by the Ensim GUI for the restore process require interaction on the part of the Service Provider or backup operations staff. In order for the restore to take place, the data to be restored must be local to the initiator of the request since it is uploaded to the site via the browser. This method is useful for small quantities of end-user data, but is not adequate for large quantities of data such as would be involved, for example, in restoring the entire Web presence of a site.

Service Providers may choose to take advantage of the ability afforded by WEBpliance to customize the GUI for the restore process, and implement their own process using their choice of backup tools.

Data Storage Information

Choosing what data storage solution to use with WEBpliance is up to the Service Provider. There are several things to consider, however. One is to equip the site and its content with high availability; another is to provide reliability, scalability, and manageability. The Compaq *ProLiant* server platform with extensive storage options scores high marks in each of these important criteria. Many Service Providers have selected *ProLiant* DL320 and DL360 1U servers as the standard platform for their hosting operations, thus on form factor alone increase the additional resources available as standby configurations that they can easily and rapidly deploy.

Locally Attached Storage

When locally attached storage is used, the WEBpliance solution is only restricted to the amount of storage available to the server platform. With local storage, however, the Service Provider needs to consider how to handle system recovery should there be a problem with the server itself. Data integrity using RAID 1 provides high availability for data when Compaq *ProLiant* DL360 or DL380 servers are used.

Migrating a WEBpliance platform to another physical server is done using the ServerXchange Operations Center Interface drag-and-drop feature. With locally attached storage, the site remains offline for a longer period of time if there is a large amount of data. During the transfer process, all of the content must also be transferred to the new physical server platform.

Note: With v2.3-41 of WEBpliance LH for Red Hat Linux 6.1, locally attached storage via the Compaq Fibre Channel Host Bus Adapter is not supported.

Network Attached Storage

Network attached storage (NAS) using Network File System (NFS) protocol is supported in ServerXchange and will improve migration time for the WEBpliance solution. There are, however, security risks defined by the base operating system, Red Hat 6.1, that must be addressed:

- In general, the entire appliance is granted access to the NFS server, and data access cannot be handled by virtual site or domain names.
- Care must be taken not to allow multiple appliances to share the same access rights on the NFS server so that granting of access to competitive websites is avoided.

During migration of the WEBpliance to another physical server with NFS, the transfer time is not dependent on the amount of data. The migration involves shutting the site down, moving the IP address to a new server, mounting the NFS mount point and restarting the services.

A side effect of the NFS solution is the disabling of the disk quota QoS feature available in the ServerXchange solution.

A preferred solution for storage in WEBpliance implementations is the Compaq *TaskSmart* N-Series NAS appliance. Compaq *TaskSmart* N-Series platforms are optimized for storage consolidation and heterogeneous file serving using NFS or Common Internet File System (CIFS) for UNIX and Microsoft Windows environments. The *TaskSmart* N-series platforms also provide sophisticated management and backup software to ensure a day-to-day environment that guarantees performance and maximum data availability. The Compaq *TaskSmart* N2400 is scalable from 72GB to beyond 10TB of raw data storage, providing ample capacity for enterprise departmental environments. Additional features and support can be found on the Compaq *TaskSmart* N-series website <http://www.compaq.com/tasksmart/n2400/index.html>.

Operational Concerns

Integrating the WEBpliance or the entire ServerXchange solution into an existing data center or facility requires a review leading to a plan for integrating core services of the Service Provider, especially DNS.

Domain Name Server

Each WEBpliance and ServerXchange server has DNS capabilities that give Site Administrators the flexibility to define virtual hosts, aliases, and mail exchange (MX) records. The ServerXchange solution v2.5 does not provide a way to perform zone transfers of such data to other DNS servers.

A solution for this lack of zone transfer capability can be obtained from the Knowledge Base on the Ensim Support Center website at <http://www.ensim.com/support/index.shtml>.

Compaq Management Agents

Compaq Management Agents for Servers operates on devices, performing in-depth monitoring of device states by collecting and measuring parameters. These parameters indicate the current state of particular server subsystems by counting the occurrence of particular events (for example, the number of read operations performed on a disk drive) or by monitoring the state of a critical function (for example, whether the cooling fan is operating).

With WEBpliance LH v2.3.0-41 for Red Hat Linux 6.1, the monitoring described above is not available from Compaq. However, this management solution is available for WEBpliance WH for Windows 2000. For details, see the Compaq Management website at <http://www.compaq.com/manage>.

Additional Information

Ordering ServerXchange and WEBpliance

To order ServerXchange, call 1-877-MYENSIM (1-877-693-6746) and ask for Sales, or visit the Ensim website at <http://www.ensim.com/>.

Obtaining Additional ServerXchange and WEBpliance Information

For more information about ServerXchange, contact William Auchincloss, Ensim Corporation, at 1-408-541-4419 (wauchincloss@ensim.com).

For additional information about the Compaq technical evaluation of ServerXchange, call 1-800-289-5986. Send global inquiries to serviceprovider@compaq.com.

Ordering Compaq *ProLiant* Servers

To order Compaq *ProLiant* servers, contact a local Reseller or purchase them online at <http://www.compaq.com/products>.