

SPECIFICATIONS, Continued

Operating System Basis	Derived from Linux
Journaling File System	Yes - Asynchronous
File System Type	XFS with Enhancements
Block Size Variability	512 Bytes to 64 KB
Max File Size	Client/Protocol Dependent
RAID-Levels Supported	0,1,5,6 & 10
Network File Protocols	Microsoft Networks SMB (1.0)/CIFS (NTLM); CIFS via OSX NFS v2/3/4 (UDP/TCP); Apple AFP + TCP; FTP; HTTP/HTTPS (1.1)
Network Transport Protocols	TCP/IP; UDP; AppleTalk
Network Clients Supported	Windows: 95/98/ME/NT/2000/XP/2003/2008; Mac OS 9.x, Xv10.2/3/5; AFPV2/V3; UNIX: Solaris 7, 8,9; HP-UX 11; AIX 4.3.3, 5.3; Linux: Red Hat Linux 6.2, 7.2, 8.0, 9.0; Red Hat Enterprise 3.x, 4.x; Fedora 4.x, 5.x, 6.x; Novell SuSE Pro 9.x; Novell SuSE Linux Enterprise Server 8.x, 9.x, 10.x
Server Emulation Types	Windows 2003 Client; Appleshare
Microsoft Active Directory support	Operates in both native and mixed domains. Dynamic DNS name resolution.
Block Protocol Support	iSCSI - Draft 20 compliant
iSCSI Software Initiators Supported	Microsoft Initiator v2.03, v2.04, v2.05, v2.06, v2.07 (win2k3, XP, Vista); RHEL 5 / SLES 10 iSCSI Initiator; SmallTree abcSAN iSCSI Initiator Version 1.0; CentOS v5.0 iSCSI Initiator; VMWare ESX 3.01, v3.02 & 3.5; Solaris 10 (x86) update 3 & 4 iSCSI Initiator; Novell NetWare v6.5 SP7 iSCSI Initiator; Emboot, netBoot 1.2 & 2.0, Winboot 2.5
iSCSI Hardware Initiators Supported	QLogic 4010, 4050/52 4060/62 for Win2k3 and Linux
Management Interface	Both Browser based and command line via SSH
UPS support	APC UPS (USB & Network Management card)
Backup 3rd Party Agent Support (For network backup support)	File data Only; Symantec/Veritas Backup Exec v10, v11 & v12d; Symantec/Veritas NetBackup v6.5; EMC/Legato NetWorker 7.3 & 7.4; EMC Retrospect for Windows 7.0, 7.5; EMC Retrospect for MAC 5.1.6.0; CA Brightstor Enterprise Backup v11.5, 12.0
Replication Support	File Data only – Supports Snap EDR V5.2.2 1195 or later for GOS 5.0
Support for local Tape Backup	Yes- including tape libraries using Bakbone NetVault Workgroup Edition – connection is platform dependent through either USB or SCSI U320.
Anti-Virus Support	Yes – CA eTrust Anti-Virus software
Volume-based Quotas	User & NIS Groups
SNMP support	V2, MIB II (RFC 1213) Host Resources MIB (RFC 1514)
Unix NIS Security	Yes
Windows Security	NTLMv2; Samba – Modified V3
Share/ File- Level security	Both Share-level and File-level permission including UNIX file permissions and specific NT ACLs
Microsoft Kerberos Support	Yes v5
File/Directory Ownership	User, Group, Other
Unix/NFS Permission ACE Support	Read (R), Write(W), Execute (X)
Windows/CIFS Permission ACE Support	All
Microsoft Inheritance Levels Supported	All
Maximum number of Volumes	255 – (# of Shares + Snapshots + SnapShot Shares)
Maximum number of Snapshots	254 – (# of active volumes + # of active snapshots)
Max. # of Quota entries through browser	Default Quota – up to the maximum users; 546 entries (exception to the Default Quota)
Maximum Volume Size	16 Terabytes
Maximum number of iSCSI LUNS	256
Default RAID Chunk Size	64KB
Maximum iSCSI Disk Size	2TB

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Operating System for Snap Servers

SNAPserver® GuardianOS™ 5.0

GuardianOS™, the award-winning Snap Server Operating System, was specifically designed to deliver robust data management throughout distributed environments. GuardianOS combines cross-platform file sharing with block-level data access on a single device to provide a simple yet flexible solution that is ideal for any storage infrastructure. In addition to a unified storage architecture, GuardianOS 5.0 offers simple scalability, centralized storage management, and a comprehensive suite of data protection tools to consolidate data and simplify management, thereby reducing the total cost of ownership (TCO) of your storage infrastructure.

Key Benefits of GuardianOS

Simplicity

GuardianOS 5.0 is a dedicated storage appliance operating environment, specifically designed for ease-of-use. It is installed on all Snap Server systems at the factory to provide a turn-key solution that is ready to go from the moment you turn it on. Because Snap Servers attach directly to the network, they install in minutes and are easily deployed without application downtime. The award-winning browser-based Snap Server management software within GuardianOS 5.0 allows Snap Servers to be easily administered from anywhere on the network.

Proven Reliability

The Snap Server family of Network Attached Storage appliances has a long-standing reputation as a storage solution that continually exceeds customer expectations. Likewise, the award-winning GuardianOS delivers a robust journaling file system with integrated RAID data protection to provide a solid foundation for Snap Servers.

Security

GuardianOS 5.0 provides a variety of system and data security features to protect your business-critical information, including:

- Integrated Computer Associates eTrust Antivirus software
- Support for Kerberos authentication
- Cross-platform file and folder access control lists (ACLs)
- Preservation of file security attributes for a variety of native client operating systems
- Secure Socket Layer (SSLv3)
- Password-encrypted Secure Shell (SSH)

Manageability

Managing Snap Servers has never been easier. The GuardianOS 5.0 management user interface is easy to navigate and offers task-oriented pages, configuration wizards, and context-sensitive help. It also includes the following enterprise-class features for advanced functionality:

- Instant Capacity Expansion™ (I.C.E.)
- Snap Server Manager™ (SSM)
- Full-Featured Command Set
- SNMP Traps

Ease of Integration

Snap Servers integrate seamlessly into any environment such as: Microsoft Active Directory Services (ADS) and UNIX Network Information Service (NIS) support leverages centralized databases to authenticate network users.

Heterogeneous

Heterogeneous file-sharing support for Windows, UNIX, Linux, and Macintosh platforms eliminates the need for individual native file servers. GuardianOS also provides iSCSI target support that delivers block storage capacity to other servers over the Ethernet Network.



- Specifically designed for ease-of-use
- Support for RAID levels 0,1,5,6, and 10
- Built-in security features to keep your business-critical data safe
- Task-oriented pages, configuration wizards, and context-sensitive help for improved manageability
- Seamlessly integrates into any environment without the need to reconfigure existing storage or bring down the network
- Heterogeneous file-sharing support for Windows, UNIX, Linux, and Macintosh platforms

New Features in GuardianOS 5.0

Simplified Data Migration NEW

Easily migrate or copy file content, security permissions and other essential information to a Snap Server, using any computer supporting CIFS or NFS file data. Unlike drag-and-drop operations, this robust feature can reliably handle large amounts of data. To ensure accuracy, this feature also compares the migrated data to that of the original and can automatically delete the data on the source server, if desired. Data that cannot be migrated is logged without slowing down the operation. Once the issue is resolved on the source server, the missing files can then be selectively migrated to the destination Snap Server.

Enhanced Performance NEW

GuardianOS 5.0 now employs the Linux 2.6 Kernel for enhanced memory management, updated network drivers, optimized multi-core processor support, and an enhanced I/O subsystem.

Improved Windows File Permissions Handling NEW

Folder/File Security Permissions have been greatly enhanced in GuardianOS 5.0, providing simpler, more efficient, and accurate interpretation for cross-protocol, cross-platform user and file access. These enhancements include true native Windows and UNIX permissions handling, as well as consistent access enforcement.

Expanded Password Characters NEW

The password character set has been expanded for local user passwords to more closely match Microsoft recommendations.

Improved Domain Joins NEW

Better Domain Join integration for environments with multiple Domain Controllers. Organizational Administrators can now add a Snap Server within their specific Active Directory Organizational Unit without requiring the Administrative password for the entire Active Directory structure.

Dynamic Home Directories NEW

The new Snap Server Home Directory feature removes the complex "old-school" method of creating and managing Home Directories en masse, by protocol. This new feature in

GuardianOS 5.0 automatically creates Home Directories for each user upon first login to the network share. Cross-platform capabilities enable users to access to their Home Directory from the Windows, UNIX, or Apple platforms, as well as via FTP or from the Web.

Additional RAID Support NEW

In addition to RAID levels 0, 1, and 5, GuardianOS 5.0 adds support for RAID levels 6 and 10 to enhance the integrity and availability of business-critical data.

Network Load Balancing Options NEW

Prior versions of GuardianOS only supported 'bonded' network Interfaces. With GuardianOS 5.0, Switch Trunking and 802.3ad (with LACP or Link Aggregate Control Protocol) have been added, as well. These server-side Adaptive Load Balancing options cooperate with switch-side load balancing, enabling Administrators to take full advantage of increased bandwidth performance of the network. This is particularly helpful in high demand environments such as iSCSI or heavy read/write environments.

Enhanced Storage Web UI NEW

The entire storage management Web UI has been revamped in GuardianOS 5.0. An improved, easy to use Storage Guide was developed to help with the now broader disk storage configurations and choices.

Enhanced NFS support NEW

In addition to support for NFS v2/v3, GuardianOS 5.0 adds NFSv4 support (less rpcsec/Kerberos). This NFS implementation supports nested shares with different permissions, thereby enabling different rights/permissions via the NFS access when NFS exports are defined either within the directory structure, or in the volume of another NFS export.

Enhanced Command Line Interface (CLI) Support NEW

128 new commands have been added to GuardianOS 5.0 – totaling 154 CLI commands – to provide a more comprehensive set of commands for environments that require scripting. The scripting shell environment also has a rich help mechanism for each command including usage and syntax.

NTP Server NEW

A Network Time Protocol (NTP) Server has been added to provide time synchronization services for other Snaps or NTP clients. The Snap Server can still use the same time sources for its own time as in previous releases.

iSCSI enhancements NEW

- MPIO Support
- iSCSI Initiators
- Microsoft Cluster Services
- Cluster Services

Greater Security via SSH NEW

GuardianOS 5.0 now requires TIS encryption for authentication via SSH-1, and greater security is required when using CLI command access.

Administrator UI Improvements NEW

Several other general usability improvements have been implemented:

- Current Server Date & Time are displayed on every Web page
- Auto-refresh has been implemented on select pages. Each of these pages can also be manually refreshed using the integrated 'refresh' icon.
- Email notification now accepts a Host name as well as an IP address.
- All SnapTree screens have been redesigned to make it much easier to administer and display the current configuration of the SnapTrees.
- Information/Status icons have been added on key pages to display information in a format that is more graphical and easily understood.
- Tool tips have been added throughout the Administration UI.

Disk Drive Failure Resiliency Enhancements NEW

The GuardianOS 5.0 I/O subsystems have been enhanced to detect and identify disk failures much more quickly, thereby minimizing impact to the system and optimizing data integrity.

Revamped Snapshots NEW

Snapshots in GuardianOS 5.0 have been completely redesigned for the new Linux I/O kernel and I/O optimizations, thereby improving overall snapshot performance.

Continued Support for Existing GuardianOS Features

Multi Protocol Support

GuardianOS supports all native File Sharing Protocols (CIFS, NFS, AFP, FTP, and HTTP File Access, including the iSCSI Protocol).

User and Group Identity Support

GuardianOS supports NIS, Active Directory, Windows-to-Unix ID Mapping, and Local and LDAP for Windows AD.

Print Server Support

Share USB printers connected to the Snap Server.

Microsoft Windows Vista Support

Supports Windows Vista computers.

Local Backup Support

Depending on Snap Server model, direct usage of attached tape drives or libraries is supported via U320 SCSI USB

tape drives. Embedded BakBone NetVault: Backup Server Software manages the local backup.

Simple Scalability with Instant Capacity Expansion™ (I.C.E.)

With ICE you can dynamically grow and provision existing volumes when additional space is required. Additional expansion storage can be added, new RAID groups can be combined with existing RAID groups for additional volume space at any time, and additional capacity is available immediately.

Unified Storage Architecture

Enables simultaneous iSCSI (block) and NAS (file) support.

Integrated, Licensable, Third Party Applications

- [BakBone NetVault Workgroup Edition Backup software](#). Includes five client licenses with a 500 GB virtual tape

library (VTL) license. Also supports a number of BakBone Application Plug-in Modules (APMs).

- [Snap Enterprise Data Replicator \(Snap EDR\), v7.2](#). A suite of enterprise-class data replication, management, and protection software that is centrally managed within the GuardianOS management UI. Snap EDR is WAN tolerant; it encrypts data in transit – up to 256 bit AES encryption; can replicate one-to-many or many-to-one; and can be employed in a variety of environments – between two or more Snap Servers, or between any combination of Snap Server, Windows, Linux, or UNIX hosts.
- [StorAssure Personal Edition](#). Automated backup for desktop and laptop systems.

SPECIFICATIONS

Maximum Number of Home Directories	Limited to the Maximum number of Users
Maximum Share Name Size	27 characters
Maximum Local Users	2,000
Maximum Microsoft Windows Domain Users	46,535
Maximum NIS Users	16,900
Maximum Total Users	65,436
Maximum Home Directories	65,436
Maximum Number of Shares	255 for AFP only; all other protocols 500 excluding Home Directory Share, which are virtual -limited to the max number of total number of Users
Maximum Disk Drives per RAID set	8 recommended / 24 maximum (all except RAID 6) 12 max recommended (RAID 6)
Recommended Active Concurrent Users Served—Up to:	Snap Server 110/210: 50 users Snap Server 410: 75 users Snap Server 510: 125 users Snap Server 520: 125 users Snap Server 550: 200 users Snap Server 620: 300 users Snap Server 650: 300 users
<i>(where each user is presenting a significant file access demand). Note that "Practical Concurrent" is not the same as "Concurrent connections". The Snap Server can handle many more connections.</i>	