GuardianOS™ 6.5
Storage-Optimized Platform OS for SnapServer® Network-Attached Storage

GuardianOS is the ideal NAS platform for business. Unlike consumer NAS offerings that are optimized for MP3 and photo storage, GuardianOS is purpose-built to provide the business-grade reliability and out-of-the-box integration needed to work with today's business applications and infrastructure. Powering the SnapServer line, the award-winning GuardianOS has over a decade of the proven stability, expertise and innovation you can rely on.

This flexible, cost effective platform allows you to scale seamlessly as your capacity, performance and number of SnapServers grow. Because SnapServers attach directly to the network, they install in minutes and are easily deployed without application downtime. You can consolidate systems by creating file- and block-level volumes on a single device. And centralized management combined with a comprehensive set of data protection tools reduces the time and resources required to manage your storage.

Management Interface	Web-based Graphical User Interface (GUI), SSH-based Command Line Interface (CLI), Java-based SnapServer Manager tool
Network File Protocols	SMB/CIFS, NFS, AFP, FTP, HTTP
Block Protocols	iSCSI
Microsoft Windows Integration	Active Directory Services (ADS), NTLM, Kerberos, VSS/VDS for iSCSI LUNs
Data Protection	RAID, Snapshots, Replication, Disaster Recovery for System Settings

Key Features of GuardianOS 6.5

FEATURE	FUNCTION	BENEFIT
SYSTEM MANAGEMENT		
Web Management Interface	Provides setup, provisioning, and configuration management for your SnapServer	Simplifies out-of-box setup and device management using an intuitive web-based interface
Command Line Interface (CLI)	Granular administration for your SnapServer with a set of over 150 commands	Enables automation and increased flexibility through scripting
SnapServer Manager™	Manages multiple SnapServer, SnapSAN, and REO systems from a single web-based console	Simplifies your Overland deployment by allowing you to consolidate management of multiple systems
Instant Capacity Expansion™	Instantly expands volume capacity – without downtime or degraded performance	Makes scaling your SnapServer quick and easy
User and Group Quotas	Enforces disk space thresholds for Users and Groups	Allows you to govern how much disk space is consumed by a particular user or group
Dynamic Home Directories	Automatically creates home directories for each user upon first login to the network share	Allows administrators to auto-allocate capacity for each user that is accessible across Windows, UNIX/Linux and Macintosh platforms
SNMP and Email Alerts	Provides real-time notices of system events and errors	Keeps you informed of the status of your SnapServer via email or an SNMP management system

Highlights

- Easily configure, manage, and monitor your SnapServer(s) from anywhere in the world

- Effortlessly move data to your SnapServer with the built-in data migration tool

- Share data across Windows, UNIX/Linux, and Macintosh platforms

- Maintain established security and permissions across platforms

- Automatically create a home directory for each user

- Store block and file-based data in the same system

- Support virtualized environments

- Protect your data with RAID, snapshots, replication, and disaster recovery images.

- Scale volumes instantly, without performance degradation

- Automate routine tasks with the CLI

- Backup to Disk, VTL, or Tape

FEATURE	FUNCTION	BENEFIT
NTP Support	Provides time synchronization services for all devices on the network. The SnapServer can act as an NTP server or client	Allows you to quickly and easily synchronize system time for all NTP-compatible devices on your network
Configuration Backup/Restore	Creates a backup image of all key SnapServer configuration information	Gives you the ability to quickly restore your SnapServer in the event of a disaster as well as clone a particular configuration to multiple systems
Ethernet Teaming	Logically groups Ethernet ports together in load balance and/or failover modes	Increase bandwidth and provide redundancy by bonding Ethernet ports together
DHCP	Automatically assigns an IP address to the SnapServer when it's connected to a network (Note: the IP address can also be set manually)	Makes connecting to a network quick and easy
UPS Support w/Controlled Shutdown and Restart	Gracefully shuts down the SnapServer in the event that a power outage lasts longer than the battery on the UPS. Automatically restarts the SnapServer when power is restored	Protects data during extended power outages and brings the SnapServer back online automatically as soon as power becomes available
Wake-On-LAN	Allows the SnapServer to be powered-on remotely over the network	You do not need to be physically present at the site where your SnapServer is located to power it on
DATA PROTECTION		
RAID	Groups hard drives together into a logical storage pool	Guards data if drives fail and increases performance by aggregating drive throughput
Snapshots	Creates incremental, point-in-time copies of a volume or LUN	Enables you to create frequent, space-efficient backups with no disruption to data traffic
Snap EDR™	Provides multi-directional, WAN-optimized replication for SnapServer systems	Easily replicate data between two or more SnapServers for file sharing and disaster recovery
Integrated Backup to Disk, VTL or Tape	Integration with leading 3rd party backup applications* / Support for SCSI or SAS-connected tape devices	Allows you to back up your SnapServer directly to a disk, VTL or tape device
SECURITY AND SERVICES		
Microsoft Active Directory Services (ADS)	Provides integration with your existing Active Directory Services	Your SnapServer will recognize the users and groups you've established in your Windows domain
UNIX Network Information Service (NIS)	Provides integration with your existing UNIX user and group database	Your SnapServer will recognize the users and groups you've established in your UNIX/Linux domain
Windows-to-UNIX ID Mapping	Maps users and groups across protocols	Allows you to maintain consistent permissions for users with multiple system types (i.e. Windows and UNIX clients)
Native Permissions Handling	Obtains Windows permissions without the need for interpretation or translation	Your SnapServer will support all Microsoft Inheritance levels and the full set of 30 Windows permission attributes
Microsoft VSS	Performs application-consistent snapshots of iSCSI LUNs	Enables you to create frequent, space-efficient backups of block-level volumes on your SnapServer
Microsoft VDS	Allows iSCSI LUNs to be managed natively within Windows	Eases administration by allowing you to manage the block-level volumes on your SnapServer directly from the Microsoft Management Console
Microsoft Multi-Path I/O (MPIO)	Provides multiple paths (via iSCSI) between a Windows server and the storage located on a SnapServer	Enables High Availability (HA) through redundant connections
UTILITIES		
Data Migration Tool	Migrates data from a server, client, or NAS device to a SnapServer	Simplifies the process of moving data to your SnapServer
Web Server	Allows the SnapServer to be used as a basic web server	Host a website on your SnapServer
Print Server	Allows the SnapServer to be used as a basic print server	Connect a USB printer directly to your SnapServer and print documents over the network
Integrated Anti-Virus Software	Guards against viruses	Enhances data protection

*For a list of compatible 3rd party backup applications, please refer to the SnapServer Compatibility Guide

Specifications

Operating System	Derived from Linux 2.6 Kernel
Journaling File System	Yes – Asynchronous
File System Type	XFS with Enhancements
RAID Levels Support	RAID 0, 1, 5, 6, and 10
Network File Protocols	Microsoft Networks SMB(1.0) / CIFS(NTLM); CIFS via Mac OS X; NFS v2, v3, v4 (UDP/TCP); Apple AFP; FTP/FTPS;HTTP/HTTPS(1.1)
Network Transport Protocols	TCP/IP; UDP/IP
Network Clients Supported	Windows 2000/XP/2003/2003 R2/2008/2008 R2/Vista/7; Mac OS 9.x, Mac OS X 10.2/3/5/6; AFP v2/v3; UNIX: Solaris 9/10; HP-UX 11; AIX 5.3; Red Hat Linux 9.0; Red Hat Enterprise Linux (RHEL) 3.x/4.x; Red Hat Fedora Core 4.x/5.x/6.x; Novell SuSE Pro 9.x/10.x; Novell SuSE Linux Enterprise Server 8.x/9.x/10.x
Server Emulation Types	Windows 2000/2003/2008; AppleShare 6.0; Network File System (NFS) 2/3/4; Windows Print Server;IPP Print Server
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/v2.08 (Windows 2003, 2003 R2, XP, Vista, 2008, 2008 R2, 7); SmallTree abcSAN iSCSI Initiator Version 1.0; CentOS v5.0 iSCSI Initiator; Solaris 10 (x86) update 3 & 4 iSCSI Initiator; NetWare v6.5 SP7 iSCSI Initiator; RHEL 5 / SLES 10 iSCSI Initiator; VMware ESX 3.01/3.02/3.5; Emboot, netBoot 1.2/2.0; Winboot 2.5
iSCSI Hardware Initiators Supported	Qlogic 4010, 4050, 4052, 4060, 4062 for Windows and Linux
Management Interface	Browser-based; Command Line Interface (CLI) via SSH; SnapServer Manager
UPS Support	APC UPS (USB & Network Management card)
Backup 3rd Party Agent Support (for network backup support — File Data Only)	Symantec NetBackup 6.5; CA ARCserve 11.5 12.0; EMC NetWorker 7.3, 7.4; Symantec Backup Exec 10d, 11d, 12d, 12.5, 2010; BakBone NetVault: Backup 8.2 **NOTE:** For network backup support. File data only
Local Tape Backup Support	Symantec Backup Exec 12.5 and 2010 Remote Media Agent for Linux Servers; BakBone NetVault: Backup SmartClient **NOTE:** Managed from separate backup application server
Replication Support	Snap EDR 7.2 or later
Anti-Virus Support	CA Antivirus software
Volume-based Quotas	User (global default and by specific user for Windows, UNIX/Linux, Mac, FTP/FTPS) & UNIX/Linux Groups
SNMP Support	V2, MIB II (RFC 1213); Host Resources MIB (RFC 1514)
UNIX NIS Security	Yes
Windows Security	NTLMv2; Full Windows ACL Support with Inheritance
Share/ File Level Security	Both Share-level and File-level permission including UNIX file permissions and Windows ACLs
Microsoft Kerberos Support	Version 5
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	File Size: Client / Protocol Dependent - GuardianOS supports the maximum file size for each supported client •• Volumes: 254 (# of active volumes + # of active snapshots •• Snapshots: 254 (# of active volumes + # of active snapshots) •• Volume Size: 16TB •• iSCSI LUNS: 256 •• iSCSI Disk Size: 2TB •• Home Directories: 65,436 (Limited to the Maximum Total Users) •• Share Name Size: 27 Characters •• Microsoft Windows Domain Users: 65,435 •• Total Users: 65,435 •• 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 •• Disk Drives per RAID Set: 8 recommended (RAID 0, 1, 5, 10), 12 recommended (RAID 6), 24 maximum •• Quota Entries Through Browser: Default Quota – up to the maximum users; 546 entries (exception to the Default Quota)
Default RAID Chuck Size	64KB
Supported SnapServer Systems	SnapServer N2000, 650, 620, 550, 520, 510, 410, 210, 110