



Highlights

- Provide extreme scalability to accommodate capacity growth, satisfying bandwidth-hungry applications with scale out performance for both random access and streaming workloads
 - Enable ubiquitous access to files from across the globe quickly and cost effectively with IBM Active Cloud Engine™, leveraging its disaster recovery and business continuity capacity
 - Lower TCO by up to 40 percent with automated lifecycle management and migration to tape
 - Provide gateway option for IBM XIV® and IBM Storwize® V7000 disk systems
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IBM Scale Out Network Attached Storage

Flexible, clustered, scale-out solution with advanced architecture

The demand to manage and store massive amounts of file data continues to challenge data centers. IBM Scale Out Network Attached Storage (SONAS) is designed to embrace and deliver cloud storage in the petabyte age. SONAS can meet today's storage challenges with quick and cost-effective IT-enabled business enhancements designed to grow with unprecedented scale.

SONAS can also deliver storage services that make the supporting technology almost invisible. It allows applications and services to be uncoupled from the underlying infrastructure, enabling businesses to adjust to change quickly. As a result, SONAS can easily integrate with your organization's strategies to develop a more dynamic enterprise.

Organizations with fast-growing, rapidly multiplying file systems are beginning to discover that traditional network attached storage (NAS)—even clustered NAS—has serious problems. Managing and supporting storage as it scales to millions, then billions, of active files is extremely complex. When such massive numbers of files require separate file systems connected with many separate servers, operational complexity grows exponentially. Consolidating tens, even hundreds, of these file servers into high-end scale-out NAS becomes a necessity. This is where SONAS helps. SONAS is designed to scale out to store millions to billions of active files in a single namespace. SONAS offers operational efficiency and administrative savings, combining massive scalability with automated file management to quickly deliver information around the world.



SONAS is an ideal solution for cloud storage implementations as well. It is designed to consolidate files that are scattered in multiple storage locations and allow them to be efficiently shared and managed. The IBM Active Cloud Engine is a unique capability of SONAS (offered at no charge) that enables this and many more management abilities. The IBM Active Cloud Engine is a suite of capabilities specifically designed to manage files in an automated, scalable manner. It creates the appearance of a single system despite geographic, physical, media or other discrepancies that may exist in the physical world. It is designed to put the right file in the right place at the right time, and to give users the fastest possible access with the same view of their data no matter where they are. It enables ubiquitous access to files from across the globe quickly and cost effectively. The IBM Active Cloud Engine offers clients not only a high-performance file serving function, but also reduced network costs. It localizes file data where it is needed. It can prepopulate files to remote sites in advance of that file request coming in, which allows for high availability and very fast access of those files at remote sites. This capability allows for file sharing and content distribution while it shields applications from fluctuating wide area network (WAN) latencies (performance fluctuations and outages during data access across a WAN). In addition, it eliminates unnecessary file replication to remote sites, thereby significantly lowering network and storage costs.

When organizations are managing millions to billions of files, the protection and availability of these files are critical. SONAS is a reliable, scalable storage solution with built-in high availability and redundancy. The IBM Active Cloud Engine within SONAS provides automated policy-based file management that enables backups, restores, snapshots and remote replication. SONAS has a specific exploitation and integration with IBM Tivoli® Storage Manager to provide very efficient and extremely fast backup and restore processes, and enables movement of files to an external disk or tape. In addition,



SONAS provides support for the Network Data Management Protocol (NDMP) “at scale” to provide both full and incremental file backup as well as restoration of these files and related file system data if needed. Support for the NDMP enables SONAS to be backed up with independent software vendor (ISV) backup applications like Symantec, CommVault, Legato and others over the local area network. The SONAS policy engine increases the efficiency of backing up billions of files by scanning their metadata in just minutes.

IBM Systems and Technology
Data Sheet

SONAS provides central deployment and management of automated tiered storage, with high performance and high storage utilization. Based on a Standard Performance Evaluation Corporation System File Server benchmark using a realistic, standard configuration, SONAS demonstrates excellent near-linear performance for a single file system without compromising capacity or cost.

Protecting business information from malware and viruses is a business imperative. Integration with McAfee and Symantec Antivirus is designed to provide the ability to isolate or delete compromised files, and protect data from risks due to viruses that can potentially compromise SONAS data.

SONAS provides ease of use for administrators through an intuitive graphical user interface (GUI). This user interface is similar to those used in XIV or Storwize V7000 systems. The highly intuitive GUI and built-in policy-driven management tools through IBM Active Cloud Engine make administrative tasks easy and efficient. Administrators can also leverage IBM Tivoli Productivity Center version 5.1 to manage SONAS, providing discovery and visualization, health status monitoring and capacity usage reporting. The new release of Tivoli Productivity Center 5.1 also enables applications to perform SONAS provisioning.

You can order SONAS as an integrated appliance or as a gateway. SONAS gateway support is enabled for XIV and Storwize V7000 disk systems, so users with these storage systems can leverage a SONAS gateway for their rapidly growing file data.

Feature	Benefits
Massive scalability	<ul style="list-style-type: none"> • Supports billions of files (up to 21 petabytes of storage) in a single file system • Supports up to 256 file systems
Flexibility	<ul style="list-style-type: none"> • Allows access to data in a single global namespace, allowing all users a single, logical view of files through a single drive letter such as a Z drive • Provides efficient distribution of files, images and application updates and fixes to multiple locations quickly and cost effectively • Offers internal (SAS, nearline SAS) and external (tape) storage pools, and automated file placement and file migration based on policies—it can store and retrieve any file data in or out of any pool transparently and quickly, without administrator involvement • Provides multiple storage tiers for flexible, efficient management of petabytes of files • Supports industry-standard protocols: CIFS, NFS, FTP, HTTPS • Includes up to two dual-port 10 GbE cards per interface node, which provides each interface node with more flexibility, connectivity and performance enablement; offers additional connectivity to manage multiple data streams and functions (NDMP, TSM, antivirus or asynchronous replication, or both)
Operational savings and total cost of ownership (TCO)	<ul style="list-style-type: none"> • Consolidates multiple individual filers and their management, thereby avoiding problems associated with administering an array of disparate NAS storage systems • Localizes files to improve file access performance and reduced network costs • Automates file placement by transparently moving files to another internal or external storage pool, optimizes your storage resources and offers tremendous time and cost savings in administering petabytes of files • Enables automated file migration to external storage devices (for example, tape), managed by Tivoli Storage Manager, to help lower TCO by up to 40 percent over the long term • Helps conserve floor space (up to a petabyte of data in less than a square meter), is highly scalable and can help reduce capital expenditure and enhance operational efficiency; its advanced architecture virtualizes and consolidates file space into a single, enterprise-wide file system, which can translate into reduced TCO
Performance	<ul style="list-style-type: none"> • Can scan billions of files in minutes with the robust IBM Active Cloud Engine, then take action (for example, migrate, backup, delete, replicate and more) • Leverages two dual-port (all ports active) 10 GbE interface cards offering high bandwidth and additional connectivity in each SONAS interface node to manage multiple data streams and functions (for example, backup, replication, antivirus) • Offers scale-out performance by adding more interface nodes (front end) and storage pods (back end) • Provides fast asynchronous replication performance with the ability to define up to 10 replication processes per node

IBM Systems and Technology
Data Sheet

Feature	Benefits
Data protection	<ul style="list-style-type: none"> Asynchronous replication for site-to-site protection provides disaster recovery and business continuity File system and fileset-level snapshots (up to 256 per file system) provide a way to partition the namespace into smaller, more manageable units File-level cloning provides a full file copy at better granularity Tivoli Storage Manager integration provides very efficient and extremely fast backup and restore processes, and policy-driven migration of files to an external or tape based disk NDMP support provides both full and incremental file backup Provides RAID 6
Cloud storage	<ul style="list-style-type: none"> IBM Active Cloud Engine enables ubiquitous access to files from across the globe quickly and cost effectively Self-managing, autonomic system enables capacity, provisioning and other IT service management decisions to be made dynamically, without human intervention or increased administrative costs Seamless elasticity allows you to scale computing resources up or down, as required, to meet changing organizational needs without service interruption Highly resilient and secure applications and an underlying infrastructure help meet expected levels of availability, reliability and integrity Highly standardized environment facilitates simultaneous service deployment and upgrades for all users, no matter where they reside Economies of scale lowers the cost of service access Clouds can provide rapid access to computing capacity at a lower cost of ownership, enabling organizations to perform operations that may have previously been unaffordable or impractical New release of Tivoli Productivity Center 5.1 enables applications to perform SONAS provisioning
Antivirus	<ul style="list-style-type: none"> Integrates with McAfee and Symantec Antivirus, enabling users to secure data from malware and leverage the most commonly deployed ISV antivirus applications
Management	<ul style="list-style-type: none"> Command line interface (CLI) and browser-based, simple, intuitive, state-of-the-art administrative GUI provides icon-based navigation, informative graphics and SONAS visualizations that streamline storage tasks and display real-time capacity, performance and system health Optional Tivoli Productivity Center 5.1 can manage SONAS, providing discovery and visualization, health status monitoring and capacity usage reporting; version 5.1 also enables applications to perform SONAS provisioning
User interface	<ul style="list-style-type: none"> Offers CLI and browser-based, simple, intuitive GUI
Advanced features	<ul style="list-style-type: none"> IBM Active Cloud Engine in SONAS is an industry unique, powerful capability designed to leverage the integrated Tivoli Storage Manager backup and archive client to increase efficiency when backing up billions of files
Disk drive support	<ul style="list-style-type: none"> 600 GB or 900 GB SAS drives 3 TB nearline SAS drives
Storage efficiency	<ul style="list-style-type: none"> Reduces infrastructure and administrative complexity and cost, and increases resource efficiency with a consolidated, virtualized infrastructure Achieves time and cost efficiencies with tiered storage (disk and tape) and policy-driven automated file management Provides scale-out performance and capacity while managing a single, global namespace

IBM Scale Out Network Attached Storage at a glance

Host interface	CIFS, NFS, FTP, HTTPS
Management software	SONAS software Optional Tivoli Storage Manager client (requires license) Optional Tivoli Productivity Center 5.1 (requires license)
Supported drives	SAS: 600 GB (15K rpm), 900 GB (10K rpm) Nearline SAS: 3 TB (7,200 rpm)
RAID levels	RAID 6

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IBM Scale Out Network Attached Storage at a glance	
Maximum drives supported	7,200
Fans and power supplies	Fully redundant, hot swappable
Rack support	42 Electronics Industries Alliance units
Dimensions	Appliance: Width: 644 mm (25.4 in.) Depth: 1329 mm (52.3 in.) Height: 2015 mm (79.3 in.)
Weight	Fully populated model weight: 2851-RXA Fibre Channel 9003 794 Kg (1,750 lbs.) 2851-RXA Fibre Channel 9004 749 Kg (1,650 lbs.) 2851-RXA Fibre Channel 9005 1044 Kg (2,300 lbs.) 2851-RXB 1343 Kg (2,960 lbs.) 2851-RXC 817 Kg (1,800 lbs.)
Environment	Allowable: <ul style="list-style-type: none"> • Temperature: 15°C to 32°C (de-rate maximum allowable temperature 1°C per 300 m above 900 m) • Relative humidity: 20% to 80% RH • Maximum dew point: 17°C • Maximum altitude: 3050 m (10,000 ft.) Recommended: <ul style="list-style-type: none"> • Temperature: 18°C to 27°C (de-rate maximum recommended temperature 1°C per 300 m above 1800 m) • Relative humidity: 60% maximum • Dew point: 5.5°C to 15°C • Conforms to the American Society of Heating, Refrigerating and Air-Conditioning Engineers Class 1 Non-operating (equipment powered off): <ul style="list-style-type: none"> • Temperature: 5°C to 45°C • Relative humidity: 8% to 80% • Maximum dew point: 27°C Shipping: <ul style="list-style-type: none"> • Temperature: -40°C to 60°C • Relative humidity: 5% to 100% (noncondensing) • Maximum wet bulb: 29°C
Certifications	For ISV solutions, please visit the ISV solutions resource library at: ibm.com/systems/storage/solutions/isv/index.html
Warranty	One year 9 x 5 next business day, upgrade to 24 hour x 7 days a week x 4-hour response

SONAS gateway at a glance	
Host interface	CIFS, NFS, FTP, HTTPS
Supported storage systems	IBM XIV, IBM Storwize V7000
Management software	SONAS software: Optional Tivoli Storage Manager client (requires license) Optional Tivoli Productivity Center 5.1 (requires license)
Rack support	42 Electronics Industries Alliance units
Dimensions	Width: 644 mm (25.4 in.) Depth: 1329 mm (52.3 in.)* Height: 2015 mm (79.3 in.) *8 inches less when feature code 0103 not needed
Warranty	One year 9 x 5 next-business day, upgrade to 24 hour x 7 days a week x 4-hour response

For more information

To learn more about the IBM Scale Out Network Attached Storage solution, please contact your IBM representative or IBM Business Partner, or visit:

ibm.com/systems/storage/network/sonas

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Actual available storage capacity may be reported for both uncompressed and compressed data and will vary and may be less than stated.



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