

DATASHEET

# NetApp StorageGRID

Object storage that enables  
management of your unstructured  
data across hybrid and  
multicloud environments



## The challenge

Today's unprecedented growth in unstructured data presents enterprises with opportunities to uncover new customer engagements and revenue streams. To keep pace, IT must overcome the challenges of keeping up not only with the volume of data, but also with changes in how data is stored and accessed. Users need IT to support a plethora of applications varying from traditional workloads to cloud-based applications, with access to the data across many locations: inside the data centers, remote offices, and the public cloud.

Object storage through cloud-based data management is quickly becoming the norm, but it doesn't come without its fair share of concerns:

- Is my data safe? What happens if my requirements change?
- What is cost-effective today and tomorrow? Does choosing one solution create vendor lock-in?
- Can I meet performance needs with data that lives both on premises and in the public cloud?

## The solution

NetApp® StorageGRID® is a software-defined, object-based storage solution that supports industry-standard object APIs like the Amazon Simple Storage Service (S3) API. It allows you to build a single name space across up to 16 data centers worldwide, with customizable service levels for metadata-driven object lifecycle policies. The integrated lifecycle management policies optimize where your data lives throughout its lifecycle.

StorageGRID optimizes your data durability and availability across multiple geographies. It enables hybrid cloud workflows—whether your data is on premises or in a public cloud—to fit your business demands with access to Amazon Simple Notification Service (SNS), Microsoft Azure Blob, Amazon Glacier, Elasticsearch, and similar services.

### Enable the Hybrid Cloud

Reduce costs without sacrificing durability with StorageGRID layered erasure coding (EC). Protect against failed disk drives and rapidly rebuild lost data segments with node-level EC and protect against site-level disasters with geo-distributed EC. You

## Key benefits

### Scale: distribute across clouds

- Take advantage of the public cloud to process, transform, and analyze objects and metadata while securing your data in an on-premises object store.

### Simplify: enable global data governance

- Protect data and comply with regulations by using geo-distributed replication and layered erasure coding; write once, read many (WORM) retention; access control policies; encryption; and audit trails.

### Accelerate: store data efficiently

- Optimize data availability, performance, geo-distribution, retention, protection, and storage cost with metadata-driven policies, and adjust them dynamically as the business value of data evolves.

can combine replication and geo-distributed EC to balance performance needs and cost savings between different sets of data or during an object's lifecycle.

StorageGRID offers industry-leading hybrid cloud integration with user-controlled platform services. You can keep your data in a local private cloud while taking advantage of public cloud offerings. Storage tenants can configure mirroring of select objects at the bucket level to an S3-compatible public cloud. You can trigger hybrid cloud workflows by integrating S3 notification of events in your on-premises buckets with Amazon SNS. You can gain further value with metadata search and analytics by streaming object metadata to an external Elasticsearch service, on premises or in the public cloud.

StorageGRID lets you take advantage of industry-leading Amazon S3 APIs, such as object versioning, multi-part upload, Amazon Identity and Access Management-style access policies, cross-origin resource sharing, and object tags. With Active Directory and LDAP identity federation for Amazon S3, StorageGRID bridges the gap between enterprise IT and cloud semantics.

Cloud-to-cloud data management can also enable cost savings. StorageGRID can manage and store objects in its own globally distributed infrastructure, and also in Amazon S3 or S3-compatible object stores or public clouds. Depending on your locality or cost needs, you can add a cloud copy through Cloud Storage Pools to Amazon Storage and Glacier, or to Microsoft Azure and Blob as a cloud storage tier.

### **Facilitate compliance with tamper-proof data retention**

StorageGRID offers many features to help you meet your regulatory obligations. Storage tenants can configure WORM retention and litigation holds for objects by buckets. You can configure StorageGRID so that compliance data is stored with duplicate copies or logical equivalents, such as erasure-coded objects. You can secure your data with software-based encryption, built-in audit trails, and with FIPS drives on select StorageGRID appliances.

Many unstructured data applications require NAS protocols. The StorageGRID NAS protocol bridge supports SMB and NFS access and enables object access to these files by using the Amazon S3 API. You can run your current workload while being proactive about next-generation applications that natively support object protocols.

### **Proven software designed for nondisruptive operations**

StorageGRID is an 11th-generation object store with nearly two decades of production deployments in the most demanding industries. With the strength of the portfolio, NetApp has demonstrated more than 20 years of product hardening with over 1 million systems shipped. With advanced features such as the NetApp Active IQ® intelligence platform for proactive, immediate response and with backing by NetApp's world-class support organization, StorageGRID is a solution that you can trust with your critical data assets.

### **Flexible deployments**

Because every deployment is unique, StorageGRID aligns with your environment, whether that includes nodes as virtual machines (VMs), as optimized hardware-based appliances, as bare-metal servers with Docker containers, or as a combination across virtual and physical environments. In all cases, designing, deploying, and managing StorageGRID is a centrally managed and streamlined process allowing you to rapidly deploy petabytes of storage.

The StorageGRID range of appliances now provides the option for increased simplicity of deployment with its new services appliance. The SG1000 service appliance delivers an enterprise grade load balancer with full HA capabilities as well as the option to host StorageGRID admin nodes. This enables customers to streamline deployments by implementing “all appliance grids”. Customers have the flexibility to operate the node or HA node pair as a load balancer, an administrative node or both roles simultaneously.

Deploying NetApp StorageGRID appliances creates an enterprise-grade turnkey solution that is easy to implement. Each appliance was built to solve specific performance or capacity needs. You can also deploy software-only StorageGRID nodes as containers on physical or virtual servers, taking advantage of heterogeneous storage underneath.

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### **About NetApp**

In a world full of generalists, NetApp is a specialist. We're focused on one thing, helping your business get the most out of your data. NetApp brings the enterprise-grade data services you rely on into the cloud, and the simple flexibility of cloud into the data center. Our industry-leading solutions work across diverse customer environments and the world's biggest public clouds.

As a cloud-led, data-centric software company, only NetApp can help build your unique data fabric, simplify and connect your cloud, and securely deliver the right data, services and applications to the right people—anytime, anywhere. [www.netapp.com](http://www.netapp.com)

Key features for Object Storage	NetApp StorageGRID provides
<b>Massive scalability and flexible infrastructure</b>	<ul style="list-style-type: none"> <li>• Massive elastic content store</li> <li>• Multiple geo-distributed sites</li> <li>• Support for multiple storage tiers: <ul style="list-style-type: none"> <li>– SSD, SAS, SATA, tape</li> <li>– Amazon S3</li> <li>– Microsoft Azure</li> </ul> </li> <li>• Geo-erasure coding and geo-replication</li> <li>• Deployment on VMs, hardware appliances, or bare-metal servers with Docker containers</li> </ul>
<b>Application interfaces</b>	<p>Massively parallel transaction engine with:</p> <ul style="list-style-type: none"> <li>• Integrated load balancing</li> <li>• Transaction multithread pipelining</li> </ul> <p>Object access protocols:</p> <ul style="list-style-type: none"> <li>• Amazon S3 and OpenStack Swift</li> </ul> <p>NAS access:</p> <ul style="list-style-type: none"> <li>• CIFS and NFS</li> <li>• File object duality</li> </ul> <p>System and account management:</p> <ul style="list-style-type: none"> <li>• Management API: system installation, system administration, tenant management, maintenance tasks, and system monitoring including Prometheus</li> <li>• Tenant API: management of users, credentials, usage, and quotas</li> </ul>
<b>Data services</b>	<p>Platform services – tenant configurable hybrid cloud integration:</p> <ul style="list-style-type: none"> <li>• S3 event notification with Amazon SNS</li> <li>• CloudMirror bucket replication with Amazon S3 or S3-compatible target</li> <li>• Metadata search and analysis with streaming metadata to external Elasticsearch</li> </ul> <p>WORM retention:</p> <ul style="list-style-type: none"> <li>• Reinforced data integrity with compliance-grade WORM</li> <li>• Litigation hold</li> </ul> <p>Advanced security and encryption capabilities:</p> <ul style="list-style-type: none"> <li>• Store objects with lossless compression</li> <li>• Transport Security Layer (TSL) 1.2 and AES 256-bit encryption</li> <li>• Secure Hash Algorithm 2 (SHA-2) and CPU-efficient integrity protection</li> </ul>
<b>Metadata and content awareness</b>	<p>Metadata-based data management:</p> <ul style="list-style-type: none"> <li>• Content-aware self-healing maintains data protection even during network disruptions</li> <li>• Policies can be modified and applied retroactively to existing objects</li> </ul>
<b>Deployment options</b>	<ul style="list-style-type: none"> <li>• Physical or virtual servers via Docker containers</li> <li>• Virtual appliance: <ul style="list-style-type: none"> <li>– VMware ESXi and vCenter</li> </ul> </li> <li>• Hardware appliances: <ul style="list-style-type: none"> <li>– NetApp StorageGRID SGF6024 for high-performance primary object storage workloads, web apps, streaming</li> <li>– NetApp StorageGRID SG6060 for transactional small object storage workloads, including FabricPool optimization, with expansion shelf options for large scale capacity, including data lakes.</li> <li>– NetApp StorageGRID SG5712 and SG5760 for secondary, capacity object storage workloads</li> <li>– NetApp StorageGRID SG1000 services appliance for simplified operations include admin node software and load balancing</li> </ul> </li> </ul>
<b>Service-level objective and performance monitoring</b>	<ul style="list-style-type: none"> <li>• Get comprehensive performance feeds: <ul style="list-style-type: none"> <li>– Access throughout</li> <li>– Replication throughout</li> <li>– Time to policies achieved</li> </ul> </li> <li>• Demonstrate SLAs</li> <li>• Leverage QoS rate limiting to manage workload performance</li> <li>• Measure transaction round-trip time</li> <li>• Isolate application, replication, and admin network traffic</li> <li>• Adjust data policies with flexible ILM</li> <li>• Advanced system monitoring via Prometheus</li> <li>• Separate WAN, storage, gateway times</li> <li>• Advanced system monitoring via Prometheus</li> </ul>
<b>Management and monitoring</b>	<ul style="list-style-type: none"> <li>• Centralized and automatable installation and expansions</li> <li>• Automated monitoring and tenant management through an API</li> <li>• Rolling upgrades without downtime</li> <li>• Comprehensive ad hoc real-time, rolling-period, and historical-usage query capability</li> <li>• 200+ predefined monitoring, usage, and performance reports</li> <li>• Event-based audit messages for performance tracing, usage monitoring, and enabling billing or chargeback</li> </ul>
<b>Professional Services</b>	<ul style="list-style-type: none"> <li>• Reduce deployment risk, streamline implementation, migrate quickly with minimal disruption <ul style="list-style-type: none"> <li>– Discovery and design determines solution requirements</li> <li>– Validated process for appliance deployment and software configuration</li> <li>– Data migration with proven methodologies and reliable tools</li> </ul> </li> </ul>

## Models & specifications

	SGF6024	SG6060	SG5760	SG5712	SG1000/SG100
<b>CPU cores</b>	40 @ 2.4GHz	40 @ 2.4GHz	8 @ 2.0 GHz	8 @ 2.0 GHz	40 @ 2.1 GHZ (SG1000) 20 @ 2.4 GHZ (SG100)
<b>Raw capacity</b>	800GB SSDs = 19.2TB  1.6TB SSDs (FIPS) = 38.4TB  3.8TB SSDs = 91.2TB  7.6TB SSDs = 182.4TB	4TB drives = 232TB <small>(712TB with 2 Exp Shelves)</small>  8TB drives = 464TB <small>(1,424TB with 2 Exp Shelves)</small>  10TB drives (FIPS) = 580TB <small>(1,780 with 2 Exp Shelves)</small>  12TB drives = 696TB <small>(2,136TB with 2 Exp shelves)</small>	4TB drives = 240TB  8TB drives = 480TB  10TB drives = 600TB  12TB drives = 720TB	4TB drives = 48TB  8TB drives = 96TB  10TB drives = 120TB  12TB drives = 144TB	Not applicable.
<b>Form factor</b>	3U*, 24 drives	5U*, 58 Drives 118 with 1 Exp Shelf 178 with 2 Exp Shelves	4U, 60 drives	2U, 12 drives	1U*
<b>Connectivity</b>	4 x 10GbE/4 x 25GbE	4 x 10GbE/4 x 25GbE	4 x 10GbE / 4 x 25GbE	4 x 10GbE / 4 x 25GbE	4x 10/25/40/100GbE (SG1000) 4 x 10/25GbE (SG100)
<b>Width</b>	17.32" (44 cm)	17.66" (44.86cm)	17.66" (44.86cm)	17.6" (44.7cm)	17.32" (44 cm)
<b>Depth</b>	32.01" (81.3 cm)	38.25" (97.16cm)	38.25" (97.16cm)	21.1" (53.6cm)	32.01" (81.3 cm)
<b>Weight</b>	90.74 lb (41.17 kg)	289 lb (131 kg)	250 lb (113 kg)	63.9 lb (29 kg)	39 lb (17.7 akg)

### Environmental specifications

	Typical	Maximum	Typical	Maximum	Typical	Maximum	Typical	Maximum	Typical	Maximum
	800GB drives		4TB drives		4TB drives		4TB drives		Standard configuration	
<b>Amps</b>	2.25	5.52	6.29	9.68	6.25	8.06	2.02	2.54	1.67	2.62
<b>Watts</b>	490	1204	1374	2114	1361	1755	440	552	334	524
<b>BTU</b>	1671	4108	4690	7212	4642	5989	1501	1884	1140	1788
	1.6TB drives		8TB drives		8TB drives		8TB drives			
<b>Amps</b>	2.27	5.56	6	9.38	5.95	7.77	1.97	2.49		
<b>Watts</b>	512	986	1310	2050	1297	1692	429	541		
<b>BTU</b>	1683	4132	4472	6994	4425	5772	1462	1846		
	3.8TB drives**		10TB drives (FIPS)		10TB drives (FIPS)		10TB drives (FIPS)			
<b>Amps</b>	2.36	5.74	6.29	9.68	6.25	8.06	1.97	2.49		
<b>Watts</b>	513	1251	1374	2114	1360	1755	441	554		
<b>BTU</b>	1750	4268	4689	7211	4642	5989	1506	1889		
	7.6TB & 15.3TB drives		12TB drives		12TB drives		12TB drives			
<b>Amps</b>	2.42	5.88	6.33	9.71	6.28	8.1	2.23	2.75		
<b>Watts</b>	527	1279	1382	2122	1369	1764	498	611		
<b>BTU</b>	1799	4365	4718	7240	4671	6018	1700	2083		

The SG5760 and SG6060 requires 208V-240V power. It will not function with 120V power.

\* 1U compute server included in form factor - environmental specifications using 220V for compute server.

\*\* available in SED and non-SED drives.

