



Highlights:

- Addresses your system performance requirements with flexible storage solutions
 - Provides dependable access to your data when you need it
 - Satisfies COOP/DR requirements in economical cloud solutions
 - Provides scalable storage, available in a “pay-as-you-grow” consumption model
 - Meets FISMA moderate security baseline and is FIPS 140-2 compliant
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IBM SmartCloud for Government

Optimizing storage for greater government value

A 50 percent annual explosion of information is driving 54 percent growth in storage shipments every year. IBM SmartCloud for Government (SCG) solutions can help government agencies manage this growth with flexible, efficient, cloud-based storage. It is a secure, private, multi-tenant cloud designed to meet the regulatory and compliance requirements of federal, state and local governments.

The SCG resides within IBM Federal Data Centers (FDC), providing hosting at the required security level for government organizations. It supplies dependable access to business-critical data along with the ability to optimize workloads, meet Federal mandates and initiatives, reduce IT and energy costs and adjust for future storage requirements. These capabilities are dynamic and scalable to help organizations meet government consolidation mandates.

Optimized storage infrastructure

Best practices in data storage technology and NAS architecture, implemented in a compute cloud, enable cost-effective, flexible and efficient solutions for enterprises handling large volumes of storage. IBM SmartCloud for Government provides that ability, *plus secure multi-tenancy*, using NetApp storage technology, including the NetApp FAS Storage System, a unified storage platform and the NetApp Data ONTAP 8 Operating System.

Government agencies using a flexible unified storage architecture have found it provides storage efficiencies that can enable them to bring new applications and services online faster, leveraging the attributes of SCG to achieve:

- Savings of up to 50 percent on capacity, power, cooling and footprint
- Two to three times more data managed per storage administrator
- As much as 35 percent of disk space reclaimed on third-party storage technology
- Provisioning time reductions of up to 90 percent
- Non-disruptive movement of data for load balancing or dynamic scalability
- Up to 50 percent reduction in development and test times¹



Data ONTAP 8 OS software is an integral part of the NetApp industry-leading unified storage platform, which provides massive scalability and, most importantly, nonstop operations. With nonstop operations, planned storage downtime is minimized and can be eliminated in many use cases – even during servicing and upgrades – helping to keep your data available when you need it.

Dependable data protection and recovery

The key to a thorough data protection strategy is to employ technologies and products that can scale across the spectrum of data protection needs while maintaining continuity of operations (COOP). In the event of a natural or manmade disaster, government agencies must be able to access their critical data within the prescribed recovery time objective (RTO) and meet the required recovery point objective (RPO), while maintaining the integrity of the data among any and all redundant storage sites. To assist government agencies in meeting their defined RTOs and RPOs, IBM maintains multiple geographically dispersed and hardened datacenters that can be leveraged to provide the required levels of failover capability.

The following Data ONTAP features, utilized by IBM SmartCloud for Government, provide improved data protection capabilities, as well as integrated disk-based backup that allows rapid data recovery in the event of data corruption or loss:

- **Snapshot** copies are instant, read-only, point-in-time copies of data, which are primarily used as local backups for rapid recovery. They enable Federal agencies to protect data with no performance impact and minimal consumption of storage space.
- **SnapVault** takes advantage of these copies in order to replicate block changes to remote storage. Once the initial full backup is complete, only changed blocks are replicated to the NetApp secondary system. This is true, incremental forever technology. The efficiencies built into SnapVault make it possible to drastically reduce backup and to improve RTOs and RPOs. SnapVault backups also work well over wide-area networks where NetApp primary storage is deployed in remote offices.
- **SnapMirror** is a data replication feature of Data ONTAP that provides flexible disaster recovery protection. It enables disaster recovery fail over to a secondary site, allowing low RTO, while supporting a full range of recovery point objectives from zero seconds to hours. Once the primary site is available again, services can be restored for normal operation.
- **SnapLock** delivers secure data permanence on storage for archive and compliance. It can be combined with backup and replication solutions such as SnapVault, SnapMirror and MetroCluster to enhance the overall data protection policies.
- **MetroCluster** offers high-performance synchronous mirroring over Fibre Channel for continuous availability between locations up to 100 kilometers apart.
- **RAID-DP** with a standard configuration protects against double disk failure without sacrificing performance. This unique implementation prevents parity drives from becoming performance bottlenecks.

SCG is part of the IBM SmartCloud for Government Base Technology, which also includes:

- IBM xSeries® (Linux® or Microsoft® Windows® OS)
 - Cisco Catalyst Switches and Firewalls
 - VMware Vsphere Hypervisor
 - IBM Proventia® Intrusion Detection
 - IBM Tivoli® System Management
 - Remedy Integrated Service Desk
 - NetApp storage technology
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Building for today, with the ability to scale for tomorrow

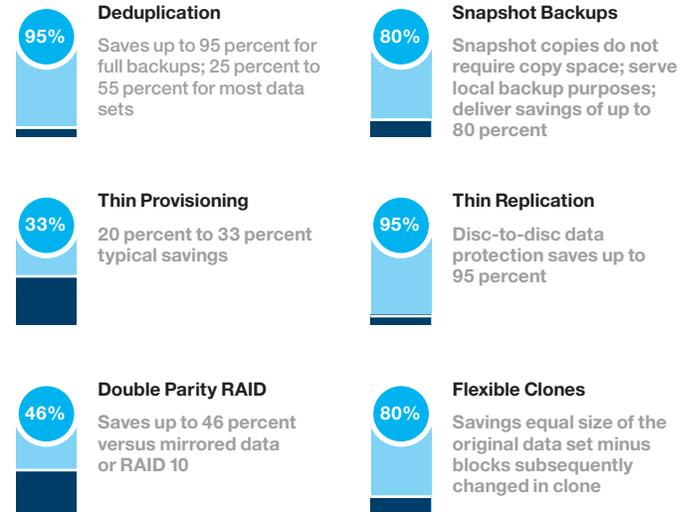
IBM SmartCloud for Government, with NetApp technology, gives you the ability to scale up, scale down and scale out to address dynamic resource needs in a “pay-as-you-grow” consumption model. With NetApp FAS storage solutions you can scale from a few terabytes to several petabytes using a single storage platform, while remaining transparent to other running applications.

Data ONTAP 8 can help reduce your IT asset and management costs by rebalancing capacity and workload on the fly, consolidating remote office file servers and enabling remote office backup. You can improve service levels by dynamically redeploying or adding more workloads and avoid hot spots by moving volumes to less active disk aggregates. Data ONTAP 8 offers an automated approach to utilizing various technologies and features in order to optimize precise datasets to meet your performance and cost targets. Features include:

- **FlexVol** creates flexible volumes to enable storage systems to be used at maximum efficiency to reduce hardware investments.
- **Thin Provisioning** enables pooling of free space and over-subscription of storage, effectively allowing administrators to potentially regain 50 to 70 percent of the empty space.²
- **Deduplication** removes data redundancies in primary and secondary storage.
- **FlexClone** instantly replicates data volumes, files and LUNs without requiring additional storage space at the time of creation. It can help you manage many more data set variations in less time and with less risk.

The Data ONTAP 8 operating system can accelerate the move to a shared infrastructure by delivering storage that is always on and massively scalable. Superior operational efficiencies can help you manage data, application and infrastructure growth.

How much space can you save?



Each technology can contribute directly to storage efficiencies. Results may vary based on individual client environments.

Comply with Federal Government security requirements

IBM understands and appreciates the challenges of handling sensitive information for the Federal Government. SmartCloud for Government has been specifically designed with the most stringent security controls, with our Federal clients in mind. While other companies provide varying levels of certification for a subset of their products, IBM focuses on what matters most to you – achieving a full Authority to Operate (ATO) for your most important business systems.

The SCG solution has achieved several ATOs. It has been evaluated at the FISMA Moderate levels prescribed in the NIST 800-53 rev 3 controls and is compliant with FIPS 140-2 encryption requirements, as well as individual agency and component requirements. With the IBM solution, you can rest assured that your data is secure, available and backed by an end-to-end certification process to meet or exceed your certification and accreditation objectives.

Why IBM

IBM has decades of experience working with U.S. Federal Government agencies along with a strong presence working with the Department of Defense, Department of Homeland Security, Federal civilian agencies and the intelligence community.

IBM has a broad range of cloud offerings from consulting services for planning and building private clouds to deploying infrastructure, platforms and software as services (IaaS, PaaS and SaaS). IBM cloud computing provides agile and rapid responsiveness for IT environments specifically tailored to Federal agencies, along with highly skilled security-cleared resources. IBM has significant experience that allows us to leverage commercial capability for our Federal customers.

IBM Federal Data Centers meet FISMA Moderate Standards with investments in new service offerings based on Federal Market trends. Tier III Data Center classification is built with the latest Green Data Center technology to reduce operational cost and provide energy efficiencies.

IBM Global Business Services® and its technology partner NetApp have the people, processes and advanced technologies to help you build and deploy your government cloud solutions quickly and efficiently with maximum benefits and minimal disruption.

For more information

To learn more about leveraging SCG capabilities for state-of-the-art government solutions, please contact your IBM representative or visit us at:

www.ibm.com/Federal/cloud



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¹ NetApp. *The Federal Mandate for Data Center Consolidation*. White Paper, 2012

² NetApp. *Thin Provisioning—Doing More With Less*. Silverton Consulting Inc., 2012



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