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Software Defined Storage

Using Software to Create an Agile IT Infrastructure

A WHITE PAPER PRESENTED BY:

NetApp™

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PREPARED BY

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SOFTWARE DEFINED STORAGE

Using Software to Create an Agile IT Infrastructure

System downtime—planned and unplanned—is a fact of life in today's IT-driven environment. But this downtime, and the associated risk of lost data and increased costs, can be devastating to an organization, especially when mission-critical operations rely on an infrastructure that is always on. How can organizations reconcile these two business realities?

EXECUTIVE SUMMARY

Information technology systems have made the workforce more productive than at any other time in history. Yet, when unavailable, those same systems can bring an organization's operations to a halt—impacting revenue, productivity, and critical services. As IT infrastructures become more mission-critical and systems become increasingly complex, downtime becomes more disruptive to essential business operations. And then there are the network and power outages that cause unplanned downtime and data loss. Simply put, the risks associated with disruptions in service are too high. But downtime is a fact of life because applications and software require routine upgrades and maintenance to deliver the newest technologies.

NetApp commissioned Market Connections to learn the frequency of infrastructure refreshes and scheduled maintenance; the impact of unplanned system downtime, and the organization's confidence in its infrastructure.

To ensure innovation, government agencies and systems integrators are collapsing data centers with the goal of saving money and building agile operations. In many instances, multiple departments share the same infrastructure, complicating scheduled downtime and making system refreshes and upgrades a challenge.

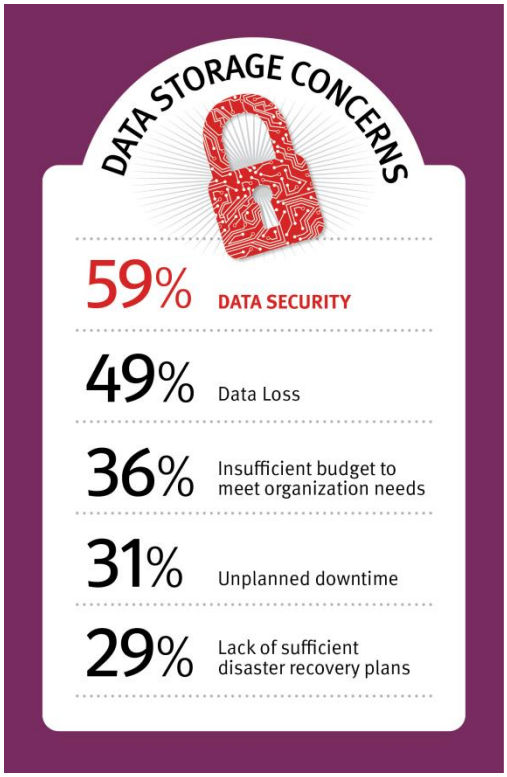
As systems integrators and government agencies grapple with these challenges, a new model is emerging that removes the need for scheduled downtime and significantly minimizes the impact of unplanned downtime. That model is known as Software Defined Storage (SDS). The multi-tenant environment of SDS allows organizations to optimize management and control of the data and the environment through separation and control of the data planes.

NetApp commissioned a research study to better understand the effects of system downtime on government agencies and systems integrators. This includes how often infrastructure refreshes are performed and maintenance scheduled; the impact of unplanned system downtime, lack of services, transportation disruption, and loss of revenue issues on the organization; and the organization's confidence in the infrastructure, its limitations and constraints, and future needs.

The study by Market Connections, Inc. revealed the top-of-mind data storage concerns government agencies and systems integrators are facing and to what extent SDS is seen as a solution to those concerns.

TOP DATA STORAGE CONCERNS

Considering the importance data plays in every aspect of an organization's operations, it's not surprising that survey respondents had a host of concerns. Unplanned downtime, budget, and lack of sufficient disaster recovery plans (including data loss and data security) were the respondents' top-of-mind concerns, each receiving 30% or more of responses.



"CIOs need an infrastructure that can work without interruption and keep costs under control, while delivering new services, projects, and capacity instantly."

RAJ RANA
SENIOR MANAGER, PARTNER ECOSYSTEM
NETAPP PUBLIC SECTOR

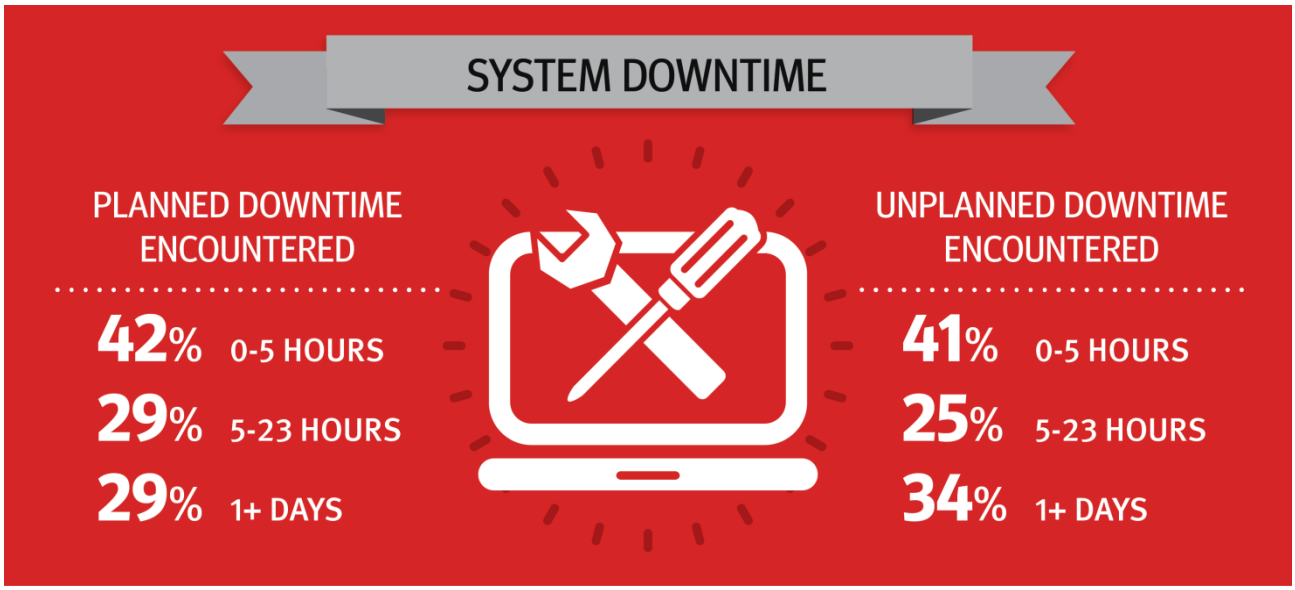
Unplanned Downtime

Regularly scheduled maintenance and software upgrades are the most frequently noted reasons for planned downtime, and 48% of respondents have resigned themselves to accept this planned downtime. But what about those network outages, server failures, and power outages that cause unplanned downtime? According to the respondents, this unplanned downtime disrupts agency/business operations and reduces end-user productivity. Whether five hours or five days per year, the majority (57%) of respondents say the amount of uplanned downtime they experience is unacceptable. It is also possible to extrapolate that, if it were an option, most IT managers would prefer to reduce planned downtime as well.

In the last 12 months, 34% of respondents experienced one day or more of unplanned downtime. Half of the respondents say unplanned downtime disrupts agency business/operations and 48% report reduced end-user productivity. Nearly 30% of respondents want to see a 25% reduction of unplanned downtime in their organization.

Budget

In addition to the costs associated with unplanned downtime, refreshing or upgrading infrastructure has a significant impact on budget considerations. In fact, 70% of respondents cite cost as one of their concerns for a refresh or upgrade, and it is the primary concern for 36% of federal and state agencies and 24% of systems integrators.



Despite the budget concerns, 29% of respondents are planning a refresh in the next year, and 33% are planning one in the next two years.

Lack of Sufficient Disaster Recovery Plans

Organizations need technology that can safeguard storage, access, manipulation, and transmission of data, and have plans in place should a disaster occur. Therefore, lack of disaster recovery plans—including what to do in the event of data loss or a security breach—is a top data storage concern among almost 30% of the respondents. Data security is of concern to 59% of respondents, and data loss is of concern to 49%.

SDS has the ability to address all of these concerns for both government agencies and systems integrators by providing increased efficiency and a more agile IT environment.

SOFTWARE DEFINED STORAGE

As an architectural approach to data storage management, the SDS infrastructure is managed and automated via intelligent software, as opposed to the storage hardware itself. It virtualizes and encapsulates the entire infrastructure into a container that can be logically partitioned. Therefore, the pooled storage infrastructure resources in an SDS environment can be automatically and efficiently allocated to match the application needs of an enterprise.

SDS allows for data portability—whether it's NetApp hardware, commodity hardware, or cloud.

With SDS, organizations move from replicating data to replicating architectures because SDS is not tied to a physical hardware configuration. Instead of requiring that everyone have the same hardware and software, organizations create heterogeneous environments and virtualized storage that can run anywhere—internally, externally, or in a shared environment such as the cloud.

This model offers agencies and systems integrators a cost-efficient, reliable, and secure solution to handling these data storage challenges. What this

means for organizations is that SDS provides the ability to respond more quickly to change by providing a single unified clustered architecture, which easily scales and adapts to the size of any business.

Despite the clear benefits, 33% of survey respondents were not familiar with SDS at all and only 7% were very familiar with SDS.

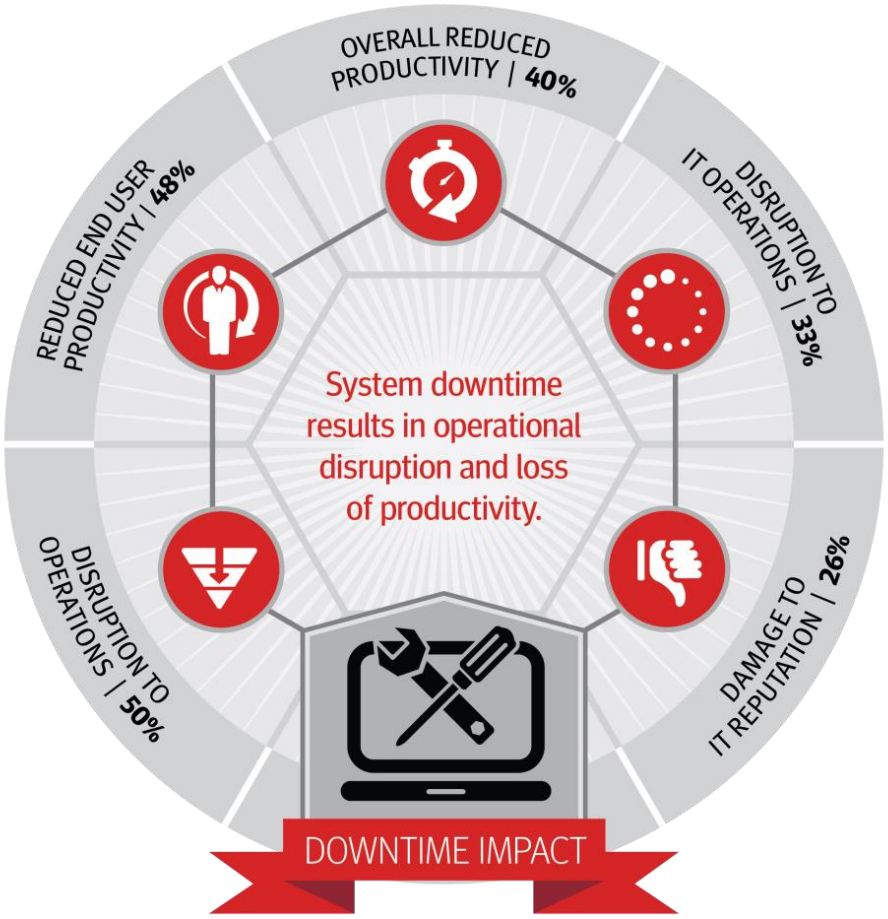
"SDS puts data at the center of your strategy, allowing you to use whatever hardware or service you choose managed by smart software."

JEFF BAXTER, MANAGER, CONSULTING SYSTEMS ENGINEERING, NETAPP US PUBLIC SECTOR

Non-disruptive Operations

A recent study by Emerson Network Power looked at the actual cost of a system outage, and the cost is staggering. Organizations lose on average $5,000 per minute in outage, or $300,000 per day. For mission-critical environments, these costs could also be measured in consumer goodwill or real human impacts to health or safety. This cost alone makes ensuring non-disruptive operations imperative.

With the majority of respondents (57%) indicating their unplanned downtime is unacceptable, the non-disruptive operations guaranteed by SDS are obviously of extreme importance. When assessing an SDS solution, it should provide transparent upgrades and hardware refreshes, prevent data loss by ensuring data is available in the event of a disaster, and make replicating data simple. Furthermore, preserving compression and deduplication over the network and at remote sites is critical for organizations where connectivity may be unreliable.



With SDS, organizations can plan their data center around their data, rather than their hardware. As hardware ages, data can be migrated transparently to newer hardware without disruption to data access. This level of non-disruptive operations is essential in today's 24/7 environment in which systems cannot afford to be offline.

Maximizing IT Budgets

Inefficient data storage typically represents up to 15-20% of IT infrastructure budgets. SDS reduces those costs by preventing an overspend on data storage by:

- Including efficiency technologies such as deduplication and compression
- Extending backup technology to take efficient volume-based backups over the network
- Preserving compression and deduplication over the network and at the remote site

Respondents cited reducing storage most often as the top benefit of SDS. Among those who are very familiar with SDS, nearly 40% cited reducing data management costs as the overall top benefit of SDS. In short, SDS allows organizations to achieve greater flexibility and have greater control over costs.

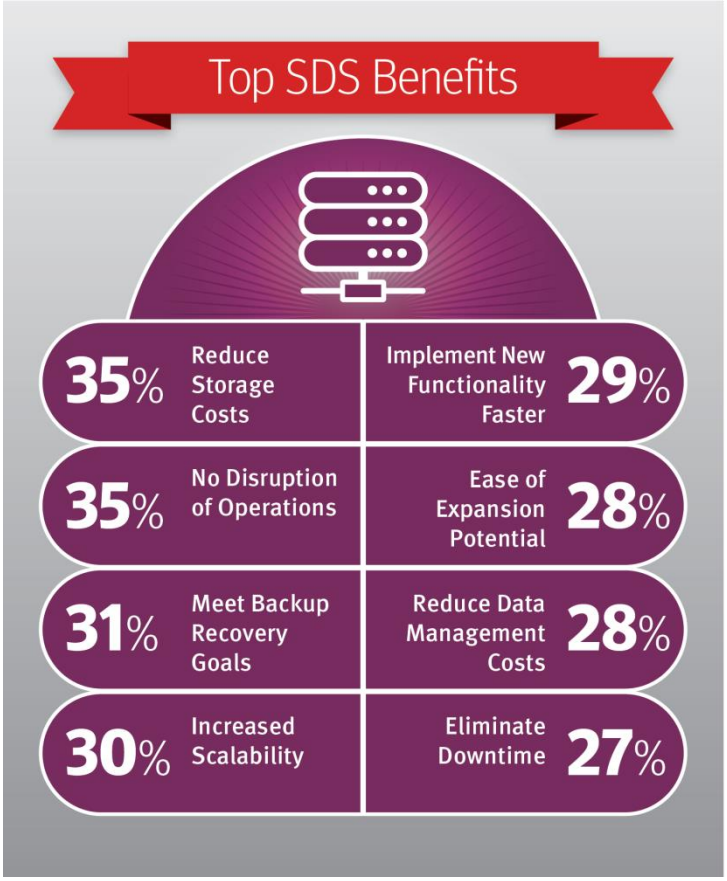
Reducing Risk

Restoring data, re-hosting applications, and re-connecting networks are the three critical tasks that must be performed as soon as possible when disaster strikes. SDS simplifies these tasks and gets the enterprise back on track quickly.

By making data replication easier and simplifying the creation of a backup link, SDS also reduces the risk of data loss and the cost and time associated with manually restoring data.

Additionally, SDS reduces risk and increases agility by standardizing on a single unified clustered architecture that easily scales and adapts to the size of your business. The model allows for cloud backups for data storage, thereby reducing the risk of data loss.

Data loss is the primary concern for approximately half of the respondents. SDS prevents data loss in the event of a hardware failure by "clustering" and putting data in a "pool" so that it is not tied to a piece of hardware. As a result, SDS is decoupling the data from the hardware that's processing. Since it is unlikely that all hardware will fail at once, SDS provides shared volume across multiple pieces of hardware.



CONCLUSIONS

SDS is doing for storage what server virtualization did for servers—enabling the ability to adapt infrastructure at the pace of business. SDS allows for seamless expansion capacity and performance, and it can rebalance critical workloads without downtime.

SDS benefits include:

- Allowing for consolidated data centers to scale on-demand to immense amounts of storage all managed as one single cluster
- Eliminating IT downtime and service to an organization's infrastructure without disrupting access to user data and applications – even during regular business hours
- Saving time and money by consolidating and sharing the same infrastructure for workloads or tenants that have different performance and security levels
- Adding capacity as organizations grow across both SAN and NAS environments without reconfiguring running applications
- Simplifying complex tasks so IT staff can focus on solving higher-level problems
- Improving IT operations and accelerating business-critical application performance

As the key to delivering on today's cutting edge technologies—SDS delivers non-disruptive operations, proven efficiency, and seamless scalability. It is a game changer for any business that values portability, flexibility, and scalability of their systems.

ABOUT THE STUDY

The NetApp 2013 SDS Online Survey explores the primary data storage challenges government agencies and systems ingegrators face. The blind online survey reached 250 IT decision makers and influencers, of which 40% are with federal agencies, 40% state and local agencies, and 20% systems integrators. All respondents were knowledgeable about, or involved in, decisions and recommendations regarding providers of data storage. Half of the respondents (50%) are responsible for identifying their organization's data storage needs, of which 37% are responsible for establishing systems requirements and development standards.

ABOUT NETAPP

NetApp's efficient, cost-effective data storage and management solutions meet IT infrastructure needs. NetApp's SDS solutions, with superior storage efficiency, can help organizations achieve nondisruptive operations and seamless scalability—all while lowering total cost of ownership. NetApp's dedication to principles of simplicity, innovation, and customer success has made them one of the fastest-growing storage and data management providers today. For more information and case studies about NetApp's SDS solutions, visit www.netapp.com/us/.

ABOUT MARKET CONNECTIONS, INC.

Market Connections delivers actionable intelligence and insights that enable improved business performance and positioning for leading businesses, trade associations and the public sector. The custom market research firm is a sought-after authority on preferences, perceptions, and trends among the public sector and the contractors who serve them, offering deep domain expertise in information technology and telecommunications; healthcare; and education. For more information visit: www.marketconnectionsinc.com.