

Four Top SMB Backup Concerns and EMC solutions **Silverton Consulting, Inc. StorInt™ Briefing**

Introduction

All too often in today's SMB data centers the overall backup and recovery process, including both its software and hardware components, is given only minor attention and is vastly overshadowed by the company's primary business operations. This phenomenon happens in any size data center and is unfortunately not usually remedied unless the data center has experienced serious data loss.

These data loss events can arise from a simple mistaken erasure of a critical file, or from a more serious process crash or a data storage failure. However, data losses, defined as losses of any vital information, can also occur in less expected ways. For example, consider information stored on a laptop used by an employee. If that laptop is lost, its data is usually permanently unrecoverable. Another less expected but even more catastrophic data loss could occur in the event of a natural disaster.

The ill effects of a data loss can be greatly mitigated through the implementation of proven backup and recovery infrastructure and a well defined data protection process. The data protection process must be flexible enough to allow for changes in the data center such as data storage growth, new applications and the need for employee mobility.

Fortunately, a variety of backup and recovery strategies and options are available to help SMBs provide better data protection. These include:

- **Backup to tape**, the traditional medium of choice for many SMBs, which offers good economics but often, has shortcomings; it can be slow, labor-intensive and potentially unreliable.
- **Backup to disk** is assuming a greater role in SMB due to its continuously decreasing costs. It is 3 to 10x times faster than tape backup operations and offers enhanced reliability and increased accessibility. The addition of next-generation technologies, like data deduplication, can significantly increase efficiency.
- **Backup to the cloud** offers many of the efficiencies of backup to disk but uses no onsite storage; backups reside at a remote server within a third-party service provider data center. With this approach there are minimal capital infrastructure requirements and it significantly reduces the amount of time IT staff spends on backup tasks.

Four SMB Backup Concerns

Given these options, planning the overall backup and recovery process can be a daunting task. Four particularly troublesome concerns arising during the data protection implementation include backup reliability and robustness, backup duration, backup cost and complexity, and disaster recovery (DR) support.

Backup reliability and robustness

Most SMBs have established data center backup procedures producing a combination of weekly full and daily incremental backups. Nonetheless, backup systems can “fail” for reasons other than unexpected tape errors or data center infrastructure failures. For example, consider the following common situations that if not handled properly can lead to data protection gaps or backup breakdowns:

- **Applications** – More and more application data is being stored on the network. Some applications provide facilities for online backups while others must be backed up offline. Where appropriate, backup software must be capable of recognizing and using available APIs to obtain online or where necessary, offline copies of application data.
- **Remote Offices** – Protecting a remote or branch office, often with low-bandwidth and no onsite technical expertise, can present a unique set of challenges. Backing up over a WAN to the data center can pose a problem because of the amount of data and the cost of bandwidth. Performing tape backups at each site can be labor intensive, cumbersome and unreliable.
- **Desktops** – Desktops regularly connected to the company network can be protected using enterprise backup solutions, but the time required to backup the data and the impact on the PC’s and network’s performance are often problems, leaving valuable data vulnerable.
- **Laptops** – With today’s highly mobile workforce, employee PCs are no longer tethered to file servers that are backed up to the data center. Laptop backup often relies on end-users to manually and routinely backup and any IT task left to a user to perform runs the risk of not getting done, exposing the critical data stored on them. Moreover, when it’s done it is often inconvenient and intrusive for both the user and IT.

In short, reliable and robust backup systems for SMBs need to be comprehensive enough to protect all business critical data, whether it resides in the data center, on LAN file servers, in remote offices, on desktops, or on mobile laptops.

Backup duration

In addition to reliability, the backup system must provide a timely completion of the data copy. In some organizations the backup process can be the most network- and storage-intensive activity in their operation and can negatively impact day-to-day operations. In particular:

Four Top SMB Backup Concerns & EMC Solutions

- **With networks** – All backup data moves across data center LANs and SANs. Such data movement, particularly full backups, can involve transferring TBs of information and is often the peak network activity of SMB data centers. As such, backups can extend into business hours, potentially impacting critical business applications.
- **With backend storage** –The backup process, in which large amounts of data are moved to and from storage, frequently consumes all the available storage throughput and bandwidth. Full backups of TBs of data in an SMB data center commonly take hours to complete and often must be executed outside normal business operations.

Thus, even a nine-hour night backup execution window from 8 p.m. to 5 a.m. may not be enough for a typical SMB data center to successfully complete a full backup. Consequently, backup schedules are often reconfigured; storage and/or servers are backed up less frequently.

Although, both options can speed up backup execution and allow normal operations to continue unimpeded, they introduce a higher risk of data loss. Therefore, a robust backup and recovery system needs to be able to complete a full backup within the allotted time without compromise.

Backup cost and complexity

The limited resources with which many SMBs contend can present a set of challenges for achieving reliable protection and timely recovery of critical business data. The complexity of managing existing backup processes creates an additional burden on these limited resources. This management complexity, including tape management and offsite shipping, increases costs in the resource-starved SMB data center.

Specifically, with SMBs' tight budgets, backup storage, including its purchase price, power and cooling, and floor space costs, becomes a significant burden. Thus, reducing the data storage for backups to the minimum required to support adequate data protection is an ongoing concern.

In addition, SMBs may have relatively small IT staff and backup and recovery administration can strain operational resources. As such, data protection products and processes must be easy to install, fully automated and use centralized administration to function effectively in SMB data centers.

When combined, these budget and staffing constraints reduce the data protection options available to an SMB data center. Nonetheless, any effective backup and recovery process must provide adequate protection with minimal complexity to meet SMB's significant cost and staffing constraints.

Disaster recovery support

Finally, while backup processes provide protection for cases when the data center remains operational, it does nothing to protect against entire data center failures. Disasters such as hurricanes, floods or fires can shut down an entire data center, which can result in catastrophic data loss. Yet despite the overwhelming media coverage of these events, many SMB data centers are only nominally prepared for the ensuing havoc.

The costs and complexity associated with setting up and maintaining a disaster recovery (DR) strategy can seem overwhelming to many SMBs. But it is still a critical component of all backup and recovery strategies and cannot be ignored. Setting up a disaster recovery site, or leveraging a third data center offsite can save a company significant time and money in the long run.

At a minimum, every SMB data center should have offsite copies of backup data to restore information. As such, it's important to find backup and recovery solutions that can help create and maintain a DR strategy that is feasible for the long-term.

EMC Solutions

EMC® offers a comprehensive portfolio of solutions that span the data protection continuum to simplify any backup process to successfully and economically overcome the data protection challenges of SMB organizations. For off-premise data protection, EMC's MozyEnterprise™ cloud-based backup may be an optimal solution. For traditional backup, EMC offers NetWorker® Fast Start backup software. Lastly, for next-generation data protection solutions that revolutionize the way backups are done, EMC provides Avamar® deduplication backup solutions and Data Domain® deduplication storage systems.

EMC MozyEnterprise

Mozy™ is a Software-as-a-Service (SaaS) EMC product providing backup to the cloud capabilities. EMC's Mozy service, which supports both Windows and Macintosh operating systems, quickly and efficiently backs up servers, desktops and laptops to offsite, cloud-based storage over the Internet. In addition, Mozy services can optionally encrypt backup data and transport it across the network using SSL protocols to maintain high data stream security.

With these capabilities alone, Mozy services are particularly attractive for smaller SMB data centers. However additionally, the single Mozy cloud data can function concurrently as a local backup and a DR backup. In fact, the Mozy cloud copy can be restored from any Internet accessed location with proper security credentials.

EMC charges for Mozy services monthly on a GB stored and bandwidth-used basis and any changes to backup needs can be swiftly and easily adjusted. As such, Mozy can provide an economically feasible backup alternative for many SMB data centers.

Four Top SMB Backup Concerns & EMC Solutions

In contrast, larger SMBs may be more optimally suited for other, more sophisticated backup alternatives.

EMC NetWorker Fast Start

One attractive alternative for the SMB data center is EMC's NetWorker Fast Start backup software, a bundled repackaging of EMC's well established and sophisticated NetWorker backup software but specifically targeted for SMB data centers. Fast Start helps lower the total cost of ownership by allowing the SMB to install and configure in a matter of minutes. This includes automatic discovery of hosts and applications as well as remote installation of the application modules. Also, Fast Start provides primary backups either to disk or tape and scales seamlessly into NetWorker to support SMB data center expansion. Optionally, this advanced software also provides a secondary backup to EMC Atmos™ cloud storage facilities and as such, provides basic DR data protection.

Furthermore, adding to the product's ease of use and overall appeal are the three Application Modules included in the bundled package. Specifically, these modules include:

- For **Microsoft Exchange** environments, Fast Start provides automated online backup of all Microsoft Exchange servers, recovery for individual messages, folders, and mailboxes, and tape clones for offsite disaster recovery. An Exchange wizard GUI enables quick and easy implementation.
- For **Microsoft SQL server** environments, Fast Start provides automated online backup of SQL data, granular recovery of files, filegroups, databases, and transaction logs, tape clones for offsite disaster recovery and third party snapshot integration. A wizard GUI enables a quick implementation of backups for Microsoft SQL servers.
- For **Oracle database** environments, Fast Start provides automated granular, online backup and recovery of all Oracle databases scheduled on either an event or a date and time basis, moves Oracle databases from one ESX server to another with no interruption in protection, creates Oracle RMAN scripts, and integrates third party snapshots.

Given these prepackaged modules and the flexibility to provide disk or tape primary backups make this EMC software offering more suitable for SMB data centers. With Fast Start, executing complicated backups without substantial administrative burden is easy.

EMC Avamar Deduplication Backup Software Solutions

For SMBs concerned with network bandwidth limitations and backend storage requirements, EMC Avamar may provide a prime alternative. Avamar is a complete next-generation backup, recovery and DR software solution with integrated global, source-based data deduplication technology. With Avamar, SMBs can fully protect all their data, even in the most



Four Top SMB Backup Concerns & EMC Solutions

challenging environments – VMware®, remote offices, desktops and laptops and NAS storage.

The Avamar client software in conjunction with its storage repository identifies redundant sub-file data segments at the source (or client), reducing backup data before it ever has to pass across crowded LAN/WAN networks or virtual infrastructure. Simultaneously, manifests are created to establish the total data components of a file to facilitate restoration. By identifying and moving only unique data, Avamar reduces the bandwidth required to perform backup and thereby shorten backup windows. In addition, while maintaining file integrity, the physical backup storage needs are dramatically reduced by this solution's data deduplication.

Avamar may also provide an optimal solution for SMB data centers with DR requirements because the EMC product supports data replication of previously deduplicated files. In fact, the benefits of the original deduplicated source backup are precisely reproduced when replicating the data to the remote location. That is, bandwidth and physical space requirements are reduced, the backup process is speeded up and the integrity of the complete data picture is maintained.

Avamar storage repository configurations include two deployment options, the fully integrated EMC Avamar Data Store hardware and EMC Avamar Virtual Edition for VMware virtual appliance. The Data Store hardware operates better in more performance intensive environments whereas Virtual Edition, with centralized management fully integrated with VMware vCenter™, is better suited for virtualized environments.

EMC Data Domain Deduplication Storage Systems

Another EMC backup to disk solution for the SMB data center is the EMC Data Domain family of deduplication storage systems including the DD140, DD610 and DD630. The systems are backup appliances that provide inline deduplication. This means that a backup application sends data to the system and only new, unique data, as determined by the Data Domain system, is stored to disk.



Data Domain deduplication offers these distinct benefits:

- **Retain longer** – provides disk-based deduplication to keep backups onsite longer with less disk for fast, reliable restores, and eliminate the use of tape for operational recovery.
- **Replicate smarter** - moves only deduplicated data over existing networks reducing bandwidth requirements significantly for cost-effective disaster recovery.



Four Top SMB Backup Concerns & EMC Solutions

- **Recover reliably** – provides continuous fault detection and self-healing to ensure data recoverability to meet service level agreements with the Data Invulnerability Architecture.
- **Simpler operations** – eliminates risk and cost of tape management with appliance based deduplication architecture.
- **Easy integration** – ships with standard CIFS and NFS file level interfaces that supports industry leading backup software. Optionally these appliances provide a Virtual Tape Library (VTL) or Data Domain Boost, a custom interface for use with OpenStorage (OST).
- **Scales better** - supports varying levels of performance and capacity that can be purchased to match a data center's current backup requirements.

Summary

Backup and recovery is an essential process for maintaining smooth business operations. With today's mobility of information and users, the amount of data at risk in a natural disaster is significant. Nonetheless companies, particularly SMB businesses, are still sometime less than diligent in protecting their critical information. Planning and implementing an effective and fluid data protection solution should be made a critical priority for those companies.

EMC offers an impressive range of services, including both software and hardware solutions, to ease the backup planning and implementation process and thus, providing excellent ongoing data protection. Software, like its Mozy and NetWorker Fast Start make implementing complex backup processes easier and more reliable as well as providing DR and backup at a reasonable cost. EMC solutions like Avamar and Data Domain can reduce the cost and complexity while increasing the speed and reliability of backup processes. With these solution alternatives, EMC can effectively address critical backup and recovery concerns and can be the ideal partner to implement reliable, robust backup processes for an SMB data center.

Silverton Consulting, Inc. is a Storage, Strategy & Systems consulting services company, based in the USA offering products and services to the data storage community.