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Market Overview: Enterprise-Class Backup And Recovery Software

by Rachel A. Dines
for Infrastructure & Operations Professionals

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by Rachel A. Dines
with Stephanie Balaouras and Alex Crumb

EXECUTIVE SUMMARY

Backup is not the sexiest process in infrastructure and operations; it's akin to getting your teeth cleaned: necessary, but often painful. Many enterprises struggle with exponential data growth, shrinking backup windows, and static budgets — which leads to the classic conundrum of how to back up more data in less time with the same amount of money. Selecting the right backup and recovery solution isn't any easier than the process itself. With dozens of providers, a laundry list of technical features, and the constantly changing landscape, it's no wonder that many infrastructure and operations professionals would rather take a trip to the dentist than replace their aging backup infrastructure. This report will outline the key features you should consider when evaluating your next backup and recovery solution, as well as the leading providers in the market for enterprise-class solutions.

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NOTES & RESOURCES

Forrester interviewed 12 vendor companies: Acronis, Asigra, BakBone Software, CA Technologies, CommVault, HP, i365, IBM, NetApp, SEP Software, Symantec, and Syncsort.

Related Research Documents
"Consolidated Backup Strategies For Remote Sites"
October 30, 2009

"Use Deduplication To Store More With Less"
July 10, 2009

DEDUPE, VIRTUALIZATION, AND CLOUD DEFINE NEXT-GENERATION RECOVERY SOLUTIONS

Backup software has been around, in one form or another, for more than 50 years. However, in the past few years, these products have rapidly evolved beyond basic backup and operational recovery into more robust solutions. Enterprise-class solutions increasingly include functionality that enables IT continuity, local high availability, and even archiving. These enterprise-class solutions have left commodity backup far behind and are becoming one-stop shops for unified continuity management and recovery.

If A Backup Vendor Doesn't Support These Established Features — Don't Send Them An RFP

In today's market, there are certain established features that every vendor should support in its enterprise-class solution (see Figure 1):

- **Broad platform support.** Your backup application should be able to protect all of your server platforms, from Windows to Unix. If you're looking at the desktop backup option, PC operating systems should be considered as well, including Windows, Linux, and Mac. Additionally, the ability to run the media server on a variety of different platforms is an important factor.

- **A choice between tape and disk target options.** Backup has come a long way since the days of tape-only backup: All enterprise solutions can now back up directly to disk targets, and many have integration with specific disk targets. Symantec's OpenStorage API is a good example of this, with eight certified hardware partners, including EMC Data Domain, FalconStor, and Quantum. Tape, however, should not be ignored, and still plays an important role in many enterprise backup environments where backups are staged to disk for quick recovery but then migrated to tape for the remainder of the backup retention. Some software has better tape integration than others, so it's important to investigate the tape capabilities of your chosen vendor as well as disk.

- **Advanced backup options.** When it comes to the backup features themselves, look for the ability to manage array-based snapshots across diverse hardware, the ability to perform block-level and image-level backups, and support for synthetic full backups and/or "incremental forever" backups. Array-based snapshots can be a powerful recovery tool, and managing these through your backup application allows you to provide the snapshots with application awareness as well as a single management console for snapshots and backups.

- **Granular recovery capabilities.** The ability to perform granular restores of servers, applications, or files is well-established as a commodity feature in most enterprise backup applications. Some solutions have application awareness that allow extremely granular restore options in certain applications; for example, in Exchange, some solutions can restore individual mailboxes or even individual emails.

- **Target-based deduplication.** For the past three years, enterprises have focused on managing explosive data growth with investments in disk libraries offering target deduplication.[1] Backup vendors of course realized that perhaps they should offer this important functionality. Although it's still a relatively new feature in backup software, 11 out of 12 vendors we surveyed for this solution included an option for target-based deduplication.[2]

- **Simplified licensing models.** Per agent licensing, with increased costs for application-aware agents, has been the dominant licensing model for data protection software. This is slowly changing, however, to a capacity-based licensing model, although many vendors still allow customers to choose between the two models.

Figure 1 Established And Competitive Features In Enterprise Backup And Recovery

	Established features	Emerging features
Data reduction techniques	• Target-based deduplication • Other data reduction techniques	Source-based deduplication
Backup options	• Disk-to-disk backup • PC backup option • Appliance integration • Multistreaming backups • Encrypted backups • Support for image-level backups of physical machines	• Advanced methods of backing up a virtual machine • Ability to send data to the cloud • Support for array-based snapshots • Support for synthetic full backups and/or "incremental forever" backups
Continuity features		• Integrated support for continuous data protection • Integrated local and/or remote replication
Restore options	Granular restores	• Support for bare-metal recovery to different hardware
Other features	Agent-based licensing	• Integrated archiving solution • Integrated data management such as tiering, HSM, or ILM • Capacity-based licensing

57332   Source: Forrester Research, Inc.

These Competitive Features Will Help You Narrow Your Selection

The new and emerging features in this market are the differentiators between competing solutions:

- **Source-based deduplication for PC, remote offices, and virtual servers.** While deduplication itself has been around for a while now, source-based deduplication at the backup agent is an emerging feature. Avamar was the first solution to offer source-based deduplication, and several other vendors quickly followed suit. Source-based deduplication is especially useful in highly virtualized environments and branch office environments where bandwidth is scarce, but it usually isn't suitable for high-transaction environments.[3]

- **Virtual machine backups with low overhead.** New and more advanced backup options make up the majority of the new and emerging features in the data protection market. One area where enterprise data protection providers have striven to differentiate themselves is in the available methods for backing up virtual machines using snapshots, agentless backups, and/or hypervisor vendor APIs (see Figure 2). Pretty much all vendors offer the ability to put an agent on each virtual machine, which is the least efficient way of backing up a virtual machine. More efficient methods are agentless and use snapshots or hypervisor-assisted backup.

- **Operational and disaster recovery.** In April 2008, Forrester predicted that traditional backup applications would evolve into unified continuity and recovery management suites — suites that provided a single console for a range of recovery requirements regardless of the underlying technology (backup, snapshot, CDP, or replication).[4] Now, more than two years later, the market has moved a step closer to that vision but has not quite reached it yet.[5]

- **Restore options.** The ability to perform a bare-metal restore to dissimilar hardware is a newer feature that many enterprise solutions are now offering. This can be very useful for recovery at an alternate site that may have different hardware from the primary site. To do this, the application must be able to take an image-level backup, a feature that is fairly commoditized.

- **Disk to disk to cloud.** Additional emerging backup features include the ability to send data to the cloud, which would involve backing up data locally in the traditional manner and then vaulting it to a public cloud — either provided by the vendor or a third party. This is an increasingly popular feature; recent Forrester data shows that there is a high level of interest in this feature among enterprises.[6] Many of the providers are already offering this capability, including Acronis, Asigra, BakBone (to be acquired by Quest Software), CommVault, IBM, SEP, and Symantec.[7]

- **Archiving and data management.** Additional features that are appearing in data protection suites include integrated archiving and data management. While only a handful of vendors are offering these solutions today, many have plans to implement them further down the road.

Figure 2 Advanced Virtual Machine Backup Methods

Vendors	Traditionally, with backup agents inside each machine	An agent on the host doing file-level backup	An agent on the host doing image-level backup	Hypervisor-assisted backup (i.e., a traditional backup application that use vStorage API or VCB to perform the backup)	Server-based snapshots of the data on the virtual machine (i.e., VMware ESX server snapshots or Microsoft VSS)
Acronis Backup & Recovery	✔	✔	✔	✔	✔
Asigra Cloud Backup & Recovery	☐	✔	☐	✔	✔
BakBone NetVault	✔	✔	☐	✔	✔
CA ARCserve	✔	✔	✔	☐	☐
CommVault Simpana	✔	✔	✔	✔	✔
EMC Avamar	✔	✔	✔	✔	✔
EMC NetWorker	✔	☐	✔	✔	✔
HP Data Protector	✔	✔	☐	✔	✔
i365 EVault	✔	☐	✔	☐	☐
IBM Tivoli Storage Manager	✔	✔	✔	✔	☐
NetApp Syncsort Integrated Backup	✔	☐	✔	☐	☐
SEP sesam	✔	✔	✔	✔	✔
Symantec Backup Exec	✔	✔	✔	✔	✔
Symantec NetBackup	✔	✔	✔	✔	✔

✔ Vendor offers the technology   ☐ Vendor does not offer technology

57332   Source: Forrester Research, Inc.

MARKET BREAKOUT: LARGE ENTERPRISE PROVIDERS VERSUS SME/ROBO PROVIDERS

The backup and data protection market can be segmented into three groups of enterprise solutions, focusing on: large enterprises, small and medium-size enterprises, and remote and branch offices. In truth, the features and functionality don't vary greatly between the groups — the core set of features is fairly consistent across all three types of providers. The main differences between the large enterprise-focused solutions and the SME/ROBO-focused solutions are:

- **Large enterprise-focused solutions excel at scalability and performance.** Large enterprise environments are very large (often measured in petabytes), highly distributed, and heterogeneous. The solutions that serve these customers tend to be massively scalable and are more focused on providing high performance for local backups over the LAN or SAN. Solutions that are aimed at enterprise data center deployment include: Asigra Cloud Backup & Recovery, CommVault Simpana, EMC NetWorker, HP Data Protector, IBM Tivoli Storage Manager (TSM), and Symantec NetBackup (see Figure 3).

- **SME- and ROBO-focused solutions are WAN optimized and have good remote management.** Remote and branch offices (ROBOs) of large enterprises are usually much smaller, are more homogeneous, and tend to have fewer IT resources on hand to manage them. Small and medium-size enterprise (SME) environments are measured in the hundreds of terabytes and are still fairly heterogeneous. The solutions that cater to these environments are not as scalable as the data center-focused solutions and concentrate on providing optimized backups over the WAN as well as remote management features. Solutions that focus on SME and ROBO deployments include: Acronis Backup & Recovery, BakBone NetVault, CA ARCserve, EMC Avamar, i365 EVault, NetApp Syncsort integrated backup, SEP sesam, and Symantec Backup Exec.

Figure 3 Today's Enterprise-Class Backup Market Offers A Wide Variety Of Solutions

Data reduction techniques — S Source-based · Ti Target-based (inline) · Tp Target-based (post-process)

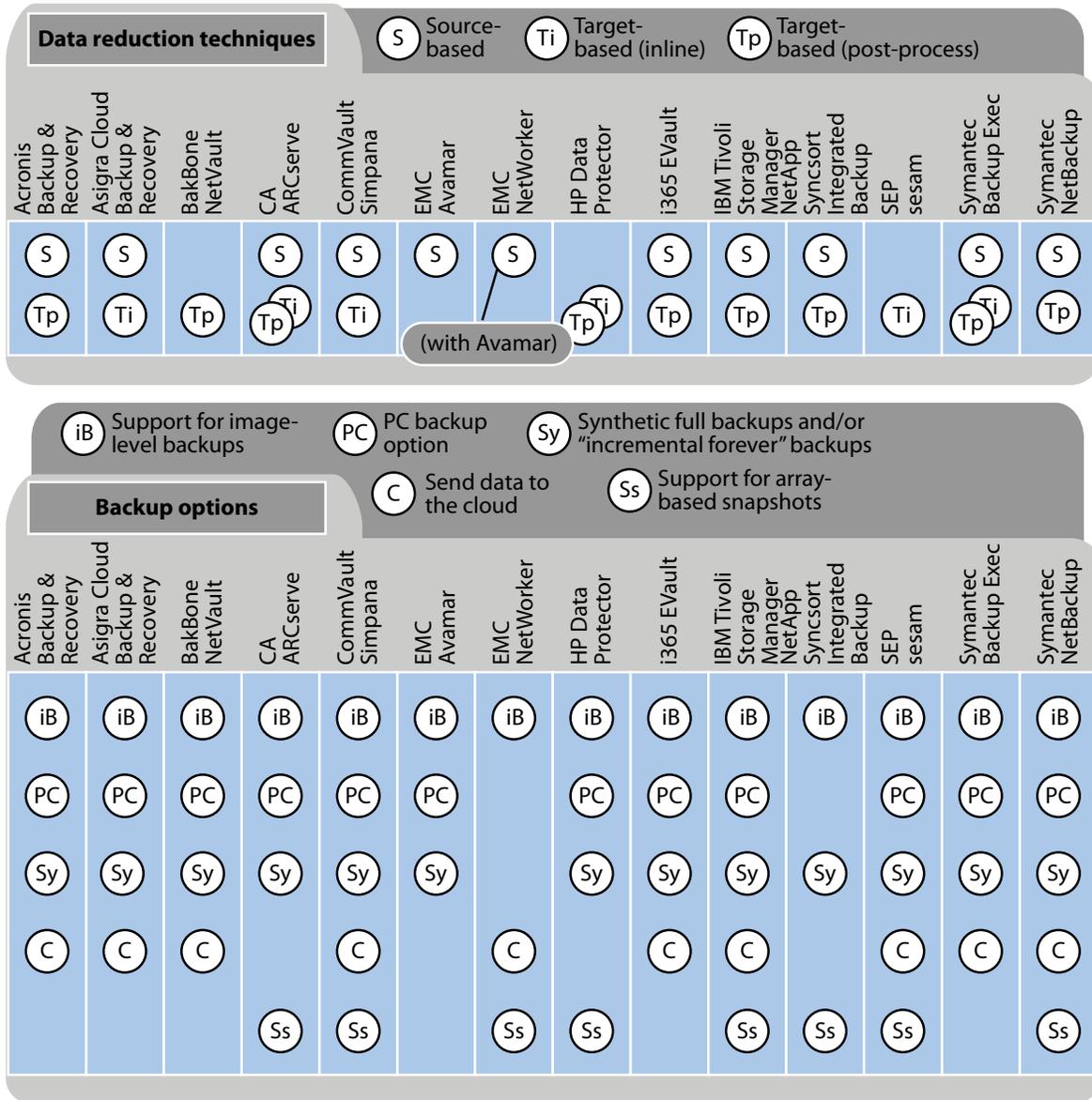|	Acronis Backup & Recovery	Asigra Cloud Backup & Recovery	BakBone NetVault	CA ARCserve	CommVault Simpana	EMC Avamar	EMC NetWorker	HP Data Protector	i365 EVault	IBM Tivoli Storage Manager	NetApp Syncsort Integrated Backup	SEP sesam	Symantec Backup Exec	Symantec NetBackup
	S	S		S	S	S	S		S	S	S		S	S
	Tp	Ti	Tp	Tp / Ti	Ti		(with Avamar)	Tp / Ti	Tp	Tp	Tp	Ti	Tp / Ti	Tp

Backup options — iB Support for image-level backups · PC PC backup option · Sy Synthetic full backups and/or "incremental forever" backups · C Send data to the cloud · Ss Support for array-based snapshots

	Acronis Backup & Recovery	Asigra Cloud Backup & Recovery	BakBone NetVault	CA ARCserve	CommVault Simpana	EMC Avamar	EMC NetWorker	HP Data Protector	i365 EVault	IBM Tivoli Storage Manager	NetApp Syncsort Integrated Backup	SEP sesam	Symantec Backup Exec	Symantec NetBackup
	iB	iB	iB	iB	iB	iB	iB	iB	iB	iB	iB	iB	iB	iB
	PC	PC	PC	PC	PC	PC		PC	PC	PC		PC	PC	PC
	Sy	Sy	Sy	Sy	Sy	Sy		Sy	Sy	Sy	Sy	Sy	Sy	Sy
	C	C	C	C			C		C	C		C	C	C
				Ss	Ss		Ss	Ss		Ss	Ss	Ss		Ss

57332 Source: Forrester Research, Inc.

Figure 3 Today's Enterprise-Class Backup Market Offers A Wide Variety Of Solutions (Cont.)

Continuity features

CDP = Continuous data protection   R = Replication

	Acronis Backup & Recovery	Asigra Cloud Backup & Recovery	BakBone NetVault	CA ARCserve	CommVault Simpana	EMC Avamar	EMC NetWorker	HP Data Protector	i365 EVault	IBM Tivoli Storage Manager	NetApp Syncsort Integrated Backup	SEP sesam	Symantec Backup Exec	Symantec NetBackup
CDP		CDP		CDP	CDP		CDP	CDP	CDP	CDP	CDP	CDP	CDP	CDP
R	R		R	R	R	R	R	R	R	R	R	R	R	R

(with Data Domain)   planned

Restore options

BMR = Bare-metal recovery

Acronis Backup & Recovery	Asigra Cloud Backup & Recovery	BakBone NetVault	CA ARCserve	CommVault Simpana	EMC Avamar	EMC NetWorker	HP Data Protector	i365 EVault	IBM Tivoli Storage Manager	NetApp Syncsort Integrated Backup	SEP sesam	Symantec Backup Exec	Symantec NetBackup
BMR	BMR		BMR	BMR	BMR	BMR	BMR	BMR	BMR	BMR	BMR	BMR	BMR

Product can restore to a granularity level of . . .

Acronis:
Images, files, folders, disks, individual email

Asigra:
Block/image level, file/ generation level, and email message level

BakBone:
Did not disclose

CA:
Full server, files, and granular application

CommVault:
File level, database, object, table level recovery with Oracle

EMC 1:
Files, directories

EMC 2:
Files, folders, directories, mailboxes, individual emails, application granular recovery, etc.

HP:
Full server, file, application to the minute, granular item

IBM:
File, individual mail, granular restore capabilities throughout the portfolio

i365 EVault:
Files, full server

NetApp:
Full server, volumes, files, individual mail, databases

SEP:
Single record granularity level

Symantec 1:
Full server, file, entire application, or database, or SQL, Exchange, or AD application object data

Symantec 2:
File, single email, folder, object, and application

57332   Source: Forrester Research, Inc.
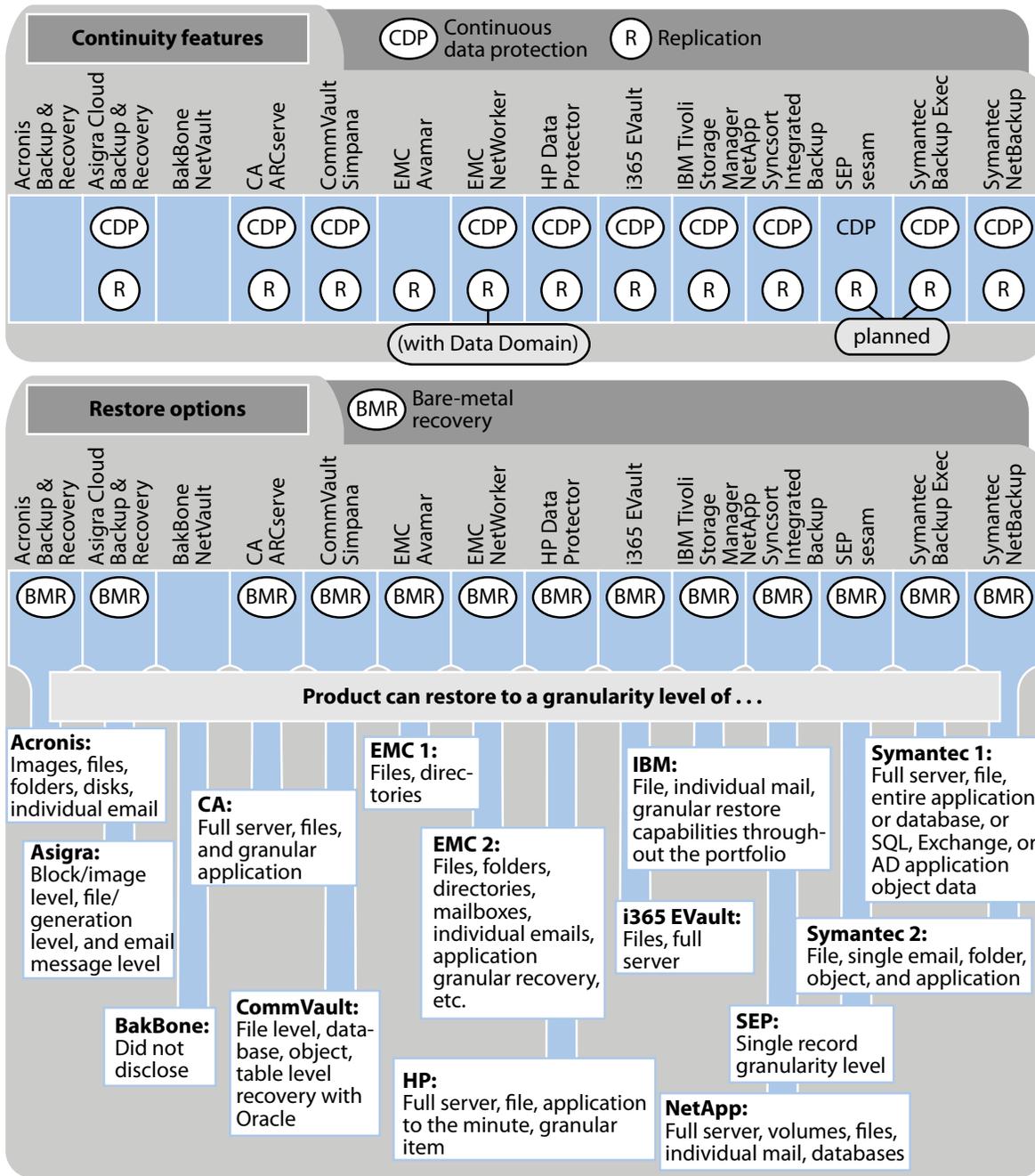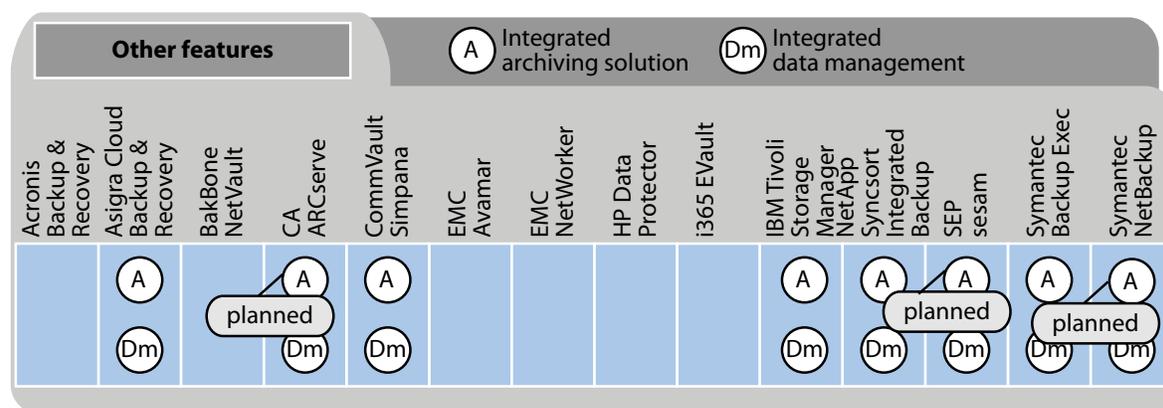
Figure 3 Today's Enterprise-Class Backup Market Offers A Wide Variety Of Solutions (Cont.)

57332   Source: Forrester Research, Inc.

THE FUTURE: UNIFIED CONTINUITY AND RECOVERY MANAGEMENT

The backup and recovery market is heading for a significant shift in the next several years, which will consist of:

- **Enterprises moving the majority of operational recovery to disk-based backup.** In recent years we've seen recovery time and recovery point objectives shrink rapidly while less and less downtime is tolerated. As recovery requirements get more stringent, enterprises are finally making decisive moves about backup, away from tape and toward disk and eventually the cloud.

- **Archives becoming a reality, enabled by tape and cloud technologies.** Archiving is a complex process that few enterprises take the time to implement properly. As more backup solutions begin to offer integrated archiving platforms, it will become easier for enterprises to keep true archives.[8] These archives will be kept on next-generation tapes as well as in the cloud — when enterprises were asked what storage workloads they planned to move to the cloud, the most common response was the archive.[9]

- **The line blurring between backup and disaster recovery.** As more and more backup solutions begin to include continuity and resiliency features like replication, CDP, and snapshots, what was once considered a backup solution is now more akin to a unified continuity and recovery management suite. Enterprises will find that less critical data will be adequately and completely protected with these suites, requiring less spend on pricey traditional DR technologies and fewer technologies to manage.

RECOMMENDATIONS

YOUR SELECTION IMPERATIVE: ADOPT DISK, CONSOLIDATE, AND EXPAND

Replacing or upgrading your data protection software is no small task, so it's imperative that you choose the right solution for your environment. When choosing your enterprise data protection solution, follow these three steps:

1. **Before you buy your next disk appliance, evaluate your deduplication strategy.** Before making an upgrade to your current backup environment, be it disk or tape, think critically about deduplication and where it should reside in your environment. In the past few years, many enterprises have made at least a partial move to deduplicating disk appliances and virtual tape libraries, but now that essentially all backup software offers target and/or source deduplication, enterprises can choose where they deploy deduplication. Making the switch to backup software-based deduplication may be the better choice for many companies that don't want to make the large upfront investment of a deduplicating disk library.

2. **Select a data protection product that supports your entire IT environment.** Look for a solution that can provide the necessary support for your virtual environment, critical applications, and branch and remote offices. Using multiple point products for different applications or locations is generally not a best practice for the enterprise. If you have multiple backup applications today, look for a single solution to consolidate onto to avoid cost and complexity.

3. **Consider continuity and recovery requirements of your environment.** Next-generation enterprise data protection solutions are beginning to offer advanced continuity features such as replication, snapshots, and CDP. Because of this, data protection solutions can now be considered a viable option for the recovery of more critical systems. Evaluate which data protection solutions will be able to meet the recovery needs for service tiers, and include that in your selection criteria.

SUPPLEMENTAL MATERIAL

Companies Interviewed For This Document

Acronis	i365, A Seagate Company
Asigra	IBM
BakBone Software	NetApp
CA Technologies	SEP Software
CommVault	Symantec
HP	Syncsort

ENDNOTES

1 While the cost of disk has declined significantly over the past five years, you still can't call it cheap at thousands of dollars per terabyte (TB). IT professionals struggle to keep up with 30% to 40% annual data growth while simultaneously creating duplicate copies of the data for recovery purposes. When you factor in the disk capacity that you need for backup and disaster recovery (DR), it's likely your storage capacities are doubling every 12 to 18 months. In order to back up as much data as possible to disk and keep it there for as long as possible, companies must look for ways to reduce the acquisition cost of disk. One technology, deduplication, is key to making this happen. In some cases, IT professionals can reduce storage capacity by 95% using deduplication in their backup environment. And it doesn't stop with backup; deduplication is quickly becoming a feature of production storage systems and even a feature of volume managers and file systems. IT professionals must understand how to exploit deduplication in backup and DR today but also understand how to leverage it across their storage environment tomorrow. See the July 10, 2009, "Use Deduplication To Store More With Less" report.

2 With target deduplication, deduplication processing does not occur on the client. It occurs on a media server/proxy server or on the disk appliance. Because deduplication occurs on the target, it does not reduce the amount of data transferred from the client, but it reduces the amount of data to be stored and it does not add any processing overhead to the client. See the July 10, 2009, "Use Deduplication To Store More With Less" report.

3 With source deduplication, processing occurs on the client itself before data is transmitted over the network. Because deduplication occurs at the source, less data is transmitted and stored. However, it does add some processing overhead on the client. How much overhead will vary by vendor. Source-based deduplication is helpful in virtual server environments and remote offices where bandwidth is constrained. See the July 10, 2009, "Use Deduplication To Store More With Less" report.

4 In addition to traditional backup to disk or to tape, commercial applications also offer snapshot management of Microsoft Volume Shadow Copy Service (VSS) and storage-based snapshots, server-based replication, and continuous data protection (CDP). IT operations professionals want one console, one technology engine, and one metadata repository for data protection — not a bunch of point products for backup, snapshots, replication, and CDP. This approach is known as unified data protection (UDP). See the April 2, 2008, "2008 Trends In Backup And Data Protection" report.

[5] CA has integrated CA XOsoft with CA ARCserve Backup, IBM has integrated Tivoli FastBack with Tivoli Storage Manager, and Symantec has integrated its CDP offering (RealTime) with NetBackup. See the August 17, 2010, "The Past, Present, And Future Of Replication" report.

[6] According to a recent survey, 23% of enterprises have already deployed an on-premises backup app to back up to a storage-as-service disk target, with another 15% planning to deploy it and 33% who are interested but have no plans. Source: Forrester's Forrsights Hardware Survey, Q3 2010.

[7] On November 9th, 2010, Quest Software announced their intent to acquire BakBone Software for $55 million.

[8] Backup creates duplicate copies of your data so that firms can quickly restore data and resume critical business operations in the event that data is lost, destroyed, or corrupted from software failures, hardware failures, human error, or disasters. Archiving does not duplicate data but instead deletes it from online, production applications, or file servers and migrates the data to a "near-line" or offline archive for long-term data retention. This is often done to comply with regulatory requirements, create a searchable archive for eDiscovery, or satisfy internal corporate best practices. See the November 17, 2006, "Backup Versus Archiving: Firms Need Separate Strategies For Each" report.

[9] According to a recent Forrester survey, of enterprises that are planning on adopting storage as a service, 58% say they plan to use it for archiving. Source: Forrester's Forrsights Hardware Survey, Q3 2010.

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