

Automated backup and replication analysis yields cost savings, reliable recovery



ESSENTIALS

Challenges

- Rampant IT infrastructure growth
- Lack of visibility of backup and replication status

Solutions

- EMC Data Protection Advisor for Backup
- EMC Data Protection Advisor for Replication Analysis

Key benefits

- Service-level objectives met more effectively
- Avoided significant backup storage expenditures
- Management reports created in 10 minutes versus a week
- Quicker detection and resolution of replication issues

EMC Corporation is the world's leading developer and provider of information technology and solutions.

In the last four years, EMC revenues have increased from \$11 to \$17 billion. Not surprisingly, EMC's IT infrastructure also has grown rapidly to meet the demands of the business.

Data backup has been especially challenging for EMC IT as the overall storage infrastructure has increased from four to seven petabytes and the number of virtual machines targeted for backup has grown from 2,000 to 5,000 in only three years. EMC IT oversees backup for more than 400 manufacturing, sales, and support facilities worldwide. EMC's backup solutions include EMC® Avamar® source-based data deduplication, backup, and recovery; EMC Data Domain® data deduplication storage; EMC Disk Library solutions; and tape libraries.

"It was very complicated and time-consuming to manually check the status of our 35 disk libraries and 19 Avamar grids one by one. We were using different consoles to monitor the backup application and schedules for thousands of clients," says Peter Mahoney, senior architect, EMC IT Backup Recovery Solutions.

Lack of visibility was also a challenge for EMC's team that was monitoring replication of its Oracle data warehousing and backup environments.

"We needed to proactively issue query commands on the server or control host to determine if we had replication gaps or the replication was running," says Michael Lancaster, senior storage administrator, EMC Global Information Infrastructure Services, SaaS Group.

CENTRALIZED MANAGEMENT OF GLOBAL INFRASTRUCTURE

EMC IT deployed EMC Data Protection Advisor (DPA) software to automatically monitor, analyze, and provide alerts and reports on its backup and replication environments.

DPA oversees EMC's entire global backup infrastructure, which today includes 19 Avamar grids, 15 EMC Disk Library systems, 12 Data Domain data deduplication storage systems, and six tape libraries. DPA is also integrated with an EMC NetWorker® backup and recovery environment comprising 120 NetWorker storage nodes and 38 data zones for scheduling and managing backups across EDL, Data Domain, tape, and selected Avamar grids.

The Avamar and NetWorker infrastructure managed by DPA includes 1,000 physical servers and 5,000 virtual servers, which are virtualized with the VMware® vSphere™ solution. Applications and databases running on these servers include Microsoft Exchange, SQL Server, Oracle, and file servers, among many others.

EMC IT also recently expanded its use of DPA for automated replication analysis. DPA oversees EMC's replication of its Oracle data warehouse and Oracle Recovery Manager (RMAN) backups, which are stored on EMC Symmetrix® systems. EMC uses EMC SRDF®

software to replicate the two environments, totaling two and a half terabytes, between two EMC data centers several miles apart.

EFFECTIVE DELIVERY OF SERVICE-LEVEL OBJECTIVES

EMC IT's service-level objectives (SLOs) include backing up every client at least once every 24 hours. By scanning the entire environment, DPA quickly identifies any backups at risk of not meeting SLOs.

"We're absolutely meeting our SLOs more effectively because DPA helps us spot issues and resolve them a lot faster. It's impressive that we've maintained 98-99 percent backup success rates during this period of tremendous backup growth," says Mahoney.

In addition, DPA reports help EMC IT identify other potential issues. For example, once DPA reported that a one-terabyte backup suddenly dropped to 10 gigabytes. The problem—a configuration change that resulted in only empty directories being backed up—was quickly identified and resolved.

Ashish Kumar, storage administrator, EMC IT Backup Recovery Solutions, explains, "We've used DPA to pinpoint that a few slow-performing clients were causing an entire group of 100 clients to fail. DPA gives us clear insight so we can be responsive."

PROACTIVE LICENSING MANAGEMENT

DPA has contributed to increased availability of Oracle and Exchange through licensing management. Before utilization levels reach 90 percent, DPA alerts EMC IT administrators. Integrated with DPA, EMC Ionix™ for Operations Intelligence software generates tickets for EMC's command center team to order additional licenses.

"If databases can't back up their archive logs because of a lack of space," explains Mahoney, "they will automatically shut down, locking out thousands of users. Such a scenario could potentially result in a significant opportunity loss for EMC."

"DPA helps prevent downtime by identifying where we may be short on licenses if we don't order more soon."

SIGNIFICANT COST SAVINGS

DPA is also saving time and money through capacity management. DPA automatically sends emails to administrators when backup storage capacities reach specified levels.

"With DPA, we proactively procure more storage or see if we can run maintenance like garbage collection to create more space," says Kumar. "We get a daily report that consolidates utilization levels across Avamar, Data Domain, EMC Disk Library, and tape."

Mahoney adds, "We've used DPA to identify under-utilized backup storage on several occasions. Once, we shut down several systems and re-utilized other systems, which helped us avoid significant new equipment purchases to support our growth. The value of DPA is huge."

REALLOCATING SAVINGS TO HIGH-VALUE ACTIVITIES

Administrative efficiencies enabled by DPA have enabled EMC's backup and recovery department to focus on other activities.

"DPA has saved us the equivalent of one full-time employee since we don't need to manually check our different backup environments. With DPA, we're able to better focus our resources on helping grow the business and making it more efficient," says Mahoney.

EMC IT also values DPA's streamlined access to management reports.

"We used to go to four different data sources to create comprehensive reports," says Mahoney. "Now, any administrator simply right-clicks and runs a report on the entire

infrastructure. What used to take a week now is done in 10 minutes. Management has read-only access to DPA too so they can run their own reports.”

Kumar adds, “The best part of DPA is that it’s highly customizable. We design our own reports around meaningful data that we use to become more efficient.”

STREAMLINED REPLICATION MONITORING

Although EMC IT has only recently begun using DPA for Replication Analysis, it has already enabled more efficient monitoring of its Oracle replication environments.

Without DPA for Replication Analysis, EMC IT estimates a single field technical engineer would be needed to manually check the status of various servers to gain a comprehensive, consistent view of replication. Now, DPA automatically monitors replication every five minutes. If a replication gap or failure is detected, the solution generates an email to the appropriate administrators.

“At the touch of a button, we can check on replication status and know if it’s working or not. DPA is a great tool because it provides a visual, holistic view of multiple environments through a single screen,” says Lancaster.

“When there are gaps, the alerts pinpoint what was missing from the replication instead of us having to manually trace the issue back to the servers. DPA provides a much faster way of tracking and resolving replication issues.”

RELIABLE, VALID RECOVERIES

With flexible restore points, DPA has enabled more reliable, consistent recovery of Oracle databases.

“DPA has given us peace of mind,” says Lancaster. “I can easily identify my restore points whether we’re going back a year, a few months, or even five minutes ago. And I know the recovery will be valid and will work.

“Thousands of users tap into these Oracle environments for critical financial data every day. Anything we can do to minimize the impact of downtime and speed recovery is crucial.”

MANAGING TRANSITION TO VIRTUALIZATION

Looking ahead, EMC IT anticipates EMC DPA’s value will only grow as the solution’s use is expanded across its backup and replication environments.

Mahoney explains, “DPA is a very versatile, flexible tool that is used by administrators, architects, and management here. It has operational value because it provides a single screen overview and day-to-day alerting. The strategic value is also significant since it helps us make procurement, design, and configuration decisions.

“Most importantly, it’s helping us very efficiently manage our rapid growth and transition to a more virtualized, flexible infrastructure.”

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