Highlights from a recent webcast on database replication

REDUCE DOWNTIME WITH DATABASE REPLICATION

Reliable solutions with high accuracy can minimize lags when your organization has planned or unplanned outages

In a world where data is king, having a reliable way to back up massive amounts of critical data is crucial. In fact, reliability and data accuracy are the top must-haves in a database replication solution, according to a survey of 150 information technology decision-makers in the higher education industry.

"What we've found in the last five or six years is that owners of the replication technology have really expanded how they're deploying, using and getting value from" a replication solution, said Bill Brunt, product manager for Dell SharePlex at Dell Software, during a May 20 webcast titled "Data Replication and Integration: Improving Reliability and Reducing Risk and Complexity." "At the highest level, it's really two things: It's going to provide you with scalability and/or availability for your database system."

Dell contracted with Market Connections, a market research firm that specializes in public-sector markets, to conduct the survey in March to find out what IT managers want in replication solutions.

Solutions such as Dell's SharePlex help with availability from two perspectives: planned maintenance and disaster recovery. In the first, if you know an update or change to the supporting infrastructure will require an outage, replication can enable you to maintain a database throughout the process. Similarly, in unplanned outages, replication can cut recovery times, Brunt said.

SharePlex works with Oracle and other databases, including cloud-based systems. Using Oracle as an example, it works by capturing data from the database and applying it to six targets: Oracle, Hadoop, Sybase, SQL text flat files, XML text flat files and a Java Message Service (JMS) queue.

Any replication tool should run outside the database, Brunt said. SharePlex's capture process picks up any changes being written to an online or redo log and turns them into generic change messages and then routes them to a capture queue. From there, the solution runs another reader and augments the information with where to deliver it and before moving it to the export queue. The export process picks up the message, takes it securely to the import queue and then erases it from the export queue on delivery confirmation.

"It's just basic flow control between a source host and now messages reside on the target host," Brunt said. "This is memory-based for performance reasons, and because we're very much outside of the database and nor do we move messages in the database itself but very much

■ WHAT REPLICATION USERS WANT

In March, research firm Market Connections surveyed 150 information technology decision-makers in the higher education industry to find out what they want in a database replication solution and where challenges lie. Almost half of the respondents work at state or public four-year institutions, 39 percent at private ones and 11 percent at community or junior colleges. Here are the results.

IT managers most value, in descending order:

- Reliability – 93 percent
- Accuracy – 91 percent
- Risk reduction – 87 percent
- Price – 86 percent
- Reduction in downtime – 83 percent
- Technical support – 82 percent
- User-friendliness – 80 percent
- Automatic data integrity fixes – 80 percent
- Flexible license options – 79 percent
- Scalability – 78 percent
- Compatibility with multiple technology platforms – 77 percent

> ## "It's going to provide you with scalability and/or availability for your database system."
> — *Bill Brunt, product manager for Dell SharePlex at Dell Software*

outside of it, the overhead is very low."

For added security, SharePlex makes sure that the pre-image matches what was found in the source database because both the source and target are open, available and running, making it possible that someone could make changes on the target database. This ensures there's accuracy between the source and target by validating that source image.

The solution does more than one-way simple replication, however. Imagine if you ran reporting activity off this target database such as online transaction reports, Brunt said. Because this activity would be directed at the target database and it's basically the load of pulling that information out of your source instance, it's a load-isolation technique. Regardless of how intense your reporting activity is, you can provide a consistent response time by using this scalability.

SharePlex works for many database replication needs, allowing availability for maintenance or migration of operating systems, Oracle database or storage migrations, or changes in hardware vendors such as moving to new servers. It also reduces risk during application upgrades, Brunt added.

"What we're reading off of the source database are change messages," he said. "We take these and we turn them into SQL statements, which are then applied to the target. It doesn't matter between the source and target database what version, for example, of Oracle that you're using."

What's more, SharePlex replicates back

to the original database so data accumulates in two places as you switch the user community over to a new infrastructure, Brunt said. Because of this, in the event something goes wrong [on the new system], people can return to the original environment and have all their transactions intact.

"It's an insurance policy," he added. "We replicate the data going back the other way."

FEATURES OF SHAREPLEX

SharePlex can vertically or horizontally partition or transform data as it moves from the source to the target, Brunt said. By default, it applies data in the same format in the target as in the source, but it can transform it if you want.

"It may be that you have a source system with hundreds or even thousands of objects, but the data you really want to access in fact is contained only in a few columns from hundreds of tables across millions of rows, but it's not everything," he said. "We can selectively pull out at the object level and within a particular table, select certain columns, even certain rows and adjust that data across."

Change tracking is another feature. SharePlex's auditing capability tells you who made what change and when and on what database with very little overhead.

"Imagine being able to go to a repository that contains audit information on all of the sensitive data in your organization," Brunt said.

SharePlex can also do cascading using intermediate systems, which can optimize network routes or save bandwidth, and load balancing through master-to-master replication.

Additionally, the solution has a data integration capability. It can capture information from an Oracle database and post it to Oracle targets or other targets such as Hadoop, Sybase, JMS queue and SQL files.

"Be sure as you're evaluating solutions

■ DATABASE REPLICATION FRUSTRATIONS

When asked about their biggest frustrations when managing database replication solutions, not having enough internal staff topped the list at 57 percent, said Laurie Morrow, director of research services at Market Connections.
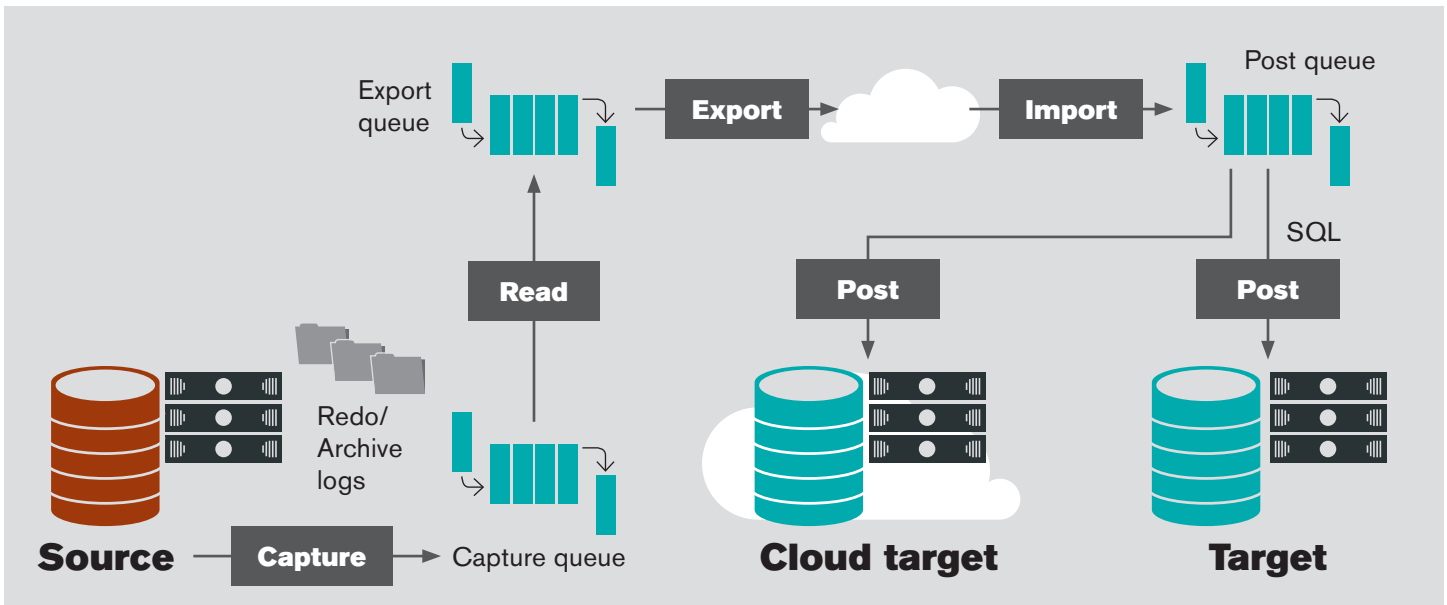
Other frustrations included:
- A lack of budget – 43 percent
- Upgrade costs – 37 percent
- Difficulty measuring return on investment – 28 percent
- Setup or implementation troubles – 27 percent
- Hidden operations costs – 27 percent
- Lack of available training – 21 percent

The survey also found that most respondents – 61 percent – said third-party database replication solutions can work as well as those from the database manufacturer, and 70 percent said it's best for total cost of ownership to work with one database replication solution for all possible scenarios.

SHAREPLEX PRODUCT ARCHITECTURE

in this space that you have the necessary tools to help you manage the environment," Brunt said. For example, SharePlex ships and is included at no additional charge with the utility called Compare and Repair. Because transactions can and do run against target databases, this utility can isolate differences and provide automatic repair to get them back in sync while the system is up and running.

"We don't wait for the commit," he said. "What that means is if you have a long-running transaction under your system, what will happen is other replication technologies out there will not even begin to do replication until they're seeing the commit. This can lead to increased latency between your source and target and also very burst-y resource usage."

BENEFITS OF SHAREPLEX
More than 32,000 installations of Share-Plex exist among 1,600 accounts, Brunt

said. Its popularity is attributable to several factors, such as its reliability, versatility, ease of use and total cost of ownership (TCO). Dell also offers support and a SharePlex Community with online forums and blogs dedicated to the product.

"If you're going to deploy a replication solution to maintain availability of critical applications or to provide scalability, it's important that you know that you're dealing with a product where the paint is not drying, something that's been tried and tested," he said.

Users can download, install and use SharePlex in less than 15 minutes, he said. During a demonstration in November, he had it up and running in only five minutes and 39 seconds.

"We've done an awful lot of work to help our customers to have a low TCO so what we've done is put together a number of supporting resources to enable folks to use the technology," Brunt said, including

classroom-based training, written manuals and short videos in multiple languages that show people how to do specific tasks. "We designed SharePlex from the ground up to be a cohesive and comprehensive replication solution."

That comprehensiveness is crucial, he added. "Rather than take products that have been put together through acquisition, SharePlex represents a solution where you have a cohesive command set and operating and usability experience where the concept, for example, of a job is applied equally to a number of tasks involved in replication. It's this kind of attention to detail that's really led to this ease of use."