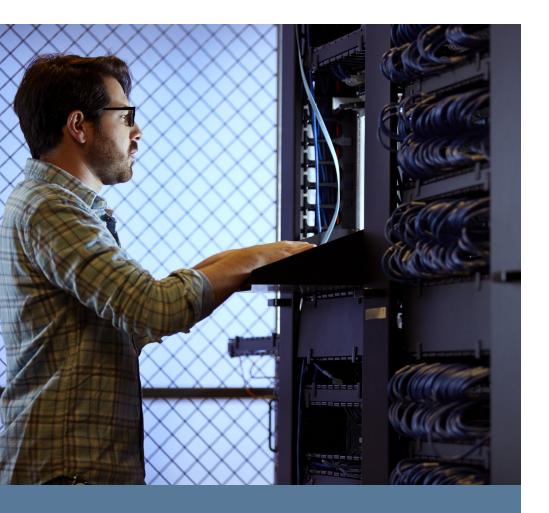# Minimizing downtime during database migration

Quest streamlined a major Oracle migration using SharePlex®, reducing downtime to mission-critical, customer-facing systems from 20 hours to just 40 minutes

BUSINESS NEED

To increase performance and availability, Dell needed to upgrade its mission-critical Delta system, which supports sales to 40 million customers worldwide.

SOLUTION

Dell chose to deploy Quest SharePlex® technology to migrate the Delta database from Oracle 10gR2 to 11gR2 with no disruption to end users or critical business processes.

BENEFITS

- Migration-related downtime reduced from 20 hours to 40 minutes
- Risk minimized with real-time data synchronization
- Massive data purge improved system performance for end users
- Enhanced backup improved business continuity
- IT team achieved migration time savings of up to 40 percent
- More than 20,000 end users increased productivity

SOLUTIONS AT A GLANCE

- Information Management
- Networking
- Server
- Storage

"Migrating to a new version of Delta running Siebel CRM on Oracle 11gR2 would have caused about 20 hours of downtime if we'd done it manually. We were able to reduce this time window to just 40 minutes with SharePlex"

Sunil Nookala, Senior IT Manager, Dell Database Practice

For any business, technology applications that support the sales process are mission- critical. This is the case with Dell Delta, a web-based Siebel system with a 9-terabyte back-end Oracle database. The system is used by more than 20,000 Dell partners and internal end users to serve 40 million customers worldwide, and it is one of the largest Siebel implementations in the world.

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>
> *Danny Knox, Database Administration Consultant, Dell*

To maximize revenues and deliver the best possible experience for users and customers, Delta must be available 24 hours a day and be able to process customers' requests for information on Dell products and services quickly, with no delays.

Over time, the hardware and software infrastructure that supported Delta became outdated. Sunil Nookala, senior IT manager for the Dell Database Practice, says: "The system couldn't handle workloads during peak times. That meant customers experienced frequent downtime and long waits for accessing the information they needed, which negatively affected the sales experience and caused Dell and our partners to lose revenues and commissions." To ensure that the system could effectively support the business, Nookala and the Dell IT team planned to migrate Delta's back-end database from Oracle 10gR2 to Oracle 11gR2 and replace aging servers and EMC storage devices with state-of-the-art Dell infrastructure.

Although the planned infrastructure and software upgrade promised major performance improvements for end users and customers, manual migration to Oracle 11gR2 would have been slow, requiring prolonged downtime for the Delta system. "We calculated that rebuilding the Delta database manually on the new infrastructure would have taken up to three weeks of our time and caused at least 20 hours of downtime during cutover to the new system, which was not acceptable to the business," says Nookala. "We needed a tool that could help us speed up the migration of of one of the largest Siebel implementations in the world by orders of magnitude and eliminate risk at every stage of the process."

IT TEAM SPEEDS UP DELTA MIGRATION WITH SHAREPLEX

After seeking advice from across Dell, the IT team decided to deploy SharePlex software to streamline the migration of the Delta system to Oracle 11gR2 and the new Dell infrastructure. SharePlex provides a near-real-time copy of production data without degrading the performance or availability of systems for customers. "We had great support from the SharePlex product team, who explained how SharePlex speeds up major, mission-critical database migrations, reduces risks and ensures excellent disaster recovery," says Nookala. "Instead of taking down the old database and then building the new one from the ground up, SharePlex allows you to sync data between old and new databases in real time and migrate users to the new system when the time is right."

Working with colleagues across Dell, the IT team selected new infrastructure to support the revamped Delta system, including Dell EqualLogic storage arrays that provide 15 terabytes of storage, 4 terabytes of which are solid-state storage. Dell PowerEdge rack servers increased processing power by orders of magnitude, and Dell Networking switches were deployed for super-fast connectivity between network components.

PRODUCTS & SERVICES
SOFTWARE
SharePlex

Quest

Close collaboration between Dell product teams and the Dell IT team ensured the success of the project. "Our colleagues across Dell helped us design and deploy a hardware infrastructure that could deliver far greater performance and scalability in conjunction with Oracle 11gR2," says Nookala. "We actually went down from six enclosures to four to speed up retrieval for data stored in 'active blocks' on the system, but we increased storage, processing power and networking capabilities by a factor of 10. The next-generation Dell infrastructure is supporting far better system performance and dramatically enhancing the customer experience."

MIGRATION-RELATED DOWNTIME REDUCED FROM 20 HOURS TO 40 MINUTES

The Dell IT team minimized migration-related downtime with SharePlex. "We calculated that migrating to a new version of Delta running on Oracle 11gR2 would have caused about 20 hours of downtime if we'd done it manually," says Nookala. "We were able to reduce this time window to just 40 minutes with SharePlex, which allowed us to sync data from our old environment to the new database in real time and migrate users to the new system when we were ready."

RISK MINIMIZED WITH REAL-TIME DATA SYNCHRONIZATION

As well as minimizing downtime for end users during the migration, the team was able to eliminate migration risk by fixing all the issues and bugs in the new database before going into production. We migrated the data seven weeks before the planned migration date, and end users continued to use the old database during that time," says Nookala. "During five test cycles, we stopped syncing data to the new environment with SharePlex and made changes and fixed bugs. After each testing cycle, we turned on SharePlex again to bring the new database back in sync."

This preproduction testing eliminated performance issues when the new database went live. Danny Knox, database administration consultant at Dell, says,

"We were sure everything was working perfectly by the time we hit the switch and migrated users to the new database. There was very little downtime for end users, and there hasn't been a single fault or issue reported to us, so we know the system has met expectations from day one."

There are several products in the market that claim to synchronize data between production environments and preproduction environments in this way, but many fail to meet expectations. "We had tried to sync data with a preproduction environment using the Oracle GoldenGate tool, but it kept getting behind, which caused havoc with the migration process," says Nookala. "We found that SharePlex was much better than Oracle GoldenGate for keeping the old database and the preproduction database in sync, and that helped us ensure a fast, issue-free migration."

MASSIVE DATA PURGE IMPROVES SYSTEM PERFORMANCE FOR END USERS

One of the major issues that historically affected Delta's database performance was excess data that could not be purged from the system due to limitations in processing power. "We knew that about 30 percent of our data was obsolete, but the old hardware infrastructure had no spare processing capacity, which meant we were unable to purge it without negatively affecting system performance," says Nookala. "With SharePlex and the new Dell infrastructure, we were able to purge 1.2 terabytes of obsolete data and rebuild indexes in just 72 hours to enhance the performance of Delta for end users. As an additional benefit of the purge, we have reduced our storage costs by up to a third."

This was a major factor in the success of the migration according to Sujay Sunderam, Senior IT manager at Dell. "The fact that SharePlex was able to offer us the ability to perform large volumes of data purges prior to the migration while still keeping the data in sync was a huge win," he says. "I can't imagine having done this on the

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>
> *Phat Hoang, Database Administration Consultant, Dell*

live system. In fact, we have another live system where we have been performing data purges that have resulted in some amount of downtime and degradation. We didn't encounter any of that with the Delta database, which was a great achievement and benefit for us."

ENHANCED BACKUP IMPROVES BUSINESS CONTINUITY

While the team was confident that the migration would go without a hitch, it built in an extra level of redundancy and protection with SharePlex. Phat Hoang, database administration consultant at Dell, says, "When we migrated to the new environment, we continued syncing data back to the old system, as well as to a 'high availability' backup environment.

If there'd been any issues early on, we could have switched back to the old system, and end users would have been able to keep working normally while we fixed the problem."

IMPROVED CHANGE MANAGEMENT INCREASES UPTIME

Historically, patching database software required some planned downtime to Delta. However, the IT team is now able to offer near-constant uptime, even during patching processes, and when other changes are made to the system. "Previously, we used Oracle Data Guard to mirror the Delta database to back up systems, but we couldn't write to the backup environment," says Hoang. "Now, with SharePlex, we can write to the backup system, which means we can deploy patches there, check that they don't break anything, and mirror them to the production environment with virtually no downtime for end users."

The IT team can also make required changes offline in the backup system and synchronize them to the production environment, with no interruption to critical services. "With SharePlex, we can create new objects, rebuild indexes and do version upgrades offline in the backup environment, which means zero downtime and zero business disruption," says Hoang.

IT TEAM ACHIEVES MIGRATION TIME SAVINGS OF UP TO 40 PERCENT

The IT team was able to reduce the time spent rebuilding the database after each testing cycle with SharePlex. "If we hadn't used SharePlex, the preproduction environment would have been grossly out of sync after every testing cycle, and we'd have had to rebuild it manually," says Nookala. "Because SharePlex allowed us to synchronize the preproduction environment with the live environment quickly and easily, we achieved an estimated time savings of up to 40 percent for the end-to-end migration."

SUPPORT FOR ONE OF THE WORLD'S LARGEST ORACLE MIGRATIONS

The IT team was able to simplify the migration of one of the world's largest Oracle databases with SharePlex. "The Oracle database that supports Delta has to be one of the biggest and craziest anywhere in the world," says Nookala. "I can't overstate how much SharePlex helped us simplify the migration by synchronizing this massive production environment with our preproduction system and allowing us to test every aspect of database performance before we went live. SharePlex was the key to our success and a technology I'd recommend for any customer that needs to migrate an Oracle database on this kind of scale."

END USERS INCREASE PRODUCTIVITY AND IMPROVE FINANCIAL RESULTS

The combination of new hardware, new Oracle software and SharePlex has delivered tremendous performance improvements for Delta end users and customers. The time needed to access the home page and other key pages, for example, has been reduced from 15 seconds to just a fraction of a second, and end users can create new orders and request information in the system much more quickly.

Across the board, the new environment has increased database response time by

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158 percent. In addition, the Delta SWAT team, which works with customers around the world, has also collected a wealth of anecdotal evidence about increased system performance. "One sales team in France has told us that they have increased their commissions and paychecks because they can do things so much faster in Delta now, and part of that performance increase is thanks to SharePlex," says Nookala. "That brings into focus just how much SharePlex is benefiting our customers and our business."

SHAREPLEX ENHANCES ENTERPRISE-WIDE MIGRATION STRATEGY

The ability to mitigate risk for the Delta migration, reduce migration-related downtime and achieve 40 percent IT time savings has brought the value of SharePlex into sharp focus at Dell. "We have made phenomenal progress with our migration strategy with SharePlex," says Sunderam. "Having pulled off such a large migration with minimal impact to the user-base is unprecedented, so I hope we can use more of this strategy and technology for other large migrations across the business."

ABOUT QUEST

Quest helps our customers reduce tedious administration tasks so they can focus on the innovation necessary for their businesses to grow. Quest® solutions are scalable, affordable and simple-to-use, and they deliver unmatched efficiency and productivity. Combined with Quest's invitation to the global community to be a part of its innovation, as well as our firm commitment to ensuring customer satisfaction, Quest will continue to accelerate the delivery of the most comprehensive solutions for Azure cloud management, SaaS, security, workforce mobility and data-driven insight.

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