

BUSINESS VALUE SPOTLIGHT

Improve Performance, Increase User Productivity, and Reduce Costs with Database Archiving: A Case Study of AT&T

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Background

AT&T's Wireless Division is one of the world's largest mobile telecommunications providers, serving 87 million customers in the United States, with voice coverage in over 215 countries and data roaming service in over 170 countries around the world. The company pushes its enterprise resource planning (ERP) applications to keep up with the fast pace of the wireless telecommunications business and has fairly extreme requirements in terms of high-volume data management and throughput in managing its supply and distribution of cell phones and related equipment.

The company had found the growth of its Oracle E-Business Suite databases to be so costly that it was impacting the bottom line. To help control costs, AT&T developed and implemented its own database archiving software. Over time, the in-house solution proved unmanageable, so the company turned to Informatica Data Archive in 2004 to bring its database growth under control and improve application performance by reducing the amount of total storage required as well as trimming the amount of time required to load and back up its application data sets.

In addition to this ERP application database use, AT&T has applied Informatica's ILM products to the problem of managing the explosive growth of its customer analysis database — a custom application known internally as Mercury. As the Mercury database grew, it eventually became so large that it could not be backed up within the required 12-hour backup window. AT&T looked to Informatica Data Archive to control the size of this important database so that it could be backed up.

Informatica Data Archive is one of Informatica's Information Lifecycle Management (ILM) products. IDC defines ILM software as that which is used to manage the evolution of data from its creation to its removal from the database. This category includes database subsetting

Business Value Highlights

Industry: Telecommunications

Location: North America

Challenge: To reduce storage costs during business growth and cut the time required for data backup and provisioning while maintaining a high level of internal and external customer service

Cumulative benefits:

- \$3.4M over 5-year period
- ROI of 276%
- Payback in 5.8 months

Specific benefits:

- 3.5 hours of downtime avoided per month (and increases each month) leading to improved end-user productivity
- 40 hours per month saved in database backup time
- \$582,594 in storage costs saved for its production systems over five years

(the identification and copying of referentially complete subsets of a database), data masking (the masking of sensitive data for test purposes), and test data generation tools. It also includes tools that build and maintain database archives, allowing transparent access to archived data and preserving original schema information about archived data and intelligence for selecting referentially complete subsets of data for archiving. Database archives are commonly used to control the size of production databases as well as preserve the data from retired applications for subsequent reporting and querying.

Since the original deployment, AT&T has expanded the use of Informatica Data Archive to include its Oracle supply chain and financial applications. The company claims to have one of the largest installations of Oracle Supply Chain in the world. As Bryon Rickey, director of production operations, said in the interview, "We are essentially a center of excellence when it comes to doing archiving. We are a very technologically oriented group and always push the envelope."

Using Informatica's ILM products, AT&T was able to carry out a combination of purging and archiving activities that allowed it to control database size. The result is that AT&T has kept its Mercury database under the 16TB threshold for the standard backup window, storing its inactive data in a 10.8TB archive. It also maintains the Oracle ERP database at 9TB while archiving 2.4TB.

Overview

AT&T experiences increasing data volumes and transaction processing demand on a continuous basis for both supply chain and financial management applications. These applications have a regular load of about 8000-plus total users, from retail store employees to purchasing agents to financial reporting analysts. Under normal operations, the application database grows constantly. As it does, its tables and indexes grow as well, it consumes more storage, and it becomes less and less efficient. Given that the performance of the database will ultimately affect AT&T employees and customers, it is critical to maintain a high level of service with complete access to all the data.

Because transactional data has a lifecycle, it reaches a point where it is no longer updated but is kept only for purposes of historical reference. Such data can be safely removed from the production database without impacting the ongoing operation of the application, but it must be kept available in an easily accessed form online. AT&T has established policies regarding data lifecycle and retention. When transactional data reaches the end of its lifecycle, those policies are applied. Some data can be discarded; much of it must be retained. The data that must be retained is archived. Thus, Informatica Data Archive has become integral to AT&T's data retention policy execution.

These retention policy-related activities are carried out continuously. Given the database size, AT&T can neither archive the data in the background during peak hours nor wait and archive massive amounts of data at one time within a month. The company must run the archive during specific times of the night so that performance is not compromised.

Similarly, AT&T's Mercury Financial Reporting database contains data that has significant value for historical analysis, but is not accessed frequently enough to warrant keeping it in the main database. Such data is appropriate for archiving. Because customer activity adds data to the Mercury database on a continuous basis, the database just grows and grows indefinitely, unless it is managed. When the database hit the 16TB threshold, preventing it from being

backed up within the nightly backup window, AT&T had to act. Once again, it turned to Informatica Data Archive to control the size of the Mercury database by archiving that infrequently accessed historical data. This has ensured its ability to regularly back up this important database.

Because archived data is infrequently accessed, it can be kept on cheaper storage. The result of this approach is a smaller, faster online database that serves the application while maintaining ready access to the archived data when needed.

Using Informatica Data Archive has enabled AT&T to contain the size of both databases (both are online databases), maintain acceptable service levels, and in the case of the Mercury database, preserve the backup window. Since implementation, the company has been able to keep its ERP database size at around 9TB despite a growth rate that has reached 60%. The Mercury database size is contained within 16TB. With Informatica Data Archive, unlike the in-house solution, the archived data remains online and available, which is a key requirement for AT&T. Because of this capability, as well as the fact that the Informatica solution runs much faster than the in-house solution, Rickey's group has shifted all its database archiving to Informatica Data Archive. By discontinuing its in-house solution, AT&T also saves staff time in maintaining its code.

Benefits

Informatica allows AT&T to save staff time controlling the size of its largest databases. Before the deployment of the Informatica Data Archive solution, the IT organization would manage the data growth and take the data out of the production system, export it to a table, and then load it to another directory. But now, AT&T has replaced that process, completely avoiding this manual work.

The company has saved valuable storage space since implementing Informatica Data Archive. AT&T estimates that without the solution, the IT organization would require at least an additional 17TB of premium storage space on production ERP and Mercury systems. By stabilizing production database growth, AT&T was able to contain development/testing storage growth as well. IDC calculated the value of the amount of storage saved based on our industry research and entered that data into the five-year ROI analysis. The result is that AT&T is saving \$116,519 annually in overall storage and related hardware costs for its production systems, including an average of \$52,764 annually in savings on tier 1 storage. It is important to note that if the database had been permitted to grow unchecked, the cost in terms of processors and staff time would have continued to mount. This is because the larger a database gets, the more processor time is required to query and update it and the more staff time is required to tune and maintain it. By using Informatica Data Archive to contain the size of its databases, AT&T is saving not just storage but also server and staff time costs.

Additional savings not included in this analysis is the impact of reduced database size on AT&T's nonproduction systems that resulted in additional storage capacity savings of 115TB in 2009.

By implementing Informatica Data Archive, AT&T estimates that it has improved ERP database performance by 30% in a very short period of time and has maintained high performance ever since. As Rickey said, "We live and die on performance. So even though the amount of some data that we archive may seem small, we are archiving critical pieces that

give us the biggest bang for the buck." Maintaining high performance is critical because the system performance directly impacts the business. "When you go to an AT&T store and you buy the latest phone, that sale will ping my system on the inventory side to see if it's actually there," Rickey said.

Before AT&T had a database archiving solution, it was faced with a dire situation with respect to its Mercury database. If AT&T could not contain the size of the database, so that it could be backed up within the standard window, then it would have to be reduced or broken up. With Informatica Data Archive, AT&T is able to maintain access to all its valuable customer data, yet still back up this important database, because it has been able to contain the size of the database.

Typically, one would expect a heavy user of large-scale financial management and supply chain applications to constantly increase system capacity to keep up with the size of the database and to maintain service levels. By using Informatica Data Archive over the past five years, despite constant data growth, AT&T has been able to contain server and storage costs. What's more, the simpler database organization that results from the archiving and removal of data has yielded a database that is easier to tune and that performs better under a load.

User Productivity

In addition to the critical user productivity boosts at the AT&T retail stores resulting from database performance improvement, back-office users are also realizing such benefits. For instance, between 200 and 300 auditors are regularly on the system and require near 100% availability. When critical batch jobs take too long, these users are unable to perform their jobs adequately. The IT organization has trimmed the batch load time from 6.5 hours to 3.5 hours, which has increased application uptime for the auditors and improved their level of satisfaction.

The time saved for auditors due to greater system availability equals a \$475,110 annual benefit for AT&T.

IT Staff Efficiency

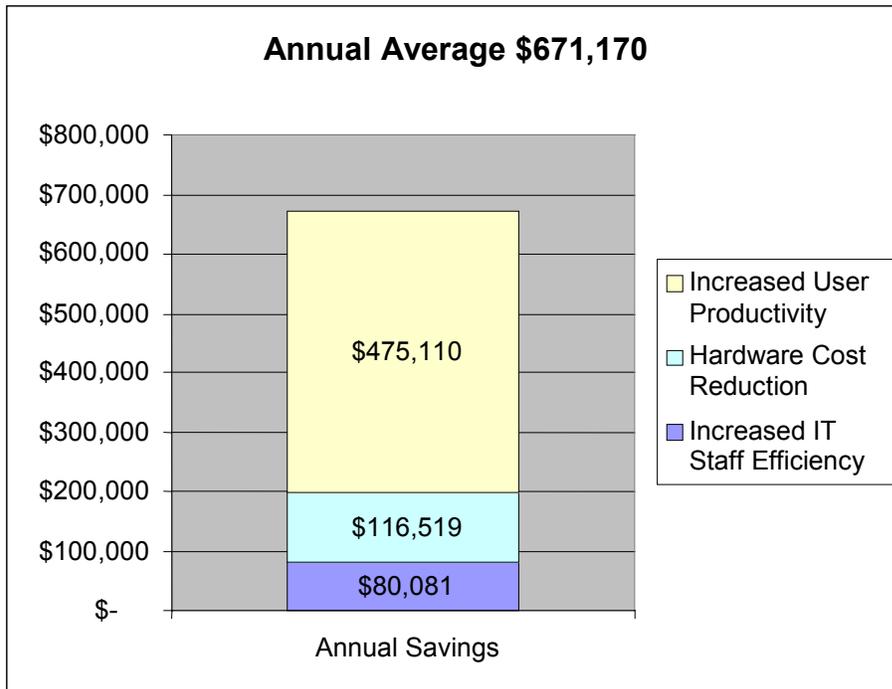
Staff time is saved and AT&T maintains a lean IT organization because the Informatica solution has allowed the company to avoid the cost of continually maintaining and tuning a growing database. "I'd probably say that it saves us 10 hours per month with not having to deal with performance issues due to data growth," said Rickey. He added that the company has been able to streamline data backup processes: "We literally shaved off a few days' worth of doing backups. Before Informatica, it would take about three or four days to back up the entire system. In terms of labor time, I'd say that we are saving about 40 hours per month."

Since deploying Informatica Data Archive, AT&T has been able to reduce the effort required for database tuning to improve performance, which has increased by 30%. The company estimates that it is saving roughly 10 hours per month by avoiding performance and data growth issues. There has also been an improvement in data uploading and reloading; the company estimates that it is saving another 10 hours per month because of faster task completion time.

Data archiving processes not only have enabled AT&T to keep the database system and storage capacity at their present levels but also have provided a flexible archiving capability without a substantial investment in staff effort.

As Figure 1 shows, AT&T realized annual benefits of \$671,170, which amounted to \$3.4 million over five years.

Figure 1
Average Annual Benefits



Source: IDC, 2010

Informatica ILM Return on Investment

Table 1 shows the results of the ROI analysis. The Informatica solution offers AT&T an ROI of 276%, with a payback period of 5.8 months. The investment category in Table 1 includes initial purchase, licensing fees, new hardware to support the Informatica solution, staff hours to install, and annual maintenance time. The investment is a five-year aggregate.

Table 1

Five-Year ROI	
Benefit (discounted)	\$ 2,415,650
Investment (discounted)	\$ 641,993
NPV	\$ 1,773,658
ROI	276%
Payback	5.8 months
Discount rate	12%

Source: IDC, 2010

Conclusion

As good as a 276% ROI seems, the benefit may extend beyond what IDC's calculations show. This is because in addition to reductions in hardware and administrative staff costs associated with the Oracle application databases, AT&T realized benefits that are harder to measure. It replaced an in-house solution that it would have otherwise had to maintain over time, costing additional staff time. In addition, the Informatica solution enables AT&T to keep archived data readily available to users, blended with database data in a transparent manner, and to provide smoother operations. This has resulted in more manageable business operations, more satisfied users, and a more predictable database environment.

The need to control database growth should be obvious: A growing database requires not only more storage but also continuous tuning and maintenance in order to meet its service-level agreements. The savings that result from a size-stabilized database are measurable, not only in terms of system and storage costs but also in terms of staffing costs and the cost and risk associated with business disruptions caused by uncontrolled database growth and its resultant impact on operations and application performance. Controlling such growth is a complicated business.

When one examines a case such as AT&T, it becomes clear that building an in-house database archiving program is almost always a bad idea. It introduces ongoing maintenance costs for the in-house software, and it is typically slow and inflexible. The right solution to a database archiving need is to turn to a professionally developed and maintained database archiving product such as Informatica Data Archive. Such a product delivers not only the benefits of a stable database environment and inexpensively maintained yet accessible archive data but also the performance and flexibility of a proven database archiving solution.

ROI Calculation Methodology

IDC performs a three-step process to calculate the ROI and payback period:

1. Measure the benefits from reduced costs, increased IT staff efficiency, greater user productivity, and better storage management since the deployment.
2. Ascertain the total investment made while deploying the solution (initial purchase price, new hardware/software, licensing fees, full-time equivalent [FTE] requirements for deployment and annual maintenance, customization, training, and consulting).
3. Project the investment and benefit over five years (term of AT&T use of Informatica Data Archive) and calculate the ROI and payback for the Informatica solution. The ROI is shown as the five-year net present value (NPV) of the benefit divided by the discounted five-year investment.

ROI Table Calculations

- Benefit (discounted) is the present value of the five-year benefit.
- Investment (discounted) is the present value of the five-year investment, plus the initial investment during deployment.
- Given that the ROI model assesses monetary value over time, and that the real value of money changes over that time, the present value must be applied to the figures above in order to examine these figures in today's current value.
- Net present value is the present value of the five-year benefit minus the present value of the five-year investment.
- ROI is the net present value divided by the investment (discounted).
- Payback period is the year 1 investment divided by the average monthly year 1 benefit.
- To account for the time value of money, IDC bases the ROI and payback period calculations on a 12% discounted cash flow.

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