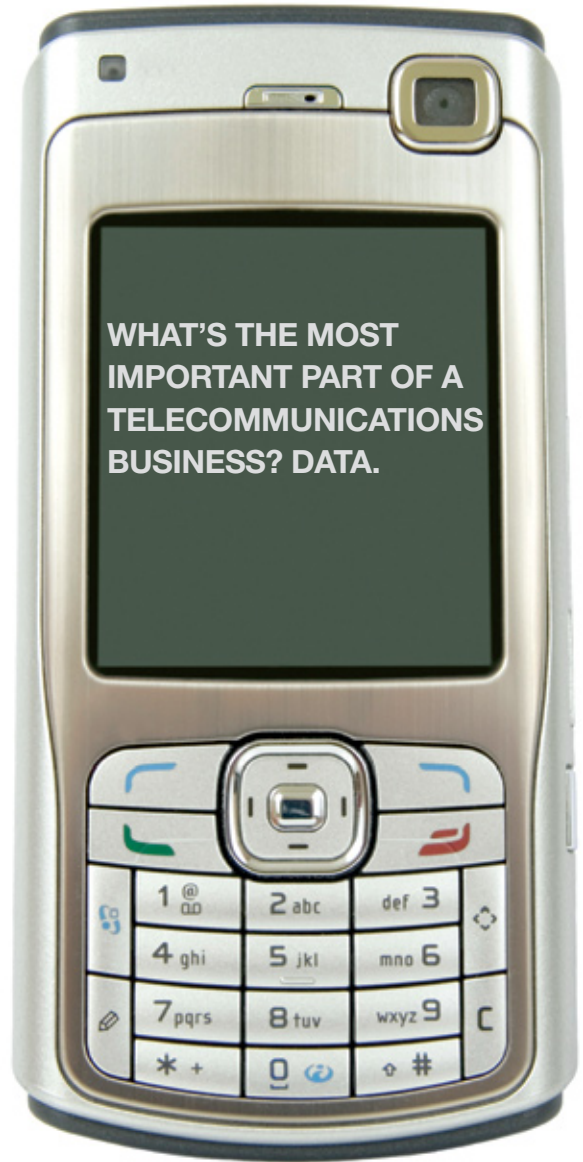


WHAT'S THE MOST
IMPORTANT PART OF A
TELECOMMUNICATIONS
BUSINESS? DATA.



CALL ME

BY TAM HARBERT

D

ata is the lifeblood of telecommunications companies. Unless they keep the data flowing, they won't have a business. But to grow, or even sustain, that business, companies must do more with that data than ever before.

Telecommunications companies face enormous competitive pressures. Voice—the original telco application—has become a commodity. More and more households are dropping landlines altogether in favor of mobile. And providers at every level must contend with fickle, price-conscious consumers who switch providers seemingly on a whim. Consequently, telcos are desperately trying to offer new products, services, and bundles to retain current customers, attract new ones, and encourage all of them to consolidate their spending with one provider. Ultimately, operators want to become one-stop shops for all services and thereby increase their average revenue per user. “Every service provider is moving toward a converged offering,” says Arvind Sathi, lead architect in the communications sector of the IBM Software Group.

This shifting market creates huge data management challenges. Telcos rely on lightning-fast database applications to route and connect voice calls and data services. In a typical mobile call, for example, the system must locate and identify the subscriber, what type of plan the subscriber uses, how much time or money is in the account, and other information. The operator may also integrate and optimize third-party value-added services, such as Short Message Service (SMS).

During the call, the operator gathers more than 100 pieces of data that by regulation must be stored in a call detail record (CDR). Many providers are combining that data with other information—such as caller location—in real time to enable innovative new services. All the while, the companies are merging and leveraging the flood of data from new services to provide a better customer experience and increase selling opportunities.

An avalanche of customer data

At the most basic level, telecommunications companies must inventory, manage, and provision circuits across the network. Reliability is critical. “Some of our online systems handle 5 million to 10 million transactions a day,” says Paul Gandolfo, principal performance analyst at Telcordia, an independent service provider whose clients include top-tier telecommunications operators. Telcordia provides software and services, based on the IBM Information Management System (IMS) database management system, that help telcos manage the network by, for example, tracking physical and logical resources to maximize resource utilization, reduce

Qwest and InfoSphere

The company: Qwest Communications is a major provider of network, data, and voice services in the United States. For residential customers, the company offers Internet service, digital phone service, wireless service through a partnership with Verizon Wireless, and TV through a partnership with DIRECTV. Qwest also provides network, data, and voice services to Fortune 500 companies.

The challenge: Qwest, as have most major providers, has expanded to offer many different products and services. Its systems, however, were originally designed to support particular products rather than the range of services it offers today. The lack of integration of data from those services inhibits customer service and prevents Qwest from maximizing revenue.

“The systems that were built to support different product silos need to be aware of each other, and they need to share data,” says Sandeep Kulkarni, vice president of IT operational support system (OSS) development at Qwest. Information on the service availability was not available to the customer service agents at the right time. And even if it were, the agents might not have information about whether the customer had the right mix of services to new service, he explains. For example, “if you’re going to sell them an over-the-top video service, you have to know whether broadband service has enough speeds to support the video in their region,” he says. On the billing end, different systems were using different discounting engines, so sometimes a customer was quoted one price when ordering, only to receive a bill listing a different price.

The technology: Qwest is using IBM InfoSphere Master Data Management Server for Product Information Management to develop an enterprise product catalog (a catalog that is shared between ordering and billing), along with Selectica (a rules-based engine designed for product configuration) and Simple Order from IBM Customer Care. Although the system is not yet fully deployed, early metrics show that Qwest will be able to achieve a cost reduction of \$25 million, a significant reduction in calls to customer service, and increased up-sell and cross-sell activities, according to Kulkarni.

“The systems need to be aware of each other, and they need to share data.”

— Sandeep Kulkarni, Vice President of IT OSS Development, Qwest

errors, and resolve network performance problems. “Our customers bet their businesses that these systems are going to be there and work without problems and with high availability,” Gandolfo says.

Beyond the network operation itself, the operator manages data about customers and the services to which they subscribe, and most of that data must be accessed in real time. A mobile call involves “a highly and, at times, almost impossibly complex exchange of digital information,” says Charles King, president and principal analyst at Pund-IT, Inc.

The amount of such “call context data” has grown dramatically, says Ari Valtanen, director and CTO for solidDB in the IBM Software Group. IBM solidDB is a relational, in-memory database designed for such real-time, mission-critical applications. “Ten years ago, about one kilobyte was the norm,” says Valtanen. “Now it’s common to use tens to the low hundreds of kilobytes, and I’ve seen a few companies designing for as much as 1 megabyte per call or session. All that data has to be kept in memory and managed efficiently.” In addition to availability, high throughput and low latency are key in these applications. The entire call must be set up in 300 milliseconds, which means these database queries must be done in microseconds, says Valtanen.

Meanwhile, the system collects and stores the CDRs, each of which contains 140 fields of information, such as where the call originated and terminated, what rate applied, and the length of the call, according to Brian Kirk, vice president of business development at NetworkIP and its subsidiary, Jaduka.

Discovering new services and new customers

In their push to remain competitive and offer innovative services, operators are increasingly combining data in new ways. This information “provides a rich resource for data mining, developing new services, and entering new commercial markets, like targeted ad campaigns,” notes King. In Europe, for example, some network operators correlate the location of the caller with businesses in that area. They then use that information to send special offers, such as a coupon for the Starbucks on the corner, says Valtanen.

Effectively combining and leveraging this proliferation of data also has the potential to cut operating costs and improve customer satisfaction. Although providers are trying to converge their services, the data from each service has typically remained in a separate database. Even within

each service, the data from sales or from technical support might not be available to customer service call centers in a form that they can use. No company has managed to achieve such mega data management yet, but at least one—Qwest—is pursuing that path.

Another type of data that operators must handle is the information that customers themselves store on the network, such as text messages and e-mails. Database technology can enable more efficient storage of such information, says King. IBM DB2, for example, incorporates data compression features that enable telcos to store data on fewer arrays. This capability not only saves costs, but also enables quicker and more effective data backups, he says.

It all goes to show how important the flow of data is to telecommunications companies. Get this lifeblood flowing in the right direction, and the business stays healthy and vibrant. But if it's lost or trapped in clogged arteries, the business will at best be stagnant, at worst, on life support. *

Tam Harbert is a Washington, D.C.-based journalist who covers technology, business, and public policy.

Soprano Design and DB2

The company: IBM Business Partner Soprano Design provides a messaging infrastructure for Short Message Service (SMS) and Multimedia Messaging Service (MMS) messages. Mobile network operators, wireless application service providers, and others integrate the Soprano Design software into their networks and resell it to their customers. The platform enables companies to use messaging to better communicate with staff, customers, and suppliers.

The challenge: The application requires industry-standard technology that's easy to administer, manage, and integrate, so "we can spend less time worrying about how to manage and operate the database and focus more on enhancing and providing rich applications and staying ahead of the market," says Mohamed Odah, general manager of Soprano Design business operations in Australia.

The technology: Using IBM DB2 9.7—the latest version—and working with the IBM Express Runtime team, Soprano developed a DVD-installable image of its software that significantly eases installation for its customers. "It's a click of a button and everything is installed," says Odah. "We could not get that done with any other technology."

The DVD not only helps customers, but also saves Soprano time and resources. Previously, Soprano technicians spent four to five days installing the software at the customer site.

NetworkIP and Informix

The company: NetworkIP offers telephony service to the prepaid international calling market, primarily through calling cards that are rebranded by other telecom operators. Through its switching network and proprietary software, NetworkIP routes international calls while ensuring high-quality connections in more than 120 countries. The company also offers a Web-conferencing service to small and midsized businesses and, through its subsidiary Jaduka, telephony services to large enterprises.

The challenge: The company needed to increase capacity while ensuring high quality and reliability of calls. The company's software

manages the network and account information, determining the route of the call, the pricing, how much money is left on the calling card, the branding or marketing messages to be delivered through that account, what language to use, the menu options available, and the correct customer service number for that account. Each call generates 100 to 150 SQL statements, according to Andrew Ford, senior database administrator at the company. That amounts to 375 million database queries a day.

Even one database lock can affect users immediately. "It's one thing to be unable to run a report for a little while, but when you're making calls,

every single call depends on having access to that data," says Brian Kirk, vice president of business development at NetworkIP and Jaduka.

The technology: To increase speed and capacity, the company upgraded to IBM Informix 11.5, along with upgrades in server and storage hardware. With the

upgrade, NetworkIP increased its capability to manage accounts from 1.3 billion to 3 billion accounts, according to Ford. Benchmarks show that the system could now handle 5 million account transactions per hour, compared to 720,000 before the upgrade, he adds.

RESOURCES

IBM Information Management System: ibm.com/ims

IBM solidDB: ibm.com/software/data/soliddb

IBM Informix Dynamic Server: ibm.com/informix/ids

IBM InfoSphere Master Data Management Server for Product Information Management: ibm.com/software/data/infosphere/mdm_server_pim