

JDSU Partners with Infobright to Help the World's Largest Communications Service Providers Ensure the Highest Quality of Service



INDUSTRY Communications

Overview

JDSU (NASDAQ: JDSU; and TSX: JDU) innovates and markets diverse technologies that enhance the way people experience the world every day. Their products enable fast, high-quality communications, secure financial transactions, reliable consumer electronics, green energy, differentiated brands, and a host of other solutions. JDSU's annual revenues exceeded \$1.3B in 2010, and their 4700 employees are based in over 80 locations worldwide.

In the communications sector, JDSU offers instruments, systems, software, services, and integrated solutions that help communications service providers, equipment manufacturers, and major communications users maintain their competitive advantage. Within the extensive JDSU product portfolio is a suite of Service Assurance solutions that ensure high quality of experience (QoE) for wireless voice, data, messaging, and billing. These products are used by many of the world's largest network operators.

Business Challenge

The growth of smartphones and the increasing volume of data traversing 3G, and now 4G/LTE networks presents a huge challenge to network operators. In addition to ensuring that network bandwidth is sufficient to handle current and projected volumes, operators must also find a way to profitably deliver the level of service their customers expect.

In a recent report published by Cisco, "Visual and Networking Index, Forecast and Methodology, 2010 – 2015," the magnitude of the growth of IP traffic is forecasted as follows:

- "Annual IP traffic will reach the Zettabyte threshold (966 Exabytes or nearly 1 Zettabyte) by the end of 2015."
- "Global IP traffic has increased eightfold over the past 5 years, and will increase fourfold over the next 5 years."

Within the overall IP volume, the growth of mobile data traffic is a key driver of these increasing data volumes. The report also notes:

- "Global mobile data traffic grew 2.6-fold in 2010, nearly tripling for the third year in a row."
- "Global mobile data traffic will increase 26-fold between 2010 and 2015. Mobile data traffic will grow at a compound annual growth rate (CAGR) of 92 percent from 2010 to 2015, reaching 6.3 Exabytes per month by 2015."

SOLUTION

Embedded analytic database within JDSU's high-performance Service Assurance Session Trace application for network operators.

"Using Infobright allowed JDSU to meet the aggressive goals we set for our new product release: reducing storage and increasing data history retention by 5x, significantly reducing costs, and meeting the fast data load rate and query performance needed by the world's largest network operators."

Chuck Gruber
Principal Architect
JDSU

CASE STUDY

Ensuring high quality of service to customers requires network operators to be able to identify problems and their root cause very quickly. Doing this within the vast volume of data generated every day is a challenge. Equally important is the need to do so without adding high costs from ever-expanding assurance solution hardware infrastructure, such as servers and storage, and from high administrative overhead in the form of expensive database administration costs.

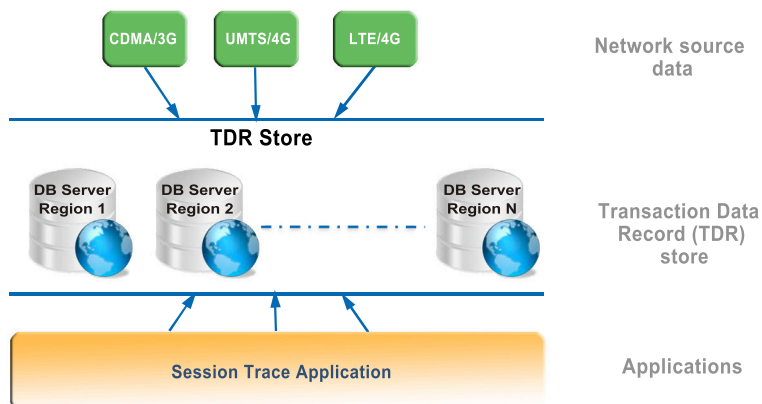
The JDSU Session Trace application, and supporting TDR-Store component, ensures quality of service for mobile networks by enabling network operators to quickly identify network issues and pinpoint the source. Recognizing the challenge with data growth and the need to contain costs, JDSU set out to deliver a new version of their Session Trace TDR-Store component that would meet the following goals:

- Support very fast load speeds to keep up with increasing call volume and the need for near real-time data access.
- Reduce the amount of physical disk capacity required by 5x, enabling more data to be stored.
- Significantly reduce overall database licensing costs.
- Eliminate their customers' "DBA tax," which meant that the new solution should require zero maintenance or tuning while enabling flexible analysis.
- Continue to deliver the fast query response needed by Network Operations Center (NOC) personnel when troubleshooting issues and supporting up to 200 simultaneous users.

In order to meet these goals, a decision needed to be made in regard to the underlying database. After investigating the available database options on the market, JDSU decided to test Infobright's high-performance analytic database. Initial testing showed promising results, and Infobright® Enterprise Edition (IEE) was given the green light.

The Solution

The diagram below represents a high-level view of JDSU's TDR-Store (session transaction data record storage), used by the Session Trace application.

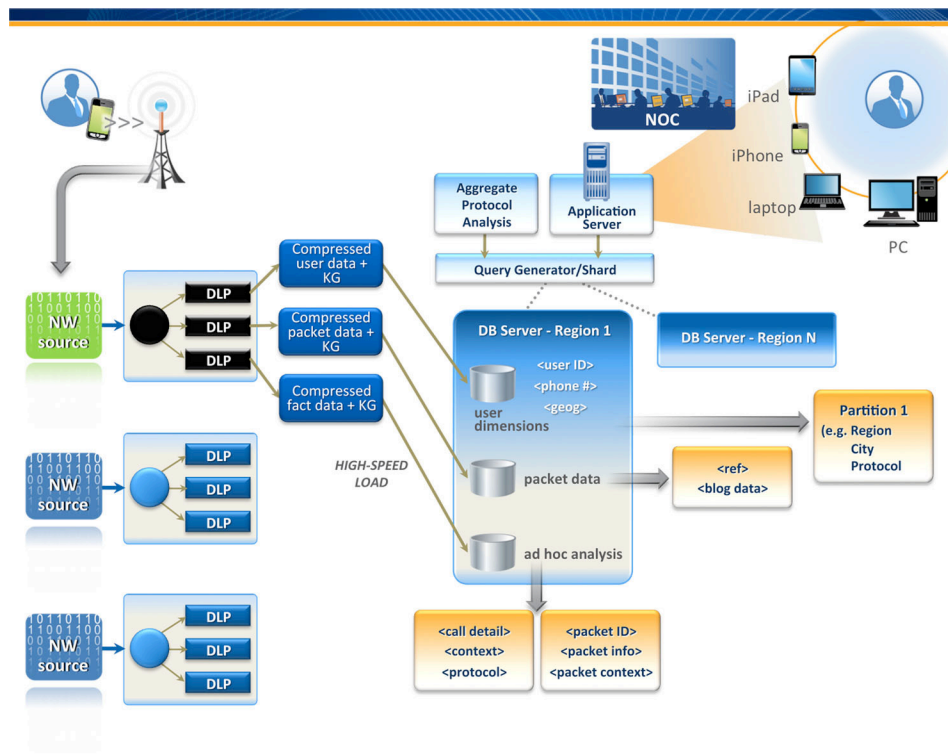


CASE STUDY

The Session Trace application supports a broad set of network protocols, including the latest generation of 4G/LTE networks. Call / session record data streams in at high speeds and populates multiple Infobright instances, based on geographic regions. The application includes a Web-based front end that passes information to a query generator, which then sends the query to the appropriate database instance. For deployment at Tier 1 network operators, each site will store between 6 and 45 TB of data, and the total data volume will typically range from 700 TB to 1PB of data.

Getting Data In Quickly

Meeting the needs of the largest wireless carriers required each database instance to ingest data at rates of up to 20,000 TDRs per second (or up to 40,000 database rows per second.) The Infobright Distributed Load Processor (DLP, as shown below) meets this requirement by offloading the process of compressing data and building the Infobright “Knowledge Nodes” to multiple servers with several instances of DLP on each server. Offloading the CPU-intensive work to other servers also means that query performance is not negatively impacted as new data is loaded.



Data Compression and History

As outlined in the list of critical project goals, a key requirement was to reduce the amount of physical disk storage needed by 5x enabling much more data to be available to NOC personnel.

How does the Infobright database enable such deep compression? Infobright's industry-leading compression rates are a result of the product's architecture. As data is loaded into Infobright, it is stored in Data Packs (fixed-sized segments within each column.) Infobright compresses each Data Pack individually using the optimal compression algorithm for that data, resulting in very deep data compression, typically 10:1 to 40:1. The rate of compression depends on the specific type of data. In addition, as Infobright does not use indexes to achieve fast query performance, no additional space is needed to accommodate indexing. With traditional row-based databases, the size of the database on disk often exceeds the raw data volume by a significant factor, sometimes as high as 2x when many indexes are required.

In the case of JDSU, Infobright's deep data compression delivered a 5x space reduction. This was one important factor in significantly lowering the total cost of ownership. In some situations, it also enables customers to choose less expensive internal server storage rather than external arrays, further reducing capital costs associated with the Session Trace application.

Reducing Capital and Operational Costs

The reduction in capital costs from reduced physical storage and the ability to use less expensive internal server storage represent just part of the overall savings from using Infobright.

A key contributor to high total cost of database ownership is operational expenses arising from the need for expensive, skilled resources like database administrators (DBAs) to maintain and tune the database. Infobright was specifically designed to eliminate these functions. Instead, built-in intelligence within the Infobright Knowledge Grid architecture automatically delivers high performance and fast query speed without manual effort. Eliminating the need for JDSU customers to use DBA resources also results in significant cost reduction.

In addition, Infobright's licensing costs provide substantial savings for both enterprises and OEMs. JDSU achieved an approximate 3x reduction in database licensing costs compared to their previous TDR-Store design.

A Strong Collaboration Benefits JDSU and Infobright

JDSU and Infobright were true partners during the development and customer testing of the enhanced Session Trace TDR-Store component. Both companies were committed to ensuring that the goals of the project were met in order to enable successful deployments at the largest network operators in the world. This input into Infobright's product development resulted in significant advancements in terms of performance and functionality of the Infobright database, which now benefits all of Infobright's customers and partners.

These advancements include the new Rough Query feature introduced in Infobright 4.0. For telecom applications, it is ideal for troubleshooting network issues or finding the records of a particular subscriber within a very large dataset. Rough Query delivers an immediate answer to investigative queries, by delivering the lower and upper bounds of possible results, and then allowing the user to filter the data so that the query runs against a much smaller dataset. This can reduce the total time to get an exact answer by 20x and more.

Other new capabilities such as DomainExpert™, which uses information about specific types of data (such as URLs, email addresses, or user-specified data) to automatically enhance query performance, are also very useful for telecom or online analytics.

About Infobright

Infobright's high-performance database is the preferred choice for applications and data marts that analyze large volumes of "machine-generated data" such as Web data, network logs, telecom records, stock tick data and sensor data. Easy to implement and with unmatched data compression, operational simplicity and low cost, Infobright is being used by enterprises, SaaS and software companies in online businesses, telecommunications, financial services and other industries to provide rapid access to critical business data.

Try it yourself! Download a free trial of our Enterprise Edition at <http://www.infobright.com/Products/Product-Demo/>. To learn more about how Infobright can add value to your application or service, contact us by email at oem@infobright.com or visit our website at http://www.infobright.com/Customers_Partners/OEM_Partners/.

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