

## Customer Application

### DES and Dow Jones Telerate



**D**ow Jones Telerate has doubled the number of transactions per second it can process through its worldwide financial network thanks in large part to database acceleration technology provided by Database Excelleration Systems.

#### Dow Jones Telerate

Real-time market price data, news, commentary, analysis and analytics are the critical elements of any financial information service provider. Dow Jones Telerate is the conduit to prices and commentary from 2,000 leading financial institutions worldwide, plus real-time quote feeds from over 100 exchanges globally.

Over 2,500 AP-Dow Jones reporters, market specialists and other information sources provide up-to-the-second news, commentary and analysis from around the world. Nearly 100,000 subscribers worldwide base their business decisions on Dow Jones Telerate-delivered information.

Dow Jones Telerate has grown from a U.S.-based fixed income information vendor to a multi-market information and technology partner for the global financial community. Global price data for international government securities, eurobonds, emerging market debt, money market instruments and mortgage-backed securities are available from hundreds of contributors. In addition, real-time coverage is supported by extensive historical data.

**Industry:** Financial

**RDBMS:** Proprietary

**Application:** OLTP, batch, decision support

**Hardware:** Concurrent & Stratus

**DES Products:**

Database Excellerator,  
Model 800D

#### Real-Time Computer Network

Dow Jones Telerate has designed, built, and maintains a highly specialized, highly optimized, multi-platform and network solution to rapidly disseminate this valuable financial information worldwide. The system is extremely reliable and available — by design and by necessity — and is available 24-hours per day, seven days per week.

"We take timelines to the extreme," said Walter Christensen, Vice President of Network Systems Development for Dow Jones Telerate. "Information is the product we sell, and everything we purchase in terms of systems, software and products is so we can deliver information faster and more reliably to our customer population."

"Where literally fractions of seconds count, everything we do is optimized for our network and for the types of data that

we're carrying. Our role is to supply the computing technology to make that happen."

All 100,000 Dow Jones Telerate terminal users connect directly into more than 100 Concurrent Computer systems located throughout the world. Each Concurrent Computer, which act as very fast data sending devices, supports up to 256 lines. Each line can support up to 16 terminals.

"All our systems are interconnected using high speed wide area networks (WANS) which run a proprietary Telerate protocol," Christensen said. "Speed of delivery is so important to maintaining our competitive advantage that we cannot afford anything that adds overhead to the delivery of our data."

In addition, Dow Jones Telerate uses its own internally developed database that it is continually fine tuning to squeeze every last ounce of performance out of it. "It is an on-going software development effort," Christensen said. "The reason we wrote our own database is because of our unique performance needs. No commercial product could meet our requirements."

Data either comes into a Concurrent system from a contributor, or from another Concurrent system, where it gets fanned out to the terminal population that's connected to it. Dow Jones Telerate uses Stratus Computers, Christensen explained, primarily to bridge between two types of data that

Dow Jones Telerate disseminates.

Terminal users can look at Dow Jones Telerate data in one of two ways. "One model that's used is called a 'page', which is analogous to a page in a book," Christensen said. "We currently maintain more than 65,000 pages, with each page filled with information about related types of securities.

"The second model is called an 'item,'" Christensen continued. "For example, a subscriber might have one specific item he or she is interested in; maybe a 30 year Treasury Bond or the current stock price of IBM stock."

The Stratus systems act as a link between those two models by "shredding the page" to make items out of it, and conversely takes items and inserting them into pages. "The Stratus systems act as the bridge between the data elements," Christensen said.

"All of the applications have similar characteristics in that they involve taking data into the network, doing something with it, and distributing it down to our customers as fast as possible," Christensen said.

## Network Delays

Three years ago, Dow Jones Telerate started receiving customer concerns about the time required to display data once it was requested. "We noticed delays were creeping into our network, especially between 8:30 am and 10:30

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— Walter Christensen

am Eastern time when all the futures, currency and stock markets in the United States are opening, which has obvious worldwide interest," Christensen said.

"We did an extensive analysis, which showed that even with the optimized database methods we employed, the actual I/O throughput of the mechanical disks was the ultimate throttling factor in terms of the amount of data we could pump through our network."

Christensen and Dow Jones Telerate concluded the only potential solution to their critical I/O bottleneck was to attach solid state disks to all of their systems to accelerate database performance. All other optimization techniques, from the hardware, software, networking, and application point of view, had been exhausted.

Dow Jones Telerate embarked on a major program to implement solid state disk storage systems on its world financial

network. Dow Jones Telerate conducted an extensive review and internal test of reliability, support, and responsiveness of vendor, and selected Database Excelleration Systems. Dow Jones loaded the entire on-line database — 256 Megabytes — onto the DES solid state system. The results were dramatic and immediate.

"Three years ago, when we started the DES upgrade program, our network was peaking at about 150 updates per second," Christensen said. "We now do in excess of 300 updates or inserts per second during the morning peak hours while a great majority of our nearly 100,000 subscribers are querying the system. The increase in our network speed and delivery of information have exceeded our requirements and are a direct result of the addition of the DES systems to our network computer systems."

Dow Jones Telerate has purchased more than 150 DES Database Excellerators in total, and has deployed more than 100 systems into its vast worldwide financial network.

"An important factor in a large, worldwide upgrade of a network such as ours is the dedication, competence, and integrity of the company making the product," Christensen said. "One of the things that struck us about DES is the amount of integrity the company has. They have met every single commitment to us in terms of delivery, performance and reliability specifications."

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