THE KRONER ZONE

Norwegian central clearing agency uses HP NonStop servers to move money between banks and accounts

THERE ARE SOME INDISPUTABLE TRUTHS about Norway: The winters are cold. The days are extremely long in June, but daylight is virtually nonexistent in December. And if you want to move money *from* just about anywhere *to* just about anywhere in the country, the funds almost certainly will go through Bankenes BetalingsSentral (BBS).

BBS, an organization owned by the Norwegian banks, is a central clearing agency for payments. It does other things as well—for instance, it runs the country's Bank-Axept electronic funds transfer and point-of-sale (EFTPOS) system and operates an Internet banking service for one of the big Scandinavian banks. "We're into lots of different things," noted BBS technical manager John Green. "But we are primarily an electronic funds transfer clearinghouse."

Green should know. For the past five years, he has been working on a sophisticated funds and message transfer system comprising two related applications, NIBE and eGiro. The system has been running live since September 1998, and volumes have grown significantly.

Both NIBE (Norwegian Interbank Based on EDIFACT) and eGiro run on the HP NonStop™ S74000 platform: an eight-processor primary system with a four-processor backup. NIBE—a high-value, high-performance EFT application—came first; it started on a NonStop K-series server, then moved sequentially through every new iteration of the NonStop S-series platform. "The hardware has been upgraded many times with minimum downtime," noted Green. "And we have had no unplanned downtime from the time we turned on the system until the present day." The sister application, eGiro, handles both funds and message transfers; the last phase of eGiro went live in February 2001.

NIBE AND eGIRO: A CLOSER LOOK

The NIBE application receives FINPAY messages from partner banks. These are simple EFT transactions that effect a transfer from a specific account in one bank to another account in a destination bank. The EDI-based (EDIFACT) transactions come into the NonStop system and are syntactically controlled and translated into an internal format using MessageWay Edikit from BCE Emergis. Then the transactions are subjected to multiple levels of validation, including file and EDI structure, account numbers, and verification of destination bank. If the

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>
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transaction is found to be valid, it is processed and sent in batch format to the company's IBM MVS mainframe for clearing. If it's invalid, NIBE produces a BANSTA file—a bank status message—to advise the originating bank that the transaction has been rejected and why.

On the outbound side, NIBE receives messages from the MVS-based clearing system in the form of a separate file for each destination bank. The system pre-processes each message and forwards it to MessageWay, which converts the file from an internal to EDI-based format. The file is then sealed electronically and sent over the communications line to the destination bank. "It sounds simple," said Green, "but there's a lot of code behind it, and hundreds of programs."

The eGiro application also uses MessageWay, since all files from banks and partner organizations are received at BBS in EDI format. But there's a difference between NIBE and eGiro: Not only does eGiro handle EFT transactions, but it also transfers messages from one organization to another. In the EDI language, these are called CREMUL, DEBMUL, and PAYMUL messages (CREMUL and DEBMUL messages are notifications of debits and credits to accounts; PAYMUL messages support more complex EFT transactions than the FINPAY messages handled by the NIBE system).

"Another big difference is that, in eGiro, transactions are stored in the Waiting Register database on the NonStop system," stated Green. "Some transactions, particularly PAYMUL messages, might sit on this database for up to a year. They are assigned an action date on which they will be processed; but in the meantime, the banks can cancel or amend the transactions."

THREE-PART SOLUTION FOR DISASTER RECOVERY

BBS leverages three complementary NonStop products to provide 100 percent replication of its NIBE/eGiro infrastructure: NonStop Remote Database Facility (NonStop RDF), NonStop AutoTMF, and NonStop AutoSYNC software. "These products enable us to provide a hot standby system for our mission-critical NonStop systems," asserted Green. "The disaster recovery capability for NIBE and eGiro went live in November 2001, and it's been running successfully ever since. We've been exceptionally pleased with it."

Here's how it works—50 percent of the EDI-based NIBE/eGiro system comprises a packaged solution, MessageWay from BCE Emergis. The other 50 percent, which was developed internally at BBS, is known as the MessageWay Clearing Interface (MCI). The MCI database was audited by HP NonStop Transaction Management Facility (NonStop TMF) software, so the database files could be updated and replicated using NonStop RDF software alone. But in the MessageWay system, half of the database was protected by NonStop TMF and the other half was not—and NonStop RDF software could only be used on elements of the database with NonStop TMF protection.

The solution to that part of the problem was NonStop AutoTMF software, which enables the company to use NonStop RDF software to replicate updates to the unaudited half of the database. NonStop AutoTMF automatically creates transactions for the NIBE/eGiro system, with no need to change application code. "As a product, NonStop AutoTMF has been great," noted Green. "Not only does it enable us to use NonStop RDF software to replicate files that previously were not audited, but it also improves performance and throughput."

NonStop AutoSYNC software forms the third leg of the business continuity solution. BBS has many files in the NIBE/eGiro application suite that don't lend themselves to auditing by NonStop TMF software, and the company uses NonStop AutoSYNC to replicate these complete files to the backup system. "NonStop RDF replicates only the changes to the database, while NonStop AutoSYNC copies the entire file," said Green. "You wouldn't typically use

FOR BBS, NONSTOP SYSTEMS:

- Deliver a perfect availability record for electronic funds and message transfers—no unplanned system downtime
- Run three complementary NonStop software products for disaster recovery protection
- Provide the linear scalability and high performance that are critical to expanding financial institutions

NonStop AutoSYNC to copy database files. In our case, we use it to copy huge intermediate files that are generated quickly and never updated again."

More important, BBS uses NonStop AutoSYNC to copy program source and object code to the backup system. "This is very important to us," asserted Green. "Without a product like NonStop AutoSYNC, every time you change a piece of code on the primary system, you would need to ensure that you change it on the backup system at the same time. If you don't, and you have a disaster where the backup system has to take over, you will inevitably have problems. Because you failed to update your code on the backup system, you basically have a second disaster as well."

BBS uses NonStop AutoSYNC to ensure that its source and object code, and a variety of other files, are kept synchronized between the primary and the backup systems. "We could have gone most of the way with NonStop AutoTMF and RDF, but we really wanted to replicate everything," noted Green. "This three-product solution—NonStop RDF, NonStop AutoTMF, and NonStop AutoSYNC software—has enabled us to build a 100 percent secure disaster recovery environment. We don't replicate just our data; we replicate our entire infrastructure. That's very important to us."

Bankenes BetalingsSentral headquarters in Norway.

BENCHMARKING SUPERIOR PERFORMANCE

In November 1998, BBS benchmarked the entire NIBE application on the NonStop S70000 server at HP's Advanced Technology Center (ATC) in Cupertino, California. As a result of that benchmark, the company migrated this mission-critical EFT application from the NonStop K-series to the NonStop S-series platform. "It was an excellent benchmark," recalled BBS technical manager John Green. "Some processes actually ran five times faster on the NonStop S-series than they did on the NonStop K-series servers."

In February 2001, BBS paid another visit to Cupertino. "This time, we wanted to benchmark the Waiting Register database that we had developed on the NonStop platform," said Green. "The numbers we got were absolutely superb, and we demonstrated the scalability and the extremely high performance that we could achieve with HP NonStop SQL database management software."

Green concluded: "The support we receive at the ATC is superb. They are a very professional group of people."

NONSTOP SYSTEM ADVANTAGES

Major financial institutions around the world have long valued the continuous availability and massive scalability of the NonStop platform—and BBS is no exception. "Availability is absolutely crucial to us," noted Green. "The loss of the NIBE system would have a catastrophic effect on the Norwegian banking world. These transactions have to be processed, and they have to be cleared; the effect of not clearing them would be extremely serious. It's the same with the EFTPOS (debit card) system. Interruption to that system on a busy Saturday just before Christmas would mean a huge monetary loss and great damage to our credibility. BBS relies on our good name within the industry to develop and grow our business. The continuous availability of the NonStop platform is a key element in the overall level of quality we provide."

Scalability is also crucial to BBS. "We have upgraded the eGiro and Bank-Axept systems many times," continued Green. "If you double the number of processors in a NonStop system, assuming the application has been written correctly, you get double the throughput. We've experienced this across all of the applications that we run on the NonStop platform. We've proved the scalability, and it's absolutely vital to us."

Green sleeps soundly at night with his company's mission-critical funds and message transfer applications running on the NonStop system and fully replicated with NonStop RDF, NonStop AutoTMF, and NonStop AutoSYNC software. "There is no other computer system in the world that has the availability and scalability for the price that we can buy a NonStop system," he concluded. "There's nothing else quite like the NonStop platform." ◆