Keeping Norway Healthy

Helse Midt-Norge IT (HEMIT) relies on HP Integrity NonStop systems to handle mission-critical patient data in the hospitals of Norway's central health region

HEMIT
HELSE MIDT-NORGE IT

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—Thore Smevik, project manager, HEMIT

HP customer case study
Helse Midt-Norge IT (HEMIT), the internal IT service provider for central Norway's eight hospitals, has relied on the continuously available HP NonStop platform for more than 20 years to handle its mission-critical patient administration and laboratory applications.

Industry
healthcare

Objective

Enhance the NonStop system's core value of continuous availability by implementing a disaster recovery system using NonStop RDF software

Approach

Following a comprehensive risk assessment by a third-party agency, HEMIT mirrored its HP Integrity NonStop NS16004 production system at a remote location and provided disaster recovery with NonStop RDF software for real-time replication of critical patient data

Technology improvements

- 24x7 availability of critical patient information
- NonStop RDF provides effective disaster recovery between mirrored HP Integrity NonStop NS16004 systems
- Full failover TCP/IP network extends redundancy beyond the computer room
- Modern application interfaces support many distributed applications via Web services
- NonStop RDF will also be used to reduce planned downtime for new application upgrades

Business outcomes

- Accurate and complete patient data for effective hospital operation and high-quality healthcare
- End users have confidence that the data will be available, even in the event of a catastrophe
- Central Norway health region continues to enhance the quality of patient care
- Users value the fast response of the NonStop system—no major performance problems in 22 years
- Increased standardization and performance improvement help drive down costs

Accurate and complete patient data is the bedrock foundation of a working hospital, and an absolute requirement for high-quality healthcare. The data must be available 24x7, and clinicians and administrators must be able to rely on it without question. This is why the dedicated employees of central Norway's eight hospitals have entrusted their mission-critical patient data to HP NonStop systems for more than 20 years.

Originally, every hospital in Norway's central health region had its own NonStop system. Starting in 1995, however, a massive rationalization effort got underway: The systems were consolidated into a single HP Integrity NonStop NS16004 platform, which now handles all patient administration (PAS) and laboratory systems (LAB) data for the region, using applications developed and maintained by Tieto Corporation.

In addition, a sweeping organizational change in 2002 brought information technology (IT) staff from the various hospitals together to form Helse Midt-Norge IT (HEMIT), the health region's internal IT service provider. Today, all hospitals in the central region share common IT systems and a common network.

Trust in the NonStop systems has always been high, but HEMIT continuously looks for ways to further enhance the services it provides to its end users. So the organization commissioned a comprehensive risk assessment in late 2007 and, based on the results, undertook an ambitious disaster recovery project for its NonStop system environment. Thore Smevik leads the project, which has already achieved a major

milestone: the replication of mission-critical patient data in less than one second to a remotely situated backup server. Takeover routines are currently in development and testing.

The risk assessment concluded with the fact that unplanned downtime of the NonStop systems could result in the risk of patient deaths. Furthermore, the hospitals would essentially stop functioning after three days, due to the large number of cancellations and rescheduling tasks, because there are not enough hospital employees to handle these tasks using a manual, paper-based system. "Since the hospitals in Norway are organized as public services, no one has calculated the cost of downtime per day or week," says Smevik. "But it is huge."

Enormous volume of information

Across central Norway, approximately 12,000 hospital-based PCs access the NonStop system to retrieve patient data. "Our healthcare employees must be assured that the valuable information they put into the system is secure, and that the system will be up and running all the time," says Smevik. "The stated goal for the disaster recovery project was 24x7 availability, even in the event of a catastrophe, with a full switchover recovery at the end-user level in less than 20 minutes. Our measurements show that we will meet this goal."

HEMIT chose HP's NonStop Remote Database Facility (NonStop RDF) software for its disaster recovery project for several reasons. NonStop RDF demonstrated superior functionality and was more cost-effective than comparable third-party software, plus it came from HP. "HP is very involved in this project, and we want them to be responsible for the complete installation," says Smevik. "It was part of our strategy to keep the number of vendors as low as possible, and HP was the obvious choice. Besides, we have an excellent relationship and high degree of trust in HP Norway." HP also provides 24x7 critical system support.

The amount of data handled by the NonStop systems is staggering. Every week, the hospitals in Norway's central region process approximately 2455 patients on an inpatient basis, plus 10,890 outpatient consultations. In the same time period there are 27,501 laboratory referrals and an astonishing 302,188 test samples. Some 85% of the regional population is represented in the database. And the data never goes away—new patient records are added daily to the enormous volume of information that has been collected over the past two decades. Today the online aggregated number of laboratory test samples exceeds 300 million, providing tremendous clinical value for quality treatment of the patients in the region.

The NonStop system statistics are equally impressive: 29,000 database files and SQL tables, 47,000 programs and configuration files, 7300 system and operating system files—all on one server with a footprint of 0.8 m x 1.6 m, and now backed up using NonStop RDF software. HEMIT's TCP/IP network, which connects the distributed PCs and hundreds of Windows® and UNIX® servers to the central NonStop system, is also completely redundant. Explains Smevik: "This is a full-failover, 100% external network in which everything is duplicated, all the way from the PC into the computer room in Trondheim."

No complaints

Continuous availability of critical patient data was the main reason the hospitals of Norway's central health region, including St. Olav's Hospital, selected the NonStop system in 1987 in a highly competitive bidding process; after all, if the system were to fail, the hospitals would immediately be thrown back on a cumbersome, paper-based manual process. But performance was also an important consideration, and here again the NonStop platform has proven its worth.

"As the NonStop platform has become progressively more modern and standard, the performance of our systems has increased by a factor of at least two or three with every new generation," says Smevik. "This, along with greater standardization, has been a key factor in helping HEMIT drive down costs. The NonStop system is also extremely cost-effective to manage, requiring very few staff resources. And because the NonStop applications do their job in a fast and reliable manner, with excellent response time, we have absolutely no complaints from our end-user community—even with the huge number of files, tables, and programs on the system. We have never had major performance problems in 22 years. People just rely on the system working, night and day."

The standard interfaces built into the PAS and LAB systems also make it possible for 40 other distributed systems across the region to leverage the centralized data store, using Web services and comForte CSL software. These programs include the heart of the system for the electronic medical record and the radiology system. Says Smevik: "The integration with other systems is very tight, thanks to the modern, open interfaces of the NonStop applications." GoldenGate replication software is used to offload transactions to other servers and data marts in the central health region.

Reducing planned downtime

An important side benefit of HEMIT's disaster recovery project is that, in addition to providing disaster recovery, NonStop RDF is expected to help reduce the planned downtime for new application upgrades. "Normally, an upgrade takes from 8 to 20 hours, because we have to take down all 20 laboratory applications and do the same work 20 times," says Smevik. "Using NonStop RDF, we can prepare the application upgrade on one system and make the switchover very quickly, reducing planned downtime for new versions from hours to minutes."

For HEMIT, the ongoing modernization of the NonStop platform has been pivotal in keeping costs under control, while the core value of the system—the 24x7 availability and absolute data integrity that the region's healthcare workers take for granted—has never changed. "We can rely on our patient data because it's on the NonStop platform," says Smevik. "Our end users are not interested in the technology for its own sake, but they certainly understand and appreciate the continuous availability and the fast, consistent response time the system provides."

With all critical physical data now replicated in real time, the value of NonStop technology at HEMIT is greater than ever. Concludes Smevik: "If I could sum it up on a high level: We can rely on the NonStop system to work all the time—period."

Customer solution at a glance

HEMIT's mission-critical patient administration and laboratory systems have run on the HP NonStop platform for more than 20 years

Primary applications
- Tieto patient administration and laboratory software
- comForte CSL software for client/server integration
- GoldenGate replication software for data dissemination to distributed systems

Primary hardware
- HP Integrity NonStop NS16004 Servers (production and backup)
- HP Integrity NonStop NS1004 Server (test and development)

Primary software
- Pathway
- HP NonStop Remote Database Facility (NonStop RDF)
- HP NonStop SQL

Services from HP
- 24x7 critical system support
- Implementation services

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