

Mission accomplished: Health information exchange

HP Integrity NonStop system and PDSG CDX software at the heart of successful NCHCI/State of Montana pilot



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National Center For
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HP customer case study: An ambitious pilot project for the State of Montana, headed by the National Center for Health Care Informatics (NCHCI), demonstrated the ability of PDSG CDX software running on the HP Integrity NonStop platform to successfully perform health information exchange.

Industry: Healthcare, public sector

Objective

To demonstrate that the HP-PDSG solution could enable health information exchange among disparate data sets quickly, easily, and cost-effectively

Approach

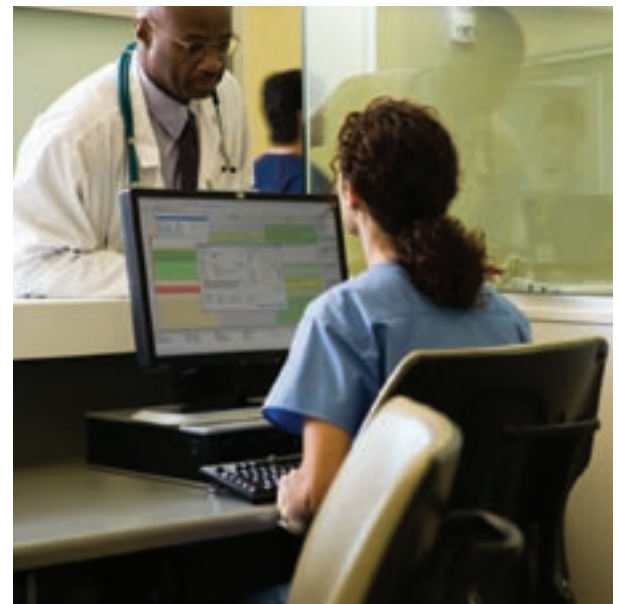
Source data was collected from four geographically dispersed Montana hospitals and fed through the HP-PDSG solution into the syndromic surveillance system at the Montana Department of Public Health and Human Services (DPHHS). The PDSG software, which complies with all relevant data-sharing and technology standards, normalized the data into the required format for the DPHHS system.

Business technology improvements

- PDSG CDX software aggregates and transforms data from a variety of sources and in multiple formats
- Highly scalable HP-PDSG solution at the core of hub-and-spoke architecture facilitates the addition of new hospitals, clinics, and other healthcare entities
- Faster, more effective exchange of clinical information
- Real-time capabilities support health information exchange, including continuity of care records

Business outcomes

- Implemented an operational health information exchange (HIE) for syndromic surveillance
- Demonstrated a solution that makes it easy, quick, and cost-effective to link data silos in hospitals, clinics, public health departments, and medical offices



- Took an important step toward realizing an effective HIE at the community, regional, statewide, and national levels
- Increased ability to track epidemics
- Enabled NCHCI to take a leadership position while adapting to changing forces in the healthcare industry

Epithets abound when it comes to describing America’s healthcare system. Despite progress in moving toward electronic medical records, the largely paper-based system is viewed as broken, dysfunctional, and riddled with inefficiencies. Critical patient data is trapped in isolated silos. Costs are spiraling out of control. Adequate healthcare is beyond the reach of more and more families.

“The ability to move in the direction of real-time data sharing for health information exchange is incredibly important. We need a system with this kind of capability, and the HP Integrity NonStop platform provides it.”

– Raymond Rogers, CEO, National Center for Health Care Informatics

Fortunately, powerful forces are at work to put the system right. One of these is the National Center for Health Care Informatics (NCHCI), which recently concluded a successful data-sharing pilot for the State of Montana using an HP Integrity NonStop server and Patriot Data Solutions Group (PDSG) DataExchange (CDX) software.

National architecture needed

NCHCI, a nonprofit U.S. organization, has a lofty mission: to improve the way in which data, information, and knowledge are managed within the healthcare industry, primarily through the enablement of health information technology. CEO Raymond Rogers helped draft legislation—now included in the American Recovery and Reinvestment Act of 2009—related to education for health information technology professionals. NCHCI has worked on projects of national significance and has an international reach as well, with ongoing work in Nigeria and Sierra Leone.

Closer to home, NCHCI is focused on improving the American healthcare system. “Our industry is undergoing significant transitions,” said CEO Rogers. “We continue to see an enormous escalation in costs, and we recognize that these incredibly high inflation rates are not sustainable. Something has to change. We must become more efficient in the way we do things. We must improve the quality, safety, and affordability of our healthcare system.”

There is reason for guarded optimism. More and more physicians have electronic medical record systems in place, and hospitals are getting better at implementing health information technology systems. But the enormous challenge of tying all the pieces together remains. “We need to create a national architecture that allows electronic health record information to be shared across myriad disparate systems,” said Rogers. “The pilot project we recently conducted helps move us in that direction.”

Proving the solution

The pilot, officially called the Montana Health Information Exchange Pilot Project, was designed to implement an operational health information exchange (HIE) for syndromic surveillance, which helps track epidemics and counter bioterrorism. An HP Integrity NonStop NS16000 system running PDSG CDX software, located in HP’s Advanced Technology Center, served as the hub of the HIE. The emergency room systems of four Montana hospitals provided raw source data; an existing syndromic surveillance program at the Montana Department of Public Health and Human Services (DPHHS) received the data, which had been aggregated and transformed by CDX. NCHCI acted as liaison and primary contact for HP, PDSG, DPHHS, and the hospitals; NCHCI also managed the overall project.

HP Services, in conjunction with PDSG, managed all technical aspects of the pilot. PDSG designed and developed the Medical Event Information Exchange Package Documentation (IEPD), which provided detailed specifications for the exchange of medical event information between the DPHHS repository and the hospital systems (e.g., data model, mapping templates, additional documentation, etc.) The IEPD, which defines how data is normalized in CDX, is an integral part of the CDX implementation methodology and is an essential service that PDSG provides along with the CDX software. It helps make the whole solution easy to use and reuse by all data-sharing partners for fast, affordable scaling of the HIE. HP Services did the mappings based on the PDSG IEPD, helped set up the data center, provided training, and much more. “It was very valuable to have the expertise and capabilities of HP Services and PDSG in implementing this project,” commented Rogers. “They were amazing to work with.”

Syndromic surveillance was selected as the project use case. It offered a well-defined set of data, and a target system was already in place at the DPHHS. The fact that the data was de-identified—that is, not linked to any specific patients—made it possible to reduce the complexity of the required data-sharing agreements. Additionally, PDSG had previous experience in this area.

But NCHCI's objective went well beyond demonstrating a syndromic surveillance capability. The healthcare industry is rife with different vendors providing health information technology solutions; as a result, critical patient data is often "siloeed" in hospitals, clinics, public health departments, medical offices, and elsewhere. The aim was to start developing a technology that makes it easy, quick, and inexpensive to link these data silos together. In this way, the dream of an effective HIE at the community, regional, statewide, and potentially even national level can be realized. According to Rogers, "Our goal with the pilot was to demonstrate the ability of the HP-PDSG solution to perform data exchange, and that's what we accomplished."

The right platform

The HP Integrity NonStop server offered the ideal platform for NCHCI's ambitious project. Considering the long-term direction of this effort—sharing patient clinical information in as close to real time as possible—it is clear that the underlying system must be highly reliable; downtime in this environment is unacceptable. If a patient checks into an emergency room, the healthcare provider requires immediate access to that patient's clinical records—and the provider needs to know that the system is dependable. These are potentially life-and-death scenarios, and the uptime of the system is paramount. That's why NCHCI chose NonStop technology, even though PDSG CDX runs on many different platforms. Continuous availability is a fundamental requirement for exchanging clinical information on a real-time basis.

Scalability, another hallmark of NonStop technology, is also critical in the HIE environment. The solution is essentially a hub-and-spoke arrangement, with PDSG CDX located in the middle as the hub. Every time a hospital or clinic is added, another spoke is inserted in the hub. The ability to scale rapidly as more and more data sets are added is essential. The massive scalability of the Integrity NonStop server makes it an excellent choice for this architecture.

The need for data integrity goes almost without saying. "You can't do health information exchange without guaranteeing data integrity," added Rogers.



"No hospital, no clinic, no public health entity will want to participate in an exchange if they have any question at all about the data integrity of the system." An effective HIE must guarantee that the data is safe, and that the network and environment meet all relevant rules and regulations. Bulletproof data integrity has long been a key fundamental of NonStop technology.

The real-time capabilities of the Integrity NonStop server are also pivotal. Hospitals operate 24x7. If an HIE is being used to share clinical data among healthcare facilities within a geographic area, all parties must be confident that requested information will be delivered in near real time, at any time of the day or night.

The concept of "continuity of care" records provides a good example. "The continuity of care record is being heralded as a great way to make a common set of patient data available to a provider at the point of care," Rogers explained. Created for each episode of care, it includes items such as major medical conditions, medications, allergies, and recent laboratory results. Clearly this shared data must represent the latest information if clinicians are to make the best possible decisions—but in today's paper-based system, records are not easily transportable and there is typically a delay in the information transfer. "The ability to move in the direction of real-time data sharing for health information exchange is incredibly important," said Rogers. "We need a system with this kind of capability, and the HP Integrity NonStop platform provides it."

Customer solution at a glance

Pilot program to demonstrate health information exchange using HP Integrity NonStop platform and PDSG CDX software

Primary application

- PDSG CDX application software

Primary hardware

- HP Integrity NonStop NS16000 platform

Primary software

- CDX software

HP Services

- HP Services managed all technical aspects of the pilot, including system design, data center setup, implementation and design documentation, and training

Looking ahead

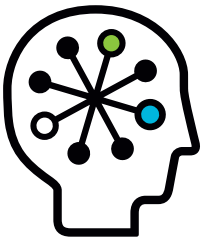
The Montana Health Information Exchange Pilot Project was a great success from a technical standpoint. “The most exciting outcome of the project is that the technology works very well, and it does what we set out to do,” said Rogers. “We know that this solution enables the exchange of health information among disparate data sets. Now we need to take it to the next level in terms of sharing much larger quantities of information, starting to share identified data, and adding many more data sources into the system.”

There are multiple possibilities for expanding the project. One way is to expand it horizontally, using the same data set but including many more healthcare facilities around the state of Montana. NCHCI also wants to expand the project vertically along the clinical data column, possibly including over-the-counter pharmaceutical sales. And, of course, this same HIE infrastructure—PDSG CDX running on the HP Integrity NonStop server—can be used to share many other types of data besides syndromic surveillance, such as electronic medical records.

Within the close-knit healthcare community, Rogers often has the opportunity to discuss new ideas in

health information exchange. “As I talk to colleagues around the state and the nation about our project, I say that this is a good solution for HIE,” affirmed Rogers. There are competing technologies, but NCHCI has demonstrated that the HP-PDSG solution does the job and works very quickly and cost-effectively. He continued, “I have been encouraging colleagues to identify additional use cases within healthcare facilities or networks. I believe the solution is ready to be implemented now in a number of different applications.”

For Rogers, the main benefit of the pilot was that it helped move healthcare toward an effective HIE environment. “This pilot was all about being adaptive to the changing forces within our healthcare industry, while taking a leadership position in setting future direction,” he concluded. The need to make healthcare more efficient and affordable—and to improve patient safety and quality of care—points to an electronically enabled system in which data is easily transportable among disparate healthcare entities. With PDSG CDX software on the HP Integrity NonStop platform, the NCHCI/State of Montana pilot shows the way forward.



Technology for better business outcomes

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