



Case Study

Intel® Xeon® Processor

Intel® Centrino® Duo

Mobile Technology

Healthcare/Government

ePrescribing

State Health Leaders

Intel® technologies, expertise help Tennessee build eHealth success

In the face of rising healthcare costs, tight budgets, and soaring levels of chronic disease, state governments are counting on healthcare IT (HIT) to improve the quality, cost, and efficiency of medical services delivered within their states. By streamlining paper-based procedures and giving providers up-to-date information at the point of care, states expect to stretch taxpayer dollars, increase clinician efficiency, and enhance their citizens' health.

One leader in state efforts to improve HIT adoption is Tennessee, whose governor, Phil Bredesen, co-chairs the National Governors Association's State Alliance for eHealth. Under Bredesen's leadership, Tennessee is moving toward an interoperable digital health environment across the state. Intel's Digital Health Group is one of many organizations working with the state to advance its eHealth initiatives, and Intel® processors anchor the technology foundation.

"Intel is with us in the trenches. It gives us insight and know-how about healthcare and the vertical industries, and it's very creative in working with our partners to help us accomplish our goals. It's a long-term player."

Antoine Agassi
Director and Chair
Governor's eHealth Council

Challenge


- **Urgent needs, complex issues.** From technology choices to stakeholders with competing interests, HIT-enabled transformation touches on complex issues. In a diverse state that ranks near the bottom of many health rankings, the challenges mount—but so does the importance of success.

Solution

- **Collaboration.** In 2006, Tennessee established the Governor's eHealth Council, bringing together top employers, providers, insurers, scholars, and others to identify win/win approaches.
- **Roadmap.** The state has mapped out a stairstep path to healthcare transformation, with broadband connectivity as an essential enabler, ePrescribing as a beachhead application, and an interoperable health information exchange (HIE) as an end point.
- **Technologies.** The Intel® Xeon® processor provides energy-efficient performance and scalability for the state's HIT infrastructure. In a pilot targeting rural physicians, physicians chose tablet computers based on Intel® Centrino® Duo mobile technology as the best match for their on-the-go workflows.

Assessing the Situation

Tennessee is known for economic and cultural centers like Memphis and Nashville, the beauty of its Blue Ridge Mountains, and the richness of its history. But as of 2005, it is also the 11th poorest state, and since poverty often goes hand-in-hand with poor health, Tennessee comes up short on many measures of health.



Rural physicians chose Intel® processor-based tablet PCs as the best fit for their workflows.

Things are starting to change. Tennessee has climbed from 48th to 46th in overall health rankings, and has dropped from first to second place nationally in the number of prescriptions per capita.¹ But the state's leaders will be the first to tell you there's tremendous room for improvement. They're betting that an interoperable HIT environment—along with other efforts the state is making—will help advance healthcare for all Tennesseans. The state has committed more than \$25 million over two years, along with more than \$15 million in federal funds, to accelerate eHealth deployment across the state.

"Creating an interoperable digital health environment is critical if we're going to improve the cost and quality of healthcare," says Antoine Agassi, who chairs the Governor's eHealth Council. "Our goal is that when you present yourself for care, your practitioners can look up your prior history and be supported by tools that help them make more informed decisions about how to care for you and make better use of their time with you. This is something we are passionate about. It's not just a job—it's a mission."

Two years after establishing its eHealth Council, Tennessee is making significant strides:

- The state has opened its broadband government network to healthcare providers and beefed up privacy and security strictures. The resulting high-speed eHealth Exchange Zone links providers in all 95 counties and enhances care by enabling them to share information for treatment and other allowed uses.
- Half the state's population is covered by an electronic health record, including 1.2 million people enrolled in TennCare, the state's managed-care Medicaid program.

- 1,250 physicians from 90 of the state's 95 counties are ePrescribing. The goal is to have 1,600 on board by the end of 2008, and adoption is running ahead of schedule.
- ePrescriptions rose 122 percent in 2006 and another 165 percent in 2007.
- Using the state's power as a buyer, state purchasing contracts now require the use of ePrescribing.

Delivering the Solution

Tennessee's leaders were quick to identify the need to build a culture of trust and collaboration. "Healthcare has run on inefficiency, self-interest, and lack of transparency," Agassi says. "To make the system more efficient and empower providers and consumers with information, you need to convince competing stakeholders to share their data."

Tennessee's approach was straightforward: bring the players to the table, focus on the benefits to be gained and the costs of failure, and hammer out win/win solutions. "It takes the best minds collaborating to solve the toughest challenges," Agassi says. "We're bringing together bright, committed people from government, universities,

Spotlight: State of Tennessee

Tennessee is the nation's 36th largest state by area. Its population of over 6.15 million people makes it the 17th most populous state, and its gross state product of \$243.8 billion in 2007 gives it the 19th largest US economy, according to U.S. Bureau of Economic Analysis.

TennCare, the state's expanded Medicaid managed care program, provides health coverage for 1.2 million Tennesseans, including 640,000 children.

1. Tennessee Medicine, April 2008.



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David Yakimischak
Executive Vice President and
Chief Technology Officer
SureScripts-RxHub

professional associations, employers, insurers, providers, small businesses, and more to help us navigate through this.”

Intel’s healthcare and IT experts have supported state leaders with knowledge and resources, including sharing best practices from other industries’ efforts to develop industry standards. Intel executives also discussed practical tools Intel has developed to assess the value of HIT investments.

“Intel is with us in the trenches,” says Agassi. “It gives us insight and know-how about healthcare and the vertical industries, and it’s very creative in working with our partners to help us accomplish our goals. It’s a long-term player, too. It isn’t just looking for the next quarter’s hit.”

Intel also joined with the American Academy of Family Physicians, SureScripts-RxHub, and others to co-found the Center for Improving Medication Management (CIMM).

Running the Pipeline

For its ePrescribing infrastructure, Tennessee utilizes the Pharmacy Health Information Exchange*, operated by SureScripts-RxHub. The exchange is a secure, standards-based ePrescribing network that runs on Intel® technologies. The network enables physicians and pharmacists to replace paper and fax communications, while informing physicians about their patients’ prescription histories and formulary recommendations.

Performance, reliability, and scalability are critical concerns for the network infrastructure. “We handle a large percentage of the nation’s ePrescriptions, and our growth plan calls for scaling well beyond 100 million prescriptions annually,” says David Yakimischak, executive vice president and chief technology officer. “We run our big back-end boxes flat out, and it’s unacceptable to have any issue or outage.”

SureScripts-RxHub runs the exchange through redundant data centers packed with IBM servers powered by Intel quad-core technology. “Why take a chance?” Yakimischak says. “We use Intel quad-core technology because the horsepower, scalability, and reliability are there for us. The multi-core processors are also more energy-efficient and take up less space than earlier

technologies, which is important in helping us expand as rapidly as we need to.”

Reaching Rural Physicians

Intel technologies are adding value in a pilot exploring rural physicians’ unique challenges when adopting technology. Launched by TennCare and Shared Health, the state’s largest public/private HIE, the pilot provides grants to 50 rural physicians in 10 counties for ePrescribing software, Internet connectivity, and a choice of a 17-inch LCD monitor for use with an existing computer or a Lenovo tablet PC based on high-performance Intel® Centrino® Duo processor technology. Forty-nine out of 50 physicians chose the tablet. Training and support were also included.

Tablets are well suited to the rural physician’s mobile work/lifestyle, says Brent Antony, CIO of TennCare. “Many of them work out of multiple offices and towns, and some even make house calls,” he comments. “They can take the tablet into their exam rooms and offices, and use it at home. It gives them a lot of flexibility.”

Antony says physicians typically use the tablet’s handwriting capability to take notes while they’re with the patient, and use the keyboard or check-off lists for ePrescribing. “Rural physicians are committed to their patients and eager for anything that can streamline their workflow and help them deliver better care,” says Antony. “With ePrescribing, they save time and are guided to optimal treatment faster. We notified physicians of the program, and within five days, more than half of them had expressed interest. Their feedback has been very positive.”

Key Technologies

Rural physician pilot

- Lenovo ThinkPad* tablets with Intel® Centrino® Duo mobile technology
- Shared Health information exchange

At SureScripts-RxHub

- IBM xSeries* servers based on the Intel® Xeon® processor with quad-core technology
- Microsoft Windows 2003* operating system
- Microsoft SQL Server 2005*
- Hitachi storage area network

A Huge Win

When Governor Bredesen delivered the keynote address at the Healthcare Information and Management Systems Society (HIMSS) national conference in 2007, he observed that ePrescribing is a great starting point for HIT adoption because it is conceptually simple, offers meaningful improvements in healthcare's cost and quality, and touches nearly all physicians and patients. Yet, he said, "It raises and requires practical solutions for many of the issues...and forces us to confront the challenges of widespread adoption."²

At SureScripts-RxHub, Director of Business Development Todd Hardman works with leaders of many state governments, and he lauds Tennessee's efforts to resolve those challenges. "Tennessee is taking a very systematic approach to creating an interoperable environment and a level playing field," he says. "As they get to critical mass in terms of adoption, they're in line to improve healthcare's quality, safety, cost, and efficiency. That's the Holy Grail—and a huge win for the state and its people."

Agassi is equally excited. "As you get the technologies in place, people start to see the benefits and the culture starts to shift," he says. "When that happens, the sky's the limit."

Find a solution that is right for your healthcare system.

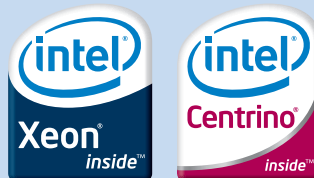
Contact your Intel representative, or visit Intel's Digital Health Web site at: <http://www.intel.com/healthcare/>



Return on Investment

Tennessee is moving toward an environment of interoperable healthcare technologies that state health leaders say can benefit all stakeholders:

- **Physicians** have more comprehensive information to help them optimize treatment plans and coordinate with the patient's extended care team. They save time and can use patient visits more effectively.
- **Pharmacists** reduce or eliminate the need for phone calls and faxes and can devote more time to patient consultations.
- **Patients** experience more coordinated and efficient care with a lower risk of drug interactions and prescription errors.
- **Insurers** reduce administrative expenses and cut costs related to medication errors.
- **The state** makes the most of its human and fiscal resources and helps improve its citizens' health. This can enhance quality of life and make the state a more attractive target for growth and investment.



2. Excerpted in Tennessee eHealth Advisory Council Annual Report and Analysis 2007.

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0808/TC/CMD/XX/PDF 320384-001 US

