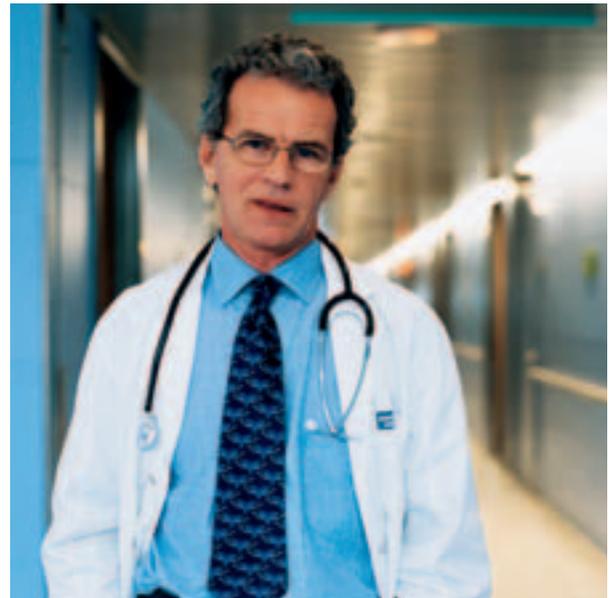


Capital Region Orthopaedic Group standardizes on HP technology in transformation to digital medical practice

change
+ hp

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—Ray DeCrescente, Chief Technology Officer, Capital Region Orthopaedic Group



Solutions for the adaptive enterprise.



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— Ray DeCrescente, Chief Technology Officer,
Capital Region Orthopaedic Group

Capital Region Orthopaedic Group is an 18-physician practice based in Albany, N.Y. that provides care for a variety of musculoskeletal problems. Its members handle nearly 90,000 office visits each year and upwards of 5,000 surgical cases.

What distinguishes the Capital Region Orthopaedic Group from similar practices is its vision of a digital information backbone to replace paper charts and film-based x-rays, with the goal of improving efficiency and patient care. Faced with the challenge of integrating practice management, electronic medical records, digital x-ray and an ambulatory surgery center into a seamless system, Capital Region Orthopaedics knew that individual components from multiple vendors was an incredible challenge. So it came to HP for a single-vendor solution and IT partner responsible to make the vision a reality.

“I wanted a vendor that could provide the whole range of systems, design the solution and support it so that all of the equipment would fit and work together. HP was clearly that choice,” said Ray DeCrescente, Chief Technology Officer for the practice. Today, Capital Region Orthopaedics has implemented much of its vision with HP ProLiant blade servers, an HP Storage Area Network and other hardware components, along with HP Care Pack support.

Choosing a single-vendor strategy

The process began when Capital Region Orthopaedics began discussions with salesmen for a Practice Management solution and digital PACS (Picture Archiving and Communications System). The salesmen came back with system specifications that involved multiple hardware vendors and a complex architecture. And that was only part of the digital office that CROG ultimately wanted to implement.

DeCrescente decided there had to be a better way. He initiated discussions with HP, laying out the entire vision of the digital practice. An HP solutions architect worked with him to design a standards-based IT infrastructure that would support the entire program.

“When we started, we were facing a complicated architecture from many vendors. Then we put it in the hands of HP. The total solution designed by HP was so clear in its sheer simplicity,” he said. The resulting system includes industry-standard architectures and reusable components to enable multiple software vendors to work together; scalability to ensure plenty of room for future growth and, perhaps most important to the physicians, redundancy for high availability and instant failover.

Emphasis on high system availability

“We recognized early on that we could not allow our whole practice to become dependent on a single server,” explained Dr. David Quinn, an orthopedic surgeon with the group since 1991. “HP designed a system where all the applications are being run simultaneously across multiple servers, each of which is instantaneously updating the others so that if one goes down, the others can pick up the workload immediately.”

Quinn likens the single-server strategy being implemented in many physician practices to buying a new car but leaving out the spare tire. “Everything is great as long as you don’t have a flat,” he says. “I believe that practices that are not employing a solution like what HP has designed for us are taking a huge risk.”

The system at Capital Region Orthopaedic Group employs standards-based HP ProLiant BL20 blade servers for individual applications, and BL40 blade servers for database applications. Both lend themselves to load balancing and clustering. They are also hot swappable and self-healing. “When one server goes down, we can bring another into production in minutes to take its place,” DeCrescente says.

At a glance

Organization: Capital Region Orthopaedic Group / Capital Region Ambulatory Surgery Center

Headquarters: Albany, N.Y.

Founded: 1959 (Practice)
2000 (ASC)

Employees: 150

Phone: 518-489-2666

URL: www.caportho.com /
www.crasconline.com

Services: Capital Region Orthopaedic Group is an 18-physician practice based in Albany, N.Y. Its three-part mission includes (1) a quality experience of quality patient care, (2) teaching and education, and (3) creation of partnerships between and among practices within the Capital Region Bone & Joint Center, educational institutions, professional organizations, and corporations. Its members are striving for Capital Region Orthopaedic Group to become a Center of Excellence for musculoskeletal care recognized locally, regionally, nationally and globally.

Enabling the Electronic Medical Record (EMR)

Another successful component of the Capital Region Orthopaedic vision is the move to an all-electronic medical record (EMR) through consistent implementation. Rather than depending on paper charts, physicians electronically access a patient's record — including everything from patient history and recent exam notes to digital x-ray images.

"We wanted to move from paper charts to a system where everything can be digitally and electronically organized, with electronic communication both inside and outside this building," DeCrescente explained. Even when they go home for the evening, physicians will have access to electronic medical records from their home PCs over a Virtual Private Network.

The result: a more organized practice in which physicians have the information they need immediately, clerical staff members no longer spend hours each day searching for missing papers, and patients spend less time waiting. In fact, the entire encounter with patients — from scheduling visits to ordering x-rays, writing and faxing out prescriptions — will be managed wirelessly.

Storing and accessing digital x-rays

One of the most challenging pieces of the digital puzzle at Capital Region Orthopaedics is supporting the PACS application. As part of its move into a new building, the Bone and Joint Center, the practice decided to install digital x-ray equipment. Images are available as digital files moments after they are captured. And with a digital PACS, they can be accessed anywhere at a computer monitor, sent to a referring physician, and treated like any other digital document.

Size poses a problem, however. Each digital x-ray comprises several megabytes of data — and Capital Region Orthopaedics produces thousands each year. To support the PACS application, HP and DeCrescente implemented a storage area network (SAN), based on the HP StorageWorks Enterprise Virtual Array 5000 (EVA5000), which is connected by HP SAN switches to the always reliable ProLiant blade servers. The EVA5000 virtualizes storage on the network, which enables allocation of storage capacity to the servers that need it. It also improves file/data accessibility for the staff. In fact, the SAN can be scaled up to 12 terabytes — providing instantaneous access to the past year's images. For some

of the ProLiant servers, a network attached storage (NAS) solution was implemented, based on the HP StorageWorks NAS B3000 system. By fusing together the HP NAS and SAN, Capital Orthopedics gets an optimal blend of price and performance.

"Both the HP ProLiant blade server systems and the EVA5000-based SAN are basically in a cabinet architecture that allow us to add servers and storage dynamically, in order to accommodate any future needs of the organization as it grows," said DeCrescente. Storage is backed up using a high-speed HP Super DLT tape library and Veritas data protection software.

The system architecture at Capital Ortho includes a subnet to support the huge volume of x-ray data without compromising network efficiency for other applications. "We decided to split the network traffic for the x-ray acquisition equipment so the x-ray data would stay on its own subnet away from the production network traffic," DeCrescente said.

"That's a good example of how HP engineers went beyond what the original vendors specified to improve the original design and develop a better solution," DeCrescente added. "We had a team of people to help us transform into a completely digital medical operation poised for the future. I'm convinced this level of support would only come from HP."



Challenge

- Transition to all-digital physician practice including PACS, Electronic Medical Records, and Practice Management
- Design IT architecture to accommodate current needs and future growth
- Accommodate data storage needs
- Ensure high availability

Solution

- HP ProLiant BL20 and BL40 blade servers
- HP ProLiant DL 380 server
- HP StorageWorks Enterprise Virtual Array (EVA5000) storage system
- HP StorageWorks MSL5052S2 tape library, with Super SDLT tape drives
- HP CarePak warranty
- HP StorageWorks NAS B3000
- HP StorageWorks Fibre Channel Hard Disk Drives
- HP StorageWorks SAN Switches

Results

- Optimum system architecture design for reliability and productivity
- Electronic storage and management of patient records for easy accessibility
- Industry-standard architecture, reusable components, and consistent implementation for efficiency, manageability and high availability
- Improved backup and recovery performance HP MSL5052S2 tape library, which contains Super SDLT tape drives
- Virtualized storage in a SAN that allows for data accessibility and storage allocation to ProLiant servers
- ProLiant servers are backed up on a NAS, so the storage functions are taking place on a separate network. This provides tremendous data transfer speeds and does not bog down the main network during data transfers

Modular design for long-term flexibility

An important reason for pursuing the modular system design at Capital Region Orthopaedics is the rapid change in medical software products and related systems from one year to the next. "Our HP systems allow us to plug in various digital radiography vendors, computerized radiography vendors, our MRI unit, the surgery center, the practice management module — whatever we need,"

DeCrescente said. "We're not beholden to a particular software application, and we can change or upgrade at any time.

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