

## Corrections Corporation of America

### Locking Up Datacenter Availability with the Help of Symantec Technology and Services

IT operations are a business-critical enterprise for Corrections Corporation of America (CCA), which has responsibility for the welfare of more than 65,000 inmates in facilities across the United States. In order to meet the quality-of-service requirements that this endeavor entails, CCA standardized its software infrastructure on datacenter availability and data protection solutions from Symantec. With evolution of its IT infrastructure reaching completion, CCA is achieving tangible results, including a 100 percent return on investment (ROI) for its data protection deployment and a 35 percent improvement in datacenter IT staff productivity. Consulting, education, and technical support from Symantec Global Services are also playing a key role at CCA, which is achieving 99.999 percent system availability.

#### Company Profile

The Corrections Corporation of America specializes in the design, building, and management of prisons, jails, and detention facilities and in providing inmate residential and prisoner transportation services in partnership with government.

#### Industry

Business Services

#### Solution

- Storage Automation
- Datacenter Availability
- Data Protection
- Performance Management
- Security

#### Constantly improving business processes is CCA's competitive edge

When it was founded in 1983, the Corrections Corporation of America (CCA) literally invented the private corrections industry. From a single contract to build and manage a correctional facility in Houston, Texas, CCA has grown to be the sixth largest corrections system in the country, behind the federal government and four states. Its 16,000 professionals operate 65 facilities with more than 65,000 inmates.

With the range of services that CCA must offer to its inmate population and employees, from utilities and food to healthcare and inmate banking, the company's management faces a task not unlike that of running a medium-sized city. Not surprisingly, CCA's rapid growth over the years has required a constant rethinking of the IT support infrastructure underpinning all these services. As Brad Wood, senior director of technology operations for CCA, describes it: "We have to continue to improve our internal processes to grow our business. CCA takes a fresh approach to the age-old problems of corrections, and that's why governments turn to us as an alternative to running their own systems. Our ability to innovate is vital to maintaining our competitive edge."

Wood describes some of the problems he faced when he joined CCA in 2003: "Most of our business processes were cumbersome and paper intensive. Everything required a form; we had over 5,000 throughout the company. Take procurement, for example—to order a PC required filling out a requisition and sending it around for no less than eight separate approvals. It could take up to 12 weeks to fill the order, and the form could be lost or misplaced, starting the clock all over again."

**"Because Symantec collaborates so closely with my other strategic vendors—Microsoft, Oracle, and Sun—we minimize our risk and deploy solutions faster."**

#### Brad Wood

Sr. Director of Technology  
Operations  
Corrections Corporation of  
America

Symantec datacenter availability solutions provide 99.999 percent uptime for critical applications while centralizing and streamlining IT infrastructure administration for Corrections Corporation of America.

Other areas of CCA's business processes needed streamlining and upgrading as well. "Our core operational activity is managing the inmate population," explains Wood. "We have to know everything about each of our 65,000 inmates at all times. We have to track their entire health histories, every medical procedure they receive, every pill they take. We have to keep track of the individual bank accounts that inmates use to buy snacks and sundries. Running all these things with a paper-based system required a lot of people, driving up our costs and siphoning resources away from inmate-related activities." In 2003, the mandate went out to convert CCA to a highly automated, paperless enterprise.

### Enterprise applications drive need to upgrade infrastructure

Wood identified the infrastructure applications that would best meet CCA's needs. He recommended Citrix Metaframe Presentation Server 4.0 and Oracle 10g database as the best software platform to support a full-featured inmate management application. After examining a number of possible vendors including McKesson and Cerner, Wood tapped Allscripts Healthcare to customize its Touchworks application to manage CCA's inmate healthcare system. Finally, for general enterprise activities such as finance and human resources, Wood uses Oracle JD Edwards Enterprise One.

"When I presented my proposal for the new infrastructure and explained what they would do for CCA's business processes and applications, my management was all smiles," remembers Wood. "Then I gave them the bad news: Our server and storage infrastructure would have to be completely overhauled to enable the deployment of these applications. The smiles quickly went away."

As a prerequisite to deploying the new applications, Wood recommended infrastructure consolida-

tion—that is, moving away from CCA's existing distributed architecture to a centralized model. At that time, CCA had servers and storage dispersed throughout the country at a number of locations. The CCA architecture consisted of 10 HP servers running Microsoft Windows Server and Novell NetWare as well as a Sun Fire V880 server and two Sun Fire V280 servers running the Solaris Operating System. At the time, CCA managed its storage environment—consisting of 2.5 terabytes—on a Hitachi Data Systems Freedom 770 system, with a file server at each facility comprising 3.5 terabytes of direct attached storage.

A related recommendation was to improve the resiliency and reliability of the infrastructure. "I was concerned about our ability to keep CCA's business going in case of a natural disaster or human or software error," Wood explains. "Any service outage not only threatens the well-being of the inmate population but can also subject the company to contractual and civil penalties." Weighing the substantial benefits of the new applications against the costs of revamping the infrastructure, CCA's management gave Wood the go-ahead for a multi-phased infrastructure upgrade (see table below).

## CCA INFRASTRUCTURE UPGRADE PLAN

PHASE	GOAL	START	FINISH	SYMANTEC PRODUCTS AND SERVICES
One	Upgrade backup and restore capability	July 2003	November 2003	<ul style="list-style-type: none"> <li>Veritas NetBackup Enterprise Server with:               <ul style="list-style-type: none"> <li>Microsoft SQL Server agent</li> <li>Oracle agent</li> <li>Shared Storage Option</li> </ul> </li> </ul>
Two	Design, build and migrate to new primary data center for high availability and resiliency	January 2004	April 2004	<ul style="list-style-type: none"> <li>Veritas Consulting, Server and Storage Management Practice</li> <li>Veritas Storage Foundation</li> <li>Veritas Cluster Server</li> <li>Storage Foundation FlashSnap Option</li> </ul>
Three	Deploy comprehensive business continuity capability	November 2004	February 2005	<ul style="list-style-type: none"> <li>Veritas Consulting, Server and Storage Management Practice</li> <li>Veritas Volume Replicator</li> <li>Veritas Cluster Server Global Cluster Option</li> </ul>
Four	Consolidate infrastructure to decrease total cost of ownership	October 2005	Estimated August 2006	<ul style="list-style-type: none"> <li>Veritas Storage Foundation for Microsoft Exchange Server</li> <li>Veritas Cluster Server Global Cluster Option</li> <li>Symantec AntiVirus Enterprise Edition</li> </ul>

## Symantec fills need for reliable data protection

Wood chose a well-defined problem for Phase One, CCA's backup and restore system. "By starting with backup and restore, we could work out our internal IT processes for managing the change as well as establish vendor relationships that we could leverage for the more complex phases," he says. The company's existing solution, Computer Associates' ARCserve, was plagued by lengthy backups, which could take up to 36 hours, and unreliable restores. So Wood turned to Symantec Corporation (formerly VERITAS Software) for help. "I've used Veritas products from Symantec for many years, so I trust them to work," says Wood. "And they have strong relationships with my other strategic vendors—Sun, Oracle, and Microsoft—which eases the integration process."

For the main backup solution, CCA opted for Veritas NetBackup™ Enterprise Server software based on its ease of use and reliability. "NetBackup centralizes administration so that we can manage backups across all the servers in the data center from a single console," explains Wood. "That not only reduces staff time but also helps us shorten our backup windows, as we can restart failed jobs faster." He also chose NetBackup Shared Storage Option, which allows CCA's single Sun StorageTek SL500 tape library to be shared over the SAN by all the servers, maximizing the tape library's value. To improve the performance of backing up CCA's databases, Wood chose Veritas NetBackup *for Oracle* software and Veritas NetBackup *for Microsoft SQL Server* software. These solutions allow NetBackup software to perform live backups of the Oracle and Microsoft SQL databases, as well as enhance the reliability of both backups and restores.

## SOLUTION AT A GLANCE

### Business Drivers

- Automate business processes and supply chain for greater operational efficiency
- Provide all support services for 65,000 inmates at 65 facilities with no interruption
- Minimize business risks of catastrophic data loss
- Push beyond business continuity to business resilience

### Technology Challenges

- Build resilient infrastructure that is easy and inexpensive to manage
- Support heterogeneous hardware and software environment
- Meet aggressive recovery point objective (RPO) and recovery time objective (RTO) targets
- Centralize storage resources and administration
- Establish disaster recovery site with continuous updates and automatic failover

### Solution

- Consolidation and upgrade of IT infrastructure supporting business-critical applications and data for 65 correctional facilities

### Symantec Products

- Veritas Cluster Server
- Veritas NetBackup™ Enterprise Server with Shared Storage Option
- Veritas NetBackup *for Oracle*
- Veritas NetBackup *for Microsoft SQL Server*
- Veritas Storage Foundation™ with Global Cluster Option and FlashSnap™ Option
- Veritas Storage Foundation *for Oracle RAC*
- Veritas Storage Foundation *for Linux*
- Veritas Storage Foundation *for Microsoft SQL Server*
- Veritas Volume Replicator™
- Symantec AntiVirus Enterprise Edition

### Technology Environment

- Server Platform: Sun and HP servers running HP-UX and the Solaris 10 Operating System; HP ProLiant DL 380 servers running Microsoft Windows Server; HP ProLiant x64 servers running SUSE Linux
- Databases: Oracle 10g, Microsoft SQL Server
- Applications: Allscripts Touchworks, Oracle JD Edwards EnterpriseOne 8.11, Oracle Database10g, Oracle Real Application Clusters, Oracle Application Server, Kronos Workforce Central
- Storage Platform: Hitachi Data Systems Lightning V9900 and Thunder V9500 storage systems; Sun StorageTek SL500 tape library; Brocade SilkWorm FC 64100 and 12000 switches (150 connections)

### Symantec Services

- Veritas Consulting
- Symantec Education Services
- Veritas Business Critical Services

### Symantec Partners

- Oracle Corporation
- Sun Microsystems, Inc.
- Microsoft Corporation

**“If you are truly serious about business continuity and if you are truly serious about getting the most from your infrastructure investment, you must have Veritas Business Critical Services.”**

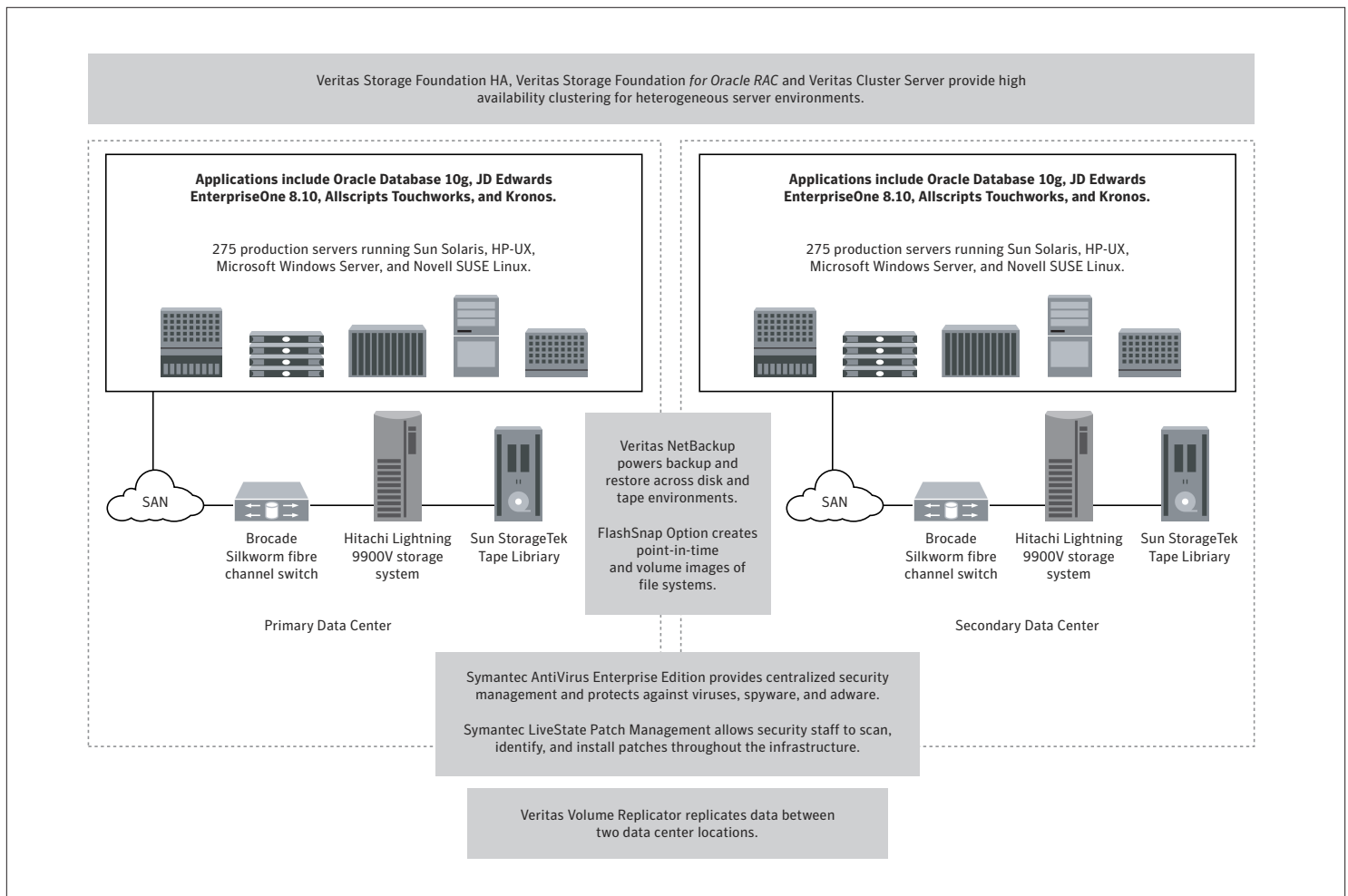
**Brad Wood**

Sr. Director of Technology Operations  
**Corrections Corporation of America**

Phase One was an unqualified success, according to Wood: “With the Symantec data protection solution, we have shrunk our backup window from 36 hours to 6 hours, an 83 percent improvement. In addition, centralizing the backup administration saved 12 hours a week in technician time, helping keep staffing costs low.” Wood also notes how well the Symantec solution has scaled: “It has easily accommodated our 100 percent annual growth in data to its current size of 100 terabytes with no increase in backup staff.” Overall, the Symantec-powered data protection system reduced CCA’s total cost of ownership (TCO) by an estimated 25 percent. When all of the productivity improvements and cost savings are calculated, CCA achieved 100 percent return on its investment in 12 months.

**From parking lot to data center in 36 days**

In 2004, just as his group was completing Phase One, an incident underscored Wood’s concern about the company’s resiliency. A local power outage caused a switchover to the backup power system, which also failed, taking the entire data center down for 8 hours. While this outage did not affect the security status of the prison facilities, it rendered vital enterprise applications such as email unavailable, an unacceptable situation for CCA. That incident spurred Phase Two, the migration to a new, more modern data center in Nashville. Wood called his primary vendors together—Symantec, Oracle, Microsoft, and Sun—to help CCA design the new facility. “We got in a big conference room and designed our dream facility,” says Wood. “Everyone worked well



together to come up with a joint solution. Because Symantec collaborates so closely with my other strategic vendors—Microsoft, Oracle, and Sun—we minimize our risk and deploy solutions faster. In fact, the new data center was built and operational in just 36 days, thanks in part to the migration plan worked out by Symantec and CCA's other vendors.

The CCA primary data center has a total of 275 production servers running four operating systems, including two UNIX variants (Sun Solaris 10 and HP-UX), Microsoft Windows Server, and SUSE Linux. The primary data center uses a storage area network (SAN) based on Hitachi Data Systems Lightning V9900 and Thunder V9500 storage systems with 150 connections to the server environment using two Brocade SilkWorm FC 12000 and 64100 switches, with total aggregate storage capacity of 100 terabytes. For offline storage, CCA uses a Sun StorageTek SL500 tape library.

#### Going beyond four 9's availability

One vital requirement for CCA's infrastructure is 99.999 percent availability, which means no more than five minutes of downtime a year. To support this stringent requirement, CCA deployed a clustered architecture in the primary data center based on Veritas Storage Foundation and Cluster Server software.

In a 24x7 environment such as CCA's, there is no good time to stop an application for backups. Accordingly, Wood selected the FlashSnap™ Option of Veritas Storage Foundation software to address this issue. FlashSnap creates images of file systems and volumes that Veritas NetBackup software uses to perform backups without impacting application performance. As an additional bonus, CCA storage administrators can access these point-in-time images directly from the NetBackup

console to perform fast restores directly from disk, eliminating the need to reload tapes in many cases.

The Oracle databases supporting the Oracle JD Edwards ERP system and other applications are deployed on a two-node cluster made up of Sun Fire 12K and E2900 servers running the Solaris 10 Operating System. Microsoft SQL Server databases used by the AllScripts application run on HP ProLiant DL 380 servers running Microsoft Windows Server in a three-node cluster in Nashville. At its secondary data center site, CCA has a two-node cluster of HP ProLiant DL 380 servers running Microsoft Windows Server. Using this configuration and Veritas Storage Foundation and Cluster Server, Wood's group has exceeded the availability targets set by CCA's management, reaching a level of 99.999 percent.

"We have a heterogeneous environment with servers running Sun Solaris and Microsoft Windows Server operating systems," explains Wood. "Standardizing on Veritas Storage Foundation and Cluster Server software gives us a single set of tools that anyone can use anywhere in the datacenter, increasing the productivity of our IT staff by at least 35 percent. Since we only have to train our people to use one product, not three, as was the case previously, Storage Foundation and Cluster Server software reduces training expenses between \$10,000 and \$20,000 annually." The various productivity, cost, and operational efficiency savings contributed to an estimated 100 percent return on investment between 12 months and 18 months.

#### Ensuring business continuity in any eventuality

With the new primary data center fully operational and achieving its availability goals, Wood launched

**"We plan to move from business continuity to a much broader concept of business resiliency by wrapping a security layer around the whole computing environment. The combination of technologies from Symantec and Veritas promises to help us get there faster."**

**Brad Wood**

Sr. Director of Technology Operations  
Corrections Corporation of America

**“I wouldn’t attempt to carry out such a major infrastructure project without Veritas Consulting.”**

**Brad Wood**

Sr. Director of Technology Operations  
Corrections Corporation of America

Phase Three, business continuity. His management had established specific targets: a recovery point objective (RPO) of 30 minutes and a recovery time objective (RTO) of 15 minutes. CCA has a facility in Nashville and a secondary data center facility on a separate power grid and dedicated SONET ring. A dedicated wide area network (WAN) connects the two sites with two OC-12 lines.

What was needed was a reliable, efficient way to automate and control the replication of data between the sites. For that purpose, Wood chose Veritas Volume Replicator™ software based on its ease of management. The Business Continuity Management Practice from Veritas Consulting worked side-by-side with CCA staff to install and configure the Veritas Volume Replicator software, speeding the time to deployment by an estimated 60 percent and helping to ensure smooth integration into CCA’s infrastructure and business processes. Veritas Volume Replicator software mirrors data continually between the two sites, transmitting as much as two to five terabytes a day.

Wood chose the Global Cluster Option of Veritas Cluster Server software to manage failover in the event of an outage. To switch to the secondary site requires a single mouse click. The Global Cluster Option also centralizes infrastructure administration, reducing the amount of time that his technicians spend monitoring the system and providing a global view of all replication and cluster operations.

Assessing the performance of the business continuity system, Wood points out that the Symantec solution has exceeded its goals. “Network latency is almost nonexistent, ensuring an RPO of less than one second, easily exceeding the target of 30 minutes,” explains Wood. “To test our recovery time, we

simulate a failure at the primary site and bring up our key applications at the continuity site. We always have them running within our target of 15 minutes, usually much sooner.”

**Veritas Business Critical Services: indispensable for CCA**

“If you are truly serious about business continuity and if you are truly serious about getting the most from your infrastructure investment, you have to have Veritas Business Critical Services,” says Wood. “Symantec dedicates a team consisting of a Business Critical Services account manager and a support engineer. These support professionals are experts on the entire IT infrastructure and business applications, not just the Symantec pieces. I can call my Business Critical Account Manager with any problem, from storage to application, and he gets it resolved. Other vendors provide technical support for their own products, but Symantec puts skin in the game. They invest in our success, and that’s why we stay with them. Going with Business Critical Services is the best money I’ve spent yet.” Wood also appreciates the quarterly evaluations with his Business Critical Services team that help identify potential future problems before they occur, ensuring CCA’s extremely high application availability.

**School’s always in session at Symantec**

He is equally enthusiastic about Symantec Education Services, citing it as a major cost and time saver: “The better our engineers understand the Symantec software and how it can be used, the more value we get from our investment. Symantec Education Services’ instructors have hands-on knowledge with their products, so our people get the best possible training.” At present, CCA has bought unlimited passes for three of Wood’s staff, including two infra-

## BUSINESS VALUE AND TECHNICAL BENEFITS

### Return on Investment

- 100% ROI on backup solution in 18 months
- 100% ROI on storage management solution in estimated 12 to 18 months

### Cost Reduction

- 25% reduction in total cost of ownership (TCO) for storage infrastructure
- Up to \$2 million in savings by centralizing on Microsoft-based direct user interface software platform

### Productivity

- 12 hours of technician time saved per week due to centralized administration of backups
- 35% increase in staff productivity due to standardized storage management tools

### Scalability

- 100% annual growth in data, currently at 100 terabytes, accommodated with no increase in backup staff

### Operational Efficiency

- 83% decrease in backup window—from 36 hours to 6 hours

### Availability

- Currently sustaining 99.999% availability for healthcare management and other business-critical applications

### Cost Avoidance

- Between \$10,000 and \$20,000 in annual training expenses avoided through standardized storage management tools

### Recoverability

- Subsecond recovery point objective (RPO) achieved, far exceeding 30 minute target
- 15 minute recovery time objective (RTO) target achieved

### Time to Deployment

- 60% faster time to deployment for data replication solution based on Veritas Volume Replicator with the help of Veritas Consulting Business Continuity Management Practice
- As much as 80% faster learning curve for new products with training from Symantec Education Services

**“The better our engineers understand the Symantec software and how it can be used, the more value we get from our investment. Symantec Education Services’ instructors have hands-on knowledge with their products, so our people get the best possible training.”**

**Brad Wood**

Sr. Director of Technology Operations  
Corrections Corporation of America

structure engineers and a database administrator. CCA is getting a good return on that investment: One engineer has taken more than 15 Symantec Education Services courses. Overall, Wood estimates that investments in training is cutting new product learning curves by as much as 80 percent.

Along with its first purchase of Symantec software, CCA called on several kinds of assistance from Veritas Consulting (now part of Symantec Global Services). Veritas consultants from the Server and Storage Management Practice helped design the high availability data-center architecture for CCA’s Oracle environment running on Sun Solaris-based servers. Consultants from the

Server and Storage Management Practice are currently auditing the end-to-end performance of CCA's critical applications, looking for improvements at all tiers of the infrastructure. "I wouldn't attempt to carry out such a major infrastructure project without Veritas Consulting," remarks Wood.

### Symantec transforms CCA's business processes

Wood assesses the impact of the revamped infrastructure, and Symantec's role in it: "In the final analysis, changing our infrastructure has transformed our business. Take our inmate management system. With the new RFID tags and the Citrix system, CCA has more accurate and up-to-date information on inmate locations. That means our guards can focus more of their attention on inmates rather than paperwork, improving the quality and security of our services.

"We've made the same kind of impact on healthcare," he continues. "We've shortened intake cycles and provided care professionals with up-to-date records on inmate medical histories to improve the quality of care. And the 12 weeks it took to get a PC ordered and installed is down to 12 days, and I'm still not satisfied; I'm shooting for 12 hours."

"Symantec has been there every step of the way," he adds, "from planning and implementation to the support and advice they continue to provide to this day. We would not have been able to achieve these remarkable improvements without Symantec."

### Looking ahead to Linux and standardization on Microsoft

With the new datacenter availability infrastructure in place, including the improved business continuity plan, Wood has ambitious plans for CCA's infrastructure. Asked about his next

major project, he responds with a single word: "Linux." To increase security and save on server costs, CCA has launched a major initiative to migrate applications to Linux-based clusters running on HP ProLiant x64 servers running SUSE Linux. Wood is starting with the Kronos time and accounting system running on Oracle RAC. Because this application needs extremely high availability, Wood has designed an eight-node system using Veritas Storage Foundation for Linux and Storage Foundation for Oracle RAC software as the clustering and storage automation technology. "It's a major plus for us that Veritas Storage Foundation software works so well with Linux," says Wood. "As we transition more of our IT infrastructure to Linux-based servers, we can continue to reap the benefits of standardization and automation of our storage management."

As a Microsoft early adopter, CCA is always looking for ways to leverage new Microsoft technologies as they become available. Wood is particularly happy that Veritas works so closely with its business partner Microsoft to ensure compatibility for upcoming product releases. "We plan to deploy Microsoft SQL Server 2005 as soon as we can get our hands on it," Wood remarks. "There will undoubtedly be compatibility issues with some parts of our infrastructure, but not on the Symantec side. Veritas Storage Foundation for Microsoft SQL Server software has already incorporated the features needed to support SQL Server 2005, so that's one less thing I have to worry about."

CCA is also migrating various applications over to Microsoft throughout 2006, which will realize a \$1.5 million in savings over the first 36 months. Symantec datacenter availability and data protection software will play a key role throughout the entire project. From Microsoft Exchange Server to Microsoft Share Point Portal, to

Microsoft Live Communication Server, to Microsoft Systems Management Server, to Microsoft Operations Manager, CCA is standardizing on a single software platform for direct user interaction. The focus of the Wood and the CCA team over the past six months is on cost containment and elimination of multiple systems. As a result of these initiatives, CCA projects more than \$2 million in savings. "The best part about this initiative is that I am able to make these changes without any touches to my business resiliency strategy and the underlying software infrastructure," explains Wood.

### Centralizing information security management

For information security around its new Microsoft-based environment, CCA deployed Symantec AntiVirus™ Enterprise Edition software. The solution provides CCA with centralized security management and various features such as antispyware and adware capabilities on an application-to-application basis. CCA also leverages LiveUpdate™ technology for single, automated security updates around spyware, malware, and viruses. "The integrated security features in Symantec AntiVirus Enterprise Edition provide CCA with robust information security," notes Wood.

### Bullish on the Symantec-Veritas merger

Wood looks forward to the Symantec-Veritas merger as beneficial to CCA. He participates on a customer advisory council that has reviewed the joint messaging and is convinced that the newly expanded company's approach is the right one. "We plan to move from business continuity to a much broader concept of business resiliency by wrapping a security layer around the whole computing environment. The combination of Symantec and Veritas promises to help us get there faster."