In 2004, Network Appliance, Inc. (NetApp) upgraded its email infrastructure to improve availability and resiliency. The company chose Veritas Cluster Server for Network Appliance SnapMirror to manage failover from its primary to its secondary site, and the solution has since proven its value in an actual failover. Another Symantec solution, Veritas NetBackup Enterprise Server software, provides reliable tape archiving. The two solutions have enabled NetApp to achieve its availability goals—five-minute recovery point objective (RPO) and 20-minute recovery time objective (RTO)—and have also boosted the productivity of NetApp’s storage administrators to 10 times the industry average.

Storage isn’t what it used to be, thanks to Network Appliance, Inc. (NetApp). Since NetApp’s inception in 1992, the company has pioneered ground-breaking technology that has brought new levels of scalability and availability to storage infrastructures. The world’s top corporations are converts: Citicorp Securities, Lockheed Martin Corporation, Merrill Lynch, Oracle Corporation, Texas Instruments, Mazda, Renault, the U.S. Army, and Yahoo! all turn to NetApp for global data management solutions.

With success comes growth, and NetApp is growing rapidly. Revenues shot up by 37 percent to $1.6 billion in FY2005, a trend that is expected to continue. The company is adding staff at the pace of more than 1,000 a year, currently employing more than 4,000. NetApp is a true global operation, with headquarters in Sunnyvale, California; United States offices in North Carolina, Pennsylvania, and Massachusetts; and overseas offices in Amsterdam, The Netherlands; and Bangalore, India.

Providing the enterprise tools and data—email, financials, customer relationship management (CRM), and more—that NetApp’s employees need to keep up with this blistering pace of growth requires a large and complex information technology (IT) infrastructure. In other words, this major IT infrastructure vendor has IT needs of its own. The top priority? “Dial-tone service,” answers Kelvin Mayo, senior manager for IT systems infrastructure. He explains: “Instead of talking about a string of 9’s for availability, NetApp’s management just says: ‘Our business-critical applications—email, CRM, financials, technical support—have to work all the time, just like the telephone.'”
“Our contribution to the bottom line is to ensure that we provide the needed services at the lowest possible expense level,” says Mayo. “Our guiding principles are standardization, to leverage training and maintenance costs, and simplification, to reduce administrative overhead. Every change we make to our IT infrastructure has to meet those criteria.”

Email vital for NetApp’s business—and brand

In 2004 NetApp launched a major project to upgrade the infrastructure, starting with email.

“Email is our most important application,” asserts Mayo. “An email outage not only affects productivity, it tarnishes the NetApp brand. We preach availability to our customers, so we have to walk that talk.” There was a failover system in place from NetApp’s Sunnyvale, California headquarters to its Amsterdam location, but it was slow—more than 45 minutes—and hard to use, requiring many manual steps. NetApp could lose as much as four hours’ worth of email before the failover was complete.

The company set its sights on a new high availability architecture for its data center with a five-minute recovery point objective (RPO) and 20-minute recovery time objective (RTO). Mayo’s team needed a clustering solution to improve NetApp’s email resiliency—and that’s where Veritas products from Symantec entered the picture.

Long-standing relationship with Symantec pays off

Symantec and NetApp have been working together for the last three years, coordinating their roadmaps and working out joint solutions to solve storage problems. So, when Mayo had an application availability problem of his own, it was natural that he would turn to Symantec for help. “Symantec had just introduced Veritas Cluster Server™ for Network Appliance SnapMirror and was looking for a beta site,” remembers Mayo. “Who would be a better beta than NetApp itself? We signed up.”

Veritas Cluster Server software met Mayo’s need for centralized administration as well as another key requirement: heterogeneous support. NetApp’s primary data center has more than 700 servers, divided among production, development, and test. The 250 servers on the production side feature two main configurations: 100 IBM eServer xSeries 345 through 365 servers running Microsoft Windows Server 2000 and 150 Fujitsu PRIMEPOWER 200 through 400 series running the Sun Solaris 8 Operating System. The production side also includes a Stratus ftServer 3300 running Microsoft Exchange Server. The development and test environments are more heterogeneous: In addition to the IBM/Windows and Fujitsu/Solaris configurations used in production, NetApp also has Fujitsu PRIMEPOWER and Sun Enterprise servers running the Sun Solaris 9 Operating System, IBM eServer BladeCenters running Red Hat Enterprise Linux and Microsoft Windows 2003, and Dell PowerEdge servers running Microsoft Windows Server.

Ensuring availability of Microsoft Exchange Server

In the NetApp main data center in Sunnyvale, California, the company’s storage architecture includes NetApp FAS960 storage systems for primary online storage and a second tier of NetApp NearStore R200s with tape backup in another building on the campus. NetApp Snapshot software continually snaps data from the main data center across campus to the local NearStore system to minimize email loss in the event of a failure. NetApp’s other worldwide offices also send their data to Sunnyvale using SnapMirror. The nearline storage
Another Symantec solution, Veritas NetBackup™ Enterprise Server software, manages tape archiving. Snapshots stored on the NetApp nearline filers are backed up daily using NetBackup. NetApp has been using NetBackup since 2000, when it replaced a competitive product. “We switched to NetBackup because it is more stable, and the backups run more reliably,” says Mayo. “And we have been able to maintain a 16-hour backup window despite rapid growth in our data volumes.” NetBackup saves backup data to three StorageTek L700 tape libraries, an HP StorageWorks SDLT 320, and a Quantum DLT7000, all located in Sunnyvale.

Provides rapid and efficient restoration of lost or corrupted files. In addition, users can perform their own restores, which greatly reduces the time that Mayo and his group spend on routine data protection work.

NetApp established a secondary site in Sacramento, California. The Sacramento site runs a scaled-down version of the Sunnyvale application infrastructure, with eight IBM/Windows and 15 Fujitsu/Solaris servers and clustered NetApp FAS980s and NearStore R200s for primary and nearline storage. It is connected to the Sunnyvale campus by a one-gigabit metropolitan area network (MAN) link.

**Tying Sunnyvale to Sacramento**

To ensure the availability of NetApp’s Microsoft Exchange application, Veritas Cluster Server for Network Appliance SnapMirror software from Symantec treats the two data centers, Sunnyvale and Sacramento, as nodes in a two-node cluster. When one node goes down, Veritas Cluster Server manages the failover to the other.

“Thanks to Veritas Cluster Server for Network Appliance SnapMirror, we have a single console that shows all of the dependencies of the cluster, both the Symantec and NetApp components,” explains Mayo. “If there’s a problem with SnapMirror, you see it right away. In the event of a failover, you can watch the transition from primary to secondary and be sure that everything is up and running. It’s a huge timesaver for us.”

Another Symantec solution, Veritas NetBackup™ Enterprise Server software, manages tape archiving. Snapshots stored on the NetApp nearline filers are backed up daily using NetBackup. NetApp has been using NetBackup since 2000, when it replaced a competitive product. “We switched to NetBackup because it is more stable, and the backups run more reliably,” says Mayo. “And we have been able to maintain a 16-hour backup window despite rapid growth in our data volumes.” NetBackup saves backup data to three StorageTek L700 tape libraries, an HP StorageWorks SDLT 320, and a Quantum DLT7000, all located in Sunnyvale.
Memorial Day failover is memorable

NetApp went live with its next-generation Microsoft Exchange clustering solution in May, 2005, and it didn’t have to wait long to find out if it would work. “Over the Memorial Day holiday, we were troubleshooting a hardware failure on our Sunnyvale Exchange server,” recalls Mayo. “The server was completely down and replacement parts were hours away. Hours of email downtime significantly impact our business. Since we had the new Veritas clustering system in place, we decided to use it.”

The results were gratifying: Within the 20-minute RTO goal, NetApp’s email was running from Sacramento. “We didn’t lose a single email message,” says Mayo. “That showed me that Veritas Cluster Server for Network Appliance SnapMirror is a solid product that gives us the disaster recovery capabilities we need for Exchange.”

“Failing over the old way would have taken us hours and involved a number of people,” Mayo says. “That one failover with Veritas Cluster Server proved that in a single real failover, we would more than recover the cost of the product.” Overall, NetApp’s email has achieved 99.98 percent availability since the deployment of Veritas Cluster Server for Network Appliance SnapMirror from Symantec.

The Memorial Day failover also gave Mayo a chance to test Veritas Technical Support, and it passed the test too. “Before making the decision to failover to Sacramento, I wanted to verify that we were doing everything properly,” Mayo remembers. “Taking advantage of our Extended Support agreement, I placed a call to Veritas Technical Support at Symantec. I immediately got through. I put my entire team into conference with a support engineer who guided us through the entire failover process. And this was over a holiday! Veritas Technical Support from Symantec is superb.”

“Symantec and NetApp make a perfect marriage. NetApp provides the storage hardware and mirroring software, and Symantec adds expertise in clustering, data protection, and infrastructure design.”

Kelvin Mayo
Senior Manager, IT Systems Infrastructure
Network Appliance, Inc.
**Productivity gains and more, with help from Symantec**

Mayo is proud of the productivity of the NetApp IT group and happy with Symantec’s contribution to his group’s performance. “The job of managing NetApp’s data infrastructure is huge,” explains Mayo. “We have more than 150 filers worldwide with thousands of data sets. Our four storage administrators manage over one petabyte of data, an average of 250 terabytes each, 10 times the industry average.” Symantec gets credit, he says, for the major role it has played in the success of the NetApp IT group’s recent projects. “Symantec and NetApp make a perfect marriage. NetApp provides the storage hardware and mirroring software, and Symantec adds expertise in clustering, data protection, and infrastructure management.”

### Business Value and Technical Benefits

- **100% ROI within first month for Veritas Cluster Server for Network Appliance**
  - **SnapMirror**
- **99.98% availability of Veritas Cluster Server Exchange deployment**
- **5-minute recovery point objective (RPO) achieved**
- **20-minute recovery time objective (RTO) achieved**
- **10-fold greater productivity compared to industry average for storage administrators**