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## Success Story

# Storage Efficiency at The College of Saint Rose Yields Hundreds of Thousands of Dollars in Annual Savings



### KEY HIGHLIGHTS

#### Industry

Higher education

#### The challenge

Accommodate data growth and enable disaster recovery while reducing management costs and conserving data center resources.

#### The solution

Support VMware® environment and achieve storage efficiency with NetApp® unified architecture.

#### Benefits

- Storage and server consolidation saved \$100K annually
- New-server provisioning was shortened from weeks to seconds
- Thin provisioning quadrupled the storage utilization rate
- NetApp storage efficiency recouped 80% of capacity

### CUSTOMER PROFILE

Located in Albany, New York, The College of Saint Rose is a private, independent coeducational college. Through a strong liberal education curriculum and progressive academic programs, the College serves traditional students and working professionals. Saint Rose has approximately 3,000 undergraduate students and 2,000 graduate students, and also offers continuing education programs.

### THE CHALLENGE

#### Meet the needs of students and staff

A core part of the College's mission is to provide students with reliable access to the technologies and information they need to complete coursework and collaborate on academic projects.

"We take a mission-critical view of IT when it comes to serving our students and faculty," explains Alekseiv Pavlinik, network administrator for The College of Saint Rose. "We look at availability and disaster recovery with the same level of urgency as a private corporation."

#### Maximize IT resources

While IT is mission critical at Saint Rose, budgets at the College are tight, as they are in most academic institutions today. The College must use its IT resources as wisely as possible, including maximizing

the efficiency of three network administrators. "We need to provide ample storage capacity and enable disaster recovery for students and staff while conserving data center and staff resources," says Pavlinik.

When Pavlinik joined Saint Rose in 2000, storage resources were fragmented, costly, and nearly impossible to manage. The mixed IT environment at the College included Windows®, Novell, and Apple® file servers. Data was stored on the servers or on attached tape backup drives. When additional storage was needed, the College typically bought a new file server. There were no centralized storage resources for the disparate server systems and no standard policies for backup and retention. There was also no disaster recovery (DR) strategy.

Pavlinik estimates that storage utilization was only in the 20–25% range—an unacceptable number in light of the College's budget constraints. Data loss was also a real concern, especially because the College is required to save documents and e-mail in case of legal actions. Physical servers, each costing thousands of dollars, were the primary means of storing documents and information.

"We had a mix of old storage technology in the form of departmental file servers and tape drives," recalls Pavlinik. "There was

“Previously, when we needed more storage, we would buy a new file server. It could take substantial staff time, weeks, and up to \$20,000. Now we can deliver multiple space-efficient virtual servers in minutes or expand a LUN in seconds. That gives us tremendous efficiency and agility.”

**Alekseiv Pavlinik**

Network Administrator, The College of Saint Rose

a hodgepodge of policies for backup and retention. When data loss occurred, we spent hours trying to determine if the information was on a tape somewhere and recoverable.”

The lack of centralized, consistent backup was especially detrimental when it came to Microsoft® Exchange Servers. “At one point, when our employees were on Microsoft Exchange 5.5, the e-mail database became corrupted,” says Pavlinik. “It knocked out all employee e-mail for a solid two weeks, causing a huge drain on productivity.”

#### **Meet growing demand while controlling costs**

Provisioning additional storage capacity was limited by the data center. Each new storage expansion involved procuring a new file server, putting additional strain on the existing network, electrical, and cooling resources. Saint Rose was spending about \$100,000 annually on new servers, and each could take weeks to procure and set up.

In addition to being resource intensive, adding new servers to the data center was also at odds with the College’s green initiatives. “Saint Rose is part of a consortium of colleges committed to reducing emissions and power usage,” says Pavlinik. “As part of our green initiatives, we have been reducing our physical server and storage footprint and cutting our energy consumption in IT.”

Along with the fact that provisioning additional storage was expensive, time consuming, and tough on the environment, storage consumption—especially regarding e-mail inbox quotas—was continuing to escalate. Demand for e-mail storage in the Microsoft Exchange environment grows at approximately 200GB per year.

#### **THE SOLUTION**

##### **Bring order to a complex storage infrastructure**

After evaluating several options, Saint Rose chose NetApp enterprise storage purchased through Atec Group, a NetApp Platinum Partner. At the primary data center in Albany, a NetApp FAS3050c system running Data ONTAP® provides production storage to the College’s heterogeneous environment of Windows and Linux® systems. An additional NetApp FAS3140 supports the high-performance requirements of the College’s Center for Communications and Interactive Media.

For disaster recovery, NetApp SnapMirror® software enables high-speed replication to a NetApp FAS3020 system at another site. “SnapMirror is very easy to set up and use,” says Pavlinik. “And, because it only replicates changed data blocks, it saves us time and network bandwidth.”

Complementing the College’s virtualized server and application environment based on VMware vSphere™, the NetApp solution enables high-speed communication to five host servers running 80 virtual machines. Saint Rose is also using NetApp FlexClone® to restore VMware backups. “We’ve consolidated Windows, Exchange, and SQL Server® through VMware, as well as Blackboard, and we are hammering away at virtualizing other applications,” says Pavlinik. “NetApp offers truly complementary technology to VMware in terms of scalability, reliability, provisioning, restores, and overall resource and cost efficiencies.”

The NetApp systems serve as primary production storage for Microsoft Exchange Servers 2007—with 2.5TB of storage allocated for e-mail—as well as for Microsoft SQL databases via Fibre Channel and user file shares via the CIFS protocol. A development and test environment for VMware and Microsoft Exchange is supported by the NetApp systems through IP SAN (iSCSI).

#### **BUSINESS BENEFITS**

##### **Reduced risks from data loss**

At Saint Rose, users now have a reliable, shared storage system that backs up invaluable data based on predefined standard policies. With NetApp Snapshot™, data can be more easily safeguarded, recovered quickly,

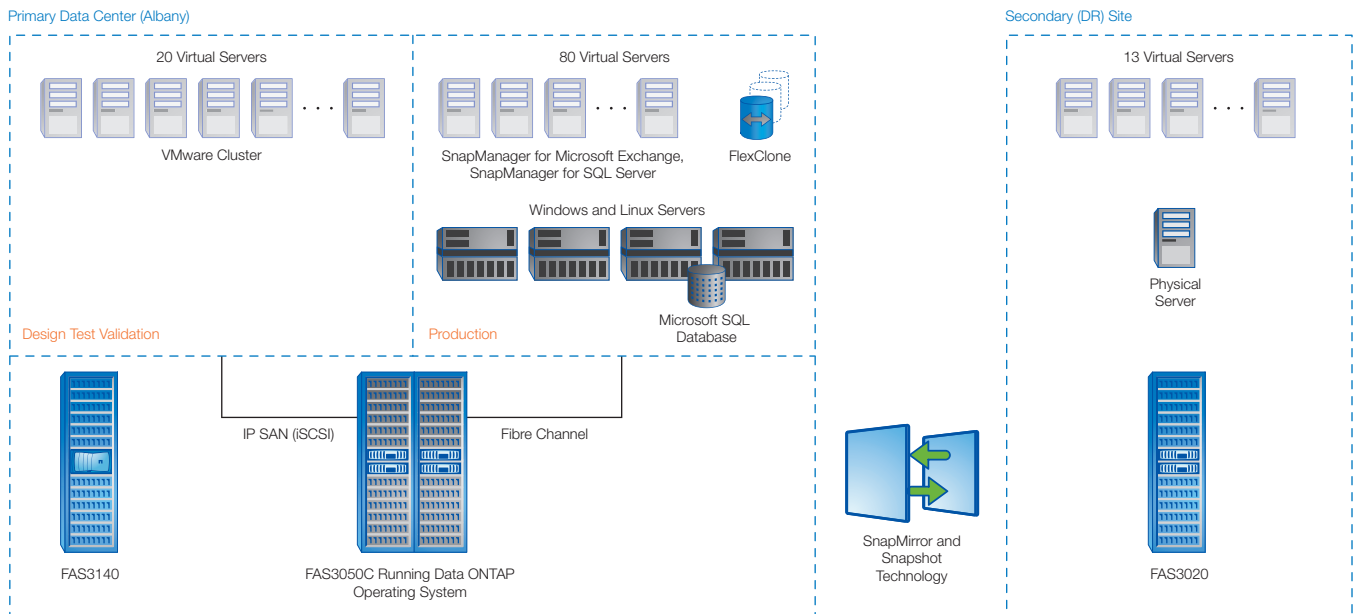


Figure 1) The College of Saint Rose storage infrastructure.

or reproduced in the event of activities such as legal discoveries. “With NetApp, we’ve cut storage requirements for backup and replication, and we can recover in minutes,” says Pavlinik.

**Storage fit for VMware: 85% utilization, streamlined provisioning**

Since deploying NetApp, the Saint Rose IT team reports an impressive 80–85% utilization of storage resources, quadrupling utilization from the previous 20%. The team also has realized a dramatic reduction in provisioning time, from weeks to minutes. Pavlinik offers a before-and-after provisioning example: “When we had to put in purchase orders for a new server, it could take a month and a half just to get everything racked and ready to go,” he says. “Previously, when we needed more storage, we would buy a new server. It could take substantial staff time, weeks, and up to \$20,000. Now we can deliver multiple space-efficient virtual servers in minutes or expand a LUN in seconds. That gives us tremendous efficiency and agility.”

NetApp’s core storage efficiencies, including NetApp deduplication and NetApp Snapshot, are not only successfully supporting the College’s VMware environment but also are helping to reduce the physical storage footprint. “By eliminating tape, going directly to disk, and deduplicating, we’re seeing

savings of up to 80% on our existing volumes, so we can use the reclaimed space instead of buying more storage,” says Pavlinik.

Storage utilization has also been improved with thin provisioning, which enables Pavlinik to resize storage dynamically without disruption and virtually eliminate unused capacity. “When we saw the NetApp products, we fell in love with the feature set,” says Pavlinik. “The ability to dynamically expand storage space through thin provisioning without having to shut things down is amazing.”

**Reduced up-front costs and administrative overhead**

Saint Rose is reducing costs through the use of tiered storage—performance-sensitive data is stored on faster Fibre Channel storage while less critical information is stored on SATA disk storage. With NetApp and VMware, Saint Rose decommissioned approximately 30 servers, saving energy, costs, and space in the data center. “We haven’t bought a physical server in recent memory to deal with data growth,” says Pavlinik. “With centralized NetApp storage and VMware server virtualization, we are saving about \$100,000 in server purchases every year.”

With NetApp, the College is also reducing administrative costs by automating labor-

intensive tasks and helping the Saint Rose team easily manage the storage environment. While the previous dispersed storage setup ate up hours of each administrator’s time each week, the unified NetApp solution can be managed in only a fraction of Pavlinik’s time. In addition to supporting the NetApp environment, he manages the wireless network with 200 access points; the entire Exchange infrastructure for employees, with 2,000 mailboxes; 17,000 student accounts on Google Apps; and the regular network.

“NetApp reduces our overall storage costs and our storage administration costs,” says Pavlinik. “Administering the NetApp solution only consumes a small fraction of my day. And, if I have questions, I can go to NetApp NOW™ [NetApp on the Web]. It’s the best support site out there.”

**Managing more with less**

Pavlinik credits the increase in productivity to several factors. Using NetApp SnapManager® for Exchange and SnapManager for SQL Server, Pavlinik can manage Exchange and SQL Server efficiently across the virtual server environment. With NetApp Operations Manager, Pavlinik has a holistic picture of the College’s storage resources with a comprehensive monitoring and management dashboard to help keep the storage infrastructure aligned with user requirements.

“NetApp has delivered efficiency plus flexibility to complement our VMware environment and meet ever-evolving needs of the institution. With NetApp, we are making better use of our existing capacity and can scale more easily to meet growing demand.”

**Alekseiv Pavlinik**

Network Administrator, The College of Saint Rose

“With Operations Manager, we have dramatically reduced the amount of disaster recovery planning and testing we have to do. The business continuity plans write themselves when you’re setting up each SnapMirror system. Operations Manager then monitors and automates the SnapMirror processes,” he says. According to Pavlinik, this is just one example of how NetApp helps Saint Rose save time and money and simplify storage management.

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#### SOLUTION COMPONENTS

##### NetApp products

NetApp FAS3050c, FAS3020, and FAS3140 storage systems

Data ONTAP operating system

Deduplication

FlexClone

NetApp FlexVol® software

Operations Manager

SnapMirror

NetApp Snapshot technology

SnapManager for Exchange

SnapManager for SQL Server

SATA disk drives

##### Protocols

CIFS, SMB, iSCSI, Fibre Channel

##### Third-party products

VMware vSphere version 4.0

Microsoft Exchange Server 2007

Microsoft SQL Server 2005

##### Environment

Applications: Blackboard, Google Apps

Server platform: IBM xSeries running

Microsoft Windows Server 2003, Linux

Enterprise Edition, and RedHat

Enterprise Edition

Database: Microsoft SQL Server

##### Partner

Atec Group

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