

### Overview

#### Customer Profile

As part of the University of Pittsburgh's School of Medicine, the Department of Microbiology and Molecular Genetics (MMG) is a leader in genetics and microbiology research. MMG trains future scientists and physicians in a supportive and collaborative environment in which its faculty members investigate top issues in biomedical research.

#### Situation

The department needed to find a solution to the high cost and complexity of maintaining aging computing equipment in several physical locations. The solution had to be very secure and highly scalable to support the needs of its growing research environment.

#### Solution

The Network Operations center worked with the Department of Microbiology and Molecular Genetics to migrate to a Virtual Machine (VM) enterprise service that would include around-the-clock monitoring and support. The NOC would migrate MMG's existing data and also offered the department the capability to easily add more data storage space as needed.

#### Benefits

- » With round-the clock monitoring, the NOC ensures MMG's systems are highly available.
- » The NOC enables the department to easily add more data storage space as its research environment grows.
- » By moving to a virtual computing environment, the department receives a significant cost savings since it no longer has to support or replace aging hardware.

The Network Operations Center (NOC) provides a secure and scalable technology solution for a top medical research department

### Background

The Department of Microbiology and Molecular Genetics (MMG) at the University of Pittsburgh has a distinguished history in the advancement of biomedical research. MMG plays a significant role in the educational missions of the School of Medicine, by striving to provide the best training to the next generation of scientists and physicians and by fostering an environment where all members of the department can enhance their scientific development. MMG's mission is to remain a leader in genetics and microbiology research, and to provide excellence in teaching and mentoring at all educational levels.

### Situation

In the fall of 2011, MMG contacted Technology Services regarding a solution to upgrade its existing IT hardware and infrastructure. The department had moved to an off-campus location but was still supporting a staff of nearly 200 users in several locations. MMG had been using hardware that was mostly obsolete or close to end-of-life. In addition, most of the hardware was out of warranty and would need to be replaced soon. The department was looking to implement a technology solution that would be very secure, scalable, require lower maintenance, and be financially viable.



Bridgeside II Building, Home of MMG

### Solution

Lou Passarello, Director of the NOC, and System Engineer Adam Cerini thoroughly analyzed the MMG computing environment and presented two potential solutions: The first option was to replace the existing hardware with four new servers and a tape vault. The second option was to migrate to a Virtual Machine (VM) enterprise service that would be supported by the NOC. After careful consideration, MMG decided to migrate their server architecture to the NOC to take advantage of the VM environment coupled with around-the-clock monitoring and support.

“As a research department, our information is invaluable. We wanted to be sure we were securing our data to the best of our ability, and the NOC fit that requirement.”

- Kathleen Rakow,  
Department Administrator  
for Microbiology and  
Molecular Genetics

The department then developed a detailed plan to facilitate a smooth migration. Regular conference calls were held between the NOC, the department's IT staff, and the CSSD Security team who ensured all the required security protocols were in place. To prepare for the migration, MMG standardized the operating system for their FileMaker research database by moving from a Mac environment to a Windows platform. NOC staff also helped to integrate servers with University Computing Accounts, which meant that MMG would no longer have to use and maintain a separate set of local user accounts.

### Migration Process

An initial step of the migration involved hosting a new physical application server at the NOC for CERF (Collaborative Electronic Research Framework). CERF is an electronic lab notebook used daily by researchers to maintain version control and to facilitate data collaboration. It is crucial for researchers that this application remains highly available, so MMG requested a recovery time objective of two hours, meaning that research data on CERF would never be unavailable for more than two hours following an unexpected system failure. The NOC worked with MMG to create an active/passive failover system to meet this need.

The NOC also moved several aging servers to a virtual environment and worked with MMG to migrate their data. In one case, the NOC was able to take a snapshot of data from a financial system used for grant management and move it to a virtual server in a single day, a process that John Viaropulos of MMG IT called “amazing”. There was no system down-time and no adverse affect to users, it was business as usual.

The NOC not only migrated MMG's existing data, but also enabled the department to easily add more data storage space as needed. “Scalable storage is important because we didn't know how our environment would grow,” explained JoAnn Polk of MMG IT. “On a monthly basis, we are able to expand our file server. It's one [help] ticket and within fifteen minutes to an hour, we have more storage. The NOC makes it easy to grow.”

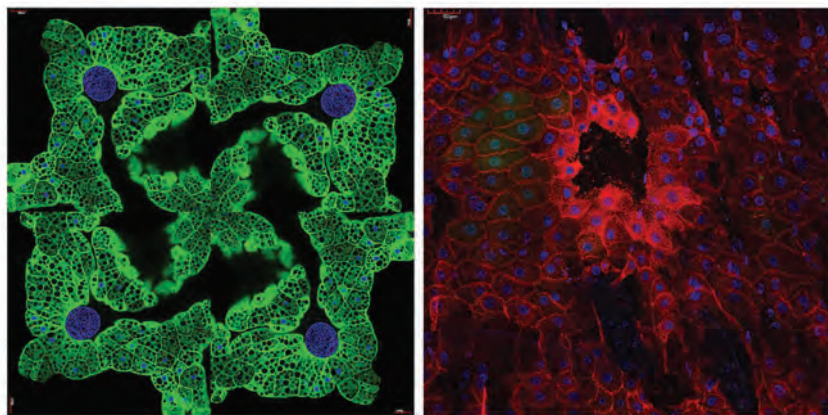
Through all phases of the migration, the NOC strived to ensure a smooth transition for the department. Regarding the migration to the NOC, Department Administrator Kathleen Rakow stated: “It was seamless. We moved our servers to the NOC and no one here blinked. If we hadn't told them, they would never have known. It was perfect for us and everyone at the NOC was extremely helpful. We had no issues whatsoever.”

### Benefits

MMG realized several important benefits from moving its server infrastructure to the NOC. The move to a virtual server environment has resulted in cost savings of approximately 40 percent annually when compared to the alternative option of replacing the old hardware with new physical servers.

Most of MMG's grants are through the National Institutes of Health (NIH), which requires the department to explain how it is securing data each year. Hosting data

at the NOC enables the department to demonstrate to the NIH and other granting agencies that their data resides in an extremely secure environment that is backed up daily.



Microscopic slides of fruit fly cells used in an immune response research study. Research scientists on campus access lab data that's stored at the NOC for their study.

From an operational standpoint, MMG benefits from the expertise and oversight of NOC staff, facilities, and processes. The NOC provides around-the-clock service and monitoring, resulting in a reduced turnaround time of server performance-related issues. The NOC also manages OS upgrades, backups, and anti-virus monitoring, allowing MMG to allocate more of their time and resources to academic activities. Lastly, MMG does not have to provide physical security for the servers and staff for server support, resulting in additional savings.

"This has been invaluable to the department. We can save not only money, but also time. It has made us much more efficient. We have a small IT staff and it has freed up their time to be able to do other projects," Rakow concluded.

## About the NOC

The Technology Services team manages the NOC, a secure 15,000-square-foot facility located off-campus in O'Hara Township, with redundant power and networking, and physical security controls. The NOC, which was established in 2005, functions to increase the availability, reliability, and security of the University's network services.

The NOC provides continuous, around-the-clock monitoring of the University's network and computer systems. As a measure of the NOC's impact to provide system reliability, there was a 64 percent decrease in network-related problems reported by students, faculty, and staff in the first six months of the center's operation. In 2006, the University received the Computerworld Honors Program Laureate award for "network operations center design and implementation." In addition to securely hosting essential University services, the NOC is also utilized by nearly 40 University departments as a centralized location from which to host their servers.

## For More Information

Departments whose servers are hosted at the NOC are charged through a cost model based on the resources needed to support the servers — virtual and/or physical — and applications.

Those servers are then housed in the NOC's environmentally controlled facility and are provided with regular monitoring, backup, and recovery services.

Researchers and department administrators interested in exploring the advantages of moving servers to the NOC can contact the Technology Help Desk at 412-624-HELP [4357] or via email at [helpdesk@pitt.edu](mailto:helpdesk@pitt.edu). A meeting will be scheduled to review your needs, including data-set security considerations.

