Biomedical Research Institute Enables Coast-to-Coast Collaboration

The Burnham Institute for Medical Research uses high-performance Cisco LAN, WAN, and security solutions to share huge amounts of data across thousands of miles to support groundbreaking research.

EXECUTIVE SUMMARY

BURNHAM INSTITUTE FOR MEDICAL RESEARH

- Biomedical Research
- La Jolla, California, United States
- 1000 Employees

BUSINESS CHALLENGE

- Provide performance to support sharing of massive amounts of biomedical data
- Ensure utmost reliability of applications and links to other institutions
- Defend against network attacks

NETWORK SOLUTION

- End-to-end Cisco LAN, WAN, and security solutions, including a high-performance coast-to-coast circuit powered by the new Cisco ASR 1000 Series

BUSINESS RESULTS

- Enables collaboration and data sharing in ways that were previously impossible
- Safeguards network while sustaining an open research environment
- Saves hundreds of thousands of dollars annually in WAN connectivity costs

Business Challenge

The Burnham Institute for Medical Research (Burnham) is one of the fastest-growing research institutes in the United States. With major research programs in cancer, neuroscience, diabetes, and infectious and childhood diseases, the Institute ranks among the top organizations nationally for grant funding from the National Institutes of Health (NIH).

To support their mission of finding cures for devastating diseases, Burnham scientists must be able to share extremely large data sets across the organization's campuses, as well as with remote researchers at other institutions.

"We operate a high-throughput molecular screening center that analyzes millions of chemical compounds each day to expedite the development of new medications," says Eric Hicks, director of Information Technology at Burnham."Those activities generate many terabytes of data, which we use in our collaborations with the NIH, the National Cancer Institute, and other institutions."

To support these activities, Burnham has long relied on an end-to-end, high-performance Cisco® local-area network at each of its two California campuses. However, the institute recently opened a new campus in Orlando, Florida. With plans to open a second screening center in Orlando as well, the organization now needed the ability to exchange massive amounts of data among researchers across the country. They needed an extremely high-capacity, highly reliable wide-area network (WAN).

"If the WAN were to fail, we could no longer perform collaborative research with data sets of any significant size. We wouldn't be able to execute our mission," said Hicks.

The cost of using a private WAN connection with the speeds and capacity required would have been exorbitant – as much as US$200,000 annually. Fortunately, the institute had another option: they could join the National Lambda Rail, a 12,000-mile optical network used by research and academic institutions nationwide. National Lambda Rail offered virtually unlimited capacity, speeds of up to 40 Gigabits-per-second (Gbps), and high-speed links to many other institutions. To take advantage of this opportunity, however, Burnham needed a high-performance, gigabit-scale WAN platform.

At the same time, the institute also needed to maintain a secure environment – a major challenge for an institution that must also maintain academic freedom.

"Our threats are not so much from without as from within," says Hicks. "We need to collaborate with other institutions, so we can't truly lock down our network or make it difficult for users to exchange data. And yet, we still have to protect our infrastructure from Internet attacks."

Network Solution

To provide the reliability, performance, and security that biomedical research applications demand, Burnham relies on Cisco as its end-to-end campus LAN and unified communications provider.

“Cisco routing and switching solutions are very mature products with strong interoperability, both with other Cisco products and with other market-leading technologies, such as Microsoft’s Active Directory,” says Hicks. “From a support perspective, we also appreciate that Cisco solutions are widely adopted. If we have an issue, we know we can find answers very quickly. That’s why we’ve standardized on Cisco routers, switches, and IP phones throughout our environment.”

At the network edge, Burnham uses the Cisco ASA 5500 Series Adaptive Security Appliance to provide strong network protection. The solution delivers industry-leading threat defense and secure communications, with the flexibility to support cross-institutional collaboration. To support the new WAN link between the California and Florida campuses, Hicks chose the new Cisco ASR 1000 Series Aggregation Services Router. “We looked at other vendors’ products, but based on past performance, Cisco had a clear leg up with us,” he says.

The Cisco ASR 1000 Series was designed to transform enterprise edge networks by delivering industry-leading performance, instant-on service capabilities, and high availability. It provides a wide range of embedded high-performance services such as multi-gigabit encryption and in-service software upgrades, and establishes a new price/performance class for enterprise edge platforms.

“We are using a redundant pair of Cisco ASR 1000 Series platforms at either end of our National Lambda Rail connection to provide extremely high speeds and connect us with our remote campus and other institutions via Internet2,” says Hicks. “We also deployed a third pair at the San Diego Supercomputer Center to provide our scientists with direct access to massive computing resources.”

The Burnham Institute was the first customer worldwide to deploy the Cisco ASR 1000 Series. And yet, based on his past experience with Cisco, Hicks felt confident enough to make the leap.

“We knew the kind of support we would get from Cisco, and that allayed our fears,” he says. “We were confident that if there were problems, they would be solved quickly. And ultimately, the tremendous amount of performance we could realize at this price point with the ASR 1000 was extremely compelling.”

To assist with the design and deployment of the solution, Hicks’ team worked with the Burnham’s longtime technology partner, Xceptional Networks. With more than 20 years IT implementation experience, the Cisco Premier Certified Partner has earned a reputation for providing the highest quality products and services, and delivering superior customer service.

“The implementation went very smoothly,” says Hicks. “Xceptional Networks is very nimble, and they worked very hard to meet our changing and sometimes unreasonable demands. They do a great job with us, and they have for a long time.”

> “By providing network connectivity that is very fast and always on, we’re enabling our scientists to collaborate in ways they never could have collaborated before.”
>
> **—Eric Hicks, Director of Information Technology, Burnham Institute for Medical Research**

Business Results

Today, Burnham has a secure, highly reliable, high-performance network foundation that extends across three major campuses and supports groundbreaking biomedical research. The Cisco ASR 1000 Series platforms are fully

deployed and Burnham scientists can now enjoy the same extraordinary capacity and performance they have long enjoyed from the Cisco campus LANs in the cross-country WAN.

“Our scientists are just beginning to bring their research online at the Florida site, but they are amazed at what they can do over this network,” says Hicks. “The platforms have performed extremely well.”

In addition, the Cisco ASR 1000 and National Lambda Rail solution is delivering those benefits at a savings of US$150-200,000 annually versus a private connection. Effectively, the solution is enabling important research that would otherwise not be possible due to the high recurring connectivity costs. The Cisco ASR 1000 platforms also give the institute long-term flexibility, as they will provide ample capacity to support research activities for several years.

“We knew we wouldn’t be satisfied with 1-Gigabit circuit forever,” says Hicks. “In the future, we may need a 10-Gigabit circuit or even faster. We wanted a solution with a lot of room to grow. The Cisco ASR 1000 gives us a tremendous amount of performance head room. These routers will never be a bottleneck. They will scale with us for a long time as our performance needs increase.”

Hicks has also found the Cisco security solutions to be highly effective, allowing Burnham to meet the unique security demands of an open, academic research institution.

“The Cisco ASA platform is very powerful,” he says. “The flexibility of the access control features allow us to configure our firewall the way we need to, and find the right balance between protecting our environment and supporting our scientists.”

The most important benefit of Burnham’s end-to-end Cisco LAN, WAN, and security environment, however, is that it’s enabling a new generation of biomedical research that will ultimately save lives.

PRODUCT LIST

Routing and Switching

- Cisco ASR 1000 Series Router
- Cisco 2800 Series Integrated Services Router
- Cisco Catalyst® 6500 Series Switch
- Cisco Catalyst 3750 Series Switch

Security

- Cisco ASA 5500 Series Adaptive Security Appliance

Unified Communications

- Cisco Unified IP Phone 7965
- Cisco MeetingPlace Express

“There are many grants we’re submitting now in support of the new campus and screening center in a variety of fields, including stem cell research, proteomics, and other areas,” says Hicks. “By providing network connectivity that is very fast and always on, we’re enabling our scientists to collaborate in ways they never could have collaborated before.”

Future Plans

In the coming months, Burnham Institute for Medical Research plans to explore an institute-wide desktop video conferencing deployment to further enhance researchers’ ability to communicate and collaborate. With an end-to-end Cisco campus LAN and unified communications

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Printed in USA C36-556138-00 08/09