



Information Service Uses Software-Defined Networking to Build Its Business Advantage

CAS, a division of the American Chemical Society

Size: 1400 employees

Industry: Information Services

Location: Columbus, Ohio, USA

For More Information

For more information about Cisco Application Centric Infrastructure, visit www.cisco.com/go/aci.

CAS, a division of the American Chemical Society, helps scientists, researchers, patent professionals, and business leaders achieve breakthroughs with access to carefully curated scientific content. When it was time to refresh its data center network, CAS had a choice. It could replace a traditional architecture with new switches, or it could “lean forward” by adopting software-defined networking (SDN) and an automated networking future.

Challenge: Meeting Global Scientific Demands Faster and More Efficiently

CAS scientists collect and organize publicly disclosed chemical substance information to create the world’s most valuable collection of chemistry-related content covering more than 80 scientific disciplines. The value derived from CAS scientist human curation combined with an innovative technology approach to solutions implementation bring data and

insights together in ways that save time and accelerate scientific discovery for academic, commercial, and government customers around the world.

CAS scientists analyze information from thousands of scientific journals, 63 global patent authorities, and dozens of regulatory agencies around the world. Its global customer base accesses services that are operated 24 hours a day, 7 days a week, 365 days a year.

“We deliver tailored solutions that meet customers’ specific needs,” says Conal Thompson, chief technology officer (CTO) at CAS. “When we needed to replace our aging infrastructure, we looked for digital transformation that would sustain our position as a global market leader.”

CAS’s technology requirements were specific, and highly available services are critical. CAS customers around the world need instant response and up-to-the-minute data.

“Software-defined capabilities really align well with our goal of achieving web-scale IT. Cisco ACI improves the ability to scale efficiently and effectively through software and automation.”

Conal Thompson
Chief Technology Officer, CAS

Security is essential. Customers conduct innovative research and need to protect their intellectual property until it can be patented. CAS wanted centralized, policy-driven security to deploy tailored policies while reducing the time and effort needed.

The information technology solution has to deliver high performance functionality to turn massive data stores into easily searchable solutions. Researchers want access to the most relevant information, and they need powerful interfaces to find the proverbial needle in a haystack of data. The infrastructure also must scale to support exponential growth. For example, it took 75 years for CAS to register the first 25 million unique chemical substances in CAS REGISTRY®, yet it has taken fewer than 10 years to register an additional 75 million.

CAS also wanted greater speed and flexibility to take advantage of untapped market opportunities. The faster CAS can bring new solutions to the market, the better it can serve existing customers and earn new ones. Automating network resource provisioning was also crucial so the company could better anticipate and respond to new market needs.

Solutions

• Cisco Application Centric Infrastructure (ACI)

With Cisco Application Infrastructure, CAS has:

- Improved ability to deliver high-availability services
- Reduced resource provisioning time from up to a week to just seconds with no negative impact to the production network or users
- Quadrupled network throughput, increasing service performance
- Increased operational efficiency with automation
- Moved valuable engineering talent from manual, low-level tasks to strategic, high-value projects



Building an Application Centric Infrastructure

The Future Is Software

As CAS considered its options, it evaluated Cisco Application Centric Infrastructure (Cisco ACI™) and VMware NSX. The Cisco ACI solution is an architecture that tightly integrates physical and virtual elements to create an efficient, single infrastructure.

“Cisco ACI was a more comprehensive and straightforward solution,” says Kris Woods, manager of infrastructure services at CAS. “We didn’t have to purchase, manage, or support network and server hardware from another vendor that would be needed to host and operate the VMware NSX software.”

Cisco ACI technology simplifies operations through application-based policy. The Cisco Application Policy Infrastructure Controller (APIC) provides centralized access to all fabric information and supports flexible application provisioning. The Cisco ACI fabric is based on Cisco Nexus® 9000 Series Switches, which are configured in a scalable spine-leaf network architecture to optimize application performance and availability with improved visibility into virtual and physical workloads.

Benefitting Content Curating and Customer Research

ACI delivers scalable, extensible, and secure network capabilities that help enable IT teams to quickly develop and get ready for new and updated market solutions.

Accelerating Everything

The new Cisco Nexus 9k switches increased backbone throughput by a factor of four. The improved capacity provides higher performance to help CAS technologists manage big data as the compendium of curated content increases over time.

“We achieved much improved resiliency with the new switches and ACI architecture,” says Woods. “It significantly improves our ability to deliver highly available services.”

Achieving Provisioning and Security Agility

Before, hardware-based network provisioning tasks had to fit in designated change management windows. If a user requested a resource on Monday, in many cases, the change couldn’t occur until the weekend.



Products and Services

Key services

- Cisco SMARTnet™ Service

Data center

- Cisco Nexus® 9000 Series Switches
- Cisco Nexus 3000 Series Switches
- Cisco Nexus 2000 Series Fabric Extenders
- Cisco Application Policy Infrastructure Controller (APIC)

With Cisco ACI technology, the CAS team can make changes through software when needed. CAS reduced provisioning times from a week to just minutes or seconds with secure changes and no negative impact to the production network. At the same time, CAS centralized security policy. Now the team can apply and distribute policy across the network—quickly, precisely, and consistently.

“Cisco ACI improved our agility to rapidly meet our organization’s needs,” says Woods. “It enables us to pursue an aggressive application development strategy and deliver new solutions to market faster.”

Raising Engineering Productivity

CAS is developing a private cloud environment that requires its best engineering talent. Cisco ACI technology enables the engineering team to create a robust, multitenant cloud environment through software.

“We can move our engineers from performing manual, lower-level hardware tasks to higher-value activities that drive business forward,” says Woods. “Software and automation—instead of a traditional, bare-metal hardwired network infrastructure—have made it much easier to provide services across a cloud environment.”

Scalability Equals Opportunity

CAS sees numerous advantages in its newfound ability to scale quickly and easily. Whether accelerating service delivery or accommodating research requiring big data capabilities, CAS relies on its network technology to grow its product portfolio.

“Software-defined capabilities really align well with our goal of achieving web-scale IT,” says Thompson. “Cisco ACI improves our ability to scale efficiently and effectively through software and automation.”



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