

# From Managed Security to Experimental Physics, KanREN Network Supports Research and Education in the Heartland

## Summary

### Organization:

KanREN

### Industry:

Research and Education

### Business Challenge:

Offer advanced technology services at an affordable rate to support the education and research community in Kansas

### Technology Solution:

- MX960 and MX480 3D Universal Edge Routers
- SRX650 and SRX240 Services Gateways

### Business Results:

- Deployed a 100GbE network to support research and collaboration
- Offered customized managed security services at an attractive price
- Simplified network operations

KanREN, the Kansas Research and Education Network, delivers world-class broadband infrastructure to colleges, universities, community colleges, K-12 school districts, public libraries, and other community institutions in Kansas. The nonprofit consortium has 74 member institutions and indirectly serves hundreds more.

## Business Challenge

KanREN is a long-time leader in using advanced network technologies to reliably deliver scalable, affordable, and innovative services. KanREN offers MPLS and IP VPNs with quality of service, multicast, and IPv6 services to Internet and Internet2 resources, as well as voice, videoconferencing, web hosting, and cloud storage.

KanREN's latest advance is a 100GbE network to connect The University of Kansas, Kansas State University, The University of Kansas Medical Center, and colocation facilities with Internet2 and the Great Plains Network, a consortium of Midwestern universities. "The drive toward 100GbE was a site-specific requirement," says Brad Fleming, assistant director for technology at KanREN. "We have a vibrant research community that is driving the need for greater bandwidth."

The University of Kansas Medical Center hosts the Kansas Cancer Registry, a population-based source of information on cancer incidence in Kansas. With more than 500,000 online patient records, researchers use the database to analyze cancer occurrence and survival rates as part of their cancer prevention efforts. Scientists at the medical center want to send bioinformatics to the University of Kansas Advanced Computing facility for analysis—and moving huge amounts of data demands high-speed connectivity.

The University of Kansas has plans for the 100GbE network too. Experimental physicists need to move massive data sets as they collaborate with researchers at the Large Hadron Collider, among others.

*"Forget all of those old network models. With the MX Series, we have consolidated edge and core—we have one box that does everything. It's great because we can converge everything into a single administrative point and a single support point for contracts. It's so much easier."*

Brad Fleming, Assistant Director for Technology, KanREN



Kansas State's new high-performance compute (HPC) environment provides computational resources to a variety of research fields, from linguistics to building better bullet resistant vests. The cluster, with more than 2,000 cores, serves a dozen departments in the university. In addition, Kansas State is an early adopter of cloud services. "They've moved a tremendous number of services to the cloud," says Fleming. "They did it before it was popular, and the cloud puts more stress on the network. They need more capacity for what looks like generalized IT traffic."

But perhaps the Center for Remote Sensing of Ice Sheets (CReSIS), an NSF-funded project at University of Kansas, will be the group that is the most delighted by 100GbE speeds. CReSIS develops technologies and computer models to predict sea level changes in response to the melting of the sheets in Greenland and Antarctica. "They've always had a hard time moving massive data sets, and with other providers, they found that the bandwidth of a UPS truck worked better than the network," says Fleming. "We showed them a way to move their communications capabilities into the 21st century, without resorting to delivery trucks."

## Technology Solution

Built on dedicated, point-to-point Ethernet links based on dark fiber, leased lambda, and dedicated circuits, KanREN's network uses Juniper Networks® MX Series 3D Universal Edge Routers.

When KanREN's network team considered its options for the 100GbE extension project, it looked for a routing solution with terabit capacity, line-rate performance, and massive route scale. Ultimately, KanREN chose to deploy MX960 and MX480 3D Universal Edge Routers, with the MX960 routers supporting the 100GbE extension.

"We have Juniper at all of our sites, and we believe that the feature set of Junos operating system is pretty amazing," says Fleming. "We have a list of at least 50 Junos OS features that we prefer to any other platform—virtualization, logical systems, and routing instances that scale to comically huge numbers, just to name a few."

KanREN uses a collapsed model for its network. "Forget all of those old network models," says Fleming. "With the MX Series, we have consolidated edge and core—we have one box that does everything. It's great because we can converge everything into a single administrative point and a single support point for contracts. It's so much easier."

Furthermore, Juniper Networks SRX Series Services Gateways are at the heart of KanREN's managed security service. KanREN helps shoulder the increasingly heavy burden of network security with a managed security service that is especially popular among

K-12 school districts and smaller organizations. "A lot of our members find that their networks aren't as simple as they used to be—especially regarding security," says Fleming. "They are tired of dealing with firewalls and keeping security software up-to-date, and the idea of offloading the complexities of network security to KanREN is very attractive."

Not only does the managed security service offer strong protection against rising threats, it is highly cost-effective. "Most of our members are strapped for cash. We can offer our members a service where they know the cost per month and they know the hardware will be refreshed on a regular basis," says Fleming. "Members get the best of both worlds; they have base security service with a cost-controlled, predictable pricing model, and the flexibility to incorporate additional services—like intrusion detection and prevention—as needed."

This is no "one-size-fits-all" managed security service, and customization is critical. KanREN has deep, field-proven expertise in security requirements for schools, including Family Educational Rights and Privacy Act (FERPA) and Children's Online Privacy Protection Act (COPPA), and it works closely with members to develop policies. "We don't walk in with a template," says Fleming. "That's why the tagline for our service is 'Your policy—enforced.'"

*"While we're higher priced than most cut-rate Internet service providers, we offer more value, including significantly better support and a broader set of IP services. Our Juniper network provides us with the agility to deliver advanced services at very competitive rates."*

**Brad Fleming**, Assistant Director for Technology, KanREN

## Business Results

Unlike most statewide networks, the educational and community institutions in Kansas are not obligated to use KanREN and can choose their provider on the open market. To succeed, KanREN must offer a compelling mix of technology and services with superior customer support at competitive prices.

"While we're higher priced than most cut-rate Internet service providers, we offer more value, including significantly better support and a broader set of IP services," says Fleming. "Our Juniper network provides us with the agility to deliver advanced services at very competitive rates."

## Next Steps

KanREN continues to explore emerging technologies that can improve the customer experience, and will evaluate SDN and Network Functions Virtualization (NFV)—including the use of virtual firewalls for its managed security service—to expand service offerings while increasing operational efficiency.

## For More Information

To find out more about Juniper Networks products and solutions, please visit [www.juniper.net](http://www.juniper.net).

## About Juniper Networks

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