

Sunet expects 4-fold capacity increase using one-third the power



Universities, researchers, and cultural institutions in Sweden need fast, reliable, and secure connectivity to collaborate nationally and internationally. To support that collaboration, Sunet, the Swedish University Computer Network, delivers advanced networking and other digital services with white-glove service.

As its data volumes and service portfolio grew, Sunet wanted to expand network capacity in a way that would be operationally efficient and environmentally sustainable. Sunet has designed its second-generation converged optical network, built on Juniper PTX Series Routers with integrated coherent optics. Sunet anticipates a \$100,000 savings in router-related power costs—with quadruple the capacity.

OVERVIEW

Company	Sunet
Industry	Service Provider
Products Used	PTX10001-36MR, JCO400 Coherent Optical Transceivers
Region	EMEA

CUSTOMER SUCCESS AT-A-GLANCE

\$100,000

Savings in power costs per year expected by moving to 400G with PTX10001 routers

4X

Expected capacity increase while reducing power consumption by two-thirds

750,000

Connected users at 110 universities, research institutions, and cultural institutions

8,500

Kilometers of fiber across Sweden

● CHALLENGE

Connect universities and enable collaboration

“The network should never get in the way of research,” says Per Nihlén, CTO of Sunet. “We built an extremely resilient network in 2016 and the network has never been down.”

Sunet was forward-thinking back then, when it designed and built a converged IP and optical network to deliver the performance, resilience, and security that universities, researchers, and cultural institutions in Sweden needed then. The foundation was Juniper MX Series Universal Routers.

Fast forward to 2023. Data volumes have exploded. Application needs have expanded. Sunet offers digital exams; identity management; cloud-based file sharing, backup, and storage; conferencing; cybersecurity; and managed campus network services to its academic, museum, and other cultural institutions in Sweden.

Sunet was ready to migrate its national network to 400G.




SOLUTION

400G converged optical network

Sunet chose Juniper PTX10001-36MR Packet Transport Routers with Juniper integrated coherent optics for its second-generation, 400G-capable network. Juniper's converged optical routing architecture provides Sunet with an extensible, sustainable, and automated network that supports IP over DWDM today and in the future.

The innovative design supports adaptability to meet future needs.

"We will use the PTX10001 everywhere, which simplifies deployment, scaling, and maintenance," says Nihlén. "We can add more 400G pluggable optics as we need. The PTX offers a pay-as-you-grow model."

Sunet plans to use segment routing, a source-based routing technique that simplifies traffic engineering and management across network domains. Segment routing, which replaces RSVP-TE, can make the network more agile and flexible to meet quality-of-service levels for applications and services.



OUTCOME

Adaptable, scalable network for the future

"The new network will be ready for anything researchers need," says Nihlén. Beyond delivering 400GbE at scale to meet the needs of academic research and collaboration, the PTX10001 router provides power- and space-saving advantages that support Sunet's sustainability goals. "We will quadruple the capacity but use less than one-third the power that we did with our first-generation converged network," he says. "We are calculating nearly a \$100,000 power savings for the routers alone."

Sunet can be confident that research and other sensitive data will be safe from prying eyes. "Every router interface will be MACsec-encrypted to protect Swedish research," he says. Sunet plans to migrate to the new PTX Series Routers in early 2024. Nihlén anticipates that the refresh of 90 sites will take just four months.

Nihlén shares a final thought: "People can build greener networks without drawbacks. Building a network that consumes less power is good for the environment."



"We expect to save \$100,000 in power costs alone by moving to the PTX10001 router for our second-generation converged optical network."

Per Nihlén
CTO, Sunet

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