Poland boosts scientific research and discovery with scalable 400G network

PSNC, the scientific research institute that oversees Poland's research and education network, is building its next-generation network called Pionier-Lab. The high-performance network will support the delivery of advanced communications and computing services to meet the needs of universities, research labs, and HPC centers in Poland and across Europe.

PSNC chose Juniper Networks® 400G routing solutions for the Pionier-Lab network not only for the ability to efficiently scale services while protecting its investment, but also based on Juniper's proven success at PSNC for the last two decades.

OVERVIEW

Company	PSNC
Industry	Research
Products Used	PTX10001-36MR, MX304, ACX7100
Region	EMEA

CUSTOMER SUCCESS AT-A-GLANCE

700
Education institutions, research labs, and HPC centers connected to the Pionier-Lab network

400G
Speed connections with a scalable, investment-protected path to 800G and beyond

Advance
Scientific research and innovation

100%
Availability to Pionier's core and metro networks

CHALLENGE

Support scientific research and innovation in Poland and beyond

"We are building one of the most modern networks in Europe," says Artur Binczewski, director of networking technologies division at PSNC. "Pionier-Lab will provide the education and research community with the most advanced and innovative services."

Pionier-Lab is also an important element of open science, a part of the EU's European Open Science Cloud initiative, which champions the creation of a trusted, open environment for sharing scientific data.

PSNC oversaw the open tender for the new network on behalf of the Pionier-Lab consortium members. The project called for building a modern, service-provider scale network with a core that supports high-density 400G interfaces today and an investment-protected path to 800G. The aggregation network needed to support 100G and 400G, with access networks delivering its members a choice of 1/10/40G speeds.

SOLUTION

Network scalability that just keeps going

Juniper's 400G core, metro and edge routing solutions met the requirements for the next-generation Pionier-Lab network. Juniper's proven track record in the current Pionier network provided additional confidence. "In the past, we had 100% availability on our national and metro networks," says Binczewski.

The network spans all of Poland with high-speed direct connections to research labs and data centers in Europe as CERN or NetherLight and interconnect to pan-european research network GÉANT to facilitate scientific collaboration across Europe. The core and edge networks, comprised of Juniper Networks PTX10001-36MR Packet Transport Routers and Juniper Networks MX304 Universal Routers, delivers the scalable capacity, high availability and flexibility needed today and in the future. The PTX10001-36MR delivers high-density 100GbE and 400GbE in a 1 U fixed form-factor. The MX304 router scales to scales to 4.8 Tbps of throughput in a 2 RU form factor, while consuming just 0.3 Watts/Gb of throughput.

Pionier-Lab relies on Juniper Networks ACX7204 and ACX7100 routers for the metro networks connecting research labs, universities, high-performance computing centers, as well as individuals. "To deliver the most modern services, we designed the metro network to function as a distributed internet exchange so all users will have high-performance connectivity wherever they are located," he says.

Sustainability and power efficiency became a critical factor with the energy crisis in Europe. "The price of energy in Poland has risen by 4X in four years," he says. "It is important to consider how much energy the network uses."

The Pionier-Lab network will have greater capacity with lower power consumption, as it replaces its existing Juniper Networks MX2020 routers with the power- and space-optimized PTX10001-36MR and MX304 routers.

OUTCOME

Fast connections and high performances improves research and discovery collaborations

"With the new network, we can practically deliver unlimited bandwidth," says Binczewski.

Pionier-Lab offers high-bandwidth access to high-performance computing centers, supporting research collaboration and scientific discovery. It also provides high-speed connectivity to GÉANT, which interconnects research and education networks across Europe.

PSNC has a long history of running the most advanced networks, and the team has the foresight to know what is considered fast today will be deemed slow tomorrow. "In 2015 we offered 10G access and the backbone was 100G," Binczewsk says. "Now we are migrating the access to 100G and the backbone to 400G. That's a 10X increase in access speeds in eight years."

"Pionier-Lab will be the most modern network in Europe, allowing Polish research and education institutions to connect to high-performance computing centers in Poland and across Europe. With Juniper, we have a scalable network with investment protection to offer virtually unlimited bandwidth to our members."

Artur Binczewski
Director of Networking Technologies Division, PSNC

Corporate and Sales Headquarters

Juniper Networks, Inc.

1133 Innovation Way

Sunnyvale, CA 94089 USA

Phone: 888.JUNIPER (888.586.4737)

or +1.408.745.2000

www.juniper.net

APAC and EMEA Headquarters

Juniper Networks International B.V.

Boeing Avenue 240 1119 PZ Schiphol-Rijk

Amsterdam, The Netherlands

Phone: +31.207.125.700