

PSNC

Poland boosts scientific research and discovery with scalable 400G research and education network

Discover how Juniper's 400G and 800G solution deliver performance at scale with agility for the unknown.

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Industry

Research

Region

EMEA

Pionier-Lab supports scientific research and innovation in Poland and beyond

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

Pionier-Lab uses Juniper Networks 400G routing solutions to efficiently scale network services while protecting its investment as scientific collaboration evolves.

Overview

Challenge

"We are building one of the most modern networks in Europe," said Artur Binczewski, Director, Networking Technologies Division at PSNC. "Pionier-Lab will provide the education and research community with the most advanced and innovative services."

Pionier-Lab spans all of Poland with high-speed direct connections to research labs and data centers in Europe, such as CERN or NetherLight, and to pan-European research network GÉANT to facilitate scientific collaboration across Europe. It is also part of the EU's European Open Science Cloud initiative, which champions the creation of a trusted, open environment for sharing scientific data.

Transformation

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.

Outcomes

Advance science

700

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

Scalable

400

Interfaces with an investment-protected path to 800G and beyond

Reliable

100%

Availability on Pionier's core and metro networks

Solution and implementation

[PTX10001-36MR Packet Transport Router](#)

[MX304 Universal Router](#)

[ACX7100 Cloud Metro Router](#)

[ACX7024 Cloud Metro Router](#)

“With the new network, we can practically **deliver unlimited bandwidth.**”

Artur Binczewski
Director,
Networking Technologies
Division, PSNC

Network scalability that just keeps going

The Pionier-Lab network relies on Juniper's 400G core, metro, and edge routing solutions. Juniper's proven, two-decade track record in the current Pionier network provided additional confidence. “In the past, we had 100% availability on our national and metro networks,” said Binczewski.

The core and edge networks, comprised of Juniper PTX10001-36MR Packet Transport Routers and Juniper MX304 Universal Routers, deliver the scalable capacity, high availability, and flexibility needed today and in the future. The PTX10001-36MR delivers high-density 100G and 400G 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.

Juniper ACX7024 and ACX7100 routers are used for the metro networks connecting research labs, universities, high-performance computing centers, and individuals. The metro network functions as a distributed internet exchange so all members have high-performance connectivity wherever they are.



Key takeaways and outcomes

Juniper is setting a new standard for sustainability, performance, and automation with **800G routing solutions** for the AI era.

Fast connections enable innovation ecosystems

“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,” said Binczewski. “With Juniper, we have a scalable network with investment protection to offer virtually unlimited bandwidth to our members.”

● Enable collaborative research and discovery

Pionier-Lab offers high-bandwidth access to high-performance computing centers, supporting research collaboration and scientific discovery in Poland, Europe, and beyond.

● Efficient, scalable network to meet future growth

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. With Juniper, it can adopt 400G today, with an investment-protected path to 800G.

● Sustainable, power-efficient networking

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

More information

Learn more about Juniper AI-Native Networking

To learn more about Juniper 400G and 800G solutions, visit our website at <https://www.juniper.net/us/en/solutions/400g-and-800g.html>

To learn more about PTX Series Transport Routers, visit our website at <https://www.juniper.net/us/en/products/routers/ptx-series.html>

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