

The background of the slide is a close-up photograph of a network switch or patch panel. Numerous yellow Ethernet cables are plugged into the ports, with some cables bundled together. The lighting is dim, highlighting the texture of the cables and the metallic components of the switch. A large, white, diagonal graphic element, resembling a stylized 'X' or a folded corner, cuts across the right side of the image.

NOKIA

FranceIX

Transforming interconnection quality

Fast Facts

- France-IX runs one of Europe's leading internet exchanges
- Members can access a range of interconnection services
- Paris and Marseille exchanges connect more than 430 AS
- France-IX's Marketplace, launched in 2016, allows members to access a wide range of additional services through 13 sellers
- An extended network of 25 resellers enable remote peering access to IXP benefits via several hundred virtual PoPs globally
- Daily global traffic peaks exceed approximately 1 Terabit per second
- Nokia infrastructure now delivers vital new flexibility, speed and a smooth upgrade path

What's the France-IX story?

France-IX is the premier Internet peering service provider in France, managing significant traffic within the French internet market. It offers public and private interconnection services for several hundred worldwide telecommunications carriers, ISPs, content providers, content delivery networks and Internet networks through its carrier and data center neutral exchange points in Paris and Marseille.

The France-IX goal? To enhance the affordability and reduce the latency of internet traffic exchanged between members and improve the overall quality of the internet in France.

Founded in June 2010 with the support of the French Internet community, France-IX is a member-based association. Their core values are neutrality, sustainability and working towards the constant improvement of the internet experience. Its busy Paris and Marseille internet exchanges provide a range of interconnection services for its members, including:

- **Peering services** – Public peering using IPv4/IPv6 unicast in the same VLAN and private peering with closed user group configuration of one or several ports for traffic exchange between members, 80 of which are connected via resellers.
- **Route Servers** – Facilitating the exchange of routes between members, with different functions and BGP communities enabling members to easily tune and secure routing policy.
- **IXP interconnection** – Offering interconnection with IXP partners including LyonIX, LU-CIX, Top-IX, ToulX.
- **France-IX PASS Service** – Providing fully secured interconnection between Paris and Marseille, giving members the ability to peer remotely with the global France-IX community for the best value for money.
- **Marketplace services** – Enabling direct connection to 13 sellers that offer non-France-IX services such as IP transit, DDoS protection, cloud direct access, Ethernet transport, network visibility and analytics, remote peering and voice services.
- **Blackholing** – Helping members to combat DDoS attacks by tagging routes to block DDoS or malicious traffic.
- **Customer portal** – Offering a public statistics website that provides a looking glass into global traffic statistics, and a private statistics web portal providing members with port and flow statistics.
- **NOC** – Supporting members by providing a 24/7 NOC.

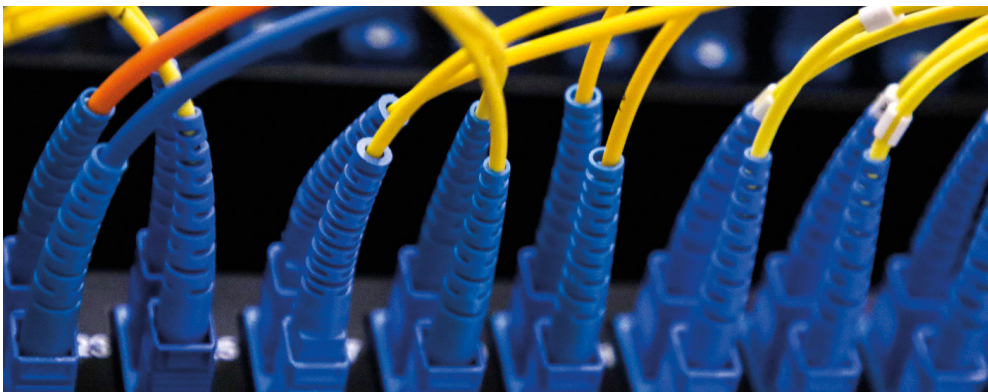
What was their challenge?

France-IX had been handling increasing amounts of customer peering traffic and needed to plan for a next generation backbone network to interconnect the data centers hosting its point-of-presence (PoP) locations.

France-IX wanted to investigate alternative solutions that could support 100G interfaces now and scale to support 400G interfaces in the future.

Several possible approaches were investigated and evaluated in extensive discussion with experienced experts. Criteria such as features and functions, cost, and ongoing support were weighed up. Amongst the approaches considered were white box Open Network Install Environment (ONIE) solutions based on different vendors' operating systems (OS).

The France-IX conclusion? While the cost of this approach was attractive, the complexity and resources needed to combine all services and manage the solution were not. Virtual Private LAN Service (VPLS) was also considered and assessed as a 'nice to have' rather than a 'must have' to ensure a smooth migration. After discussions with several potential vendors, France-IX concluded that VXLAN could provide a viable solution.



How did France-IX move forward?

Having narrowed their final selection down to Nokia and two other vendors, a number of key innovations won Nokia the partnership opportunity:

- FP4 network processors – Nokia's 4th generation of custom silicon provides the range of network functions and capabilities that France-IX needs without impacting performance.
- High density 100G line cards – Nokia 7750 SR-2s platforms support line cards with the density of 100G interfaces that France-IX needs, each offering up to 36 x 100G interfaces.
- High density satellite systems – Nokia 7210 SAS platforms act as satellite systems to the 7750 SR-2s, providing the density of 1G and 10G ports France-IX needs to support its customers, each offering up to 64 x 1G/10G interfaces.
- Ready for 400G – Nokia 7750 SR-2s platforms are 400G ready, enabling France-IX to implement the right solution now with a simple upgrade to 400G and beyond into the future.
- Migration options – By supporting VPLS and other layer 2 technologies like EVPN/VXLAN, the Nokia platforms can also enable the original intended migration.

France-IX ran a proof of concept (POC) with support from Nokia both before and during it. Nokia platforms were stressed with multiple 100G traffic streams over more than 30 successful tests. They also ran basic and advanced feature testing and interoperability testing with existing vendors' platforms to ensure full compatibility. France IX concluded that some work was needed to integrate the Nokia platforms with their configuration and monitoring tools. They also determined that they would be able to implement VPLS initially across their backbone, before moving to VXLAN in the future.

What are the new advantages?

Thanks to Nokia 7750 SR-s platforms, France-IX is free to focus on enabling and delivering new and expanded services for its customers now and well into future. The Nokia solution allows France-IX to:

- Renew its backbone infrastructure with the latest generation of powerful IP routers
- Stay compatible and interoperable with existing vendors' platforms
- Scale 100G capacity and deliver 400G interconnection on a stable, programmable platform
- Reduce time to market for new services with network and service automation.



Want to know more about France-IX?
Please visit: www.franceix.net

Why did France-IX choose Nokia?

Advanced innovation was key. By enabling the renewal of its interconnection backbone, Nokia 7750 SR-s routers powered by FP4 custom silicon deliver stability, high performance, flexibility and scalability. The new backbone will also let France-IX provide its peering community members with an advanced IXP platform that delivers optimum connection capacity for both current and future needs.

The 7750 SR-s routers additionally provide higher 100GE port densities and are 400GE-ready, accommodating the anticipated growth and the evolution of France-IX's service offerings. They allow a smooth upgrade path from VPLS (Virtual Private LAN Service) to EVPN (Ethernet VPN) too, as well as the ability to offer network automation and streaming telemetry.

It all enables France-IX to:

- Flexibly automate the provisioning of new services
- Activate new services faster, in less than a day
- Upgrade smoothly to 400GE in the future.

“We chose Nokia as it offers the most advanced technology foundation for our IXP platform with outstanding stability and the ability to meet our anticipated growth in terms of increased demand for capacity and valuable new service offerings. This major investment means the France-IX platform will not experience constraints in future when looking to scale offerings, automate network operations, or rapidly deploy new services.”



Simon Moyal,
Chief Technical Officer, France-IX

