

USER STORY

How IP Nexia Built a Foundation for Multi-Site Growth with SONiC

Organization

IP Nexia is a Belgian business-to-business (B2B) telecommunications provider based in Diegem, in the Brussels region. The company describes itself as an “Integropoperator,” combining the expertise of a telecom operator with the agility of an information and communications technology (ICT) integrator. IP Nexia delivers internet connectivity, Voice over IP (VoIP) and unified communications, mobile connectivity, hosting, and security services to more than +1,000 enterprise customers and public-sector customers across Belgium, supporting them from the initial network audit and design through implementation and ongoing support. Reliable voice and data services sit at the center of its business, and its network underpins live, customer-facing services.

The user story was submitted together with Deca Consulting, an independent Belgian network engineering consultancy focused on data center networking, security, and network automation, which designed and deployed the network fabric described below.

Overview

Growing bandwidth demand exposed the limits of IP Nexia’s existing data center network. The installed switches were approaching end of support, which restricted access to security fixes and software updates,

and the network depended on a single supplier for hardware choices, roadmap, and pricing. The traditional aggregation design limited horizontal scaling and created potential bottlenecks for server-to-server (“east-west”) traffic, the number of high-speed ports was too low for future capacity needs, and the platform could not be integrated with modern orchestration and Infrastructure-as-Code (IaC) workflows. Because the network carries production voice and connectivity services, any replacement also had to avoid disrupting live traffic.

Rather than pursue a like-for-like hardware refresh, IP Nexia and Deca Consulting chose an open, disaggregated approach built on Software for Open Networking in the Cloud (SONiC), the open source network operating system hosted by the Linux Foundation. SONiC was selected for several reasons:

- **Vendor independence:** SONiC separates network software from switch hardware through the Switch Abstraction Interface (SAI), removing the dependency on a single supplier.
- **Automation-first foundation:** it is Linux-based and fully programmable, supporting an automation-first operating model.
- **Multi-tenant readiness:** it supports the standards-based Ethernet Virtual Private Network (EVPN) and Virtual Extensible LAN (VXLAN) technologies needed

for a multi-tenant fabric, including validated Layer 3 multicast.

- **Production-grade stability:** it is available in commercially supported distributions that provide the stability a service provider requires.

The team evaluated options against features, scalability, cost, and the availability of professional software support, an important requirement for a production service-provider network, and weighed SONiC's fit against IP Nexia's plans for future multi-site expansion.

The deployment is notable because it shows that SONiC, which originated in hyperscale cloud data centers, is equally suited to a regional service provider running a production network on which thousands of businesses depend.

Deployment

Architecture

The new data center network is a two-tier spine-leaf fabric. Open Shortest Path First (OSPF) handles underlay routing, while a BGP EVPN control plane with a VXLAN data plane provides the overlay that separates tenants and services. Separate Virtual Routing and Forwarding (VRF) instances isolate routing tables and connect to firewalls over BGP. Every leaf switch connects to every spine switch over multiple 100 Gigabit Ethernet links, giving a non-blocking fabric with predictable latency for east-west traffic and removing the aggregation bottlenecks of the previous design. The fabric consists of two spine switches and four leaf switches deployed as two redundant pairs, with the architecture designed from the outset to support a planned second data center. It can grow by adding leaf switches without redesigning the fabric.

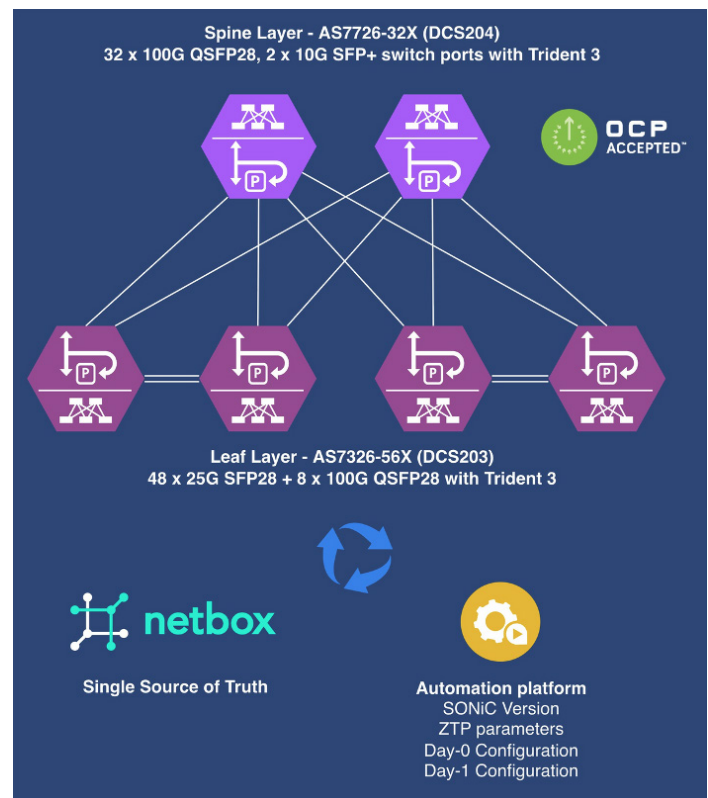
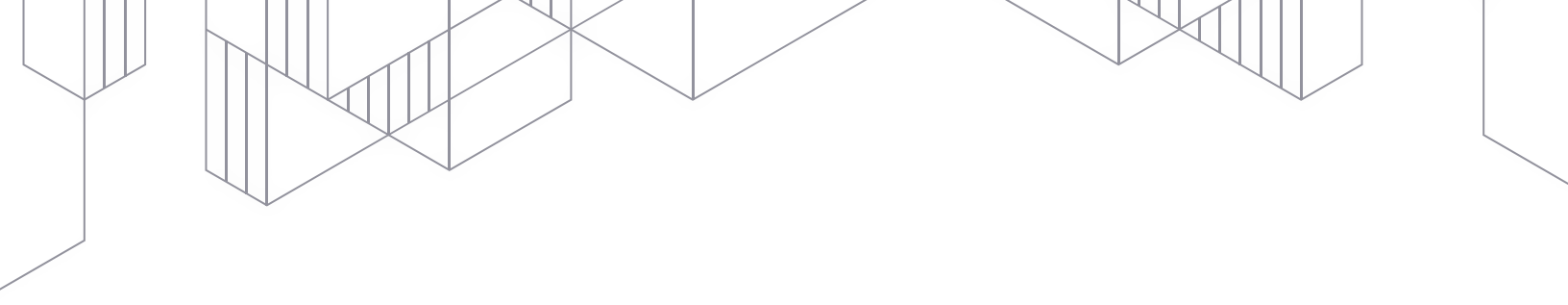


Figure 1: IP Nexia spine-leaf SONiC fabric, with NetBox as the single source of truth and the automation platform that delivers the SONiC version, provisioning parameters and Day-0 and Day-1 configuration.



Hardware and Software

The fabric uses the following switching platforms:

Layer	Platform	Port Configuration	Switching Silicon
Spine	Edgecore AS7726-32X	32 x 100 Gigabit Ethernet (QSFP28), 2 x 10 Gigabit Ethernet (SFP+)	Broadcom Trident 3
Leaf	Edgecore AS7326-56X	48 x 25 Gigabit Ethernet (SFP28), 8 x 100 Gigabit Ethernet (QSFP28)	Broadcom Trident 3

QSFP28 and SFP28/SFP+ are the pluggable optical and copper interface formats used on these switches. Existing optical modules were reused for server and firewall connections, and the combination of open switch hardware with an independently chosen SONiC distribution gives IP Nexia the freedom to select hardware and software components on their own merits going forward, rather than being tied to a single vendor’s ecosystem.

Deca Consulting led the architecture, automation, and migration planning. STORDIS supplied the Edgecore switching hardware, coordinated logistics, and provided a virtualized SONiC environment for functionality testing ahead of the production cutover. All switches run a commercially supported SONiC distribution, with STORDIS providing ongoing support under a support agreement, access to professional software support was an important factor in choosing SONiC for a production service-provider network.

Automation

- **Day-0, Zero Touch Provisioning (ZTP):** a newly installed switch automatically retrieves the correct SONiC software version and its base configuration, and joins the network without manual intervention.

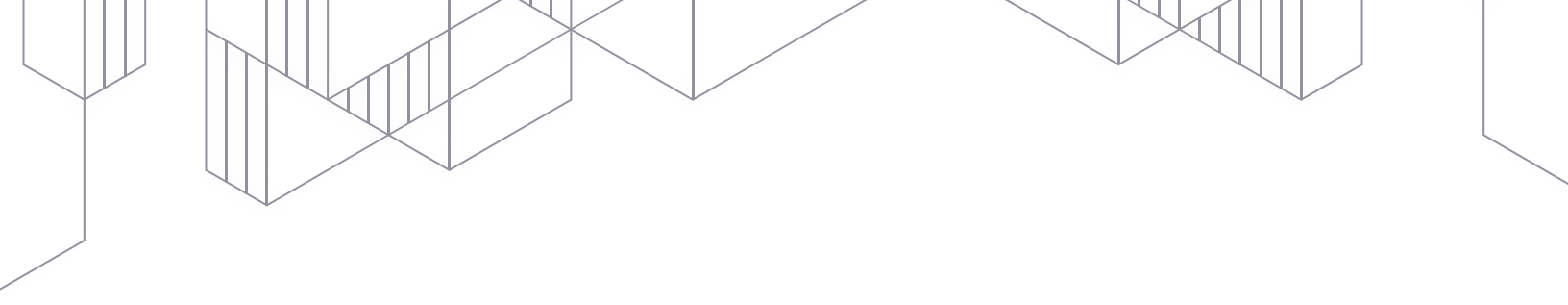
- **Day-1, source-of-truth-driven configuration:** NetBox, an open source network documentation and modeling tool, serves as the single source of truth, using device roles and tags to select configuration templates that Ansible playbooks then apply to the fabric. Reusing existing Ansible playbooks reduced the need for custom development and gave the team a repeatable process for adding switches as the network grows.
- **Infrastructure-as-Code (IaC):** network changes are version controlled, enabling peer review, rapid rollback, and consistent deployment across the whole fabric.

Monitoring

Telegraf, InfluxDB, and Grafana provide telemetry and dashboards, with alerts routed to IP Nexia’s support team through its existing messaging platform.

Migration

Evaluation of SONiC began around 2023, and the broader journey, including technology assessment and validation, spanned roughly three years. A virtualized SONiC environment was used for functionality testing ahead of



the production cutover. Because the fabric carries live customer services, the move from the legacy infrastructure was planned around a zero-downtime requirement: the team interconnected the old and new networks and moved workloads and gateways in stages, with automated scripts disabling each legacy gateway interface and activating its replacement. Reusing the same MAC addresses reduced address relearning during the transition. The live-service cutover itself was completed in approximately three weekends, using one-hour Sunday maintenance windows.

Benefits

By deploying SONiC, IP Nexia achieved:

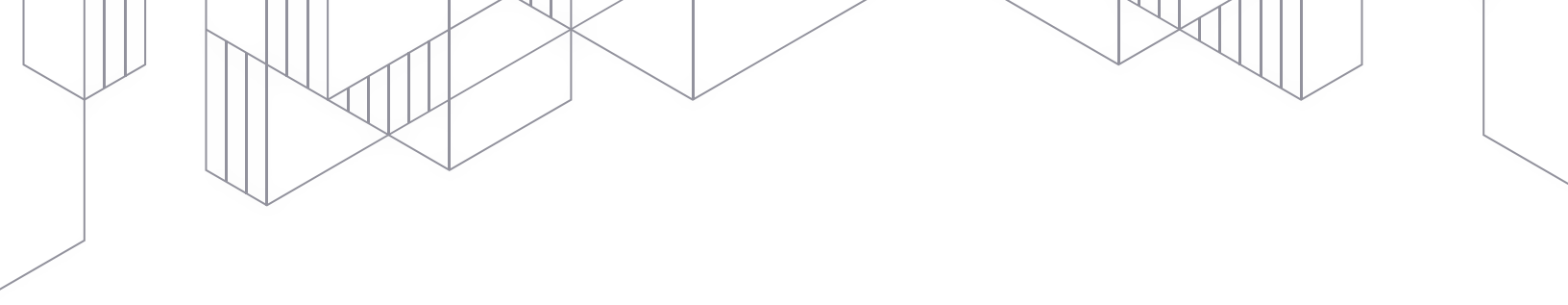
- **Service continuity:** CEO Michel Coric reported no service downtime during implementation, with only one or two lost pings recorded during cutover.
- **Cost savings:** estimated project pricing came in more than 50% below the traditional-vendor alternative IP Nexia considered.
- **Freedom of choice and control:** separating hardware and software removes the dependency on a single supplier's roadmap and price list, letting IP Nexia adapt its infrastructure as business demands evolve, while separate routing tables and firewall integration support traffic isolation.
- **Predictable performance:** the non-blocking 100 Gigabit Ethernet spine-leaf fabric delivers consistent, low latency and removes the bottlenecks of the previous design.
- **Faster deployment and capacity to grow:** with Zero Touch Provisioning, new switches retrieve their software and configuration automatically, cutting deployment time from hours to minutes, and higher port density makes it easier to expand the fabric

by adding leaf switches as demand grows, without redesigning the network or interrupting services.

- **Consistent, auditable operations:** NetBox-driven Ansible playbooks replace manual configuration with repeatable changes, a full audit trail, and version control, freeing senior engineers and consultants to focus on other complex projects.
- **Service agility:** the EVPN VXLAN overlay lets IP Nexia deploy multi-tenant services quickly across its full portfolio of voice, unified communications, mobile, cloud connectivity, and security offerings.

“The open SONiC platform delivers enterprise-grade stability while giving us the flexibility to rapidly deploy multi-tenant services supporting our full portfolio of VoIP, unified communications, mobile, cloud connectivity, and security solutions. We now have a scalable, future-ready infrastructure that matches the operational agility expected from a competitive modern Internet Service Provider (ISP). We wanted infrastructure that was easy to deploy, easy to expand, and potentially easy to replicate.”

— Michel Coric,
Chief Executive Officer, IP Nexia



Lessons Learned and Future Plans

Insights

- **Open networking is ready for regional service providers:** SONiC is often associated with hyperscale operators, but a commercially supported distribution on open switch hardware met the stability requirements of a production service-provider network.
- **Build the source of truth first:** the quality of automation depends on the quality of the data. Modeling the fabric in NetBox before the first switch was installed made Day-0 and Day-1 provisioning repeatable from the start, though NetBox templates and device tags needed several passes before hardware type, role, and deployment status consistently mapped to the right configuration.
- **Rehearse the cutover:** gateway migration carried a risk of interrupting live traffic, so the team tested routing and gateway transitions, automated the changes, and moved services in stages before touching production. With a zero-downtime requirement, most of the risk sits in the migration of live services rather than in the new platform itself.
- **Plan support alongside the technology:** confidence in software support and hardware availability mattered as much as feature validation. The lesson was to establish the delivery and support model early and test required features before production deployment or upgrades.

- **Invest in knowledge transfer:** a Linux-based network operating system lets engineers use familiar Linux and automation tooling, but moving from manual, device-by-device configuration to an Infrastructure-as-Code workflow requires deliberate knowledge transfer to the operations team.

Future Plans

- Build and test multi-site connectivity to a planned second data center, extending the current design and automation for greater resilience, and expand the fabric horizontally with additional leaf switches as demand grows.
- Apply the same repeatable deployment approach to other data center refresh projects.
- Extend the NetBox, Ansible, and Infrastructure-as-Code workflow from Day-0 and Day-1 provisioning to ongoing (Day-2) operations, such as configuration compliance checks and automated change validation.
- Deepen observability of the fabric by making further use of SONiC's streaming telemetry, feeding the data into AI-assisted analytics for anomaly detection and capacity forecasting, and onboard additional multi-tenant services onto the EVPN VXLAN fabric.
- Follow the SONiC community roadmap and share operational experience with the SONiC community.

Related viewing: video interviews with IP Nexia — [Part 1](#), [Part 2](#).



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Become a SONiC member to collaborate, learn, and shape the future of the open network operating system.

sonicfoundation.dev/join-sonic