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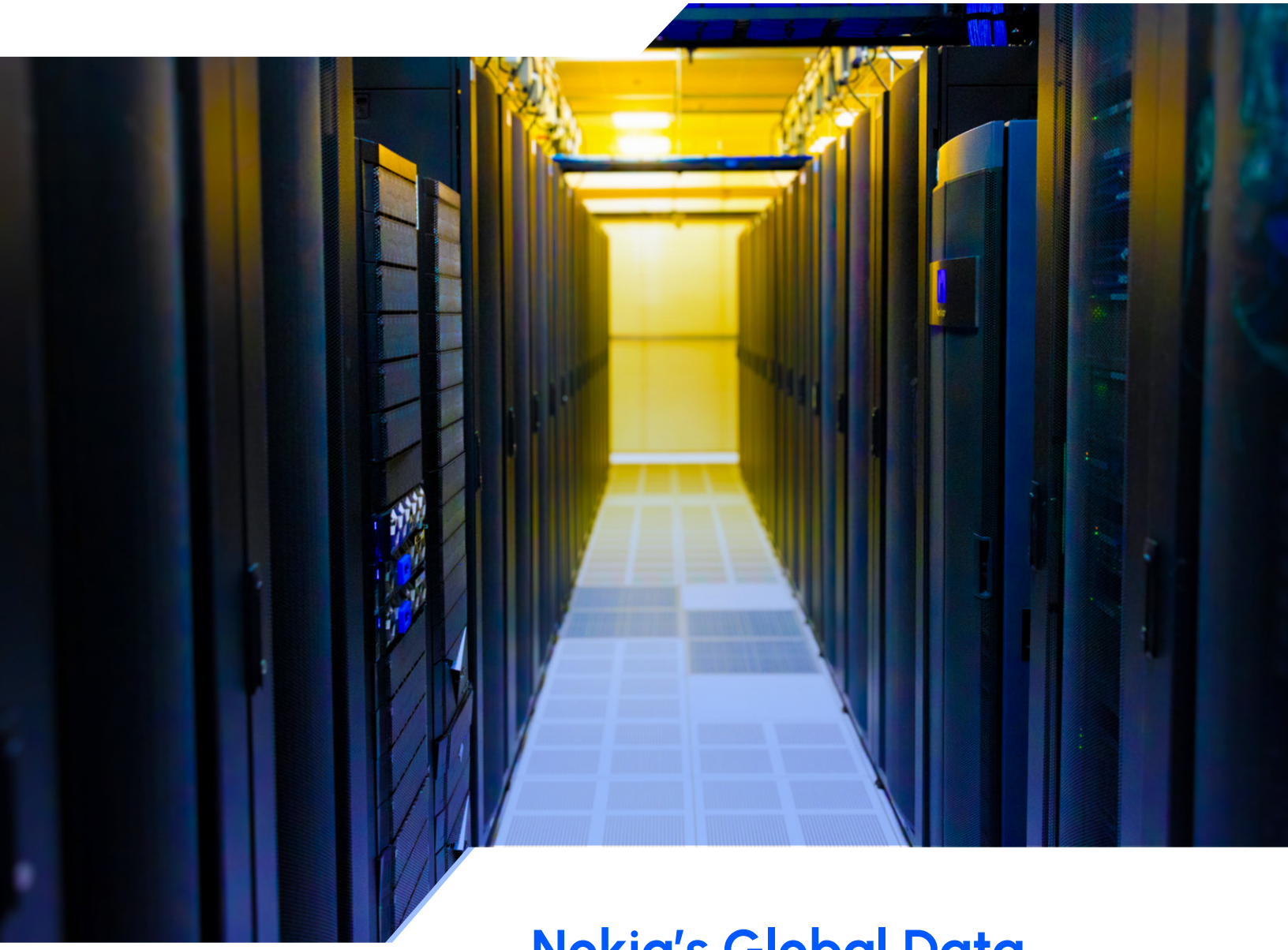
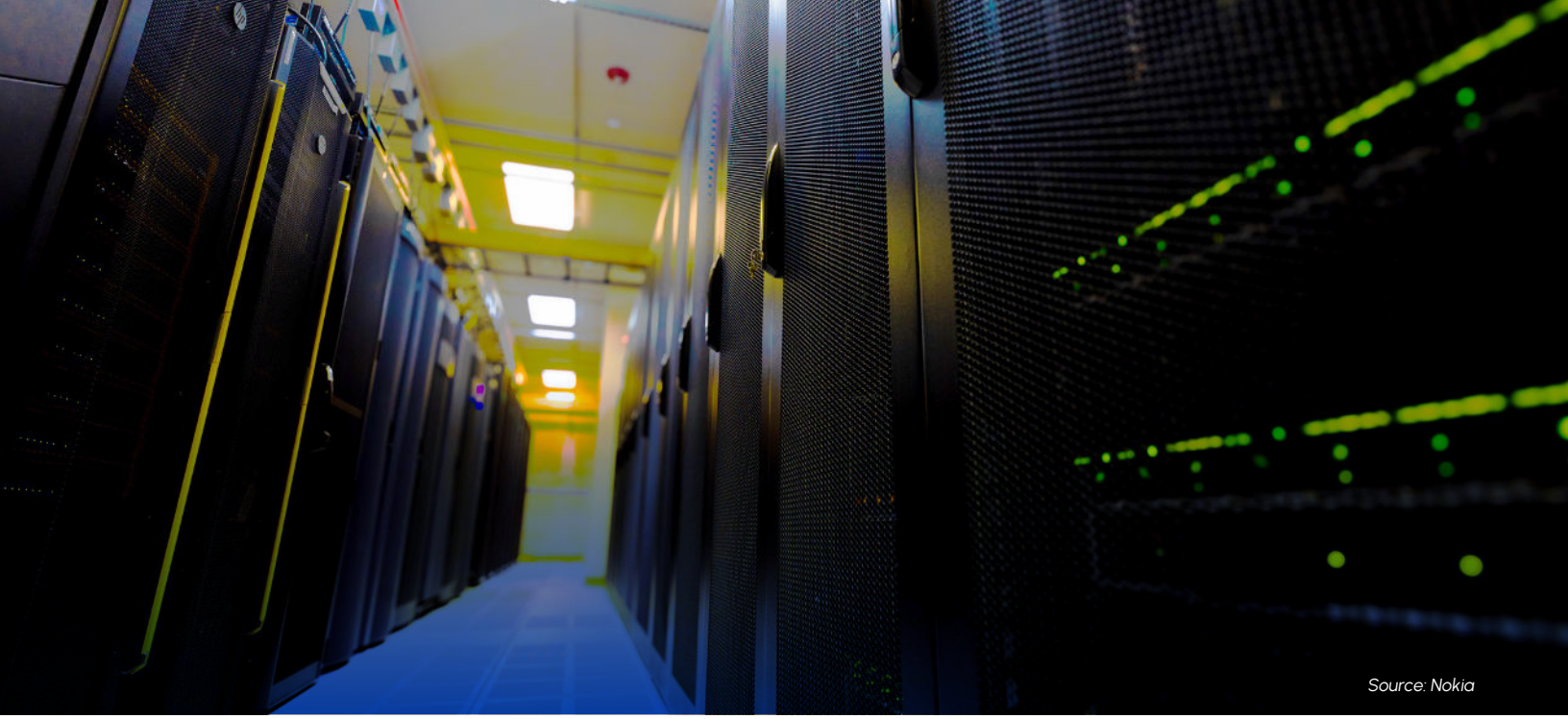


Nokia's Global Data Center Network Migration:

From Legacy Complexity to Automated, Reliable Operations

FEBRUARY 2026



Source: Nokia

Executive Summary

Nokia IT has embarked on a global data center network transformation to modernize a previously heterogeneous legacy infrastructure. Over decades of growth and acquisitions, Nokia's data centers had accumulated multiple legacy network platforms that were complex to operate and prone to long outages. By consolidating onto a modern data center fabric solution built on Nokia data center switches, running the Nokia SR Linux network operating system (NOS) and managed by the Nokia Event-Driven Automation (EDA) platform, Nokia IT achieved dramatic improvements in reliability and operations.

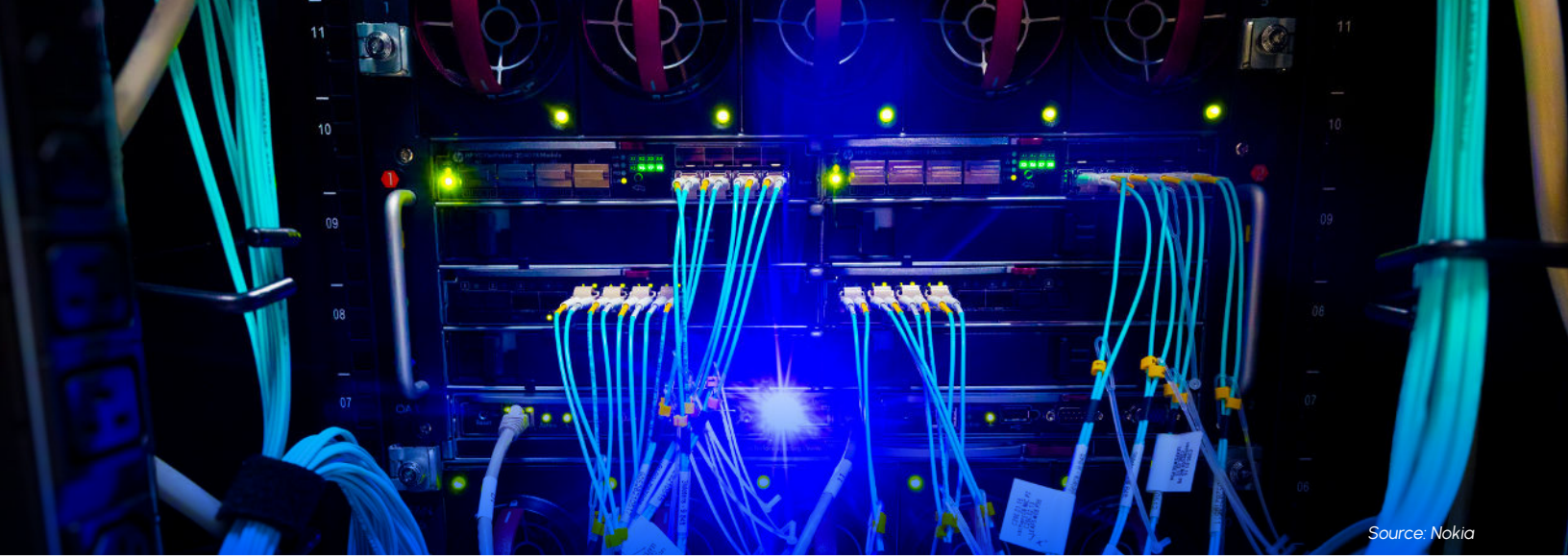
The first deployments—representing key stages of a broader global migration—delivered immediate, measurable operational improvements. Chronic network instability affecting long-running, mission-critical applications was eliminated, and the environment experienced an approximate 80% reduction in network-related incidents. These outcomes validated both the architectural direction and the phased execution model. Importantly, these deployments are now in production and were designed from the outset to scale globally through successive phases.

This report details the drivers, approach, and outcomes of Nokia's brownfield data center network migration, with verifiable quotes and metrics from Nokia's experience.

80%
Incident Reduction

Near Zero
Downtime

$MM
OPEX Savings


Source: Nokia

Business Drivers and Legacy Challenges

Several key factors drove Nokia to pursue a global data center network migration:

- **Multi-Vendor Complexity:** Through mergers, Nokia's enterprise IT inherited a mix of data center network technologies (an acquired vendor's switches and legacy vendor's fabrics). Managing three different network platforms proved unsustainable, requiring specialized skills for each. As one leader put it, "[The legacy vendor solution]... it's way too complicated... you need people who built it to be here seven years down the line to migrate it." This fragmentation led to design inconsistencies and configuration drift, with no single source of truth or version control for the network. The operational model varied by platform, increasing the risk of errors.
- **Frequent, Lengthy Outages:** The legacy environment suffered repeated outages that could last eight to nine hours at a time. In one manufacturing data center, network failures were causing production stoppages with significant costs—"Every hour of outage in the factory costs... USD $100K dollar loss," meaning a multi-hour outage could cost hundreds of thousands of dollars. These prolonged outages often had no easily identifiable root cause, eroding trust in the network.
- **High Risk of Changes:** Teams grew apprehensive about making network changes in the old environment. Even simple modifications like adding a VLAN were approached with fear, as engineers were "scared that this might create an aftereffect somewhere else and create an outage." As a result, standard maintenance was delayed, further compounding technical debt. There was effectively no way to pre-validate configuration changes on the legacy platforms—"you don't really know what the blast radius is...you're flying blind."
- **Outdated Operations & Tools:** Much of the network management was manual, with engineers pushing configuration by hand (e.g. "copying and pasting Notepad++ scripts into devices" in earlier days). The tooling did not provide modern DevOps capabilities. There were no feedback loops between design and implementation—once deployed, configurations drifted from the intended design without robust validation. This gap meant design "blueprints" quickly became stale, and troubleshooting was ad hoc. The enterprise IT mandate, however, was to achieve telco-grade reliability ("five nines" uptime) in the data centers, calling for a fundamentally new approach.
- **Hybrid Cloud Strategy:** Nokia's business needed a hybrid cloud approach—moving cloud-friendly applications to public cloud, while keeping "crown jewel" and cost-prohibitive workloads on-premises. This demanded that on-prem data centers be highly reliable and automated, since they would continue hosting critical 24x7 applications (some running on decades-old platforms like VAX/VMS and legacy SAP). The status quo of the on-prem network could not meet these needs, prompting leadership to sponsor a transformation.

Source: Nokia

Modernization Strategy and Solution Design

Based on these challenges, Nokia IT defined clear principles for the new data center network centered on reliability, simplicity, automation, and operational agility. The requirements led to the following principles:

- **Simplified Design & Operations:** The target solution had to be "simple to deploy, simple to configure, and simple to operate" , enabling small changes and software upgrades easily without needing certified experts on every task. This principle aimed to eliminate the complexity that had made the legacy network so fragile.
- **Automation-First, "Network as Code" Model:** Nokia IT sought to manage the network through software-driven automation and DevOps practices rather than manual CLI changes. The team envisioned using CI/CD pipelines and intent-based provisioning to pre-check changes and roll them out with minimal risk. As one executive noted, the solution needed to "abstract the complexity of networks… make these networks as code" and enable an AIOps/NetOps approach.
- **Predictable, Tested Changes (digital twin):** A key capability Nokia IT adopted was a "digital twin" of the network—a simulated environment to test changes. Indeed, the chosen solution implements a digital twin capability, which the team saw working in real-time during trials. This ensures "no blind changes": any configuration can be validated offline for its impact, addressing the legacy problem of unknown blast radius. The new automation platform would integrate this capability for safer changes going forward.
- **Global Consistency:** The new architecture would be deployed uniformly across all major data centers worldwide. The design emphasized standardization (in contrast to the prior patchwork) so that Nokia could manage all sites as one fabric. The team ran an internal RFP exercise to get the full scope of requirements and discovered that "the surrounding bits"—support for migration, multi-site management, integration with IT processes—were just as important as raw product features. Nokia IT needed a partner that could provide end-to-end support for this large-scale rollout.

The team decided to adopt Nokia's own next-generation Data Center Fabric solution. This consists of the SR Linux NOS running on Nokia's data center switching hardware, combined with the Nokia EDA platform for management and orchestration. Nokia's automation-driven fabric, aligned perfectly with the IT automation goals. Nokia's Global Network Services lead noted they were "particularly impressed with the storyline coming out [of] our SR Linux solution" and had full confidence in Nokia's hardware capabilities.

The major question was whether the software/automation was mature enough—"the main worries for us were whether it's going to be automated enough… hardware being fancy [is not enough], I want to make sure it can be easily operated." Early proofs of concept indicated that the solution would meet these needs.

Source: Nokia

EDA SaaS

One strategic decision Nokia IT made was to consume the automation platform using a Software-as-a-Service (SaaS) delivery model. Importantly, this decision was driven by a desire to reduce the operational overhead associated with hosting and maintaining the management platform.

Operating and lifecycle-managing controller infrastructure was not viewed as a core value-add for the network team. As one leader explained, "we are not server experts... I don't want to take the pain of upgrading the server, managing infrastructure." In response, Nokia's product group offered EDA as a cloud-hosted option that offloads platform hosting, upgrades, and first-line operational responsibilities.

Nokia IT adopted EDA SaaS with strong results. The SaaS deployment allowed the team to focus entirely on network design, automation workflows, and operational outcomes, rather than on maintaining the underlying platform.

This approach simplified operations. Engineers continued to interact with EDA through familiar automation constructs and workflows, while benefiting from reduced infrastructure burden and faster access to software updates. For Nokia IT, EDA SaaS was a pragmatic choice to streamline operations.

Phased Migration Approach

Nokia IT took a cautious, phased approach to the brownfield network migration. Rather than a big-bang overhaul, they implemented the new fabric in one site to prove its value and work out any kinks before global rollout:

- **First Deployment (Europe dual data center sites):**The initial deployment was carried out at the dual data center sites in Europe, which were built on legacy vendor infrastructure. This site was selected due to persistent operational challenges and because it was already targeted for modernization as part of Nokia's broader data center strategy. The deployment involved standing up a new SR Linux–based fabric in parallel with the existing network, followed by the migration of applications onto the new environment. These applications included critical 24×7 manufacturing systems supporting two of Nokia's factories—a deliberate and high-stakes choice, given that any disruption would have had direct production impact. Nokia IT supported this phase with structured validation and close collaboration with internal product teams.
- **Migration Approach:** The positive experiences with deploying Nokia data center switches in the Europe data center sites, gave the team the confidence to adopt the same approach to the US data center sites. This led to the next phase of implementing Nokia hardware and the SR Linux NOS in the US data center sites, along with implementation of migration to Nokia EDA as the management and automation platform for the US and Europe data center locations.

This involved careful planning to move each application with minimal downtime. Some pains were encountered (inherent in any large migration), but they were largely due to the effort of moving systems rather than issues with the new network itself. The team effectively ran the old and new networks in parallel during cutover windows, ensuring that if any problem arose, fallback was possible. In the end, the initial cutover was successful—as Nokia's Head of Global Network Services put it, "we made it work," and the manufacturing applications were all transitioned without business-impacting incidents.

- **No Unplanned Downtime:** Impressively, the brownfield migration was executed with zero unplanned outages caused by the new network. In fact, during the migration process, it was the old network environment that continued to cause problems—"in the last three to four weeks, we have caused three to four outages in the… infrastructure while building a migration path to SR Linux" (i.e., simply preparing the legacy network for migration triggered issues within that network). By contrast, the new SR Linux and EDA-based data center fabric operated flawlessly during testing and onboarding of services. All configurations for the new network were validated in the automation platform's digital twin before being applied, so the team had high confidence in each change.
- **Operational Transition:** Network operators were trained to use the new automation tools and interfaces. As the team gained experience, operators found that the automated model increased confidence rather than reducing control.

Operators saw that the EDA automation and templates abstracted low-level protocols (BGP, OSPF, VLANs, etc.) while still allowing engineers to achieve the outcomes they needed. The automation did not remove human oversight; rather, it removed drudgery and uncertainty. One year into running the initial deployment site, the operations team was "very happy with how things went so far" and eager to extend the solution globally.

Data Center Network Migration Milestones

First Deployment

The initial deployment launched at the dual data center sites in Europe, which were experiencing chronic network issues and were scheduled for overhaul or decommissioning.

Migration Approach

The next phase included deploying Nokia hardware and SR Linux NOS across US sites plus implementing Nokia EDA for US and Europe sites.

Automation & Digital Twin Testing

All network configurations were validated in the EDA automation platform's digital twin before deployment, ensuring high confidence and minimizing risk during cutover.

Parallel Fabric Deployment

A new SR Linux-based data center fabric was built in parallel alongside the existing legacy network infrastructure.

Application-by-Application Migration

Applications were gradually migrated from the legacy vendor network onto the new fabric, including critical 24x7 manufacturing systems supporting Nokia factories.

Migration With Zero Downtime

The new SR Linux and EDA-based fabric operated without any unplanned outages, while issues continued to originate from the legacy environment during migration preparation.

Source: Nokia

Outcomes and Benefits

The initial deployment and subsequent network migrations at the Europe and USA data center locations quickly yielded **tangible benefits,** validating Nokia's choice to modernize its data center network. Key outcomes include:

- **80% Reduction in Incidents:** Nokia IT observed an approximately 80% drop in network-related incident tickets at the initial deployment site.

  While this was based on one site's results (and before the full global migration), it represents a massive reliability improvement. Fewer incidents mean less downtime for applications and less time spent by engineers on troubleshooting. IT staff who were once consumed by firefighting can now be reallocated to proactive projects—"number of incidents [reduced] makes so much difference. I can use those resources to build something new, [to do] automation for us."

- **Elimination of Chronic Outages:** The new network solved issues that had plagued certain applications for years. For example, a 20-year-old manufacturing application used to crash regularly in the old environment – if the network lost a heartbeat for even two seconds, the database would go down and take over two hours to recover. This occurred almost every month on the legacy network, despite attempts like hardware refreshes to fix it. After migrating that application to the SR Linux and EDA-based fabric, those disruptions vanished. Stopping such chronic outages directly safeguards significant revenue (previously, a single multi-hour outage in that factory could cost on the order of USD $500K-$1M in lost output).

- **Zero Change-Induced Downtime:** The automation and validation capabilities of the new solution have virtually eliminated outages caused by human error or configuration changes. This result reflects thei nitial deployment and early rollout environments rather than the full global estate.

  In the legacy network, engineers were extremely cautious with changes due to the high risk of knock-on failures. By contrast, in the new environment, every change is staged and tested via the EDA platform's CI/CD pipeline and digital twin. The team reported that in the first migrated data center, they have had "zero outages" while continually making changes and migrations. They simply design the change, run it through the pipeline and simulation, then push a button to deploy—"done, no outage." This level of change confidence is transformative: it not only prevents downtime, but also accelerates deployment of new services (no more waiting for weekend maintenance windows for fear of weekday changes).

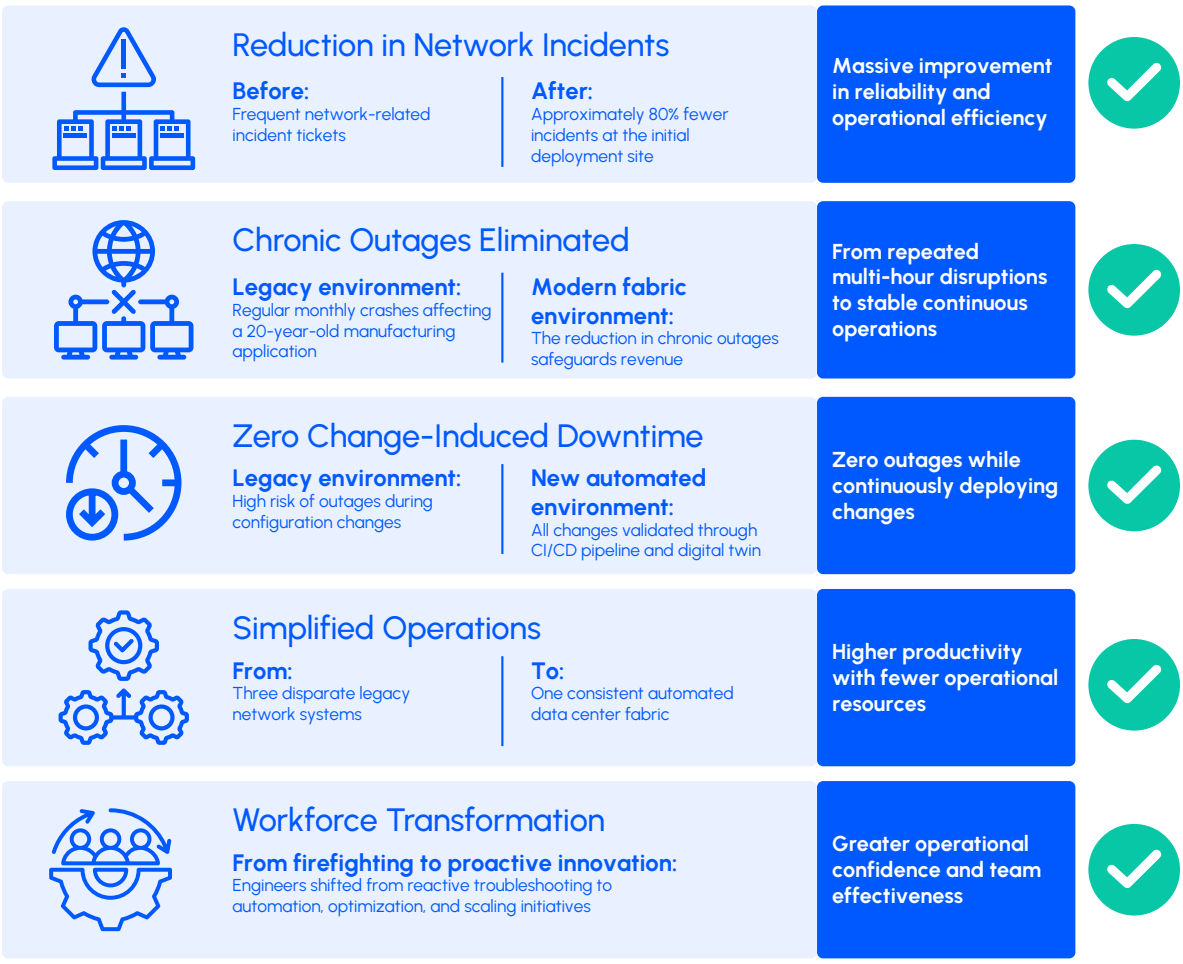
Across the early rollout environments, the team reported no unplanned outages attributable to the new fabric during migration or steady-state operations.

- **Simplified Network Operations:** The unified fabric significantly simplified day-to-day network operations and staffing requirements.

  Nokia went from three disparate network systems to one consistent architecture, which is easier to monitor and manage. Day-to-day tasks that used to require deep vendor-specific expertise can now be handled via high-level intent definitions. One Nokia IT engineer noted that the automation "abstracted the complexity so much that [operators] feel confident" implementing changes safely. The network team's productivity has increased, enabling them to manage more with less. In fact, Nokia IT believes that once fully rolled out, a small team will be able to operate all their data centers globally, something that would have been impossible before. The successful migration proved that even with just a handful of engineers, the new network ran smoothly across multiple sites.

- **Cultural & Workforce Impact:** The migration shifted the network team from reactive troubleshooting to proactive improvement. With fewer incidents and predictable changes, engineers can focus on automation, optimization, and scaling rather than constant firefighting. This operational stability has improved team effectiveness and confidence while enabling Nokia IT to influence product direction through real-world enterprise requirements.

Outcomes & Benefits



Conclusion and Roadmap

Nokia's data center network transformation is an ongoing, multi-phase program. The initial deployment established a production-ready, globally scalable foundation. Subsequent phases extend this architecture across additional data centers and workloads, progressively retiring legacy platforms and increasing operational consistency. The program spans six major data centers across the Americas, Europe, and Asia, along with several regional sites. This initiative will retire the final legacy networks and consolidate the enterprise data center estate under a unified, automated fabric. As of the latest update, the rollout is well underway:

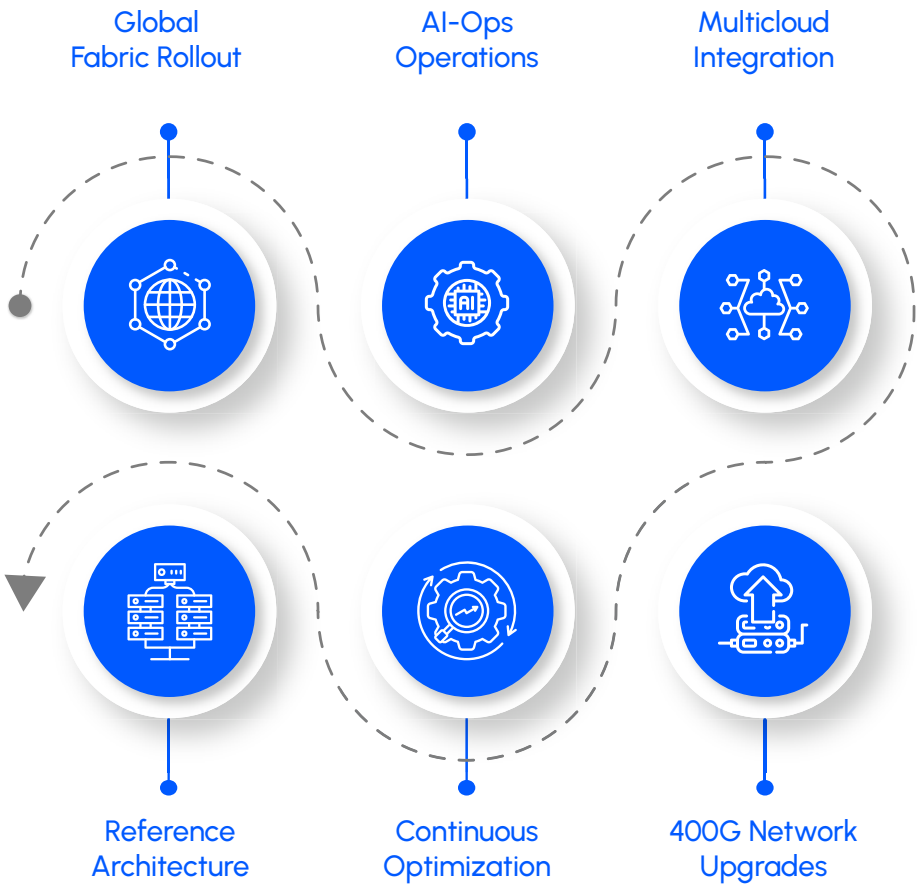
"Next six to nine months, [we will] remove legacy vendors from our ecosystem... migrate all our applications... to our SR Linux and EDA data center network."

What began as a high-stakes initial deployment is now a repeatable model applied across Nokia's global infrastructure.

"We feel happy if nobody complains. That's our achievement."

Nokia's journey shows that even the most complex, legacy-laden networks can be transformed into simple, resilient, cloud-era infrastructure—if backed by a clear vision, sound architecture, and automation at the core. The project serves not only as an operational breakthrough for Nokia's internal IT, but also as a blueprint for other large enterprises.

Roadmap



Source: Nokia

What's Next: Evolving the Fabric

With the foundation in place, Nokia is continuing to evolve the data center fabric across several strategic dimensions, building on automation, operational confidence, and architectural consistency.

- **Autonomous Networks & AI-Driven Operations:**
  Nokia is exploring increased use of AI-assisted analytics within the on-prem data center fabric, applying machine learning to telemetry, anomaly detection, and predictive maintenance. These capabilities are intended to further reduce operational risk and accelerate root-cause analysis, particularly for mission-critical on-prem workloads that demand high reliability.
- **Hybrid Cloud & WAN Integration:**
  Plans are underway to extend the EDA platform and digital twin capabilities to include WAN and hybrid connectivity. This would allow teams to model, test, and validate traffic paths spanning on-prem data centers and cloud environments prior to deployment.
- **Next-Generation Hardware (400G & Beyond):**
  With 100 GbE already deployed, Nokia is evaluating 400 GbE upgrades to support future high-performance and AI-adjacent workloads. The modular fabric design enables these upgrades without requiring architectural changes.
- **Continuous Optimization:**
  Operational data and telemetry continue to feed reminders and refinements to automation policies, enabling incremental improvements in reliability, performance, and change management.
- **Global, Large Enterprise Data Center Network Migration Case Study:**
  Finally, the deployment serves as a real-world reference architecture. Insights from Nokia IT's experience are informing product development and demonstrating how modern, automated, and AI-ready data center fabrics can be operated at scale.

Sources:

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