

Innovate on a telco cloud platform from Red Hat and Nokia

Speed cloud-native 5G deployments and core network services

Together, Red Hat and Nokia make it possible for you to deploy Red Hat OpenShift for more 5G applications.

Red Hat provides customers with cloud-native platforms for their multivendor architecture and solutions.

Red Hat's products are integrated into Nokia's vertical solutions.

With Nokia on Red Hat OpenShift, you can:

- Reduce risk with certified network functions.
- Enhance security across your network.
- Increase operational efficiency.
- Simplify workload management.

Deliver new services with a robust cloud-native platform

Worldwide, telecommunications (telco) service providers are developing innovative services and business models based on modern cloud and 5G technologies. By using private datacenters, public cloud environments, and edge installations, they are reshaping telco infrastructure and applications. Rapid cloud-native deployment capabilities, increased network flexibility, and improved interoperability help telco service providers deliver these advanced services and enhanced customer experiences. And with preintegrated, validated, and tested solutions, service providers can now offer 5G solutions with less risk to meet growing subscriber demands.

Red Hat and Nokia offer complete, validated solutions that deliver high throughput, low latency, and increased security for 5G networks. Based on Nokia's 5G expertise and Red Hat's open telco cloud vision, you can create a production, cloud-native core network to deliver innovative services in dynamic markets. A comprehensive telco ecosystem from Red Hat and Nokia lets you capitalize on 5G opportunities with less risk to increase innovation, attract customers, and create differentiated value.

Deploy an advanced 5G core network

Red Hat and Nokia offer a joint approach to cloud infrastructure based on Red Hat technologies that simplifies deployment and management of Nokia cloud-native core network functions (CNFs) and applications. You can deploy flexible, cloud-native networks that deliver the performance and resiliency required for 5G. [Nokia on Red Hat® OpenShift®](#) is an integrated solution that combines [Red Hat OpenShift](#) with CNFs, applications, and reference hardware and architecture available in [Nokia's 5G Core](#). With comprehensive capabilities for Nokia core CNFs including networking solutions, load balancing capabilities, and ingress and egress control mechanisms, this integrated solution provides high availability and scalability for the core network.

Red Hat OpenShift delivers tested, trusted services that support Nokia core CNFs in [telco cloud](#) environments. With scalability, flexibility, and advanced orchestration capabilities, Red Hat OpenShift includes tools and capabilities for [carrier-grade](#), container-based cloud infrastructure. Integration of Red Hat OpenShift and Nokia core CNFs—including security fortification and performance validation—creates a consistent, reliable core network solution that meets the security, performance, and reliability needs of modern telco networks.

Nokia on Red Hat OpenShift provides a carrier-grade architecture that lets you deploy and manage Nokia core CNFs on Red Hat OpenShift in central, regional, and edge datacenters. As recommended by Nokia's architecture, CNFs are distributed with deployment models suited and optimized for small scale or edge datacenters versus large scale central datacenters. All core CNFs can run in central or regional datacenters, however, typical networks may deploy user plane functions (UPFs) in edge datacenters to reduce network latency and traffic at central locations.

Reduce risk with certified network functions

Preintegrated, tested, and certified solutions based on carrier-grade open platforms can simplify and speed delivery of 5G services and solutions. Red Hat and Nokia test and validate Nokia core CNFs on Red Hat OpenShift to provide unified operations across your telco cloud environment. In fact, Nokia core CNFs achieved vendor validated certifications on Red Hat OpenShift across 4 areas.

Table 1. Nokia network functions validated on Red Hat OpenShift

| Certification area | Vendor Validated Nokia network functions |
|----------------------------------|---|
| Subscriber data management (SDM) | Shared Data Layer (SDL) |
| | Unified Data Management (UDM) |
| | Home Subscriber Server/Home Location Register (HSS/HLR) |
| | Equipment Identity Register (EIR) |
| Signaling and policy | Cloud Signaling Director (CSD) |
| | Nokia Policy Controller (NPC) |
| | Authentication, Authorization, and Accounting (AAA) |
| Packet core | Cloud Mobility Manager (CMM) |
| | Cloud Mobile Gateway (CMG) |
| | Cloud Network Resource Director (CNRD) |
| IP multimedia subsystem (IMS) | Short Message Service Function (SMSF) |
| | IMS Call Session Control Function (CFX-5000) |
| | Nokia Telecom Application Server (NTAS) |
| | Session Border Control (SBC) |
| | Cloud Native Communication Suite (CNCS) |

Gain more options from our strategic partnership

Red Hat serves as Nokia's primary platform for developing, testing, and delivering core network functions and applications. By certifying its cloud-native, core network functions on Red Hat OpenShift, Nokia empowers service providers to deploy across telco clouds with the flexibility, reliability, and security of Red Hat's trusted platform.

Read more about the Red Hat and Nokia [strategic partnership](#).

Increase security across your network

Comprehensive security across your telecommunications network is critical to protect sensitive data, maintain user privacy, and safeguard against threats and malicious attacks. Red Hat OpenShift provides a robust security framework with a scalable approach to securing the entire application platform stack—from operating systems to containers to applications. Red Hat OpenShift helps protect critical Nokia services, applications, and core CNFs:

- ▶ Security context constraints ensure that core network functions and applications run with the minimum required privileges to prevent unauthorized access and operations.
- ▶ Role-based access control (RBAC) lets you assign specific permissions to users and services, limiting access to sensitive resources and data.

Deliver innovative applications and services

New technologies and ways of delivering services transform telecommunications networks into platforms for innovation. Through collaboration with industry leaders and innovators, Red Hat provides the reliable, standards-based software foundation and certified partner ecosystem needed to modernize your infrastructure, business, and operations and capitalize on 5G, edge, and AI opportunities.

Read the [Modernize to innovate](#) e-book to learn more.

Read the “[Unlock the power of 5G](#)” checklist from Red Hat and Nokia.

- ▶ Secrets management increases protection of sensitive information—including passwords, application programming interface (API) keys, and certificates—against unauthorized access and potential data breaches.
- ▶ Network policies for pod-to-pod communications let you define and enforce rules that restrict traffic and prevent lateral attacks within your telco cloud infrastructure.
- ▶ Data encryption—both at rest and in transit—protects critical information across your telecommunications network.
- ▶ Image scanning and signing technologies help you deploy only trusted source code and images in your telco cloud environment.
- ▶ Centralized logging and monitoring for security events deliver real-time detection of potential threats to your telecommunications network, helping you identify incidents, investigate anomalies, and remediate vulnerabilities in less time.

Enhance efficiency across network operations

Inefficient operations can increase costs, prolong service outages, and slow responses to changing subscriber demands. Nokia on Red Hat OpenShift helps you streamline and automate operations for agile, efficient container management across your telco cloud environment. Reduce manual intervention with automated CNF deployment, configuration, scaling, and management through a single console with [Red Hat OpenShift operators](#). Boost application reliability with a platform that can rapidly scale CNFs to thousands of instances across hundreds of nodes. Simplify maintenance with automated installation—even in air-gapped environments—and over-the-air (OTA) platform upgrades. And minimize downtime when updating CNFs across your network with Red Hat OpenShift container management capabilities.

Migrate workloads across environments

Through efficient workload placement across your telco cloud environment, you can optimize resource use, reduce costs, and meet evolving network demands. Nokia on Red Hat OpenShift helps you deploy, manage, and migrate Nokia workloads. Deploy Nokia core CNFs and applications in the same environment to improve resource use and reduce infrastructure costs. Manage workloads consistently with a unified platform and a single, shared set of automated processes across your organization.

Deliver new services in less time

Innovative applications can generate new revenue streams in increasingly competitive markets. Nokia on Red Hat OpenShift simplifies development, delivery, and lifecycle management of cloud-native and traditional workloads. Red Hat OpenShift provides advanced development capabilities to help you integrate 5G, artificial intelligence (AI), data analytics, and edge capabilities into your applications. Additionally, Red Hat’s ecosystem of expert partners provide innovative technologies to help you create new services and revenue opportunities.

Operate with confidence on a supported platform

Guidance and assistance from teams of experts can help you adopt new technologies and business models, address complex challenges, and maximize the value of your investments. Red Hat and Nokia provide a unified customer experience for troubleshooting and support. Combining expertise in

telecommunications and open source application platforms, Red Hat and Nokia configure Red Hat OpenShift to meet the workload requirements of Nokia core CNFs, helping you deliver reliable, high-performance service across your network.

Choose the right integration for your telecommunications network

Customizable network infrastructure lets you optimize performance and scalability to meet your technical and business objectives. With Red Hat and Nokia, you can choose horizontal and/or vertical options.

Available directly from Nokia, the complete vertical stack includes Nokia's end-to-end embedded core network applications on Red Hat OpenShift. This preintegrated option simplifies network operations with a single vendor service-level agreement (SLA) for the entire solution.

Available from Red Hat, the horizontal option lets you deploy and manage any third-party vendor solution including Nokia core CNFs on Red Hat OpenShift, allowing you to choose the applications that best meet your requirements. With this option, you can deploy core network, radio access network (RAN), transport, operations support systems/business support systems (OSS/BSS), and IT workloads on a common cloud platform, architecture and infrastructure to increase operational efficiency and control costs across your telco cloud environment.

Both options include integrated service and support from Red Hat and Nokia to help you meet the demands of core network, [open RAN](#), [multi-access edge computing \(MEC\)](#), and [private 5G](#) applications.

Learn more

Red Hat delivers the primary platform for Nokia CNFs and applications. Read about [5 benefits of running Nokia on Red Hat OpenShift](#) and [watch this video](#) to discover how you can benefit from the consistent container framework of Red Hat OpenShift across your telco cloud infrastructure.



About Red Hat

Red Hat helps customers standardize across environments, develop cloud-native applications, and integrate, automate, secure, and manage complex environments with [award-winning](#) support, training, and consulting services.

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