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DevOps cloud for large enterprises

Use case

Transform your complex IT environment into a leading-edge DevOps cloud, provide a rich and globally consistent user experience, and reduce total cost of ownership (TCO) by at least 25 percent.

Are you struggling to provide a rich and globally consistent user experience? Do you have so many silos that you may need to rip and replace everything? Are your developers clamoring for the latest tools, such as Mesos and Kubernetes?

Let Nokia show you how to provide a global DevOps cloud that supports the latest tools that your developers crave. What's more, the Nokia enterprise private cloud can provide a TCO cost savings of at least 25 percent compared to a legacy environment that was upgraded to a cloud. This Nokia use case describes how even the most complex IT and application environment can be transformed into a leading-edge DevOps cloud—without the disruption of rip and replace.

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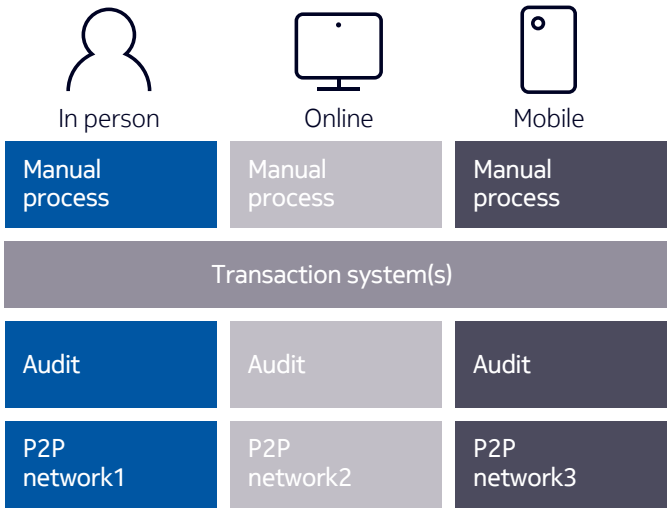
Challenges

As illustrated in Figure 1, large enterprises typically have complex IT environments that include multiple operational silos. In many cases, these silos provide operational efficiencies for a given function, such as support or they isolate a given network environment for an acquired company. Difficulties arise when the enterprise strategy demands a globally consistent experience for end users and partners. That's why IT organizations find themselves in a quandary—how to transform their operations without a complete rip and replace of the environment. Here are the major challenges these enterprises are facing:

- **Lack of a comprehensive approach:** Although a comprehensive approach is needed, few end-to-end or top-to-bottom approaches exist, much less are commercially available.
- **Lack of tool support:** Legacy environments don't support the leading edge development tools, such as Mesos and Kubernetes that are needed for global transformation efforts.
- **High cost of device support:** In practice, achieving a consistent user experience across a wide range of devices is too resource intensive for even a large enterprise. Consequently, most large enterprises must limit the devices supported and therefore the customers that they can serve.
- **Inconsistent resource access:** Consistent access to development resources, such as a back-end application server, from multiple applications and across the globe is difficult to provide. As applications become more multi-tiered and distributed, this issue becomes critical in terms of programmer productivity.
- **Infeasible integration requirements:** Legacy environments typically suffer from multiple lock-ins from various vendors that hinder integration. Cloud approaches can complicate this environment by adding multiple cloud management software (CMS) systems, hypervisors and bare metal (non-virtualized) resources to the mix.
- **Increased security challenges:** Global access dramatically increases the attack surface that hackers can exploit.

Figure 1. Application silos can provide task and organizational efficiencies but hinder transformation efforts

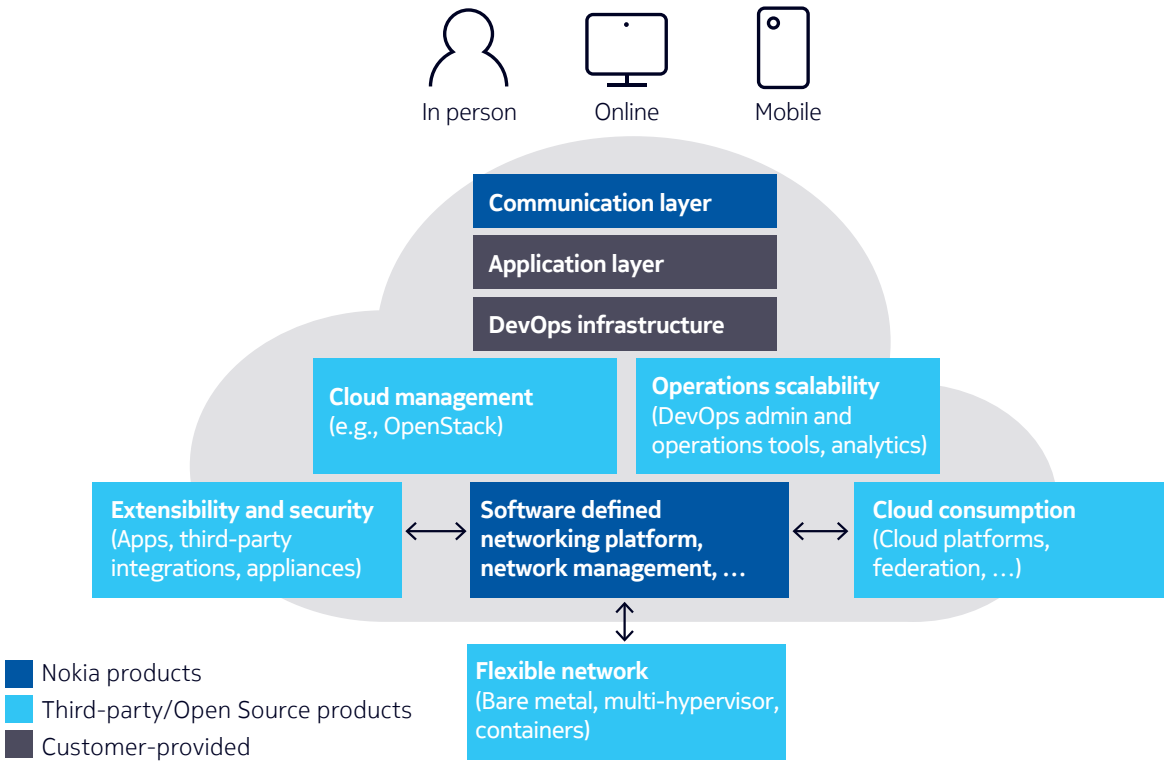


How we help you

The Nokia cloud architecture enables enterprises to convert the most complex and siloed infrastructure into a platformized infrastructure having functionality layers consistent with a robust application software stack. Best-of-breed commercial vendor products can be leveraged alongside open source offerings. Furthermore, broad environment support—multiple virtualization approaches, such as VMware, KVM, Xen, and containers, as well as cloud management systems, such as OpenStack and VMware vCenter—ensures that the most complex enterprise environment can be addressed by a comprehensive and global DevOps approach.

Shown in Figure 2, the foundation for the DevOps cloud is a robust and unified software defined networking and software defined WAN approach from Nuage Networks (a subsidiary of Nokia). With APIs based on developer-friendly standard REST, a wide variety of security and special-purpose appliances can be integrated into the application logic. Cloud consumption interfaces enable public cloud resources to be leveraged as well as leading development tools, such as Kubernetes and Mesos. The operations scalability interface provides communications with tools that provide mapping between physical and virtual resources along with other DevOps tools and approaches. Lastly, the flexible network interface ensures that the environment can overlay even the most sophisticated and complex network environment without requiring a forklift upgrade. At the top communication layer, the Nokia Rapport platform provides device support for a wide range of devices—from mobile through ATMs to distributed information kiosks. This platformized stack enables critical communications from enterprise to customer, from enterprise to partner, and within the enterprise in real-time or near real-time.

Figure 2. Nokia transforms your legacy environment into an application-friendly cloud architecture



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How our approach changes the game

This innovative approach provides a DevOps cloud that can leverage the latest tools used by webscale companies. These capabilities can enable your development team to leapfrog the competition. Capabilities include:

- **Comprehensive software stack:** For programming purposes, this approach enables the entire environment to be treated as a single software-friendly stack. This provides enterprises with the flexibility and controls needed for true digital transformation of even mission-critical applications and systems.
- **Webscale-friendly development tools:** The Nokia cloud architecture supports leading edge development tools, such as Mesos and Kubernetes, that are used by webscale companies. This provides the required capabilities for global transformation and puts the enterprise on par with the webscale giants.
- **Extensive device support:** This approach eliminates the need for the enterprise's precious development resources to invest in expensive and tedious device support programming.
- **Application templates:** With the Nuage Networks Virtualized Services Platform, network administrators can define application templates with embedded network and security definitions that handle the complexity of the network environment automatically. Furthermore, application and workload moves do not require application developer assistance.
- **Service chaining:** Application templates provide step-by-step definitions for multi-tier applications using service chaining. For example, a service chain of declarative policies would define that web server A can talk to application server B using firewall B and application server B can talk to database server C using firewall C. This approach removes the complexity of the application environment from the application developer's task list. Additionally, settings are automatically updated with minimum impact on development teams when servers are added or moved.
- **Flexible integration capabilities:** The platform leverages developer-friendly interfaces, such as REST and universal network protocols, such as Border Gateway Protocol (BGP) to integrate with a wide range of applications, development tools, and devices. For cloud management systems (e.g., OpenStack) and virtualization environments, plug-ins provide seamless and powerful interoperability.
- **Improved security:** We deliver a layered defense for the entire cloud—far more than a bolt-on afterthought:
  - At the physical layer, encryption built into Nokia's optical products provides defense against physical taps.
  - At the virtualization layer, microsegmentation guards communications within and between hypervisors and container hosts.
  - A robust API enables every packet and every stream to be inspected by one-to-many security programs or appliances.
  - Automated declarative policies with endpoint interpretation minimize, if not eliminate, the manual errors responsible for most day-to-day breaches.

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Why our approach is different

- **Platformization:** Enables the entire environment to be treated as a software platform, enabling new business capabilities, such as full partner integration.
- **Unparalleled security programmability:** With full granularity down to the packet level and the ability to integrate multiple partner security products, even the most stringent security requirements can be coded into the cloud.
- **Hard cost savings:** The Nokia enterprise private cloud reduces total cost of ownership by a minimum of 25 percent as compared to the original legacy environment that was transformed to cloud.

How you benefit

- **Helps address strategic board mandates:** Transforming the IT environment into a programmable stack provides IT with the core capabilities to translate high-level enterprise objectives into concrete systems.
- **Ensures competitive parity with larger firms:** By supporting the latest development tools, the Nokia cloud ensures development parity with even webscale enterprises.
- **Enables faster market response:** By eliminating limitations caused by vendor lock-in and hardware incompatibilities, IT can respond to market demands more rapidly.

For more information on our solutions for large and webscale enterprises, visit https://networks.nokia.com/large-enterprises

About Nokia

We create the technology to connect the world. Powered by the research and innovation of Nokia Bell Labs, we serve communications service providers, governments, large enterprises and consumers, with the industry's most complete, end-to-end portfolio of products, services and licensing.

From the enabling infrastructure for 5G and the Internet of Things, to emerging applications in virtual reality and digital health, we are shaping the future of technology to transform the human experience.

Connect with our sales team

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