



Unification cloud for financial services

Use case

Unify even the most complex environment, get mission-critical network control and security, and reduce total cost of ownership (TCO) by at least 25 percent.

Are you challenged by your strategic direction to grow larger through acquisitions while managing more and more operational silos, connections to public clouds, and wide area networks (WAN) to connect branches and back-office operations? Do you struggle with the ever-increasing operational expenses (OPEX) needed to master increasing complexity? Short of a radical forklift, do you wonder how you will be able to keep up?

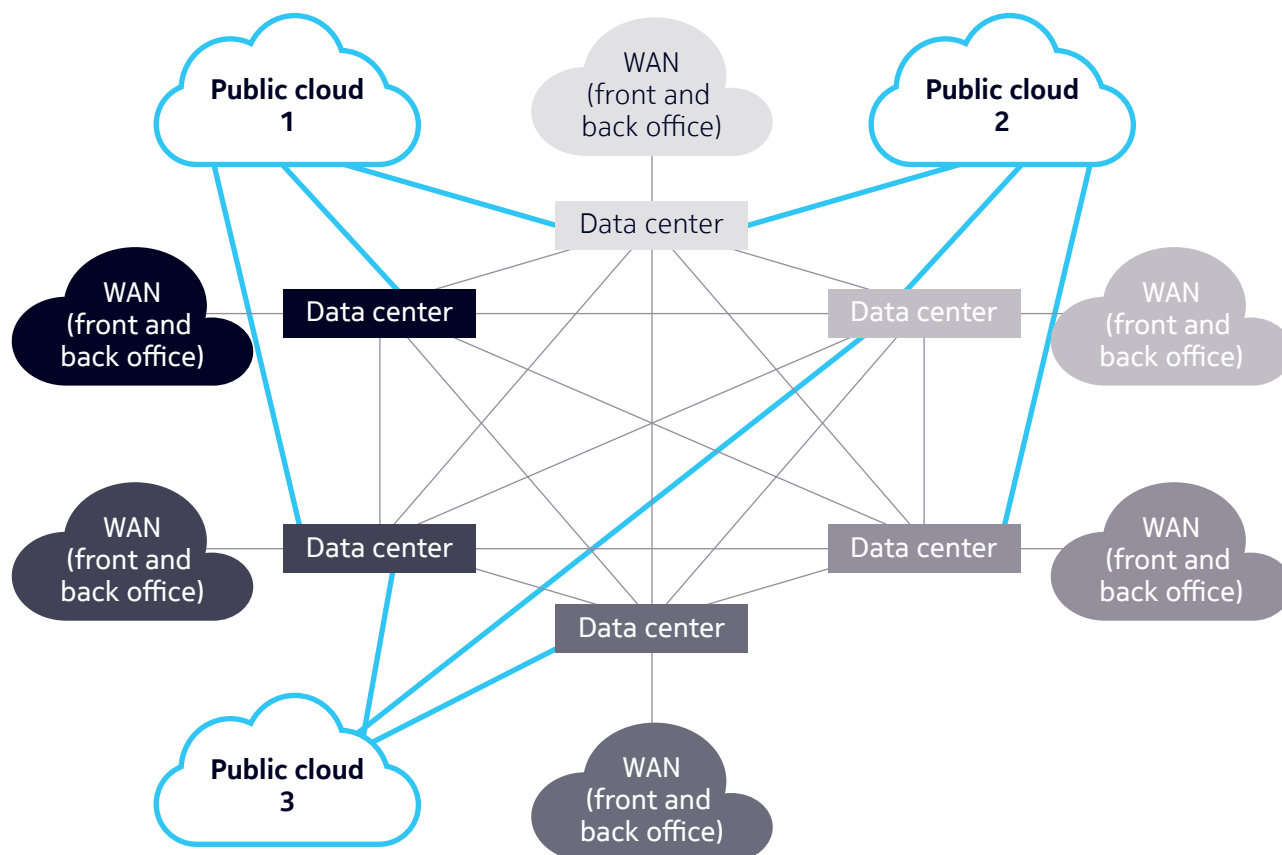
Let Nokia show you how to unify your entire IT environment to yield consistent and efficient operations globally. This Nokia use case describes how even the most complex IT and application environment can be unified into a leading-edge unified cloud environment—without the disruption of rip and replace.

Challenges

Large financial services firms strategic goals are achieved by growing through acquisitions and mergers. As a result, within the firm there can be multiple data center environments, each with their own complexities and strengths. Also, there can be multiple wide area networks for connection to branch offices and remote locations, such as processing facilities. Further, as shown in Figure 1, because each major department or subsidiary may have embraced the use of public cloud organically and independently, there may be multiple access paths to the major public cloud providers. As a result, IT teams may struggle with ongoing operations challenges and often do not have the time to redesign, migrate, and replace the entire environment. Consequently, the following major challenges arise:

- **Complexity barrier:** The overall environment can be so complex that a redesign—let alone a migration—is not feasible.
- **Stranded IT assets:** When operations are siloed and workload mobility is low, most legacy environments have large pools of expensive yet underutilized IT resources.
- **Lack of role-based controls:** Department business and data center directors are reluctant, even if technically possible, to relinquish control of their respective domains to a centralized IT team.
- **Conflicting Service Level Agreements (SLAs):** Because each subsidiary has its own SLAs to enforce or conform to, there can be performance unpredictability as well as availability impacts when the networks are combined into a shared network.
- **Network limitations:** Few truly hybrid approaches exist and fewer still can meet the reliability, scalability, and flexibility needs of large financial services firms.
- **Lack of heterogeneous environment support:** To support enterprise needs, a wide range of virtualization hypervisors, cloud management systems, and container hosts must be supported side-by-side.
- **Workload immobility:** Legacy approaches do not provide the required workload mobility for hybrid operations. Workloads must be mobile within and across data centers.
- **Lack of visibility:** A hybrid cloud environment is highly virtualized for control and cost savings. However, virtualization can hinder asset management. For example, the root cause of hardware failure can be hard to identify much less pinpoint in a virtualized environment.
- **Increased security challenges:** In a legacy environment, each data center is essentially its own castle with multiple layers of defense. A cloud environment with virtualized applications distributed across data centers presents a much larger exposure surface.

Figure 1. Legacy environments include fully- or semi-independent environments resulting from acquisitions and mergers

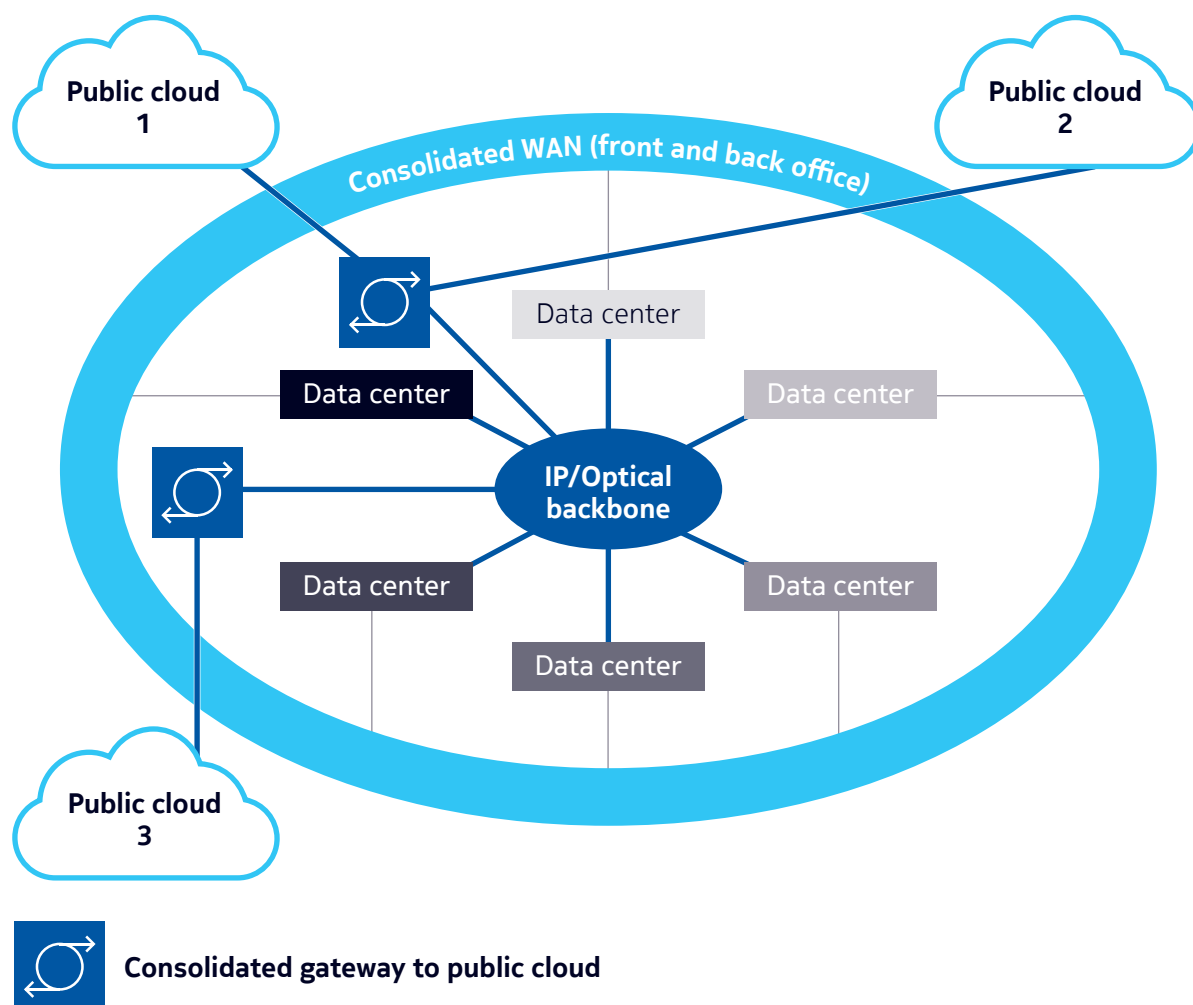


How we help you

Nokia combines innovative software defined networking (SDN) and software defined wide-area networking (SD-WAN) approaches with cutting-edge networking technology to deliver a fully unified cloud infrastructure that provides mission-critical communications and operations while reducing costs. Nokia transforms even the most complex environment into a single coherent cloud with rich network management from the data center to even the most distant WAN environment.

As Figure 2 illustrates, Nokia can create an Internet Protocol (IP) backbone among data centers. Leveraging data center interconnect (DCI) approaches, any combination of IP and optical network gear provides high-performance, scalable, and reliable connections among data centers. The Nokia cloud architecture overlays even the most complex financial services environment without forklift upgrades, transforming the environment into a best practices cloud. By creating a unified WAN environment over any combination of IP and MPLS networks, each remote location can be efficiently networked and managed. In summary, by unifying data centers and the WAN into a manageable whole, the result is a unified private cloud with consolidated gateways to one or more public clouds.

Figure 2. Unification provides foundation for digital transformation



How our approach changes the game

This innovative approach overlays the existing environment and upgrades it into a unified environment for front-end uses (e.g., a rich and consistent customer experience) or for back office uses (e.g., providing globally consistent services and support to internal organizations). Cost efficiencies are realized through consolidation of networking as well as use of the most cost-effective IP or WAN medium (e.g., copper for low-volume supply depots). Capabilities include:

- **Masters complexity:** The Nokia SDN and SD-WAN approaches seamlessly overlay the existing network, and in doing so it leverages the existing environment. This preserves the necessary complexity while the entire environment is upgraded to a best practices cloud—without a forklift upgrade.
- **Higher asset use:** Since operations are unified and workloads are highly mobile, IT asset usage rates are on average 20 percent higher with the Nokia cloud approach.

- **Role-based controls:** Nokia provides a hierarchical command-and-control capability, enabling multiple levels of network control—from the central team to the subsidiary head, to the data center teams to the department heads.
- **Predictable Quality of Service (QoS):** Nokia assures that each network stream gets the right network priority and performance needed.
- **Network flexibility:** The Nokia cloud network provides the core infrastructure that flexes automatically—and in near real-time for mission-critical operations—in response to the demands of the cloud management system (e.g. OpenStack®).
- **Scalability:** We can show you how to extend cloud management system networking capabilities to scale up to the most demanding financial services requirements, such as millions of transactions per day.
- **Heterogeneous support:** The Nokia overlay approach encompasses multiple virtualization hypervisors, cloud management systems, and container hosts side-by-side.
- **Workload mobility:** Our cloud approach ensures that commands issued by the cloud management system—such as moving a virtual machine (VM)—are fully operationalized at the network level both within and across data centers.
- **Full visibility:** By mapping between physical and virtualized resources, we provide full visibility. This mapping enables an error's root cause, including hardware failures, to be identified and pinpointed.
- **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.

Why our approach is different

- **Full unification:** Our overlay approach and the wide range of environments supported, make the Nokia cloud approach the top, if not the only way, way, to create a unified and coherent cloud from a complex enterprise data center, IP, and WAN environment.
- **Mission-critical controls:** The Nokia approach is perhaps unique in providing the fine-grained yet automated controls that are essential for large-scale, complex financial services clouds.
- **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

- **Manageable within existing budget:** Using a single approach that spans from the core to the data center to the WAN and to the public cloud, the entire financial services environment becomes manageable with your existing resources.
- **Standardization across the environment:** This approach unifies network management and operations to provide mission-critical controls and operations across the entire cloud.
- **Increased asset life:** The Nokia overlay approach uses existing assets without requiring a forklift upgrade and ensures that costly stranded IT assets are minimized if not eliminated.

For more information on our solutions for financial services firms, visit <https://networks.nokia.com/financial-services>.

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](#)

Europe and Asia Pacific: +44 203 582 5650 (M-F 08:00 – 16:00 GMT)

United States and Canada: +1 866 231 0264 (M-F 08:00 – 17:00 EST)

Nokia is a registered trademark of Nokia Corporation. Other product and company names mentioned herein may be trademarks or trade names of their respective owners.

Nokia Oyj
Karaportti 3
FI-02610 Espoo
Finland
Tel. +358 (0) 10 44 88 000

Product code: SR1706012154EN (September)