NOKIA

Defense strategic WAN modernization

Use case

Transforming your strategic WAN to a mission-critical IP and optical network will dramatically improve your mission response capability, allowing broader use of IP-based applications for improved information sharing, enhanced situational awareness and faster decision-making.

The bedrock of network-centric warfare doctrine is a mission-critical defense communications network that transports vital strategic voice, video, operational weaponry data, and other command and control traffic. Accordingly, today's aging, circuit-based networks that interconnect main units must undergo significant transformation to provide faster, secure, ubiquitous real-time communications.

This use case describes how Nokia can help modernize defense backbone networks to securely and reliably support today's network-centric operations.

NOKIA

Challenges

In the past, defense network operators often built discrete networks using a variety of technologies such as SDH/SONET, ATM, Ethernet and IP. These network overlays used a variety of transmission media, including fiber, microwave, satellite, and leased lines from service providers.

This model is inefficient and costly because it involves multiple, siloed networks built with different network technologies, equipment and management systems. Moreover, much of the deployed network equipment has reached or is approaching end-of-life while new IP/Ethernet-based and bandwidth-intensive applications are being deployed. Even legacy applications such as radar are evolving to IP-based systems. Finding a cost-effective solution to build networks for next-generation communications and applications has become critical.

The modernized strategic backbone network needs to exhibit the following key attributes:

1. **Strong network reliability:** Network outages can cause disruptions in tactical operations and defense command with grave consequences. The strategic network must deliver best-in-class service availability even under the most inclement circumstances.
2. **Security:** All connected systems must guarantee the highest levels of security and cyber resilience across the entire network. It must be possible to segregate different applications and departments, protect information from theft and also detect and counter cyber intrusions.
3. **Flexible service evolution:** Converging networks into a multiservice asset, yields efficiency and smooth migration from legacy applications to IP-based services with the necessary performance assurance.
4. **Cost effectiveness and simplicity:** Defense organizations seeking improved efficiency want to employ advanced civilian telecommunications technologies instead of expensive custom systems. The ability to leverage commercial off-the-shelf (COTS) technology in defense communications networks is a key attribute of the new strategic mission-critical network.

How we help you

Combining market-leading IP/MPLS, packet microwave and optical transport technologies, Nokia provides a resilient, secure, converged mission-critical strategic communications WAN solution. Defense organizations can thus benefit from the latest advances of communications solutions, without compromising the security of their network.

Mission-critical survivability

- Our mission-critical WAN solution for defense leverage redundancy mechanisms at the nodal level and different protocol layers to survive network faults.
- It supports flexible network topologies to maximize path diversity to attain utmost multi-fault resiliency.
- SDH/SONET-like network restoration can be achieved, without service interruption.

NOKIA

Secure communications

- A dynamic network solution associates products in a red/black network. Complementing classified data encryption, our solution offers multilayer protection, including layer 1 encryption for microwave or optical transport, IPSec and Network Group Encryption (NGE).
- With enhanced packet intelligence and hardware assist embedded in Nokia routers, combined with service-aware stateful firewall and Nokia's Deepfield IP network analytics solution, maximum network performance can still be attained while deploying security measures to mitigate cyber threats, including DDoS attacks.
- Finally service-aware stateful firewalls can also be used to prevent intrusion and stop illicit traffic flows. Optical intrusion detection technology further protects the network from fiber tapping.

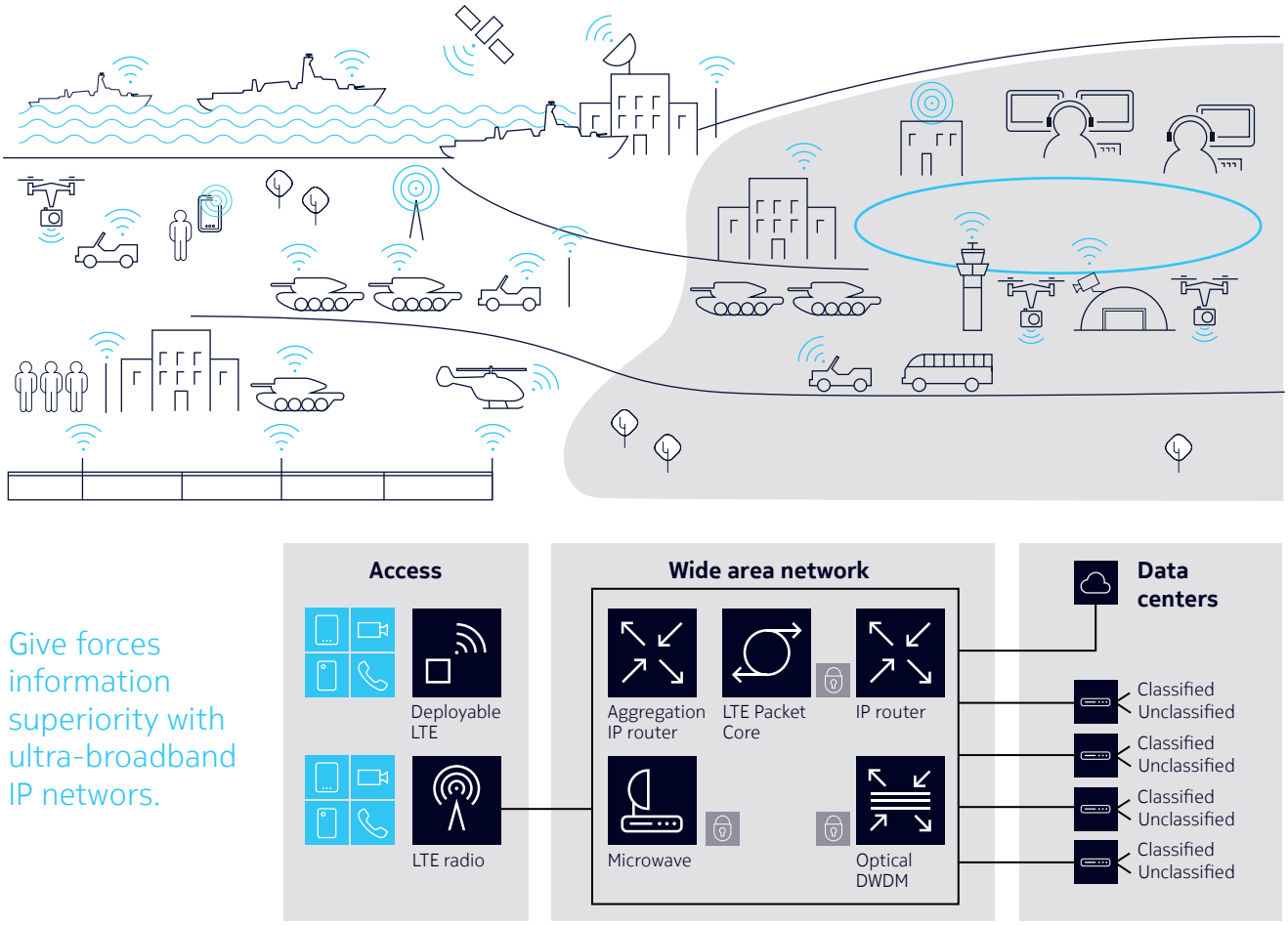
Flexible service evolution

- The network can continue to carry today's legacy applications without disruption while seamlessly support new data applications.
- IP/MPLS VPNs ensure that traffic from all applications of different departments and agencies are segregated
- Quality of service (QoS) management ensures that the most important traffic always gets the highest priority.

Cost effectiveness and simplicity

- Our solution delivers ease of use and efficient operations in a unified, shared IP/optical WAN that allows for the convergence of legacy networks. Operational and maintenance cost are thus significantly lowered.
- Unified, end-to-end multilayer network services management helps provision services, monitor performance and troubleshoot proactively across the whole network, including IP/MPLS, optical and microwave layers. Network operations are thus simplified and streamlined.
- As the network evolves, software-defined networking (SDN) will provide the automation to dynamically optimize resources usage, further improving network quality and lowering OPEX.

Figure 1. Defense ultra-broadband, IP-based communication network



Give forces information superiority with ultra-broadband IP networs.

Why our approach is different

- The Nokia mission-critical WAN solution offers the following industry innovations:
- Full WAN solution integration with IP/MPLS, packet microwave and optical transport, allowing choice of optimal technology mix
- Embedded network security capabilities ensures no performance degradation
- Unified cross-layer management with seamless evolution to SDN for increased network flexibility and optimization
- Scalable service routing platforms allow seamless future network expansion

How you benefit

As threats to national security are rapidly evolving, it is crucial to empower the defense forces with the best information available to stay head and stifle attacks early on. The Nokia mission-critical WAN solution is an integral part of network-centric operations, allowing any type of information to be reliably, quickly and securely shared among appropriate command, control, tactical forces and weapons assets.

Let us help you

Nokia is committed to helping defense organizations leverage mission-critical communication technologies to unleash the full potential of network-centric warfare. Through our end-to-end solutions and services, we provide mission-critical, secure, broadband communications to equip the forces with all the necessary information to defend against all threats and complete their mission successfully and safely.

Contact us to learn more on our defense products and solutions.

For more information on our solutions for defense, visit https://networks.nokia.com/defense.

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

Product code: SR1706012999EN (September)