

# Securing Mission-Critical Networks in the Quantum Era

Nokia and Senetas Technology Partnership White Paper

# Executive Summary

Defense, government and critical infrastructure organizations are facing **rapidly increasing cybersecurity risks as their networks become more distributed and mission-critical.**

At the same time, geopolitical pressures and the emergence of quantum computing are driving the need for independently certified, future-proof encryption.

This whitepaper explores how the Nokia-Senetas partnership eliminates the trade-off between network performance and data sovereignty. Discover how you can leverage high-speed connectivity to move mission-critical data without exposing your organization to evolving cyber threats.

SECURING THE FLOW

## Future-Proofing Your Mission-Critical Data **in Transit**

Your mission-critical data requires more than just a 'fast' connection; **it needs a secure one that stays ahead of emerging threats.**

The partnership between Nokia and Senetas provides the high-speed, crypto-agile foundation you need to meet today's compliance standards while remaining ready for tomorrow's quantum risks

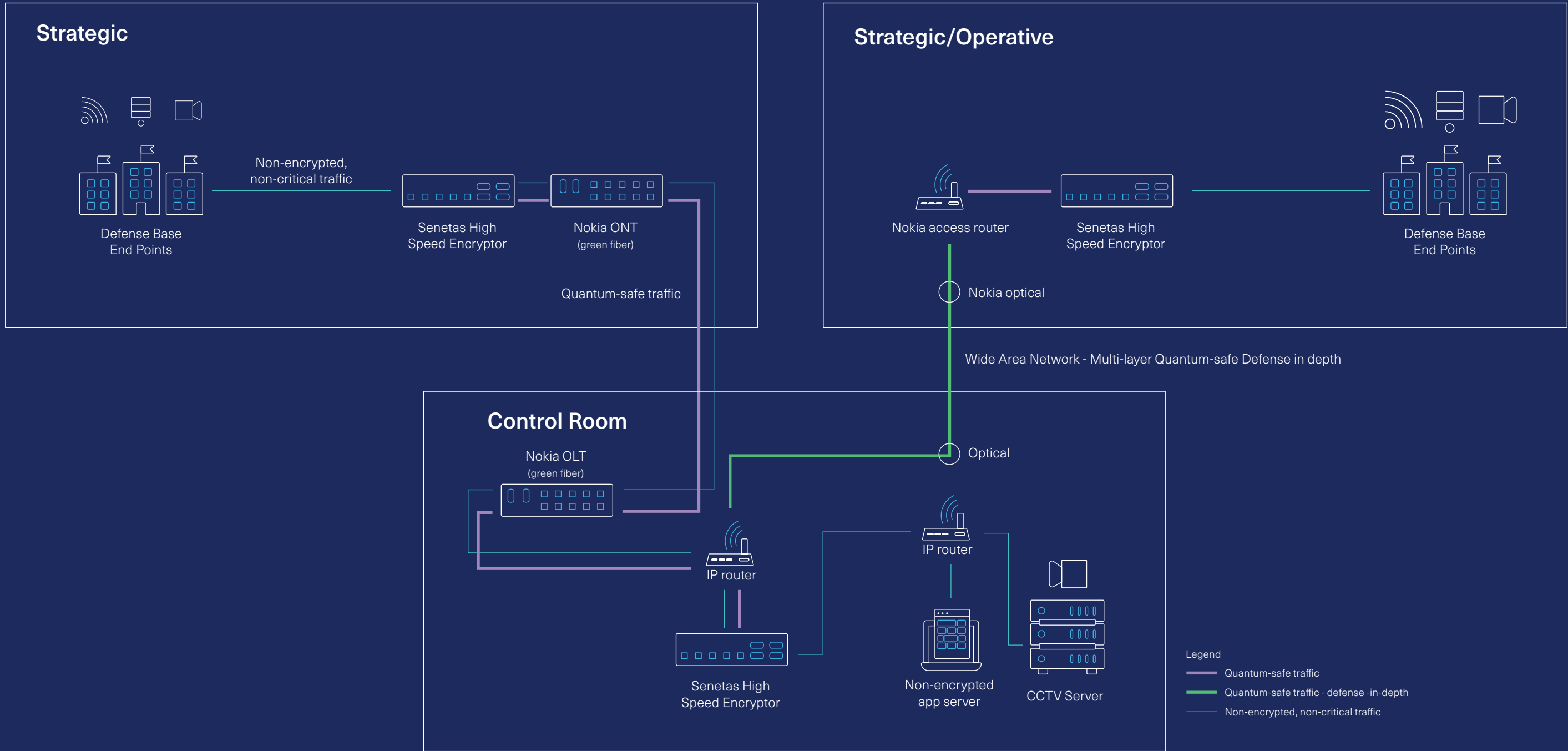
To address the complexities of modern threat landscapes, organizations can leverage the 25-year legacy of independently certified encryption that Senetas delivers. This foundation ensures that mission-critical data remains protected by proven architecture, incorporating both post-quantum agility and support for custom national ciphers to meet the strictest global sovereignty requirements.

Nokia complements this with its leadership in mission-critical networking across Optical LAN, IP/MPLS, optical transport and access, as part of a quantum-safe proven Defense-in-Depth security strategy.



# Joint Solution Architecture and Network Topology

Protect your most sensitive information with no performance loss, thanks to wire-speed throughput and near-zero latency.



# Validating the Integrated Solution

The joint solution enabled by the Senetas–Nokia partnership delivers true defense-in-depth security by combining cryptography across multiple network layers—from optical transport through IP and Ethernet—complemented by dedicated Senetas inline network encryptors.

## Combining industry leadership

This partnership brings together a global security leader and a quantum-safe wide-area networking leader to address the growing challenge of securing mission-critical communications.

## Addressing the expanding attack surface

As digitalization accelerates and endpoints proliferate to the edge, the number and diversity of potential attack vectors continue to increase.

## Layered protection for data-in-flight

The solution provides defense-in-depth for data in transit through multiple layers of cryptography, including optical, ethernet MPLS and IP network cryptography. Crypto agility and crypto-resiliency layered protection can also provide network obfuscation alongside data-in-flight security and trust.

## End-to-end protection from core to edge

The integrated solution delivers end-to-end security for defense and government environments—from core networks to the tactical edge—without compromising performance.

## Uncompromising security at full speed

As nations strengthen sovereign defense capabilities and critical infrastructure resilience, this solution provides robust protection against sophisticated cyber threats across distributed operational environments. Joint laboratory validation confirms zero measurable impact on throughput or latency while enabling selective encryption of critical traffic.

## Certified and trusted security

The solution incorporates technologies that meet rigorous defense and security certifications, including:

- **Senetas:**  
FIPS 140-3 Level 3 Common Criteria, NATO, DoDIN APL for wire speed encryption at layers 2-4 PKTN - Malaysia
- **Nokia Optical Transport:**  
First in the industry to achieve *FIPS 140-3 Level 2 certification for Layer 1 optical encryption*
- **Nokia IP Transport:**  
Quantum-safe connectivity leveraging MacSec and AnySec, DoDIN APL, DoDIN SPE, NIAP, FIPS 140-3 (on-going process)



## FROM FINANCE TO DEFENSE

# Protecting the World's Most Sensitive Data Flows

For organizations managing the world's most sensitive data, security is not a feature—it is a mission requirement.

The Nokia–Senetas partnership is engineered for environments where a single compromised packet could have national or systemic consequences.

This architecture addresses the rigorous assurance demands of **defense forces, government agencies, critical infrastructure organizations and global financial services**, where protecting the integrity of communications is non-negotiable. From command-and-control networks and tactical military deployments to the critical infrastructure and capital markets powering our cities, we provide the sovereignty and performance necessary to maintain operational integrity under any conditions.

## Conclusion

The Nokia–Senetas partnership provides more than just a technical integration; it delivers the certainty required to operate in an increasingly volatile threat landscape. By combining the quantum-safe cryptography networking power of Nokia with the independently certified, quantum-safe encryption that Senetas provides, organizations no longer have to choose between performance and protection. You can confidently deploy secure, high-speed services today, fully prepared for the security challenges of the quantum era.

## About Us

### Nokia

Nokia is a global leader in connectivity for the AI era. With expertise across fixed, mobile, and transport networks, powered by the innovation of Nokia Bell Labs, we're advancing connectivity to secure a brighter world. Nokia's strategy is to foster collaboration with a diverse ecosystem of partners to deliver comprehensive and layered Quantum-Safe Network (QSN) solutions tailored to various customer requirements. This collaboration with Senetas implements one of the high-assurance architectures supported by Nokia to address the evolving cryptographic challenges in mission-critical networks.

### Senetas

Senetas is an Australian defense technology company with 25+ years delivering certified network encryption to governments, militaries, intelligence agencies, and critical infrastructure operators across 60+ countries. Certified under Common Criteria, FIPS 140-3, US DoDin APL, and NATO, Senetas delivers quantum-ready encryption built on the latest NIST post-quantum algorithms, with global distribution and lifecycle support provided through our partnership with Thales.