

# Lumen Next Generation Network Cryptography Program

A Quantum-Resilient Blueprint for Government Agencies

United States government agencies are navigating a threat landscape never seen before, where the dawn of quantum computing, AI-driven cyberattacks, and data harvesting tactics are accelerating—posing unprecedented challenges in securing their communications infrastructure. Traditional NSA Type 1 encryption systems, while historically effective, are increasingly ill-suited for the agility, scalability, and quantum resilience required in today's digital battlefield.

The urgency is clear—by 2028, NSA and other federal agencies will require quantum-resilient encryption for all network refreshes and new builds. This mandate underscores the urgency for today's security leaders to be proactive, move beyond legacy systems and adopt future-ready alternatives to begin shaping tomorrow's defense posture. Yet no agency is equipped with all the necessary infrastructure or talent themselves. Partnering with innovators who are redefining secure communications will be the key to their success.

## Lumen Next Generation Network Cryptography (NGNC)

As a certified NSA Trusted Integrator, Lumen Technologies is at the forefront of secure network innovation with our Next Generation Network Cryptography (NGNC) program.

“Your data is being stolen today to be decrypted tomorrow. Modern encryption is not a safeguard—it's a countdown”

— **Tom Barnett**, Director of Strategic Innovation

As a modular and composable suite of advanced security solutions, the Lumen NGNC program is purpose-built to help federal, state, and local governments modernize and proactively defend their networks against current and emerging threats.

Developed in direct response to the escalating urgency across the public sector, NGNC delivers a defense-in-depth architecture that integrates quantum-resistant technologies and commercial-grade encryption into a unified framework—protecting data seamlessly across edge, cloud, and core environments.

### Challenges redefining encryption standards

**Data Harvesting:** “Harvest now, decrypt later” tactics threaten systems using legacy encryption

**AI-Enhanced Attacks:** Weaponized AI is accelerating automated decryption and overwhelming traditional cyber defenses

**Quantum Threats:** Quantum computers could rapidly break RSA and ECC, requiring urgent adoption of post-quantum cryptography

**Secure Mobility:** Enable secure, interoperable comms without centralized infrastructure

## A Composable Security Framework

Each component in the NGNC suite plays a strategic role integrating cutting-edge technologies into a unified defense-in-depth framework. It enables secure classified communications over commercial infrastructure, reducing complexity while maintaining NSA compliance with the following solutions:

### Commercial Solutions for Classified (CSfC)

Enables classified assurance using dual-layer commercial encryption, replacing rigid legacy systems like TACLANEs with agile, scalable alternatives. This approach minimizes complexity while maintaining NSA compliance and accelerates deployment timelines.

### Isidore Quantum® Protocol-Free Encryption Device (PFED)

A protocol-agnostic, AI-autonomous encryptor that secures any digital payload—voice, video, ATM frames, serial, IPv6—without requiring protocol translation. It supports VLAN segmentation, galvanic isolation, and ephemeral keying for resilient security in disconnected environments through autonomous key management and post-quantum algorithms.

### Post-Quantum Encryption (PQE)

Uses CRYSTALS-Kyber and other NIST- and NSA-aligned algorithms to resist quantum decryption—

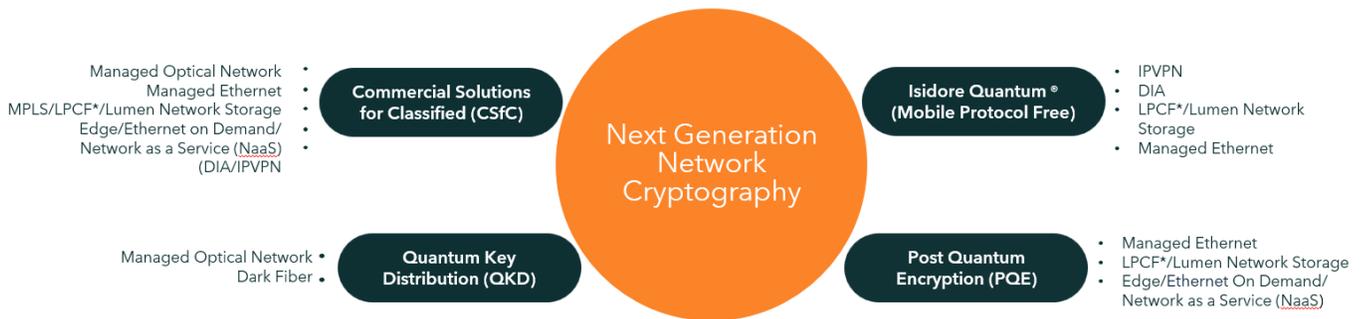
helping ensure harvested data remains secure against future quantum threats.

**Quantum Key Distribution (QKD):** Helps ensure secure key exchange using quantum mechanics, mitigating risks of interception and replay attacks. QKD is a foundational element in building a truly quantum-resilient infrastructure.

### The Lumen Private Connectivity Fabric (LPCF)

LPCF integrates these capabilities into a unified, scalable platform that enables secure mobility and interoperability across mission domains. It resolves fragmented infrastructure by supporting dynamic scalability, consistent policy enforcement, and AI-driven workloads—without compromising performance or compliance.

Together, these composable solutions form a resilient and intelligent architecture that not only meets the 2028 mandate but also positions government agencies to counter today's threats and adapt for tomorrow's unknowns. NGNC is more than a technology suite—it's a strategic posture for secure, sovereign, and scalable communications in the age of quantum and AI.



\*Lumen Private Connectivity Fabric

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## How Can Agencies Benefit?

By adopting NGNC, public sector organizations can expect:

- Rapid deployment of secure networks—weeks instead of months
- Significant cost savings across hardware, staffing, and operations
- Flexible infrastructure that adapts to mission needs and legacy systems and works across any transport that defends against quantum and AI-driven threats
- Confidence in compliance and accreditation, backed by Lumen expert managed services support
- Interoperability and integration with existing Type1 and CSfC systems and aligns with Zero Trust and cloud native architectures
- Simplified operations through managed services and automation, allowing agencies to focus on mission outcomes rather than maintenance

## Future-Read Your Agency

If you're a public sector CIO, CISO, or IT director looking to modernize your agency's secure communications and want to learn more about the benefit of Lumen Next Generation Network Cryptography, now is the time to act.

### Contact Lumen today to:

- Schedule a personalized briefing on NGNC solutions with one of our experts. Call 1-866-352-0291.
- Explore deployment models that can be tailored to your mission needs
- Learn how to integrate Lumen CSfC and Isidore into your existing infrastructure

## Why Lumen?

Lumen serves as a trusted partner for public sector agencies looking to modernize their infrastructure, connectivity, communication and security services. Lumen helps agencies transform their technology to provide superior citizen services and accomplish their missions with excellence.

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