ITUS BRIDGE MODULE

SW1 SW2

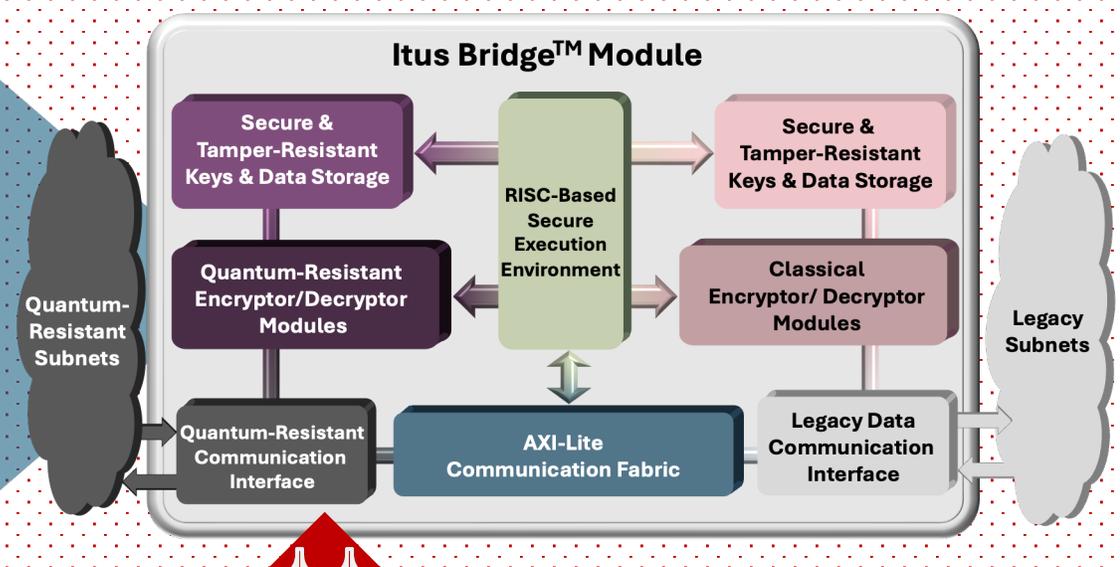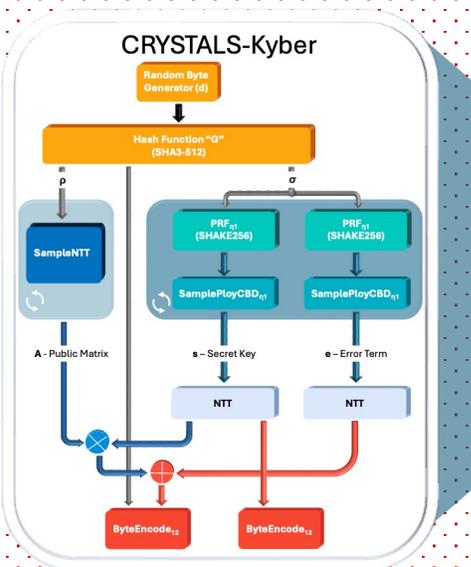SECURE MICRO TECHNOLOGIES

- **Programmable PQC-HSM Architecture**
- **Dual-Stack Cryptographic Support**
- **Secure Enclave-Based Translation**
- **Real-Time Traffic Classification & Routing**

Quantum computing is breaking legacy encryption. Itus Bridge™ enables a smooth shift to PQC by letting quantum-resistant and classical cryptography run in parallel, ensuring secure, phased migration with no operational disruption.

CRYSTALS-Kyber

Random Byte Generator (d)

Hash Function "G" (SHA3-512)

ρ σ

SampleNTT

$PRF_{\eta 1}$ (SHAKE256) $PRF_{\eta 1}$ (SHAKE256)

$SamplePloyCBD_{\eta 1}$ $SamplePloyCBD_{\eta 1}$

A - Public Matrix   s – Secret Key   e – Error Term

NTT   NTT

$ByteEncode_{12}$ $ByteEncode_{12}$

Itus Bridge™ Module

Quantum-Resistant Subnets

Secure & Tamper-Resistant Keys & Data Storage

RISC-Based Secure Execution Environment

Secure & Tamper-Resistant Keys & Data Storage

Quantum-Resistant Encryptor/Decryptor Modules

Classical Encryptor/ Decryptor Modules

Legacy Subnets

Quantum-Resistant Communication Interface

AXI-Lite Communication Fabric

Legacy Data Communication Interface

Key Capabilities
- Dual-Domain Crypto Engine: Classical (RSA, ECC, AES-GCM) + PQC (Kyber, Dilithium).
- PQC-Optimized HSM: Isolated domains connected through a secure RISC-based enclave.
- Dynamic Key Translation: Real-time negotiation between classical and PQC traffic.
- Hardware Acceleration: Tuned for PQC polynomial and scalar math.
- Secure Enclave Execution: Tamper-resistant cryptographic processing.
- Real-Time Traffic Intelligence: Routes mixed PQC/classical traffic at edge or core.

Deployment Use Cases
- Defense & Aerospace - Critical Infrastructure & SCADA - Zero Trust & Secure Cloud - Embedded and Tactical Systems

Why It Matters
- Enables a safe, staged PQC transition.
- First known platform to run classical + PQC encryption simultaneously.
- Supports DoD Zero Trust and CMMC 2.0 modernization paths.

Network Card Bridge

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SECURE MICRO TECHNOLOGIES