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Resilient, AI-Enabled, and Post-Quantum-Ready Maritime Architectures

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Abstract:

Achieving and sustaining maritime dominance within the Davidson Window demands resilient digital architectures that are ready today while remaining secure against tomorrow's risks. As the Department of the Navy aligns with the CNSA 2.0 timeline, this presentation examines how AI-enabled infrastructure, hybrid cloud, and edge architectures can strengthen continuity, adaptability, and trust in mission-critical information/communication systems. These capabilities are essential to maintaining readiness across distributed and austere maritime environments where assured communications and information availability are foundational to operational success.

A core focus is the accelerated need to transition toward post-quantum encryption for communications, consistent with CNSA 2.0 milestones. Post-quantum-ready architectures enhance resilience and obfuscation, ensuring the information advantage persists as cryptographic threats evolve within and beyond the Davidson Window time-horizon. This presentation highlights why crypto-agility and quantum-resistant communications must be embedded now—alongside AI-driven resilience—so naval digital architectures remain survivable, interoperable, and decisive in the critical years ahead.