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2:10 PM - 2:30 PM

Adaptive Mission Networking: Using Cloud Computing to Operationalize the Army Unified Network

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Abstract:

As the U.S. Army transitions from a collection of legacy tactical, enterprise, and platform-specific networks toward a data-centric Unified Network, one of the most significant

technical challenges remains: how to integrate thousands of disparate radios, transport systems, cloud environments, sensors, command posts, and mission systems into a single operational fabric without disrupting existing mission capabilities. Recent Army modernization efforts emphasize reducing network complexity, enabling seamless data movement across echelons, implementing Zero Trust security, and delivering resilient communications in denied, disrupted, intermittent, and limited-bandwidth environments. This session explores how commercial cloud service can act as the orchestration layer for a Unified Army Network, enabling existing tactical and enterprise transport technologies to operate as a cohesive, adaptive, and policy-driven infrastructure. Rather than replacing radios, SATCOM, MANETs, private 5G systems, tactical data links, or enterprise networks, the commercial cloud can provide a software-defined control plane capable of integrating and managing these heterogeneous environments as a single operational system. The cloud can provide the Army with centralized routing and hybrid connectivity capabilities, large-scale mesh networking and policy-driven

connectivity - foundational capabilities for a modern military transport architecture.

Attendees will learn how emerging cloud and edge technologies can automate the execution of Primary, Alternate, Contingency, and Emergency (PACE) communications plans through telemetry-driven routing decisions. The presentation will discuss architectural patterns that leverage network performance measurements, link availability, security status, and mission priorities to dynamically add and operate network nodes and select transport paths while remaining transparent to end users. These concepts extend traditional failover models by enabling adaptive routing across terrestrial, aerial, satellite, and tactical networks in real time. Finally, the session will also examine how AI-enabled operations and observability can improve network resilience and operational effectiveness, achieve continuous visibility across tactical and enterprise environments while automating responses to network degradation, cyber threats, and infrastructure failures.

Attendees will leave with practical design patterns, implementation considerations, and architectural insights for building resilient, self-healing, and mission-aware communications infrastructures capable of supporting future Army and Joint Force operations across contested environments.