

CASE STUDY

NASA NEAR SPACE NETWORK VIRTUAL NETWORK MANAGEMENT & ORCHESTRATION ARCHITECTURE

The NASA Near Space Network (NSN) is an integrated, multi-mission space and ground network that provides communications and navigation services to numerous user missions, ranging from launch vehicles to Lunar and Lagrange spacecraft, using a global portfolio of more than 50 government and commercial direct-to-earth (DTE) and space relay (SR) antennas. The original implementation of the NSN relied heavily on mission-unique capabilities and on-premises assets, and network leadership has sought to transition to a services-oriented enterprise model that effectively integrates and leverages standardized capabilities, cloud platforms, and commercial capabilities.

ENTERPRISE ARCHITECTURE

CLOUD MIGRATION

COMMERCIAL SERVICE INTEGRATION

SYSTEMS ENGINEERING

ENGINEERING & TRADE STUDIES

To address these needs, Kurtek engineers developed a cloud-first enterprise architecture that decomposed the functions of the network into three core areas: service management, including resource allocation and service scheduling; network monitoring and control, including service configuration, status

aggregation, and performance reporting; and service execution, including data transport, translation, processing, and warehousing.

KEY RESULTS

- Developed a scalable, cloud-first enterprise architecture for ground network management and space communications service delivery.
- Evaluated 20+ government, commercial, and hybrid solutions using 200+ quantitative and qualitative technical, cost, and risk criteria.

Leveraging the architecture, the Kurtek team conducted a comprehensive Analysis of Alternatives (AoA) to evaluate potential solutions, including existing network assets, government off-the-shelf (GOTS) and

commercial off-the-shelf (COTS) technologies, managed commercial services, and hybrid cloud offerings. Using a combination of quantitative and qualitative criteria, our engineers evaluated each potential solution for technical capability, maturity, operational readiness, and implementation, operation, and sustainment cost and risk; performed sensitivity analyses and identified an approach to optimize tradeoffs; and developed a recommendation package for program leadership.

To learn more about our capabilities, email us at info@kurtek.io or call our team at 703-943-7236.