

# JALN TCS™

## Joint Aerial Layered Network Tactical Communications System

### Key features

- A-LOS range extension for voice and tactical data communications
- Bridges and relays disparate radio communications via VoIP/RoIP
- Conferences IP phones to field radio users
- Remote configuration of airborne payload
- Self-reporting UAS location in Link 16
- Provides UAS back-up flight control capability link
- RF insertion point for Naval AIS into Link 16
- Facilitates machine-to-machine targeting of sensor data
- COP fused and disseminated with Link 16/SADL, Intel, radar and Naval AIS

JALN TCS provides a persistent, IP-based aerial infrastructure that extends communications across the battlefield from an airborne platform.

JALN TCS bridges disparate radio systems, relays voice and data communications, creates communication conference patches between radios and common phone systems, provides Link 16 and SADL access, integrates Naval Automatic Identification System (AIS) data and spreads the Common Operational Picture (COP) to users over a wide operational area.

All of these capabilities are provided in a small, light-weight, modular airborne package capable of being installed in a variety of manned and unmanned airborne hosts flying for long durations. The system can be shelved, racked, housed in rugged cases for a "roll-on, roll-off" capability and individually mounted or podded to hang on the exterior of the aircraft.

The JALN TCS radio bridging capability allows seamless movement of voice and data across disparate radio waveforms such as SINCGARS, HAVEQUICK, UHF, VHF and P-25, eliminating the need for all communicators to have the same type of radio/waveform. This bridging/translating capability enables communication with disparate radio waveforms such as:

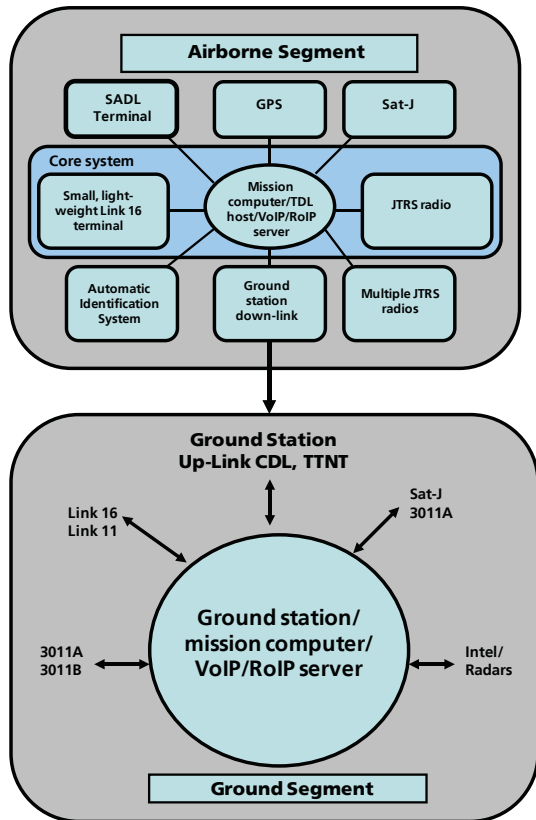
- Military forces communicating with state and local police and fire departments
- U.S. forces communicating with foreign forces

The airborne JALN TCS relay capability allows communicators in urban jungles, mountainous terrain, or widely dispersed from each other to use their common radio systems to talk to each other; extending Line-of-Sight (LOS) communications. Two JALN TCS systems flying on host platforms at 65,000 feet could cover a country about the size of Afghanistan.

The ground station operator has full control over the JALN TCS system's capability to change radio frequencies, bridge frequencies, patch regular telephone callers to radio users in the field and make conference calls between several users on radios and telephones. For example, the higher HQ could call-in to the ground station in the theater of operations, request a communications patch to a special operations soldier in the field and be able to communicate from telephone to radio. They could also request a conference call between them, the controlling operations center and the soldier on the ground, eliminating the need to have a person in-the-loop to translate communications.



# Conduct the mission anywhere, anytime



The JALN TCS system is built from Commercial-Off-The-Shelf (COTS) and Government Off-The-Shelf (GOTS) components specifically chosen to minimize SWaP requirements and to maintain cost at an acceptable level. Ultra's component selection emphasizes best-of-breed components and utilizes established MIL-STDs for equipment specification and qualification.

The JALN TCS system's VoIP/RoIP capability is powered by Twisted Pair's WAVE® software. Voice bridging between the JTRS radio channels and radio control and configuration are controlled by the operator in the ground segment. The JALN TCS Dispatch software allows remote patching of voice channels without the voice data consuming bandwidth on the Common Data Link (CDL) radio, enabling more efficient operations. Radio control and configuration is integrated with the JALN TCS Dispatch software for an intuitive user interface. The JALN TCS Server software allows the Air Segment to host data link and VoIP applications on a single Air Segment computer.

The JALN TCS Air Segment is designed for platform independence. It contains its own GPS and only requires power and mounting from the host. JALN TCS can utilize all of the available secure IP radio links including CDL, Tactical Targeting Network Technology (TTNT) and Highband Networking Waveform (HNW).

The functional design of the JALN TCS system was driven by the U.S. Air Force's identified need for a "modular integrated communications system to fulfill COCOM and warfighters immediate and compelling requirements for a persistent high-altitude communications capability." The program's high-level specification requires an airborne gateway node that can provide interoperability and range extension for legacy and emerging tactical data links, data and voice communication networks. Further, performance requirements were specified that increased emphasis on minimizing Size, Weight and Power (SWaP), allowing for remote (unmanned) operation and qualification to extreme environmental requirements for temperature and altitude; the resulting system: JALN TCS. JALN TCS is well-suited to any subset of these requirements and is scalable and adaptable to user functional and platform environmental requirements.

## JALN TCS air segment capabilities and specifications

- Link 16
- S-TADIL J
- SADL
- AIS
- JTRS
- VoIP/RoIP
- High-bandwidth IP
- Up/down-link via CDL, TTNT, HNW
- Core system: 35 lbs
- Fully-loaded system: 150 lbs



## JALN ground segment capabilities

- Link 16
- Link 11
- SADL
- 3011 B/C
- Intel
- Multiple radar inputs
- VoIP/RoIP
- Air tasking orders
- Common Operational Picture



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