BATTLEFIELD AIRBORNE COMMUNICATIONS NODE (BACN)

Current as of February 1, 2023

MISSION

Battlefield airborne communications node (BACN) is a communications relay and gateway system that provides military commanders with a versatile means of exchanging information from multiple air, ground, and maritime sources, to include host nation, joint, and coalition forces. It increases tactical situational awareness and communication abilities from the forward edge of the battlefield to operational decision makers in operations centers. BACN provides Combatant Commanders (CCDRs) a forward located, high-flying, long-loiter dedicated communication node capable of interoperable information in permissive environments. The functionality provided by BACN reduces communication issues associated with incompatible systems, adverse terrain, and distance (Line of Sight (LOS)/Beyond Line of Sight (BLOS)).

BACN provides communications capability and waveform conversions where terrestrial services are restricted or unavailable by using three core service categories: Tactical Data Links (TDLs), voice services, and Internet Protocol (IP) services.

This ability is achieved without modifying end-user systems, or placing Size, Weight, and Power (SWaP) requirements for these systems on end users. BACN augments theater communications and supports deployed ground forces by reducing LOS issues, Satellite Communications (SATCOM) dependence, and providing greater range for communication links. Additionally, BACN provides support across the range of military operations as a reliable means of communications between edge users across different waveforms and data formats.

BACN's message translation and forwarding capability provides the means to connect legacy TDLs. BACN receives a message in one language (e.g., J-series, VMF) and translates the data to another language (e.g., SADL) on the other information link. This translation capability enables TDL interoperability, providing a unified operational picture.

BACKGROUND

The original BACN prototype was developed on the NASA WB-57 high-altitude test aircraft and tested during a Joint Expeditionary Force Experiment. That successful test led to the deployment of the first E-11A (a/c 9001) in December 2008.

In May 2009, the Secretary of Defense signed the Joint Urgent Operational Need (JUON) statement for BACN operations in the CENTCOM AOR.

In August 2011, BACN transitioned from a JUON to an Enduring Capability.

As of FY19, BACN became a Program of Record (POR) in the Continental United States (CONUS) under Air Combat Command (ACC) as a Service Retained Capability (SRC) with baseline and Overseas Contingency funding through the Future Years Defense Plan.

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FEATURES

The BACN payload is hosted on the E-11A, which is a modified Bombardier Global XRS/6000-series commercial aircraft. This platform was selected due to its high-altitude flight capability. BACN refers to the BACN platform, its payload, and associated ground systems. Payload operators located at ground sites within the orbit location, monitor the status of the payload, radios, and voice communications for the duration of a mission, which allows the operators to quickly identify potential problems and correct them with minimal impact to the customers.

The BACN payload is controlled from the Payload Control Element-Mission (PCE-M). The Payload Control Element- Launch (PCE-L) is where pre-flight, launch, and recovery functions occur. PCE-M/Ls are currently located at Combined Forces Air Component Commander (CFACC) designated C2 nodes. In general, BACN extends the range of an external interface (voice/ data relay or IP route on a single waveform) or converts external interface data from one format to another (data link gateway, voice bridging, or cross-waveform IP routing) without changes to the disadvantaged users' systems or any addition of equipment to their systems.

BACN provides voice bridging/translation, TDL gateway, and TDL relay functions for BLOS data communications. BACN provides nine separate voice and data pathways across UHF and VHF waveforms and translates, forwards, and relays between two TDLs (Link16/ SADL). Additionally, BACN has a two-channel voice or data SATCOM capability with a pathway for transmittal and reception within LOS across a Common Data Link (CDL) system. BACN makes voice and data bridging possible by using a routing system to interface between pathways. The system also has a 1TB server to enable recording and storage of data.

E-11A Characteristics

Primary function: High-altitude, long-endurance communications gateway

Contractor: Bombardier

Power Plant: 2x Rolls-Royce BR710A2-20 turbofans

Thrust: 14,750 pounds

Wingspan: 94 feet

Length: 99 feet

Height: 24 feet 10 inches

Empty Weight: 49,750 pounds

Maximum takeoff weight: 99,500 pounds

Fuel Capacity: 43,500 pounds

Speed: Cruise 566 KIAS/.85M

Range: 6,235 nautical miles

Service Ceiling: 51,000 feet

Armament: None

Crew: Two pilots

ORGANIZATION

The E-11A is currently operated OCONUS by the 430th Expeditionary Electronic Combat Squadron, 380th Expeditionary Operations Group, and 380th Air Expeditionary Wing.

The CONUS E-11A squadron, the 18th Airborne Command and Control Squadron, was activated in February 2023 and is assigned as an to Warner Robbins AFB, Ga., as a geographically separated unit under the 319th Reconnaissance Wing, Grand Forks AFB, N.D. The 18ACCS is expected to achieve Initial Operating Capability (IOC) FY25 and Full Operational Capability (FOC) FY26. The 18ACCS will be able to establish and sustain two 16/7 orbits and a 24/7 surge capability for a 6-month maximum without an Air Expeditionary Force (AEF) augmentation. The current E-11A fleet is 4 aircraft and is programmed to grow to an end strength of 9 aircraft by FY26.

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