



BANDWIDTH ON DEMAND

DOD's Joint IP Modem provides efficient standard solution

by Johnny Ng

The requirements of net-centric warfare and operations for robust networks, information sharing, and collaboration have led the U.S. military increasingly to use Internet Protocol (IP)-based products over both government and commercial satellites.

To date, U.S. military satellite communications (SATCOM) systems using IP include the Army's Joint Network Node, Warfighter Information Network-Tactical, and Combat Service Support SATCOM; the U.S. Marine Corps' Support Wide Area Network; the U.S. Air Force's Global Broadcast Service; and the Navy's Commercial Broadband Satellite Program.

However, these and other similar systems all use different proprietary modems. According to officials at the Defense Information Systems Agency (DISA),

there are many different modems in the DOD inventory, each requiring its own logistics support. The proliferation of nonstandard modems also presents issues regarding interoperability, efficient use of bandwidth, and transmission security (TRANSEC).

As the new standard, the Joint IP Modem (JIPM) can support direct interoperability throughout these systems. The JIPM is based on the widely adopted Digital Video Broadcasting-Satellite 2nd Generation and Digital Video Broadcast-Return Channel Satellite standards.

JIPM is managed by DISA's JIPM Program Office. The Defense Communications and Army Transmission Systems (DCATS) Project Office, part of Program Executive Office Enterprise Information Systems, serves as the acquisition agent. JIPM underwent qualification testing in December at the Joint SATCOM Engineering Center at Fort Monmouth, NJ.

JIPM PASSES TESTING

Testers using JIPM successfully passed network traffic via Defense Satellite Communications System and Wideband Global SATCOM military satellites and

NETWORK CONTROL CENTER

The author, Product Leader for Modems in the DCATS Project Office, checks out the JIPM Network Control Center during recent qualification testing at the Joint SATCOM Engineering Center at Fort Monmouth, NJ. (U.S. Army photo by Stephen Larsen.)

“ JIPM WORKS IN A HUB-SPOKE CONFIGURATION, SIMILAR TO DIRECTV. WITH JIPM, ONE SIGNAL GOES UP FROM THE HUB TO THE SATELLITE AND SPREADS TO MANY OTHER REMOTE MODEMS [THE SPOKES] AROUND THE WORLD. ”

a Telstar 14 commercial satellite in the X, Ka, and Ku bands. The JIPM Network Control Center, a two-rack hub, successfully broadcast and received traffic from multiple remote modems, each of which is housed in a 1U-size (1.719-inch or 43.7-millimeter) chassis.

“JIPM works in a hub-spoke configuration, similar to DIRECTV,” said Art Reiff, a SATCOM consultant with DCATS. “With JIPM, one signal goes up from the hub to the satellite and spreads to many other remote modems [the spokes] around the world.”

Testers demonstrated both unicast (host-to-host) and multicast (one host to a specific set of hosts) operations, using 11.58-meter AN/GSC-39 terminals and 2.4-meter tactical Very Small Aperture Terminals to transmit at X-band; the nine-meter Ka Satellite Transmit and Receive Systems AN/GSC-70 terminal to transmit at Ka-band; and a satellite simulator to transmit at C-band.

Reiff said that JIPM uses satellite bandwidth much more efficiently than prior types of modems.

It is unique among modems in that it employs internal TRANSEC that has been certified to comply with the *National Institute of Standards and*

Technology Federal Information Processing Standard 140-2.

FIRST DELIVERIES

DCATS is acquiring JIPM via an \$87 million delivery order awarded in October 2007 on the World Wide Satellite Systems Indefinite Delivery/Indefinite Quantity contract from prime contractor Globecom Systems Inc., with ViaSat Inc. serving as the major subcontractor.

The first deliveries of JIPM Network Control Centers were in January to various DOD Teleport and Standardized Tactical Entry Point sites. The first deliveries of remote modems were in April to Hanscom Air Force Base, MA, followed by deliveries in June and July to the Navy in Charleston, SC, and Norfolk, VA.

The version of JIPM that just completed qualification testing could be just the first stage of an evolving standard IP infrastructure that will keep growing to serve future warfighter needs.

Christopher Catlin, JIPM Program Manager in DISA's JIPM Program Office, said his staff is working to identify a second-source vendor for JIPM to ensure multiple providers. “We released an RFI [Request for Information] in October for industry to review the JIPM Interoperability Draft,” said Catlin, adding that

many vendors responded with excellent comments and even provided recommendations that could improve JIPM's utility as an open-standard device.

Catlin said that in addition to delivering JIPM to meet current needs, DISA is looking toward future IP modems that meet visions defined by DOD.

“We want to ‘right-size’ IP modems that will logically play into a defined technology road map for DOD,” he said.

He added that the JIPM Program Office has been working with the user community to identify the next wave of JIPM enhancements, such as dynamic routing, improved encapsulation, mesh network architectures, and communications on the move, as well as remote modem packaging options that will accommodate smaller size and less weight and will provide power for ground, shipboard, and airborne platforms.

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