

JIPM: Standardized Access to the GIG!

Connecting More Warfighters More Efficiently.



The Joint Internet Protocol Modem (JIPM) system from ViaSat combines flexible satellite networking with information assurance capabilities to deliver secure, high-speed IP communications to the military and government agencies. Featuring a DVB standards-based waveform with powerful encryption and government-specified transmission security (TRANSEC), JIPM is the Department of Defense (DoD) satellite modem standard for connecting all US forces. This system powers an IP networking backbone across the battlespace, enabling today's information-hungry warfighters to efficiently share voice, video, and data communications over military and commercial satellites (including Ka band) using adaptive and variable coded modulation techniques.

JIPM connects more users in more networks — and does so more efficiently — thanks to flexible networking and bandwidth optimization features. The 1U remote modem (RM) and highly scalable Network Control Center (NCC) hub rely on advanced forward error correction (FEC), modulation, and coding schemes to make better use of bandwidth in star or multi-star topologies. The JIPM system even supports upgrade for single satellite hop mesh connections between remote modems. So you can change your network architecture to suit your application, without changing your modem. One modem, multiple networks, for all US forces.

With an embedded FIPS 140-2, Level 2, AES-256 based TRANSEC module, the system ensures secure connectivity and protects sensitive communications. Using transportable and mobile SATCOM platforms equipped with JIPM remote modems, deployed warfighters can access core Global Information Grid (GIG) services including SIPRNET, NIPRNET, VTC, DSN, DRSN and JWICS through JIPM NCCs.

Share information across forces and across the battlespace with IP satellite networking powered by JIPM. Arm yourself with this secure, high-speed modem to communicate across the GIG and directly between deployed forces to execute joint missions more effectively.

CONNECTING JOINT FORCES ACROSS THE BATTLESPACE

Built for Bandwidth-Hungry IP Applications

- Voice over IP (VoIP)
- Streaming video
- Video Teleconference (VTC)
- SIPRNET, NIPRNET, GIG access

One Platform for Multiple Network Topologies

- Star, Multi-Star (Hub/Spoke; One-to-Many) with Dual DVB-S2 Receivers
- Upgradable to Mesh (Single Satellite Hop; Many-to-Many)

Flexible Connections and Bandwidth Efficiency

- Integrated Digital Video Broadcast-Second Generation (DVB-S2) receiver for high-speed downloading from the GIG
- 1 Msps to 50 Msps DVB-S2 ACM/VCM/CCM forward link (FL)
- 128 to 2048 ksps DVB-RCS Return Link (RL)
- Return Link power control via Dynamic Link Adaptation (DLA)
- Supports QPSK, 8PSK (FL/RL) and 16APSK (FL) modulations
- Embedded QoS and TCP/IP acceleration (Protocol Enhancing Proxy)

Embedded Information Assurance

- AES-256 encryption-based Transmission Security (TRANSEC)
- FIPS 140-2, Level 2 certification (extensible to 140-3 when finalized)
- Automatic over-the-air authentication, re-keying, and zeroization

Adapts as Your Network Grows

- Compatible with existing IPv4 networks and IPv6 standards
- Software-reprogrammable RM and NCC elements
- Software-upgradable to higher RL rates
- Hardware/Software-upgradable to Mesh operation
- SNMP at NCC allows remote monitoring by higher-level management systems

SPECIFICATIONS

NETWORK

Independent Networks:	10 per JIPM NCC
Forward Link Carriers:	1 per network
Remote Modems:	≥ 300 per network
Return Link Carriers:	up to 32 per network
Multi-satellite Operation:	each network can operate on a separate satellite or transponder
NCC Network Interface:	Gigabit Ethernet, 1 data port per network, 4 control ports per NCC
Frequency Hopping:	Per SatLabs recommendation
Hop Rate:	up to 6000 hops/sec
Synchronization:	Network Timing Reference provided by NCC
Forward Transmission Rate (NCC to RM):	1 to 50 Msps, independent on each DVB-S2 receiver
Return Transmission Rate (RM to NCC):	128 Ksps to 2.048 Msps (extensible to 8.192 Msps)
Interoperability:	With SatLabs-compliant IP modems with TRANSEC disabled
Receive Only Operation:	Yes (with or without TRANSEC enabled)

TRANSMISSION SECURITY

Encryption:	AES-256 with additional TRANSEC features
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PLANNED CERTIFICATIONS*

MILSATCOM:	DSCS, GBS, WGS compliance
DIACAP:	DoD 8510.01 compliance
NIST:	NIST compliance with FIPS 140-2 (extensible to 140-3)
SatLabs^:	ETSI EN 301 790 compliance^

DVB-S2/RCS

Forward Link:	DVB-S2 per ETSI EN 302 307 with ACM/VCM/CCM
Return Link:	DVB-RCS per ETSI EN 301 790

REDUNDANCY

NCC Redundancy:	1:1 for core components
Forward Link Redundancy:	1:4
Return Link Redundancy:	1:4

IP

IP Packet Forwarding:	Transparent IPv4 packet forwarding for unicast and multicast
IP Packet Routing:	IGMP v3
IP Encapsulation:	MPE, MPEG and ATM encapsulation
IPv6:	Per DoD IPv6 Special Profiles for IPv6 Compatible Products Mandatory requirements
IP QoS:	Configurable for FL and RL
TCP/IP Acceleration:	Configurable for FL and RL; applies to unencrypted (SBU) traffic flows concurrent with Type 1 encrypted traffic flows

SATELLITE INTERFACE

IF Interface:	950-2050 MHz
Spectral Confinement:	$\alpha = 0.20$ or 0.35 (FL-selectable), 0.35 (RL)
Doppler Performance:	Maintains specified performance under all of the satellite Doppler conditions corresponding to up to seven (7) degrees of orbital inclination
BU, LNB Support:	10 MHz on/off, LNB power (13, 18 VDC, off), BUC power (24 VDC, external, off), independently selectable

MODULATION AND CODING

Forward Links:	DVB-S2 ACM/VCM/CCM LDPC FEC, QPSK/8PSK/16APSK
Return Links:	DVB-RCS Turbo FEC, QPSK/8PSK
Mesh Links (Upgrade):	DVB-RCS Turbo FEC, QPSK/8PSK

HARDWARE

RM Packaging:	19 inch rack mountable
RM Cooling:	Forced air cooling not required
Electro-Magnetic Interference (EMI):	FCC Rules Part 15 (47CFR15, Sections 47CFR15.107 and 47CFR15.109) for Class A devices
System Availability:	99.99%
AC Prime Power:	100 to 240 VAC, 47 to 63 Hz
NCC High Temperature:	38°C (100°F) Operating; 60°C (140°F) Non-Operating
NCC Low Temperature:	4.4°C (40°F) Operating; -40°C (-40°F) Non-Operating
RM High Temperature:	50°C (122°F) Operating; 70°C (158°F) Non-Operating
RM Low Temperature:	0°C (32°F) Operating; -40°C (-40°F) Non-Operating
Humidity, Operating:	95%, Non-Condensing
Humidity, Transportation and Storage:	100%, Non-Condensing
Management Interface:	Web browser for NCC and RM (local or remote access); SNMPv3 on NCC allows local or remote monitor from external NMS

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