

# GVN-Ground VSAT Network

## Features

- Intelsat type approved antennas
- Transportable or fixed configuration
- Voice/Fax/Data network for operation in Ku-band
- COTS equipment
- Modular, flexible, expandable star configuration
- Dedicated channel for M&C functions
- Redundancy with automatic switchover (Hub terminal)

## Options

- Data encryption
- Hub to hub links
- Increased data and/or voice channels
- Star network
- Other satellite frequencies
- Additional spoke terminals
- Low cost fixed site terminals
- 0.9M and 1.2M antennas
- Flyaway terminals

## Description

To meet the global demand for rapidly installed telephony and data communications Satellite Networks has developed the Ground VSAT Network (GVN) for commercial and government Commercial Off The Shelf (COTS) applications. GVN is a commercial satellite communications closed network approved for operation over INTELSAT or PanAmSat in the Ku-band frequency range. The network is designed to balance space segment power and bandwidth for the lowest operating cost. The network is transportable and deployed in a star configuration consisting of a hub station at the center with up to 24 remote (spoke) terminals. Each spoke terminal can provide 2 voice, 1 fax and 2 data connections to the hub terminal. The hub station can also communicate with other hubs. A hub station host computer exercises local monitor and control (M&C) of hub station electronics as well as a dedicated channel for over-the-satellite M&C of the network spoke terminals.



**A Transportable INTELSAT  
Approved Voice & Data Network**

GVN hub stations employ 2.4-meter antennas with redundant RF subsystems (LNA, HPA and transceiver). Spoke stations typically utilize 1.8-meter antennas with single thread electronics. Hub stations meet INTELSAT E1 standards; spoke stations are qualifiable as INTELSAT standard G terminals.

Hub and spoke electronic are either antenna mounted or enclosed integrated and ruggedized transit cases. Provision is made for data encryption using either Satellite Networks or customer provided data encryption equipment.

A network PBX provides more channel connectivity, spoke to hub or spoke to spoke.

# GVN Specifications (For configuration shown below)



Several GVN's are currently operated by the U.S. Government

## System Performance

Hub Terminal:  
EIRP, 68.2 dBW, saturated  
G/T, 25.0 dB/\*K

Spoke Terminal:  
EIRP, 50.8 dBW, 1 dB compression  
G/T, 23.0 dB/\*K

## Terminal Performance

Hub antenna Subsystem:  
2.4 meter antenna reflector (2 piece)  
Feed: 2 port linear offset  
Receive frequency: 10.95-12.75 GHz  
Transmit frequency: 14.0-14.5 GHz  
AZ/EL positioner: manual adjust  
Pedestal: non-penetrating, pipe mount

Spoke Antenna Subsystem:  
1.8 meter antenna reflector (1 piece)  
Feed: 2 port linear offset  
Receive frequency: 10.95-12.75 GHz  
Transmit frequency: 14.0-14.5 GHz  
AZ/EL positioner: manual adjust  
Pedestal: non-penetrating, pipe mount

Hub RF Terminal:  
100 watt Ku-band TWT amplifier (redundant)  
LNA/LNB Ku-band, 85°K noise temperature (redundant)  
Transceiver, Up/Downconverter (redundant)

Spoke RF Terminal:  
4.0 watt solid state amplifier  
LNA/LNB Ku-band, 85°K noise temperature  
Transceiver, Up/Downconverter

Hub Data Terminal:  
Network data channel @ N x 64 Kbps for N spoke terminals  
M&C channel @ 1.2 Kbps  
Hub-to-Hub channel

Spoke Data Terminal:  
Data channel @ 64 Kbps (aggregate)  
M&C channel @ 1.2 Kbps

Hub Voice/Fax/Data Interface:  
VDM Multiplexer: Voice, data and fax channels configured for N spoke sites  
COMSEC interface (optional)  
PBX interface

Spoke Voice/Fax/Data Interface:  
VDM Multiplexer with  
1 Fax Channel 9.6 Kbps  
1 Synchronous 19.2 Kbps Data Channel  
2 Voice Channels @ 8 Kbps

Network Monitor and Control:  
Hub Terminal  
Network

Hub & Spoke Primary Power:  
120 Vac  $\pm$ 15% (47-63 Hz) or  
220 Vac  $\pm$ 15% (47-63 Hz) or  
90-240 VAC with power factor correction