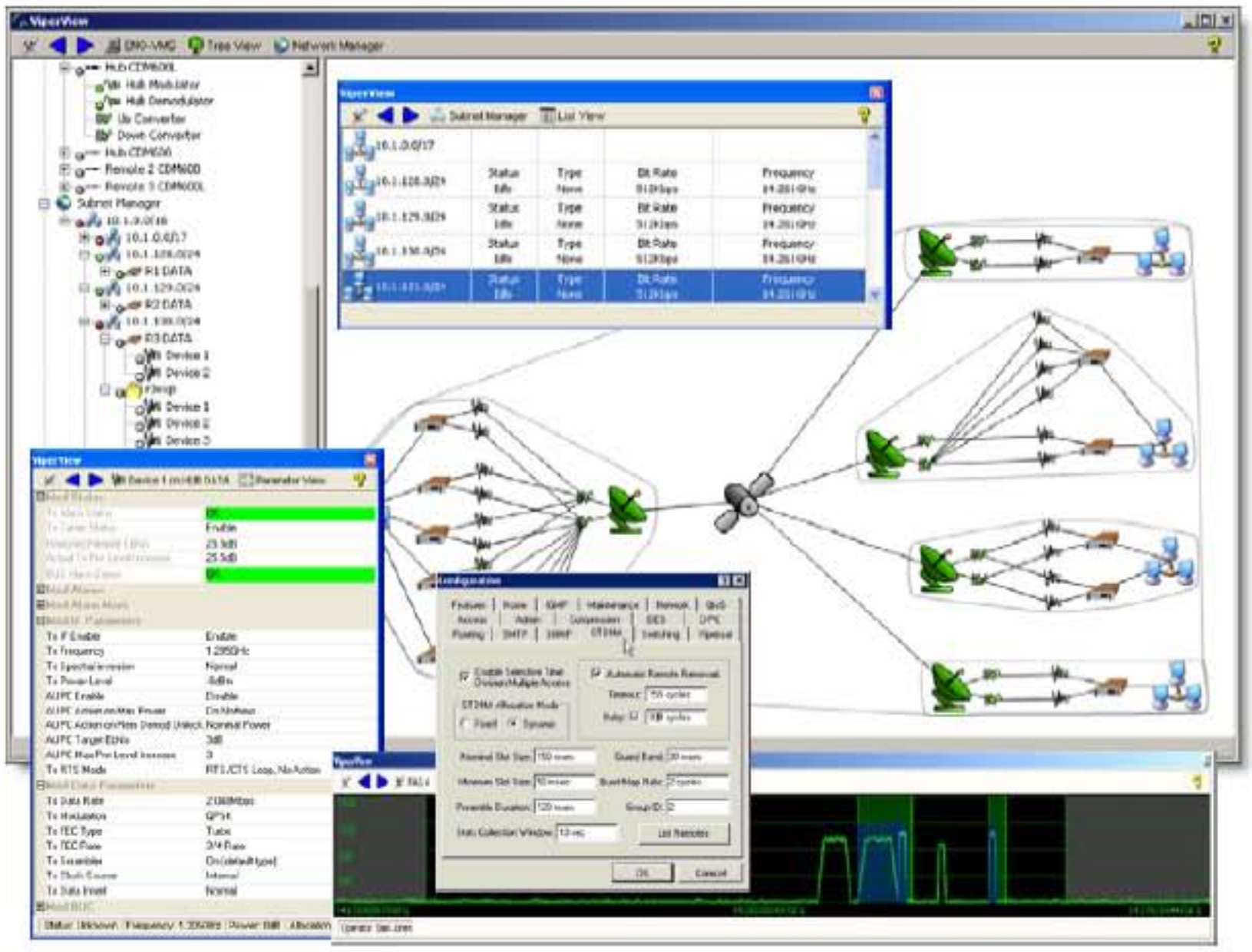
# VMS 3.x

## Vipersat Management System Version 3.x



## *CAPACITY, BANDWIDTH, AND NETWORK MANAGEMENT OF IP BASED SATELLITE NETWORKS*

Comtech Vipersat Networks understands the issues with operating IP based satellite networks. Satellite service providers are continuously looking for ways to enhance their service offerings, while enterprise satellite operators strive for improved space segment efficiencies. Both are dedicated to serving their customers with the most efficient, cost effective, reliable network available, while also providing a scalable platform that is capable of growing with the organization.

VMS 3.x builds on years of providing our customers with the most advanced automated bandwidth and capacity management system in the industry. VMS 3.x increases the efficiency of the satellite network while improving customer service for your organization.

### *VMS 3.x INTRODUCTION*

VMS 3.x is a feature-rich, automated bandwidth, capacity, and network management system with an intuitive, user-friendly GUI and higher degree of configuration automation than previous versions. VMS 3.x is designed to enable network administrators and satellite service providers to easily configure their networks and rapidly and effectively respond to network anomalies. Much more than just a network monitor and control platform, VMS 3.x automates the carrier switching and spectrum management processes within the satellite network. These capabilities allow Single Carrier Per Channel (SCPC) carriers to be switched automatically based on application, load, or schedule, providing on-demand services and unparalleled space segment savings.

### *KEY FEATURES and FUNCTIONS*

- Centralized network management
- Auto detection of new nodes
- Detailed event logs can be filtered and/or exported
- Scalable from small to large networks
- Multiple access topologies (TDM, STDMA, SCPC)
- Automation of space segment capacity
- User defined policies for upstream switching
- Multiple STDMA return channel configurations
- Star and full mesh capabilities using Single Hop On Demand (SHOD)
- Multi-Transponder Mode (MTM)
- Multi-Satellite Services (MSS)

### *EASE OF USE*

An intuitive graphical user interface allows the user access to control and management functions. VMS 3.x incorporates commonly used and widely understood windows-type layouts to manage networks.

### *AUTOMATED CAPACITY MANAGEMENT*

VMS 3.x allows remote terminals to switch from shared (STDMA) mode to dedicated (SCPC) channels. Switches can be initiated in several ways: manually, via schedule, via application, or via load. Under extreme data loads on a remote terminal, automatic switching is performed on the remote giving it higher throughputs during peak traffic times. Applications such as IP voice (VoIP) or video also produce conditions of high or constant loads due to their streaming nature. Through protocol detection circuits in the remote terminals, the modem router initiates automatic switching to achieve reduced latency and increased throughput.

### *IP BASED NETWORK CONTROL*

All management operations and controls are accomplished using standard IP communications protocols. VMS 3.x uses a proprietary interface to communicate with an IP Router Interface Board (IPIB) residing in the satellite modem. The IPIB is a powerful microprocessor based input/output (I/O) controller supporting a variety of I/O types and containing embedded software that supports Vipersat functionality. This proprietary IP interface between the VMS and the IPIB results in dramatically lower M&C overhead compared to traditional SNMP management interfaces. The benefit is less bandwidth required and faster response to control and status messages.

# VIPERSAT MANAGEMENT SYSTEM VERSION 3.X (VMS 3.X)

## *VMS ARCHITECTURE*

VMS 3.x is based on a client/server architectural model in which a central hub communicates with remote nodes in a star or mesh topology. The client/server model provides a number of advantages. The server maintains all databases in a centralized location accessible to all clients. Thus, updates and changes can be made in a single place and distributed globally to all clients.

Through its client/server architecture, VMS 3.x supports centralized management, control, and distribution of data, alarms, and events. It also supports multiple clients and network management user applications and access to all system features simultaneously. The network management system provides complete visibility over the network. All information regarding network status and performance is processed and stored on the server. Any and all logged client workstations retrieve information from the primary server data base.

## *SCALABILITY*

VMS 3.x is completely scalable to manage small or large systems with dozens or even thousands of network elements. The system has been designed to anticipate future growth and allow expandability in all areas. VMS 3.x easily adapts and continues to perform its automated functions when the network configuration is changed or new remote sites are added.

## *SINGLE HOP ON DEMAND (SHOD)*

Until now, flexible and dynamic switching systems such as DAMA or multiple transmission link switches were bandwidth and equipment resource intensive. This was due to the constraints of traditional private serial modem interfaces. Switching multiple transmission links via satellite meant reducing flexibility for the benefit of lower latency circuit switches.

Single Hop On Demand (SHOD) switching technology offers IP packet circuit switching at the application level. SHOD provides significant and dynamic connectivity between latency connections without suffering the high costs associated with multiple carriers and/or 1-to-1 multi-receiver links.

## *MULTI-TRANSPONDER MODE (MTM)*

Multi-Transponder Mode (MTM) allows a satellite operator or service provider to allocate unused, but fragmented, portions of space segment across the entire satellite to a network. The allocated space segment can then be used for on-demand SCPC links. Due to the greater bandwidth, MTM functions only with L-band satellite modems.

## *HIGHLIGHTS OF VMS 3.x FEATURES INCLUDE*

- Improved network views – users can zoom in to view all components within the entire network or subnet and observe configuration and status.
- Increased STDMA functionality – In conjunction with modem IP module firmware upgrades, VMS 3.x allows for greater flexibility in the configurations of the return STDMA channel. STDMA data slot size can be configured as fixed, variable depending on network load, set to a guaranteed information rate (GIR) for each remote, or set to Entry Channel Mode (ECM).
- VMS 3.x supports the switching of SCPC connections using the web-based Vipersat Circuit Scheduler (VCS). VCS simplifies the network setup process and enables bandwidth sharing capacity management for a variety of applications including IP video conferencing, news and sporting events, high capacity file transfers, scheduled broadcasts, distance learning, telemedicine, and end of day transactions.
- VMS 3.x supports Vipersat External Switching Protocol (VESP). VESP allows third party applications to negotiate SCPC transmission links between any two or more subnets. It provides for selecting a range of required bandwidth, and single-hop options.
- Significantly improved spectrum analyzer like view – Users can easily view the entire managed spectrum of the satellite, and then zoom in on individual transponders and circuits within the transponder.
- Separate policies for each remote in the network can be enabled for various automatic switches, such as for voice and video applications, as well as manually or scheduled switched connections.
- Easier navigation to subnet components – Enables users to easily and quickly view any individual component within their network, allowing for faster configuration and diagnostics.

## *SYSTEM REQUIREMENTS*

VMS 3.x requires the following hardware and software:

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|---|---|
| CPU | Pentium 4, 2.0 GHz or higher |
| RAM | 256 Mb |
| Hard Disk Space | 2 GB + 500 Mb free space |
| Video** | SVGA, 16 bit color or higher |
| Network Interface | Ethernet 10/100 Base-T NIC |
| Serial Port | One available USB port |
| Operating System | Windows 2003 Server |

** Two video output ports recommended for split screen viewing

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Broadband IP Network via Satellite

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