

The NEW LinkStar® Pro system can bring your networks increased security, reduced total operational costs, and improved network management using ViaSat's advanced satellite communications technology for IP routing, quality of service (QoS), security, data acceleration, and compression in one single platform. The system ensures for your IP applications to seamlessly integrate via satellite by using industry standards in our network designs.

With the constant change in markets and customer requirements, we understand the importance of offering a reliable, varied and flexible portfolio of features and applications. Managing networks for enterprises, carriers, service providers, and governments can be challenging and ViaSat's proven advanced technologies and flexible topologies such as star, mesh, and SCPC can give you what you need.

ViaSat's system is a trusted and proven technology which continues to evolve with new and advanced technologies and features. We have installed more than 220 LinkStar® hubs and delivered over 140,000 terminals to commercial, government, and military customers.

### IMPROVED SECURITY, BANDWIDTH OPTIMIZATION, FAST DELIVERY, AND MORE FLEXIBLE NETWORKS

- » Our improved network security now includes 2-way IP user traffic data and control plane encryption using AES-128 with dynamic, efficient application specific keys allowing you to better control access to your networks.
- » Improve performance with less bandwidth using ViaSat's patented bandwidth efficiency and optimization technologies, AcceleNet™ and PCMA hub canceller. Reduce data on the network by 50 to 70% and increase your bandwidth savings by up to 20% respectively while still providing a better end user experience for your customers.
- » A new simplified architecture allows delivery in days of your fully-redundant hub for a medium size network in a single rack.
- » Hybrid star-mesh networks and SCPC networks that share a common DVB-S2 outbound stream, offering a flexible and scalable network topology to give you a competitive advantage in accessing new market segments.

### AT-A-GLANCE NEW BENEFITS

- » **High Throughput** IP Multicast outbound stream for broadband access and video distribution
- » **Security** Manage 2-way IP user traffic data and control plane encryption using AES-128 and with dynamic, efficient application specific keys
- » **Multiple Return Access Methods** Cover diverse applications such as broadband Internet access, GSM backhaul, telemedicine, and distance learning
- » **Flexible Connectivity** Hybrid, star and full mesh
- » **Powerful IP Networking** Features support enterprise applications and seamless integration to MPLS core networks
- » **ViaSat Efficient Bandwidth Optimization Technologies** PCMA (Paired Carrier Multiple Access) Hub Cancellor and AcceleNet™



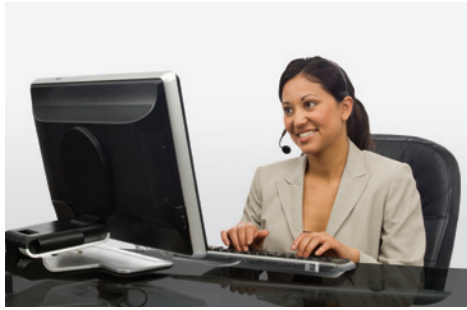


## GSM

Our advanced technology allows for cellular backhaul to be cost effective for wireless operators. ViaSat's multiple bandwidth assignment methods, application triggered CIR, BoD, and CIR+BoD—as well as multi-level QoS and prioritization help achieve the economic model needed by service providers.

### Applications

- » Cellular Backhaul
- » IP
- » Rural Telephony



## TELEPHONY

ViaSat's unique Voice over IP (VoIP) header compression technology allows for up to 50% bandwidth reduction on the inbound.

For G.723, 5.3kbps, 40-byte payload voice, the LinkStar Pro system can provide 29 inbound calls using only 400kHz bandwidth.

### Applications

- » VoIP



## DIGITAL MEDIA

LinkStar Pro remotes work as extremely efficient and economical IP receivers. Our system provides up to 95 Mbps IP throughput per remote. The system provides Unicast or Multicast IP addressing, as well as VLAN support and both 2-way and Rx-only remotes can coexist in the same network.

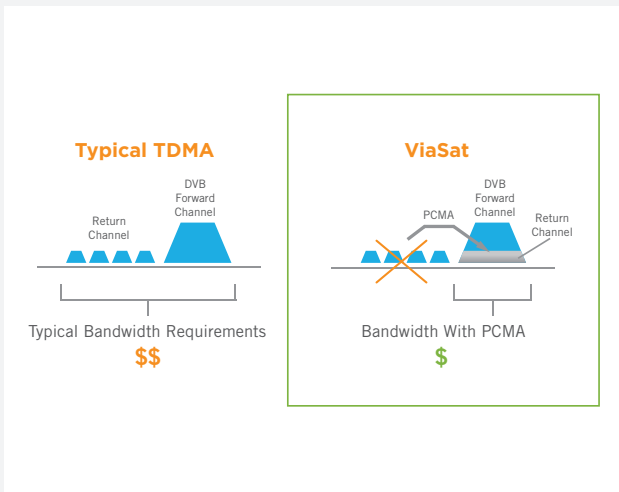
### Applications

- » Digital Cinema Distribution
- » Broadcast Stock Exchange
- » Data Large-Scale Software

## REDUCE YOUR OPERATIONAL COSTS WITH VIASAT'S BANDWIDTH OPTIMIZATION AND EFFICIENT TECHNOLOGIES

**PCMA** is a patented ViaSat technology for frequency re-use which allows two different earth stations to use the same frequency, time slots, and/or CDMA code at the same time.

**AcceleNet** is an advanced data compression and bandwidth optimization software which allows for LAN-like performance to mobile users by accelerating file transfers, email, and web applications over secure VPN connections.





» ENTERPRISE NETWORKS

» GOVERNMENT BROADBAND INITIATIVE

» OIL AND GAS

» MILITARY

» TELECOM

## KEY ADVANTAGES AND FEATURES

### NEW Multi-level IP Quality of Service (QoS)

VoIP prioritization and network-wide QoS based on DiffServ offers six queues at the scheduler level on each remote terminal. You get a finer prioritization of user traffic based on profiles defined using the IP QoS feature.

### NEW Security

Manage 2-way IP user traffic data and control plane encryption using AES-128 with dynamic, efficient application specific keys. (optional)

### NEW AcceleNet™

Optimize the satellite network bandwidth and deliver terrestrial-like user experience performance over satellite by compressing data, accelerating applications and mitigating network latency. (optional)

### NEW PCMA

Patented ViaSat technology provides bandwidth savings by allowing inbound and outbound carriers to share the same frequency bandwidth. Bandwidth savings can be as much as 20%. (optional)

### NEW Powerful Network Management System (NMS)

Our web-based NMS gives you configuration control and network management using a GUI and a standard browser. The Network Control Center (NCC) provides additional management through traffic statistics, call detail records and an SNMP interface. Other features include:

- » User Groups (logically group remote terminals)
- » Online Context-Sensitive Help
- » Virtual Network Operator (VNO)
- » Virtual Service Provider (VSP)
- » Hybrid Star/Mesh Networks

Provide flexibility for a multitude of applications in one integrated network. Sharing a common DVB-S2 outbound stream, the LinkStar Pro system is interoperable with ViaSat's LinkWay<sub>S2</sub>™ mesh VSAT system.

### Advanced IP Routing Capability

Unicast and Multicast, RIP, IGMP, UDP, TCP, BGP are all supported by the LinkStar Pro system.

### DHCP Relay and VLAN Tagging

Enables service providers to offer VPN services to multiple customers. The LinkStar Pro system enables end-to-end VLAN separation of customer traffic, reuse of private addresses, and automatic IP address assignment to devices at remote sites. (optional)

### Automatic Rain Fade Mitigation

Dynamic Uplink Power Control automatically boosts signal level during fading conditions, ensuring your network will stay connected.

Adaptive Coding & Modulation (ACM) for the downstream reduces satellite bandwidth requirements by up to 63%.

Dynamic Link Adaptation (DLA) reduces upstream satellite bandwidth requirements by up to 20% by using FHOP technique, that simultaneously compensates using FEC and symbol rates.

### Multi-Satellite/Multi-Transponder

You can choose to operate in C, Ku, and Ka band, utilizing a unique region for each requirement.

### IP Header Compression

Significantly reduces the bandwidth required for VoIP traffic by eliminating extraneous and redundant protocol information.

### Frequency Hopping

Allows your network to be more efficient through load balancing across return channels.

### Flexible, Scalable Architecture

With each Regional NCC (RNCC) managing up to 8,000 sites and a single NCC controlling up to 10 RNCCs, you can grow your network to a total of up to 80,000 nodes.

### Redundancy

Ensure your critical communications through both local and/or geographic redundancy for the hub.

### Input Power Options

Include a choice of AC and DC power. Intelligent power management is ideal for solar applications.

### Maritime/Mobile Operation

Allows installation on moving platforms such as ships and vehicles.

## SPECIFICATIONS

### RETURN / INBOUND CHANNEL (REMOTE TO HUB)

**Format**

- » MF-TDMA
- » SCPC (optional)

**Transmit**

- » IF Frequency 950 to 1525 MHz

**Turbo Coding**

- » DVB-RCS compliant

**Modulation**

- » QPSK

### OUTBOUND CHANNEL (HUB TO REMOTE)

**Format**

**DVB-S2** ACM, MPE/MPEG-2

**Symbol Rates**

**DVB-S2** 1 to 36 Msps

**Data Rates**

**DVB-S2** 1 to 126 Mbps

**FEC and Modulation**

**DVB-S2** LDPC

- » QPSK @ 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
- » 8PSK @ 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
- » 16APSK @ 2/3, 3/4, 4/5, 5/6, 8/9, 9/10

**BER**

Quasi-error-free per DVB standards  
EN 302307 (DVB-S2)

### HUB SYSTEM PERFORMANCE

- » TCP/IP 10 Mbps throughput to the LAN;  
up to 50 Mbps with ViaSat xPEP<sup>1</sup>
- » UDP/IP 95 Mbps throughput to the LAN

**Scalability**

- » 8,000 nodes with single Hub/NCC
- » 80,000 nodes with multiple regions

**Protocols**

- » TCP/IP, UDP/IP, IGMP, RIP 1 & 2, IP QoS support, BGP

### PHYSICAL INTERFACES

- » L-band Transmit and Receive (2) Type-F, 75 ohm
- » Network (1) 10/100BaseT Ethernet (RJ-45)
- » Console (1) RS-232 (DB-9)
- » RF Antenna Diameters 0.96, 1.2, 1.8, 2.4 M

### RETURN CHANNEL SATELLITE TERMINAL (RCST)

**Mechanical/Environmental****Dimensions (WHD)**

- » 13" x 1U x 8"

**Power**

- » 100 to 240 VAC, universal 50/60 Hz
- » +24 VDC

**Temperature**

- » -5° to 50° C ope rating;
- » -40° to 70° C storage

**Humidity**

- » 95% relative humidity non-condensing at 0° to 50°C operating
- » 95% relative humidity non-condensing at 65°C storage

### NETWORK MANAGEMENT AND CONTROL

**Network Management System (NMS)**

- » Java Web-based, standard PC

**Network Control Center (NCC)**

- » SUN Solaris Workstation; SNMP agent

### COMPLIANCE

**Safety**

- » UL/cUL 60950-1<sup>2</sup>; CE-R&TTE (EN60950-1)

**EMI/EMC**

- » FCC part 15 Class B
- » ICES-003 Class B
- » AS/NZS3548 Class B
- » AS/NZS 4053
- » CE-R&TTE (EN 301489-12)

**RF Spectrum**

- » CE-R&TTE (EN 301 428); ANATEL

**RoHS Compliant**

- » SUN Solaris Workstation; SNMP agent

<sup>1</sup> Based on traffic profile and network configuration

<sup>2</sup> NRTL Certified

