

## Why the SurfBeam System Should Be Your Internet-Over-Satellite Network



The SurfBeam system is the standards-based satellite system that lets you offer broadband Internet access to your current markets – and reach new customers beyond. It starts with the proven economics and scalability of cable modem Internet access and adds the wide, immediate coverage of satellite. Along with your customer base, distribution channels, and support organization you'll have a platform for rapid penetration into the broadband access market. So, you can sign up the best customers, without the cost or delays of building terrestrial connections to reach them.

Unlike VSAT systems that have been modified and home-grown to handle large, Internet-access networks, the SurfBeam system is based on Internet-over-cable standards and hardware that have been designed by the cable industry from the start for provisioning and management of large Internet-access networks. In this way, ViaSat's broadband Internet-over-satellite system is unlike any VSAT system, so you get revolutionary advantages.

### SURFBEAM ADVANTAGES

#### RELIABILITY AND SCALABILITY

As a DOCSIS<sup>®1</sup>-based<sup>1</sup> network, the SurfBeam infrastructure was created with large networks in mind and was designed and architected to support millions of subscribers. With the SurfBeam system success in large satellite networks worldwide, you get a platform with proven support for many hundreds of thousands of installed satellite Internet subscribers per network. From thousands to hundreds-of-thousands of subscribers and more, you get an economical, easy-to-scale system that can handle your network growth.

<sup>1</sup> DOCSIS: Data over Cable Service Interface Specification

#### EASE OF OPERATION AND LOWEST OPERATIONAL COSTS

By using traditional VSAT systems for large networks, your operational costs can contribute significantly to the total cost of service. Because the SurfBeam system is based on DOCSIS standards, it includes key features that allow you to minimize operational costs while adding valuable operational features. With the SurfBeam integrated operations support system (OSS) and business support system (BSS), you get highly automated provisioning of subscribers and services, a rich set of network, service, and customer management tools architected for large networks, Virtual Network Operator (VNO) support using a common infrastructure, and optional support for billing, trouble tickets, and more.

#### EXCELLENT CUSTOMER EXPERIENCE

Low capital and operating costs are meaningless without satisfied subscribers. That's why the SurfBeam system incorporates DOCSIS-based services with innovative technology that enhances the total user experience. AcceleNet<sup>®</sup> compression technology increases speed and performance to optimize web browsing and other web-centric applications. From Internet access to VoIP and video over IP, the

SurfBeam system provides an unparalleled level of performance for high-bandwidth applications.

#### UNMATCHED EXPERTISE IN SATELLITE BROADBAND

ViaSat extends fast, efficient, and secure communications to people at the far reaches of information networks. At the edge is where wired networks just can't deliver what you need. Our project experience extends to virtually every satellite broadband system in the world. And our production experience includes hundreds of thousands of terminals—climbing towards 1 million—making us far and away the leading technology provider for Ka-band. In addition, ViaSat is working to transform satellite broadband with ViaSat-1, expected to be the world's largest capacity broadband satellite.

In addition to satellites and ground system technology, our technical staff focuses on this challenge from many other angles. Data processing and acceleration techniques, more efficient antenna technologies, creative waveforms, adapting open standards, and software-driven products all give customers the ability to do more with less bandwidth.

When you need to connect people at the edge of the network, ViaSat networks bring you more efficiency and bandwidth capacity so you can expand your network reach, enable your customers to do more with the network, and create new opportunities for you and your customers.

Complementing our technical expertise, our strong business organization can plan, develop, and execute programs on a scale that we could not just a few years ago. We bring you an unmatched combination of technical and business innovation, award-winning schedule/quality performance, and a commitment to the overall success of these ventures. That also enables us to attract the brightest new talent who want to take on cutting-edge, complex projects.

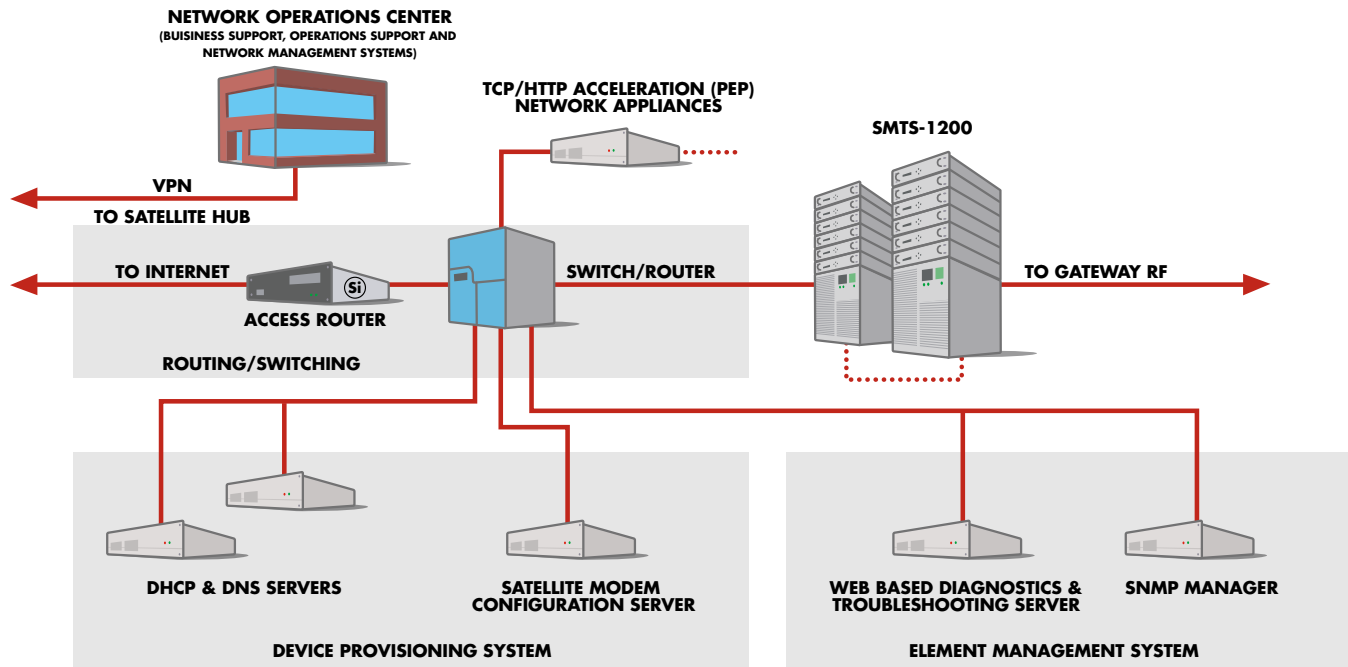
## APPLICATIONS

- SurfBeam Applications
- High-speed Internet access
- Software-as-a-Service (SaaS)
- Video and Voice-over-IP
- High bandwidth file transfer
- IP Multicast
- For Consumer, Small-Office Home-Office (SOHO) or Small-Medium Enterprise (SME)

## DOCSIS™ 1.1 STANDARD BASED

- Subscriber terminals based on high volume cable modem chipset
- Mature infrastructure products available
- High availability, low-cost Satellite Modem Termination System (SMTS) cable headend architecture
- Integration with off-the-shelf Operations and Business Support Systems

## SURFBEAM NET DIAGRAM





## SYSTEM COMPONENTS

### **SUBSCRIBER TERMINAL – AT THE CUSTOMER PREMISES**

The Outdoor Unit (ODU) is similar to a Direct-To-Home (DTH) satellite television dish, but with integrated transmit capabilities. It includes a compact satellite reflector and feed, transmit and receive electronics, and an associated mounting kit to affix the unit to your customer's home, office, or enterprise.

The Indoor Unit (IDU) is just 23 x 23 x 3.8 cm (9 x 9 x 1.5 in) – comparable in size and function to a desktop ADSL or cable modem – with a sleek design that fits with other modern personal computing and telecommunications equipment. It interfaces to your customer's computer or home/enterprise network via a standard Ethernet connection. The IDU may be oriented on the user's desktop either horizontally or vertically to preserve desk space. Two cables connect the indoor and outdoor units.

- Low-cost broadband satellite modem
- Always-on high-speed connections
- Adaptive Coding and Modulation (ACM) on the forward link – high-availability without throughput loss
- Rate-adaptable return link
- Built-in authentication and data security
- Acceleration for web-centric applications
- Advanced Quality of Service (QoS) at the network traffic level
- 10/100 Mbps Ethernet and optional wireless LAN (WiFi)
- Standards-based remote management monitor and control

### **SMTS-1200 – AT YOUR SATELLITE HUB/GATEWAY(S)**

Based on a state-of-the-art cable modem termination system (CMTS), this carrier-class edge device manages and controls traffic between satellite network subscribers and the satellite gateway routers and servers. Each SMTS routes more than 42 million packets per second, while managing 16,000 simultaneous traffic flows per satellite interface.

### **NETWORK MANAGEMENT SYSTEM (NMS) – AT YOUR SATELLITE GATEWAY AND NETWORK OPERATIONS CENTER (NOC)**

Thanks to its solid proven architecture and DOCSIS foundation, the SurfBeam NMS offers the industry's most complete turnkey system for managing your broadband satellite network. You can centrally monitor and control all aspects of the SurfBeam system through the NMS. With complete integration of your front- and back-office systems, you also get supporting functions such as systems diagnostics, network performance monitoring, and virtual network operation (VNO).

### **OPERATIONS AND BUSINESS SUPPORT SYSTEM (OSS/BSS) – AT YOUR SATELLITE NOC**

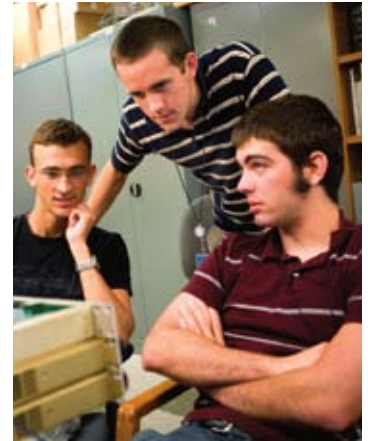
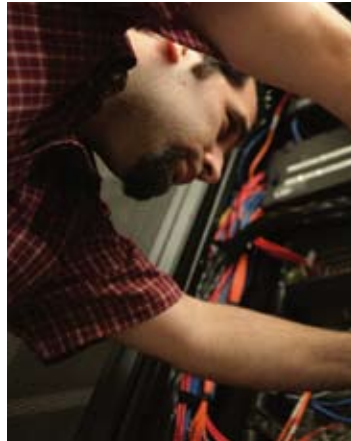
With the integrated SurfBeam OSS/BSS, you get a sophisticated suite of tools to allow efficient and effective customer care and management, in addition to support at the network operator level, reseller level, and user level. Tools include a Reseller and Customer pPortals, subscriber service management, billing services, and comprehensive reporting capabilities, billing services, and subscriber database.

Redundancy of all mission-critical service elements is designed into the basic gateway architecture. The satellite hub/gateway(s) can be unmanned, with the NOC residing in a separate location.

## YOUR PARTNER

## You Can be Confident with ViaSat as Your Partner

ViaSat has been an innovator and leading supplier of state-of-the-art satellite terminals and networks since its inception in 1986. We bring together the right products, technologies and system engineering expertise to help make your broadband Internet service a commercial success. Revenues reached \$575 million during the past year, ranking us among the *Space News Technology* "Top 50 Space Companies". We have also received national recognition for our record of growth and stability from *INC*, *Business 2.0*, *Forbes*, *Fortune*, *Red Herring*, and *BusinessWeek*. ViaSat employs more than 1,900 people, including eight regional offices worldwide.



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