Elevate Your Services

Rise above Market Demands, Surpass Competition & Future-Proof Your Business

June 2015

Introduction

Today, the pressures on the satellite communications market are multi-fold: balancing the need for higher throughputs to support bandwidth-rich applications, meeting the stringent jitter and latency requirements of the most crucial business applications, providing the flexibility to grow a network gracefully as demand increases – all while minimizing the Total Cost of Ownership (TCO) and meeting stringent Service Level Agreements (SLAs).

In the race to compete with peers, wireless services and terrestrial options, satellite service providers must constantly strive to improve bandwidth utilization and user throughput to stay ahead. This calls for the use of advances in modulation, coding gain, fade adaptation and intelligent data processing to provide increased capacity, improved reliability and substantial savings in bandwidth while maintaining contracted SLAs.

With global broadband requirements constantly growing combined with the convergence of voice and data, satellite operators feel the pressure to evolve to satisfy these demands. The best example of this is the advent of a new generation of spacecraft, namely, High Throughput Satellites (HTS), which present new revenue opportunities to the market. However, the selection of the right ground equipment technology is critical to support a customer's dynamic operations and to provide the highest possible performance and differentiation of service.

Innovation at Comtech EF Data is always driven by our customers' priorities. As a recognized industry pioneer for bandwidth efficiency and dynamic bandwidth management, Comtech EF Data remains on the edge of ground technology innovation and offers satellite-based communications solutions designed to specifically address the challenges of today in a cost-effective manner.

Based on our customers' feedback, we developed the Heights™ Networking Platform. Representing the next generation in satellite networking, Heights incorporates the latest advanced technologies and provides:

- Robust intelligence to maximize the Quality of Experience (QoE) of the end user
- Groundbreaking, industry-leading bandwidth efficiency and network optimization to control costs
- Unparalleled horsepower to support ever-increasing end user traffic demand

More than ever, service providers must continue to elevate their services to stay ahead of market demands, surpass competition and future-proof their businesses or risk being left behind in the brave new world of satellite networking. It is imperative that the proper ground equipment engine is chosen to run a sustainably profitable business. Relying on a satellite service platform that provides limited capabilities, quickly runs out of fuel and throttles the applications of its end users is not a winning strategy. Existing incumbent solutions cannot sustain rapid demand growth in a fast changing satellite environment and enable business growth. Avoiding and ignoring progress in the satellite market is a sure path to failure.

To achieve your business growth goals, you need a powerful, dynamic networking platform that outperforms the rest and guarantees optimal levels of service beyond a one- or two-year business case.

Key Market Challenges Now and in the Future

In today's market, organizations across many industries face similar challenges. As traditional satellite networks become more complex, and even more so with the launch of High Throughput Satellites (HTS), these challenges need to be addressed to keep up with your business growth plan. More than ever, companies are demanding higher Return on Investment (ROI) from network investments, and are closely watching their budgets.

Let's review six of the main challenges that the market faces.

Challenge 1:
Creating Service Differentiation through Multiple Business Models to Increase Market Share
Service Providers must be able to support multiple business models in a cost-effective manner, create service differentiation and a unique value proposition that resonates from a business standpoint with their customers. They must be able to quickly adapt to changing business requirements and have the ability to manage their satellite resources and network components as part of a complex network management system. At the same time, they need to create opportunities for automation, user satisfaction, and additional business revenue opportunities, while maintaining contracted SLAs.

Challenge 2:
Minimizing OPEX through Increased Bandwidth Efficiency to Create New Revenue Streams and Better Value to Customers
One of the biggest challenges for the industry is to improve spectral efficiency and drive down the cost per bit, to ultimately provide better value to customers.

There is a growing demand for higher data rates to support advanced system and lower cost transmission. The key is to be able to fit more data into the available satellite bandwidth, both to increase the bits per second per Hertz, and to decrease the cost per bit per second.

Challenge 3:
Controlling CAPEX through Scalable Equipment Platform to Maximize Profits
A satellite networking platform that can be scaled-up is vital for service providers. Controlling CAPEX entails finding a cost efficient platform that provides an entry-level, low cost hub configuration with the flexibility to expand as the business grows and more remote terminals are deployed in the field.

Challenge 4:
Meeting the Increased Demand for Higher Throughput Capabilities
Over the last decade, the expectation in satellite throughput has completely changed the market. The explosive growth of social media, combined with the development of smart handsets, were the precursor for new expectations for connectivity. The emergence of HTS will address and may accelerate that demand across all verticals. There is no doubt about the rapid expansion of the digital world in public and corporate environments. Even controlled corporate telecommunications environments experience this demand for more packets per second and more bandwidth.

Challenge 5:
Supporting Increasingly Complex Satellite Networks and Future-proofing Satellite Network Infrastructure
The last few years have seen a significant evolution in spacecraft technology. Along with business opportunities to offer a new generation of communications solutions, new satellite designs bring new technical complexity. Primary here is the combination of spectrum efficiency and performance of spot-beam antennas with ultra-wideband transponders to enable unprecedented levels of bandwidth and throughput. Each spot beam reuses frequencies in multiple carriers so that a single HTS spacecraft can provide five to ten times the capacity of traditional geosynchronous satellites. With the increase in available satellite capacity from the launch of these satellites, service providers will need a service delivery infrastructure with the right future-proof ground technology solution to meet users' expectations to monetize differentiated service offerings.

Challenge 6:
Providing Global Connectivity Where and When Customers Need it…Dynamically
Mobility in satellite networks has come a long way in the past few years. Many technologies have been implemented to provide high bandwidth and global satellite coverage on a moving platform. These have been great improvements, but one main challenge remains; how to address the need to maintain constant communication between the mobile platforms and corporate headquarters while providing seamless connectivity to end users. Regardless of the type of mobile platform, the paramount challenge here is dynamically maintaining connectivity on the move with minimal interruptions to service.

Existing Solutions and Their Drawbacks

All networking platform solutions on the market today utilize an outbound Time Division Multiplexed (TDM) carrier, sharing a large outbound carrier across the remote population. The difference in satellite networking approaches between platforms lies in how bandwidth is intelligently shared in the inbound direction. Most widely accepted existing solutions utilize a Time Division Multiple Access (TDMA) method at the expense of overall link efficiency. While TDMA solutions provide bandwidth sharing, which works well for certain communication needs, this approach has drawbacks in meeting the key challenges that exist in today's market.

Drawbacks to current TDMA solutions to meet today's market challenges include:

Drawback 1:
Limited Transmission Efficiency
A TDMA structure has overhead inefficiencies, such as guard band and pre-amble (typically 15-20% or more on the inbound channel). Therefore, TDMA is not inherently spectrally efficient. TDMA communications require short coding blocks to keep bursts small enough to share the capacity while attempting to minimize the negative effects of jitter and additional delay. Unfortunately with TDMA, the tradeoff for low latency small blocks means that much of the capacity is being used by this TDMA overhead. On top of this, there is the significant overhead of encapsulation.

Drawback 2:
Support of Peak Load Efficiently for "Bursty" Traffic
TDMA architectures with shared bandwidth functionality are well suited for highly "bursty" traffic. However, these solutions are only effective when traffic levels at some remote sites are low enough to allow the peaking sites to "borrow" their capacity. When sites are peaking and capacity is oversubscribed, TDMA systems cannot leverage unused capacity, since there is none.

Drawback 3:
Limited Hub Scalability to Support Multiple Spot Beam Designs
The new generation of High Throughput Satellites will employ frequency re-use across multiple spot beams to deliver more throughput to end users. As networks transition from a wide beam to a spot beam architecture, networks once served by a single beam may now span multiple beams, each beam requiring its own outbound.

Existing incumbent designs may send a large oversized outbound to all spot beams, which is an inefficient use of satellite bandwidth and results in high OPEX or high CAPEX as hub equipment is added per spot beam.

Drawback 4:
Oversized Block Up Converter (BUC) Equipment
Another disadvantage of TDMA is that though multiple sites are on the same inbound carrier, the carrier is designed to address the site most disadvantaged because of satellite footprint or fade. This is a consideration when determining the required BUC power for the remote site. In a TDMA network, the BUC power is determined by the size of the TDMA carrier, which is a summation of the traffic requirements of all the sites assigned to the inbound carrier, modified by a probability that all sites will not be transmitting their peak traffic simultaneously.

Drawback 5:
Lack of Return/Inbound Adaptive Coding and Modulation (ACM)
Most of the VSAT technologies do not support bi-directional ACM. Some TDMA platforms utilize a technique on the inbound carriers known as Adaptive TDMA or Adaptive Inroute Selection (AIS) that require inbound carriers that are used solely during fades or at edge of satellite coverage, and not used otherwise, an additional penalty on overall efficiency. This is done with a static number of modulation and coding (MODCOD) combinations. This is not the same as return ACM which utilizes the same satellite capacity in clear and faded conditions.

Drawback 6:
High Latency and Jitter Performance
In a TDMA oversubscribed network, latency and jitter can increase significantly. Real-time applications such as VoIP and videoconferencing require minimal jitter. Similarly, Citrix and some other business applications require minimal latency. When allocating bandwidth to a remote to support these applications and packets are not received with near-constant time variation, tight jitter thresholds are surpassed, causing connections to terminate. If they are not received with the least possible delay, timeouts cause unnecessary retransmissions. Minimizing jitter and latency is crucial for providing a high Quality of Experience (QoE) for users.

Drawback 7:
Limited Packet Processing Capabilities
Another drawback on the market is the processing power of the satellite transmission equipment. Most VSATs have limited packet processing capabilities so are unable to support published maximum data rates. Transmission equipment that uses TDM/TDMA access tends to share the processor on their remote devices with different functions, such as transmission timing, traffic compression or network housekeeping. The TDMA equipment processing capacity tops out quickly, significantly lowering the actual data rate. This results in situations where the traffic carried over the satellite link is much less than the carrier RF rate less its overhead.

Drawback 8:
High Switching Time for Mobility Platforms
With existing solutions, the mobile platform’s location information is stored at the hub. Issues with hub-based information arise when the mobile platform loses communication with the hub while moving out of the original footprint. There are attempts at addressing this with storage of multiple remote configuration files. However, there is still a dependence on the main mobility server at the hub. Loss of connectivity to this server results in no location or switching information being received from the hub and the remote may disengage from the network. In addition, a beam switch from one beam to another on the same satellite does not require a repointing of the remotes antenna, but does require an unlock and relock to a carrier, whether the platform uses TDMA or not. Many TDMA systems are challenged by this, and minute long outages are possible.

Facing Future Challenges and Overcoming Today’s Obstacles – Heights Networking Platform Solution

Designed to address the market challenges and meet the evolving demands of a diverse multi-tenant end user community, Heights is a scalable networking platform that utilizes a fully managed platform with seamless integration into a service provider’s network. The most net efficient, flexible and powerful platform in the industry, Heights leverages a single comprehensive user interface teamed with a powerful traffic analytics engine that allows customers to easily design, implement, monitor, control and optimize their network. The result is an elevated QoE for users. Equipped to support the most demanding networks on traditional wide beams, new HTS spot beams or a combination of both, users can increase market share and grow revenues while controlling costs.

The intelligence, horsepower and efficiency of this platform provide unmatched performance while minimizing the Total Cost of Ownership.

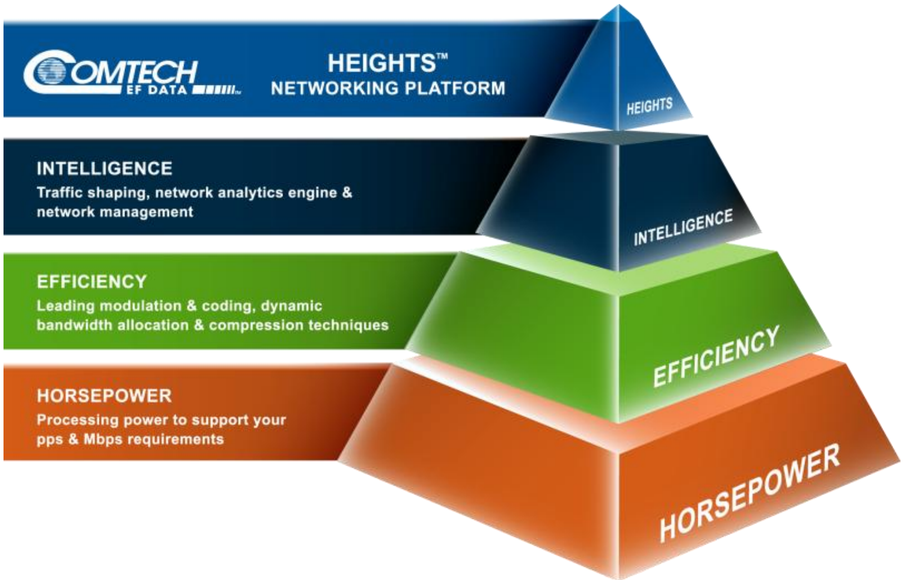
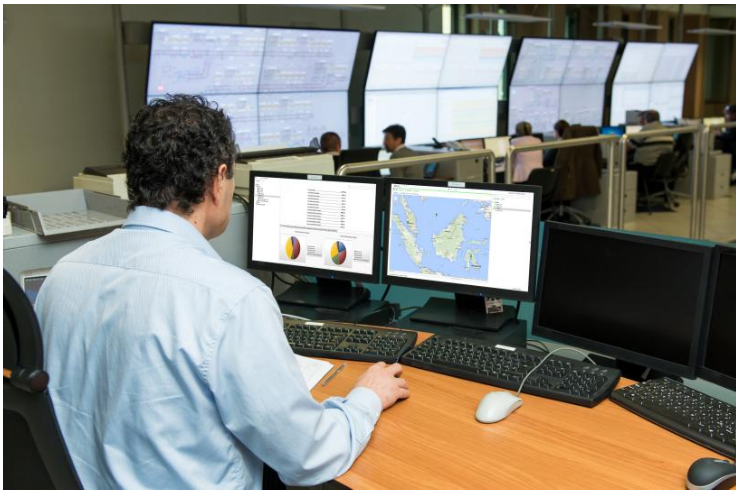


Figure 1: Heights Attributes – Elevating your services through a fusion of intelligence with a highly efficient horsepower machine

Robust Intelligence to Maximize QoE – NetVue™ Integrated Management System

Throughout the life of a network, a great deal of intelligence is required to ensure your end users are delivered a maximized QoE.

By intelligence, we mean the ability to acquire, apply knowledge and gather information through network management that can create and display information for quick and accurate decision making.



Our NetVue Integrated Management System, with dynamic bandwidth management and Virtual Network Operator (VNO) capability provides the level of real-time network insight required to run optimized networks. NetVue leverages a single intuitive graphical user interface teamed with a powerful traffic analytics engine that acts as a user-friendly front-end to monitor and control network equipment and allows simplified design, implementation, monitor, control and network optimization for an elevated QoE. It is a comprehensive network management engine that allows users to intelligently maximize resources, ensure network uptime and provides the elevated levels of service that are required to support fixed and remote sites. NetVue is coupled with a dynamic bandwidth manager, to provide scalable, dynamic satellite capacity management that facilitates bandwidth-sharing, automates space segment allocation and manages "pools" of available bandwidth. This feature blends the flexibility of MF-TDMA with the efficiency of SCPC by providing the architecture to dynamically manage bandwidth operations without requiring dedicated bandwidth for each remote location. Customers can remotely modify bandwidth allocations as requirements change automatically by the type of traffic or the traffic load, or manually, without requiring costly upgrades or site visits. Unlike MF-TDMA systems, return traffic packets are not fragmented to meet the burst length criteria, which in those systems impose additional overhead management traffic.

NetVue Main Attributes
Figure 2 outlines the main attributes of our NetVue Integrated Management System.

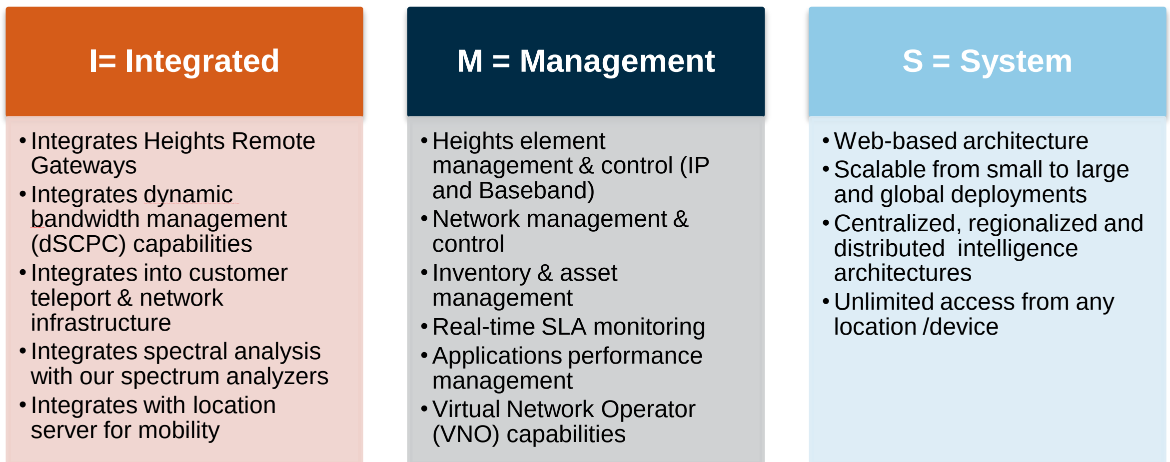


Figure 2: NetVue IMS Main Attributes

NetVue Monitoring Capabilities – High Level to low-Level Management Interface
NetVue provides a unified management interface to monitor, control, and obtain status for Heights Remote Gateways. The management of the network elements can be done at various levels as outlined in Figure 3 below.

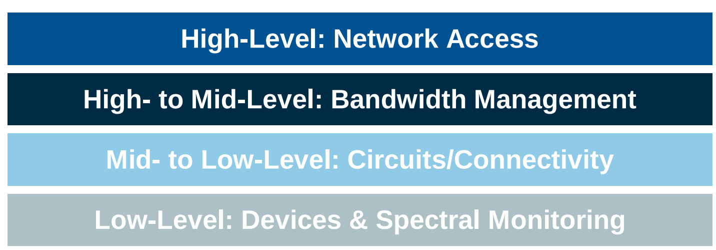


Figure 3: NetVue Monitoring Capabilities

Heights – Support of Multiple Business Models

The Heights Networking Platform is a robust carrier class solution that supports multiple business models simultaneously, from full hub ownership, to collocation at a third party teleport facility to Virtual Network Operator (VNO) operations. The Heights platform comes with two hub configurations each seamlessly enabling connectivity with existing IP infrastructure and capable of providing user IP throughputs of up to 450 Mbps per outbound.

Heights Solo – Designed to support a single private network with one shared outbound and shared bandwidth pool for inbound connections.

Heights VNO – Designed to support the hosting of multiple VNO networks simultaneously, it provides multiple outbound carriers along with multiple bandwidth pools for inbound connections. The VNO capability is implemented with Heights to support multiple service providers over the same platform and

create virtual customer networks based on secured access policies defined by the Host Network Operator (HNO).
Three VNO models are supported.

Model 1: Each VNO has separate hardware and a separate outbound/inbound bandwidth pool
- VNOs only share the NetVue NMS with bandwidth manager and the rack

Model 2: The VNOs share the outbound bandwidth but have a separate inbound bandwidth pool
- In addition to sharing the NetVue NMS with bandwidth manager and the rack, the VNOs also share the hub modulator, traffic optimizer and hub multi-channel receiver
- The outbound bandwidth is shared among VNOs using multi-tier QoS bandwidth management
- Customers of a VNO share their VNO's dedicated inbound bandwidth pool

Model 3: The VNOs share outbound and inbound bandwidth pools
- All the hub equipment is shared
- The outbound bandwidth is shared among VNOs using multi-tier QoS bandwidth management
- The Inbound bandwidth pools are shared among VNOs

Both Heights Solo and Heights VNO feature advanced waveforms, advanced multi-level QoS, bi-directional ACM, and increased horsepower multi-core packet processors to provide unprecedented bandwidth efficiency and performance.

Groundbreaking Efficiency to Minimize OPEX

To create the service economics required in today's evolving world of satellite networking, a great deal of focus needs to be placed on the overall net efficiency of the network. The goal is to reduce the amount of bits transmitted over the satellite as much as possible. The Heights platform provides the most attractive economics for mission-critical premium enterprise services via multi-layer optimization.

Outbound Efficiency Boost Waveform (EB)

Implemented for the outbound, this waveform provides a 10%-35% increase in efficiency over the DVB-S2 standard, controlling operating costs while providing up to 450 Mbps outbound user IP throughput. This is accomplished by virtually doubling the number of available MODCODs from previous Comtech products, introducing three optimized roll off factors (5%, 10% and 15%) in addition to 20%, 25% and 35% and minimizing implementation loss to near theoretical operation.

Inbound VersaFEC®-2 Waveform

Comtech EF Data's next generation VersaFEC-2 high-performance LDPC Forward Error Correction (FEC) is specifically designed to optimize application and RF performance and to allow our customers to control costs while providing the ever-increasing service levels that your end users demand. VersaFEC-2 provides two operational modes, Long-Block (High Rate) and Short-Block.

VersaFEC-2 High Rate provides 38 MODCODs (BPSK to 32-ARY) with coding gain and spectral efficiencies better than DVB-S2 and on par with DVB-S2x at approximately 1/8 the data latency of these two standards.
VersaFEC-2 Short-Block, suitable for minimal latency and jitter provides 36 MODCODs (BPSK to 32-ARY) with better performance than the industry-proven VersaFEC at similar or better data latencies.

All higher order constellations within VersaFEC-2 are circular or quasi-circular for optimal peak-to-average performance, which makes them less prone to performance degradation in non-linear satellite channels. In addition, new 32-ARY modulation with 5% roll off factor has been added to support high spectral efficiency. Both CCM and ACM operation are supported in both Long-Block and Short-Block modes.

Bi-Directional Adaptive Coding & Modulation (ACM)

Satellite users have traditionally relied on worst-case link margin to overcome rain fade and other impairments, which leads to significant inefficiencies.

With the implementation of bi-directional ACM, you have a unique and important feature that mitigates this issue. With the ability to maximize throughput under all conditions – rain fade, inclined orbit satellite operation, interference and other impairments – bi-directional ACM allows each remote to achieve maximum throughput in both link directions thereby maximizing network efficiency and availability. An average throughput gain of 100% (or more) can be realized, when compared to using traditional rain fade margins. Bi-directional ACM operation is integrated in Heights with advanced QoS and other optimization technologies, maximizing network efficiency and availability to maintain desired service levels.

Dynamic Bandwidth Management (dSCPC)

Our dynamic bandwidth management capability enables dynamic allocation and sharing of bandwidth and power among users. Bandwidth requests can be based on:

- **Load switching** based upon traffic level, providing additional bandwidth to remotes under heavy load conditions
- **Type of Service (ToS**) **switching** based upon pre-defined ToS / DSCP values, providing dedicated bandwidth for applications such as video and voice that require it.

Like TDM/TDMA systems, in TDM/dSCPC networks, the outbound traffic from all terminals shares a common carrier, enabling the advantages of dynamic bandwidth allocation and associated statistical multiplexing. The difference between both systems is on the inbound link. In the dSCPC inbound link, each terminal is assigned a dedicated carrier. Dynamic allocation of capacity is achieved by varying modulation, FEC type and/or channel bandwidth of return carriers assigned to individual terminals in response to traffic demands.
This concept is illustrated in Figure 4***:*** below.

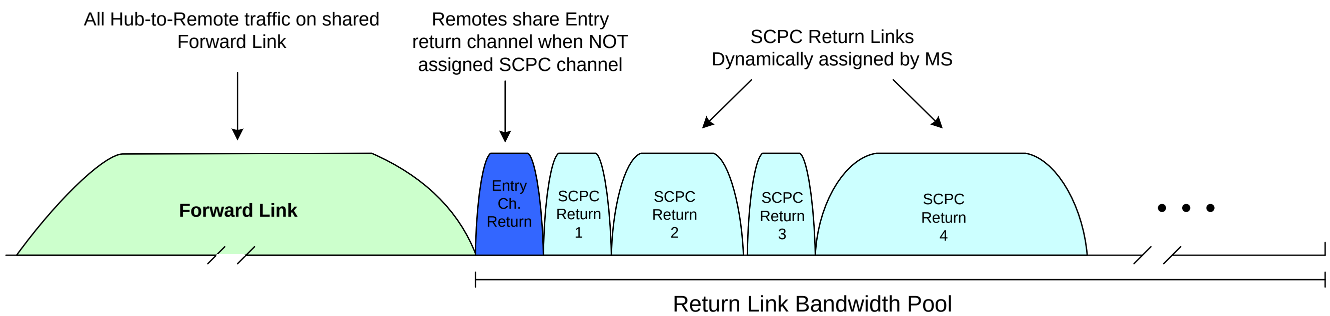


Figure 4: Comtech EF Data's Dynamic Bandwidth Management (dSCPC)

Compression

For efficient IP networking and transport over satellite, Heights features high-performance packet processing capabilities with header compression, lossless payload compression, very low overhead encapsulation and multi-level QoS that is fully integrated with ACM and dSCPC.

As depicted in Figure 5 below, by removing and intelligently reassembling the header of an IP packet at the other end of the satellite link (IP header compression) and similarly applying a compression algorithm to the entire frame payload (payload compression) results in significant additional bandwidth savings.

Both IP header and payload compression techniques implemented in Heights provide up to 74% savings depending on the routing mode.

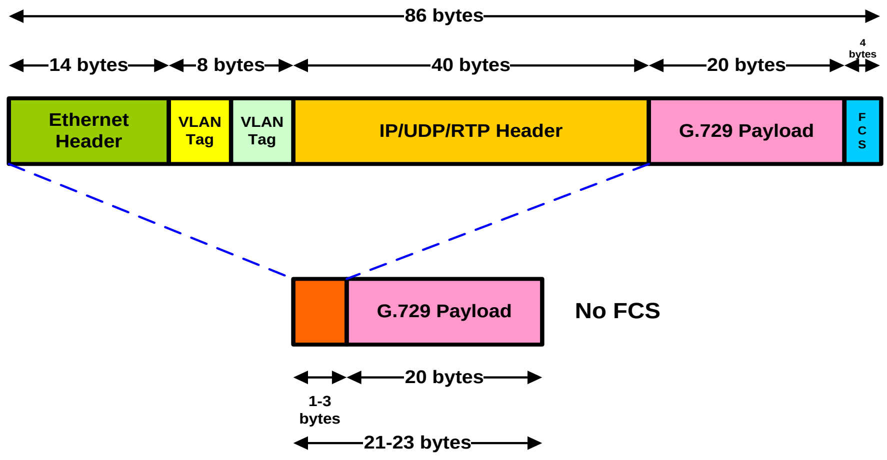


Figure 5: Heights Header Compression

Multi-tier Quality of Service (QoS)

Multi-tier QoS leverages a powerful classification and traffic shaping engine that ensures that the highest "value" traffic is prioritized, ensuring the most important services are uninterrupted and business applications continue to function properly. Comtech EF Data has implemented two types of group QoS:

- 3-level group QoS for the outbound to enable service providers to seamlessly share the outbound among multiple customers for differentiated services
- 2-level group QoS for the inbound to support multi-tenant remote sites

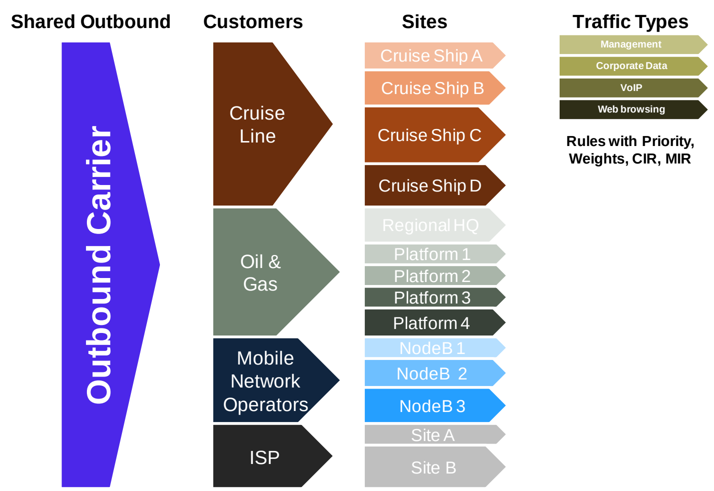


Figure 6: Outbound – Multi User/Multi Service QoS

Combined with ACM, group QoS is an important feature to improve bandwidth management while meeting and maintaining desired SLAs. It enables service providers to seamlessly share the outbound and inbound among multiple customers for differentiated services. The focus is ultimately placed on Quality of Experience (QoE), a necessary benchmark that provides service providers a true end-to-end view of customer's satisfaction.

Outbound IP Encapsulation

Heights uses Enhanced GSE or EGSE, a modified version of DVB-Generic Stream Encapsulation (GSE), on the outbound for encapsulating IP datagrams with 6 byte overhead per IP datagram. Using EGSE provides 20-30% efficiency compared to GSE as defined by DVB-S2.

Unparalleled Horsepower to Support End User Traffic Demand

The Heights platform supports the traffic load of demanding premium enterprise users on traditional satellites or HTS with four Remote Gateways options. These powerful tiered Remote Gateways are designed to meet the vertical-specific needs of end users with inbound user IP throughput of up to 64 Mbps.

The processor power of the Remote Gateways is a crucial point to consider. You may have your satellite transmission equipment on the RF side (towards the satellite) set for a given carrier bandwidth, but you will not be approaching the useable bandwidth if the processor in the equipment tops out because of its packet per second (pps) limitations. Our Remote Gateways mitigate this issue as they have the horsepower to process from 35,000 pps up to 140,000 pps with all optimization features such as compression enabled. Generally more processing power means greater amounts of compression. Greater amounts of compression mean less transmission bandwidth used post-versus pre-compression. With these performance levels, the Heights Remote Gateways have the most powerful IP packet processing engines in the market. They provide the best support for high throughput and simultaneous high definition video sessions working in tandem with high data rate mission-critical business applications, Internet access and voice connections that users demand.

Future-Proof Satellite Network Infrastructure

The launch of High Throughput Satellites will increase the complexity of satellite networks. Future-proofing your satellite network infrastructure in this new business environment entails the following:

Scalability of the Satellite Network Platform
The scalability of the satellite networking platform is important for service providers rolling out new networks or entering new markets. The Heights platform removes the traditional barriers to entry in the satellite market. Modular in design, the platform consists of scalable hubs that support any satellite architecture, any frequency band, and allows for multiple cost-effective expansion paths.

The Heights Solo hub is the market-entry hub and it is a cost-effective, compact and scalable solution for service providers operating over a single transponder.

The Heights VNO hub is a multi-network/multi-transponder/multi-satellite capable hub intended for service providers with multiple customers. Powerful and future-ready, it provides a starter configuration for one transponder with the flexibility to expand as the business grows. The VNO functionality enables a lower cost of service entry. It helps service providers expand their businesses through hosting capabilities and gives them greater control of their networks without the investment and high costs associated with the underlying teleport infrastructure.

Capability to Transmit Multiple Outbound Carriers to Each Spot Beam
We incorporated a multiple outbound transmit capability in Heights, suitable for HTS. As the number of beams is increased through frequency re-use, networks in an HTS environment may now require multiple beams, each beam requiring its own outbound. To mitigate the CAPEX at the hub and the OPEX, a single modulator was designed to transmit up to eight different, smaller and contiguous outbound carriers, one to each spot beam.

Powerful Ground Equipment to Transmit High Throughput
One of the many attributes and a real advantage of an open architecture HTS is the increased uplink power. The satellite antenna gain-to-noise ratio (G/T) is greatly increased allowing up to 9 dB of gain. This increase allows for significant additional margin or throughput to be transmitted on the uplink.

Comtech EF Data leverages this through an extensive combination of modulation and coding for maximum efficiencies and powerful Remote Gateways to provide the ability to transmit this high throughput that end users demand.

Global IP Roaming

Global IP roaming enables a satellite terminal on-board a mobile platform to seamlessly transition between satellite beams or hub coverage with minimal service interruption. The Heights Networking Platform uses a mobility controller embedded in the Remote Gateway. This onboard mobility controller interfaces to the Antenna Control Unit (ACU) and maintains satellite footprint maps, initiates beam switching and handoff as the Remote Gateway moves through satellite footprints. It offers a common management interface for the mobility server and the ACU by providing a set of commands, information, interfaces and status queries.

Figure 7 provides a high-level depiction of our Global IP roaming implementation.

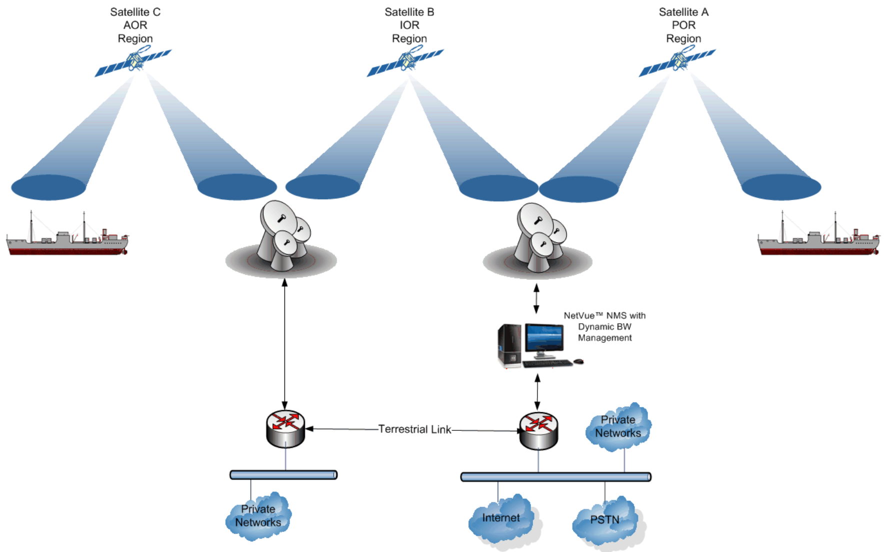


Figure 7: Global IP Roaming Implementation

Ongoing Support via Engineering Support Services (ESS)

As end users demands and cost pressures continue to increase, consultation with satellite networking experts teamed with 24 x 7 engineering support to ensure a network is optimal has become a necessity. Our ESS Prime is backed by a team of seasoned satellite network engineers who have designed, implemented and optimized networks around the world, and leverage this expertise daily to provide users with their best solution.

Figure 8: ESS Prime Features

ESS Prime provides:

24 x 7 x 365 Engineering Support	Telephonic engineering support to resolve customers' issues related to our equipment is provided 24 hours a day, 7 days a week, 365 days a year by an experienced team. Issues may include installation and/or support, software revision control, and general inquiries on documentation, equipment performance and specifications. Our ESS engineers address issues in a tiered structure, including escalating to our product engineering personnel when required.
Online Portal	A secure web-based portal provides customers with the ability to instantly create tickets and manage follow up/updates with our ESS engineers.
Direct Remote Access	Our ESS engineering team will work with customers to establish direct remote access to their network via IP VPN or other remote access mechanism. This will aid in the speedy resolution of issues related to our provided equipment.
Program Management	A Program Manager will be assigned to provide regular status updates and to act as your primary point of contact (POC) for all technical and commercial issues.
Remote Network Performance Review	Annually, our ESS engineering team will review all network configuration parameters, link budget (s), and satellite transmission plans. A summary of our recommendations for network performance improvements and software/firmware upgrades will be created.
Software/Firmware Upgrades and Maintenance Releases	Our ESS engineers will provide assistance for routine product upgrades and/or escalated maintenance issues.
RMA Support	We will evaluate RMA requests to verify that an RMA is necessary versus a configuration issue. We will provide priority service to ensuring the quickest turn-around time possible.
Warranty Support for Comtech EF Data's Hub Equipment	Comtech EF Data's hub side equipment warranty is provided for the duration of the ESS support contract which commences from the date of equipment shipment from our shipping dock.
Training	Free training seats at our facility, subject to availability.

Can Your Satellite Platform Keep Up with Your Business Plan for Growth?

Is your satellite networking platform ready today to meet the market challenges and requirements of tomorrow?

There is no debate about the markets' expectations and demands for increased capacity, improved reliability, improved efficiency and substantial savings in bandwidth while maintaining contracted SLAs and minimizing TCO.

Satellite bandwidth is the single largest operating expense for your satellite network. Profitability is directly impacted by higher bandwidth, power efficiency and utilization. Today, you are pressured to provide more throughput than ever to support bandwidth-rich and mission-critical applications. The majority of this increased demand originates in the inbound direction given the valuable multimedia content that needs to be transmitted from remote sites back to central locations. It is important for satellite networking solutions to be able to handle these increasing data rates while having headroom for future growth.

What you need is an approach for your growth demands that can meet your requirements now and in the future without breaking the bank in the process. You need an approach that is intelligent, efficient, and has the horsepower to meet the changing business environment. You need the Heights Networking Platform from Comtech EF Data.

Conclusion

The Comtech EF Data's Heights networking platform is your new solution to address these market challenges. It is future-proof, flexible, scalable and HTS-ready with no site visits. It is designed to provide a higher QoE per user, at a lower cost per delivered bit, letting you increase your market penetration, expand your addressable markets, operate with better margins and minimize end-customer churn.

Heights is a fully managed platform focused on the intelligence to enable dynamic allocation of bandwidth when and where it is needed, on throughput as well as service quality. It has the processing power needed to support your packets per second and data rates transmission requirements, while enhancing the service quality your users demand to meet those stringent SLAs.

For additional information, please contact us.

Email: sales@comtechefdata.com
Voice: +1.480.333.2200
Fax: +1.480.333.2540
Web: www.comtechefdata.com