

Leveraging Hughes Capabilities to Develop a Satellite Broadband Service

A Large and Growing Addressable Market

By its original definition, surfing would remind us of beaches, sun and riding waves. Today, the word has a brand new meaning—and its association with accessing the many benefits of the Internet has far greater social and economic significance. Yet, it may be surprising to note that nearly 60% of the people in the world do not have access to the Internet. And even more surprising is that many of this huge population that is either unserved or underserved by terrestrial fiber, cable or DSL services live or work in ex-urban, not just difficult-to-serve rural areas, and can be found in developed and developing economies alike. For example, in the world's largest economy, the US, this addressable market represents over 10% of residences—well over 14 million. Broadband operators worldwide looking to service these markets are now increasingly recognizing that satellite technology offers the most attractive and rapidly deployable alternative, competitive in performance and often more cost-effective than today's conventional cable or DSL access.

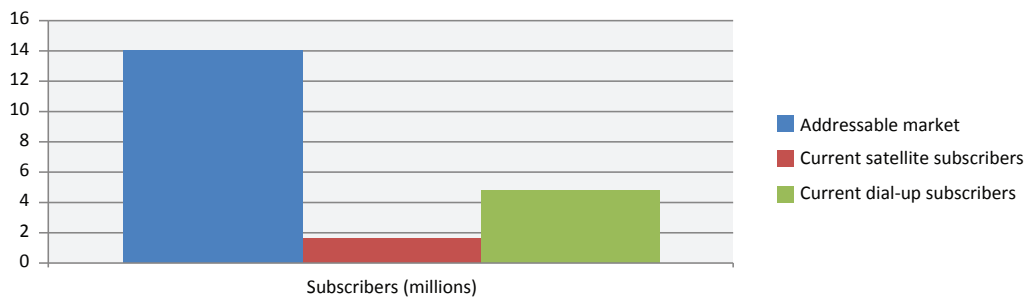
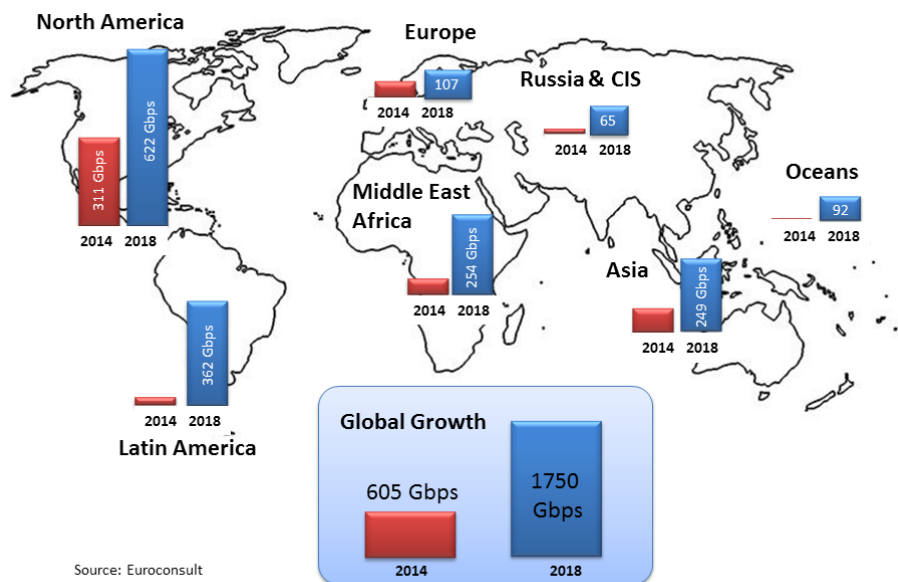


Figure 1 – USA addressable market for satellite broadband

A growing number of high-throughput satellite (HTS) systems are bringing ever larger capacity at lower cost per bit around the world and will significantly increase the ability to deliver cost effective satellite broadband around the world. As illustrated in Figure 2, over 1 Tbps of HTS capacity will be added to the global supply by 2018.



Source: Euroconsult

Figure 2 – Global Growth of HTS Broadband Capacity

Managed Services to Deliver High Quality Service

Establishing a large scale broadband subscription service requires much more than just transmission equipment, and encompasses sales, marketing, operational/business support systems (OSS/BSS), call centers, network management, and more. For a new broadband operator—or at least new to satellite-based services—achieving a successful business model means fully understanding how to organize, staff, and streamline these multidimensional functions.

From sales/marketing to network operations and customer care, Hughes stands ready to provide managed services and to share its experience with every satellite broadband operator in every aspect of setting up and managing a satellite broadband business. Hughes has been in the VSAT business for over 30 years, has shipped more than 5 million terminals globally, and owns and operates the world's largest broadband satellite service, HughesNet, which, in North America, supports over 1 million Internet subscribers and over 300,000 enterprise locations.

The market for HughesNet is primarily in ex-urban and rural areas either unserved or underserved by terrestrial broadband technologies, including fiber, DSL, or cable. Today's high-speed satellite Internet services, such as HughesNet, offer plans to suit any budget, and with download speeds starting at 10 Mbps are competitive with conventional DSL or cable, easily handling the demands of a typical home environment consisting of browsing, video streaming, and VoIP.

HughesNet operates over High-throughput Ka band satellites in North America including SPACEWAY® 3 (2008) and EchoStar XVII (2012), which has over 100 Gbps capacity, as well as over leased capacity on 13 other satellites. In addition, HughesNet will continue to expand over EchoStar XIX/JUPITER™ 2, which will launch in late 2016, which, with over 150 Gbps capacity and over 100 spot beams, is expected to support well over 1 million additional subscribers. Key features of these satellites are illustrated below.

SPACEWAY 3 (2008)	EchoStar XVII (2012)	EchoStar XIX /JUPITER 2 (2016)
<ul style="list-style-type: none"> ■ First with onboard switching/routing ■ Dynamic coverage allocation ■ Dynamic capacity density allocation ■ Smallest beam size, flexible capacity density ■ 800 Mbps VSAT receiver ■ Bandwidth-on-demand 	<ul style="list-style-type: none"> ■ 100+ Gbps capacity ■ High-capacity, multi-Gbps gateways ■ Beyond DVB-S2/ACM with AIS ■ Fastest VSATs 	<ul style="list-style-type: none"> ■ 150+ Gbps ■ More capacity ■ 100+ beams ■ More coverage ■ Higher VSAT throughput ■ More users ■ Advanced networking ■ More services

As a proven market leader in satellite broadband, Hughes can structure a managed services plan for any and all areas of a successful business beyond supplying advanced systems and terminals, summarized as follows:

- **Network Operations:** Hughes network operations comprise a Network Management System for monitoring gateway and remote components for events and alarms, trouble-ticket creation, and management using customer-facing Web portal, Inventory management and asset tracking, traffic management, as well as subscriber management.
- **OSS/BSS:** Hughes uses a combination of platforms for creating business process automation as well as for hosting value-added applications. The architecture and functionality are driven by the business objectives of revenue generation, cost reduction, and customer satisfaction.
- **Customer Service:** Both self-care (by an end customer) and customer care (by a Customer Service Representative (CSR)) are supported by Hughes-developed systems. The reduction in the number of calls made to a call center as well as efficient and effective handling of customer calls are the main objectives that drive the customer support features. A fully scalable trouble ticketing management and notification system is part of the customer care solution.
- **Field Service:** Hughes has extensive experience in field service including installation and maintenance of remote terminals with a quick turnaround.
- **Consumer Marketing:** In growing HughesNet to over 1 million subscribers, the Hughes team has developed a sophisticated and comprehensive marketing and distribution process, covering service plans, provision of premium services, and establishment of distribution channels.

Operators who use the Hughes JUPITER System can also leverage Hughes capabilities and expertise in any or all of these operational elements of a satellite broadband system.

Network Operations

Many of the more than a million HughesNet customers in North America who go about their daily online activities, including browsing, streaming and calling, may be unfamiliar with the comprehensive Network Operations Center (NOC) that is behind managing their broadband service.

The NOC is the foothold of all the effort and innovation that go into the design and development of Hughes services and products, where the objective is to deliver unrivalled quality of services, enabling customers to unleash satellite broadband to its maximum potential. This is where the services are managed, network status is monitored, and issues are diagnosed and fixed.

Since such a crucial part of running a successful satellite broadband service lies in network operations, Hughes has developed an extensive set of tools to monitor and manage large scale and diverse networks.

Some of the network operations functions include:

- Network Management system for monitoring gateway and remote components for events and alarms, trouble-ticket creation, and management using a customer-facing Web portal, inventory management ,asset tracking, etc
- Monitoring of traffic at different network egress and ingress points across multiple gateways to ensure network performance
- Subscriber management

The Network Management system is built on fully featured management of hub and remote components using SNMP, ICMP, etc. It supports synthetic transactions, database query, and custom API interfaces for interfaces to various network element management systems for performing manager of manager roll functions.

HUGHES NETWORK MANAGEMENT SYSTEM
Access real-time network status and fault management data
Monitor network-level trouble tickets and create and monitor site-level trouble tickets
View and monitor Hughes-generated trouble tickets
Track installation from initial scheduling to completion in real time
Automate and review a wide range of scheduled bandwidth reports, including top talkers, top applications, and bit rate vs. time-to-optimize bandwidth and application delivery
Access multirouter traffic graphs and virtual auto dial backup report

The Network Management system also facilitates creation of trouble tickets with work flow escalations, reporting on open and closed tickets, event and alarm reporting, etc., and provides customer-facing portals for viewing trouble-ticket status and event logs.

The dashboard interface provides a display of network management information on bigger screen displays. Other key features of the NMS include:

- Hierarchal management scalable to large number of gateways and millions of terminals
- Centralized high availability redundant database
- Distributed local management functions at each gateway
- Comprehensive fault and performance management
- Single unified interface to BSS based on RESTful API standard

The architecture of the NMS is as seen in Figure 4.

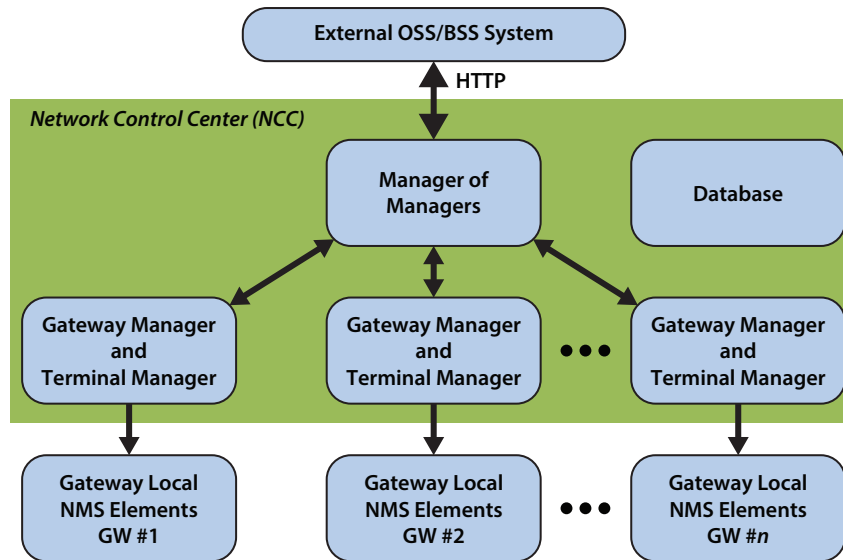


Figure 4 – NMS Architecture

One of the major challenges of network operations and monitoring includes managing all the diverse network components of a very large network on the same platform. Hughes uses a carrier-grade manager of managers' application for managing and monitoring disparate network components. The manager of managers has a staggering granularity of delegation, allowing customization of alert levels for each network attribute. It can also correlate various network events across a variety of platforms as well as generate alerts and tickets. This, together with its ability to scale and over 30 years of experience in network operations, makes Hughes network operations highly efficient and streamlined.

Another key feature of the NMS lies in its fault and performance management abilities including:

- Fault reporting functions for all network elements accessed via Web Portal
- Integrated configuration for dashboards, system monitoring, and thresholds
- Distributed function over Data Center and Gateway Domain

The NOC serves a very critical role of network monitoring. A wide array of systems and functions must be monitored, which include:

- Satellite network hub systems, which comprise servers and specialized hardware
- Application and layered feature service servers
- IP infrastructure, such as routers, switches, and trunking equipment
- Physical infrastructure monitoring (video, intrusion alarms, physical remote access control, etc.)

All of the above are monitored by an array of systems and presented to NOC personnel on personal displays as well as large multifunction screens in the NOC. The monitoring systems use a collection of techniques, such as SNMP alarm consolidation, SNMP polling, statistical data analysis, and other methods in order to present the big picture to the network operations staff. These systems comprise in-house-developed applications, as well as Commercial off-the-Shelf (COTS) software packages and together make up the core of the OSS.

The **traffic monitoring system** makes use of several monitoring tools developed by Hughes for its service infrastructure. It enables the operator to monitor the traffic carried by various hub components across multiple gateways. For enterprise customers who own dedicated hub components, the network monitoring system provides Web interface for viewing bandwidth utilization by enterprise virtual private networks.

The **subscriber management system** performs service subscription, service provisioning, and service management functions. The NOC receives usage records from gateways, which are made available to be copied to a customer-designated location and may be used to generate billing data.

Hughes can provide outsourced network operations for as long as a client desires, thereby allowing the client to bypass the tasks of network operations while Hughes ensures smooth and seamless network activity.

OSS/BSS

Business process comprises tasks and functions that drive organizational goals. From managing network services to ensuring service delivery, from initiating services for customers to billing them, all tasks must be automated to achieve the most cost-effective structure. The automated systems that perform these functions are called Operations Support Systems (OSS) and Business Support Systems (BSS) (Figure 5).

The Role of OSS/BSS Systems

In order to operate a large-scale broadband service, there are many functionalities that need to be implemented as a set of automated processes to make them as scalable as possible. These include:

- **Customer management:** Marketing, Customer Resource Management (CRM)
- **Service fulfillment:** Order management, delivery, provisioning, install
- **Customer support:** Technical support (help desk), onsite support, repair
- **Collecting revenue:** Billing
- **Service assurance:** Managing faults, trouble tickets, SLAs, QoS, etc.

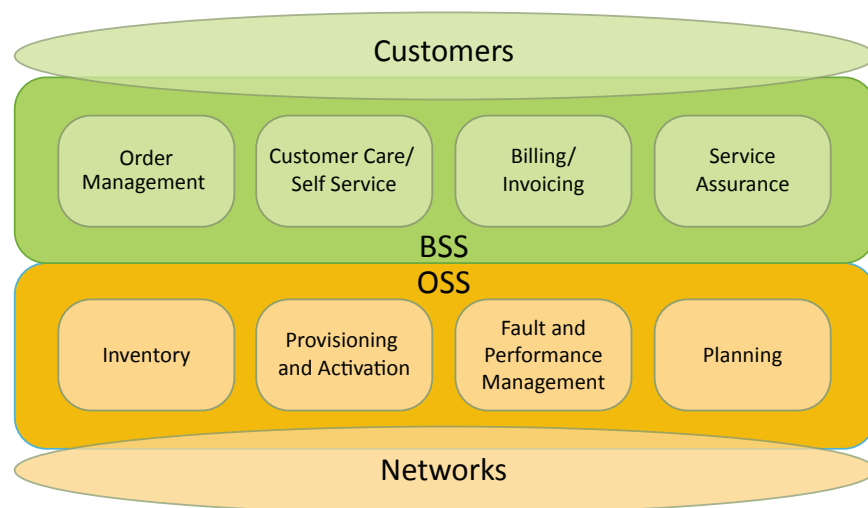


Figure 5 – OSS/BSS Architecture

OSS systems are utilized in the actual operation and monitoring of the constituent parts that make up the network. Depending on the architecture, they may either encompass the Network Management Systems/Element Management Systems (NMS/EMS) layers or sit directly above them. The five key areas of network management, known as Fault, Configuration, Accounting, Performance and Security (FCAPS), are implemented in the NMS/EMS layers.

BSS systems, as the name implies, are generally geared toward the operation of the business, such as order entry, order fulfillment, customer interaction (CRM), knowledge base, trouble ticketing, etc. Though OSS and BSS systems serve distinct roles in the overall management of the network, it is essential that they work in an integrated manner for maximum effectiveness. OSS/BSS systems comprise a variety of software systems, which bridge business services and network operations. For example, if a customer calls about a problem with their service, the call center will likely use a database in the BSS systems to look up and validate the user. Once validated, the call center technician may use data, such as equipment alarms, from the OSS to determine the cause of the problem the customer is experiencing. Therefore, although there is a clear distinction between the BSS and OSS systems, they essentially form a circular relationship as illustrated in Figure 6.

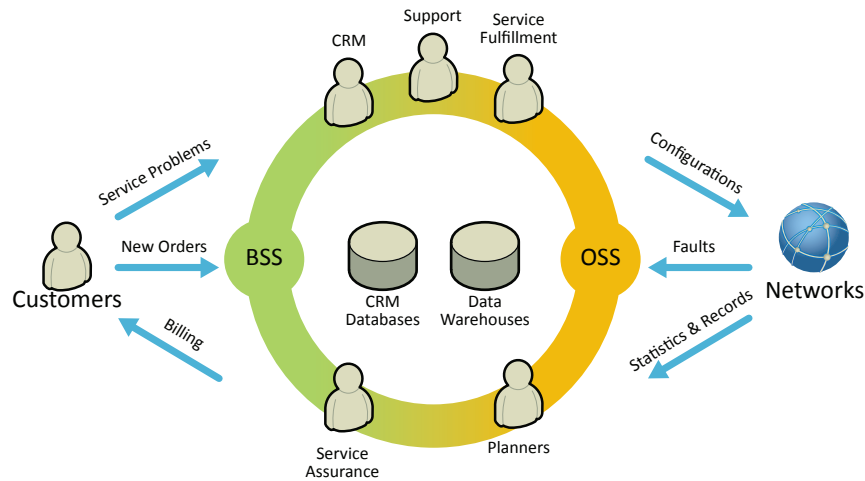
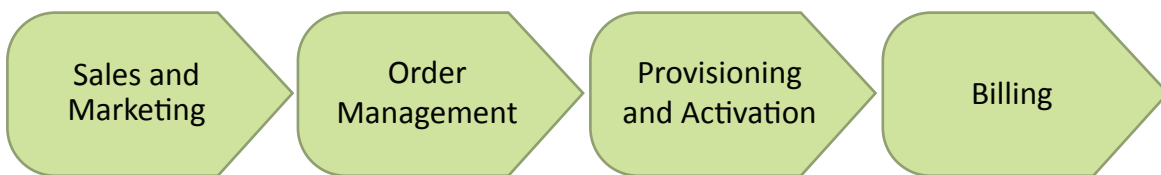


Figure 6 – Circular Relationship Between OSS and BSS

Bringing New Customers Online

The following sections briefly describe the steps that follow in the lifecycle of a service activation assuming that the marketing, presales, and sales cycles are completed.



Order Management

New customers must be brought online as quickly as possible. This requires several steps, which the BSS system facilitates:

- Input of customer information, credit check, plan options
- Lookup of capacity availability and ability to provision
- Entry of selected plan and options, collection of initial payment if needed
- Equipment order entry
- Scheduling of installs

The BSS system pulls information required to complete these tasks from various databases in the BSS itself, as well as from the OSS system.

Service Fulfillment

Once an order has been placed, the process of creating the service and bringing the customer online begins. This process may be automated in more sophisticated systems, or portions may be manually handled while other portions are automated.

The steps in fulfilling an order are:

- **Order management:** Breakdown of the order into the constituent parts as they relate to the network.
- **Inventory and delivery:** Defining the required equipment and delivering it to the customer.
- **Provisioning:** Creating the necessary CPE configuration, circuits, tunnels, etc., in the network components.
- **Install and service activation:** Enabling the service once the install has been completed.
- **Service verification and quality assurance**

The final step above includes the comparison of the installed site to adjacent sites in order to verify that the signal levels are within expected norms.

Billing

Once a service is activated and the customer is using it, the process of billing is initiated. This process may be largely automated in the BSS system to occur typically on a monthly cycle. However, the BSS billing components may rely on data from the OSS systems to apply credits caused by outages, for example. For enterprise customers especially, the Service Level Agreement (SLA) is an important contract deliverable that must be met by the service provider and therefore tracked and reported.

Customer Support

In the support of any large network, there are many facets of support required in order to keep the network running and—first and foremost—keep users happy. Everything from individual CPE issues to core network issues must be dealt with swiftly and effectively.

In order to support the network with the contracted SLAs, a network operator must have the infrastructure in place to proactively manage the network, as well as to react to customer issues quickly.

Self-Care

For some issues that do not involve a direct outage, customers can use self-care portals. Self-care portals allow users to resolve questions quickly on subjects, such as account status, billing, and network status. If a customer is experiencing issues, they may also open and track cases on the typical self-care portal. All of the information that the customer can see on the self-care portal is presented from the OSS/BSS.

Customer-Facing Support

Depending upon the SLAs for which customers have contracted, various levels of live help desk and onsite support may be required. These help desk and support personnel require interactions in one form or another to the BSS and OSS systems in order to verify accounts, open trouble tickets, and conduct other activities. The OSS/BSS facilitates customer and network support at every level.

For very large networks, an enhanced three-tier customer support structure may be used, as illustrated in Figure 7. The first line of support is the traditional three-tier support, which is backed up with two more layers of deeper level support.

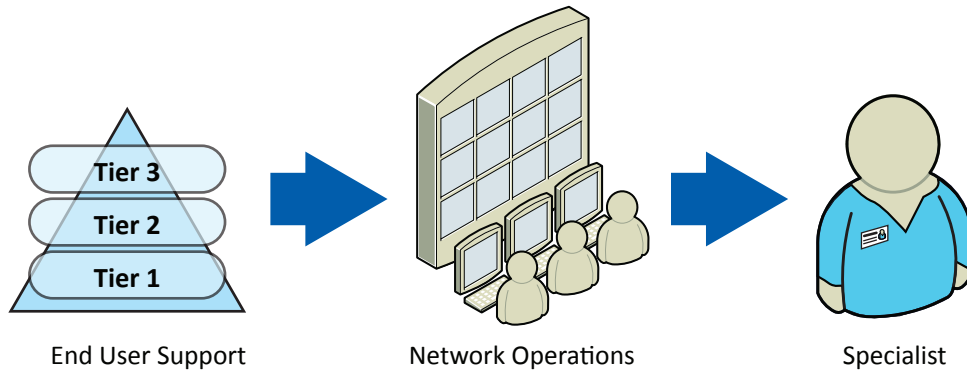


Figure 7 – Customer Support Structure

End user support: This is the interface for the customer when they have an issue with their service. The customer dials a support phone number connecting them to call centers that typically provide 24/7/365 live support, as well as handling specialized customer interface, such as billing questions. The personnel in the call centers use the OSS/BSS system (which includes the CRM system) to support the majority of issues that customers generally experience. For example, the call center agent may use a knowledgebase in the BSS to quickly resolve most common issues. The call centers operate a traditional three-tier structure as shown in Figure 8.

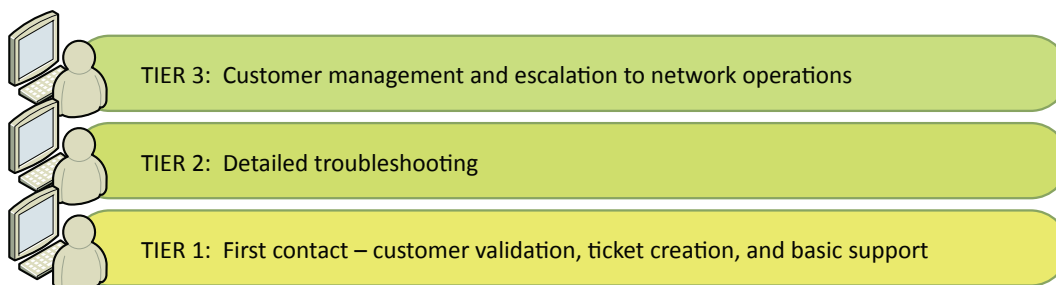


Figure 8 – Three-tier Structure

Within the support structure that the call centers provide, there are several degrees of expertise available to solve customer issues before an issue is escalated to a higher level.

- **Tier 1:** First interface, customer validation, basic troubleshooting, and ticket creation using the BSS screens.
- **Tier 2:** Escalation for more complex issues and the ability to dig deeper into the OSS' troubleshooting capabilities (e.g., logs, verification tools, etc.).
- **Tier 3:** Management escalation and interface to network operations and specialist support

Network Operations: In the relatively few cases where a problem can't be solved at the first three tiers of support or if the problem is identified to be outside the scope of the user's equipment (known as the Customer Premise Equipment or CPE), a ticket may be escalated to the NOC. The NOC can evaluate issues to a deeper level, which may involve broader network-affecting issues, such as weather, core transport, or equipment outages, and other issues beyond a specific CPE issue. The NOC personnel have the expertise to utilize most of the capabilities, which the OSS/BSS systems can provide.

Specialist support: This is a dedicated group of engineers who take on issues, which may require a deeper understanding of the system components. A very important role of the specialist support level also includes other functions that are vital to the operation and growth of the network:

- **System integration and test:** Rollout of new features and upgrades
- **Infrastructure:** Configuration and maintenance of routers, switches, and other network infrastructure
- **RF engineering:** Link budgets, capacity planning, and RF vendor interfaces
- **Systems engineering:** Capacity management and data modeling
- **Tools:** Diagnostic tools, automation tools, etc.
- **Network upgrades, change management**

An organization may not implement all of these layers to support their broadband customers; however, at every layer a view into the OSS/BSS systems is required. It is also important to note that personnel at the various layers must be restricted to certain views. For example, Tier 1 support would need full access to a user's account information but may have restricted access or a limited view into core network equipment views. The definition of roles and permissions is also a function of the OSS/BSS system.

Other Roles the OSS/BSS Plays

Analytics

The various systems that make up the network produce volumes of data. The OSS/BSS must be able to warehouse this data and then process it into meaningful reports, which are consumed at various levels of management. Business analytics provides insight into, for example, revenue broken down by category, such as regional or demographic, new orders over different periods of time, customer churn, how well customer service is performing, etc. Analytics can provide invaluable insight into how well marketing activities, such as online campaigns through social media, are performing. All of this information is vital to constrain customer churn and form a solid basis for profitable growth of the business.

Security Compliance

More and more of the economy is starting to rely on online transactions. In the retail industry, for example, the use of payment cards for online transactions means that businesses, clearing houses, banks, and anyone else in the path must be Payment Card Industry (PCI) compliant. The OSS/BSS must be able to produce the required data and reports to ensure compliance and analyze breaches should they occur.

Trend Monitoring

As the network rapidly grows, the network operator must monitor the usage of space segment in order to properly allocate and plan the growth. In typical Ka-band systems, this means monitoring the capacity of the each beam and determining how to allocate new remotes and how to increase capacity in beams' reaching capacity. For example, the capacity of a

Ka spot-beam may be monitored via daily reports that show the status and utilization so that planners can take steps to reduce congestion and plan future traffic.

Application Programming Interface (API)

Some functions required by the network operator may have to be custom written applications or may require interfaces to other existing systems. For these cases, the OSS/BSS system must provide API interfaces to allow programmers to design software that interacts with the OSS/BSS or allows the OSS/BSS to interface with other systems.

Implementing an OSS/BSS System

The cost and time required to implement an effective OSS/BSS system can be very significant. In general, there are three options for implementing such systems:

- **Building a solution from the ground up:** Various components are purchased and integrated. This may also include writing of custom applications. This option may entail the hiring of a large number of developers and support staff to design the software and hardware systems.
- **Bringing in an “off-the-shelf” solution from a large integrator:** While there are various options for off-the-shelf OSS/BSS systems, these typically come at a very high price and still require a significant amount of customization in order to automate the processes, which are unique to each business.
- **Utilizing Cloud-based services offered by an experienced network operator:** This option may also entail some amount of customization in order to support the unique business process requirements; however, it eliminates the need for staff to support the software and physical infrastructure required for the first two options.

Clearly, the third choice is the ideal choice for any new broadband operator.

Hughes OSS/BSS Software as a Service (SaaS)

Utilizing its own OSS/BSS system developed to support the world’s largest satellite broadband network, Hughes offers a complete OSS/BSS solution delivered as Software as a Service (SaaS). Hughes can leverage its existing in-house systems and experience to enable an operator to focus on primary aspects of running a broadband business.

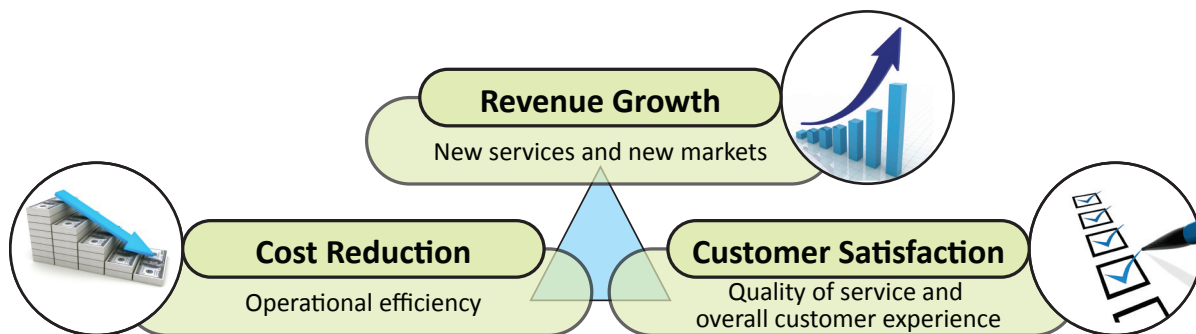


Figure 9 – Cost, Revenue, and Customer Satisfaction

The advantages for the network operator of outsourcing the OSS/BSS functions to Hughes are:

- Reduction in CAPEX to start the service.
- No need to set up an organization to operate OSS/BSS.
- No need for high initial investment in software, servers, and facilities.
- Reduction in yearly operational costs because of economies-of-scale achieved by Hughes.
- An operator can stay focused on business development since operations are handled by Hughes.
- Leverage Hughes experience to quickly achieve service maturity and therefore accelerate revenue generation.

The Hughes OSS/BSS SaaS can also support the virtual network model allowing a network operator to partition and sell wholesale capacity to, for example, regional resellers while enabling those resellers to have a view into the relevant OSS/BSS views and functions that relate only to their part of the network.

Customer Services

In a service oriented industry where customer requests need to be streamlined, call centers can be highly efficient. Hughes has taken the time to develop efficient call center services and strategy to provide seamless customer services. Hughes uses call center services to handle customers’ calls, as well as to call prospective customers.

Without a skilled and efficient call center, it may be hard to engage and service customers. Hughes has ensured this by providing training and scripting to the operators and establishing customer satisfaction through quality measurement of call center performance and user experience. Provision of training and scripting to the call center representatives ensures that all customer requests are handled professionally, and with consistency.

The representatives in call centers are trained to address consumer issues whenever conflicts arise in a skillful manner by troubleshooting, finding solutions, and transferring knowledge to customers. When the call center ensures high customer satisfaction, the customers are more likely to become loyal repeat customers.

With online assistance also growing more common, Hughes has also developed and implemented wide range of e-support tools to engage with customers including:

- Email
- Chat
- Web self-service
- Social media
- Hughes community

Email

With growing use of email service over the past two decades, a number of customers prefer email as their primary means of communication. Hughes customer care Web portal allows users to directly email Hughes to address any issues. The emails are effectively tracked and promptly responded to by customer representatives.

Chat

Customers who prefer using e-services but do not prefer waiting for email response can engage in online chat with a customer representative. This service is similar to the call center except that the customer and representative engage in online chat instead of a phone conversation.

Web Self-Service

A number of Web services are available to HughesNet customers. These include searching the knowledge base for self-help, checking usage, checking repair order status, finding answers to FAQs, etc. For any customer who prefers accessing all usage and service information on the Web, the Customer Care Web service portal provides these extensive services in one place to HughesNet customers.

Social Media

In a digital age, reaching out to customers through social media has proven to be highly effective. Hughes constantly delivers messages to its customers through social media, including Facebook, LinkedIn, and Twitter to spread awareness, increase engagement, and promote services.

HughesNet Community

Hughes has developed a community forum where customers of HughesNet can communicate with one another as well as with representatives of Hughes. It also acts as a platform for reaching out to many customers in any event that requires notification to customers. For example, in an event such as upgrading of satellite components that may cause some downtime, the HughesNet community can help in reaching out to all its community members through sharing this scheduled update.

Unlike any other VSAT provider, Hughes is uniquely positioned to help its partners/broadband operators by providing “best practices” to develop an unrivalled customer service matrix based on years of experience.

Field Services

Hughes installs as many as 10,000 sites per week and has developed an organization and tools to enable this growth. Hughes has developed an effective field service organization that enables us to address the following areas:

- Remote terminal installation
- Performance and quality monitoring
- Training services

- Logistics
 - Equipment forecasting
 - Inventory management
 - Shipping
- Repair services

Remote Terminal Installation

Hughes receives a huge volume of orders on a daily basis. These orders are received from Hughes Call Centers, Hughes Sales Agents, Distributor Sales Agents, and Selling Dealers. These orders are auto-assigned by state to each distributor, and the distributor auto-assigns orders to their dealers based on ZIP code. Dealers assign installation orders to certified installers.

The order can be searched, tracked, and managed in the order management system.

The certified installers use Hughes Oasis mobile application (Figure 15) in the installation process. The application lets the installers accurately position the VSAT so as to receive maximum signal strength from the satellite. Once the installation and activation are complete, the terminal is ready to be managed under the NMS.

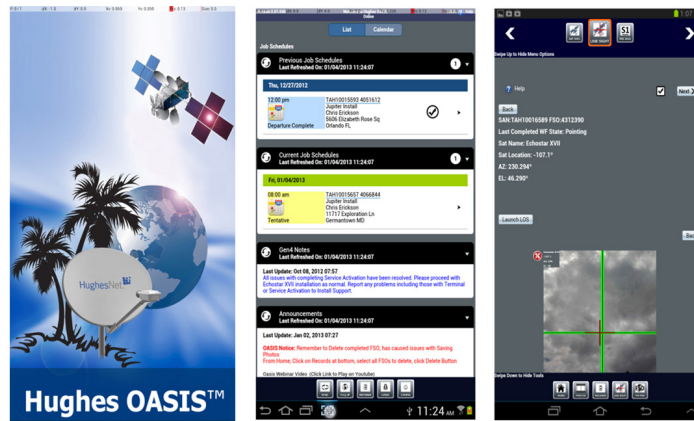


Figure 15 – Hughes Oasis

Performance and Quality Monitoring

The metrics of each installation are individually tracked and measured, right from the time of installation to days of backlog to customer satisfaction. These metrics in turn help in devising strategic plans to streamline the installation process and to ensure efficiency.

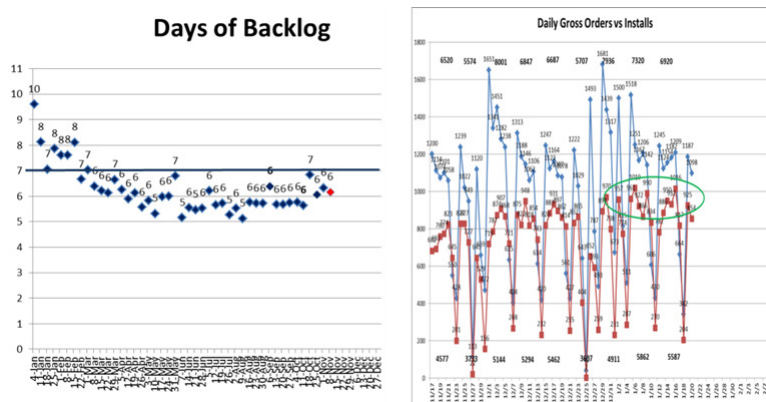


Figure 16 – Performance Graphs

Training

Installation includes various tasks from interfacing with the customer professionally, to positioning the VSAT to grounding and cabling. The installers require being adept at their task to maximize the installation efficiency, and in turn ensure customer satisfaction. Hughes provides comprehensive training and certification to installers on all aspects of the installation process.

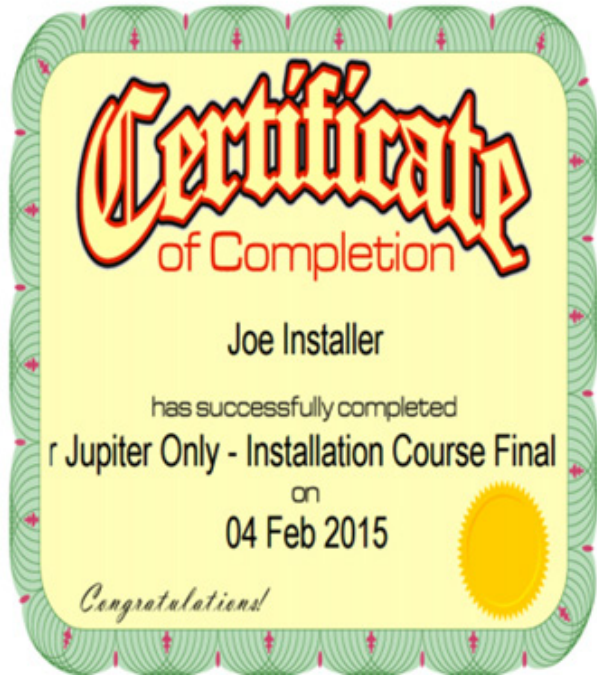
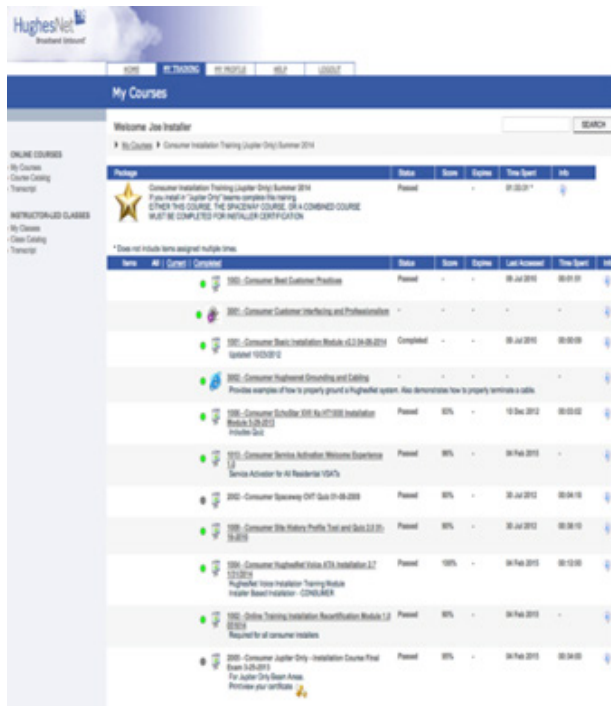


Figure 17 – Training Portal

Logistics

A challenging task in field services is a detailed coordination of supplying and managing inventory at all required locations. Hughes has developed compelling logistics methods for equipment forecasting, inventory management, and shipping. Based on ordering data as well as trends, Hughes is able to predict market demand and plan to execute the supplies.

Repair

Maintenance and repairs are sometimes necessary to ensure that the VSAT equipment runs smoothly.

Field support technicians are used in cases where a problem arises after a system is already in use and can't be solved by the remote support technicians. These technicians often carry spares on their trucks or have quick access to an inventory of spares. When there is an issue, they are automatically scheduled and dispatched by the trouble ticketing system, which is part of the OSS/BSS infrastructure, based upon the geographic area they cover, their working hours, and their on-call status.

In order to properly diagnose the issues in the field, verify their intervention, and log their activity, the field technicians typically rely on laptop or tablet-based Web interfaces, which tie into the relevant OSS/BSS screens.

Hughes can provide exclusive knowledge transfer and training to broadband operators in field services to ensure quick installation turnaround as well as flawless broadband service to the end user.

Sales & Marketing

Sales can be largely determined by marketing strategies as well as the choice of sales channels. Hughes utilizes both direct and indirect sales channels to optimize its sales levels.

Direct Sales Channels

Broadcast: Advertising on satellite TV can be an effective way of reaching out to consumers. TV advertisements of 30- or 60-second spots are seen daily by viewers of satellite TV. In case of Direct Response Television (DRTV), fees are paid on a per-sale basis. The spots generate calls to call centers or visits to Websites, resulting in orders. The spots are monitored on a daily basis to optimize performance by demographic and clustering information. The call center capacity is also maximized at times when peak call volumes owing to the advertisements are expected. In turn customers can place orders through the call center, where discrete numbers track the source of purchase, or online orders, where discrete URL tracks the source of purchase (Figure 18).

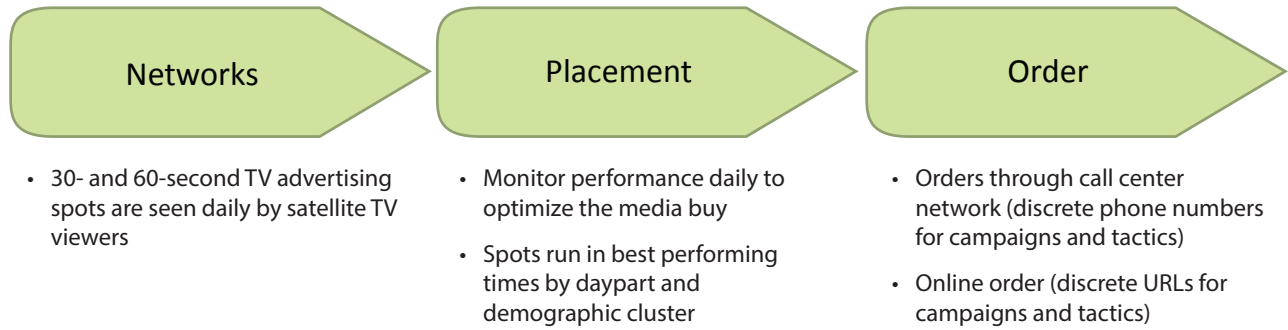


Figure 18 – Broadcast Advertising

Direct Mail:

Direct Mail Marketing (Figure 19) is used to ensure that the marketing message reaches the doors of the consumer. Hughes has developed a powerful marketing strategy to reach out to distinct consumer segments through direct mail. This is done through identifying postal geographies in the US where HughesNet customers reside and then ranking the geographies based on customer penetration. Next, mail is sent to the targeted addresses as well as lists outside the zones where probability of customer acquisition is high.

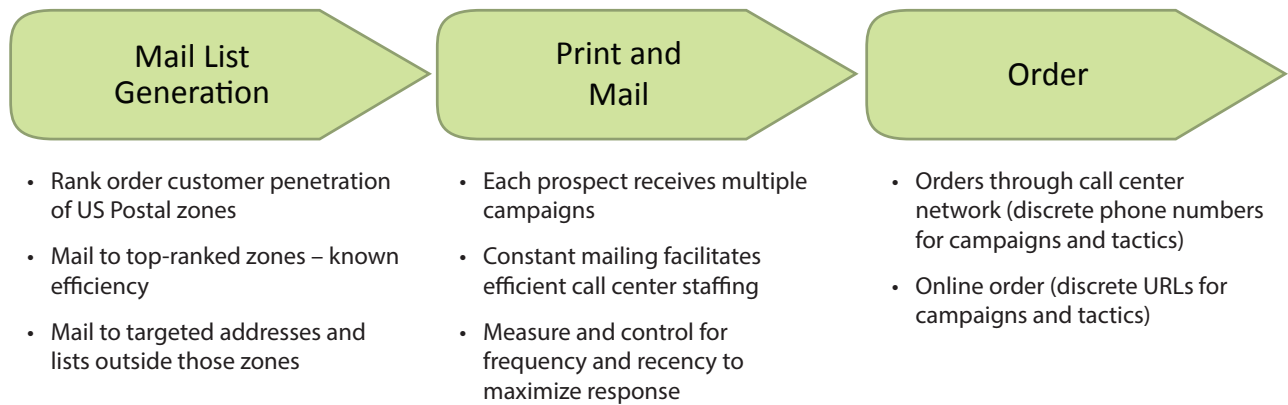


Figure 19 – Direct Mail Marketing

Web Marketing:

HughesNet has very high brand awareness, and this is one of the reasons for driving sales volume. The Web fuels both phone and online ordering. Hughes online marketing programs drive online traffic to successful customer acquisition. Hughes uses pay per click as well as SEO methods to direct customers to HughesNet or campaign microsite (Figure 20).

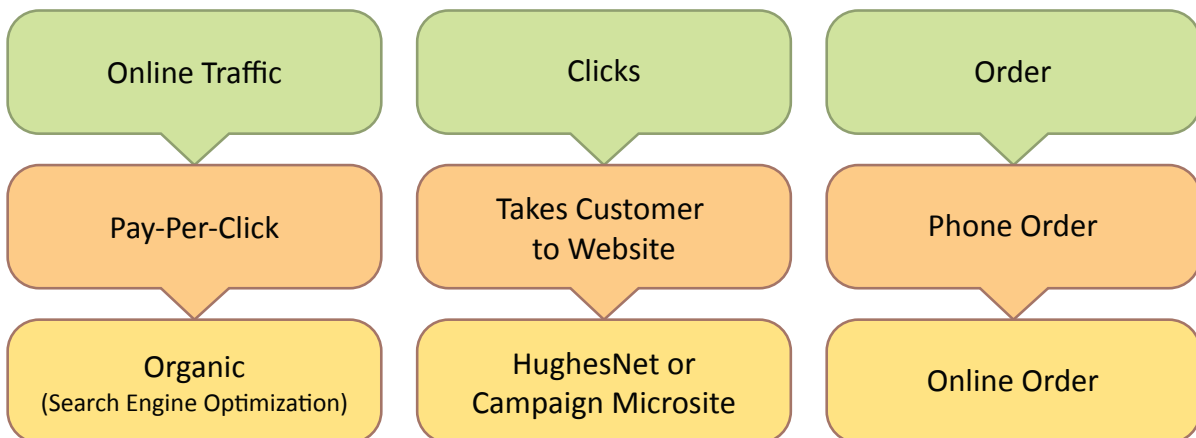


Figure 20 – Web Marketing

Leveraging Hughes Capabilities to Develop a Satellite Broadband Service

Indirect Sales Channels:

Hughes has access to a variety of indirect sales channels including sales agents and dealers with significant expertise in local sales. Hughes leverages the experience and expertise of these channels to strategically increase its sales in targeted regions. Some of the advantages of indirect channels include benefits of working with an established sales partner as well as potential sharing of marketing and sales costs.

In addition to the sales and marketing techniques stated above, Hughes has the experience of functioning successfully in such a market by setting optimal targets. For example, Hughes has learned that overselling the service can eventually lead to a higher churn and has developed a process to minimize churn. In order to reduce churn, the first 30 to 90 days are crucial in achieving the optimal sales target.

Hughes can help broadband operators by providing exclusive training in marketing and sales. Some employees of broadband operators would have the opportunity to work at Hughes marketing and sales departments and gain firsthand knowledge on developing, implementing, and executing marketing and sales strategies.

Conclusion

In summary, building a successful satellite broadband service involves a lot more than transmission services. Some of the other functions that drive a satellite broadband operator business include network operations, OSS/BSS, field services, customer service, and marketing and sales activities. Hughes can help network operators by:

- Providing outsourced network operations services or providing network operations training: More than a million HughesNet customers in North America go about their daily online activities, including browsing, streaming, and calling, and Hughes has a proven network operations service that makes it possible.
- Providing OSS/BSS as SaaS: The business process comprises tasks and functions that drive organizational goals. From managing network services to ensuring service delivery, from initiating services for customers to billing them, all tasks must be automated to achieve the most cost-effective structure. Hughes OSS/BSS has been highly successful and up-to-date in driving operations efficiency.
- Providing knowledge and tools for customer services: In a service-oriented industry, where customer requests need to be streamlined, a comprehensive customer service determines customer satisfaction and retention. Hughes has taken the time to develop efficient call center services as well as Web-based customer services including email, chat, portal, social media, and community based customer services.
- Providing training and knowledge on field services: Hughes installs as many as 10,000 sites per week and has developed an organization and tools to enable this growth. Hughes has developed an effective field service organization that enables us to address installation; performance; and quality monitoring, training and logistics.
- Providing knowledge transfer and training on marketing and sales activities: Marketing strategies drive consumer awareness, consideration, and ultimately purchase. Sales are also largely determined by the choice of sales channels. Hughes utilizes both direct and indirect sales channels to optimize its sales levels. The vast consumer base of HughesNet, North America, reflects the intensity and effectiveness of Hughes marketing and sales activities.

As classic satellite and VSAT operators typically don't have experience in this, transferring knowledge on these tasks to broadband operators has historically been a major challenge to most. However, as the largest satellite broadband operator in the United States, supporting more than a million subscribers, Hughes can help broadband operators in every aspect of satellite broadband business.

Proprietary Statement

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