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WORLDWIDE SATELLITE MAGAZINE

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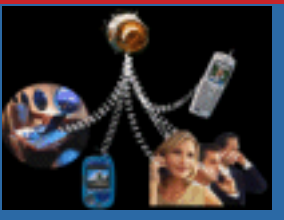

REGULAR DEPARTMENTS

NOTES FROM THE EDITOR

SatMagazine Celebrates One Year Anniversary

It's official, SatMagazine is one year old. This is the last issue of Volume 1 and we start a new volume next month. Our inaugural issue last April seem now a distant memory. It seemed appropriate at that time that we launched in Las Vegas during the NAB show, as some think it was a huge gamble to start another publication in a industry where there are more publications closing down than starting up.

But here we are eleven issues and 27,000 registered subscribers later, looking forward to our second volume. To commemorate this milestone, we are coming up with a printed "Index" issue which will serve as a handy reference guide to the issues we've covered from April 2003-March 2004. This full color hard copy Index issue will be distributed free of charge at major trade shows such as the NAB, ISCe 20004 and IBC. It's amazing what we have covered in just one year. SatMagazine has chronicled the major issues affecting the industry in the past year and we plan to continue to serve the industry in man years to come. Watch out for the Index issue.

Meanwhile, Satnews will be chairing a panel on "Earthquakes, Fires and Floods: Satellites to the Rescue " at the ISCe conference in Long Beach, California from June 1-3. We would like to extend our invitation to everyone to attend this exciting conference and exhibition. Mark your calendars.

Virgil Labrador

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CALENDAR OF EVENTS

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March 2-5 Washington, D.C. Satellite 2004
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Don't Miss ISCe 2004:

June 1-3,2004 Long Beach, CA, USA

ISCe Satellite & Communications a GEBIT Event

ISCe is the premier annual conference and expo highlighting dual-use satellite-based services, applications and innovative technologies for the commercial, civil and military sectors. Key program highlights for ISCe 2004 include: Satellite Users Forum; Defense and Security Forum ; Global Navigation Forum ; Next-Generation Capabilities Forum ; Satellite Entertainment/DBS Forum ; U.S.-Asia Satellite Business Roundtable ; GPS Tutorials ; Satellite Career Day Program ; Innovation Gateway Pavilion.

For more information, please visit www.isce.com or contact Gina Lerma of Hannover Fairs USA, Inc. at (310) 410-9191 or glerma@hfusa.com.

FEATURED EVENT

ISCe 2004: Conference to Highlight Key Industry Issues

Long Beach, California June 1-3, 2004

Now going on its third year, ISCe 2004 in Long Beach California is a must-attend event that features leading industry executives and decision makers in a three-day conference and expo from June 1-3, 2004. Organized by Hannover Fairs, USA, one of the leading event organizers in the world, ISCe has carved a niche as the premier annual conference and expo highlighting dual-use satellite-based services, applications and innovative technologies for the commercial, civil and military sectors.

Richard DalBello **Capt. Peter Neffinger** **Dean Olmstead** **Keith Hall**

The Conference component of ISCe is organized in a forum format will be tackling key issues affecting varous segments of the satellite industry including:

- **Satellite Users Forum**
- **Defense and Security Forum**
- **Global Navigation Forum**
- **Next-Generation Capabilities Forum**
- **Satellite Entertainment/DBS Forum**
- **U.S.-Asia Satellite Business Roundtable**
- **GPS Tutorials**
- **Satellite Career Day Program**
- **Innovation Gateway Pavilion**

Commenting on the Forum format of the conference, Joachim Schafer, President of Hannover Fairs USA says: "The forum design is a product of discussions with both our partner organizations and attendees from last year's show. It provides attendees with an easy way to learn about various aspects of a particular topic and provides presenting companies with a platform to reach decision-makers in a particular market segment."

Speaking at the conference will be leading executives and personalities in the industry. To date, confirmed speakers include **Dean Olmstead, President and CEO of SES AMERICOM; Richard DalBello, President of the Satellite Industry Association; Captain Peter Neffinger, Commanding Officer and Captain, Port of Los Angeles/Long Beach; and Keith Hall, Vice-president of Booz Allen Hamilton (and former Director, National Reconnaissance Office), Mark Dankberg, Chairman & CEO, ViaSat; Yousuf Al Sayed, CEO, Thuraya Telecommunications; Linas Danilevicius, Supervisory Senior Special Agent, Joint Terrorism Task Force – FBI; Scott Carson, President, Connexion by Boeing; Dr. Eui Koh, President - Asia-Pacific Satellite Communications Council; Dr. Joseph R. Guerci, Deputy Director,**

FEATURED EVENT

Special Projects Office – DARPA; Keith McDonald, Chairman - Navtech Consulting; Ken Dozier, NASA Far West Regional Technology Transfer Center; Donald Walker - Sr. Vice President, Systems Planning and Engineering - The Aerospace Corp; Glynn Spangenberg - Vice President & General Manager of Transport Logistics - Qualcomm; among others.

The organizers have also added new sessions including a panel on **"Earthquakes, Fires and Floods: Satellites to the Rescue."** The session will feature the use of satellites in disaster prevention and management and will be chaired by Satnews managing editor, Virgil Labrador.

"We have added on another dimension to our conference program by increasing the number of sessions either dedicated to or of interest to end users," added Schafer. "While this move will obviously be beneficial to the growing amount of end users that come to ISCe every year, it will also help service providers understand what needs they should be addressing with their end user communities," he said.

With the unique conference format and the participation of key industry leaders, ISCe 2004 promises to be a exciting event where you could learn more about the issues affecting the industry and identify opportunities, network and do business all at the same time. SM

SPONSORSHIP/ REGISTRATION

To get more information on sponsorship opportunities or to register, visit www.isce.com or contact Gina Lerma of Hannover Fairs USA, Inc. at (310) 410-9191 or glerma@hfusa.com.

INDUSTRY NEWS

New Broadband Service, NewSat Formally Launched by Multiemedia

In a two-day event attended by over 100 industry representatives from all over the world last February 23-24, a new broadband service dubbed NewSat was formally launched by one of the leading Australian satellite service companies, Multiemedia. In attendance were NewSat partners and customers representing satellite operators, service providers and end-users from business and government from Asia, Middle East, Europe and North America.

NewSat is a new division of Multiemedia. It aims to fill a void in the market for next generation Video, Internet, Voice over IP and data communications services for organizations not adequately served by traditional broadband technologies such as ADSL, ISDN and cable. NewSat will have the capability to deliver high-speed communications to 60% percent of the world's population, providing access to North and South East Asia, the Indian sub-continent, China, the Middle East, Southern Africa and Australia. NewSat has already secured a US $5 million deal, which could be worth US$ 40 million over the life of the contract, with the United Sates Agency for International Development (USAID) for sites across Iraq as part of its post-war enforcement and governance program. NewSat is listed in the Australian stock exchange and has a current market capitalization of Aus $ 100 million.

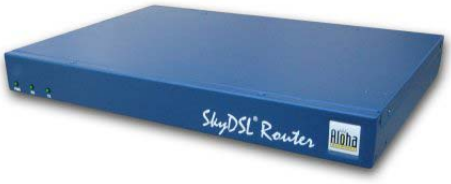
The launch featured an industry conference tackling the theme is on "The Future of Communication." The conference featured presentations from key executives from partners in the NewSat venture which included Mark Dankberg, Chairman and CEO of Viasat; David Price VP of Sales of News Skies Satellites; Pat Matthews, President of SeaTel; Rob Vechi, President of Edge Access; Phil Meyer of Microsoft, among others. The speakers took turns in expressing their bullishness on the satellite services market in general and the NewSat venture in particular.

An ebullient Adrian Ballintine, Multiemedia founder and CEO, who hosted the proceedings, said "You can't beat reality. Two- way satellite is suddenly the number one option for companies and this event has captured all the majors." SM

NEW PRODUCTS

Aloha Networks Introduces New SkyDSL Router

Aloha Networks, Inc is introducing a new, low profile SkyDSL Router at Satellite 2004. Aloha Network's **SkyDSL Router** with integrated **SkyTCP™ Software**, and the **SkyDSL Outdoor Unit** combine to enable the **SkyDSL VSAT Terminal** to consistently provide low-latency, high-speed satellite broadband service.



The **SkyDSL Router** is a custom single-board design using an IBM® PowerPC® processor running embedded Linux, which resides in solid-state flash memory. The satellite modem includes an integrated 10/100 BaseT Ethernet router that supports from one to many users across both wired and wireless LANs. The auto-ranging internal power supply supports a wide range of power amplifiers and dish sizes for either a Ku- or C-band configuration. The SkyDSL Router's 1U-sized enclosure and omni-mounting system makes it ideal for desktop, rack mount, or wall mount installations.

Comtech EF Data Introduces New Advancements for its IP-Centric Satellite Modems

Comtech EF Data Corporation released a software version 1.3.0 for its IP-centric satellite modems, CDM-IP 300L and CDM-IP 550. Included in the release are advanced features that support bandwidth optimization for satellite links, including Payload Compression and enhanced Quality of Service (QoS).

With Payload Compression, the size of data frames is condensed, reducing the satellite bandwidth required to transmit across links.

"When Payload Compression is used in conjunction with header compression, the CDM-IP modems offer maximized link efficiency for the service provider and reduced operating expenditures for the enterprise," said Daniel Enns, senior vice president strategic marketing and business development. SM

EXECUTIVE MOVES

KVH Industries Appoints Two New Vice-Presidents

Jeff Brunner

KVH Industries, Inc. has named two new vice presidents to oversee its mobile satellite communications and defense product operations. Jeff Brunner, formerly KVH's Director of Operations for Fiber Optic Products, has been promoted to Vice President of Operations, Military and Fiber Optic Products, and will oversee KVH's consolidated defense product manufacturing at the company's Tinley Park, Illinois, facility. KVH has also named Jeff Greer to the position of Vice President of Operations, Satellite Products. Mr. Greer will be responsible for manufacturing and operations at the company's two facilities in Middletown, Rhode Island.

Jeff Greer

Mr. Greer has a BA from Grove City College and a MA from Boston University.

Mr. Brunner and Mr. Greer have assumed many of the responsibilities previously held by Mr. S. Joseph Bookataub, KVH's former chief operating officer, who resigned for personal reasons in December 2003.

Susan Eid Appointed VP-Government Relations of Hughes

Susan Eid has been appointed as vice president of Government Relations of Hughes. Eid, who most recently served as a legal advisor to Federal Communications Commission Chairman Michael Powell, will be based in Washington, D.C.
Eid will oversee all regulatory and legislative affairs for Hughes and its operating companies, including DIRECTV.

From August 2000 through August 2003 Ms. Eid served as a senior public policy advisor to FCC Chairman Powell.

Keith Lippert Joins Pivotal Satellite Technologies

Keith Lippert

Keith Lippert joins Natick, Mass.-based satellite service provider Pivotal Satellite Technologies as it's manager, sales and business development.

Pivotal Satellite Technologies provides transportable satellite downlinks, audio-visual solutions, and commercial satellite antenna installation services throughout New England and New York City. SM

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COVER STORY

Satellite Operators Seek New Domain Knowledge

By Bruce Elbert
President
Application Technology Strategy, Inc.

The satellite communications industry depends on satellite operators as much today as it did in 1965 when Early Bird was launched. By taking big investment gambles in spacecraft and launches, they offer power and bandwidth to all manner of user locations and applications. Central to their business model is the management of large capital and operating expense related to running a satellite fleet through various generations of orbital assets and technology. This is not a business for the faint of heart, or for those seeking a quick profit.

When Hughes Aircraft Company of the 1970s concentrated on satellite manufacturing and system integration, it sought customers with deep pockets who either could handle the technical challenges or would allow Hughes to help them reach a level of sufficient maturity to run a satellite system. By 1975, RCA became the first spacecraft manufacturer to move closer to the end user when they launched Satcom 1. Already an international record carrier in the telex and data line business, RCA demonstrated that new revenues could be had by competing with your satellite-buying customer. Satcom 1 helped forge the cable TV industry through delivery of early subscription services such as HBO and SuperStation WTBS. Getting the point of all this, Hughes established the Galaxy System in the mid-1980s and grew the business to over 12 satellites covering primarily the US. Transponder sales not only paid for spacecraft construction but turned some rather attractive profits for the parent, General Motors.

"...A successful business-to-consumer (B2C) satellite operator like DIRECTV learned that a vertical market demands a lot of domain knowledge ..."

The teams that did this was immersed in new thinking about customer needs and solutions, thereby increasing their domain knowledge as they traveled down the entertainment TV vertical market. While at Hughes, I recall participating in a Galaxy management team offsite meeting in 1984; its objective was identifying new businesses and revenues that could be obtained from operating satellites in Geostationary orbit. Among the possibilities was mobile satellite service and direct TV broadcasting. The latter was perhaps the first step toward DIRECTV, a system which demands many satellites to deliver a competitive DTH service. Like RCA Satcom, DIRECTV is one of the great success stories in moving from the top of a vertical market down to the consumer who pays directly for the service. While many of the original management team came from Galaxy, a multitude of others were recruited from consumer industries or grown internally.

Many of the largest satellite operators today are involved in vertical markets in a big way; others have ambitious plans along those lines. A successful business-to-consumer (B2C) satellite operator like DIRECTV learned that a vertical market demands a lot of domain knowledge. Such are the consequences of moving from a business-to-business (B2B) foundation of owning satellites and providing transponders, to a B2C strategy that delivers an integrated service to the end user. A satellite operator "parent" can produce a vertical service "child" that is often bigger and more capital hungry that anyone once thought. Doing this on a small scale, like Hughes did with DirecPC and SES with Astra Return-Channel by

COVER STORY

Satellite, may provide new domain knowledge, but it has not achieved the subscriber results of a BSkyB or DISH network. The latter is a unique satellite operator and vertical market service provider that began as a pure startup backed by an entrepreneur - Charlie Egan in this case. Echostar is now a very big company that has won a sizable segment of the home television business in the US. Moving into another vertical market is just as much a challenge for Echostar as it is for, say, SES Americom with their Americom2Home project. Success is not guaranteed, but developing and nourishing a fertile field to grow domain knowledge is a necessary condition for success.

Image from Boeing Satellite Systems

Some satellite operators prefer to stick to their knitting, a position once advocated by Tom Peters, co-author of the 1980s management book, *In Search of Excellence*. JSAT and PanAmSat are partnered in Horizons 1, a conventional Ku band satellite to serve all of North America. These companies know the B2B business they are in and have found a creative way to reduce their respective risks in activating a new orbit slot at 127 WL. Intelsat is pursuing the B2C broadband market, and has chosen to invest in startup WildBlue to gain entry at a higher plane. This strategy has its risks, but Intelsat isn't betting their company on its complete success. On the other hand, if WildBlue succeeds with their approach of using a cable TV-based system called Data Over Cable Service Interface Specification (DOCSIS), Intelsat has a part of a potentially valuable business.

But what about the national satellite operators found in a variety of countries in Asia and Latin America? Some have already chosen to merge with global operators; others seek to grow outside their particular country markets. One – Shinsat - has decided to lead in its area of coverage with a broadband thrust akin to WildBlue. Shinsat, part of the powerful Shinawatra Group of Thailand, is an experienced player in cellular and DTH markets; thus they have good domain knowledge credentials in voice and video. This provides some of the expertise and perseverance needed to succeed with the challenge of broadband B2C services.

Technology and domain knowledge have defused from the west to the east, where costs are lower, suggesting that one or more of these local initiatives could achieve financial success in three to five years. That will depend on overall economic development in Asia, for example. At the moment, the action is in North America, Europe and perhaps Africa.

The coming years will try the patience of satellite operators and their investors, because rapid growth of vertical B2C markets is far from assured. Each strategy provides the possibility of new revenues using space assets already committed to orbit or under development. On the other hand, satellites provide that vital backbone of television and data transmission in a world where fiber stops at major cities and fails to reach into the home and most offices. This is a good thing for satellite operators with apatite for growth, and the potential is there for an explosion in the broadband market, like cellular in the late 1980s and DTH in the late 1990s. Satellite operators need to facilitate experimentation with innovative applications and increase domain knowledge, while supporting their long-term customers in broadcasting, Internet services, and enterprise and military communications. SM

Bruce Elbert has over 30 years of experience in satellite communications and is the President of Application Technology Strategy, Inc., which assists satellite operators, network providers and users in the public and private sectors. He is an author and educator in these fields, having produced seven titles and conducted technical and business training around the world. During 25 years with Hughes Electronics, he directed major technical projects and led business activities in the U.S. and overseas.He is the author of The Satellite Communication Applications Handbook, second edition (Artech House, 2004). Web site: www.applicationstrategy.com Email: bruce@applicationstrategy.com

FEATURES

Abu Dhabi Goes Global

By Chris Forrester
SatMagazine Editor for Europe, Middle East and Africa

Abu Dhabi TV is spending $5.5m on a vast new 1300 sq m studio, plus another $12m budgeted for fit out, to ready itself for transition towards high-definition transmission. The new studio has 12m clear working height and is now waiting for its massive 'hanger doors' to be supplied this August. Abu Dhabi already operates 8 studios including Discreet Logic-driven 'virtual' 3D and 2D facilities.

Viewers around the world can already see Abu Dhabi's core entertainment channel, carried as part of Globecast's 'World TV' distribution package, and Abu Dhabi is a member of the Arab States Broadcasting Union (ASBU) consortium of Arab-language broadcasters seeking to deliver a bundle of 10 channels to every major region of the world. A contract is pending and it is understood that Globecast is the favoured bidder.

The expansion has come as part of a deliberate policy to capitalise on the images seen by viewers during the allied attack on Baghdad during the opening hours of last year's Iraqi campaign. Director of Abu Dhabi TV is Ali Al-Hamed: "We delivered credibility. How do we capitalise on this? First, remember that the world's knowledge of us is now massive. Seemingly everyone knows Abu Dhabi TV." Asked how the station had managed to come up with the best images, he replied: "Everyone, you will remember, knew the war was coming so we were able to prepare during the six months of build up. We had a choice: we could either stay at home and buy footage in from the news agencies, or we could gather the material ourselves. We decided that we wanted to be a primary source of news, and we were blessed by having the Number One beachfront property in terms of camera positions. We had the best camera angles."

Abu Dhabi TV's Ali Al-Ahmed

Al-Ahmed says the expansion overseas is a natural move in the 21st Century, especially with distribution costs being relatively inexpensive, compared to the overall cost of running a 10-studio complex and three broadcast channels. "If you asked whether there would be Arab viewers living in these overseas markets, the answer is yes. But more than this we know that there is recognition of our message and what we are doing. We believe we are a source of news. We do not want simply repeat the news flow that's coming from APTN or Reuters, but we want to be

Abu Dhabi's Global footprint

- Hot Bird for Europe/Middle-East
- Eurobird for the UK (BSkyB)
- Telstar 5 for North America
- Hispasat 1C for South America
- NSS7 for Africa
- Optus B3 for Australia / New-Zealand

Data: Globecast

responsible for our own newsflow, presenting our viewer wherever they are in world what our opinion is. It is absolutely not propaganda but is a view that we want the world to see."

As to the prospects for high-definition in the Middle East, Mustafa Ishaq, technical advisor to Emirates Media, which owns Abu Dhabi TV, is emphatic: "The problems for us broadcasters is that we have to ask whether it is going to be a blessing or a curse. HD, in my view, will be a blessing for viewers who will love to see a higher quality signal. Remember how it used to be in satellite viewing, with terrible analogue sparklies? Well, digital got rid of those but viewers are ready for the next step. They move their rooftop dishes to get the best signals, and programming. Now they like to have a single small dish that's fixed. It is easy to imagine the impact a big variety gala beamed from Beirut, or Cairo, or here in Dubai, might have in HD with surround sound. It is the difference between black and white and colour. Many of our programme suppliers are now recording in HD, and our first step was to upgrade our equipment to 16:9 widescreen. Our new main production studio, under construction, is a likely candidate for to be equipped with HD. It is all a matter of dollars and cents, of course. Our directors have seen some working papers and they'll be making a decision soon. You cannot step back in this industry. The logical next step for us is HD. When equipping a new facility the extra cost is not that much. On the viewing side we can all see the plasmas are there, LCD's are there, prices are tumbling and they are now affordable for ordinary people, who are buying. It is up to us to supply some content."

As to the 10-channel bundle, Ishaq gave some additional background: "With ASBU we will take ten channels worldwide, and we will do this very quickly. People's mobility is so much different today, they expect to see their channels from home wherever they are in the globe."

"Broadcasting is not cheap, everyone knows that," added Ishaq. "But our costs here are significant, and adding a little transponder space around the world is not a major addition to that overall budget. Transponder costs are only a fraction of what they were five and ten years ago. If we are going to pay for space on, say, ten digital satellites all over the world to get our signals in front of a maximum audience, then this is probably still less than we were paying ten years ago for one analogue channel on one satellite locally. It is truly unbelievable that costs should be so much less, and it allows us to develop this concept. If it means that our local revenues must subsidise a modest income overseas then it is an acceptable subsidy. However, we also tell our programme-makers continually that they must look across the border. It also means that we have to legally buy the rights for international material, sport in particular." SM

"Why Globecast?"

According to Mustafa Ishaq, technical advisor to Emirates Media "That's easy. There are only a few suppliers who could give us this sort of response, we know that. To be frank, when we started there was two potential suppliers and then it came down to price. And Globecast was not the cheapest, but there was something extra that Globecast and France Telecom could offer and that was speed of completion. There was one other factor, and that is that Globecast is going to be around for a long time. This is important to us. The contract was detailed, and took a little discussion, but continuity was very important to us. Our relationship is excellent, better than ever, in fact. They have not let us down and the partnership is very strong."

"The upcoming [10 channel] contract is just as important. When it was first suggested we invited Globecast to look at the tender but it also went out to four others. And yet it is Globecast which has given better delivery, better satellites and even better prices! The logic for us in the ASBU plan is inescapable. Having a group of 10 channels is much less expensive than 10 channels having single feeds going everywhere. I hope the 10 channels will grow over the next 10 years."

FEATURES

The Secrets of Broadband-on-Demand Revealed

By John Puetz

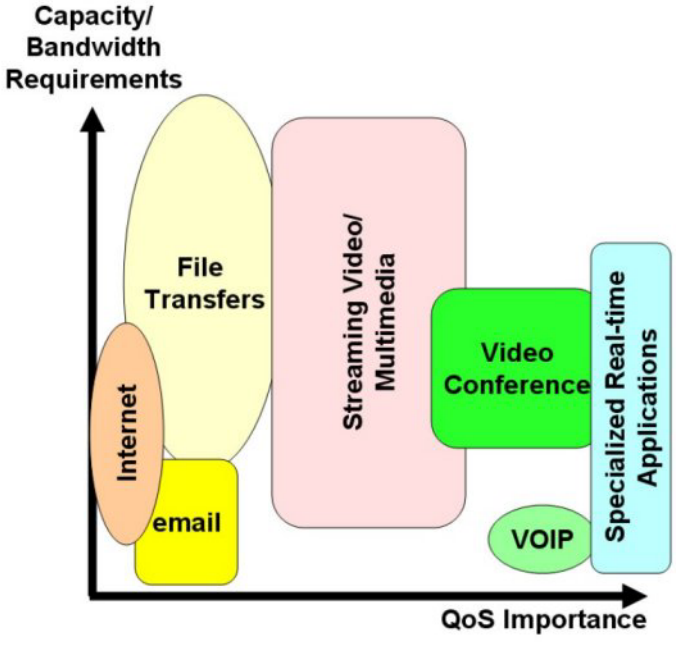
As the third and fourth generation bandwidth-on-demand (BOD) VSAT systems rollout, service providers and their corporate customers still seem to be mystified by the technology and the accompanying service offerings. What are the key differences between systems and how do service providers select between them? As an end-user, how do I know that the service I'm buying will meet my needs?

In the next few minutes, we'll look at revealing the essentials of broadband-on-demand offerings and distilling down the key ingredients of choice.

Not all needs are equal

In providing a service offering or in purchasing a service, the most fundamental concern is quantifying the end-user's requirements. While there are many considerations to make, the most important can be distilled down to these three:

- How much capacity is needed?
- How important is quality-of-service (QoS)?
- How much am I willing to pay?



These three are tightly interrelated; the better the QoS and higher the capacity, the more the service will cost. As illustrated in the diagram, the end-user's applications will determine the capacity and QoS requirements. If Internet access is all that desired, then service quality is not very important and service bandwidth needs are moderate. However, voice, video conferencing and specialized real-time applications require a high level of service quality (low latency, consistent throughput and reliable connections). And for service providers, customer requirements vary by industry segment (e.g., financial, oil & gas, disaster recovery, construction, government, etc).

From a service provider's perspective, select a broadband VSAT system platform that delivers:

- Sufficient capacity for both in-bound and out-bound directions and scales easily
- Integrated quality-of-service (QoS) mechanisms/tools that support traffic prioritization, integrated protocol support & routing, and capacity load balancing
- Attractive economics; evaluate cost of infrastructure across expected client base (capital costs), remote site implementation costs and operational costs (bandwidth efficiency, load-balancing/capacity management and maintenance)
- Vendor stability and reputation

The power of sharing

While there will likely always be a need for the traditional fixed-rate leased-line type services in certain industries and applications, most service providers are embracing the power of sharing network capacity across customers using bandwidth-on-demand VSAT

systems. End-users are warming up to the concept as well, especially as they become aware of the economic and operational benefits.

With traditional leased-line connections, the size of the data pipes (e.g., data rate) is fixed, thereby requiring the data/voice capacity to be sized for the expected peak loading, to ensure the desired rate of service, throughput availability and quality of service (QoS). Once the data capacity is selected and implemented using SCPC services, the data rate does not change. If traffic requirements exceed the data rate, then the traffic is not accommodated and performance suffers. Likewise, if traffic requirements are considerably less, then capacity is unused.

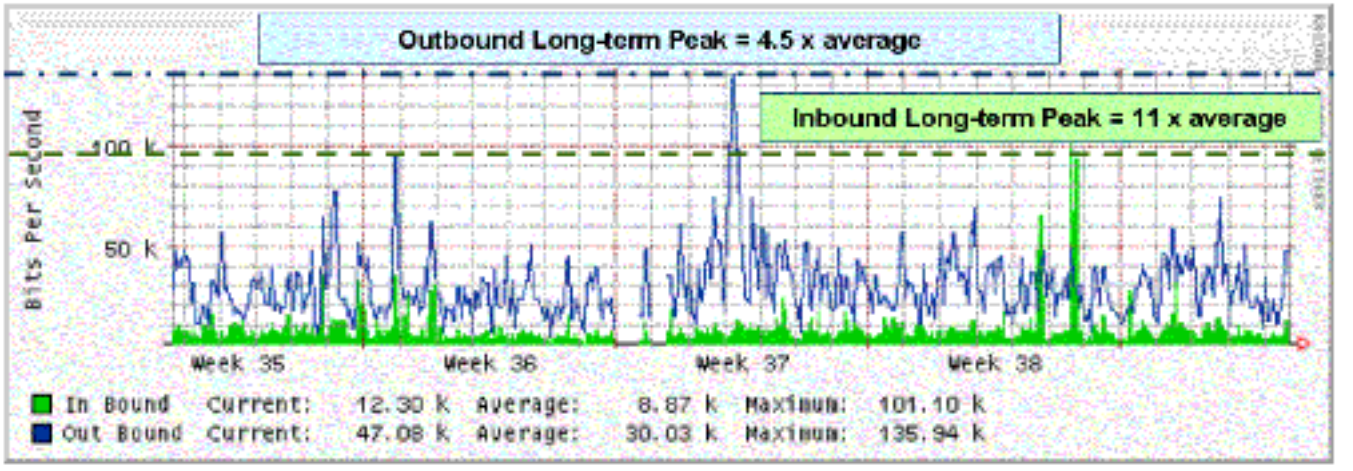
Typically, end-users have dozens of sites, each with varying traffic capacity needs. Using a bandwidth-on-demand system, the unused capacity can be applied to locations that need additional capacity. This capacity allocation occurs automatically and typically every 2 to 6 seconds, depending on the system. As network capacity is shared amongst more locations, overall efficiency is improved even more, and the number of sites that experience capacity bottlenecks is further reduced.

Let's take a real-world enterprise example, where there is a variety of data applications and voice/fax usage. Traffic analysis shows that over a five week period, the average (24 hour/day) capacity requirement is 12 Kbps (remote-to-hub) and 47 Kbps (hub-to-remote). Peak traffic conditions however where substantially higher, with hub-to-remote peaks 4.5 times the daily average and remote-to-hub 11 times average.

In my studies of various industry segments, it's not unusual to find intraday peaks of 20-to-50 times the daily average throughput for relatively brief periods of time (5 to 30 minute intervals). Furthermore, the busy-hour average is typically 2 to 4 times the traditionally measured 24-hour average, and considerably less than

the daily peak average. These types of traffic patterns can benefit significantly with BOD systems.

- Is the capacity shared with other end-users? Using what oversubscription rate?



The bottom-line benefit to end-users of a well-managed broadband-on-demand system—fewer performance bottlenecks, better service and lower service costs. For throughput sensitive applications like voice/VoIP, video conferencing and other real-time applications, the delivered quality-of-service is extremely important. Techniques for supporting real-time applications include a minimum throughput mechanism (e.g., committed information rate or CIR), prioritized queuing and transport (e.g., DiffServ, MPLS, etc.) and traffic shaping.

Delivered service offerings—not all are equal

While there a hundreds of service providers around the world, there are likely only a handful that serve your particular locale or industry segment from an end-users perspective. However, selecting a service provider can still be difficult as there are many ways of packaging and delivering broadband-on-demand services. From a buyer's perspective, you may find the following evaluation criteria useful in comparing your service vendors:

- What is the delivered capacity per site? (maximum and minimum; is there a guaranteed throughput, e.g., CIR?)
- How often is the capacity adjusted?
- How is quality-of-service (QoS) implemented, managed and audited? (per site and across your network of sites)
- Is there a service level agreement (SLA) included? What are the provisions? Are there credits if the SLA/QoS is not met?
- Do they have other customers that have similar needs and traffic profiles? Get references and contact them.

The old adage "you get what you pay for" is often times true. Shop around, but resist the temptation of purchasing services from the lowest bidder, especially if they are considerably less than the others. The better service providers may cost more, but you'll also have a piece of mind that when you call them, they will answer the phone! SM

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FEATURES

20 million XM Subs by 2010

By Chris Forrester.

In January the USA's two satellite radio stocks had a little downward turn. Sirius dropped its monthly subs price, and the threat of tougher competition affected XM Satellite's trading price. But February's news of Q4 numbers from XM should once and for all dispel any notion that this satellite-based technology has any real problems. The fact is that satellite radio is selling like gangbusters in the USA. Market-leading XM Satellite Radio and rival Sirius used the giant Las Vegas Consumer Electronics Show (CES) to report more than healthy sales figures for their all-important pre-Christmas sales, and the latest year-end data confirms this. XM confirmed on Feb 11 that it finished 2003 with 1.36m subscribers or 431K net additions for the year. Moreover, XM has already added 140K more subscribers in 2004, taking its total up to 1.5m.

But here's the really good news. XM said in February – and the first time on the record – that it now expects to sign up around 20m subscribers by 2010, some 30% up on previous market guidance.

In addition, XM in January announced some new gizmo-features that make their in-car radios even more useful devices. By about now Canada's broadcasting authorities were also expected to confirm whether any other players were interested in Canada's DARS prospects. Both XM and Sirius have already tied up with local players. XM is linked with Toronto-based Canadian Satellite Radio (a company controlled by local fast-food entrepreneur John Bitove). Sirius is working with national pubcaster CBC.

But perhaps the biggest surprise of January's CES was that XM would drop its 4-5 minutes per hour of advertising spots effective February 1. Sirius has always been ad-free. XM carried advertising on 35 channels out of 70.

XM's Q4 numbers really were spectacular, and significantly outperforming all market expectations. Q4 turned in 430,000 net additions, against forecasts of 295,000-330,000. XM's market-share of new DARS subs is around currently around 80%, and this 4-to-1 sales ratio was confirmed by Sirius, which reported Q4 net sales stood at 111,000 taking its year-end total to 261,000 active subscribers. XM finished the year with 1.36m subs (ahead of forecast 1.225m).

It is now clear that XM is steaming ahead of its rival and expects to end 2004 with 2.8m subs, again beating most market expectations by around 200,000 units. If XM hits these numbers – and the market now firmly expects it – then it will go full cash-flow break-even in 1H/2005 which is slightly later than initially expected (Nov-Dec this year). Indeed, the delay in break-even is caused by that most beautiful of problems, selling too many receivers each with their associated

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Subscriber Acquisition Cost (SAC) which needs financing.

On March 1 XM added 'always on' traffic data to its broadcasts, with 15 out of 21 planned channels going live. Drivers in New York City, Los Angeles, Washington, D.C., Dallas-Ft. Worth, Chicago, Houston, Detroit, Philadelphia, Phoenix, San Francisco, Tampa-St. Petersburg, Orlando, Baltimore, Pittsburgh, and St. Louis, will get the first set of transmissions. Boston, Atlanta, Miami-Ft. Lauderdale, Minneapolis-St. Paul, Seattle, and San Diego will be introduced later this year. This news has not come without its own controversy, with the powerful National Association of Broadcasters (NAB) stating that neither XM nor Sirius is licensed for such data-casts. XM reportedly agreed that it could not transmit local information from its network of terrestrial repeaters, but within their FCC licenses there was no mention of any such prohibition in terms of transmissions from XM's satellites.

As to the dropping of advertising, analyst Bob Peck of Bear Stearns suggests that negative customer feed-back has prompted the decision. "This could put more pressure on Sirius, as one of its main consumer selling points was that it didn't have commercials, while XM did. One of the major concerns from this change in format for XM is the advertising revenue forecasts in the model. The company has stated that it doesn't expect its prior advertising projections to change substantially, as the advertisements will be moved to the newly created traffic channels."

The extra subs numbers predicted for 2004 also seem to be coming with lower-than-expected Subscriber Acquisition Costs (SAC). XM, in its SEC 8-K filing, as well as guidance given to analysts, suggests that SAC for 2004 is dropping on a per-subscriber basis at a rate "faster than expected" says Peck.

XM has been famously conservative in its expectations to date and seems to like telling Wall

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DARS to 2005*

	Dec 2003(A)	Dec 2004(F)
XM Radio	1.36m	2.8m
Sirius	0.26m	0.86

Data: Bear Stearns

Street that it its besting its own guidance. Bear Stearns' Peck agrees, at least as far as 2004's forecast 2.8m subs is concerned. "We think this may still be conservative and would not be surprised if the company finishes the year with north of 3M subscribers. Of course, this would be largely driven by the impending OEM announcements from GM, Honda, and others on their level of participation – we think this could present further upside," says Peck in a report.

There is one major uncertainty that may affect XM's own internal cash-demands, and that's insurance for one of its Boeing-built satellites which has problems. XM is discussing compensation of some $400m for the damaged bird, and if it receives this payout – says Peck – this year then it will meet its finance targets. If the payout is delayed until 2005 then XM might have to borrow to cover the funding gap. "However, we think that the chances of the company not getting any of its claim is minimal, as the satellite anomalies were insured, the satellite manufacturer (Boeing) admits to the defect, and as other companies with the exact same anomaly received insurance payments on their claim (Thuraya). We expect XM to secure ~50% of its claim in 2H 2004. This would leave the company fully funded," added Peck.

Bear Stearns has given XM's shares an "outperform" rating and a target price of $30, stating: "In addition, we continue to see a stream of more catalysts that could come out of XM over the next several months that should help drive the company's stock to our target. Of particular importance in our opinion, are the impending announcements from OEMs on the number of cars they will install with XM radio for the 2005 model (which come out in Sept 2004). We would look for GM and Honda to give updates on their current plans. In addition, Toyota has long been believed to be considering factory installations of satellite radio – this would be a major catalyst for XM should Toyota announce any plans to install XM radios in the factory."

However, if XM is winning the battle in the market-place, then there has to be a loser and it seems XM's sales success is coming at Sirius' expense. Sirius, according to Bear Stearns, will sell less than its forecast 750,000 units in 2004. Peck is adjusting his bank's forecast down to 600,000 net units "and well down on past guidance of 1 million" units. Peck adds that Sirius used the Las Vegas show to announce a host of new products and programming today, including: 10 new channels, wireless in home networking, live video options, new portable boom box, and surround sound capability.
that 7,000 Radio Shack stores would start selling the kit. That's a coup, and if each store sold just one unit a week then Sirius might add 364,000 sales from one source. Watch this space. SM

London-based Chris Forrester, a well-known broadcasting journalist is the Editor for Europe, Middle East and Africa for SATMAGAZINE. He reports on all aspects of the industry with special emphasis on content, the business of television and emerging technologies. He has a unique knowledge of the Middle East broadcasting scene, having interviewed at length the operational heads of each of the main channels and pay-TV platforms. He can be reached at chrisforrester@compuserve.com

EXECUTIVE SPOTLIGHT

Interview with Hellas Sat CEO Christodoulos A. Protopapas

Hellas Sat has issued a RFI for its second satellite, to be co-located at 39 deg East. Hellas Sat Consortium's CEO Christodoulos Protopapas, speaking exclusively to *Satmagazine*'s EMEA Editor, Chris Forrester at February's Dubai CabSat show, said the company's first satellite (somewhat confusingly called Hellas-Sat 2 and launched last May) is now 20% full, and is 100% full for this summer's Athens Olympic Games. Hellas-3 will provide redundancy for H-2 as well as add extra capacity, including additional steerable beams.

Hellas-2 is an Astrium-built triple-axis craft (Eurostar E2000 bus) with 30 x 36Mhz transponders and generating at least 52 dBW power levels over Europe. It was launched on an Atlas rocket from the Cape and has a design lifetime of 15 years. Hellas' owners are a consortium led by Greek telco OTE and including Telesat Canada. Protopapas says that while the final configuration of H-3 is not yet agreed, it will provide a back-up role to H-2's Ku-band channels and add around 12 active transponders over the region as well as additional steerable spot-beams to fresh markets. Protopapas says that one option under consideration includes adding C-band capacity.

H-2 went 'live' last September. Protopapas says transponder leases have sold faster than anticipated in the original business plan, helped now by three DTH mini-platforms on the satellite. "One addresses Bulgaria, another Greece and the third is an experimental transmission for Italy beaming up from Sicily. Additionally we have VSAT hubs, occasional use and telecom clients. By the end of this year we expect to have 50% sold. TV is our primary target, helped by our power levels." Protopapas says by the end of 2005 Hellas is on target to achieve a 50-60% fill rate.

Protopapas was reluctant to give more information regarding the upcoming RFI given, he said, that Hellas wanted the companies concerned to commit to the usual Non-Disclosure Agreements ahead of detailed discussions. "We expect to issue the RFI by the end of this week," he said. "We have always been optimistic about our sales prospects," added Protopapas, talking about the industry's past scepticism over the need for H-2. "They did not see Hellas as having an international appeal. They saw us performing purely as a Greek-Cyprus craft. While the Greek-Cyprus market was always going to have some appeal, it could never fill a satellite, absorbing perhaps 3 or 4 transponders or thereabouts. We designed Hellas to be an international bird, and on May 1st – with Cyprus' accession into the Europe Community - this places us firmly at the heart of Europe, and we see Cyprus playing a key role between Europe and the Middle East, the way it has always done. We can have relay stations in Cyprus helping connectivity between the two regions and further afield."

Hellas Sat CEO Christodoulos A. Protopapas

"It is not our intention to compete with the likes of Eutelsat. We are tiny in comparison, and do not seek major expansion," said Protopapas. I do not really understand why the big players see us as a threat. Our market research always predicted that our local clients would take perhaps 6 transponders, so that is hardly attractive to the big operators. We have also been true with prices, our prices are competitive helped by our buying the satellite and its launcher at very good prices, and we are getting those benefits now. We are also a small organisation with low overheads. We can

EXECUTIVE SPOTLIGHT

afford to be competitive to clients." Like just about every other satellite operator Protopapas sees South Africa and India as representing tangible opportunities for Hellas' spot beams. The planned steerable beam over the Middle East has now been refocused towards Europe. "We can now easily connect Munich with Tehran and Iran," he added.

"...Many operators are sustaining themselves through low prices..."

Protopapas recognises that Hellas is helped by its major shareholder OTE's existing telecom presence in most Eastern European countries (Romania, Bulgaria, Albania, Serbia and elsewhere). "These areas recognise Greece's expertise. We have been active in the region for many years, and Cyprus plays a similar role in the Middle East where many companies trading with the Arab world use Cyprus as a base. It is a neutral country, and recognised as such. We will use this political advantage to promote Hellas."

One of the questions currently troubling the industry is transponder lease pricing, with operators complaining of ever-falling prices. Protopapas says Hellas is not part of this under-cutting trend. "Many operators are sustaining themselves through these low prices. We can afford low prices being a small operator, but the problem in this area is the battle between Eutelsat and New Skies, which want larger slices of the market. They might be successful in winning some new business which has a temporary effect in terms of revenues raised but in the longer run they are not earning enough to replace their satellites. The same applies to us. If we win business at any price we will be harming our own ability to re-finance future craft. For us we are working hard to establish new services, and to create demand for our bandwidth. We see good prospects in PPV and DVB-RCS activity. These will, we think, boost the market. Hellas does not even attempt to match New Skies or Eutelsat. We have had clients approach us, asking for us to match this or that competing price. We have said 'go to that supplier' because we have a powerful satellite with strong EIRP coverage, and better connectivity." He added that occasional use traffic for sport and news was building well. "The BBC is a regular customer, as is British Telecom. Our signal strength helps, and we have good bookings for the upcoming 2004 European soccer championships." SM

VIEWPOINT

VoIP and the Future of Satellite Communications

By Errol Olivier
President, CapRock Communications

You may remember a few years ago when everyone first started talking seriously about voice over IP (VoIP). Several companies claimed that the world was in for another technological revolution and that paradigms were going to start shifting dramatically. You may also remember that technological revolutions were a dime a dozen at the time, and the United States was about to experience a tech crash and the ensuing aftermath. VoIP, like many young technologies, had to be put on the backburner until the market was ready for it. Now, that market is finally beginning to materialize, and VoIP is poised, once again, to take the communications world by storm.

AT&T plans to make available a consumer VoIP offering for customers in the top 100 markets during the first quarter of 2004, and Verizon has similar VoIP plans for the second quarter. Vonage already has been delivering consumer and business VoIP services successfully and continues to gain subscribers on a regular basis. In the satellite communications industry, VoIP has been quietly but widely available in some format for the past two years.

For the remote ocean communications sector of the satellite communications industry, the news about VoIP and IP communication has traveled slowly. Most ship-to-ship and ship-to-shore (or remote rig-to-shore) communication has operated unchanged for several years. That's not all that surprising. For workers centrally from a network operations center (NOC). The end user isn't forced to constantly purchase new equipment or new software applications. All of the new services, in addition to any moves/adds/changes, are provisioned from the NOC. This creates dramatic cost savings and a pleasant reduction in hassle for everyone involved. On land, such efficiencies eliminate truck roll – but on water, the truck roll (which really involves helicopters and boats) is far more costly. Remote provisioning takes care of that issue.

In addition to the basic services and efficiencies, advances in IP networking are progressing at phenomenal rates. A limited number of the new IP networks even feature the much-talked-about plug-and-play capabilities. With plug-and-play, users are not tied down to a single location. A user with a laptop on the network could leave the central office on the mainland, plug the laptop into the network on a rig or vessel and be instantly connected to the VPN. The network would recognize the user, provide the user access to all authorized services and even automatically route phone calls to wherever the user is located.

Because the network enables mobility, when a company and its personnel transfer to a different rig or remote location, the VPN goes with them, and their phone numbers and IP addresses stay the same. The IP network is expressly configured to make life easy for the user. They are not required to change or reconfigure their settings at each location as they go from site to site.

All satellite communications providers do not offer these advanced features, but virtually every offshore provider is offering some form of IP communications. Even so, experts in the industry believe it could be several years before IP becomes the de facto standard for offshore communications. In the meantime, those companies interested in IP via satellite are encouraged to research the technology and look for providers with a strong track record of reliability and technological innovation. SM

Errol Olivier is president of CapRock Communications, which provides communications services to extreme locations. CapRock is the dominant satellite communications provider for the drilling industry. By offering complete managed telecommunications solutions in the world's harshest and most hard-to-reach environments, CapRock has earned a reputation as the one to call when reliability matters.

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FINANCIAL SNAPSHOT

New Skies Satellites

By Chris Forrester

New Skies say they will start the ball rolling on another share buy-back program equal to 10% of the issued share capital. Speaking at its Feb 11 results announcement CEO Dan Goldberg also said their Q4 (and full year) numbers were in line with expectations. Guidance for 2004 is that numbers will be in line with 2003 due to market conditions. "Management continues to deliver on the fundamentals of the business in what continues to be a challenging FSS environment," said analyst Bob Peck at Bear Stearns.

New Skies 2003 Numbers
US$ millions (except per share amounts)

	3 months ended December 31		Year ended December 31	
	2003	2002	2003	2002
Revenues	$54.1	$50.8	$214.9	$200.5
Net income (loss)	2.4	4.4	11.8	(4.6)
EBITDA (adjusted)	29.9	27.8	119.6	110.3
EBITDA (adjusted) margin	55%	55%	56%	55%
Basic and diluted earnings per share	0.02	0.03	0.10	(0.04)
Free cash flow	3.7	(25.8)	65.7	(119.4)

Goldberg told analysts: "We expect revenue, EBITDA and net income in 2004 to be by and large consistent with our 2003 results. Further, assuming most of the remaining milestone payments associated with our NSS-8 satellite come due in early 2005, we anticipate another year of positive free cash flow, which we expect will be somewhere in the range of $30m-$50m."

But if that's the upside, the downside for New Skies is a story of falling utilisation rates (fleet fill rate is 49%), albeit not helped with the launch late last year of NSS-5 in the POR where transponder rates are still notoriously sluggish. Goldberg says NSS average transponder rentals stand at $1.3m per annum, although Q4/2003 contracts were averaging just $1.2m.

Revenues for 2003 rose 7%, or $14.4m, to $214.9m, compared to $200.5m in 2002. Revenues for the three-month period ended December 31, 2003 were $54.1m, an increase of $3.3m, or 6%, compared to $50.8m for the same period in 2002. SM