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April 2006 | Worldwide Satellite Magazine | Vol. 4 No. 1

Content Management and Distribution

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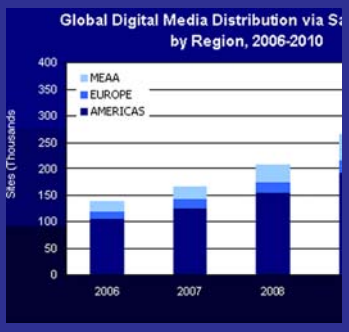


by Christopher Baugh

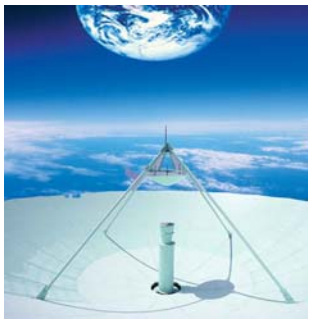
Digital media distribution to businesses is becoming a key adjacent opportunity for satellite operators and vendors to add valuable revenue sources.

By Chris Forrester

The recent failure of the launch of an Arabsat satellite and other developments makes this the best of times or the worse of times for the Middle Eastern satellite market.

by Bernardo Schneiderman

Satellite mobile solutions may take the lucrative consumer market .



By Peter Galace

According to the WTA™s Teleport Benchmarks survey of satellite service providers, the enterprise market provides 10-12% of service revenues to the average company. However, that percentage has changed little over the past decade, despite the fact that enterprise networking has grown explosively.

REGULAR DEPARTMENTS

READER SURVEY

Your opinion matters! **Complete the survey below, and return via email, fax, or mail.**

You may also fill in this survey online – Please - Click Here

You will be entered into our drawing for a free selection of the best wine in our area. The winner will be posted in the July/August issue of SatMagazine.com.

Information about You:	**And your Company:**	**We need your Opinion:**
Name: Job Title: Company: E-Mail: Your Favorite Varietal? ❍ Cabernet Sauvigon ❍ Zinfandel ❍ Merlot ❍ Chardonney Other: _____	What best describes your firm's business: ❑ Broadband Services ❑ End User ❑ Broadcasting/Cable ❑ Satellite Industry *(specify)* ❍ Operator/carrier ❍ Transmission services ❍ Telecommunications Carrier ❍ Satellite Equipment Manufacturer ❍ Satellite Equipment Distributor/Dealer ❑ Business Information Services ❑ Government Agency	How often do you read SatMagazine? What do you like best about SatMagazine? What could we do to enhance SatMagazine for you personally? What feature articles would you like to see in future issues?

Click Here – to fill in this survey online.

Or please fax this form back now to our customer services department at (707) 939-9235
or post to: SatNews Publishers, 800 Siesta Way, Sonoma, CA 95476

CALENDAR OF EVENTS 2006

APRIL

April 9-11, Atlanta, GA
NCTA The National Show
Tel: 202-775-3669 / Fax: 202-775-3692
Email: thenationalshow@ncta.com
Website: www.thenationalshow.com

April 11 - 14, Istanbul, Turkey
5th International Caspian Telecoms Conference
Maggie Cheung
Tel : + 44 20 7596 5221 / 5000
Fax : + 44 20 7596 5208 / 5117
Email : Maggie.Cheung@ite-exhibitions.com
Website: www.caspiantelecoms.com/en/2006

April 18 - 20, Washington, DC
Military Satellites 2006
Tel: 800 882 8684 or +973 256 0211
Fax: + 973 256 0205
Email: info@idga.org
Website: www.idga.org/na-2298-02

April 22-27, Las Vegas, Nevada
NAB 2006
Tel: +45 3815 3332 / 202-429-5300 /
Fax: 202-429-4199
Email: nab@nab.org
Website: http://www.nabshow.com/

MAY

May 4-5, Copenhagen Business School, Copenhagen, Denmark
European Satellite Cultures Conference
Julie Uldam
Tel: +45 3815 3332
Email: esc@cbs.dk
Website: www.cbs.dk/esc

JUNE

June 12-14, Washington, D.C., USA
MILSAT 2006
Warren Gollop
Tel: +1-246-417-5328
Fax: +1-888-844-4901
Email: defense@marcusevansbb.com
Website: www.marcusevansbb.com/MILSAT

June 13-15, San Diego Hilton Resort at Mission Bay, San Diego, CA, USA
ISCe Conference and Expo
Hannover Fairs USA
Phone: +1 310 410 9191 / Fax: +1 310 410 9396
Email: info@isce.com / Website: www.isce.com

June 19-23, Singapore
BroadcastAsia 2006
Tel: +65 6738 6776 / Fax: +65 6732 6776
Email: events@sesallworld.com
Website: www.broadcast-asia.com/index2.htm

June 20-23m, Singapore
CommunicAsia 2006
Tel: +65 6738 6776 / Fax: +65 6732 6776
Email: min@sesallworld.com
Website: www.communicasia.com

JULY

July 11-13, Stockholm, Sweden
2006 SUIRG Interference Conference/Meeting
Robert W. Ames Jr.
Tel: +1-941-575-1277 / Fax: +1-941-575-7048
Email: bobames@suirg.org / Website: www.suirg.org

AUGUST

Aug. 22-26, Beijing, China
BIRTV 2006
Tel: +86 10 86093207 or 86092783 ext. 801
Fax: +86 10 86093790 / Email: birtv@birtv.com
Website: www.birtv.com/english/about.asp

SEPTEMBER

Sept. 7-11, RAI Convention Centre, Amsterdam
IBC2006 Conference
Tel: +44 (0)20 7611 7500 / Fax: +44 (0)20 7611 7530
Email: show@ibc.org / Website: www.ibc.org/

Sept. 26-28, **Hotel Lotte World, Seoul, Korea**
APSCC 2006 Satellite Conference and Exhibition
Tel: +82 2 508 4883~5 / Fax: +82 2 568 8593
Email: info@apscc.or.kr
Website: www.apscc.or.kr/event/apscc2006.asp

FEATURED EVENT

ISCe 2006: Charting the Wave of Entertainment and Digital Content Applications

Two Forums Bringing Together content providers, service providers and equipment manufacturers in the booming satellite service marketplace

ISCe Conference and Expo 2006

June 13-15, 2006, San Diego Hilton Resort at Misson Bay, California

Satellite technology continues to open up new markets and offer new intertwined hybrid applications for both businesses and consumers. Mobile applications, and the markets that will use these applications, bring together satellite and terrestrial services into one service offering. The sessions in these two forums will explore the present and future business cases for mobile video, DBS, satellite radio and mobile broadband. Special emphasis will be on highlighting the successful applications of such hybrids.

These issues will be covered extensively in two forums at ISCe 2006: The Carmel Group's Five Burning Questions: Cable, Satellite and Telco Entertainment Forum and the Digital Content and Mobile Forum. Participants at ISCe will learn ways to recoup the investments that they have made in these innovative new applications by interacting directly with the successful CEOs and top executive leaders who already have mastered these applications, according to conference chairman, David Bross.

Among thefeatured speakers in the Entertainment Forum includes from left Josh Goldman, CEO-Akimbo; Jim Ramo, CEO,-Movielink; Blake Krikorian, co-founder of Sling Media; and Christine Heckart, Generl Manager, Marketing, Microsoft TV.

"The focus this year is on satellite, of course, " said Jimmy Schaeffler, Chairman of the Carmel Group. "However, we are also reaching into the spaces where satellite is a key participant, and which in the past may have been taken for granted, such as content, IPTV, and broadband, as well as mobile services and advanced services, all tied closely to multichannel operators such as cable, telephone and Direct Broadcast Satellite (DBS). Then there is our hallmark CEO panel, which already has drawn CEO's such as MovieBeam's Tres Izzard and MovieLink's Jim Ramo," he added.

The Carmel Group's highly successful Five Burning Questions conference, which covered the DBS/Entertainment business now on it's 11th year, merged its program with ISCe two years ago. The partnership between ISCe and the Carmel Group has been working out well, bringing in another important dimension to ISCe's scope. "Working with HFUSA and the ISCe management has been the most positive partnership The Carmel Group has ever entered into. There is a solidness, trust and follow-through with these folks that is all-to-rate in this business," said Schaeffler..

"There are but a few cutting edge conferences every year, where top-level execs walk away feeling they've gotten their money's worth. This is one of them, but in a special way: It is much smaller and more intimate than a CES, NAB or NCTA. We can't count the number of people who, when we recollect with them, they mention that so-and-so deal was fist talked about (or sealed) at one of The Carmel Group's 5 Burning Questions forums. Plus, HFUSA/ISCe is on the verge of growing a national and international franchise, whereby "getting in on the ground floor" will provide substantial future advantages," added Schaffler.

The Entertainment and Digital Content Forums at ISCe are a value-laden addition to the ISCe program which covers a comprehensive range of topics relevant to the satellite industry. Moreover, as David Bross said: "Attendees at both the Carmel Group's Cable, Satellite and Telco Entertainment Forum and the Digital Content and Mobile Forum will learn ways to recoup the investments that they have made in these innovative new applications by interacting directly with the successful CEOs and top executive leaders who already have mastered these applications." SM

FEATURED EVENT

ISCE Conference Program At-a-Glance

	Tuesday, June 13, 2006				Wednesday, June 14, 2006		Thursday, June 15, 2006	
	GVF Wireless Workshop	WTA "Translating the Trends" Workshop	Space & Security Forum	Cable, Satellite & Telco Entertainment Forum	Digital Content & Mobile Forum	Military & Government Requirements Forum	Retail & Business Enterprise Forum	Global Business, Policy & Financial Outlook Forum
7:00am								
					VIP Breakfast (by Invitation Only) (7:30 am - 8:30 am)			
8:00am					SIA "State of the Industry" Report (8:30 - 8:45 am)		VIP Breakfast (by Invitation Only) (8:00 am - 9:00 am)	
9:00am	Welcome: SPAWAR Commander Keynote: Maj. Gen. James Armor, Director - NSSO			Content Innovation: Looking Beyond (Mod: J. Schaeffler)	Joint Plenary Session - with AIAA (8:45 am - 10:15 am) (Mod: L. Rains)		CTO/CIO Plenary Session (9:00 am - 10:30 am) (Mod: D. Bross)	
10:00am	Coffee Break in Exhibit Hall (10:00 - 10:30am)				Coffee Break in Exhibit Hall (10:15 - 10:45am)		Coffee Break in Exhibit Hall (10:30 am - 11:00 am)	
11:00am	Hybrid Wireless: Convergence Cash Cow?	ISCe Product Demo Program	Transforming Space & Integrating the Battlefield (Mod: G. Tattini)	IPTV Strategies for Success! (Mod: J. Schaeffler)	Satellite Mobile Entertainment and Data (Mod: M. Dankberg)	DoD Network-centric Operations & Integration (Mod: D. Karp)	End-to-End Network Solutions for the Retail Enterprise Market (Mod: Chain Store Age)	Global Satellite Finance: A Forecast (Mod: R. Villain)
12:00pm	AIAA Awards/ISCe Welcome Luncheon Invited Keynote Speaker: Dr. Charles Elachi, Director NASA JPL (12:00 pm - 1:30 pm)				Leadership Luncheon (12:00 pm - 1:30 pm)			
1:00pm							Luncheon in Exhibitor Pavilion (12:30 pm - 1:30 pm)	
2:00pm	Cellular, WiFi, WiMAX, or Whatever	WTA: The Top 10 Trends You Need to Watch	Space Systems and Hybrid Networks for First Responders (Mod: D. Sachdev)	Broadband: Top 10 Drivers for 2007 (Mod: J. Schaeffler)	Content for the Mobile Platform (Mod: G. Hatch)	Future MILSATCOM Systems: A Progress Report (Mod: R. Scurry)	Optimizing Retailer's Connectivity and Increasing Efficiencies (Mod: Chain Store Age)	DC Beat: A Legislative, Regulatory & Policy Update (Mod: J. Ordway)
3:00pm	Satellite-Based WiFI: Killer App?	WTA: Responding to Changing Markets		Advanced Services: Shaking Out the Hype (Mod: J. Schaeffler)	Refreshment Break in Exhibit Hall (2:45 - 3:15 pm)			
	Refreshment Break in Exhibit Hall (3:30 - 4:00 pm)				Digital Content for Hollywood! (Mod: R. Bell)	Distributed Connectivity to the Warfighter (Mod: L. Bien)	Satellite Networks for Retailers: Improving the Value Proposition (Mod: B. Elbert)	Trends in the European, Latin American and Asia-Pacific Markets (Mod: R. Villain)
4:00pm	IP and the "New" Bottom Line	WTA: Technologies That Grow the Market	The Next Horizon: New and Evolving Comm'l Space Markets (Mod: M. Farrell)	CEOs: Breaking the Rules & Making it Happen (Mod: J. Schaeffler)	Mobile Applications for the Commercial and Government Sectors (S. Chase)			
5:00pm								
6:00pm	SSPI Beach Blast & Welcome Reception (5:30 pm - 7:00 pm)				ISCe Reception and Awards Dinner (6:00 pm - 10:00 pm at Sea World)			
7:00pm								
8:00pm	**Exhibitor Pavilion Open 10:00 am - 5:30 pm**				**Exhibitor Pavilion Open (10:00 am - 5:30 pm)**		**Exhibitor Pavilion Open (10:30 am - 2:00 pm)**	
9:00pm								

FEATURED EVENT

ISCe Entertainment and Digital Media Forums Program

ISCe Satellite & Communications a CeBIT Event

Tuesday, June 13, 2006

The Carmel Group's Cable, Satellite & Telco Entertainment Forum
(Sponsored by SES AMERICOM)

8:00 am – 9:05 am Terrazza Ballroom

9:00 am – 10:00 am

Session CG1: Content Innovation: Looking Beyond the Box

This session focuses on the software side of the business of cable, satellite, telco, utilities, and mobile services, featuring a frank and provocative discussion about the content and entertainment services and applications that service providers are rapidly adopting. Content is being delivered anywhere, all the time, to anyone! This session looks from both the content and service providers' perspectives, focusing on the business models and related issues.

Moderator: **Sean Badding**, *President and Senior Analyst, The Carmel Group*

Panelists: **Christine Hecker**t, *General Manager, Marketing, Microsoft TV*
Scott Newnam, *CEO, Goldpocket Interactive/Alcatel*
Sam Pemberton, *President & CEO, Softel USA*
Tom Southwick, *Senior VP, Starz Entertainment*

10:00 am – 10:30 am

Coffee Break in Exhibitor Pavilion

10:30 am – 12:00 pm

Session CG2: IPTV Strategies for Success!

Telcos see Internet Protocol TV (IPTV) as a critical triple play service and the chance to regain a dominant place in the telecom market. But is it? Are telcos playing catch-up and need to understand not only the opportunities, but also the challenges and uncertainties? Or is this technology a Next Holy Grail? Come learn from this technology-focused panel and hear what key executives are saying about the technology, business, marketing and regulatory realities underlying this digital medium, and its impact on telcos and the competitors. Does IPTV justify — and can it handle — the current industry hype? How does the competition react?

Moderator: **Susan Irwin**, *President, Irwin Communications*

Panelists: **Mauro Bonomi,** *CEO, Minerva Networks*
Chris Coles, *CEO, Myrio/Siemens*
Tim Krause, *Chief Marketing Officer North America, Alcatel*
Jeff Weber, *Vice-President of Product and Strategy, AT&T*

1:30 p.m. – 2:30 pm

Session CG3: Broadband: The Top 10 Drivers for 2007

In the current economic climate, operators are making careful decisions about how and where they are expanding broadband services, and which business models will be strengthening their bottom lines. Broadband commoditization and the price erosion of Internet access services are driving operators to seek new revenue streams by offering enhanced services, such as VoIP, video telephony, broadcast video and gaming. Will this be enough for satellite operators to differentiate themselves from their rivals? Will consumers be attracted to these new, bundled services? This distribution-based session examines the market drivers, the available technologies (i.e., terrestrial, satellite, and wireless), and the best business models producing the best results.

Moderator: **Harry Thibedeau** , *Manager of Industry and Technical Affairs, NRTC*

Panelists: **Josh Goldman,** *CEO, Akimbo*
Blake Krikorian, *Co-founder, Sling Media*
Robert Petty, *CEO & Chairman, Roo Group*
Shawn Strickland, *Vice-President of Verizon Fios TV Product Managment, Verizon Communciations*

2:30 pm – 3:30 pm
Session CG4: Advanced Services: Shaking Out the Hype

Included in this "Advanced Services" basket are IPTV, VOD, DVR and gaming. These new, advanced applications are revolutionizing—and complicating—business models for every operator, on a global scale. Indeed, just a couple of the more critically disruptive services include DVRs and VoIP, which have become very popular with mainstream consumers. Service providers have been attempting to capitalize on such areas, but are they underestimating the business and technology challenges facing the markets in the next two years? What partnerships are lining up? Where do advertisers fit in? Is theirs a dying art? Or are they just waiting to find their new legs? This session finds the answers.

Moderator: **Armand Mussey**, *Principal & Director, Near Earth LLP*

Panelists: **Dave Davies**, *Vice-President, Scientific Atlanta*
Tim Evard, *Senior Vice-President, Open TV*
Dan Ronayne, *Senior Vice-President, Mag Rack*
Tom Sauer, *Vice-President, AT&T*

3:30 pm – 4:00 pm
(Sponsored by Mobile Satellite Ventures)
Refreshment Break in Exhibitor Pavilion

4:00 pm – 5:30 pm
Session CG5: CEOs: Breaking the Rules & Making It Happen

For 10 years, this renowned CEO session has become a hallmark of events organized by The Carmel Group. This year will be no exception. A mixture of the best and the brightest will engage one another and their audience on the most crucial issues facing the multi-channel market. This session will cover: the next-generation of devices, content and business models, advertising, content, distribution, operators, technology, legal/regulatory…you name the topic, these business leaders are going to tackle it! This is a can't-miss final session.

Moderator: **Jimmy Schaeffler**, *Chairman and CEO – The Carmel Group*

Panelists: **Jeremy Allaire,** *Founder, Chairman & President, Brightcove*
***Eric Cooney**, CEO, Tandberg Television*
Tres Izzards, *CEO, MovieBeam*
Jim Ramo, *CEO, Movielink*
Tom Rogers, *CEO, TiVo*

SSPI "Beach Blast" Welcome Reception
(Co-Sponsored by Space Systems Loral)
5:30 pm – 7:00 pm Hilton Hotel Beach Lagoon

Wednesday June 14, 2006

Digital Content & Mobile Forum
(Sponsorship Available)
11:00 am – 5:30 pm Riviera Room

Session WE1: Satellite Mobile Entertainment and Data
11:00 am – 12:00 pm

There is a rapidly growing market for new forms of mobile entertainment, including real time audio and video. Satellite has helped create and define this market through direct to user mobile digital audio and video services. This panel of leading experts will explore the future potential of these services in terms of new satellite bands, new delivery technologies, new business models and new forms of content.

Moderator: **Mark Dankberg**, *Chairman & CEO-ViaSat*
Panelists: **Christopher Baugh,** *President, NSR**
TBD

Session WE3: Watching the Small Screen: Digital Content for the Mobile Platform
1:30 pm – 2:45 pm

It's hard to believe that the cell phone explosion of yesterday has now surfaced as the most dominant strength in the entertainment industry, rivaling TV and DVD as consumers' leading choice. Mobile as a fully functional entertainment provider - news, music, sports, and video - has replaced mobile as a simple communication tool. In this session, we have gathered a seasoned group of executives from the Entertainment, TV and Mobile industries who will explore several key topics focusing on content for the mobile platform. What compelling features will create a competitive advantage? How important is content? Selling + Celebrity = Sellebrity How important are icons in the success of these mobile networks? Will the DVB-H market capture enough consumer interest to achieve positive cash flow? Don't miss this outstanding session highlighting content and the emerging mobile market.

Moderator: **Gary Hatch**, *CEO – ATCi*

Panelists: **TBD** - *ESPN*
TBD – *Sony Digital Entertainment or CNN*
Jeff Lorbeck, *Sr. Vice President & GM, MediaFLO Division – Qualcomm**
TBD – *Verizon*

Session WE5: And…..Action! Digital Content for Hollywood Takes the Stage
3:15 pm – 4:30 pm

Digital cinema presents a compelling vision: a revolutionary breakthrough in distribution that will lower costs, improve security and significantly expand opportunities for theater owners and studios – not to mention for satellite and terrestrial service providers that manage and transport the multi-gigabit files. Reality, however, has been slow to catch up as the vision has run head-on into established business interests and technology hurdles. Today, however, the early stages of a digital cinema market are becoming visible through multi-cinema trials and commercial distribution of pre-show content. In this session, a panel of buyers and sellers in this emerging market explore issues of secure transport, network requirements and digital rights management, and provide their forecasts for the next two years.

Moderator: **Robert Bell**,
Executive Director, Society of Satellite Professionals International and World Teleport Association

Panelists: **TBD**

***Invited**

For additional information regarding speaking, exhibiting or sponsorship opportunities at ISCe 2006, please contact the Conference Chairman, David Bross at +1-301-916-2236 or e-mail at: dbross@hfusa.com For information on the event, visit: www.isce.com.

INDUSTRY NEWS

Fuel Leak, Fire Doomed Falcon 1 According to SpaceX Initial Analysis

EL SEGUNDO, CA — A fuel leak that triggered a fire around the top of Falcon 1's main engine led to the destruction of Space Exploration Technologies' (SpaceX) rocket on its maiden voyage last March 24.

A preliminary investigation conducted by SpaceX has concluded that at T+25s, a fuel leak of currently unknown origin caused a fire around the top of the main engine cutting into the first stage helium pneumatic system. "Once the pneumatic pressure decayed below a critical value, the spring return safety function of the pre-valves forced them closed, shutting down the main engine at T+29s," SpaceX said on its website.

A high resolution imagery provided by SpaceX showed the fire clearly visible within seconds after liftoff.

On its inaugural flight on Friday at 5:30 p.m. EST (2230 GMT), Falcon 1 rocket tumbled out of control and slammed into the Pacific Ocean shortly after its liftoff from the Ronald Reagan Ballistic Missile Test Site on Omelek Island near Kwajalein Atoll in the Pacific Ocean's Marshall Islands.

The company announced there will be a formal US Government-led anomaly investigation in partnership with SpaceX. It added the report issued by that team will be considered the official opinion.

An engine close up shows the fire that doomed Falcon 1 on its maiden flight. (Thom Rogers/ SpaceX photo)

SpaceX CEO and founder Elon Musk said despite the failure of the rocket, all the vehicle systems, including the main engine, thrust vector control, structures, avionics, software, guidance algorithm, etc. were picture perfect. "Falcon's trajectory was within 0.2 degrees of nominal during powered flight," he said.

The Ariane 5 accelerates away from the launch pad at Europe's Spaceport. (Arianespace/CNES/ESA photo.

Ariane 5 Launches Hot Bird 7A, Spainsat Satellites

KOUROU, French Guiana — After three launch postponements, Arianespace's Ariane 5 ECA finally orbited two telecommunications satellites from Europe's Spaceport in French Guiana on March 11.

Spain's Spainsat governmental telecommunications spacecraft and the Eutelsat's Hot Bird 7A television broadcast platform were injected into geostationary transfer orbit during a mission that demonstrated Ariane 5's dual-satellite payload capacity. It was also the first Arianespace mission this year.

The 3,680-kg. Spainsat was deployed approximately 27 minutes after Ariane 5's liftoff from the Spaceport, followed about 5 minutes later by the separation of Hot Bird 7A, which had a mass of 4,100 kg.

Spainsat is the first Spanish satellite dedicated to secure government communications, and will be operated by Hisdesat – a company founded in 2001 by INSA, EADS CASA Espacio, Indra and Sener. It will assume the relay duties handled by the Secomsat military payloads included on Spain's Hispasat 1A and 1B satellites, which were launched by Arianespace in 1992 and 1993.

The Spainsat spacecraft was produced by Space Systems/Loral in Palo Alto, California, and carries 13 X-band transponders plus one Ka-band transponder. It will operate from an orbital slot of 30 deg. West, which will place it over the Atlantic.

Arabsat 4A Loss is Russia's 3rd Space Mishap in 8 Months

MOSCOW — The malfunction of the Russian-made rocket that left Arabsat 4A stranded in useless orbit on March 1 is the third serious accident suffered by Russia's space program in eight months.

In October 8 last year, an Earth monitoring satellite was lost because of another Russian booster failure. The $169.7 million (140 million euro) CryoSat satellite of the European Space Agency blasted off atop a Russian-built Rockot/Britz-KM launch vehicle but went crashing into the sea after its launch went wrong.

The Rockot is a converted Soviet-era SS-19 ballistic missile with an additional Breeze-KM upper stage. CryoSat was to conduct a three-year mapping of polar ice caps and provide more reliable data for the study of global warming.

The Proton rocket ignites its first stage engines in the final moments of the launch countdown. (ILS TV photo)

A few days later, Russia's Federal Space Agency controllers lost contact with the Russian-built Monitor-E satellite after it lost orientation on October 18. The Monitor-E satellite was launched from the Plesetsk space center in northern Russia in Aug. 26, 2005. The satellite was designed to assess the aftermath of emergency situations, map surface areas, survey agriculture and forestry conditions. Monitor-E satellite was eventually recovered and based on recent reports, it is back in harness as it monitored China's chemical spill in November last year.

Earlier, on June 21, 2005, a Russian Molnia rocket carrying a sensitive military communications satellite crashed shortly after taking off from Plesetsk launch pad.

Canada's Ciel Satellite Contracts Alcatel Alenia to Build Ciel-2 Satellite

OTTAWA — Ciel Satellite has announced that it chose Alcatel Alenia Space to construct its new spacecraft to be known as Ciel-2. The geosynchronous satellite will be operated by Ciel from 129 degrees West and deliver services throughout North America.

Alcatel will build the Spacebus 4000 C4 spacecraft, which will be the largest Spacebus class satellite ever built, according to Ciel Satellite. A number of innovations will also complement the design; the all Ku-band satellite will feature high frequency re-use and both regional and spot beams.

The Ciel-2 satellite is scheduled to launch in late 2008 and to operate for at least 16 years.

The partners and shareholders in the Ciel venture include BPC Telecommunications Corporation, owned by OMERS, one of Canada's largest pension funds, with more than $40 billion in assets; Ottawa-based Smyth Satellite Holdings Ltd., a Canadian satellite and telecommunications company established by Kevin Smyth and Gerry Wall, Ph.D.; 620582 NB Ltd., an investment company led by Brian Neill, the founder and former chairman of Star Choice Communications Inc.

SES Global S.A. (Euronext Paris, and Luxembourg stock exchanges: SESG), which owns SES Astra in Europe, and SES Americom in the US also holds substantial shareholdings in Ciel.

China to Launch 9 Satellites in 2006

BEIJING — China will launch nine satellites in 2006, Zhang Qingwei, president of the China Aerospace Science and Technology Corp, revealed on Monday.

Reports from the Chinese media said the first one, an experimental satellite, will be launched towards the end of April. The country will also send into orbit for the first time a "seed satellite" specially designed for seed-breeding in space. That satellite is scheduled to blastoff in September.

Zhang revealed the China's space plans while attending the annual meeting of the National People's Congress, which opened on Sunday in Beijing.

China is celebrating the 50th anniversary of its space program this year. Recently, China sold a communications satellite (Nigcomsat-1) to Nigeria and sold another satellite (Venesat-1) to Venezuela. These business coups illustrate China's renewed focus on the commercial satellite industry after deliberately concentrating first on the development of new generation carrier rockets.

Quoting sources from the Chinese Academy of Agricultural Sciences, reports say the recoverable satellite will enable scientists to try to cultivate high-yield and high-quality plant varieties after the seeds are exposed to special environments such as cosmic radiation and micro-gravity.

INDUSTRY NEWS

SinoSat 2, China's first direct broadcasting satellite, will also be launched this year.

Zhang said another key satellite to be launched in 2006 is SinoSat 2, the country's first direct broadcasting satellite, which is expected to beam TV programs to even the most remote rural regions in the country. SinoSat 2 will be based on the country's newest generation of satellite platform Dongfanghong 4, which has a designed life mission of 15 years.

Satnews Editors Virgil Labrador and Peter Galace Nominated for Eugene M. Emme Astronautical Literature Award

SPRINGFIELD, VA — Satnews Publishers' Managing Editor, Virgil Labrador and Editorial Director, Peter I. Galace have been jointly nominated for the 2005 Eugene M. Emme Astronautical Literature Award for their book, Heavens Filled with Commerce: A Brief History of the Communications Satellite Industry.

The "Emme" award is given annually by the American Astronautical Society (AAS). The award is named after Eugene M. Emme, the first official Historian of the National Aeronautical Space Administration (NASA). The award was created in 1982

INDUSTRY NEWS

to recognize an outstanding book serving public understanding about the impact of astronautics on society and its potential for the future, according to the AAS. The 2005 Emme award winner will be announced in the summer of this year and presented during the AAS annual meeting in Pasadena, Calif. in November. The nominations and final choice of winner are selected by a panel of reviewers from the AAS History Committee.

"Heavens Filled with Commerce," published by Sonoma, CA-based Satnews in June 2005 was the first book ever to be released that covers the history of the communications satellite industry from its beginnings to the present. The book traces the breakthroughs in scientific thought from Galileo to Newton that made possible the conception of the geostationary communication satellite propounded by Arthur C. Clarke in 1945. It covers all the major events that shaped the industry from Sputnik, to the formation of Intelsat and the road to commercialization and privatization of the industry that continues to the present.

Virgil Labrador *Peter I. Galace*

The authors have been with Satnews since 1998. Virgil Labrador is the managing editor in charge of all editorial activities worldwide based in Los Angeles, Calif., while Peter I. Galace is editorial director based in Manila, Philippines covering the Asia-Pacific region. For more information on the book, go to http://www.satnews.com/products/historybook.htm. SM

EXECUTIVE MOVES

Intelsat Appoints Jeffrey P. Freimark as Chief Financial Officer

WASHINGTON, D.C — Intelsat, Ltd. has appointed Jeffrey P. Freimark as executive vice president and chief financial officer, effective on the resignation of Robert Medlin. Medlin has been serving as acting CFO of Intelsat since June 2005 and is expected to resign his post in April 2006.

Freimark resigned on March 15 as executive vice president, chief financial and information officer, of Beverly Enterprises Inc., a leading provider of healthcare services to the elderly. Beverly Enterprises was sold to Pearl Senior Care, Inc. in a transaction that closed on March 14, 2006.

Prior to his role at Beverly, Freimark held officer-level positions at a number of public companies, including serving as chief financial officer of OfficeMax Inc., chief executive officer, president, and chief financial officer for Grand Union Company, and chief financial officer of Pueblo International, Inc.

Freimark, who holds an MBA in accounting and taxation from the Stern School of Business at New York University, and a JD degree from New York Law School, is a Certified Public Accountant and a member of the New Jersey Bar.

Boeing Integrated Defense Systems Appoints Christopher Raymond as VP, Business Development

ST. LOUIS Boeing — Integrated Defense Systems president and CEO Jim Albaugh has selected Christopher Raymond, who was serving as vice president, Air Force business development, to replace Shephard W. Hill as the vice president for Boeing IDS business development.

Hill is moving to a new corporate position—senior vice president for business development and strategy. Both moves are effective immediately.

Raymond, in his new role, will report to Albaugh and be responsible for development, integration and implementation of IDS customer and business strategies, and ensuring customer alignment across the enterprise.

Most recently, Raymond was the business development vice president responsible for all strategy development and engagement with the company's U.S. Air Force customer. Prior to the recent IDS reorganization, he had served as vice president, business development for Air Force Systems—a position that led teams focused on innovative Global Mobility, Global Strike, C3ISR and Integrated Space solutions. He also has held a number of leadership assignments within engineering, supply chain management and operations.

Raymond holds a bachelor's degree in aeronautical engineering from the University of Illinois, a certificate with honors in contract management and a master's degree with honors, both from the University of California-Irvine.

SES Americom Names Ducay as COO, Russo as Marketing and Product Management SVP

PRINCETON, N.J. — SES Americom, an SES Global company, has named two key telecommunications industry leaders to its executive team: Jim Ducay as chief operating officer and Jon Russo as senior vice president of Marketing and Product Management.

Reporting to Ed Horowitz, president and CEO, Jim Ducay has extensive communications industry experience, particularly in the areas of Internet/data, wireless, Voice over IP (VoIP), electronic commerce, and enterprise solutions. Most recently, he served as chief operating officer of San Diego-based Acceris Communications Inc. Prior to Acceris, Ducay worked at Ameritech Interactive Media Services and NYNEX/Bell Atlantic.

He has a master's degree in Business Administration from the University of Chicago that complements his master's and engineering degrees from the University of Illinois.

Reporting to Ducay, Jon Russo will be focused on the "go to market" strategy and management of the company's portfolio of new voice, video, and data services in addition to market research. He most recently was vice president of Marketing at iPass Inc. (NASDAQ:IPAS) where he led product management, global marketing, channel strategy, corporate communications, and strategic alliance teams.

Prior to iPass, Russo worked for Frontier Communications, and GlobalCenter, a web hosting content distribution company, acquired by Frontier. A former active duty U.S. Army telecommunications officer, Jon graduated from the University of Connecticut with a degree in Finance and completed a master's degree in Business Administration from the Haas School of Business at the University of California, Berkeley.

EXECUTIVE MOVES

MSV Appoints Two New VP of Operations to Spearhead Terrestrial Build-Out

RESTON, Va. — Mobile Satellite Ventures (MSV) named on Thursday David Claassen as vice president of core engineering and Brian Smith as vice president of network deployment.

Claassen joins MSV with seven years of experience as the vice president of engineering development at Nextel Communications. In this role, he was responsible for the technical design and development of all of Nextel's integrated network systems and services including RF, transport, core network, IP WAN, voice and packet data services and subscriber devices. Claassen has also served as the vice president of IP and Core Network Engineering at WFI. In this role, Claassen was responsible for the management of the WFI's domestic transport, switch, core and IP network business for wireless carriers and equipment vendors as well as the company's Advanced Technology Group (ATG).

Smith, who similarly joins MSV from Nextel, brings with him extensive experience in the deployment of telecommunications equipment/system engineering and the management of telecommunication facility design and construction projects.

Smith served as a senior director for Nextel's Network Engineering organization, where he led the design and construction of all Nextel Mobile Switching offices; including site identification and acquisition, project design and scope of work development, facility construction and telecommunications equipment installation. Prior to his eight years at Nextel, Smith played an instrumental role in the MCI network construction team.

MSV said Claassen's and Smith's appointment is part of the company's strategy to put in place an experienced, world class team of telecommunications industry experts to build out and implement the hybrid network. Under the direction of MSV's chief operating officer Mark Faris, Claassen and Smith will be part of a growing team focusing on integrated terrestrial system development.

Jim Maser to Join SpaceX as President and Chief Operating Officer

EL SEGUNDO, CA — SpaceX has announced that Jim Maser will be joining the company as president and chief operating officer.

Maser has an exceptional track record of success in both the technical and business aspects of the launch vehicle industry. Before joining SpaceX, Maser served first as chief systems engineer and then as president and general manager of Sea Launch, arguably the world's most successful commercial launch company.

Maser started his career with the Boeing Delta and Evolved Expendable Launch Vehicle programs in structural design. He went on to serve as chief engineer of Delta III and was one of the key architects of the evolution of Delta II to Delta IV. Before joining McDonnell Douglas (now Boeing) in the 1980s, he was a research fellow at the NASA/Lewis Research Center.

DirecTV Appoints Derek Chang Senior VP of Strategy and Development

EL SEGUNDO, — DirecTV, Inc. has named Derek Chang as senior vice president of Strategy and Development of DirecTV Entertainment Group.

Chang will report to David Hill, president of DirecTV Entertainment, and will also work closely with Chase Carey, president and CEO of DirecTV, Inc. Chang will be responsible for developing new strategic areas of business for DirecTV.

Chang joins DirecTV from Charter Communications where he served as executive vice president, Finance and Strategy, beginning in December 2003, and as interim Co-CFO beginning September 2004. While at Charter, Chang oversaw all balance sheet, mergers and acquisitions, and corporate strategic activities for the company.

Prior to this, Chang served as a member of the Yankees Entertainment & Sports Network's (YES Network) original senior management team starting in September 2001. As EVP of Development for the YES Network, Chang was responsible for overseeing finance and corporate development, as well as managing team and investor relationships.

Chang holds a Masters of Business Administration from Stanford University and a Bachelor of Arts Degree in History from Yale University.

EXECUTIVE MOVES

David Zufall Named Senior Vice President for Network Systems of ICO Global and ICO North America

RESTON, Va. — ICO Global Communications (Holdings) has appointed David Zufall as senior vice president for network systems of both ICO and ICO North America. Zufall will begin his new role immediately.

Zufall joins ICO from Sprint Nextel, where for the past ten years, he served in a number of technical and operational capacities. During his recent position as the vice president of network architecture and chief architect for Nextel, Zufall managed the definition and development of nationwide Direct Connect, the industry's first always-on-mobile-IP-based packet data service, and Nextel's first iDEN handset. As chief architect, he led the definition of Nextel's device, switching, radio and Direct Connect platforms.

Craig Jorgens, president of ICO, said David will lead the system design, development and implementation of the terrestrial portion of our new hybrid satellite/terrestrial mobile communications system.

"David and his team at Nextel accomplished the design, launch, and operation of unique and differentiated products and services. We are confident that his experience will lend strong support to ICO's service launch."

ATK Announces New Appointments

MINNEAPOLIS — As part of realigning its operations, Alliant Techsystems Inc. (NYSE: ATK) has appointed new key company officers.

EXECUTIVE MOVES

Effective April 1, ATK said John Shroyer will become the chief financial officer with responsibility for finance, audit, treasury, tax, and risk management. Shroyer will replace Eric Rangen, who will be departing ATK for other business opportunities. Rangen completes five years as a key participant in the execution of ATK's growth strategy.

Blake Larson, currently president of ATK Advanced Propulsion and Space Systems Group, will become executive vice president of the new Mission Systems Group. Thomas Wilson, currently president of ATK Precision Systems Group, will become senior vice president, Combatant Command Relations.

Wilson will be responsible for establishing a senior ATK presence in the Tidewater, Virginia area to gain better alignment between ATK capabilities and the requirements that flow from the training and combatant commands.

Shroyer, who has been vice president of ATK Operations since 2005, will bring to his new position a strong combination of finance and operations leadership experience gained over the course of a 20-year career. SM

NEW PRODUCTS

Globalstar Offers 50% Discount for New Users

MILPITAS, Calif. — Globalstar is launching a special promotion for customers in Alaska, as the company prepares to open its new gateway satellite ground station in Wasilla. Any Alaska business or resident who activates an annual Globalstar service plan before July 15, 2006 will receive a 50 percent discount off access charges.

The Globalstar promotion precedes the opening of the company's new gateway ground station in Wasilla that is expected to open in the summer of 2006. The satellite gateway is used to connect Globalstar customers to the public telephone network or to other satellite phone users via the Globalstar satellite constellation, with no reliance on the public telephone network.

"Now, Alaskan customers will have affordable access to a dial-tone even in the most remote parts of the state, with pricing less than most people pay for satellite TV or cellular phones," said Dennis Allen, senior VP of US Sales and Marketing. "Once the new gateway is open, we will also be able to provide a local 907 area code for their satellite handset, fixed unit, or data modem."

Although the company has offered satellite coverage in the region since 2000, the new gateway ground station will provide enhanced Globalstar coverage to areas throughout Alaska, Northwestern BC, and the Bering Sea.

STMicroelectronics Unveils Cheaper, Highly Integrated Satellite Set-Top Box Decoder for High Volume Markets

GENEVA, — STMicroelectronics has introduced a new low-cost satellite STB receiver/decoder chip — the STI5188 — intended for high-volume free-to-air markets in Asia, the Middle East, Africa, South America and Europe.

STMicroelectronics said the new device is highly integrated and combines the functions of ST's STV0288 DVB-S receiver and the STM5118 mass-market STB decoder, to create a product that will enable the manufacture of digital receivers competing in cost with analog sets. In addition, ST said the STI5188 is the first low-cost decoder for the STB market to be implemented in 90nm process technology, and therefore puts ST in pole position to support market requirements for both high volume and low cost.

According to the company, the STI5188 integrates the QPSK (Quadrature-Phase-Shift-Keying) demodulator, together with audio DACs and VCXO, allowing manufacturers to cut their total BOM cost and to greatly simplify board design and assembly; PCB layout is also helped by a small 20x20mm QFP package. ST said it is one of only a few companies with QPSK IP, and the embedded QPSK demodulator, with 'blind scan' capability to allow users to autoscan for available signals, is best-in-class technology included in a low-cost device.

The integrated audio DACs also offers a direct connection to the TV input, making further savings compared to earlier generation and competitive products. The use of serial Flash memory in the new device has reduced the number of I/O lines required and allowed the package size to be smaller — PCB routing is also simplified, with less chance of EMI problems.

Delphi Offers Cheaper, Heavy Duty Satellite Radio

TROY, Mich. — Delphi Corp. has introduced a new satellite radio for the heavy-duty market based on research and feed-back of commercial vehicle users.

Delphi said its new premium CD/MP3 radio with an integrated satellite receiver features robust, digital-quality audio in a compact package at a very competitive cost.

"We went directly to professional operators to learn their special preferences for the radio in their vehicles," said Ken Erickson, Delphi Integrated Media Systems business line executive. "We wanted to get feedback from the end-users of this product to get customer driven direction on the design. We believe that this 'common sense approach' to design is going to make this a very popular radio in that market."

To achieve high quality and strong longevity, the single DIN premium CD/MP3 radio is durably designed and SAE J1455 compliant for rugged use in the harsh environment of commercial and off-highway vehicles. According to Delphi, all of the materials and components for the radio were carefully selected for maximum resistance to wear.

NEW PRODUCTS

Voom HD Networks Targets Growing Gaming Audience with New 'Gameplay HD' High Def Channel

NEW YORK, — Voom HD Networks has partnered with leading game industry companies to offer fresh and exclusive content on Gameplay HD, the first high-definition channel dedicated solely to the fast-growing world of video gaming.

The channel, which launched on February 1, 2006, features three tiers of exclusive programming centered on the interests of gamers, including gaming news, original series and specials, and global gaming community coverage featuring tournaments and competitions.

Helping to deliver this unique content, Voom has also inked a deal with CNET Networks' GameSpot, one of the leading sources for gaming information, to create two new series for the channel: GameSpotting, a half-hour series of news, reviews, and previews, and CinemAddicts, an hourly series featuring immersive stories told through cinematics and gameplay from leading games.

"Voom provides a platform for viewers who are looking to maximize the power of HD, and in the gaming category Gameplay HD is the leader in this next generation of channels," said Greg Moyer, general manager of Voom. "The channel takes advantage of the growing demand for global entertainment and video gaming and now, with new advancements, the manufacturing of games in high definition."

NEW PRODUCTS

Worldspace Launches First Company-Branded Arabic-Language Channels

SILVER SPRING, Md. — Worldspace Satellite Radio has launched Ranin and Min Zaman, two new commercial-free Arabic music channels that will offer subscribers contemporary pop hits and classic Arab hits from the Middle East.

Available on the east beam of the company's AfriStar satellite, both channels can be heard in over 12 countries throughout the Middle East and North Africa.

Ranin (channel 55) captures the essence of the Arabic Top 40 scene, offering subscribers irresistible blends of contemporary pop hits. The channel features hot Arabic artists such as Amr Diab, Elissa, Nancy Agram, Rashid Al Majid, Ragheb Alama, Nawal El Zoghby, Maria, Dareen Hadshity, Angham and Wama.

Min Zaman (channel 135) delivers Arabic classic hits in several diverse, regional styles of music, including legendary Arab musicians from Egypt, Lebanon, Syria and the Gulf States. Listening to Min Zaman, subscribers can hear their favorite retro hits from artists such as Fairuz, Wadee' el Safi, Abdel Halim, Sabah, Shadiya and the great Um Kalthoum.

WildBlue's Internet Via Satellite Service Now Available in South Carolina, Tennessee and Alabama

DENVER — WildBlue Communications, Inc. announced on Monday its high-speed Internet via satellite service, is now

NEW PRODUCTS

available throughout South Carolina, Tennessee and Alabama.

WildBlue provides high-speed Internet access via satellite to homes and small businesses in communities not currently served, or underserved, by other high-speed providers.

WildBlue offers Internet access in three service packages to consumers and small businesses with download speeds of up to 1.5Mbps. All packages include Internet Service Provider (ISP) services such as e-mail and Web space, the WildBlue Portal (featuring the latest news, information and entertainment), 24 hours per day/7 days a week customer care, and an equipment warranty.

NOAA Testing ADA Technologies' WeatherPod Station

DENVER — A micro-weather station developed by ADA Technologies is being installed on a National Oceanic and Atmospheric Administration (NOAA) ship where it will undergo rigorous testing of its ability to provide automated weather observations.

ADA said the test of its WeatherPod technology on the NOAA Ship Gordon Gunter, in Pascagoula, Mississippi, is in response to NOAA's need for an easy-to-operate weather monitoring system that can inexpensively be purchased and installed on the more than 900 U.S. ships that participate in NOAA's Voluntary Observation Ship (VOS) program. Measurements being made with the ADA WeatherPod technology include barometric pressure, wind speed, wind direction, air temperature and relative humidity.

Voluntary Observation Ships are the primary weather observation platforms available for the majority of oceans and coastal areas. These ships, which are typically commercial container ships, provide data for the nation's most sophisticated weather/ocean monitoring satellites and are a vital component of the Global Earth Observation System of Systems. These ships also provide vital information for the severe storm warning system used to keep ships safe.

Boeing's SoftPlotter 4.1 Enhances Digital Map Production

ST. LOUIS — Boeing has released version 4.1 of its SoftPlotter digital map production software, enabling users to provide more accurate and efficiently produced digital mapping products to their defense and commercial mapping customers.

"This newest version of SoftPlotter is a leap forward in providing customers with the desktop tools needed to process imagery directly from satellite and aerial digital sensors and cameras," said Brian Knutsen, general manager of Boeing Space & Intelligence Systems Mission Systems. "Softplotter continues to set the standard for softcopy performance and functionality by providing the most advanced, complete tools for all stages of digital map production."

SoftPlotter's engineering-based, map development products drive civil works projects, commercial real estate and highway development, and are used to support the National Geospatial-Intelligence Agency's Global Geospatial Intelligence program with digital mapping production services.

The new SoftPlotter provides JPEG 2000 support — the next-generation image compression algorithm now widely available in digital imagery circles — that allows imagery compression with fewer artifacts than JPEG. Digital Globe QuickBird sensor support for panchromatic and multispectral imagery offers SoftPlotter users full, rigorous sensor model and triangulation support, while digital aerial camera support for the Intergraph Z/I DMC, Vexcel UltraCAM and Airborne Data Systems digital cameras allow users to process imagery directly from these devices.

GlobeCast WorldTV Launches Asianet NEWS and Asianet PLUS in U.S.

WASHINGTON, DC, — DTH provider GlobeCast WorldTV has launched Asianet PLUS and Asianet NEWS in the United States. The company said the two new Kerala-based Malayalam channels join AsiaNet as part of GlobeCast WorldTV's Malayalam bouquet which also includes Amrita TV.

GlobeCast said the new additions address the rapidly expanding Asian community in the U.S. and bring GlobeCast WorldTV's international channel selection to more than 160.

Asianet NEWS was launched in 1993 by Asianet Communications Ltd., the largest Malayalam satellite television broadcaster. Introduced as a two-hour news segment, the channel has since grown to a premiere 24-hour news service in response to viewer demand. SM

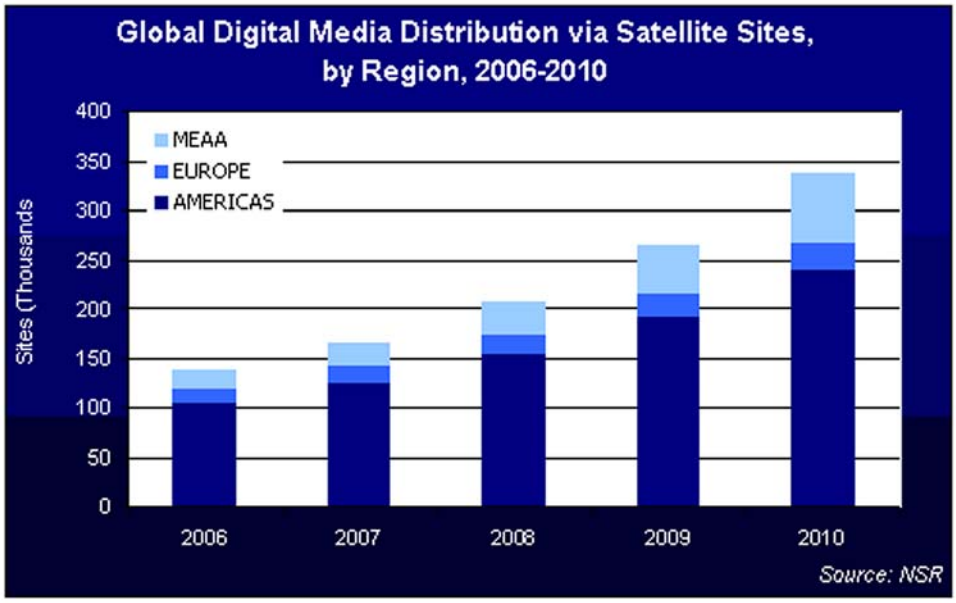
COVER STORY

Satellite Digital Media Distribution for Business Takes Off

by Christopher Baugh
Northern Sky Research

While Direct-to-home (DTH) television requires the largest number of satellite transponders for the consumer market, digital media distribution to businesses is becoming a key adjacent opportunity for satellite operators and vendors to add valuable revenue sources. It is especially true for business satellite TV, which delivers in-store channels for dynamic digital signage and interactive distance learning (IDL) at the retail location. Multicasting and the advent of IP over satellite have enabled new service possibilities in vertical media distribution markets such as retail. These trends are a critical element driving this market as end-users and consumers demand more complex and richer media content. The intrinsic nature of IP communication is seen by many as a key-enabling technology to sell satellite as a natural transport mode to reach business customers and staff. IP support places satellite on the IT manager's list for multi-site deployments, alongside fiber, cable or DSL, with a set of unique, intrinsic features.

The fact that satellite service providers have adopted and deployed legacy and new network systems with IP is a strong signal the industry is ready to address some of the markets that it thought a few years ago were out of reach. However, education to and acceptance by customers of the digital media satellite solution is still needed at all levels, from executives to human resources managers through to marketing and IT staff, to gain further market shares. Too often, the mystic aura that satellite portrays prevents its implementation beyond the current market penetration. Nonetheless, there should be a strong growth in the applications market facilitated by the implementation of IP-based digital media distribution. These applications should be beyond the traditional training and corporate communications world, for example in upgrading networks to provide digital signage.



Signing Up for Digital Signage

NSR conducted an in-depth analysis of demand trends for three core digital media via satellite applications in the three regions of the globe in which it believes are promising avenues for services and equipment sales. The applications include digital signage, IDL/corporate communications, and digital cinema. These digital media services offer opportunities for satellite business in part due to increasing demand for rich and more diversified content for the enterprise.

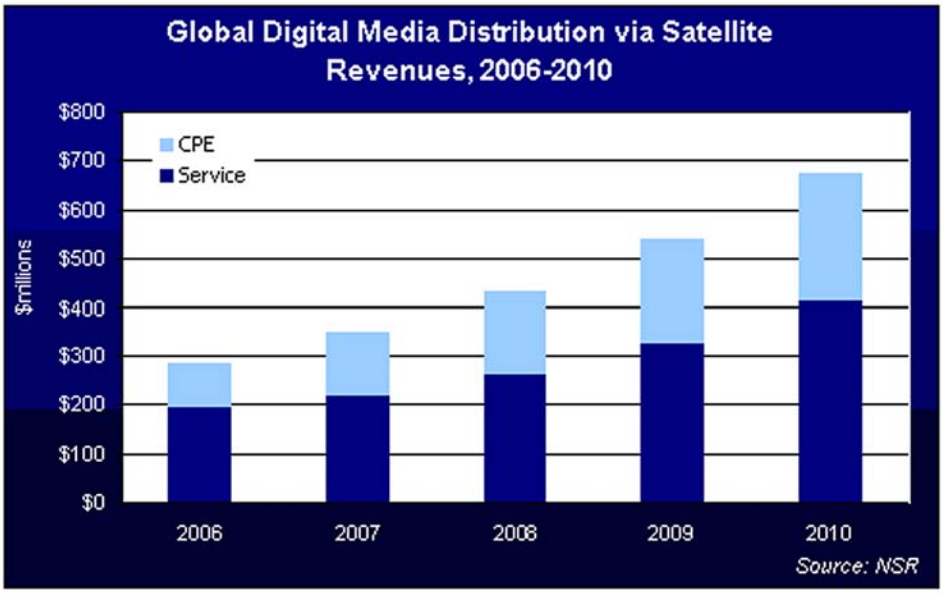
Instead of paper and cardboard, digital signage provides consumers in retail locations a digital display screen to view. The screen is then fed with high-quality video and multimedia advertisement, information and targeted programs.

By announcing in mid-January 2006 that it would offer Managed Digital Signage services as part of its Digital Media Services umbrella, Hughes Networks Systems reinforced a trend in

COVER STORY

satellite digital signage distribution to retailers that started a few years ago. Based on this and other services offerings, in addition to many high profile retail deployments, digital signage is well beyond the testing phase. As such, NSR believes that satellite digital signage deployments over the next five years will see healthy growth from 2006 to 2010 with a CAGR of 13.8% expected.

Despite this impressive growth potential, a major threat to this new advertising media is the Internet. Ad-based models via the Internet have recovered nicely from the 2001 bubble burst and today show double digit growth rates, thanks in large part to the explosion of DSL, Wi-Fi and other broadband offerings. Digital signage as an emerging media ad market is still fragmented, but recent consolidation should propel it beyond the start-up phase to a more mainstream media avenue. Satellite players such as HNS, Microspace, BTV+, Helius and Mainstream Data have developed broad partnerships to help customers find their complete turnkey solutions for tailored digital signage networks.



Switching to IP for IDL

The largest current market for business satellite-delivered media is IDL, corporate communications and videoconferencing. With the upgrade and replacement of satellite networks installed in the 1980s and 1990s, there is a growing demand for extra products and services to transition to IP-based communications across organizations. The use of IP over satellite private networks is thus a key element of the trend towards increased communications and education for the citizen, the employee and the customer through corporate and government networks.

By attempting to emulate classroom interactivity, IDL has found a strong ally in rich media content delivery over IP. Traditional IDL and corporate communications customers benefit from satellite multicasting in their geographically dispersed locations with sites in remote locations or overseas, and a large employee base that requires regular training in today's fast moving markets.

These trends have led NSR to forecast IDL and corporate communications via satellite revenue to grow at a healthy 19.2% CAGR from 2006 to 2010. Interesting to note in this forecast is that many times, growth for IDL and corporate communications was seen as a side-effect of the uptake in digital signage. Other times, the trend was reversed. The offer often bundles digital signage

Exhibit 3.2 Core Digital Signage Vertical Segments

Vertical Market	Description and Assesment
Retail	Includes grocery and convenience stores, gas stations, drug stores, medical offices, hypermarkets, supermar kets, car dealerships, quick-serve and chain restaurants. Expected to grow significantly with screen cost and bandwidth price decrease, especially in retail with favorable ad-based business models
Banking and Financia Services	Includes banks, financial and investment services, Iinsurance. Early adopter of digital signage that benefits from a well-known captive audience and could represent 15% to 20% of digital signage market.
Entertainment	Includes theaters, cineplex, sports centers, stadium, and fitness centers. Digital signage has already been installed in theater lobbies in North America to help offset diminishing ticket sales, and as in retail sector, to seek new revenues from unused locations.

Source : NSR

COVER STORY

with IDL and corporate communication software suites in a triple-play option in order to maximize usage of the corporate private business network. The forecast benefits from a strong legacy base for IDL and corporate communications that has yet to upgrade to new rich-media content applications such as digital signage. Furthermore, there are many examples of intensive network usage that take advantage of both applications for the business throughout the day. For example, in the morning the network is used by staff for training; then for customers during the day with digital signage; later in the afternoon or the evening by staff or management again to view sales generation figures and feed their reports to headquarters.

Moving Digital Movies

Digital media via satellite is also moving into the film industry. With the ever increasing number of formats and viewers in which consumers can view movies, the robustness of the exhibitor market is perplexing when years ago its existence was called into question. Indeed, it was generally not projected that Beta or VHS tapes, then DVDs and home cinema, and more recently online downloads would kill the movie theater. It is also interesting to see that it has taken so long for the studios to move to all-digital. Much like other media, satellite can effectively transmit large size files to theaters, but there are very few target sites when compared to the market size that actually utilize digital distribution. For example, of the 6,000 theaters located in the United States, less than one hundred are served digital movies via satellite.

So where does the problem lie? Perhaps the most pressing issue is the cost of projectors that show digital movies, which can run up to $100,000 per unit. The issue for theater owners then is who finances digital cinema

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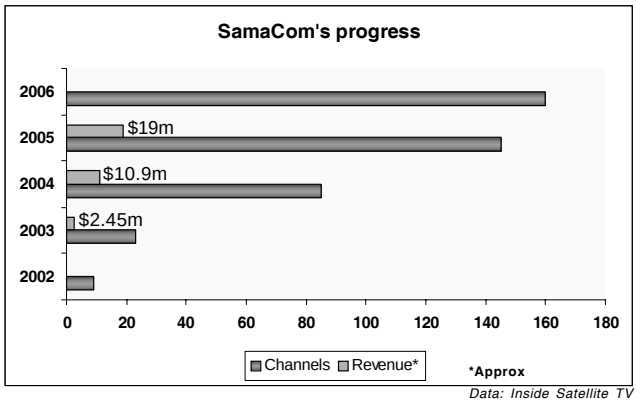

Data: Inside Satellite TV

conversion? And what type of security is imposed on copies they receive of new and re-released movies? For this and other issues such as the frequency of releases, digital cinema is not up the ladder of priority markets and will remain a small adjacent market in satellite digital media distribution. SM

Information for this article was extracted from a new NSR report entitled **Digital Media Distribution via Satellite - Assessing the Market for Digital Signage, Interactive Distance Learning and Digital Cinema.** Complete information can be found at www.nsr.com

Christopher Baugh founded **Northern Sky Research** in 2000 to provide market research on domestic and international high-speed networks to vendors and carriers worldwide. With a specialization in satellites and wireless technology, Mr. Baugh directs all Northern Sky Research multi-client research reports and single-client consulting projects. He has participated in a number of individual client studies, performing research and market analysis on specific topics for clients in the telecommunications industry. Topics include broadband satellite networks, wireless standards and service rollout, cable networks, pricing and strategic analyses, partnership identification and market validation through detailed forecasts and trend analyses. He can be reached at cbaugh@northernskyresearch.com

FEATURE

Middle East broadcasting….
……the best of times, the worst of times

by Chris Forrester

Mr Yatinder Mahajan, SamaCom, Dubai

Do you remember the opening words from Charles Dickens' A Tale of Two Cities? He opens the book, a novel set in the French Revolution, with the marvellous lines "It was the best of times, it was the worst of times…" And the words just about sum up the broadcasting revolution taking place in and around the Middle East, which is simply booming with business. The downside, however, concerns the catastrophic loss of Arabsat's much-needed 4A craft.

It was a typical hot Riyadh, Saudi Arabia night on February 28-March 1, temperature in the high 70s after a scorching day in the high 80s, while some 2200 miles away at the Baikonur launch site in Kazakhstan it was much nearer freezing at 2.10am. The giant Proton rocket lifted off looking good, and carrying the EADS-Astrium craft on behalf of Arabsat aloft. At first all seemed well, and the congratulations were enthusiastically given to the VIPs present, with excited calls made to the Arabsat staff viewing the launch back at Arabsat's Riyadh HQ. The celebrations continued with, initially, no cause for concern and all but one of the large Arab delegation turned to their beds after what had been a 40-hour day.

BADR, Arabsat's new logo

But all was not well. The crucial Breeze-M upper (4TH) stage malfunctioned and shut down early, leading to an immediate contingency to release the satellite.

Launch contractor International Launch Services (ILS) said the 4th stage started burning correctly, ending at T+14 minutes, 45 seconds, and nominally. Three additional firings were scheduled over a 3.5-hour period to ease the satellite into its transfer and final GEO orbit. The satellite is currently in a widely elliptical orbit and considered near-useless, and the consequences are serious for all concerned.

Mr Khalid Balkheyour, CEO Arabsat

A report carried on Russia's 'Interfax' on March 7 talked about Arabsat being saved. Roscosmos engineers say they can use the satellite's on-board fuel to slowly move the craft into its correct orbit, and leave it with enough fuel for about 2 years of life. However, even if finally agreed, this is going to take time. Arabsat sources, speaking last week in Dubai, and quoting Astrium and CNES engineers,

FEATURES

For Arabsat, read BADR

BADR, which means 'full moon' in Arabic, is the new name of Arabsat's fleet. Badr, or the full moon, is a very strong positive symbol that's appreciated throughout the entire Arab & Muslim world and different cultural sensitivities.

The plan now, with the lost 'Badr 1' is to rename the fleet Badr 2, for Arabsat's second series craft, Badr 3 for the third, and Badr 4 for the current launch plans, leading up to Badr 5 for the upcoming 5th generation craft launching around 2009.

say this report should be discounted.

However, nobody is going to throw away a satellite without first examining every possible scenario, and one authoritative report reminds the industry that Hughes (at the time) managed to recover a similarly lost AsiaSat 3 back in 1997-8 by sending the bird around the Moon in order to – eventually – reach geostationary orbit. It was put into more than useful service by PanAmSat as PAS-22.

Technically, Arabsat was built on a turnkey 'build, launch & insure' (delivery in orbit) prime contract with EADS Astrium, with Alcatel supplying the payload. Arabsat signed its contract with ILS for two launches, in October 2003.

ILS and its Khrunichev partners immediately suspended operations while a two-pronged investigation into the problem is carried out. Russia's space agency (Roscosmos) has its enquiry, while ILS is also implementing a Failure Review Oversight Board investigation. A result is expected by the end of March. It was the first Breeze-M failure following its introduction in 2000, although its predecessor, the Block-DM unit (but built by RSC Energia, and still used by Sea Launch) has had problems, not least with the loss of Astra's 1K satellite back in November 2002. Then the Block-DM failed on the start of its second burn period, coincidentally the same problem as occurred on three other Block-DM failures since 1996. Arabsat 4A was the 36th ILS mission on Proton.

EADS-Astrium, and its insurers, will be impacted, and it may be that Arabsat's loss will impact the decision to switch launchers for its Arabsat 4B currently under construction and initially slated for launch later this year. Either way, the loss places huge pressures on a launch sector that was only just beginning to enjoy full order books after a few fallow years. Immediately suffering will be Eutelsat's Hot Bird 8 craft, expected for launch by ILS/Proton early in May. Hot Bird 8 will need to be patient, although one report talked of ILS switching back to using a Block-DM final stage pending whatever remedial action the enquiries recommend.

But the severest impact will be felt at Arabsat which needed the launch to permit the transfer of channels to the new, more powerful, satellite as well as a renaming statement for the fleet. "The transition plan is now on hold," said a company statement, adding that its existing services will continue as normal. This, somewhat cryptic statement refers to the leased Eutelsat and PanAmSat craft that are currently performing crucial transmission roles for Arabsat at 26 deg East. HotBird 2, which is nominally Arabsat 2D for the moment, was expected to be released and start operations as 'Noorsat' for a rival Middle East operator as soon as Arabsat 4A had been commercialised. The older PanAmSat bird is rapidly nearing its end of life, and needs urgently to be replaced. However, it is the PanAmSat craft that's providing Arabsat with C-Band capacity.

Arabsat 4A, besides replacing these two rented satellites, would also have brought much-needed extra capacity on line, although the real capacity improvements would only come with the launch of 4B later this year (and currently booked on another Proton/Bleeze-M).

Senior staffers at Arabsat say there are many decisions now under consideration. Top of the list is whether to exercise an option already in place with EADS-Astrium for an Arabsat 4C to be expedited as quickly as possible. Option 2 is to ignore the 4C option but to bring forward the contract for Arabsat 5A, where RFP's are already with satellite builders. "Perhaps this could be done on a 'fast-build' contract say in 2.5 years," we were told. Option 3 is to "buy" an existing orbiting satellite, and "offers are coming in," said our source.

"Nobody wants this situation," said our insider, "but it might even end up being a blessing in disguise". The 'blessing in disguise' option covers Arabsat 4A's transponder configuration, which comprised 24 C-band and 20 Ku-band transponders. Most observers recognise that the C-band market, while still having some importance for Arabsat's consortium members, is

FEATURES

rapidly declining. Few expect it to last the 15+ years of the lifetime of a satellite, and more than one senior staffer last week in Dubai thought one option was to completely rethink 4A's role in terms of C-band.

While also admitting that the loss had left some employees devastated, Plan B was in place and there was a "business as usual" air about the company. "Some non-strategic customers might be encouraged to shift from 26 deg East (Arabsat's hot spot) to free up space," we were told.

Meanwhile, Arabsat's senior management have some other key decisions to be made, helped by members of Lockheed Martin's ILS team who were with Arabsat last week in Dubai. These include whether to switch launches from Proton to Ariane. While ILS holds the launch contract for Arabsat 4B, it is clear that there are grave concerns in Riyadh over the state of play over the use of the Breeze-M, and the inevitable delay that will now occur. EADS-Astrium also has a potential input given its role in the Ariane launcher programme. A compromise might be to switch from Proton to Atlas, and thus exploiting ILS' 'launch guarantee' scheme to allow such flexibility. "There's a lot a stake here," said our source.

Either way, the loss means there are now 4 Arabsat's again in the manifest. A replacement for the lost 4A which we have discussed above, plus 4B, which is almost completed and scheduled for launch later this year. And 5A and 5B, one of which might be placed on a rapid build and launch contract.

Elsewhere. The Arabsat loss has other consequences, some good and some not so good. Eutelsat, for example, might well be a beneficiary, given that it is targeting the Middle East and now finds itself – at least for the moment – with a market near desperate for capacity. A loser, however, is also Eutelsat-based, given that the virtual satellite company Noorsat now has no capacity to re-sell (it was dependent on the Eutelsat bird at 26 deg East being freed up). Omar Shoter, former General Manager of Arabsat, manages Noorsat. The other potential winner is Cairo-based NileSat, again relying for the time being on spare Eutelsat capacity and with a growing order book of clients.

That the extra satellite capacity is needed is undoubted. While Nilesat and Eutelsat are both mopping up demand, those local broadcasting needs seem never-ending. Back at the start of 2004 Dubai's uplink and play-out specialists Sama Communications (SamaCom) was handling just 23 channels, and considered itself very

FEATURES

happy with progress. After all, the previous year had closed with just 9 channels being uplinked and to double business in a year was a good sign. Besides, the Earth Station's EVP Yatinder Mahajan knew that later on in 2004 pay-TV operator Showtime was transferring its operations from London, and would start needing SamaCom's facilities in a big way. By December the extra Showtime business took the total number of channels uplinked to 86.

"This was our boom year and we thought we'd never do that again," says Mahajan. "But last year we took the total to 145 channels, plus dozens of radio stations. Our turnover rose to about AED70m ($19m). I'd expect to add another 15-20 channels or so this year. But remember there have been certain capacity restraints. I'm reasonably confident that by year-end we'll be around 160

FEATURES

channels out of Dubai alone."

SamaCom plays out to Nilesat and Arabsat, as well as providing connectivity to other satellite operators within its orbit arc. "SamaCom was established in 2002, and we carried our first channel in March 2002. Taj TV's 10 Sports was the first channel, followed quickly by MBC," says Mahajan. "We have added channels from Orbit, added on Feb 15, moved the first of their channels to us from Rome."

SamaCom is itself playing out about 8 channels, although handles input from broadcasters like Showtime, MBC, and the other major operators based at the nearby Dubai Media City. These players have their own in-house playout but are linked to SamaCom by fibre. "MBC and Showtime give us a multiplexed stream for uplinking to their own transponders, but for other channels we multiplex here, for Dubai TV for example."

And Mahajan says besides TV, there are other prospects locally, not least broadcasting to mobiles, with DVB-H transmissions, and tests are currently being held in the region. "DVB-H has to be covered be a frequency plan for the whole of the UAE, and this has yet to be decided, as part of the wider ITU discussions, which also have yet to be decided."

Mahajan explains that SamaCom, which is now officially owned by the UAE's second licensed telco, Emirates Integrated Telecommunications (which trades as 'Du'), says they own capacity on NileSat, Arabsat and Hot Bird. "By and large, we can put broadcasters on satellite for around $400,000 per year. If they are located here in Dubai Media City, we can then supply a complete end-to-end service including fibre,

uplinking and space segment, and playout if needed. Depending on what they want we can also supply all or just portions of this end-to-end service. Playout might be $5000-$10000 a month, depending on the complexity of their demand. In terms of uplink and space segment, a 3.5 Mb/s constant bandwidth service would cost about $325,000 a year which covers fibre, uplink and space segment. A multiplexed service would cost less, about 5%-10% in general. In other words a complete package would cost less than $400,000 a year."

"As for the future, the growth will continue. I see Dubai as creating the vehicle for expression, exploiting the facilities at Media City, where there's publishing as well as production and post-production facilities, dubbing and editing, everything that's needed in effect under one roof. It is easy for broadcasters, and there are the tax incentives, as well as the very cosmopolitan nature of Dubai." 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

FEATURE

SATCOM ON THE MOVE

by Bernardo Schneiderman

Satellite Communications historically has been used for fix application for Broadcast, Enterprise, Government and Defense markets. With the current development of high power Ku and Ka-Band satellite and the new antennas tracking technologies the new wave is mobile communications via satellite. The major advantage is the portability of the solution and the broadband capacity that could bring to the end user.

The major push for this application both in Government/Defense and Commercial was the advantage to bring broadband anywhere when a broadcaster need to generate transmission and/or military/navy or disaster operation are in process and the communications is critical in the overall logistics. But the major push for Satcom on the move came during the Iraq war where both military and broadcaster crews was looking for this application to coordinate war logistics and transmit the news from the Battle zone.

Currently we have several companies focus in developing Satcom on the move for commercial and military or defense logistics.

Basically we have two kind of Satcom on the move:

- mobile Antennas that are installed in moving vehicles, train, and boats/ships and airplanes.
- Flyways Antennas that is deployed in 2 to 10 minutes for applications in Broadcast, Defense, Backup, Homeland Security and special occasions anywhere in the world that satellite communications is available in Ku-Band.

Raysat flat antenna which can be mounted on the roof of vehicles)

On the Antennas on the move several companies are developing solution for the Defense Industry in the USA among than L3, BAE, DSR and others that still in developing phase for application with Ku, KA and X-Band. Beside this market the Airline industry market Connexion by Boeing is the leader. Connexion developed during the last five years with other vendors a solution to provide Broadband in the planes that use the concept of Satcom on the move but because of the niche market we are not describing in this article their product because is for internal use at this stage.

In the commercial arena we have basically at this stage Raysat and Patriot but other companies are evaluating this hot market.

Raysat is one of the companies that started launching last year with a flat Antenna for DTH video receive only to be set in the roof of vehicles in movement. Raysat is bringing this year a broadband flat antenna to use Internet and broadband solution for vehicles on the move like a VSAT on the move.

RaySat StealthRay™ is a breakthrough in bi-directional satellite communication. The StealthRay's™ low profile (5.7"), array antenna system was designed to provide in-motion communications for vehicles on-the-move in Ku-Band. The innovative antenna system automatically searches for and acquires the designated satellite signal and maintains pointing via automatic tracking and control of the azimuth, elevation and polarization angles while the vehicle moves. The StealthRay™ offers valuable utility across a wide range of applications, including emergency communication, since it can provide users with a high-speed satellite communications link to moving vehicles independent of terrestrial infrastructure.

The system could support transmission from 64 Kbps up to 512 Kbps and could receive up to 10 Mbps. The system could be used as part of a VSAT

FEATURES

Raysat antenna mounted on an SUV

start Topology or a Mesh DAMA solution. Raysat is developing with System Integrators application for Trains, Trucks, Bus, Mobile homes and Cars. The solution is innovative and is being implemented in pilot trials in the market in Europe and the USA. The price of the terminal at this stage is in the range of US$ 25 K per unit. Considering this is the first phase of production the price is considered low comparing with Portable Flyways conventional available antennas in the market for auto-location.

The trend in the near future is that every car or vehicle will be equipped in the market with a broadband antenna in the roof. This will permit the driver access Internet, voice and video on the move. Raysat Antennas with the IP technology is a killer application for the Broadcast industry that could bring video IP from sports events and other news where the media need to bring the news in the move as the last war in Iraq and future sports events where the cameramen need be on the move like car races and other and etc.

Another manufacturer that is bringing innovation in the Satcom on the move is Patriot that is launching the fastrack system that could be used in boats, ships or Trucks. The system has option for receive only and transmit and receive solution with antennas starting with 45 cm for receive only up to 1.2 meter for TX/RX.

On the Flyaways antennas and VSAT on the move we have several companies bring solution in the market for Broadcaster, Enterprise, Educational, Military and homeland defense application.

Among then we have Patriot that launched Satcom on the move the new VSAT mobile antenna that could be mounted in SUV, Truck and could be activated in 2 minutes in average after the vehicle stop.

FEATURES

Fastrack Patriot Antennas without the radome.

The VSAT mobile is another applications for Broadcaster, Homedefense Security and other organization that need high bandwidth capacity in mobile way. This application could transmit up to 4 Mbps bi-directional with any Ku-Band satellite in the world market.

The traditional Flyaway for Video broadcaster has few models in the market from the top of the line in term of portability is Swedish with the carry on in the plane model and the low cost solution the Patriot Flyaway model see both solution below.

1.8 meter Flyaway Patriot Antenna Manual Adjustment

FEATURES

Swe-Dish flyaway antenna system

The key features are:

Compact and portable - The functionality of a fly-away compressed to suitcase size and approx. 38 kg (84 lbs), DVB Centric, High performance with speed up to 10 MBps and could be deployed in less than 5 minutes.

Satcom on the move is growing in applications and potential for reaching the consumer market in a few years with more high power satellites and microtechnology that will bring the satellite industry in another growth phase. SM

Bernardo Schneiderman has over 20 years of experience in Satellite communications and is the President of Telematics Business consultants based in Irvine, CA. He has been working in Business Development, Sales and Marketing for Satellite Carriers, VSAT Equipment Manufacturer and Consulting Companies in the USA, Latin America, Brazil and Africa developing business for the Telecom, Broadcast and the Enterprise Market Segment. He was the editor of the Publication Brazil Telematics Newsletter during 1995-2003. He has a MBA from University of San Francisco with Major in Telecom and International Marketing and BSEE from UFRJ in Brazil. He can be contacted at bernardo@tbc-telematics.com

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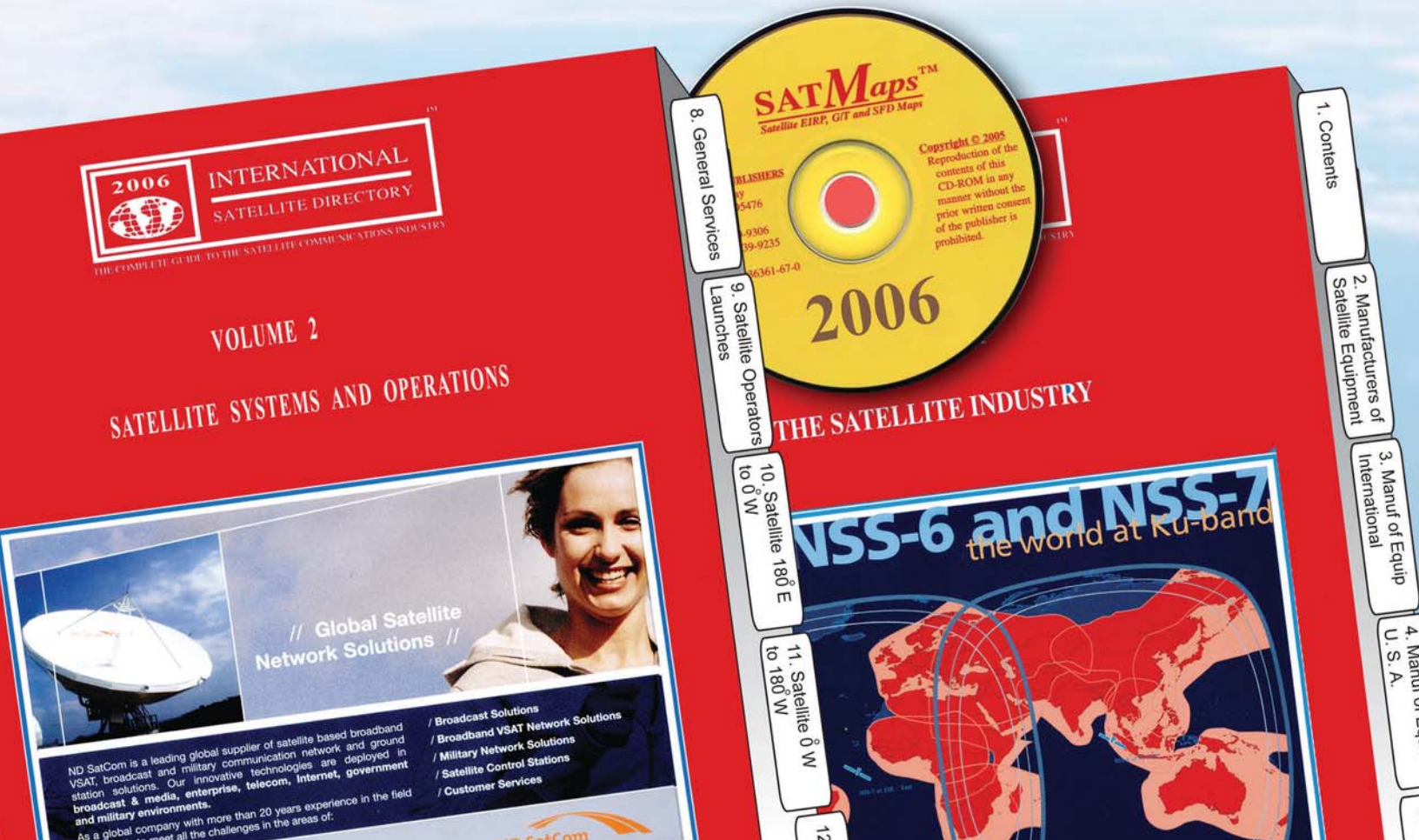

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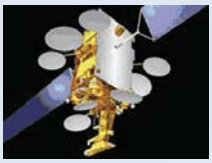

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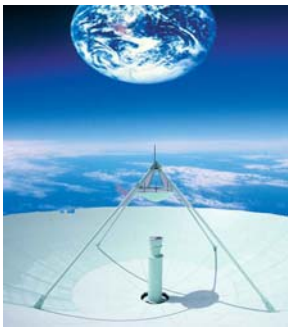
FEATURE

"But Can You Run Citrix?"

By Peter Galace

The enterprise market can seem like El Dorado – the fabled city of gold that lies always beyond the horizon — to the satellite industry. According to the World Teleport Association's Teleport Benchmarks survey of satellite service providers, the enterprise market provides 10-12% of service revenues to the average company. However, that percentage has changed little over the past decade, despite the fact that enterprise networking has grown explosively



. Ask enterprise IT executives what they most need from a network that involves satellite hops and some will talk about BTV, others about company-wide training. But odds are the vast majority will say this, "I need to run Citrix over a secure virtual private network." This seems to be the "gold" that satellite hasn't been able to touch. This enterprise application need not only apply to Citrix, but to other enterprise data platforms like SAP, PeopleSoft, Microsoft Exchange and Lotus Notes. These are the widely used, "chatty" applications that exchange data continuously between server and client. Unfortunately, chattiness strikes at the Achilles heel of satellite networks: the long latency that results from transmitting to a bird in geosynchronous orbit and back. That's 500 milliseconds at least, whereas TCP/IP was designed for terrestrial networks where latency seldom exceeds 250 ms. Higher latency slows "chatty" applications to a crawl and makes it almost impossible to create and sustain the VPN "tunnel" that ensures security.

Acceleration : An Incomplete Solution

Until now, the satellite industry has worked to solve latency problems using techniques known as acceleration. Offered by such vendors as Packeeter, Orbital Data, Encore Networks and UDcast, acceleration involves working around the TCP/IP protocol's sensitivity to latency by what amounts to slight-of-hand. This involves using Performance Enhancing Proxies (PEPs), such as leaving the header information in the IP packet unencrypted or adjusting packet size or data rate to better match the satellite environment. Vendors also use "spoofing," which sends false acknowledgements of successful transmission *before* the packet is uplinked to the satellite. The final acceleration method, multiplexing, turns a single TCP session into multiple simultaneous sessions.

Acceleration has been the reason behind recent modest gains in the use of satellite for IP-based networks–but it has major shortcomings. It typically involves adding accelerator appliances at the uplink and downlink side (i.e. the satellite provider's Network Operations Center), which must be integrated into firewalls, intrusion detectors and other devices. More devices mean more complexity in network management. The most serious problem, however, is that virtual private networks (VPNs), - the enterprise standard for secure connections to remote sites - and acceleration technologies do not "play" well together. Some popular applications, such as Citrix, simply don't provide an acceptable, multi-user experience through an accelerated, satellite-based VPN. In offering acceleration as a solution, satellite service providers are still asking their customers to sacrifice performance, and also adapt to their standard, rather than adapting to that of their customers. This is not the way to make friends in the enterprise world.

"Don't Accelerate – Optimize"

Optimization offers a new approach to solving the application performance problems over satellite and it seems to have helped one company, End II End Communications, find El Dorado. End II End (www.endiiend.com) is a privately held company headquartered in North Carolina, USA. Its founder, CEO John Dwyer, Jr., comes not from the satellite industry, but from leading IT vendors including Xerox. Having come from the enterprise world, Dwyer founded End II End with first-hand knowledge that satellite would only be accepted by IT managers when it complied with their requirements, namely LAN-like performance using secure VPNs based on industry standards such as IPSec. As

FEATURES

Doug Triblehorn

the 38 year-old Dwyer puts it, "The enterprise customer considers their WAN to be a strategic asset, built with commodity bandwidth and industry standard security. If they can't run their enterprise applications with a positive end-user experience over the WAN connection, then you will not get their business. It is that simple"

By refusing to compromise standards, the -year old company has won customers from major players on both the enterprise and satellite sides of the business: including National Gypsum, BASF, MA Mortenson, Jordache, and PanAmSat.

What is End II End's solution? It is not another device but software, based on a hardened Linux operating system that secures and optimizes all applications running over a VPN, regardless of the type of bandwidth used. The company's patent-pending software resides on Intel based PCs and servers at the network hub and each remote site. As the end points of a VPN, they measure the characteristics of the broadband circuit and continually adjust the VPN tunnels between each point. This allows every VPN session to use the maximum available bandwidth independent of the application. And because the optimization takes place within the VPN end-point, all IP Security Protocols (IPSec) remain in place, which means complete AES 256 encryption from end to end.

The result, according to satellite industry veteran Doug Triblehorn, End II End's vice president of sales, is a completely secure VPN that runs over satellite just as it would over any broadband circuit. "I can't tell you the number of customers who have come to us because they invested in satellite links for their offices and couldn't get applications to run. They installed our solution – which takes about eight minutes per site and requires no technical skills – and watched the VPN tunnels come up automatically and their Citrix or SAP work for the first time over satellite.

"Seven Times Faster"

"We tried many brand name VPN devices," says, Nick Siercho, an IT manager for BASF and an End II End customer, "and not one has come close to the performance of End II End's VPN. We saw application performance seven times faster than other VPN alternatives. I was also quite surprised with how simple it was to deploy."

All in One

Circuit optimization and industry-standard security are valuable, but they weren't enough to fulfill John Dwyer's vision. "Reducing network complexity is a high priority in the IT world," he says. "That's the pot of gold that IP offers: everything in the network speaks the same language and is managed from the same tool. While we were in development, I kept beating up on my guys to add all the functions a network administrator needed," Dwyer laughed. "It worked." As a result, the software suite provides stateful and stateless firewalls, intrusion detection and analysis, Web filter and real-time traffic analysis. Because these are integrated into End II End's software, there are no additional devices to purchase and no additional maintenance contracts to pay for.

End II End's Simple Unified Management System allows the administrator to monitor and manage every site and requires that he make only one change to affect every site. Business continuity features include auto-sensing failover to a redundant circuit and automated system recovery with the latest network configuration

.

Will other vendors follow End II End's lead in pursuing optimization instead of acceleration? "Maybe," says Triblehorn. "But with our patent application on systems and methods for broadband network optimization, they'll have to come up with a better mousetrap of their own."

It may be worth the effort. According to Mark Calkins of M.A. Mortenson Company, a major Citrix shop, "End II End's software is a magic bullet – the missing piece to our networking puzzle. We can now deploy our enterprise applications anywhere in the world within a couple of weeks."

Nick Siercho of BASF agrees. "Anywhere there is a satellite dish," he says, "End II End will be our solution."

From a young company with funding, a sales team headed by a satellite industry veteran and a better mousetrap – the satellite industry might really have found a golden enterprise solution. SM

Peter I. Galace is editorial director of Satnews Publishers. He has written extensively on the telecommunications developments in Asia for numerous publications. Currently he is associate editor of Satnews Daily and Weekly editions, and art and production editor of the International Satellite Directory and the monthly e-zine, Satmagazine. He can be reached at peter@satnews.com.

MARKET INTELLIGENCE

Capitalizing on the Broadband Satellite 'Value Proposition' through Advanced Training

by Ralph Brooker, Pete Zilliox and David Hartshorn

From the beginning, the VSAT industry recognized that VSAT installers would require training to transform a pile of cables, electronics, and antenna parts into a revenue-making VSAT terminal. Up to now, most VSAT installer training programs have focused on how to bolt up the components and mount parts to a roof or wall, providing instructions about how to make certain indicators illuminate and/or achieve minimum levels on meters or displays. But unintended consequences of basic "bolt it up" training have become liabilities and cost burdens for the VSAT industry. Without a solid understanding of the fundamentals of the satellite link, it is easy for installers to accidentally cause interference and difficult for them to troubleshoot problems.

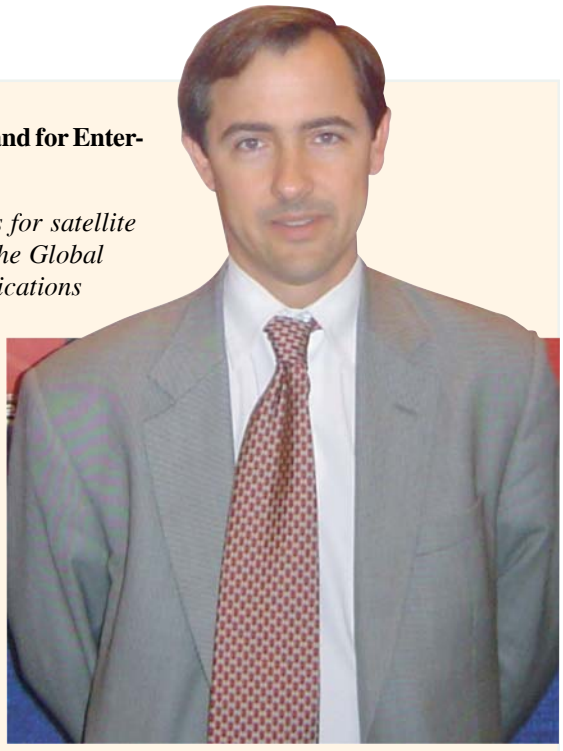
Without solid training in the engineering fundamentals, technicians must resort to swapping hardware to troubleshoot problems. Often the item removed is not actually defective, but it is returned anyway and joins an ever-growing pool of equipment of unknown quality circulating around warehouses, repair depots, and distribution centers. With today's high-volume VSAT production hardware, simply evaluating and re-testing questionable equipment often costs more than manufacturing it in the first place.

Further, even replacing all the parts may not solve the problem. The dish might not be aligned accurately, cross-pol may not be set correctly, or cables may have reflections due to improper connector attachment. These errors don't just affect the service quality of the particular installation — they can cause the entire VSAT network to be disrupted or can even create debilitating interference on other satellites.

Often a simple "shotgun" approach to troubleshooting is not successful and are return visit with additional hardware or a technician with higher-level must be

Industry-Endorsed Training Program to Promote Certified Installers as Demand for Enterprise and Consumer Satellite Systems Continues to Grow

Lucrative opportunities are being created in enterprise and consumer markets for satellite earth station installers, according to David Hartshorn, Secretary General of the Global VSAT Forum, the non-profit association of the international satellite communications industry. In this SatMagazine.com *interview, Mr. Hartshorn details how his organization is positioning satellite communications installers to strengthen their businesses in key vertical markets such as disaster recovery, oil & gas, rural broadband, military, in addition to the consumer market.*



SatMagazine.com: We've heard that a new online training program has been launched for installers of satellite broadband systems. True?

Hartshorn: Yes, it's true. Recently, the Global VSAT Forum (GVF) and SatProf, Inc. launched online VSAT installation training that enables more cost-effective delivery of our courseware. Now, installers can take the first two course levels online, and then complete the third and final level at one of our on-site classes, where we provide hands-on guidance on how to install a live bi-directional broadband system.

scheduled. Not only are such repeat truck rolls extremely expensive to the service provider, they do great damage to the customer relationship. Broadband satellite services must compete with terrestrial services such as DSL and leased lines, which are generally simpler to install; the VSAT industry cannot afford a reputation of imperfect installations and frequent return visits.

Responding to the challenge

Interference, lost hardware, site revisits, disgruntled customers, and good hardware returned for repair could all be reduced by more thorough installer training. When technicians have a solid understanding of the fundamental concepts behind the VSAT terminal's operation, they are much better equipped to perform tasks such as peaking the antenna accurately, setting cross-pol with precision, and interacting efficiently with a satellite operator's Network Operations Center staff to resolve problems.

The Global VSAT Forum (GVF) is a not-for-profit association representing the VSAT industry around the world. Its 180+ members include the major satellite operators, VSAT service providers, equipment manufacturers, and other satellite industry organizations. Its activities include promotion of VSAT solutions, regulatory efforts, conference and seminar events, business development support, and education.

In 2002, responding to membership requests to address the increasing problem of interference due to improper VSAT installations, the GVF initiated a Certified VSAT Installer program, comprised of a three-course sequence of classroom sessions. Classes are given periodically in the U.S., South America, Middle East, Africa, and other venues. The Certified Installer database now lists hundreds of installers worldwide.

To increase the reach and effectiveness of this program, the GVF has teamed with SatProf, Inc. to make the fundamentals portion of the training available on-line. SatProf, which was founded by satellite systems engineering professionals who together have over 50 years of industry and in-house training experience, has now developed techniques for highly interactive, real-time simulator-based instruction based on Web delivery to the Macromedia Flash reader in standard browsers.

The new on-line program takes a step beyond conventional classroom training modes with their rigid class times and places (with the attendant travel and lost labor costs). Moreover, SatProf engineers discarded the notion that distance learning material should be "pushed" to the student in aural/visual format without interaction, as is the case with books, tapes, and videos. Instead, SatProf adapted the use of the Internet as the platform for interactive, animated training courses. SatProf courses can be accessed 24 hours per day each day of the year from any location with Internet access. The SatProf courses focus on presenting a fundamental understanding of the technical topics with heavy doses of animation and virtual reality engines to support interactive 'play' with the instruction tools.

The GVF on-line training consists of two course levels. Level 1, entitled "Introduction to VSAT Technology," presents an overview of satellite communications principles, and is followed by Level 2, "VSAT Installation Fundamentals."

Introduction to VSAT Technology – Level 1

In the Level 1 course, the student receives an overview of satellite communications, with emphasis on VSAT applications, for technicians, engineers, managers, and IT professionals. It presents an overview of the technology and history of satellite communications,

But this partnership is about more than just training: When an installer gets GVF Certified, we post their name – or, if they prefer, the name of their company – on an online database that's accessible to the major satellite communications service providers. All of the major satellite operators, the manufacturers, the value-added resellers… we are, in effect, putting them together with our Certified Installers, who will have the information tools that equip them to deliver top-level installations for consumer and enterprise jobs.

SatMagazine.com: Enterprise.

Hartshorn: Yes, enterprise. The Global VSAT Forum's core activity – our 'mission' – has been to promote the delivery of two-way satellite systems and services worldwide. Until recently, all of our activity has been focused on enterprise markets because that's where 2-way services have traditionally been deployed. Last year, when we opened our U.S. office, we saw a tremendous untapped opportunity for DBS installers to make additional business conducting installations in the enterprise markets.

focusing on Very Small Aperture Terminal (VSAT) networks and how they compete with terrestrial alternatives. The fundamentals of spacecraft operation, orbits, and coverage are explained, followed by an overview of ground equipment hardware and alternative methods for sharing space segment cost. The course concludes with a discussion of the main technical, economic, and regulatory factors of VSAT networks. The student is exposed to topics and terminology such as:

- Spacecraft Signal Path Building Blocks and Flight Control Systems
- Satellite Bandwidth and Capacity
- Spacecraft Orbits
- RF Spectrum Assignments allo cated for Commercial Satcom
- Channel Latency
- Regional Coverage Footprints
- Analog/Digital TV, IP, Voice, Media Satellite Services
- Advantages of SATCOM
- Disadvantages of SATCOM
- Earth Station Varieties
- Satellite Transmission Access Techniques
- Digital Video Broadcasting (DVB)

The on-line course medium consists of animated & interactive HTML/Flash movies presented in a self-paced screen prompt style. During the course, the student is encouraged to explore diagrams using mouse rollovers, turn knobs, adjust antennas, and tune test equipment, courtesy of the on-line simulator functions. For example, in screen shown in Figure 1, the student is prompted to turn the "Frequency" and "Amplitude" knobs on a virtual RF signal generator. As the knobs are turned, the student is given a graphical representation of amplitude variation and how frequency variations affect the signal's wavelength.

Review quizzes are given after each of the ten lessons and a final test is given at the end of the course. The prerequisites for the course are simply an interest in satellite communications. Level 1 consists of approximately 100 learning pages, requiring 5-10 hours study.

VSAT Installation Fundamentals - Level 2

The Level 2 course presents the fundamental knowledge and skills that all VSAT installers need for high-quality, interference-free installations. Like Level 1, this course consists of animation and interactive HTML/Flash movies presented in a self-paced on-line format. The animation and simulator-based interactivity are used even more extensively to bring critical technical concepts to life. The Level 2 student learns fundamentals of signals, noise, modulation, antennas, propagation, and link budgets. The key techniques necessary

SatMagazine.com: You say, 'markets'. Can you give me a few concrete examples?

Hartshorn: Sure. Take hurricanes Rita and Katrina. GVF Certified installers were on the ground conducting installation of 2-way satellite services used by corporations and government agencies for restoration services. And they were paid handsomely.

SatMagazine.com: OK, what other markets?

Hartshorn: First, let me finish on what we're doing to promote our Certified Installers' business in the disaster recovery market. Recently, we also reached an agreement with the International Association of Emergency Managers to jointly roll out our organizations' Certification programs. Installers who get GVF Certified will be recommended to more than 2,000 U.S. emergency management professionals at the local, state and federal levels. And hurricane season is coming up again shortly.

We're taking a similar approach in the other vertical markets, too. Last week, for example, we put our Certified Installers in direct contact with a VAR [value added reseller] that's involved in the rollout of a 3,000-site VSAT network for the rural broadband sector. Also recently, we met with the U.S. Army and Air Force, which needs qualified VSAT installers. Retail, the cellular industry, the oil & gas patch… we are leveraging strategic relationships in each vertical market to drive business to our Certified Installers.

SatMagazine.com: So, what do installers do to take advantage?

Hartshorn: For installers who haven't already taken the first two GVF training levels, they are now accessible at www.gvf.org. Installers can register for Levels 1 and 2 today. Completion of Level 3 – which results in full GVF VSAT Installation Certification – can then be made by taking a short on-site course. *Satellite Expo 2006* in Atlanta this April will be the location of the next on-site class, and we offer discounts for installers who simultaneously sign up for training on two or more levels.

for a high quality installation are treated in detail, starting with the site survey, continuing with equipment installation and accurate antenna pointing, carrier lineup and cross-pol checks, indoor electronics installation, and IP network configuration concepts. The course concludes with a review of the installation process, troubleshooting tips, and maintenance guidelines. The student is learns topics and terminology such as:

- Decibels (dB)
- Carrier to Noise Ratio and Digital Eb/No Ratio
- Digital Signal Primer for BPSK, QPSK, 8PSK, 16QAM
- Antenna Primer
- Polarization and Frequency Reuse
- VSAT Hardware Variations
- Forward Error Correction (FEC) Coding and Channel Bit Error Rate (BER)
- Rain Fading and Link Budgets
- Site Survey Basics, Use of Compass
- Virtual Antenna Pointing Exercises
- IP Networking
- Trouble Shooting

As an example, Figure 2 shows a screen shot of the 'virtual antenna' pointing lesson. The student is able to twist virtual wrenches and observe a typical signal strength meter in an exercise to "peak" the antenna on the satellite. (In this example, a previous student exercise had shown with simulation the proper procedure for finding the correct satellite to peak on.) The mathematical "engine" running behind the scene for this simulation introduces the real world phenomena that complicates the actual pointing process for an installer including antenna mount wind-up, backlash, atmospheric scintillation, thermal noise, actual antenna far field radiation patterns, envelope detector response, instrument gain adjustment, etc. The student can practice pointing the antenna over and over again, and can request the final pointing accuracy score – *a critical teaching step that cannot be done at all with physical equipment.*

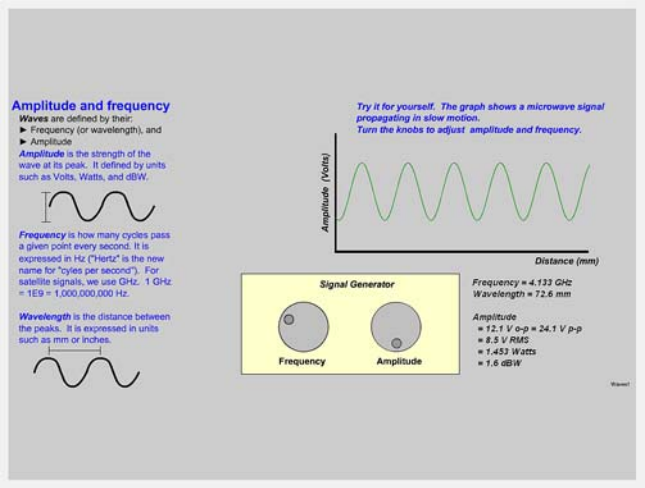


Figure 1 – Signal Generator Graphical User Interface (GUI)

As with Level 1, review quizzes are given during each lesson and a final test is given at the end of the course. The student should expect to allocate 15 to 30 hours to navigate the approximately 180 pages, depending upon the pace the student finds comfortable.

In conclusion

The Level 1 and Level 2 courses provide the installer and the industry with a learning vehicle that provides a solid foundation for understanding the engineering basics governing VSAT system operations. When VSAT installers are armed with a better understanding of the systems they are installing, the VSAT industry can expect to enjoy the economic benefits associated with lower levels of 'good hardware' circulating around for repair depots, fewer inefficient (or interference causing) terminals installed, and a happier VSAT customer base.

Students may self-register and start the courses immediately by following

SatMagazine.com: What about consumer installations? There are already lots of training courses out there for broadband satellite services. Why does an installer need GVF training for that?

Hartshorn: Good question. Some of the other courses are very good, but they are typically specific to the installation of one brand and, in order to train as many installers as possible as quickly as possible, those courses tend to lack training related to key technical concepts. The GVF course, which was developed by and at the urging of the satellite communications industry, serves as a global standard of training excellence, enabling installers of consumer terminals to do more effective installs across multiple brands, to become good trouble shooters, and to provide stronger after-sales services. On top of that, we are training them to do enterprise installs, which is a higher margin business. And as I said before, we are putting GVF Certified Installers in front of potential customers. SM

MARKET INTELLIGENCE

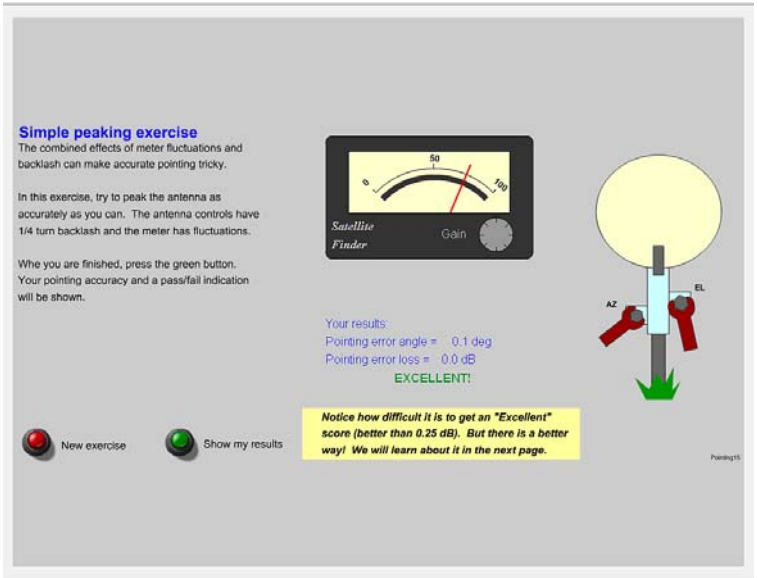


Figure 2 – Antenna Pointing Exercise

the links for Training at www.gvf.org. For more information about on-line training for satellite professionals, including additional sample pages from the GVF on-line classes and options for customer training module development, an overview presentation in the learning course format is available at www.satprof.com. SM

About GVF (www.gvf.org)

GVF is the international association of the satellite communications industry. Supported by 180 companies based in more than 80 nations in every major region of the world, GVF promotes higher standards of service, greater levels of market access, improved regulatory conditions, and heightened awareness by the private and public sectors of the advantages afforded by state-of-the-art satellite-based fixed and mobile solutions.

About SatProf, Inc. (www.satprof.com)

SatProf, Inc., was founded by **Ralph Brooker** and **Peter Zilliox,** both veterans of the satellite ground equipment and system engineering industry. SatProf offers standard and custom technical e-learning material and engineering support for satellite installers, technicians, engineers, and managers.

STOCK MONITOR

Company Name	Symbol	Price (March 29)	52-wk Range
APT SATELLITE	ATS	**1.83**	1.12 - 2.10
ANDREW CORP	ANDW	**12.47**	10.07 - 14.25
ASIA SATELLITE TELECOMMU-NICATIONS (ASIASAT)	SAT	**19.39**	15.91 - 20.55
BALL CORP	BLL	**44.15**	35.06 - 45.00
BOEING CO	BA	**79.18**	56.22 - 79.48
BRITISH SKY ADS	BSY	**37.91**	33.59 - 44.30
CALAMP CORP	CAMP	**11.75**	5.23 - 12.59
C-COM SATE-LLITE SYSTEMS	CMI.V	**0.36**	0.21 - 0.56
COM DEV INTL LTD	CDV.TO	**3.67**	1.67 - 3.74
COMTECH TELECOM	CMTL	**28.91**	28.09 - 45.65
THE DIRECTV GROUP	DTV	**16.09**	13.17 - 16.79
ECHOSTAR COMMUNICATIONS	DISH	**29.26**	24.44 - 32.33
FREQUENCY ELECTRONICS	FEI	**13.98**	9.90 - 14.35
GILAT SATELLITE NETWORKS	GILTF	**5.87**	5.06 - 7.20
GLOBECOMM SYS INC	GCOM	**7.48**	5.09 - 8.44
HARRIS CORP	HRS	**46.97**	27.25 - 49.78
HONEYWELL INTL	HON	**42.27**	32.68 - 43.15
INTL DATACASTING	IDC.TO	**0.265**	0.14 - 0.33
INTEGRAL SYSTEMS	ISYS	**26.09**	18.63 - 28.75
KVH INDS INC	KVHI	**10.92**	8.54 - 11.64
L-3 COMM HLDGS IN	LLL	**86.42**	64.66 - 88.50
LOCKHEED MARTIN	LMT	**75.50**	58.28 - 77.78
NEWS CORP	NWS	**17.49**	14.76 - 18.18
NORSAT INTL INC	NSATF.OB	**0.71**	0.43 - 1.51
ORBITAL SCIENCES	ORB	**15.92**	8.84 - 15.99
PT PASIFIK SATEL	PSNRY.PK	**0.01**	0.09 - 0.30
QUALCOMM INC	QCOM	**50.72**	32.08 - 51.18
RADYNE CORPORATION	RADN	**15.75**	7.15 - 16.33
SCIENTIFIC ATLANTA	SFA	**42.98**	26.73 - 43.90
SIRIUS SATELLITE RADIO	SIRI	**4.99**	4.36 - 7.98
SES GLOBAL FDR	SDS.F	**12.45**	6.70 - 12.47
TRIMBLE NAVIGATION	TRMB	**44.77**	26.64 - 45.00
WORLDSPACE INC	WRSP	**7.35**	5.86 - 26.00
VIASAT INC	VSAT	**28.09**	17.30 - 29.17
XM SATELLITE RADIO	XMSR	**21.80**	19.66 - 37.31

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