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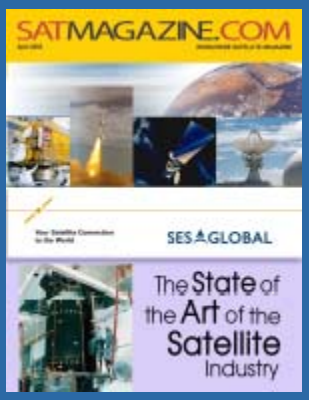
April 2003 - March 2004 | Worldwide Satellite Magazine | Volume 1

Index Issue

TABLE OF CONTENTS

Vol.1-INDEX



3 / **Issue Index--***an issue by issue guide to the articles covered in the past year*

8/ **Subject Index--** *a comprehensive reference to keywords, names and places*

Company Profiles

7/ **SES Global**

9/ **PanAmSat**

11/ **Comtech EF Data**

13/ **MITEQ**

15/ **Paradise Datacom**

17/ **Andrew Corporation/ Agile Communications Systems**

19/ **FOXCOM/ Global Link Productions, Inc.**

21/ **Advanced Projects Intl./ Microspace Communications Corp.**

23/ **PROMAX Electronica S.A./ Sector Microwave industries, Inc.**

25/ **ISCe 2004/ W.B. Walton Enterprises**

27/ **About the Authors**

28/ **Calendar of Events**

SATMAGAZINE.COM

Published monthly by
Satnews Publishers
800 Siesta Way
Sonoma, CA 95476 USA
Phone (707) 939-9306
Fax (707) 939-9235
E-mail: design@satnews.com
Website: www.satmagazine.com

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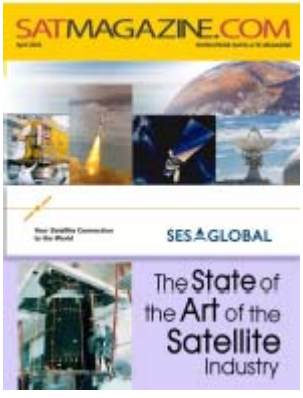
ISSUE INDEX

An issue by issue guide to Volume 1: April 2003-March 2004

Vol.1, No. 1
April 2003
The State of the Art of the Satellite Industry



Message From Sir Arthur C. Clarke

The State of the Art of the Satellite Industry
by Virgil Labrador

The Satellite Broadband Promise
by Dan Freyer

SES Americom: "We'll Jump Start A2H This year"
by Chris Forrester

Are You Protected?
by John Puetz

European Pay-TV: "The Rise and Rise of DTH"
by Chris Forrester

Post-War Opportunities in the Satellite Industry
by Bruce Elbert

Company Spotlight: SES Global--Preparing for 2010
by Chris Forrester

Vol.1, No. 2
May 2003
Military Satcom Market

Good War, Bad War
By Chris Forrester

Asian Businesses Change Plans to Cope with SARS
by Stuart P. Browne

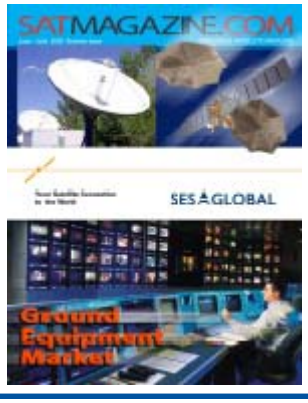
Eutelsat Offers Ka for DTH
By Chris Forrester

Space Tourism: A Valid Market by 2021
By Chris Forrester

Interview with Americom Government Services President David Helfgott

Commercial Off the Shelf Solutions for Military Communications
By Bruce Elbert

Vol.1, No. 3
June-July 2003
Ground Equipment Market



Asia's Cable and Satellite Industry is Bouyant
by Cable and Satellite Broadcasting Association of Asia

ISCe 2003: Where Innovative Satellite Technologies and Business Meet

Europe's New Sat Channel Boom and Bust
by Chris Forrester

European Union: Preparing for "Aquis"
by Chris Forrester and Roger Stanyard

Europe Satellite Radio Goes Ahead
by Chris Forrester

Guidelines for Success in the Asian Equipment Market
by Bruce Elbert

Interview with Americom Asia-Pacific's Deepak Mathur

ISSUE INDEX

Vol.1, No. 4
August 2003
Satellite Manufacturing: The New Reality

The New Reality in Satellite Manufacturing
by Bruce Elbert

DTH in Spain: "Savings on Satellite Transmission"
by Chris Forrester

Evolving Satellite Applications
by Dan Freyer

Indian TV in a Mess
by Chris Forrester

Satellite Challenges and Solutions Cross All Borders: A Case Study in Africa
by Howard Greenfield

Technical Tutorial: Internet via Satellite--IP overview
by D.C. Palter

U.S. Programmers: Now Franchising in Europe
by Dan Freyer

Vol. 1, No. 5
September 2003
Opportunities in the European Satellite Market

Will Satellite Deliver Mass Market Internet Service to Europe?
by Howard Greenfield

Set Top Box PVR's: A Long-term Opportunity
by Chris Forrester

VSAT4D in India
by Stuart Browne

From Aerial to Dish: How Satellite Changed Broadcasting
by Bruce Elbert

Bringing VPNs and Broadband Satellite Connections Together
by John Puetz

DOD Satcom Procurement: Time for a Change
by David Helfgott

Vol. 1, No. 6
October 2003
The Telecom Market

ITU Telecom '04: The Demarcation Between our Boom/Bust Past and an Open Future
by Bruce Elbert

SES Global: More Optimistic about 2004-5
by Chris Forrester

Finding Growth and Profitability in Enterprise Markets
by Alan Gottlieb

BBC to Export Playout Model
by Chris Forrester

Al-Jazeera: Adding to its Core Message
by Chris Forrester

Inteview with Integral CEO Steve Chamberlain

Technical Tutorial: Protecting Valuable Satellite Bandwidth
by John Thoma

ISSUE INDEX

Vol. 1, No. 7
Noveber 2003
New Satellite Applications

What's Hot in Satellite Applications
by Virgil Labrador

Europe's First HDTV Channel Imminent
by Chris Forrester

The Future of VSAT Networks
by Stuart P. Browne

The Energy Industry Turns to High-Tech VSATs
by John Puetz

BT Broadcast Services: "High Margins Starting to Flow"
by Chris Forrester

Inteview with Tiscali SVP Mario Mariani

Making Your Idea Happen--Creating a Viable Satellite Application
by Bruce Elbert

Vol. 1, No. 8
December 2003
Emerging Markets

Markets Emerging Around the World
by Howard Greenfield

The Emerging Market for HDTV in North America
by Chris Forrester

European HDTV: Will it Fly?
by Chris Forrester

The "Right Match": Introducing DBS to the Philippines
by Thomas van der Heyden

Emerging Markets From Global Trends
by Bruce Elbert

Inteview with News Skies' CEO Dan Goldberg

Vol. 1, No. 9
January 2004
Years of Transition in the Satellite Industry

2003-2004: Years of Transition in the Satellite Industry
by Bruce Elbert

The View from Europe: A Look Back at 2003 (and 1993)
by Chris Forrester

The View from Asia
by Stuart P. Browne

A Fresh Approach to Evaluating and Purchasing a Communications Satellite System
by Harold E. McDonnell

The Battle for the Oilfield Customer
by Alan Gottlieb

Are we Listening?
by John M. Kealey

ISSUE INDEX

Vol. 1, No. 10
February 2004
Whiter Broadband?

Whither Broadband?: What's in Store for 2004
by Virgil Labrador

SES Global: Still Looking to Buy
by Chris Forrester

VSAT Technology: Which Way to Go?
by Frank Francyzk

Dubai's Showtime: Worth $ 1 Billion+
by Chris Forrester

Pilgrimage to Sri Lanka: A Meeting with the Father of Communication Satellitee, Sir Arthur C. Clarke
by Peter Escher

Broadband Satellite Services: Another Year, Another Strategy
by Bruce Elbert

Vol. 1, No. 11
March 2004
Satellite Operators

Satellite Operators Seek New Domain Knowledge
by Bruce Elbert

Abu Dhabi Goes Global
by Chris Forrester

The Secrets of Broadband-on-Demand Revealed
by John Puetz

20 million XM Subcribers by 2010
by Chris Forrester

VoIP and the Future of Satellite Communications
by Errol Olivier

Inteview with Hellas Sat CEO Christodoulos Protopapas

Plus...

In each issue of SatMagazine, there are regular features and columns such as *Company Spotlight, Financial Snapshot, Calendar of Events, Industry News, Executive Moves, New Products and Services, Market Intelligience, Vital Statistics* and much more...

Future Issues:

April 2004 Satellite Broadcasting

May 2004 Ground Equipment

June 2004 Enterprise Market

July-August 2004 Satellite Sports Coverage

PROFILES

SES GLOBAL
Your Satellite Connection to the World

SES GLOBAL is the world's leading satellite services provider. As a strategic management company, SES GLOBAL heads an outstanding network of satellite operators, whose satellites together cover 95% of the world's population with unequalled depth of regional knowledge and market penetration.

SES GLOBAL's operating companies SES ASTRA, SES AMERICOM and WORLDSAT, and its partners AsiaSat, Nordic Satellite AB, Star One and Nahuelsat, provide unrivalled transmission capacity and landmass coverage through a modern fleet of 40 geostationary communications satellites at 31 orbital positions. The fleet consists of 29 fully-owned satellites (13 ASTRA, 11 AMERICOM and 5 WORLDSAT spacecraft), plus 11 satellites to which SES GLOBAL provides access through equity participations (3 AsiaSat, 2 SIRIUS (NSAB), 5 Brasilsat (Star One), 1 Nahuelsat).

SES GLOBAL stands for a culture of highest quality of service. This quality focus in all business areas enables the SES GLOBAL companies to achieve transponder availability levels of 99.99% which rate among the highest in the industry.

SES ASTRA

SES ASTRA, a 100%-owned SES GLOBAL company, operates ASTRA, Europe's leading direct-to-home satellite system. At year-end 2002, ASTRA transmitted 1,174 channels to 92 million homes in 30 European countries. ASTRA also offers a comprehensive portfolio of broadband and occasional use solutions, as well as broadcast-related support services such as contribution links, uplink, multiplexing and encoding services. And through its TechCom services line,

SES GLOBAL Headquarters in Betzdorf, Luxembourg

ASTRA provides technical solutions and consultancy services to other satellite operators.

In addition, ASTRA provides a complete range of proven broadband network and community management solutions for the delivery and easy reception of data-rich DVB-IP compliant content.

SES AMERICOM

SES AMERICOM, a 100%-owned SES GLOBAL company, is the leading provider of satellite communications in the U.S., supporting the distribution of content and end-to-end communication solutions for cable programmers, radio and television broadcasters, enterprises, ISPs, educational organisations, and government agencies by providing bandwidth, transmission services and customised networks. AMERICOM's premier cable neighbourhoods reach approximately 80 million homes.

SES GLOBAL

Mirroring the ASTRA system in Europe, SES AMERICOM has developed the DTH platform AMERICOM2Home™ at 105.5° and 105° West, providing capacity to broadcasters and content providers to transmit television and broadband Internet services to consumers in the U.S.

WORLDSAT

As a fully-owned SES GLOBAL company, WORLDSAT interconnects the world's premier satellite systems, providing seamless solutions worldwide for international broadcasters, secure data networks, value-added resellers and telecoms.

A Global Network of Partners

SES GLOBAL also holds significant investments in partner companies around the world: 34.10% participation in AsiaSat, Asia's premier satellite operator, providing transponder capacity for broadcast and telecommunications services in the Asia-Pacific region; a 19.99% interest in Star One, operator of Brasilsat, the largest satellite fleet in Latin America; a 28.75% stake in Argentinian-based Nahuelsat; and a 75% participation in Nordic Satellite AB, operator of SIRIUS and providing complementary services to the European capacities of ASTRA in the Nordic countries, the Baltics and in Eastern Europe.

www.ses-global.com

SUBJECT INDEX

***Editor's Note*: Page references consist of an issue number and a page number, separated by a colon. Issue numbers are: 1-April 2003, 2-May 2003, 3-June/July 2003, 4-August 2003, 5-September 2003, 6-October 2003, 7-November 2003, 8-December 2003, 9-January 2004, 10-February 2004, and 11-March 2004.**

A

A2100 spacecraft, 2:6, 9:8
A2H (AMERICOM2Home)
  in 2004, 10:13
  launch of, 1:23–1:25, 1:33–1:36
  revenues, 6:12
  and satellite broadband, 1:20
ABI Research, 6:5, 6:6
ABN Amro, 3:10
Abu Dhabi TV, 11:13–11:14
Acquis (acquis communautaire), 3:17–3:19, 3:36–3:38
ACU workstation, 10:34
Adams, David, 10:11
adjacent satellite interference, 6:19
Advent Communications, 2:27
Advertising Masking, 3:10
Agnew, Carson, 2:23
AGS (Americom Government Services), 2:25–2:26, 9:22
Air-VSAT, 2:29
al Maktoum. Mohammed, 10:25
Al Sayed, Yousuf
  and ISCe 2003, 2:23, 3:11, 4:9
  and ISCe 2004, 11:5
AlAyyar, Faisal Hamad, 10:24
Albaugh, Jim, 4:3
Alcatel Space
  AMC-9, 1:7
  and Astrium, 3:4
  and DSL, 10:28
  and satellite radio, 3:20, 3:21
  and Satlynx, 10:13
AlfaCam, 5:6, 7:10, 10:31
Al-Hamed, Ali, 11:13
Al-Jazeera, 6:21–6:22
Aloha Networks, 11:9
al-Thani, Hamad bin Thamer, 6:21
American Cable Channels on European DTH Packages (chart), 5:11
American Tower Corporation (ACT), 5:5
America-To-Home. *see* A2H (AMERICOM2Home)
Americom Asia-Pacific, 3:31
Americom Government Services. *see* AGS
AMERICOM2Home. *see* A2H (AMERICOM2Home)
Amor, Joe, 9:22–9:23
AmosConnect, 2:30
Analytical Hierarchy Process (AHP), 10:21
Andrew Corporation, executive moves, 8:10
Antenna Hungária, 3:17–3:19
AntennaMikro, 3:18
AOL Time Warner. *see* Time Warner
Aon Space, 3:28
Apax Partners Worldwide LLP, 7:5
Apollo Management LP, 7:5
Arab Digital Distribution (ADD), 10:25
Arab Radio & Television (ART), 10:25
Arab States Broadcasting Union (ASBU), 11:13–11:14
ArabSat, 2:18, 8:13, 10:26
Arback, Jacob, 8:11
Arcidiacono, Antonio, 3:4–3:5
Ariane 5 rocket, 5:13, 6:5–6:6
Arianespace
  and Amos 2, 9:10
  Ariane 5G rocket, 5:13
  and EADS, 3:4
  and SeaLaunch, 9:25
  SMART-1, E-Bird, & INSAT 3E, 6:5–6:6
Arnold, Brian, Lt. General, 3:11, 4:9
Arthur C. Clarke Foundation, executive moves, 7:7
ASCENT study, 2:20–2:21
Asia, success guidelines, 3:27–3:28
Asia-Pacific Satellite Communications Council, and ISCe 2004, 8:7, 9:5, 9:6–9:7
Asia-Pacific Satellite Communications Summit, 7:32
Asia-Pacific Space Cooperation Organization (APSCO), 9:18
AsiaSat
  and CASBAA, 3:10
  market region, 10:15
  and SES Global, 1:7, 1:16, 1:33
  and SpeedCast, 1:36
  and TCA, 2:28
Associated Press Television News (APTN), 2:10, 7:19
Astra. *see* SES Astra
Astrium, 3:4
Astro, 3:9, 3:28
Astrolink, 1:19, 4:14, 10:12
AT&T, 11:23
AT&T Broadband, 4:16
ATK (Alliant Techsystems), executive moves, 2:7
Atlas rocket, as Proton backup, 9:25
Auque, Francois, 3:4
Austin, Roxanne, 1:23, 5:15
automatic suppression systems, interference, 6:17
Average Revenue Per User (ARPU), 10:9, 10:19–10:21, 10:24
AVL, 2:27
Aygun, Illhami, and ISCe 2003, 3:11, 3:12, 4:9, 4:12

B

backup connections, 1:26–1:27
Baikonur Cosmodrome, 1:7, 9:10, 10:13
Baker, James, 9:17
Ballantine, Adrian, 10:10, 11:8
bandwidth on demand. *see* BOD (bandwidth on demand)
bandwidth, mitigating interference, 6:17–6:20
Baroud, Ramzy, 6:22
Bartholomew, Martin, 8:26
Bartolone, Dave, 4:18
Baugh, Christopher, 3:12, 4:12, 7:9–7:10
Bausch, Romain, 1:33–1:36, 6:11
BBC, 3:10, 6:15–6:16
Bear Stearns
  DARS outlook, 11:20
  and PVR, 5:15
  residential broadband outlook, 1:20
Becher, Klaus, 2:9
Bednarek, Robert, 10:15, 10:17
Berretta, Giuliano
  and Eutelsat, 9:15, 9:16, 10:29–10:33
  and Ka band, 2:15–2:16
Berry, Robert, and ISCe 2003, 3:11, 4:9
BGAN (Broadband Global Area Network)
  expansion, 9:13–9:14
  mobile IP router (graphic), 7:21
  and oil service industry, 9:29, 9:31
  and Thuraya, 1:31
Bhalla, BG, 5:18
Bharat Electronics, 5:18
Bicknell, Marcus, 1:33
Bilotti, Richard, 8:19
bin Abdullah, Khalid, 10:25
bin Talal, Waleed, 10:26
Binariang Satellite Systems, 1:9, 3:9, 5:6
Binder, Michael, 7:32
Birla, Kumar Mangalam, 4:30
"Birth of Broadband" (report), 7:29
BitCentral, 4:17
Bitove, John, 11:18
Bitterman, Mark, and ISCe 2003, 3:11, 4:9
Blackwell, Sheila, 1:20
Blair, Tony, 8:26
Bloomberg Television, 3:10, 5:9
BOD (bandwidth on demand)
  and Cyber.Net, 9:11
  and oil service industry, 9:30
  and QoS (chart), 11:15
  selecting services, 11:15–11:17
  and Spaceway, 1:20
Boeing
  601 platform, 3:9, 5:6
  executive moves, 1:11
  and ISCe 2004, 8:7, 9:5, 9:8
  revenue losses, 4:3
  venture with Lockheed Martin, 2:5
Boeing Launch Systems, and Air Force contracts, 4:5
Boeing Satellite Systems, 2:7–2:8

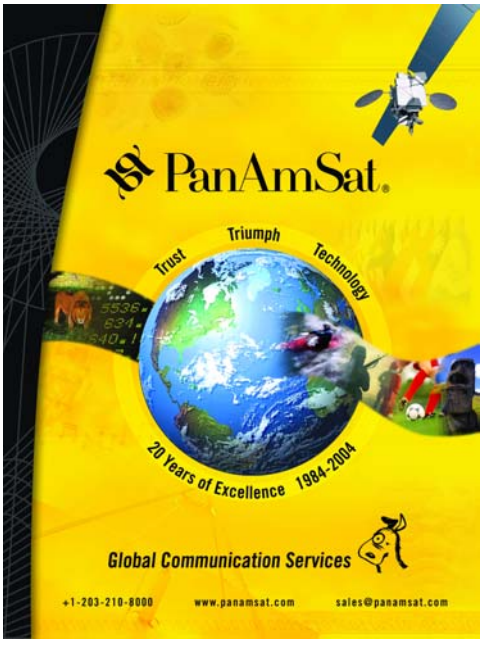
PROFILES

PanAmSat operates one of the largest satellite-based global communications networks and is the premier provider of satellite-based solutions to leading media, telecommunications and information service companies around the world.

As the world's first commercial international satellite operator, PanAmSat has been the industry innovator from the start. Now, PanAmSat has evolved into a leading network solutions provider, leveraging satellites, fiber and ground stations to offer advanced services to more than 700 blue-chip customers. With offices on six continents, PanAmSat understands that each region's unique requirements and partners with its customers to develop world-class solutions to meet business needs.

We provide communications links for:

- **Entertainment companies** such as AOL Time-Warner, the BBC, China Central Television, Discovery, Disney, NHK, TARBS and Viacom;
- **Broadcasters and news agencies** such as ABC, the BBC, the Associated Press, Bloomberg and ESPN;
- **Internet service providers** in dozens of countries that connect to the North American Internet backbone over our satellites;
- **Corporations** such as Hughes Network Systems, General Motors, DaimlerChrysler and Walgreen's; and
- **Telecommunications service providers** in the United States, Latin America, Africa, Europe and Asia.



PanAmSat manages a global fleet of more than 24 satellites for the delivery of video and data. This fleet is capable of reaching 98 percent of the world's population and is ideal for supporting advanced digital services such as high-definition television and digital store and forward as well as program distribution, broadcast services, data solutions and connections to the North American Internet backbone.

In addition to its global fleet, PanAmSat uses a fiber network as a key element to support customer requirements for both video and data transport. To improve customer access to teleports and satellites, PanAmSat has integrated fiber into its network to expand reach with additional points-of-presence. This allows PanAmSat to increase reliability and redundancy as well as support future development of advanced video a data services.

Through creativity, innovation and commitment to quality, PanAmSat has expanded communications technologies worldwide and continues to develop advanced services. PanAmSat has altered the commercial satellite landscape around the globe and today leads the industry that it has shaped – and that it will continue to shape for years to come.

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SUBJECT INDEX

For an explanation on volume and page notations go to Editor's note on page 8.

Connexion by Boeing, 6:10, 7:10, 9:12, 9:21
executive moves, 1:10
manufacturing capacity, 1:17
and Measat-3, 1:9, 3:9, 5:6
Boeing Space Systems, 3:10
Bookataub, S. Joseph, 11:10
Boutelle, Steve, Lt. General, 5:24
Boyd, Steve, 7:7
Branch, Kenneth V., 4:5
Braun, Walter, 9:24
Bravo HD, 8:16
Breckon, Alex, 2:7
Breeze M rocket stage, 1:7, 5:6
Briggs. Fred, 7:32
Brinkley, Randy, 1:10
British Radiocommunications Authority, 1:24
British Telecom Broadcast Services (BTBS), 5:13, 7:18–7:19
Broadband Global Area Network. *see* BGAN (Broadband Global Area Network)
Broadband Satellite / VPN Tutorial, 5:22–5:23
broadband services
Africa, 8:11, 8:12
Asia, 10:13
Bhutan, 7:30
and BOD, 11:15
Brazil, 8:31–8:32
Broadband Global Area Network (Inmarsat), 9:13–9:14
broadband IP satellites, 9:18
business growth, 9:21, 9:23, 10:12–10:14, 10:27–10:28
cable/DSL, 1:20
Canada, 7:29
enterprise, 9:33–9:34
Europe, 3:4, 5:13–5:14, 7:23
and Gilat, 9:23
and HDTV, 8:19
Hong Kong, 7:29
Iraq, 10:35–10:36
Japan, 3:9
Latin America, 8:31
listening to customers, 9:34
Malaysia, 3:9
Middle East, 7:26
ND SatCom, 3:25
and NewSat, 10:10, 11:8
projected connections (chart), 10:12
Republic of Korea, 7:29
satellite broadband promise, 1:19–1:22
and SatLynx, 1:36
and SME and SoHo, 8:31–8:32
two-way Ku-Ka, 8:8–8:9
U.S., 7:30
wi-fi, 7:9–7:10
broadcast channels
China, 8:11–8:12
European channel growth (charts), 3:14, 3:15
Hungarian Satellite TV Channels (chart), 3:37
worldwide chart, 1:42
BroadcastAsia2003, cancellation, 2:5
Brown, David, 4:6
Brunner, Jeff, 11:10
BSkyB
and the BBC, 6:15
and Europe, 5:9
and HDTV, 8:19
and SES Global, 1:33
and Sky+, 5:15
BT Broadcast Services, 6:15
BT Group plc, 7:5
Bush, George W., 8:26, 10:3
Bush, Wes, 3:7
Butler, Jerry, Sr., 8:15
Butler, Michael, and ISCe 2003, 3:11, 4:9
Buy I program, 4:5
Byrnes, Joan M., 8:10

C

Cable & Satellite Broadcasting Association of Asia. *see* CASBAA
Cable & Wireless, 7:17
Cablevision, 7:10, 8:19
California Space Authority. *see* CSA (California Space Authority)
Callopy, Bill, 1:10
Canadian Satellite Radio, 11:18
Canal Plus, 1:33, 5:9
Canal Satellite, 1:29, 4:19, 4:20
Canal+Espana, 4:19, 4:20
Canalsatellite, 3:16
Capanina, 10:14
CapRock Services, 7:17
Carlton Communications, 7:19
Carlton mediaReel, 7:18, 7:19
Carmel Group, and ISCe 2004, 9:7
Carroll, Ken, 8:10
Carson, Scott, and ISCe 2004, 11:5
Cartwright, Charles, 1:12–1:13
Caruso, Andrea, 9:16
CAS (Conditional Access System) rules (India), 4:28–4:29
CASBAA (Cable & Satellite Broadcasting Association of Asia), 3:8, 3:10, 7:6
Caspionet (Kazakhstan), 3:18
Catalysing Access to ICT in Africa (CATIA), 6:30
Celestial Pictures, 3:9
Chamberlain, Steve, 6:23
Chan, Jeanette, and ISCe 2003, 3:12, 4:12
Chandra, Subhash, 4:28, 4:30
Channel NewsAsia, 3:9–3:10
China
manned space flight, 9:18
Ministry of Information Industry, 2:33
and WTO, 2:33–2:34
China Jitong, 2:34
China Satellite, 2:34
China Unicom, 2:34
Choi, Tom, and ISCe 2003, 3:12, 4:12
Chu, Van, 10:11
Cinemax, 8:15
Cisco, 7:14, 10:13
Clarke, Arthur C.. *see also* Arthur C. Clarke Foundation
best wishes, 1:4
and geostationary satellites, 1:18, 4:21
interview with, 10:22–10:23
and Mars, 10:3
Classen, Karl, 9:19
CLM-9600L Satellite Modem, 10:34
Cloussy, Dan, 7:8
CLSA, 7:6
CNBC Asia-Pacific, 3:9
CNN International, 5:10
Codem Systems, Inc., 10:34
Cohen, Anita, and ISCe 2003, 3:11, 4:9
Colucci, Tony, 6:8
Comcast Corp., 4:16
Comcast Sports Net, 8:15
Commonwealth Telecommunications Organisation (CTO), 6:29
CommunicAsia1992, 3:3
CommunicAsia2003, 2:5, 3:3
communication outages, 1:26–1:27
ComStream, 2:28
COMSYS, 7:30
Comtech EF Data Corp, 10:34, 11:9
Comtech Telecommunications Corp., 10:34
Connexion by Boeing
in the Asia Pacific region, 9:13–9:14
business growth 2004, 9:21
in-flight internet connections, 7:10, 9:12
content distribution network (CDN), 7:22, 9:13
Contingency Planning & Management, 1:27
Contractor, Dinyar, 2:4
Cooney, Eric, 6:25
Corbett, Joe, 7:26
COTS (Commercial Off the Shelf), satellite communications, 2:27–2:28
Cox Communications, 4:16
Crawley, Edward F., 2:8
Crisafulli, Jim, 2:4
Croatian Radio and Television (HRT), 3:19
CrossLinks, 6:12, 10:17. *see also* Worldsat
cross-polarization interference, 6:18
Crystal Computer Corporation, executive moves, 10:11
CSA (California Space Authority)
and ISCe 2003, 3:12, 4:10
and ISCe 2004, 8:7, 9:5, 9:8
CSD, 4:19
Cyber.Net, 9:11
Cyberstar (Loral Orion), 3:38

D

DalBello, Richard
and ISCe 2003, 1:38, 3:12, 4:12
and ISCe 2004, 10:5, 11:5
on satellite industry growth, 1:15–1:17
DAMA, 9:29
Dangerous Company, 6:10
Danilevicius, Linas, and ISCe 2004, 11:5
Dankberg, Mark
business growth 2004, 9:20–9:21

PROFILES

Comtech EF Data

Comtech EF Data, a subsidiary of Comtech Telecommunications Corporation (NASDAQ: CMTL), designs and manufactures a broad range of data and RF satellite communications equipment deployed in commercial and government applications around the globe. With a reputation for providing unparalleled product quality and reliability, we are committed to delivering products that continue this tradition. All products meet or exceed the standards published by Intelsat®, Eutelsat, Insat, AsiaSat and other satellite operators.

Comtech EF Data is recognized as a technology leader and innovator, with offerings such as the industry's most advanced and bandwidth efficient forward error correction, Turbo Product Coding (TPC), an array of modulation techniques plus advanced IP-centric features enabling satellite communications links to be maximized.

Typical users of Comtech EF Data products are: Satellite operators and broadband service providers, cellular service providers plus organizations with large or evolving satellite bandwidth requirements, including government agencies, homeland security, educational institutions, energy companies, mariner communications providers and others.

The line-up of data products includes Satellite Modems, Monitor & Control Software and a TCP/IP Performance Enhancement Proxy. Available with countless configurations and options, our "CDM" and "SDM" Satellite Modems provide:

- L-Band or 70/140 MHz
- Data rates from 2.4 kbps to 100 Mbps
- Full range of modulation – BPSK, QPSK, OQPSK, 8-PSK and 16-QAM
- Complete set of Forward Error Correction, such as Viterbi, Sequential, Reed-Solomon, Pragmatic Trellis Coding Modulation and Turbo Product Coding
- Range of interfaces EIA422/530, V.35, EIA232 and G.703 T1/E1, 10/100 Ethernet, LVDS and HSSI
- Local and remote management – SNMP, Web, M&C port, front panel

The IP-Centric Modems take bandwidth optimization to a new level. Available features, such as Payload Compression, Header Compression and Quality of Service improve transmission quality, enable significant bandwidth savings and increase control of bandwidth provisioning. Combine *turbo*IP™ into the equation and performance of TCP traffic over impaired satellite links can be accelerated, restoring network efficiency.

In conjunction with our sister division, Comtech Vipersat Networks, we offer the Vipersat Management System, which provides a seamless IP-based infrastructure for satellite networking. This advanced system automates bandwidth utilization while optimizing space segment efficiency. It is scalable, designed to accommodate future growth and capable of centrally managing networks.

Comtech EF Data's RF products include Converters, Solid State Power Amplifiers (SSPAs), Transceivers and Satellite Terminals. The Up and Down Frequency Converters are available in C-, Ku- or X-Band models, for the transmission of SCPC, DAMA and TDMA, as well as full transponder HDTV and analog TV. Our SSPAs for C, Ku- and X-Band frequencies are offered for use in communication systems or in satellite uplink data systems.

Our C, Ku- and X-Band Transceivers provide superior performance, long-term reliability and ease of installation. And, our Very Small Aperture Terminal (VSAT) systems are intended for applications requiring low cost components. Available in various models to support indoor or outdoor applications, C- or Ku-Band frequencies, the Terminals meet the needs of single and multiple site configurations.

Comtech EF Data products are installed in more than 160 countries from Afghanistan to Zimbabwe. With 24x7 customer support, we are prepared to assist you maximize satellite bandwidth, reduce fixed and operational costs and simplify configuration and management.

www.comtechefdata.com

For an explanation on volume and page notations go to Editor's note on page 8.

and ISCe 2003, 3:11, 4:9
and ISCe 2004, 11:5
and NewSat, 10:10, 11:8
and PTC Conference, 10:28
DARS (Digital Audio Radio Service), 2:16, 3:20. *see also* satellite radio
data compression. *see also* MPEG4; WM9
and satellite broadcasting, 1:12–1:13
technologies, 6:25–6:26
video compression evolution (chart), 8:19
Data Over Cable Service Specification. *see* DOCSIS
data-transaction services, in Iraq, 10:35
Davis, Paul R., 6:8
DBS (Direct Broadcasting Service). *see also* DTH (Direct to Home)
A2H, 10:13
and broadband, 10:27
and HDNet, 8:15–8:16
and HDTV, 8:14
D-cinemas, 10:31
de Jong, Eric, 8:10
Defense Information Services Agency (DISA), 5:24–5:25
Defense Meteorological Satellite Program (DMSP), 2:12
Defense Satellite Communications System (DSCS), 2:12
Defense Support Program (DSP), 2:12
Defense Working Capital Fund (DWCF), 5:25
delivery in orbit, 9:25
Delta rocket (Boeing Division), and Air Force contracts, 4:5
Department of Homeland Security, 2:23, 2:25, 9:22
deregulation, and foreign satellite business, 8:12
Detecon International, 1:43
Deutsche Messe AG, and ISCe 2004, 9:6
Deutsche Telekom, 3:18, 7:5
DeWitt, Patrick, 2:23
DG Systems, 4:16
Digital Angel Corporation, executive moves, 10:11
Digital Audio Radio Service. *see* satellite radio
Digital Plus, 5:9
digital processing, satellite, 4:14–4:15
Digital Rights Management, 6:26, 7:12
Digital Video Broadcast Return Channel over Satellite. *see* DVB-RCS
Digital+, 10:30
Direct Broadcasting Service. *see* DBS (Direct Broadcasting Service); DTH (Direct to Home)
DirecTV
and A2H, 1:25, 1:34, 1:35
and the BBC, 6:15
and DTH evolution, 5:20
executive moves, 11:10
and HDTV, 8:14
and News Corp., 1:8–1:9, 9:12, 9:23
and PVR, 5:15
senior secured credit facilities, 1:7
and SES Americom, 1:23
DirecWay
and broadband, 10:27
and NRTC, 1:22
and StarBand, 10:12
subscribers, 1:20, 7:30
disaster protection, 1:26–1:27, 11:6
Disaster Recovery Journal, 1:26
Discovery Networks, 3:10, 5:9, 8:15
DISH Network, 1:25, 5:6
DOCSIS (Data Over Cable Service Specification), 10:28, 11:12
DOD (Department of Defense), procurement, 5:24–5:25
Doering, Steve, 3:7
Dozier, Ken, and ISCe 2004, 11:6
Dream Broadcasting, 8:22–8:24
DSL
ADSL, Tiscali, 7:23–7:24
Alcatel Space, 10:28
Aloha Networks SkyDSL Router, 11:9
cable/DSL broadband services, 1:20
"DSL In The Sky," 10:28
and MPEG4 compression, 1:12
DSTV, 4:21
DTH (Direct to Home). *see also* DBS (Direct Broadcasting Service)
in 1993 UK, 9:16–9:17
in Asia, 3:28, 3:31, 3:32
in Bulgaria & Greece, 11:21
and DirecTV, 11:11
in Europe, 1:28–1:30, 3:5, 5:10
evolution, 5:20–5:21
in Greece, 4:31
growth, 1:17–1:18
and Hot Bird satellites, 2:15–2:16
in India, 4:28–4:30
in Iraq, 10:36
and KabelVision, 3:9
in Latin America, 4:31
in Malaysia, China, India, 1:9
in North America, 4:31
radio, 5:3
revenues, 1:15
and SES Global, 10:15
and Sky Italia, 10:32
and SkyPerfecTV, 3:9
in Spain, 4:19–4:20
in Turkey, 4:32
and VSAT, 9:21
in Western Europe, 4:31
worldwide connections (chart), 4:31
DTT Consulting, 3:17, 5:30, 10:35–10:36
Duffy, Simon, 5:7
Duplay, Christophe, 8:8, 8:9
DVB-RCS (Digital Video Broadcast Return Channel over Satellite)
Salamander report, 10:9
and SkyARCS, 3:25
and ViaSat, 10:28
and VSAT technology, 10:20

E

EADS (European Aeronautic Defence and Space Co), 3:4
Earthlink, 1:22
East Africa Regulatory Postal and Telecommunications Organisation (EARPTO), 6:29, 6:30
Eaton, Tom, 2:23
Eberhart, Ed, General, 2:9
EBU (European Broadcasters Union), HDTV study, 8:20–8:21
EchoStar Communications Corp.
and A2H, 1:25, 1:34, 1:35, 10:13, 11:12
DISH Network, 5:6
EchoStar IX, 1:6
and HDTV, 8:14
and Loral bankruptcy, 7:26
and PVR, 10:17
PVR fee plan, 5:15
and StarBand, 10:12
and technology strategy, 10:27
and WildBlue Communications, 1:22
Eetsi Telfon, 3:38
"The Effective Application of Satellite Solutions in Iraq," 10:36
Egan, Charlie, 11:12
Eid, Susan, 11:10
Eidson, Julian, 7:7
Einstein, Peter, 8:13
Eisenhower, Dwight D., 9:24
Electronic System Products, Inc. (ESP), 5:5
Electro-Radiation 2100 Series, 6:18, 6:20
Electro-Radiation Inc., 6:20
Encore International, 3:10
Encore Networks, 5:23
Enns, Daniel, 11:9
enterprise markets, 6:13–6:14
EPOCH command and control software, 6:23
Ergen, Charles, 5:6
Erskine, William David, 4:5
ESPN, 3:10, 6:15, 8:15
Euro 1080
broadcast format, 8:19
demo, 8:18
launch, 7:11–7:12
programming, 8:21
strategy, 5:6
Euroconsult, 1:18, 4:5–4:6
Europe Online, 5:13
European Parliament, Joint Sky and Space Committee, and Galileo, 2:6
European Satellite Operators Association, and ISCe 2004, 8:7, 9:5
Eutelsat
European broadband, 3:4, 5:13
and Hispasat, 10:29
and Hotbird fleet, 5:9
middle east coverage, 2:9, 2:15–2:16
rate structure (chart), 3:5
retrospective, 9:15
revenues chart, 10:31
satellite resources (chart), 1:42
and Stellat, 1:16
in Turkey, 4:32
and Xantic, 2:29
Evatt, Jim, 1:11
'Event' channel, 7:11, 7:12

PROFILES

MITEQ: A Technology Driven Company

Established in 1969, MITEQ has been committed to designing and manufacturing state-of-the-art microwave components and subsystems. With the continuous investment in technology development, the MITEQ product line continues to grow in scope and complexity.

The recent acquisition of MCL Inc., a designer and manufacturer of high power amplifiers (HPAs), greatly enhances the ability to serve the needs of MITEQ's customers in the SATCOM field. MITEQ will be expanding resources to continue MCL improvements in new product development, quality of product and customer service.

The addition of HPAs to the MITEQ product line and the internal developments in fiber-optic components for high-speed fiber-optic communication circuits further establishes MITEQ as a multi-faceted communications company, pushing the boundaries of technology development.

It is an understatement to say that MITEQ offers a wide selection of products. In fact, "we have such a broad product line that we work virtually for most of the U.S. and international system companies", says President and CEO Arthur Faverio.

These companies choose MITEQ because of its high quality products, which are designed and supported by the MITEQ engineering staff. "It's the level of technical competence", Faverio says, "plus competitively priced products built with a high level of quality and reliability, all supported by our customer service". All MITEQ products are backed with an extended warranty.

The emphasis on technical competence and product quality is a primary reason for success. MITEQ is comprised of 14 separate product units, each one headed by an engineer. When it comes to product design and service, it's an engineer who's behind it all: one who understands the products' application and the importance of engineering product development. MITEQ was founded on this principle and its success is based on the technical aspects of the customer interface. This includes the MITEQ sales/marketing staff, all of whom are technically educated.

Although there are separate product units, the technology that is developed by each unit is shared throughout the company. The major benefactor of this structure is the communications systems group. "We can draw from the technology of all of MITEQ's component areas to assemble the most comprehensive line of satellite communications frequency translation products in the world," Faverio says.

The communications products group manufactures upconverters, downconverters, test loop translators, redundant switchover units, redundant low noise amplifier systems and a wide range of equipment for Inmarsat applications. Although the emphasis of these products is in the L-, C-, X-, Ku-and Ka-bands, the frequency capabilities of current components and system products extend from video to 60 GHz.

MITEQ offers dual conversion, synthesized upconverters and downconverters, which are available in 1 kHz and 125 kHz steps in a single-rack panel height unit. These converters offer complete remote control capability over a variety of remote interfaces (RS232, RS422, RS485, IEEE 488 and contact closure).

In short, when it comes to RF satellite equipment, MITEQ pretty much has it all. And if they don't have it, they can probably build it on a custom basis to fit the customer's needs.

For more information go to **www.miteq.com**

For an explanation on volume and page notations go to Editor's note on page 8.

Evolved Expendable Launch Vehicle program, 2:5

F

F5 Networks, 5:23
Falcon orbital launch vehicle, 7:5
FCC
  HDTV mandate, 7:10
  SES Americom petition, 1:23–1:25, 1:35–1:36, 10:13
Federation of Regional Associations (FORA), 7:32
Fehervari, Gabriel, 7:11, 8:18
Feltes, Yves, 5:13
Fenez, Marcel, 3:8, 3:10
Fischer, Carl, 4:22
Fisher, Rand, Rear Admiral, 2:28
flat screen TV, 8:18–8:20, 8:21
Florida Space Authority Board, executive moves, 3:6
Flynn, Roger, 6:15
Flynt, Allen, 3:4
Forbes Magazine, 9:13
Ford, Celeste, 9:9
Fox News Network, 9:13
Foxcom, Ltd., 2:31
France Telecom, 7:5, 10:17
Franks, Tommy, General, 5:24
Franz, Gerhard, 2:24
free-to-air concept, 1:25, 1:34
French, Patrick, 8:11–8:12, 10:12, 10:14
frequency trends chart, 7:3
Freund, Spencer A., 2:4
Frost & Sullivan, 8:11, 9:8, 9:27
Frost, Mary, 5:7, 6:7, 8:17
FSS (Fixed Satellite Service) industry, 4:5–4:6
Fujisaki, Michio, at PTC'04, 7:32
Futron Corp.
  and band frequency trends chart, 7:3
  costs of satellite operation study, 9:27
  and the DOD, 5:24
  public space travel report, 2:20–2:22

G

Galaxy Satellite, 9:18
Galileo navigation system, 2:6, 2:24, 10:6
Galili, Tamir, 6:8
GAO (General Accounting Office), 5:24
Gat, Yoel, 1:10
Gates, Bill, 1:19
Gavrilis, Ted, and ISCe 2003, 2:23, 3:11, 4:9
GE Americom, 1:7
GE AstroSpace, 1:33
GEO MSS system, 1:31, 6:10
geostationary communication satellites, developers, 2:8
Gerety, Bill, 4:7
Getting, Ivan A., obituary, 7:7
Gibbs, Matt, 8:18
GigaSat Ltd., 5:28–5:29
Gil, Miguel, 2:10
Gilat Satellite Networks
  executive moves, 1:10, 4:7
  and Satlynx, 1:36, 10:13
  and StarBand, 10:12
Gillet, Jean-Phillipe, 4:7
Gilroy, Mark P., 10:11
GiTy Slovakia, 3:38
Globacom, 1:43
Global Crossing, 2:6, 6:3
Global Information Grid (GIG), 5:25
Global Mobile Personal Communications by Satellite (GMPCS), 6:30
Global Positioning System. *see* GPS (Global Positioning System)
Global VSAT Forum
  Asia-Pacific forecasts, 3:33–3:34
  and China, 2:33–2:34
  disaster recovery resources, 1:27
  and Futurecom 2003, 8:31–8:32
  Internet and VSAT Policy Workshop, 6:29
  and ISCe 2004, 8:7, 9:5, 9:7
  Satellite Communications Summit, 7:32, 10:28
Globalstar
  bankruptcy, 1:19, 4:6
  and ICO Global Communications, 2:5
  and middle east conflict, 2:10
GlobeCast
  executive moves, 1:41, 4:8, 5:7, 6:7
  and France Telecom SA, 10:17
  and Quadriga, 4:17–4:18
  and Viacom, 5:10
Goldberg, Dan
  interview, 8:28–8:30
  and NewSkies revenue, 11:24
  and Telenor, 10:15
  and transponder pricing, 10:30
Gormel, Ed, 3:6
Gottlieb and Company, 6:13, 9:29–9:30
GPS (Global Positioning System), 2:12, 2:24, 6:5. *see also* Galileo navigation system
greenfield applications, 9:34
greenfield sites, 1:12–1:13
Greenwald, Brad, 1:19–1:22, 10:13
Greer, Jeff, 11:10
Grenier, Jean, 9:16
Grindon, Michael, 2:8
Groothedde, Celia, 5:6
Gross, David, 7:32
Gross, Jeff, 1:26
Ground Control, and IPSec, 5:23
Group of Ministers (GoM - India), 4:28
Groupe Canal+, 4:19
growth chart, entertainment technologies, 7:9
GSM (Global System for Mobile Communication), 10:35
Gude, Kalpak, and ISCe 2003, 3:12, 4:12
Guerci, Joseph R., and ISCe 2004, 11:5
Gunawan, S., 3:27–3:28
Guyer, Kay, 1:14

H

H-2A launch vehicle, Japanese spy satellite, 1:8
Haislip, Wally, 7:7
Hall, Keith
  and ISCe 2003, 3:11, 4:10
  and ISCe 2004, 10:5, 11:5
Hallmark Channel, 5:9
Hannover Fairs USA
  and ISCe 2003, 1:37, 1:39, 3:12
  and ISCe 2004, 8:5, 9:6, 10:5, 11:5
Hansen, Marcus C., 1:11, 1:41
Harms, Greg, 6:8
Hartshorn, David, 2:4
Hatamiya, Kim, 2:8
Hatch, Gary, 9:21–9:22
Hawaii Pacific Teleport (HPT), 1:6
HBO, and HDTV, 8:15
HDNet, 8:15
HDTV
  and AlfaCam, 5:6
  ann Abu Dhabi TV, 11:13
  and bandwidth demand, 10:16
  in Europe, 7:11–7:12
  flat screen TV, 9:13
  growth, 7:10
  retrospective, 9:16
  and Tandberg Television, 6:25
Hedinger, Bob, 3:7
Heinerscheid, Paul, 4:7
Helfgott, David
  business growth 2004, 9:22
  interview, 2:25–2:26
  and ISCe 2003, 3:11, 4:10
Hellas Sat Consortium, 11:21–11:22
high-altitude platforms (HAPs), 10:14
Hispasat
  Berretta's views, 2:16
  market value, 10:29
  and Sogecable, 4:19, 10:30
HNS, 7:14
Home Cinema, 8:13
Home office. *see* SoHo (Small Office-Home)
Honeywell Engines, 2:7
Horner, Bob, 4:17
Hot-Air De-Icing system, 1:6–1:7
Hotbird fleet, 4:14, 5:9
Hubbard, Robert, 8:14
Hubbard, Stanley, 8:14
Hudspeth, Thomas, 2:8
Hughes
  DirecWay, 1:20, 7:30
  executive moves, 11:10
  historical challenges, 11:11
  and National Cable Communications (NCC), 4:16
  and News Corp., 1:8–1:9, 9:22, 9:23
  senior secured credit facilities, 1:7
  Spaceway, 1:19
  and Spaceway, 9:13, 10:13
HungaroDigitel, 3:18
Hunsat (Co-ordination Association of Hungarian Space Communications), 3:17–3:19
Hunter, Cameron, 5:7
Hutchison Global

PROFILES

Paradise Datacom

Intro/Heritage

Paradise Datacom is a manufacturer of satcom electronic equipment integral in providing a variety of data transfer solutions in voice, video and data networks. The company is a unique blend of over 35 years of telecom experience having absorbed such organizations as Locus and SierraCom to become today's Paradise Datacom. Paradise Datacom, with facilities in the United Kingdom and United States, has become a leader in providing Satellite Telecom Equipment. From baseband to the antenna feed, Paradise Datacom has solutions for today's communications needs.

Hardware Solutions

Paradise Datacom offers lightweight and easy to use equipment providing a high degree of user interface intelligence. All Paradise Datacom products are available in a variety of redundant configurations.

Modems - Products include the P300 Series of Modems including 70 MHz, L-Band and a Mentat SkyX© Enhanced TCP/IP Router/Ethernet interface as well as the "industry favorite" built-in 1:1capablity. These modems are also available in a 1:N configuration for even more assurance against loss of traffic. Newly released, P300VMUX version of the modem will provide a built in Vocality multiplexer with Voice/Fax, Synchronous data and Ethernet IP ports for simultaneous connectivity of multiple services.

LNAs - Paradise provides a family of quality Low Noise Amplifiers that have been an industry standard for nearly 25 years. Available in C, Ku, X, Ka and custom bands, Paradise Datacom offers some of the lowest, uncooled, noise temperatures available in the industry. LNA redundant systems and custom plate assemblies are available for all LNA frequencies as well.

1.1 KW at C Band SSPA @ 9RU

BUCs and Transceivers - Paradise offers a comprehensive line of C and Ku "intelligent" block up-converters and complete 70 MHz or L-Band transceiver solutions for lightweight VSAT applications. Output power levels are available in C-Band from 5W to 170W and in Ku-Band from 2W to 100W, all through the use of our own SSPA designs.

SSPAs - Paradise offers a variety of C, Ku, S and X Band Solid State Power Amplifiers. These are available in either small weatherized enclosures for antenna mounting, or efficient indoor packages for higher output power transmit applications. Most SSPA's can be provided with an optional integral block up-converter. Paradise Datacom SSPAs are available with power levels to 1.1 KW at C Band and 450 watts at Ku Band. Both indoor and outdoor SSPAs are available and are among the highest power, smallest and most reliable units available on the market today.

With a unique ability to cost-effectively phase combine SSPAs and provide redundancy at the same time, Paradise offers an affordable method to have a back-up SSPA and still be able to double the output when required due to atmospheric conditions or increased traffic.

Direction

Paradise Datacom has a rich tradition of providing dedicated support to its customers. This includes sales and service as well as engineering support. Paradise engineers have traveled extensively throughout the world working with customers one on one to help implement intelligent solutions in the field. As Paradise charts its future direction, the ability to listen to our customers' needs and continue to provide service and support to our customers (including system integrators, service providers and earth station operators) is considered paramount in our plans. As Paradise has evolved from an individual component manufacturer to a provider of more complex and system oriented packages, the direction of the company remains on track for continued and solid growth. For more information go to **www.paradisedata.com**

For an explanation on volume and page notations go to Editor's note on page 8.

Communications, 3:8
Hutchison Telecommunications, 2:6

I

IBM, and CASBAA, 3:10
I-Cable Communications, 3:8
ICO Global Communications, 2:5
iDirect
  and oil service industry, 9:29, 9:30, 9:31
  Swift Deploy Terminal, 7:14
IG-VPN, 5:23
Immeon Networks, 1:26, 5:29
iN Demand, 4:18, 8:16
In Search of Excellence, 11:12
Independent Television Commission (ITC), 5:11
Indian Space Research Organization (ISRO), 5:18, 9:18
Indovision, 3:9
industry outlook
  bandwidth as commodity, 6:13–6:14
  HDTV, 6:25–6:26
  satellites, 6:9–6:10
  SES Global, 6:11–6:12
  Wi-Fi, 6:6
in-flight internet connections, 7:10, 9:13
Information and Communication Technology for Development (ICT4D), 5:17
Inmarsat. *see also* BGAN (Broadband Global Area Network)
  and Apax / Permira, 7:5
  launches, 2:30–2:31
  military terminals, 2:9, 2:10
  and oil service industry, 9:31
  and TCA, 2:28
  terminals in Nigeria, 1:43
  in Turkey, 4:32
  and Xantic, 2:29–2:30
Integral Systems, Inc., 6:23–6:24
Intelsat
  business units, 1:7–1:8
  and CASBAA, 3:8
  executive moves, 4:7
  and Galaxy Satellite, 9:18
  government business, 2:3
  and Loral bankruptcy, 4:6, 7:26
  and Loral North American Skynet, 9:22
  military traffic, 2:9, 2:10
  as pioneer, 1:16
  revenues chart, 7:26
  satellite resources (chart), 1:42
  and TCA, 2:28
  in Turkey, 4:32
  and WildBlue Communications, 1:20, 10:13
  and Xantic, 2:29
Interference Suppression Units, 6:18, 6:20
interference, tutorial, 6:17–6:20
International Development Research Centre, 6:30
International Launch Services (ILS), 1:7, 5:6
International Marketing Reports, 4:6
International Satellite & Communications exchange. *see* ISCe
International Telecommunication Union (ITU) Digital Access Index, 8:11
International Telecommunications Union (ITU) Forum, 10:8–10:9
Internet and VSAT Policy Workshop, 6:29
interruption to communication services, 1:26–1:27
Intersat-H, 2:29
Invsat, 9:29
IP (internet protocol)
  "hourglass" (graphic), 3:23
  addressing, 4:23
  fragmentation, 4:24
  overview, 4:23–4:25
  path MTU, 4:24–4:25
  routing, 4:23–4:24
IPSec (IP Security), and satellite networks, 1:14, 5:22–5:23
iPSTAR, 3:28, 10:13, 10:27
IQStat, Inc, 5:5–5:6
Iridium
  executive moves, 7:8
  failure of, 1:19
  and middle east conflict, 2:10
  and oil service industry, 9:29
  and SCADA, 9:32
  and Xantic, 2:29
Irwin, Susan, 7:7
ISCe 2003
  demographics chart, 8:7
  highlights, 2:23–2:24
  Matchmaking program, 3:12, 4:10
  preview, 1:37–1:40, 3:11–3:13, 4:9–4:12
  program schedule, 4:11
  Satellite Technologies in Iraq war, 3:12, 4:12
  US-Asia Business Roundtable, 3:12–3:13, 4:12
ISCe 2004
  events, 10:5–10:6, 11:5–11:6
  organizations and events, 9:5–9:9
  preview, 8:5–8:7
Ishaq, Mustafa, 11:13
Israel Aircraft Industries (IAI), 9:10
ITU Reginal Office for Asia and the Pacific, 7:32
ITU Telecom World Forum and Exhibition, 6:3, 6:9–6:10
ITU Trends in Telecommunications Reform 2003, 7:29
ITU Youth Forum, 7:32

J

Jalife, Salma, 7:32
Jenniches, F. Suzanne, 1:10–1:11
Jennings, Toni, 3:6
Johnson Space Center, executive moves, 3:7
Johnson, Robert, 2:31
Joint Sky and Space Committee (European Parliament), and Galileo, 2:6
JSAT Corp.
  and Horizons 1, 8:27, 9:12
  JCSAT-9, 2:6
  and TCA, 2:28
Jupiter Telecommunications (J-Com Broadband), 3:9

K

Ka-band technology, for broadband, 1:19–1:22
KabelVision, 3:9
Kamel, Saleh, 10:25
Karnedy, D. Scott, 6:8
Katz Media Group, 4:16
Kaufmann, William, 10:11
Kayser, Ferdinand, 7:11, 8:11
KDDI Corp., 7:5
Kelly, Tim, 7:29
Kenya, regional satellite approach, 6:29
Kerrebrock, Jack L., 2:8
Keyhole satellites, 2:12
Khrunichev State Research and Production Space Center, 5:6
Kingston 'inmedia', 6:15, 8:29
Kiss, Amanda, 9:17
Kleiner Perkins Caufield & Byers, 10:13
KL-VSAT, 2:29
Knapp, Barclay, 5:7
Koh, Eui
  and ISCe 2003, 3:12, 4:12
  and ISCe 2004, 11:5
Korea, North. *see* North Korea
Kristal, 3:9
Ku-band, shift to, 7:3
Kulick, Betsy, 2:4
Kullman, Conny, 7:26, 9:19
Kuo, K.C., and ISCe 2003, 3:12, 4:12
Kuwait Investments Projects Co. (KIPCO), 10:24
KVH Industries, executive moves, 11:10

L

Labrador, Virgil, and ISCe 2004, 11:6
Lacrosse satellites, 2:12
launch forecast, ASCENT study (chart), 2:21
launch prices (chart), 2:21
Le Gall, Jean-Yves, 6:6
Leddy, Jeff, 9:10
Legere, John, 7:32
Leslie Taylor and Associates, 10:12
Letele, Nolo, 4:21, 4:22
Liberty Media, 1:8–1:9, 1:20, 10:13
Lindblad Expeditions, 7:10
LinkSat America, 9:11
Lippert, Keith, 11:10
Lloyd, Carmen, 7:8
Lockheed Martin
  and Air Force contracts, 4:5
  AMC-15 satellite, 1:24
  and Americom Asia-Pacific, 3:31
  Astrolink, 1:19
  executive moves, 1:11, 1:41
  joint Russian venture, 5:6

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For an explanation on volume and page notations go to Editor's note on page 8.

manufacturing capacity, 1:17
venture with Boeing, 2:5
Lockheed Martin Commercial Space Systems (LMCSS)
and ISCe 2004, 8:7, 9:5, 9:8
JCSAT-9, 2:6
Lockheed Martin Space & Strategic Missiles, executive moves, 3:7
Loral Global Alliance, satellite resources (chart), 1:42
Loral Skynet
executive moves, 3:7, 8:10
and Hunsat, 3:19
and Intelsat, 9:22
Loral Space & Communications, 2:8, 4:3, 4:6
Loral Space Systems, 1:6, 1:17, 6:8
Loral, bankruptcy, 7:26
lunar spacecraft, 6:6
Lundberg, Olof

M

M2sat Ltd.
Maag, Graeme
Mabuhay, executive moves, 10:11
Mack, Dean, 7:13
Madison Square Garden Network, 8:15
Maguire, Joanne, 3:7
'Main' channel, 7:11, 7:12
Malaysia-East Asia Satellite (Measat), 1:9
Malone, John, 1:9
manned space flight, China, 9:18
Mariani, Mario, 7:23–7:25
Marin, Javier, 4:19
markets. *see also* enterprise markets
Africa, 10:17
emerging, 8:25–8:27
energy industry, 7:16
offshore oil service, 9:30–9:31
onshore oil service, 9:31
SCADA, 9:31–9:32
South America, 10:17
well logging, 9:31
Markham, Dave, Captain, 2:9
Masoni, Rick, 9:22
MasterWorks Communications, 1:27
MATAV, 3:17–3:19
Mathur, Deepak, 3:31–3:32
Matthews, Patrick, 10:10, 11:8
Mawared group, 10:25
McCaw, Craig, 1:19, 2:6
McCulley, Michael J., 2:7
McDonald, Jim, 7:7
McDonald, Keith, 10:6
McDonald, Keith, and ISCe 2004, 11:6
McDonnell, Harold, 9:28
McGrath, Kevin N., 10:11
McGuinness, Michael J., 3:7
McGuirk, Bryan A., 6:7
Measat Broadcast Network Systems (MBNS), 3:9, 3:10
Media City, 10:25
Media Corp News, 3:9–3:10
Media Development Authority (Singapore), 3:10
Media Village project, 6:15, 6:16
Mediapipe News, 4:17
mediaREEL, 7:18, 7:19
Meirzon, Tal, 9:23
Mentat Inc., 1:13–1:14
Meyer, Phil, 11:8
Meyrat, Pierre, 1:33, 9:15
Michel, Kenneth, 8:14, 8:16
Microsoft WM9. *see* WM9
middle east conflict. *see also* War on Terror
and Abu Dhabi TV, 11:13
armed services contracts, 10:25
effect on satellite industry, 2:3, 2:9–2:11, 2:25
national reconstruction, 10:35–10:36
and satellite industry, 1:31–1:32
and the satellite industry, 9:20–9:21
and satellites, 9:12–9:13
MII (Chinese Ministry of Information Industry), satellite services (chart), 2:33
military
bandwidth needs (chart), 2:11
SatCom market, 2:3
satellite applications (graphic), 2:12
Miller, John, 7:17
Miller, Jon, 9:17
Miller, Paul David, 2:7
Miller, Susan, and ISCe 2003, 3:11, 4:10
Millstein, Leo, 5:7
milsatcom (military satellite communications), 2:3
MILSTAR, 2:12
Mitsubishi Heavy Industries, 9:25
Mobile Satellite Users Association, and ISCe 2004, 8:7, 9:5, 9:7
Molvar, Jan, and ISCe 2003, 1:39
Moore, John, 6:20
Morgan Stanley
and cable TV in the UK, 9:16
and HDTV, 8:19
and PVR, 5:15–5:16
and Sogecable, 4:19
Morgan, Monica, 10:13
Moriizumi, Tomoyuki, 3:9
Most, Oren, 1:10
Motorola Asia Pacific, 3:10
MPEG4 compression
and bandwidth demand, 10:16
and DSL, 1:12
and HDTV, 6:25–6:26
and satellite broadcasting, 1:12–1:13
MTN, 9:29
MTN Nigeria, 1:43
MTV Networks, 3:10
Mullarkey, Anthony J., 2:4
multicasting, satellite, 4:16, 4:17, 10:28
MultiChoice, 4:21
Multiemedia, 10:10, 11:8
Multimedia Rural Initiative, 4:21–4:22
Multi-Stream Area (MSA), 6:16
Mummert, Sergy, 10:13
Murdoch, Rupert
and DirecTV, 1:8–1:9
and Dr. Meyrat, 9:15
early UK satellite coverage, 1:33
and Indian TV, 4:28, 4:30
and Italian DTH market, 10:32
Murphy, Dan, 2:7
Murphy, John, 2:31
Musk, Elon, and ISCe 2003, 3:11, 4:10

N

Nadon, Marc, 9:11
Nahuelsat, 1:16
Nakamura, Yoshihiro, 1:8
NASA Ames Research Center, executive moves, 3:7
NASA, and AGS, 2:25
National Cable Communications (NCC), 4:16
National Cable TV Association, 8:15
National Inventors Hall of Fame, 2:7–2:8
Navtech Seminars & GPS Supply, and ISCe 2004, 9:7
ND SatCom
broadband terminal, 2:27
SkyARCS, 3:25–3:26
and SkyWAN, 5:28
and TCA, 2:28
Neffinger, Peter, Captain, 10:5, 11:5
Netscaler, 5:23
Network Advantage Corporation, 9:11
network outages, 1:26–1:27
network-centric warfare (NCW)
bandwidth requirements, 5:25
business opportunities, 2:25–2:26
and business plans 2004, 9:22
New Skies
and Hunsat, 3:19
and MTN Nigeria, 1:43
outlook, 8:28–8:30
revenue chart, 8:30, 11:24
satellite fleet (chart), 8:29
satellite resources (chart), 1:42
and Telenor, 10:15
News Corp.
and DirecTV, 1:8–1:9, 9:12
and Hughes Electronics Corp., 9:22
and PanAmSat, 9:23
and PVR, 10:17
and SES Global, 10:15
News One (ABC), 4:17
NewSat, launch of, 10:10, 11:8
newsclips, delivery, 4:17
Newspath (CBS), 4:17
Nigeria, communications profile, 1:43
NileSat, 8:13, 10:26
NITEL, 1:43
NOAA (National Oceanic and Atmospheric Administration), 2:12, 2:25
Norsat International Inc., executive moves, 5:7
North American Aerospace Defense Command, 2:9
North Korea, and Japanese spy satellites, 1:8

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For an explanation on volume and page notations go to Editor's note on page 8.

Northern Sky Research
Asia-Pacific broadband markets, 3:34–3:35
business growth for satellites, 10:14
on China, 8:11–8:12
and in-flight internet, 7:10
and wi-fi growth, 7:9–7:10
Northrop Grumman, executive moves, 1:10–1:11, 3:7
Nova (Greece), 4:31
NRTC (National Rural Telecommunications Cooperative), 1:20, 1:22, 10:13
NSAB, 1:33
NTL Broadcast, 5:7, 6:15, 8:19

O

Obadia, Marcos, 8:16
Olmstead, Dean
and A2H, 1:23–1:25, 1:34–1:36
and ISCe 2003, 1:38–1:39, 2:23, 3:11, 4:10
and ISCe 2004, 10:5, 11:5
Olympic Games, 7:11, 11:21
Onodera, Tadashi, 7:32
"Open Skies" policy, 6:9
OpenSky, 2:16, 3:4, 3:5
"operator friendly" satellite, 9:27
OPUS, 5:3
Orbit, 10:25, 10:26
Orbit Data Systems (ODSL), 7:26
Orbital Sciences Corp., executive moves, 2:8, 5:7
O'Shea, James, 6:10
OTE, 11:21
outage (WAN) chart, 1:26
outsourcing, in satellite manufacturing, 4:13–4:14

P

Pagano, Chuck, 8:16, 8:17
Palapa, 6:9
Palter, DC, 5:9
PanAmSat
and deregulation, 1:16
and DirecTV, 2:16
and Eutelsat, 2:15
Galaxy 13/Horizons 1, 7:10
government business, 2:3
and Horizons 1, 8:27, 9:12
and Hunsat, 3:19
military traffic, 2:9
and MTN Nigeria, 1:43
and News Corp., 9:23
satellite resources (chart), 1:42
and TCA, 2:28
Paradigm, 2:10
Paredes, Art
and ISCe 2003, 1:39
and ISCe 2004, 8:5, 9:5, 10:5–10:6
Parker, Ed, 7:13
Patacchini, Arduino, 2:19
Patel, Ravi V., 2:4
Pathfire, 4:17
Patwardhan, Anil, 4:30
Patzert, William, and ISCe 2003, 3:11, 4:10
pay satellites, 8:12
pay-TV
Europe, 1:28–1:30
forecasts chart, 1:29
market and business plans, 4:6
Pay-Per-View, hotel, 4:17
piracy in Asia, 7:6
in Spain (chart), 4:19
PBI Media, LLC., 7:32
PBS, and HDTV, 8:15
PCCW, 3:10
Peck, Bob, 11:19–11:20, 11:24
Peña, Virgilio, 7:32
Permia Advisers, Ltd., 7:5
Peters, Tom, 11:12
Petrocom, 9:29
Picasso, Gino, and ISCe 2003, 3:11, 4:10
Pindar, Andrew, 5:13
Pinon, Christian, 1:41
piracy
Asia, pay-TV, 7:6
and CASBAA, 3:10
grey-market, in the Middle East, 10:26
PMSI fingerprinting technology, 8:23
and Sogecable, 4:20
and Telepiu, 2:19
Pivotal Satellite Technologies, executive moves, 11:10
plasma TV, 8:18
Playboy Television, 5:9
Plenexis-Holding Gmbh, 8:26
PMSI (Philippines Multi-Media System, Inc.), 8:22–8:24
Polar, 9:29
Potarazu, Ramu
Intelsat business units, 1:7–1:8
and ISCe 2003, 2:23, 3:11, 4:10
Powercom, 3:8
Prasad, Ravi Shankar, 4:29
Price, David, 11:8
PricewaterhouseCoopers, 3:10
Prisa, 4:19
procurement, and the DOD, 5:24–5:25
Prolink, 10:34
Promax, 10:34
Proton rocket, 1:7, 5:6, 9:25
Protopapas, Christodoulos A., 11:21–11:22
PTC (Pacific Telecommunications Council), 1:15. *see also* PTC'04
PTC'04, 7:31–7:32, 10:28
public space travel, 2:20–2:22
PVR (Personal Video Recorders), 5:15–5:16, 10:17

Q

QoS (quality of service), 5:28, 7:14, 11:15–11:17
Quadriga Worldwide, 4:17–4:18
Quaker-Finder, LLC, 9:9
QVC, 5:9

R

Radio Shack, and satellite radio, 11:20
RAI, 8:20
Rainbow Media, 8:19
RAJAR, 5:3
Rare Medium Group, Inc., 5:5–5:6
RCA, and Satcom 1, 11:11
Redline Networks, 5:23
regulatory environment
in Asia, 3:10
export controls, 6:24
Salamander report, 10:8–10:9
Renaud, Jean-Luc, 9:16
Request for Information / Proposal (RFI/RFP), and satellite system acquisition, 9:24
Rerisi, Edward, 6:6
Re-usable Launch Vehicles (RLV), 2:21–2:22
revenue charts, Satellite Industry, 1:15, 1:16
revenues
Asia-Pacific Broadband Revenue (chart), 3:34
Asia-Pacific Broadband Services (chart), 3:33
Pay-TV industry, 4:6
satellite operators (2002), 4:5–4:6
RigNet, 9:29
Ritchie, Ian, 2:10–2:11
Rodav, Shlomo, 1:10
Rohrabacher, Dana, 3:12, 4:10
Rojsrivichaikul, Yongsit, 10:13
Romm, Jon, 1:8
Rooda, Pieter Eelkman, 8:10
Rosen, Harold, 2:7–2:8
Royal Netherlands Army, 2:29
Ryan, Dave, 1:10

S

Sachdev, D.K., 2:23
Saha, Tarak, 4:29
Saito, Tadao, 7:32
Salamander Systems Inc., 10:8–10:9
Salih, Mary, 4:8
Samara, Noah, 7:32, 9:20
San Miguel, Renay, and ISCe 2003, 3:12, 4:12
Sanchez, Darby, 1:41
Sanford, Rick, and ISCe 2003, 3:11, 4:10
Sangram Committee, 4:29
Sant'Anna, Marcelo, 3:7
SARS (Severe Acute Respiratory Syndrome)
and business plans, 9:19
and Channel NewsAsia, 3:9–3:10
and conference cancellations, 2:5, 3:3
effect on Asian businesses, 2:13–2:14, 3:31
Satchell, Larry Dean, 4:5
SatCom Africa 2004, 8:11
SatCom Asia 2004, 8:11
Satellite Applications Technology Conference (SATCON Expo), 7:20–7:22
Satellite Broadcasting and Communications Association (SBCA), executive moves, 2:7
"Satellite Communications in Iraq," 10:32
satellite industry
in 1993 vs. 2003, 9:15
breakeven costs (chart),

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For an explanation on volume and page notations go to Editor's note on page 8.

7:29
broadband services, 10:8–10:9
broadcast services, 7:18–7:19
business models, 10:8–10:9, 11:11–11:12
consolidation, 1:16, 4:14
domain knowledge, 11:11–11:12
emerging markets, 8:11–8:13
global trends, 8:25
insurance costs, 9:27
listening to customers, 9:33–9:34
manufacturing reality, 4:13–4:15
military satellite communications, 2:27–2:28
new applications, 7:9–7:10
New Skies Satellite (NSS), 8:28–8:30
and oil service industry, 9:29
operational costs, 9:26–9:27
operators, new reality, 4:14
past and future, 6:9–6:10
post-war opportunities, 1:31–1:32
recovery of, 7:29–7:30
regulation, 10:8–10:9
satellite and vehicle costs, 9:25–9:26
state of the art, 1:15–1:18
total cost of ownership (TCO), 9:24–9:28
Satellite Industry Association. *see* SIA
satellite markets
2003 review, Asia-Pacific, 9:18
Africa, 4:21–4:22
Asia, 3:8, 3:27–3:28, 3:31–3:32
Asia-Pacific, 3:33–3:34
Baltic states, 3:19
China (chart), 2:33
Croatia, 3:19
East Africa, 6:29–6:30
Estonia, 3:19, 3:36, 3:38
Europe, 3:14–3:16, 3:20–3:22
HDTV, Europe, 7:11–7:12, 8:18–8:20
HDTV, North America, 8:14
Hungary, 3:17–3:19
India, 4:28–4:30
Iran, 5:30
Kazakhstan, 3:18
Latvia, 3:19
Lithuania, 3:19
Philippines, 8:22
by sector (chart), 2:21
Slovakia, 3:38
Tunisia, 3:18
Turkey, 4:32
satellite radio. *see also* Sirius Satellite Radio; XM Satellite Radio
and advertising, 11:18–11:20
and automobile OEM, 11:20
business growth, 1:18, 7:9, 9:12, 11:18–11:20
Global Radio, 3:20
as market, 5:3
subscribers (chart), 11:20
traffic data broadcast, 11:19
satellite technology
digital processing, 4:14–4:15
evaluating, 9:24–9:28
interference tutorial, 6:17–6:20
networks, 10:19–10:21
operational beam problems, 10:31
platform operation comparison chart, 9:26
stability problems with, 10:31
technology risk areas, 7:20
satellites (by name)
AAP, 10:17
AAP-1, 3:31
AAP-2, 3:32
AMC-9, 1:7, 1:24
AMC-10, 1:7
AMC-11, 1:7, 6:12
AMC-12, 1:7, 6:12, 10:17
AMC-13, 6:12, 10:17
AMC-15, 1:20, 1:24, 1:34, 10:13
Ameristar, 3:20
Amos 1, 3:17
Amos 2, 9:10
Anik F2, 1:20, 10:13
APstar 5, 9:18
Apstar V, 4:6
AsiaSat 4, 1:36, 9:18
Astra 1A, 1:33
Astra 2B, 5:10
Astra 2D, 5:10
Astra fleet, 5:9
Astra L, 6:12
Astra1KR, 6:12
Astra-2A, 5:10
Atlantic Bird 1, 10:31
Atlantic Bird 3, 2:16
Boeing 601HP, 1:9
Chinasat 20, 9:18
DirecTV 7S, 7:26
E-Bird, 2:15, 2:18–2:19, 3:4, 5:13, 6:5–6:6, 10:31
EchoStar 9, 9:13
EchoStar IX, 1:6
Envisat, 1:16
Estrela do Sul, 4:6
Eurasiasat 1, 4:32
Eurobird, 10:32, 11:13
Eurobird 1, 3:38
EuroBird 2, 2:15, 2:18–2:19
Eutelsat W4, 4:21
Fleet F33, 2:30–2:31
Fleet F55, 2:30–2:31
FM3, 3:20
FM4, 3:20
Galaxy 13, 7:10
Galaxy 13/Horizons 1, 8:27
Hellas-3, 11:21
Hellas-Sat 2, 11:21
Hispasat 1C, 11:13
Horizons 1, 7:10, 9:12
Hot Bird 3, 3:18
Hot Bird 6, 2:15, 5:10, 10:32
Hot Bird 7, 10:32
Hot Bird fleet, 2:15–2:16, 3:17
Hotbird fleet, 11:13
Insat 3a, 9:18
Insat 3E, 9:18
Insat 4a, 9:18
INSAT-3B, 5:18
INSAT-3E, 6:5–6:6
Ipstar 1, 9:18
JCSAT-9, 2:6
Measat-3, 1:9, 3:9, 5:6
Milstar 5, 1:16
NSS7, 11:13
Optus B3, 11:13
Optus C1, 9:18
Palapa C, 3:9
PAS 10, 4:21
PAS 7, 4:21
Rainbow 1, 7:10, 8:14
RCA F1, 5:17
Satcom 1, 11:11
SES Astra, 7:10
SIRIUS-1, 5:10
SMART-1, 6:5–6:6
spy, Japanese, 1:8
Stellat, 2:16
SuperBird 6, 9:18
Syncom, 2:8
TacSat-1, 7:5
Telstar 10, 11, 12, 4:6
Telstar 13, 1:6, 9:13
Telstar 14, 4:6
Telstar 18, 4:6
Telstar 4, 9:22–9:23
Telstar 5, 11:13
Turksat 1-B & 1-C, 4:32
TVB Galaxy, 3:8
W3A, 10:33
Wildblue 1, 10:13
Worldsat 3, 10:17
Saterlee, Herb, III, and ISCe 2003, 3:11, 4:10
Sat-Light products, 2:31
SatLynx, 1:36, 4:7, 6:12
SATMAGAZINE.COM, 1:3, 1:4, 6:3
Satmode, 1:36, 8:8–8:9
SBC Communications, 1:9, 1:22
SCADA (Supervisory Control and Data Acquisition), 9:31–9:32
Schaeffler, Jimmy, 10:28
Schafer, Joachim, and ISCe 2004, 8:6, 8:7, 9:5, 10:5–10:6, 11:5–11:6
Schlumberger, 9:29
Schreuder, Fritz, 8:21
Schulte, Jurgen, 6:11
Schwartz, Bernard L., 2:8
Scientific-Atlanta, 3:10, 7:7
Scopus Network Technologies, executive moves, 6:8
Scott, Winston Captain, 3:6
Screen Digest, 1:28, 3:14, 3:15, 4:31
SDTVplus fiberoptic platform, 2:31
Sea Launch, and Arianespace, 9:25
SeaChange, 4:16
Secure Sockets Layer (SSL), 5:23
SES Americom
A2H, 1:22, 1:23–1:25
and AGS, 2:25
AMC-9, 1:7
and Americom Asia-Pacific, 3:31
and Echostar, 1:22
executive moves, 6:7
fill rate, 6:11
government business, 2:3
and ISCe 2004, 8:7, 9:5, 9:8
SES Astra
and Africa, 8:12

PROMAX ELECTRONICA SA

PROMAX ELECTRONICA SA is a leading company in the area of testing and measurement with a focus on information technologies and telecommunications. The product lines include instruments to install, certify and maintain fiber optic networks, as well as baseband services such as MPEG2, and broadband services such as Cable TV, satellite, and digital terrestrial television.

The company was founded in Barcelona, Spain, in 1963 and at present has a wide sales network with service and calibration facilities in several countries. Over its 40 year existence, PROMAX has developed a large number of products, spectrum analyzers, signal level meters, TV pattern generators, cable TV analysers or DOCSIS cable modem analyzers are some of the products we can offer to the industry.

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Sector Microwave industries, Inc.

Sector Microwave industries, Inc. is a privately held New York corporation established in 1974 by Victor H. Nelson that specializes in high quality electromechanical RF switches and switch assemblies for use in satellite communications around the world.

Located in Deer Park, New York, Sector Microwave (SMI) is an ISO9001-2000 company occupying a 26,000 square foot manufacturing, assembly and test facility. A complete CNC machining facility is located on-site to support the production of nearly 10,000 switches per year. In addition to its manufacturing capability, SMI owns state of the art vector network analyzers to support testing of products to 65 GHz. and environmental test equipment including thermal vacuum chambers and automated thermal cycling chambers.

SMI's Hi-Com Division produces waveguide and coaxial switches for commercial applications such as satellite communications ground stations. Those switches may be found in numerous locations around the world including both North and South poles. The Division also produces switches for many military applications such as Aegis, Longbow, JSTARS and the Link-16 system for the B-2 bomber.

SMI's Hi-Rel Division produces high reliability switches and switch assemblies for space applications and has been privileged to participate on such NASA programs as Cassini, Pathfinder, Genesis, Odyssey and most recently Mars Exploration Rovers "Spirit" and "Opportunity". In addition to NASA SMI has provided switching for military programs such as Milstar, Advanced EHF.

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For an explanation on volume and page notations go to Editor's note on page 8.

and AlfaCam, 5:6
fill rate, 6:11
fleet, 5:9
and INTELSAT, 1:16
retrospective, 9:15–9:16
and Satmode service, 8:8
and Sogecable, 4:19, 10:30
SES Global
A2H, 1:20
acquisitions and partnerships, 1:16
and AGS, 2:26
AMC-9, 1:7
and Crosslinks, 10:17
EBITDA Margins (chart), 1:36
executive moves, 4:7
industry outlook, 6:11–6:12
satellite resources (chart), 1:42
and Satlynx, 10:13
spotlight, 1:33–1:36
and technology strategy, 10:27
and Telenor, 10:15
Shanghai Media Group (SMG), 3:9
Sharif, Adnan, 6:21, 6:22
Shaw, Brewster H., 2:7
Shaw, Michael, and ISCe 2003, 3:11, 4:10
Shin Satellite Co., 10:13
Shinawtra Group, 7:14, 11:12
Shinsat, 3:28, 11:12
Shiron, 2:28
Showtime
and HDTV, 8:15
and the Middle East, 10:24–10:26
in Middle East, North Africa (MENA), 8:12–8:13
SIA (Satellite Industry Association)
Asia-Pacific Satellite Communications Summit, 7:32
and the DOD, 5:24–5:25
growth survey, 1:15
and ISCe 2003, 1:37
and ISCe 2004, 8:7, 9:5, 9:6
Simon, Sarah, 5:15
Singapore Exhibition Services, 2:5
Singapore Expo, 2:5
SIPNET, 7:5
Sirius Satellite Radio, 3:7, 11:18. *see also* satellite radio
SITE project (India), 7:10
Sky Italia, 5:9, 7:18, 10:32
Sky Terra Communications, Inc., 5:5
Sky+ PVR economics, 5:15
SkyARCS, 3:25–3:26
Skycasters, and IPSec, 5:23
SkyDSL Router, Aloha Networks, 11:9
SkyLogic Italia, 2:19
Skynet, 1:6, 4:6
Skynet do Brasil, 3:7
SkyPerfecTV, 3:9, 5:20
SkyPlex, 2:15, 10:32
SkyTerra Communications Inc., 9:10
SkyWAN, 5:28
SkyX products (Mentat), 1:14
Slamin, Brendan, 8:20–8:21
Sloane, Stanton D., 1:11, 1:41
Slovak Telecom, 3:38
Small office. *see* SoHo (Small Office-Home)
SmartGate technology, 1:13–1:14
SmartSatT, 1:13–1:14
SME (Small-Medium Enterprise), broadband services, 8:31, 8:32
Smith, Mark, 7:18, 7:19
Society of Satellite Professionals International, and ISCe 2004, 8:7, 9:5, 9:7
Sogecable, 4:19–4:20, 10:30
SoHo (Small Office-Home)
broadband services, 8:31, 8:32, 10:27
and Satlynx, 10:13
and Spaceway, 10:13
and WildBlue Communications, 10:13
Sola, 9:29
Sony Pictures Television International (SPTI), 2:8, 3:10
Soros Private Equity Partners, 7:5
Sourisse, Pascale, 3:20
South Africa Broadcasting, 6:15
Soyuz launch, 9:10
Space Exploration Technologies Corporation (SpaceX), 7:5
Space Foundation, executive moves, 3:7
space travel, public, 2:20–2:22
Space TV, 4:28
Spacebus, 1:7
Spacecom Ltd., 9:10
Spacenet, executive moves, 4:7
Spaceway
and Ka band, 1:22
launch of, 9:13
markets, 10:13
and satellite broadband, 1:19, 1:20
and technology strategy, 10:27
Spangenberg, Glynn, and ISCe 2004, 11:6
Spazio, Alenia, 3:4
SpeedCast, 1:36
Sprague, Scott J., 10:10
Sputnik, 9:24
Squire, Sanders, & Dempsey, 2:33–2:34
ST Telemedia, 2:6
Staffa, Eugene, 2:9–2:10
Stalker, Altan, 2:4
Stanton, John, 1:8, 3:12, 4:12
STAR Group, 3:9
Star One, 1:16, 1:33
Star Select, 10:25, 10:26
Star TV, 1:33, 3:10, 4:28
StarBand
bankruptcy, 1:20, 7:30, 10:12, 10:27
and Ka band, 1:19
StarHub Cable Vision, 3:9
StarOne, 10:15
Starsem, 9:10
STARZ!, 8:15
State Administration of Radio, Film and Television (SARFT-China), 3:9
Steele, Rupert, 5:3
Stellar Solutions, and ISCe 2004, 8:7, 9:5, 9:8–9:9
Stellat, 1:16
Stirling, Frank, and ISCe 2003, 3:11, 4:10
store-and-forward systems, 4:17
Stranathan, Brent, 8:14–8:15
Stratos Global, 2:28, 7:8, 9:29
Stream, 2:19
SuperVPN, 5:23
Supron, Nick, 4:7
Sustainable Access in Rural India (SARI), 7:30
SVT, 8:20
SweDish, 2:27
SWOT analysis, 7:20
syndicated programs, delivery, 4:17

T

Taepodong missile, 1:8
TakeAway satellite terminals, 1:9
Tan, Stephen, 2:5
Tandberg Television, 1:12, 6:25–6:26
Tanzania, regional satellite approach, 6:29
Taylor, Leslie, 1:15
TCA (Transformational Communications Architecture), 2:28
Tchuruk, Serge, 3:4
TCO (Total Cost of Ownership), 9:24–9:28
TCP/IP
and satellites, 1:14, 3:23
tutorial, 3:23–3:24, 4:23–4:25
TDMA-DAMA*2 VSAT, 2:29, 2:30
Telecom/ICT industries, 10:8–10:9
Teledesic, 1:19, 4:14, 10:12
Telefonica, 4:19
telematics, 3:22, 6:5
telemedicine, 5:17–5:19, 7:10
Telenor
and Eutelsat, 10:33
and Hunsat, 3:19
and Inmarsat, 7:5
satellite arm for sale, 10:15
Telenor Slovakia, 3:38
telephony, 9:23
Telepiu, 2:19
Telesat, 10:13, 10:27
Telesat Canada, 9:13, 11:21
Telespazio, 2:19
Telewest, 8:19
Telsat, 6:9
Tenzing Communications, 7:10
terrestrial interference, 6:17–6:18
Thapar, Rajiv, 6:8
TheMovieChannel, 8:15
Thermo Capital Partners, 2:5
Thoma, John, 6:20
Thomson, Graeme, 7:18
Thuraya Satellite Telecommunications Co.
and BGAN, 1:31, 9:13–9:14
broadband services, 1:9
business growth, 9:12
and digital processing, 4:14
GEO MSS system, 1:31, 6:10
military terminals, 2:9
and the War on Terror, 8:25–8:26
Time Warner, 3:10, 4:16
Tiscali, 3:4, 5:13, 7:23–7:25

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For an explanation on volume and page notations go to Editor's note on page 8.

TITAAN (Theatre Independent Army and Air Force Network), 2:29
Tivo, 5:15
Toffler, Alvin, 7:13
Tomlinson, Kenneth, 7:32
Total Cost of Ownership (TCO), 9:24–9:28
tourism, space, 2:20–2:22
Townsend, Richard J., 2:8
TPS, 5:9
trade barriers, reduction, 8:26
transponder sales, 8:11
transponder sales, revenues, 1:15–1:16
transponders (chart), 1:42
Treasury Department (US), and Hutchison / Global Crossings, 2:6
Triblehorn, Doug, 1:41, 4:7
Turbo Product Coding (TPC), 10:34
Turkey, internet subscribers (chart), 4:32
Turner International, 3:10
Turner Networks, 5:9, 5:10
Turner, Richard D., 2:7
tutorials
  satellite interference, 6:17–6:20
  TCP/IP, 3:23–3:24, 4:23–4:25
TV commercials, delivery, 4:16
TVB International, 3:8–3:9, 9:18
TVN Entertainment, 4:18
two-way broadband, 6:10

U

U.S. Dish Network, 1:6
UBC, 3:9, 3:10
Ueda, Yutaka, 5:7
Uganda, regional satellite approach, 6:29
UNDP (UN Development Programme), 3:33–3:34
United Space Alliance, executive moves, 2:7
United States Agency for International Development (USAID), 10:10, 11:8
University of York, 10:14
Unmanned Aerial Vehicle (UVA), bandwidth requirements, 5:25
US Air Force, and Boeing contracts, 4:5
US Navy, 2:9
US Space Command, 2:9
USAT, and broadband IP, 9:18

V

Vechi, Rob, 11:8
Verdisys, Inc., executive moves, 10:11
Verestar, Inc.
  bankruptcy of, 9:10
  market study, 6:13
  and oil service industry, 9:29
  and Rare Medium Group, 5:5
Verizon, and VoIP, 11:23
Vermaas, Linda, 4:22
Via Digital, 4:19, 4:20
Viacom, Inc., 5:10, 10:15, 10:24
ViaSat Inc., 2:28, 5:29, 9:20–9:21
video "titans" (chart), 1:42
video files and satellites, 4:16–4:18
videoconferencing, 2:14, 9:30–9:31, 11:17
Video-on-demand. *see* VOD
Viquez, Frank, 6:5
virtual private networks. *see* VPN
Vittoria, Joseph, 3:7
VOD (Video-on-demand)
  and business growth, 10:15, 10:16
  as cable advantage, 4:18
  and hotel distribution, 4:17
Vodafone Hungary, 3:18
VoIP (Voice over IP)
  in Africa, 6:30
  in Asia, 3:32
  in Australia, 10:10
  and BOD, 11:17
  in China, 2:34
  and the future, 11:23
  ND SatCom, 3:25
  and NewSat, 11:8
  and oil service industry, 9:30
Vonage, 11:23
V-ONE Corp., 1:13–1:14, 5:23
VOOM, 7:10, 8:14, 8:19
VPN (virtual private networks)
  Broadband Satellite Tutorial, 5:22–5:23
  ND SatCom, 3:25
  SmartSatT, 1:13–1:14
  and VoIP, 11:23
VSAT
  as alternative network connection, 1:26
  in the Asia Pacific region, 9:18
  and BOD, 11:15–11:17
  and broadband, 9:21
  business growth 2004, 9:23
  and business growth of, 10:19–10:21
  and China, 2:33–2:34, 8:12
  and DVB-RCS, 10:9
  and energy exploration, 7:16–7:17
  networks, future, 7:13–7:15
  and oil service industry, 9:29–9:30
  and Xantic, 2:29, 2:30
"The VSAT Report," 7:30
VSAT technology decisions, chart, 10:20

W

W.R. Huff Asset Management Co., executive moves, 3:7
Wadood, M. Javed, 9:11
Wagnon, Ron, 7:17
Walker, Donald, and ISCe 2004, 11:6
Wal-Mart, VSAT networks, 7:22
W.B. Walton Enterprises, 1:6–1:7
War on Terror. *see also* middle east conflict
  and Fox News, 9:13
  and satellites, 8:25, 9:13
  and Thuraya, 8:25–8:26
Warfighter Information Network-Tactical (WIN-T), 5:24
Warner Bros., 4:17
Wataniya, 10:24
weather channels, 3:16
Wehri, Jim, 9:25
Well Logging, 9:31
Weller, Bill, 6:8
Widener, Peri A., 1:11
Wi-Fi, 6:6, 7:9–7:10, 10:8–10:9
Wikanto, R., 3:28
Wildblue Communications
  and broadband, 10:13
  business growth 2004, 9:21
  executive moves, 8:10
  and Ka band, 1:20
Williams, Donald D., 2:8
Windows Media 9. *see* WM9
Winnington-Ingram, Rebecca, 9:16
Withee, Gregory, and ISCe 2003, 3:11, 4:10
WM9, 6:25–6:26, 8:21
Wolfowitz, Paul, 6:22
Woolsey, James R., 2:23 and ISCe 2003, 4:10
Woolsey, James R., and ISCe 2003, 3:11
World Satellite Communications & Broadcasting Market Survey, 4:5–4:6
World Summit on the Information Society (WSIS), 7:30
World Teleport Association awards, 1:6–1:7
  and ISCe 2004, 8:7, 9:5, 9:7–9:8
Worldcom, bankruptcy, 6:3
Worldsat, former Crosslinks, 10:17
Worldspace Europe, and satellite radio, 3:20, 3:21
WorldSpace, business growth 2004, 9:20
WorldTV, 5:21
Wredberg, Conrad, 7:7
Wright, Andrew, 2:7
Wright, Joe, 2:15
WTO (World Trade Organization), and China, 2:33–2:34

X

Xantic, 2:29–2:30, 7:5, 8:10
XM Satellite Radio. *see also* satellite radio
  and Boeing satellite problems, 11:20
  business growth, 11:18–11:20
  executive moves, 6:8
  and WorldSpace, 9:20
Xtreme, 9:17

Y

Yeow, Agnes, 3:28
Yes Television, 3:8
Young, Andrew, 8:13

Z

Zitter, Robert, 8:15

SM

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