Space Commercialization in the Decade Ahead—Economic Opportunity!

GW University
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Mike Cook
Senior Vice President
Hughes
Satellite Broadband Powering the Economy

### Hughes is a leading provider to these end markets

#### Automotive
- Toyota Lexus
- Daimler Chrysler
- VW

#### Lodging
- Best Western
- Wyndham
- Choice Hotels

#### Financial
- Edward Jones
- VISA
- HSBC
- CitiCorp
- AGF (AIG)
- AG Edwards
- Itau Bank
- Reserve Bank of India
- Banco do Brasil

#### Oil and Gas
- BP Amoco
- Chevron
- ExxonMobil
- Shell
- Nabors
- Pemex

#### Retail
- Albertson’s/USSC
- Best Buy
- Blockbuster Video
- Dollar Tree Stores
- Jiffy Lube
- Kmart
- Lowe’s
- Rite Aid
- Wal-Mart
- Walgreens
- TJ Maxx
- CSK Auto
- Goody’s
- Safeway
- Foot Locker
- CVS

#### Government
- Army Corps of Engineers
- Pennsylvania Emergency Svc.
- Florida Emergency Svc.
- Texas Department of Public Safety

#### Restaurants
- Wendy’s
- Jack in the Box
- Sonic
- Denny’s
- YUM Brands
- McDonald’s

#### Entertainment & Sports
- Gtech
- National Cinema Network
- AMF Bowling
- Playwin, India
- Regal CineMedia
- STAR TV

#### Integrators/Service Providers
- Telesat
- Telstra
- Telecom Malaysia
- Korea Telecom
- Telmex – Mexico
- Telefónica
- Telecom South Africa
- CVS
Use of digital video applications growing throughout US

- Digital Signage
- Business IP TV for training and communications

Technologies are combining to significantly reduce the transmission costs: DVBS-2 satellite coding systems and MPEG4

Business models are being tested:

- Advertising funded
- Branding
- Hybrid
Combining Satellite and Terrestrial Technologies Provides High Network Availability

- Each branch site has satellite and wireline access (DSL and T1 fill in)
- Applications use one path as primary
- Network automatically re-routes in the event of a failure
- Bandwidth is aggregate of satellite and wireline paths
SPACEWAY™: Designed for Data

- SPACEWAY 3 successfully launched by Ariane on August 14th
- First commercial regenerative satellite
- Optimized for data networking not broadcasting
- Advanced technologies include on board processing and phased array antenna system
- Commercial services projected for 1Q08
First full mesh commercial satellite system
- 10 Gigabits/second capacity: 5 – 7 times existing satellites
- Core IP VPN services and Bandwidth-on-demand

Flexible Capacity Allocation

Base Capabilities
- Uplink speeds
  - 2 Mbps
  - N x 16 Mbps
- Downlink carrier speeds:
  - 440 Mbps
- On-board packet replicator
Multiple VPN and access plans to address the entire range of Hughes market segments: consumers/SMB, midmarket, and enterprise

Full-mesh connectivity enables simultaneous networking with:
- Primary and backup data center
- Regional offices distribution centers and HQ
- Internet gateway and intranet sites

Four end-end class of services, including constant rate for low jitter applications
Indicative Price Comparison

High QoS Network
- MPLS
- Spaceway HAN
- Spaceway High QoS VPN

Basic IP-VPN
- DSL + T1 VPN
- Spaceway High priority
- Spaceway and DSL

Example
- Typical 50-site network
- Objective is 256 kbps minimum inbound bandwidth (DSL + T1 VPN assumes more like 128 kbps) from the remote and 1.5 Mbps–3 Mbps at data center
- HAN configuration is Spaceway plus DSL or T1 at each site
# Satellites have a Key Role in the Broadband World

## Terrestrial Broadband
- **MPLS:**
  - Replacing frame relay
  - Pushed by telcos as they migrate to IP infrastructure
  - QoS, Mesh, typically fractional T1 access
  - Relatively expensive
- **DSL**
  - Coverage varies between 50% and 85% of enterprise locations
  - Performance dependent on location
  - No QoS/SLAs
  - Needs VPN for networking
- **Cable**
  - More limited coverage than DSL
  - No QoS/SLAs
- **EVDO**
  - Similar coverage to DSL
  - Highly variable service
  - No QoS/SLA
  - Unknown contention issues
- **WiMax**
  - Underdeployed
  - Will compete primarily with DSL

## Spaceway
- **Performance:**
  - 2.0/15 Mbps
  - 16/30 Mbps
- **SLAs:**
  - Full managed network options
  - Performance and network SLAs
- **MPLS Like QoS**
  - Full Mesh small dish to small dish
  - Classifier to allow service differentiation
  - Multiple service plans from a single terminal
  - Bandwidth on demand capability and billing
  - Low jitter services
- **Roles:**
  - Primary networking:
    - Full mesh with additional service plan overlays and on demand bandwidth
    - Ideal for small networks as well as large
  - **MPLS network integration**
    - Integrates with MPLS backbone
    - More bandwidth and availability than typical MPLS network (using HAN configuration)
    - Lower cost than MPLS
    - Additional service overlay (e.g. internet access/teleconferencing)
  - **Backup networking**
    - Overlay of terrestrial network infrastructure with high speed and on demand bandwidth
    - High capacity trunking and back up
Consumers and SMBs use Satellite Broadband

- Broadband Internet access service for those overlooked by cable/DSL
- More than 365,000 Hughes consumer subs at end of 3Q07
- Activating ~12,000 subs per month with controlled marketing expenditure*

Key business characteristics
- Great synergy with enterprise business on platform, space segment, back office support (thus sharing costs)
- Includes residential and small business users

*(during first half of 2007)
Largest Satellite-Based Internet Provider to the Consumer/SMB Market

- Targeting 10–15 million households and 3.5 million SMBs
- 20% revenue and subscriber CAGR over past years

Hybrid mobile networking for the US

Integrated satellite and terrestrial mobile voice and data systems

State-of-the-Art cellular terminals


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