VSAT vs LBand, Examining the Evolution of Maritime Satcom Pricing

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Managing Director Telaccount Overseas Ltd
BSM Overview

- Full Management vessels: 320
- Bernhard Schulte Vessels: 82
- Crew Management vessels: 353
- 30 VSAT Terminals
- Over 17,000 employees onboard and ashore
- 8 Service Delivery Centres
- 1 Crew Management Centre
- and 25 Crew Service Centres
- Presence in over 25 countries around the globe
Cyprus Shipping Chamber Overview

- Established in January 1989 by 17 Members
- Today: 155 Member-Companies
  - Shipowning
  - Shipmanagement
  - Chartering
  - Shipping-related
- 2200 Ships - 49 Million Gross Tons
- Among the largest Shipping Associations Globally!
- 11 Companies have 236 VSAT Terminals on their vessels
Telaccount Overseas – 25 years of Experience takes us forward

Established in 1988
Accounting and Communication Service providers
Recognised Accounting Authority by 35 major Flags States
Appointed as Point of Service Activation by 110 countries
Distributor partners of 5 Land Earth Station Operators: Inmarsat Direct, Astrium, Otesat Maritel, Station 711 and Singtel
Installation and support of satellite terminals, Electronic Bridge Equipment, LRIT Conformance Test and Certification, SVDRs, ECDIS, Radars, etc.
Certified with ISO 9001:2008

www.telaccountoverseas.com
The year 2013 started with the crash of Intelsat’s 27, almost immediately after take-off, a satellite that could close the gap in the Ku-Band Network and demonstrate a significant improvement in the Intelsat’s Epic NG programme.

Inmarsat successfully launched the joint EU-funded extension to its LBand, the Alphasat.

On 8th December, Inmarsat successfully launched their new ‘toy’, the first of 3 or may be even 4 Ka-Band satellites, that will provide the maritime communications industry (and not only) with broadband technology and speeds of up to 50 MBits onboard the vessels.
EADS acquired Vizada for its Astrium division for $920 Mio. Astrium to be renamed Airbus soon.

Cobham acquired Thrane & Thrane for $445 Mio

Wins Eutelsat acquired the German based DH Interkom

SpeedCast acquired Pactel and Elektrikom Satellite Services

Panasonic Avionics acquired majority stake in AeroMobile for $400 Mio

Eutelsat acquired Asia-Pacific Satellite from GE Capital for $228 Mio

Wasserstein buys Globecomm for $340 Mio

Broadband Satellite Services (BSS), an investment company based in the UK, acquired AND Group and Satcom Global

Globewireless acquired by Inmarsat for $40 Mio. With this acquisition Inmarsat now has the majority of vessels with Astrium next and followed by the other DPs. Is Navarino the next Inmarsat acquisition, being owned by Inmarsat for 49%?
Inmarsat Terminals

Source: Inmarsat Partner Conference, Istanbul, Nov. 2013

www.bs-shipmanagement.com
FBB Terminals

Source: Inmarsat Partner Conference, Istanbul, Nov. 2013
VSAT Terminals in Service

Bar chart showing the number of VSAT terminals in service from 2002 to 2012.

- 2002: 1500
- 2003: 1600
- 2004: 1900
- 2005: 2200
- 2006: 3800
- 2007: 5100
- 2008: 6800
- 2009: 8300
- 2010: 10200
- 2011: 12300
- 2012: 13100
VSAT Terminals by segment – The largest spenders
Changes in usage pattern drive the growth

- Demand of transferring high amounts of data to and from the vessels
- Inmarsat price increase for narrowband terminals over the last 2 years made it almost unbearable for the ship operators to retain this technology, making the switch to a broadband terminal the only option
- Increasing pressure on ship operators to provide a better overview about the vessel’s operation: cargo status and containers temperature, fleet tracking and reporting with real time updates, bunker fuel consumption, paperless vessel, etc.
- Safety and other regulatory requirements increasing the need for connectivity at sea with average data consumption growing rapidly
- New enterprise applications require higher bandwidth, VPN, Intranet, etc.
- Crew Welfare - the need to have internet Cafés onboard. Maritime Labour Convention (MLC) 2006 - regulatory focus on crew welfare and training
- VSAT taking a larger share of the market, supported by improving VSAT coverage and capacity supply and decreasing hardware prices
- Combined Ku/L band packages (XpressLink) emerging
VSAT C Band Coverage Map
VSAT Ku Band Coverage Map
Maritime Shipping Traffic Worldwide
There are currently 40,000 FBB terminals installed onboard the vessels.

Ka-band frequencies provide more capacity than traditional C- and Ku-band frequencies.

All You Can Eat or XpressLink can provide unlimited data.

I-5 satellite for IOR launched on 8th December 2013.

One network infrastructure and provider with seamless spot beam handovers.

Construction of fourth satellite under way.

6 satellite access station (SAS) sites: two per satellite region.
Inmarsat Ka Band Coverage Map

Please note coverage is indicative as the service is not yet operational.
## Investment decisions

<table>
<thead>
<tr>
<th></th>
<th>C-BAND</th>
<th>KU-BAND</th>
<th>FLEETBROADBAND</th>
<th>OPENPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BANDWIDTH</strong></td>
<td>up to 5 Mbps/2 Mbps</td>
<td>From 64Kbps up to 4 Mbps</td>
<td>up to 432 kbps</td>
<td>up to 128 kbps</td>
</tr>
<tr>
<td><strong>ANTENNA SIZE</strong></td>
<td>~1.8-2.5 m diameter</td>
<td>~60cm-1.5 m diameter</td>
<td>29x27 cm (150)</td>
<td>23 cm height</td>
</tr>
<tr>
<td></td>
<td>~60cm-1.5 m diameter</td>
<td></td>
<td>33 x 27 cm (250)</td>
<td>57 cm diameter</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>79 x 68 cm (500)</td>
<td></td>
</tr>
<tr>
<td><strong>ANTENNA WEIGHT</strong></td>
<td>&gt;200-850 kg</td>
<td>~30kg-150 kg</td>
<td>5-35 kg</td>
<td>11 kg</td>
</tr>
<tr>
<td><strong>TERMINAL COST</strong></td>
<td>~$70,000 - $100,000</td>
<td>~$20,000-$60,000</td>
<td>~$5,000-$15,000</td>
<td>&lt;$5,000</td>
</tr>
<tr>
<td><strong>SERVICE COST</strong></td>
<td>~$1,500-$8,000/month (flat rate)</td>
<td>~$1,000-$8,000/month (flat rate)</td>
<td>~$0.5-$0.59/minute voice;</td>
<td>~$0.6-$1.5/minute voice;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$0.27-$17 MB data</td>
<td>~$7-$12/MB data</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>~$2,700 - $3,000/month (flat rate)</td>
<td></td>
</tr>
<tr>
<td><strong>ADVANTAGES</strong></td>
<td>• Unlimited data consumption</td>
<td></td>
<td>• Worldwide coverage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Higher bandwidth</td>
<td></td>
<td>• Smaller &amp; low cost terminals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ku/C Band Antenna from KVH V11 provides Inmarsat like coverage</td>
<td></td>
<td>• Low installation costs</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Signal is not affected by heavy rain</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Still affordable for every “pocket”</td>
<td></td>
</tr>
<tr>
<td><strong>DISADVANTAGES</strong></td>
<td>• Large, heavy and expensive equipment</td>
<td></td>
<td>• Low bandwidth rates. Highest is 432kbps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• High installation and maintenance cost</td>
<td></td>
<td>• High per MB cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Coverage area for Ku Band is still an issue</td>
<td></td>
<td>• Affordable installation and maintenance cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Signal loss due to heavy rain</td>
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</tbody>
</table>
Project Management

- FBB or VSAT or both?
- How much bandwidth?
- What can crew do with bandwidth?
- Trading area of the vessels
- Reporting
- Managing
- Supporting
Cost Management

- PIN & Account assignment
- Pre-Paid or Post-Paid
- Roll over or not
- SCAP management or SIM Allowance
- VSAT Flat monthly rate
- Fleet view
- Daily, Weekly, and monthly reports

From shore or ship you need to have control
Solution and Design

- FBB250 / FBB500 / KVH V7 / SEATEL
- 4 Laptops
- 4 Telephone sets
- Gateway
- Wi-Fi Hotspot(s)
- Standardised Software
- 6 GB Plan - 1GB for Commercial purposes and 5 GBs for Crew Internet purposes
- Individual e-mail with web-based access both onboard and ashore
- Access to mobile sites to avoid high charges on web browsing
- Prepaid crew data and calling cards
- Business Internet restricted through BSM Internet Policy
Internet Café Network onboard

- Wireless AP config
  - SSD: Shipsat WiFi
  - Encryption: WPA2/PSK
  - Passphrase: *********

- Shipset Network config
  - IP: 192.168.15.75
  - Network: 255.255.255.0
  - Gateway: DHCP assigned
  - Firewall: SHIPSAT port(FBB)

- Crew PC config
  - Network:
    - IP address: 192.168.8.X
    - Network: 255.255.255.0
    - Gateway: 192.168.8.75

- Vessel Master PC
- Vessel Crew PC

- Managed Switch
- FireWall
- Lan Cable CAT5

- VoIP Phones Network config
  - IP address: DHCP
  - SIP config
    - SIP server: IP of Shipsat box
    - Display Name: [8931] - [8934]
    - User ID: [8931] - [8934]
    - Auth ID: [8931] - [8934]
    - Password: [152544]
  - All users connected by telephone with Ethernet cables or by wireless

- Laptops config
  - Network:
    - IP address: DHCP
  - Windows credentials:
    - Username:
    - Password:
    - All laptops can be connected by Ethernet cables or by wireless

- Possible to connect wireless devices

- www.bs-shipmanagement.com
Since the beginning of last year iCafé was installed on 82 vessels

- 750 unique registered users

- 250 MBs per PIN on vessels equipped with 6GB SCAP, 3 months rollover with Inmarsat FB250 / 256Kbps and FB500 / 432Kbps

- 400 MBs per PIN on vessels equipped with VSAT, 3 months rollover. Unlimited Data with KVH and Seatel VSAT 128/256 Kbps

- 20 MBs per day per crew on vessels equipped with VSAT or AYCE and service is provided to the crew free of charge
iCafé Usage Report - Registered Users

Total Active Users: 735

Active Users

Jan 2014
iCafé Usage Report – Amount of MBs

Jan 2014

Total Traffic MB

Total MB: 269GB
Conclusion - Things to think of!

Inmarsat new acquisition: iFusion instead of Infinity? Globe Email instead of AmosConnect? Will iFusion be the GX Service Enablement Platform (SEP) Smartbox?

Astrium/Airbus Xchange, Telaccound Gateway / Setel SmartBox, W-Link Shipsat, Station 711 Start@Sea, Otesat S@tGate, Dualog will still be used with GX Platform?

What will be the prices for GX? Indication for 256/256kbps will be the same price as what we currently pay for 128/128kbps on XpressLink

The maritime VSAT world is going to change radically, soon. Why to use Ku Band now with the limitations in coverage area when next year Ka Band will provide worldwide coverage? Are your Ku Band antennas Ka Band compatible?

Are you ready to go for higher bandwidth? Is Crew Welfare a good reason to move to a 6GB plan?

Ship operators need to educate themselves
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Thank you