Preparation, Innovation, and Success
The Future of Maritime Communications

Martin Kits van Heyningen
President and CEO
KVH Industries, Inc.
Background

• KVH founded in 1982
  – Marine market focus

• Leading supplier of satellite TV and VSAT
  – TracVision is #1 mobile TVRO brand – land, sea, and air
  – TracPhone is #1 maritime VSAT service

• Leading supplier of military navigation systems and fiber optic gyros

• KVH Industries, Inc.
  – ~500 employees
  – Turnover ~$150M
  – Public company (NASDAQ KVHI)
  – Two state of the art design & manufacturing facilities
  – Regional offices in the UK, Denmark, Norway, Cyprus, India, Singapore, Japan, and the Philippines
KVH Maritime Experience

- **Manufacturer**
  - 175,000+ mobile satellite TV and communications systems
  - 3,000+ maritime VSAT systems

- **Network Operator**
  - mini-VSAT Broadband network world’s only seamless global C/Ku-band VSAT service

- **Service Provider**
  - Inmarsat service provider since 1998; mini-VSAT since 2007
  - Installation and support

- **Onboard Network Management**
  - CommBox best-of-breed ship/shore network manager
  - 1,300 vessels

- **Premium Content**
  - Leading provider of licensed news, music, movies, and maritime training videos
  - 9,600 vessels
What’s going on?

Mobile Traffic as % of Global Internet Traffic =
Growing 1.5x per Year & Likely to Maintain Trajectory or Accelerate

Source: Meeker, Kleiner Perkins Caufield Byers
iPads are Coming!

Tablet Shipments = Surpassed Desktop PCs & Notebooks in Q4:12, < 3 Years from Intro

Source: Meeker, Kleiner Perkins Caufield Byers
Mobile Broadband Demand is Booming

• Mobile Internet in 2012
  – Mobile data traffic grew 70%
  – Mobile video exceeded 50% of mobile traffic for the first time
  – Mobile data traffic was almost 12 times the size of the global Internet in 2000
  – Smartphones and tablets everywhere

• Trends have significant implications for mobile satellite markets
  – Legacy satellite systems are incapable of supporting the onslaught

Installed Base Expected to Double in Five Years Compounding Network Strain

Maritime Broadband Unit Sales Projection

Source: NSR Mobile Satellite Services, 2012
How to build a business case to demonstrate the value of IT?

and keep your job...
Satellite Communications Cost is Only Tiny Part of Fleet Operating Expenses

But IT has significant ROI in other expense areas
IT Can Drive Business Productivity

• Improve operational efficiency
  – Real-time, weather-based route planning for improved fuel efficiency
  – Reduce maintenance and repair costs

• Enhance crew morale and promote crew retention
  – Access to Internet and e-mail for staying in touch with family and friends
  – Improve retention and reduce recruiting costs

• Many new mandated requirements starting in 2013
  – Reduced emissions (route planning and efficiency)
  – Crew welfare (Internet and e-mail) Maritime Labor Convention (MLC-2006)
  – Standards for Certification, Training, and Watchkeeping (SCTW-2010)
  – IMO ECDIS (over-the-air delivery and updates)

• But integration puts strain on IT departments
  – Need an easy way to implement all this
  – IT should take credit for all this!
Preparing for Success

• Consider the groups benefitting from broadband
  – Involve different groups, different budgets, different needs in plans
  – Take money from other departments!
  – Prioritize potential applications and start with a lead project that provides a fast ROI on its own as a starting point

• Count on technology advances and innovation
  – Select a solution that can grow to meet new requirements once deployed

• Work with a service provider who can support a quick rollout plan
  – Preconfigured equipment that is fast and easy to install
  – Professional services to support IT integration, project management, installation and training

• Objective: Make your life easy!
  – Enough challenges already with remote locations, no on-site help
  – Why should you suffer so others can benefit?
KVH’s End-to-End Business Model

• Fully integrated hardware and service
  – Design and manufacture the onboard hardware
  – Own the terrestrial hubs at the teleports
  – Lease the satellite bandwidth

• Provide high-speed connectivity
  – Monthly airtime service
  – Voice and data
  – 24/7/365 support

Turnkey solution for our customers
True Global Coverage is a Must-Have

- Ku-band Coverage with C-band Overlay Coverage
- Ku-band Coverage Only
- C-band Coverage Only
Advanced RF and Tracking Antenna Technology Enables Network Flexibility

Patents Pending
Flexibility Enables Bandwidth Choices

- **Leverage readily available commercial satellites**
  - *Hundreds* of satellites and thousands of transponders
  - KVH does not need to buy or launch satellites

- **Over-the-air map updates to add satellite capacity**
  - Backwards-compatible with fielded units
  - Already have 100% coverage
  - Add capacity only where needed

- **Frequency agnostic**
  - C, Ku, or HTS

- **Dual-mode, not one time “upgradeable”!**
New HTS Commercial Capacity

- New commercial satellite will create healthy competition in maritime markets
  - Offers KVH customers a future-proof upgrade path to higher performance satellites
- ViaSat: 140 Gbps capacity (launched in 2012)
- Intelsat Epic, HTS: 600 Mbps in each spot beam (Global Xpress: 50 Mbps)
IT Managers Need Multiple Hardware Options but Common Platform

- New TracPhone VIP-series
- Integrated CommBox Modem
Which Would You Rather Install?

Typical Solution

KVH’s Solution
IT Needs to Simplify, Integrate, and Standardize

New Integrated CommBox Modem 2U Enclosure
- ViaSat modem
- Built-in server
- Network manager
- VoIP with crew calling
- Ethernet switch
- USB ports
- Wi-Fi

Typical Solution

KVH’s Solution
Three Lessons Learned from our Customers

• Don’t wait to upgrade to a common modern solution
  – Better is the enemy of good enough
  – Delaying implementation will push out the payback
  – Today’s solutions offer faster speeds, more data, lower costs

• You won’t ever be able to provide enough speed or capacity to keep up with unmanaged demand
  – The better the service, the faster the crew will consume it

• If you don’t control traffic on your network, your communications implementation will fail
  – Prioritize business traffic
  – Fair access even onboard to the entire crew
## Software as a Service Solution for IT Departments

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<thead>
<tr>
<th>KVH CommBox QuickBasic</th>
<th>Standard Bundle</th>
<th>Enterprise Bundle</th>
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<tbody>
<tr>
<td>Least cost routing</td>
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<td>Onboard firewall</td>
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<td>Web image compression and ad removal</td>
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<td>URL and content filtering</td>
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<th>KVH CommBox QuickFile</th>
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<td>Automated file transfers</td>
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<td>✅</td>
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<td>Differential synchronization</td>
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<td>Mail server (POP3/SMTP/IMAP)</td>
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<td>✅</td>
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<tr>
<td>Webmail client</td>
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<td>✅</td>
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<tr>
<td>Anti-spam &amp; anti-virus filters</td>
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<th>Standard Bundle</th>
<th>Enterprise Bundle</th>
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<tr>
<td>Roaming crew accounts</td>
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<tr>
<td>Prepaid Internet and e-mail services</td>
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### Benefit

Manage bandwidth and connectivity onboard
Can’t Afford to Save Money?

• Lack of resources can make it difficult to roll out a new deployment

• KVH has professional services team
  – Project management
  – Network design
  – Assembly and testing of integrated onboard terminal systems
  – Training
  – Installation of onboard terminals
  – Vessel monitoring and notification systems
End-to-end Solution Must Include the Onboard Network

- **Hosted platform for value-added services**
  - Bandwidth management
  - Crew calling
  - Internet café
  - Sold directly to crew and passengers
  - You don’t have to pay for everything yourself

- **New services**
  - IPTV, digital newspapers, radio
  - Weather and charting updates
Where is all This Headed?

• Bandwidth usage continues to accelerate
  – 10-50 GB/vessel/month not uncommon

• You can’t hide from the emerging demand for broadband onboard
  – Good seafarers will work for companies offering the best living conditions
  – Managers demand the tools to do their jobs

• Netflix and YouTube account for 50% of U.S. total Internet traffic
  – Just two sites account for half of all traffic!

• What about on mobile devices?
  – 50% of mobile Internet traffic is now video

• Need a new platform for moving this volume off the business network

• Some new technology can help here...
Introducing KVH IP-MobileCast Platform
What is IP-MobileCast Service?

• A new service to broadcast content including large files directly and efficiently to all vessels at once

• Content delivery system
  – Multicast technology in all KVH Hubs around the world
  – Additional network bandwidth (new bandwidth from VCSM and ACSM)
  – Built into all KVH systems V3-IP, V7-IP, and V11-IP

• Deliver news, sports, music, movies, digital charts, detailed weather

• Even live TV
  – Remember satellite TV only works near shore, not in the middle of the ocean

• Will support TVs, smartphones, tablets, laptops
Efficiency of IP-MobileCast vs. Unicast

Unicasting – each file individually requested & transmitted to receiving vessels

IP-MobileCast – ONE transmission sends a file to ALL vessels
How it Works

• Delivered automatically in the background over the top of the mini-VSAT Broadband network

• Does not use customer’s data plan and does not affect onboard speeds at all

• Delivering terabytes of content per year to the vessel with a separate datastream
  – You only pay for the movies and content--no charge for the delivery

• Patented software
  – Optimizes data, provides advanced forward error correction, and validates onboard files

• Available globally throughout the mini-VSAT Broadband network

• Enables large files like the entire ECDIS ENC global chart database to be delivered automatically
  – Partnered with Jeppesen
  – 3 GB DVDs
Use Only Idle Bandwidth (Background Multicast)

Today 50% is idle even on busy beams
But Where to get the Content?

- KVH just acquired Headland Media
- Leading supplier of licensed content for maritime industry
Movies, TV, News & Sports Clips

- Approved distributor of *all* major movie studios for maritime market
- Fully licensed for commercial use
- Movies available *before* release to DVD
News Services

- Licensed content from 27 newswire services
- Creating 70 different newspapers in 17 languages 365 days/year
- Delivered digitally for print or display
- Market to merchant vessels, cruise ships, and hotels
  - 9,300 merchant vessels
  - 300 cruise ships
Challenge for CIOs

- Tasked with delivering more with less resources
- Crew expectations are going up every day
- More and more difficult to meet demands with traditional satellite and IT solutions
  - Need to manage usage onboard
  - Need creative new content delivery platforms to scale your business
  - Free Internet bandwidth up for core IT and business use
- Work with someone who can share the load and make your life easier
- Take credit for the impact on the business and don’t just get stuck with the bill
Questions?