



HiSeasNet

INTERNET FOR OCEANOGRAPHIC SHIPS AT SEA

HiSeasNet 2.0 2015 Review

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2015 Transitions and Highlights



- ◆ **HiSeasNet Team Transition**
- ◆ **Network infrastructure Transition**
 - ◆ New Q-Flex modems fully fielded on ships and shore
 - ◆ Bandwidth increased 4X at 2X price
 - ◆ All IP Architecture – no more serial interfaces
- ◆ **Comparison to U.S. Navy Commercial SatCom**
- ◆ **Network Operations and Support Transition**
 - ◆ Shared situational awareness
 - ◆ Matrix Team Support Structure
- ◆ **HiSeasNet Future Directions**
 - ◆ Move from development phase to mature operations
 - ◆ Requirements driven

Steve Foley – Heart and Soul of HiSeasNet Gentleman Farmer



- ◆ Architect, Engineer, and User Support for HiSeasNet for 13+ years
- ◆ Shipboard Technical Support Veteran
- ◆ Once an HiSeasNet Veteran – Always a HiSeasNet Veteran
- ◆ *Semper fi*



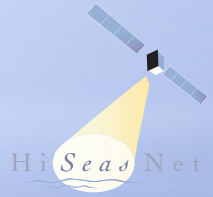
Kevin Walsh – Old New Guy



USS Bonhomme Richard LHD-6



Please Be Patient



Patience is something you admire in the driver behind you, but not in one ahead.

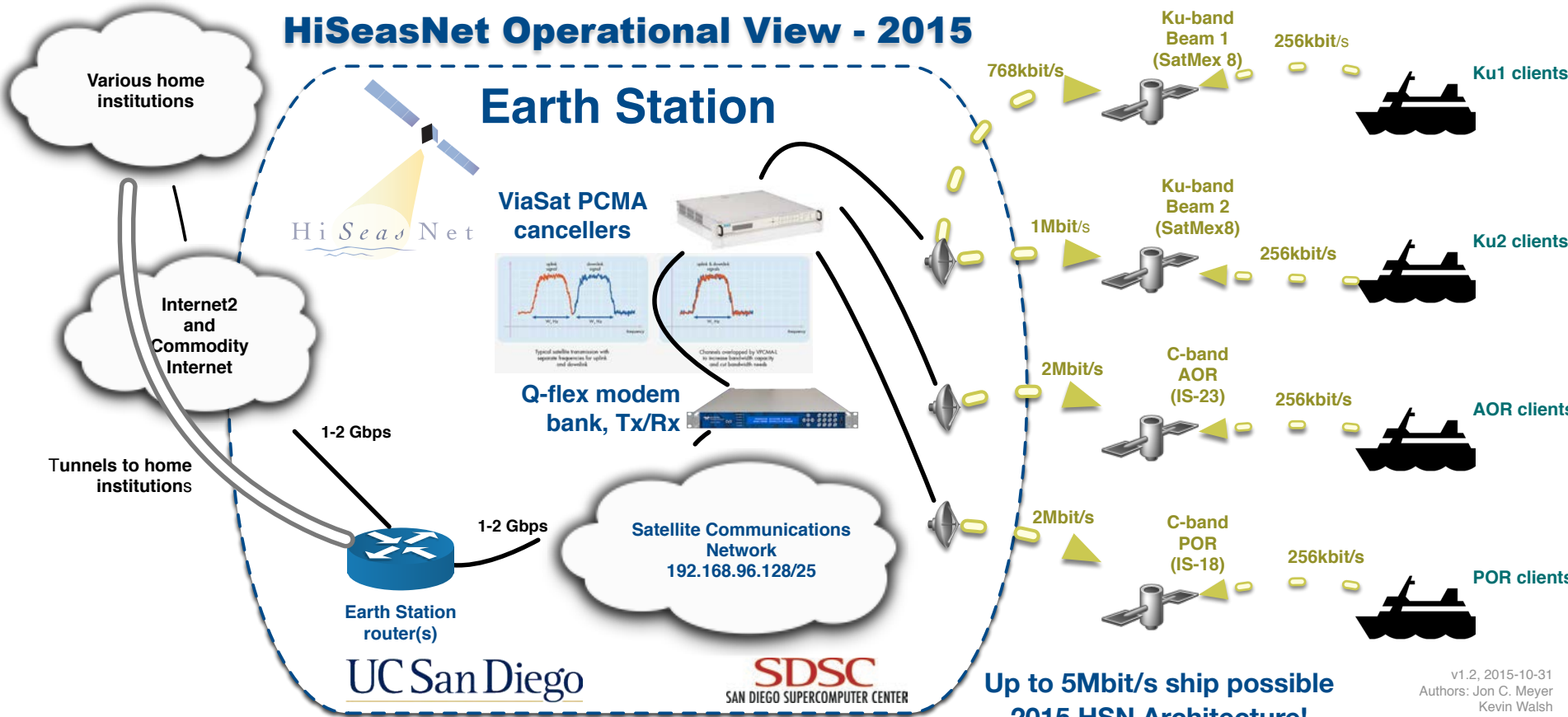
Bill McGlashen

HiSeasNet 2015

4X Performance Increase ++ IP



HiSeasNet Operational View - 2015



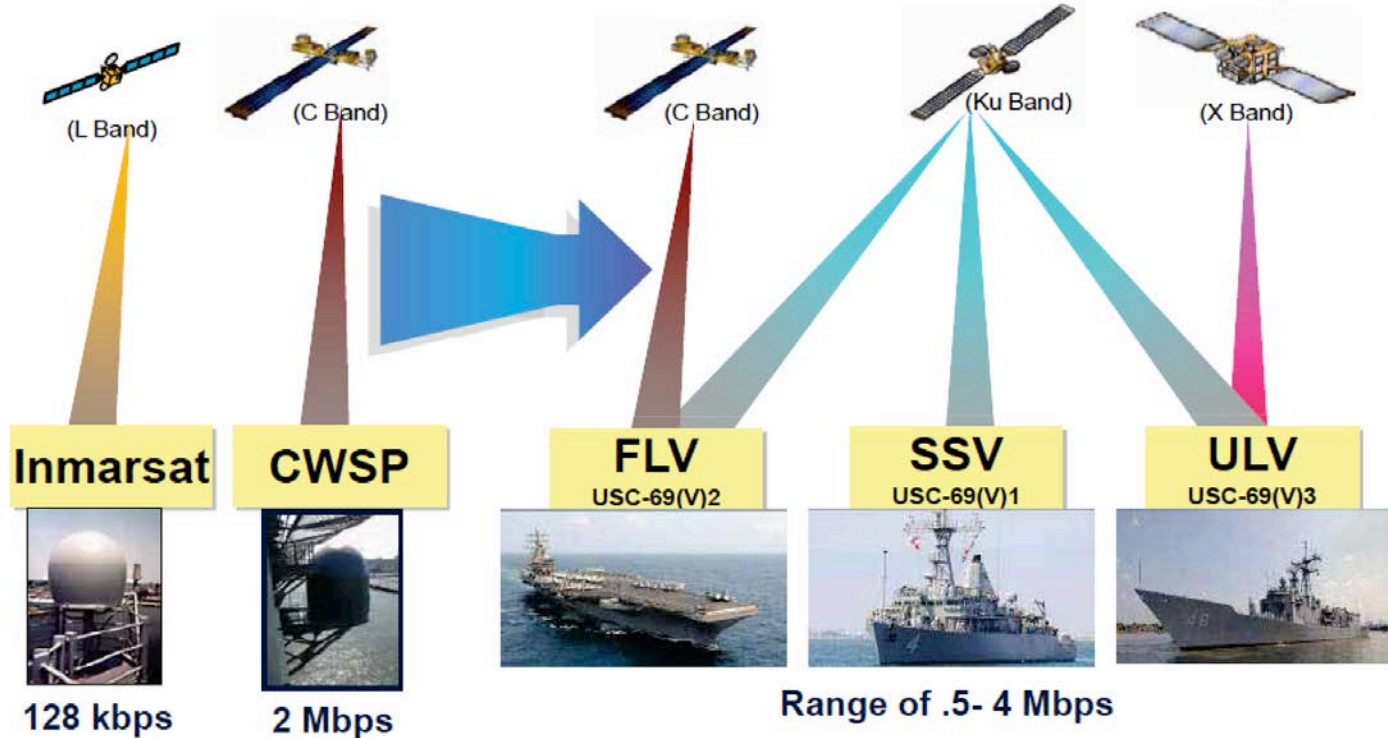
HiSeasNet Compared to Navy



Navy SATCOM Migration



Commercial Broadband Satellite Program



3



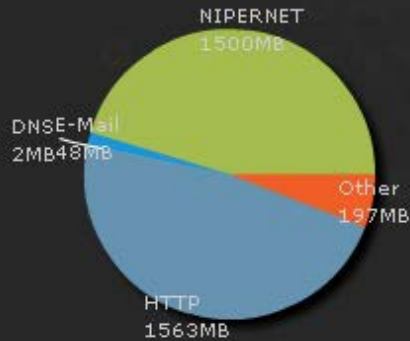
SATELLITE COMMUNICATIONS

- DSCS
- CWSP
- EHF
- EHF-TIP
- MIL SHF
- COM SHF
- UHF
- INMARSAT

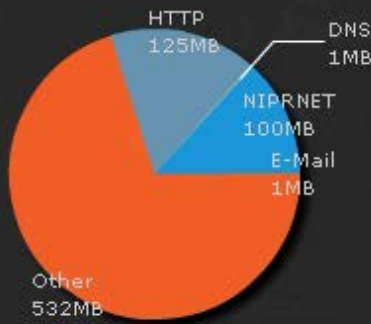
SIPRNET SERVICES

- IASM EVENTS
- E-MAIL
- WEB
- DNS
- CHAT

SIPRNET TRAFFIC BY TYPE



TO SHIP

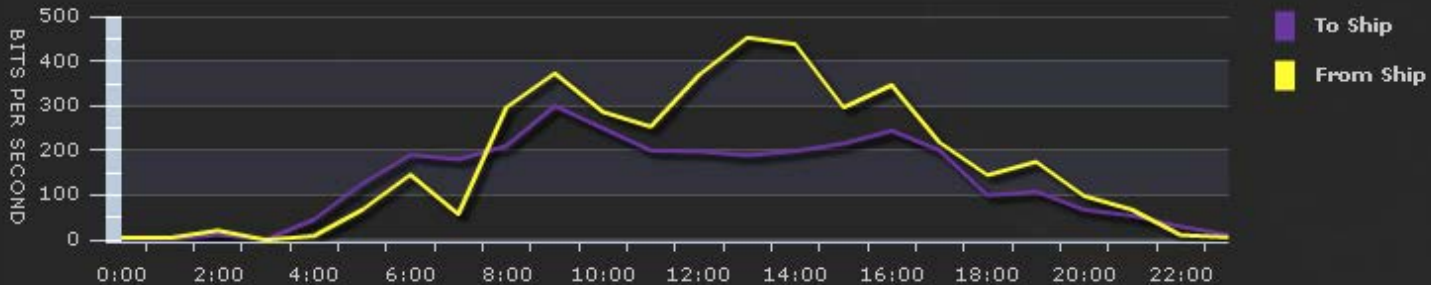


FROM SHIP

E-MAIL QUEUES



SIPRNET AGGREGATE BANDWIDTH





HiSeasNet Earth Station customer informational graphs

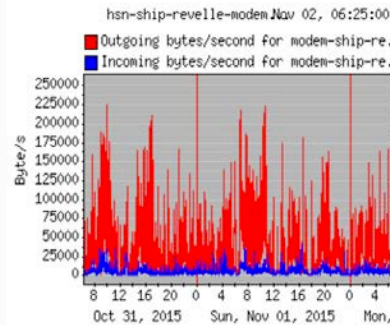
Customer: **--** Time steps: **Daily** Image resolution: **medium** Go Generated Mon, 02 Nov 2015 06:20:51 +0000

Please select a customer:

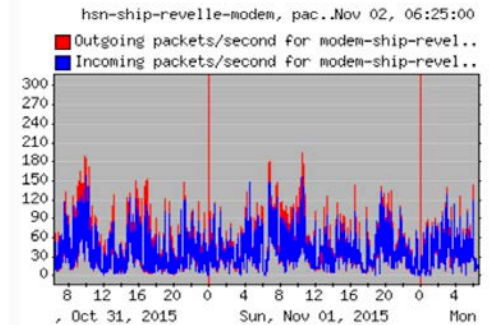
- R/V Atlantic Explorer (BIOS)
- R/V Atlantis (WHOI)
- R/V Endeavor (URI)
- R/V Kilo Moana (UH)
- R/V Marcus G. Langseth (LDEO)
- R/V Oceanus (OSU)
- R/V Pelican (LUMCON)
- R/V Roger Revelle (SIO)
- R/V Sikuliaq (UAF)
- R/V Thomas G. Thompson (UW)
- R/V F.G. Walton Smith (RSMAS)

- 1 minute
- 5 minutes
- 10 minutes
- 30 minutes
- 1 hour
- 2 hours
- 6 hours
- 12 hours
- Daily
- Weekly**
- Monthly
- Yearly

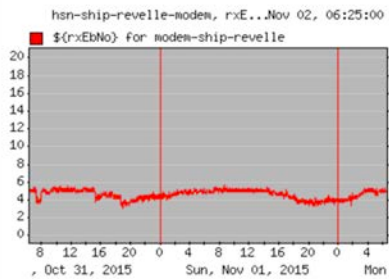
ship Bytes/second (bit/second + 8)



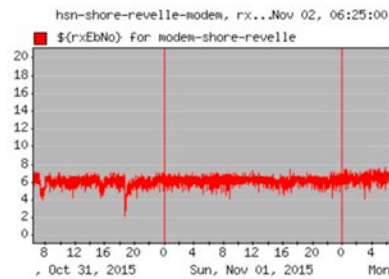
ship Packets/second



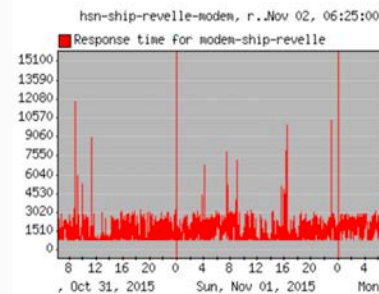
ship Rx Eb/N0 (dB - Signal:Noise)



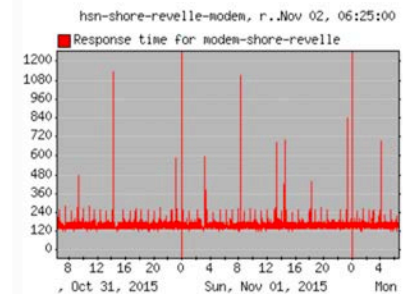
shore Rx Eb/N0 (dB - Signal:Noise)



ship Response Time (milliseconds)



shore Response Time (milliseconds)



Slack - Collaboration and Situational Awareness

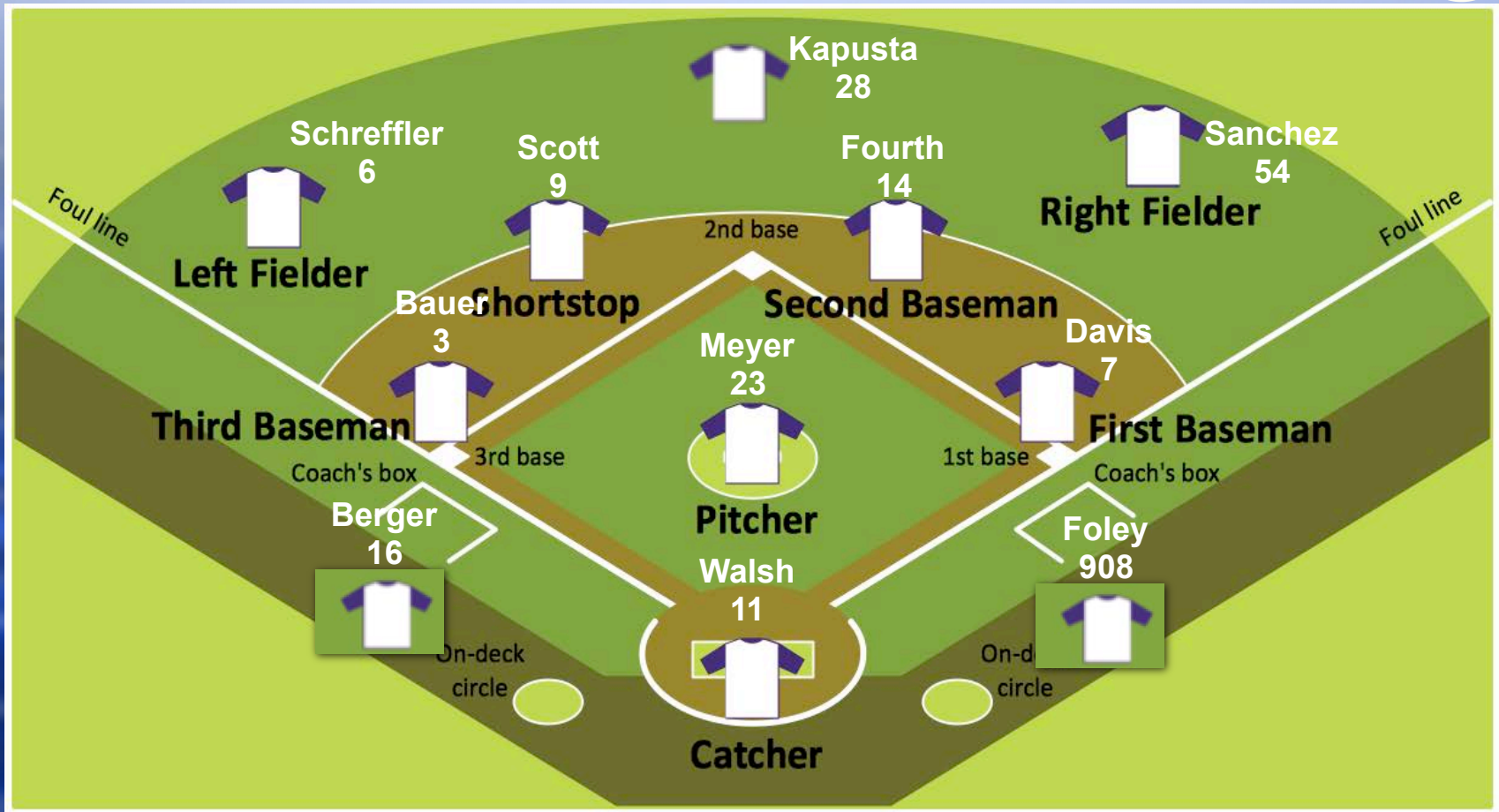
UNCLASSIFIED



The image is a collage of four screenshots from the Slack messaging application, illustrating collaboration and situational awareness in a technical environment.

- Top Left:** A screenshot of the Slack channel sidebar. It shows a list of channels including #earth_station_ops, #general, #hsnadm_notify (highlighted), #random, #rv-revelle, #rv-thompson, and #rvtec. Below the channels are direct messages with users like slackbot, alant, dswensen, and others.
- Top Center:** A screenshot of a warning message in the #earth_station_ops channel. The message is titled "Warning: modme-ship-sikuliaq (192.168.96.198)" and includes details such as "Address: 192.168.96.198", "Probe Type: SNMP Teledyne Q-Flex satellite modem probe (port 161 SNMPv2c)", "Device Status: Warning", "Last Time Down: 11 hours, 19 minutes, 40 seconds", "SysUpTime: 10 days, 1 hour, 41 minutes, 46 seconds", "Device Condition: Rx signal below threshold. Threshold: -54.1575", and "Counts: Down: 295, Critical: 12, Alarm: 9".
- Bottom Left:** A screenshot of a direct message history between @mhuey and kwalsh. The messages include: "Hi Kevin.", "(FYI, I have the memory stick prepped, and have turned the modem's TX off.)", "Hi -good deal. Please stand by for Jon to arrive.", "Ok. FYI, I'm on the XMPP client. Should I use the other Slack format?", "looks like Jon is online", "XMPP should be fine", "Ok.", "I'm still loading -- FBB is slow. Verrrry slow."
- Bottom Right:** A screenshot of the #earth_station_ops channel message history. It shows messages from kwalsh and jmeyer dated October 14th and 15th. The messages include: "try that - cannot see the application icon", "just the folder on the desktop that looks like the install folder", "Yes - please provide Hugo with image and see his latest email see that you saw it.", "Kevin - DacRemP (DAC Remote Panel) can be seen here.... <https://wiki.hiseasnet.ucsd.edu/pages/viewpageattachments.action?pageId=458806>", "thanks", "FYI - Spoke to Lianne at CommSystems to ask her to alert Hugo latest info from Atlantis", "spoke with Hugo. Maint visit for pedestal replacement was missing blockage values. Visit from 2013 had Azimuth Blackout Limit 1 AZ LIMIT 1 0340 Azimuth Blackout Limit 2 AZ LIMIT 2 0357".

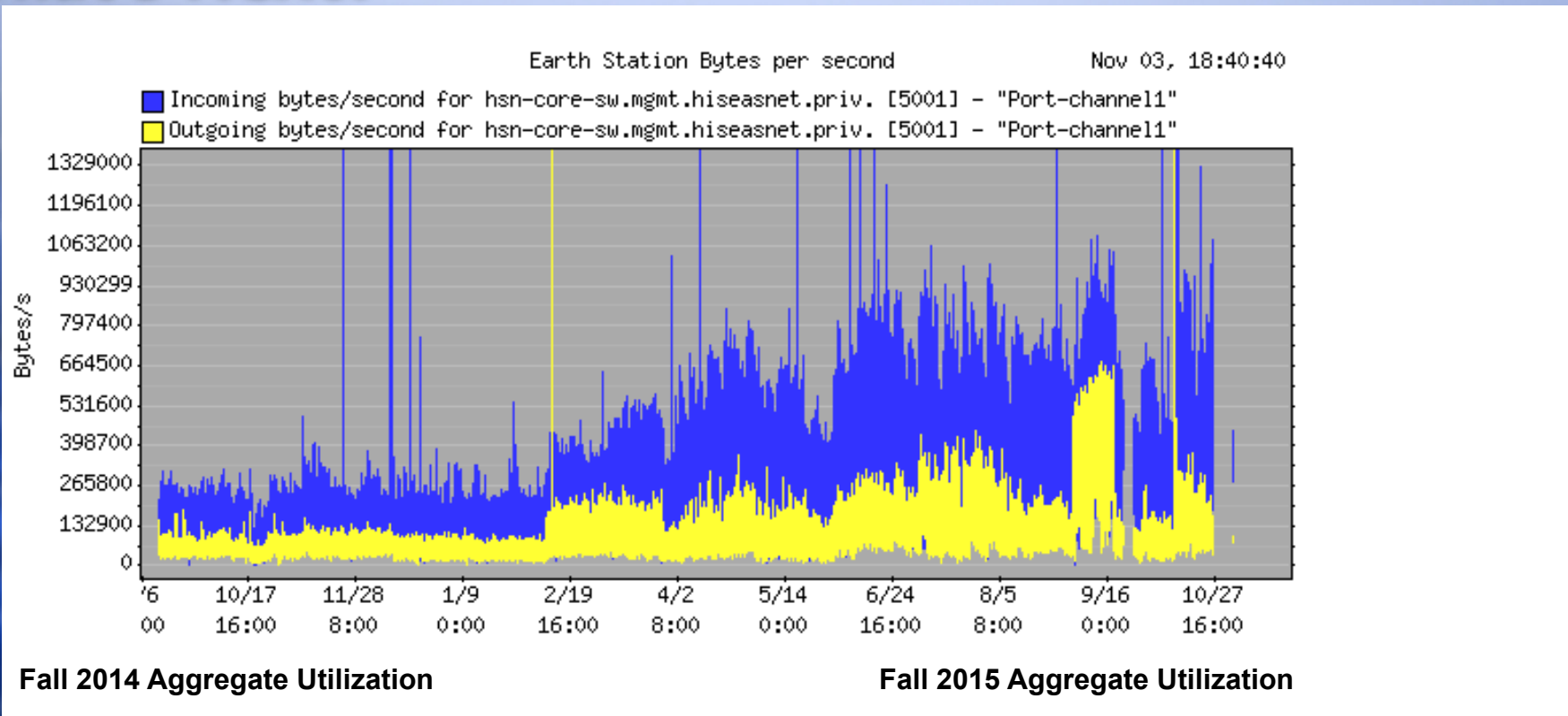
HiSeasNet Support Team



HiSeasNet Support Line (858)822-3356 hiseasnet@ucsd.edu

HiSeasNet 2.0 – 4 X Bandwidth ++ IP

What's Next?



- Delivered 4X increase in bandwidth – all IP
- No surprise – ships use it
- What if another 2X?
- Target objective – 15 Mbit?

Take Aways for HiSeasNet 2.0



- ◆ **New Q-Flex modems fully fielded on ships and shore**
 - ◆ Bandwidth increased 4X at 2X price
 - ◆ Scalable Bandwidth Expansions
 - ◆ Enables new capabilities for scientific users
- ◆ **All IP Architecture – no more serial interfaces**
 - ◆ Enables better remote support , monitoring and measurement
 - ◆ Leveraging UC San Diego and CENIC/ I2 network infrastructure
- ◆ **Matrix Staff Support – Mature operations posture**
 - ◆ Leveraging skills and knowledge of staff across projects
 - ◆ Leveraging collaborative integrated systems management
 - ◆ Shared situational awareness and
 - ◆ Rapid response 7 days a week best effort
- ◆ **HiSeasNet delivering mainstream maritime SatCom services tailored to Oceanographic research community**
 - ◆ Future development to align with user requirements



Thank you for your attention.