Network Infrastructure, topology, routing, shipboard WiFi, IT

This technical exchange is intended as a nuts and bolts discussion about the design of the network.
Moderator – Jon Meyer

- Network Infrastructure, topology, routing
- Shipboard WiFi
- Sikuliaq IT Overview - John Haverlack (UAF/SFOS IT)

Shipboard Networking Topics:

- Bandwidth -- everybody wants more than is available; what can we do?
- Internet Connectivity -- links are very dynamic; they aren't always all online. Fancy routing tricks can help.
- Controls -- methods for making the most of what we have.
- Local Area Network, WiFi, special networks

Bandwidth:

- 8 bits = 1 Byte
- 100 Megabits (Mbits) = 12.5 MegaBytes
- 492 kilobits = 61.5 kiloBytes
- 8,000,000 bits = 1 "MegaByte" in your FBB usage summary
- 8,388,608 bits = 1 MegaByte on your computer or router
- 1.5 Mbit/s = too slow for Netflix

- HiSeasNet: full duplex, 512 kilobit/s shore->ship (shared), 96 kilobit/s
- FleetBroadband: half duplex (?), 492 kilobit/s "best effort"
- 3G plans: at least 200 kilobits/s
- 4G plans: up to 100Mbits/s for "high mobility" links
- WiFi: 802.11n, 100Mbits/s; 802.11g <= 50Mbit/s

Internet Connectivity:

- Physical issues
- ISP issues
  - HiSeasNet -- *discussed performance issues*
  - FleetBroadband -- *discussed performance issues*
  - other (3G, 4G)
- Routing issues
  - *Meyer/Foley poster discussed -- http://sts.ucsd.edu/t/~jmeyer/internet_at_sea.pdf or http://sts.ucsd.edu/t/~jmeyer/internet_at_sea.png*
- Staying connected (and what to do when links fail)

- Technical issues
- VPN, GRE, IPsec, MTU

Controls:

- Users -- how do folks manage them?
  - *Internet Café model is popular*
- Web access -- how is this managed?
- How are different users treated/given access? *-- in short, nobody is treated very differently*
  - Admins
  - Crew
  - Science Party
- Useful technologies
- Port blocking
- Firewalls
  - *iptables is popular*
- Quality of Service
- Proxy as a web filter (e.g. squid+squidGuard, other)