Optimizing IP Services on Inmarsat Fleet Broadband (FB) Systems

Dual FB installations onboard UNOLS vessels.

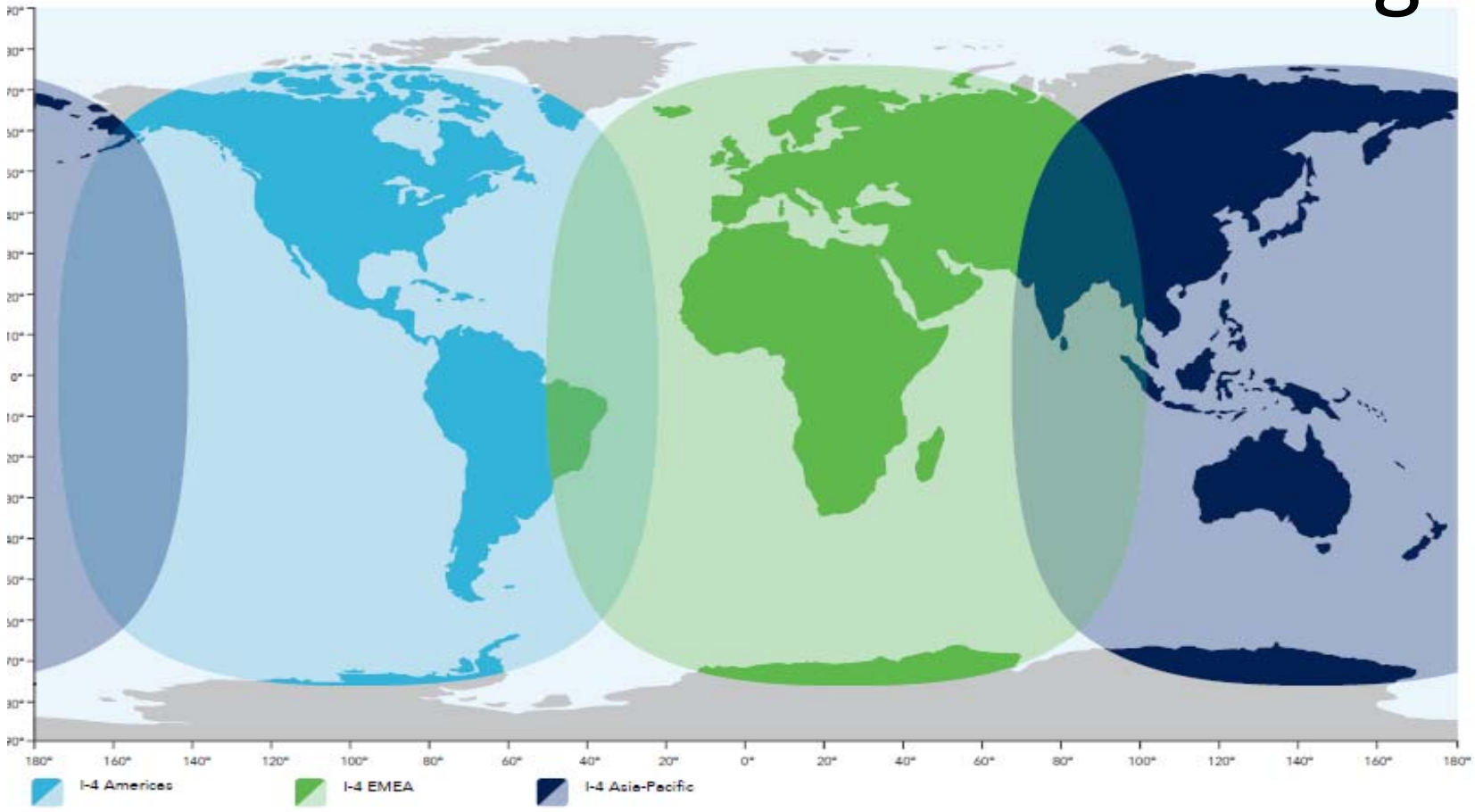
UNOLS – RVTEC
Texas A&M University
Nov. 19th. 2013

WORLDLINK COMMUNICATIONS

- Fleet Broadband background
- Available services
- The need to optimize bandwidth
- Optimization of Single LAN Connection
- Dual FB configuration
- High throughput capacity

WORLDLINK COMMUNICATIONS

Fleet Broadband Global Coverage



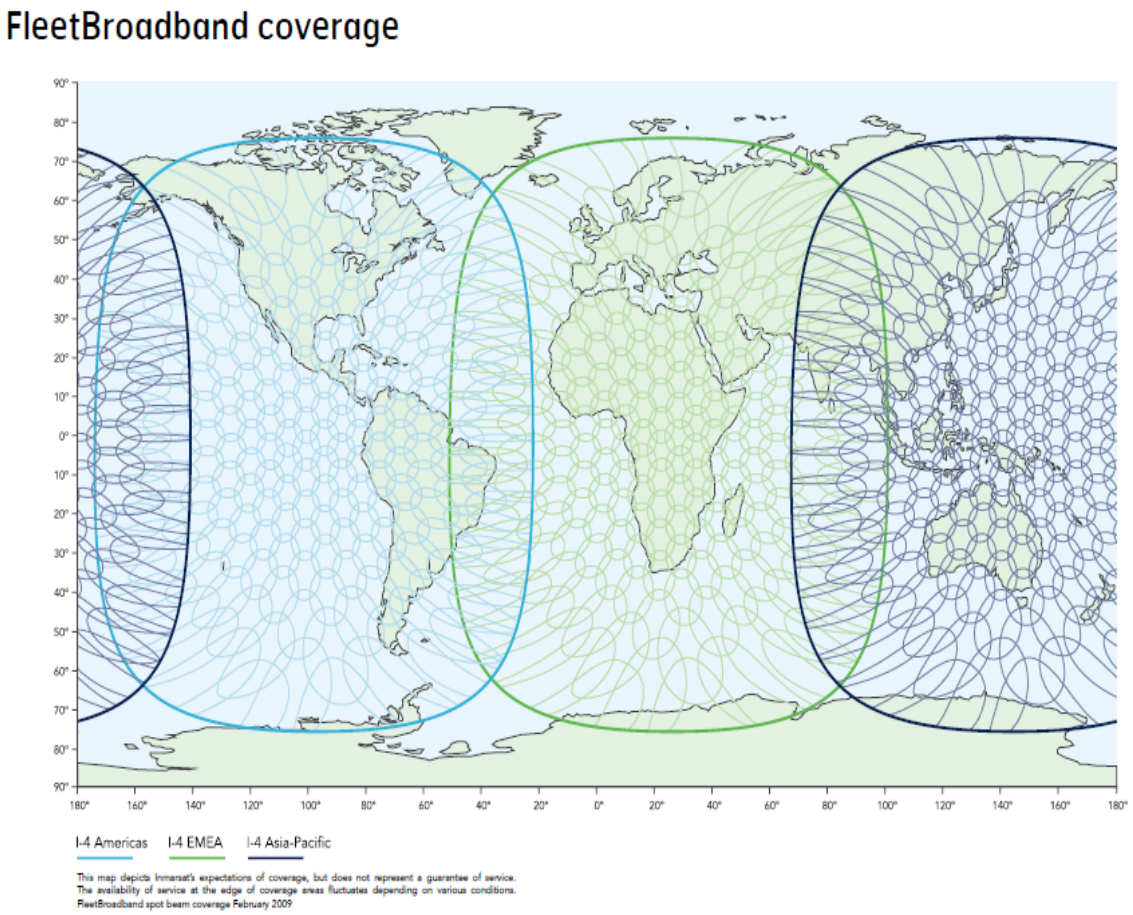
This map depicts Inmarsat's expectations of coverage post repositioning of its I-4 satellites. This map does not represent a guarantee of service. The availability of service at the edge of coverage areas fluctuates depending on various conditions.

.com/coverage

inmarsat

WORLDLINK COMMUNICATIONS

FB Spot beams maps, dynamic bandwidth



-Small spot beams area

- Independent Capacity

- Dynamic allocation to where capacity is required.

WORLDLINK COMMUNICATIONS

FB 500 Spec:

ADU: 35 Lbs / 60 cm
Speed: 432/432 kbps
Streaming: up to 256 kbps
4 independent IP networks
Multi—voice: up to 9 voice lines.
Integral DHCP/NAT router
Integrated PBX

Capacity: 4.8 GBytes per day
In each direction.

WORLDLINK COMMUNICATIONS

c.6 FB: one device, 3 networks

(5) Meanwhile, your file exchange server sets up another simultaneous connection dedicated for its batch FTP to HQ

(6) A crew member realises he needs to call his wife and sets up a VOIP call on another dedicated connection.

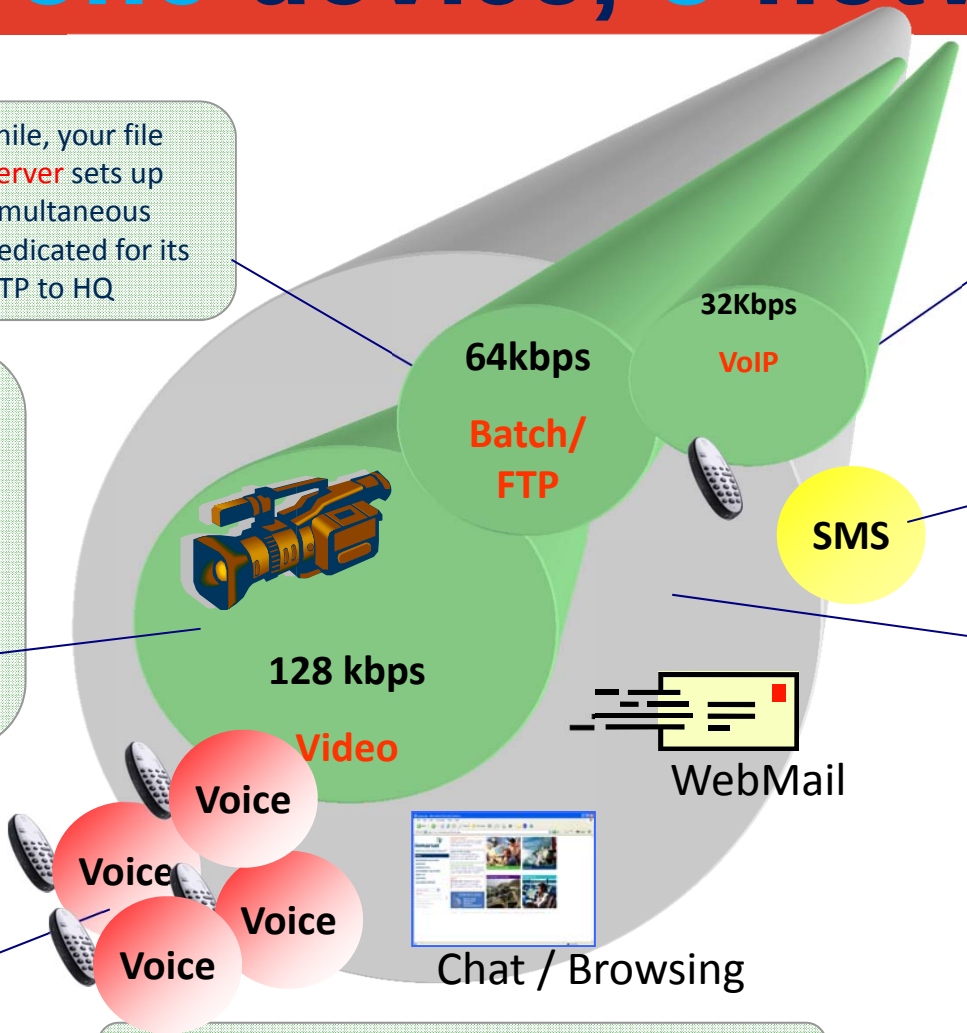
(4) Engineer from Engine Room, liaises with expert on shore check the parts or fittings – so starts a simultaneous streaming channel dedicated for the camera

(7) Crew are also sending/Receiving SMS

(1) Single FB Terminal with single SIM card – starts with STD-IP connection. With other simultaneous connections from different locations onboard

(3) The Captain receives a Telephone calls, Superintendant can call from HQ, Officer can make call to suppliers

(2) Crew can begin Browsing or Email or Interactive access sharing this connection.

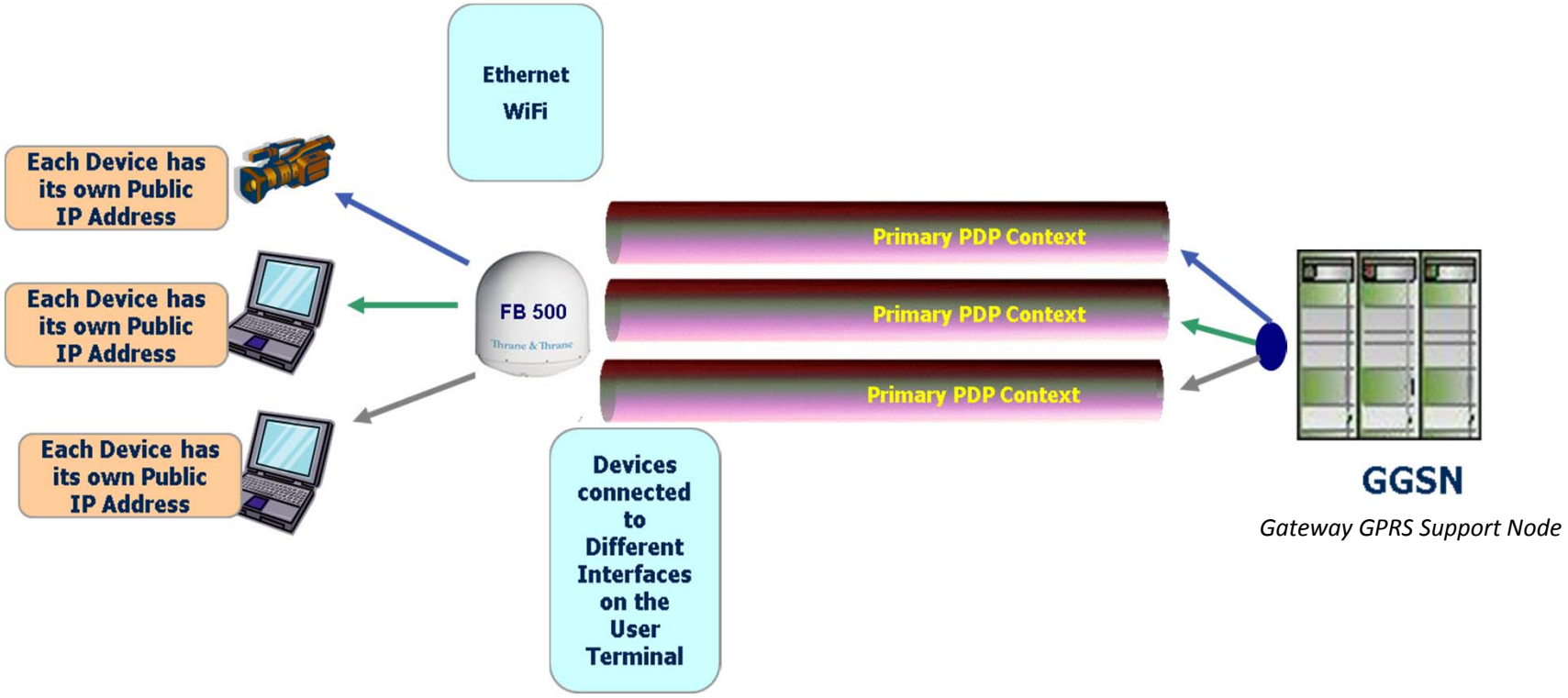


Legacy CS
Traditional

Interactive Best Effort
Standard

Batch High QOS
Special

Onboard - IP Network configuration



Why optimize

- Ever increasing volume of science data volumes.
- Bandwidth demanding apps:
  - Personal and vessel operations – Skype, video streaming, electronic charts, engine monitoring, remote presence …

  ➔ Congestion on the WAN link
- Budget cuts – reduced allowances for additional bandwidth

WORLDLINK COMMUNICATIONS

Optimizer Features

Bandwidth Management and Quality of Service (QOS)
Application-based priority assignments
Custom port-based application definition
Compression
Caching
Configured protocols:
Web
Email
FTP
DNS
Network Authentication
Terminal Services
SIP

Administration
Web-based interface
Traffic and performance monitoring
Event logging
SNMP support
Secure remote administration
Reporting

WORLDLINK COMMUNICATIONS

Optimizer Features

Features

Link Balancing

WAN and Internet connection link balancing
Inbound link balancing
Automated link failover and failback
Link health monitoring
Ping
HTTP
DNS
TCP port checking

Basic Firewall Functions

Network Address Translation (NAT)
1:1 NAT
Port forwarding
Firewall IP Access Control Lists (ACLs) and rules
Firewall transparency

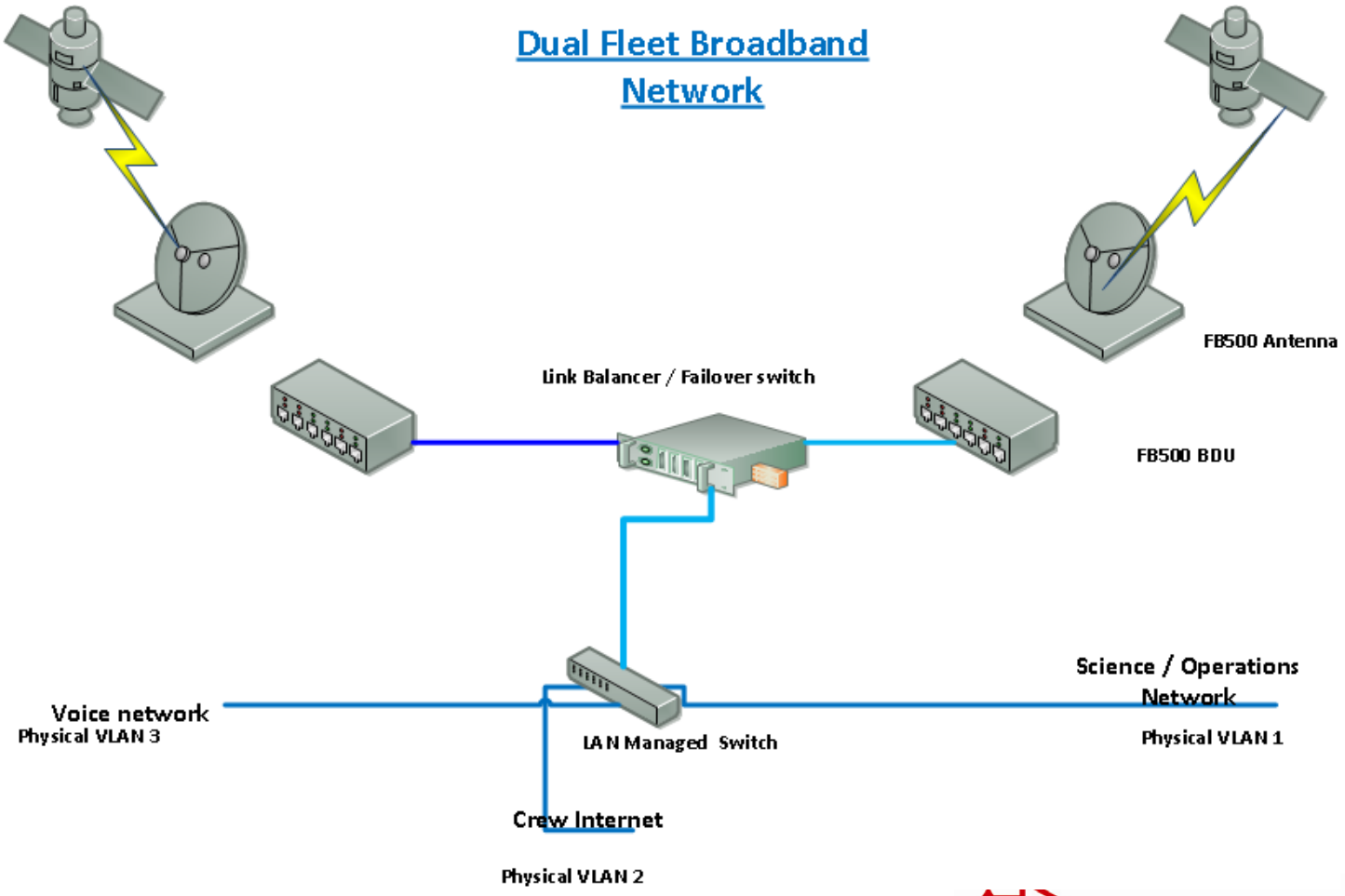
Network Services

DHCP server
Authoritative DNS server
DNS request forwarding
Site-to-site VPN
Outbound Source NAT
VLAN support

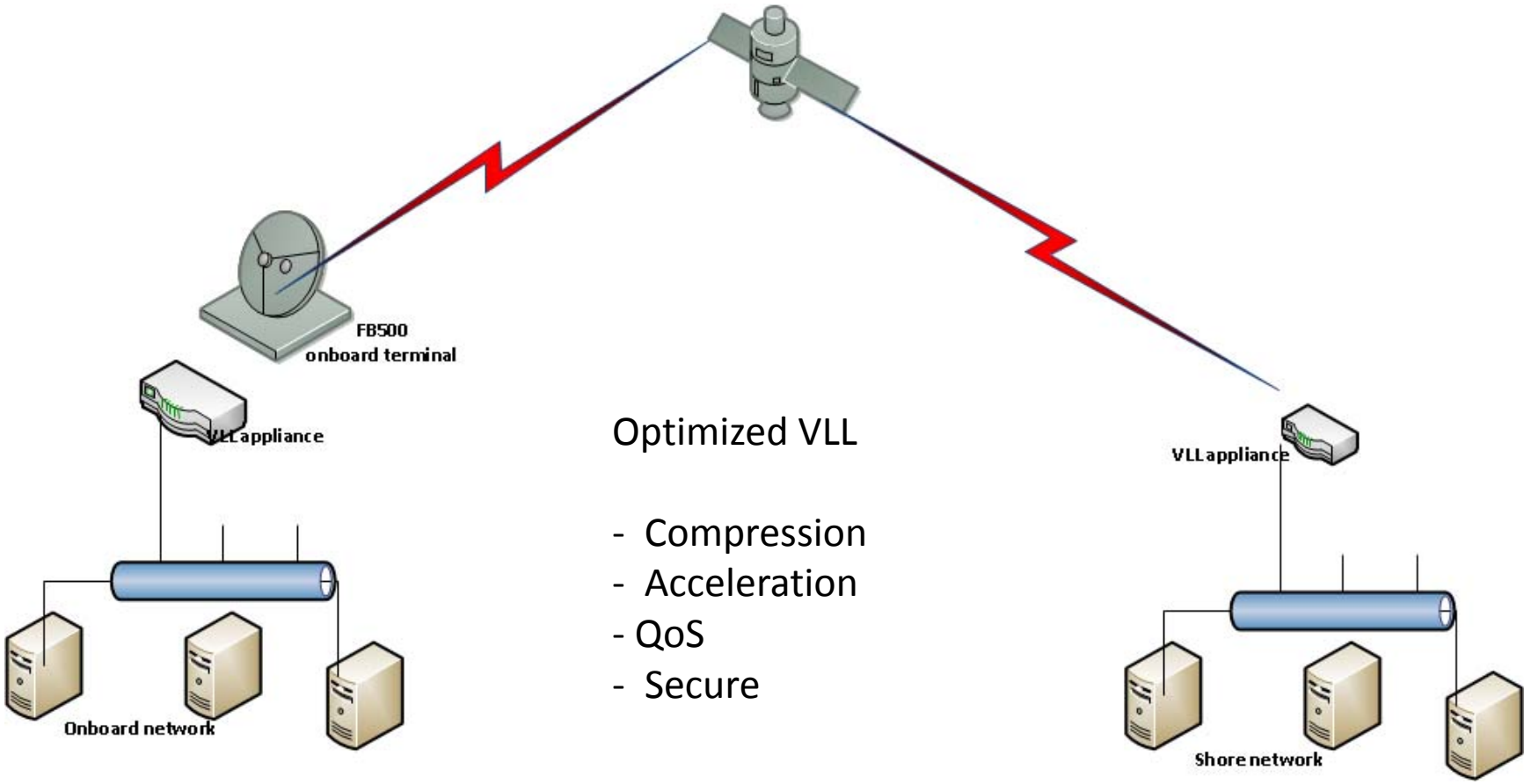
WORLDLINK COMMUNICATIONS

Appliance Dashboard

WORLDLINK COMMUNICATIONS


Dual Fleet Broadband Network
FB500 Antenna
Link Balancer / Failover switch
FB500 BDU
Science / Operations Network
Physical VLAN 1
Voice network
Physical VLAN 3
LAN Managed Switch
Crew Internet
Physical VLAN 2

Fleet Broadband Virtual Leased Line

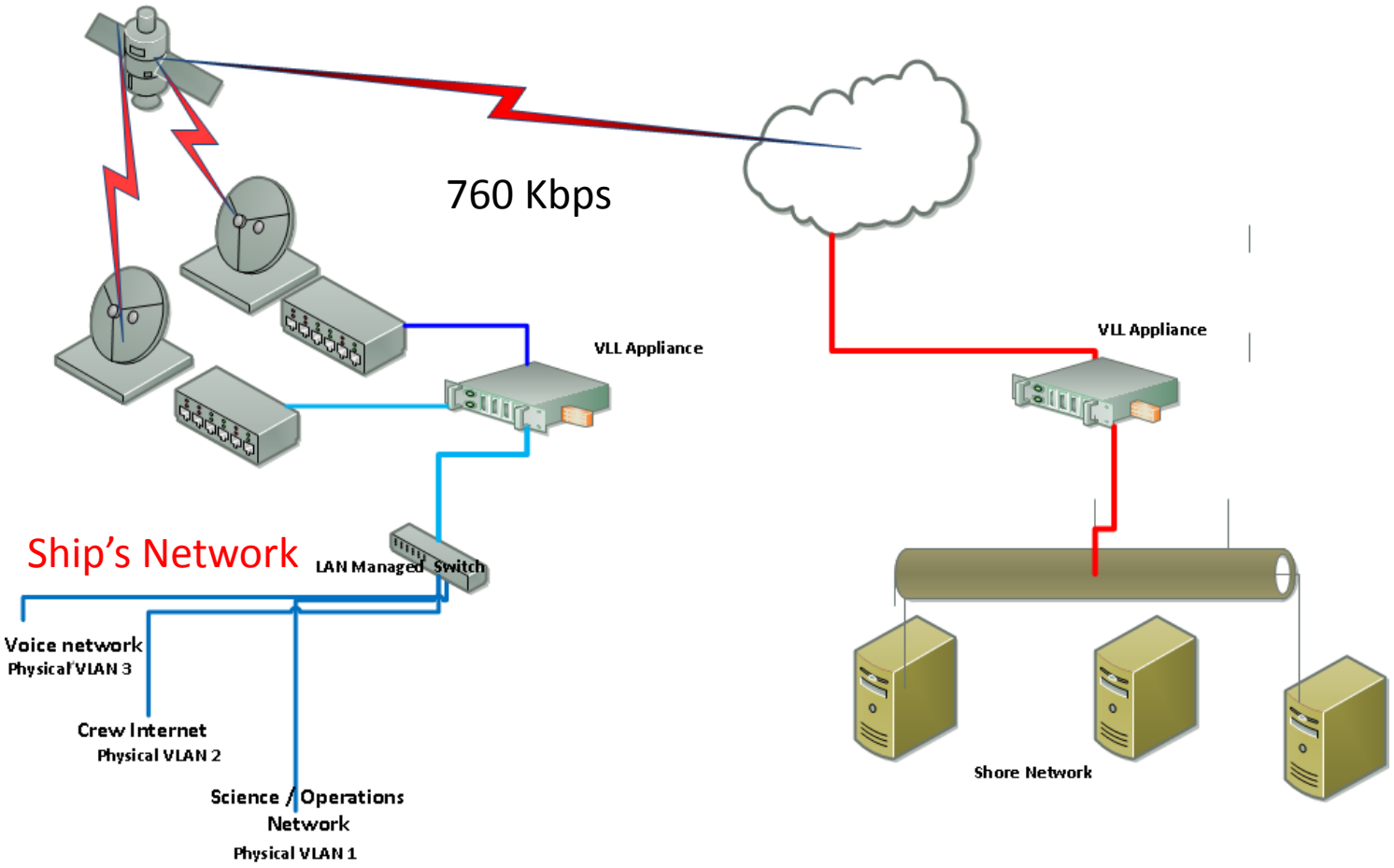


Optimized VLL

- Compression
- Acceleration
- QoS
- Secure

WORLDLINK COMMUNICATIONS

Dual Fleet Broadband VLL



mushroom NETWORKS

ShipSat

FAT Pipe

CISCO

Barracuda Networks

WORLDLINK COMMUNICATIONS

Thank you

WORLDLINK COMMUNICATIONS