Program Executive Office
Command, Control, Communications,
Computers and Intelligence (PEO C4I)

Afloat Networks
ASNE Combat Systems Symposium

March 2012
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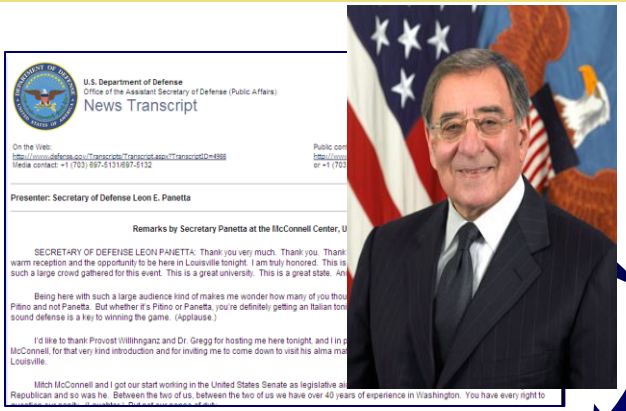
Bandwidth = Time = Battlespace

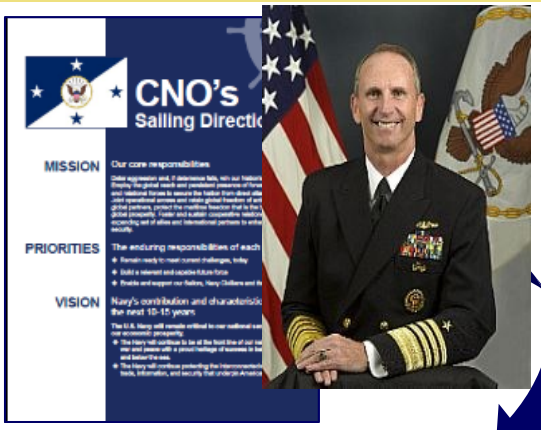

U.S. Department of Defense
Office of the Assistant Secretary of Defense (Public Affairs)
News Transcript

Presenter: Secretary of Defense Leon E. Panetta

Remarks by Secretary Panetta at the McConnell Center, U

SECRETARY OF DEFENSE LEON PANETTA: Thank you very much. Thank you. Thank

Proceedings Magazine, "Lead or Get Out of the Way: Winning the Millennium War," VADM Mark Edwards, US Navy, April 2008,



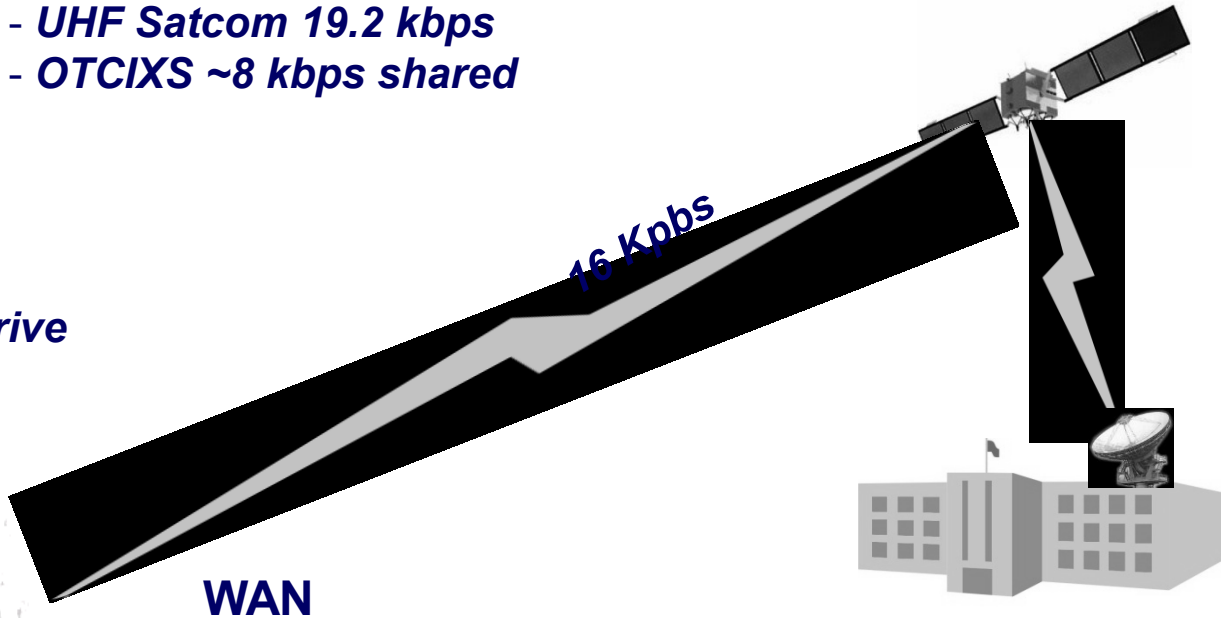
- *We must continue to invest in new capabilities like cyber and unmanned systems and space…*
- *I have to tell you that I do worry, however, about this new area I talked about of cyber-war.*
- *I think the capabilities are available in cyber to virtually cripple this nation, to bring down our power grid system, to impact on our governmental system, to impact on our -- on Wall Street, on our financial systems, and to literally bring – paralyze this country.*
- *So the one thing that I worry about the most right now is knowing that this is possible and feeling that we have not taken all the necessary steps to protect this country from that possibility.*

- *Over the next 10-15 years, the Navy will evolve and remain the preeminent maritime force.*
  - *The reach and effectiveness of ships and aircraft will be greatly expanded through new and updated weapons, unmanned systems, sensors, and increased power.*
  - *Unmanned systems in the air and water will employ greater autonomy and be fully integrated with their manned counterparts.*
  - *Cyberspace will be operationalized with capabilities that span the electromagnetic spectrum – providing superior awareness and control when and where we need it.*

PEO C4I End to End Capability Early – Mid 90's

RF Bandwidth

- *Inmarsat 16kbps*
- *SHF voice (CMD Ships) 16 kbps*
- *UHF Satcom 19.2 kbps*
- *OTCIXS ~8 kbps shared*

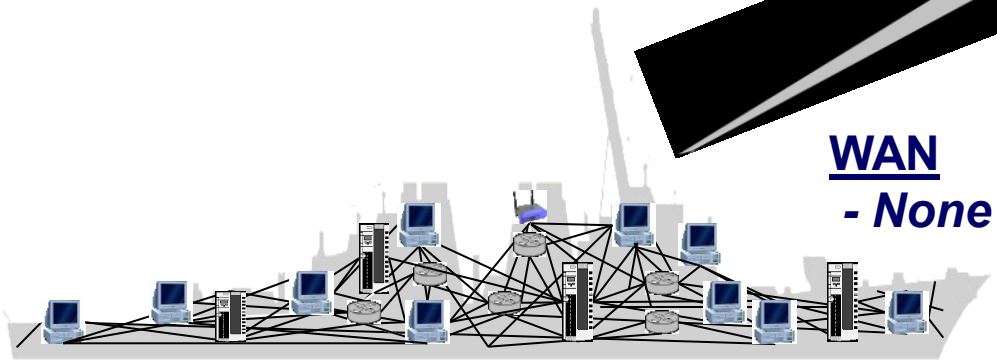


Network Storage

- *JOTS/JMCIS: 20 MB Hard drive*

Applications

- *Three*



WAN

- *None*

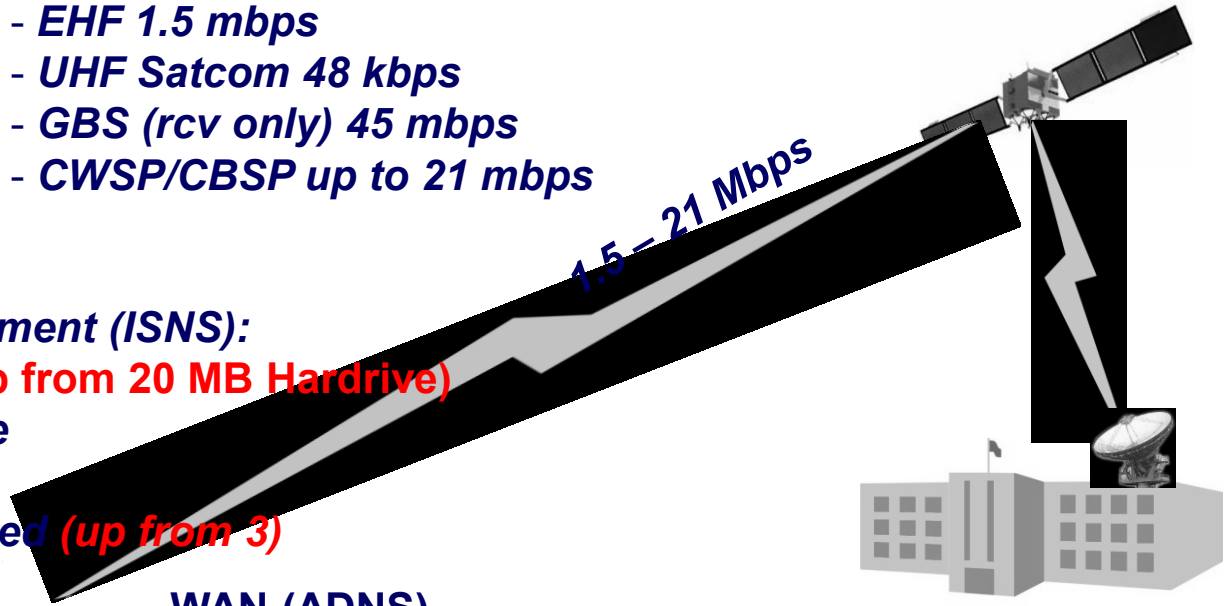
SHF – Super High Frequency
EHF – Extremely High Frequency
OTCIXS - Officer in Tactical Command Information Exchange Subsystem
JOTS – Joint Operational Tactical System
JMCIS – Joint Maritime Command Information System

Required Bandwidth achieved via helicopter – Navy disadvantaged and nearly kept out of the game….

PEO C4I End to End Capability 2010's

RF Bandwidth (up from 16 Kbps)

- *Inmarsat 16kbps*
- *SHF up to 7 mbps*
- *EHF 1.5 mbps*
- *UHF Satcom 48 kbps*
- *GBS (rcv only) 45 mbps*
- *CWSP/CBSP up to 21 mbps*



Network Storage

Common Computing Environment (ISNS):
20 TB storage per enclave (up from 20 MB Hardrive)
CANES: 9.5 TB for apps alone

Applications

- Over 800 Connected or hosted (up from 3)

WAN (ADNS)

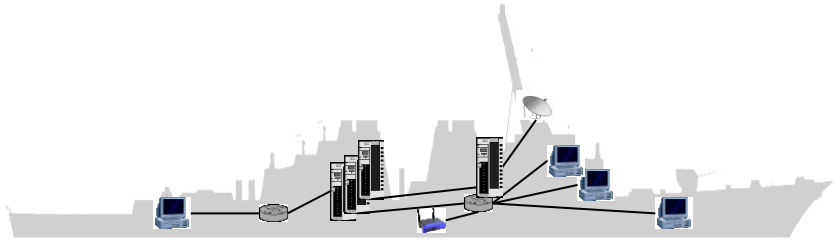
- 25 / 50 mbps

CANES – Consolidated Afloat Networks and Enterprise Services
ISNS – Integrated Shipboard Network System
ADNS – Automated Digital Network System
SHF – Super High Frequency
EHF – Extremely High Frequency
GBS – Global Broadcast System
CWSP/CBSP – Commercial Wideband Satellite Program/Broadband

…now Supports Full Motion Video, persistent COP, ISR Data Management and full array of Warfare

PEO C4I End to End Capability

Capability	Current Systems	Future Technology
Local Area Network	- Integrated Shipboard Network Systems (ISNS) - Submarine LAN (SubLAN) - Combined Enterprise Regional Information Exchange System – Maritime (CENTRIXS-M) - Sensitive Compartmented Information Networks (SCI Net)	- Consolidated Afloat Networks and Enterprise Services (CANES)
C2 Application	- Global Command and Control System – Maritime (GCCS-M) - Naval Tactical Command Support System (NTCSS) - Distributed Common Ground System - Navy (DCGS-N)	-Maritime Tactical Command and Control System (MTC2) - NTCSS - DCGS-N
Wide Area Network	- Automated Digital Network System (ADNS) Increments I,II, III	- ADNS Inc III - ADNS Inc II (Airborne)
Communications	- Super High Frequency (SHF) - Navy Extremely High Frequency Program(NESP) - Global Broadcast System (GBS) - Commercial Wideband Satellite Program (CWSP) - Commercial Broadband Satellite Program (CBSP) - Battle Force Tactical Network (BFTN)	- Navy Advanced EHF Multiband Terminal (NMT) - CBSP - GBS - BFTN



Network Development

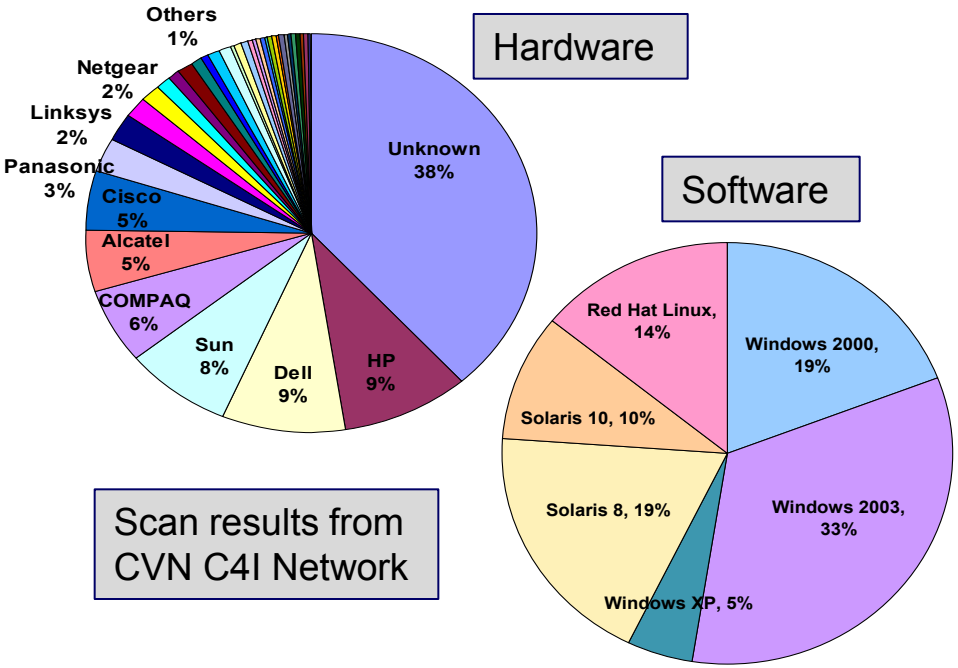
Status Quo

- Multiple security vulnerabilities
  - Inadequate levels of information security / network readiness
- Multiple unique networks & h/w variants
  - 642 legacy variants on 300+ platforms
- Multiple Operating Systems and versions
- Inefficient use of server/storage resources

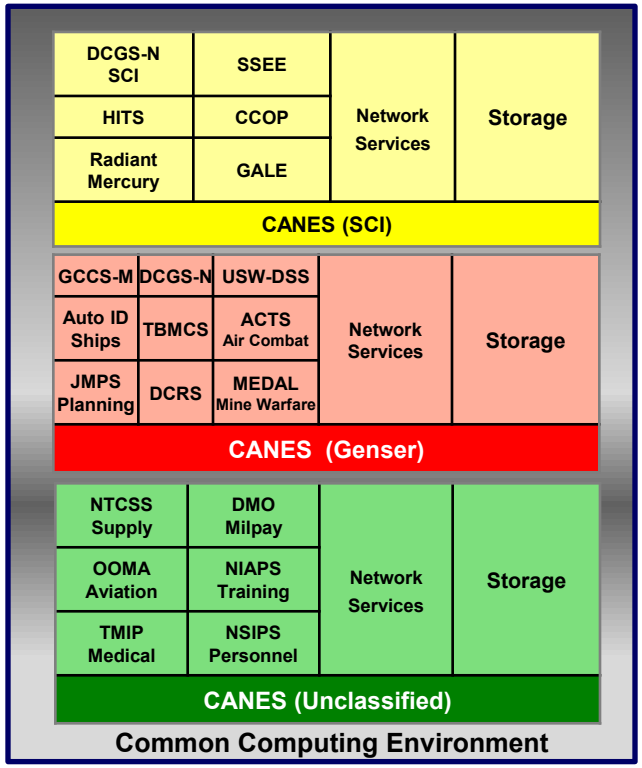
Across multiple security enclaves

CANES

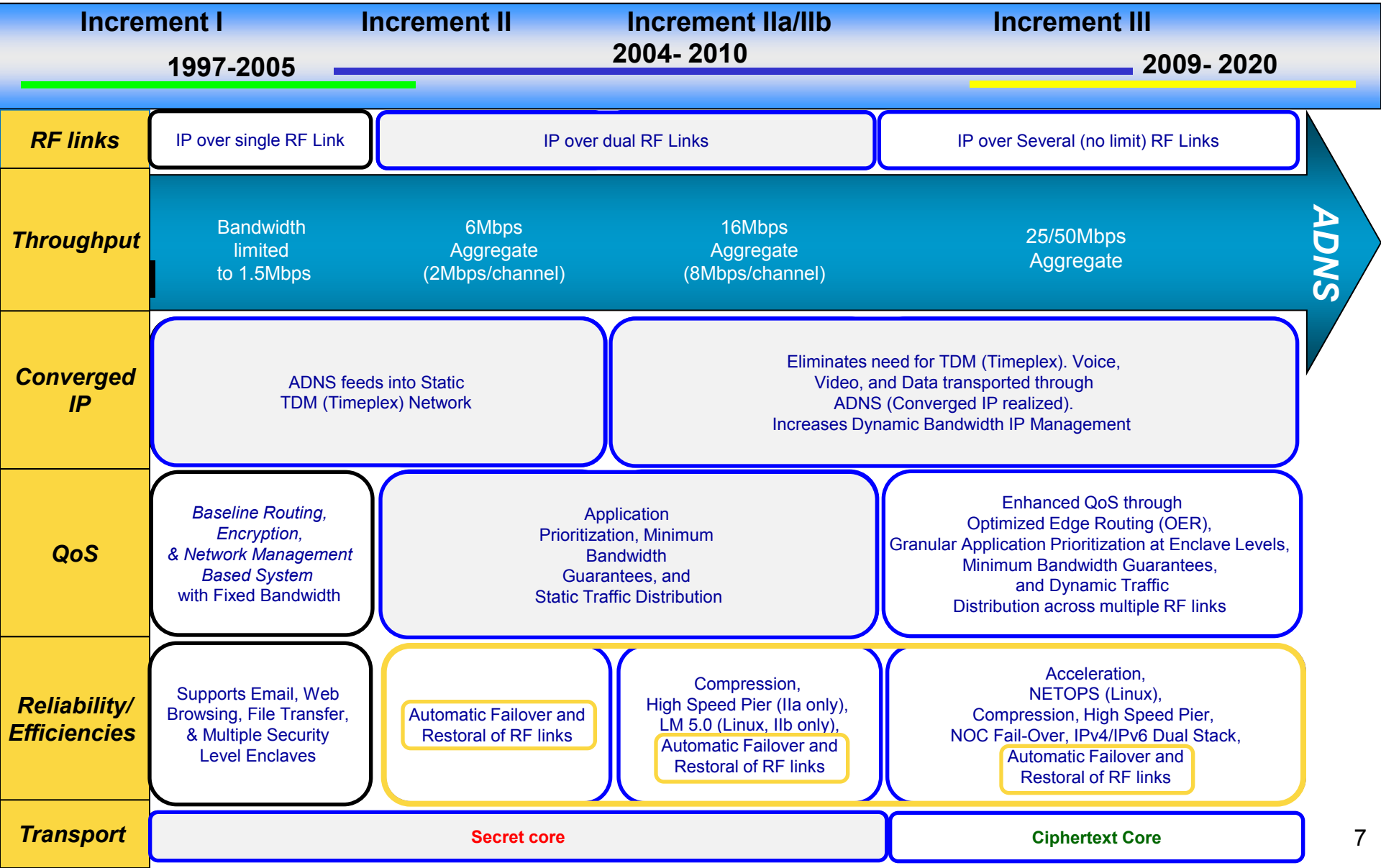
- Common Computing and Software Environment
- Cross Domain Solutions (CDS)
- Systems Management
- Technology Refresh



Scan results from CVN C4I Network



ADNS Evolutionary Development



Navy SATCOM Capability Growth

Desert Storm c. 1990

Inmarsat - A
SALTS (logistics)/FAX
Official Phones
2.4-16 kbps

SHF
Voice @ 16 kbps
(Command Ships Only)
16 kbps

UHF
"Dual DAMA"
8 2.4 kbps
Circuits
(25kHz only)
Secure Voice/Data
Netted Comms
19.2 kbps

Navy barely in the game

Post Desert Storm

- 1992 "QUICKSAT" SHF for CVNs
- 1994 ORDs define WB SATCOM requirements

Aggressive fielding schedules deliver:

- WB MILSATCOM for all Surface Combatants
- WB Commercial SATCOM (CWSP) augmentation for Large-decks
- Inmarsat-B HSD for others

…getting into the game

Today

UHF
"Quad DAMA"
16 2.4 kbps
Networks
(25kHz only)
Secure Voice/Data
Netted Comms
48 kbps

SHF
JWICS
SIPRNET
NIPRNET
VTC
POTS
MSG TRAFFIC
CHAT
384 kbps – 12 Mbps

EHF MDR
JWICS
SIPRNET
NIPRNET
MDU's
BMD Net
SECURE
VOICE/DATA
4.8 – 1544 kbps

EHF LDR
24 LDR Channels
8 Primary
(2.4 kbps)
8 Secondary
(300 bps)
8 RCV Only
(2.4 kbps)
MDU's, S-TADIL-J
Secure Voice/
Data
21.6 kbps

24 – 45 Mbps

GBS (Receive Only)
UAV Video
CNN/FOX NEWS
Imagery (Weather/Intel)
Web Site Replication
(classified/unclassified)
Immediate File Delivery (IFD)

128 kbps

Inmarsat - B HSD
NIPRNET
SIPRNET
JWICS
POTS
FAX

1.544 - 2.048 Mbps

CWSP/CBSP
JSIPS/JCA
JWICS
SIPRNET
NIPRNET
VTC
POTS
MSG TRAFFIC

3.6 Mbps

TV Direct to Sailors (Receive Only)
News
Sports
Entertainment
3 Radio Channels
1 Data Channel

…staying in the game.

Some Thoughts on Future Command, Control, Communications, Computers and Intelligence Capability and Capacity

Future C4I Capability and Capacity drivers?

- *Cyberspace Operationalization*
- *Cyber Defense*
- *Broad Area Maritime Surveillance (BAMS)*
- *UAVs, USVs, UUVs*
- *LCS and Mission Modules*
- *Remote Sensors*
- *Maritime Aerial Layer Network*
- *Full Motion, High Resolution Video*
- *Advances in Computer Technology*
- *Advances in Network Technology*
- *Network and System Management*
- *Competition for Bandwidth*
- *Application Proliferation*
- *New ISR sources*
- *Advances in Waveforms*
- *Growth of Adversary Capabilities*
- *Growth of Coalition/Partner Capabilities*
- *Budget and Fiscal Realities*
- *Others????*

We get IT.

We also integrate it, install it and support it. For today and tomorrow.

TEAM SPAWAR

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