National Defense Industrial Association

RADM Edward H. Deets, III
Vice Commander, Naval Network Warfare Command

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Some Inconvenient Truths

- **Non-kinetics may beat kinetics in the 21st century**
- **Business and admin systems have evolved into warfighting systems**
- **We can't function today without the Internet**
  - *Our Millennials expect it*
  - *Our Millennials will use it to evolve cyber warfare*
  - *Our Millennials are a great source of innovation*
  - *DoD users make 1 billion+ Internet connections every day, passing 40TB of data*
- **Convenience and security must be in balance**

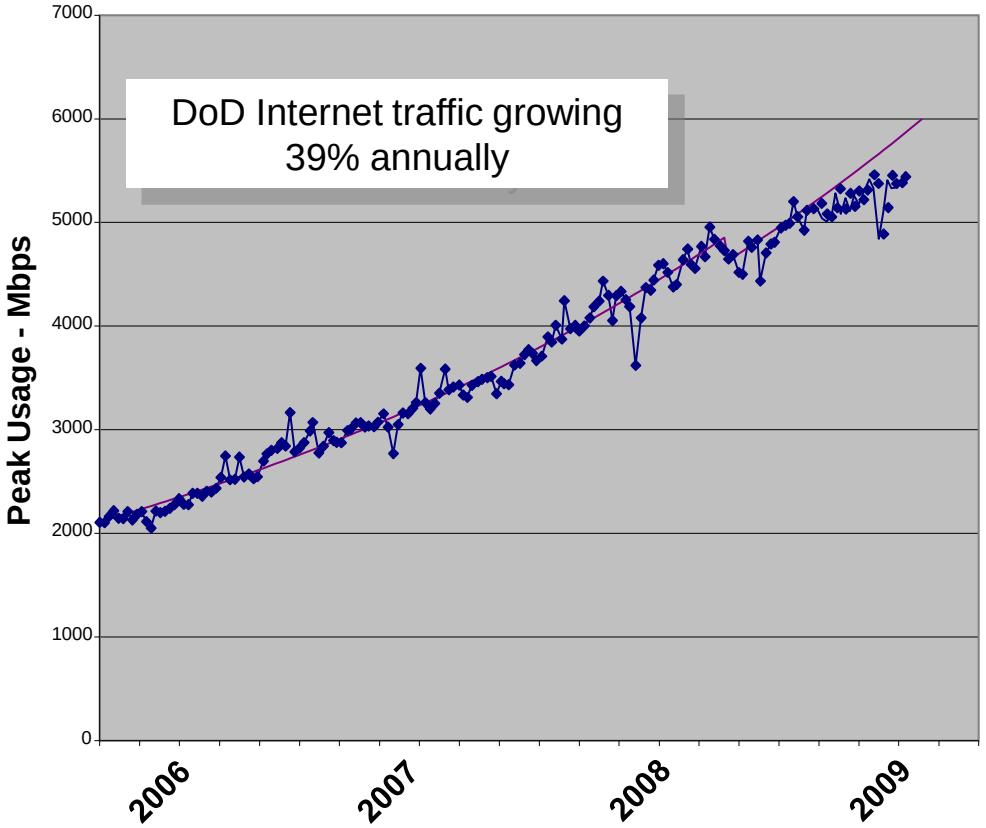


The Challenging Battlespace

- **Most rapidly changing battlespace**
- **More than Moore's Law**
- **Battlespace is more than the networks**
  - *Increasing demand for computer network defense, attack and exploitation*
  - *Providing access to a bandwidth hungry generation*
  - *Fighting in an RF and network degraded environment*
  - *Building Navy's EW/Spectrum Dominance*
- **Websense will categorize 11,000 websites as security risks in the next 60 minutes**

And Increasingly More Exposed

Inbound Internet Traffic Growth



Most Popular Sites Visited

94% of DoD web traffic is commercial web browsing

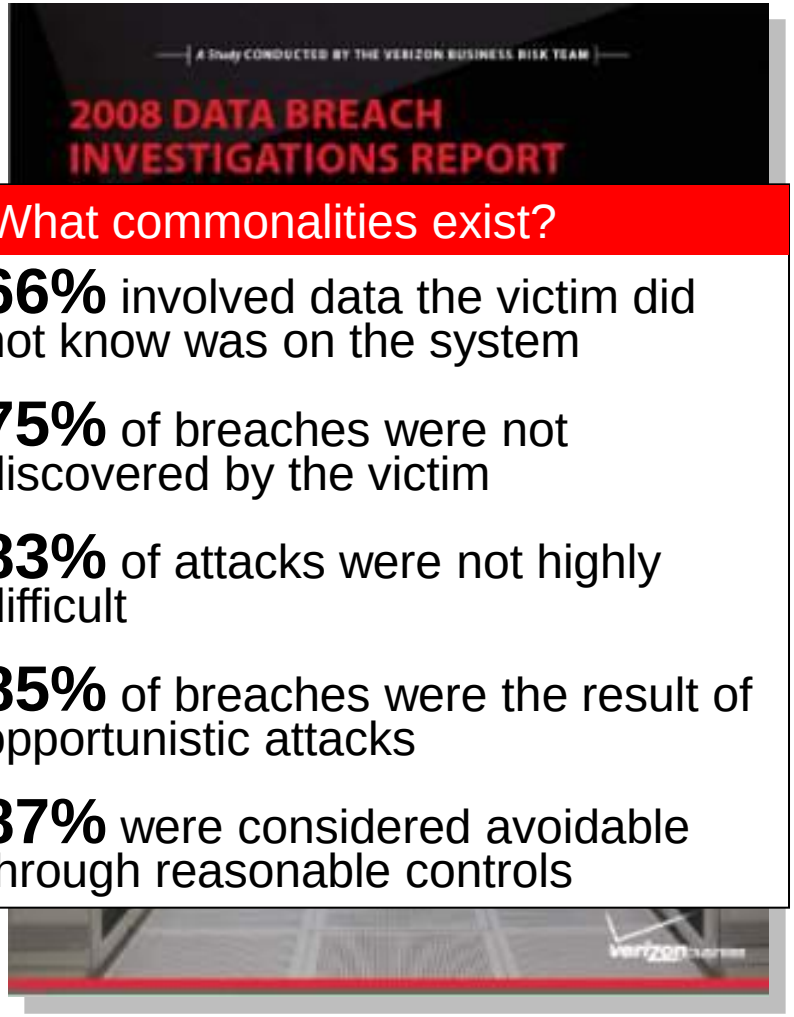
google.com
streamtheworld.com …….. Music
facebook.com……...Social Networking
imeem.com…….....Music
yahoo.com
rr.com……..……..…Portal
zshare.net……..…..File Sharing
dailymotion.com……....On-line Videos
bitgravity.com…….Streaming Television
stagevu.com…….... Streaming Video
amazon.com
grooveshark.com…....….Streaming Music
cnn.com……News
megavideo.com…....…..Streaming Video
msn.com
craigslist.org……..Shopping
eBay.com……Shopping, On-line Auctions

Unconstrained Web Access Increases Exposure ⟶ Risk

Verizon Data Breach Study

How do breaches occur?

Most breaches resulted from a combination of events rather than a single action. Some form of error often directly or indirectly contributed to a compromise. In terms of deliberate action against information systems, hacking and malcode proved to be the attack method of choice among cybercriminals. Intrusion attempts targeted the application layer more than the operating system and less than a quarter of attacks exploited vulnerabilities. ***Ninety percent of known vulnerabilities exploited by these attacks had patches available for at least six months prior to the breach.***



What commonalities exist?

66% involved data the victim did not know was on the system

75% of breaches were not discovered by the victim

83% of attacks were not highly difficult

85% of breaches were the result of opportunistic attacks

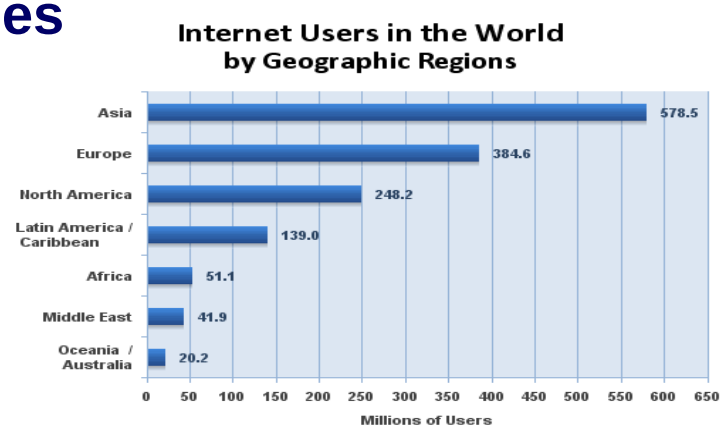
87% were considered avoidable through reasonable controls

Nature of Cyber Warfare

- **We operate, defend, exploit and attack on the same platform as the adversaries**
  - *Threat characterization and attribution are challenging*
  - *Offense and defense have similar features*
- **Industry drives cyberspace technology**
- **Public, high profile adversary successes will breed additional actors**
  - *Inexpensive, anonymous and effective*
- **Cyber operations require a force that lives "on-the-network"**
  - *Global Cyber Common Operational Picture*
  - *Predictive cyber threat/response capability*
  - *Integrated NetOps, Defense, Exploit, Attack operations*

Cellular Expansion

Internet Explosion



Source: Internet World Stats - www.internetworldstats.com/stats.htm
Estimated Internet users is 1,463,632,361 for Q2 2008
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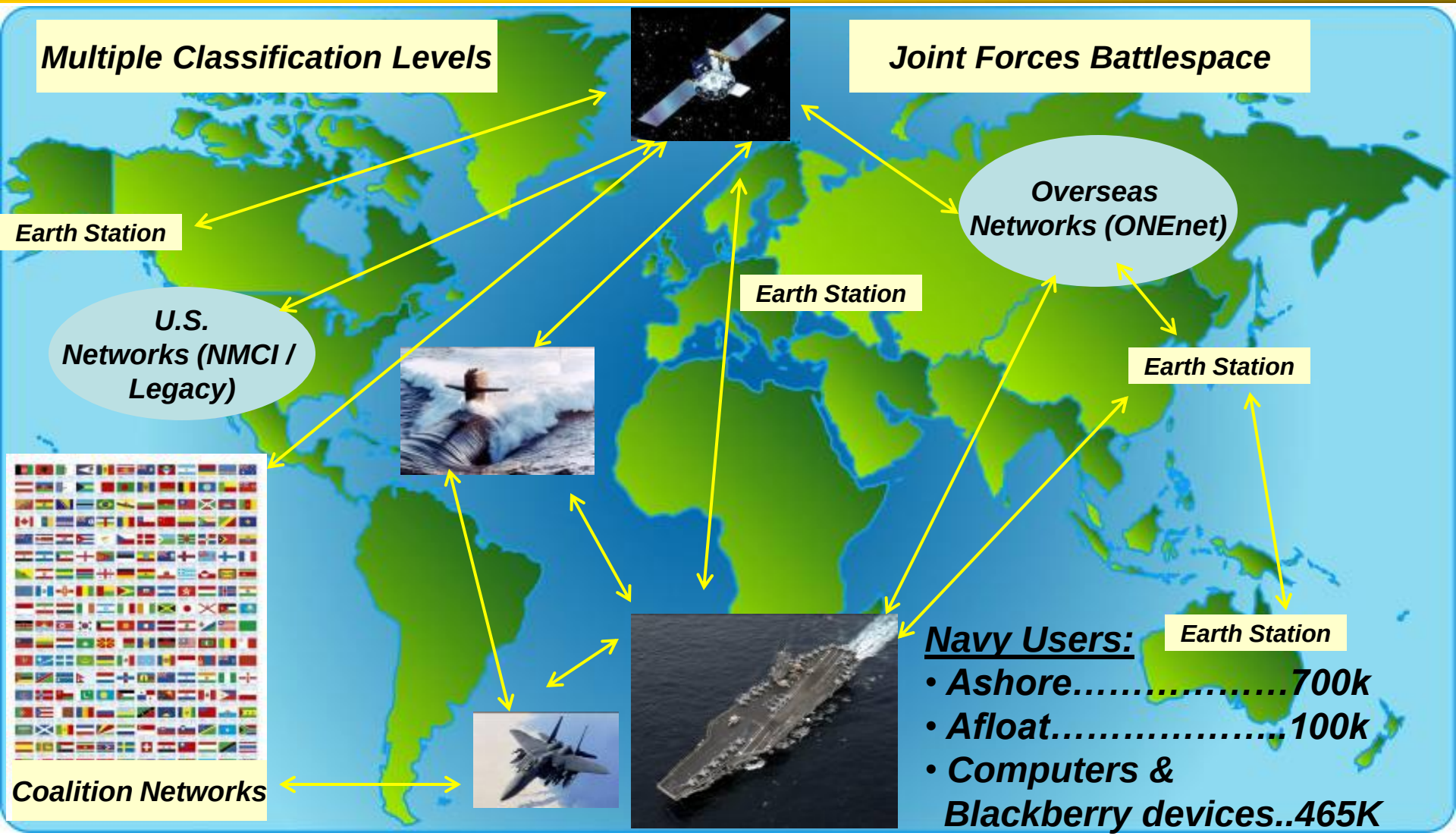
Today's Challenges & Solutions

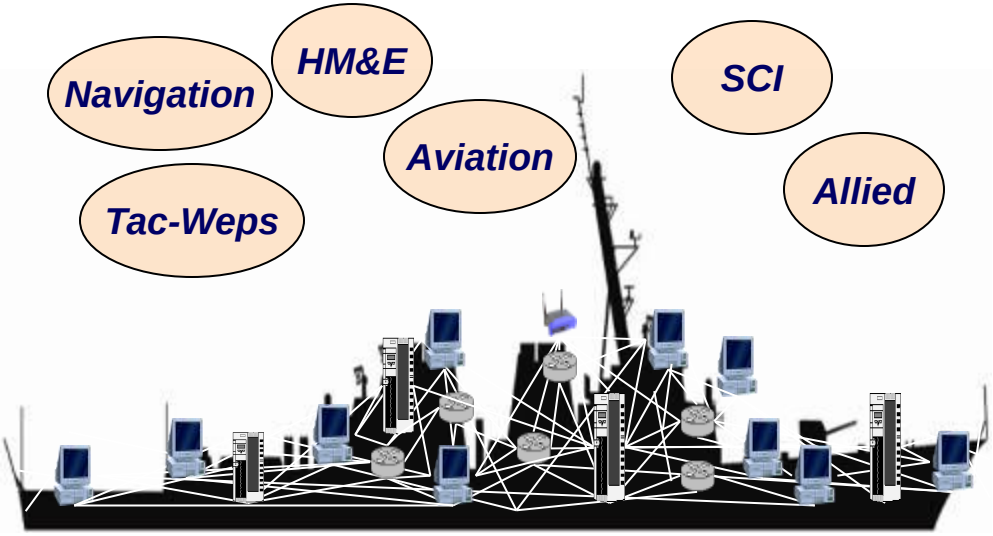
- **Culture**
  - *Accountability: full compliance with existing security directives would have reduced exploits through known vulnerabilities by over 90%*
  - *Culture of 'network entitlement' (i.e., "if I can do it, it must be okay")*
  - *Commander's 'daily view' ?*
  - *Damage Control, Force Protection*
  - *OPREP-3 Reporting*

- **What we don't know about our networks**

Today's Complex Networking Environment



Afloat Networks



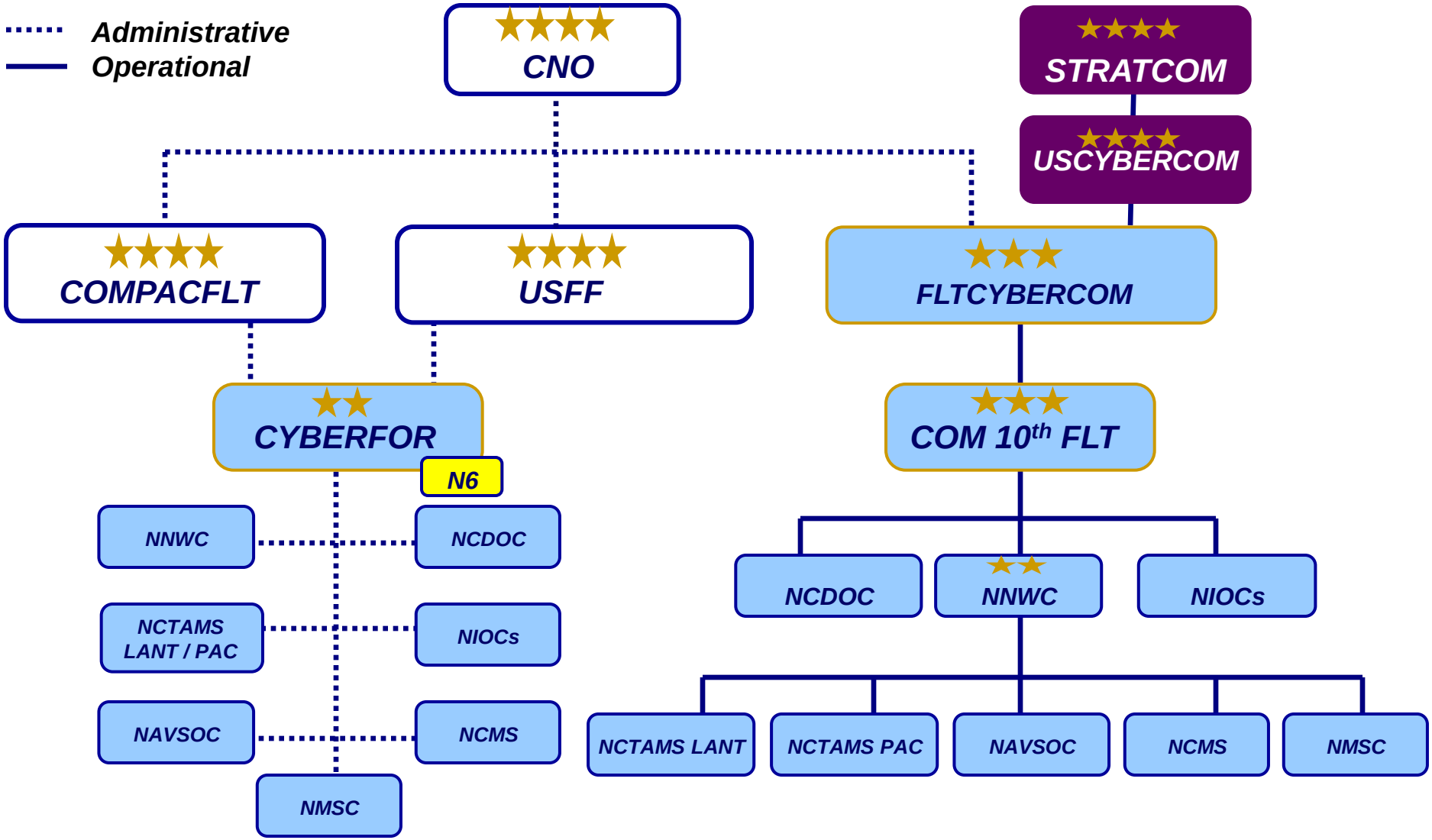
Average Networks Per

- *Carrier 15*
- *Amphib 10*
- *Cruiser/Destroyer 7*

Challenges

- *Security*
- *Compatibility*
- *Platform centric acquisition*
- *Program alignment*
- *Install timelines*
- *Environment*
- *Training*
- *Finite manpower/Infinite demands*
- *Bandwidth-data choke point*
- *Life cycle costs*

Delivering Cyber Capability to the Fleet and COCOMs



CYBERFOR Readiness is . . .

- **Among other things**
  - *C5I afloat and ashore*
  - *IP's and IT's ready for tasking at the JNCC in Afghanistan and Iraq*
  - *CT's and IT's in Tactical Cryptologic Support and Terminal Guidance Units for tasking by Naval Special Warfare and Army Battalions*
  - *Space Operations Officers ready for tasking on ESGs, CSGs and in MOCs*
  - *CTNs ready to exploit, defend and attack*
  - *Transport, Connectivity, Security*

Joint Crew Composite Squadron

- **Navy EW Success Story**
  - *Competency across all warfare areas (E-4 to O-6)*
    - Technical Capability and Warfighter ethos
  - *Assisting USA and USMC by filling EW gaps and building operational EW culture*

Combined Explosives Exploitation Cell

Joint NETOPS Control Center

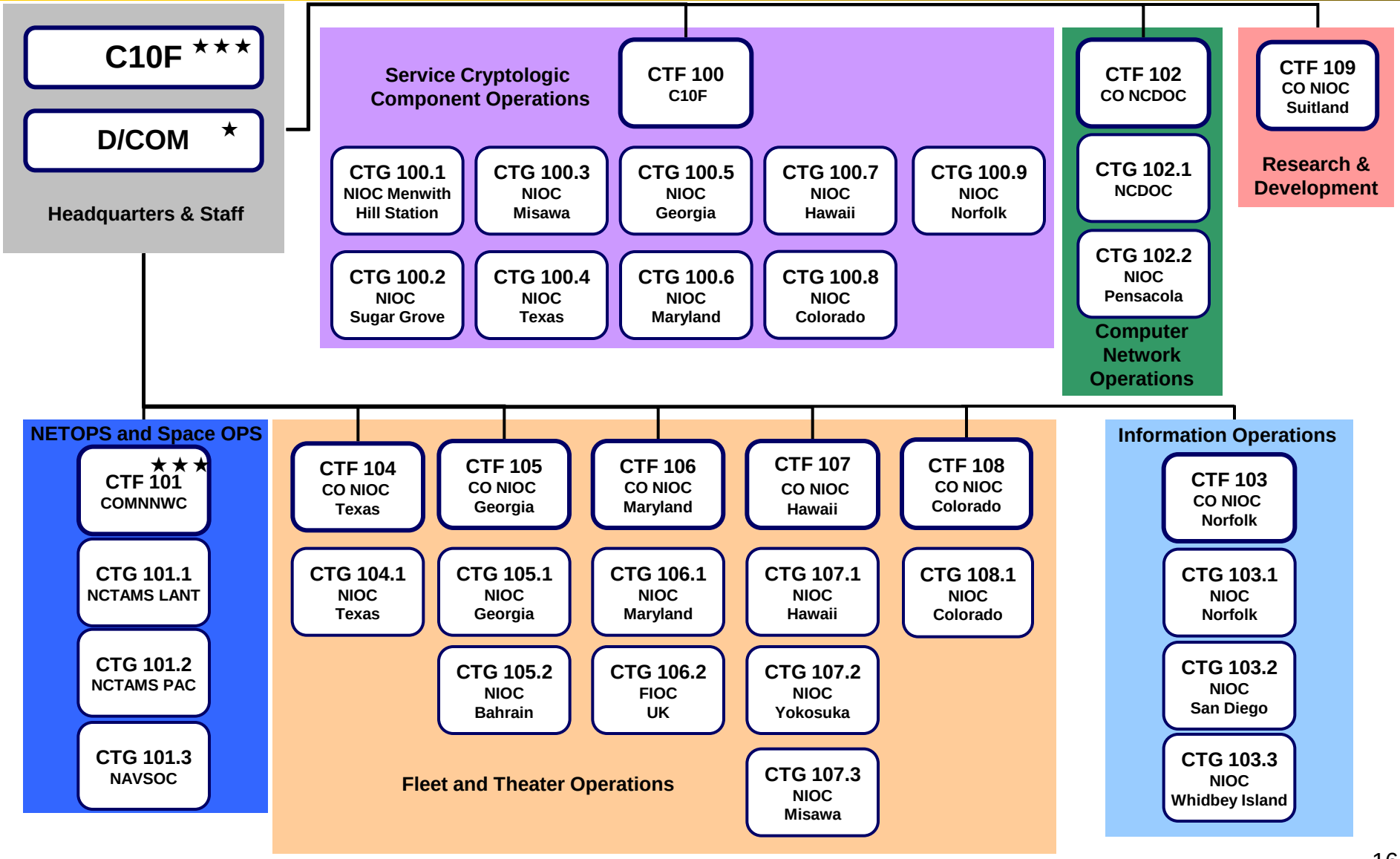
C10F Missions, Initial Functions & LOOs

- **Mission**
  - *Central operational authority for networks, cryptology/SIGINT, IO, cyber, EW and space in support of forces afloat and ashore*
  - *Navy Component Commander to USCYBERCOM*
  - *Service Cryptologic Component Commander*

- **Initial Functions**
  - *Emphasis on defense*
  - *Operational culture*

- **Lines of Operation**
  - *Assuring Navy's ability to Command and Control its operational forces in any environment*
  - *Achieve and sustain the ability to navigate and maneuver freely in cyberspace and the RF spectrum*
  - *On command, and in coordination with Joint and Navy commanders, conduct operations to achieve effects in and through cyberspace*

C10F Standing Task Organization



Operational Capabilities

- **Cyber Effects Delivery**
  - *Move to delivering information vice bodies and boxes …*
- **Warfighting Support**
  - *C10F TF Commanders integrated into targeting process*
  - *Build Cyber Intelligence Preparation of Environment*
- **Full Spectrum Cyberspace Operations**
  - *SIGINT-driven IO (CNA and Comms EA)*
  - *Grow non-kinetic capabilities and integrate into CONPLAN/OPLAN*
- **Operationalize Cyber**
  - *Integrate weapons into planning and training cycles*
  - *Develop non-kinetic COAs for each phase*

Realigned to Achieve Information Dominance

Before → **After**