DoD Cloud Computing Security Challenges

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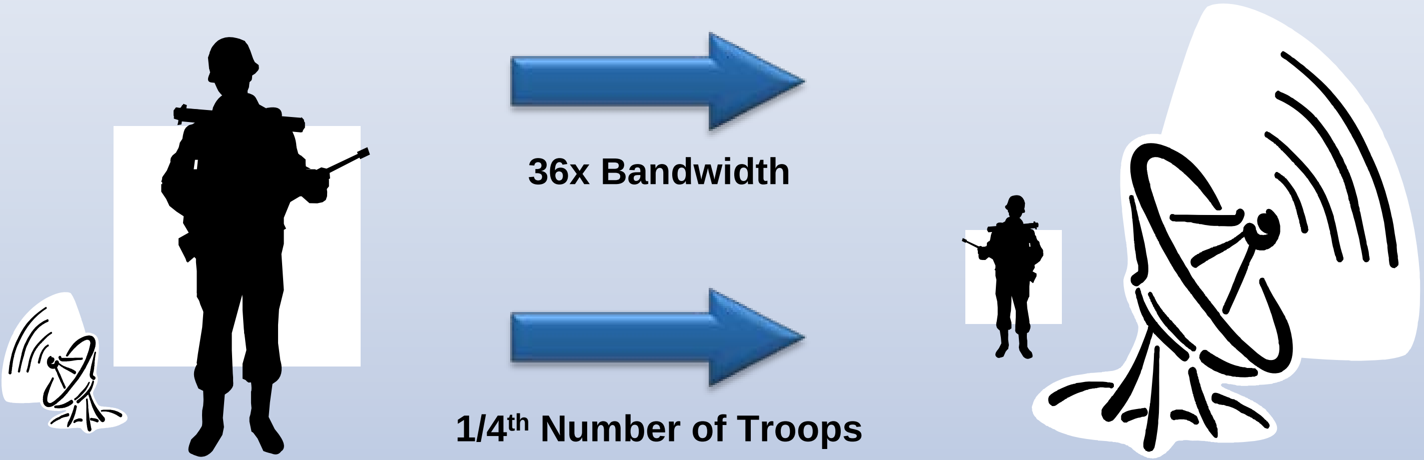
This Briefing is Unclassified

Improved Situational Awareness Enables Small Agile Force

Growth of the Information Environment



99 Mb/s

3.6 Gb/s

36x Bandwidth

1/4th Number of Troops

500,000 Troops
1991

123,000 Troops
2003-2004

Source: Defense Systems “filling the SATCOM Gap” May 2008

Right Information, at the Right Time, at the Right Place, and Displayed in the Right Format

DoD’s Use of the Cloud

- Potential Cloud Applications (lots of them!)
  - – Cyber Network Defense
    - Sensor data storage, analysis, situational awareness
  - – Battlespace Awareness -- Common Operating Picture
    - Status of troops, missions, vehicles, weapons, supplies
      - – In the future – autonomous (unmanned) weapons systems
    - Storage/processing of tactical Intelligence, Surveillance, Reconnaissance (ISR) feeds
    - Creating a tailored picture based on a user’s access privileges
  - – Simulation and Visualization
    - Mission planning and training
  - – Plus all the emerging “corporate/business” applications

DoD’s Use of the Cloud

- Potential Implementation Models
  - – Use of commercially provided cloud services
  - – DoD deployment within DoD networks (build our own)
    - “Monolithic” cloud (serves a single purpose), statically provisioned

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    - Dynamically provisioned across DoD clouds
  - – Multi-agency “Federated” processing and storage
  - – DoD/Commercial “Mashup”
- From a security perspective, above the line is hard – below the line is really hard!

DoD’s Use of the Cloud

- Early Adopters
  - trooptube.tv
    - “YouTube” for troops and their families
  - Rapid Access Computing Environment
    - Computing Capacity on Demand
    - Virtual Machine based
  - Many more in the works

TroopTube Powered by Military OneSource

DISA

RACE

RAPID ACCESS COMPUTING ENVIRONMENT

DoD Cloud Computing Security Challenges

- "Gartner Group" security risks certainly apply to DoD
  - Protection of sensitive data, regulatory compliance, data location, data segregation, recovery, etc…
- Other things to consider
  - Security standards for cloud computing (SAML, WS* equivalent)
  - Secure provisioning of applications into the cloud
    - Ensuring integrity of applications
    - Controlling/restricting what applications can run in which cloud instances
    - Binding specific platforms/virtual machines to applications
    - Ability to control how many resources an application can consume
  - Protecting the cloud computing platforms from cyber attack
  - Ability for cloud to attest to its security configuration/properties

DoD Cloud Computing Security Challenges (Cont)

- Unique DoD Challenges
  - Processing information at multiple classification levels and under multiple authorities (e.g. DoD, DHS)
    - Sanitization/purging of local storage
    - Data labeling
    - Privilege-based access control to data stored in the cloud
    - Tailoring "common operating picture" presented to a user based on their privileges
  - Certification and Accreditation
    - Approves system Hardware/Software configuration
    - Extremely difficult in dynamically provisioned environment
      - Must trust system to enforce a security policy and accredit the policy