

AFCEA INDUSTRY DAYS 2009

21-23 SEPTEMBER 2009

AUGUSTA - FORT GORDON CHAPTER

C4ISR/GNEC : CONCEPTS TO REALITY ... FASTER!!



GNEC OPVAL PEO 2009 Lessons Learned

**Dr. David Kaplan
PEO C3T (MITRE)**

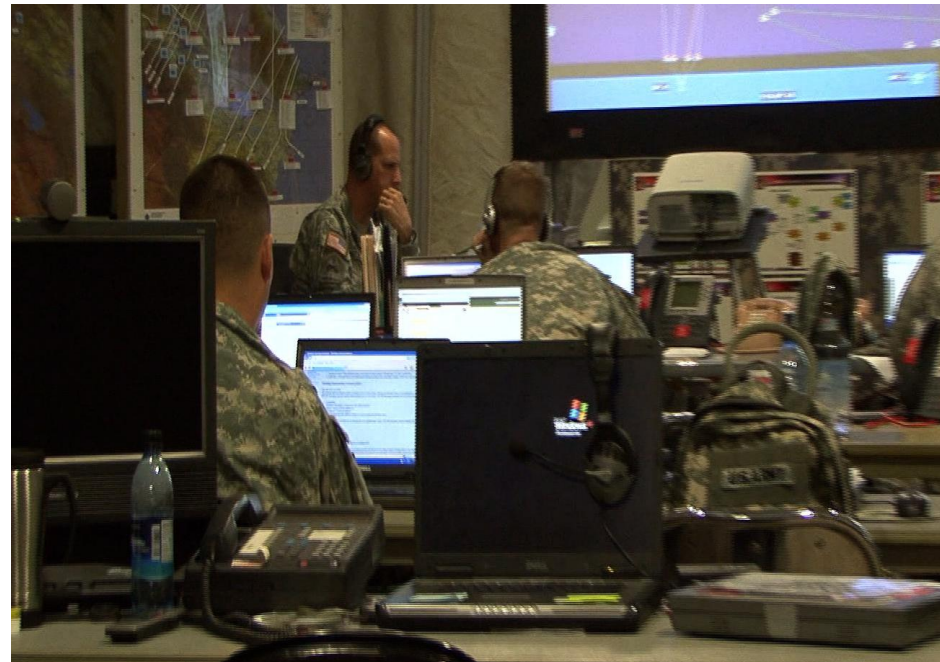
**LTC John Howell
PEO EIS/ PM NSC**



Agenda



- **OPVAL I Video**
- **Roles & Responsibilities**
- **OPVAL I Technical AAR items**
- **Opportunities for Industry Engagement**





NSC OPVAL BACKGROUND



Mission: NETCOM will lead, on behalf of CIO/G6, an Operational Validation of the Network Service Center (NSC) construct to demonstrate Secure Internet Protocol Router (SIPR) and Battle Command Common Services (BCCS) fight upon arrival capabilities, ability to minimize BCT IT reconfiguration and improved network security posture. The command will transition a warfighting unit from CONUS to EUCOM Area of Responsibility (AOR), leveraging the NSC, across the joint phases of operation.

SIPR Enterprise Services Required: BCCS Services - enabling access during movement between theaters; failover while engaged in theater; Enterprise collaboration - "always on" portals, information sharing, instant messaging, chat, whiteboards, audio and video

Supports CIO/G6 intent to demonstrate ability to deliver NSC capability ISO Warfighter “within 12 months” (CSA Brief 15 Mar 08)



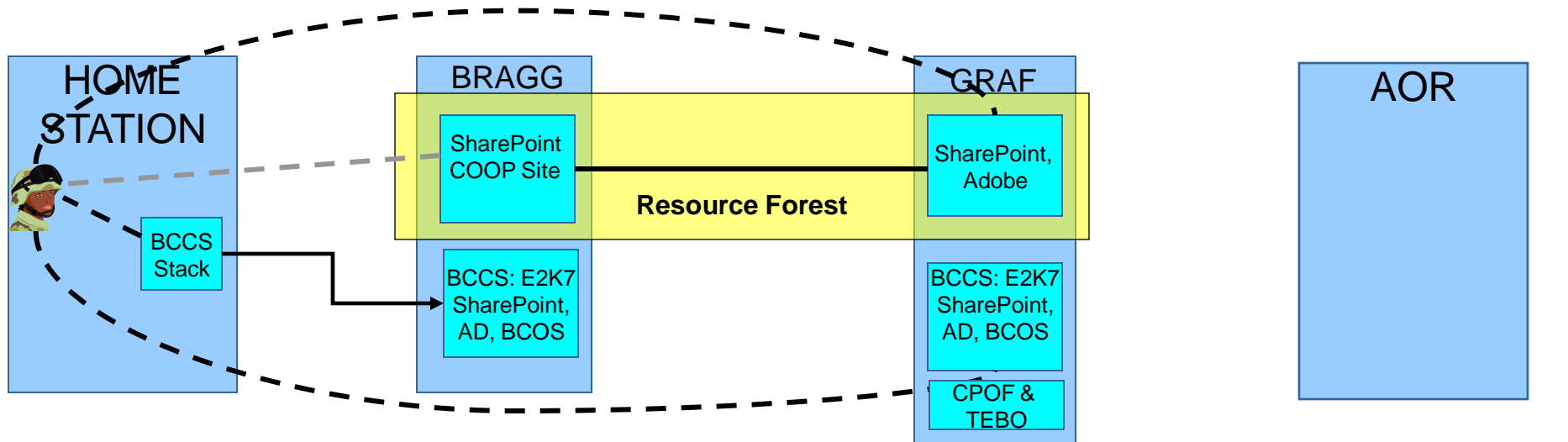


PEO C3T OPVAL VIDEO





NSC OPVAL – Phase 0



Legend:

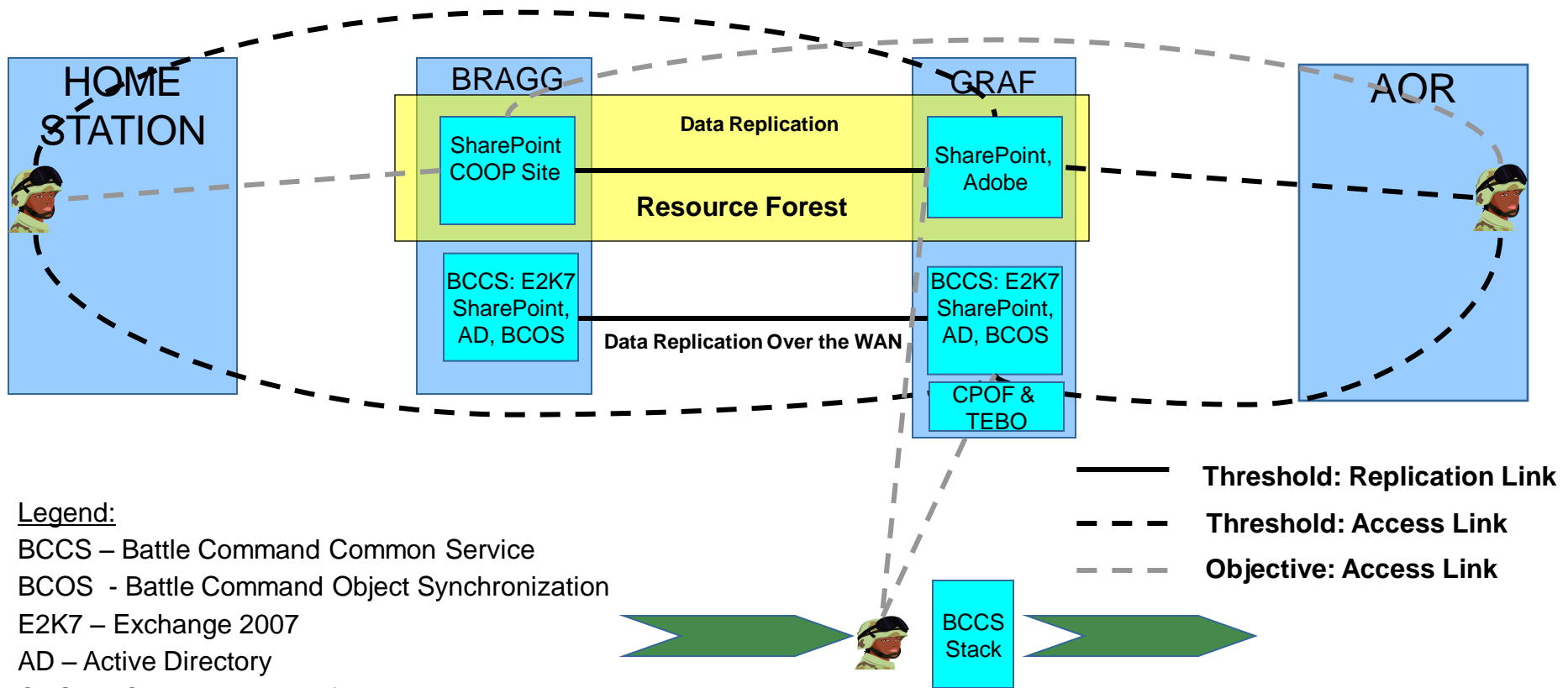
- BCCS – Battle Command Common Service
- BCOS - Battle Command Object Synchronization
- E2K7 – Exchange 2007
- AD – Active Directory
- CPOF – Command Post of the Future
- TEBO – Theater Effects Based Operation
- AOR – Area of Responsibility
- COOP – Continuity of Operations
- RHN – Regional Hub Node

- Threshold: Replication Link
- - -** Threshold: Access Link
- - -** Objective: Access Link





NSC OPVAL – Phase 1 & 2

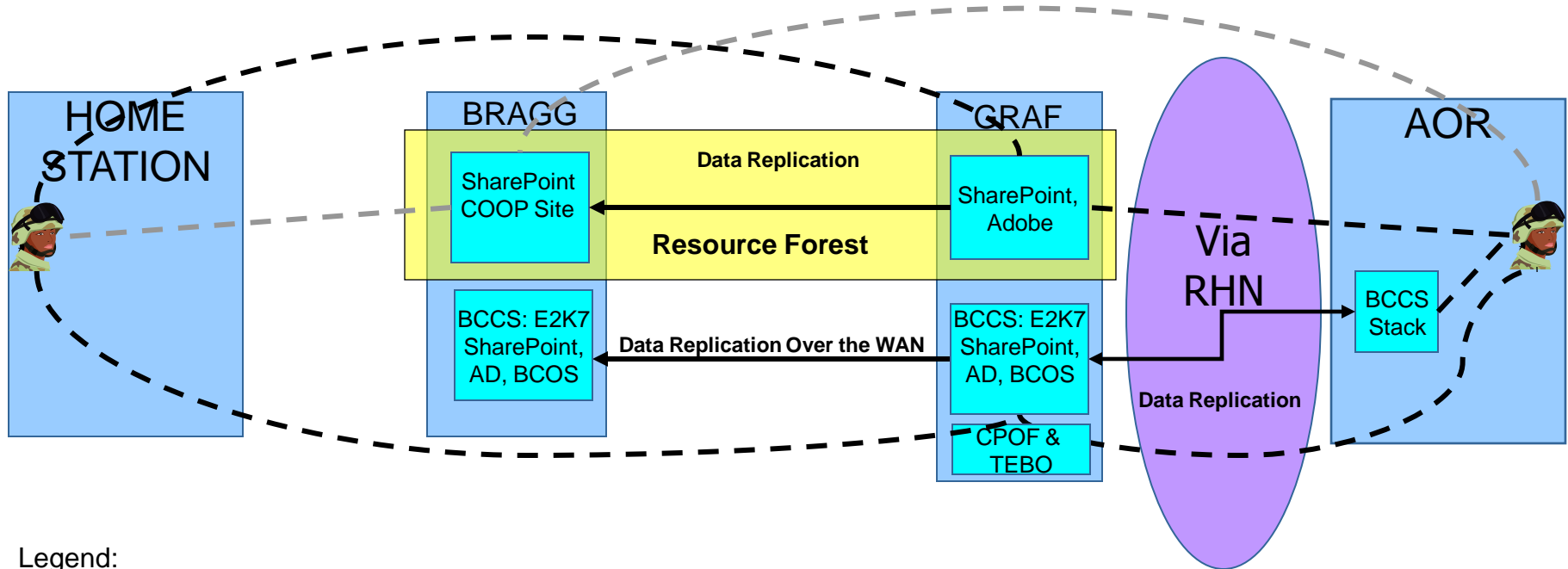


BCCS Stack and Users en-route





NSC OPVAL – Phase 3 & 4



Legend:

- BCCS – Battle Command Common Service
- BCOS - Battle Command Object Synchronization
- E2K7 – Exchange 2007
- AD – Active Directory
- CPOF – Command Post of the Future
- TEBO – Theater Effects Based Operation
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Roles and Responsibilities



- PEO EIS/ PM-NSC is responsible for designing and implementing the Area Processing Centers (APC)
- PEO-C3T is responsible for much of the expeditionary force, deployable systems and contributed to APC design

Collaborative Effort with 9th Signal Command (SC) and Warfighter, to Demonstrate and Validate the Network Service Center Construct





OPVAL I – Successes



- Data was replicated across every link in the process, including the PEO C3T/PM WIN-T Increment 1 tactical satellite network
- Services were moved between locations without significant interruption
- Services were drawn by the unit from both APCs
- Provided Command Post of the Future (CPOF) as an enterprise service

Demonstrated that the NSC construct is valid and useful to the Warfighter





APC Components

- Infrastructure: Cisco Nexus 7000, 10 Gb/s
- In-rack Switches: Cisco Nexus 5020, 10 Gb/s
- Server H/W: Dell R900, 4x4 processors, 128 GB, CNAs
- Virtualization
 - ESX v3.5 Update 3
 - Site Recovery Manager v1.0.1
- Storage: NetApp FAS 6080A (100 TB usable)
- SAN Fabric: FCoE (APC-B); MDS FC (APC-G)
- Replication: NetApp SnapMirror
- Inter-APC Replication Circuit: OC-12





AAR: Technical Issues (1 of 2)



- **Services Migration (PEO C3T (PEO EIS support)):**
 - Takes about 15 minutes to cut over
 - Numerous manual steps
- **Network Infrastructure (PEO EIS (NETCOM support)):**
 - Asynchronous routing caused in-coming traffic to be dropped
 - Difficult to synchronize Enterprise Services across the dynamic network (i.e., Simple Mail Transfer Protocol (SMTP) routing)
- **Generic Routing Encapsulation (GRE) Tunnels (PEO EIS (NETCOM support)):**
 - Spaghetti-like web of GRE tunnels are a management and scalability issue
- **SATCOM (PEO C3T (NETCOM support)):**
 - Subject to the weather
 - Difficult to handle replication volume



AAR: Technical Issues (2 of 2)



- Service Switchover (PEO C3T/PEO EIS):
 - Site Recovery Manager (SRM) not designed for many-to-many location environment
- Domain Name Service (DNS) (PEO EIS (NETCOM support)):
 - Working toward a unified DNS structure across the Enterprise
 - Becomes more complex in a Joint environment
- NetOps/Network Management (PEO EIS (NETCOM support)):
 - Network tools need to be unified across the Enterprise to enable decision support





Focus Areas (1 of 2)

- Service location independence
 - Switch services between locations quickly and easily
 - Support split operations in and through phases of operation
- Move the forklift up the stack
 - Move only what is necessary
 - i.e., must we move Operating System (OS) and Application?
- Configuration and Change Management
 - System changes must be reviewed, tested, and managed (end to end)
- Mitigate Bandwidth Constraints
- Implement Decision Support Capability
 - Enterprise views of capabilities/processes
 - Better decision support information





Focus Areas (2 of 2)



- Implement an enterprise level DNS capability
- GRE tunnel management simplification or alternative
 - Solution scalability and deployability
 - Trust the network





Opportunities for Industry Engagement



- Service Continuity
- Enterprise Decision Support
- Scalability to support 70(+) Brigades at once
- Battle Command Application Hosting

How does the Army turn NSC OPVAL into a Production-Level Capability?

QUESTIONS

