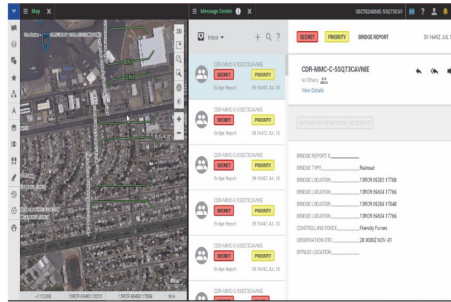# Command Post Computing Environment (CPCE)

Executive Summary

- In November 2019, the Army conducted a Program Executive Office Command, Control, Communications – Tactical (PEO C3T) Acquisition Decision Memorandum (ADM)-directed, program-led developmental performance test to verify correction of deficiencies noted during the 2018 Command Post Computing Environment (CPCE) Increment 0 IOT&E. The results of the lab-based event demonstrated:
  - CPCE has improved in message handling, map services, availability, chat message management, and a reduced traffic load on tactical networks.
  - CPCE's scalability does not support the intended number of users and translation of Command and Control message data results in significant latency.
  - When under stress, CPCE can discontinue generating outbound server data for logged in users.
- The Army is planning for a June – July 2021 CPCE Increment 1 operational test and working to resolve challenges related to integrated testing, data instrumentation, and cybersecurity assessments. The Army presented its initial strategy for completing an adequate CPCE Increment 1 operational test in an Early Concept Brief to DOT&E in October 2020.

Tactical Server Infrastructure (TSI)
Version 2(a) - Small

Command Post Computing Environment (CPCE) Software

Tactical Server Infrastructure (TSI)
Version 2(a) - Large

- The Army designed and fielded CPCE Increment 0 (formerly version 3.0) to replace and integrate the capabilities of the following existing mission command systems:
  - Command Post of the Future
  - Tactical Ground Reporting System
  - Command Web
  - Global Command and Control System – Army
- The Army is developing CPCE Increment 1 to provide increased functionality in accordance with an incremental development strategy, and improve the performance of Increment 0, through features such as:
  - Significant Activities (SigActs) Tracking Capability
  - Geospatial Tool Persistence on Map
  - Server Status Monitoring Tools
  - Increased Consumption of External Data (e.g. Electronic Warfare, Cyber, Fires data)

System

- The CPCE is a server-based software system that provides mission command applications to support commanders and staff using general-purpose client computers, located within battalion through corps Tactical Operations Centers. The Army intends CPCE to provide soldiers a common operating picture, shared situational awareness, collaboration tools, and Command and Control messaging.
- CPCE provides basic mission command applications required in tactical command posts as part of the Army's Common Operating Environment (COE). The Army designed CPCE to interface with other developing COE Computing Environments (CEs), and to interoperate with joint, allied, and coalition forces.
- The Army is developing CPCE in increments as an evolution of existing, stove-piped mission command systems to a common, shared client-server architecture.

Mission

The Army intends for commanders and staff at battalion through corps level to use CPCE to conduct mission command throughout all phases of the Army operations process, to include planning, preparation, execution, and continuous assessment of unit missions. As COE CEs are developed, units will use CPCE as a collection point for data from sensors, aviation, logistics, fires, intelligence, and safety information, including mounted, dismounted, and home station command units.

Major Contractors

- Weapons Software Engineering Center – Picatinny Arsenal, New Jersey
- Systematic USA/Systematic AS – Centreville, Virginia/ Aarhus, Denmark

Activity

- In July 2019, the PEO C3T, as the Milestone Decision Authority (MDA), published a CPCE Increment 0 ADM that:
  - Authorized a conditional full deployment of CPCE Increment 0 to two divisions, two brigade combat teams, and Defender 2020 exercise participants
  - Recognized DOT&E's November 2018 CPCE IOT&E assessment of not effective, not suitable, and not survivable
  - Detailed Army test and DevOps events, highlighting enhancements since the CPCE IOT&E
  - Directed Program Manager, Mission Command (PM, MC) to conduct a lab-based, developmental performance test to demonstrate fixes for effectiveness and suitability deficiencies noted during the CPCE Increment 0 IOT&E
- During October – November 2019, PM, MC with the support of Army Test and Evaluation Command (ATEC) conducted the ADM-directed CPCE developmental performance test at Aberdeen Proving Ground, Maryland. DOT&E and ATEC briefed the test results to the PEO C3T MDA in February 2020.
- In May 2020, the PEO C3T, as the MDA, published an amendment to the CPCE Increment 0 ADM that removed conditional full deployment of CPCE Increment 0.
- The Army is planning a CPCE Increment 1 Operational Test in June – July 2021, using the Joint Warfighting Assessment 21 (JWA21) as the test event. JWA21 is a worldwide mission command exercise, with the CPCE test portion planned for Fort Carson, Colorado.

Assessment

- In November 2019, the PM MC completed the ADM-directed CPCE Increment 0 developmental performance test, and demonstrated the following results compared to the 2018 CPCE IOT&E:
  - CPCE's message handling has improved in both timeliness and accuracy.
  - CPCE's map service and overall availability showed improvement.
  - CPCE's ability to manage chat messages has improved, along with a reduction in the quantity of distracting automated chat messages.
  - CPCE's ability to handle network load is better than demonstrated at IOT&E, yet still requires buffering at peak periods for a typical brigade.
  - Under stress, CPCE can discontinue generating outbound server data for logged in users.
  - CPCE's scalability is not sufficient for the number of intended users.
  - CPCE's Command and Control message data translation results in significant latency and does not generate situational awareness in a reliable manner.
  - CPCE's graphics support capabilities can result in inaccuracies on the displayed common operational picture. The program plans to correct the demonstrated deficiencies with the release of CPCE Increment 1.
- The Army continues to develop a CPCE Increment 1 integrated testing strategy to result in an operational test at the June – July 2021 JWA21. With the termination of the Army's annual Network Integration Evaluation events, the Army is working to overcome challenges of integrated testing, data instrumentation, and cybersecurity assessments. The Army presented its initial strategy for completing an adequate CPCE Increment 1 operational test in an Early Concept Brief to DOT&E in October 2020.

Recommendations

The Army should:
1. Continue to improve CPCE Increment 0 hardware and software to address lingering IOT&E shortcomings and problems discovered at the November 2019 ADM-directed developmental performance test.
2. Complete development, resourcing, approval, and execution of the CPCE Increment 1 operational test.