


Standards Based Collaboration 2004 Command and Control Research and Technology Symposium Brief

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Participants

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Experiment Background

- Distributed C2 Initiative Areas
  - Collaborative Information Environment (CIE)
  - Agent Based Computing (ABC)
  - Information Management (IM)
  - Cross Domain Solutions (CDS)
  - Advanced Networking
- Events Completed
  - Split Staff Experiment, MNME 03 (C2F, Norfolk)
  - JFCOM CIE LOE (NWDC Lab)
  - Multiple Secure Level Exploration (NWDC Lab)

Abstract

- Several significant problems prevent the military from enjoying the full benefit of collaborative tools. These problems include poorly defined standards and a lack of adherence. These problems are not insurmountable. This paper addresses these problems and describe some solutions tested during limited objective experiments.

Background

- Synchronous focus verses asynchronous
- Military planning focus verse execution
- Overhead associated with toolset
- Operational focus verses tactical or strategic
- Multiple tool integration verses single tool

Experiment Design

- NWDC conducts experimentation at the Operational level
  - Technical exploration secondary
- Collaborative Tools a focus in many Fleet Battle Experiments
  - Systems examined in several venues
- Experiment series tested an increasingly complex suite of tools

Issues preventing agreement on single collaborative system

- Sunk cost
- Unique functionality
- Bandwidth Issues
- Training on yet another system
- Each tools has its own supporters
- Interface preference
- Prior experience (Negative)

Benefits of Standards Based Interoperability

- Reduced Stovepipes
- Reduced training
- Reduced software installation
- Users focused on subject matter not learning new tools

Issues preventing Standards Based Interoperability

- Poorly defined standards
- Vendors not fully implementing standards
- Frequently updated standards
- Potential loss of functionality
- Complexity of solution
- Vendor not motivated to support interoperability

Standards

- H.323
- T.120
  - Network T.122, T.123, T.124
  - Application T.125. T.127, T.128
- SIP (Session Initiation Protocol)
- SIMPLE (SIP Instant Messaging and Presence Leveraging Extensions)
- XMPP (Extensible Messaging and Presence Protocol)
- Proprietary Protocols

H.323 Terminology

- End Points
  - User Interface (NetMeeting, VTC)
- MCUs
  - Support multiple party conferences
- Gateways
  - Translate between protocols, and IP to Public Switched Network
- Gatekeepers
  - Route calls, control access, monitor usage, management functions

Functionality Sought

- Voice over IP (VoIP)
- Text Chat
- Whiteboard
- Application Sharing
- HTTP Control
- User awareness
- Group Work space
- Video
- File Transfer
- Dialing Plan

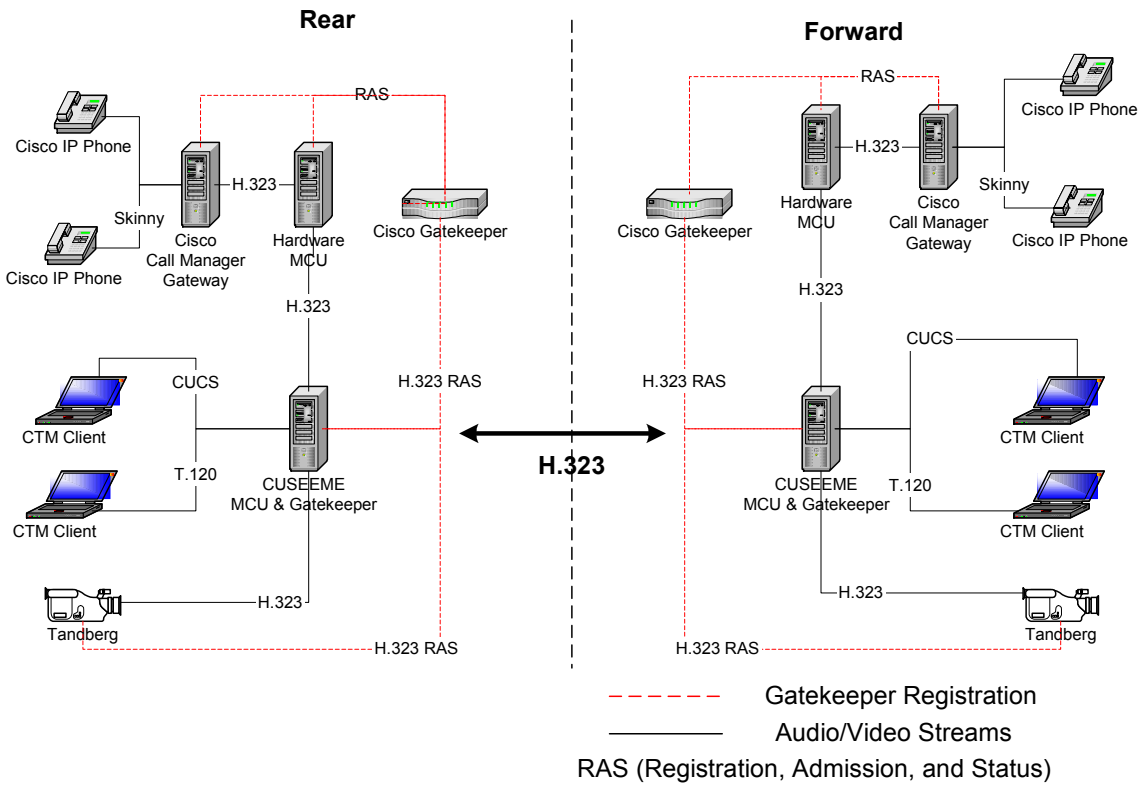
Testing Conducted

- End Point to End Point
  - Fully H.323 compliant NetMeeting, VIGO, Tandberg
- End Point to MCU/ Server
  - Click to Meet to First Virtual Server (FVS), NetMeeting to FVS, CISCO IP Phone to FVS
- Server to Server/ MCU
  - SameTime to FVS
  - SameTime and FVS to CISCO MCU

Interoperability Options

- Any endpoint can talk to any MCU/ Server
- Endpoints into specific servers with servers talking to other severs
- Endpoints into specific servers with servers all talking to third party server which bridges between servers

Sample Multi-Endpoint and Multi-Server Architecture



Interoperability Bottom line

- Audio between different end points using common MCU worked. Used IP phones, VTC, and synchronous collaborative tool suites with First Virtual Server.
- Audio between servers accomplished only through CISCO MCU bridge
- Limited testing done with video between server. One way video only demonstrated
- T.120 interoperability
  - Different end point through common server worked
  - Interoperability a problem between servers; CISCO bridge did not support

Road Ahead

- Continue work on new protocols to understand benefits and costs
- Continue experimentation in bandwidth efficient topologies/ tools.
- Explore information management techniques for afloat environment
- Continue close coordination with JFCOM
- Standards base CIE with Multi-national security domains
- Support future Fleet operational experimentation

Conclusion

The standards exist to connect multiple collaborative tools into a single conference sharing voice, video and data. Employing and interconnecting standards based tools is not easy but the benefit out weigh the costs. Venders must be pushed to make tool fully adhere to agreed upon standards.