

**Program Executive Office
Command Control Communications-Tactical**



**Interoperable Software Voice Client
Product Specification**

Document No. V29

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Interoperable Software Voice Client Specification	
1	Scope
<p>This document defines the requirements and functionality of the Interoperable Software Voice Client, a tactical unified communications software application that can be installed on hundreds of user workstations throughout all echelons of the Brigade Combat Team (BCT). It is designed to integrate onto vehicle platforms such as the Warfighter Information Network-Tactical Increment 2(WIN-T Inc 2) Point of Presence and the Soldier Network Extension and reside on user workstations in fixed Tactical Operations Centers. It bridges the gap between disparate voice technologies in a BCT by combining radio, telephony and software voice client users into logical talk groups.</p>	
2	Applicable Documents
2.1	General
<p>The following documents are listed for guidance only.</p>	
2.1.1	Non-Government Specifications
<p>[RFC 6120] P. Saint-Andre, "Extensible Messaging and Presence Protocol (XMPP): Core," RFC 6120, March 2011.</p>	
<p>[RFC 6121] P. Saint-Andre, "Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence," RFC 6121, March 2011.</p>	
<p>[RFC 6121] P. Saint-Andre, "Extensible Messaging and Presence Protocol (XMPP): Address Format," RFC 6122, March 2011.</p>	
<p>Cisco Unified Communications Manager Documentation Guide for Release 8.x</p>	
<p>ITU-T H.323 Recommendation ITU Telecommunications Standard Sector (ITU-T) H.323 Packet-Based Multimedia Communications Systems (12/09)</p>	
<p>ITU-T G.711 Recommendation ITU-T G.711 (1988) - Amendment 2 Pulse Code Modulation of Voice Frequencies (11/2009)</p>	
<p>ITU-T G.729 Annex A Coding of Speech at 8 kbit/s Using Conjugate-Structure Algebraic-Code-Excited Linear Prediction (CS-ACELP), Annex A: Reduced Complexity 8 kbit/s CS-ACELP Speech Codec (11/96)</p>	
<p>[RFC 0768] Postel, J., "User Datagram Protocol", STD 6, RFC 768, August 1980.</p>	
<p>[RFC 2474] Nichols et al, "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers," RFC 2474, December 1998.</p>	
<p>[RFC 2597] Heinanen et al, "Assured Forwarding PHB Group," RFC 2597, June 1999.</p>	
<p>[RFC 3140] Black et al, "Per Hop Behavior Identification Codes," RFC 3140, June 2001.</p>	
<p>[RFC 3246] Davie et al, "An Expedited Forwarding PHB (Per-Hop Behavior)," RFC 3246, March 2002</p>	
<p>[RFC 3260] Grossman, D. "New Terminology and Clarifications for Diffserv," RFC 3260, April 2002.</p>	
<p>[RFC 3261] Rosenberg, J. et al, "SIP: Session Initiation Protocol", RFC 3261, June 2002.</p>	
<p>[RFC 4733] Schulzrinne & Taylor, "RTP Payload for DTMF Digits, Telephony Tones, and Telephony Signals," RFC 4733, December 2006.</p>	
<p>VMWare vSphere 4.1 (ESXi) and 5.0(ESXi) Documentation</p>	

Exhibit A – Interoperable Software Voice Client Product Specification v29

ID	Interoperable Software Voice Client Specification	Threshold	Objective
ISVC31	3 Requirements		
ISVC32	3.1 VOICE CLIENT FEATURES		
ISVC33	3.1.1 Simultaneous Talk Groups The voice client shall allow users to monitor a minimum of 20 talk groups simultaneously. A talk group is a logical grouping of voice participants in any combination of software client, radio and IP telephony participants.	X	
ISVC34	3.1.2 Push-to-Talk The voice client shall support Push-to-Talk (PTT) via mouse click, touchscreen, and configurable keyboard key to speak on a talk group.	X	
ISVC35	3.1.3 Microphone Muting The voice client shall provide a capability for the user to mute the microphone with the ability to bind this function to a keyboard key.	X	
ISVC36	3.1.4 Talk Group Muting The voice client shall provide a capability for the user to mute the voice traffic, from any individual, multiple or all talk groups with the ability to bind the mute all talk groups function to a keyboard key.	X	
ISVC37	3.1.5 Speaker User Identity Display The voice client shall display the User identity of the speaker to talk group participants.	X	
ISVC38	3.1.6 Visual Alert of Voice Traffic The client shall provide a visual alert / notification to the user when voice traffic is received on a talk group in the event that the client application is minimized on the user interface, running in the background or speakers are muted.	X	
ISVC39	3.1.7 Voice Traffic Playback The client shall provide a playback capability for users to listen to a configurable time period (up to the last 60 seconds at a minimum) of voice traffic on each talk group separately.	X	
ISVC40	3.1.8 Software Keypad Interface The client shall provide a software keypad interface with the ability to place/receive Voice over Internet Protocol (VoIP) phone calls.	X	
ISVC41	3.1.9 Client User Training The Basic Client Features of the voice client shall be trainable to end users in 1 hour or less	X	

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ID	Interoperable Software Voice Client Specification	Threshold	Objective
ISVC42	3.1.10 Direct Client-to-Client Voice Communication The voice client shall provide the ability for one client participant to have direct voice communication with another client participant without the need for a predefined Talk Group.	X	
ISVC43	3.1.11 Integrated Text Chat The system shall provide integrated text chat for voice clients to allow users to type messages to each other on talk groups.	X	
ISVC44	3.1.12 Speed Dial Call List The voice client should have a Speed-dial Call List incorporated with the software keypad interface.		X
ISVC45	3.2 POWER USER FEATURES		
ISVC46	3.2.1 Power Users The system shall provide the ability to assign elevated privileges to select users (hereby referred to as Power Users) to perform additional functions outlined in remaining requirements in this section (3.2). These additional functions can be accessed through the existing software voice client, an additional local voice client with enhanced capabilities, a web interface, or any combination thereof.	X	
ISVC47	3.2.2 Talk Group Users The system shall provide Power Users with the ability to add, delete and modify which users can participate in talk groups.	X	
ISVC48	3.2.3 Specification of Listen-Only Users The system shall provide Power Users with the ability to specify “listen only” users on a talk group and “talk/listen” users on a talk group.	X	
ISVC49	3.2.4 Key Pad Disabling The system shall provide Power Users with the ability to administratively disable the software keypad interface of any user on the client application.	X	
ISVC50	3.2.5 Talk Group Creation The system shall provide Power Users the ability to create talk groups.	X	
ISVC51	3.2.6 Talk Group Modification The system shall provide Power Users the ability to modify talk groups.	X	

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ID	Interoperable Software Voice Client Specification	Threshold	Objective
ISVC52	3.2.7 Talk Group Patching The system shall provide Power Users with the ability to patch together any combination of talk groups, radio participants and telephony participants on an ad-hoc basis.	X	
ISVC53	3.2.8 Muting Users The system should provide Power Users the ability to mute users on talk groups.		X
ISVC54	3.2.9 Talk Group Priority Speaker Preemption The system should provide Power Users with the ability to assign and accommodate Priority Speakers with preemption on a talk group (e.g. a Brigade Commander can PTT to override all other participants wherein all other participants are muted).		X
ISVC55	3.3 INFRASTRUCTURE		
ISVC56	3.3.1 Software Only Capability The system shall be a software-only capability, including any and all server and client components, to be installed on existing Army servers or client computing platforms.	X	
ISVC57	3.3.2 Voice Client Minimum Hardware Specification The software client shall be able to operate on the following minimum hardware specifications: 1.86GHz CPU, 2GB RAM and 1GB Hard Drive Space.	X	
ISVC58	3.3.3 Voice Client Operating System Requirement The software voice client shall be able to run on Microsoft Windows XP, Windows Vista and Windows 7 (32- and 64-bit) operating systems.	X	
ISVC59	3.3.4 Voice Client Virtual Machine Requirement The software voice client shall be able to run on a virtualized instance of either Windows Vista or Windows 7 hosted on VMWare VSphere 4.1(ESXi) and 5.0 (ESXi).	X	
ISVC60	3.3.5 Server Minimum Hardware Specification Any and all software server components shall be able to operate on the following minimum hardware specifications: 2.26 GHz CPU, 1GB RAM and 20GB Hard Drive Space.	X	
ISVC61	3.3.6 Server Operating System Requirement Any and all software server components shall be able to run on Microsoft Windows Server 2008 R2 64-bit operating system.	X	

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ID	Interoperable Software Voice Client Specification	Threshold	Objective
ISVC62	3.3.7 Server Virtual Machine Requirement Any and all server components shall be able to run on a virtualized instance of Windows Server 2008 R2 64-bit operating system hosted on VMWare VSphere 4.1(ESXi) and 5.0 (ESXi).	X	
ISVC63	3.3.8 Session Initiation Protocol (SIP) The system shall support SIP [RFC3261].	X	
ISVC64	3.3.9 H.323 The system shall support ITU-T H.323.	X	
ISVC65	3.3.10 G.729A The system shall support ITU-T G.729A	X	
ISVC66	3.3.11 G.711 The system shall support ITU-T G.711 (μlaw and alaw).	X	
ISVC67	3.3.12 IPv4 The system shall be IPv4 compatible	X	
ISVC68	3.3.13 IP Voice via UDP The system shall enable all transmission of IP voice payload traffic via UDP.	X	
ISVC69	3.3.14 QoS Marking The system shall provide application marking of Differentiated Service Code Points (DSCP) in the header of voice IP packets for Quality of Service (QoS) in accordance with RFCs 2474, 2597, 3140, 3246 and 3260.	X	
ISVC70	3.3.15 Remote Administration of Configuration Items The system shall enable remote administration of any configuration items.	X	
ISVC71	3.3.16 Administrator Training The system shall be able to be trained to configure and administer in 40 hours or less	X	
ISVC72	3.3.17 IPv6 The system should be IPv6 compatible		X
ISVC73	3.3.18 QoS Marking for Different Data Types The system should provide marking of DSCP in the header of IP packets for a minimum of four different data types: call signaling, voice traffic, other data (TCP), other data (UDP)		X
ISVC74	3.3.19 Server Operating System Objective Any and all software server components should be able to run on Microsoft Windows Server 2012.		X
ISVC75	3.3.20 Voice Client Operating System Objective The software voice client should be able to run on Microsoft Windows 8 (32-bit and 64-bit) operating systems.		X

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ID	Interoperable Software Voice Client Specification	Threshold	Objective
ISVC76	3.3.21 Voice Client Virtual Machine Objective The software voice client should be able to run on a virtualized instance of Windows 8 hosted on VMWare VSphere 4.1(ESXi) and 5.0 (ESXi).		X
ISVC77	3.3.22 Web Browser Client The system should offer a web browser-based client to communicate on talk groups (voice and text).		X
ISVC78	3.3.23 Talk Group Voice Traffic Recording The system shall offer the ability to record voice traffic on all talk groups for future export and playback, with the ability to purge or disable recordings to conserve hard drive space based on storage resources available.	X	
ISVC79	3.4 INTEGRATION		
ISVC80	3.4.1 Integration with TOCNET eMCSU Gateway The system shall integrate with the Sanmina-SCI TOCNET eMCSU radio gateway and enable two-way Push-to-Talk voice communications with connected radios, incorporating the radio net users as members on one or more talk groups. The process of establishing a connection to the eMCSU gateway is defined by ITU-T specification H.323.	X	
ISVC81	3.4.2 Cisco UCM Dial-In Talk Group Access The system shall interface with Cisco Unified Communications Manager (CUCM) 8.x via either SIP or H.323 and incorporate telephony users as participants on a talk group.	X	
ISVC82	3.4.3 AD Integration for AAA The system shall integrate with Windows Active Directory Services for user authentication, authorization and access.	X	
ISVC83	3.4.4 Enterprise Directory Search The system should provide enterprise directory search through Windows Active Directory Services to enable user / device contact lookup.		X

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ID	Interoperable Software Voice Client Specification	Threshold	Objective
ISVC84	<p>3.4.5 Integration with Inc2 CNR Gateway</p> <p>The system should integrate with the WIN-T Increment 2 Combat Net Radio Gateway (Inc 2 CNR Gateway) to enable two-way Push-to-Talk voice communications with connected radios, incorporating the radio net users as members on one or more talk groups. The process of establishing a connection to the Inc 2 CNR Gateway is defined by specification SIP [RFC 3261], requires In-Band SIP Signaling, and requires generating Dual Tone Multi Frequency (DTMF) tones over the Real Time Protocol (RTP) audio bearer in accordance with RFC 4733 for radio key-up and key-down.</p>		X
ISVC85	<p>3.5 TECHNICAL PERFORMANCE</p>		
ISVC86	<p>3.5.1 Military Network Transport Operability</p> <p>The system shall be able to operate over military network transport conditions to accommodate high latency up to 5000ms round-trip time, transport jitter of up to 1000ms and packet loss of up to 10%.</p>	X	
ISVC87	<p>3.5.2 Multicast and Unicast Configurability</p> <p>The system shall be capable of sending talk group IP voice traffic via IP Multicast, Unicast and configurable hybrid Multicast/Unicast over the LAN and WAN.</p>	X	
ISVC88	<p>3.5.3 Participant Scalability</p> <p>The system shall support up to 500 participants (mix of radio, telephony and client users) in a single talk group.</p>	X	

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ID	Table 4.1 Verification Matrix	Threshold	Objective	Method
	Table 4.1 Verification Method			
	This table indicates the verification method to be used for the NIE and for Production. A “T” in the Method column indicates the verification is to be conducted in a test environment. A “D” in the Method column indicates the verification will be conducted by reviewing contractor supplied supporting documentation and certifications.			
ISVC32	3.1. VOICE CLIENT FEATURES			
ISVC33	3.1.1. Simultaneous Talk Groups	X		T, D
ISVC34	3.1.2. Push-to-Talk	X		T, D
ISVC35	3.1.3. Microphone Muting	X		T, D
ISVC36	3.1.4. Talk Group Muting	X		T, D
ISVC37	3.1.5. Speaker User Identity Display	X		T, D
ISVC38	3.1.6. Visual Alert of Voice Traffic	X		T, D
ISVC39	3.1.7. Voice Traffic Playback	X		T, D
ISVC40	3.1.8. Software Keypad Interface	X		T, D
ISVC41	3.1.9. Client User Training	X		T, D
ISVC42	3.1.10. Direct Client-to-Client Voice Communication	X		T, D
ISVC43	3.1.11. Integrated Text Chat	X		T, D
ISVC44	3.1.12. Speed Dial Call List		X	
ISVC45	3.2. POWER USER FEATURES			
ISVC46	3.2.1. Power Users	X		T, D
ISVC47	3.2.2. Talk Group Users	X		T, D
ISVC48	3.2.3. Specification of Listen-Only Users	X		T, D
ISVC49	3.2.4. Key Pad Disabling	X		T, D
ISVC50	3.2.5. Talk Group Creation	X		T, D
ISVC51	3.2.6. Talk Group Modification	X		T, D
ISVC52	3.2.7. Talk Group Patching	X		T, D
ISVC53	3.2.8. Muting Users		X	
ISVC54	3.2.9. Talk Group Priority Speaker Preemption		X	
ISVC55	3.3. INFRASTRUCTURE			
ISVC56	3.3.1. Software Only Capability	X		T, D
ISVC57	3.3.2. Voice Client Minimum Hardware Specification	X		D
ISVC58	3.3.3. Voice Client Operating System Requirement	X		D
ISVC59	3.3.4. Voice Client Virtual Machine Requirement	X		T, D
ISVC60	3.3.5. Server Minimum Hardware Specification	X		D

Exhibit A – Interoperable Software Voice Client Product Specification v29

ID	Table 4.1 Verification Matrix	Threshold	Objective	Method
ISVC61	3.3.6. Server Operating System Requirement	X		T, D
ISVC62	3.3.7. Server Virtual Machine Requirement	X		T, D
ISVC63	3.3.8. SIP	X		D
ISVC64	3.3.9. H.323	X		D
ISVC65	3.3.10. G.729A	X		T, D
ISVC66	3.3.11. G.711	X		T, D
ISVC67	3.3.12. IPv4	X		T, D
ISVC68	3.3.13. IP Voice via UDP	X		T, D
ISVC69	3.3.14. QoS Marking	X		T, D
ISVC70	3.3.15. Remote Administration of Configuration Items	X		T, D
ISVC71	3.3.16. Administrator Training	X		D
ISVC72	3.3.17. IPv6		X	
ISVC73	3.3.18. QoS Marking for Different Data Types		X	
ISVC74	3.3.19. Server Operating System Objective		X	
ISVC75	3.3.20. Voice Client Operating System Objective		X	
ISVC76	3.3.21. Voice Client Virtual Machine Objective		X	
ISVC77	3.3.22. Web Browser Client		X	
ISVC78	3.3.23. Talk Group Voice Traffic Recording	X		T,D
ISVC79	3.4. INTEGRATION			
ISVC80	3.4.1. Integration with TOCNET eMCSU Gateway	X		T, D
ISVC81	3.4.2. Cisco UCM Dial-In Talk Group Access	X		T, D
ISVC82	3.4.3. AD Integration for AAA	X		T, D
ISVC83	3.4.4. Enterprise Directory Search		X	
ISVC84	3.4.5. Integration with Inc2 CNR Gateway		X	
ISVC85	3.5. TECHNICAL PERFORMANCE			
ISVC86	3.5.1. Military Network Transport Operability	X		T, D
ISVC87	3.5.2. Multicast and Unicast Configurability	X		T, D
ISVC88	3.5.3. Participant Scalability	X		D