



DEFENSE INFORMATION SYSTEMS AGENCY

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IN REPLY
REFER TO: Joint Interoperability Test Command (JTE)

1 March 2022

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Joint Interoperability Certification of the Spok MediCall Suite, Software Release 12.0

References: (a) Department of Defense Instruction 8100.04, "DoD Unified Capabilities (UC)," 9 December 2010
(b) Office of the Department of Defense Chief Information Officer, "Department of Defense Unified Capabilities Requirements 2013 (UCR 2013) Change 2," September 2017
(c) through (f), see Enclosure 1

1. Certification Authority. Reference (a) establishes the Joint Interoperability Test Command (JITC) as the Joint Interoperability Certification Authority for Department of Defense Information Network (DoDIN) products, Reference (b).

2. Conditions of Certification. The Spok MediCall Suite with Software Release 12.0, hereinafter referred to as the System Under Test (SUT), meets the critical requirements of the Unified Capabilities Requirements, Reference (b), as a Customer Premise Equipment Auto Attendant system and is certified for joint use with no conditions (see Table 1). The SUT was tested and is certified for joint use integrated with the Avaya Aura Enterprise Session Controller (ESC), Release 8.1, and Cisco ESC21, Release 14. This integration includes the SUT Application Enablement Services (AES) Telephony Application Program Interface (TAPI), Device Media and Call Control (DMCC) and its 96XX International Telecommunication Union-Telecommunication Standardization Sector (ITU-T) H.323 end instruments (EIs), and the Cisco ESC21, Release 14, TAPI and its Session Initiation Protocol (SIP) EIs. Furthermore, based on JITC analysis, the SUT is also certified with any Avaya Aura ESC and Cisco ESC previously or currently listed on the DoDIN Approved Products List (APL).

This certification expires upon changes that could affect interoperability, but no later than the specified expiration date in the DoDIN APL memorandum.

Table 1. Conditions

Description	Operational Impact	Remarks
Not applicable; Spok MediCall Suite, Software Release 12.0, meets all critical joint interoperability requirements in accordance with the Unified Capabilities Requirements, Reference (b).		

3. Interoperability Status. Table 2 provides the SUT interface interoperability status, Table 3 provides the Capability Requirements and Functional Requirements status, and Table 4 provides the DoDIN APL Product Summary, to include subsequent Desktop Review (DTR) updates.

Table 2. SUT Interface Status

Interface (See note 1.)	Applicability	Status	Remarks
Legacy Line/Trunk Interfaces (See note 2.)			
2-/4-Wire Analog	C	Not Tested	
ISDN BRI	C	Not Tested	
Proprietary Digital	C	Not Tested	
T1 ISDN PRI	C	Not Tested	
E1 ISDN PRI	C	Not Tested	
T1 CAS	C	Not Tested	
E1 CAS	C	Not Tested	
IP Network Interfaces			
IEEE 802.3i (10 Mbps)	C	Met	See note 3.
IEEE 802.3u (100 Mbps)	C	Met	See note 3.
IEEE 802.3ab (1000 Mbps)	C	Met	See note 3.
Network Management Interfaces			
IEEE 802.3i (10 Mbps)	C	Met	
IEEE 802.3u (100 Mbps)	C	Met	
IEEE 802.3ab (1000 Mbps)	C	Met	
NOTE(S):			
1. The UCR does not specify a minimum required interface for a CPE Auto Attendant; therefore, the SUT can support one or more of the listed conditional interfaces. Table 3 depicts the SUT high-level requirements. Refer to Reference (c) for a detailed list of requirements.			
2. The SUT does not support the conditional Legacy Line/Trunk Interfaces.			
3. The SUT provided an IP intra-enclave interface between the MediCall Suite Application/Database Server and the Operator Console Workstation to include integration with the SUT AES TAPI, DMCC and its 96XX ITU-T H.323 EIs, and Cisco ESC21 TAPI and its SIP EIs.			
LEGEND:			
802.3ab	1000BaseT Gbps Ethernet over Twisted Pair	H.323	VoIP Standard
802.3i	10BaseT 10 Mbps Ethernet over Twisted Pair	IEEE	Institute of Electrical and Electronics Engineers
802.3u	Fast Ethernet at 100 Mbps, Copper and Fiber	IP	Internet Protocol
AES	Application Enablement Services	ISDN	Integrated Services Digital Network
BaseT	Megabit Ethernet	ITU-T	International Telecommunication Union- Telecommunication Standardization Sector
BRI	Basic Rate Interface	Mbps	Megabits per second
C	Conditional	PRI	Primary Rate Interface
CAS	Channel Associated Signaling	SIP	Session Initiation Protocol
CPE	Customer Premise Equipment	SUT	System Under Test
DMCC	Device Media and Call Control	T1	Digital Transmission Link Level 1 (1.544 Mbps)
E1	European Basic Multiplex Rate (2.048 Mbps)	TAPI	Telephony Application Program Interface
EI	End Instrument	UCR	Unified Capabilities Requirements
ESC	Enterprise Session Controller	VoIP	Voice over IP
Gbps	Gigabits per second		

Table 3. SUT Capability Requirements and Functional Requirements Status

CR/FR ID	UCR Requirement (See note 1.)	UCR 2013 Reference	Status
1	CPE Requirements (R)	3.7.2	Met (See note 2.)
2	Auto Attendant Specific Requirements (R)	2.2.10	Met (See note 2.)
3	DSCP Tagging Requirements (R)	7.2.1 Table 7.2-3	Met
4	IPv6 Requirements (R)	5.2 Table 5.2-1	Met

(Table continues next page.)

Table 3. SUT Capability Requirements and Functional Requirements Status (continued)

NOTE(S):	
1. The annotation of 'required' refers to a high-level requirement category. Refer to Reference (c) for the applicability of each sub-requirement.	
2. The SUT does not support all requirements; however, the SUT met all the requirements via integration with the following EIs, which do support the requirements: Avaya Aura ESC Release 8.1, TN 1907901, Reference (d), and Cisco ESC21 Release 14, TN 2104001, Reference (e).	
LEGEND:	
CPE	Customer Premise Equipment
CR	Capability Requirement
DSCP	Differentiated Services Code Point
EI	End Instrument
ESC	Enterprise Session Controller
FR	Functional Requirement
ID	Identification
IPv6	Internet Protocol version 4
R	Required
SUT	System Under Test
UCR	Unified Capabilities Requirements

Table 4. DoDIN APL Product Summary

Product Identification			
Product Name	Spok MediCall Suite		
Software Release	v12.0.0.11		
UCR Product Type	CPE Auto Attendant		
Product Description	The SUT offers a communications platform for the modern contact center. The SUT platform provides the operator group with access to staff, department, patient, and physician information, as well as on-call scheduling tools and messaging capabilities. The SUT has screen-based interactive functions including automatic screen displays of incoming calls, single button call transfer, conferencing, speed dialing, and other telephony functions. The telephone console user application provides access to database information, messaging, and staff and patient tracking options. The operator console is also capable of monitoring for call center activity and reporting procedures including call-processing, statistics and messaging. Reports may be generated for a particular day, operator, or time-period. The SUT telephone console requests and receives directory data from the SQL Database server to be used while processing telephone calls. The Operator Console Workstation performs secure database lookups from the SQL Database server as needed by the operator.		
Product Components (See note.)	Component Name	Version	Remarks
Spok MediCall Suite	MediCall Application/ Database Server	Windows Server 2019	
		MS SQL 2017 Enterprise	
		ADTW v12.0.0.11	
		Spok CTI Middle Layer v7.4.0.2	
		AlwaysUP v11.8.3.74	
		McAfee Endpoint Security v10.7	
		ActivID ActivClient x64 (7.3.0.25)	
	Operator Console Workstation	Windows 10	
		MS SQL Express 2017	
		MediCall v12.0.0.11	
		Spok CTI Middle Layer v7.4.0.2	
		McAfee Endpoint Security v10.7	
		ActivID ActivClient x64 (7.3.0.25)	
NOTE(S): Refer to Reference (c) for a detailed component and subcomponent list.			
LEGEND:			
ADTW	Admission, Discharge, and Transfer Watcher	MS	Microsoft
APL	Approved Products List	SQL	Structured Query Language
CPE	Customer Premise Equipment	SUT	System Under Test
CTI	Computer Telephony Integration	UCR	Unified Capabilities Requirements
DoDIN	Department of Defense Information Network	v	Version
ID	Identification		

4. Test Details. This certification is based on interoperability testing, review of the Vendor's Letters of Compliance (LoC), and the Defense Information Systems Agency (DISA) Certifying Authority Recommendation for inclusion on the DoDIN APL. JITC completed review of the Vendor's LoC on 18 January 2022 and conducted testing at the Global Network Test Facility, Fort Huachuca, Arizona from 31 January through 11 February 2022 using test procedures derived from Reference (c). A JITC-led Cybersecurity (CS) test team conducted CS testing and published the results in a separate report, Reference (f). Enclosure 2 documents the test results and describes the tested network and system configurations. Enclosure 3 provides a detailed list of the interface, capability, and functional requirements.

5. Additional Information. JITC distributes interoperability information via the JITC Electronic Report Distribution system, which uses Sensitive but Unclassified Internet Protocol Data (formerly known as NIPRNet) e-mail. Interoperability status information is available via the JITC System Tracking Program (STP). STP is accessible by .mil/.gov users at <https://stp.fhu.disa.mil/>. Test reports, lessons learned, and related testing documents and references are on the JITC Industry Toolkit (JIT) at <https://jit.fhu.disa.mil/>. Due to the sensitivity of the information, the CS Assessment Package that contains the approved configuration and deployment guide must be requested directly from the Approved Products Certification Office (APCO), e-mail: disa.meade.ie.list.approved-products-certification-office@mail.mil. All associated information is available on the DISA APCO website located at <https://aplits.disa.mil>.

6. Point of Contact (POC). JITC POC: Ms. Lorraine Gardner, commercial telephone (520) 538-5221, DSN telephone 879-5221, FAX DSN 879-4347; e-mail address: lorraine.gardner.civ@mail.mil; mailing address: Joint Interoperability Test Command, ATTN: JTE2 (Ms. Lorraine Gardner), P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The APCO tracking number for the SUT is 2114501.

FOR THE COMMANDER:

3 Enclosures a/s

LAWRENCE T. DORN
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Distribution (electronic mail):

DoD CIO
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US Coast Guard, CG-64
DISA/ISG REP
OUSD Intel, IS&A/Enterprise Programs of Record
DLA, Test Directorate, J621C
NSA/DT
NGA, Compliance and Assessment Team
DOT&E
Medical Health Systems, JMIS PEO T&IVV
HQUSAISEC, AMSEL-IE-ME
APCO

ADDITIONAL REFERENCES

- (c) Joint Interoperability Test Command (JITC), “Customer Premise Equipment (CPE) Auto Attendant Test Procedures Version 1.0 Unified Capabilities Requirements (UCR) 2013 Change 2,” October 2020
- (d) JITC Memo, JTE, “Joint Interoperability Certification of the Avaya Aura® Enterprise Session Controller (ESC) Release 8.1,” 14 January 2020
- (e) JITC Memo, JTE, “Joint Interoperability Certification of the Cisco Enterprise Session Controller (ESC)21 (ESC21) with Software Release 14,” 19 November 2021
- (f) JITC, “Cybersecurity Assessment Report for Spok MediCall Suite, Software Release 12.0, Tracking Number (TN) 2114501,” January 2022

CERTIFICATION SUMMARY

1. SYSTEM AND REQUIREMENTS IDENTIFICATION. The Spok MediCall Suite with Software Release 12.0 is hereinafter referred to as the System Under Test (SUT). Table 2-1 depicts the SUT identifying information and requirements source.

Table 2-1. System and Requirements Identification

System Identification	
Sponsor	United States Army
Sponsor Point of Contact	Jordan Silk, E-mail: jordan.r.silk.civ@mail.mil , Phone: 520-533-7218
Vendor Point of Contact	Azad Sadick, E-mail: azad.sadick@spok.com , Phone: 212-951-7690
System Name	Spok MediCall Suite
Increment and/or Version	12.0
Product Category	Customer Premise Equipment Auto Attendant
System Background	
Previous certifications	None
Tracking	
APCO ID	Tracking Number 2114501
System Tracking Program ID	9576
Requirements Source	
Unified Capabilities Requirements	Unified Capabilities Requirements 2013, Change 2, Sections 2, 3, 5, and 7
Remarks	None
Test Organization	Joint Interoperability Test Command, Fort Huachuca, Arizona 85670
LEGEND:	
APCO	Approved Products Certification Office
ID	Identification

2. SYSTEM DESCRIPTION. A wide variety of Customer Premise Equipment (CPE) manufactured and sold by many sources was connected to the line (subscriber) side of a Defense Switched Network (DSN) switching system. Such varieties include industry “American National Standards Institute – European Telecommunications Standards Institute (ANSI-ETSI) Standards”- based digital and analog devices, and non-standards based proprietary digital devices. During the transition period between Time Division Multiplexing- and Internet Protocol (IP)-based technologies, some locations may have a requirement to interface the legacy CPE to a Session Controller (SC). As a result, most SC vendors provide an optional Integrated Access Device to permit the use of CPE until it is replaced. The CPE devices may include answering machines, voice mail systems, automated call distributors, proprietary telephone sets, standards-based telephone sets, facsimile machines, voice-band modems, Integrated Services Digital Network Termination 1 devices, Terminal Adapters, and certain devices deemed mandatory for local or host nation telecommunications network compliance (i.e., 911 emergency service).

The SUT is a CPE Auto Attendant.

a. General Description. The SUT is a communications platform that provides call center functions. The SUT platform also provides the operator group with instant access to patient, physician, and staff information, in addition to on-call scheduling and other information. The system has screen-based interactive functions including automatic screen displays of incoming

calls, single button call transfer, conferencing, speed dialing, and other telephony functions. The telephone console user application provides access to database information, messaging, and staff and patient tracking options. The operator console is also capable of monitoring for call center activity and reporting procedures including call-processing statistics and messaging. Reports may be generated for a particular day, operator, or time-period. The SUT telephone console requests and receives directory data from the Structured Query Language (SQL) Database server to be used while processing telephone calls. The Operator Console Workstation performs secure database lookups from the SQL Database server as needed by the Operator.

The SUT consists of the MediCall Application/Database Server and Operator Console Workstation.

The MediCall Application/Database Server is hosted on a Common Access Card (CAC)-enabled Windows 2019 server running Microsoft (MS) SQL 2017 Database that operates as the system's primary database server and applications engine.

The Operator Console Workstation is a CAC-enabled Windows 10 workstation that hosts the primary telephone console interface user application. It uses a secure connection to the Cisco Enterprise Session Controller (ESC) and Avaya Aura ESC to perform call center application functions.

b. Management Description. The Application/Database function is hosted on a Windows 2019 server. The SUT is managed by administrative users who log directly onto the MediCall Application/Database server using a CAC-enabled Windows Authenticated Administrator user session. Only approved and documented administrator accounts will have direct access to the server. The Operator Console Workstation is a CAC-enabled Windows 10 workstation that hosts the SUT application. The application is administered by an administrator account accessing the workstation directly. Application users are authenticated using Public Key Infrastructure authentication. The application communicates with the Application/Database server through an Open Data Base Connectivity session that is secured using IP Security (IPSec) encryption.

3. OPERATIONAL ARCHITECTURE. The Department of Defense (DoD) Information Network (DoDIN) architecture is a two-level network hierarchy consisting of Defense Information Systems Network backbone switches and Service/Agency installation switches. The DoD Chief Information Officer and Joint Staff policy and subscriber mission requirements determine the type of switch allowable at a particular location. The DoDIN architecture, therefore, consists of several categories of switches. Figure 2-1 depicts the notional operational DoDIN architecture in which the SUT may be used.

4. TEST CONFIGURATION. The Joint Interoperability Test Command (JITC) test team tested the SUT at JITC, Fort Huachuca, Arizona, in a manner and configuration similar to that of the notional operational environment depicted in Figure 2-1. Testing of the system's required functions and features was conducted using the test configurations depicted in Figures 2-2 and 2-3. Cybersecurity (CS) testing used the same configuration.

5. METHODOLOGY. The JITC test team conducted testing using the CPE Auto Attendant requirements derived from the Unified Capabilities Requirements (UCR) 2013, Change 2, Reference (b), and the CPE Auto Attendant test procedures derived from Reference (c). In addition to testing, an analysis of the Vendor’s Letters of Compliance (LoC) verified that letter “R” requirements have been met. Any discrepancy noted in the operational environment will be evaluated for impact on the existing certification. These discrepancies will be adjudicated to the satisfaction of the Defense Information Systems Agency (DISA) via a vendor Plan of Action and Milestones (POA&M), which will address all new critical Test Discrepancy Reports (TDRs) within 120 days of identification.

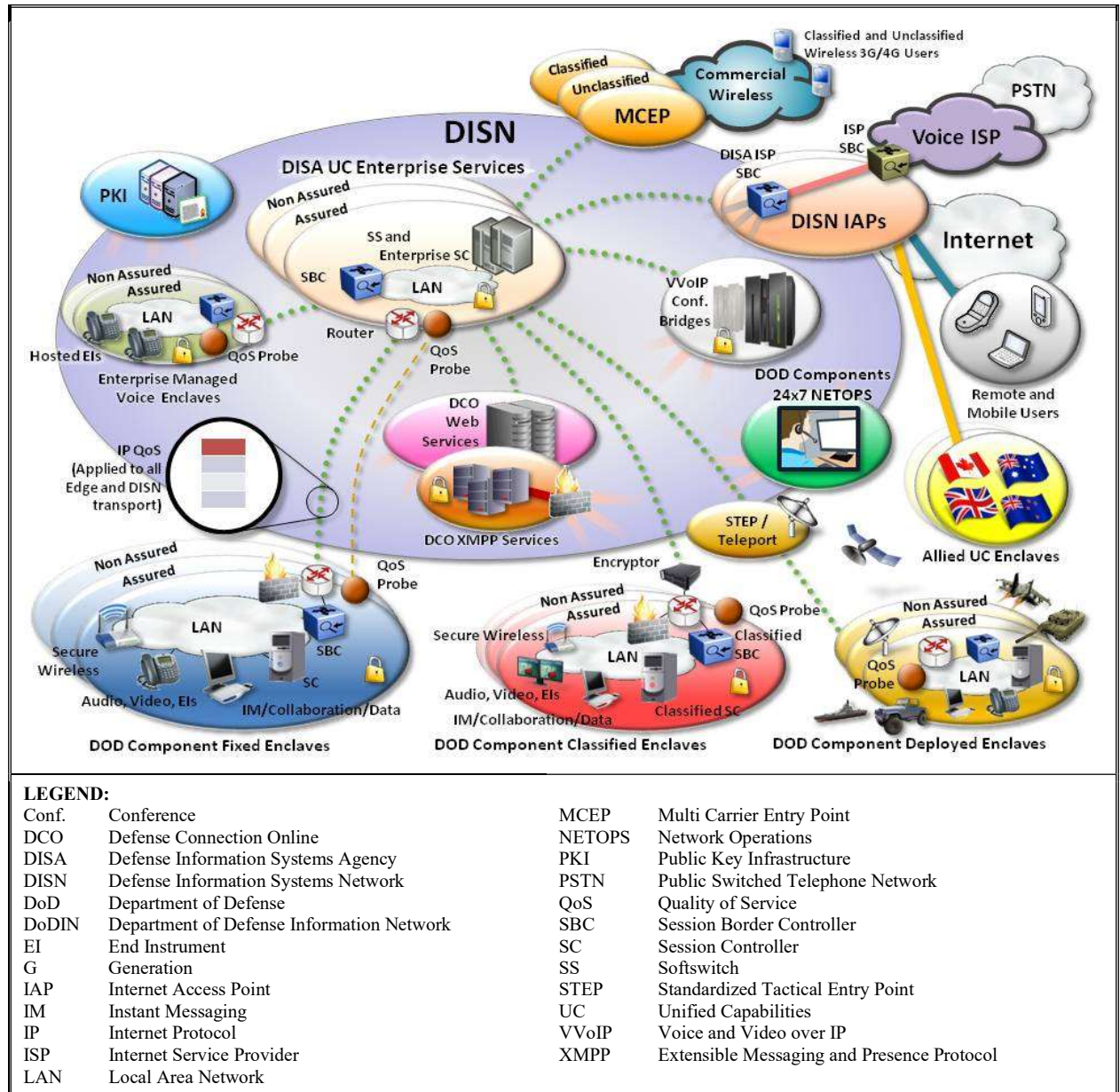


Figure 2-1. Notional DoDIN Network Architecture

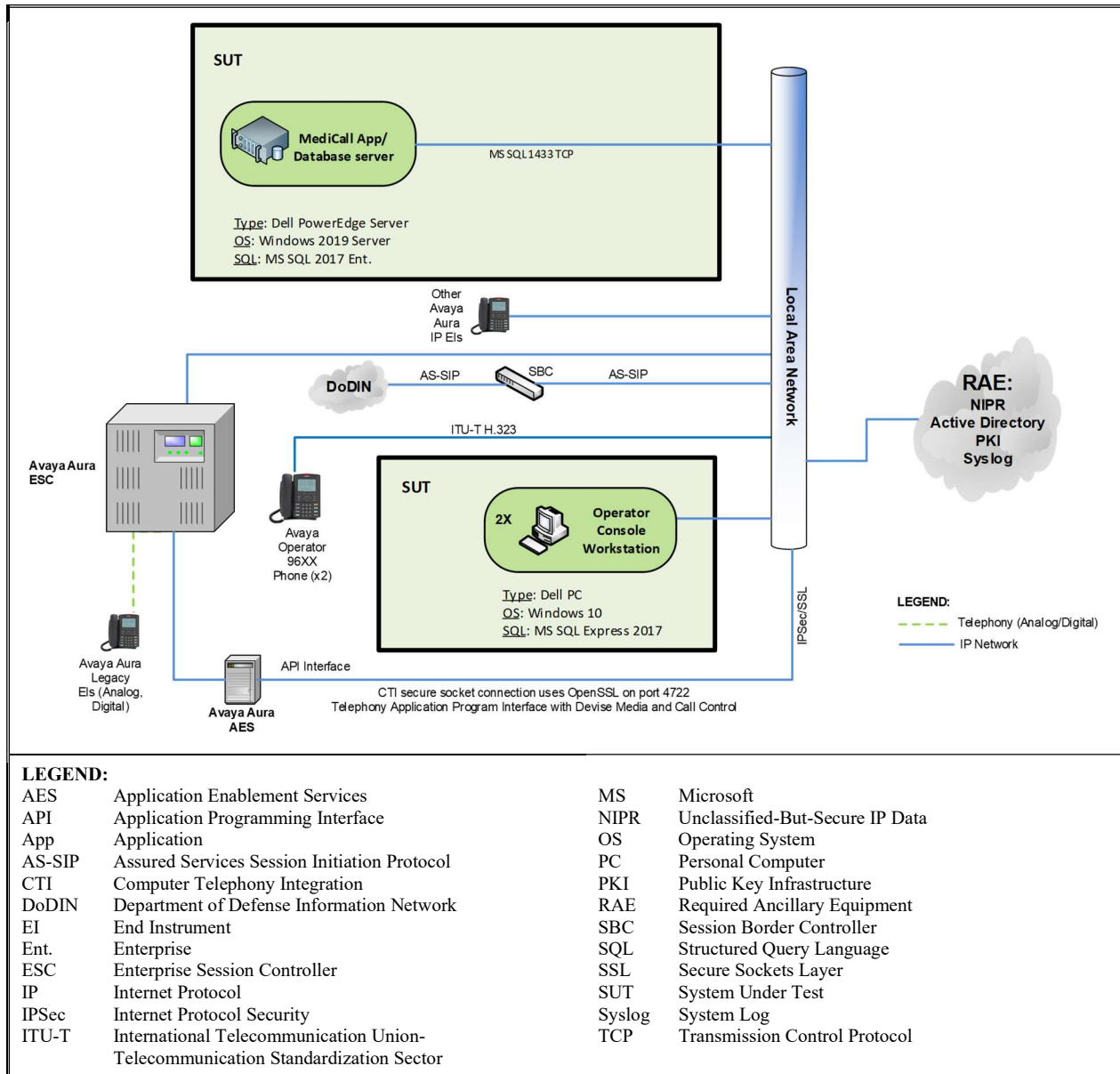


Figure 2-2. SUT Test Configuration with Avaya Aura

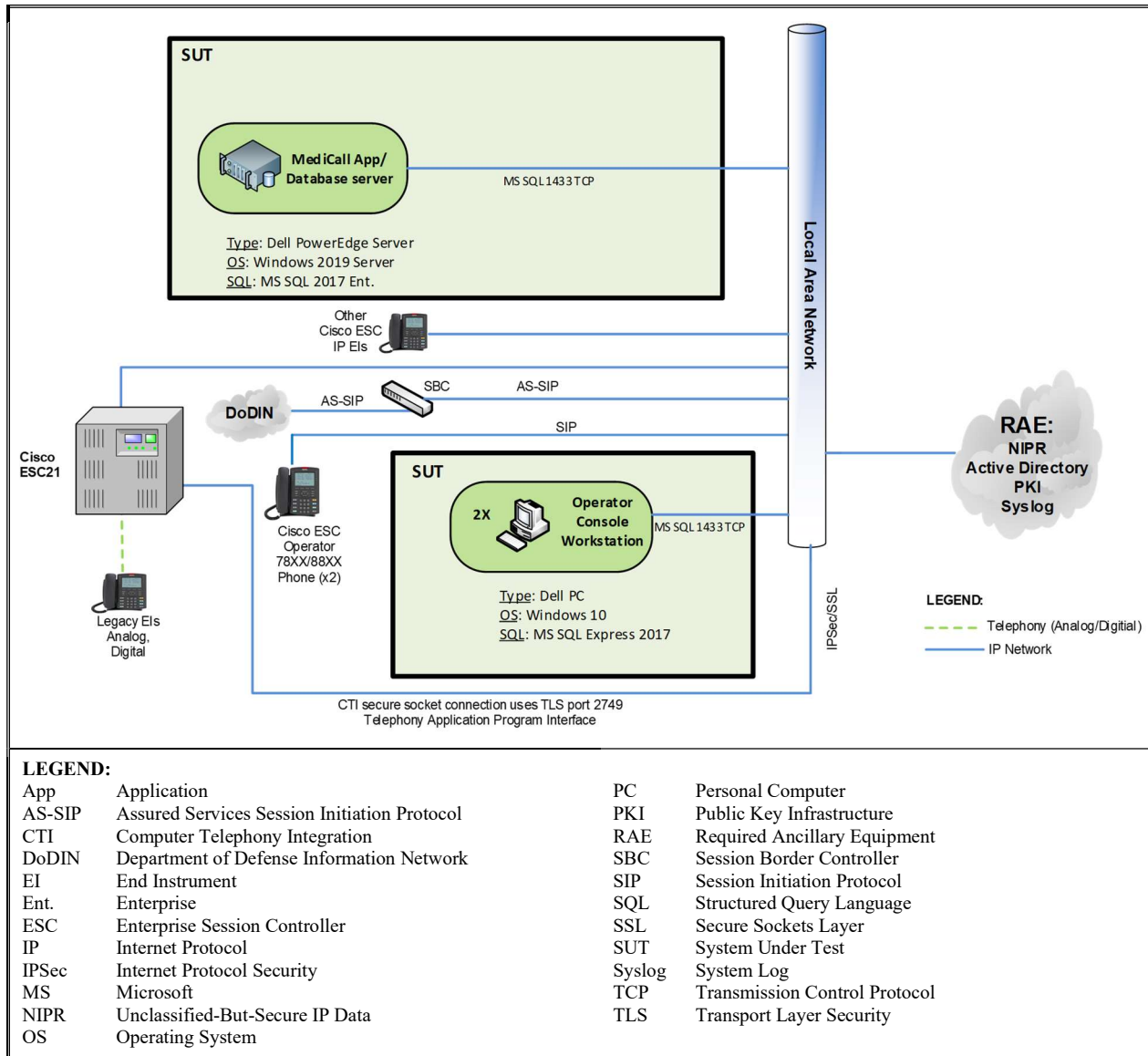


Figure 2-3. SUT Test Configuration with Cisco ESC21

6. INTEROPERABILITY REQUIREMENTS, RESULTS, AND ANALYSIS. The UCR 2013, Change 2, Sections 2, 3, 5, and 7, established the interface, Capability Requirements, Functional Requirements, CS, and other requirements for the DoDIN CPE Auto Attendant. The subparagraphs below provide the testing details and results. Optional and/or conditional requirements are not included in the test results unless otherwise noted.

a. Interface Status. Table 3-1 provides the status of JITC interface testing.

1) Legacy Line/Trunk Interfaces. The SUT does not support the conditional Legacy Line/Trunk Interfaces; these interfaces were not tested and are not included in this certification.

2) IP Network Interfaces. The SUT provides an IP intra-enclave interface between the MediCall Suite Application/Database Server and the Operator Console Workstation to include integration with the SUT Application Enablement Services (AES) Telephony Application Program Interface (TAPI), Device Media and Call Control (DMCC) and its 96XX International Telecommunication Union-Telecommunication Standardization Sector (ITU-T) H.323 end instruments (EIs), and Cisco ESC 21 (ESC21) TAPI and its Session Initiation Protocol (SIP) EIs. The SUT met the requirements for IP Network Interfaces with testing.

3) Network Management Interfaces. The SUT supports the Institute of Electrical and Electronics Engineers (IEEE) 802.3i (10 Megabits per second (Mbps)), IEEE 802.3u (100 Mbps), and IEEE 802.3ab (1000 Mbps) interfaces for management. The SUT met the Network Management Interfaces with testing.

b. Functional Requirements

1) The UCR 2013, Section 3.7.2, includes the general CPE requirements in the subparagraphs below.

a) If a CPE device supports Multi-Level Precedence and Preemption (MLPP), then that device shall do so in accordance with the requirements listed in Section 2.25.1, Multilevel Precedence and Preemption, and shall not affect the DSN interface features and functions associated with line supervision and control. MLPP is not a function of the SUT; however, the SUT includes operator telephones registered off the Avaya Aura and Cisco ESC21 ESCs, which do meet this requirement and are certified separately on the DoDIN Approved Products List (APL) via the following Tracking Numbers (TNs): Avaya Aura ESC, Release 8.1, TN 1907901, Reference (d), and Cisco ESC21, Release 14, TN 210401, Reference (e).

b) All DSN CPE, at a minimum, must meet the requirements of Part 15 and Part 68 of the Federal Communications Commission (FCC) Rules and Regulations, and the Administrative Council for Terminal Attachments. The SUT met these requirements with the Vendor's LoC.

c) If a CPE device supports autoanswer, then that device shall have an "autoanswer" mode feature allowing the autoanswer mode to be set to a "time" more than the equivalency of four ROUTINE precedence ring intervals, in accordance with Section 2.25.1, Multilevel Precedence and Preemption, before "answer" supervision is provided. The SUT does not support this conditional requirement.

d) If a CPE device is required to support precedence calls above ROUTINE precedence, then that device shall respond properly to an incoming alerting (ringing) precedence call cadence, as described in Section 2.9.1.2.1, Unified Capabilities Ringing Tones, Cadences, and Information Signals. The SUT does not support this conditional requirement; however, this requirement is met via integration with the following EIs, which do support this requirement: Avaya Aura ESC, Release 8.1, TN 1907901, Reference (d), and Cisco ESC21, Release 14, TN 2104001, Reference (e).

e) If a CPE device can “out dial” Dual Tone Multi-Frequency (DTMF) and/or dial pulse digits (automatic and/or manual), then that device shall comply with the requirements as specified in Telcordia Technologies GR-506-CORE, Local Access and Transport Area (LATA) Switching Systems Generic Requirements (LSSGR): Signaling for Analog Interfaces, Issue 1, June 1996, paragraph 10. That device shall also be capable of outpulsing and interpretation of DTMF digits on outgoing and two-way trunks as specified in Telcordia Technologies GR-506-CORE, LSSGR: Signaling for Analog Interfaces, Issue 1, June 1996, paragraph 15, and Table 3.7-1. The SUT met this conditional requirement with testing and the Vendor’s LoC.

f) If a CPE device contains a modem or facsimile machine, then that modem or facsimile machine shall be compatible with International Telecommunication Union (ITU) and Telcordia standards, as applicable. The SUT does not support this conditional requirement.

g) If a CPE device contains a facsimile device, then that facsimile device, at a minimum, shall meet the requirements in accordance with applicable DoD Information Technology Standards Registry standards. The SUT does not support this conditional requirement.

h) If Configuration Management and/or Fault Management is provided by the CPE device so that it can be managed by the Advanced DSN Integrated Management Support System or other management systems, then the management information for that CPE device shall be provided by one or more of the following serial or Ethernet interfaces:

1. Serial interfaces shall be in accordance with one of the following standards:

a. ITU-T Recommendation V.35. The SUT does not support this conditional management interface.

b. Telecommunications Industry Association (TIA)-232-F. The SUT does not support this conditional management interface.

c. Electronic Industries Alliance (EIA)-449-1. The SUT does not support this conditional management interface.

d. TIA-530-A. The SUT does not support this conditional management interface.

2. Ethernet interfaces shall be in accordance with IEEE 802.3-2002. The SUT supports this conditional interface for management with the Vendor’s LoC for the IEEE 802.3i (10 Mbps), IEEE 802.3u (100 Mbps), and IEEE 802.3ab (1000 Mbps) IP interfaces.

i) If a CPE device supports 911 and E911 emergency services, then, at a minimum, the 911 and the E911 (tandem) emergency services shall have the capability to “hold” (prevent) the originating subscriber or caller from releasing the call, via the “switch supervision interaction for line and trunk control by the called party” feature, in accordance with Telcordia Technologies GR-529-CORE. Additionally, the FCC regulations regarding 911 and E911 must be considered. This functionality is not a feature of the SUT but rather the local switch and E911 (tandem)

emergency services switch in accordance with Telcordia Technologies GR-529-CORE. The SUT does not support this conditional requirement.

2) The UCR 2013, Change 2, Section 2.2.10, includes the Auto Attendant specific requirements in the subparagraphs below.

a) Unanswered Unified Capabilities (UC) Voice over IP (VoIP) calls above the ROUTINE precedence level shall not be forwarded to voicemail and shall not be forwarded to Automatic Call Distribution (ACD) systems. Instead, they shall divert to the Precedence Call Diversion (PCD) Directory Number (DN) when the PCD time-period expires. The SUT does not support this conditional requirement; however, the SUT meets this requirement via integration with the following EIs, which do support this requirement: Avaya Aura ESC, Release 8.1, TN1907901, Reference (d), and Cisco ESC21, Release 14, TN 2104001, Reference (e).

b) Unanswered UC VoIP ROUTINE calls to DNs that are configured with voicemail or an ACD system shall be forwarded to voicemail or to the ACD system. The SUT does not support this conditional requirement; however, the SUT meets this requirement via integration with the following EIs, which do support this requirement: Avaya Aura ESC, Release 8.1, TN 1907901, Reference (d), and Cisco ESC21, Release 14, TN 2104001, Reference (e).

c) Calls above the ROUTINE precedence level that are directly dialed to DNs assigned to voicemail or ACD systems shall divert to the PCD DN as specified above (i.e., when they are unanswered at the voicemail or ACD system, and the PCD time period expires). The SUT does not support this conditional requirement; however, the SUT meets this requirement via integration with the following EIs, which do support this requirement: Avaya Aura ESC, Release 8.1, TN 1907901, Reference (d), and Cisco ESC21, Release 14, TN 2104001, Reference (e).

d) The Assured Services Session Initiation Protocol signaling appliance shall support a per-appliance configuration option that, when activated, diverts ROUTINE calls directly dialed to DNs assigned to voicemail or ACD systems to the PCD DN, if they go unanswered and the PCD time period expires. These calls shall keep their ROUTINE precedence level after they are diverted by PCD. When this configuration option is not used, unanswered ROUTINE calls shall continue to be offered to the voicemail or ACD system and shall not be diverted by PCD. The SUT does not support this conditional requirement; however, the SUT meets this requirement via integration with the following EIs, which do support this requirement: Avaya Aura ESC, Release 8.1, TN 1907901, Reference (d), and Cisco ESC21, Release 14, TN 2104001, Reference (e).

3) The UCR 2013, Change 2, Section 7.2.1, states the product shall support the Differentiated Services Code Point (DSCP) plan, as shown in Table 7.2-3, DSCP Assignments. Differentiated Services (DS) assignments shall be software configurable for the full range of six-bit values (0-63 Base10) for backwards compatibility with IP precedence environments that may be configured to use the Type of Service (TOS) field in the IP header but do not support DSCP. This capability was not tested but was determined by JITC analysis to be compliant

based on the Vendor's LoC and previous test data collected on the similar hardware platform with similar performing Windows operating system software, and product maturity.

4) The UCR 2013, Change 2, Section 5.2, Table 5.2-1, states that if a CPE supports IP interfaces, then the CPE shall support the IP version 6 (IPv6) requirements as defined for Network Appliance/Simple Server in the UCR, Section 5, IPv6. The SUT met this requirement with testing and the Vendor's LoC.

c. Hardware/Software/Firmware Version Identification. Table 3-3 provides the SUT components' hardware, software, and firmware tested. The JITC tested the SUT in an operationally realistic environment to determine its interoperability capability with associated network devices and network traffic. Table 3-4 provides the hardware, software, and firmware of the components used in the test infrastructure.

7. TESTING LIMITATIONS. None.

8. CONCLUSION(S). The SUT meets the critical interoperability requirements for a CPE Auto Attendant system in accordance with the UCR 2013, Change 2, and is certified for use with the interfaces as depicted in Table 3-1.

DATA TABLES

Table 3-1. SUT Interface Status

Interface (See note 1.)	Applicability	Status	Remarks
Legacy Line/Trunk Interfaces (See note 2.)			
2-/4-Wire Analog	C	Not Tested	
ISDN BRI	C	Not Tested	
Proprietary Digital	C	Not Tested	
T1 ISDN PRI	C	Not Tested	
E1 ISDN PRI	C	Not Tested	
T1 CAS	C	Not Tested	
E1 CAS	C	Not Tested	
IP Network Interfaces			
IEEE 802.3i (10 Mbps)	C	Met	See note 3.
IEEE 802.3u (100 Mbps)	C	Met	See note 3.
IEEE 802.3ab (1000 Mbps)	C	Met	See note 3.
Network Management Interfaces			
IEEE 802.3i (10 Mbps)	C	Met	
IEEE 802.3u (100 Mbps)	C	Met	
IEEE 802.3ab (1000 Mbps)	C	Met	
NOTE(S):			
1. The UCR does not specify a minimum required interface for a CPE Auto Attendant; therefore, the SUT can support one or more of the listed conditional interfaces. Table 3 depicts the SUT high-level requirements. Refer to Reference (c) for a detailed list of requirements.			
2. The SUT does not support the conditional Legacy Line/Trunk Interfaces.			
3. The SUT provided an IP intra-enclave interface between the MediCall Suite Application/Database Server and the Operator Console Workstation to include integration with the SUT AES TAPI, DMCC and its 96XX ITU-T H.323 EIs, and Cisco ESC21 TAPI and its SIP EIs.			
LEGEND:			
802.3ab	1000BaseT Gbps Ethernet over Twisted Pair	H.323	VoIP Standard
802.3i	10BaseT 10 Mbps Ethernet over Twisted Pair	IEEE	Institute of Electrical and Electronics Engineers
802.3u	Fast Ethernet at 100 Mbps, Copper and Fiber	IP	Internet Protocol
AES	Application Enablement Services	ISDN	Integrated Services Digital Network
BaseT	Megabit Ethernet	ITU-T	International Telecommunication Union- Telecommunication Standardization Sector
BRI	Basic Rate Interface	Mbps	Megabits per second
C	Conditional	PRI	Primary Rate Interface
CAS	Channel Associated Signaling	SIP	Session Initiation Protocol
CPE	Customer Premise Equipment	SUT	System Under Test
DMCC	Device Media and Call Control	T1	Digital Transmission Link Level 1 (1.544 Mbps)
E1	European Basic Multiplex Rate (2.048 Mbps)	TAPI	Telephony Application Program Interface
EI	End Instrument	UCR	Unified Capabilities Requirements
ESC	Enterprise Session Controller	VoIP	Voice over IP
Gbps	Gigabits per second		

Table 3-2. SUT Capability and Functional Requirements and Status

CR/FR ID	UCR Requirement (See note 1.)	UCR 2013 Reference	Status																												
1	CPE Requirements (R)	3.7.2	Met (See note 2.)																												
2	Auto Attendant Specific Requirements (R)	2.2.10	Met (See note 2.)																												
3	DSCP Tagging Requirements (R)	7.2.1 Table 7.2-3	Met																												
4	IPv6 Requirements (R)	5.2 Table 5.2-1	Met																												
<p>NOTE(S):</p> <p>1. The annotation of 'required' refers to a high-level requirement category. Refer to Reference (c) for the applicability of each sub-requirement.</p> <p>2. The SUT does not support all requirements; however, the SUT met all the requirements via integration with the following EIs, which do support the requirements: Avaya Aura ESC, Release 8.1, TN 1907901, Reference (d), and Cisco ESC21, Release 14, TN 2104001, Reference (e).</p> <p>LEGEND:</p> <table> <tr> <td>APL</td> <td>Approved Products List</td> <td>FR</td> <td>Functional Requirement</td> </tr> <tr> <td>CPE</td> <td>Customer Premise Equipment</td> <td>ID</td> <td>Identification</td> </tr> <tr> <td>CR</td> <td>Capability Requirement</td> <td>IPv6</td> <td>Internet Protocol version 6</td> </tr> <tr> <td>DoDIN</td> <td>Department of Defense Information Network</td> <td>R</td> <td>Required</td> </tr> <tr> <td>DSCP</td> <td>Differentiated Services Code Point</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>EI</td> <td>End Instrument</td> <td>TN</td> <td>Tracking Number</td> </tr> <tr> <td>ESC</td> <td>Enterprise Session Controller</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> </table>				APL	Approved Products List	FR	Functional Requirement	CPE	Customer Premise Equipment	ID	Identification	CR	Capability Requirement	IPv6	Internet Protocol version 6	DoDIN	Department of Defense Information Network	R	Required	DSCP	Differentiated Services Code Point	SUT	System Under Test	EI	End Instrument	TN	Tracking Number	ESC	Enterprise Session Controller	UCR	Unified Capabilities Requirements
APL	Approved Products List	FR	Functional Requirement																												
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DSCP	Differentiated Services Code Point	SUT	System Under Test																												
EI	End Instrument	TN	Tracking Number																												
ESC	Enterprise Session Controller	UCR	Unified Capabilities Requirements																												

Table 3-3. SUT Hardware/Software/Firmware Version Identification

Component	Release	Sub-component	Function																
Spok MediCall Suite	Windows Server 2019	MediCall Application/ Database Server	MediCall Application Host																
	MS SQL 2017 Enterprise																		
	ADTW v12.0.0.11																		
	Spok CTI Middle Layer v7.4.0.2																		
	AlwaysUP v11.8.3.74																		
	McAfee Endpoint Security v10.7																		
	ActivID ActivClient x64 (7.3.0.25)	Operator Console Workstation	Management																
	Windows 10																		
	MS SQL 2017																		
	MediCall v12.0.0.11																		
	Spok CTI Middle Layer v7.4.0.2																		
	McAfee Endpoint Security v10.7																		
ActivID ActivClient x64 (7.3.0.25)																			
<p>LEGEND:</p> <table> <tr> <td>ADTW</td> <td>Admission, Discharge, and Transfer Watcher</td> <td>SQL</td> <td>Structured Query Language</td> </tr> <tr> <td>CTI</td> <td>Computer Telephony Integration</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>ID</td> <td>Identification</td> <td>v</td> <td>Version</td> </tr> <tr> <td>MS</td> <td>Microsoft</td> <td></td> <td></td> </tr> </table>				ADTW	Admission, Discharge, and Transfer Watcher	SQL	Structured Query Language	CTI	Computer Telephony Integration	SUT	System Under Test	ID	Identification	v	Version	MS	Microsoft		
ADTW	Admission, Discharge, and Transfer Watcher	SQL	Structured Query Language																
CTI	Computer Telephony Integration	SUT	System Under Test																
ID	Identification	v	Version																
MS	Microsoft																		

Table 3-4. SUT Test Infrastructure Hardware/Software/Firmware Version Identification

System Name	Software Release	Function	
Required Ancillary Equipment (Site Provided)			
Active Directory			
Public Key Infrastructure			
SysLog Server			
Test Network Components			
Avaya Aura	8.1	ESC/LSC	
Cisco ESC21	14	ESC/LSC	
REDCOM High Density Exchange	Real-Time Operating System v4.0AR5P8	LSC	
REDCOM Slice	Real-Time Operating System v4.0AR5P8	LSC	
NEC Univerge 3C	Release 9.2.1.7	LSC	
Avaya AS5300	Release 3.0 Service Pack 15 Enterprise	LSC	
Cisco IP SIP EIs 78XX/88XX	SIP88_78 14-1-1-0001-125	IP Phone	
Avaya H.323 EIs 96XX	7.1.10.0r5	IP Phone	
LEGEND:			
AS	Application Server	LSC	Local Session Controller SE
CS	Communication Server	SIP	Session Initiation Protocol
EI	End Instrument	SUT	System Under Test
ESC	Enterprise Session Controller	SysLog	System Log
H.323	VoIP Standard	VoIP	Voice over IP
IP	Internet Protocol		