



DEFENSE INFORMATION SYSTEMS AGENCY

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

6 November 2018

MEMORANDUM FOR DISTRIBUTION

Revision 1 (Enclosure 4)

SUBJECT: Joint Interoperability Certification of the MicroAutomation, Omni911, Software, Release 4.0

- 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 (d), see Enclosure 1

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

2. Conditions of Certification. The MicroAutomation, Omni911, Software, Release 4.0, hereinafter referred to as the System Under Test (SUT), meets the critical requirements of the Unified Capabilities Requirements, Reference (b), and is certified for joint use as a Customer Premises Equipment Public Safety Answering Point without any conditions (see Table 1). The SUT was tested with the Avaya Communication Server (CS) 2100 Switching System with a Digital Transmission Link Level 1 (T1) Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) and a 2-wire analog Centralized Automatic Message Accounting (CAMA) interface with a CAMA simulator. Based on JITC analysis, the SUT is also certified with any Legacy Switching System or Session Controller previously listed or currently listed on the DoDIN Approved Products List (APL) certified with a T1 ISDN PRI or CAMA interface. This certification expires upon changes that affect interoperability, but no later than the expiration date specified in the DoDIN APL memorandum.

Table 1. Conditions

Table with 3 columns: Description, Operational Impact, Remarks. Row 1: Not applicable; the MicroAutomation, Omni911, Software, Release 4.0 meets all of the critical joint interoperability requirements in accordance with the Unified Capabilities Requirements (UCR), Reference (b).

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

Table 2. SUT Interface Status

| Interface (See note.) | Applicability | Status | Remarks | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|------------|--|--|--|--|----------------------|--------------------------|--|---------------|--|---|----------------------------|----------------------------------|------------------------------------|---------------------------------|-----------------------|---------------------------|--------------------------------------|----------------------------------|--------------------------------|------------------------------------|---|--|---------------------------------------|---------------------------|--|
| Legacy Line/Trunk Interfaces | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-/4-Wire Analog | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-Wire CAMA Trunk | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| ISDN BRI | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| Proprietary Digital | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| T1 ISDN PRI | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| E1 ISDN PRI | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| T1 CAS | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| E1 CAS | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| IP Network Interfaces | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10Base-X | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| 100Base-X | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| 1000Base-X | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| Network Management Interfaces | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ITU-T Recommendation V.35 | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| TIA-232-F | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| EIA-449-1 | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| TIA-530-A | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| IEEE 802.3-2002 | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>NOTE(S): The UCR does not specify a minimum required interface for a CPE PSAP; therefore, the SUT can support one or more of the listed conditional interfaces. In the process of transitioning from TDM to IP, the product must comply with standard based legacy standards (i.e., ANSI, IEEE, and ETSI Standards) as applicable and the minimum required requirements for this product category per the UCR. Table 3 depicts the SUT high-level requirements. These high-level requirements refer to a more detailed list of requirements provided in Reference (c).</p> <p>LEGEND:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">ANSI American National Standards Institute</td> <td style="width: 50%;">IEEE Institute of Electrical and Electronics Engineers</td> </tr> <tr> <td>Base-X Megabit (Baseband Operation, Twisted Pair) Ethernet</td> <td>IP Internet Protocol</td> </tr> <tr> <td>BRI Basic Rate Interface</td> <td>ISDN Integrated Services Digital Network</td> </tr> <tr> <td>C Conditional</td> <td>ITU-T International Telecommunication Union - Telecommunication Standardization Sector</td> </tr> <tr> <td>CAMA Centralized Automatic Message Accounting</td> <td>PRI Primary Rate Interface</td> </tr> <tr> <td>CAS Channel Associated Signaling</td> <td>PSAP Public Safety Answering Point</td> </tr> <tr> <td>CPE Customer Premises Equipment</td> <td>SUT System Under Test</td> </tr> <tr> <td>CR Capability Requirement</td> <td>T1 Digital Transmission Link Level 1</td> </tr> <tr> <td>E1 European Basic Multiplex Rate</td> <td>TDM Time Division Multiplexing</td> </tr> <tr> <td>EIA Electronic Industries Alliance</td> <td>TIA Telecommunications Industry Association</td> </tr> <tr> <td>ETSI European Telecommunications Standards Institute</td> <td>UCR Unified Capabilities Requirements</td> </tr> <tr> <td>FR Functional Requirement</td> <td></td> </tr> </table> | | | | ANSI American National Standards Institute | IEEE Institute of Electrical and Electronics Engineers | Base-X Megabit (Baseband Operation, Twisted Pair) Ethernet | IP Internet Protocol | BRI Basic Rate Interface | ISDN Integrated Services Digital Network | C Conditional | ITU-T International Telecommunication Union - Telecommunication Standardization Sector | CAMA Centralized Automatic Message Accounting | PRI Primary Rate Interface | CAS Channel Associated Signaling | PSAP Public Safety Answering Point | CPE Customer Premises Equipment | SUT System Under Test | CR Capability Requirement | T1 Digital Transmission Link Level 1 | E1 European Basic Multiplex Rate | TDM Time Division Multiplexing | EIA Electronic Industries Alliance | TIA Telecommunications Industry Association | ETSI European Telecommunications Standards Institute | UCR Unified Capabilities Requirements | FR Functional Requirement | |
| ANSI American National Standards Institute | IEEE Institute of Electrical and Electronics Engineers | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Base-X Megabit (Baseband Operation, Twisted Pair) Ethernet | IP Internet Protocol | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BRI Basic Rate Interface | ISDN Integrated Services Digital Network | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C Conditional | ITU-T International Telecommunication Union - Telecommunication Standardization Sector | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAMA Centralized Automatic Message Accounting | PRI Primary Rate Interface | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAS Channel Associated Signaling | PSAP Public Safety Answering Point | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CPE Customer Premises Equipment | SUT System Under Test | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR Capability Requirement | T1 Digital Transmission Link Level 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E1 European Basic Multiplex Rate | TDM Time Division Multiplexing | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EIA Electronic Industries Alliance | TIA Telecommunications Industry Association | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ETSI European Telecommunications Standards Institute | UCR Unified Capabilities Requirements | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FR Functional Requirement | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Table 3. SUT Capability Requirements and Functional Requirements Status

| CR/FR ID | UCR Requirement (See note 1.) | UCR 2013 Reference | Status | | | | | | | | | | | | | | | | |
|--|------------------------------------|------------------------|-----------------------------------|----|------------------------|-----|-----------------------|------|------------------------------------|---|----------|----|------------------------|-----|-------------------|----|----------------|-----|-----------------------------------|
| 1 | Requirements (R) | 3.7.2 | Met | | | | | | | | | | | | | | | | |
| 2 | DSCP Tagging Requirements (R) | 7.2.3 | Met | | | | | | | | | | | | | | | | |
| 3 | Internet Protocol version 6 (R) | Section 5, Table 5.2-1 | Met (See note 2.) | | | | | | | | | | | | | | | | |
| <p>NOTE(S):</p> <p>1. The annotation of 'required' refers to a high-level requirement category. The applicability of each sub-requirement is provided in Reference (c).</p> <p>2. Internet Protocol version 6 met this requirement with the vendor's LoC.</p> <p>LEGEND:</p> <table> <tr> <td>CR</td> <td>Capability Requirement</td> <td>LoC</td> <td>Letters of Compliance</td> </tr> <tr> <td>DSCP</td> <td>Differentiated Services Code Point</td> <td>R</td> <td>Required</td> </tr> <tr> <td>FR</td> <td>Functional Requirement</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>ID</td> <td>Identification</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> </table> | | | | CR | Capability Requirement | LoC | Letters of Compliance | DSCP | Differentiated Services Code Point | R | Required | FR | Functional Requirement | SUT | System Under Test | ID | Identification | UCR | Unified Capabilities Requirements |
| CR | Capability Requirement | LoC | Letters of Compliance | | | | | | | | | | | | | | | | |
| DSCP | Differentiated Services Code Point | R | Required | | | | | | | | | | | | | | | | |
| FR | Functional Requirement | SUT | System Under Test | | | | | | | | | | | | | | | | |
| ID | Identification | UCR | Unified Capabilities Requirements | | | | | | | | | | | | | | | | |

Table 4. DoDIN APL Product and Certification Summary

| Product Identification | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---------------|--|-----|------------------------|------|---------------------------------------|------|--|----|-----------------|-------|---|-----|------------------------|----|--|-----|-----------------------------|----|-------------------|-----|---------------------------|
| Product Name | MicroAutomation, Omni911 | | | | | | | | | | | | | | | | | | | | | | |
| Software Release | Software Release 4.0 | | | | | | | | | | | | | | | | | | | | | | |
| DoDIN Product Type(s) | Customer Premises Equipment (CPE) Public Safety Answering Point (PSAP) | | | | | | | | | | | | | | | | | | | | | | |
| Product Description | NENA i3-compliant Next Generation 911 system with Command and Control functionality | | | | | | | | | | | | | | | | | | | | | | |
| Product Components (See note 1.) | Component Name (See Note 2.) | Version | Remarks | | | | | | | | | | | | | | | | | | | | |
| NG9-1-1 Controller | <u>Omni911 NG9-1-1 Controller System</u> | 4.0 | Media communications interface that hosts the E-911 service. | | | | | | | | | | | | | | | | | | | | |
| NG9-1-1 Call Taker/ Supervisor Interface | <u>Omni911 Call Taker Station</u> | 4.0 | SoftPhone Client for E-911, NG9-1-1, command and control functionality for Call Takers and Supervisors | | | | | | | | | | | | | | | | | | | | |
| Analog CAMA and PRI SIP Gateway | <u>Audio Codes Mediant 800</u> | 6.60A.336.004 | Converts legacy telephony interfaces (CAMA, PRI) to SIP. | | | | | | | | | | | | | | | | | | | | |
| <p>NOTE(S):</p> <p>1. The detailed component and subcomponent list is provided in Enclosure 3.</p> <p>2. Components bolded and underlined were tested by JITC. The other component in the family series was not tested; however, JITC certified the other components for joint use because they utilize the same software and similar hardware as tested components and JITC analysis determined they were functionally identical for interoperability certification purposes.</p> <p>LEGEND:</p> <table> <tr> <td>APL</td> <td>Approved Products List</td> <td>NENA</td> <td>National Emergency Number Association</td> </tr> <tr> <td>CAMA</td> <td>Centralized Automatic Message Accounting</td> <td>NG</td> <td>Next Generation</td> </tr> <tr> <td>DoDIN</td> <td>Department of Defense Information Network</td> <td>PRI</td> <td>Primary Rate Interface</td> </tr> <tr> <td>i3</td> <td>NENA Stage 3 Solution (IP to TDM connectivity)</td> <td>SIP</td> <td>Session Initiation Protocol</td> </tr> <tr> <td>IP</td> <td>Internet Protocol</td> <td>TDM</td> <td>Time Division Multiplexer</td> </tr> </table> | | | | APL | Approved Products List | NENA | National Emergency Number Association | CAMA | Centralized Automatic Message Accounting | NG | Next Generation | DoDIN | Department of Defense Information Network | PRI | Primary Rate Interface | i3 | NENA Stage 3 Solution (IP to TDM connectivity) | SIP | Session Initiation Protocol | IP | Internet Protocol | TDM | Time Division Multiplexer |
| APL | Approved Products List | NENA | National Emergency Number Association | | | | | | | | | | | | | | | | | | | | |
| CAMA | Centralized Automatic Message Accounting | NG | Next Generation | | | | | | | | | | | | | | | | | | | | |
| DoDIN | Department of Defense Information Network | PRI | Primary Rate Interface | | | | | | | | | | | | | | | | | | | | |
| i3 | NENA Stage 3 Solution (IP to TDM connectivity) | SIP | Session Initiation Protocol | | | | | | | | | | | | | | | | | | | | |
| IP | Internet Protocol | TDM | Time Division Multiplexer | | | | | | | | | | | | | | | | | | | | |

4. Test Details. This certification is based on interoperability testing, review of the vendor's Letters of Compliance (LoC), and the Defense Information System's Agency (DISA) Certifying Authority Recommendation for inclusion on the DoDIN APL. The JITC's Global Network Test Facility at Fort Huachuca, Arizona, conducted testing from 15 through 19 October 2018, using test procedures derived from Reference (c). Completed review of the vendor's LoC on 17 October 2018. JITC-led Cybersecurity (CS) test teams conducted CS testing and published the results in a separate report, Reference (d). 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.

JITC Memo, JTE, Joint Interoperability Certification of the MicroAutomation, Omni911, Software, Release 4.0

5. **Additional Information.** JITC distributes interoperability information via the JITC Electronic Report Distribution system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (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 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 <http://www.disa.mil/Network-Services/UCCO>.

6. **Point of Contact (POC).** JITC POC: Sibylle Gonzales; commercial telephone (520) 538-5483; DSN telephone 312-879-5483; FAX DSN 312-879-4347; e-mail address: sibylle.j.gonzales.civ@mail.mil; mailing address: Joint Interoperability Test Command, ATTN: JTE (Sibylle Gonzales) P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The APCO tracking number for the SUT is 1816501.

FOR THE COMMANDER:

4 Enclosures a/s

for RIC HARRISON
Chief
Networks/Communications &
DoDIN Capabilities Division

JITC Memo, JTE, Joint Interoperability Certification of the MicroAutomation, Omni911,
Software, Release 4.0

Distribution (electronic mail):

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ISG Secretariat, DISA, JT

U.S. Strategic Command, J665

US Navy, OPNAV N2/N6FP12

US Army, DA-OSA, CIO/G-6 ASA (ALT), SAIS-IOQ

US Air Force, SAF/CIO A6XA

US Marine Corps, MARCORSSYSCOM, SIAT, A&CE Division

US Coast Guard, CG-64

DISA/ISG REP

DIA, Office of the Acquisition Executive

NSG Interoperability Assessment Team

DOT&E, Netcentric Systems and Naval Warfare

Medical Health Systems, JMIS PEO T&IVV

HQUSAISEC, AMSEL-IE-IS

APCO

ADDITIONAL REFERENCES

- (c) Joint Interoperability Test Command, "Customer Premise Equipment Public Safety Answering Point (PSAP) Test Procedures Version 1.0 For Unified Capabilities Requirements (UCR) 2013 Change 2," 28 March 2018
- (d) Joint Interoperability Test Command, "Cybersecurity Assessment Report for MicroAutomation, Inc. Omni911 Software Release 4.0 Tracking Number 1816501," October 2018

CERTIFICATION SUMMARY

1. SYSTEM AND REQUIREMENTS IDENTIFICATION. The MicroAutomation, Omni911, Software, Release 4.0, 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 (U.S.) Air Force | | |
| Sponsor Point of Contact | James Conrad, U.S. Air Force Computer Aided Dispatch Administrator/GS-7 E-mail: james.j.conrad10.civ@mail.mil , Comm. 850-882-2242 | | |
| Vendor Point of Contact | Suresh Gursahaney, 5870 Trinity Parkway Suite 600, Centreville, Virginia 20120 E-mail: gursahaney@microautomation.com | | |
| System Name | Omni911 | | |
| Increment and/or Version | Release 4.0 | | |
| Product Category | Customer Premises Equipment (CPE) Public Safety Answering Point (PSAP) | | |
| System Background | | | |
| Previous certifications | None | | |
| Tracking | | | |
| APCO ID | 1816501 | | |
| System Tracking Program ID | 4762 | | |
| Requirements Source | | | |
| Unified Capabilities Requirements | Unified Capabilities Requirements (UCR) 2013, Change 2, Sections 3.7.2, 7.2.3, and 5 | | |
| Remarks | None | | |
| Test Organization(s) | JITC, FHU | | |
| LEGEND | | | |
| APCO | Approved Products Certification Office | ID | Identification |
| FHU | Fort Huachuca | JITC | Joint Interoperability Test Command |

2. SYSTEM DESCRIPTION. A wide variety of Customer Premises 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 (TDM)- 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 (ISDN) Network Termination 1 devices and 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 Public Safety Answering Point (PSAP) National Emergency Number Association (NENA) i3-compliant Next Generation 9-1-1 system with command and control

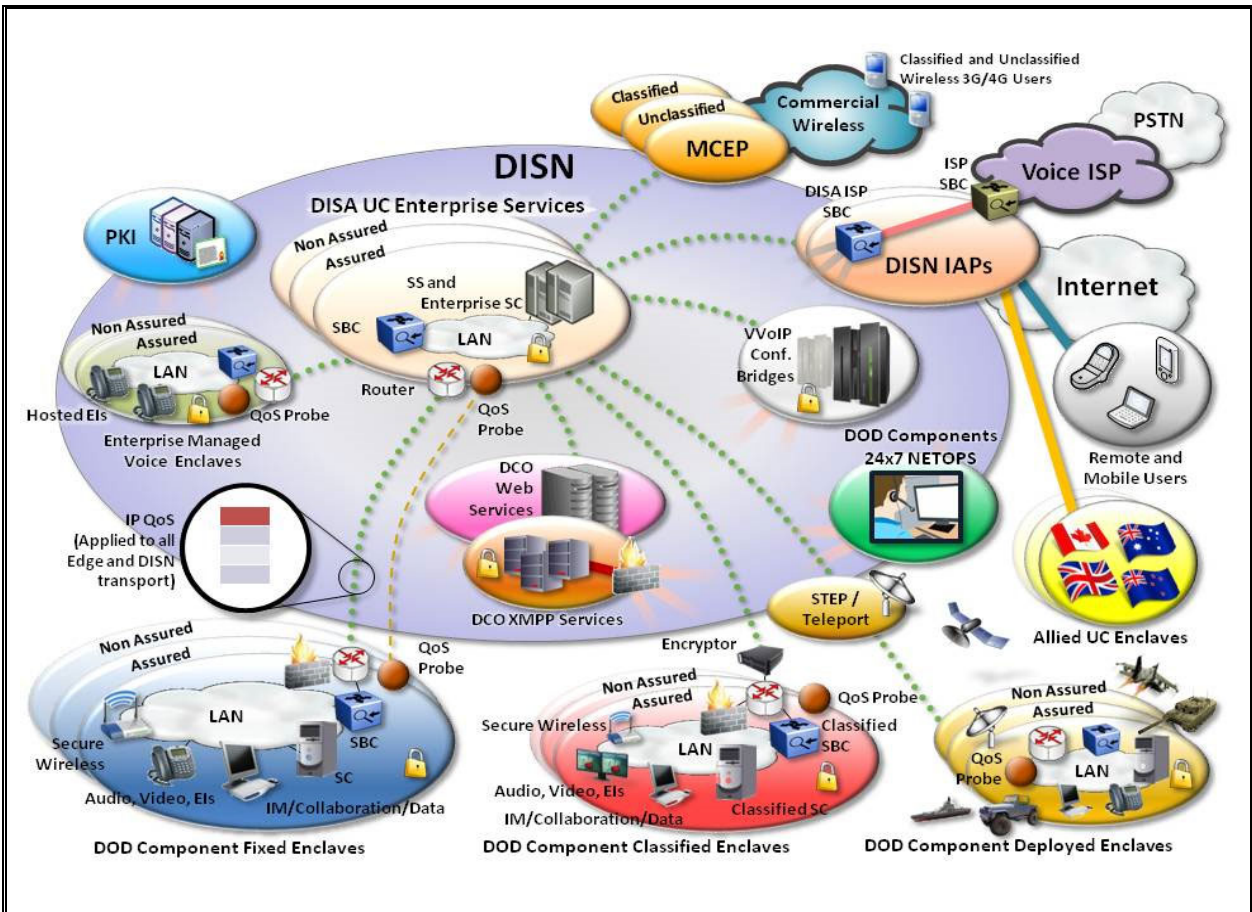
functionality. The Omni911 system is the heart of the Omni911 solution linking the telephone switch interface to the other Omni911 components. The Omni911 base system delivers call events and agent activity events to the appropriate components when calls are received and routed by the telephone switch.

The Omni Automatic Location Identification (ALI) Server performs ALI lookups when incoming calls are received. Call identification information is delivered to the Omni ALI database from the Omni911 Media Communications Server when an incoming call is received. Using the caller Automatic Number Identification (ANI), the Omni911 ALI Importer sends an ALI request to the ALI database over multiple connections. When the ALI is returned from the ALI Databases, the ALI information is forwarded, unchanged, to the call-taker workstations.

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 which type of switch can be used 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 conducted testing on the SUT at the Global Network Test Facility (GNTF), Fort Huachuca, Arizona, in a manner and configuration similar to that of the notional operational environment depicted in Figure 2-1. The test team verified the required functions and features of the SUT using the end-to-end test configuration depicted in Figure 2-2. The test team conducted interoperability testing of the SUT components by testing the SUT with different vendor DoDIN Approved Products List certified products. Cybersecurity (CS) testing used the same configuration.

5. METHODOLOGY. The GNTF conducted testing using the CPE PSAP requirements derived from the Unified Capabilities Requirements (UCR) 2013, Change 2, Reference (b), and CPE test procedures derived from Reference (c). 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 via a vendor Plan of Action and Milestones, which will address all new critical Test Discrepancy Reports within 120 days of identification.



LEGEND:

| | | | |
|-------|---|--------|--|
| Conf. | Conference | MCEP | Multi Carrier Entry Point |
| DCO | Defense Connection Online | NETOPS | Network Operations |
| DISA | Defense Information Systems Agency | PKI | Public Key Infrastructure |
| DISN | Defense Information Systems Network | PSTN | Public Switched Telephone Network |
| DoD | Department of Defense | QoS | Quality of Service |
| DoDIN | Department of Defense Information Network | SBC | Session Border Controller |
| EI | End Instrument | SC | Session Controller |
| IAP | Internet Access Point | SS | Softswitch |
| IM | Instant Messaging | STEP | Standardized Tactical Entry Point |
| IP | Internet Protocol | UC | Unified Capabilities |
| ISP | Internet Service Provider | VVoIP | Voice and Video over IP |
| LAN | Local Area Network | XMPP | Extensible Messaging and Presence Protocol |

Figure 2-1. Notional DoDIN Network Architecture

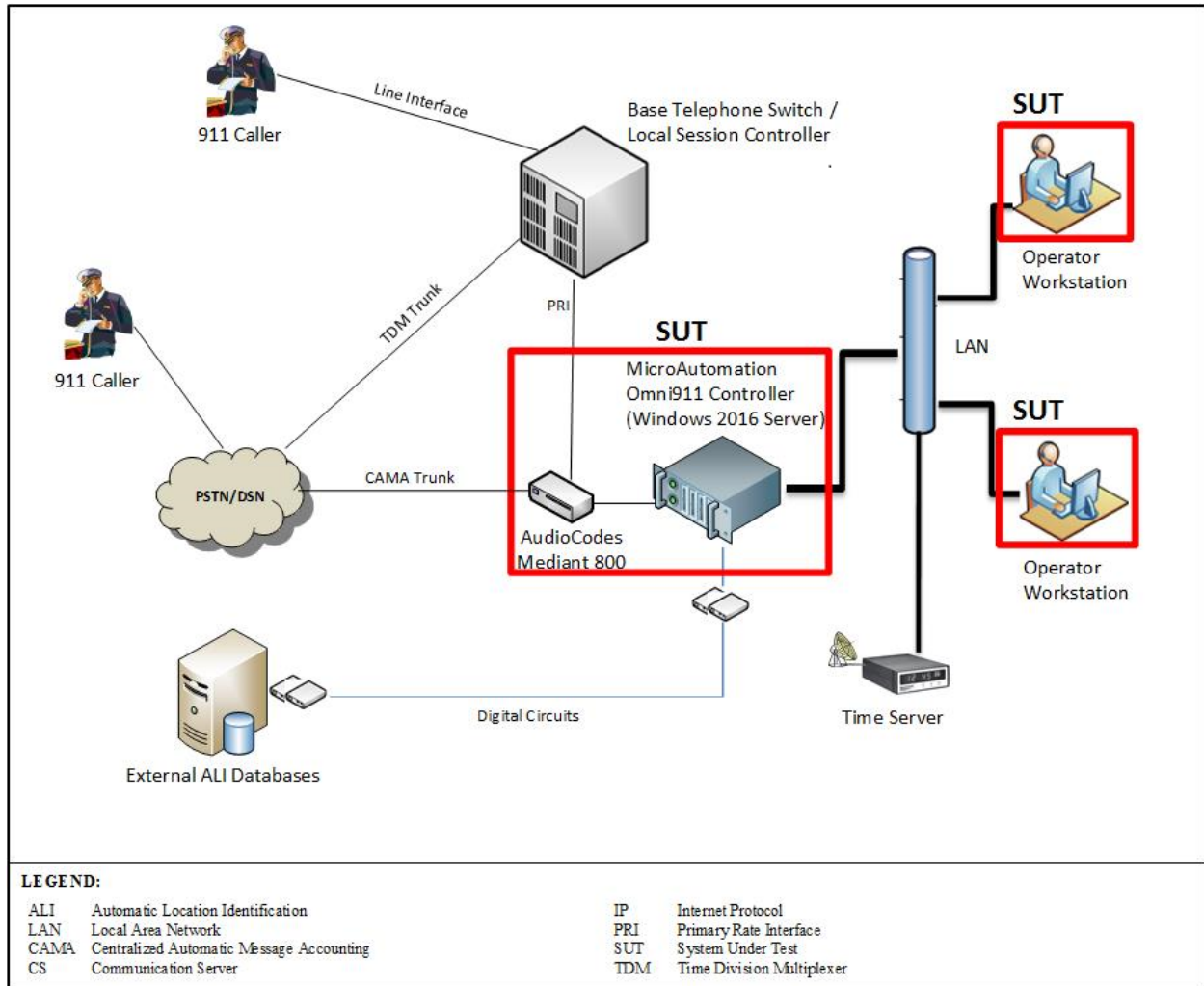


Figure 2-2. SUT Test Configuration

6. INTEROPERABILITY REQUIREMENTS, RESULTS, AND ANALYSIS. The interface, Capability Requirements, Functional Requirements, CS, and other requirements for the DoDIN CPE PSAP are established by UCR 2013, Change 2, Sections 3.7.2, 7.2.3, and 5.

a. Interface Requirements. The UCR 2013, Change 2, includes the following basic 911 requirements. The emergency services network that handles DoD and Public Switched Telephone Network 911 calls may be TDM- or IP-based. The E911 Management System may also support one or more proprietary or standardized signaling interfaces to the Unified Capabilities (UC) SC products. The SC and Softswitch may support E911 services for Voice over IP and TDM lines. When the local switching system is in an area with E911 served through a tandem switch, the emergency call is advanced to the tandem switch with calling line ANI or Calling Number Delivery.

1) Legacy Line/Trunk Interfaces. The SUT met the requirements for Digital Transmission Link Level 1 (T1) ISDN Primary Rate Interface and 2-wire analog Centralized Automatic Message Accounting (CAMA) Legacy Trunk Interfaces with testing.

2) IP Network Interfaces. The SUT met the IP Network Interface requirements with the Institute of Electrical and Electronics Engineers (IEEE) 10/100/1000BaseT interfaces with testing.

3) Network Management Interfaces. The SUT met the Network Management Interface requirements with IEEE 10/100/1000BaseT interfaces with testing.

b. Capability and Functional Requirements

1) The UCR 2013, Change 2, 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 UCR 2013 Change 2, Section 2.25.2, MLPP, and shall not affect the DSN interface features and functions associated with line supervision and control. The SUT does not support this conditional requirement; therefore, it is not included in the certification.

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 this requirement with the vendor's Letters of Compliance (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 UCR 2013 Change 2, Section 2.25.2, MLPP, before "answer" supervision is provided. When a call is received at the SUT above the number of attendants already in call state, the call is placed on hold. The SUT does not support this conditional requirement; therefore, it is not included in the certification.

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 UCR 2013 Change 2, Section 2.9.1.2.1, UC Ringing Tones, Cadences, and Information Signals. The SUT does not support this conditional requirement; therefore, it is not included in the certification.

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 (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 requirement with the 2-wire CAMA interface with testing.

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; therefore, it is not included in the certification.

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; therefore, it is not included in the certification.

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. The SUT met this requirement with an IEEE 802.3-2002 interface with testing.

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

- a. ITU- Telecommunication Standardization Sector (T) Recommendation V.35.
- b. Telecommunications Industry Association (TIA)-232-F.
- c. Electronic Industries Alliance (EIA)-449-1.
- d. TIA-530-A.

2. Ethernet interfaces shall be in accordance with IEEE 802.3-2002.

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. The SUT met this requirement with testing and the vendor's LoC.

2) The UCR 2013, Change 2, Section 7.2.3, states the product shall support the Differentiated Services Code Point (DSCP) plan, as shown in Table 7.2-3, DSCP Assignments. Differentiated Services 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. The SUT met this requirement with testing.

3) The UCR 2013, Change 2, Section 5, Table 5.2-1, states that if a CPE supports IP interfaces, then the CPE shall support the Internet Protocol version 6 (IPv6) requirements as defined for Network Appliance/Simple Server in UCR Section 5, IPv6. The SUT met this requirement with 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. JITC did not have the capability to test the SUT with an actual 2-wire analog CAMA trunk to a legacy switching system. Instead, a 2-wire analog CAMA trunk simulator was used. Due to the maturity of this legacy interface, JITC determined this as a low risk for interoperability purposes.

8. CONCLUSION(S). The SUT meets the critical interoperability requirements for a CPE PSAP 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.) | Applicability | Status | Remarks | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|------------|--|--|--|--|--------------------------|------------------------------|--|-------------------|---|---|--------------------------------|--------------------------------------|--|-------------------------------------|---------------------------|-------------------------------|--|--------------------------------------|------------------------------------|--|---|--|---|-------------------------------|--|
| Legacy Line/Trunk Interfaces | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-/4-Wire Analog | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-Wire CAMA Trunk | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| ISDN BRI | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| Proprietary Digital | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| T1 ISDN PRI | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| E1 ISDN PRI | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| T1 CAS | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| E1 CAS | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| IP Network Interfaces | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10Base-X | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| 100Base-X | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| 1000Base-X | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| Network Management Interfaces | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ITU-T Recommendation V.35 | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| TIA-232-F | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| EIA-449-1 | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| TIA-530-A | C | Not Tested | The SUT does not support this conditional interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| IEEE 802.3-2002 | C | Met | The SUT met the critical CRs and FRs for this interface. | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>NOTE(S): The UCR does not specify a minimum required interface for a CPE PSAP; therefore, the SUT can support one or more of the listed conditional interfaces. In the process of transitioning from TDM to IP, the product must comply with standard based legacy standards (i.e., ANSI, IEEE, and ETSI Standards) as applicable and the minimum required requirements for this product category per the UCR. Table 3 depicts the SUT high-level requirements. These high-level requirements refer to a more detailed list of requirements provided in Reference (c).</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>LEGEND:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">ANSI American National Standards Institute</td> <td style="width: 50%;">IEEE Institute of Electrical and Electronics Engineers</td> </tr> <tr> <td>Base-X Megabit (Baseband Operation, Twisted Pair) Ethernet</td> <td>IP Internet Protocol</td> </tr> <tr> <td>BRI Basic Rate Interface</td> <td>ISDN Integrated Services Digital Network</td> </tr> <tr> <td>C Conditional</td> <td>ITU-T International Telecommunication Union - Telecommunication Standardization Sector</td> </tr> <tr> <td>CAMA Centralized Automatic Message Accounting</td> <td>PRI Primary Rate Interface</td> </tr> <tr> <td>CAS Channel Associated Signaling</td> <td>PSAP Public Safety Answering Point</td> </tr> <tr> <td>CPE Customer Premises Equipment</td> <td>SUT System Under Test</td> </tr> <tr> <td>CR Capability Requirement</td> <td>T1 Digital Transmission Link Level 1</td> </tr> <tr> <td>E1 European Basic Multiplex Rate</td> <td>TDM Time Division Multiplexing</td> </tr> <tr> <td>EIA Electronic Industries Alliance</td> <td>TIA Telecommunications Industry Association</td> </tr> <tr> <td>ETSI European Telecommunications Standards Institute</td> <td>UCR Unified Capabilities Requirements</td> </tr> <tr> <td>FR Functional Requirement</td> <td></td> </tr> </table> | | | | ANSI American National Standards Institute | IEEE Institute of Electrical and Electronics Engineers | Base-X Megabit (Baseband Operation, Twisted Pair) Ethernet | IP Internet Protocol | BRI Basic Rate Interface | ISDN Integrated Services Digital Network | C Conditional | ITU-T International Telecommunication Union - Telecommunication Standardization Sector | CAMA Centralized Automatic Message Accounting | PRI Primary Rate Interface | CAS Channel Associated Signaling | PSAP Public Safety Answering Point | CPE Customer Premises Equipment | SUT System Under Test | CR Capability Requirement | T1 Digital Transmission Link Level 1 | E1 European Basic Multiplex Rate | TDM Time Division Multiplexing | EIA Electronic Industries Alliance | TIA Telecommunications Industry Association | ETSI European Telecommunications Standards Institute | UCR Unified Capabilities Requirements | FR Functional Requirement | |
| ANSI American National Standards Institute | IEEE Institute of Electrical and Electronics Engineers | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Base-X Megabit (Baseband Operation, Twisted Pair) Ethernet | IP Internet Protocol | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BRI Basic Rate Interface | ISDN Integrated Services Digital Network | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C Conditional | ITU-T International Telecommunication Union - Telecommunication Standardization Sector | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAMA Centralized Automatic Message Accounting | PRI Primary Rate Interface | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAS Channel Associated Signaling | PSAP Public Safety Answering Point | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CPE Customer Premises Equipment | SUT System Under Test | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CR Capability Requirement | T1 Digital Transmission Link Level 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E1 European Basic Multiplex Rate | TDM Time Division Multiplexing | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EIA Electronic Industries Alliance | TIA Telecommunications Industry Association | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ETSI European Telecommunications Standards Institute | UCR Unified Capabilities Requirements | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FR Functional Requirement | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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

| CR/FR ID | UCR Requirement (See note 1.) | UCR 2013 Reference | Status | | | | | | | | | | | | | | | | |
|--|------------------------------------|------------------------|-----------------------------------|----|------------------------|-----|-----------------------|------|------------------------------------|---|----------|----|------------------------|-----|-------------------|----|----------------|-----|-----------------------------------|
| 1 | Requirements (R) | 3.7.2 | Met | | | | | | | | | | | | | | | | |
| 2 | DSCP Tagging Requirements (R) | 7.2.3 | Met | | | | | | | | | | | | | | | | |
| 3 | Internet Protocol version 6 (R) | Section 5, Table 5.2-1 | Met (See note 2.) | | | | | | | | | | | | | | | | |
| <p>NOTE(S): 1. The annotation of ‘required’ refers to a high-level requirement category. The applicability of each sub-requirement is provided in Reference (c). 2. Internet Protocol version 6 met this requirement with the vendor’s LoC.</p> <p>LEGEND:</p> <table> <tr> <td>CR</td> <td>Capability Requirement</td> <td>LoC</td> <td>Letters of Compliance</td> </tr> <tr> <td>DSCP</td> <td>Differentiated Services Code Point</td> <td>R</td> <td>Required</td> </tr> <tr> <td>FR</td> <td>Functional Requirement</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>ID</td> <td>Identification</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> </table> | | | | CR | Capability Requirement | LoC | Letters of Compliance | DSCP | Differentiated Services Code Point | R | Required | FR | Functional Requirement | SUT | System Under Test | ID | Identification | UCR | Unified Capabilities Requirements |
| CR | Capability Requirement | LoC | Letters of Compliance | | | | | | | | | | | | | | | | |
| DSCP | Differentiated Services Code Point | R | Required | | | | | | | | | | | | | | | | |
| FR | Functional Requirement | SUT | System Under Test | | | | | | | | | | | | | | | | |
| ID | Identification | UCR | Unified Capabilities Requirements | | | | | | | | | | | | | | | | |

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

| Component (See note.) | Release | Sub-component | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--------------------------------------|---|-----|-----------------------------------|-----|------------------------|------|--|------|-----------------------------------|-----|-----------------------------------|-----|-----------------------------|----|-------------------|-----|-----------------------|------|-------------------------------------|-----|---------------------------|-----|----------------|-----|-------------------|----|-----------------|--|--|
| <u>Omni911 NG9-1-1 Controller System</u> | 4.0 | Omni911 IP Switching System | Media communications interface | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Omni911 Communications Server | Omni911 Controller Service | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Omni911 ALI Server | Automatic Location Identification Service | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Omni911 SMS Gateway | Text Messaging Gateway Service | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Omni911 Mapping Server | GIS Mapping Service | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Omni911 Reporting | Reporting Service (Real-time & Historical) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Omni911 Administrator | Omni911 Administration Utility | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Omni911 ALI Importer | ALI Import Utility | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>Dell Server</u> | Microsoft Server 2016 Standard | Microsoft SQL Server SQL Server 2016 | Relational Database | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>Omni911 Call Taker Station</u> | 4.0 1.8.2.18287 | Omni911 Call Taker SoftPhone | SoftPhone Client for E-911, NG9-1-1, command and control functionality for Call Takers and Supervisors. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>Mediant 800</u> | 6.60A.336.004 | AudioCodes gateway appliance | Converts legacy telephony interfaces (CAMA, PRI) to SIP | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>Dell Laptop</u> | Windows 10 | Omni911 Call Taker Application | Site Provided | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>DigiSmart</u> | 4300-RT | N/A | PSTN CAMA simulator (E911 Trunk Simulator) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>NOTE(S): Components bolded and underlined were tested by JITC. The other components in the family series were not tested; however, JITC certified the other components for joint use because they utilize the same software and similar hardware as tested components and JITC analysis determined there were functionally identical for interoperability certification purposes.</p> <p>LEGEND:</p> <table> <tr> <td>ALI</td> <td>Automatic Location Identification</td> <td>PRI</td> <td>Primary Rate Interface</td> </tr> <tr> <td>CAMA</td> <td>Centralized Automatic Messaging Accounting</td> <td>PSTN</td> <td>Public Switched Telephone Network</td> </tr> <tr> <td>GIS</td> <td>Geographical Information Services</td> <td>SIP</td> <td>Session Initiation Protocol</td> </tr> <tr> <td>IP</td> <td>Internet Protocol</td> <td>SMS</td> <td>Short Message Service</td> </tr> <tr> <td>JITC</td> <td>Joint Interoperability Test Command</td> <td>SQL</td> <td>Structured Query Language</td> </tr> <tr> <td>N/A</td> <td>Not Applicable</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>NG</td> <td>Next Generation</td> <td></td> <td></td> </tr> </table> | | | | ALI | Automatic Location Identification | PRI | Primary Rate Interface | CAMA | Centralized Automatic Messaging Accounting | PSTN | Public Switched Telephone Network | GIS | Geographical Information Services | SIP | Session Initiation Protocol | IP | Internet Protocol | SMS | Short Message Service | JITC | Joint Interoperability Test Command | SQL | Structured Query Language | N/A | Not Applicable | SUT | System Under Test | NG | Next Generation | | |
| ALI | Automatic Location Identification | PRI | Primary Rate Interface | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAMA | Centralized Automatic Messaging Accounting | PSTN | Public Switched Telephone Network | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GIS | Geographical Information Services | SIP | Session Initiation Protocol | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IP | Internet Protocol | SMS | Short Message Service | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JITC | Joint Interoperability Test Command | SQL | Structured Query Language | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N/A | Not Applicable | SUT | System Under Test | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NG | Next Generation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

