



DEFENSE INFORMATION SYSTEMS AGENCY

P. O. BOX 4502
ARLINGTON, VIRGINIA 22204-4502

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

26 Oct 09

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of RedSky Technologies, Inc., Cielo Enhanced 911 (E911) Manager with Software Release 5.5.10

References: (a) DoD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01D, "Interoperability and Supportability of Information Technology and National Security Systems," 8 March 2006
(c) through (e), see Enclosure 1

1. References (a) and (b) establish the Defense Information Systems Agency, Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.

2. RedSky Technologies Inc., Cielo E911 Manager with Software Release 5.5.10 is hereinafter referred to as the System Under Test (SUT). The SUT meets the interface and functional requirements and is certified for joint use within the Defense Switched Network (DSN). The SUT was tested and is certified specifically with the Avaya S8720 digital switching systems and is certified with all S8720 versions listed on the Unified Capabilities (UC) Approved Products List (APL). The Avaya S8700 and S8710 employ the same software and hardware as the Avaya S8720. Analysis by JITC determined that the S8700 and S8710 are functionally identical to the S8720 for interoperability certification purposes, and the SUT is also certified for joint use within the DSN with all software versions of the Avaya S8700 and S8710 listed on the UC APL. The SUT met the interface and functional requirements for customer premise equipment devices set forth in appendix 7 of Reference (c). Testing was conducted using test procedures derived from Reference (d). This certification expires upon changes that affect interoperability, but no later than three years from the date of this memorandum.

3. This finding is based on interoperability testing conducted by JITC, and Defense Information Assurance (IA)/Security Accreditation Working Group (DSAWG) accreditation. Interoperability testing was conducted by JITC at the Global Information Grid Network Test Facility, Fort Huachuca, Arizona, on 14 and 15 June 2009. DSAWG grants accreditation based on the security testing completed by DISA-led Information Assurance test teams and published in a separate report (Reference (e)). DSAWG accreditation was granted on 19 October 2009. The Certification Testing Summary (Enclosure 2) documents the test results and describes the test configuration.

4. The Functional Requirements used to evaluate the interoperability of the SUT and the interoperability statuses are indicated in Table 1.

Table 1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Requirements Required or Conditional	Status	UCR Reference																												
IEEE 802.3u (100BaseT)	No ¹	Yes	Configuration Management (C)	Met	Sec 5.2.8.4																												
	Yes	See note 2.	Security (R)	See note 2.	Sec 3.2.3																												
<p>NOTES:</p> <p>1 The CPE Network Management interface can be met with one of the following interfaces: ITU-T X.25, IEEE 802.3, or Serial.</p> <p>2 Information assurance testing is accomplished via DISA-led Information Assurance test teams and published in a separate report, Reference (e).</p> <p>LEGEND:</p> <table> <tr> <td>802.3u</td> <td>IEEE standard for carrier sense multiple access with collision detection at 100 Mbps</td> <td>Mbps</td> <td>Megabits per second</td> </tr> <tr> <td>100BaseT</td> <td>100 Mbps (Baseband Operation, Twisted Pair) Ethernet</td> <td>R</td> <td>Required</td> </tr> <tr> <td>C</td> <td>Conditional</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>CPE</td> <td>Customer Premise Equipment</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> <tr> <td>DISA</td> <td>Defense Information Systems Agency</td> <td>X.25</td> <td>Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit</td> </tr> <tr> <td>IEEE</td> <td>Institute of Electrical and Electronics Engineers</td> <td></td> <td></td> </tr> <tr> <td>ITU-T</td> <td>International Telecommunication Union - Telecommunication Standardization Sector</td> <td></td> <td></td> </tr> </table>						802.3u	IEEE standard for carrier sense multiple access with collision detection at 100 Mbps	Mbps	Megabits per second	100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet	R	Required	C	Conditional	SUT	System Under Test	CPE	Customer Premise Equipment	UCR	Unified Capabilities Requirements	DISA	Defense Information Systems Agency	X.25	Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit	IEEE	Institute of Electrical and Electronics Engineers			ITU-T	International Telecommunication Union - Telecommunication Standardization Sector		
802.3u	IEEE standard for carrier sense multiple access with collision detection at 100 Mbps	Mbps	Megabits per second																														
100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet	R	Required																														
C	Conditional	SUT	System Under Test																														
CPE	Customer Premise Equipment	UCR	Unified Capabilities Requirements																														
DISA	Defense Information Systems Agency	X.25	Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit																														
IEEE	Institute of Electrical and Electronics Engineers																																
ITU-T	International Telecommunication Union - Telecommunication Standardization Sector																																

5. No detailed test report was developed in accordance with the Program Manager’s request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) System, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125> (SIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.

6. The JITC point of contact is Mr. Cary Hogan, DSN 879-2589, commercial (520) 538-2589, FAX DSN 879-4347, or e-mail to cary.hogan@disa.mil. The JITC’s mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 0910601.

FOR THE COMMANDER:



for RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

2 Enclosures a/s

JITC Memo, JTE, Special Interoperability Test Certification of the RedSky Technologies, Inc.,
Enhanced 911 (E911) Manager with Software Release 5.5.10

Distribution (electronic mail):

Joint Staff J-6

Joint Interoperability Test Command, Liaison, TE3/JT1

Office of Chief of Naval Operations, CNO N6F2

Headquarters U.S. Air Force, Office of Warfighting Integration & CIO, AF/XCIN (A6N)

Department of the Army, Office of the Secretary of the Army, DA-OSA CIO/G-6 ASA (ALT),
SAIS-IOQ

U.S. Marine Corps MARCORSSYSCOM, SIAT, MJI Division I

DOT&E, Net-Centric Systems and Naval Warfare

U.S. Coast Guard, CG-64

Defense Intelligence Agency

National Security Agency, DT

Defense Information Systems Agency, TEMC

Office of Assistant Secretary of Defense (NII)/DOD CIO

U.S. Joint Forces Command, Net-Centric Integration, Communication, and Capabilities
Division, J68

Defense Information Systems Agency, GS23

ADDITIONAL REFERENCES

- (c) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008," 22 January 2009
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006
- (e) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of RedSky Enhanced 911 (E911) Manager Software Release 5.5.10 (Tracking Number 0910601)," 19 October 2009

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. RedSky Technologies, Inc., Cielo Enhanced 911 (E911) Manager with Software Release 5.0; hereinafter referred to as the System Under Test (SUT).

2. PROPONENT. Joint Special Operations Command (JSOC).

3. PROGRAM MANAGER. Larry Bowers, Chief, Media Services, YA2, Post Office Box 70239, Fort Bragg, North Carolina, 28307, e-mail: bowers@jdi.socom.mil.

4. TESTER. Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.

5. SYSTEM UNDER TEST DESCRIPTION. The SUT is a server running a software application that automates the E911 process for the enterprise. The E911 manager server connects to the Avaya S8700, S8710, or S8720 Small End Office (SMEO) switches to provide services across multiple facilities regardless of geographic boundaries or systematic parameters. The steps shown below depict the SUT process and how it interacts with the E911 Public Safety Answer Point (PSAP).

- The telecomm administrator performs moves, adds, and changes in the SMEO switch(es) to include building, floor, and room identification.

- The SUT makes a software call using either a modem or via the network to the Avaya switch and downloads the station location information and extension to Direct Inward Dialing (DID) mapping. This is performed by the system administrator or scheduled to run automatically.

- The SUT then takes the station location information and formats it into an Emergency Location Identification Number (ELIN) using the extension to DID mapping method from the Avaya switch. The extension location information is also formatted into Emergency Response Location (ERL) information and associated to the ELIN corresponding to that extension.

- The SUT dials out via modem to the Regional Bell Operating Company (RBOC) Gateway (E911 Database Provider) and transfers the formatted file for verification.

- The RBOC Gateway E911 Database Provider passes, via a dedicated connection, the formatted file to the Regional E911 Database to be verified. The Regional E911 Database is responsible for maintaining the Master RBOC Automatic Location Identifier (ALI) database and updates the local PSAP database with any ELIN and ERL changes.

- The RBOC Gateway receives the ELIN and ERL records. It verifies the format and cycle counter and checks for file errors.

6. OPERATIONAL ARCHITECTURE. The Generic Switching Center Requirements (GSCR) Defense Switched Network (DSN) architecture in Figure 2-1 depicts the relationship of the SUT to the DSN switches.

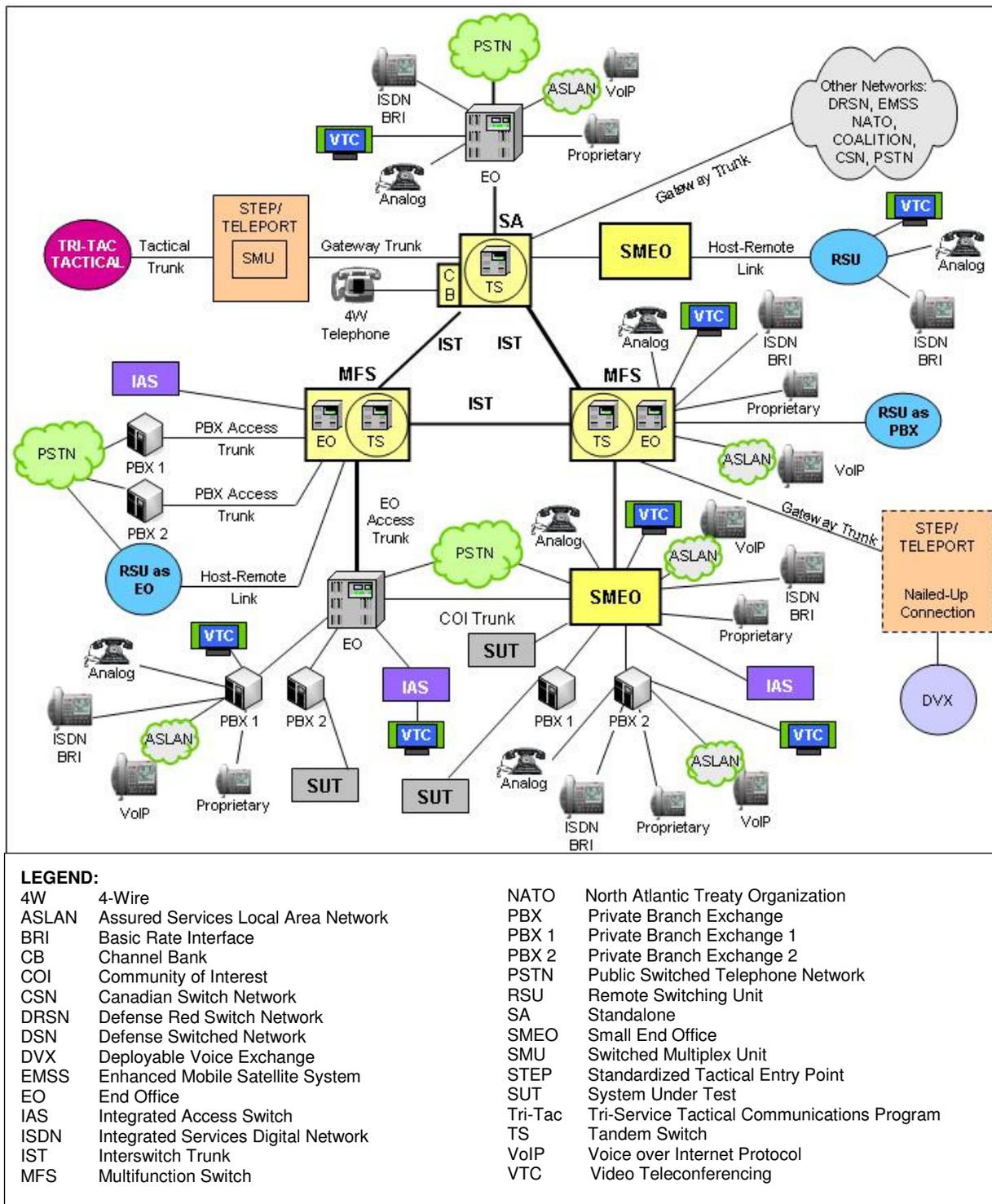


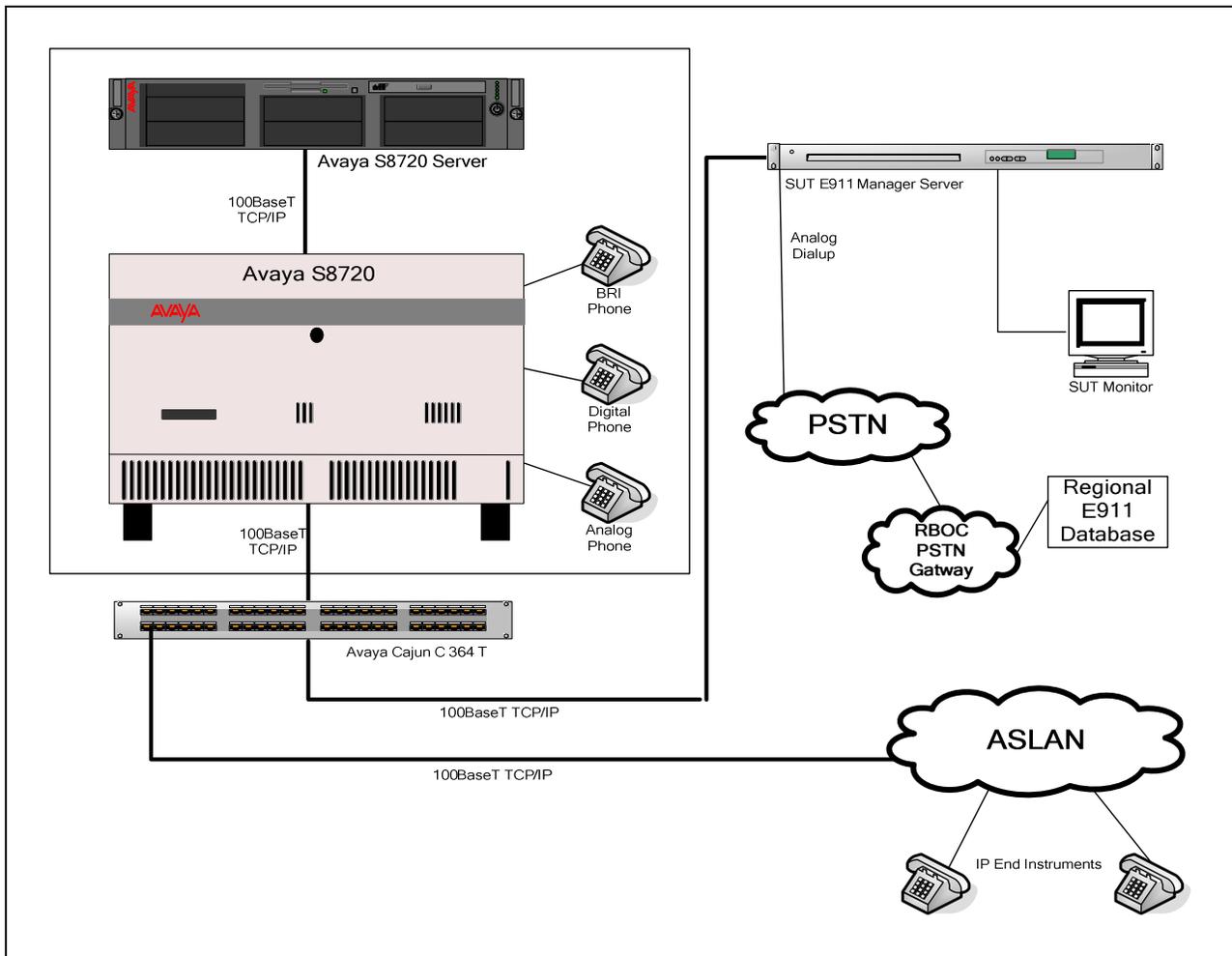
Figure 2-1. DSN Architecture

7. REQUIRED SYSTEM INTERFACES. Requirements specific to the SUT and interoperability results are listed in Table 2-1. These requirements are derived from GSCR Interface and Functional Requirements (FRs) verified through JITC testing.

Table 2-1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Requirements Required or Conditional	Status	UCR Reference																												
IEEE 802.3u (100BaseT)	No ¹	Yes	Configuration Management (C)	Met	Sec 5.2.8.4																												
	Yes	See note 2.	Security (R)	See note 2.	Sec 3.2.3																												
<p>NOTES:</p> <p>1 The CPE Network Management interface can be met with one of the following interfaces: ITU-T X.25, IEEE 802.3, or Serial.</p> <p>2 Information assurance testing is accomplished via DISA-led Information Assurance test teams and published in a separate report, Reference (e).</p> <p>LEGEND:</p> <table border="0"> <tr> <td>802.3u</td> <td>IEEE standard for carrier sense multiple access with collision detection at 100 Mbps</td> <td>Mbps</td> <td>Megabits per second</td> </tr> <tr> <td>100BaseT</td> <td>100 Mbps (Baseband Operation, Twisted Pair) Ethernet</td> <td>R</td> <td>Required</td> </tr> <tr> <td>C</td> <td>Conditional</td> <td>SUT</td> <td>System Under Test</td> </tr> <tr> <td>CPE</td> <td>Customer Premise Equipment</td> <td>UCR</td> <td>Unified Capabilities Requirements</td> </tr> <tr> <td>DISA</td> <td>Defense Information Systems Agency</td> <td>X.25</td> <td>Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit</td> </tr> <tr> <td>IEEE</td> <td>Institute of Electrical and Electronics Engineers</td> <td></td> <td></td> </tr> <tr> <td>ITU-T</td> <td>International Telecommunication Union - Telecommunication Standardization Sector</td> <td></td> <td></td> </tr> </table>						802.3u	IEEE standard for carrier sense multiple access with collision detection at 100 Mbps	Mbps	Megabits per second	100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet	R	Required	C	Conditional	SUT	System Under Test	CPE	Customer Premise Equipment	UCR	Unified Capabilities Requirements	DISA	Defense Information Systems Agency	X.25	Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit	IEEE	Institute of Electrical and Electronics Engineers			ITU-T	International Telecommunication Union - Telecommunication Standardization Sector		
802.3u	IEEE standard for carrier sense multiple access with collision detection at 100 Mbps	Mbps	Megabits per second																														
100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet	R	Required																														
C	Conditional	SUT	System Under Test																														
CPE	Customer Premise Equipment	UCR	Unified Capabilities Requirements																														
DISA	Defense Information Systems Agency	X.25	Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit																														
IEEE	Institute of Electrical and Electronics Engineers																																
ITU-T	International Telecommunication Union - Telecommunication Standardization Sector																																

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC’s Global Information Grid Network Test Facility in a manner and configuration similar to that of the DSN operational environment. The test configuration depicted in Figure 2-2 was used to test the system’s interface functions and features.



NOTE: The RBOC Gateway E911 Database Provider passes, via a dedicated connection, the formatted file to the Regional E911 Database to be verified. The Regional E911 Database is responsible for maintaining the Master RBOC ALI database and updates the local PSAP database with any ELIN and ERL changes.

LEGEND:

100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet	IP	Internet Protocol
2W	2-Wire	Mbps	Megabits per second
ALI	Automatic Location Identification	PSAP	Public Safety Awareness Point
ASLAN	Assured Services Local Area Network	PSTN	Public Switched Telephone Network
E911	Enhanced 911	RBOC	Regional Bell Operating Company
ELIN	Emergency Location Identification Number	SUT	System Under Test
ERL	Emergency Response Location	TCP/IP	Transmission Control Protocol/Internet Protocol

Figure 2-2. SUT Test Configuration

9. SYSTEM CONFIGURATIONS. Table 2-3 provides the system configurations, hardware, and software components tested with the SUT. The SUT was tested in an operationally realistic environment to determine interoperability with a complement of DSN switches noted in Table 2-3. Table 2-3 lists the DSN switches which depict the tested configuration and is not intended to identify the only switches that are certified with the SUT. The SUT is certified specifically with the Avaya S8700, S8710, and

S8720 Small End Office (SMEO) switches which are on the Unified Capabilities (UC) Approved Products List (APL).

Table 2-3. Tested System Configurations

System Name	Software Release													
Avaya S8720	CM 4.0 (R014x.00.2.731.7: Super Patch 14419)													
SUT	Hardware	Software/Firmware												
	<ul style="list-style-type: none"> - Dell PowerEdge SC1425 - Pentium IV, 2.8 GHz - 2 GB RAM - 160 GB Hard Drive - Ethernet Card (Etherlink P/N: 3C900-TPO) 	Windows 2003 Member Server (SP2) running IIS 6 and the E911 Manager 5.510												
<p>NOTE: The SUT was tested and is certified specifically with the Avaya S8720 digital switching systems and is certified with all S8720 versions listed on the UC APL. The Avaya S8700 and S8710 employ the same software and hardware as the Avaya S8720. Analysis by JITC determined that the S8700 and S8710 are functionally identical to the S8720 for interoperability certification purposes, and the SUT is also certified for joint use within the DSN with all software versions of the Avaya S8700 and S8710 listed on the UC APL.</p> <p>LEGEND:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">APL Approved Products List</td> <td style="width: 50%;">P/N Part Number</td> </tr> <tr> <td>CM Communication Manager</td> <td>RAM Random Access Memory</td> </tr> <tr> <td>E911 Enhanced 911</td> <td>SP Service Pack</td> </tr> <tr> <td>GB Gigabyte</td> <td>SUT System Under Test</td> </tr> <tr> <td>GHz GigaHertz</td> <td>UC Unified Capabilities</td> </tr> <tr> <td>IIS Internet Information Server</td> <td></td> </tr> </table>			APL Approved Products List	P/N Part Number	CM Communication Manager	RAM Random Access Memory	E911 Enhanced 911	SP Service Pack	GB Gigabyte	SUT System Under Test	GHz GigaHertz	UC Unified Capabilities	IIS Internet Information Server	
APL Approved Products List	P/N Part Number													
CM Communication Manager	RAM Random Access Memory													
E911 Enhanced 911	SP Service Pack													
GB Gigabyte	SUT System Under Test													
GHz GigaHertz	UC Unified Capabilities													
IIS Internet Information Server														

10. TEST LIMITATIONS. None.

11. TEST RESULTS

a. Discussion. The SUT met all CRs and FRs with the Institute of Electrical and Electronics Engineers (IEEE) 802.3 100BaseT interface.

(1) The SUT was tested in the test configuration depicted in Figure 2-2. The SUT was configured to automatically establish a connection via the Transmission Control Protocol/Internet Protocol (TCP/IP) interface and retrieve line information from the Avaya S8720 SMEO switch. The SUT successfully imported the station location information and extension to DID mapping. The SUT then took the station location information from the Avaya switches and formatted it into an ELIN using the extension to DID mapping method. The extension location information was then successfully formatted into ERL information and associated to the ELIN corresponding to that extension.

(2) The SUT would then dial out via a modem to the RBOC PSTN Gateway (E911 Database Provider) and transfer the formatted file for verification. The RBOC PSTN Gateway E911 Database Provider would pass the formatted file, via a dedicated connection, to the Regional E911 Database to be verified. This functionality was not tested; because it has no impact on the interoperability certification test results captured via the TCP/IP interface to the Avaya switches.

(3) Security is tested and met by DISA-led Information Assurance test teams and is published in a separate report, Reference (e).

b. Test Summary. The SUT met the critical interoperability requirements for a customer premise device for the interface shown in Table 2-1, as set forth in Reference (c), and is certified for joint use within the DSN specifically with the Avaya S8700, S8710, and S8720 SMEO switches which are on the UC APL.

12. TESTS AND ANALYSIS REPORT. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125> (SIPRNet). Information related to DSN testing is on the TSSI website at <http://jitc.fhu.disa.mil/tssi>.