



## DEFENSE INFORMATION SYSTEMS AGENCY

JOINT INTEROPERABILITY TEST COMMAND

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IN REPLY  
REFER TO: Networks and Transport Division (JTE)

22 September 2004

### MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of eOn Communications Corporation eQueue-Defense Switched Network (DSN) Digital Switching System with Software Release V5.02.00-DSN10

References: (a) DOD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004  
(b) CJCSI 6212.01C, "Interoperability and Supportability of Information Technology and National Security Systems," 20 November 2003

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification. Additional references are provided in enclosure 1.

2. The eOn Communications Corporation's eQueue-DSN Switching System with Software Release V5.02.00-DSN10, hereinafter referred to as the system under test (SUT), meets all of its critical interoperability requirements and it is certified for joint use within the DSN. This certification does not cover the eOn eQueue or eOn Millennium switching systems as individual switching platforms. The SUT meets Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) interface requirements by using the eOn Millennium Digital Switching System with software release V2.10.096 as a subcomponent. Special software was developed for the eOn Millennium Digital Switching System to allow required ISDN BRI interfaces only. All other interfaces (i.e., 2-wire analog, 2-wire digital proprietary, and ISDN Primary Rate Interface (PRI) T1) are not configurable on the eOn Millennium and must be interfaced on the eOn eQueue-DSN. The SUT switch can be installed in a cabinet or rack mounted. The cabinet is limited to eight shelves. The T1 ISDN PRI limits the number of BRI phones to 48 per shelf; however, this capability can be increased by adding more Millennium type switch shelves. Combining these two software releases allows eOn to meet all of its critical interoperability requirements. The identified test discrepancies shown in the Certification Testing Summary (enclosure 2) that remained open after software patches were applied and regression testing was completed have an overall minor operational impact. The SUT was tested and met the critical interoperability requirements for Private Branch Exchange (PBX) 1 and PBX 2 type switches. This certification expires upon changes that could affect interoperability, but no later than three years from the date of this memorandum.

3. This certification is based on interoperability testing conducted by JITC at the Global Information Grid Network Test Facility, Fort Huachuca, AZ, from 15 through 28 June 2004 and

review of letters of compliance submitted by the vendor on 29 July 2004. Testing was conducted in an environment that emulates the DSN. Enclosure 2 provides more details about the test, documents the test results, and describes the tested network and system configurations.

4. The interoperability test summary of the SUT is indicated in table 1. The PBX 1 required and conditional Capability Requirements (CRs) and Feature Requirements (FRs) are listed in table 2. Network Management (NM) capabilities of the SUT platform were tested in accordance with requirements as set forth in reference (c). This reference requires that a switch provide NM capabilities via Ethernet, Transmission Control Protocol/Internet Protocol (TCP/IP), serial Electronic Industries Alliance (EIA), or serial (X.25 or BX.25 variant). NM features and functions are not a requirement for a PBX 1; however, the vendor requested that NM be tested and included in this certification. The SUT meets the NM requirements through a TCP/IP connection. The SUT provides Voice over Internet Protocol capability, but it was not tested and is not covered under this certification. This interoperability test status is based on the PBX 1's ability to meet:

- a. DSN services for Network and Applications specified in reference (d).
- b. PBX 1 interface and signaling requirements for trunks/lines specified in reference (c) verified through JITC testing and/or vendor submission of Letter(s) of Compliance (LoC).
- c. PBX 1 CRs and FRs specified in reference (c) verified through JITC testing and/or vendor submission of LoC.
- d. The overall system interoperability performance derived from test procedures listed in reference (e).

**Table 1. SUT Interoperability Test Summary**

<b>DSN Trunk Interfaces</b>				
<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>	
T1 CAS (DTMF, DP)	No	Not Tested		
E1 CAS (DTMF, DP)	No (Europe only)	Not Tested		
T1 ISDN PRI NI 1/2 (ANSI T1. 619a)	Yes	Certified	Met all critical CRs and FRs.	
E1 ISDN PRI (Q.955.3)	No (Europe only)	Not Tested		
<b>DSN Line Interfaces</b>				
<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>	
2-Wire Analog (GR-506-CORE)	Yes	Certified	Met all critical CRs and FRs.	
ISDN BRI NI 1/2	Yes	Certified	Met all critical CRs and FRs with the following minor exception: STE in BRI mode calls can not set up at 32 kbps secure voice or 19.2 kbps secure data. <sup>1</sup>	
Digital Proprietary	No	Certified	Met all CRs and FRs.	
VoIP	No	Not Tested		
<b>Network Gateways</b>				
<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>	
PSTN	T1 CAS (DTMF, DP)	No	Not Tested	
	E1 CAS (DTMF, DP)	No (Europe only)	Not Tested	
	T1 ISDN PRI NI2	No	Certified	Met all CRs and FRs.
	E1 ISDN PRI (Q.955.3)	No (Europe only)	Not Tested	

**Table 1. SUT Interoperability Test Summary (continued)**

<b>DSN Features and Capabilities</b>			
<b>Features and Capabilities</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
Common Features	No	Certified	Met all CRs and FRs.
Attendant	No	Not Tested	
Public Safety	No	Not Tested	
Preset Conferencing	No	Not Tested	
Nailed-up Connections	No	Not Tested	
PAT	No	Not Tested	
DSN Hotline services	No	Not Tested	
Network Management	No	Certified	Met all CRs and FRs.
ISDN services (EKTS)	No	Not Tested	
Synchronization	Yes	Certified	Met all critical CRs and FRs.
Reliability	Yes	Certified	Met all critical CRs and FRs.
Security <sup>2</sup>	Yes	Certified	Met all critical CRs and FRs.
VoIP System	No	Not Tested	
VoIP LANs	No	Not Tested	
<b>Legend:</b>			
ANSI - American National Standards Institute		kbps - kilobits per second	
BRI - Basic Rate Interface		LAN - Local Area Network	
CAS - Channel Associated Signaling		LoC - Letters of Compliance	
CRs - Capability Requirements		Mbps - Megabits per second	
DP - Dial Pulse		MLPP - Multi-Level Precedence Preemption	
DSN - Defense Switched Network		NI 1/2 - National ISDN 1 or 2	
DTMF - Dual Tone Multi-Frequency		PAT - Precedence Access Threshold	
E1 - European Basic Multiplex Rate (2.048 Mbps)		PRI - Primary Rate Interface	
EKTS - Electronic Key Telephone System		PSTN - Public Switched Telephone Network	
FNBDT - Future Narrow Band Digital Terminal		Q.955.3 - ITU ISDN Signaling Standard for E1 MLPP	
FRs - Feature Requirements		SS7 - Signaling System 7	
GR - Generic Requirement (Telcordia)		STE - Secure Terminal Equipment	
IATP - Information Assurance Test Plan		SUT - System Under Test	
IAW - in accordance with		T1 - Digital Transmission Link Level 1 (1.544 Mbps)	
ISDN - Integrated Services Digital Network		T1.619a - SS7 and ISDN signaling Standard for T1	
ITU - International Telecommunication Union		VoIP - Voice over Internet Protocol	
JITC - Joint Interoperability Test Command			
<b>Notes:</b>			
1 STE in BRI mode cannot set up at 32 kbps secure voice or 19.2 kbps secure data; however, in FNBDT mode it will set up at 9.6 kbps secure voice and data.			
2 JITC verifies security via vendor LOC. Further testing IAW the IATP is required prior to being authorized connection approval.			

**Table 2. PBX 1 Requirements**

<b>DSN Trunk Interfaces</b>				
<b>Digital Interface</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>		<b>References</b>
T1 CAS	No	Trunking	<ul style="list-style-type: none"> <li>Framing (R)</li> <li>Line Code (R)</li> <li>Signaling (R)</li> <li>Alarms (R)</li> </ul>	<ul style="list-style-type: none"> <li>GSCR Sect. 7</li> <li>GSCR Sect. 7</li> <li>GSCR Sect. 5</li> <li>GSCR Sect. 2.5.7, 7.1.4 and 7.2.2</li> </ul>
E1 CAS	No (Europe only)		<ul style="list-style-type: none"> <li>WWNDP (R)</li> <li>Outpulsing digit formats (C: CAS only)</li> <li>Routing (C)</li> <li>Trunk Groups (C)</li> <li>Call Processing (C)</li> <li>CAS to CCS trunk interworking (C)</li> <li>PCM-24/PCM-30 Interoperation (C)</li> <li>Direct Inward Dialing (C)</li> </ul>	<ul style="list-style-type: none"> <li>GSCR Sect. 4.5.1</li> <li>GSCR Sect. 4.5.2</li> <li>GSCR Sect. 4.2</li> <li>GSCR Sect. 2.5.5 and 2.5.6</li> <li>GSCR Sect. 4</li> <li>GSCR Sect. 3.10</li> <li>GSCR Sect. 7.3</li> <li>GSCR Sect 2.3.2</li> </ul>
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes	Voice	<ul style="list-style-type: none"> <li>MOS (R)</li> <li>MLPP (R)</li> <li>Secure calls (R)</li> </ul>	<ul style="list-style-type: none"> <li>CJCSI 6215.01B</li> <li>GSCR Sect. 3</li> <li>CJCSI 6215.01B</li> </ul>
		Facsimile	<ul style="list-style-type: none"> <li>Analog: EIA/TIA-465-A (R)</li> <li>Digital: MIL-STD-188-161D (C)</li> </ul>	<ul style="list-style-type: none"> <li>JTA</li> <li>JTA</li> </ul>
E1 ISDN PRI (Q955.3)	No (Europe only)	Data	<ul style="list-style-type: none"> <li>Modem (VBD) (R)</li> <li>56-kbps switched data (R: ISDN PRI only)</li> <li>64-kbps switched data (R: ISDN PRI only)</li> <li>NX56 synchronous BER (R: ISDN PRI only)</li> <li>NX64 synchronous BER (R: ISDN PRI only)</li> <li>Secure data (STE/STU-III) (R)</li> </ul>	<ul style="list-style-type: none"> <li>CJCSI 6215.01B</li> <li>GSCR Sect. 3.10</li> </ul>
		VTC	<ul style="list-style-type: none"> <li>H.320 (R: ISDN PRI only)</li> </ul>	<ul style="list-style-type: none"> <li>JTA</li> </ul>
<b>DSN Line Interfaces</b>				
<b>Interfaces</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>		<b>References</b>
2-Wire Analog (GR-506-CORE)	Yes	Access	<ul style="list-style-type: none"> <li>DN Identification (R)</li> <li>Line signaling (R)</li> <li>Alerting Signals and Tones(R)</li> <li>WWNDP (R)</li> <li>Call Treatments (R)</li> <li>2W user access (R: 2-Wire Analog only)</li> <li>Analog busy/idle (R: 2-Wire Analog only)</li> </ul>	<ul style="list-style-type: none"> <li>GSCR Sect 2.1.1</li> <li>GSCR Sect 5.2</li> <li>GSCR Sect 5.5</li> <li>GSCR Sect. 4.5</li> <li>GSCR Sect. 4.1</li> <li>GSCR Sect 4.3.3</li> <li>GSCR Sect 4.3.4.1</li> </ul>
ISDN BRI NI 1/2	Yes		Voice	<ul style="list-style-type: none"> <li>MOS (R)</li> <li>MLPP (R)</li> <li>Secure Calls (R): (ISDN BRI and Analog only)</li> </ul>
2-Wire Digital	No	Facsimile	<ul style="list-style-type: none"> <li>Analog: EIA/TIA-465-A (R)</li> <li>Digital: MIL-STD-188-161D (C): (ISDN BRI only)</li> </ul>	<ul style="list-style-type: none"> <li>JTA</li> <li>JTA</li> </ul>
VoIP	No		Data	<ul style="list-style-type: none"> <li>Modem (VBD) (R) (Analog only)</li> <li>56-kbps switched data (R: ISDN BRI only)</li> <li>64-kbps switched data (R: ISDN BRI only)</li> <li>NX56 synchronous BER (R:ISDN BRI only)</li> <li>NX64 synchronous BER (R: ISDN BRI only)</li> <li>Secure data (STE/STU-III) (R): (ISDN BRI and Analog only)</li> </ul>
		VTC	<ul style="list-style-type: none"> <li>H.320 (R: ISDN BRI only)</li> </ul>	<ul style="list-style-type: none"> <li>JTA</li> </ul>
<b>Network Gateways</b>				
<b>Gateway</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>		<b>References</b>
PSTN	No	Trunking	<ul style="list-style-type: none"> <li>Positive Identification Control (C)</li> <li>On-Netting (C)</li> <li>Off Netting (C)</li> </ul>	<ul style="list-style-type: none"> <li>CJCSI 6215.01B</li> <li>CJCSI 6215.01B</li> <li>CJCSI 6215.01B</li> </ul>

**Table 2. PBX 1 Requirements (continued)**

<b>DSN Features &amp; Capabilities</b>			
<b>Interface</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>	<b>References</b>
Common Features	No	<ul style="list-style-type: none"> <li>• Selective call rejection (C)</li> <li>• Denied originating service (C)</li> <li>• Code restriction and diversion (C)</li> <li>• Call waiting (C)</li> <li>• Three-way calling (C)</li> <li>• Add-on transfer and conference calling (C)</li> <li>• Call forwarding (C)</li> <li>• Call pick-up (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.1.2</li> <li>• GSCR Sect. 2.1.3</li> <li>• GSCR Sect. 2.1.4</li> <li>• GSCR Sect. 2.1.5</li> <li>• GSCR Sect. 2.1.6</li> <li>• GSCR Sect. 2.1.7</li> <li>• GSCR Sect. 2.1.8</li> <li>• GSCR Sect. 2.1.9</li> </ul>
Attendant	No	<ul style="list-style-type: none"> <li>• Initiate all precedence levels (C)</li> <li>• Visual display (C)</li> <li>• Override class of service (C)</li> <li>• Override busy line (C)</li> <li>• Call deflection (C)</li> <li>• Auto recall (C)</li> <li>• Waiting queue (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.2.1</li> <li>• GSCR Sect. 2.2.2</li> <li>• GSCR Sect. 2.2.3</li> <li>• GSCR Sect. 2.2.4</li> <li>• GSCR Sect. 2.2.5</li> <li>• GSCR Sect. 2.2.6</li> <li>• GSCR Sect. 2.2.7</li> </ul>
Public Safety	No	<ul style="list-style-type: none"> <li>• 911 (C)</li> <li>• Trace of terminating calls (C)</li> <li>• Outgoing call trace (C)</li> <li>• Tandem call trace (C)</li> <li>• Trace of a call in progress (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.4.1</li> <li>• GSCR Sect. 2.4.2</li> <li>• GSCR Sect. 2.4.3</li> <li>• GSCR Sect. 2.4.4</li> <li>• GSCR Sect. 2.4.5</li> </ul>
Preset Conferencing	No	<ul style="list-style-type: none"> <li>• Support 10 bridges; 1 originator and 20 conferees (C)</li> <li>• Assign up to 20 address numbers per bridge (C)</li> <li>• Use KXX codes for bridge access (C)</li> <li>• Conference notification recorded announcement (C)</li> <li>• Auto retrieval and alternate address (C)</li> <li>• Bridge release (C)</li> <li>• Lost connection (C)</li> <li>• Secondary conferencing (C)</li> <li>• Address translation (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.6</li> <li>• GSCR Sect. 2.6</li> <li>• GSCR Sect. 2.6</li> <li>• GSCR Sect. 2.6.1</li> <li>• GSCR Sect. 2.6.2</li> <li>• GSCR Sect. 2.6.3</li> <li>• GSCR Sect. 2.6.4</li> <li>• GSCR Sect. 2.6.5</li> <li>• GSCR Sect. 2.7</li> </ul>
Nailed-up Connections	No	<ul style="list-style-type: none"> <li>• Between any two like terminations (C)</li> <li>• PCM-24 and PCM-30, both CAS and CCS (C)</li> <li>• Supervision passed end-to-end for A/D or D/A (C)</li> <li>• Monitored and auto reconfigure (C)</li> <li>• Support at least 10% of circuits as nailed-up (C)</li> <li>• Non-preemptable (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.8</li> </ul>
PAT	No	<ul style="list-style-type: none"> <li>• Classmark for/not for PAT screening (C)</li> <li>• 7 PAT mechanisms (C)</li> <li>• Outgoing call screening (C)</li> <li>• Functional structure (C)</li> <li>• Simultaneous calls limitation (C)</li> <li>• Overflow process (C)</li> <li>• Decrementing call-in-progress count (C)</li> <li>• Call treatment (C)</li> <li>• Queuing (C)</li> <li>• Attendant calls (C)</li> <li>• Operation measurement registers (C)</li> <li>• Maintenance and Administration of thresholds (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.11.1</li> <li>• GSCR Sect. 2.11.1</li> <li>• GSCR Sect. 2.11.1.1</li> <li>• GSCR Sect. 2.11.1.2</li> <li>• GSCR Sect. 2.11.1.3</li> <li>• GSCR Sect. 2.11.1.4</li> <li>• GSCR Sect. 2.11.1.5</li> <li>• GSCR Sect. 2.11.1.6</li> <li>• GSCR Sect. 2.11.1.7</li> <li>• GSCR Sect. 2.11.1.8</li> <li>• GSCR Sect. 2.11.1.9</li> <li>• GSCR Sect. 2.11.1.10</li> </ul>
DSN Hotline services	No	<ul style="list-style-type: none"> <li>• Hotline restrictions (C)</li> <li>• Auto initiate (C)</li> <li>• Analog and digital (C)</li> <li>• Subscription basis (C)</li> <li>• Protected hotline calling (C)</li> <li>• WWNDP interoperable (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.12</li> <li>• GSCR Sect. 2.12</li> <li>• GSCR Sect. 2.12</li> <li>• GSCR Sect. 2.12</li> <li>• GSCR Sect. 2.12.1-4</li> <li>• GSCR Sect. 2.12.5</li> </ul>

**Table 2. PBX 1 Requirements (continued)**

<b>DSN Features &amp; Capabilities (continued)</b>			
<b>Interface</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>	<b>References</b>
Network Management	No	<ul style="list-style-type: none"> <li>• Interfaces (C)</li> <li>• Measurements and data generation (C)</li> <li>• Fault management (C)</li> <li>• Configuration management (C)</li> <li>• Accounting management (C)</li> <li>• Performance management (C)</li> <li>• NM controls (C)</li> <li>• Remote access (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 9.1</li> <li>• GSCR Sect. 9.2</li> <li>• GSCR Sect. 9.3</li> <li>• GSCR Sect. 9.4</li> <li>• GSCR Sect. 9.5</li> <li>• GSCR Sect. 9.6</li> <li>• GSCR Sect. 9.7</li> <li>• GSCR Sect. 9.8</li> </ul>
ISDN services	No	<ul style="list-style-type: none"> <li>• EKTS (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 10, table 10-3</li> </ul>
Synchronization	Yes	<ul style="list-style-type: none"> <li>• Line timing mode (R)</li> <li>• Internal Stratum 4 (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 11.1.1.2</li> <li>• GSCR Sect. 11.1.2.2</li> </ul>
Reliability	Yes	<ul style="list-style-type: none"> <li>• GR-512-CORE (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect.12</li> </ul>
Security (see note)	Yes	<ul style="list-style-type: none"> <li>• DITSCAP (R)</li> </ul>	<ul style="list-style-type: none"> <li>• DODI 8100.3</li> </ul>
VoIP System	No	<p><b>VoIP function is conditional. If VoIP is provided, all of the following requirements must be met:</b></p> <ul style="list-style-type: none"> <li>• MOS 4.0 or better</li> <li>• G.711 PCM Codec</li> <li>• Security IAW DITSCAP</li> <li>• NM</li> <li>• Line timing</li> <li>• Internal Clock</li> <li>• Latency ≤ 60 msec</li> <li>• IPv6 capable</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR App. 3</li> </ul>

**Table 2. PBX 1 Requirements (continued)**

DSN Features & Capabilities (continued)			
Interface	Critical	Requirements Required (R) or Conditional (C)	References
<b>VoIP (continued)</b>			
LANs	No	<p><b>VoIP function is conditional. If VoIP is provided, all of the following requirements must be met:</b></p> <ul style="list-style-type: none"> <li>• LAN parameters</li> <li>• CoS /QoS</li> <li>• VLANs</li> <li>• IEEE Standards Conformance</li> <li>• .99999 availability</li> <li>• Modular devices</li> <li>• 2-second link restoral</li> <li>• LAN NM</li> <li>• Traffic Engineering</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR App. 3</li> </ul>
<b>Legend:</b>			
2W	- 2-Wire	KXX	- K= any number 2-8; X= any number 1-9
911	- 911 Emergency Service	LAN	- Local Area Network
A/D	- Analog to Digital	LoC	- Letter(s) of Compliance
ANSI	- American National Standards Institute	Mbps	- Megabits per second
App	- Appendix	MIL-STD	- Military Standard
BER	- Bit Error Ratio	MLPP	- Multi-Level Precedence and Preemption
BRI	- Basic Rate Interface	MOS	- Mean Opinion Score
CAS	- Channel Associated Signaling	msec	- millisecond
CCS	- Common Channel Signaling	NI 1/2	- National ISDN Std. 1 or 2
CJCSI	- Chairman Joint Chiefs of Staff Instruction	NM	- Network Management
CoS	- Class of Service	NX56	- Data format restricted to multiples of 56 kbps
D/A	- Digital to Analog	NX64	- Data format restricted to multiples of 64 kbps
DITSCAP	- Department of Defense Information Technology Security Certification and Accreditation Process	PAT	- Precedence Access Threshold
DN	- Directory Number	PBX	- Private Branch Exchange
DODI	- Department of Defense Instruction	PCM-24	- Pulse Code Modulation 24 Channels
DSN	- Defense Switched Network	PCM-30	- Pulse Code Modulation 30 Channels
E1	- European Basic Multiplex Rate (2.048 Mbps)	PRI	- Primary Rate Interface
EIA	- Electronic Industries Alliance	PSTN	- Public Switched Telephone Network
EKTS	- Electronic Key Telephone System	Q.955.3	- ITU ISDN Signaling Standard for E1 MLPP
GR	- Generic Requirement (Telcordia)	QoS	- Quality of Service
GSCR	- Generic Switching Center Requirements	Sect.	- section
H.320	- ITU Standard for narrowband VTC	SS7	- Signaling System 7
IATP	- Information Assurance Test Plan	STE	- Secure Terminal Equipment
IAW	- in accordance with	STU-III	- Secure Telephone Unit-Third Generation
IEEE	- Institute of Electrical and Electronics Engineers, Inc.	T1	- Digital Transmission Link Level 1 (1.544 Mbps)
IPv6	- Internet Protocol version 6	T1.619a	- SS7 and ISDN Signaling Standard For T1
ISDN	- Integrated Services Digital Network	TIA	- Telecommunications Industry Association
ITU	- International Telecommunication Union	VBD	- Variable bit data
JITC	- Joint Interoperability Test Command	VLAN	- Virtual Local Area Network
JTA	- Joint Technical Architecture	VoIP	- Voice over Internet Protocol
kbps	- kilobits per second	VTC	- Video Teleconferencing
		WWNDP	- Worldwide Numbering and Dialing Plan
<b>Note:</b> JITC verifies security via an LoC. Further testing IAW the IATP is required prior to being authorized connection approval.			

5. 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>.

JITC Memo, JTE, Special Interoperability Test Certification of the eOn Communications Corporation eQueue-Defense Switched Network (DSN) Digital Switching System with Software Release V5.02.00-DSN10

6. The JITC point of contact is Mr. Mike Napier, DSN 879-6787, commercial (520) 538-6787, FAX DSN 879-4347, or e-mail to [napierm@fhu.disa.mil](mailto:napierm@fhu.disa.mil).

FOR THE COMMANDER:

2 Enclosures a/s

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Joint Interoperability Test Command, 101 Strauss Avenue, Code 1348, Indian Head, MD 20640-5035

Defense Information Systems Agency, GIG Enterprise Services Engineering Directorate, NETCENTRICITY, REQUIREMENTS, ANALYSIS & ASSESSMENTS BRANCH, ATTN: GE333, Rm. 244, 5600 Columbia Pike, Falls Church, VA 22041-2770

Defense Information Systems Agency, GIG-Combat Support Directorate, DSN SYSTEMS MANAGEMENT BRANCH, ATTN: GS235, Rm. 5W248A, 5275 Leesburg Pike, Falls Church, VA 22041

Office of Chief of Naval Operations (N61C22), CNON6/7, 2000 Navy Pentagon, Washington, DC 20350

Headquarters US Air Force, AF/XICC, 1250 Pentagon, Washington, DC 20330-1250

Department of the Army, Office of the Secretary of the Army, G-6/ASA (ALT), ATTN: ASAALT (SAAL-SSI), 103 Army Pentagon, Washington, DC 20310-0103

US Marine Corp (C4ISR), MARCORSSYSCOM, 2200 Lester Street, Quantico, VA 22134

DOT&E, Strategic and C3I Systems, 1700 Defense Pentagon, Washington, DC 20301-1700

US Coast Guard, COMDT/G-SCE (C4), 2100 2nd Street SW, Washington, DC 20593

Office of Assistant Secretary of Defense, OASD(NII)/DoD CIO, Crystal Mall 3, 7<sup>th</sup> Floor, Suite 700, 1931 Jefferson-Davis Hwy, Arlington, VA 22202

Office of Under Secretary of Defense, OUSD(AT&L), Room 3E144, 3070 Defense Pentagon, Washington, DC 20301

US Joint Forces Command, J6I, C4 Plans and Policy, 1562 Mitscher Ave, Norfolk, VA 23551-2488

Defense Intelligence Agency, ATTN: DS-CIO, Bldg 6000, Bolling AFB, Washington, DC 20340-3342

National Security Agency, ATTN: DT, Suite 6496, 9800 Savage Road, Fort Meade, MD 20755-6496

Commander, Defense Information Systems Agency (DISA), ATTN: GS23 (Mr. Osman), Room 5w23, 5275 Leesburg Pike (RTE 7), Falls Church, VA 22041

### **ADDITIONAL REFERENCES**

- (c) Defense Information Systems Agency (DISA), "Defense Switched Network (DSN) Generic Switching Center Requirements (GSCR)," 8 September 2003
- (d) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services," 23 September 2001
- (e) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP)," 23 April 2004

## CERTIFICATION TESTING SUMMARY

**1. SYSTEM TITLE.** eOn Communications Corporation Defense Switched Network (DSN) eQueue-DSN Switching System with Software Release V5.02.00-DSN10, hereinafter referred to as the System Under Test (SUT).

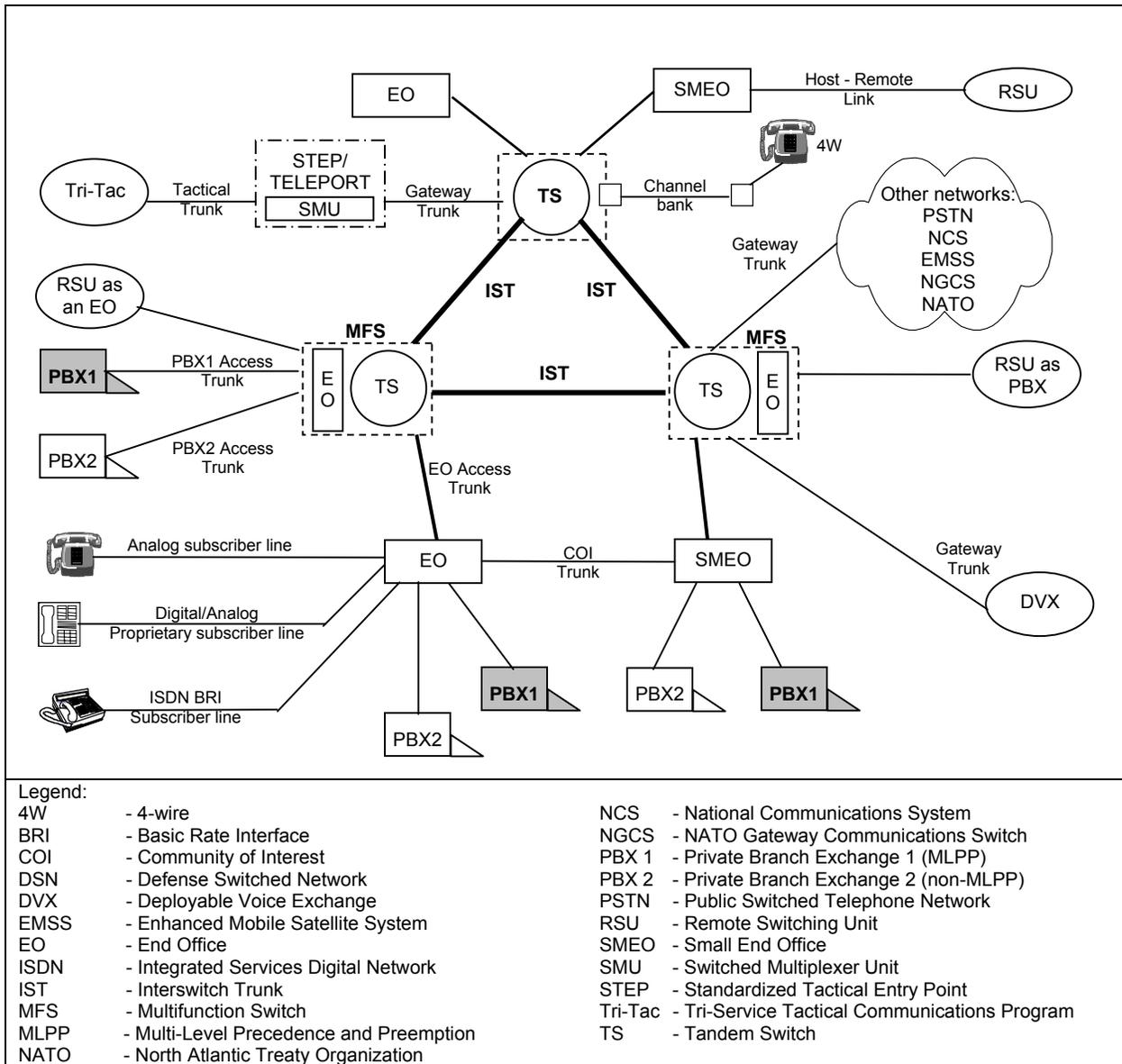
**2. PROPONENT.** Defense Information Systems Agency (DISA).

**3. PROGRAM MANAGER.** Mr. Howard Osman, GS23, Room 5W23, 5275 Leesburg Pike, Falls Church, VA 22041, E-mail: Osmanh@ncr.disa.mil.

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

**5. SYSTEM UNDER TEST DESCRIPTION.** Private Branch Exchanges (PBXs) are Military Department (MILDEP)-controlled elements of the DSN. The SUT was tested and met the critical interoperability requirements for PBX 1 and PBX 2 type switches. The SUT meets Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) interface requirements by using the eOn Millennium Digital Switching System with software release V2.10.096 as a subcomponent. Special software was developed for the eOn Millennium Digital Switching System to allow required ISDN BRI interfaces only. All other interfaces are not configurable on the eOn Millennium and must be interfaced on the eOn eQueue-DSN. The SUT switch can be installed in a cabinet or rack mounted. The cabinet is limited to eight shelves. The T1 ISDN Primary Rate Interface limits the number of BRI phones to 48 per shelf, although this capability can be increased by adding more Millennium type switch shelves. Combining these two software releases allows EON to meet all of its critical interoperability requirements. The SUT provides a Voice over Internet Protocol (VoIP) capability; however, VoIP was not tested and is not covered by this certification.

**6. OPERATIONAL ARCHITECTURE.** The DSN architecture is a two-level network hierarchy consisting of DSN backbone switches and Military/Agency installation switches. Joint Staff policy and subscriber mission requirements determine which type of switch can be used at a particular location. The DSN architecture, therefore, consists of several categories of switches including PBXs. The Generic Switching Center Requirements (GSCR) operational DSN Architecture is depicted in figure 2-1. The architecture depicts the relationship of MILDEP PBX 1s to the rest of the DSN switch types.



**Figure 2-1. DSN Architecture**

**7. REQUIRED SYSTEM INTERFACES.** Requirements specific to PBX 1s are listed in table 2-1. These requirements are derived from:

a. DSN services for Network and Applications specified in Chairman of the Joint Chiefs of Staff instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services."

b. GSCR interface and signaling requirements for trunks/lines verified through JITC testing and/or vendor submission of Letter(s) of Compliance (LoC).

c. GSCR PBX 1 Capability Requirements (CRs) and Feature Requirements (FRs) verified through JITC testing and/or vendor submission of LoC.

**Table 2-1. PBX 1 Requirements**

<b>DSN Trunk Interfaces</b>				
<b>Digital Interface</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>		<b>References</b>
T1 CAS	No	Trunking	<ul style="list-style-type: none"> <li>• Framing (R)</li> <li>• Line Code (R)</li> <li>• Signaling (R)</li> <li>• Alarms (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 7</li> <li>• GSCR Sect. 7</li> <li>• GSCR Sect. 5</li> <li>• GSCR Sect. 2.5.7, 7.1.4 &amp; 7.2.2</li> </ul>
E1 CAS	No (Europe only)		<ul style="list-style-type: none"> <li>• WWNDP (R)</li> <li>• Outputting digit formats (C: CAS only)</li> <li>• Routing (C)</li> <li>• Trunk Groups (C)</li> <li>• Call Processing (C)</li> <li>• CAS to CCS trunk interworking (C)</li> <li>• PCM-24/PCM-30 Interoperation (C)</li> <li>• Direct Inward Dialing (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 4.5.1</li> <li>• GSCR Sect. 4.5.2</li> <li>• GSCR Sect. 4.2</li> <li>• GSCR Sect. 2.5.5 &amp; 2.5.6</li> <li>• GSCR Sect. 4</li> <li>• GSCR Sect. 3.10</li> <li>• GSCR Sect. 7.3</li> <li>• GSCR Sect. 2.3.2</li> </ul>
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes	Voice	<ul style="list-style-type: none"> <li>• MOS (R)</li> <li>• MLPP (R)</li> <li>• Secure calls (R)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01B</li> <li>• GSCR Sect. 3</li> <li>• CJCSI 6215.01B</li> </ul>
		Facsimile	<ul style="list-style-type: none"> <li>• Analog: EIA/TIA-465-A (R)</li> <li>• Digital: MIL-STD-188-161D (C)</li> </ul>	<ul style="list-style-type: none"> <li>• JTA</li> <li>• JTA</li> </ul>
E1 ISDN PRI (Q955.3)	No (Europe only)	Data	<ul style="list-style-type: none"> <li>• Modem (VBD) (R)</li> <li>• 56-kbps switched data (R: ISDN PRI only)</li> <li>• 64-kbps switched data (R: ISDN PRI only)</li> <li>• NX56 synchronous BER (R: ISDN PRI only)</li> <li>• NX64 synchronous BER (R: ISDN PRI only)</li> <li>• Secure data (STE/STU-III) (R)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01B</li> <li>• GSCR Sect. 3.10</li> </ul>
		VTC	<ul style="list-style-type: none"> <li>• H.320 (R: ISDN PRI only)</li> </ul>	<ul style="list-style-type: none"> <li>• JTA</li> </ul>
<b>DSN Line Interfaces</b>				
<b>Interfaces</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>		<b>References</b>
2-Wire Analog (GR-506-CORE)	Yes	Access	<ul style="list-style-type: none"> <li>• DN Identification (R)</li> <li>• Line signaling (R)</li> <li>• Alerting Signals and Tones(R)</li> <li>• WWNDP (R)</li> <li>• Call Treatments (R)</li> <li>• 2W user access (R: 2-Wire Analog only)</li> <li>• Analog busy/idle (R: 2-Wire Analog only)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect 2.1.1</li> <li>• GSCR Sect 5.2</li> <li>• GSCR Sect 5.5</li> <li>• GSCR Sect. 4.5</li> <li>• GSCR Sect. 4.1</li> <li>• GSCR Sect 4.3.3</li> <li>• GSCR Sect 4.3.4.1</li> </ul>
ISDN BRI NI 1/2	Yes		Voice	<ul style="list-style-type: none"> <li>• MOS (R)</li> <li>• MLPP (R)</li> <li>• Secure Calls (R): (ISDN BRI and Analog only)</li> </ul>
2-Wire Digital	No	Facsimile	<ul style="list-style-type: none"> <li>• Analog: EIA/TIA-465-A (R)</li> <li>• Digital: MIL-STD-188-161D (C): (ISDN BRI only)</li> </ul>	<ul style="list-style-type: none"> <li>• JTA</li> <li>• JTA</li> </ul>
VoIP	No			

**Table 2-1. PBX 1 Requirements (continued)**

<b>DSN Line Interfaces (continued)</b>				
<b>Interfaces</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>		<b>References</b>
2-Wire Analog (GR-506-CORE)	Yes	Data	<ul style="list-style-type: none"> <li>• Modem (VBD) (R) (Analog only)</li> <li>• 56-kbps switched data (R: ISDN BRI only)</li> <li>• 64-kbps switched data (R: ISDN BRI only)</li> <li>• NX56 synchronous BER (R: ISDN BRI only)</li> <li>• NX64 synchronous BER (R: ISDN BRI only)</li> <li>• Secure data (STE/STU-III) (R): (ISDN BRI and Analog only)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01B</li> <li>• GSCR Sect. 3.10</li> </ul>
ISDN BRI NI 1/2	Yes			
2-Wire Digital	No			
VoIP	No		VTC	<ul style="list-style-type: none"> <li>• H.320 (R: ISDN BRI only)</li> </ul>
<b>Network Gateways</b>				
<b>Gateway</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>		<b>References</b>
PSTN	No	Trunking	<ul style="list-style-type: none"> <li>• Positive Identification Control (C)</li> <li>• On-Netting (C)</li> <li>• Off Netting (C)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01B</li> <li>• CJCSI 6215.01B</li> <li>• CJCSI 6215.01B</li> </ul>
<b>DSN Features &amp; Capabilities</b>				
<b>Interface</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>		<b>References</b>
Common Features	No		<ul style="list-style-type: none"> <li>• Selective call rejection (C)</li> <li>• Denied originating service (C)</li> <li>• Code restriction and diversion (C)</li> <li>• Call waiting (C)</li> <li>• Three-way calling (C)</li> <li>• Add-on transfer and conference calling (C)</li> <li>• Call forwarding (C)</li> <li>• Call pick-up (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.1.2</li> <li>• GSCR Sect. 2.1.3</li> <li>• GSCR Sect. 2.1.4</li> <li>• GSCR Sect. 2.1.5</li> <li>• GSCR Sect. 2.1.6</li> <li>• GSCR Sect. 2.1.7</li> <li>• GSCR Sect. 2.1.8</li> <li>• GSCR Sect. 2.1.9</li> </ul>
Attendant	No		<ul style="list-style-type: none"> <li>• Initiate all precedence levels (C)</li> <li>• Visual display (C)</li> <li>• Override class of service (C)</li> <li>• Override busy line (C)</li> <li>• Call deflection (C)</li> <li>• Auto recall (C)</li> <li>• Waiting queue (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.2.1</li> <li>• GSCR Sect. 2.2.2</li> <li>• GSCR Sect. 2.2.3</li> <li>• GSCR Sect. 2.2.4</li> <li>• GSCR Sect. 2.2.5</li> <li>• GSCR Sect. 2.2.6</li> <li>• GSCR Sect. 2.2.7</li> </ul>
Public Safety	No		<ul style="list-style-type: none"> <li>• 911 (C)</li> <li>• Trace of terminating calls (C)</li> <li>• Outgoing call trace (C)</li> <li>• Tandem call trace (C)</li> <li>• Trace of a call in progress (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.4.1</li> <li>• GSCR Sect. 2.4.2</li> <li>• GSCR Sect. 2.4.3</li> <li>• GSCR Sect. 2.4.4</li> <li>• GSCR Sect. 2.4.5</li> </ul>
Preset Conferencing	No		<ul style="list-style-type: none"> <li>• Support 10 bridges; 1 originator and 20 conferees (C)</li> <li>• Assign up to 20 address numbers per bridge (C)</li> <li>• Use KXX codes for bridge access (C)</li> <li>• Conference notification recorded announcement (C)</li> <li>• Auto retrieval and alternate address (C)</li> <li>• Bridge release (C)</li> <li>• Lost connection (C)</li> <li>• Secondary conferencing (C)</li> <li>• Address translation (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.6</li> <li>• GSCR Sect. 2.6</li> <li>• GSCR Sect. 2.6</li> <li>• GSCR Sect. 2.6.1</li> <li>• GSCR Sect. 2.6.2</li> <li>• GSCR Sect. 2.6.3</li> <li>• GSCR Sect. 2.6.4</li> <li>• GSCR Sect. 2.6.5</li> <li>• GSCR Sect. 2.7</li> </ul>
Nailed-up Connections	No		<ul style="list-style-type: none"> <li>• Between any two like terminations (C)</li> <li>• PCM-24 and PCM-30, both CAS and CCS (C)</li> <li>• Supervision passed end-to-end for A/D or D/A (C)</li> <li>• Monitored and auto reconfigure (C)</li> <li>• Support at least 10% of circuits as nailed-up (C)</li> <li>• Non-preemptable (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.8</li> </ul>

**Table 2-1. PBX 1 Requirements (continued)**

<b>DSN Features &amp; Capabilities (continued)</b>			
<b>Interface</b>	<b>Critical</b>	<b>Requirements Required (R) or Conditional (C)</b>	<b>References</b>
PAT	No	<ul style="list-style-type: none"> <li>• Classmark for/not for PAT screening (C)</li> <li>• 7 PAT mechanisms (C)</li> <li>• Outgoing call screening (C)</li> <li>• Functional structure (C)</li> <li>• Simultaneous calls limitation (C)</li> <li>• Overflow process (C)</li> <li>• Decrementing call-in-progress count (C)</li> <li>• Call treatment (C)</li> <li>• Queuing (C)</li> <li>• Attendant calls (C)</li> <li>• Operation measurement registers (C)</li> <li>• Maintenance and Administration of thresholds (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.11.1</li> <li>• GSCR Sect. 2.11.1</li> <li>• GSCR Sect. 2.11.1.1</li> <li>• GSCR Sect. 2.11.1.2</li> <li>• GSCR Sect. 2.11.1.3</li> <li>• GSCR Sect. 2.11.1.4</li> <li>• GSCR Sect. 2.11.1.5</li> <li>• GSCR Sect. 2.11.1.6</li> <li>• GSCR Sect. 2.11.1.7</li> <li>• GSCR Sect. 2.11.1.8</li> <li>• GSCR Sect. 2.11.1.9</li> <li>• GSCR Sect. 2.11.1.10</li> </ul>
DSN Hotline services	No	<ul style="list-style-type: none"> <li>• Hotline restrictions (C)</li> <li>• Auto initiate (C)</li> <li>• Analog and digital (C)</li> <li>• Subscription basis (C)</li> <li>• Protected hotline calling (C)</li> <li>• WWNDP interoperable (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 2.12</li> <li>• GSCR Sect. 2.12</li> <li>• GSCR Sect. 2.12</li> <li>• GSCR Sect. 2.12</li> <li>• GSCR Sect. 2.12.1-4</li> <li>• GSCR Sect. 2.12.5</li> </ul>
Network Management	No	<ul style="list-style-type: none"> <li>• Interfaces (C)</li> <li>• Measurements and data generation (C)</li> <li>• Fault management (C)</li> <li>• Configuration management (C)</li> <li>• Accounting management (C)</li> <li>• Performance management (C)</li> <li>• NM controls (C)</li> <li>• Remote access (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 9.1</li> <li>• GSCR Sect. 9.2</li> <li>• GSCR Sect. 9.3</li> <li>• GSCR Sect. 9.4</li> <li>• GSCR Sect. 9.5</li> <li>• GSCR Sect. 9.6</li> <li>• GSCR Sect. 9.7</li> <li>• GSCR Sect. 9.8</li> </ul>
ISDN services	No	<ul style="list-style-type: none"> <li>• EKTS (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 10, table 10-3</li> </ul>
Synchronization	Yes	<ul style="list-style-type: none"> <li>• Line timing mode (R)</li> <li>• Internal Stratum 4 (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect. 11.1.1.2</li> <li>• GSCR Sect. 11.1.2.2</li> </ul>
Reliability	Yes	<ul style="list-style-type: none"> <li>• GR-512-CORE (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Sect.12</li> </ul>
Security (see note)	Yes	<ul style="list-style-type: none"> <li>• DITSCAP (R)</li> </ul>	<ul style="list-style-type: none"> <li>• DODI 8100.3</li> </ul>
VoIP System	No	<p><b>VoIP function is conditional. If VoIP is provided, all of the following requirements must be met:</b></p> <ul style="list-style-type: none"> <li>• MOS 4.0 or better</li> <li>• G.711 PCM Codec</li> <li>• Security IAW DITSCAP</li> <li>• NM</li> <li>• Line timing</li> <li>• Internal Clock</li> <li>• Latency ≤ 60 msec</li> <li>• IPv6 capable</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR App. 3</li> </ul>

**Table 2-1. PBX 1 Requirements (continued)**

DSN Features & Capabilities (continued)					
Interface	Critical	Requirements Required (R) or Conditional (C)	References		
<b>VoIP (continued)</b>					
LANs	No	<p><b>VoIP function is conditional. If VoIP is provided, all of the following requirements must be met:</b></p> <ul style="list-style-type: none"> <li>• LAN parameters</li> <li>• CoS /QoS</li> <li>• VLANs</li> <li>• IEEE Standard Conformance</li> <li>• .99999 availability</li> <li>• Modular devices</li> <li>• 2 second link restoral</li> <li>• LAN NM</li> <li>• Traffic Engineering</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR App. 3</li> </ul>		
<p><b>Legend:</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">                 2W - 2-Wire                  911 - 911 Emergency Service                  A/D - Analog to Digital                  ANSI - American National Standards Institute                  App - Appendix                  BER - Bit Error Ratio                  BRI - Basic Rate Interface                  CAS - Channel Associated Signaling                  CCS - Common Channel Signaling                  CJCSI - Chairman Joint Chiefs of Staff Instruction                  CoS - Class of Service                  D/A - Digital to Analog                  DITSCAP - Department of Defense Information Technology Security Certification and Accreditation Process                  DN - Directory Number                  DODI - Department of Defense Instruction                  DSN - Defense Switched Network                  E1 - European Basic Multiplex Rate (2.048 Mbps)                  EIA - Electronic Industries Alliance                  EKTS - Electronic Key Telephone System                  GR - Generic Requirement (Telcordia)                  GSCR - Generic Switching Center Requirements                  H.320 - ITU Std. for narrowband VTC                  IATP - Information Assurance Test Plan                  IAW - in accordance with                  IEEE - Institute of Electrical and Electronics Engineers, Inc.                  ISDN - Integrated Services Digital Network                  ITU - International Telecommunication Union                  JITC - Joint Interoperability Test Command                  JTA - Joint Technical Architecture                  kbps - kilobits per second                  KXX - K= any number 2-8; X= any number 1-9             </td> <td style="width: 50%; vertical-align: top;">                 LAN - Local Area Network                  LoC - Letter(s) of Compliance                  Mbps - Megabits per second                  MIL-STD - Military Standard                  MLPP - Multi-Level Precedence and Preemption                  MOS - Mean Opinion Score                  msec - millisecond                  NI 1/2 - National ISDN Standard 1 or 2                  NM - Network Management                  NX56 - Data format restricted to multiples of 56 kbps                  NX64 - Data format restricted to multiples of 64 kbps                  PAT - Precedence Access Threshold                  PBX - Private Branch Exchange                  PCM-24 - Pulse Code Modulation 24 Channels                  PCM-30 - Pulse Code Modulation 30 Channels                  PRI - Primary Rate Interface                  PSTN - Public Switched Telephone Network                  Q.955.3 - ITU ISDN Signaling Standard for E1 MLPP                  QoS - Quality of Service                  Sect. - section                  SS7 - Signaling System 7                  STE - Secure Terminal Equipment                  STU-III - Secure Telephone Unit-III                  T1 - Digital Transmission Link Level 1 (1.544 Mbps)                  T1.619a - SS7 and ISDN Signaling Standard For T1                  TIA - Telecommunications Industry Association                  VBD - Variable bit data                  VLAN - Virtual Local Area Network                  VoIP - Voice over Internet Protocol                  VTC - Video Teleconferencing                  WWNDP - Worldwide Numbering and Dialing Plan             </td> </tr> </table> <p><b>Note:</b> JITC verifies security via an LoC. Further testing IAW the IATP is required prior to being authorized connection approval.</p>				2W - 2-Wire 911 - 911 Emergency Service A/D - Analog to Digital ANSI - American National Standards Institute App - Appendix BER - Bit Error Ratio BRI - Basic Rate Interface CAS - Channel Associated Signaling CCS - Common Channel Signaling CJCSI - Chairman Joint Chiefs of Staff Instruction CoS - Class of Service D/A - Digital to Analog DITSCAP - Department of Defense Information Technology Security Certification and Accreditation Process DN - Directory Number DODI - Department of Defense Instruction DSN - Defense Switched Network E1 - European Basic Multiplex Rate (2.048 Mbps) EIA - Electronic Industries Alliance EKTS - Electronic Key Telephone System GR - Generic Requirement (Telcordia) GSCR - Generic Switching Center Requirements H.320 - ITU Std. for narrowband VTC IATP - Information Assurance Test Plan IAW - in accordance with IEEE - Institute of Electrical and Electronics Engineers, Inc. ISDN - Integrated Services Digital Network ITU - International Telecommunication Union JITC - Joint Interoperability Test Command JTA - Joint Technical Architecture kbps - kilobits per second KXX - K= any number 2-8; X= any number 1-9	LAN - Local Area Network LoC - Letter(s) of Compliance Mbps - Megabits per second MIL-STD - Military Standard MLPP - Multi-Level Precedence and Preemption MOS - Mean Opinion Score msec - millisecond NI 1/2 - National ISDN Standard 1 or 2 NM - Network Management NX56 - Data format restricted to multiples of 56 kbps NX64 - Data format restricted to multiples of 64 kbps PAT - Precedence Access Threshold PBX - Private Branch Exchange PCM-24 - Pulse Code Modulation 24 Channels PCM-30 - Pulse Code Modulation 30 Channels PRI - Primary Rate Interface PSTN - Public Switched Telephone Network Q.955.3 - ITU ISDN Signaling Standard for E1 MLPP QoS - Quality of Service Sect. - section SS7 - Signaling System 7 STE - Secure Terminal Equipment STU-III - Secure Telephone Unit-III T1 - Digital Transmission Link Level 1 (1.544 Mbps) T1.619a - SS7 and ISDN Signaling Standard For T1 TIA - Telecommunications Industry Association VBD - Variable bit data VLAN - Virtual Local Area Network VoIP - Voice over Internet Protocol VTC - Video Teleconferencing WWNDP - Worldwide Numbering and Dialing Plan
2W - 2-Wire 911 - 911 Emergency Service A/D - Analog to Digital ANSI - American National Standards Institute App - Appendix BER - Bit Error Ratio BRI - Basic Rate Interface CAS - Channel Associated Signaling CCS - Common Channel Signaling CJCSI - Chairman Joint Chiefs of Staff Instruction CoS - Class of Service D/A - Digital to Analog DITSCAP - Department of Defense Information Technology Security Certification and Accreditation Process DN - Directory Number DODI - Department of Defense Instruction DSN - Defense Switched Network E1 - European Basic Multiplex Rate (2.048 Mbps) EIA - Electronic Industries Alliance EKTS - Electronic Key Telephone System GR - Generic Requirement (Telcordia) GSCR - Generic Switching Center Requirements H.320 - ITU Std. for narrowband VTC IATP - Information Assurance Test Plan IAW - in accordance with IEEE - Institute of Electrical and Electronics Engineers, Inc. ISDN - Integrated Services Digital Network ITU - International Telecommunication Union JITC - Joint Interoperability Test Command JTA - Joint Technical Architecture kbps - kilobits per second KXX - K= any number 2-8; X= any number 1-9	LAN - Local Area Network LoC - Letter(s) of Compliance Mbps - Megabits per second MIL-STD - Military Standard MLPP - Multi-Level Precedence and Preemption MOS - Mean Opinion Score msec - millisecond NI 1/2 - National ISDN Standard 1 or 2 NM - Network Management NX56 - Data format restricted to multiples of 56 kbps NX64 - Data format restricted to multiples of 64 kbps PAT - Precedence Access Threshold PBX - Private Branch Exchange PCM-24 - Pulse Code Modulation 24 Channels PCM-30 - Pulse Code Modulation 30 Channels PRI - Primary Rate Interface PSTN - Public Switched Telephone Network Q.955.3 - ITU ISDN Signaling Standard for E1 MLPP QoS - Quality of Service Sect. - section SS7 - Signaling System 7 STE - Secure Terminal Equipment STU-III - Secure Telephone Unit-III T1 - Digital Transmission Link Level 1 (1.544 Mbps) T1.619a - SS7 and ISDN Signaling Standard For T1 TIA - Telecommunications Industry Association VBD - Variable bit data VLAN - Virtual Local Area Network VoIP - Voice over Internet Protocol VTC - Video Teleconferencing WWNDP - Worldwide Numbering and Dialing Plan				

**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. This test was conducted using the two test configurations as shown in figures 2-2 and 2-3. Testing the SUT's required functions and features was conducted using the notional test configuration depicted in figure 2-2. According to this configuration, the SUT was tested as the endpoint in relation to the other switches. This configuration accurately emulates the DSN operational

environment. Figure 2-3 depicts the test configuration used to test the Advanced DSN Integrated Management Support System network management required functions and features. The SUT hardware configuration is shown in figure 2-4.

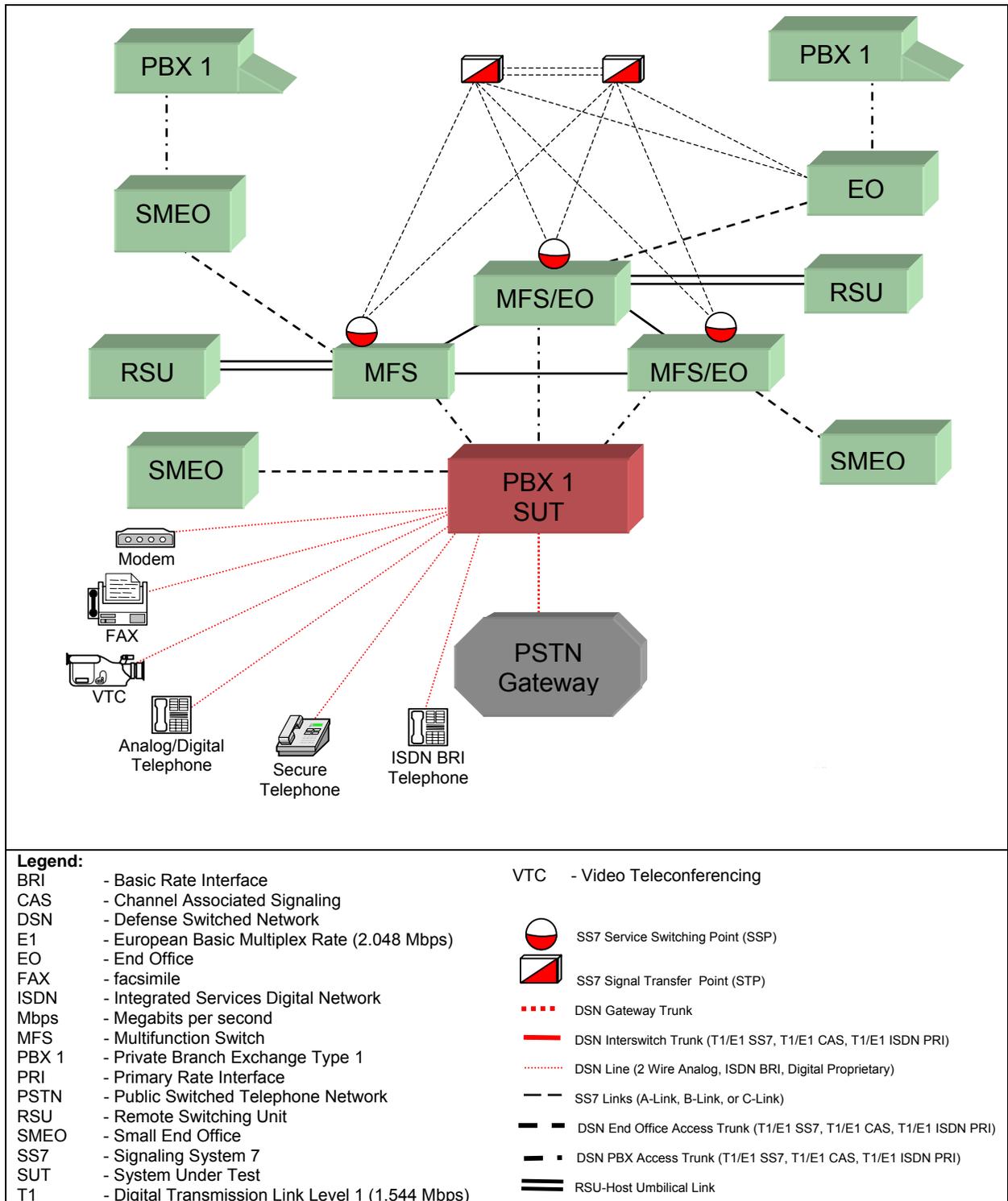
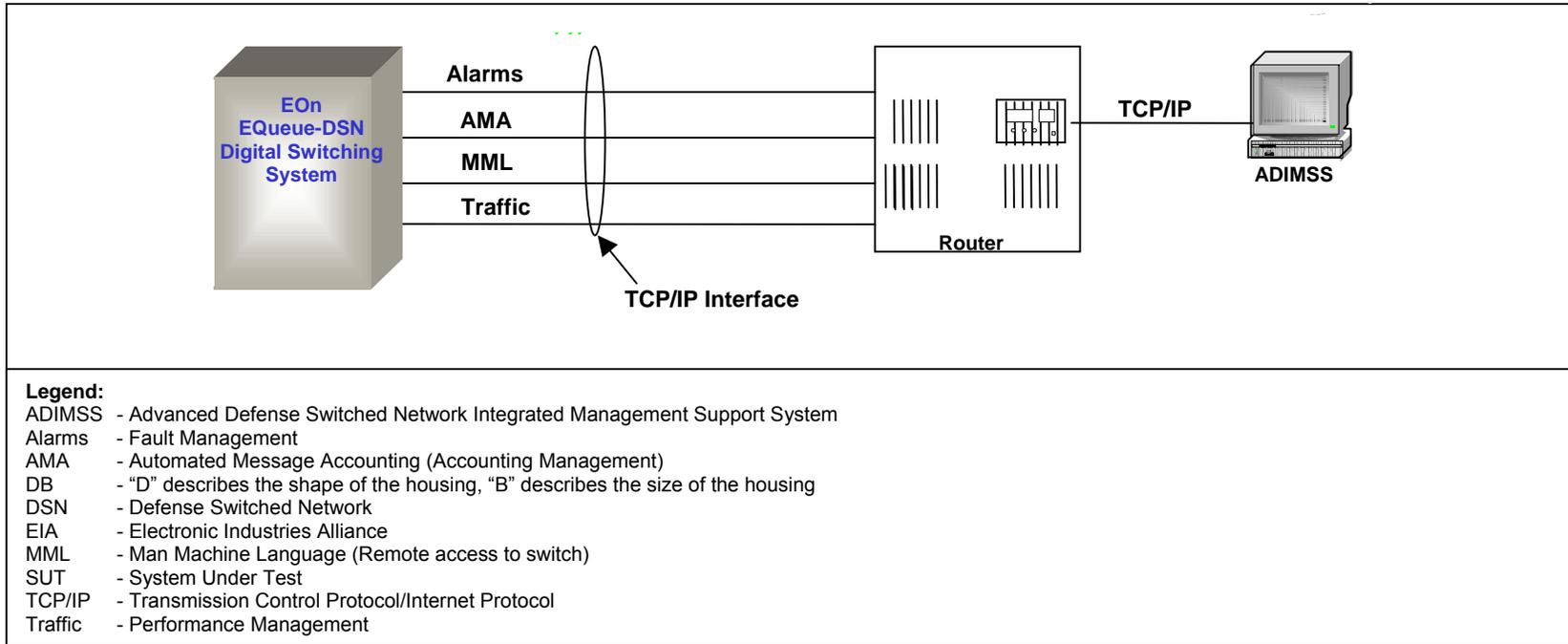
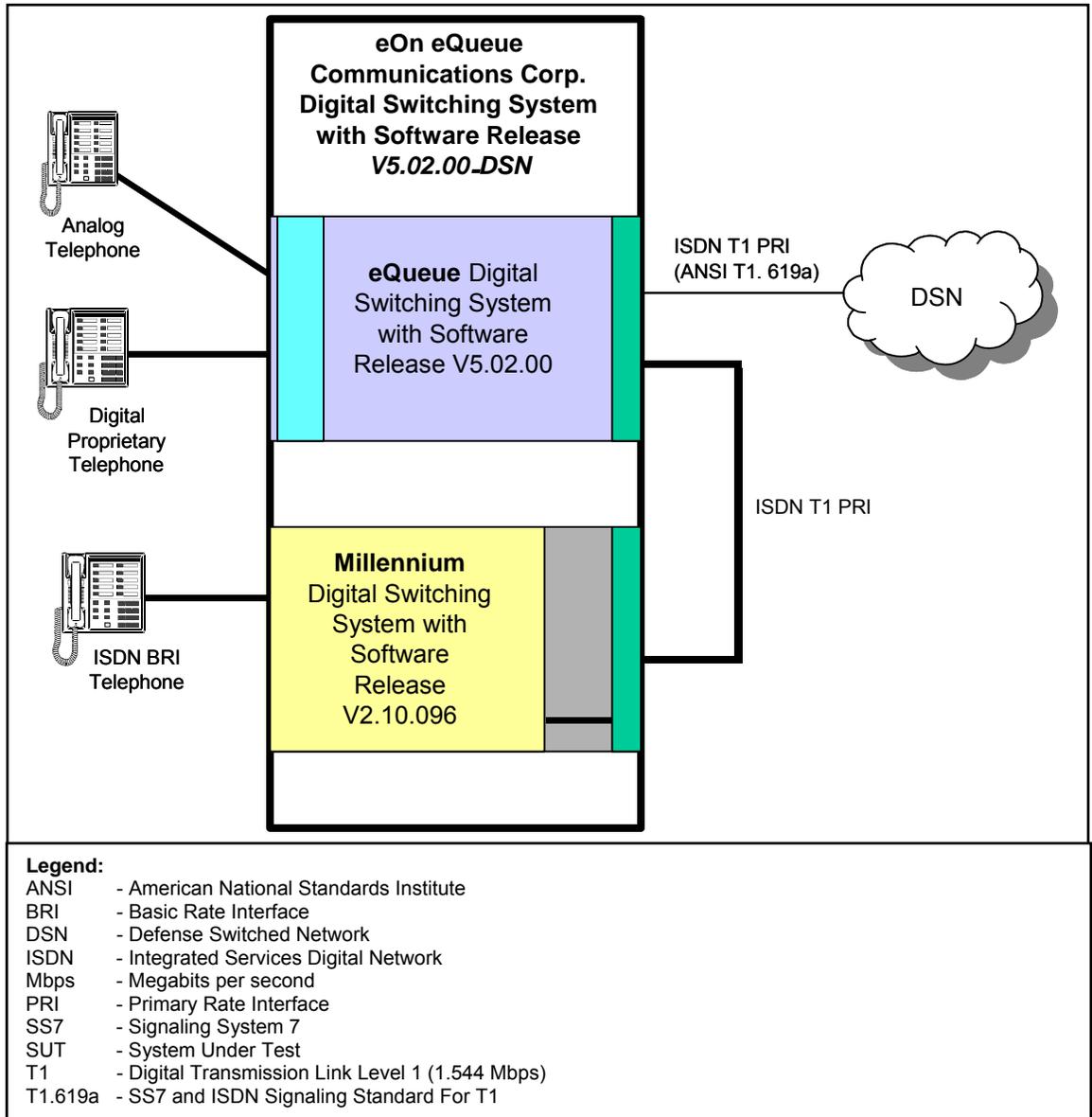


Figure 2-2. Notional Test Configuration



**Figure 2-3. SUT ADIMSS Network Management System Interface**



**Figure 2-4. SUT Hardware Configuration**

**9. SYSTEM CONFIGURATIONS.** Table 2-2 provides the system configurations used in the test. The two components of the SUT interface through a T1 ISDN PRI.

**Table 2-2. Tested System Configurations**

SUT: eOn eQueue-DSN Switching System (see note) V5.02.00-DSN10	eOn eQueue with Software Release V5.02.00	System Name	Product Engineer Code	Firmware
		eQueue-DSN Shelf Processor		V5.02.00-F20
		eQueue Base Sys., AC Powered	300-6701	V5.02.00-F20
		Analog Station, 16 port Card	300-4026	V5.02.00-DSN1
		Single T1 Card	300-6520	V5.02.00-DSN1
		Digital Line Card, 32 Port	300-4002	V5.02.00-DSN3
		CMTS		V5.02.00.F20
		<b>Telephone Instruments</b>	<b>Models/Release</b>	
		2-Wire Analog	Panasonic KX-TS15-W, OMNI Secure Wire Line Terminal (E252), Motorola Sectera Wire Line Terminal (8.9), Motorola STU Sectal 1500	
		Proprietary Digital 18 Button Subset	500620-430-001	V1.05-152 2003-12-08
		Proprietary Digital 30 Button Subset	500621-430-001	V1.05-308 2003-12-08
		Proprietary Digital 6/12 Button Subset	500654-430-001	V1.05-065 2003-12-08
		Proprietary Digital 30 Button Subset	500657-430-001	V1.07-046 2003-12-08
		Proprietary Digital 18 Button Subset	500658-430-001	V1.07-020 2003-12-08
		Proprietary Digital 30 Button Subset	500657-430-001	V1.07-046 2003-12-08
Proprietary Digital 18 Button Subset	500658-430-001	V1.07-020 2003-12-08		
eOn Millenium with Software Release V2.10.096	System Name	Product Engineer Code	Firmware	
	System Controller II	500117-000-101	V2.10-096 2004-06-09	
	Digital Line Card 16 Port	500002-536-002	V1.07-095 2004-01-23	
	Common Services	500045-000-101	V2.10-096 2004-06-09	
	T1/ISDN PRI Card	500084-000-101	V1.109-102 2004-02-23	
	System Clock III	500102-000-102	V2.10-096 2004-06-09	
	U-Interface Line Card	500078-000-101	V1.07-095 2004-01-23	
	200 Watt Power Supply Module	500054-000-102		
	<b>Telephone Instruments</b>	<b>Models/Release</b>		
	ISDN BRI	Optiset NI 1200S, STE 2.2 and 2.3		
Other Systems	Nortel Networks MSL-100 (MFS, EO, SMEO, PBX)	SEO6		
	Avaya MultiVantage S8700 (SMEO, PBX)	R012x.00.0.221.1		
	Siemens EWSD (MFS, EO, SMEO, PBX)	19d with Patch Set 43		
	Lucent Technologies 5ESS (MFS, EO, SMEO, PBX)	5E16.2 SU9		
	MARCONI ATM switches	Versions 6.2 and 7.1		
<b>Legend:</b>				
AC	- Alternating Current	Mbps	- Megabits per second	
ATM	- Asynchronous Transfer Mode	MFS	- Multifunction Switch	
BRI	- Basic Rate Interface	MSL	- Meridian Switching Load	
CMTS	- Central Memory Time Switch	PBX	- Private Branch Exchange	
DSN	- Defense Switched Network	PRI	- Primary Rate Interface	
EO	- End Office	SMEO	- Small End Office	
EWSD	- Elektronisches Wählsystem Digital	SU	- Software Update	
ISDN	- Integrated Services Digital Network	SUT	- System Under Test	
M	- Meridian	T1	- Digital Transmission Link Level 1 (1.544 Mbps)	
Note: This certification does not cover the eOn eQueue or eOn Millennium switching systems as individual switching platforms. The eOn Millennium is a subcomponent of the SUT.				

**10. TESTING LIMITATIONS.** None.

**11. TEST RESULTS.**

**a. Discussion.** All critical interface CRs and FRs for DSN were met. The following minor exceptions are noted:

(1) The SUT supports only a single B-Channel ISDN BRI configuration for voice, but does support a dual B-channels ISDN BRI configuration for data. The operational impact is minor.

(2) The SUT does not support 32 kbps secure voice or 19.2 kbps secure data when the STE is configured in the ISDN BRI mode. The SUT does support 6.4 kbps secure voice in the ISDN BRI mode does when configured for Future Narrow Band Digital Terminal. The operational impact is minor

**b. System Interoperability Results.** The SUT was tested and met the critical interoperability requirements for PBX 1 and PBX 2 switch types. The SUT is certified in the configuration as shown in figure 2-4. This certification does not cover the eOn eQueue or eOn Millennium switching systems as individual switching platforms. The SUT provides a VoIP capability; however, VoIP was not tested and is not covered by this certification. Minor discrepancies identified during testing will have no adverse operational impact. The interoperability test summary is shown in table 2-3 and the detailed interoperability test status is shown table 2-4.

**Table 2-3. SUT Interoperability Test Summary**

<b>DSN Trunk Interfaces</b>				
<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>	
T1 CAS (DTMF, DP)	No	Not Tested		
E1 CAS (DTMF, DP)	No (Europe only)	Not Tested		
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes	Certified	Met all CRs and FRs.	
E1 ISDN PRI (Q.955.3)	No (Europe only)	Not Tested		
<b>DSN Line Interfaces</b>				
<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>	
2-Wire Analog (GR-506-CORE)	Yes	Certified	Met all CRs and FRs.	
ISDN BRI NI 1/2	Yes	Certified	Met all critical CRs and FRs with the following minor exception: STE in BRI mode calls can not set up at 32 kbps secure voice or 19.2 kbps secure data. <sup>1</sup>	
Digital Proprietary	Yes	Certified	Met all CRs and FRs.	
VoIP	No	Not Tested		
<b>DSN Features and Capabilities</b>				
<b>Features and Capabilities</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>	
Common Features	No	Certified	Met all Common Features supported by the SUT.	
Attendant	No	Not Tested		
Public Safety	No	Not Tested		
Preset Conferencing	No	Not Tested		
Nailed-up Connections	No	Not Tested		
PAT	No	Not Tested		
DSN hotline services	No	Not Tested		
Network Management	No	Certified	Met all CRs and FRs.	
ISDN Services (EKTS)	No	Not Tested		
Synchronization	Yes	Certified	Met all CRs and FRs.	
Reliability	Yes	Certified	Met all CRs and FRs.	
Security <sup>2</sup>	Yes	Certified	Met all CRs and FRs.	
VoIP System	No	Not Tested		
VoIP LANs	No	Not Tested		
<b>Network Gateways</b>				
	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
PSTN	T1 CAS (DTMF, DP)	No	Not Tested	
	E1 CAS (DTMF, DP)	No (Europe only)	Not Tested	
	T1 ISDN PRI NI 1/2	No	Certified	Met all CRs and FRs.
	E1 ISDN PRI (Q.931)	No (Europe only)	Not Tested	

**Table 2-3. SUT Interoperability Test Summary (continued)**

<b>Legend:</b>	
ANSI - American National Standards Institute	kbps - kilobits per second
BRI - Basic Rate Interface	LAN - Local Area Network
CAS - Channel Associated Signaling	LoC - Letters of Compliance
CRs - Capability Requirements	Mbps - Megabits per second
DP - Dial Pulse	MLPP - Multi-Level Precedence and Preemption
DSN - Defense Switched Network	NI 1/2 - National ISDN 1 or 2
DTMF - Dual Tone Multi-Frequency	PAT - Precedence Access Threshold
E1 - European Basic Multiplex Rate (2.048 Mbps)	PRI - Primary Rate Interface
EKTS - Electronic Key Telephone System	PSTN - Public Switched Telephone Network
FNBDT - Future Narrow Band Digital Terminal	Q.931 - ITU signaling std. for ISDN
FRs - Feature Requirements	Q.955.3 - ITU ISDN Signaling Std. for E1 MLPP
GR - Generic Requirement (Telcordia)	SS7 - Signaling System 7
GSCR - Generic Switching Center Requirements	Std. - Standard
IATP - Information Assurance Test Plan	SUT - System Under Test
IAW - in accordance with	T1 - Digital Transmission Link Level 1 (1.544 Mbps)
ISDN - Integrated Services Digital Network	T1.619a - SS7 and ISDN signaling std. for T1
ITU - International Telecommunications Union	VoIP - Voice over Internet Protocol
JITC - Joint Interoperability Test Command	
<b>Notes:</b>	
1 STE in BRI mode cannot set up at 32 kbps secure voice or 19.2 kbps secure data; however, in FNBDT mode it will set up at 9.6 kbps secure voice and data.	
2 JITC verifies security via vendor LoC. Further testing IAW the IATP is required prior to being authorized connection approval.	

**12. TEST 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 Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.

**Table 2-4. SUT Interoperability Test Requirements and Status**

DSN Trunk Interfaces							
Interface	Critical	Interface Status	GSCR Requirement Required (R) Conditional (C)		Reference	Test Results	Operational Impact
T1 CAS	No	Not Certified	Trunking	Framing (R)	GSCR Sect. 7	Not Tested	
				Line Code (R)	GSCR Sect. 7	Not Tested	
				Signaling (R)	GSCR Sect. 5	Not Tested	
				Alarms (R)	GSCR Sect. 2.5.7, 7.1.4 & 7.2.2	Not Tested	
				WWNDP (R)	GSCR Sect. 4.5.1	Not Tested	
				Outpulsing digit formats (C)	GSCR Sect. 4.5.2	Not Tested	
				Routing (C)	GSCR Sect. 4.2	Not Tested	
				Trunk Groups (C)	GSCR Sect. 2.5.5 & 2.5.6	Not Tested	
				Call Processing (C)	GSCR Sect. 4	Not Tested	
				CAS to CCS trunk interworking (C)	GSCR Sect. 3.10	Not Tested	
			PCM-24/PCM-30 Interoperation (C)	GSCR Sect. 7.3	Not Tested		
			Direct Inward Dialing (C)	GSCR Sect. 2.3.2	Not Tested		
			Voice	MOS (R)	CJCSI 6215.01B	Not Tested	
				MLPP (R)	GSCR Sect. 3	Not Tested	
				Secure calls (R)	CJCSI 6215.01B	Not Tested	
			Facsimile	Analog: EIA/TIA-465-A (R)	JTA	Not Tested	
				Digital: MIL-STD-188-161D (C)	JTA	Not Tested	
			Data	Modem (VBD) (R)	CJCSI 6215.01B	Not Tested	
				56-kbps switched data (R: ISDN PRI only)	GSCR Sect. 3.10	Not Tested	
				64-kbps switched data (R: ISDN PRI only)	GSCR Sect. 3.10	Not Tested	
				NX56 synchronous BER (R: ISDN PRI only)	GSCR Sect. 3.10	Not Tested	
NX64 synchronous BER (R: ISDN PRI only)	GSCR Sect. 3.10	Not Tested					
	Secure data (STE/STU-III) (R)	GSCR Sect. 3.10	Not Tested				
VTC	H.320 (R: ISDN PRI only)	JTA	Not Tested				

**Table 2-4. SUT Interoperability Test Requirements and Status (continued)**

DSN Trunk Interfaces							
Interface	Critical	Interface Status	GSCR Requirement Required (R) Conditional (C)		Reference	Test Results	Operational Impact
T1 ISDN PRI (ANSI T1.619a)	Yes	Certified	Trunking	Framing (R)	GSCR Sect. 7	Met	
				Line Code (R)	GSCR Sect. 7	Met	
				Signaling (R)	GSCR Sect. 5	Met	
				Alarms (R)	GSCR Sect. 2.5.7, 7.1.4 & 7.2.2	Met	
				WWNDP (R)	GSCR Sect. 4.5.1	Met	
				Outpulsing digit formats (C)	GSCR Sect. 4.5.2	Met	
				Routing (C)	GSCR Sect. 4.2	Met	
				Trunk Groups (C)	GSCR Sect. 2.5.5 & 2.5.6	Met	
				Call Processing (R)	GSCR Sect. 4	Met	
				CAS to CCS trunk interworking (C)	GSCR Sect. 3.10	Not Tested	
				PCM-24/PCM-30 Interoperation (C)	GSCR Sect. 7.3	Not Tested	
			Direct Inward Dialing (C)	GSCR Sect. 2.3.2	Met		
			Voice	MOS (R)	CJCSI 6215.01B	Met	
				MLPP (R)	GSCR Sect. 3	Met	
				Secure calls (R)	CJCSI 6215.01B	Met	
			Facsimile	Analog: EIA/TIA-465-A (R)	JTA	Met	
				Digital: MIL-STD-188-161D (C)	JTA	Not Tested	
			Data	Modem (VBD) (R)	CJCSI 6215.01B	Met	
				56-kbps switched data (R: ISDN PRI only)	GSCR Sect. 3.10	Met	
				64-kbps switched data (R: ISDN PRI only)	GSCR Sect. 3.10	Met	
NX56 synchronous BER (R: ISDN PRI only)	GSCR Sect. 3.10	Met					
NX64 synchronous BER (R: ISDN PRI only)	GSCR Sect. 3.10	Met					
Secure data (STE/STU-III) (R)	GSCR Sect. 3.10	Met					
VTC	H.320 (R: ISDN PRI only)	JTA	Met				

**Table 2-4. SUT Interoperability Test Requirements and Status (continued)**

DSN Line Interfaces							
Interface	Critical	Interface Status	GSCR Requirement Required (R) Conditional (C)		Reference	Test Results	Operational Impact
2-Wire Analog (GR-506-CORE)	Yes	Certified	Access	DN Identification (R)	GSCR Sect 2.1.1	Met	
				Line signaling (R)	GSCR Sect 5.2	Met	
				Alerting Signals and Tones (R)	GSCR Sect 5.5	Met	
				WWNDP (R)	GSCR Sect. 4.5	Met	
				Call Treatments (R)	GSCR Sect. 4.1	Met	
				2W user access (R)	GSCR Sect 4.3.3	Met	
				Analog busy/idle (R)	GSCR Sect 4.3.4.1	Met	
			Voice	MOS (R)	CJCSI 6215.01B	Met	
				MLPP (R)	GSCR Sect. 3.4.3, 3.9	Met	
				Secure calls (R)	CJCSI 6215.01B	Met	
			Facsimile	Analog: EIA/TIA-465-A (R)	JTA	Met	
				Digital: MIL-STD-188-161D (C)	JTA	Not Tested	
			Data	Modem (VBD) (R)	CJCSI 6215.01B	Met	
				Secure data (STE/STU-III) (R)	GSCR Sect. 3.10	Met	
			VTC	H.320 (R: ISDN BRI only)	JTA	Not Tested	

**Table 2-4. SUT Interoperability Test Requirements and Status (continued)**

DSN Line Interfaces (continued)							
Interface	Critical	Interface Status	GSCR Requirement Required (R) Conditional (C)		Reference	Test Results	Operational Impact
ISDN BRI NI 1/2	Yes	Certified	Access	DN Identification (R)	GSCR Sect 2.1.1	Met	
				Line signaling (R)	GSCR Sect 5.2	Met	
				Alerting Signals and Tones (R)	GSCR Sect 5.5	Met	
				WWNDP (R)	GSCR Sect. 4.5	Met	
				Call Treatments (R)	GSCR Sect. 4.1	Met	
			Voice	MOS (R)	CJCSI 6215.01B	Met	
				MLPP (R)	GSCR Sect. 3.4.3, 3.9	Met	
				Secure calls (R)	CJCSI 6215.01B	Met	
			Data	Modem (VBD) (R)	CJCSI 6215.01B	Met	
				56-kbps switched data (R))	GSCR Sect. 3.10	Met	
				64-kbps switched data (R)	GSCR Sect. 3.10	Met	
				NX56 synchronous BER (R)	GSCR Sect. 3.10	Met	
				NX64 synchronous BER (R)	GSCR Sect. 3.10	Met	
				Secure data (STE/STU-III) (R)	GSCR Sect. 3.10	Met <sup>1</sup>	
VTC	H.320 (R)	JTA	Met				

**Table 2-4. SUT Interoperability Test Requirements and Status (continued)**

<b>DSN Line Interfaces (continued)</b>							
<b>Interface</b>	<b>Critical</b>	<b>Interface Status</b>	<b>GSCR Requirement Required (R) Conditional (C)</b>		<b>Reference</b>	<b>Test Results</b>	<b>Operational Impact</b>
Digital Proprietary	No	Certified	Access	DN Identification (R)	GSCR Sect 2.1.1	Met	
				Line signaling (C)	GSCR Sect 5.2	Met	
				Alerting Signals and Tones (C)	GSCR Sect 5.5	Met	
				WWNDP (R)	GSCR Sect. 4.5	Met	
				Call Processing (C)	GSCR Sect. 4.4	Met	
				Call Treatments (C)	GSCR Sect. 4.1	Met	
			Voice	MOS (R)	CJCSI 6215.01B	Met	
<b>DSN Features &amp; Capabilities</b>							
<b>Features/ Capabilities</b>	<b>Critical</b>	<b>Status</b>	<b>GSCR Requirement Required (R) Conditional (C)</b>		<b>Reference</b>	<b>Test Results</b>	<b>Operational Impact</b>
Common Features	No	Certified	Selective call rejection (C)		GSCR Sect. 2.1.2	Not Tested	
			Denied originating service (C)		GSCR Sect. 2.1.3	Not Tested	
			Code restriction and diversion (C)		GSCR Sect. 2.1.4	Met	
			Three-way calling (C)		GSCR Sect. 2.1.5	Met	
			Add-on transfer and conference calling (C)		GSCR Sect. 2.1.6	Met	
			Call forwarding (C)		GSCR Sect. 2.1.7	Met	
			Call pick-up (C)		GSCR Sect. 2.1.8	Met	
Attendant	No	Certified	Call waiting (C)		GSCR Sect. 2.1.9	Met	
			Initiate all precedence levels (C)		GSCR Sect. 2.2.1	Not Tested	
			Visual display (C)		GSCR Sect. 2.2.2	Not Tested	
			Override class of service (C)		GSCR Sect. 2.2.3	Not Tested	
			Override busy line (C)		GSCR Sect. 2.2.4	Not Tested	
			Call deflection (C)		GSCR Sect. 2.2.5	Not Tested	
			Auto recall (C)		GSCR Sect. 2.2.6	Not Tested	
Public Safety	No	Not Tested	Waiting queue (C)		GSCR Sect. 2.2.7	Not Tested	
			911 (C)		GSCR Sect. 2.4.1	Not Tested	
			Trace of terminating calls (C)		GSCR Sect. 2.4.2	Not Tested	
			Outgoing call trace (C)		GSCR Sect. 2.4.3	Not Tested	
			Tandem call trace (C)		GSCR Sect. 2.4.4	Not Tested	
Trace of a call in progress (C)		GSCR Sect. 2.4.5	Not Tested				

**Table 2-4. SUT Interoperability Test Requirements and Status (continued)**

DSN Features & Capabilities (continued)						
Features/ Capabilities	Critical	Status	GSCR Requirement Required (R) Conditional (C)	Reference	Test Results	Operational Impact
Preset Conferencing	No	Not Tested	Support 10 bridges; 1 originator and 20 conferees (C)	GSCR Sect. 2.1.6	Not Tested	
			Assign up to 20 address numbers per bridge (C)	GSCR Sect. 2.6	Not Tested	
			Use KXX codes for bridge access (C)	GSCR Sect. 2.6	Not Tested	
			Conference notification recorded announcement (C)	GSCR Sect. 2.6.1	Not Tested	
			Auto retrieval and alternate address (C)	GSCR Sect. 2.6.2	Not Tested	
			Bridge release (C)	GSCR Sect. 2.6.3	Not Tested	
			Lost connection (C)	GSCR Sect. 2.6.4	Not Tested	
			Secondary conferencing (C)	GSCR Sect. 2.6.5	Not Tested	
Nailed-Up Connections	No	Not Tested	Address translation (C)	GSCR Sect. 2.7	Not Tested	
			Between any two like terminations (C)	GSCR Sect. 2.8	Not Tested	
			PCM-24 and PCM-30, both CAS and CCS (C)	GSCR Sect. 2.8	Not Tested	
			Supervision passed end-to-end for A/D or D/A (C)	GSCR Sect. 2.8	Not Tested	
			Monitored and auto reconfigure (C)	GSCR Sect. 2.8	Not Tested	
PAT	No	Not Tested	Support at least 10% of circuits as nailed-up (C)	GSCR Sect. 2.8	Not Tested	
			Non-preemptable (C)	GSCR Sect. 2.8	Not Tested	
			Classmark for/not for PAT screening (C)	GSCR Sect. 2.11.1	Not Tested	
			7 PAT mechanisms (C)	GSCR Sect. 2.11.1	Not Tested	
			Outgoing call screening (C)	GSCR Sect. 2.11.1.1	Not Tested	
			Functional structure (C)	GSCR Sect. 2.11.1.2	Not Tested	
			Overflow Process (C)	GSCR Sect. 2.11.1.3	Not Tested	
			Simultaneous calls limitation (C)	GSCR Sect. 2.11.1.4	Not Tested	
			Decrementing call-in-progress count (C)	GSCR Sect. 2.11.1.5	Not Tested	
			Call treatment (C)	GSCR Sect. 2.11.1.6	Not Tested	
DSN hotline services	No	Not Certified	Queuing (C)	GSCR Sect. 2.11.1.7	Not Tested	
			Attendant calls (C)	GSCR Sect. 2.11.1.8	Not Tested	
			Operation measurement registers (C)	GSCR Sect. 2.11.1.9	Not Tested	
			Maintenance and Administration of thresholds (C)	GSCR Sect. 2.11.1.10	Not Tested	
			Hotline restrictions (C)	GSCR Sect. 2.12	Not Tested	
			Auto initiate (C)	GSCR Sect. 2.12	Not Tested	
			Analog and digital (C)	GSCR Sect. 2.12	Not Tested	
			Subscription basis (C)	GSCR Sect. 2.12	Not Tested	
			Protected hotline calling (C)	GSCR Sect. 2.12.1-4	Not Tested	
			WWNDP interoperable (C)	GSCR Sect. 2.12.5	Not Tested	

**Table 2-4. SUT Interoperability Test Requirements and Status (continued)**

DSN Features & Capabilities (continued)						
Features/ Capabilities	Critical	Status	GSCR Requirement Required (R) Conditional (C)	Reference	Test Results	Operational Impact
Network Management	No	Certified	Interfaces (C)	GSCR Sect. 9.1	Met	
			Measurements and data generation (C)	GSCR Sect. 9.2	Met	
			Fault management (C)	GSCR Sect. 9.3	Met	
			Configuration management (C)	GSCR Sect. 9.4	Met	
			Accounting management (C)	GSCR Sect. 9.5	Met	
			Performance management (C)	GSCR Sect. 9.6	Met	
			NM controls (C)	GSCR Sect. 9.7	Met	
Remote access (C)	GSCR Sect. 9.8	Met				
ISDN services	No	Not Tested	EKTS (C)	GSCR Sect. 10, table 10-3	Not Tested	
Synchronization	Yes	Certified	Line timing mode (R)	GSCR Sect. 11.1.1.2	Met	
			Internal Stratum 4 (R)	GSCR Sect. 11.1.2.2	Met	
Reliability	Yes	Certified	GR-512-CORE (R)	GSCR Sect. 12	Met	
Security <sup>2</sup>	Yes	Certified	DITSCAP (R)	DODI 8100.3	Met	
VoIP System	No	Not Tested	MOS 4.0 or better (R)	GSCR App. 3	Not Tested	
			G.711 PCM Codec (R)	GSCR App. 3	Not Tested	
			Security IAW DITSCAP (R)	GSCR App. 3	Not Tested	
			NM (R)	GSCR App. 3	Not Tested	
			Line timing (R)	GSCR App. 3	Not Tested	
			Internal Clock (R)	GSCR App. 3	Not Tested	
			Latency @60 msec or less (R)	GSCR App. 3	Not Tested	
IPv6 capable (R)	GSCR App. 3	Not Tested				
LANs	No	Not Tested	LAN parameters (R)	GSCR App. 3	Not Tested	
			CoS /QoS (R)	GSCR App. 3	Not Tested	
			VLANs (R)	GSCR App. 3	Not Tested	
			IEEE Standards Conformance (R)	GSCR App. 3	Not Tested	
			.99999 availability (R)	GSCR App. 3	Not Tested	
			Modular devices (R)	GSCR App. 3	Not Tested	
			2 second link restoral (R)	GSCR App. 3	Not Tested	
LAN NM (R)	GSCR App. 3	Not Tested				
Traffic Engineering (R)	GSCR App. 3	Not Tested				

**Table 2-4. SUT Interoperability Test Requirements and Status (continued)**

Network Gateway																																																																																																																																										
Gateway	Critical	Interface Status	GSCR Requirement Required (R) Conditional (C)		Reference	Test Results	Operational Impact																																																																																																																																			
PSTN	No	Certified	Trunking	Positive Identification Control (C)	CJCSI 215.1B	Met																																																																																																																																				
				On-Netting (C)	CJCSI 215.1B	Met																																																																																																																																				
				Off-Netting (C)	CJCSI 215.1B	Met																																																																																																																																				
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Further testing IAW the IATP is required prior to being authorized connection approval.</li> </ol>							2W	- 2-Wire	GSCR	- Generic Switching Center Requirements	NX64	- Data format restricted to multiples of 64 kbps	911	- Emergency 911 Service	H.320	- ITU Standard for narrowband VTC	PAT	- Precedence Access Threshold	A/D	- Analog to Digital Conversion	IATP	- Information Assurance Test Plan	PBX 1	- Private Branch Exchange 1	ANSI	- American National Standards Institute	IAW	- In accordance with	PCM-24	- Pulse Code Modulation 24 Channels	App.	- Appendix	IEEE	- Institute of Electrical and Electronics Engineers, Inc.	PCM-30	- Pulse Code Modulation 30 Channels	BER	- Bit Error Ratio	IPv6	- Internet Protocol version 6	PRI	- Primary Rate Interface	BRI	- Basic Rate Interface	ISDN	- Integrated Services Digital Network	PSTN	- Public Switched Telephone Network	C	- Conditional	JITC	- Joint Interoperability Test Command	QoS	- Quality of Service	CAS	- Channel Associated Signaling	JTA	- Joint Technical Architecture	R	- Required	CCS	- Common Channel Signaling	kbps	- kilobits per second	Sect.	- Section	CJCSI	- Chairman of the Joint Chiefs of Staff Instruction	KXX	- K = any number 2-8, X = any number 1-9	SS7	- Signaling System 7	CoS	- Class of Service	LAN	- Local Area Network	STE	- Secure Terminal Equipment	D/A	- Digital to Analog Conversion	LoC	- Letters of Compliance	STU-III	- Secure Telephone Unit-Third Generation	DITSCAP	- Department of Defense Information Technology Security and Accreditation Process	Mbps	- Megabits per second	SUT	- System Under Test	DN	- Directory Number	MIL-STD	- Military Standard	T1	- Digital Transmission Link Level 1 (1.544 Mbps)	DODI	- Department of Defense Instruction	MLPP	- Multi-Level Precedence and Preemption	T1.619a	- SS7 and ISDN Signaling Standard For T1	DSN	- Defense Switched Network	MOS	- Mean Opinion Score	TIA	- Telecommunications Industry Association	EIA	- Electronic Industries Alliance	msec	- Milliseconds	VBD	- Variable bit data	EKTS	- Electronic Key Telephone System	NI 1/2	- National ISDN Standard 1 or 2	VLAN	- Virtual LAN	FNBBDT	- Future Narrow Band Digital Terminal	NM	- Network Management	VoIP	- Voice over Internet Protocol	GR	- Generic Requirement (Telcordia)	NX56	- Data format restricted to multiples of 56 kbps	VTC	- Video Teleconferencing					WWNDP	- Worldwide Numbering and Dialing Plan
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