



## DEFENSE INFORMATION SYSTEMS AGENCY

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

**23 Jun 09**

### MEMORANDUM FOR DISTRIBUTION

**SUBJECT:** Extension of the Special Interoperability Test Certification of the Alcatel-Lucent Class 5 Electronic Switching System (5ESS) Digital Switching System and Compact Digital Exchange (CDX) both with Software Release 5E16.2, Broadcast Warning Message (BWM) 07-0003

**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 (f), see Enclosure

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. The Alcatel-Lucent 5ESS Digital Switching System with Software Release 5E16.2, BWM 07-0003 is hereinafter referred to as the System Under Test (SUT). The SUT meets the critical interoperability requirements and is certified as interoperable for joint use within the Defense Switched Network (DSN). The SUT was tested and met the critical interoperability requirements for the following DSN switch types: Multifunction Switch (MFS) (except Europe), End Office (EO) (except Europe), Small End Office (SMEO) (except Europe), Private Branch Exchange (PBX) 1, PBX 2, and Deployable Voice Exchange (DVX). The SUT does not support the critical European interfaces required for MFS, EO, and SMEO switches. Therefore, the SUT is not certified by JITC nor approved by the DSN PMO for use in Europe as a MFS, EO, or SMEO. The SUT was tested and is certified with the following optional peripherals: Administrative Services Module (ASM), Extended Switching Module (EXM), and the Distinctive Remote Module (DRM). The ASM is required for the SUT to meet the Information Assurance requirements. The SUT is certified with or without the EXM and DRM. This certification also applies to the CDX with Software Release 5E16.2, BWM 07-0003. Analysis by JITC determined that the 5ESS and CDX utilize the same hardware and software, differing only in processing power and scalability and are functionally identical for interoperability certification purposes. Therefore, the CDX with Software Release 5E16.2, BWM 07-0003 is also certified for joint use within the DSN as a MFS (except Europe), EO (except Europe), SMEO (except Europe), PBX 1, PBX 2, and DVX. The identified test discrepancies shown in the SUT Interoperability Summary that remained open after software patches were applied and regression testing was completed have a minor operational impact. No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This

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certification expires upon changes that affect interoperability, but no later than three years from the date of the original memorandum (10 December 2007).

3. The extension of this certification is based upon a desktop review. The original certification is based on interoperability testing conducted by JITC and a review of the vendor's Letters of Compliance (LoC). Certification testing was conducted at JITC's Global Information Grid Network Test Facility at Fort Huachuca, Arizona from 13 August through 24 September 2007 and documented in reference (c). Review of the vendor's LoC was completed on 10 October 2007. Review of system information was completed on 24 October 2007. A desktop review was requested to include the Digital Network Unit - Synchronous Optical Network (SONET) (DNU-S) trunk unit, which is functionally equivalent to the Digital Line and Trunk Unit 2 (DLTU2) but provides higher density/greater capacity. It was determined without further testing that there was no risk to the DSN to include the DNU-S trunk unit. The desktop review request was approved on 13 May 2009. Table 1 includes the product code, description, and version of the DNU-S trunk unit cards. The DNU-S is applicable to the 5ESS/CDX, EXM, and DRM configurations. DSAWG accreditation was granted on 16 June 2009.

**Table 1. DNU-S Trunk Unit Cards**

5ESS/CDX	Component Cabinet/ Unit	Product Code	Description	Version
EXM	DNU-S	KTU2	STS Facility Interface - SFI00-01	4:7
		KTU1B	Trans Multiplex unit - TMUX00-05	3:4
KLU3		Common Data Packs - CD00,CD01	11:13	
KLU2		Common Control packs - CC00,CC01	11:15	
DRM				
<b>LEGEND:</b> 5ESS Class 5 Electronic Switching System CDX Compact Digital Exchange DNU-S Digital Network Unit – SONET DRM Distinctive Remote Module EXM Extended Switching Module SONET Synchronous Optical Network STS Synchronous Transport Signal				

4. The SUT interoperability test summary is listed in Table 2. The MFS Capability Requirements (CRs) and Feature Requirements (FRs) are listed in Table 3. This interoperability test summary is based on the SUT's ability to meet:

a. The following network interfaces as specified in reference (d): DSN, Defense Red Switch Network Gateway, Tactical Network Gateway, and Public Switched Telecommunications Network.

b. Interface and signaling requirements for trunk, line, and network management interfaces, and interoperability CRs and FRs derived from reference (e).

c. The overall system interoperability performance derived from test procedures listed in reference (f).

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d. Review of the LoC submitted by Alcatel-Lucent.

**Table 2. SUT Interoperability Summary**

<b>DSN Trunk Interfaces</b>			
<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
T1 CAS (DTMF, MFR1, DP)	Yes	Certified	Met all CRs and FRs.
E1 CAS (DTMF, MFR1, DP)	Yes (Europe only)	Not Tested	This interface is not supported. Therefore, the SUT is not certified by JITC nor approved by the DSN PMO for use in Europe as a MFS, EO, or SMEO. Since this is not a required interface for a MFS except when deployed in Europe, there is no operational impact.
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes	Certified	Met all CRs and FRs with the following exception: Does not support the full range of MLPP service domain. <sup>1</sup>
E1 ISDN PRI (ITU-T Q.955.3)	Yes (Europe only)	Not Tested	This interface is not supported. Therefore, the SUT is not certified by JITC nor approved by the DSN PMO for use in Europe as a MFS, EO, or SMEO. Since this is not a required interface for a MFS except when deployed in Europe, there is no operational impact.
T1 SS7 (ANSI T1.619a)	Yes	Certified	Met all CRs and FRs with the following exceptions: Does not support the full range of MLPP service domain. <sup>1</sup> Does not have the capability to assign prioritization to the Initial Address Message based on precedence level. <sup>2</sup>
E1 SS7 (ITU-T Q.735.3)	Yes (Europe only)	Not Tested	This interface is not supported. Therefore, the SUT is not certified by JITC nor approved by the DSN PMO for use in Europe as a MFS, EO, or SMEO. Since this is not a required interface for a MFS except when deployed in Europe, there is no operational impact.
<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 with the following exceptions: Does not fully support MLPP functionality on a 3-Party call. <sup>3</sup> Does not properly support MLPP interaction for call pick-up. <sup>4</sup>
ISDN BRI S/T and U Interface ITU-T Q.931	Yes	Certified	Met all CRs and FRs with the following exceptions: Does not fully support MLPP functionality on a 3-Party call. <sup>3</sup> Does not properly support MLPP interaction for call pick-up. <sup>4</sup> The SUT will only support MLPP (voice) with 5E Custom BRI protocol. <sup>5</sup>
2-Wire Digital and Analog (Proprietary)	No	Not Tested	This interface is not supported. Since this is not a required interface for a MFS, there is no operational impact.
2-Wire Analog Ground Start Line (GR-506-CORE)	Yes	Certified	Met all CRs and FRs.
<b>Voicemail</b>			
<b>Interface</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
T1 CAS	No	Certified	Met all CRs and FRs.
T1 ISDN PRI NI 1/2 (ANSI T1.607)	No	Certified	Met all CRs and FRs.
Serial SMDI interface <sup>6</sup>	No	Certified	Met all CRs and FRs.
<b>Automated Call Distributor</b>			
<b>Interface</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
T1 CAS (DTMF, MFR1, DP)	No	Certified	Met all CRs and FRs. The SUT is certified for use with any ACD on the DSN APL which is certified for this interface.
T1 ISDN PRI NI 1/2 (ANSI T1.607)	No	Certified	Met all CRs and FRs. The SUT is certified for use with any ACD on the DSN APL which is certified for this interface.
Analog	No	Certified	Met all CRs and FRs. The SUT is certified for use with any ACD on the DSN APL which is certified for this interface.

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**Table 2. SUT Interoperability Summary (continued)**

<b>Network Management<sup>7</sup></b>				
<b>Interface &amp; Signaling</b>		<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
IEEE 802.3 10BaseT Ethernet, TCP/IP		No	Certified	Met all CRs and FRs.
EIA-232 Asynchronous at 9.6 kbps		No	Certified	Met all CRs and FRs.
ITU-T X.25		No	Not-Tested	This interface is not supported. Since this is not a required interface for a MFS, there is no operational impact.
<b>DSN Features and Capabilities</b>				
<b>Features and Capabilities</b>		<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
Common Features		Yes	Certified	Met all CRs and FRs.
Attendant		Yes	Certified	Met all CRs and FRs.
Public Safety		Yes	Certified	Met all CRs and FRs.
Preset Conferencing		Yes	Certified	Met all CRs and FRs. Certified with any conference bridge on the DSN APL which is certified for the same interfaces.
Nailed-up Connections		Yes	Certified	Met all CRs and FRs.
Precedence Access Threshold		No	Certified	Met all CRs and FRs with the following exceptions: Does not support PAT queuing. <sup>8</sup>
DSN Hotline Services		Yes	Certified	Met all CRs and FRs.
Tandem Switching		Yes	Certified	Met all CRs and FRs.
ISDN Services (EKTS)		No	Not Certified	Does not support MLPP with EKTS. <sup>9</sup>
Synchronization		Yes	Certified	Met all CRs and FRs.
Reliability		Yes	Certified	Met all CRs and FRs.
Security		Yes	See note 10.	See note 10.
<b>RSU</b>				
<b>Features and Capabilities</b>		<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
Normal Operation		No	Certified	Met all CRs and FRs.
Degraded Operations		No	Certified	Met all CRs and FRs.
<b>Network Gateways</b>				
<b>Gateway</b>	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
PSTN	T1 CAS (DTMF, MFR1, DP)	Yes	Certified	Met all CRs and FRs.
	E1 CAS (DTMF, MFR1, DP)	Yes (Europe only)	Not Tested	This interface is not supported. Therefore, the SUT is not certified by JITC nor approved by the DSN PMO for use in Europe as a MFS, EO, or SMEO. Since this is not a required interface for a MFS except when deployed in Europe, there is no operational impact.
	T1 ISDN PRI NI 1/2 (ANSI T1.607)	Yes	Certified	Met all CRs and FRs.
	E1 ISDN PRI (ITU-T Q.931)	Yes (Europe only)	Not Tested	This interface is not supported. Therefore, the SUT is not certified by JITC nor approved by the DSN PMO for use in Europe as a MFS, EO, or SMEO. Since this is not a required interface for a MFS except when deployed in Europe, there is no operational impact.
	Ground Start Line	Yes	Certified	Met all CRs and FRs.
Tactical	T1 CAS (DTMF, MFR1, DP)	Yes	Certified	Met all CRs and FRs.
	E1 CAS (MFR1)	Yes (Europe only)	Not Tested	This interface is not supported. Therefore, the SUT is not certified by JITC nor approved by the DSN PMO for use in Europe as a MFS, EO, or SMEO. Since this is not a required interface for a MFS except when deployed in Europe, there is no operational impact.
DRSN <sup>11</sup>	2-Wire Analog (GR-506-CORE)	Yes	Certified	Met all CRs and FRs.

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**Table 2. SUT Interoperability Summary (continued)**

**NOTES:**

- 1 The SUT does not support the full range of MLPP service domains on the ANSI T1.619a ISDN T1 PRI and the ANSI T1.619a T1 SS7 trunk types. The SUT supports 256 MLPP service domains instead of the required 16,777,216. Since there is only one MLPP service domain used in the DSN, there is no operational impact.
- 2 The GSCR states that, in case of congestion, IAMs carrying FLASH or FLASH OVERRIDE calls shall be assigned a priority of three, IMMEDIATE calls shall be assigned a priority of two, PRIORITY calls shall be assigned a priority of one, and ROUTINE calls a priority of zero. The SUT does not have the capability to assign prioritization to SS7 IAMs based on precedence level (i.e. FLASH OVERRIDE, FLASH, IMMEDIATE, etc.). The SUT assigns a priority level of one in the IAMs to all precedence levels. Due to the amount of traffic in the DSN, congestion is not possible over the SS7 56 kbps link; therefore there is no operational impact.
- 3 The GSCR states that when any party of a 3-party call is preempted, the remaining parties will receive a conference disconnect tone. The SUT however, preempts all parties of the conference when the originator of the 3-party call is preempted. Since the originator is properly classmarked at the highest precedence of both legs of the 3-party call, the operational impact is minor.
- 4 The SUT call pickup feature doesn't retrieve the call with the highest precedence first. The SUT retrieves unanswered call pickup group calls above ROUTINE in a random sequence. The GSCR requires that "If a call pickup group has more than one party in an unanswered condition and the unanswered parties are at different precedence levels, a call pickup attempt in that group shall retrieve the highest precedence call first." All unanswered precedence calls above ROUTINE in the pickup group do divert after 15-45 seconds if unanswered and are positively connected to the attendant, night service, or alternate DN. The same method is used for diverting calls that go to an unattended phone. There is no operational impact because all precedence calls are answered.
- 5 The SUT only supports MLPP (voice) with 5E Custom protocol on their ISDN BRI interface with their proprietary 8510 instruments and certified Tone Commander ISDN BRI instruments. The Tone Commander ISDN BRI instruments have been tested and are the only ISDN BRI vendor certified for joint use within the DSN for all major DSN switches to include the SUT. In addition, the SUT BRI interface has been tested and is interoperable with all versions of the L3 Communications Secure Terminal Equipment devices using 5E Custom Protocol; therefore, there is no operational impact.
- 6 The SMDI serial interface is required for voice mail systems to turn on and turn off the voice mail lamp or stutter dial tone.
- 7 The GSCR NM requirements state that a switch can provide NM capabilities via Ethernet, serial asynchronous (EIA-232), or serial synchronous (ITU-T X.25). The SUT meets all the requirements for NM over EIA-232 asynchronous serial.
- 8 The SUT met all CRs and FRs for PAT with the following minor exception: PAT Queuing is not supported by the SUT. PAT is a conditional requirement for a MFS which makes the operational impact of this discrepancy minor.
- 9 The SUT did not meet all CRs and FRs for ISDN services EKTS. The SUT does not support MLPP interaction with telephones assigned the MADN option. This option applies to EKTS ISDN BRI telephones. The SUT does not support MLPP interaction with these instruments when more than one ISDN BRI instrument shares the same DN. Therefore, the EKTS MADN functionality of the SUT is not certified for use in the DSN. The operational impact is minor.
- 10 Information assurance testing is accomplished via DISA-led Information Assurance test teams and published in a separate report.
- 11 Interoperability certification of the SUT does not constitute DRSN PM approval for connectivity to the DRSN. It is the user's responsibility to request connectivity approval directly from the PM.

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**Table 2. SUT Interoperability Summary (continued)**

<b>LEGEND:</b>			
10BaseT	10 Mbps (Baseband Operation, Twisted Pair) Ethernet	JITC	Joint Interoperability Test Command
802.3	Standard for carrier sense multiple access with collision detection at 10 Mbps	kbps	kilobits per second
ACD	Automated Call Distributor	MADN	Multiple Appearance Directory Number
ANSI	American National Standards Institute	Mbps	Megabits per second
APL	Approved Products List	MFR1	Multifrequency Recommendation 1
BRI	Basic Rate Interface	MFS	Multifunction Switch
CAS	Channel Associated Signaling	MLPP	Multi-Level Precedence and Preemption
CRs	Capability Requirements	NI 1/2	National ISDN Standard 1 or 2
DCE	Data Circuit-Terminating Equipment	NM	Network Management
DISA	Defense Information Systems Agency	PAT	Precedence Access Threshold
DN	Directory Number	PM	Program Manager
DP	Dial Pulse	PMO	Program Management Office
DRSN	Defense Red Switch Network	PRI	Primary Rate Interface
DSN	Defense Switched Network	PSTN	Public Switched Telephone Network
DSS1	Digital Subscriber Signaling 1	Q.735.3	SS7 Signaling Standard for E1 MLPP
DTE	Data Terminal Equipment	Q.931	Signaling Standard for ISDN
DTMF	Dual Tone Multi-Frequency	Q.955.3	ISDN Signaling standard for E1 MLPP
E1	European Basic Multiplex Rate (2.048 Mbps)	RSU	Remote Switching Unit
EIA	Electronic Industries Alliance	SE	Succession Enterprise
EIA-232	Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices	SMDI	Simplified Message Desk Interface
EKTS	Electronic Key Telephone System	SMEO	Small End Office
EO	End Office	SS7	Signaling System 7
FRs	Feature Requirements	S/T	ISDN BRI four-wire interface
GR	Generic Requirement	SUT	System Under Test
GR-506-CORE	Telcordia Signaling for Analog Interface Generic Requirement	T1	Digital Transmission Link Level 1 (1.544 Mbps)
GSCR	Generic Switching Center Requirements	T1.607	ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1
IAM	Initial Address Message	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
IEEE	Institute of Electrical and Electronics Engineers, Inc.	TCP/IP	Transmission Control Protocol/Internet Protocol
ISDN	Integrated Services Digital Network	U	ISDN BRI two-wire interface
ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	X.25	Interface between DTE and DCE for terminals operating in the packet mode and connected to public data networks by dedicated circuit

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**Table 3. MFS Requirements**

<b>DSN Trunk Interfaces</b>					
<b>Interface</b>	<b>Critical</b>	<b>Requirements Required or Conditional</b>		<b>References</b>	
T1 SS7 (ANSI T1.619a)	Yes	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 Section 7</li> <li>• GSCR Section 7</li> <li>• GSCR Section 5</li> <li>• GSCR Section 2.5.7, 7.1.4 &amp; 7.2.2</li> </ul>	
E1 SS7 (ITU-T Q.735.3)	Yes (Europe only)		<ul style="list-style-type: none"> <li>• WWNDP (R)</li> <li>• Outpulsing digit formats (R: CAS only)</li> <li>• Routing (R)</li> <li>• Trunk Groups (R)</li> <li>• CAS to CCS trunk interworking (R)</li> <li>• PCM-24/PCM-30 Interoperation (R)</li> <li>• Direct Inward Dialing (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 4.5.1</li> <li>• GSCR Section 4.5.2</li> <li>• GSCR Section 4.2</li> <li>• GSCR Section 2.5.5 &amp; 2.5.6</li> <li>• GSCR Section 3.10</li> <li>• GSCR Section 7.3</li> <li>• GSCR Section 2.3.2</li> </ul>	
T1 CAS (MFR1, DTMF, DP)	Yes		<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 Section 3</li> <li>• CJCSI 6215.01B</li> </ul>	
E1 CAS (MFR1, DTMF, DP)	Yes (Europe only)		Facsimile	<ul style="list-style-type: none"> <li>• Analog: TIA/EIA-465-A (R)</li> </ul>	<ul style="list-style-type: none"> <li>• DISR</li> </ul>
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes		Data	<ul style="list-style-type: none"> <li>• Modem (VBD) (R)</li> <li>• 56 kbps switched data (R)</li> <li>• 64 kbps switched data (R: E1, PRI, and SS7)</li> <li>• NX56 synchronous BER (R)</li> <li>• NX64 synchronous BER (R: E1, PRI, and SS7)</li> <li>• Secure data (STE/STU-III) (R)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01B</li> <li>• GSCR Section 3.10</li> <li>• GSCR Section 3.10</li> <li>• GSCR Section 3.10</li> <li>• GSCR Section 3.10</li> <li>• CJCSI 6215.01B</li> </ul>
E1 ISDN PRI (ITU-T Q.955.3)	Yes (Europe Only)		VTC	<ul style="list-style-type: none"> <li>• ITU-T H.320 (R)</li> </ul>	<ul style="list-style-type: none"> <li>• DISR</li> </ul>
<b>DSN Line Interfaces</b>					
2-Wire Analog	Yes	Access	<ul style="list-style-type: none"> <li>• Directory Number Identification (R)</li> <li>• Line signaling (R)</li> <li>• Loop Start Line (R: 2-Wire Analog only)</li> <li>• Analog Ground Start (R)</li> <li>• Alerting Signals and Tones (R)</li> <li>• WWNDP (R)</li> <li>• Call Processing (R)</li> <li>• Call Treatments (R)</li> <li>• 2-Wire 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 Section 2.1.1</li> <li>• GSCR Section 5.2</li> <li>• GSCR Section 5.2.1</li> <li>• GSCR Section 5.2.2</li> <li>• GSCR Section 5.5</li> <li>• GSCR Section 4.5</li> <li>• GSCR Section 4.4</li> <li>• GSCR Section 4.1</li> <li>• GSCR Section 4.3.3</li> <li>• GSCR Section 4.3.4.1</li> </ul>	
ISDN BRI NI 1/2 (ANSI T1.619a)	Yes		<ul style="list-style-type: none"> <li>• MOS (R)</li> <li>• Announcements (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 Section 3.1.3</li> <li>• GSCR Section 3.4.3/3.9</li> <li>• CJCSI 6215.01B</li> </ul>	
Proprietary	No	Voice	<ul style="list-style-type: none"> <li>• Analog: TIA/EIA-465-A (R)</li> </ul>	<ul style="list-style-type: none"> <li>• DISR</li> </ul>	
IEEE 802.3 TCP/IP	No	Data	<ul style="list-style-type: none"> <li>• Modem (VBD) (R: 2-Wire analog only)</li> <li>• 56 kbps switched data (R: BRI only)</li> <li>• 64 kbps switched data (R: BRI only)</li> <li>• NX56 synchronous BER (R: BRI only)</li> <li>• NX64 synchronous BER (R: BRI only)</li> <li>• Secure data (STE/STU-III) (R)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01B</li> <li>• GSCR Section 3.10</li> <li>• GSCR Section 3.10</li> <li>• GSCR Section 3.10</li> <li>• GSCR Section 3.10</li> <li>• CJCSI 6215.01B</li> </ul>	
		VTC	<ul style="list-style-type: none"> <li>• ITU-T H.320 (R: BRI only)</li> </ul>	<ul style="list-style-type: none"> <li>• DISR</li> </ul>	

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**Table 3. MFS Requirements (continued)**

<b>Voice Mail Interfaces</b>			
T1 CAS T1 ISDN PRI with B Channel Transfer Serial SMDI Interface	No	<ul style="list-style-type: none"> <li>FCC Part15/Part 68 (R)</li> <li>DTMF outpulsing (C)</li> <li>ROUTINE precedence only in accordance with GSCR, Section 3.3 (R)</li> </ul>	<ul style="list-style-type: none"> <li>GSCR A7.5</li> <li>GSCR A7.5, 5.4.1, 5.4.2</li> <li>GSCR A7.5.5</li> </ul>
<b>ACD Interfaces</b>			
T1 CAS (DTMF, MFR1, DP) T1 ISDN PRI NI 1/2 (ANSI T1.607) Analog	No	<ul style="list-style-type: none"> <li>DTMF outpulsing (C)</li> <li>TIA/EIA-470-B (R): Analog only</li> <li>PCM-24 as specified in GSCR, section 7.1 (R)</li> <li>ROUTINE precedence only in accordance with GSCR, Section 3.3 (R)</li> </ul>	<ul style="list-style-type: none"> <li>GSCR Sect. A7.5, 5.4.1, 5.4.2</li> <li>GSCR A7.5.1</li> <li>GSCR Sect. A7.5.5</li> <li>GSCR Sect. A7.5.5</li> </ul>
<b>DSN Features &amp; Capabilities</b>			
<b>Feature/ Capability</b>	<b>Critical</b>	<b>Requirements Required or Conditional</b>	<b>References</b>
Common Features	Yes	<ul style="list-style-type: none"> <li>Selective call rejection (C)</li> <li>Denied originating service (C)</li> <li>Code restriction and diversion (R)</li> <li>Call waiting (C)</li> <li>Three-way calling (C)</li> <li>Add-on transfer, conference calling, and call hold (C)</li> <li>Call forwarding (C)</li> <li>Call pick-up (C)</li> </ul>	<ul style="list-style-type: none"> <li>GSCR Section 2.1.2</li> <li>GSCR Section 2.1.3</li> <li>GSCR Section 2.1.4</li> <li>GSCR Section 2.1.5</li> <li>GSCR Section 2.1.6</li> <li>GSCR Section 2.1.7</li> <li>GSCR Section 2.1.8</li> <li>GSCR Section 2.1.9</li> </ul>
Attendant	Yes	<ul style="list-style-type: none"> <li>Initiate all precedence levels (R)</li> <li>Visual display (R)</li> <li>Override class of service (R)</li> <li>Override busy line (R)</li> <li>Call deflection (R)</li> <li>Auto recall (R)</li> <li>Waiting queue (R)</li> <li>Release to pivot (R: SS7 only)</li> </ul>	<ul style="list-style-type: none"> <li>GSCR Section 2.2.1</li> <li>GSCR Section 2.2.2</li> <li>GSCR Section 2.2.3</li> <li>GSCR Section 2.2.4</li> <li>GSCR Section 2.2.5</li> <li>GSCR Section 2.2.6</li> <li>GSCR Section 2.2.7</li> <li>GSCR Section 2.2.8</li> </ul>
Public Safety	Yes	<ul style="list-style-type: none"> <li>Basic Emergency Service (911) (C)</li> <li>Trace of terminating calls (R)</li> <li>Outgoing call trace (R)</li> <li>Tandem call trace (R)</li> <li>Trace of a call in progress (R)</li> </ul>	<ul style="list-style-type: none"> <li>GSCR Section 2.4.1</li> <li>GSCR Section 2.4.2</li> <li>GSCR Section 2.4.3</li> <li>GSCR Section 2.4.4</li> <li>GSCR Section 2.4.5</li> </ul>
Preset Conferencing	Yes	<ul style="list-style-type: none"> <li>Support 10 bridges; 1 originator and 20 conferees per bridge (R)</li> <li>Assign up to 20 address numbers per bridge (R)</li> <li>Use KXX codes for bridge access (R)</li> <li>Conference notification recorded announcement (R)</li> <li>Auto retrieval and alternate address (R)</li> <li>Bridge release (R)</li> <li>Lost connection (R)</li> <li>Secondary conferencing (R)</li> <li>Address translation (R)</li> </ul>	<ul style="list-style-type: none"> <li>GSCR Section 2.6</li> <li>GSCR Section 2.6</li> <li>GSCR Section 2.6</li> <li>GSCR Section 2.6.1</li> <li>GSCR Section 2.6.2</li> <li>GSCR Section 2.6.3</li> <li>GSCR Section 2.6.4</li> <li>GSCR Section 2.6.5</li> <li>GSCR Section 2.7</li> </ul>
Nailed-up Connections	Yes	<ul style="list-style-type: none"> <li>Between any two like terminations (R)</li> <li>PCM-24 and PCM-30, both CAS and CCS (R)</li> <li>Supervision passed end-to-end for A/D or D/A (R)</li> <li>Monitored and auto reconfigure (R)</li> <li>Support at least 10% of circuits as nailed-up (R)</li> <li>Non-preemptable (R)</li> </ul>	<ul style="list-style-type: none"> <li>GSCR Section 2.8</li> </ul>

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**Table 3. MFS Requirements (continued)**

DSN Features & Capabilities			
Feature/ Capability	Critical	Requirements Required or Conditional	References
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 Section 2.11.1</li> <li>• GSCR Section 2.11.1</li> <li>• GSCR Section 2.11.1.1</li> <li>• GSCR Section 2.11.1.2</li> <li>• GSCR Section 2.11.1.3</li> <li>• GSCR Section 2.11.1.4</li> <li>• GSCR Section 2.11.1.5</li> <li>• GSCR Section 2.11.1.6</li> <li>• GSCR Section 2.11.1.7</li> <li>• GSCR Section 2.11.1.8</li> <li>• GSCR Section 2.11.1.9</li> <li>• GSCR Section 2.11.1.10</li> </ul>
DSN Hotline Services	Yes	<ul style="list-style-type: none"> <li>• Hotline restrictions (R)</li> <li>• Auto initiate (R)</li> <li>• Analog and digital (R)</li> <li>• Subscription basis (R)</li> <li>• Protected hotline calling (R)</li> <li>• WWNDP interoperable (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 2.12</li> <li>• GSCR Section 2.12</li> <li>• GSCR Section 2.12</li> <li>• GSCR Section 2.12</li> <li>• GSCR Section 2.12.1-4</li> <li>• GSCR Section 2.12.2</li> </ul>
Tandem Switching	Yes	<ul style="list-style-type: none"> <li>• Tandem Features (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 8 Table 8-1</li> </ul>
Network Management	Yes	<ul style="list-style-type: none"> <li>• Interfaces (R)</li> <li>• Measurements and data generation (R)</li> <li>• Fault management (R)</li> <li>• Configuration management (R)</li> <li>• Accounting management (R)</li> <li>• Performance management (R)</li> <li>• Network Management controls (R)</li> <li>• Remote access (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 9.1</li> <li>• GSCR Section 9.2</li> <li>• GSCR Section 9.3</li> <li>• GSCR Section 9.4</li> <li>• GSCR Section 9.5</li> <li>• GSCR Section 9.6</li> <li>• GSCR Section 9.7</li> <li>• GSCR Section 9.8</li> </ul>
ISDN Services	No	<ul style="list-style-type: none"> <li>• Electronic Key Telephone Systems (EKTS) (C)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 10, Table 10-3</li> </ul>
Synchronization	Yes	<ul style="list-style-type: none"> <li>• External line timing mode (R)</li> <li>• Line timing mode (R)</li> <li>• Internal Stratum 3 (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 11.1.1.1</li> <li>• GSCR Section 11.1.1.2</li> <li>• GSCR Section 11.1.2.1</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 Section 12</li> </ul>
Security	Yes	<ul style="list-style-type: none"> <li>• GR-815, STIGs, and DIACAP (replacement for DITSCAP) (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 13</li> </ul>
RSU			
Normal Operations	No	<p>RSU function is conditional. If an RSU is provided, <b>all</b> of the following requirements must be met:</p> <ul style="list-style-type: none"> <li>• Same user features as EO, SMEO, or PBX</li> <li>• Normal operations in accordance with GR-532-CORE</li> <li>• If EO, provide diverse routing to host and PSTN</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 2.10.2</li> <li>• GSCR Section 2.10.2</li> <li>• GSCR Section 2.10.2</li> </ul>
Degraded Operations	No	<p>RSU function is conditional. If an RSU is provided, <b>all</b> of the following requirements must be met:</p> <ul style="list-style-type: none"> <li>• Stand-alone <ul style="list-style-type: none"> <li>- Stand-alone in accordance with GR-532-CORE</li> <li>- Automated Message Accounting not required</li> <li>- MLPP required</li> </ul> </li> <li>• Partial stand-alone operations <ul style="list-style-type: none"> <li>- Partial in accordance with GR-532-CORE</li> <li>- 3% users provided assured dial tone</li> <li>- Normal MLPP interaction</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 2.10.3.1</li> <li>• GSCR Section 2.10.3.2</li> </ul>

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**Table 3. MFS Requirements (continued)**

Network Gateways				
Gateway	Critical	Requirements Required or Conditional		References
PSTN <sup>1</sup>	Yes	Trunking	<ul style="list-style-type: none"> <li>• Positive Identification Control (R)</li> <li>• On-Netting (R)</li> <li>• Off-Netting (R)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01B</li> <li>• CJCSI 6215.01B</li> <li>• CJCSI 6215.01B</li> </ul>
Tactical <sup>2</sup>	Yes	Trunking	<ul style="list-style-type: none"> <li>• Trunk Groups (R)</li> <li>• Call Processing (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 2.5.5 &amp; 2.5.6</li> <li>• GSCR Section 4</li> </ul>
		Voice	<ul style="list-style-type: none"> <li>• MLPP (R)</li> <li>• Secure calls (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 3</li> <li>• CJCSI 6215.01B</li> </ul>
		Facsimile	<ul style="list-style-type: none"> <li>• Analog: TIA/EIA-465-A (R)</li> </ul>	<ul style="list-style-type: none"> <li>• DISR</li> </ul>
DRSN <sup>3</sup>	Yes	Access	<ul style="list-style-type: none"> <li>• Alerting Signals and Tones (R)</li> <li>• Call Processing (R)</li> <li>• Call Treatments (R)</li> <li>• Analog busy/idle (R)</li> </ul>	<ul style="list-style-type: none"> <li>• GSCR Section 5.5</li> <li>• GSCR Section 4.4</li> <li>• GSCR Section 4.1</li> <li>• GSCR Section 4.3.4.1</li> </ul>
		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 Section 3</li> <li>• CJCSI 6215.01B</li> </ul>

**NOTES:**  
1 Voice, facsimile, data, and VTC service requirements for PSTN are identical to DSN with the exception of MLPP.  
2 Data and VTC services are not provided via the DSN to tactical (SMU) interface.  
3 Facsimile, data, and VTC services are not provided via the DSN to DRSN interface.

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**Table 3. MFS Requirements (continued)**

<b>LEGEND:</b>					
802.3	Standard for carrier sense multiple access with collision detection at 10 Mbps	GR-815	Generic Requirements For Network Element/Network System (NE/NS) Security	PRI PSTN	Primary Rate Interface Public Switched Telephone Network
A	Appendix	GSCR	Generic Switching Center Requirements	Q.735.3	SS7 Signaling Standard for E1 MLPP
A/D	Analog to Digital Conversion	H.320	Standard for Narrowband VTC	Q.955.3	ISDN Signaling standard for E1 MLPP
ANSI	American National Standards Institute	IEEE	Institute of Electrical and Electronics Engineers, Inc.	R	Required
BER	Bit Error Ratio	ISDN	Integrated Services Digital Network	RSU	Remote Switching Unit
BRI	Basic Rate Interface	IT	Information Technology	SMDI	Simplified Message Desk Interface
C	Conditional	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	SMEO	Small End Office
CAS	Channel Associated Signaling			SMU	Switch Multiplexer Unit
CCS	Common Channel Signaling			SS7	Signaling System 7
CJCSI	Chairman of the Joint Chiefs of Staff Instruction	kbps	kilobits per second	STE	Secure Terminal Equipment
D/A	Digital to Analog Conversion	KXX	K= any number 2-8; X= any number 1-9	STIGs	Security Technical Implementation Guides
DIACAP	DoD Information Assurance Certification and Accreditation Process	LSSGR	Local Access and Transport Area (LATA) Switching Systems Generic Requirements	STU-III	Secure Telephone Unit - 3rd generation
DISR	DoD IT Standards Registry	Mbps	Megabits per second	T1	Digital Transmission Link Level 1 (1.544 Mbps)
DITSCAP	DoD IT Security Certification and Accreditation Process	MFR1	Multi-Frequency Recommendation 1	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
DoD	Department of Defense	MFS	Multifunction Switch	TCP/IP	Transmission Control Protocol/Internet Protocol
DP	Dial Pulse	MLPP	Multi-Level Precedence and Preemption	TIA	Telecommunications Industry Association
DRSN	Defense Red Switch Network	MOS	Mean Opinion Score	TIA/EIA-465-A	Group 3 Facsimile Apparatus for Document Transmission
DSN	Defense Switched Network	NI 1/2	National ISDN Standard 1 or 2	TIA/EIA-470-B	Performance and Compatibility Requirements for Telephone Sets with Loop Signaling
DTMF	Dual Tone Multi-Frequency	NX56	Data format restricted to multiples of 56 kbps		Variable bit data
E1	European Basic Multiplex Rate (2.048 Mbps)	NX64	Data format restricted to multiples of 64 kbps	VBD	Video Teleconferencing
EIA	Electronic Industries Alliance	PAT	Precedence Access Threshold	VTC	Worldwide Numbering and Dialing Plan
EO	End Office	PBX	Private Branch Exchange	WWNDP	
FCC	Federal Communications Commission	PCM-24	Pulse Code Modulation - 24 Channels		
GR	Generic Requirement	PCM-30	Pulse Code Modulation - 30 Channels		
GR-512	LSSGR: Reliability, Section 12				
GR-532	LSSGR: Call Processing Features				

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. Joseph Roby, DSN 879-0507, commercial (520) 538-0507, FAX DSN 879-4347, or e-mail to [joseph.robby@disa.mil](mailto:joseph.robby@disa.mil). The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 0706705.

FOR THE COMMANDER:

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Enclosure a/s

  
for RICHARD A. MEADOR  
Chief  
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Distribution (electronic mail):

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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 MARCORSYSCOM, 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) JITC Memo, JTE, "Special Interoperability Test Certification of the Alcatel-Lucent Class 5 Electronic Switching System (5ESS) Digital Switching System and Compact Digital Exchange (CDX) both with Software Release 5E16.2, Broadcast Warning Message (BWM) 07-0003," 10 December 2007
- (d) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services," 23 September 2001
- (e) Defense Information Systems Agency, "Department of Defense Voice Networks Generic Switching Center Requirements (GSCR), Errata Change 2," 14 December 2006, Revised 27 March 2007
- (f) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006