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IN REPLY REFER TO: Joint Interoperability Test Command (JTE) **29 Sep 11**

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Special Interoperability Test Certification of Nortel Communication Server (CS) 2100 Compact Call Agent (CCA) with Software Release Succession Enterprise (SE)09.1 and specified Software Patch Groups

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 Enclosures

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

2. The Avaya CS2100 CCA with Software Release SE09.1 and specified Software Patch Groups 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 met the critical interoperability requirements for the following DSN switch types: Multifunction Switch (MFS), End Office (EO), Small End Office (SMEO), Private Branch Exchange (PBX) 1, PBX 2, and Deployable Voice Exchange (DVX). The MFS and EO European Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) requirements for Europe are met by the SUT with the DSN Option 11C switching system with Software Release 4.5w and specified product enhancement packages. In this configuration, the DSN Option 11C is a tandem switch and is not authorized nor approved to support line side subscribers. The SUT meets the SMEO, PBX 1, PBX 2, and DVX requirements for Europe without the DSN Option 11C.

The SUT was tested and is certified with the following optional peripherals: Intelligent Peripheral Equipment Column (IPEC), Spectrum Peripheral Module (SPM), Media Gateway 3500 (MG3500), Media Gateway 9000 (MG9K), and the MG9K with Enhanced ISDN Line Concentration Module (LCME). The MG3500 was tested and is certified only with ISDN PRI Digital Transmission Link Level 1 Interface without the capability to support Multi-Level Precedence and Preemption (MLPP) for access to the Public Switched Telephone Network (PSTN). In addition, the MG3500 is certified to be connected to any ancillary device on the DSN Approved Products List (APL) that supports ISDN PRI interfaces without MLPP (e.g. Automatic Receiving Device, Integrated Access Switch, PBX 2, Video Teleconferencing, etc.).

The SUT is certified with or without any combination of these optional peripherals. The SUT is certified to support DSN assured services over Internet Protocol with any Assured Services Voice Application Local Area Network (ASVALAN) on the DSN APL. In addition, the MG9K and the MG3500 are also certified with any certified strategic network element on the APL certified to transport 1 Gigabit Ethernet 1000BaseX. The SUT is also certified for joint use with any Voice Application Local Area Network (VALAN) on the DSN APL. However, since VALANs do not support the Assured Services Requirements detailed in reference (c), Command and Control (C2) users and Special C2 users are not authorized to be served by the SUT connected to a VALAN. 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 a minor operational impact. The SUT offers a Remote Switching Unit (RSU); however it did not meet the critical interoperability requirements and is therefore not certified by JITC, nor authorized for use in the DSN by the Program Management Office (PMO). No other configurations, features, or functions, except those cited within this report, are certified by the JITC, or authorized by the PMO for use within the DSN. This certification expires upon system changes that affect interoperability, but no later than three years from the date of this memorandum.

3. The extension of this certification is based upon Desktop Review (DTR) 13. The original certification is based on interoperability testing conducted by JITC and a review of the vendor's Letters of Compliance (LoC). Certification testing of the DSN Option 11C was completed on 18 December 2006 and documented in Reference (d). Certification testing of the CS2100 was conducted at JITC's Global Information Grid Network Test Facility at Fort Huachuca, Arizona from 30 July through 5 October 2007. Regression testing and patch verification was conducted from 19 November through 14 December 2007. Review of the vendor's LoC was completed on 5 October 2007. Interoperability verification and validation testing of the changes associated with this DTR was conducted on 23 September 2011. Nortel was acquired by Avaya; therefore, the SUT is now sold and supported by Avaya. This DTR includes a new software patch pki00ufm loaded on the MG9K. This patch is applied to the MG9K processor to simply change the default clear channel voice-port parameters (clearchanvpparam) listed in Table 1. The new default clearchanvpparam settings improves stability of established clearmode H.320 video calls by increasing the default data buffer setting from 20 milliseconds (ms) to 50ms. This patch was developed at the request of Ft Hood to fix a problem noted with video calls dropping after 10 minutes. JITC verified that this patch only changes the default settings and after the patch was applied conducted a 64 kilobits per second clearmode data bit error ratio test for over 24 hours with no errors. Therefore, JITC approves this DTR and this patch is certified for joint use within the DISN. The IA posture has not changed. The original IA approval applies to this DTR.

Table 1. Clearchanvpparam Original and New Default Settings

Original Default clearchanvpparam Settings	New Default clearchanvpparam Settings
clrChan_vp_min_delay = 20	clrChan_vp_min_delay = 50
clrChan_vp_nom_delay = 40	clrChan_vp_nom_delay = 50
clrChan_vp_max_delay = 60	clrChan_vp_max_delay = 100
LEGEND: Clearchanvpparam – clear channel voice-port parameter	

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. The SUT specified patch groups and DSN Option 11C Product Enhancement Packages are listed in Enclosure 3. This interoperability test summary is based on the SUT's ability to meet:

a. The following network interfaces as specified in Reference (c): DSN, Defense Red Switch Network Gateway, Tactical Network Gateway, and PSTN.

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).

d. Review of the LoC submitted by Avaya.

e. Internet Protocol version 6 requirements specified in Reference (e), paragraph 1.7, Table 2-5 verified through vendor submission of LoC.

Table 2. SUT Interoperability Summary

DSN Trunk Interfaces			
Interface & Signaling	**Critical**	**Status**	**Remarks**
T1 CAS (DTMF, MFR1, DP)	Yes	Certified	Met all CRs and FRs with the following exceptions: The SUT does not retry direct route during failed wink condition or glare condition.[1]
E1 CAS (DTMF, MFR1, DP)	Yes (Europe only)	Certified	Met all CRs and FRs with the following exceptions: The SUT does not retry direct route during failed wink condition or glare condition.[1] An E1 CAS trunk group set up for DTMF signaling only supports A, B, C, D precedence digits and only supports DP on inbound calls.[2]
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes	Certified	Met all CRs and FRs.
E1 ISDN PRI (ITU-T Q.955.3)	Yes (Europe only)	Certified	The MFS and EO European ISDN PRI requirements for Europe are met by the SUT with the DSN Option 11C switching system with Software Release 4.5w and specified product enhancement packages listed in enclosure 3. Met all CRs and FRs with the following minor exception: The SUT does not meet full requirement for carrier alarms.[3]
T1 SS7 (ANSI T1.619a)	Yes	Certified	Met all CRs and FRs.
E1 SS7 (ANSI T1.619a)	Yes (Europe only)	Certified	Met all CRs and FRs.

Table 2. SUT Interoperability Summary (continued)

DSN Trunk Interfaces			
DSN Line Interfaces			
Interface & Signaling	**Critical**	**Status**	**Remarks**
2-Wire Analog (GR-506-CORE)	Yes	Certified	Met all CRs and FRs with the following minor exceptions: The SUT does not provide the correct precedence ring back cadence on an analog phone in accordance with the GSCR.[4] MLPP interaction when calls are placed to a MLHG DN.[5]
ISDN BRI S/T and U Interface ITU-T Q.931	Yes	Certified	Met all CRs and FRs with the following minor exceptions: MLPP interaction when calls are placed to a MLHG DN.[5] The SUT does not support MLPP interaction on BRI telephones assigned the MADN option.[6] A member of an EKTS cannot be assigned as a member of an MLHG.[7] The Conference 6 line option does not support MLPP.[8]
2-Wire Digital and Analog (Proprietary)	No	Certified	Met all CRs and FRs with the following minor exception: MLPP interaction when calls are placed to a MLHG DN.[5]
VoIP	No	Certified	Met all CRs and FRs with the following minor exception: MLPP interaction when calls are placed to a MLHG DN.[5]
Line-Side T1 CAS DTMF (Ground-Start)	No	Certified	Met all CRs and FRs. This interface is provided by the IPEC with a line side T1 interface and is certified exclusively for voicemail.
2 Wire Analog Ground Start Line (GR-506-CORE)	Yes	Certified	Met all CRs and FRs.
Interface & Signaling	**Critical**	**Status**	**Remarks**
Voicemail			
Line-Side T1 CAS DTMF (Ground-Start)	No	Certified	Met all CRs and FRs. This interface is provided by the IPEC with a line side T1 interface and is certified exclusively for voicemail.
2 Wire Analog Ground Start Line (GR-506-CORE)	No	Certified	Met all CRs and FRs.
Network Management			
Interface & Signaling	**Critical**	**Status**	**Remarks**
IEEE 802.3 10BaseT Ethernet, TCP/IP	No[9]	Certified	Met all CRs and FRs.
EIA-232 Asynchronous at 9.6 kbps	No[9]	Certified	Met all CRs and FRs.
ITU-T X.25	No[9]	Certified	Met all CRs and FRs.
Automated Call Distributor			
Interface & Signaling	**Critical**	**Status**	**Remarks**
Internal interface	No	Not Certified	The SUT offers an internal ACD capability; however this capability does not meet the MLPP interaction requirements in accordance with the GSCR. Therefore, the SUT ACD capability is not certified by JITC, nor authorized for use within the DSN by the PMO with either an internal or external ACD.

Table 2. SUT Interoperability Summary (continued)

DSN Trunk Interfaces				
DSN Features and Capabilities				
Features and Capabilities		**Critical**	**Status**	**Remarks**
Common Features		Yes	Certified	Met all CRs and FRs with the following minor exceptions: The SUT does not provide the correct conference disconnect tone in accordance with the GSCR.[10] The SUT does not provide a splash ring on an ISDN BRI telephone when the telephone has the CFV feature assigned to the phone.[11]
Attendant		Yes	Certified	Met all CRs and FRs with the following three consoles listed on the DSN APL: Amcom Software Inc. BOSS soft console, CS2100/MSL-100 NT4X09 hard console, and the T-Metrics PhoneGroups® Personal Computer-based Console.
Public Safety		Yes	Certified	Met all CRs and FRs.
Preset Conferencing		Yes	Certified	Met all CRs and FRs.
Nailed-up Connections		Yes	Certified	Met all CRs and FRs.
Precedence Access Threshold		No	Certified	Met all CRs and FRs.
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	The SUT does not support MLPP with EKTS. The EKTS option is not certified by JITC, nor authorized for use within the DSN by the PMO. A member of an EKTS cannot be assigned as a member of an MLHG.[5]
Synchronization		Yes	Certified	Met all CRs and FRs.
Reliability		Yes	Certified	Met all CRs and FRs.
Security		Yes	See note 12.	See note 12.
RSU				
Features and Capabilities		**Critical**	**Status**	**Remarks**
Normal Operation		No	Not Certified	The RSU does not meet the GSCR requirements for certification. The RSU is not certified by JITC, nor authorized for use within the DSN by the PMO.
Degraded Operations		No	Not Certified	The SUT did not meet the following critical requirements in the degraded operations condition: MLPP is not supported during emergency standalone; MLPP is only partially met during the partial standalone when the umbilical is saturated. The RSU is not certified by JITC, nor authorized for use within the DSN by the PMO.
VoIP				
Features and Capabilities		**Critical**	**Status**	**Remarks**
VoIP Systems		No	Certified	The SUT is certified for VoIP with certified ASVALANs posted on the DSN APL. See notes 13 and 14.
Network Gateways				
Gateway	**Interface & Signaling**	**Critical**	**Status**	**Remarks**
PSTN	T1 CAS (DTMF, MFR1, DP)	Yes	Certified	Met all CRs and FRs.
	E1 CAS (DTMF, MFR1, DP)	Yes (Europe only)	Certified	Met all CRs and FRs.
	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)	Certified	The MFS and EO European ISDN PRI requirements for Europe are met by the SUT with the DSN Option 11C switching system with Software Release 4.5w and specified product enhancement packages listed in enclosure 3. Met all CRs and FRs with the following minor exception: The SUT does not meet full requirement for carrier alarms.[3]
	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)	Certified	Met all CRs and FRs.
DRSN[15]	2-Wire Analog (GR-506-CORE)	Yes	Certified	Met all CRs and FRs.

Table 2. SUT Interoperability Summary (continued)

LEGEND:

10BaseT	- 10 Mbps (Baseband Operation, Twisted Pair) Ethernet
802.3	- Standard for carrier sense multiple access with collision detection at 10 Mbps
ACD	- Automated Call Distributor
ANSI	- American National Standards Institute
APL	- Approved Products List
ASVALAN	- Assured Services Voice Application Local Area Network
BOSS	- Basic Operator Services System
BRI	- Basic Rate Interface
C2	- Command and Control
CAS	- Channel Associated Signaling
CFV	- Call Forward Variable
CRs	- Capability Requirements
CS	- Communication Server
DCE	- Data Circuit-Terminating Equipment
DISA	- Defense Information Systems Agency
DN	- Directory Number
DP	- Dial Pulse
DRSN	- Defense Red Switch Network
DSN	- Defense Switched Network
DSS1	- Digital Subscriber Signaling 1
DTE	- Data Terminal Equipment
DTMF	- Dual Tone Multi-Frequency
E1	- European Basic Multiplex Rate (2.048 Mbps)
EIA	- Electronic Industries Alliance
EIA-232	- Standard for defining the mechanical and electrical characteristics for connecting DTE and DCE data communications devices
EKTS	- Electronic Key Telephone System
EO	- End Office
FRs	- Feature Requirements
GR	- Generic Requirement
GR-506-CORE	- Telcordia Signaling for Analog Interface Generic Requirement
GSCR	- Generic Switching Center Requirements
IEEE	- Institute of Electrical and Electronics Engineers
IMP	- Impulses per minute
IPEC	- Intelligent Peripheral Equipment Column
IPv4	- Internet Protocol version 4
IPv6	- Internet Protocol version 6
ISDN	- Integrated Services Digital Network
ITU-T	- International Telecommunication Union - Telecommunication Standardization Sector
JITC	- Joint Interoperability Test Command
kbps	- kilobits per second
MADN	- Multiple Appearance Directory Number
Mbps	- Megabits per second
MFR1	- Multifrequency Recommendation 1
MFS	- Multifunction Switch
MLHG	- Multiline Hunt Group
MLPP	- Multi-Level Precedence and Preemption
MSL	- Meridian Switching Load
NI 1/2	- National ISDN Standard 1 or 2
PM	- Program Manager
PMO	- Program Management Office
PRI	- Primary Rate Interface
PSTN	- Public Switched Telephone Network
Q.931	- Signaling Standard for ISDN
Q.955.3	- ISDN Signaling standard for E1 MLPP
RSU	- Remote Switching Unit
SS7	- Signaling System 7
S/T	- ISDN BRI four-wire interface
SUT	- System Under Test
T1	- Digital Transmission Link Level 1 (1.544 Mbps)
T1.607	- ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1
T1.619a	- SS7 and ISDN MLPP Signaling Standard for T1
TCP/IP	- Transmission Control Protocol/Internet Protocol
U	- ISDN BRI two-wire interface
VALAN	- Voice Application Local Area Network
VoIP	- Voice over Internet Protocol
X.25	- Interface between DTE and DCE for terminals operating in the packet mode and connected to public data networks by dedicated circuit

NOTES:

1 The SUT does not retry direct route during failed wink condition or glare condition. The SUT tries the direct route one time then completes the call over the alternate route. Since the call is correctly routed over the alternate route, there is no operational impact.

2. An E1 CAS trunk group set up for DTMF signaling only supports A, B, C, D precedence digits and only supports DP on inbound calls. 100 percent of all E1 CAS interfaces within the DSN using DTMF signaling are configured using either DP towards the SUT and DTMF outbound from the SUT, or DTMF both ways with ABCD precedence format. There is no operational impact.

3 With the DSN Option 11C included to meet the SUT European ISDN PRI interface requirement, there exists a minor discrepancy when either the T1 or E1 interfaces are severed. When either the T1 ISDN PRI or E1 ISDN PRI interfaces are severed, the respective carrier alarms are not propagated from one interface to the other. However; when this condition occurs, calls placed over this interface via the DSN Option 11C receive an appropriate treatment (T120 busy, or Isolated Code Announcement).

4 The SUT does not provide the correct precedence above ROUTINE ring back cadence on an analog phone in accordance with the GSCR. The GSCR requires 30 IMP. The SUT is providing precedence above ROUTINE ring back cadence of 40 IMP. Since the precedence above ROUTINE ring back cadence is distinguished from the ROUTINE ring back cadence, there is no operational impact.

5 When a member of a MLHG is busy and a higher precedence call is placed to the DN of that member (not the MLHG pilot number), the higher precedence call is forwarded to the next idle member of the MLHG. Since the higher precedence call is handled and will divert to an attendant console, night service or alternate DN, there is no operational impact.

6 The SUT does not support MLPP interaction with BRI telephones assigned the MADN option. This option applies to EKTS ISDN BRI telephones. The SUT does not support MLPP interaction with these instruments. Therefore, the MADN functionality of the SUT is not certified for use of BRI instruments within the DSN. EKTS is not a required line feature for an MFS. The operational impact is minor

7 A member of an EKTS cannot be assigned as a member of an MLHG. The SUT does not allow the assignment of an ISDN BRI with options DNH (Directory Number Hunt) and MDN (Multiple Appearance Directory Number). EKTS is a conditional requirement for an MFS and therefore is considered to have a minor operational impact.

8 When the Conference 6 feature is used to perform a three-way-call, members of the three-way-call are no longer preemptable. Conference 6 is a conditional line feature and therefore has a minor operational impact. The conference feature is not certified by JITC, nor authorized for use within the DSN.

9 The Network Management requirements can be satisfied with one of the three following physical interfaces: Ethernet/TCP/IP (IEEE 802.3), Serial EIA-232/Asynchronous, or Serial Synchronous (ITU-T X.25).

10 The SUT does not provide the exact conference disconnect tone in accordance with the GSCR. The tone provided is the same tone provided to commercial customers. The tone currently being provided is distinct and will have no operational impact.

11 The SUT does not provide a splash ring on an ISDN BRI telephone when the telephone has the CFV feature assigned to the phone. This discrepancy has a minor operational impact.

12 Security is tested by DISA-led Information Assurance test teams and published in a separate report.

13 The SUT is certified to support DSN assured services over Internet Protocol with any ASVALAN on the DSN APL. The SUT is also certified for joint use with any VALAN on the DSN APL. However, since VALANs do not support the Assured Services Requirements detailed in reference (c), C2 users and Special C2 users are not authorized to be served by the SUT connected to a VALAN.

14 An IPv6 capable system or product, as defined in the GSCR, paragraph 1.7, shall be capable of receiving, processing, and forwarding IPv6 packets and/or interfacing with other systems and protocols in a manner similar to that of IPv4. IPv6 capability is currently satisfied by a vendor Letter of Compliance signed by the Vice President of the company. The vendor stated, in writing, compliance to the following criteria by 31 December 2008**:**

a. Conformant with IPv6 standards profile contained in the Department of Defense Information Technology Standards Registry (DISR).
b. Maintaining interoperability in heterogeneous environments and with IPv4.
c. Commitment to upgrade as the IPv6 standard evolves.
d. Availability of contractor/vendor IPv6 technical support.

15 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.

Table 3. MFS Requirements

DSN Trunk Interfaces				
Interface	**Critical**	**Requirements Required or Conditional**		**References**
T1 SS7 (ANSI T1.619a) E1 SS7 (ANSI T1.619a) T1 CAS (MFR1, DTMF, DP) E1 CAS (MFR1, DTMF, DP) T1 ISDN PRI NI 1/2 (ANSI T1.619a) E1 ISDN PRI (ITU-T Q.955.3)	Yes Yes (Europe only) Yes Yes (Europe only) Yes Yes (Europe Only)	Trunking	• Framing (R) • Line Code (R) • Signaling (R) • Alarms (R) • WWNDP (R) • Outpulsing digit formats (R: CAS only) • Routing (R) • Trunk Groups (R) • CAS to CCS trunk interworking (R) • PCM-24/PCM-30 Interoperation (R) • Direct Inward Dialing (R)	• GSCR Section 7 • GSCR Section 7 • GSCR Section 5 • GSCR Section 2.5.7, 7.1.4 & 7.2.2 • GSCR Section 4.5.1 • GSCR Section 4.5.2 • GSCR Section 4.2 • GSCR Section 2.5.5 & 2.5.6 • GSCR Section 3.10 • GSCR Section 7.3 • GSCR Section 2.3.2
		Voice	• MOS (R) • MLPP (R) • Secure calls (R)	• CJCSI 6215.01B • GSCR Section 3 • CJCSI 6215.01B
		Facsimile	• Analog: TIA/EIA-465-A (R)	• DISR
		Data	• Modem (VBD) (R) • 56 kbps switched data (R) • 64 kbps switched data (R: E1, PRI, and SS7) • NX56 synchronous BER (R) • NX64 synchronous BER (R: E1, PRI, and SS7) • Secure data (STE/STU-III) (R)	• CJCSI 6215.01B • GSCR Section 3.10 • GSCR Section 3.10 • GSCR Section 3.10 • GSCR Section 3.10 • CJCSI 6215.01B
		VTC	• ITU-T H.320 (R)	• DISR
DSN Line Interfaces				
2-Wire Analog ISDN BRI NI 1/2 (ANSI T1.619a) Proprietary IEEE 802.3 TCP/IP	Yes Yes No No	Access	• Directory Number Identification (R) • Line signaling (R) • Loop Start Line (R: 2-Wire Analog only) • Analog Ground Start (R) • Alerting Signals and Tones (R) • WWNDP (R) • Call Treatments (R) • Call Processing • 2W user access (R: 2-Wire Analog only) • Analog busy/idle (R: 2-Wire Analog only)	• GSCR Section 2.1.1 • GSCR Section 5.2 • GSCR Section 5.2.1 • GSCR Section 5.2.2 • GSCR Section 5.5 • GSCR Section 4.5 • GSCR Section 4.1 • GSCR Section 4.4 • GSCR Section 4.3.3 • GSCR Section 4.3.4.1
		Voice	• MOS (R) • Announcements (R) • MLPP (R) • Secure Calls (R)	• CJCSI 6215.01B • GSCR Section 3.1.3 • GSCR Section 3.4.3/3.9 • CJCSI 6215.01B
		Facsimile	• Analog: TIA/EIA-465-A (R)	• DISR
		Data	• Modem (VBD) (R: 2W analog only) • 56 kbps switched data (R: BRI only) • 64 kbps switched data (R: BRI only) • NX56 synchronous BER (R: BRI only) • NX64 synchronous BER (R: BRI only) • Secure data (STE/STU-III) (R)	• CJCSI 6215.01B • GSCR Section 3.10 • GSCR Section 3.10 • GSCR Section 3.10 • GSCR Section 3.10 • CJCSI 6215.01B
		VTC	• ITU-T H.320 (R: BRI only)	• DISR
SUT Voice Mail interfaces				
2 Wire Analog (Ground Start) T1 CAS (DTMF) (Ground Start)	No	• FCC Part15/Part 68 (R): Analog only • DTMF outpulsing (C) • ROUTINE precedence only in accordance with GSCR, Section 3.3 (R) • TIA/EIA-470-B (R): Analog only		• GSCR A7.5 • GSCR A7.5, 5.4.1, 5.4.2 • GSCR A7.5.5 • GSCR A7.5.1

Table 3. MFS Requirements (continued)

Automated Call Distributor Interfaces			
Internal	No	• DTMF outpulsing (C) • ROUTINE precedence only in accordance with GSCR, Section 3.3 (R) • TIA/EIA-470-B (R): Analog only	• GSCR A7.5, 5.4.1, 5.4.2 • GSCR A7.5.5 • GSCR A7.5.1
DSN Features & Capabilities			
Feature/ Capability	**Critical**	**Requirements Required or Conditional**	**References**
Common Features	Yes	• Selective call rejection (C) • Denied originating service (C) • Code restriction and diversion (R) • Call waiting (C) • Three-way calling (C) • Add-on transfer, conference calling, and call hold (C) • Call forwarding (C) • Call pick-up (C)	• GSCR Section 2.1.2 • GSCR Section 2.1.3 • GSCR Section 2.1.4 • GSCR Section 2.1.5 • GSCR Section 2.1.6 • GSCR Section 2.1.7 • GSCR Section 2.1.8 • GSCR Section 2.1.9
Attendant	Yes	• Initiate all precedence levels (R) • Visual display (R) • Override class of service (R) • Override busy line (R) • Call deflection (R) • Auto recall (R) • Waiting queue (R) • Release to pivot (R: SS7 only)	• GSCR Section 2.2.1 • GSCR Section 2.2.2 • GSCR Section 2.2.3 • GSCR Section 2.2.4 • GSCR Section 2.2.5 • GSCR Section 2.2.6 • GSCR Section 2.2.7 • GSCR Section 2.2.8
Public Safety	Yes	• Basic Emergency Service (911) (C) • Trace of terminating calls (R) • Outgoing call trace (R) • Tandem call trace (R) • Trace of a call in progress (R)	• GSCR Section 2.4.1 • GSCR Section 2.4.2 • GSCR Section 2.4.3 • GSCR Section 2.4.4 • GSCR Section 2.4.5
Preset Conferencing	Yes	• Support 10 bridges; 1 originator and 20 conferees per bridge (R) • Assign up to 20 address numbers per bridge (R) • Use KXX codes for bridge access (R) • Conference notification recorded announcement (R) • Auto retrial and alternate address (R) • Bridge release (R) • Lost connection (R) • Secondary conferencing (R) • Address translation (R)	• GSCR Section 2.6 • GSCR Section 2.6 • GSCR Section 2.6 • GSCR Section 2.6.1 • GSCR Section 2.6.2 • GSCR Section 2.6.3 • GSCR Section 2.6.4 • GSCR Section 2.6.5 • GSCR Section 2.7
Nailed-up Connections	Yes	• Between any two like terminations (R) • PCM-24 and PCM-30, both CAS and CCS (R) • Supervision passed end-to-end for A/D or D/A (R) • Monitored and auto reconfigure (R) • Support at least 10% of circuits as nailed-up (R) • Non-preemptable (R)	• GSCR Section 2.8 • GSCR Section 2.8 • GSCR Section 2.8 • GSCR Section 2.8 • GSCR Section 2.8 • GSCR Section 2.8
PAT	No	• Classmark for/not for PAT screening (C) • 7 PAT mechanisms (C) • Outgoing call screening (C) • Functional structure (C) • Simultaneous calls limitation (C) • Overflow process (C) • Decrementing call-in-progress count (C) • Call treatment (C) • Queuing (C) • Attendant calls (C) • Operation measurement registers (C) • Maintenance and Administration of thresholds (C)	• GSCR Section 2.11.1 • GSCR Section 2.11.1 • GSCR Section 2.11.1.1 • GSCR Section 2.11.1.2 • GSCR Section 2.11.1.3 • GSCR Section 2.11.1.4 • GSCR Section 2.11.1.5 • GSCR Section 2.11.1.6 • GSCR Section 2.11.1.7 • GSCR Section 2.11.1.8 • GSCR Section 2.11.1.9 • GSCR Section 2.11.1.10

Table 3. MFS Requirements (continued)

DSN Features & Capabilities			
Feature/ Capability	**Critical**	**Requirements Required or Conditional**	**References**
DSN Hotline Services	Yes	• Hotline restrictions (R) • Auto initiate (R) • Analog and digital (R) • Subscription basis (R) • Protected hotline calling (R) • WWNDP interoperable (R)	• GSCR Section 2.12 • GSCR Section 2.12 • GSCR Section 2.12 • GSCR Section 2.12 • GSCR Section 2.12.1-4 • GSCR Section 2.12.2
Tandem Switching	Yes	• Tandem Features (R)	• GSCR Section 8 table 8-1
Network Management	Yes	• Interfaces (R) • Measurements and data generation (R) • Fault management (R) • Configuration management (R) • Accounting management (R) • Performance management (R) • Network Management controls (R) • Remote access (R)	• GSCR Section 9.1 • GSCR Section 9.2 • GSCR Section 9.3 • GSCR Section 9.4 • GSCR Section 9.5 • GSCR Section 9.6 • GSCR Section 9.7 • GSCR Section 9.8
ISDN Services	No	• Electronic Key Telephone Systems (EKTS) (C)	• GSCR Section 10, table 10-3
Synchronization	Yes	• External line timing mode (R) • Line timing mode (R) • Internal Stratum 3 (R)	• GSCR Section 11.1.1.1 • GSCR Section 11.1.1.2 • GSCR Section 11.1.2.1
Reliability	Yes	• GR-512-CORE (R)	• GSCR Section12
Security	Yes	• GR-815, STIGs, and DIACAP (replacement for DITSCAP) (R)	• GSCR Section 13
RSU			
Normal Operations	No	RSU function is conditional. If an RSU is provided, **all** of the following requirements must be met: • Same user features as EO, SMEO, or PBX • Normal operations in accordance with GR-532-CORE • If EO, provide diverse routing to host and PSTN	 • GSCR Section 2.10.2 • GSCR Section 2.10.2 • GSCR Section 2.10.2
Degraded Operations	No	RSU function is conditional. If an RSU is provided, **all** of the following requirements must be met: • Stand-alone - Stand-alone in accordance with GR-532-CORE - Automated Message Accounting not required - MLPP required • Partial stand-alone operations - Partial in accordance with GR-532-CORE - 3% users provided assured dial tone - Normal MLPP interaction	 • GSCR Section 2.10.3.1 • GSCR Section 2.10.3.2
VoIP			
VoIP System	No	VoIP function is conditional. If VoIP is provided, **all** of the following requirements must be met: • MOS 4.0 or better • ITU-T G.711 PCM Codec • Security • Network Management • Line timing • Internal Clock • Latency ≤ 60 milliseconds • IPv6 capable	 • GSCR Appendix 3 • GSCR Appendix 3 • GSCR Appendix 3 • GSCR Appendix 3 • GSCR Appendix 3 • GSCR Appendix 3 • GSCR Appendix 3 • GSCR paragraph 1.7

Table 3. MFS Requirements (continued)

Network Gateways				
Gateway	**Critical**	**Requirements Required or Conditional**		**References**
PSTN[1]	Yes	Trunking	• Positive Identification Control (R) • On-Netting (R) • Off-Netting (R)	• CJCSI 6215.01B • CJCSI 6215.01B • CJCSI 6215.01B
Tactical[2]	Yes	Trunking	• Trunk Groups (R) • Call Processing (R)	• GSCR Section 2.5.5 & 2.5.6 • GSCR Section 4
		Voice	• MLPP (R) • Secure calls (R)	• GSCR Section 3 • CJCSI 6215.01B
		Facsimile	• Analog: TIA/EIA-465-A (R)	• DISR
DRSN[3]	Yes	Access	• Alerting Signals and Tones (R) • Call Processing (R) • Call Treatments (R) • Analog busy/idle (R)	• GSCR Section 5.5 • GSCR Section 4.4 • GSCR Section 4.1 • GSCR Section 4.3.4.1
		Voice	• MOS (R) • MLPP (R) • Secure calls (R)	• CJCSI 6215.01B • GSCR Section 3 • CJCSI 6215.01B

LEGEND:

2W	- 2-Wire	GR-512	- LSSGR: Reliability, Section 12	PCM-24	- Pulse Code Modulation - 24 Channels
A/D	- Analog to Digital Conversion	GR-532	- LSSGR: Call Processing Features	PCM-30	- Pulse Code Modulation - 30 Channels
ANSI	- American National Standards Institute	GR-815	- Generic Requirements For Network Element/Network System (NE/NS) Security	PRI	- Primary Rate Interface
BER	- Bit Error Ratio			PSTN	- Public Switched Telephone Network
BRI	- Basic Rate Interface	GSCR	- Generic Switching Center Requirements	Q.955.3	- ISDN Signaling standard for E1 MLPP
C	- Conditional	H.320	- Standard for Narrowband VTC	R	- Required
CAS	- Channel Associated Signaling	IEEE	- Institute of Electrical and Electronics Engineers	RSU	- Remote Switching Unit
CCS	- Common Channel Signaling	IPv6	- Internet Protocol version 6	SMEO	- Small End Office
CJCS	- Chairman of the Joint Chiefs of Staff	ISDN	- Integrated Services Digital Network	SMU	- Switch Multiplexer Unit
CJCSI	- CJCS Instruction	IT	- Information Technology	SS7	- Signaling System 7
D/A	- Digital to Analog Conversion	ITU-T	- International Telecommunication Union - Telecommunication Standardization Sector	STE	- Secure Terminal Equipment
DIACAP	- DoD Information Assurance Certification and Accreditation Process			STIGs	- Security Technical Implementation Guides
		kbps	- kilobits per second	STU-III	- Secure Telephone Unit - 3rd generation
DISR	- DoD IT Standards Registry	KXX	- K= any number 2-8; X= any number 1-9	T1	- Digital Transmission Link Level 1 (1.544 Mbps)
DITSCAP	- DoD IT Security Certification and Accreditation Process	LSSGR	- Local Access and Transport Area (LATA) Switching Systems Generic Requirements	T1.619a	- SS7 and ISDN MLPP Signaling Standard for T1
DoD	- Department of Defense	Mbps	- Megabits per second	TIA	- Telecommunications Industry Association
DP	- Dial Pulse	MFR1	- Multi-Frequency Recommendation 1	TIA/EIA-465-A	- Group 3 Facsimile Apparatus for Document Transmission
DRSN	- Defense Red Switch Network	MFS	- Multifunction Switch		
DSN	- Defense Switched Network	MLPP	- Multi-Level Precedence and Preemption	TIA/EIA-470-B	- Performance and Compatibility Requirements for Telephone Sets with Loop Signaling
DTMF	- Dual Tone Multi-Frequency	MOS	- Mean Opinion Score		
E1	- European Basic Multiplex Rate (2.048 Mbps)	NI 1/2	- National ISDN Standard 1 or 2	VBD	- Variable bit data
EIA	- Electronic Industries Alliance	NX56	- Data format restricted to multiples of 56 kbps	VoIP	- Voice over Internet Protocol
EO	- End Office	NX64	- Data format restricted to multiples of 64 kbps	VTC	- Video Teleconferencing
FCC	- Federal Communications Commission	PAT	- Precedence Access Threshold	WWNDP	- Worldwide Numbering and Dialing Plan
G.711	- Standard for PCM of Voice Frequencies	PBX	- Private Branch Exchange		
GR	- Generic Requirement	PCM	- Pulse Code Modulation		

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.

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 Capt. Stéphane Arsenault, DSN 879-5269, commercial (520) 538-5269, FAX DSN 879-4347, or e-mail stephane.arsenault@disa.mil. The tracking number for the SUT is 0605901.

FOR THE COMMANDER:

Enclosure a/s

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ADDITIONAL REFERENCES

(c) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services," 23 September 2001

(d) Joint Interoperability Test Command (JITC), Memo, "Special Interoperability Test Certification of Nortel Defense Switched Network (DSN) Communications Server (CS) 1000M Cabinet and CS1000M Chassis (including Voice over Internet Protocol [VoIP]) and DSN Option 11C Digital Switching Systems with Software Release 4.5w and Product Enhancement Packages," 7 March 2007

(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