



## DEFENSE INFORMATION SYSTEMS AGENCY

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

**21 Sep 10**

### MEMORANDUM FOR DISTRIBUTION

**SUBJECT:** Extension of the Special Interoperability Test Certification of Nortel Application Server (AS)5300 Release 1.0

**References:** (a) DoD Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004  
(b) CJCSI 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008  
(c) through (g), see Enclosure

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.

2. The Nortel AS5300 Release 1.0 is hereinafter referred to as the system under test (SUT). The SUT meets all of the critical interoperability requirements and is certified for joint use within the Defense Switched Network (DSN) for the following switch types: Private Branch Exchange (PBX) 1 and PBX 2. The SUT meets the Voice over Internet Protocol critical interoperability requirements with any certified Assured Services Local Area Network (ASLAN) on the Unified Capabilities (UC) Approved Products List (APL). The identified test discrepancies shown in the SUT Interoperability Test Summary have an overall minor operational impact. No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This certification expires upon changes that could affect interoperability, but no later than three years from the date of the original memorandum (11 May 2009).

3. The extension of this certification is based upon Desktop Review (DTR) 4 and Defense Information Assurance (IA)/Security Accreditation Working Group (DSAWG) accreditation. The original certification is based on interoperability testing conducted by JITC, DISA adjudication of open test discrepancy reports, review of the vendor's Letters of Compliance (LoC), and DSAWG accreditation. Interoperability testing of the SUT was conducted at JITC's Global Information Grid Network Test Facility at Fort Huachuca, Arizona, from 15 July through 30 September 2008. Review of vendor's LoC was completed on 30 January 2009. Regression Testing was conducted from 15 December 2008 through 30 January 2009 and from 13 through 25 April 2009 and documented in Reference (c). The DISA adjudication of outstanding test discrepancy reports was completed on 29 April 2009. The DSAWG granted accreditation on 13 January 2009 based on the security testing completed by DISA-led Information Assurance test teams and published in a separate report, Reference (d). The Session Initiation Protocol

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(SIP) core was tested with software release MCP 11.0.0.0\_2008\_04\_16-2100. This DTR was requested to include software release MCP\_11.0.1.0\_2008-10-23-1827 on the SIP core. The JITC determined there was minor risk in approving this DTR because the software update was included in Real Time Services (RTS) testing conducted at JITC. The DSAWG accreditation for this DTR was granted on 21 September 2010.

4. The interoperability test summary of the SUT is indicated in Table 1. The PBX 1 Capability Requirements (CRs) and Feature Requirements (FRs) are listed in Table 2. This interoperability test status is based on the PBX 1's ability to meet:

- a. DSN services for Network and Applications specified in Reference (e).
- b. PBX 1 interface and signaling requirements for trunks/lines specified in Reference (f) verified through JITC testing and/or vendor submission of LoC.
- c. PBX 1 CRs/FRs specified in Reference (f) verified through JITC testing and/or vendor submission of LoC.
- d. Softphone CRs/FRs specified in References (f) and (g) verified through JITC testing in accordance with Reference (h) and/or vendor submission of LoC
- e. The overall system interoperability performance derived from test procedures listed in Reference (h).

**Table 1. SUT Interoperability Test Summary**

DSN Trunk Interfaces			
Interface & Signaling	Critical	Status	Remarks
T1 CAS (DTMF, MFR1, DP)	No	Not Tested	This interface is not supported by the SUT. This is not a required interface for a PBX 1. There is no risk associated with the SUT not supporting this feature.
E1 CAS (DTMF, MFR1, DP)	No (Europe only)	Not Tested	This interface is not supported by the SUT. This is not a required interface for a PBX 1. There is no risk associated with the SUT not supporting this feature.
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes	Certified	Met all critical CRs and FRs.
E1 ISDN PRI (ITU-T Q.955.3)	No (Europe only)	Not Tested	This interface is not supported by the SUT. This is not a required interface for a PBX 1. There is no risk associated with the SUT not supporting this feature.
DSN Line Interfaces			
Interface & Signaling	Critical	Status	Remarks
2-Wire Analog (GR-506-CORE)	Yes	Certified	Met all critical CRs and FRs.
ISDN BRI NI 1/2 (ANSI T1.619a)	No	Not Tested	This feature is not supported by the SUT. This is not a required feature for a PBX 1. There is no risk associated with the SUT not supporting this feature.
2-Wire Proprietary Digital	No	Not Tested	This feature is not supported by the SUT. This is not a required feature for a PBX 1. There is no risk associated with the SUT not supporting this feature.
VoIP	No	Certified	Met all critical CRs and FRs.
DSN Features and Capabilities			
Features and Capabilities	Critical	Status	Remarks
Common Features	Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: The SUT analog EIs do not support the following required features: Call Waiting, Call Hold, Call Transfer, and 3-Way-Calling. <sup>1</sup> The SUT does not provide 'Ping' Ring when CFV is activated. <sup>2</sup>
Attendant	No	Not Tested	This feature is not supported by the SUT. This is not a required feature for a PBX 1. There is no risk associated with the SUT not supporting this feature.

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

<b>DSN Features and Capabilities (continued)</b>				
<b>Features and Capabilities</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>	
Public Safety	Yes	Certified	The SUT met all critical CRs and FRs for Basic 911. Additionally the SUT met the following non-critical CRs and FRs: Tracing of a Terminating Call, Outgoing Call Tracing, and Trace of a Call in Progress.	
Preset Conferencing	No	Not Tested	This feature is not supported by the SUT. This is not a required feature for a PBX 1. There is no risk associated with the SUT not supporting this feature.	
Meet-me Conferencing	Yes	Not Certified	The SUT does not permit preemption of a Meet-me conference with no available resources. This SUT feature is not certified by JITC. <sup>3</sup>	
Progressive Conferencing	No	Not Tested	This feature is not supported by the SUT. This is not a required feature for a PBX 1. There is no risk associated with the SUT not supporting this feature.	
Nailed-up Connections	No	Not Tested	This feature is not supported by the SUT. This is not a required feature for a PBX 1. There is no risk associated with the SUT not supporting this feature.	
DSN Hotline Services	No	Not Tested	This feature is not supported by the SUT. This is not a required feature for a PBX 1. There is no risk associated with the SUT not supporting this feature.	
MLPP	Yes	Certified	Met all critical CRs and FRs with the following minor exception: Calls are diverted to the Alt DN instead of being forwarded to the CFB DN. After timeout, calls are diverted to the Alt DN instead of the CFD DN. <sup>4</sup>	
Call Processing	Yes	Certified	Met all critical CRs and FRs with the following minor exception: Improper classmarking of a partially dialed IP phone. <sup>5</sup>	
ISDN Services	Yes	Certified	Met all critical CRs and FRs.	
Synchronization	Yes	Certified	Met all critical CRs and FRs.	
Reliability	Yes	Certified	Met all critical CRs and FRs with the following minor exception: When a call is in a ringing state and the Mediant 3000 gateway redundant processor failover is conducted, the call fails to complete. <sup>6</sup>	
Softphone	No	Certified	Met all CRs and FRs. The SUT is certified specifically with the Nortel Multimedia Federal Client Release 6.1.228_20080928.	
Security	Yes	Certified	See note 7.	
VoIP System	No	Certified	The SUT did not meet the IPv6 capability requirement to be compliant no later than 31 December 2008. <sup>8</sup>	
<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)	No	Not Tested	This feature is not supported by the SUT. This is not a required feature for a PBX 1. There is no risk associated with the SUT not supporting this feature.
	E1 CAS (DTMF, MFR1, DP)	No (Europe only)	Not Tested	This feature is not supported by the SUT. This is not a required feature for a PBX 1. There is no risk associated with the SUT not supporting this feature.
	T1 ISDN PRI NI 1/2 (ANSI T1.607)	No	Certified	Met all critical CRs and FRs.
	E1 ISDN PRI (ITU-T Q.931)	No (Europe only)	Not Tested	This interface is not supported by the SUT. This is not a required interface for a PBX 1. There is no risk associated with the SUT not supporting this feature.
	Ground Start Line	Yes	Not Tested	This interface is not supported by the SUT. <sup>9</sup>

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

<b>NOTES:</b>			
1	The SUT analog EIs do not support the following required features: Call Waiting, Call Hold, Call Transfer, and 3-Way-Calling. This is due to the fact that the SUT analog EIs do not support hook flash. Also, this UCR requirement changed from Conditional to Required and the vendor has 18 months (until July 2009) to develop this capability.		
2	The SUT does not provide 'Ping' Ring when CFV is activated. This feature was adjudicated by DISA on 21 February 2009 as having a minor operational impact. Also, this is not a required feature for a PBX 1. There is no risk associated with the SUT not supporting this feature.		
3	The SUT does not permit preemption of a Meet-me conference with no available resources. This SUT feature is not certified by JITC. DISA's adjudication of this discrepancy was completed on 21 February 2009 and was ruled to have a minor operational impact. Furthermore, DISA, in coordination with the Joint Staff, stated their intent to modify Meet-me conference for a PBX 1 from required to conditional in Change 1 of the UCR 2008.		
4	The SUT meets MLPP interaction with the following exceptions: When an equal or lower precedence call above ROUTINE is placed to a busy subscriber with CFB assigned, the call is diverted to the Alt DN instead of being forwarded to the CFB DN. When a call above ROUTINE is placed to a DN assigned the CFD feature, the call after timeout is diverted to the Alt DN instead of the CFD DN. Since the precedence call is positively answered, the operational impact is minor. This discrepancy was adjudicated by DISA as having a minor operational impact on 21 February 2009.		
5	For an IP EI in a partial dialed condition (any number of digits less than the complete dialed number), the incoming caller above ROUTINE preempts the IP EI 100% of the time instead of receiving the required BPA. Since the SUT IP EI is technically not off-hook until the SEND key is pressed after all digits are dialed, there is no operational impact. This feature was adjudicated by DISA on 21 February 2009 as having a minor operational impact.		
6	When a call is in a ringing state over the T1 PRI and a Mediant 3000 gateway redundant processor failover is conducted, the call fails to complete. DISA's adjudication of this discrepancy was completed on 21 February 2009 and was ruled to have a minor operational impact. Furthermore, the SUT met the overall reliability requirements, therefore the operational impact is minor.		
7	Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (d).		
8	An IPv6 capable system or product, as defined in the UCR, 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 LoC signed by the Vice President of the company. The vendor stated in their LoC that the SUT will not be IPv6 compliant until the next software release, which is not available until September 2009. The OSD waived this requirement on 6 May 2009 with the stipulation that the vendor submit this new release for testing via the Unified Capabilities Certification Office after September 2009.		
	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.	
9	DISA's adjudication of this discrepancy was completed on 29 April 2009 and was ruled to have a minor operational impact. Furthermore, DISA, in coordination with the Joint Staff, stated their intent to modify ground start line for a PBX 1 from required to conditional in Change 1 of the UCR 2008.		
<b>LEGEND:</b>			
AltDN	Alternate Directory Number	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector
ANSI	American National Standards Institute	JITC	Joint Interoperability Test Command
BPA	Blocked Precedence Announcement	LoC	Letter of Compliance
BRI	Basic Rate Interface	LSSGR	Local Access and Transport Area (LATA) Switching Systems Generic Requirements
CAS	Channel Associated Signaling	Mbps	Megabits per second
CFB	Call Forward Busy	MFR1	Multi-Frequency Recommendation 1
CFD	Call Forward Busy, Do Not Answer	MLPP	Multi-Level Precedence and Preemption
CFV	Call Forward Variable	NI 1/2	National ISDN Standard 1 or 2
CRs	Capability Requirements	OSD	Office of the Secretary of Defense
DISA	Defense Information Systems Agency	PBX 1	Private Branch Exchange 1
DN	Directory Number	PRI	Primary Rate Interface
DP	Dial Pulse	PSTN	Public Switched Telephone Network
DSN	Defense Switched Network	Q.931	Signaling Standard for ISDN
DSS1	Digital Subscriber Signaling 1	Q.955.3	ISDN Signaling standard for E1 MLPP
DTMF	Dual Tone Multi-Frequency	SS7	Signaling System 7
E1	European Basic Multiplex Rate (2.048 Mbps)	SUT	System Under Test
EI	End Instrument	T1	Digital Transmission Link Level 1 (1.544 Mbps)
FRs	Feature Requirements	T1.607	ISDN Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1
GR	Generic Requirement	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
GR-506-CORE	LSSGR: Signaling for Analog Interfaces	UCR	Unified Capabilities Requirements
IP	Internet Protocol	VoIP	Voice over Internet Protocol
IPv4	Internet Protocol version 4		
IPv6	Internet Protocol version 6		
ISDN	Integrated Services Digital Network		

**Table 2. PBX 1 Requirements**

DSN Trunk Interfaces						
Interface	Critical	Requirements Required or Conditional		References		
TI CAS (MFR1, DTMF, DP)	No	Trunking	<ul style="list-style-type: none"> <li>• PBX Line (C)</li> <li>• Direct Inward Dialing (C)</li> <li>• National ISDN 1/2 Primary Access (R)</li> <li>• ISDN ANSI MLPP Service Capability (R)</li> <li>• ITU-T ISDN Primary Access (Europe only) (C)</li> <li>• ITU-T ISDN Primary Access Digital Subscriber Signaling System Number 1 MLPP (Europe only) (C)</li> <li>• Normal Wink Start Operations (C)</li> <li>• Glare Operation (C)</li> <li>• Abnormal Wink Start (C)</li> <li>• Glare Resolution (C)</li> <li>• Call for Service Timing (R)</li> <li>• Guard Timing (R)</li> <li>• Satellite Timing (C)</li> <li>• Disconnect Control (C)</li> <li>• Reselect and Retrial (C)</li> <li>• Off-Hook Supervision Transition (C)</li> <li>• Dial-Pulse Signals (C)</li> <li>• DTMF Signaling (C)</li> <li>• Standard Digit Format for Precedence (C)</li> <li>• MFR1 2/6 Signaling (C)</li> <li>• Alerting Signals and Tones (R)</li> <li>• DSN ISDN User-to-Network Signaling (R)</li> <li>• Application (R)</li> <li>• Physical Layer (R)</li> <li>• Data Link Layer (R)</li> <li>• Data Link Connection (R)</li> <li>• Peer-to-Peer Procedures of Data-Link Layer (R)</li> <li>• Layer 3 DSN User-to-Network Signaling (R)</li> <li>• DSN User-to-Network Signaling for Circuit-Switched Bearer Services (R)</li> <li>• Sequence of Messages for DSN Circuit-Switched Calls (R)</li> <li>• Message Functional Definition and Content (R)</li> <li>• General Message Format and Information Elements Coding (R)</li> <li>• Supplementary Services (C)</li> <li>• PCM-24 Digital Trunk Interface (R)</li> <li>• Interface Characteristics (R)</li> <li>• Supervisory Channel Associated Signaling (C)</li> <li>• Clear Channel Capability (R)</li> <li>• Alarm and Restoral Requirements (R)</li> <li>• PCM-30 Digital Trunk Interface (Europe only) (C)</li> <li>• Interoperation of PCM-24 and PCM-30 (C)</li> <li>• Analog Trunk Interface (C)</li> <li>• Integrated Digital Loop Carrier (C)</li> <li>• Trunk Group-Remove from Service (C)</li> <li>• Trunk Group-Restore to Service (C)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 2.3.1</li> <li>• UCR Section 2.3.2</li> <li>• UCR Section 2.3.4.1</li> <li>• UCR Section 2.3.4.1.1</li> <li>• UCR Section 2.3.4.2</li> <li>• UCR Section 2.3.4.2.1</li> <li>• UCR Section 5.3.3.1.1</li> <li>• UCR Section 5.3.3.1.2</li> <li>• UCR Section 5.3.3.2.1</li> <li>• UCR Section 5.3.3.2.2</li> <li>• UCR Section 5.3.5</li> <li>• UCR Section 5.3.6</li> <li>• UCR Section 5.3.7</li> <li>• UCR Section 5.3.8</li> <li>• UCR Section 5.3.9</li> <li>• UCR Section 5.3.10</li> <li>• UCR Section 5.4.1</li> <li>• UCR Section 5.4.2</li> <li>• UCR Section 5.4.2.1</li> <li>• UCR Section 5.4.3</li> <li>• UCR Section 5.5</li> <li>• UCR Section 5.7.1</li> <li>• UCR Section 5.7.1.1</li> <li>• UCR Section 5.7.1.2</li> <li>• UCR Section 5.7.1.3</li> <li>• UCR Section 5.7.1.3.1</li> <li>• UCR Section 5.7.1.3.2</li> <li>• UCR Section 5.7.1.4</li> <li>• UCR Section 5.7.1.4.2</li> <li>• UCR Section 5.7.1.4.3</li> <li>• UCR Section 5.7.1.4.4</li> <li>• UCR Section 5.7.1.4.5</li> <li>• UCR Section 5.7.1.4.6</li> <li>• UCR Section 7.1</li> <li>• UCR Section 7.1.1</li> <li>• UCR Section 7.1.2</li> <li>• UCR Section 7.1.3</li> <li>• UCR Section 7.1.4</li> <li>• UCR Section 7.2</li> <li>• UCR Section 7.3</li> <li>• UCR Section 7.4</li> <li>• UCR Section 7.5</li> <li>• UCR Section 2.5.5</li> <li>• UCR Section 2.5.6</li> </ul>		
			E1 CAS (MFR1, DTMF, DP)	No (Europe only)		
			T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes		
			E1 ISDN PRI (ITU-T Q.955.3)	No (Europe only)		
		Voice	<ul style="list-style-type: none"> <li>• MOS (R)</li> <li>• Secure calls (R)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01C</li> <li>• CJCSI 6215.01C</li> </ul>		
		Facsimile	<ul style="list-style-type: none"> <li>• Analog: ITU-T T.4 (R)</li> </ul>	<ul style="list-style-type: none"> <li>• DISR</li> </ul>		
		Data	<ul style="list-style-type: none"> <li>• Modem (VBD) (R)</li> <li>• 56 kbps switched data (R: PRI only)</li> <li>• 64 kbps switched data (R: PRI only)</li> <li>• NX56 synchronous BER (R: PRI only)</li> <li>• NX64 synchronous BER (R: PRI only)</li> <li>• Secure data (STE/STU-III) (R)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01C</li> <li>• UCR Section 3.10</li> <li>• UCR Section 3.10</li> <li>• UCR Section 3.10</li> <li>• UCR Section 3.10</li> <li>• CJCSI 6215.01C</li> </ul>		
		VTC	<ul style="list-style-type: none"> <li>• ITU-T H.320 (R: PRI only)</li> </ul>	<ul style="list-style-type: none"> <li>• FTR 1080B-2002</li> </ul>		

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

<b>DSN Line Interfaces</b>				
<b>Interface</b>	<b>Critical</b>	<b>Requirements Required or Conditional</b>		<b>References</b>
2-Wire Analog	Yes	Access	<ul style="list-style-type: none"> <li>• Directory Number Identification (R)</li> <li>• National ISDN 1/2 Basic Access (C)</li> <li>• Analog Line (R)</li> <li>• Basic Line Test Capabilities (R)</li> <li>• Advanced Line Test Capabilities (C)</li> <li>• Loop Start Line (R: 2-Wire Analog only)</li> <li>• Reverse Battery (R)</li> <li>• Alerting Signals and Tones (R)</li> <li>• S/T Reference Point (ISDN BRI) (C)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 2.1.1</li> <li>• UCR Section 2.3.3</li> <li>• UCR Section 2.3.5</li> <li>• UCR Section 2.5.4.1.1</li> <li>• UCR Section 2.5.4.1.2</li> <li>• UCR Section 5.2.1</li> <li>• UCR Section 5.3.1</li> <li>• UCR Section 5.5</li> <li>• UCR Section 5.7.1.2.1</li> </ul>
ISDN BRI NI 1/2 (ANSI T1.619a)	No		Voice	<ul style="list-style-type: none"> <li>• MOS (R)</li> <li>• Secure Calls (R)</li> </ul>
2-Wire Proprietary Digital	No	Facsimile	<ul style="list-style-type: none"> <li>• Analog: ITU-T T.4 (R)</li> </ul>	<ul style="list-style-type: none"> <li>• DISR</li> </ul>
		Data	<ul style="list-style-type: none"> <li>• Modem (VBD) (R)</li> <li>• Secure data (STE/STU-III) (R)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01C</li> <li>• CJCSI 6215.01C</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>• FTR 1080B-2002</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>• Individual Lines (R)</li> <li>• Denied originating service (C)</li> <li>• Code restriction and diversion (C)</li> <li>• Call waiting (R)</li> <li>• Three-way calling (R)</li> <li>• Add-on transfer, conference calling, and call hold (C)</li> <li>• Call Transfer Individual – All calls (R)</li> <li>• Call Transfer - Internal Only (R)</li> <li>• Call Transfer – Individual – Incoming Only/Add-On Consultation Hold – Incoming Call (R)</li> <li>• Call Transfer – Outside (R)</li> <li>• Call Transfer – Add-On Restricted Station (C)</li> <li>• Call Transfer – Attendant (C)</li> <li>• Call Hold (R)</li> <li>• Conference Calling – Six Way Station Controlled (C)</li> <li>• Call forwarding Variable (R)</li> <li>• Call Forward Busy Line (R)</li> <li>• Call Forwarding – Don't Answer – All Calls (R)</li> <li>• Selective Call Forwarding (C)</li> <li>• Call pick-up (C)</li> <li>• Address Translation (C)</li> <li>• Assured Dial Tone (R)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR Section 2.1</li> <li>• UCR Section 2.1.3</li> <li>• UCR Section 2.1.4</li> <li>• UCR Section 2.1.5</li> <li>• UCR Section 2.1.6</li> <li>• UCR Section 2.1.7</li> <li>• UCR Section 2.1.7.1</li> <li>• UCR Section 2.1.7.2</li> <li>• UCR Section 2.1.7.3</li> <li>• UCR Section 2.1.7.4</li> <li>• UCR Section 2.1.7.5</li> <li>• UCR Section 2.1.7.6</li> <li>• UCR Section 2.1.7.7</li> <li>• UCR Section 2.1.7.8</li> <li>• UCR Section 2.1.8.1</li> <li>• UCR Section 2.1.8.2</li> <li>• UCR Section 2.1.8.3</li> <li>• UCR Section 2.1.8.4</li> <li>• UCR Section 2.1.9</li> <li>• UCR Section 2.7</li> <li>• UCR Section 2.9</li> </ul>
Attendant	No	<ul style="list-style-type: none"> <li>• Attendant Features (C)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR Section 2.2</li> </ul>
Public Safety	Yes	<ul style="list-style-type: none"> <li>• Emergency Service (911) Caller (R)</li> <li>• Emergency Service (911) Public Safety Answering Service (C)</li> <li>• Enhanced Emergency Service (E911) (C)</li> <li>• Trace of terminating calls (C)</li> <li>• Outgoing call trace (C)</li> <li>• Trace of a Call in Progress (C)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR Section 2.4.1.1</li> <li>• UCR Section 2.4.1.2</li> <li>• UCR Section 2.4.1.3</li> <li>• UCR Section 2.4.2</li> <li>• UCR Section 2.4.3</li> <li>• UCR Section 2.4.5</li> </ul>
Conferencing	Yes	<ul style="list-style-type: none"> <li>• Preset Conferencing (C)</li> <li>• Meet-Me Conferencing (R)</li> <li>• Progressive Conferencing (C)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR Section 2.6.1</li> <li>• UCR Section 2.6.2</li> <li>• UCR Section 2.6.3</li> </ul>
Nailed-up Connections	No	<ul style="list-style-type: none"> <li>• Nailed-Up Connections (C)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR Section 2.8</li> </ul>
DSN Hotline Services	No	<ul style="list-style-type: none"> <li>• DSN Analog Hotline Service (C)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR Section 2.12</li> </ul>

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

<b>DSN Features &amp; Capabilities</b>			
<b>Feature/ Capability</b>	<b>Critical</b>	<b>Requirements Required or Conditional</b>	<b>References</b>
MLPP	Yes	<ul style="list-style-type: none"> <li>• MLPP Overview (R)</li> <li>• Precedence Levels (R)</li> <li>• Announcements (R)</li> <li>• Invocation and Operation (R)</li> <li>• Preemption in the Network (R)</li> <li>• Network Facility with Lower Precedence Calls (R)</li> <li>• Network Facility with Equal or Higher Precedence Calls (R)</li> <li>• MLPP Trunk Selection (R)</li> <li>• Precedence Call Diversion (R)</li> <li>• Channel Associated Signaling (C)</li> <li>• Primary Rate Interface (R)</li> <li>• Analog Line MLPP (R)</li> <li>• ISDN MLPP Basic Rate Interface (C)</li> <li>• ISDN Primary Rate Interface (R)</li> <li>• Precedence Call Waiting (R)</li> <li>• Call Forwarding (R)</li> <li>• Call Transfer (R)</li> <li>• Call Hold (R)</li> <li>• Three-Way Calling (R)</li> <li>• Call Pickup (C)</li> <li>• Conferencing (C)</li> <li>• Multiline Hunt Group (C)</li> <li>• Community of Interest (C)</li> <li>• MLPP Interaction with EKTS features (C)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 3.1</li> <li>• UCR Section 3.1.2</li> <li>• UCR Section 3.1.3</li> <li>• UCR Section 3.1.4</li> <li>• UCR Section 3.2</li> <li>• UCR Section 3.2.1</li> <li>• UCR Section 3.2.2</li> <li>• UCR Section 3.2.3</li> <li>• UCR Section 3.3</li> <li>• UCR Section 3.4.1</li> <li>• UCR Section 3.4.2</li> <li>• UCR Section 3.5</li> <li>• UCR Section 3.6</li> <li>• UCR Section 3.7</li> <li>• UCR Section 3.8.1</li> <li>• UCR Section 3.8.2</li> <li>• UCR Section 3.8.3</li> <li>• UCR Section 3.8.4</li> <li>• UCR Section 3.8.5</li> <li>• UCR Section 3.8.6</li> <li>• UCR Section 3.8.7</li> <li>• UCR Section 3.8.8</li> <li>• UCR Section 3.8.9</li> <li>• UCR Section 3.11</li> </ul>
Call Processing	Yes	<ul style="list-style-type: none"> <li>• Call Treatments (R)</li> <li>• Primary and Alternate Routing (C)</li> <li>• E&amp;M Lead Signaling States (C)</li> <li>• 4-Wire Analog User Access Lines (C)</li> <li>• 2-Wire User Access Lines (R)</li> <li>• Termination of Analog Lines (R)</li> <li>• DSN User Dialing (R)</li> <li>• Interswitch and Intraswitch Dialing (R)</li> <li>• Seven-Digit Dialing (R)</li> <li>• Ten-Digit Dialing (R)</li> <li>• Access Code (R)</li> <li>• Access Digit (R)</li> <li>• Precedence Digit (R)</li> <li>• Service Digit (R)</li> <li>• Route Code (R)</li> <li>• Area Code (R)</li> <li>• Switch Code (R)</li> <li>• Line Number (R)</li> <li>• Calling Name Delivery (C)</li> <li>• Calling Number Delivery (R)</li> <li>• Emergency Service 911 Conflict Resolution (R)</li> <li>• DSN Switch Outpulsing Digit Formats (C)</li> <li>• Standard Directory Number (R)</li> <li>• Standard Test Numbers (C)</li> <li>• Base Services – Abbreviated Numbers (C)</li> <li>• Digit Reception Requirements (R)</li> <li>• Screening (C)</li> </ul>	<ul style="list-style-type: none"> <li>• UCR Section 4.1</li> <li>• UCR Section 4.2</li> <li>• UCR Section 4.3.1</li> <li>• UCR Section 4.3.2</li> <li>• UCR Section 4.3.3</li> <li>• UCR Section 4.3.4</li> <li>• UCR Section 4.5.1.1</li> <li>• UCR Section 4.5.1.2</li> <li>• UCR Section 4.5.1.2.1</li> <li>• UCR Section 4.5.1.2.2</li> <li>• UCR Section 4.5.1.3</li> <li>• UCR Section 4.5.1.3.1</li> <li>• UCR Section 4.5.1.3.2</li> <li>• UCR Section 4.5.1.3.3</li> <li>• UCR Section 4.5.1.4</li> <li>• UCR Section 4.5.1.5</li> <li>• UCR Section 4.5.1.6</li> <li>• UCR Section 4.5.1.7</li> <li>• UCR Section 4.5.1.8.1</li> <li>• UCR Section 4.5.1.8.2</li> <li>• UCR Section 4.5.1.9</li> <li>• UCR Section 4.5.2</li> <li>• UCR Section 4.5.3</li> <li>• UCR Section 4.5.4</li> <li>• UCR Section 4.5.5</li> <li>• UCR Section 4.5.6</li> <li>• UCR Section 4.5.8</li> </ul>

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

<b>DSN Features &amp; Capabilities (continued)</b>				
<b>Feature/ Capability</b>	<b>Critical</b>	<b>Requirements Required or Conditional</b>		<b>References</b>
ISDN Services	Yes	<ul style="list-style-type: none"> <li>• BRI Access, Call Control and Signaling (C)</li> <li>• Uniform Interface Configuration for BRIs (C)</li> <li>• Electronic Key Telephone Systems (EKTS) (C)</li> <li>• PRI Access, Call Control and Signaling (R)</li> <li>• PRI Features (R)</li> <li>• Packet Data Features and Capabilities (C)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR Section 10, Table 10-1</li> <li>• UCR Section 10, Table 10-2</li> <li>• UCR Section 10, Table 10-3</li> <li>• UCR Section 10, Table 10-4</li> <li>• UCR Section 10, Table 10-5</li> <li>• UCR Section 10, Table 10-6</li> </ul>
Synchronization	Yes	<ul style="list-style-type: none"> <li>• Line timing mode (R)</li> <li>• Internal Stratum 4 (R)</li> <li>• Synchronization Performance Monitoring Criteria (C)</li> <li>• DS1 Traffic Interfaces (C)</li> <li>• DS0 Traffic Interconnects (C)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR Section 11.1.1.2</li> <li>• UCR Section 11.1.2.2</li> <li>• UCR Section 11.2</li> <li>• UCR Section 11.3</li> <li>• UCR Section 11.4</li> </ul>
Reliability (See note 1.)	Yes	<ul style="list-style-type: none"> <li>• System Availability (R)</li> <li>• Backup Power (R)</li> <li>• Power Components (R)</li> <li>• UPS Requirements (R)</li> <li>• UPS PBX 1 Load Capacity (R)</li> <li>• Backup Power (Environmental) (R)</li> <li>• Alarms (R)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR Section 12.2</li> <li>• UCR Section 12.3</li> <li>• UCR Section 12.3.1</li> <li>• UCR Section 12.3.2</li> <li>• UCR Section 12.3.2.2</li> <li>• UCR Section 12.3.3</li> <li>• UCR Section 12.3.4</li> </ul>
Softphone	No	<ul style="list-style-type: none"> <li>• Hard phone features and functionality in accordance with UCR, appendix 3 (R)</li> <li>• Softphone interfaces (R)</li> <li>• Softphone alerting signals and tones (R)</li> <li>• Softphone security in accordance with DoD security standards and STIGs (R)</li> <li>• IPv6 in accordance with UCR, appendix 11 (R)</li> <li>• VoIP Service Class Tagging - End User Devices (R)</li> <li>• IEEE 802.1Q 2-byte TCI field 3-bit user priority field (C)</li> <li>• VoIP system downtime – 120 minutes per year (R)</li> </ul>		<ul style="list-style-type: none"> <li>• A3.5</li> <li>• A3.5.1</li> <li>• A3.5.2</li> <li>• A3.5.4</li> <li>• A3.2.8</li> <li>• A3.2.9.2</li> <li>• A3.2.9.2</li> <li>• A3.2.10</li> </ul>
Security	Yes	<ul style="list-style-type: none"> <li>• GR-815, STIGs, and DoDI 8510.bb (DIACAP) (R)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR Section 13</li> </ul>
<b>VoIP</b>				
VoIP System	No	<p>VoIP function is conditional. If VoIP is provided, <b>all</b> of the following requirements must be met:</p> <ul style="list-style-type: none"> <li>• Voice Quality with MOS of 4.0 or better (R)</li> <li>• ITU-T G.711 PCM CODEC (R)</li> <li>• MLPP (R)</li> <li>• Security (R)</li> <li>• Network management (C)</li> <li>• System timing (R)</li> <li>• Latency ≤ 60 milliseconds (R)</li> <li>• IPv6 capable (R)</li> <li>• Service Class Tagging (R)</li> <li>• VoIP System Downtime (IP network 80 min/yr Subscriber 20 min/yr) (R)</li> </ul>		<ul style="list-style-type: none"> <li>• UCR App. 3, para. A3.2.1</li> <li>• UCR App. 3, para. A3.2.2</li> <li>• UCR App. 3, para. A3.2.3</li> <li>• UCR App. 3, para. A3.2.4</li> <li>• UCR App. 3, para. A3.2.5</li> <li>• UCR App. 3, para. A3.2.6</li> <li>• UCR App. 3, para. A3.2.7</li> <li>• UCR App. 3, para. A3.2.8</li> <li>• UCR App. 3, para. A3.2.9</li> <li>• UCR App. 3, para. A3.2.10</li> </ul>
<b>Network Gateways</b>				
<b>Gateway</b>	<b>Critical</b>	<b>Requirements Required or Conditional</b>		<b>References</b>
PSTN (See note 2.)	No	Trunking	<ul style="list-style-type: none"> <li>• Positive Identification Control (C)</li> <li>• On-Netting (C)</li> <li>• Off-Netting (C)</li> <li>• Ground Start Line (R)</li> <li>• Immediate Start (C)</li> <li>• Delay Dial (C)</li> </ul>	<ul style="list-style-type: none"> <li>• CJCSI 6215.01C</li> <li>• CJCSI 6215.01C</li> <li>• CJCSI 6215.01C</li> <li>• UCR Section 5.2.2</li> <li>• UCR Section 5.3.2</li> <li>• UCR Section 5.3.4</li> </ul>

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

<b>NOTES:</b>						
1	Backup power, power components, UPS requirements, UPS load capacity and alarms are non-testable requirements. It is the responsibility of the respective base/post/camp/station communication agency to provide this with the SUT when installed.					
2	Voice, facsimile, data, and VTC service requirements for PSTN are identical to DSN with the exception of MLPP.					
<b>LEGEND:</b>						
2W	2-Wire	FTR 1080B-2002	Video Teleconferencing Services	PAT	Precedence Access Threshold	
A/D	Analog to Digital Conversion	G.711	PCM of voice frequencies	PBX 1	Private Branch Exchange 1	
ANSI	American National Standards Institute	GR	Generic Requirement	PCM	Pulse Code Modulation	
		GR-512	LSSGR: Reliability, Section 12	PCM-24	Pulse Code Modulation - 24 Channels	
App.	Appendix	GR-815	Generic Requirements For	PCM-30	Pulse Code Modulation - 30 Channels	
			Network Element/Network System (NE/NS) Security			
BER	Bit Error Ratio		Standard for Narrowband VTC	PRI	Primary Rate Interface	
BRI	Basic Rate Interface	H.320		PSTN	Public Switched Telephone Network	
C	Conditional	IEEE	Institute of Electrical and Electronics Engineers	Q.955.3	ISDN Signaling Standard for E1 MLPP	
CAS	Channel Associated Signaling	IP	Internet Protocol	R	Required	
CCS	Common Channel Signaling	IPv6	Internet Protocol version 6	SMEO	Small End Office	
		ISDN	Integrated Services Digital Network	SS7	Signaling System 7	
CJCSI	Chairman of the Joint Chiefs of Staff Instruction	IT	Information Technology	STE	Secure Terminal Equipment	
CODEC	Coder/Decoder	ITU-T	International Telecommunication Union-Telecommunication	STIGs	Security Technical Implementation Guides	
D/A	Digital to Analog Conversion		Standardization Sector	STU-III	Secure Telephone Unit -3rd generation	
DIACAP	DoD Information Assurance Certification and Accreditation Process	kbps	kilobits per second	T1	Digital Transmission Link Level 1 (1.544 Mbps)	
		KXX	K= any number 2-8; X= any number 1-9	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1	
DISA	Defense Information Systems Agency	Mbps	Megabits per second	TCI	Tag Control Information	
DISR	DoD IT Standards Registry	MFR1	Multi-Frequency Recommendation 1	TIA	Telecommunications Industry Association	
DoD	Department of Defense	min	minute	UCR	Unified Capabilities Requirements	
DP	Dial Pulse	MLPP	Multi-Level Precedence and Preemption	VBD	Variable bit data	
DSN	Defense Switched Network		Mean Opinion Score	VoIP	Voice over Internet Protocol	
DTMF	Dual Tone Multi-Frequency	MOS	National ISDN 1 or 2	VTC	Video Teleconferencing	
E1	European Basic Multiplex Rate (2.048 Mbps)	NI 1/2	Data format restricted to multiples of 56 kbps	WWNDP	Worldwide Numbering and Dialing Plan	
		NX56	Data format restricted to multiples of 64 kbps	yr	year	
EIA	Electronic Industries Alliance	NX64	paragraph			
FTR	Federal Telecommunications Recommendation	para.				

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>.

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Enclosure a/s

  
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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) Joint Interoperability Test Command, Memo, JTE, "Special Interoperability Test Certification of Nortel Application Server (AS)5300 Release 1.0," 11 May 2009
- (d) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Nortel Application Server (AS) 5300 Release 2.0 (Tracking Number 0818902)," 13 January 2009
- (e) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01C, "Policy for Department of Defense Voice Services with Real Time Services (RTS)," 9 November 2007
- (f) Defense Information Systems Agency, "Department of Defense Networks Unified Capabilities Requirements," 21 December 2007
- (g) Defense Information Systems Agency, Memo, "Softphone Certification," 20 April 2009
- (h) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006