



DEFENSE INFORMATION SYSTEMS AGENCY

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

21 May 2004

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of Nortel Networks Meridian 1 Options 11C and 11C Mini Digital Switching Systems with Software Release 25.47 and Specified Patch Groups with Patch #MPLR18302

References: (a) DOD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 11 January 2002
(b) CJCSI 6212.01C, "Interoperability and Supportability of Information Technology and National Security Systems," 20 November 2003

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

2. The Nortel Networks Meridian 1 Option 11C Digital Switching System with Software Release 25.47 and specified patch groups listed in table 4, hereinafter referred to as the system under test (SUT), meets all of its critical interoperability requirements and is certified as interoperable for joint use within the Defense Switched Network (DSN). The Nortel Networks Meridian 1 Option 11C Mini Digital Switching System employs the same software and trunk/line card hardware as the Meridian 1 Option 11C and is also certified for joint use within the DSN. JITC analysis determined the Option 11C Mini to be functionally identical to the Meridian 1 Option 11C for interoperability certification purposes. The identified test discrepancies shown in reference (c) that remained open after software patches were applied and regression testing was completed have an overall minor operational impact. The SUT was tested and met the critical interoperability requirements for the following DSN switch types: Private Branch Exchange (PBX) 1 and PBX 2. This certification expires upon changes that could affect interoperability, but no later than three years from the date of this memorandum.

3. This finding is based on interoperability testing of Nortel Networks Meridian 1 Option 11C Digital Switching System with Software Release 25.47 conducted by JITC and certified on 7 October 2003 as described in reference (c), and regression testing of Patch #MPLR18302 conducted 22 through 25 March 2004, by JITC at the Global Information Grid Network Test Facility, Ft. Huachuca, AZ. The Certification and Testing Summary in reference (c) documents the test results and describes the tested network and system configurations. System interoperability should be verified before deployment in an operational environment that varies significantly from the test environment.

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4. The interoperability summary of the SUT is indicated in table 1. The interoperability status and criticality are listed in table 2, the Exchange Requirements (ERs) and Functional Requirements (FRs) for each network interface are listed in table 3, and a list of applied software patch descriptions are shown in table 4. The Nortel Networks Meridian 1 switch product line offers a Voice over Internet Protocol capability; however, this capability is not covered by this certification. Network Management (NM) capabilities of the SUT platform were tested in accordance with the DISA NS53 requirements as set forth in references (d) and (e). These references require that a switch provide NM capabilities via either Ethernet, serial (EIA-232), or serial (X.25 or BX.25 variant). Although this capability is not required of a PBX1, the SUT meets the NM requirements through the use of serial (EIA-232) connections. This interoperability test status is based upon evaluation of:

a. The following network interfaces as specified in reference (f): DSN and Commercial Network Gateway.

b. The interface and signaling requirements for trunk/line interfaces, and interoperability ERs and FRs derived from reference (g) and (h).

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

d. Review of Letters of Compliance submitted by Nortel Networks.

Table 1. Nortel Networks Meridian 1 Options 11C and 11C Mini Digital Switching Systems Interoperability Summary

Network	Critical	Status	Remarks
DSN	Yes	Certified	- Certified as a PBX1 and PBX2. - VoIP not certified. - The identified test discrepancies shown in reference (c) that remained open have an overall minor operational impact.
Commercial Network Gateway	Yes	Certified	- All critical requirements met.
Legend: DSN - Defense Switched Network PBX - Private Branch Exchange VoIP - Voice over Internet Protocol			

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Table 2. Interoperability Status

Defense Switched Network	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	No	Certified	Met all critical ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP IN/DTMF OUT	No	Certified	Met all critical ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) ISDN PRI	Yes	Certified	Met all critical ERs and FRs.
	Line Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	TPC ISDN BRI ST and U Interface Q.931	Yes	Certified	Met all critical ERs and FRs. ISDN supplemental services not met. ¹
	TPC 2-Wire analog	Yes	Certified	Met all critical ERs and FRs.
	TPC 2-Wire Digital (Proprietary)	No	Certified	Met all critical ERs and FRs.
Network Management Interfaces				
Interface & Signaling	Critical	Status	Remarks	
TPC EIA-232 Asynchronous @ 9.6 kbps	No	Certified	Met all critical ERs and FRs.	
Commercial Network Gateway	Trunk Interfaces			
Interface & Signaling	Critical	Status	Remarks	
Same Interfaces and Signaling as DSN	Yes	Certified	See note 2	
Legend: AMI - Alternate Mark Inversion B8ZS - Bipolar Eight Zero Substitution BRI - Basic Rate Interface CAS - Channel Associated Signaling DISN - Defense Information Systems Network DP - Dial Pulse DSN - Defense Switched Network DTMF - Dual Tone Multi-Frequency EIA - Electronic Industries Alliance ERs - Exchange Requirements ESF - Extended Superframe FRs - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan ISDN - Integrated Services Digital Network ITU - International Telecommunications Union kbps - kilobits per second Mbps - Megabits per second PCM-24 - Pulse Code Modulation 24 Channels PRI - Primary Rate Interface Q.931 - ITU signaling standard for ISDN SF - Superframe ST - ISDN BRI Four-Wire Interface T1 - Digital Transmission Link level 1 (1.544 Mbps) TPC - Twisted Pair Copper U - ISDN BRI Two-Wire Interface				
Notes: 1 ISDN supplemental services are currently not used in the DISN. The operational impact is minor. 2 The certification of interoperability with commercial networks was verified based on the review of the vendor's letter of compliance to requirements identified as the "Letter" and "Verify" items listed in appendix E of the GSTP and specified in tables 2-1 through 2-15 of the GSCR.				

Table 3. Exchange and Functional Requirements

Trunk Interfaces			
Interface & Signaling	Critical	Exchange & Functional Requirements	
PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	No	<ul style="list-style-type: none"> - MLPP - Hotline services¹ - System Interface <ul style="list-style-type: none"> • Non-secure Voice and Data • Secure Voice and Data (STU-III and STE) • NX56 and NX64 Synchronous Data (<i>TI ISDN PRI only</i>) • Non-secure and Secure FAX • VTC (<i>TI ISDN PRI only</i>) • Alarms - Integrated Services Digital Network (<i>TI ISDN PRI only</i>) - Attendant services² - System Administration, Measurements, and Service Standards - Y2K (Rollover, Valid, and Invalid Dates) - Screening, Zone Restriction, and DSN Access Restriction - Automated Message Accounting - Network Integration - ANSI T1.619a (<i>TI ISDN PRI</i>) 	
PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP IN/DTMF OUT	No		
PCM-24 T1 B8ZS/ESF ISDN PRI	Yes		
Line Interfaces			
Interface & Signaling	Critical	Exchange & Functional Requirements	
Defense Switched Network		<ul style="list-style-type: none"> - MLPP - Hotline services¹ - ANSI T1.619a - ISDN supplemental services - Call Treatments - DSN Announcements - Attendant services² - EKTS - VTC - NX56 and NX64 Synchronous Data - Non-secure Voice and Data - Secure Voice and Data (STE) 	
	TPC ISDN BRI ST and U Interface Q.931	Yes	
	TPC 2-Wire analog	Yes	<ul style="list-style-type: none"> - MLPP - Hotline services¹ - DSN Announcements - Traffic Measurements - Attendant services² - Call Treatments - Non-secure Voice and Data - Non-secure and Secure FAX - Secure Voice and Data (STU-III and STE)
TPC 2-Wire Digital (Proprietary)	No	<ul style="list-style-type: none"> - MLPP - Hotline services¹ - DSN Announcements - Traffic Measurements - Attendant services² - Call Treatments - Non-secure Voice 	

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Table 3. Exchange and Functional Requirements (continued)

Defense Switched Network (continued)	Network Management Interfaces		
	Interface & Signaling	Critical	Exchange & Functional Requirements
	TPC EIA-232 Asynchronous @9.6 kbps	No	- Automated Message Accounting - Traffic Measurements - Alarms - Man Machine Language
Commercial Network Gateway	Trunk Interfaces		
	Interface & Signaling	Critical	Exchange & Functional Requirements
	Same Interfaces and Signaling as DSN	Yes	See note 3.
Legend: AMI - Alternate Mark Inversion ANSI - American National Standards Institute B8ZS - Bipolar Eight Zero Substitution BRI - Basic Rate Interface CAS - Channel Associated Signaling DP - Dial Pulse DSN - Defense Switched Network DTMF - Dual Tone Multi-Frequency EIA - Electronic Industries Alliance EKTS - Electronic Key Telephone System ESF - Extended Superframe FAX - Facsimile GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan ISDN - Integrated Services Digital Network ITU - International Telecommunications Union kbps - kilobits per second Mbps - Megabits per second MLPP - Multi-Level Precedence and Preemption NX56 - Data format is restricted to multiples of 56 kbps NX64 - Data format is restricted to multiples of 64 kbps PCM-24 - Pulse Code Modulation 24 Channels PRI - Primary Rate Interface Q.931 - ITU signaling standard for ISDN SF - Superframe SS7 - Signaling System 7 ST - ISDN BRI Four-Wire Interface STE - Secure Terminal Equipment STU-III - Secure Telephone Unit-III SUT - System Under Test T1 - Digital Transmission Link level 1 (1.544 Mbps) T1.619a - SS7 and ISDN signaling standard for T1 TPC - Twisted Pair Copper U - ISDN BRI Two-Wire Interface VTC - Video Teleconferencing Y2K - Year 2000			
Notes: 1 SUT does not meet the GSCR exchange requirements for hotline services. Hotline services are not a critical requirement. 2 SUT does not meet the GSCR exchange requirements for attendant services. Attendant services are not a critical requirement. 3 The certification of interoperability with commercial networks was verified based on the review of the vendor's letter of compliance to requirements identified as the "Letter" and "Verify" items listed in appendix E of the GSTP and specified in tables 2-1 through 2-15 of the GSCR.			

Table 4. Meridian 1 Options 11C and 11C Mini Software Release 25.47 Patch Identification Patch List

Core Software Patch List		
Patch ID Number	PRS Number	Description
MPLR16260	MP17717	INI code ID (INI000 0000001D) from DCH_Handler Procedure
MPLR16674	Q004828	DSN: Precedence calls to a Hunt Group do not get proper treatment
MPLR16789	Q436716	Four Issues: 1. T1 CAS Intermittent Preempt Wink. 2. Bug105. 3. ANSI T1.619A PRI Preempt for Re-use Unanswered. 4. AMA: Data: Outgoing (cause 9) - Timing Issue
MPLR16790	Q005260	SLPREM - Preemption: 1. Origination Busy Treatment. FFC code. 2. Busy Non-preemptable station trunk Preemption Cause 46. 3. T1 PRI Non-preemptable station Busy Not Equipped Announcement (BNEA).
MPLR16798	Q005385	DSN: No DMI Digit Manipulation after glare failure.
MPLR16801	Q005259	DSN: The M1 Option 11C switch does not provide the correct response to a failed wink start condition.
MPLR16806	Q005259	DSN: Outgoing Preempt Not For Reuse Answered Trailing Digit.
MPLR16857	Q005423	DSN: Outgoing trunk preemption fails over NI2

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Table 4. Meridian 1 Options 11C and 11C Mini Software Release 25.47 Patch Identification Patch List (continued)

Core Software Patch List			
Patch ID Number	PRS Number	Description	
MPLR16878	Q005193	DSN: Call Transfer 2nd leg sends originators precedence level.	
MPLR16879	Q005194	DSN: Conference Call not preserving precedence level.	
MPLR16912	Q005571	DSN: Different Service Domains via T1 CAS allow preemption	
MPLR16926	Q005592	Change BSERV on NI2 causes system to INI.	
MPLR16937	Q005626	DSN: Changing MLSD in LD 87 causes other fields to change.	
MPLR16939	Q005571	DSN: BRI sets with different Service Domains allow preemption	
MPLR16945	Q005629	NI2: Bearer channel disable/enable fails with SL-100/Siemens	
MPLR17308	Q006365	Euro-ISDN STE mu-law to A-law conversion over E1 PRI	
MPLR16878	Q005193	DSN: Call Transfer 2nd leg sends originators precedence level.	
MPLR16879	Q005194	DSN: Conference Call not preserving precedence level.	
MPLR16912	Q005571	DSN: Different Service Domains via T1 CAS allow preemption	
MPLR16926	Q005592	Change BSERV on NI2 causes system to INI.	
MPLR16937	Q005626	DSN: Changing MLSD in LD 87 causes other fields to change.	
MPLR16939	Q005571	DSN: BRI sets with different Service Domains allow preemption	
MPLR16945	Q005629	NI2: Bearer channel disable/enable fails with SL-100/Siemens	
MPLR17308	Q006365	Euro-ISDN STE mu-law to A-law conversion over E1 PRI	
MPLR17473	Q001747	The IGF and OGF timers for preemption calls on T1 CAS needs the minimum threshold to be lowered.	
MPLR17344	Q005871	ATVN trunks on TMDI card behave differently from tie trunks - channel status mismatch between M1 and SL100 when the loop is enabled.	
MPLR17582	Q005965	DSN: Unable to send B-Channel status message from individual channels.	
MPLR17502	Q005871	Channel status mismatch after Yellow Alarm cleared.	
MPLR18302	Q00841477	NI2 DID Tandem to ATVN	
LOADWARE Software Patch List			
Patch ID Number	PRS Number	Description	
MPLR17079	Q005959	X11 25.47 psdl file NI02 version 23 fails to download	
MPLR17395	Q005965	NI2 remote busy-out	
Legend:			
AMA	- Automated Message Accounting	LD	- Overlay
ANSI	- American National Standards Institute	M1	- Meridian 1
ATVN	- Autovon	Mbps	- Megabits per second
BNEA	- Busy, Not Equipped Announcement	MLPP	- Multi-Level Precedence and Preemption
BRI	- Basic Rate Interface	MLSD	- MLPP Service Domain
BSERV	- Bearer Service	MPLR	- Meridian Patch Library Reference
CAS	- Channel Associated Signaling	NI2	- National ISDN-2
DCH	- Data Channel	OGF	- Outgoing Flash Timer
DID	- Direct Inward Dialing	PRI	- Primary Rate Interface
DMI	- Digit Manipulation Index	PRS	- Patch Report System
DSN	- Defense Switched Network	psdl	- peripheral software downloadable listing
E1	- European Basic Rate (2.048 Mbps)	SLPREM	- Station Loop Preemption
FFC	- Flexible Feature Code	SS7	- Signaling System 7
ID	- Identification	STE	- Secure Terminal Equipment
IGF	- Incoming Flash Timer	T1	- Digital Transmission Link Level 1 (1.544 Mbps)
INI	- Initialize	T1.619a	- SS7 and ISDN Signaling Standard for T1
ISDN	- Integrated Services Digital Network	TMDI	- Time Multiplexer Digital Interface
Note: Regression testing of Software Patch #MPLR18302 conducted 22 through 25 March 2004.			

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5. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified but Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil/>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125/> (SIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.

6. The JITC point of contact is Mr. John Hooper, DSN 879-5041, commercial (520) 538-5041, FAX DSN 879-4347, or e-mail hooperj@fhu.disa.mil.

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ADDITIONAL REFERENCES

- (c) Joint Interoperability Test Command Memorandum, Networks, Transmission and Integration Division (JTE), "Joint Interoperability Test Certification of Nortel Networks Meridian 1 Options 11C and 11C Mini Digital Switching Systems with Software Release 25.47," 7 October 2003
- (d) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Switch Network Management Interface," 26 July 2001
- (e) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Network Management Requirements for End Offices," 2 August 2001
- (f) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services," 23 September 2001
- (g) Defense Information Systems Agency (DISA), Joint Interoperability and Engineering Organization (JIEO), Technical Report 8249, "Defense Information Systems Network (DISN) Circuit Switched Subsystem, Defense Switched Network (DSN) Generic Switching Center Requirements (GSCR)," March 1997
- (h) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Global Network Requirements for Small End Office and Private Branch Exchange Category of Switches," 18 March 2003
- (i) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP)," 17 June 1999