



DEFENSE INFORMATION SYSTEMS AGENCY
JOINT INTEROPERABILITY TEST COMMAND
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IN REPLY
REFER TO: Networks, Transmission and
Integration Division (JTE)

MEMORANDUM FOR DISTRIBUTION

SIGNED October 7, 2003

SUBJECT: Joint Interoperability Test Certification of Nortel Networks Meridian 1 Options 11C and 11C Mini Digital Switching Systems with Software Release 25.47

References:

- (a) DOD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 11 January 2002
- (b) CJCSI 6212.01B, "Interoperability and Supportability of National Security Systems and Information Technology Systems," 8 May 2000

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, hereafter 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. 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 enclosure 2 that remained open after software patches were applied and regression testing was completed have an overall minor operational impact. The SUT was tested and met the critical interoperability requirements for 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 certification is based on interoperability testing conducted at the JITC, Fort Huachuca, AZ. The Certification Testing Summary (enclosure 2) documents the test results and describes the tested network and systems 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 status of the SUT is indicated below in table 1. The interoperability status and criticality are listed in table 2, and the Exchange Requirements (ERs) and Functional Requirements (FRs) for each network interface are listed in table 3. 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 (c) and (d). This reference requires that a switch provide NM capabilities via either Ethernet, serial (RS-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 (RS-232) connections. This interoperability test status is based upon evaluation of:

a. The following network interfaces as specified in reference (e): DSN, Defense Red Switch Network Gateway, Tactical Network Gateway, North Atlantic Treaty Organization Gateway, and Public Switched Telecommunications Network or Commercial Network Gateway.

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

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

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
Commercial Network Gateway	Yes	Certified	
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.
Defense Switched Network	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.
Defense Switched Network	Network Management Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	TPC RS-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 ERs - Exchange Requirements ESF - Extended Superframe FRs - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan ISDN - Integrated Services Digital Network kbps - kilobits per second Mbps - Megabits per second PCM-24 - Pulse Code Modulation 24 Channels PRI - Primary Rate Interface RS - Recommended Standard 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 currently not used in the DISN. The operational impact is minor. 2 The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" 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 kbps and NX64 kbps 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	<ul style="list-style-type: none"> - 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 ISDN PRI	Yes	<ul style="list-style-type: none"> - Automated Message Accounting - Network Integration - ANSI T1.619a (<i>TI ISDN PRI</i>) 	
Line Interfaces			
Interface & Signaling	Critical	Exchange & Functional Requirements	
Defense Switched Network	TPC ISDN BRI ST and U Interface Q.931	Yes	<ul style="list-style-type: none"> - MLPP - Hotline Services¹ - ANSI T1.619a - ISDN Supplemental Services - Call Treatments - DSN Announcements - Attendant Services² - EKTS - VTC - NX56 kbps and NX64 kbps Synchronous Data - Non-secure Voice and Data - Secure Voice and Data (STE)
	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 RS-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 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 kbps - kilobits per second Mbps - Megabits per second MLPP - Multi-Level Precedence and Preemption NX56 - Data format is restricted to multiples of 56K NX64 - Data format is restricted to multiples of 64K PCM-24 - Pulse Code Modulation 24 Channels PRI - Primary Rate Interface RS - Recommended Standard SF - Superframe 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) TPC - Twisted Pair Copper U - ISDN BRI Two-Wire Interface VTC - Video Conferencing Y2K - Year 2000			
Notes: 1 SUT does not meet the GSCR exchange requirements for hotline services. Hotline Services is not a critical requirement. 2 SUT does not meet the GSCR exchange requirements for attendant services. Attendant Services is not a critical requirement. 3 The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the GSTP and specified in tables 2-1 through 2-15 of the GSCR.			

5. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system -- ERD uses unclassified (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.

FOR THE COMMANDER:

- 3 Enclosures:
- 1 Additional References
- 2 Certification Testing Summary
- 3 Meridian 1 Options 11C and 11C Mini Software Release 25.47 Patch Identification Patch List

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ADDITIONAL REFERENCES

- (c) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Switch Network Management Interface," 26 July 2001
- (d) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Network Management Requirements for End Offices," 2 August 2001
- (e) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services," 23 September 2001
- (f) 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
- (g) 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
- (h) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP)," 17 June 1999

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. Nortel Networks Meridian 1 Options 11C and 11C Mini Digital Switching Systems with Software Release 25.47 specified Software Patch Groups listed in enclosure 3 (hereafter referred to as the system under test [SUT]).

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

3. PROGRAM MANAGER. Mr. Howard Osman, Network Services (NS) 53, Room 5W23, 5275 Leesburg Pike, Falls Church, VA 22041, E-mail: Osmanh@ncr.disa.mil.

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

5. SYSTEM UNDER TEST DESCRIPTION. The Meridian 1 Option 11C Private Branch Exchange (PBX) telephone system supports up to 1000 lines. The Option 11C supports the same desktop and system features as the larger Meridian 1 systems, including digital telephones, in-building wireless communications, voice messaging, call center, PC-based system management, and multimedia applications. The Option 11C can be configured for a single site or provide multi-location Integrated Services Digital Network (ISDN) Private Networking. The Option 11C's modular design allows the addition of capacity and new capabilities on an "as needed" basis. The Nortel Meridian 1 Option 11C Mini PBX is one of the newer additions to the Meridian Portfolio and is based on the Option 11C platform. The Option 11C Mini was designed to serve branch offices with 80 lines or fewer. It provides the full range of Meridian 1 features and uses the same telephones software and trunk/line card hardware as the Option 11C. Nortel Network's Meridian 1 Options 11C and 11C Mini Digital Switching Systems are currently in use within the Defense Switched Network (DSN) providing PBX1 switch functionality.

6. OPERATIONAL ARCHITECTURE. The operational DSN Architecture is depicted in figure 2-1.

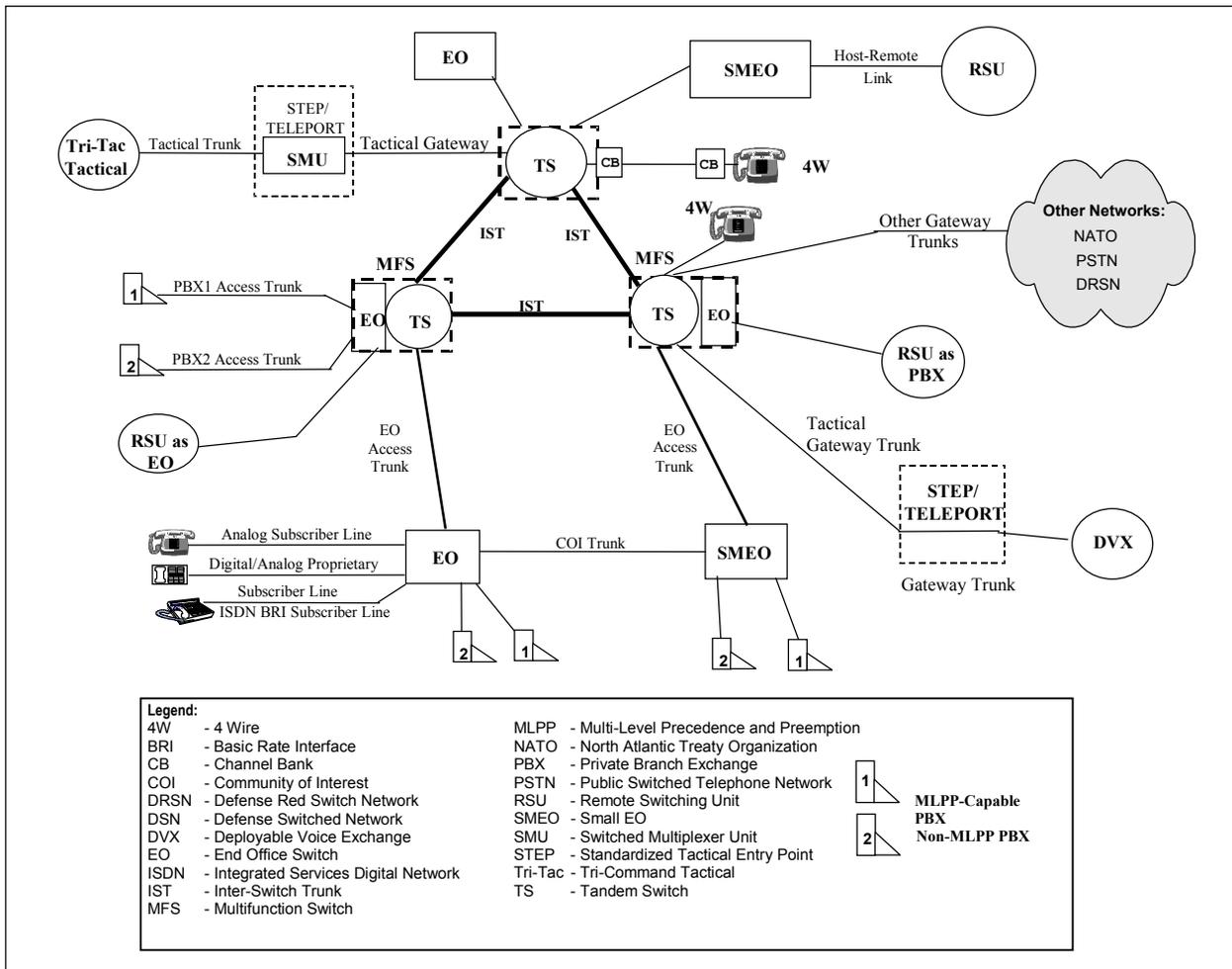


Figure 2-1. DSN Architecture

7. REQUIRED SYSTEM INTERFACES. This interoperability test certification is based upon evaluation of the network interfaces as specified in:

- a. The Chairman of the Joint Chiefs of Staff (CJCS) policy for Department of Defense voice services requirements for the DSN.
- b. Interface and signaling requirements for trunk, line and network management derived from the Generic Switching Center Requirements (GSCR) document, and the DISA Network Services (NS) 53, Memorandum, "DSN Global Network Requirements for Small End Office and Private Branch Exchange Category of Switches," dated 18 March 2003.
- c. Interoperability Exchange Requirements (ERs) and Functional Requirements (FRs) derived from the GSCR.

The ERs and FRs for the CJCS network interfaces are indicated in table 2-1. The criticality and certification status of these interfaces can be found in paragraph 11. The test summary can be found in paragraph 11b.

Table 2-1. Exchange and Functional Requirements

	Trunk Interfaces		
	Interface & Signaling	Critical	Exchange and Functional Requirements
Defense Switched Network	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 kbps and NX64 kbps Synchronous Data (T1 ISDN PRI only) • Non-secure and Secure FAX • VTC (T1 ISDN PRI only) • Alarms - Integrated Services Digital Network (T1 ISDN PRI only) - 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 (T1 ISDN PRI only)
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP IN/DTMF OUT	No	<ul style="list-style-type: none"> - Integrated Services Digital Network (T1 ISDN PRI only) - 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 (T1 ISDN PRI only)
	PCM-24 T1 B8ZS/ESF ISDN PRI	Yes	<ul style="list-style-type: none"> - MLPP - Hotline Services¹ - ANSI T1.619a - ISDN Supplemental Services - Call Treatments - DSN Announcements - Attendant Services² - VTC - NX56 kbps and NX64 kbps Synchronous Data - Non-secure Voice and Data - Secure Voice and Data (STE)
	Line Interfaces		
	Interface & Signaling	Critical	Exchange and Functional Requirements
	TPC ISDN BRI ST and U Interface Q.931	Yes	<ul style="list-style-type: none"> - MLPP - Hotline Services¹ - ANSI T1.619a - ISDN Supplemental Services - Call Treatments - DSN Announcements - Attendant Services² - VTC - NX56 kbps and NX64 kbps Synchronous Data - Non-secure Voice and Data - Secure Voice and Data (STE)

Table 2-1. Exchange and Functional Requirements (continued)

Line Interfaces			
Interface & Signaling		Critical	Exchange and Functional Requirements
Defense Switched Network (continued)	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 and Analog (Proprietary)	No	<ul style="list-style-type: none"> - MLPP - Hotline Services¹ - DSN Announcements - Traffic Measurements - Attendant Services² - Call Treatments - Non-secure Voice
	Network Management Interfaces		
	Interface & Signaling		Critical
TPC RS-232 Asynchronous @ 9.6 kbps		No	<ul style="list-style-type: none"> - Automated Message Accounting - Traffic Measurements - Alarms - Man Machine Language
Commercial Network Gateway	Interface & Signaling		Exchange and Functional Requirements
	Same Interfaces and Signaling as DSN		Yes
See note 3.			
Legend:			
AMI - Alternate Mark Inversion	GSCR - Generic Switching Center Requirements	SF - Superframe	
ANSI - American National Standards Institute	GSTP -Generic Switch Test Plan	ST - ISDN BRI Four-Wire Interface	
B8ZS - Bipolar Eight Zero Substitution	ISDN - Integrated Services Digital Network	STE - Secure Terminal Equipment	
BRI - Basic Rate Interface	kbps - kilobits per second	STU-III - Secure Telephone Unit-III	
CAS - Channel Associated Signaling	Mbps - Megabits per second	SUT - System Under Test	
CAT - Category	MLPP - Multi-Level Precedence and Preemption	T1 - Digital Transmission Link level 1 (1.544 Mbps)	
DP - Dial Pulse	NX56 - Data format restricted to multiples of 56K	TPC - Twisted Pair Copper	
DSN - Defense Switched Network	NX64 - Data format restricted to multiples of 64K	U - ISDN BRI Two-Wire Interface	
DTMF - Dual Tone Multi-Frequency	PCM-24 - Pulse Code Modulation 24 Channels	VTC - Video Teleconferencing	
ESF - Extended Superframe	PRI - Primary Rate Interface	Y2K - Year 2000	
FAX - Facsimile	RS - Recommended Standard		
Notes:			
1 SUT does not meet all the GSCR exchange requirements for Hotline Services. Hotline Services is not a critical requirement.			
2 SUT does not meet all the GSCR exchange requirements for Attendant Services. Attendant Services is not a critical requirement.			
3 The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the GSTP and specified in tables 2-1 through 2-15 of the GSCR.			

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC's Network Engineering and Integration Laboratory in a manner and configuration similar to that of the DSN operational environment. This test was conducted using three test configurations shown in figures 2-2 through 2-4. Testing of the system's required functions and features was conducted using the test configuration depicted in figure 2-2, which accurately emulates the DSN operational environment. Network integration testing, which accurately emulates the DSN operational environment, was conducted using the test configuration depicted in figure 2-3. Figure 2-4 depicts the test configuration used to test the Advanced Defense Switched Network Integrated Management Support System network management functions and features.

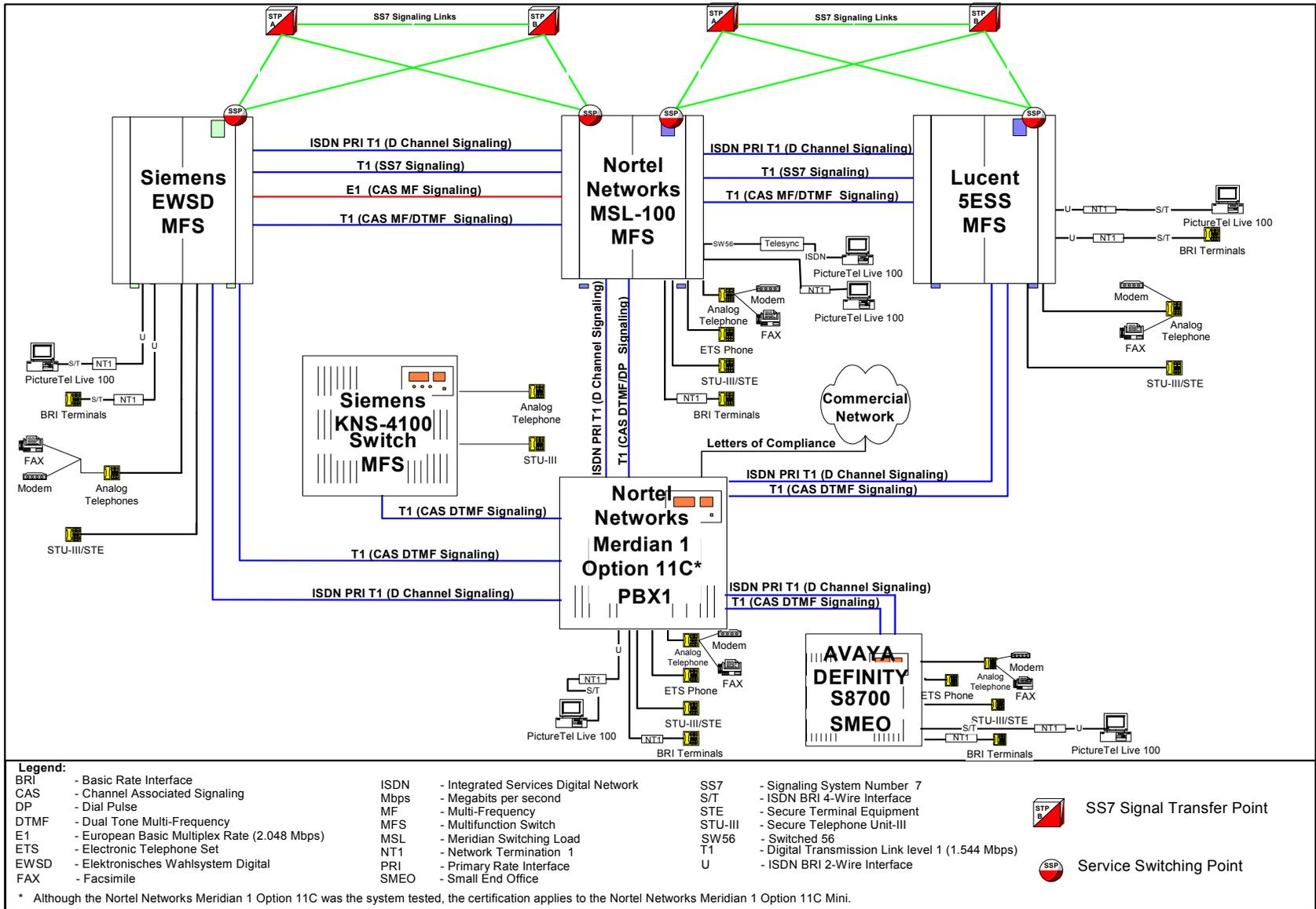


Figure 2-2. Test Configuration

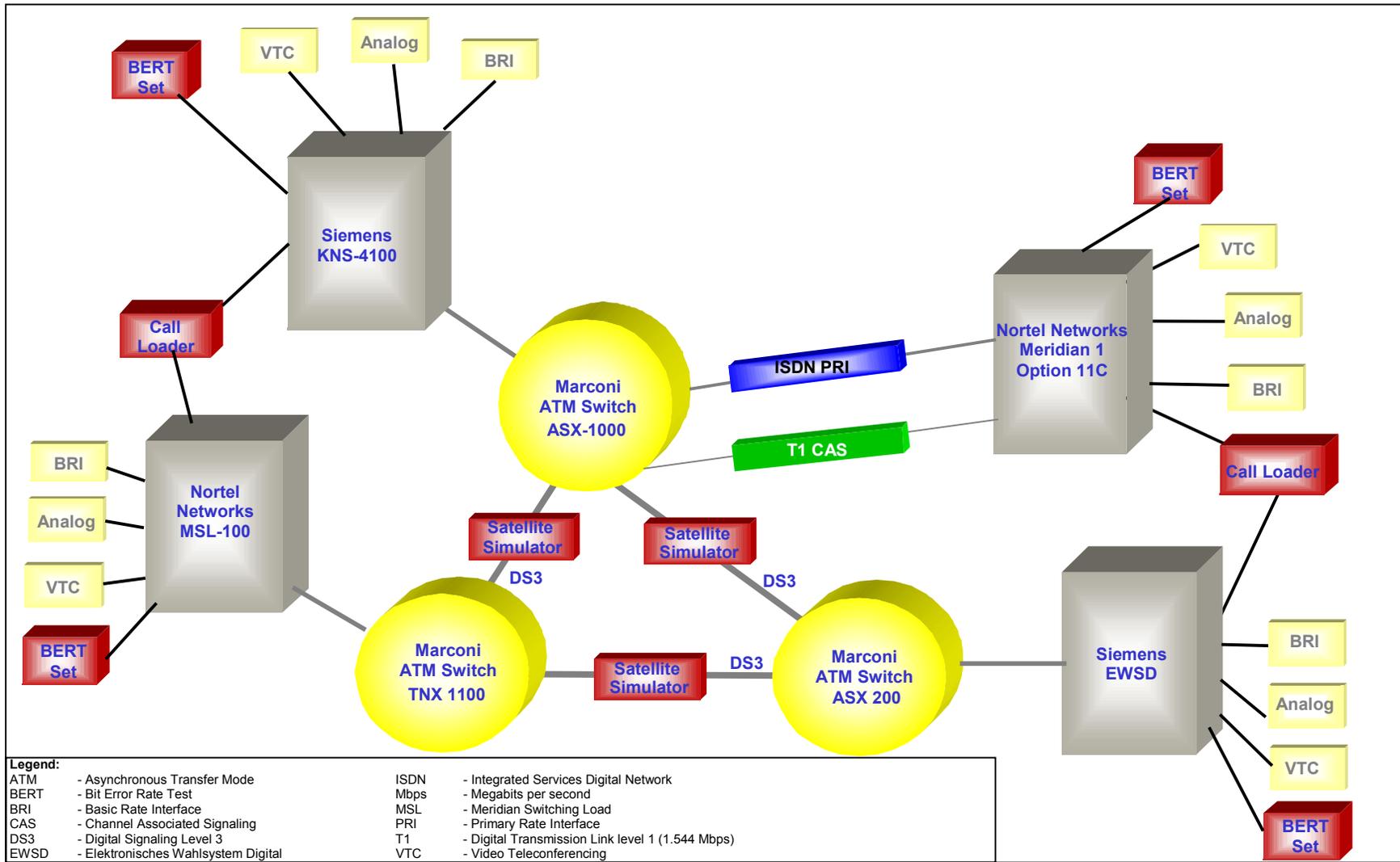
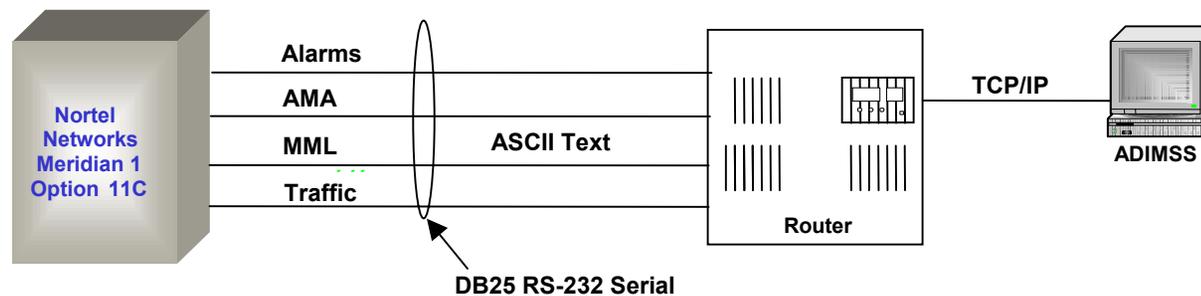


Figure 2-3. Network Integration Test Configuration



Legend:

- ADIMSS - Advanced Defense Switched Network Integrated Management Support System
- Alarms - Fault Management
- AMA - Automated Message Accounting (Accounting Management)
- ASCII - American Standard Code for Information Interchange
- DB - "D" describes the shape of the housing, "B" describes the size of the housing
- DSN - Defense Switched Network
- MML - Man Machine Language (Remote access to switch)
- RS - Recommended Standard
- TCP/IP - Transfer Control Protocol/Internet Protocol
- Traffic - Performance Management

Note:

DSN Switch Network Management Interfaces as described in reference (c) and Network Management Requirements for End Offices as described in reference (d).

Figure 2-4. Nortel Networks Meridian 1 Options 11C and 11C Mini ADIMSS Network Management System Interface

9. SYSTEM CONFIGURATIONS. Table 2-2 provides the system configurations used in the test.

Table 2-2. Tested System Configurations

System Name	Software Release
Nortel Networks MSL-100	MSL-17
Avaya MultiVantage S8700	R011x.7585.7.0.2
Nortel Networks Meridian 1 Option 11C	25.47
Siemens EWSD	19d with Patch Set 39
Siemens KNS-4100	APS4V2.3
Lucent Technologies 5ESS	5E16.2
SMU 96 Tactical Gateway	RD302185
Tekelec STP	23.1
Nortel Networks Broad Band STP	3.0.3.18d
DSS Red Switch	8.03
MARCONI ATM switches	Versions 6.2 and 7.1
Legend:	
ATM - Asynchronous Transfer Mode	
DSS - Digital Small Switch	
EWSD - Elektronisches Wahl-System Digital	
MSL - Meridian Switching Load	
SMU - Switch Multiplexer Unit	
STP - Signal Transfer Point	

10. TESTING LIMITATIONS. The Nortel Networks Meridian 1 Option 11C Digital Switching System was the only switch platform tested by JITC, however, the test results are applicable to the Option 11C Mini. The Nortel Networks Meridian 1 Option 11C Digital Switching System employs the same software and trunk/line card hardware as the 11C Mini digital switches, and JITC analysis determined it to be functionally identical for certification purposes.

11. TEST RESULTS. Tables 2-3 through 2-8 synopsize the SUT interface ER and FR status and criticality. The identified test discrepancies shown below denote only those test discrepancies that remained open after software patches were applied and regression testing was completed. A detailed description of these discrepancies can be found in paragraph 11a.

Table 2- 3. Defense Switched Network Trunk Interface and Exchange Requirements

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 CAS (B8ZS/ESF) (AMI/SF) DTMF	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	Yes	II-3.2	21.3.10	No	Not Met ¹
		System Interface (Alarms, non-secure voice and data, secure voice and data, FAX)	No	II-4.2	10.1 through 10.12	Yes	Met
		Attendant Services	Yes	II-7.2	2.1.3	No	Not Met ²
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	Yes	Met
		Y2K (Rollover, Valid, Invalid) Dates	No	II-9.2, II-10.2, II-11.2	9.1	Yes	Met
		Screening, Zone Restriction, and DSN Access Restriction	No	II-12.2	5.3.4	Yes	Met
		AMA	No	II-14.2	8.1	Yes	Met
		Network Integration	No	II-20.2	10	No	Met

Table 2-3. Defense Switched Network Trunk Interface and Exchange Requirements (continued)

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 CAS (B8ZS/ESF) (AMI/SF) DP IN/DTMF OUT	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	Yes	II-3.2	21.3.10	No	Not Met ¹
		System Interface (Alarms, non-secure voice and data, secure voice and data, FAX, VTC)	No	II-4.2	10.1 through 10.12	Yes	Met
		Attendant Services	Yes	II-7.2	2.1.3	No	Not Met ²
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	Yes	Met
		Y2K (Rollover, Valid, Invalid) Dates	No	II-9.2, II-10.2, II-11.2	9.1	Yes	Met
		Screening, Zone Restriction, and DSN Access Restriction	No	II-12.2	5.3.4	Yes	Met
		AMA	No	II-14.2	8.1	Yes	Met
		Network Integration	No	II-20.2	10	No	Met

Table 2-3. Defense Switched Network Trunk Interface and Exchange Requirements (continued)

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 CCS (B8ZS/ESF) ISDN PRI	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	Yes	II-3.2	21.3.10	No	Not Met ¹
		System Interface (Alarms, non-secure voice and data, secure voice and data, FAX, VTC)	No	II-4.2	10.1 through 10.12	Yes	Met
		ISDN	No	II-6.2	6.6, 21.1, 21.2, 21.3	Yes	Met
		Attendant Services	Yes	II-7.2	2.1.3	No	Not Met ²
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	Yes	Met
		Y2K (Rollover, Valid, Invalid) Dates	No	II-9.2, II-10.2, II-11.2	9.1	Yes	Met
		Screening, Zone Restriction, and DSN Access Restriction	No	II-12.2	5.3.4	Yes	Met
		AMA	No	II-14.2	8.1	Yes	Met
		Network Integration	No	II-20.2	10	No	Met
		ANSI T1.619a	No	II-6.2	21.3.1	Yes	Met

Table 2-3. Defense Switched Network Trunk Interface and Exchange Requirements (continued)

Legend:		
AMA - Automated Message Accounting	ER - Exchange Requirements	PCM-24 - Pulse Code Modulation 24 channels
AMI - Alternate Mark Inversion	ESF - Extended Superframe	PRI - Primary Rate Interface
ANSI - American National Standards Institute	FAX - Facsimile	SF - Superframe
B8ZS - Bipolar Eight Zero Substitution	FR - Functional Requirements	SUT - System Under Test
CAS - Channel Associated Signaling	GSCR - Generic Switching Center Requirements	T1 - Digital Transmission Link level 1 (1.544 Mbps)
CCS - Common Channel Signaling	GSTP - Generic Switch Test Plan	VTC - Video Teleconferencing
DP - Dial Pulse	ISDN - Integrated Services Digital Network	Y2K - Year 2000
DSN - Defense Switched Network	Mbps - Megabits per second	
DTMF - Dual Tone Multi-Frequency	MLPP - Multi-Level Precedence and Preemption	
Notes:		
1 SUT does not meet all the GSCR exchange requirements for hotline services. This is not a critical requirement.		
2 SUT does not meet all the GSCR exchange requirements for attendant services. This is not a critical requirement.		

Table 2-4. Defense Switched Network Line Interface and Exchange Requirements

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
TPC, ISDN BRI ST and U, Q.931	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4	Yes	Met
		Hotline Services	Yes	II-3.2	21.3.10	No	Not Met ²
		ANSI T1.619a	No	II-6.2	21.3.1	Yes	Met
		ISDN Supplemental Services	Yes	II-6.2	21.3	No	Not Met ³
		Attendant Services	Yes	II-7.2	2.1.3	No	Not Met ²
		Call Treatments	No	II-15.2	5.2.1.1, 5.2.2.1	Yes	Met
		DSN Announcements	No	II-19.2	5.6	Yes	Met
TPC, 2 Wire Analog	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4	Yes	Met
		Hotline Services	Yes	II-3.2	21.3.10	No	Not Met ²
		Attendant Services	Yes	II-7.2	2.1.3	No	Not Met ¹
		Call Treatments	No	II-15.2	5.2.1.1, 5.2.2.1	Yes	Met
		DSN Announcements	No	II-19.2	5.6	Yes	Met

Table 2-4. Defense Switched Network Line Interface and Exchange Requirements (continued)

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
TPC 2 Wire Digital (Proprietary)	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4	No	Met
		Hotline Services	Yes	II-3.2	21.3.10	No	Not Met ¹
		Attendant Services	Yes	II-7.2	2.1.3	No	Not Met ²
		Call Treatments	No	II-15.2	5.2.1.1, 5.2.2.1	No	Met
		DSN Announcements	No	II-19.2	5.6	No	Met
<p>Legend:</p> <ul style="list-style-type: none"> ANSI - American National Standards Institute BRI - Basic Rate Interface DSN - Defense Switched Network DISN - Defense Information Systems Network ER - Exchange Requirements FR - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan ISDN - Integrated Services Digital Network MLPP - Multi-Level Precedence and Preemption ST Interface - ISDN BRI 4-Wire Interface SUT - System Under Test TPC - Twisted Pair Copper U Interface - ISDN BRI 2-Wire Interface <p>Notes:</p> <ul style="list-style-type: none"> 1 SUT does not meet all the GSCR exchange requirements for Hotline Services. Hotline Services is not a critical requirement. 2 The does not meet the GSCR exchange requirements for Attendant Services. Attendant Services is not a critical requirement. 3 ISDN Supplemental Services currently not used in the DISN. The operational impact is minor. 							

Table 2-5. Defense Switched Network Network Management Interface and Exchange Requirements

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
TPC RS-232 Asynchronous @ 9.6 kbps	Certified	AMA	No	II-23.2	2.1.10, 16.1	No	Met
		Traffic Measurements	No	II-23.2	2.1.10, 16.1	No	Met
		MML	No	II-23.2	2.1.10, 16.1	No	Met
		Alarms	No	II-23.2	2.1.10, 16.1	No	Met
Legend: AMA - Automated Message Accounting ER - Exchange Requirements FR - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan kbps - kilobits per second MML - Man Machine Language RS - Recommended Standard TPC - Twisted Pair Copper							

Table 2-6. Commercial Network Gateway Interface and Exchange Requirements

Interface & Signaling	Interface Status	Exchange and Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
Same Interfaces Signaling as DSN	Certified	See Note	No	See Note	See Note	Yes	Met
Legend: DSN - Defense Switched Network ER - Exchange Requirements FR - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan Note: The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the GSTP and specified in tables 2-1 through 2-15 of the GSCR.							

a. Discussion

(1) **DSN.** All critical interface ERs and FRs for DSN were met. The following minor exceptions are noted:

(a) The SUT attendant console does not meet the following GSCR requirements:

- Transfer of a line or trunk call at a precedence above ROUTINE
GSCR Para. 2.1.3.3
- Display of precedence or class of service. GSCR Para. 2.1.3.2
- Queuing by order of precedence (highest first).
GSCR Para. 2.1.3.1

The SUT Attendant console is not certified. This is not a critical requirement for a PBX1 and its operational impact is minor.

(b) The SUT does not support route digit 5 or 6 for Hotline Services. This is not a critical requirement for a PBX1 and its operational impact is minor.

(c) The SUT does not support the following unique ISDN Basic Rate Interface (BRI) Supplemental Services as specified in the respective GSCR paragraphs listed below. There are currently no switches in the DISN that support ISDN BRI Supplemental Services. The operational impact is minor.

- Conference Calling. GSCR Para. 21.3.2
- User-to-User Signaling. GSCR Para. 21.3.3
- Call Hold. GSCR Para. 21.3.4
- Call Waiting. GSCR Para. 21.3.5
- Normal Call Transfer. GSCR Para. 21.3.6
- Explicit Call Transfer. GSCR Para. 21.3.7
- ISDN Call Deflection. GSCR Para. 21.3.8
- Preset Conference Calling. GSCR Para. 21.3.11

(2) **Commercial Gateway.** The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the GSTP, specified in tables 2-1 through 2-15 of the GSCR, with minor exceptions. Exceptions were reviewed and assessed by DISA NS53, the Development and Operational Engineering Department, and determined to have a minor operational impact.

b. Test Summary. The Nortel Networks Meridian 1 Options 11C and 11C Mini Digital Switching Systems, with their associated software releases listed in table 2-1 of the memo, are certified for joint use in the DSN in accordance with the requirements set forth in the GSCR. Minor discrepancies identified during testing and the GSCR

requirements not tested will have no adverse operational impact. The interoperability summary and status to include criticality for each interface is shown in tables 2-9 and 2-10.

12. TEST AND ANALYSIS REPORT. No detailed test report was developed per the Program Manager’s request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system -- ERD uses unclassified (NIPRNET) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNET at <https://stp.fhu.disa.mil/>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNET), or <http://199.208.204.125/> (SIPRNET). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.

Table 2-9. Nortel Networks Meridian 1 Options 11C and 11C Mini Digital Switching Systems Interoperability Summary

Network	Status	Remarks
DSN	Certified	- Certified as a PBX1 and PBX2 - VoIP not certified
Commercial Gateway	Certified	
Legend: DSN - Defense Switched Network PBX - Private Branch Exchange VoIP - Voice over Internet Protocol		

Table 2-10. 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. Hotline services ¹ and Attendant Services ² not met.
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP IN/DTMF OUT	No	Certified	Met all critical ERs and FRs. Hotline services ¹ and Attendant Services ² not met.
	PCM-24 T1 (B8ZS/ESF) ISDN PRI	Yes	Certified	Met all critical ERs and FRs. Hotline services ¹ and Attendant Services ² not met.
	Line Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	TPC ISDN BRI ST and U Interface Q.931	Yes	Certified	Met all critical ERs and FRs. Hotline services ¹ , Attendant Services ² , and ISDN Supplemental Services ³ were not met. Operational impact is minor.
	TPC 2-Wire analog	Yes	Certified	Met all critical ERs and FRs. Hotline services ¹ and Attendant Services ² not met.
	TPC 2-Wire Digital (Proprietary)	No	Certified	Met all critical ERs and FRs. Hotline services ¹ and Attendant Services ² not met.
Network Management Interfaces				
Interface & Signaling	Critical	Status	Remarks	
TPC RS-232 Asynchronous @ 9.6 kbps	No	Certified	Met all critical ERs and FRs.	

Table 2-10. Interoperability Status (continued)

Commercial Network Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	Same Interfaces and Signaling as DSN	Yes	Certified	See note 4
Legend: AMI - Alternate Mark Inversion B8ZS - Bipolar Eight Zero Substitution BRI - Basic Rate Interface CAS - Channel Associated Signaling DP - Dial Pulse DISN - Defense Information Systems Network DSN - Defense Switched Network DTMF - Dual Tone Multi-Frequency ERs - Exchange Requirements ESF - Extended Superframe FRs - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan ISDN - Integrated Services Digital Network kbps - kilobits per second Mbps - Megabits per second NATO - North Atlantic Treaty Organization PCM-24 - Pulse Code Modulation 24 Channels PRI - Primary Rate Interface RS - Recommended Standard 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 SUT does not meet all the GSCR exchange requirements for Hotline Services. Hotline Services is not a critical requirement. 2 The does not meet the GSCR exchange requirements for Attendant Services. Attendant Services is not a critical requirement. 3 ISDN Supplemental Services currently not used in the DISN. The operational impact is minor. 4 The certification/compliance of interoperability to commercial networks was satisfied based on the review of the vendor's letter of compliance to requirements identified as the "L" and "V" items listed in appendix E of the GSTP and specified in tables 2-1 through 2-15 of the GSCR.				

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 000001D) 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
MLPR16989	Q005697	PRI on DCHL
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.
MLPR17542	Q005218	CORE
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 NI-2
MPLR16878	Q005193	DSN: Call Transfer 2nd leg sends originators precedence level.
MLPR17343	Q005965	ATTEN_PREC_CALL
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
MLPR17473	Q001747	The IGF and OGF timers for preemption calls on T1 CAS needs the minimum threshold to be lowered.
MLPR17344	Q005871	ATVN trunks on TMDI card behave differently from TIE trunks - channel status mismatch between M1 and SL100 when the loop is enabled.
MLPR17467	Q003379	CORE
MLPR17582	Q005965	DSN: Unable to send B-Channel status message from individual channels.
MLPR17502	Q005871	Channel status mismatch after Yellow Alarm cleared.
LOADWARE Software Patch List		
Patch ID Number	PRS Number	Description
MPLR17500	Q006766	TMDI card channel state mismatch from far end after the loop is enabled or recovered from a red or yellow alarm.
MLPR17395	Q005965	Unable to send B-channel status message from individual channels.
Legend: AMA - Automated Message Accounting ANSI - American National Standards Institute BRI - Basic Rate Interface BSERV - Bearer Service CAS - Channel Associated Signaling DCHL - Data Channel DSN - Defense Switched Network E1 - European Basic Rate (2.048 Mbps) FFC - Flexible Feature Code IGF - Incoming Flash Timer INI - Initialize ISDN - Integrated Services Digital Network LD - Overlay M1 - Meridian 1 Mbps - Megabits per second MLPP - Multi-Level Precedence and Preemption MLSD - MLPP Service Domain NI-2 - National ISDN-2 OGF - Outgoing Flash Timer PRI - Primary Rate Interface PRS - Patch Report System SLPREM - Station Loop Preemption STE - Secure Terminal Equipment T1 - Digital Transmission Link Level 1 (1.544 Mbps) TMDI - Time Multiplexer Digital Interface		