



**DEFENSE INFORMATION SYSTEMS AGENCY**  
**JOINT INTEROPERABILITY TEST COMMAND**  
**FORT HUACHUCA, ARIZONA 85613-7051**

IN REPLY  
REFER TO: Networks, Transmission and  
Integration Division (JTE)

MEMORANDUM FOR DISTRIBUTION

*Signed 9 May 03*

SUBJECT: Joint Interoperability Test Certification of Nortel  
Networks MSL-100 Digital Switching System with  
Software Release MSL-17

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 Digital Switching System with Software Release MSL-17 and specified Software Patch Groups, hereafter referred to as the system under test (SUT), meets the critical interoperability requirements for Multifunction Switch and End Office Switch applications. The SUT is certified as interoperable for joint use within the Defense Switched Network (DSN). This certification expires upon system changes that affect interoperability, but no later than three years from the date of this memorandum.

3. This certification is based on testing conducted at JITC, Fort Huachuca, Arizona. The interoperability test effort was conducted 10 June 2002 through 13 August 2002. Additional patch validation and regression testing was conducted between 14 August 2002 and 25 October 2002 to fix outstanding test

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discrepancy reports. This interoperability test status is based upon evaluation of:

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

b. Interface and signaling requirements for trunk, line and network management interfaces, and interoperability Exchange Requirements (ERs) and Functional Requirements (FRs) derived from reference (d).

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

4. The interoperability summary of the SUT is indicated in table 1. The interoperability status and criticality are listed in table 2, and the ERs and FRs for each network interface are listed in table 3.

**Table 1. MSL-100 with Release MSL-17 Interoperability Summary**

Network	Critical	Status	Remarks
DSN	Yes	Certified	- VoIP not certified - Certified as MFS & EOS - RSU not certified - E1 CAS and CDC certified (DISN-E only)
DRSN Gateway	Yes	Certified	
Tactical Gateway	Yes	Certified	
NATO Gateway	No	Not Tested	
Commercial Gateway	Yes	Certified	
<b>Legend:</b>			
CAS	- Channel Associated Signaling	EOS	- End Office Switch
CDC	- Common Data Channel	Mbps	- Megabits per second
DRSN	- Defense Red Switch Network	MFS	- Multifunction Switch
DISN-E	- Defense Information System Network Europe	NATO	- North Atlantic Treaty Organization
DSN	- Defense Switched Network	RSU	- Remote Switching Unit
E1	- European Basic Rate (2.048 Mbps)	VoIP	- Voice over Internet Protocol

**Table 2. Interoperability Status**

Defense Switched Network	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	Yes	Certified	Met all critical ERs and FRs
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	Yes	Certified	Met all critical ERs and FRs
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	Yes	Certified	Met all critical ERs and FRs

**Table 2. Interoperability Status (continued)**

	<b>Trunk Interfaces</b>			
	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
<b>Defense Switched Network (continued)</b>	PCM-30 E1 CAS HDB3 MFR1	Yes	Certified	Met all critical ERs and FRs
	PCM-24 T1 (B8ZS/ESF) SS7	Yes	Certified	Met all critical ERs and FRs
	PCM-30 E1 HDB3 SS7	Yes	Certified	Met all critical ERs and FRs
	PCM-24 T1 (B8ZS/ESF) ISDN PRI	Yes	Certified	Met all critical ERs and FRs
	Analog E&M Signaling Type I	Yes	Certified	Met all critical ERs and FRs
	<b>Line Interfaces</b>			
	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
	TPC ISDN BRI ST and U Interface Q.931	Yes	Certified	Met all critical ERs and FRs. ISDN Supplemental Service <sup>1</sup> , and MLPP interaction with EKTS <sup>2</sup> not met. Operational impact is minor
	TPC 2-Wire analog	Yes	Certified	Met all critical ERs and FRs
	TPC 2-Wire Digital and Analog (Proprietary)	No	Certified	Met all critical ERs and FRs. MLPP interaction with the MADN configuration not met <sup>2</sup>
	<b>Network Management Interfaces</b>			
	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
	CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP	No	Certified	Met all critical ERs and FRs
	TPC RS-232 Asynchronous @ 9.6 kbps	No	Certified	Met all critical ERs and FRs
TPC X.25 or BX.25 Synchronous	No	Not Tested	No operational impact.	
<b>Defense Red Switch Network Gateway</b>	<b>Trunk Interfaces</b>			
	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
	TPC 2-Wire analog	Yes	Certified <sup>3</sup>	Met all critical ERs and FRs
<b>Tactical Network Gateway</b>	<b>Trunk Interfaces</b>			
	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	No	Certified	Met all critical ERs and FRs
	PCM-30 E1 HDB3 CAS MFR1	No	Certified	Met all critical ERs and FRs
Analog E&M Signaling Type I	Yes	Certified	Met all critical ERs and FRs	
<b>NATO Gateway</b>	<b>Trunk Interfaces</b>			
	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
		No	Not Tested	See note 4
<b>Commercial Network Gateway</b>	<b>Trunk Interfaces</b>			
	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
	Same Interfaces and Signaling as DSN above	Yes	Certified <sup>5</sup>	Met all critical ERs and FRs

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**Table 2. Interoperability Status (continued)**

<b>Legend:</b>	
AMI - Alternate Mark Inversion	Kbps - kilobits per second
B8ZS - Bipolar Eight Zero Substitution	MADN - Multiple Appearance Directory Number
BRI - Basic Rate Interface	Mbps - Megabits per second
CAS - Channel Associated Signaling	MFR1 - Multi-Frequency R1
CAT - Category	MLPP - Multi-Level Precedence and Preemption
DP - Dial Pulse	NATO - North Atlantic Treaty Organization
DISN - Defense Information Systems Network	PCM-24 - Pulse Code Modulation 24 Channels
DRSN - Defense Red Switch Network	PCM-30 - Pulse Code Modulation 30 Channels
DTMF - Dual Tone Multi-Frequency	PRI - Primary Rate Interface
E1 - European Basic Rate (2.048 Mbps)	RS - Recommended Standard
E&M - Ear and Mouth	SF - Superframe
EKTS - Electronic Key Telephone Service	SS7 - Signaling System Number 7
ERs - EXchange Requirements	ST - ISDN BRI Four-Wire Interface
ESF - Extended Superframe	SUT - System Under Test
FRs - Functional Requirements	T1 - Digital Transmission Link level 1 (1.544 Mbps)
HDB3 - High Density Bipolar Three	TPC - Twisted Pair Copper
IEEE - Institute of Electrical and Electronics Engineers, Inc.	TCP/IP - Transmission Control Protocol/Internet Protocol
ISDN - Integrated Services Digital Network	U - ISDN BRI Two-Wire Interface
<b>Notes:</b>	
<sup>1</sup> ISDN Supplemental Services currently not used in the DISN. The operational impact is minor.	
<sup>2</sup> Single directory number only. Multiple appearance directory numbers (MADN) not certified. The operational impact is minor.	
<sup>3</sup> Interoperability Certification of the SUT does not constitute DRSN Program Manager's (PM) approval for connectivity to the DRSN. It is the user's responsibility to request connectivity approval directly from the PM.	
<sup>4</sup> Not all switches are required to perform this function. Operational impact is minimal.	
<sup>5</sup> 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 reference (d), specified in tables 2-1 through 2-15 of reference (d).	

**Table 3. Exchange and Functional Requirements**

	<b>Trunk Interfaces</b>	
	<b>Interface &amp; Signaling</b>	<b>Exchange &amp; Functional Requirements</b>
<b>Defense Switched Network</b>	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	- Preset Conference - MLPP - Hotline Services
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	- System Interface <ul style="list-style-type: none"> <li>• Non-Secure Voice and Data</li> <li>• Secure Voice and Data (STU III and STE)</li> <li>• NX56 kbps and NX64 kbps Synchronous Data</li> <li>• Non-Secure and Secure FAX</li> <li>• VTC</li> <li>• Alarms</li> </ul>
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	
	PCM-30 E1 CAS HDB3 MFR1	- Common Channel Signaling/Signaling System Number Seven ( <b>T1 and E1 SS7 only</b> ) - Integrated Services Digital Network ( <b>ISDN PRI only</b> )
	PCM-24 T1 (B8ZS/ESF) SS7	- Attendant Services (See note 1) - System Administration, Measurements, and Service Standards
	PCM-30 E1 HDB3 SS7	- Y2K (Rollover, Valid and Invalid Dates) - Screening, Zone Restriction, and DSN Access Restriction - COI
	PCM-24 T1 B8ZS/ESF ISDN PRI	- Automated Message Accounting - Internal Overload Control - Automatic Call GAP Manual Controls - Nailed-Up Connections ( <b>T1 and E1 CAS only</b> )
	Analog E&M Signaling Type I	- Network Integration - Common Data Channel ( <b>T1 and E1 CAS only</b> ) - ANSI T1.619a ( <b>T1 ISDN PRI and SS7 only</b> )

**Table 3. Exchange and Functional Requirements (continued)**

	<b>Line Interfaces</b>	
	<b>Interface &amp; Signaling</b>	<b>Exchange &amp; Functional Requirements</b>
<b>Defense Switched Network (continued)</b>	TPC ISDN BRI ST and U Interface Q.931	<ul style="list-style-type: none"> <li>- Preset Conference</li> <li>- MLPP</li> <li>- Hotline Services</li> <li>- ANSI T1.619a</li> <li>- ISDN Supplemental Services</li> <li>- Community of Interests</li> <li>- Call Treatments</li> <li>- ESP</li> <li>- DSN Announcements</li> <li>- Attendant Services</li> <li>- EKTS</li> <li>- VTC</li> <li>- NX56 kbps and NX64 kbps Synchronous Data</li> <li>- Non-Secure Voice and Data</li> <li>- Secure Voice and Data (STE)</li> </ul>
	TPC 2-Wire analog	<ul style="list-style-type: none"> <li>- Preset Conference</li> <li>- MLPP</li> <li>- Hotline Services</li> <li>- DSN Announcements</li> <li>- COI</li> <li>- Traffic Measurements</li> <li>- Attendant Services<sup>1</sup></li> <li>- Call Treatments</li> <li>- ESP</li> <li>- Non-Secure Voice and Data</li> <li>- Non-Secure and Secure FAX</li> <li>- Secure Voice and Data (STU-III and STE)</li> </ul>
	TPC 2-Wire Digital and Analog (Proprietary)	<ul style="list-style-type: none"> <li>- Preset Conference</li> <li>- MLPP</li> <li>- Hotline Services</li> <li>- DSN Announcements</li> <li>- COI</li> <li>- Traffic Measurements</li> <li>- Attendant Services<sup>1</sup></li> <li>- Call Treatments</li> <li>- ESP</li> <li>- Non-Secure Voice</li> </ul>
	<b>Network Management Interfaces</b>	
	<b>Interface &amp; Signaling</b>	<b>Exchange &amp; Functional Requirements</b>
	CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP	<ul style="list-style-type: none"> <li>- Automated Message Accounting</li> <li>- Traffic Measurements</li> </ul>
	TPC RS-232 Asynchronous @ 9.6 kbps	<ul style="list-style-type: none"> <li>- Alarms</li> <li>- Man Machine Language</li> </ul>
<b>Defense Red Switch Network Gateway</b>	<b>Trunk Interfaces</b>	
	<b>Interface &amp; Signaling</b>	<b>Exchange &amp; Functional Requirements</b>
	TPC 2-Wire analog	<ul style="list-style-type: none"> <li>- MLPP</li> <li>- Secure Voice (STU-III and STE)</li> </ul>

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**Table 3. Exchange and Functional Requirements (continued)**

Tactical Network Gateway	Trunk Interfaces																																							
	Interface & Signaling	Exchange & Functional Requirements																																						
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	- MLPP - Non-Secure Voice																																						
	PCM-30 E1 HDB3 CAS MFR1																																							
	Analog E&M Signaling Type I																																							
NATO Gateway	Trunk Interfaces																																							
	Interface & Signaling	Exchange & Functional Requirements																																						
	Not tested	See note 2																																						
Commercial Network Gateway	Trunk Interfaces																																							
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	Same Interfaces and Signaling as DSN above	See note 3																																						
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<b>Notes:</b>																																								
<sup>1</sup> SUT meets all the GSCR exchange requirements for attendant services with the following consoles: NT4X09AG, NT4X09AB, and T-Metrics with software release 7102081953. <sup>2</sup> MSL-100s are not currently used as NATO Gateway switches; no operational impact. <sup>3</sup> 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 reference (d), specified in tables 2-1 through 2-15 of reference (d).																																								

a) The Nortel Networks MSL-100 product line offers a Remote Switch Unit capability referred to as the Remote Switching Center. This product line also offers a Voice over Internet Protocol capability. Preliminary testing was performed on these capabilities, but neither is covered by this certification.

b) The Internal Overload Control (IOC) requirement was not tested due to the inability to overload a non-operational switch in a lab environment. IOC is currently operational in Nortel Networks MSL-100 switches in the DSN and commercial networks. Based on current performance, the operational risk of

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not testing this feature is determined to have a minor operational impact.

c) The SUT does not support Multi-Level Precedence and Preemption interaction with telephones assigned the Multiple Appearance Directory Number option. This option applies to Electronic Key Telephone Service (EKTS) Integrated Services Digital Network Basic Rate Interface telephones, and proprietary "P Phones." EKTS is a non-critical requirement, therefore, the operational impact is minor.

d) Network Management (NM) capabilities of the SUT platform were tested in accordance with the DISA NS53 requirements as set forth in references (f) and (g). This reference requires that a switch provide NM capabilities via either ethernet, serial (RS-232) or serial (X.25 or BX.25 variant). The SUT meets the NM requirements through the use of either serial (RS-232) or Ethernet connections.

e) This certification also includes a review of letters of compliance submitted by Nortel Networks. The Certification Testing Summary (enclosure 2) provides more details about the test and enclosure 3 lists the specified Software Patch Group Identification Numbers applied to the SUT for certification. System interoperability should be verified before deployment in an operational environment that varies significantly from the test environment.

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

6. The JITC point of contact is Mr. John Gese, DSN 879-5164, commercial (520) 538-5164, FAX DSN 879-4347 or e-mail to [gesej@fhu.disa.mil](mailto:gesej@fhu.disa.mil).

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(JTE), Joint Interoperability Test Certification of Nortel  
Networks MSL-100 Digital Switching System with Software Release  
MSL-17

FOR THE COMMANDER:

3 Enclosures:	LESLIE F. CLAUDIO
1 Additional References	Chief
2 Certification Testing Summary	Networks, Transmission and Integration Division
3 MSL-17 Software Patch Group Identification Numbers	

Distribution:

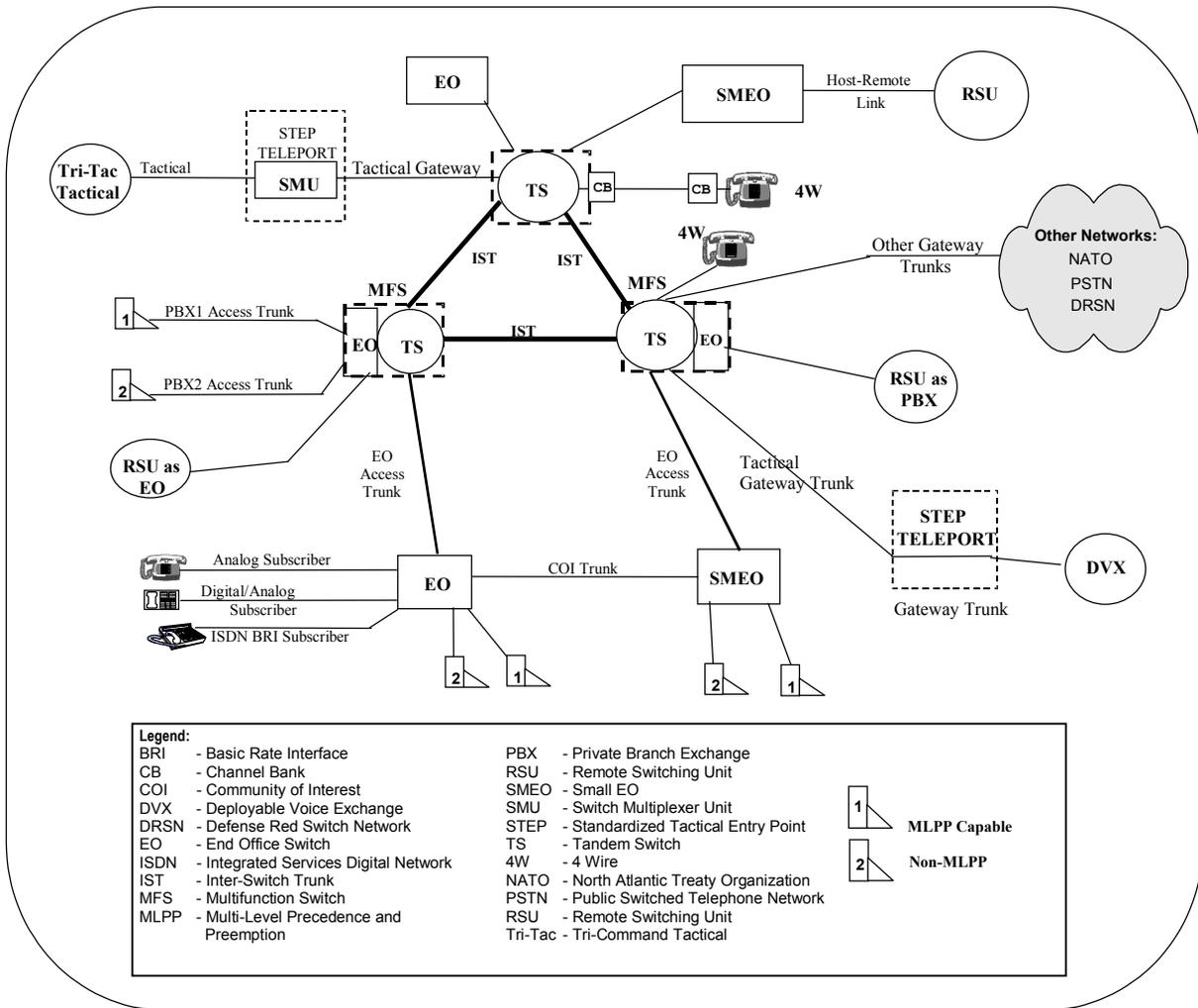
Joint Staff J6I, Room-1E833, Pentagon, Washington, DC 20318-6000  
Joint Staff J6E, Room-1E834, Pentagon, Washington, DC 20318-6000  
Joint Interoperability Test Command, Washington Operations  
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Department of the Army, Office of the Secretary of the Army,  
CIO/G6, Office Symbol SAIS-IOE-A, 107 Army Pentagon DISC4,  
Washington, DC 20310  
Commander, MARCORSSYSCOM, Code SE&I, Suite 315, 2033 Barnett  
Avenue, Quantico, VA 22134-5010  
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Washington, DC 20340-3342  
DOT&E, Strategic and C3I Systems, 1700 Defense Pentagon,  
Washington, DC 20301-1700  
United States Coast Guard, COMDT/G-SCE (C4), 2100 2nd Street SW,  
Washington, DC 20593  
Office of Assistant Secretary of Defense, C3I (C4ISR & Space  
Programs)/C3 Directorate, Crystal Mall 3, 7<sup>th</sup> Floor, Suite  
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Deputy Director for I/O Testing, Office of Under Secretary of  
Defense, AT&L Interoperability, Room 3E144, Pentagon,  
Washington, DC 20301  
United States Joint Forces Command, J6I, C4 Plans and Policy,  
1562 Mitscher Ave, Norfolk, VA 23551-2488

### ADDITIONAL REFERENCES

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

## CERTIFICATION TESTING SUMMARY

1. **SYSTEM TITLE.** Nortel Networks MSL-100 Digital Switching System Software Release MSL-17 with 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, NS53, 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 SL-100, the largest member of the Meridian 1 family of business communications systems, combines the advanced hardware and software architecture of the DMS-100 with the premier Private Branch Exchange software features of the Meridian 1 into a single enterprise solution. The options are Meridian SL-100 SuperNode SE, with its 50,000-port capacity, and SuperNode, designed for higher capacity (up to 100,000 ports). Nortel Networks offers a Remote Switching Unit (RSU) that provides a platform for digital integration, network simplification and exchange area consolidation for up to 6400 lines or 480 trunks. The RSU is not covered under this certification. Nortel Networks also provides voice services over packet data networks called Voice over Internet Protocol (VoIP). VoIP is also not covered under this certification. Previous software and hardware configurations within this product line are currently deployed in Europe, the Pacific, and are the backbone Digital Switching System for Continental United States. The MSL-100 is currently used within the Defense Information Systems Network (DISN) to provide both End Office Switch (EOS) and Multifunction Switch functionality.
6. **OPERATIONAL ARCHITECTURE.** The operational Defense Switched Network (DSN) Architecture is depicted in figure 1.



**Figure 1. DSN Architecture**

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

a. The Chairman of the Joint Chiefs of Staff (CJCS) policy for DOD voice services: DSN, Defense Red Switch Network (DRSN) Gateway, Tactical Network Gateway, North Atlantic Treaty Organization (NATO) Gateway, and Commercial Network Gateway.

b. Interface and signaling requirements for trunk, line and network management derived from the Generic Switching Center Requirements (GSCR) document.

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 1. The criticality and certification status of these interfaces can be found in paragraph 11a. The test summary can be found in paragraph 11b.

**Table 1. Exchange and Functional Requirements**

	Trunk Interfaces		
	Interface & Signaling	Critical	Exchange and Functional Requirements
<b>Defense Switched Network</b>	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	Yes	- Preset Conference - MLPP - Hotline Services - System Interface
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	Yes	<ul style="list-style-type: none"> <li>• Non-Secure Voice and Data</li> <li>• Secure Voice and Data (STU-III and STE)</li> <li>• NX56 kbps and NX64 kbps Synchronous Data</li> <li>• Non-Secure and Secure FAX</li> <li>• VTC</li> <li>• Alarms</li> </ul>
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	Yes	
	PCM-30 E1 CAS HDB3 MFR1	Yes	- Common Channel Signaling/Signaling System Number Seven ( <b>T1 and E1 SS7 only</b> ) - Integrated Services Digital Network ( <b>ISDN PRI only</b> )
	PCM-24 T1 (B8ZS/ESF) SS7	Yes	- Attendant Services (See note 1) - System Administration, Measurements, and Service Standards
	PCM-30 E1 HDB3 SS7	Yes	- Y2K (Rollover, Valid and Invalid Dates) - Screening, Zone Restriction, and DSN Access Restriction
	PCM-24 T1 B8ZS/ESF ISDN PRI	Yes	- COI - Automated Message Accounting - Internal Overload Control - Automatic Call GAP Manual Controls
	Analog E&M Signaling Type I	Yes	- Nailed-Up Connections ( <b>T1 and E1 CAS only</b> ) - Network Integration - Common Data Channel ( <b>T1 and E1 CAS only</b> ) - ANSI T1.619a ( <b>T1 ISDN PRI and SS7 only</b> )

**Table 1. Exchange and Functional Requirements (continued)**

				<b>Line Interfaces</b>			
				<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Exchange and Functional Requirements</b>	
<b>Defense Switched Network (continued)</b>	TPC ISDN BRI ST and U Interface Q.931			Yes	<ul style="list-style-type: none"> <li>- Preset Conference</li> <li>- MLPP</li> <li>- Hotline Services</li> <li>- ANSI T1.619a</li> <li>- ISDN Supplemental Services</li> <li>- Community of Interests</li> <li>- Call Treatments</li> <li>- ESP</li> <li>- DSN Announcements</li> <li>- Attendant Services <sup>1</sup></li> <li>- EKTS</li> <li>- VTC</li> <li>- NX56 kbps and NX64 kbps Synchronous Data</li> <li>- Non-Secure Voice and Data</li> <li>- Secure Voice and Data (STE)</li> </ul>		
	TPC 2-Wire analog			Yes	<ul style="list-style-type: none"> <li>- Preset Conference</li> <li>- MLPP</li> <li>- Hotline Services</li> <li>- DSN Announcements</li> <li>- COI</li> <li>- Traffic Measurements</li> <li>- Attendant Services <sup>1</sup></li> <li>- Call Treatments</li> <li>- ESP</li> <li>- Non-Secure Voice and Data</li> <li>- Non-Secure and Secure FAX</li> <li>- Secure Voice and Data (STU-III and STE)</li> </ul>		
	TPC 2-Wire Digital and Analog (Proprietary)			No	<ul style="list-style-type: none"> <li>- Preset Conference</li> <li>- MLPP</li> <li>- Hotline Services</li> <li>- DSN Announcements</li> <li>- COI</li> <li>- Traffic Measurements</li> <li>- Attendant Services <sup>1</sup></li> <li>- Call Treatments</li> <li>- ESP</li> <li>- Non-Secure Voice</li> </ul>		
	<b>Network Management Interfaces</b>						
					<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Exchange and Functional Requirements</b>
					CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP	No	<ul style="list-style-type: none"> <li>- Automated Message Accounting</li> <li>- Traffic Measurements</li> <li>- Alarms</li> <li>- Man Machine Language</li> </ul>
					TPC RS-232 Asynchronous @ 9.6 kbps	No	
				TPC X.25 or BX.25 variant	No		
<b>Defense Red Switch Network Gateway</b>	<b>Trunk Interfaces</b>						
	<b>Interface &amp; Signaling</b>			<b>Critical</b>	<b>Exchange and Functional Requirements</b>		
TPC 2-Wire analog			Yes	<ul style="list-style-type: none"> <li>- MLPP</li> <li>- Secure Voice</li> </ul>			
<b>Tactical Network Gateway</b>	<b>Trunk Interfaces</b>						
	<b>Interface &amp; Signaling</b>			<b>Critical</b>	<b>Exchange and Functional Requirements</b>		
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1			Yes	<ul style="list-style-type: none"> <li>- MLPP</li> <li>- Non-Secure Voice</li> </ul>		
	PCM-30 E1 HDB3 CAS MFR1			Yes			
Analog E&M Signaling Type I			Yes				

**Table 1. Exchange and Functional Requirements (continued)**

NATO Gateway	Trunk Interfaces		
	Interface & Signaling	Critical	Exchange and Functional Requirements
	Not tested	No	See note 2
Commercial Network Gateway	Trunk Interfaces		
	Interface & Signaling	Critical	Exchange and Functional Requirements
	Same Interfaces and Signaling as DSN above	Yes	See note 3
<b>Legend:</b> AMI - Alternate Mark Inversion ANSI - American National Standards Institute B8ZS - Bipolar Eight Zero Substitution BRI - Basic Rate Interface CAS - Channel Associated Signaling CAT - Category COI - Community of Interests DP - Dial Pulse DSN - Defense Switched Network DTMF - Dual Tone Multi-Frequency E1 - European Basic Rate (2.048 Mbps) E&M - Ear and Mouth EKTS - Electronic Key Telephone Service ESF - Extended Superframe ESP - Essential Service Protection FAX - Facsimile GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan HDB3 - High Density Bipolar Three IEEE - Institute of Electrical and Electronics Engineers, Inc. ISDN - Integrated Services Digital Network kbps - kilobits per second MFR1 - Multi-Frequency R1 MLPP - Multi-Level Precedence and Preemption NATO - North Atlantic Treaty Organization PCM-24 - Pulse Code Modulation 24 Channels PCM-30 - Pulse Code Modulation 30 Channels PRI - Primary Rate Interface SF - Superframe SS7 - Signaling System Number 7 ST - ISDN BRI Four-Wire Interface STE - Secure Terminal Equipment STU-III - Secure Telephone Unit III T1 - Digital Transmission Link level 1 (1.544 Mbps) TCP/IP - Transmission Control Protocol/Internet Protocol U - ISDN BRI Two-Wire Interface VTC - Video Teleconferencing Y2K - Year 2000			
<b>Notes:</b> <sup>1</sup> MSL-17 meets all the GSCR exchange requirements for attendant services with the following consoles: NT4X09AG, NT4X09AB, and T-Metrics with software release 7102081953. <sup>2</sup> Not required of all switches; no operational impact. <sup>3</sup> 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.			

**8. TEST NETWORK DESCRIPTION.** The SUT was tested at the JITC Network Engineering and Integration Laboratory and Strategic Switching Laboratory. This test was conducted using three test configurations shown in figures 2 through 4. Testing of the system's required functions and features was conducted using the test configuration depicted in figure 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 3. Figure 4 depicts the test configuration used to test the Advanced Defense Switched Network Integrated Management Support System (ADIMSS) network management required functions and features.

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

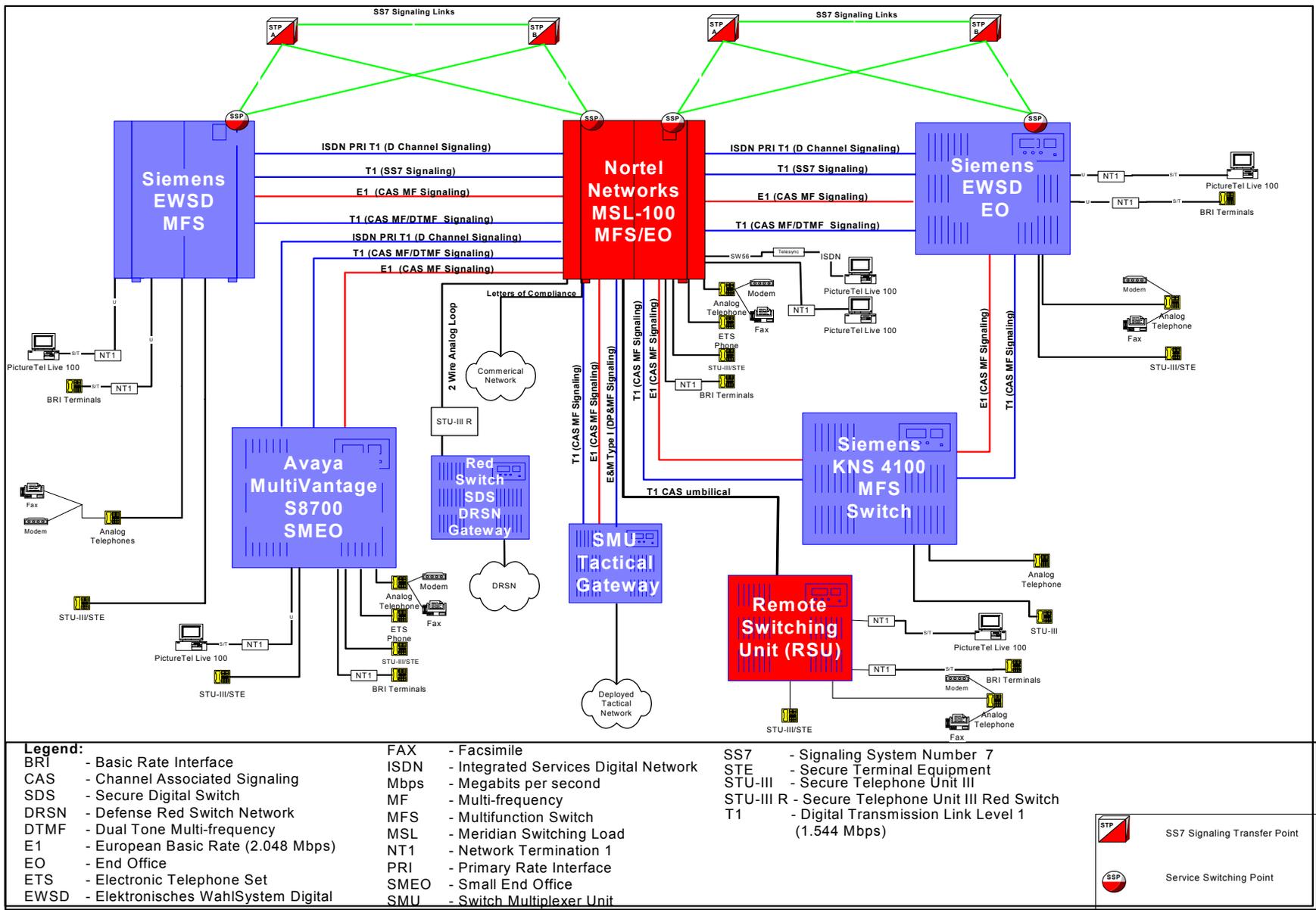
**Table 2. Tested System Configurations**

System Name	Hardware	Software
MSL-100	RISC Processor	MSL-17 with Software Patch Groups listed in enclosure (3)
Avaya Definity G3R	RISC Processor	Release G3V10r.7585.6.0.3
Siemens EWSD	CP 113C	Release 19 with Patch Set 25
Tekelec Eagle STP	Eagle Data Packet Switch	Release 23.1

**Table 2. Tested System Configurations (continued)**

<b>System Name</b>	<b>Hardware</b>	<b>Software</b>
Siemens KN (S) 4100	SAB 8086 Processor	APS4V2.3
SMU 96 Tactical Gateway	Litton Processor	Version RD302185
SDS Red Switch	Force Board Processor	Version 8.03
MARCONI ATM switch ASX-1000 and ASX-200BX	SCP-I960 Processor	Versions 6.0.1 and 6.2
<b>Legend:</b> ATM - Asynchronous Transfer Mode CP - Central Processor EWSD - Elektronisches WahlSystem Digital MSL - Meridian Switching Load RISC - Reduced Instruction Set Computer SDS - Secure Digital Switch SMU - Switch Multiplexer Unit STP - Signaling Transfer Point		

**10. TESTING LIMITATIONS.** The Internal Overload Control (IOC) requirement was not tested due to the inability to overload a non-operational switch in a lab environment. IOC is currently operational in Nortel Networks MSL-100 switches in the DSN and commercial networks. Based on current performance, the operational risk of not testing this feature is determined to have a minor operational impact.



**Figure 2. Test Configuration**

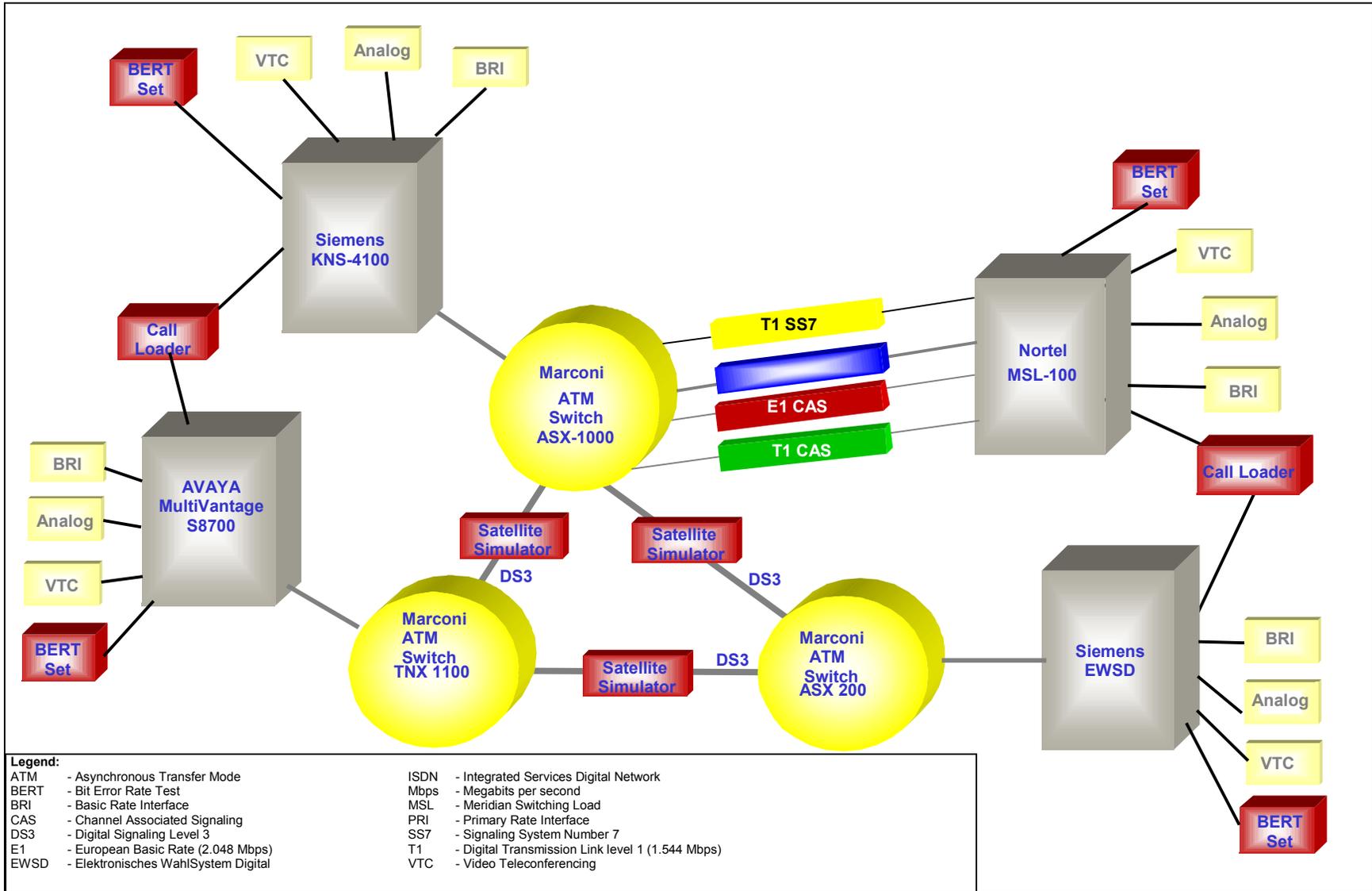
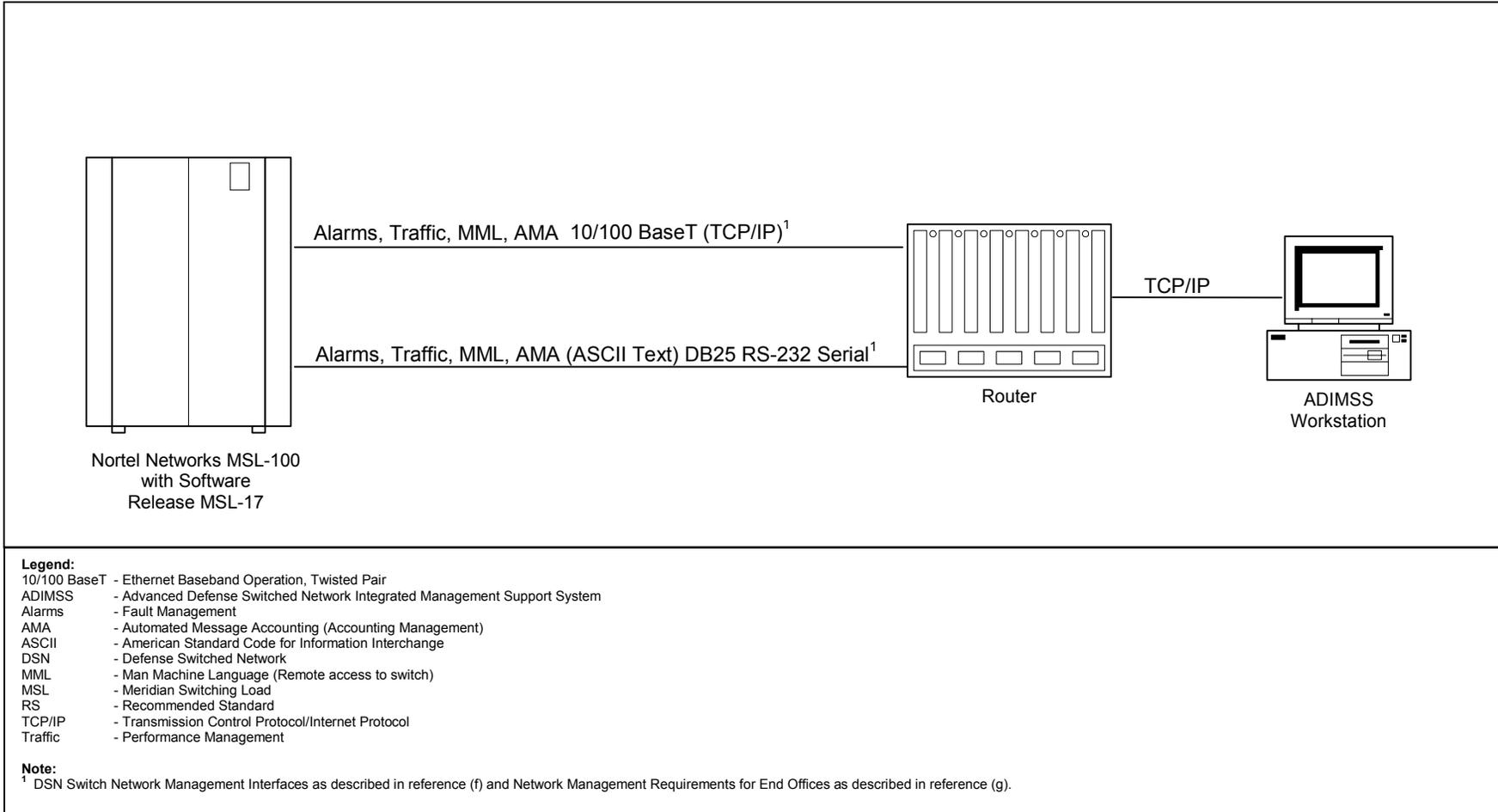


Figure 3. Network Integration Test Configuration



**Figure 4. Nortel Networks MSL-100 ADIMSS Network Management System Interface**

## 11. TEST RESULTS.

a. **Discussion.** Tables 3 through 8 synopsise 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 below.

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

(a) The SUT does not support the following unique Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) Supplemental Services as specified in the respective GSCR paragraphs listed below. Nortel Networks MSL-100 will not satisfy these requirements until later software releases. There are currently no switches in the DISN that support ISDN BRI Supplemental Services; therefore, this discrepancy will have no operational impact.

- 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

(b) The SUT does not support Multi-Level Precedence and Preemption (MLPP) interaction with telephones assigned the Multiple Appearance Directory Number (MADN) option. This option applies to Electronic Key Telephone Service ISDN BRI telephones, and proprietary "P Phones. " The SUT does not support MLPP interaction with these instruments because the assignment of both Preemptable (PREMTBL) and MADN options simultaneously on the same instrument is not permitted. Therefore, the MADN functionality of the MSL-100 is not certified for use in the DSN. The operational impact is minor.

(c) DSN Network Management. DISA NS53 requirements are that a switch provide NM capabilities via either ethernet, serial (RS-232) or serial (X.25 or BX.25 variant). The SUT meets all the exchange requirements for Network Management over Institute of Electrical and Electronic Engineers 802.3 (10BaseT Ethernet) Transmission Control Protocol/Internet Protocol and RS-232 asynchronous serial interfaces. It was verified that these interfaces pass required Network Management data elements to the ADIMSS. The X.25 interface capability was not tested.

(d) RSU. The Nortel Networks MSL-100 RSU was tested in standalone and non-standalone modes. The RSU, when connected to the MSL-100 Host, is treated similar to an EOS. The same test procedures conducted on the MSL-100 Host subscribers were also conducted on the RSU subscribers. The RSU did not meet the critical interoperability certification requirements and is, therefore, not certified for joint use in the DSN.

(2) **DRSN Gateway.** All critical interface ERs and FRs for the DRSN gateway were met.

(3) **Tactical Gateway.** All critical interface ERs and FRs for the tactical gateway were met.

(4) **NATO Gateway.** The NATO Gateway interfaces were not tested. The operational impact is minimal.

(5) **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 Generic Switch Test Plan, specified in tables 2-1 through 2-15 of the GSCR, with minor exceptions. Exceptions were reviewed and assessed by the DISA, Network Services (NS) 53, the Development and Operational Engineering Department, and determined to have a minor operational impact.

**b. Test Summary.** The Nortel Networks MSL-100 Digital Switching System with Software Release MSL-17 and Software Patch Groups listed in enclosure 3 is certified for joint use in the DSN, in accordance with the requirements set forth in reference (d). Minor discrepancies identified during testing and the GSCR requirements not tested will have a minor operational impact. The interoperability summary and status to include criticality for each interface can be found in tables 9 and 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) email. 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).

**Table 3. Defense Switched Network Trunk Interfaces and Requirements**

Interface & Signaling	Interface Status	Exchange & 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	Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		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 <sup>1</sup>	No	II-7.2	2.1.3	Yes	Met
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	No	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
		COI	No	II-13.2	2.2.2	No	Met
		AMA	No	II-14.2	8.1	Yes	Met
		IOC	No	II-17.2	5.3.8	No	Not Tested <sup>2</sup>
		Automatic Call GAP, Network Management Manual Controls	No	II-18.2	16.5.3, 16.6.3	Yes	Met
		Nailed Up Connections	No	II-20.2	2.2.4	No	Met
		Network Integration	No	II-20.2	10	No	Met
CDC <sup>3</sup>	No	II-24.2	10.1.1.5	No	Met		

**Table 3. Defense Switched Network Trunk Interfaces and Requirements (continued)**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 CAS (B8ZS/ESF) (AMI/SF) MFR1	Certified	Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		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 <sup>1</sup>	No	II-7.2	2.1.3	Yes	Met
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	No	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
		COI	No	II-13.2	2.2.2	No	Met
		AMA	No	II-14.2	8.1	Yes	Met
		IOC	No	II-17.2	5.3.8	No	Not Tested <sup>2</sup>
		Automatic Call GAP, Network Management Manual Controls	No	II-18.2	16.5.3, 16.6.3	Yes	Met
		Nailed Up Connections	No	II-20.2	2.2.4	No	Met
		Network Integration	No	II-20.2	10	No	Met
CDC <sup>3</sup>	No	II-24.2	10.1.1.5	No	Met		

**Table 3. Defense Switched Network Trunk Interfaces and Requirements (continued)**

Interface & Signaling	Interface Status	Exchange & 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	Certified	Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		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 <sup>1</sup>	No	II-7.2	2.1.3	Yes	Met
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	No	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
		COI	No	II-13.2	2.2.2	No	Met
		AMA	No	II-14.2	8.1	Yes	Met
		IOC	No	II-17.2	5.3.8	No	Not Tested <sup>2</sup>
		Automatic Call GAP, Network Management Manual Controls	No	II-18.2	16.5.3, 16.6.3	Yes	Met
		Nailed Up Connections	No	II-20.2	2.2.4	No	Met
		Network Integration	No	II-20.2	10	No	Met
		CDC <sup>3</sup>	No	II-24.2	10.1.1.5	No	Met

**Table 3. Defense Switched Network Trunk Interfaces and Requirements (continued)**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-30 E1 CAS HDB3	Certified	Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		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 <sup>1</sup>	No	II-7.2	2.1.3	Yes	Met
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	No	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
		COI	No	II-13.2	2.2.2	No	Met
		AMA	No	II-14.2	8.1	Yes	Met
		IOC	No	II-17.2	5.3.8	No	Not Tested <sup>2</sup>
		Automatic Call GAP, Network Management Manual Controls	No	II-18.2	16.5.3, 16.6.3	Yes	Met
		Nailed Up Connections	No	II-20.2	2.2.4	No	Met
		Network Integration	No	II-20.2	10	No	Met
		CDC <sup>3</sup>	No	II-24.2	10.1.1.5	No	Met

**Table 3. Defense Switched Network Trunk Interfaces and Requirements (continued)**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 CCS (B8ZS/ESF) SS7	Certified	Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		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
		CCS/SS7	No	II-5.2	6.5, 2.2.5	No	Met
		Attendant Services <sup>1</sup>	No	II-7.2	2.1.3	Yes	Met
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	No	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
		COI	No	II-13.2	2.2.2	No	Met
		AMA	No	II-14.2	8.1	Yes	Met
		IOC	No	II-17.2	5.3.8	No	Not Tested <sup>2</sup>
		Automatic Call GAP, Network Management Manual Controls	No	II-18.2	16.5.3, 16.6.3	Yes	Met
		Network Integration	No	II-20.2	10	No	Met
		ANSI T1.619a	No	II-6.2	21.3.1	Yes	Met

**Table 3. Defense Switched Network Trunk Interfaces and Requirements (continued)**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-30 E1 CCS / SS7 HDB3	Certified	Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		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
		CCS/SS7	No	II-5.2	6.5, 2.2.5	No	Met
		Attendant Services <sup>1</sup>	No	II-7.2	2.1.3	Yes	Met
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	No	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
		COI	No	II-13.2	2.2.2	No	Met
		AMA	No	II-14.2	8.1	Yes	Met
		IOC	No	II-17.2	5.3.8	No	Not Tested <sup>2</sup>
		Automatic Call GAP, Network Management Manual Controls	No	II-18.2	16.5.3, 16.6.3	Yes	Met
		Network Integration	No	II-20.2	10	No	Met
ANSI T1.619a	No	II-6.2	21.3.1	Yes	Met		

**Table 3. Defense Switched Network Trunk Interfaces and Requirements (continued)**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 CCS (B8ZS/ESF) ISDN	Certified	Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		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	Yes	II-6.2	6.6, 21.1, 21.2, 21.3	No	Met
		Attendant Services <sup>1</sup>	No	II-7.2	2.1.3	Yes	Met
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	No	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
		COI	No	II-13.2	2.2.2	No	Met
		AMA	No	II-14.2	8.1	Yes	Met
		IOC	No	II-17.2	5.3.8	No	Not Tested <sup>2</sup>
		Automatic Call GAP, Network Management Manual Controls	No	II-18.2	16.5.3, 16.6.3	Yes	Met
		Network Integration	No	II-20.2	10	No	Met
ANSI T1.619a	No	II-6.2	21.3.1	Yes	Met		

**Table 3. Defense Switched Network Trunk Interfaces and Requirements (continued)**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
Analog E&M Signaling Type I	Certified	Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		MLPP	No	II-2.2	2.2.1, 5.3.4.3 through 4.9	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		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	Yes	II-6.2	6.6, 21.1, 21.2, 21.3	No	Met
		Attendant Services <sup>1</sup>	No	II-7.2	2.1.3	Yes	Met
		System Administration, Measurements, and Service Standards	No	II-8.2	9.1 through 9.5	No	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
		COI	No	II-13.2	2.2.2	No	Met
		AMA	No	II-14.2	8.1	Yes	Met
		IOC	No	II-17.2	5.3.8	No	Not Tested <sup>2</sup>
		Network Integration	No	II-20.2	10	No	Met
		ANSI T1.619a	No	II-6.2	21.3.1	Yes	Met

**Table 3. Defense Switched Network Trunk Interfaces and Requirements (continued)**

<b>Legend:</b>		
AMA - Automated Message Accounting	DTMF - Dual Tone Multi-Frequency	HDB3 - High Density Bipolar Three
AMI - Alternate Mark Inversion	E1 - European Basic Multiplex Rate (2.048 Mbps)	MFR1 - Multi-Frequency R1
ANSI - American National Standards Institute	E&M - Ear and Mouth	MLPP - Multi-Level Precedence and Preemption
B8ZS - Bipolar Eight Zero Substitution	ER - Exchange Requirement	PCM - Pulse Code Modulation
CAS - Channel Associated Signaling	ESF - Extended Superframe	SF - Superframe
CCS - Common Channel Signaling	FAX - Facsimile	SS7 - Signaling System Number 7
CDC - Common Data Channel	FR - Functional Requirements	SUT - System Under Test
COI - Community of Interests	GSCR - Generic Switching Center Requirements	T1 - Digital Transmission Link level 1 (1.544 Mbps)
DISN - Defense Information Systems Network	GSTP - Generic Switch Test Plan	VTC - Video Teleconferencing
DP - Dial Pulse	IOC - Internal Overload Control	Y2K - Year 2000
DSN - Defense Switched Network	ISDN - Integrated Services Digital Network	
<b>Notes:</b>		
<sup>1</sup> SUT meets all the GSCR exchange requirements for attendant services with the following consoles: NT4X09AG, NT4X09AB, and T-Metrics with software release 7102081953.		
<sup>2</sup> The operational impact is minor.		
<sup>3</sup> CDC is a requirement only for DISN-Europe. Switches that have a requirement to interface to the DSN European KNS-4100 switches must be capable of passing CDC traffic transparently.		

**Table 4. Defense Switched Network Line Interfaces and Requirements**

Interface & Signaling	Interface Status	Exchange & 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 <sup>1</sup>
		Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		ANSI T1.619a	No	II-6.2	21.3.1	No	Met
		ISDN Supplemental Services	Yes	II-6.2	21.3	No	Not Met <sup>2</sup>
		Attendant Services <sup>3</sup>	No	II-7.2	2.1.3	Yes	Met
		COI	No	II-13.2	2.2.2	No	Met
		ESP	No	II-16.2	5.3.9	No	Met
		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
		EKTS	Yes	II-25.5	21.2	No	Not Met <sup>4</sup>
2 Wire Analog, TPC	Certified	MLPP	No	II-2.2	2.2.1, 5.3.4	Yes	Met
		Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		Attendant Services <sup>2</sup>	No	II-7.2	2.1.3	Yes	Met
		COI	No	II-13.2	2.2.2	No	Met
		ESP	No	II-16.2	5.3.9	No	Met
		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 4. Defense Switched Network Line Interfaces and Requirements (continued)**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
2 Wire Proprietary Digital and Analog	Certified	MLPP	Yes	II-2.2	2.2.1, 5.3.4	Yes	Met <sup>1</sup>
		Preset Conference	No	II-1.2	2.2.3, 21.3	Yes	Met
		Hotline Services	No	II-3.2	21.3.10	Yes	Met
		Attendant Services <sup>3</sup>	No	II-7.2	2.1.3	Yes	Met
		COI	No	II-13.2	2.2.2	No	Met
		ESP	No	II-16.2	5.3.9	No	Met
		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

**Legend:**  
 BRI - Basic Rate Interface  
 COI - Community of Interests  
 DSN - Defense Switched Network  
 EKTS - Electronic Key Telephone Service  
 ER - Exchange Requirement  
 ESP - Essential Service Protection  
 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 - 4 Wire Integrated Services Digital Network Basic Rate Interface  
 SUT - System Under Test  
 TPC - Twisted Pair Copper  
 U - 2 Wire Integrated Services Digital Network Basic Rate Interface

**Notes:**  
<sup>1</sup> Single directory number only. Multiple appearance directory numbers (MADN) not certified. Operational impact is minor.  
<sup>2</sup> Operational impact is minor  
<sup>3</sup> SUT meets all the GSCR exchange requirements for attendant services with the following consoles: NT4X09AG, NT4X09AB, and T-Metrics with software release 7102081953  
<sup>4</sup> EKTS did not fulfill MLPP requirements and is not certified for use.

**Table 5. Defense Switched Network Network Management Interfaces and Requirements**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
CAT 5 TPC, IEEE 802.3 10BaseT Ethernet, TCP/IP	Certified	Automated Message Accounting	No	II-23.2	2.1.10, 16.1	Yes	Met
		Traffic Measurements	No	II-23.2	2.1.10, 16.1	Yes	Met
		Alarms	No	II-23.2	2.1.10, 16.1	Yes	Met
		Man Machine Language	No	II-23.2	2.1.10, 16.1	Yes	Met
TPC RS-232 Asynchronous @ 9.6 kpbs	Certified	Automated Message Accounting	No	II-23.2	2.1.10, 16.1	Yes	Met
		Traffic Measurements	No	II-23.2	2.1.10, 16.1	Yes	Met
		Alarms	No	II-23.2	2.1.10, 16.1	Yes	Met
		Man Machine Language	No	II-23.2	2.1.10, 16.1	Yes	Met
TPC X.25 or BX.25	Not Tested	Automated Message Accounting	NA	II-23.2	2.1.10, 16.1	NA	NA
		Traffic Measurements	NA	II-23.2	2.1.10, 16.1	NA	NA
		Alarms	NA	II-23.2	2.1.10, 16.1	NA	NA
		Man Machine Language	NA	II-23.2	2.1.10, 16.1	NA	NA
<b>Legend:</b> 10BaseT - 10 megabits per second Ethernet twisted pair CAT - Category 5 cable (rated @ 100 megahertz of bandwidth) ER - Exchange Requirements FR - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan IEEE - Institute of Electrical and Electronics Engineers, Inc. kbps - kilobits per second RS - Recommended Standard TCP/IP - Transmission Control Protocol/Internet Protocol TPC - Twisted Pair Copper							

**Table 6. Defense Red Switch Network Interfaces and Requirements**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
TPC 2-Wire analog	Certified	- Multi-Level Precedence and Preemption - Secure Voice (STU-III and STE)	No	II-2.2	2.2.1, 5.3.4	Yes	Met
<b>Legend:</b> ER - Exchange Requirements FR - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan STE - Secure Terminal Equipment STU-III - Secure Telephone Unit III TPC - Twisted Pair Copper							

**Table 7. Tactical Network Interfaces and Requirements**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
PCM-24 T1 (B8ZS/ESF (AMI/SF) MFR1, DTMF	Certified	- Multi-Level Precedence and Preemption - Non-Secure Voice	No	II-2.2	2.2.1, 5.3.4	Yes	Met
PCM-30 E1 HDB3 CAS	Certified	- Multi-Level Precedence and Preemption - Non-Secure Voice	No	II-2.2	2.2.1, 5.3.4	Yes	Met
Analog E&M Type I	Certified	- Multi-Level Precedence and Preemption - Non-Secure Voice	No	II-2.2	2.2.1, 5.3.4	Yes	Met
<b>Legend:</b> AMI - Alternate Mark Inversion B8ZS - Bipolar Eight Zero Substitution CAS - Channel Associated Signaling DTMF - Dual Tone Multi-Frequency E1 - European Basic Multiplex Rate (2.048 Mbps) E&M - Ear and Mouth ER - Exchange Requirements ESF - Extended Superframe FR - Functional Requirements GSCR - Generic Switching Center Requirements GSTP - Generic Switch Test Plan HDB3 - High Density Bipolar Three Mbps - Megabits per second MFR1 - Multi-Frequency R1 PCM-24 - Pulse Code Modulation Twenty-Four channels PCM-30 - Pulse Code Modulation Thirty Channels SF - Superframe T1 - Digital Transmission Link level 1 (1.544 Mbps)							

**Table 8. Commercial Network Interfaces and Requirements**

Interface & Signaling	Interface Status	Exchange & Functional Requirements	Test Discrepancies	GSTP Para (s)	GSCR Para (s)	Critical Yes/No	ER/FR Status
Same Interfaces Signaling as DSN		See Note	No	See Note	10.5	Yes	Met
<p><b>Legend:</b>            DSN - Defense Switched Network            ER - Exchange Requirements            FR - Functional Requirements            GSCR - Generic Switching Center Requirements            GSTP - Generic Switch Test Plan</p> <p><b>Note:</b> 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 GSCR specified in tables 2-1 through 2-15 of the GSCR.</p>							

**Table 9. MSL-100 with Release MSL-17 Interoperability Summary**

Network	Status	Remarks
DSN	Certified	- VoIP not certified - Certified as MFS & EOS - RSU not certified - E1 CAS and CDC (DISN-E only)
DRSN Gateway	Certified	
Tactical Gateway	Certified	
NATO Gateway	Not Certified	Not Tested
Commercial Gateway	Certified	
<b>Legend:</b>		
CAS - Channel Associated Signaling	Mbps - Megabits per second	
CDC - Common Data Channel	MFS - Multifunction Switch	
DRSN - Defense Red Switch Network	NATO - North Atlantic Treaty Organization	
DSN - Defense Switched Network	RSU - Remote Switching Unit	
E1 - European Basic Rate (2.048 Mbps)	T1 - Digital Transmission Link level 1 (1.544 Mbps)	
EOS - End Office	VoIP - Voice over Internet Protocol	

**Table 10. Interoperability Status**

	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
<b>Defense Switched Network</b>	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	Yes	Certified	Met all critical ERs and FRs
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	Yes	Certified	Met all critical ERs and FRs
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	Yes	Certified	Met all critical ERs and FRs
	PCM-30 E1 CAS HDB3 MFR1	Yes	Certified	Met all critical ERs and FRs
	PCM-24 T1 (B8ZS/ESF) SS7	Yes	Certified	Met all critical ERs and FRs
	PCM-30 E1 HDB3 SS7	Yes	Certified	Met all critical ERs and FRs
	PCM-24 T1 (B8ZS/ESF) ISDN PRI	Yes	Certified	Met all critical ERs and FRs
	Analog E&M Signaling Type I	Yes	Certified	Met all critical ERs and FRs
	<b>Line Interfaces</b>			
		<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>
	TPC ISDN BRI ST and U Interface Q.931	Yes	Certified	Met all critical ERs and FRs. ISDN Supplemental Service <sup>1</sup> , and MLPP interaction with EKTS <sup>2</sup> not met. Operational impact is minor
	TPC 2-Wire analog	Yes	Certified	Met all critical ERs and FRs
	TPC 2-Wire Digital and Analog (Proprietary)	No	Certified	Met all critical ERs and FRs. MLPP interaction with the MADN configuration not met <sup>2</sup>
<b>Network Management Interfaces</b>				
	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
	CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP	Yes	Certified	Met all critical ERs and FRs
	TPC RS-232 Asynchronous @ 9.6 kbps	Yes	Certified	Met all critical ERs and FRs
<b>Defense Red Switch Network Gateway</b>	<b>Trunk Interfaces</b>			
	<b>Interface &amp; Signaling</b>	<b>Critical</b>	<b>Status</b>	<b>Remarks</b>
	TPC 2-Wire analog	Yes	Certified <sup>3</sup>	Met all critical ERs and FRs

**Table 10. Interoperability Status (continued)**

	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
<b>Tactical Network Gateway</b>	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	No	Certified	Met all critical ERs and FRs
	PCM-30 E1 HDB3 CAS MFR1	No	Certified	Met all critical ERs and FRs
	Analog E&M Signaling Type I	Yes	Certified	Met all critical ERs and FRs
<b>NATO Gateway</b>	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
		No	Not Tested	See note 4
<b>Commercial Network Gateway</b>	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	Same Interfaces and Signaling as DSN above	Yes	Certified <sup>5</sup>	Met all critical ERs and FRs

**Legend:**

AMI - Alternate Mark Inversion	kbps - kilobits per second
B8ZS - Bipolar Eight Zero Substitution	MADN - Multiple Appearance Directory Number
BRI - Basic Rate Interface	MFR1 - Multi-Frequency R1
CAS - Channel Associated Signaling	MLPP - Multi-Level Precedence and Preemption
CAT - Category	NATO - North Atlantic Treaty Organization
DP - Dial Pulse	PCM-24 - Pulse Code Modulation 24 Channels
DISN - Defense Information Systems Network	PCM-30 - Pulse Code Modulation 30 Channels
DTMF - Dual Tone Multi-Frequency	PRI - Primary Rate Interface
E1 - European Basic Rate (2.048 Mbps)	RS - Recommended Standard
E&M - Ear and Mouth	SF - Superframe
EKTS - Electronic Key Telephone Service	SS7 - Signaling System Number 7
ERs - Exchange Requirements	ST - ISDN BRI Four-Wire Interface
ESF - Extended Superframe	T1 - Digital Transmission Link level 1 (1.544 Mbps)
HDB3 - High Density Bipolar Three	TPC - Twisted Pair Copper
IEEE - Institute of Electrical and Electronics Engineers, Inc.	TCP/IP - Transmission Control Protocol/Internet Protocol
ISDN - Integrated Services Digital Network	U - ISDN BRI Two-Wire Interface

**Notes:**

- <sup>1</sup> ISDN Supplemental Services currently not used in the DISN. The operational impact is minor.
- <sup>2</sup> Single directory number only. Multiple appearance directory numbers (MADN) not certified. The operational impact is minor.
- <sup>3</sup> Interoperability Certification of the SUT does not constitute DRSN Program Manager's (PM) approval for connectivity to the DRSN. It is the user's responsibility to request connectivity approval directly from the PM.
- <sup>4</sup> Not all switches are required to perform this function. Operational impact is minimal.
- <sup>5</sup> 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 reference (d), specified in tables 2-1 through 2-15 of reference (d).

**NORTEL NETWORKS MSL-100 SOFTWARE RELEASE MSL-17  
SOFTWARE PATCH GROUP IDENTIFICATION NUMBERS**

<b>CM (Front End) Patches</b>							
AEM24BCM	BMA23BGT	ECU80BNH	IST54BCM	JFK82BNH	PFY11BGT	SAW61BNG	TLW30BGT
AEM25BGT	BMA24BOB	ECU82BGT	IST74BCM	JFK83BCM	PFY12BGT	SBA99BNG	TLW31BGT
AEM28BNH	BUZ83BNH	ECU83BCM	ITN20BGT	JOR69BNH	PFY13BNH	SCM86BCM	TLW32BGT
AEM30BCM	BXG47BNH	ECU84BCM	IVN35BGT	JOR94BNG	PFY14BNH	SCM93BCM	TNT44BNH
AEM31BGT	CFX56BOB	ECU85BGT	IVN36BGT	JOR95BCM	PFY15BGT	SCO50BNH	TNT45BNH
AEM32BNH	CNL16BGT	ECU86BCM	IVN37BGT	JOR97BCM	PFY19BGT	SCO70BNH	TNT47BCM
AEM34BCM	CPH05BGT	ECU87BNH	IVN38BGT	JOR98BNG	PFY20BGT	SDM24BGT	TXS23BNH
AEM35BCM	CPH07BGT	ECU91BNG	IVN39BGT	JZR40BNH	PJL28BOB	SDM26BGT	TXS27BCM
ALP06BOB	CPH11BGT	ECU98BCM	IVN42BOB	JZR41BNH	PJL30BNH	SDM30BGT	TXS29BNG
ALP07BGT	CUT14BCM	EKW17BOB	JAK00BCM	JZR43BNH	PPM87BOB	SDM31BGT	TXS30BCM
ALP10BGT	CUT20BGT	EKW18BOB	JCI13BNH	KAA53BOB	PPM99BNH	SDM34BGT	VGR16BOB
ALP11BGT	CUT23BGT	ELD20BGT	JCI14BOB	KBD13BNH	QDJ51BNG	SDM35BGT	VGR29BOB
ALP12BNH	DFM24BCM	EMI30BGT	JCI18BCM	KFD46BOB	QDJ59BCM	SDM36BGT	VGR30BOB
ALP14BOB	DLW33BGT	EMI34BCM	JCI19BCM	KFD47BNH	QDJ60BNH	SEA64BOB	VON32BCM
ATM09BCM	DLW34BGT	ESL01BOB	JCT14BGT	KFD48BNH	QDJ61BOB	SEA66BOB	VON33BNH
ATM12BCM	DMG82BNG	FGA05BGT	JCT15BNH	KRI25BNH	QDJ64BNH	SSG04BGT	VON35BNH
ATM14BNH	DMG85BNH	FGP28BGT	JEO03BCM	KRI33BOB	QDJ66BCM	SUK07BCM	VON36BGT
ATM15BNH	DMG86BGT	FGP29BGT	JEO05BNH	KRI34BNH	RAV15BGT	SUN52BNH	VON38BGT
ATM16BCM	DMO43BNH	GAG21BOB	JEO06BGT	LCF94BOB	RAV17BGT	SUN53BGT	VON39BNH
ATM17BCM	DMO44BNG	GEL67BGT	JEO07BNG	LCF95BOB	RAV18BGT	SUN54BCM	VON40BCM
ATM18BCM	DMX13BCM	GEL68BNH	JEO08BNG	LCF97BGT	RAV21BGT	SUN58BCM	VON42BCM
ATM19BCM	DMX14BCM	GEL69BCM	JEO09BGT	MEK51BCM	RDV02BOB	SWT48BOB	ZAD77BNH
ATM20BCM	DOT77BOB	GEL70BNG	JES46BNG	MFB40BNH	RDV11BOB	SWT49BGT	ZUK67BOB
ATM21BNH	DOT78BGT	GEL72BGT	JES47BCM	MPS02BOB	RND21BCM	SWT51BOB	
ATM22BCM	DOT79BOB	GEL73BCM	JES49BCM	MPS08BNH	RND55BCM	SWT53BGT	
ATM23BNG	DOT80BGT	GEL74BNG	JES50BCM	MPS10BOB	RNS01BCM	SWT54BNH	
ATM24BNH	DOT81BOB	GEL75BNH	JES51BCM	MPS11BNH	RNS03BCM	SWT58BOB	
ATM26BCM	DOT86BOB	GEL77BGT	JES52BNG	MPS12BNH	RNS05BCM	TA185BCM	
ATM27BCM	<b>DSN00BLJ</b>	GEL80BNH	JES53BNG	MPS20BNH	RNS06BGT	TAV01BNH	
ATM29BCM	<b>DSN01BCM</b>	GFS43BOB	JES54BCM	NOR01BCM	RNS08BCM	TBF56BNH	
ATM30BCM	<b>DSN02BGT</b>	HOG62BNH	JES55BNG	NOR31BNH	RNS09BCM	TEL64BCM	
AUP01BCM	DVD01BNG	HOG75BOB	JES56BNH	NOR46BCM	RUNLAB	THY05BCM	
BBC71BGT	DVD02BNG	HOG78BOB	JES58BCM	NOR58BNH	RZR36BOB	THY33BCM	
BBC73BNG	EBN27BGT	IST02BCM	JEW36BCM	PDM30BOB	SAW46BNH	THY67BCM	
BBC83BCM	EBN31BNH	IST11BGT	JFK73BNH	PDM42BOB	SAW47BNG	THY86BCM	
BBC84BCM	EBN32BNH	IST12BCM	JFK74BGT	PDM43BOB	SAW48BGT	TLC42BNH	
BBC89BCM	EBN33BCM	IST17BCM	JFK75BGT	PDV61BGT	SAW51BNH	TLC54BOB	
BBC91BNH	EBN34BCM	IST19BCM	JFK78BCM	PDV63BGT	SAW56BNG	TLC55BGT	
BBC92BNH	ECP38BCM	IST22BCM	JFK80BCM	PFY00BGT	SAW57BCM	TLC56BNH	
BMA18BOB	ECU77BNH	IST42BCM	JFK81BGT	PFY04BGT	SAW58BOB	TLC71BNH	
<b>ISN (MS and ENET) Patches</b>							
ALP06IOB	DOT79IOB	HOG78IOB	LPP69IGT	PDM42IOB	RDV11IOB	TLC54IOB	VGR30IOB
BMA18IOB	EKW18IOB	LCF95IOB	MFB29IOB	RDV02IOB	SEA66IOB	VGR16IOB	ZUK67IOB

**NORTEL NETWORKS MSL-100 SOFTWARE RELEASE MSL-17  
SOFTWARE PATCH GROUP IDENTIFICATION NUMBERS**

XPM Patches								
DTC								
XBC81X14	XDY43X14	XIG49X14	XIG72X14	XMV25X14	XQM13X14	XXJ23X14	XZB21X14	
XBC88X14	XIG12X14	XIG53X14	XMC62X14	XOG41X14	XRP99X14	XYY00X14	XZB22X14	
PDTC								
XFE65X7A	XFE72X7A	XFE98X7A	XNZ05X7A	XNZ12X7A	XNZ16X7A	XNZ17X7A	XNZ22X7A	XRR99X7A
LTC								
XIG18X7S	XIG22X7S	XIG41X7S	XIG65X7S	XQM37X7S	<b>XT184X7S</b>	XUT84X7S	XYY65X7S	
XIG22X7S	XIG23X7S	<b>XIG55X7S</b>	XQM35X7S	<b>XQM67X7S</b>	XUT80X7S	XYY52X7S	XYY69X7S	
LIU Patches								
ALP06INH	DOT86INH	LCF95INH	PDM42INH	RDV02INH	SEA66INH	VGR30INH		
BMA18INH	EKW18INH	MFB29INH	PFY20INH	RDV11INH	TLC54INH	ZUK67INH		
DOT79INH	HOG78INH	PDM34INH	PFY24INH	SEA64INH	VGR16INH			
EIU Patches								
ALP06IOB	CUT23IGT	DOT86IOB	LCF95IOB	RDV02IOB	SEA66IOB	VGR30IOB		
ALP14IOB	CUT24IGT	EKW18IOB	MFB29IOB	RDV11IOB	TLC54IOB	ZUK67IOB		
BMA18IOB	DOT79IOB	HOG78IOB	PDM42IOB	SEA64IOB	VGR16IOB			
NIU Patches								
ALP06IOB	BMA18IOB	EKW18IOB	LCF95IOB	MPS02IOB	RDV02IOB	SEA66IOB	VGR16IOB	ZUK67IOB
ALP14IOB	DOT79IOB	HOG78IOB	MFB29IOB	PDM42IOB	RDV11IOB	TLC54IOB	VGR30IOB	
RCC2 Patches								
XAH19X7A	XIG30X7A	XQM36X7A	XQM38X7A	<b>XQM66X7A</b>	XYY55X7A	XYY66X7A	XYY68X7A	
DCH Patches								
XSI81X7A	XSI82X7A							
<b>Legend:</b>								
CM - Computing Module								
DCH - D Channel Handler								
DTC - Digital Trunk controller Module								
EIU - Ethernet Interface Unit								
ENET - Enhanced Network (Fiber)								
ISN - Integrated Service Node								
LIU - Link Interface Unit								
LTC - Line Trunk Controller Module								
MS - Message Switch								
NIU - Network Interface Unit								
PDTC - PCM-30 Digital Trunk Controller								
RCC2 - Remote Cluster Controller 2								
XPM - Enhanced Peripheral Module								
<b>Note:</b> Patch IDs that are bold, denote the patches applied by Nortel Networks to fix test discrepancies identified during interoperability certification testing of MSL-100 Software Release MSL-17								