



DEFENSE INFORMATION SYSTEMS AGENCY

JOINT INTEROPERABILITY TEST COMMAND

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

23 August 2004

SUBJECT: Special Interoperability Test Certification of Siemens Elektronisches Wählsystem Digital (EWSD) Switching System Software Release 19d, Patch Set 43, with Specified Software Patch Groups

References: (a) DOD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01C, "Interoperability and Supportability of Information Technology and National Security Systems," 20 November 2003

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

2. The Siemens EWSD Digital Switching System with Software Release 19d with Patch Set 43 and specified software patch groups, hereinafter referred to as the system under test (SUT), meets the critical interoperability requirements and is certified as interoperable for joint use within the Defense Switched Network (DSN). The SUT was tested and met the critical interoperability requirements for joint use within the DSN for the following switch types: Multifunction, End Office, Small End Office, Private Branch Exchange (PBX) 1, and PBX 2. The identified test discrepancies shown in reference (c) that remained open after software patches were applied and regression testing was completed have minor operational impact. 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 interoperability testing of the EWSD Digital Switching System with Software Release 19d with Patch Set 25 conducted at JITC, Fort Huachuca, AZ, and documented in reference (c), and regression testing conducted on 20 July 2004 of patch set 43 with specified patch groups. The Certification Test Summary shown in reference (c) documents the test results and describes the tested network and system configurations. System interoperability should be verified before deployment in an operational environment that varies significantly from the test environment.

4. The interoperability summary of the SUT is indicated in table 1. The interoperability status and criticality are listed in table 2. The Exchange Requirements (ERs) and Functional Requirements (FRs) for the DSN are listed in table 3. The Specified patch groups are listed in table 4. The SUT offers a Remote Switching Unit capability and a Voice over Internet Protocol capability, but neither are covered under this certification. Network Management (NM)

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capabilities of the SUT were tested in accordance with the DISA NS53 requirements as set forth in references (d) and (e). These references require that a switch provide NM capabilities via either Ethernet, serial (Electronic Industries Alliance-232), or serial (X.25 or BX.25 variant). The SUT meets the NM requirements through the use of X.25 or BX.25 connections. Furthermore, the Enhanced Dual Data Port (EDDP) configuration required by the Defense Information System Network-Europe contract statement of requirement was also tested, and is covered by this certification. The EDDP allows for Ethernet NM interfaces and these were also covered under this certification. In order to meet the class of service display requirement for the attendant console, the SUT must be deployed with the Switching Control Center Network Management System. This interoperability test summary is based upon evaluation of:

- a. The following network interfaces as specified in reference (f): DSN, Defense Red Switch Network Gateway, Tactical Network Gateway, North Atlantic Treaty Organization Gateway, and Public Switched Telecommunications Network.
- b. Interface and signaling requirements for trunk, line, and network management interfaces, and interoperability Exchange Requirements and Functional Requirements derived from reference (g).
- c. The overall system interoperability performance derived from test procedures listed in reference (h).
- d. Review of Letters of Compliance submitted by Siemens.

Table 1. SUT Interoperability Summary

Network	Critical	Status	Remarks
DSN	Yes	Certified	- VoIP not certified. - Certified as MFS, EO, SMEO, PBX 1, and PBX 2. - RSU not certified. - E1 CAS and CDC certified (DISN-E only). - The identified test discrepancies shown in reference (c) that remained open have an overall minor operational impact.
DRSN Gateway	Yes	Certified	Met all critical ERs and FRs.
Tactical Gateway	Yes	Certified	Met all critical ERs and FRs.
NATO Gateway	No	Not Tested	
PSTN Gateway	Yes	Certified	Met all critical ERs and FRs.
Legend:			
CAS	- Channel Associated Signaling	Mbps	- Megabits per second
CDC	- Common Data Channel	MFS	- Multifunction Switch
DISN-E	- Defense Information System Network-Europe	NATO	- North Atlantic Treaty Organization
DRSN	- Defense Red Switch Network	PBX	- Private Branch Exchange
DSN	- Defense Switched Network	PSTN	- Public Switched Telephone Network
E1	- European Basic Rate (2.048 Mbps)	RSU	- Remote Switching Unit
EO	- End Office	SMEO	- Small End Office
ERs	- Exchange Requirements	SUT	- System Under Test
FRs	- Functional Requirements	VoIP	- Voice over Internet Protocol

Table 2. SUT Interoperability Status

	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
Defense Switched Network	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, DTMF, DP	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.
	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 ¹ not met. Operational impact is minor.
	TPC 2-Wire analog (GR-506-CORE) ²	Yes	Certified	Met all critical ERs and FRs
	Network Management Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP (via EDDP)	No	Certified	Met all critical ERs and FRs.
X.25 or BX.25	No	Certified	Met all critical ERs and FRs.	
Defense Red Switch Network Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	TPC 2-Wire analog (GR-506-CORE) ²	Yes	Certified ³	Met all critical ERs and FRs.
Tactical Network Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	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.
NATO Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
		No	Not Tested	See note 4.

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Table 2. SUT Interoperability Status (continued)

PSTN Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
	Same Interfaces and Signaling as DSN above	Yes	Certified ⁵	Met all critical ERs and FRs.
Legend:				
802.3	- IEEE Ethernet Protocol	ISDN	- Integrated Services Digital Network	
10BaseT	- Ethernet Based Operation, Twisted Pair	ITU	- International Telecommunications Union	
AMI	- Alternate Mark Inversion	Mbps	- Megabits per second	
B8ZS	- Bipolar Eight Zero Substitution	MFR1	- Multi-Frequency R1	
BRI	- Basic Rate Interface	MLPP	- Multi-Level Precedence and Preemption	
CAS	- Channel Associated Signaling	NATO	- North Atlantic Treaty Organization	
CAT	- Category	PCM-24	- Pulse Code Modulation 24 Channels	
DP	- Dial Pulse	PCM-30	- Pulse Code Modulation 30 Channels	
DISN	- Defense Information Systems Network	PM	- Program Manager	
DRSN	- Defense Red Switch Network	PRI	- Primary Rate Interface	
DSN	- Defense Switched Network	PSTN	- Public Switched Telephone Network	
DTMF	- Dual Tone Multi-Frequency	Q.931	- ITU Signaling Standard for ISDN	
E1	- European Basic Rate (2.048 Mbps)	SF	- Superframe	
EDDP	- Enhanced Dual Data Port	SS7	- Signaling System Number 7	
EKTS	- Electronic Key Telephone Service	ST	- ISDN BRI Four-Wire Interface	
ERs	- Exchange Requirements	SUT	- System Under Test	
ESF	- Extended Superframe	T1	- Digital Transmission Link level 1 (1.544 Mbps)	
FRs	- Functional Requirements	TPC	- Twisted Pair Copper	
GR	- Generic Requirement (Telcordia)	TCP/IP	- Transmission Control Protocol/Internet Protocol	
HDB3	- High Density Bi-Polar Three	U	- ISDN BRI Two-Wire Interface	
IEEE	- Institute of Electrical and Electronics Engineers, Inc.			
Notes:				
1	ISDN supplemental services currently not used in the DISN. The operational impact is minor.			
2	The GR-506-CORE reference was added to clarify the reference requirements for 2-Wire Analog.			
3	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.			
4	Not all switches are required to perform this function. Operational impact is minimal.			
5	The certification of interoperability with commercial networks was verified based on the review of the vendor's letter of compliance to requirements identified as the "Letter" and "Verify" items listed in appendix E of reference (g) and specified in tables 2-1 through 2-15 of reference (h).			

Table 3. SUT Exchange and Functional Requirements

	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
Defense Switched Network	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	- Preset Conference - MLPP - Hotline services - System Interface
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	<ul style="list-style-type: none"> • Non-Secure Voice and Data • Secure Voice and Data (STU-III and STE) • NX56 and NX64 Synchronous Data • Non-Secure and Secure FAX • VTC • Alarms
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	- CCS/ SS7 (<i>T1 and E1 SS7 only</i>)
	PCM-30 E1 CAS HDB3 MFR1, DTMF, DP	- Integrated Services Digital Network (<i>ISDN PRI only</i>) - Attendant services (See note 1) - System Administration, Measurements, and Service Standards - Y2K (Rollover, Valid, and Invalid Dates)
	PCM-24 T1 (B8ZS/ESF) SS7	- Screening, Zone Restriction, and DSN Access Restriction - COI
	PCM-30 E1 HDB3 SS7	- Automated Message Accounting - Internal Overload Control - Automatic Call Gap Manual Controls - Nailed-Up Connections (<i>T1 and E1 CAS only</i>)
	PCM-24 T1 B8ZS/ESF ISDN PRI	- Network Integration - Common Data Channel (<i>T1 and E1 CAS only</i>) - ANSI T1.619a (<i>T1 ISDN PRI and SS7 only</i>)
	Line Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	TPC ISDN BRI ST and U Interface Q.931	- Preset Conference - MLPP - Hotline services - ANSI T1.619a - ISDN supplemental services - COI - Call Treatments - ESP - DSN Announcements - Attendant services - EKTS - VTC - NX56 and NX64 Synchronous Data - Non-Secure Voice and Data - Secure Voice and Data (STE)
TPC 2-Wire analog (GR-506-CORE) ²	- Preset Conference - MLPP - Hotline services - DSN Announcements - COI - Traffic Measurements - Attendant services ¹ - Call Treatments - ESP - Non-Secure Voice and Data - Non-Secure and Secure FAX - Secure Voice and Data (STU-III and STE)	

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Table 3. SUT Exchange and Functional Requirements (continued)

Defense Switched Network (continued)	Network Management Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP (via EDDP)	- Automated Message Accounting - Traffic Measurements - Alarms - Man Machine Language
X.25 or BX.25	- Automated Message Accounting - Traffic Measurements - Alarms - Man Machine Language	
Defense Red Switch Network Gateway	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	TPC 2-Wire analog (GR-506-CORE) ²	- MLPP - Secure Voice (STU-III and STE)
Tactical Network Gateway	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1 PCM-30 E1 HDB3 CAS MFR1, DTMF, DP	- MLPP - Non-Secure Voice
NATO Gateway	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	Not tested	See note 3.
PSTN Gateway	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	ISDN E1 PRI plus the same interfaces and signaling as shown in DSN above	See note 4.
Legend: 802.3 - IEEE Ethernet Protocol 10BaseT - Ethernet Based Operation, Twisted Pair AMI - Alternate Mark Inversion ANSI - American National Standards Institute B8ZS - Bipolar Eight Zero Substitution BRI - Basic Rate Interface CAS - Channel Associated Signaling CAT - Category CCS - Common Channel Signaling COI - Community of Interest DP - Dial Pulse DSN - Defense Switched Network DTMF - Dual Tone Multi-Frequency E1 - European Basic Rate (2.048 Mbps) EDDP - Enhanced Dual Data Port EKTS - Electronic Key Telephone Service ESF - Extended Superframe ESP - Essential Service Protection FAX - Facsimile GR - Generic Requirement HDB3 - High Density Bi-Polar Three IEEE - Institute of Electrical and Electronic Engineers, Inc. ISDN - Integrated Services Digital Network ITU - International Telecommunications Union kbps - kilobits per second Mbps - Megabits per second MFR1 - Multi-Frequency R1 MLPP - Multi-Level Precedence and Preemption NATO - North Atlantic Treaty Organization NX56 - Data format restricted to multiples of 56 kbps NX64 - Data format restricted to multiples of 64 kbps PCM-24 - Pulse Code Modulation 24 Channels PCM-30 - Pulse Code Modulation 30 Channels PRI - Primary Rate Interface PSTN - Public Switched Telephone Network Q.931 - ITU Signaling Standard for ISDN SF - Superframe SS7 - Signaling System Number 7 ST - ISDN BRI Two-Wire Interface STE - Secure Terminal Equipment STU-III - Secure Telephone Unit-Third Generation SUT - System Under Test T1 - Digital Transmission Link level 1 (1.544 Mbps) T1.619a - SS7 and ISDN Signaling Standard for T1 TCP/IP - Transmission Control Protocol/Internet Protocol TPC - Twisted Pair Copper U - ISDN BRI Two-Wire Interface VTC - Video Conferencing Y2K - Year 2000		
Notes: 1 In order to meet the class of service display requirement for the attendant console, the SUT must be deployed with the Switching Control Center Network Management System. 2 The GR-506-CORE reference was added to clarify the reference requirements for 2-Wire Analog. 3 The SUT is not currently used as a NATO gateway switch; no operational impact. 4 The certification of interoperability with commercial networks was verified based on the review of the vendor's letter of compliance to requirements identified as the "Letter" and "Verify" items listed in appendix E of reference (g) and specified in tables 2-1 through 2-15 of reference (h).		

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Table 4. SUT Specified Patch Group List

Patch Group ID Number	Associated Patch ID
Patch Set 43	Includes various patch groups for both commercial and DSN applications
Patch Group 538-A	B0605L4D.A0A0, B0665L4D.A0A0, B0697L4D.A0A0, CU758L2Z.A0A0, CX306L4D.A0A0, B0703L4D.A0A0
Patch Group 541-A	B0614L41.A0A0
Patch Group 543-A	CX120L4D.A0A0, CV556L4D.A0A0
Patch Group 545-A	DE44L2Z.A0A0
Patch Group 546-A	BZ177L4D.A0A0
Patch Group 547-A	DD998L4D.A0A0, DI045L4D.A0A0
Patch Group 548-A	CZ566L2Z.A0A0, CZ576L2Z.A0A0, CZ577L2Z.A0A0
Patch Group 549-A	DH390L4D.A0A0, DH394L2Z.A0A0
Patch Group 550-A	DI131L2Z.A0A0
Patch Group 551-A	DK235L2Z.A0A0, DH393L2Z.A0A0
Patch Group 552-A	DM604L2Z.A0A0
Patch Group 553-A	DM771L2Z.A0A0, Z6103L2Z.IFA1, Z3155L2Z.IFA1, X4127L2Z.IFA0, X2441L2Z.IGA2, X1426L2Z.IGA2, X0333L2Z.IIA1, W9884L2Z.IEA0, S6697L2Z.A3A1, U6134L2Z.IFA1
Patch Group 554-A	DJ578L2Z.A0A0, DJ50L2Z.A0A0
Patch Group 555-A	B0715L4D.A0A0
Patch Group 556-A	DK411L4D.A0A0
Patch Group 557-A	DL476L4D.A0A0
Patch Group 558-A	DO029L4D.A0A0
Legend: DSN - Defense Switched Network ID - Identification SUT - System Under Test	
Note: This certification specifically covers regression testing of newly applied patch groups listed in bold. The other patches were tested and covered under a certification letter that was signed on 22 June 04.	

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

6. The JITC point of contact is Capt. Michel Roy, DSN 821-8575, commercial (520) 533-8575, FAX DSN 879-4347, or e-mail roym@fhu.disa.mil.

FOR THE COMMANDER:

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ADDITIONAL REFERENCES

- (c) Joint Interoperability Test Command Memorandum, Networks, Transmission and Integration Division (JTE), "Joint Interoperability Test Certification of Siemens Elektronisches Wählsystem Digital (EWSD) Switching System Software Release 19d with Patch Set 25," 29 August 2003
- (d) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Switch Network Management Interface," 26 July 2001
- (e) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Network Management Requirements for End Offices," 2 August 2001
- (f) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services," 23 September 2001
- (g) Defense Information Systems Agency (DISA), Joint Interoperability and Engineering Organization (JIEO), Technical Report 8249, "Defense Information Systems Network (DISN) Circuit Switched Subsystem, Defense Switched Network (DSN) Generic Switching Center Requirements (GSCR)," March 1997
- (h) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP)," 17 June 1999