



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

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of Avaya MultiVantage G3CSI (ProLogix) Digital Switching System with Software Release R011x.7585.7.0.2, and Software Patch # 6153

References:

- (a) DOD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 11 January 2002
- (b) CJCSI 6212.01C, "Interoperability and Supportability of National Security Systems and Information Technology 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 system interoperability test certification. Additional references are provided in enclosure 1.
2. The Avaya MultiVantage G3CSI (ProLogix) Digital Switching System with Software Release R011x.7585.7.0.2 and Software Patch # 6153, hereinafter referred to as the system under test (SUT), met all of its critical interoperability requirements, and is certified as interoperable for joint use within the Defense Switched Network (DSN). The identified test discrepancies shown in reference (c) that remained open after software patches were applied and regression testing was completed have an overall minor operational impact. The SUT was tested and met the critical interoperability requirements for the following DSN switch types: Private Branch Exchange (PBX) 1 and PBX 2. This certification expires upon changes that could affect interoperability, but no later than three years from the date of this memorandum.
3. This finding is based on interoperability testing of the Avaya MultiVantage G3CSI (ProLogix) Digital Switching System with Software Release R011x.7585.7.0.2 conducted by JITC and certified on 8 December 2003 as seen in reference (c), and regression testing of Software Patch # 6153 conducted 8 through 12 December 2003 at the JITC facility at Ft. Huachuca, AZ. The test results and tested network and systems configurations can be found in enclosure 2 of reference (c). System interoperability should be verified before deployment in an operational environment that varies significantly from the test environment.

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4. The interoperability summary of the SUT is indicated in table 1. The interoperability status and criticality are listed in table 2, Exchange Requirements (ERs) and Functional Requirements (FRs) for the DSN are listed in table 3, and description of Software Patch # 6153 is shown in table 4. The Avaya switch product line offers a Remote Switch Unit capability referred to as the Survivable Remote Processor Expansion Port Network. 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. Network Management (NM) capabilities of the SUT platform were tested in accordance with the DISA NS53 requirements as set forth in references (d) and (e). These references require that a switch provide NM capabilities via either Ethernet, serial (EIA-232), or serial (X.25 or BX.25 variant). The SUT meets the NM requirements through the use of either serial (EIA-232) or Ethernet connection as shown in reference (c). This interoperability test status is based upon evaluation of:

- a. The following network interfaces as specified in reference (f), DSN, 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 references (g) and (h).
- c. The overall system interoperability performance derived from test procedures listed in reference (i).
- d. A review of the Letters of Compliance submitted by Avaya.

Table 1. Avaya MultiVantage G3CSI (ProLogix) Digital Switching System Interoperability Summary

Network	Critical	Status	Remarks
DSN	Yes	Certified	- VoIP not certified - Certified as PBX1 and PBX2 - RSU not certified - E1 CAS and CDC certified (DISN-E only) - The identified test discrepancies shown in enclosure 2 of reference (c) that remained open have an overall minor operational impact.
Commercial Network Gateway	No	Certified	
Legend:			
CAS	- Channel Associated Signaling	Mbps	- Megabits per second
CDC	- Common Data Channel	PBX1	- Private Branch Exchange 1
DISN-E	- Defense Information System Network Europe	PBX2	- Private Branch Exchange 2
DSN	- Defense Switched Network	RSU	- Remote Switching Unit
E1	- European Basic Rate (2.048 Mbps)	VoIP	- Voice over Internet Protocol

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Table 2. Interoperability Status

	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
Defense Switched Network	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	No	Certified	Met all ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	No	Certified	Met all ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	No	Certified	Met all ERs and FRs.
	PCM-30 E1 CAS HDB3 MFR1	No	Certified	Met all ERs and FRs.
	PCM-24 T1 (B8ZS/ESF) ISDN PRI	Yes	Certified	Met all critical ERs and FRs. Full compliance to the ANSI T1.619a requirement not met. ¹ Operational impact is minor.
	Analog E&M Signaling Type 1	No	Certified	Met all 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 ² and full compliance of DSN Announcements ³ not met. Operational impact is minor.
	TPC 2-Wire Analog	Yes	Certified	Met all critical ERs and FRs. Full compliance of DSN Announcements ³ not met. Operational impact is minor.
TPC 2-Wire Digital (Proprietary)	No	Certified	Met all ERs and FRs except for full compliance of DSN Announcements ³ . Operational impact is minor.	
Network Management Interfaces				
Interface & Signaling	Critical	Status	Remarks	
CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP	No ⁴	Certified	Met all ERs and FRs.	
TPC EIA232 Asynchronous @ 9.6 kbps	No ⁴	Certified	Met all ERs and FRs.	
Commercial Network Gateway	Trunk Interfaces			
	Interface & Signaling	Critical	Status	Remarks
Same Interfaces and Signaling as DSN	No	Certified	See note 5.	
Legend:				
10BaseT	- Ethernet Based Operation, Twisted Pair	GSTP	- Generic Switch Test Plan	
AMI	- Alternate Mark Inversion	HDB3	- High Density Bi-Polar Three	
ANSI	- American National Standards Institute	IEEE	- Institute of Electrical and Electronic Engineers, Inc.	
B8ZS	- Bipolar Eight Zero Substitution	ISDN	- Integrated Services Digital Network	
BRI	- Basic Rate Interface	kbps	- kilobits per second	
CAS	- Channel Associated Signaling	Mbps	- Megabits per second	
CAT	- Category	MFR1	- Multi-Frequency R1	
DISN	- Defense Information Systems Network	NM	- Network Management	
DP	- Dial Pulse	PBX	- Private Branch Exchange	
DSN	- Defense Switched Network	PCM-24	- Pulse Code Modulation 24 Channels	
DTMF	- Dual Tone Multi-Frequency	PCM-30	- Pulse Code Modulation 30 Channels	
E1	- European Basic Rate (2.048 Mbps)	PRI	- Primary Rate Interface	
E&M	- Ear and Mouth	SF	- Superframe	
EIA	- Electronic Industries Alliance	ST	- ISDN BRI Four-Wire Interface	
ERs	- Exchange Requirements	T1	- Digital Transmission Link level 1 (1.544 Mbps)	
ESF	- Extended Superframe	TCP/IP	- Transmission Control Protocol/Internet Protocol	
FRs	- Functional Requirements	TPC	- Twisted Pair Copper	
GSCR	- Generic Switching Center Requirements	U	- ISDN BRI Two-Wire Interface	
Notes:				
1 The Avaya MultiVantage G3CSI will not allow calls between unlike DSN service domains when resources are available. The Avaya MultiVantage G3CSI meets the minimum requirements defined in reference (j). The operational impact is minor.				
2 ISDN Supplemental Services are currently not used in the DISN. The operational impact is none.				
3 Met all DSN announcement requirements except for Isolation Code Announcement. The Avaya MultiVantage G3CSI provides this announcement only for precedence calls above ROUTINE. ROUTINE precedence calls receive a fast busy signal.				
4 NM is not a requirement for PBX1 or PBX2. NM functions were tested though and met all ERs and FRs.				
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 "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

Defense Switched Network	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DTMF	<ul style="list-style-type: none"> - MLPP - Hotline Services - 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 • Non-secure and Secure FAX • VTC • Alarms - Integrated Services Digital Network (<i>ISDN PRI only</i>) - Attendant Services¹ - System Administration, Measurements, and Service Standards - Y2K (Rollover, Valid and Invalid Dates) - Screening, Zone Restriction, and DSN Access Restriction - Automated Message Accounting - Network Integration - Common Data Channel (<i>T1 and E1 CAS only</i>) - ANSI T1.619a (<i>T1 ISDN PRI</i>)
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS MFR1	
	PCM-24 T1 (B8ZS/ESF) (AMI/SF) CAS DP	
	PCM-30 E1 CAS HDB3 MFR1	
	PCM-24 T1 B8ZS/ESF ISDN PRI	
	Analog E&M Signaling Type I	
	Analog E&M Signaling Type I	
	Line Interfaces	
Interface & Signaling	Exchange & Functional Requirements	
TPC ISDN BRI ST and U Interface Q.931	<ul style="list-style-type: none"> - MLPP - Hotline Services - ANSI T1.619a - ISDN Supplemental Services - Call Treatments - DSN Announcements - Attendant Services¹ - EKTS - VTC - NX56 kbps and NX64 kbps Synchronous Data - Non-secure Voice and Data - Secure Voice and Data (STE) 	
TPC 2-Wire Analog	<ul style="list-style-type: none"> - MLPP - Hotline Services - DSN Announcements - Traffic Measurements - Attendant Services¹ - 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)	<ul style="list-style-type: none"> - MLPP - Hotline Services - DSN Announcements - Traffic Measurements - Attendant Services¹ - 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	Exchange & Functional Requirements
	CAT 5 TPC IEEE 802.3 10BaseT Ethernet, TCP/IP	<ul style="list-style-type: none"> - Automated Message Accounting - Traffic Measurements - Man Machine Language - Alarms
TPC EIA232 Asynchronous @ 9.6 kbps	<ul style="list-style-type: none"> - Automated Message Accounting - Traffic Measurements - Man Machine Language 	
Commercial Network Gateway	Trunk Interfaces	
	Interface & Signaling	Exchange & Functional Requirements
	Same Interfaces and Signaling as DSN	See note 2.

Legend:

10BaseT - Ethernet Based Operation, Twisted Pair	kbps - kilobits per second
AMI - Alternate Mark Inversion	Mbps - Megabits per second
ANSI - American National Standards Institute	MFR1 - Multi-Frequency R1
B8ZS - Bipolar Eight Zero Substitution	MLPP - Multi-Level Precedence and Preemption
BRI - Basic Rate Interface	NX56 - Data format is restricted to multiples of 56 kbps
CAS - Channel Associated Signaling	NX64 - Data format is restricted to multiples of 64 kbps
CAT - Category	PCM-24 - Pulse Code Modulation 24 Channels
DP - Dial Pulse	PCM-30 - Pulse Code Modulation 30 Channels
DSN - Defense Switched Network	PRI - Primary Rate Interface
DTMF - Dual Tone Multi-Frequency	SF - Superframe
E1 - European Basic Rate (2.048 Mbps)	ST - ISDN BRI Four-Wire Interface
E&M - Ear and Mouth	STE - Secure Terminal Equipment
EKTS - Electronic Key Telephone Service	STU-III - Secure Telephone Unit-III
ESF - Extended Superframe	SUT - System Under Test
FAX - Facsimile	T1 - Digital Transmission Link level 1 (1.544 Mbps)
GSCR - Generic Switching Center Requirements	TCP/IP - Transmission Control Protocol/Internet Protocol
GSTP - Generic Switch Test Plan	TPC - Twisted Pair Copper
HDB3 - High Density Bi-Polar Three	U - ISDN BRI Two-Wire Interface
IEEE - Institute of Electrical and Electronic Engineers, Inc.	VTC - Video Teleconferencing
ISDN - Integrated Services Digital Network	Y2K - Year 2000

Notes:

- SUT meets all the GSCR exchange requirements for attendant services with the following console: Lucent Attendant Console Model 302C.
- 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 4. Software Patch # 6153 Description

Software Patch #	Patch Description
6153	<ol style="list-style-type: none"> Deletion of the MLPP ANSI T1.619a information elements on a non-DSN ISDN PRI Trunkgroup (DSN Term=No). Allows for Remote Access with PIN from DSN to local commercial extensions.
ANSI - American National Standards Institute DSN - Defense Switched Network ISDN - Integrated Services Digital Network Mbps - Megabits per second MLPP - Multi-Level Precedence and Preemption PIN - Personal Identification Number PRI - Primary Rate Interface T1 - Digital Transmission Link level 1 (1.544 Mbps)	

5. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which 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/>

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(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 Gese, DSN 879-5164, commercial (520) 538-5164, FAX DSN 879-4347, or e-mail to gesej@fhu.disa.mil.

FOR THE COMMANDER:

1 Enclosure:
Additional References

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ADDITIONAL REFERENCES

- (c) Joint Interoperability Test Command Memorandum, Networks, Transmission and Integration Division (JTE), "Joint Interoperability Test Certification of Avaya MultiVantage G3CSI (ProLogix) Digital Switching System with Software Release R011x.7585.7.0.2," 8 December 2003
- (d) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Switch Network Management Interface," 26 July 2001
- (e) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Network Management Requirements for End Offices," 2 August 2001
- (f) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, "Policy for Department of Defense Voice Services," 23 September 2001
- (g) Defense Information Systems Agency (DISA), Joint Interoperability and Engineering Organization (JIEO), Technical Report 8249, "Defense Information Systems Network (DISN) Circuit Switched Subsystem, Defense Switched Network (DSN) Generic Switching Center Requirements (GSCR)," March 1997
- (h) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Global Network Requirements for Small End Office and Private Branch Exchange Category of Switches," 18 March 2003
- (i) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP)," 17 June 1999
- (j) Defense Information Systems Agency (DISA) NS53, Memorandum, "DSN Global Network Requirements for Tandem (Standalone), Multifunction, End Office, and Small End Office Switches," 30 January 2003