DEFENSE INFORMATION SYSTEMS AGENCY
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IN REPLY REFER TO: Joint Interoperability Test Command (JTE) 8 May 2012

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Special Interoperability Test Certification of the Fujitsu FLASHWAVE 4100 Extension Shelf (ES) with Software Release 8.2

References: (a) Department of Defense Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) Chairman, Joint Chiefs of Staff Instruction 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems (NSS)," 15 December 2008
(c) through (i), see Enclosure

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.

2. The Fujitsu FLASHWAVE 4100 ES with Software Release 8.2, hereinafter referred to as the System Under Test (SUT), is certified for joint use within the Defense Information System Network (DISN) as a Strategic Network Element. The DISA adjudicated all Test Discrepancy Reports (TDR) open at the completion of testing to have a minor operational impact. JITC will verify the SUT's certification status by evaluating any new discrepancies noted in the operational environment for impact on the existing certification. JITC will adjudicate these discrepancies to the satisfaction of DISA via a vendor Plan of Actions and Milestones that will address all new critical TDRs within 120 days of identification. The SUT met the critical interoperability requirements set forth in References (c) and (d) using test procedures derived from Reference (h). Although the SUT offers European Basic Multiplex Rate (E1) access interfaces, JITC did not test these interfaces and they are not covered under this certification. JITC does not certify any other configurations, features, or functions, except those cited in this memorandum. This certification expires upon changes that affect interoperability, but no later than three years from the date of the original memorandum.

3. The extension of this certification is based upon Desktop Review (DTR) 4, DTR 5, and DTR 6. JITC conducted interoperability testing at the Global Information Grid Network Test Facility, Fort Huachuca, Arizona from 7 July through 1 August 2008. Review of the vendor's Letters of Compliance (LoC), were completed on 4 December 2009. A review of the current changes in the SUT in Reference (e), (f), (g), and comparison with the new requirements in Reference (c) and (d) was conducted in March 2012 to certify the SUT for interoperability within the DISN without additional interoperability testing. Defense Information Assurance (IA)/Security Accreditation Working Group (DSAWG) granted accreditation on 10 March 2009, based on the security testing completed by DISA-led IA test teams and published in a separate

report, Reference (i). The original certification specified the expiration date three years from date of issue; therefore, this certification is also based on the IA accreditation, which is limited to three years, so expiration date has been changed to reflect the maximum authorized timeframe.

The DTR 4 was requested to include 10 components. The DTR 5 was requested to include 13 components. The DTR 6 was requested to include 5 components. All components are listed in Table 3. These components have the same exact functionality as previously tested and approved components in release 8.2 at Fort Huachuca, Arizona and release 8.3 at Indian Head, Maryland. JITC determined, through the analysis, that there is minimal risk in approving these DTRs. This change is unlikely to affect the interoperability functionality of the certified Fixed Network Element. Therefore, JITC approves the DTR 4, 5, and 6. The DSAWG accreditation for these DTRs 4, 5, and 6 were not required because these DTRs are relevant only to interoperability certification.

4. Table 1 shows the SUT Interface Interoperability Status and Table 2 shows the Capability and Feature Requirements used to evaluate the interoperability of the SUT.

Table 1. SUT Interface Interoperability Status

DSN Access Interfaces				
DSN Switch Access		**Critical**	**Status**	**Remarks**
T1 CAS (AMI/SF) DTMF, MFR1, DP		No[1]	Certified	Met all CRs and FRs.
T1 CAS (B8ZS/ESF) DTMF, MFR1, DP		No[1]	Certified	Met all CRs and FRs.
T1 PRI (ANSI T1.619a)		No[1]	Certified	Met all CRs and FRs.
T1 SS7 (ANSI T1.619a)		No[1]	Certified	Met all CRs and FRs.
E1 CAS (HDB3) DTMF, MFR1, DP		No[1] (Europe only)	Not Tested	The SUT offers this interface; however, it was not tested. The SUT E1 CAS interface is therefore not certified by JITC. This is not a required interface for a Strategic Network Element.
E1 ISDN PRI (ITU-T Q.955.3)		No[1] (Europe only)	Not Tested	The SUT offers this interface; however, it was not tested. The SUT E1 CAS interface is therefore not certified by JITC. This is not a required interface for a Strategic Network Element.
E1 SS7 (ANSI T1.619a)		No[1] (Europe only)	Not Tested	The SUT offers this interface; however, it was not tested. The SUT E1 CAS interface is therefore not certified by JITC. This is not a required interface for a Strategic Network Element.
DS3		No[1]	Certified	Met all CRs and FRs.
DS3C		No[1]	Certified	Met all CRs and FRs.
10/100 Mbps Ethernet		No[1]	Certified	Met all CRs and FRs.
Gigabit Ethernet		No[1]	Certified	Met all CRs and FRs.
Optical Carrier Level	**Transport Level**	**Critical**	**Status**	**Remarks**
OC-3	VT 1.5	No[2]	Certified	Met all CRs and FRs.
	STS-1	No[2]	Certified	Met all CRs and FRs.
OC-12	VT 1.5	No[2]	Certified	Met all CRs and FRs.
	STS-1	No[2]	Certified	Met all CRs and FRs.
OC-48	VT 1.5	No[2]	Certified	Met all CRs and FRs.
	STS-1	No[2]	Certified	Met all CRs and FRs.
Features and Capabilities				
Features and Capabilities		**Critical**	**Status**	**Remarks**
Synchronization		Yes	Certified	Met all CRs and FRs.
Network Management		Yes	Certified	Met all CRs and FRs.
Security		Yes	See note 3.	See note 3.

Table 1. SUT Interface Interoperability Status (Continued)

NOTES:
1 The UCR does not stipulate a minimum Access interface requirement for a Strategic Network Element.
2 The UCR does not stipulate a minimum Transport interface requirement for a Strategic Network Element.
3 DISA-led Information Assurance test teams tested security and published the results in a separate report, Reference (i).

LEGEND:

10/100BaseT	10/100 Mbps (Baseband Operation, Twisted Pair) Ethernet	ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
AMI	Alternate Mark Inversion	JITC	Joint Interoperability Test Command
ANSI	American National Standards Institute	Mbps	Megabits per second
B8ZS	Bipolar Eight Zero Substitution	MFR1	Multi-Frequency Recommendation 1
CAS	Channel Associated Signaling	MLPP	Multi-Level Precedence and Preemption
CR	Capability Requirements	OC-3	Optical Carrier Level 3 (155 Mbps)
DISA	Defense Information Systems Agency	OC-12	Optical Carrier Level 12 (622 Mbps)
DP	Dial Pulse	OC-48	Optical Carrier Level 12 (2.448 Gbps)
DS3	Digital Signal Level 3 (44.736 Mbps)	PRI	Primary Rate Interface
DS3C	Digital Signal Level 3 - Concatenated (89.472 Mbps)	Q.955.3	ISDN Signaling Standard for E1 MLPP
DSN	Defense Switched Network	SF	Super Frame
DTMF	Dual Tone Multi-Frequency	SS7	Signaling System 7
E1	European Basic Multiplex Rate (2.048 Mbps)	SUT	System Under Test
ESF	Extended Super Frame	STS	Synchronous Transport Signal
FR	Feature Requirements	T1	Digital Transmission Link Level 1 (1.544 Mbps)
Gbps	Gigabits per second	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
HDB3	High Density Bipolar 3	UCR	Unified Capabilities Requirements
ISDN	Integrated Services Digital Network	VT1.5	Virtual Tributary 1.5

Table 2. SUT Capability and Feature Interoperability Requirements

DSN Access Interfaces			
Interface	**Critical**	**Requirements Required or Conditional**	**References**
T1 CAS	No[1]	• DS1 Interface Characteristics (C) • DS1 Supervisory Channel Associated Signaling (C) • DS1 Clear Channel Capability (C) • DS1 Alarm and Restoral Requirements (C) • E1 Interface Characteristics (C) • E1 Supervisory Channel Associated Signaling (C) • E1 Clear Channel Capability (C) • E1 Alarm and Restoral Requirements (C) • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) • Modem (R) • Facsimile (R) • Call Control Signals (R) • Delay (R) • Alarms (R) • Call Congestion Control (R) • Call Congestion for TDM Transport (C) • Call Congestion for IP Transport (C) • Voice Compression (C) • DS3 Interface Requirements (R) • IP Interface (C) - Delay (R) - Jitter (R) - Packet Loss (R)	• UCR Section 5.2.12.5.5.1.2.4 • UCR Section 5.2.12.5.5.1.2.4 • UCR Section 5.2.12.5.5.1.2.4 • UCR Section 5.2.12.5.5.1.2.4 • UCR Section 5.2.12.5.5.1.2.5 • UCR Section 5.2.12.5.5.1.2.5 • UCR Section 5.2.12.5.5.1.2.5 • UCR Section 5.2.12.5.5.1.2.5 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1.1 • UCR Section 5.2.12.5.5.1.1.2 • UCR Section 5.2.12.5.5.1.1.2.1 • UCR Section 5.2.12.5.5.1.1.2.2 • UCR Section 5.2.12.5.5.1.1.3 • UCR Section 5.2.12.5.5.1.2.6 • UCR Section 5.2.12.5.5.1.2.9 • UCR Section 5.2.12.5.5.1.2.9 • UCR Section 5.2.12.5.5.1.2.9 • UCR Section 5.2.12.5.5.1.2.9
T1 SS7 (ANSI T1.619a)	No[1]		
T1 ISDN PRI (ANSI T1.607/ANSI T1.619a)	No[1]		
E1 ISDN PRI (ITU-T Q.955.3)	No[1] (Europe only)		
E1 CAS	No[1] (Europe only)		
E1 SS7 (ANSI T1.619a)	No[1] (Europe only)		
DS3, DS3C	No[1]		
10/100 Mbps Ethernet	No[1]		
Gigabit Ethernet	No[1]		

Table 2. SUT Capability and Feature Interoperability Requirements (continued)

DSN Transport Interfaces			
Interface	**Critical**	**Requirements Required or Conditional**	**References**
OC-3	No[2]	• MLPP (R) • GR-303-CORE (R) • GR-253-CORE (R) • GR-782-CORE (R) • ANSI T1.105-2001 (R) • DS1 Rate Transport via VT1.5 (R) • DS1 Rate Provisioning (R) • DS0 Call Processing (R) • DS0 to OC-3 Route Assignment (R) • Facility Alarms (R) • DS1 AIS/Yellow (R) • DS0 AIS/DS0 RAI (R) • Synchronization in accordance with GR-518-CORE (R) • Synchronization in accordance with GR-253-CORE (R) • Synchronization in accordance with GR-436-CORE (R) • Reliability (R) • Security (R) • MOS (R) • BERT (R) • Secure Transmission (Voice and Data) (R) • Modem (R) • Facsimile (R) • Call Control Signals (R) • Delay (R) • Call Congestion Control (R) • Voice Compression (C)	• UCR Section 5.2.12.2.5.1 • UCR Section 5.2.12.2.5.2 • UCR Section 5.2.12.2.5.2 • UCR Section 5.2.12.2.5.2 • UCR Section 5.2.12.2.5.2 • UCR Section 5.2.12.2.5.2 • UCR Section 5.2.12.2.5.2 • UCR Section 5.2.12.2.5.2 • UCR Section 5.2.12.2.5.3 • UCR Section 5.2.12.2.5.4 • UCR Section 5.2.12.2.5.4 • UCR Section 5.2.12.2.5.4 • UCR Section 5.2.12.2.5.5 • UCR Section 5.2.12.2.5.5 • UCR Section 5.2.12.2.5.5 • UCR Section 5.2.12.2.5.6 • UCR Sections 3.2.3, 3.2.5, and 5.4.6.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1 • UCR Section 5.2.12.5.5.1.1.2 • UCR Section 5.2.12.5.5.1.1.3
OC-12	No[2]		
OC-48	No[2]		

SUT Features And Capabilities			
Feature/Capability	**Critical**	**Requirements Required or Conditional**	**References**
Synchronization	Yes	• Timing (R)	• UCR Section 5.2.12.5.5.1.2.7
Network Management	Yes	• Management Option (R) - Local Management (Front Panel and/or External Console) (C) - ADIMSS (C) • Fault Management (C) • Loop Back Capability (C) • Operational Configuration Restoral (R)	• UCR Section 5.2.12.5.5.2.1 • UCR Section 5.2.12.5.5.2.2 • UCR Section 5.2.12.5.5.2.3 • UCR Section 5.2.12.5.5.3
Security	Yes	• DIACAP and STIGs (R)	• UCR Sections 3.2.3, 3.2.5, and 5.4.6.1

Table 2. SUT Capability and Feature Interoperability Requirements (continued)

NOTES:
1 The UCR does not stipulate a minimum Access interface requirement for a Strategic Network Element.
2 The UCR does not stipulate a minimum Transport interface requirement for a Strategic Network Element.

LEGEND:

ADIMSS	Advanced DSN Integrated Management Support System	ITU-T	International Telecommunications Union - Telecommunications
AIS	Alarm Indication Signal	LSSGR	Local Access and Transport Area (LATA) Switching Systems Generic Requirements
ANSI	American National Standards Institute	Mbps	Megabits per second
BERT	Bit Error Rate Test	MLPP	Multi-Level Precedence and Preemption
C	Conditional	MOS	Mean Opinion Score
CAS	Channel Associated Signaling	OC-3	Optical Carrier Level 3 (155 Mbps)
DIACAP	DoD Information Assurance Certification and Accreditation Process	OC-12	Optical Carrier Level 12 (622 Mbps)
DoD	Department of Defense	OC-48	Optical Carrier Level 12 (2.448 Gbps)
DS0	Digital Signal Level 0	para	Paragraph
DS3	Digital Signal Level 3	PRI	Primary Rate Interface
DS3C	Digital Signal Level 3 - Concatenated	Q.955.3	ISDN Signaling standard for E1 MLPP
DSN	Defense Switched Network	R	Required
DS1	Digital Subscriber Signaling 1	RAI	Remote Alarm Indication
E1	European Basic Multiplex Rate (2.048 Mbps)	SONET	Synchronous Optical Network
Gbps	Gigabits per second	SS7	Signaling System 7
GR	Generic Requirement	STIGs	Secure Technical Implementation Guides
GR-253-CORE	SONET Transport Systems: Common Generic Criteria	SUT	System Under Test
		T1	Digital Transmission Link Level 1 (1.544 Mbps)
GR-303-CORE	Integrated Digital Loop Carrier System Generic Requirements, Objectives, and Interface	T1.105-2001	SONET – Basic Description include Multiplexer structure, rates, formats
GR-436-CORE	Digital Network Synchronization Plan	T1.607	ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1
GR-518-CORE	LSSGR: Synchronization, Section 18		
GR-782-CORE	SONET Digital Switch Trunk Interface Criteria	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
IP	Internet Protocol	TDM	Time Division Multiplexing
ISDN	Integrated Services Digital Network	UCR	Unified Capabilities Requirements
		VT1.5	Virtual Tributary 1.5

Table 3. List of DTR Equipments to be included in the Original Certification

DTR 4 - New Components Part Number	Description	Comparable Approved Components Part Number
FC95700160-I02	SFP OC-48 (SR Multi-rate, I-temp)	FC95700120
FC95700170-I02	SFP OC-48 (IR Multi-rate, I-temp)	FC95700130
FC95700180-I02	SFP OC-48 (LR1 Multi-rate, I-temp)	FC95700140
FC95700190-I02	SFP OC-48 (LR2, Multi-rate, I-temp)	FC95700150
FC95705000-I03	GigE 1000BaseSX SFP Transceiver	FC95705030
FC95705200-I02	SFP GigE 1000Base-LX10	FC95705040
FC95705093-I02	1000Base-LX SFP	FC95705090
FC9681EL22	4100ES OC-12 Line Unit (SFP Base) with BITS OUTPUT	FC9681EL21
FC9681EL82	4100ES OC-48 Line Unit (SFP Base) with BITS OUTPUT	FC9681EL81
FC9681FAN5	4100ES Fan Tray, +24VDC	FC9681FAN4
DTR 5 - New Components Part Number	**Description**	**Comparable Approved Components Part Number**
P4100ECP1R0822A	PRELOADED Rls.8.2.2 S/W on MPE1-ECP1	PL4100ECP1R0822A

Table 3. List of DTR Equipments to be included in the Original Certification (Continued)

DTR 5 Part Number	New Issue Number	Description	Comparable Approved Issue Number
FC9681ELS3	I03	4100ES OC-3 Service Unit, SFP base	I02
FC9681ED33	I04	8-port DS3 Service unit	I01/non-issue
FC9681EL4M	I02	Single port OC-12/Dual port OC-3 Service unit	I01/non-issue
FC9681EL4M	I03	Single port OC-12/Dual port OC-3 Service unit	I01/non-issue
FC9681ECD4	I02	16-port DS3 IOP	I01/non-issue
FC9681ECP1	I09	4100ES MCU - Controller Unit	I05
FC9681EL22	I02	ES OC-12 LU with BITS OUTPUT	I01/non-issue
FC9681EL22	I03	ES OC-12 LU with BITS OUTPUT	I01/non-issue
FC9681EL82	I02	ES OC-48 LU with BITS OUTPUT	I01/non-issue
FC9681EL82	I03	ES OC-48 LU with BITS OUTPUT	I01/non-issue
FC9681FAN5	I04	4100ES Fan Tray, 24V	I01/non-issue
FC9681FAN5	I05	4100ES Fan Tray, 24V	I01/non-issue
DTR 6 Part Number	**New Issue Number**	**Description**	**Comparable Approved Issue Number**
FC9681FAN4	I07	FAN Assembly	I04, I05, I06
FC9681EL21	I06	OC-12 Line unit (SFP base unit)	non-issue, I02, I04, I05
FC9681EL81	I06	4100ES OC-48 Line Unit, SFP Base	I05
FC9681ED33	I05	8-port DS3 Service unit	I01/non-issue
FC9681ECP1	I10	4100ES MCU - Controller Unit	I05

LEGEND:

BITS	Building Integrated Timing System	LU	Line Unit
DC	Direct Current	LX	Long Wavelength
DS1	Digital Signal Level 1 (1.544 Mbps) (2.048 Mbps European)	Mbps	Megabits per second
DS3	Digital Signal Level 3	MCU	Main Controller Unit
DTR	Desktop Review	OC	Optical Carrier
ES	Extension Shelf	OC-3	Optical Carrier Level 3 (155 Mbps)
Gbps	Gigabits per second	OC-12	Optical Carrier Level 12 (622 Mbps)
GigE	Gigabits Ethernet	OC-48	Optical Carrier Level 48 (2.448 Gbps)
I	Issue	SFP	Small Form Factor
IOP	Input Output Port	SR	Short Reach
IR	Intermediate Reach	SX	Short Wavelength
LR	Long Reach	V	Voltage

5. In accordance with the Program Manager's request, JITC did not develop a detailed test report. JITC distributes interoperability information via the JITC Electronic Report Distribution 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, which .mil/gov users can access 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 at http://jit.fhu.disa.mil (NIPRNet). Information related to Defense Switched Network (DSN) testing is on the Telecom Switched Services Interoperability website at http://jitc.fhu.disa.mil/tssi. Due to the sensitivity of the information, the IA Accreditation Package that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO) e-mail: ucco@disa.mil.

6. The JITC point of contact is Mr. Son Pham, commercial (301) 743-4258, FAX (301) 743-4367, or e-mail: Son.Pham@disa.mil. The JITC mailing address is 3341 Strauss Avenue, Suite 236, Indian Head, Maryland 20640-5149. The system tracking number for the SUT is TN0920401.

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of the Fujitsu FLASHWAVE 4100 Extension Shelf (ES) with Software Release 8.2

FOR THE COMMANDER:

Enclosure a/s

RICHARD A. MEADOR
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United States Army (AMSEL-IE-IS)

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ADDITIONAL REFERENCES

(c) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008," 22 January 2009
(d) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008 Change 2," 31 December 2010
(e) Fujitsu Desk Top Review (DTR)-4 Reference Document, "FLASHWAVE 4100, R8.2 DTR-4," September 2011
(f) Fujitsu Desk Top Review (DTR)-5 Reference Document, "FLASHWAVE 4100, R8.2 DTR-5," November 2011
(g) Fujitsu Desk Top Review (DTR)-6 Reference Document, "FLASHWAVE 4100, R8.2 DTR-6," January 2012
(h) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006
(i) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Fujitsu FLASHWAVE 4100 Extension Shelf (ES) with Software Release 8.2 (Tracking Number 0920401)," 28 March 2011

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