



DEFENSE INFORMATION SYSTEMS AGENCY

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IN REPLY
REFER TO:

Joint Interoperability Test Command (JITC)

11 Feb 13

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of Special Interoperability Certification of the Fujitsu FLASHWAVE[®] 4100 Extension Shelf (ES), Micro Packet Optical Networking Platform, Fixed-Network Element (F-NE), with Software Release 8.3.2

References: (a) Department of Defense Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) Department of Defense Instruction 8100.04, "DoD Unified Capabilities (UC)," 9 December 2010
(c) through (f), see Enclosure

1. References (a) and (b) establish the Joint Interoperability Test Command (JITC) as the responsible organization for interoperability test certification.

2. The Fujitsu FLASHWAVE[®] 4100 ES, Micro Packet Optical Networking Platform with Software Release 8.3.2, is hereinafter referred to as the System Under Test (SUT). The SUT was originally certified for joint use in the Defense Information Systems Network (DISN) as a F-NE. The SUT provides additional Access Grooming Functional (AGF) device interfaces and functional capabilities. The vendor submitted Desktop Review (DTR) 1, to include the small form-factor pluggable (SFP) units and fan tray that are listed on the datasheet of DTR-1, Reference (c), to the existing UC Approved Product List (APL) entry. JITC conducted the original testing using F-NE requirements within the Unified Capabilities Requirements (UCR) 2008, Change 3, Reference (d), and other sponsor requested requirements. JITC tested the SUT using F-NE test procedures, Reference (e), that were developed to address the sponsor-unique requirements. The operational status of the SUT will be verified during deployment. Any new discrepancies that are discovered in the operational environment will be evaluated for impact and adjudicated to the satisfaction of the Defense Information Systems Agency (DISA) via a vendor Plan of Action and Milestones to address the concern(s) within 120 days of identification. No other configurations, features, or functions, except those cited within this memorandum are certified by JITC. This certification expires on 22 August 2015 or upon changes that could affect interoperability.

3. JITC approves the extension of this certification for DTR 1, submitted to include those small form-factor pluggable (SFP) units and fan tray that are listed on the datasheet of DTR-1. Approval is based on the review of the updated product information provided by the vendor and Interoperability (IO) testing conducted at the Indian Head, Maryland Test Facility, from 3 January through 13 February 2012. The test results for the SUT are published in separate reports under Unified Capabilities Certification Office (UCCO) Tracking Number (see paragraph 6) and can be found on the Approved Products List Integrated Tracking System (APLITS) at

<https://aplits.disa.mil>. The DISA Information Assurance Certification Authority concurrence was received on 23 March 2012.

4. Section 5.9 of the UCR establishes the interfaces and threshold CRs/FRs used to evaluate the interoperability of the SUT as an F-NE. Tables 1 and 2 list the F-NE, sponsor-requested interfaces, CRs, FRs, and component status of the SUT. Table 3 lists the components to be added to the certification.

Table 1. SUT Interface Interoperability Status

Interface	Critical (See note 1.)	Reference (UCR 2008, Change 3)	Threshold CR/FR	Status	Remarks
NE					
Analog	No	5.9.2.2.1	1, 2, and 4	NA	See note 2.
Serial	No	5.9.2.3.2	1, 2, and 4	NA	See note 2.
BRI ISDN	No	5.9.2.3.3	1, 2, and 4	NA	See note 2.
DS1	No	5.9.2.3.4	1, 2, 3, and 4	Certified	See note 3.
E1	No	5.9.2.3.5	1, 2, 3, and 4	NA	See note 2.
DS3	No	5.9.2.3.6	1, 2, 3, and 4	Certified	See note 3.
OC-X	No	5.9.2.3.8	1, 2, 3, and 4	Certified	See notes 3 and 4.
IP (Ethernet)	No	5.9.2.3.9	1, 2, 4, 6 and 7	Certified	See notes 3 and 5.
NM					
10Base-X	Yes	5.3.2.4.4	7	Certified	See note 3.
100Base-X	Yes	5.3.2.4.4	7	Certified	
OTHER (See note 6.)					
OC-3/OC-3c	No	5.5.3.4.2	8	Certified	See note 3.
OC-12/OC-12c	No	5.5.3.4.2	8	Certified	See note 3.
OC-48/OC-48c	No	5.5.3.4.2	8	Certified	See note 3.
STM-1/STM-1c	No	5.5.3.4.3	8	Certified	See note 3.
STM-4/STM-4c	No	5.5.3.4.3	8	Certified	See note 3.
STM-16/STM-16c	No	5.5.3.4.3	8	Certified	See note 3.
DS1	No	5.5.3.4.4	8	Certified	See note 3.
DS3	No	5.5.3.4.4	8	Certified	See note 3.
1 GbE	No	5.5.3.4.4	8	Certified	See note 3.

NOTES:

1. UCR does not specify any minimum interfaces. The SUT must minimally provide one of the listed interfaces specified.
2. The SUT does not support Analog interface, Serial interface, ISDN-BRI interface, or E1 and E3 interfaces; however, these interfaces are not critical for F-NE certification.
3. The SUT met UCR requirements for the specified interfaces.
4. The SUT supports OC-3, OC-12, and OC-48, but does not support SONET interfaces of OC-192/STM-64, and OC-768; however, these interfaces are not critical for F-NE certification.
5. The SUT supports the 1 GbE interface but does not support Ethernet interfaces of 10 Mbps, 100 Mbps and 10GbE for client and network sides interfaces; however, these interfaces are not critical for F-NE certification.
6. The SUT does not support conditional requirements for SONET interfaces: OC-192/768, STM-64, electrical interfaces: E1/E3, and Ethernet interfaces: 10/100 Mbps, and 10 GbE. In addition, the conditional requirements for FICON or ESCON are not supported.

Table 1. SUT Interface Interoperability Status (continued)

LEGEND:			
10Base-X	10 Mbps Ethernet generic designation	GbE	Gigabit Ethernet
100Base-X	100 Mbps Ethernet generic designation	IP	Internet Protocol
BRI	Basic Rate Interface	ISDN	Integrated Services Digital Network
CR	Capability Requirement	Mbps	Megabits per second
DS1	Digital Signal Level 1 (1.544 Mbps)	NA	Not Applicable
DS3	Digital Signal Level 3 (44.736 Mbps)	NE	Network Element
E1	European Interface Standard (2.048 Mbps)	NM	Network Management
E3	European Interface Standard (34.368 Mbps)	OC-X	Optical Carrier - X (OC-3, OC-12, OC-48, etc.)
ESCON	Enterprise Services Connectivity	SONET	Synchronous Optical Networking
FICON	Fiber Connectivity	STM	Synchronous Transport Module
F-NE	Fixed-Network Element	SUT	System Under Test
FR	Functional Requirement	UCR	Unified Capabilities Requirements

Table 2. SUT CRs and FRs Status

CR/FR ID	Capability/Function	Applicability (See notes 1 and 2.)	Reference (UCR 2008, Change 3)	Status	Remarks
F-NE CR/FR					
1	General NE Requirements				
	General Requirements	Required	5.9.2.1	Met	
	Alarms	Required	5.9.2.1.1	Met	
	Congestion Control & Latency	Required	5.9.2.1.2	Met	
2	Compression				
	G.726	Conditional	5.9.2.2	NA	See note 3.
	G.728	Conditional	5.9.2.2	NA	See note 3.
	G.729	Conditional	5.9.2.2	NA	See note 3.
3	Interface Requirements				
	Timing	Required	5.9.2.3.7	Met	
4	Device Management				
	Management Options	Required	5.9.2.4.1	Met	
	Fault Management	Conditional	5.9.2.4.2	Met	
	Loop-Back Capability	Conditional	5.9.2.4.3	Met	
	Operational Configuration Restoral	Required	5.9.2.4.4	Met	
5	DLoS				
	DLoS Transport	Conditional	5.9.2.4.5	NA	See note 4.
6	IPv6 Requirements				
	Product Requirements	Required	5.3.5.4	Met	See note 5.
7	NM Requirements				
	VVoIP NMS Interface Requirements	Required	5.3.2.4.4	Met	
	General Management Requirements	Required	5.3.2.17.2	Met	

Table 2. SUT CRs and FRs Status (continued)

CR/FR ID	Capability/Function	Applicability (See notes 1 and 2.)	Reference (UCR 2008, Change 3)	Status	Remarks
Other Tested Requirements					
8	AGF Requirements				
	SONET Interface Requirements	Conditional	5.5.3.4.2	Partially Met	See note 6.
	SDH Interface Requirements	Conditional	5.5.3.4.3	Partially Met	See note 6.
	Electrical Interface Requirements	Conditional	5.5.3.4.4	Partially Met	See note 7.
	Ethernet Interface Requirements	Conditional	5.5.3.4.5	Partially Met	See note 7.
	SAN Interface Requirements	Conditional	5.5.3.4.6	Not Supported	See note 8.
	Cross-Connect Requirements	Conditional	5.5.3.4.7	Met	See note 9.
	Interface Performance Requirements	Conditional	5.5.3.4.8	Met	See note 9.
	Redundancy Requirements	Conditional	5.5.3.4.9	Met	See note 9.
	General Protection Requirements	Conditional	5.5.3.4.10	Met	See note 9.
	Interoperability Requirements	Conditional	5.5.3.4.11	Met	See note 9.
	Fault Management Requirements	Conditional	5.5.3.4.12	Met	See note 9.
	Performance Monitoring Requirements	Conditional	5.5.3.4.13	Met	See note 9.
	Functional Device Requirements	Conditional	5.5.3.4.14	Met	See note 9.
	Functional Device EMS Requirements	Conditional	5.5.3.4.15	Met	See note 9.
Physical Design Requirements	Conditional	5.5.3.4.16	Met	See note 9.	
Standards Compliance Requirements	Conditional	5.5.3.4.17	Met	See note 9.	
NOTES:					
1. Annotation of 'required' refers to high-level requirement category. Applicability of each sub-requirement is provided in Enclosure 3.					
2. The sponsor requested the SUT be assessed against UCR 2008, Section 5.5 as an AGF device.					
3. The SUT does not support these conditional features.					
4. The SUT does not support conditional DLoS transport.					
5. The SUT is a Layer-2 device and transports IPv4 and IPv6 transparently.					
6. The SUT supports following SONET interfaces: OC-3, OC-12, and OC-48, but does not support OC-192/STM-64 and OC-768.					
7. The SUT does not support conditional requirements for the electrical interfaces: E1/E3 and Ethernet interfaces: 10/100 Mbps, and 10 GbE.					
8. The SUT does not support conditional requirements for FICON or ESCON.					
9. The SUT met UCR requirements for the specified interfaces.					
LEGEND:					
ADPCM	Adaptive Differential Pulse Code Modulation	IPv4	Internet Protocol version 4		
AGF	Access Grooming Function	IPv6	Internet Protocol version 6		
CR	Capabilities Requirement	ITU-T	International Telecommunication Union - Telecommunication		
CS-ACELP	Conjugate Structure Algebraic Code-Excited Linear Prediction	Kbps	Kilobits per second		
DLoS	Direct Line of Sight	LD-CELP	Low Delay-Code Excited Linear Prediction		
E1	European Interface Standard (2.048 Mbps)		Mbps Megabits per second		
E3	European Interface Standard (34.368 Mbps)	NA	Not Applicable		
EMS	Enhanced Messaging Service	NM	Network Management		
ESCON	Enterprise Services Connectivity	NMS	Network Management System		
FICON	Fiber Connectivity	OC-X	Optical Carrier-X (OC-3, OC-12, OC-48)		
F-NE	Fixed-Network Element	SAN	Storage Area Network		
FR	Functional Requirement	SDH	Synchronous Digital Hierarchy		
G.726	ITU-T speech codec for ADPCM (32 Kbps)	SONET	Synchronous Optical Network		
G.728	ITU-T speech codec for LD-CELP (16 Kbps)	STM	Synchronous Transport Module		
G.729	ITU-T speech codec for CS-ACELP (8 Kbps)	SUT	System Under Test		
GbE	Gigabit Ethernet	UCR	Unified Capabilities Requirements		
ID	Identification	VVoIP	Video and Voice over IP		

Table 3. List of DTR Components to be Included in the Original Certification

DTR 1 - New Components Part Number	Description	Comparable Approved Components Part Number																																																
FC95700030	OC-3 LR1 SFP	FC95700020																																																
FC95700040	OC-3 LR2 SFP																																																	
FC95700060	OC-12 LR1 SFP	FC95700050																																																
FC95700070	OC-12 LR2 SFP																																																	
FC95700061	OC-12 LR1 SFP																																																	
FC95700120	OC-48 (SR, 1310nm; I-temp) SFP	FC95700160																																																
FC95700130	OC-48 (IR, 1310nm; I-temp) SFP																																																	
FC95700140	OC-48 (LR1, 1310nm; I-temp) SFP																																																	
FC95700150	OC-48 (LR2, 1550nm; I-temp) SFP																																																	
FC95700180	OC3/12/48/GE Multi-rate SFP LR1 SMF																																																	
FC95700190	OC3/12/48/GE Multi-rate SFP LR2 SMF																																																	
FC95705051	1000BASE-ZX GigE SFP (80km)	FC95705030																																																
FC95705000	1000BaseSX GBE SFP Transceiver																																																	
FC95705200	1000Base-LX10																																																	
FC95705130	1000BASE-EX GigE SFP (40km)	FC95705090																																																
FC95705083	100Base-FX(w/o PHY)																																																	
FC95705081	100BASE-FX SFP (2km) with diagnostics																																																	
FC95705082	100Base-FX(w PHY)																																																	
FC95705120	100BASE-ZX SFP (80km)																																																	
FC95705093	100Base-LX10(w/o PHY)																																																	
FC9681FAN5	4100ES Fan Tray, 24V	FC9681FAN4																																																
<p>LEGEND:</p> <table> <tr> <td>100 Base FX</td> <td>100 Mbps Ethernet generic designation 2km</td> <td>m</td> <td>meters</td> </tr> <tr> <td>1000Base-EX</td> <td>1000 Mbps Ethernet generic designation 40km</td> <td>Mbps</td> <td>Megabits per second</td> </tr> <tr> <td>1000Base-ZX</td> <td>1000 Mbps Ethernet generic designation 70km</td> <td>nm</td> <td>nanometer</td> </tr> <tr> <td>1000Base-LX</td> <td>1000 Mbps Ethernet generic designation 5km</td> <td>OC-X</td> <td>Optical Carrier – X</td> </tr> <tr> <td>1000Base SX</td> <td>1000 Mbps Ethernet generic designation 550m</td> <td>PHY</td> <td>Physical Layer Protocol</td> </tr> <tr> <td>DTR</td> <td>Desktop Review</td> <td>SFP</td> <td>Small Form Factor</td> </tr> <tr> <td>ES</td> <td>Extension Shelf</td> <td>SMF</td> <td>Single Mode Fiber</td> </tr> <tr> <td>GE/GBE/GigE</td> <td>Gigabit Ethernet</td> <td>SR</td> <td>Short Reach</td> </tr> <tr> <td>IR</td> <td>Intermediate Reach</td> <td>V</td> <td>Volt</td> </tr> <tr> <td>I-Temp</td> <td>Industrial Temperature</td> <td>w</td> <td>with</td> </tr> <tr> <td>km</td> <td>Kilometer</td> <td>w/o</td> <td>without</td> </tr> <tr> <td>LR</td> <td>Long Reach</td> <td></td> <td></td> </tr> </table>			100 Base FX	100 Mbps Ethernet generic designation 2km	m	meters	1000Base-EX	1000 Mbps Ethernet generic designation 40km	Mbps	Megabits per second	1000Base-ZX	1000 Mbps Ethernet generic designation 70km	nm	nanometer	1000Base-LX	1000 Mbps Ethernet generic designation 5km	OC-X	Optical Carrier – X	1000Base SX	1000 Mbps Ethernet generic designation 550m	PHY	Physical Layer Protocol	DTR	Desktop Review	SFP	Small Form Factor	ES	Extension Shelf	SMF	Single Mode Fiber	GE/GBE/GigE	Gigabit Ethernet	SR	Short Reach	IR	Intermediate Reach	V	Volt	I-Temp	Industrial Temperature	w	with	km	Kilometer	w/o	without	LR	Long Reach		
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km	Kilometer	w/o	without																																															
LR	Long Reach																																																	

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 Approved Products List (APL) testing is available on the DISA APL Testing and Certification website located at <http://www.disa.mil/Services/Network-Services/UCCO>. All associated test information is available on the DISA Unified Capability Certification Office APL Integrated Tracking System (APLITS) website located at <https://aplits.disa.mil>.

JITC Memo, JTE, Extension of the Special Interoperability Certification of the Fujitsu FLASHWAVE® 4100 Extension Shelf (ES), Fixed Network Element (F-NE), with Software Release 8.3.2

6. JITC testing point of contact is Ms. Fanny Lee-Linnick, commercial (301) 743-4259. Her e-mail address is Fanny.Lee-Linnick.civ@mail.mil; mailing address: 3341 Strauss Avenue, Suite 236, Indian Head, MD 20640-5149. The tracking number for SUT is 1125606.

FOR THE COMMANDER:



BRADLEY A. CLARK
Acting Chief
Battlespace Communications Portfolio

Enclosure a/s

Distribution (electronic mail):

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DISA/TEMC
DIA, Office of the Acquisition Executive
NSG Interoperability Assessment Team
DOT&E, Netcentric Systems and Naval Warfare
Medical Health Systems, JMIS IV&V

ADDITIONAL REFERENCES

- (c) Fujitsu Desk Top Review (DTR)-1 Reference Document, “Fujitsu FLASHWAVE® 4100 ES R8.3.2, TN 1125606, DTR-1,” 8 November 2012
- (d) Office of the Assistant Secretary of Defense, “Department of Defense Unified Capabilities Requirements 2008, Change 3,” September 2011
- (e) Joint Interoperability Test command, “Unified Capabilities Interoperability Test Plan,” 4 February 2010
- (f) Joint Interoperability Test Command, “Information Assurance (IA) Assessment of Fujitsu FLASHWAVE® 4100 ES, Software Release 8.3.2 (Tracking Number 1125606),” 21 February 2012