



DEFENSE INFORMATION SYSTEMS AGENCY

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IN REPLY
REFER TO: Joint Interoperability Test Command (JTE)

12 September 2008

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Special Interoperability Test Certification of the Nortel Assured Services Voice Application Local Area Network (ASVALAN) and Voice Application Local Area Network (VALAN) with Specified Software Releases

References: (a) DoD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01D, "Interoperability and Supportability of Information Technology and National Security Systems," 8 March 2006
(c) through (g) see enclosure 1

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 Nortel ASVALAN and VALAN with Specified Software Releases is hereinafter referred to as the system under test (SUT). The SUT meets all of its critical interoperability requirements and is certified as interoperable for joint use within the Defense Switched Network (DSN). The SUT is certified for joint use within the DSN with the Digital Switching Systems on the DSN Approved Products List (APL) which are certified for use with an ASVALAN or VALAN. The SUT components which are bolded and underlined in the tables throughout this certification letter are components that were tested in the JITC laboratory for this certification. The SUT components which are not bolded and not underlined, but also listed throughout the tables in this letter, are certified for joint use in the DSN as well. The JITC analysis determined these components contain the same hardware and software and are functionally identical to the tested components for interoperability certification purposes. The SUT is certified to support DSN Assured Services over Internet Protocol as an ASVALAN. If a system meets the minimum requirements for an ASVALAN, it also meets the lesser requirements for a VALAN. However, since VALANs do not support the Assured Services Requirements detailed in reference (c), Command and Control (C2) users and Special C2 users are not authorized to be served by a VALAN. Since VALANs do not support Assured Services, they can only serve Department of Defense (DoD), non-DoD, non-governmental, and foreign government users having no missions or communications requirement to ever originate or receive C2 communications. VALAN connectivity to the DSN is not authorized until a waiver is granted by the Joint Staff for each site. The SUT is certified for joint use as a VALAN for non-C2 traffic. The VALAN requirements differing from those of an ASVALAN include:

- C2 traffic shall not traverse a VALAN.

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- Reliability is a conditional requirement for a VALAN.
- Network Management features are conditional requirements for a VALAN.

Testing did not include video services or data applications; however, simulated data traffic was generated during testing to determine its effect on voice traffic. No other configurations, features, or functions, except those cited within this report, are certified by the JITC, or authorized by the Program Management Office for use within the DSN. This certification expires upon changes that could affect interoperability, but no later than three years from the date of the original memorandum (25 July 2008).

3. The extension of this certification is based upon a desktop review. The original certification is based on interoperability testing conducted by JITC and a review of the vendor's Letters of Compliance (LoC). Testing was conducted at JITC's Global Information Grid Network Test Facility at Fort Huachuca, Arizona, from 19 November 2007 through 04 February 2008 and documented in reference (c). Review of the vendor's LoC was completed on 04 February 2008. Review of the system and the vendor's mitigation for an open discrepancy for a stacked configuration was conducted from 18 February through 7 March 2008. Further regression testing of the ERS5530-24TFD in the distribution layer was performed from 21 April to 2 May 2008. A desktop review was requested to include the following switches: ERS4526T, ERS4526T-PWR, ERS4524GT, ERS4526GTX, and ERS4526GTX-PWR. These switches are certified with the same software/firmware as the ERS4500 series switches in reference (c). The desktop review request was approved on 4 September 2008. These devices must be used with the same constraints as the other ERS4500 series devices.

4. The overall interoperability status of the SUT is indicated in table 1. The ASVALAN and VALAN system requirements are listed in table 2. In addition to system level requirements, components that comprise the SUT must meet specific criteria to be certified for use as core, distribution, or access components. The interoperability status of the SUT components is listed in table 3. The ASVALAN and VALAN requirements used to certify the components are listed in table 4. This interoperability test status is based on the SUT's ability to meet:

- a. Assured Services as defined in references (d).
- b. Local Area Network system requirements specified in references (e) and (f) verified through JITC testing and/or vendor submission of LoC.
- c. Internet Protocol version 6 requirements specified in reference (e), paragraph 1.7, table 1-4, verified through vendor submission of LoC signed by the Vice President of the company.
- d. The overall system interoperability performance derived from test procedures listed in reference (g).

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Table 1. SUT Interoperability Status

System Interoperability Status			
Components (See note.)	Release	Status	Remarks
<u>ERS8610</u> , ERS8606	4.1.4	Certified	All ASVALAN and VALAN system requirements were met when the SUT was configured in accordance with architecture provided in reference (c). Additional details about component level certification are provided in table 3. Security testing is accomplished through DISA-led Information Assurance Test teams and published in a separate report.
<u>ERS5530-24TFD</u> , <u>5520-48T-PWR</u> , 5520-24T, 5510-48T, 5510-24T	Firmware 5.0.0.4 Software 5.0.6.207		
<u>ERS4548GT-PWR</u> , ERS4548GT, <u>ERS4550T-PWR</u> , ERS4550T, <u>ERS4526FX</u> , ERS4526T, ERS4526T-PWR, ERS4524GT, ERS4526GTX, ERS4526GTX-PWR	Firmware 5.0.1.0 Software 5.0.1.209		
LEGEND: ASVALAN - Assured Services Voice Application Local Area Network DISA - Defense Information Systems Agency ERS - Ethernet Routing Switch FD - Fiber distribution FX - 100BaseFX fiber G - Gigabit JITC - Joint Interoperability Test Command PWR - Power over Ethernet SUT - System Under Test T - Base T VALAN - Voice Application Local Area Network			
NOTE: Components bolded and underlined were tested by JITC. The other components in the family series were not tested; however, they utilize the same software and hardware and JITC analysis determined them to be functionally identical for interoperability certification purposes and they are also certified for joint use.			

Table 2. ASVALAN and VALAN System Requirements

System Requirements				
Requirement	Criteria		Reference	Required
Delay	One-way packet delay for voice packets of an established call (signaling and media) shall be 5 ms or less averaged over any 5-minute period.		GSCR, Appendix 3, Section A.3.3.1.1	Yes
Jitter	For voice media packets, jitter shall be 5 ms or less averaged over any 5-minute period.		GSCR, Appendix 3, Section A.3.3.1.2	Yes
Packet Loss	Voice packet loss within the LAN shall not exceed 0.05% averaged over any 5-minute period.		GSCR, Appendix 3, Section A.3.3.1.3	Yes
Reliability	ASVALAN	- ASVALANs shall have a reliability of .99999 - No single point of failure for outage of more than 64 telephony subscribers - Network Path restores within 5 seconds	GSCR, Appendix 3, Section A.3.3.4.1, UCR, Appendix 3 A3.3.9.3	Yes
	VALAN	- This requirement is conditional for a VALAN.	GSCR, Appendix 3, Section A.3.3.4.1	No
IPv6 ¹	All IP devices shall be IPv6 capable.		GSCR, Paragraph 1.7, and GSCR Appendix 3, Section A3.2.8	Yes
Security ²	DIACAP (replacement for DITSCAP)/IA		GSCR, Appendix 3, Section A.3.3.4.3	Yes
LEGEND: ASVALAN - Assured Services Voice Application LAN DIACAP - DoD IA Certification and Accreditation Process DISA - Defense Information Systems Agency DISR - DoD IT Standards Registry DITSCAP - DoD IT Security Certification and Accreditation Process DoD - Department of Defense GSCR - Generic Switching Center Requirements IA - Information Assurance IP - Internet Protocol IPv4 - Internet Protocol version 4 IPv6 - Internet Protocol version 6 IT - Information Technology LAN - Local Area Network ms - milliseconds UCR - Unified Capabilities Requirements VALAN - Voice Application LAN				
NOTES: 1 An IPv6 capable system or product, as defined in the GSCR, paragraph 1.7, shall be capable of receiving, processing, and forwarding IPv6 packets and/or interfacing with other systems and protocols in a manner similar to that of IPv4. IPv6 capability is currently satisfied by a vendor Letter of Compliance signed by the Vice President of the company. The vendor must state, in writing, compliance to the following criteria by: a. Conformant with IPv6 standards profile contained in the DoD IT Standards Registry (DISR). b. Maintaining interoperability in heterogeneous environments and with IPv4. c. Commitment to upgrade as the IPv6 standard evolves. d. Availability of contractor/vendor IPv6 technical support. 2 Security testing is accomplished via DISA-led Information Assurance test teams and published in a separate report.				

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Table 3. SUT Component Interoperability Status

Component Interoperability Status					
Component (See note 1.)	Release	Sub-component (See note 1.)	Status	Layer (s)	Remarks
ERS8610 , ERS8606	4.1.4	ERS8692 , ERS8692SF ²	Certified	Core, Distribution, Access	All CRs and FRs were met.
		ERS8683XLR , ERS8683XZR	Certified		
		ER8648GTR , ERS8630GB	Certified		
		ERS8005DC , ERS8005AC, ERS8004AC	Certified		
ERS5530-24TFD	Firmware 5.0.0.4 Software 5.0.6.207	Not Applicable	Certified	Distribution ³	All CRs and FRs were met.
ERS5530-24TFD , 5520-48T , 5520-24T, 5510-48T, 5510-24T	Firmware 5.0.0.4 Software 5.0.6.207	Not Applicable	Certified	Access ⁴	All CRs and FRs were met.
ERS4548GT-PWR , ERS4548GT, ERS4550T-PWR , ERS4550T, ERS4526FX , ERS4526T, ERS4526T-PWR, ERS4524GT, ERS4526GTX, ERS4526GTX-PWR	Firmware 5.0.1.0 Software 5.0.1.209	Not Applicable	Certified	Access ⁴	All CRs and FRs were met.
LEGEND: AC - Alternating Current CRs - Capability Requirements DC - Direct Current DSN - Defense Switched Network ERS - Ethernet Routing Switch FD - Fiber distribution FRs - Feature Requirements FX - 100BaseFX fiber G - Gigabit GB - GBIC interface GBIC - Gigabit Interface Connector GTR - Gigabit base T IPV6 - Internet Protocol version 6 JITC - Joint Interoperability Test Command PMO - Program Management Office PWR - Power over Ethernet SUT - System Under Test T - Base T XLR - 10 G XFP Long Range vAC - volts Alternating Current vDC - volts Direct Current					
NOTES: 1 Components bolded and underlined were tested by JITC. The other components in the family series were not tested; however, they utilize the same software and hardware and JITC analysis determined them to be functionally identical for interoperability certification purposes and they are also certified for joint use. 2 This card includes a daughter board which provides enhanced IPv6 performance. However, IPv6 capability was not tested, it was satisfied by the vendor's Letter of Compliance. 3 The ERS5530-24TFD switch is authorized for use in the distribution layer provided both the 120 vAC and the 48 vDC power inputs are utilized. The ten Gigabit fiber interfaces due to excessive frame loss, are not certified by JITC nor authorized for use by the DSN PMO. 4 The ERS4500 series and ERS5500 series switches listed in table 3 are authorized for use in the access layer as standalone units. These same series switches listed in table 3 are also authorized for use in the access layer in a stacked configuration when equipped with dual power supplies (120 vAC and 48 vDC) for all the switches which utilize an uplink.					

Table 4. ASVALAN and VALAN Component Requirements

Core/Distribution/Access Component Requirements			
Requirement	Criteria	Reference	Required
CoS Models	LAN components shall support IEEE 802.1p to DSCP mapping and at least one of the following: - IEEE 802.1p/Q priority tagging/VLAN tagging - DSCP - ToS	GSCR, Appendix 3, Section A.3.3.2.1	Yes
Traffic Prioritization	Traffic within LAN components shall be prioritized so that voice signaling receives highest priority, voice media second highest priority, and data lowest priority.	GSCR, Appendix 3, Section A.3.3.2.2	Yes
QoS	LAN components shall support one of the following: - Priority Queuing - Custom Queuing - Weighted Fair Queuing - Class Based Weighted Fair Queuing	GSCR, Appendix 3, Section A.3.3.3.1	Yes
Policing	LAN components shall support one of the following: - DSCP PHB - Generic Traffic Shaping - Class-Based Shaping	GSCR, Appendix 3, Section A.3.3.3.2	Yes

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Table 4. ASVALAN and VALAN Component Requirements (continued)

Core/Distribution/Access Component Requirements				
Requirement	Criteria		Reference	Required
VLANs	LAN components shall support: - Port based VLANs - MAC address based VLANs - Protocol based VLANs		GSCR, Appendix 3, Section A.3.3.3.3	Yes
IEEE Conformance	LAN components shall support: - IEEE 802.1d – Bridging - IEEE 802.1p/Q – Priority tagging/VLAN tagging - IEEE 802.1s – Per-VLAN Group Spanning Tree - IEEE 802.1v – VLAN Classification by port and protocol - IEEE 802.1w –Rapid Reconfiguration of Spanning Tree - IEEE 802.1x – Port Based Network Access Control - IEEE 802.3ad – Link Aggregation Protocol		GSCR, Appendix 3, paragraph A.3.3.4	Yes
Reliability	ASVALAN	LAN components shall support: - ASVALAN components shall have a reliability of .99999 or better - Dual power supplies and dual processors (more than 64 users) - N+1 sparing for access (more than 64 users) - Redundancy protocol ¹ - 5 second path restoral	GSCR, Appendix 3, Section A.3.3.4.1 UCR, Appendix 3 A3.3.9.3	Yes
	VALAN	This requirement is conditional for a VALAN.	GSCR, Appendix 3, Section A.3.3.4.1	No
Network Management	ASVALAN	LAN components shall support: - In-band or out-of-band management - SNMP - Measurements	GSCR, Appendix 3, Section A.3.3.4.2	Yes
	VALAN	This requirement is conditional for a VALAN.	GSCR, Appendix 3, Section A.3.3.4.2	No
Security	LAN components shall employ the Network Infrastructure and VoIP STIGs. ²		GSCR, Appendix 3, Section A.3.3.4.3	Yes
IPv6	All IP devices shall be IPv6 capable. ³		GSCR, Paragraph 1.7, and GSCR Appendix 3, Section A3.2.8	Yes
TE	ASVALAN	- ASVALAN components shall be engineered for a maximum of 25% voice traffic per link. ⁴ - For more than 64 users, link pairs (redundant links) must be used.	GSCR, Appendix 3, Section A.3.3.4.4	Yes
	VALAN	VALAN components shall be engineered for a maximum of 25% voice traffic per link. ⁴	GSCR, Appendix 3, Section A.3.3.4.4	Yes
LEGEND: 802.1d - Standard for Local and Metropolitan Area Networks: MAC Bridges 802.1p - LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization 802.1Q - Standards for Local and Metropolitan Area Networks: Virtual Bridged Local Area Networks 802.1s - Standard for Local and Metropolitan Area Networks - Amendment 3 to 802.1Q Virtual Bridged Local Area Networks: Multiple Spanning Trees 802.1v - Standard for Local and Metropolitan Area Networks - Virtual Bridge Local Area Networks - Amendment 2: VLAN Classification by Protocol and Port (Amendment to IEEE 802.1Q, 1998 Edition) 802.1w - Standard for Local and metropolitan area networks - Common Specifications - Part 3: Media Access Control (MAC) Bridges: Rapid Configuration 802.1x - Standard for Local and Metropolitan Area Networks Port-Based Network Access Control 802.3ad - Standard for Information Technology – Local and Metropolitan Area Networks – Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications--Aggregation of Multiple Link Segments ASVALAN - Assured Services Voice Application LAN CoS - Class of Service DISA - Defense Information Systems Agency DISR - DoD IT Standards Registry DSCP - Differentiated Services Code Point GSCR - Generic Switching Center Requirements IEEE - Institute of Electrical and Electronics Engineers IP - Internet Protocol IPv4 - Internet Protocol version 4 IPv6 - Internet Protocol version 6 LAN - Local Area Network MAC - Media Access Control Mbps - Megabits per second N - total VoIP users / 64 OSPFV.3 - Open Shortest-Path First Version 3 PHB - Per Hop Behaviors QoS - Quality of Service SNMP - Simple Network Management Protocol STIG - Security Technical Implementation Guide TE - Traffic Engineering ToS - Type of Service UCR - Unified Capabilities Requirements VALAN - Voice Application LAN VLANs - Virtual LANs VoIP - Voice over Internet Protocol VRRP - Virtual Router Redundancy Protocol				

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Table 4. ASVALAN and VALAN Component Requirements (continued)

NOTES:	
1	For core and distribution components, OSPF V.3 redundancy protocol shall be the routing protocol supported. For access components, redundancy protocol shall be VRRP or equivalent protocol.
2	Verified using the Information Assurance Test Plan. Results of the security testing are published in a separate test report generated by the DISA Information Assurance test personnel.
3	An IPv6 capable system or product, as defined in the GSCR, paragraph 1.7, shall be capable of receiving, processing, and forwarding IPv6 packets and/or interfacing with other systems and protocols in a manner similar to that of IPv4. IPv6 capability is currently satisfied by a vendor Letter of Compliance signed by the Vice President of the company. The vendor must state, in writing, compliance to the following criteria: a. Conformance with IPv6 standards profile contained in the Department of Defense Information Technology Standards Registry (DISR). b. Maintaining interoperability in heterogeneous environments and with IPv4. c. Commitment to upgrade as the IPv6 standard evolves. d. Availability of contractor/vendor IPv6 technical support.
4	Instruments connected to an access device must provide a minimum of a 10 Mbps full duplex link. For core and distribution connections, the minimum link capacity is 100 Mbps full duplex.

5. No detailed test report was developed in accordance with the Program Manager's request. 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 <https://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 Captain Oskar Widecki, DSN 879-5269, commercial (520) 538-5269, FAX DSN 879-4347, or e-mail to Oskar.Widecki@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 0714401.

FOR THE COMMANDER:

Enclosure a/s



for
RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

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Office of Assistant Secretary of Defense (NII)/DOD CIO

U.S. Joint Forces Command, Net-Centric Integration, Communication, and Capabilities Division, J68

Defense Information Systems Agency, GS23

ADDITIONAL REFERENCES

- (c) Joint Interoperability Test Command, Memo, JTE, "Special Interoperability Test Certification of the Nortel Assured Services Voice Application Local Area Network (ASVALAN) and Voice Application Local Area Network (VALAN) with Specified Software Releases," 25 July 2008
- (d) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01C, "Policy for Department of Defense Voice Services with Real Time Services (RTS)," 9 November 2007
- (e) Defense Information Systems Agency (DISA), "Defense Switched Network (DSN) Generic Switching Center Requirements (GSCR), Appendix 3, Errata Change 2," 14 December 2006, Revised 27 March 2007
- (f) Defense Information Systems Agency, "Department of Defense Voice Networks Unified Capabilities Requirements, 21 December 2007
- (g) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006