



DEFENSE INFORMATION SYSTEMS AGENCY

JOINT INTEROPERABILITY TEST COMMAND

P.O. BOX 12798

FORT HUACHUCA, ARIZONA 85670-2798

IN REPLY
REFER TO:

Battlespace Communications Portfolio (JTE)

14 April 2008

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of the Cisco Internet Protocol Video Conference (IPVC) 3545 Video Teleconference (VTC) Multipoint Control Unit (MCU) Version 5.5.0.0.52 with Cisco IPVC 3540 Gateway Version 5.5.0.0.5 and 3545 Gateway Version 5.5.0.0.5

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) and (d) see enclosure 1

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

2. The Cisco IPVC 3545 VTC MCU Version 5.5.0.0.52 with Cisco IPVC 3540 Gateway Version 5.5.0.0.5 and 3545 Gateway Version 5.5.0.0.5 is hereinafter referred to as the System Under Test (SUT). The SUT met all the critical interface and functional interoperability requirements of the Generic Switching Center Requirements, appendix 8 and it is certified for joint use on the Defense Switched Network (DSN). The SUT also met the requirements for the International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) H.323 interface standard, however, assured service is not yet defined for the ITU-T H.323 interface. Since ITU-T H.323 interfaces do not provide assured services during a crisis or contingency, users' access to the DSN will be on a best effort basis. Therefore, Command and Control (C2) VTC users and Special C2 VTC users are not authorized to be served by an ITU-T H.323 Interface. The IPVC 3545 is certified to be used as a standalone MCU or with either the IPVC 3540 or IPVC 3545 Gateway. The SUT configuration management control was conducted using RADVISION Enhanced Communication Server Professional with software version 5.5. The SUT meets the critical interoperability requirements set forth in reference (c) using test procedures derived from reference (d). 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 affect interoperability, but no later than three years from the date of this memorandum.

3. This certification is based on interoperability testing and review of the vendor's Letters of Compliance (LoC). Interoperability testing was conducted by the JITC at the Global Information

JITC Memo, Special Interoperability Test Certification of the Cisco Internet Protocol Video Conference (IPVC) 3545 Video Teleconference (VTC) Multipoint Control Unit (MCU) Version 5.5.0.0.52 with Cisco IPVC 3540 Gateway Version 5.5.0.0.5 and 3545 Gateway Version 5.5.0.0.5

Grid Network Test Facility, Fort Huachuca, Arizona, from 2 through 18 January 2008. Review of the vendor's LoC was completed on 11 February 2008. The Certification Testing Summary (enclosure 2) documents the test results and describes the test configuration.

4. The Functional Requirements used to evaluate the interoperability of the SUT and the interoperability statuses are indicated in table 1.

Table 1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Requirements Required or Conditional	Status	Reference
ITU-T H.323	No ¹	Yes ²	ITU-T H.323 in accordance with FTR 1080B-2002 (R)	Met	A8.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	A8.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with GSCR, Appendix 7 (CPE) (C)	Met	A8.5
			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations (R)	Met	A8.5
ISDN PRI T1 ISDN PRI E1	No ¹	Yes	The VTC system/endpoints shall meet the requirements of Federal Telecommunications Recommendation 1080B-2002	Met	A8.5
			ITU-T H.320 in accordance with FTR 1080B-2002 (R)	Met	FTR 1080B-2002 Section 9.1
			A VTC system/endpoint that uses an integrated BRI interface to connect to the DSN shall be in conformance with the requirements associated with a Terminal Adaptor as described in GSCR, Appendix 7, (CPE)	Met	A8.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	A8.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with GSCR, Appendix 7 (CPE) (C)	Met	A8.5
			Integrated PRI interface shall be in conformance with IAS requirements in GSCR, Appendix 6 (IAS) (C)	Met	A8.5
			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations (R)	Met	A8.5
Serial Interfaces: EIA-366A EIA-530	No ¹	Yes	Connections shall be in conformance with the requirements for serial interface(s) as described in FTR 1080B-2002 (R)	Met	A8.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	A8.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with GSCR, Appendix 7 (CPE) (C)	Met	A8.5
			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations (R)	Met	A8.5
	Yes	See note 3.	Security in accordance with DIACAP (replacement for DITSCAP) (R)	See note 3.	A8.7

JITC Memo, Special Interoperability Test Certification of the Cisco Internet Protocol Video Conference (IPVC) 3545 Video Teleconference (VTC) Multipoint Control Unit (MCU) Version 5.5.0.0.52 with Cisco IPVC 3540 Gateway Version 5.5.0.0.5 and 3545 Gateway Version 5.5.0.0.5

Table 1. SUT Functional Requirements and Interoperability Status (continued)

LEGEND:	
A	- GSCR Appendix
BRI	- Basic Rate Interface
C	- Conditional
C2	- Command and Control
CPE	- Customer Premise Equipment
DIACAP	- DoD Information Assurance Certification and Accreditation Process
DISA	- Defense Information Systems Agency
DITSCAP	- DoD Information Technology Security Certification and Accreditation Program
DoD	- Department of Defense
DSN	- Defense Switched Network
E1	- European Basic Multiplex Rate (2.048 Mbps)
EIA	- Electronic Industries Alliance
EIA-366A	- Standard for interface between data terminal equipment and automatic calling equipment for data communication
EIA-530	- Standard for 25-position interface for data terminal equipment and data circuit-terminating equipment employing serial binary data interchange
FTR	- Federal Telecommunications Recommendation
GSCR	- Generic Switching Center Requirements
H.320	- Standard for narrowband VTC
H.323	- Standard for VTC over IP
IAS	- Integrated Access Switch
IP	- Internet Protocol
ISDN	- Integrated Services Digital Network
ITU-T	- International Telecommunication Union-Telecommunication Standardization Sector
Mbps	- Megabits per second
PRI	- Primary Rate Interface
R	- Required
SUT	- System Under Test
T1	- Digital Transmission Link Level 1 (1.544 Mbps)
VTC	- Video Conferencing
NOTES:	
1	The VTC system interface requirements can be met with an ISDN BRI, ISDN PRI, Serial, or ITU-T H.323 interface.
2	The SUT's ITU-T H.323 Internet Protocol interface did not meet the requirements for C2 or assured service. The ITU-T H.323 interface is certified for non-C2 use as set forth in appendix 8 of reference (c), therefore C2 and Special C2 VTC users are not authorized to be served by ITU-T H.323.
3	Security is tested by DISA-led Information Assurance test teams and published in a separate report.

5. The 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 (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 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 website at <http://jitc.fhu.disa.mil/tssi>.

6. The JITC point of contact is Mr. Edward Mellon, DSN 879-5159, commercial (520) 538-5159, FAX DSN 879-4347, or e-mail to edward.mellon@disa.mil. The tracking number for the SUT is 0708003.

FOR THE COMMANDER:

2 Enclosures a/s




RICHARD A. MEADOR
Chief
Battlespace Communications Portofolio

JITC Memo, Special Interoperability Test Certification of the Cisco Internet Protocol Video Conference (IPVC) 3545 Video Teleconference (VTC) Multipoint Control Unit (MCU) Version 5.5.0.0.52 with Cisco IPVC 3540 Gateway Version 5.5.0.0.5 and 3545 Gateway Version 5.5.0.0.5

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ADDITIONAL REFERENCES

- (c) Defense Information Systems Agency, "Department of Defense Voice Networks Generic Switching Center Requirements (GSCR), Errata Change 2," 14 December 2006, Revised 27 March 2007
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006

CERTIFICATION TESTING SUMMARY

- 1. SYSTEM TITLE.** Cisco Internet Protocol Video Conference (IPVC) 3545 Video Teleconference (VTC) Multipoint Control Unit (MCU) Version 5.5.0.0.52 with Cisco IPVC 3540 Gateway Version 5.5.0.0.5 and 3545 Gateway Version 5.5.0.0.5 is hereinafter referred to as the System Under Test (SUT).
- 2. PROPONENT.** Defense Information Systems Agency (DISA).
- 3. PROGRAM MANAGER.** Mr. Timothy Raines, GS253, 5275 Leesburg Pike, Falls Church, VA 22041, e-mail: Timothy.Raines@disa.mil.
- 4. TESTER.** Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.
- 5. SYSTEM UNDER TEST DESCRIPTION.** The SUT systems are high performance, multi-functional chassis that supports mix-and-match functionality. This configurable and scalable design provides flexibility for configuring platforms to meet a wide variety of functional and performance application requirements. The SUT systems consist of a number of embedded applications on modules that are inserted into the SUT chassis.

The SUT chassis are 3.5" high and can mount in a 19-inch rack. The 3544 chassis can accommodate Cisco IPVC 3540 modules in each of its four slots. The 3545 chassis can accommodate Cisco IPVC 3545 modules in each of its four slots. Each board receives power via the backplane. There are four slots at the front and rear of the chassis. The front slots are used for the main device boards. The rear slots are used by gateway Rear Transition Module (RTM) boards, which allow a connection to the Integrated Services Digital Network (ISDN) or serial network.

The 3545 MCU enables multimedia, multiparty collaboration in applications such as group conferencing, distance learning, training, and video telephony. The 3545 MCU supports multimedia and multiparty communications, provides core Internet Protocol (IP)-centric functionality, a wide range of layouts, and powerful audio and video transcoding. The 3545 MCU also provides an open Application Programming Interface (API) for customer application development, support of web-initiated data collaboration, and software upgradeable technology. Services are pre-configured so that they suit most conferencing requirements. However, when necessary, administrators can create customized services to suit their networks and user needs.

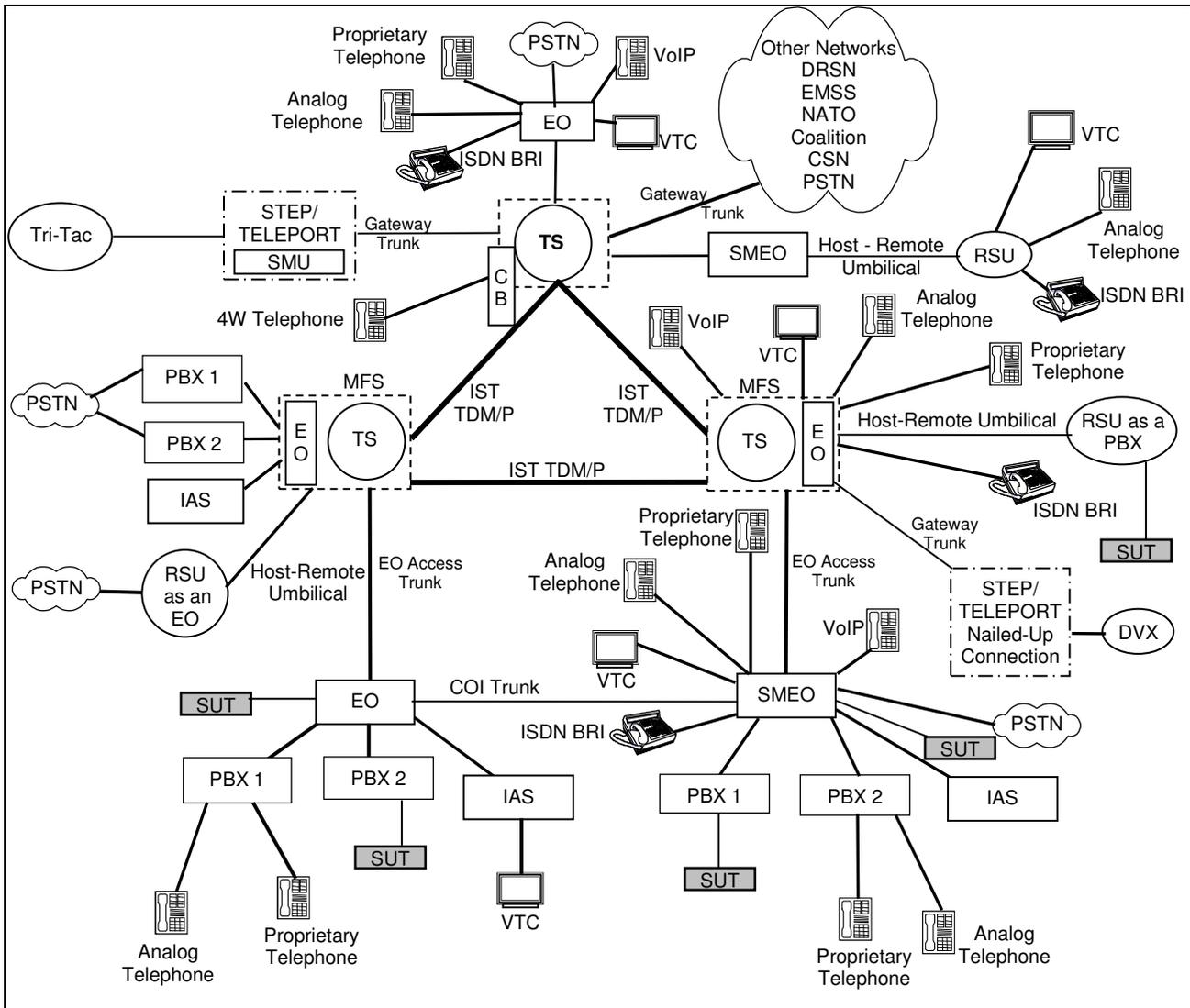
The SUT system supports ISDN Primary Rate Interface (PRI) and serial multimedia gateways. The 3540 and 3545 PRI Gateways enable audio, video, and data communication between International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) H.320 endpoints that connect through ISDN, and ITU-T H.323 endpoints that connect through a packet-based network. The SUT PRI Gateways support two T1 or E1 ISDN PRI ports.

The SUT serial gateways support multimedia conferencing over IP by translating between

ITU-T H.323 and serial protocols. With the addition of an ITU-T V.35 Adtran IMUX, the gateways can also translate between ITU-T H.323 and ITU-T H.320 protocols. The gateways offer a serial leg for multimedia conferencing over IP by providing an interface for legacy endpoints with serial interfaces, encryption/decryption devices, satellite networks, and leased line services.

When the MCU card is working alone, it can support audio conferencing of 96 audio ports; however audio conferencing was only tested and certified as an audio add-on to a video conference. Each MCU video processing card can support 24 flat capacity video ports. A flat port means that the users connecting to the MCU can connect at different resolutions and bandwidths from 64 kilobits per second (kbps) up to 2 Megabits per second, depending on the system they are using and join a conference with others using different speeds. The MCU card can be mixed and matched with up to four Enhanced Media Processor (EMP) cards to create a 96 flat port video bridge.

6. OPERATIONAL ARCHITECTURE. The Generic Switching Center Requirements (GSCR) Defense Switched Network (DSN) architecture in figure 2-1 depicts the relationship of the SUT to the DSN switches.



LEGEND:	
4W	- 4-Wire
BRI	- Basic Rate Interface
CB	- Channel Bank
COI	- Community of Interest
CSN	- Canadian Switch Network
DRSN	- Defense Red Switch Network
DSN	- Defense Switched Network
DVX	- Deployable Voice Exchange
EMSS	- Enhanced Mobile Satellite System
EO	- End Office
IAS	- Integrated Access Switch
ISDN	- Integrated Services Digital Network
IST	- Interswitch Trunk
MFS	- Multifunction Switch
NATO	- North Atlantic Treaty Organization
PBX	- Private Branch Exchange
PBX 1	- Private Branch Exchange 1
PBX 2	- Private Branch Exchange 2
PSTN	- Public Switched Telephone Network
RSU	- Remote Switching Unit
SMEO	- Small End Office
SMU	- Switched Multiplex Unit
STEP	- Standardized Tactical Entry Point
SUT	- System Under Test
TDM/P	- Time Division Multiplex/Packetized
Tri-Tac	- Tri-Service Tactical Communications Program
TS	- Tandem Switch
VoIP	- Voice over Internet Protocol
VTC	- Video Teleconferencing

Figure 2-1. DSN Architecture

7. REQUIRED SYSTEM INTERFACES. Requirements specific to the SUT and interoperability results are listed in table 2-1. These requirements are derived from the GSCR, appendix 8, Interface and Functional Requirements and verified through JITC testing and review of the vendor's Letters of Compliance (LoC).

Table 2-1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Requirements Required or Conditional	Status	Reference
ITU-T H.323	No ¹	Yes ²	ITU-T H.323 in accordance with FTR 1080B-2002 (R)	Met	A8.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	A8.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with GSCR, Appendix 7 (CPE) (C)	Met	A8.5
			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations (R)	Met	A8.5
ISDN PRI T1 ISDN PRI E1	No ¹	Yes	The VTC system/endpoints shall meet the requirements of Federal Telecommunications Recommendation 1080B-2002	Met	A8.5
			ITU-T H.320 in accordance with FTR 1080B-2002 (R)	Met	FTR 1080B-2002 Section 9.1
			A VTC system/endpoint that uses an integrated BRI interface to connect to the DSN shall be in conformance with the requirements associated with a Terminal Adaptor as described in GSCR, Appendix 7, (CPE)	Met	A8.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	A8.5
			Audio add-on interface, implemented independently of an IAS, shall be in accordance with GSCR, Appendix 7 (CPE) (C)	Met	A8.5
			Integrated PRI interface shall be in conformance with IAS requirements in GSCR, Appendix 6 (IAS) (C)	Met	A8.5
			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations (R)	Met	A8.5
Serial Interfaces: EIA-366A EIA-530	No ¹	Yes	Connections shall be in conformance with the requirements for serial interface(s) as described in FTR 1080B-2002 (R)	Met	A8.5
			A loss of any conferee on a multipoint videoconference shall not terminate or degrade the DSN service supporting VTC connections of any of the other conferees on the videoconference (R)	Met	A8.5
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			Physical, electrical, and software characteristics shall not degrade or impair switch and associated network operations (R)	Met	A8.5
	Yes	See note 3.	Security in accordance with DIACAP (replacement for DITSCAP) (R)	See note 3.	A8.7

LEGEND:

A - GSCR Appendix	FTR - Federal Telecommunications Recommendation
BRI - Basic Rate Interface	GSCR - Generic Switching Center Requirements
C - Conditional	H.320 - Standard for narrowband VTC
C2 - Command and Control	H.323 - Standard for VTC over IP
CPE - Customer Premise Equipment	IAS - Integrated Access Switch
DIACAP - DoD Information Assurance Certification and Accreditation Process	IP - Internet Protocol
DISA - Defense Information Systems Agency	ISDN - Integrated Services Digital Network
DITSCAP - DoD Information Technology Security Certification and Accreditation Program	ITU-T - International Telecommunication Union-Telecommunication Standardization Sector
DoD - Department of Defense	Mbps - Megabits per second
DSN - Defense Switched Network	PRI - Primary Rate Interface
E1 - European Basic Multiplex Rate (2.048 Mbps)	R - Required
EIA - Electronic Industries Alliance	SUT - System Under Test
EIA-366A - Standard for interface between data terminal equipment and automatic calling equipment for data communication	T1 - Digital Transmission Link Level 1 (1.544 Mbps)
EIA-530 - Standard for 25-position interface for data terminal equipment and data circuit-terminating equipment employing serial binary data interchange	VTC - Video Teleconferencing

Table 2-1. SUT Functional Requirements and Interoperability Status (continued)

NOTES:	
1	The VTC system interface requirements can be met with an ISDN BRI, ISDN PRI, Serial, or ITU-T H.323 interface.
2	The SUT's ITU-T H.323 Internet Protocol interface did not meet the requirements for C2 or assured service. The ITU-T H.323 interface is certified for non-C2 use as set forth in appendix 8 of reference (c), therefore C2 and Special C2 VTC users are not authorized to be served by ITU-T H.323.
3	Security is tested by DISA-led Information Assurance test teams and published in a separate report.

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC's Global Information Grid Network Test Facility in a manner and configuration similar to that of the DSN operational environment. Testing the system's required functions and features was conducted using the test configuration depicted in figure 2-2.

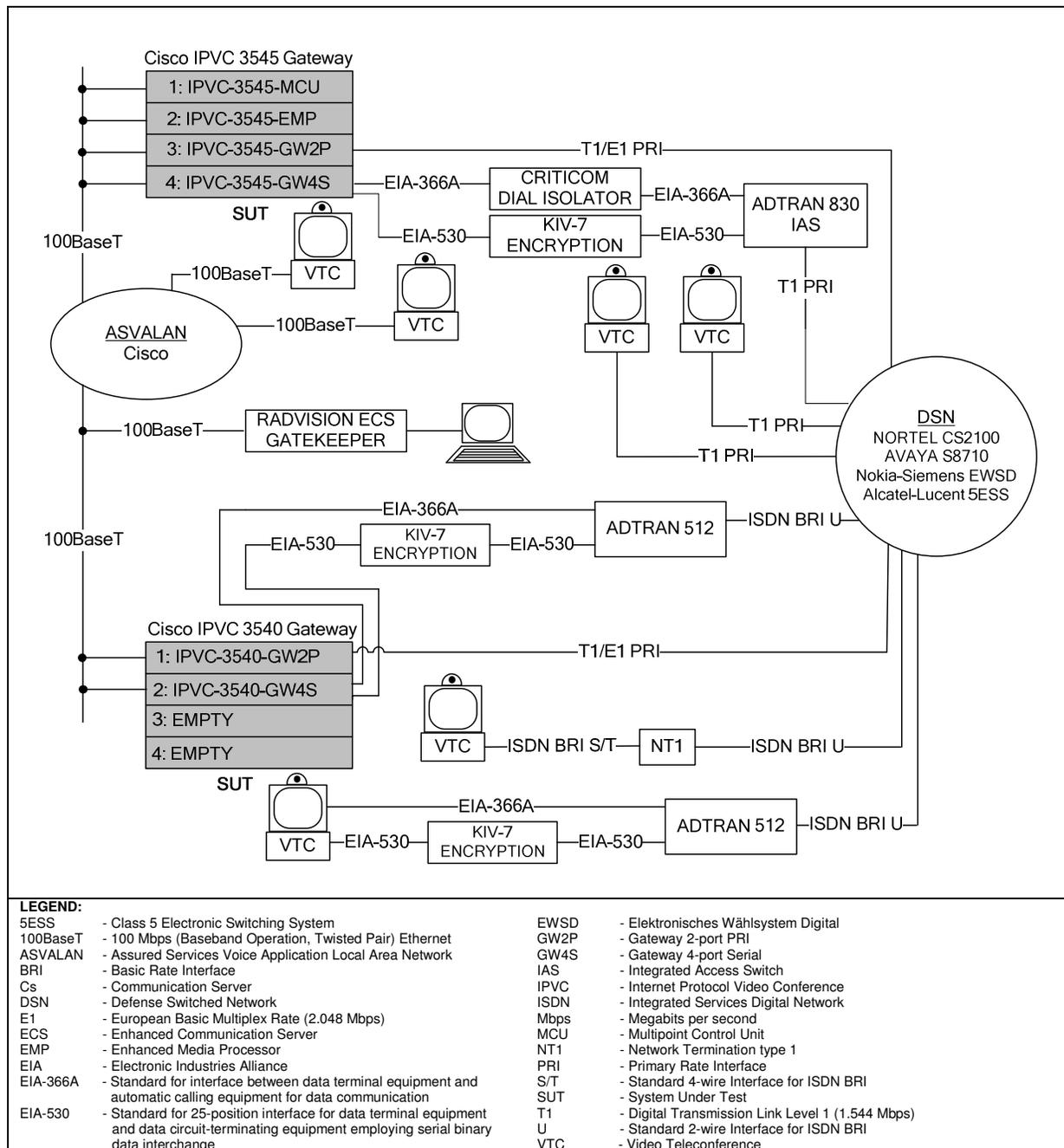


Figure 2-2. Test Configuration

9. SYSTEM CONFIGURATIONS. Table 2-2 provides the system configurations, hardware and software components tested with the SUT. The SUT was tested in an operationally realistic environment to determine interoperability with a complement of DSN switches noted in table 2-2. The DSN switches listed in table 2-2 only depict the tested configuration. Table 2-2 is not intended to identify the only switches that are certified with the SUT. The SUT is certified with switching systems listed on the DSN Approved Products List (APL) that offer the same certified interfaces.

Table 2-2. Tested System Configurations

DSN Components				
System Name		Software Release		
Siemens EWSD		19d with Patch Set 46		
Alcatel-Lucent 5ESS		Broadcast Warning Message (BWM) 07-0003		
Nortel CS2100		Succession Enterprise (SE)09.1 with Extended Architecture Core (XACore)		
Avaya S8710		Communication Manager (CM) 4.0 (R014x.00.2.731.7: Super Patch 14419)		
Adtran 512-U		Firmware Version CS.0, Cksum10b2		
Adtran 830		Firmware Version A.03, Boot ROM Version. A.01		
Tandberg 6000		E4.1 NTSC		
Tandberg 6000 MXP		F2.3 NTSC		
Tandberg 880		F2.1 NTSC		
Polycom Inc. VSX-7000		Snowbird 7.0		
Aethra Vega X5		10.2.9.B		
Aethra Vega X3		10.2.9.B		
KIV-7		N/A		
Criticom DI-366		N/A		
Cisco ASVALAN		IOS 12.2(18) SXF7		
SUT Components				
Description		Part Number		Specifications
SUT	3545 MCU (See note.)	3545 Chassis	Cisco IPVC-3545-CHAS	N/A
		3545 Gateway 2-Port PRI	Cisco IPVC-3545-GW2P	Software version 5.5.0.0.5
		3545 Gateway 4-Port Serial	Cisco IPVC-3545-GW4S	Software version 5.5.0.0.5
		3545 Multipoint Control Unit	Cisco IPVC-3545-MCU	Software version 5.5.0.0.52
		3545 Video Processor	Cisco IPVC-3545-EMP	Software version 5.5.0.0.34
	3540 Gateway	3544 Chassis	Cisco IPVC-3540-CHAS	N/A
		3540 Gateway 2-Port PRI	Cisco IPVC-3540-GW2P	Software version 5.5.0.0.5
		3540 Gateway 4-Port Serial	Cisco IPVC-3540-GW4S	Software version 5.5.0.0.5
	RADVISION ECS	RADVISION ECS Software	RADVISION 55597-00016	Software version 5.5.0.1
		Windows 2003 Server for RADVISION ECS	N/A	Pentium 4, 2GHz Processor, 1GB RAM, 2.1 GB hard drive (minimum), Windows 2000 Advanced Server (Service Pack 3 or 4 required), SNMP Service
LEGEND: 5ESS - Class 5 Electronic Switching System ASVALAN - Assured Services Voice Application Local Area Network CHAS - Chassis CS - Communication Server DI - Dial Isolator DSN - Defense Switched Network ECS - Enhanced Communication Server EMP - Enhanced Media Processor EWSD - Elektronisches Wahlsystem Digital GB - Gigabyte GHz - Gigahertz GW2P - Gateway 2-port PRI GW4S - Gateway 4-port Serial Inc. - Incorporated IOS - Internetwork Operating System IPVC - Internet Protocol Video Conference MCU - Multipoint Control Unit MSL - Meridian Switching Load N/A - Not Applicable NTSC - National Television Standards Committee PRI - Primary Rate interface RAM - Random Access Memory ROM - Read only Memory SNMP - Simple Network Management Protocol SUT - System Under Test U - 2-wire ISDN BRI interfaces X3 - Three ISDN BRI interfaces X5 - Five ISDN BRI interfaces				
NOTE: The 3545 MCU is a 3545 Gateway with the MCU and Video Processor cards added.				

10. TEST LIMITATIONS. None.

11. TEST RESULTS

a. Discussion. The SUT minimum critical interface and functional requirements were met through both interoperability certification testing and review of the vendor's LoC. Bonding mode 1 was tested to requirements defined in GSCR, paragraph A8.5 and Federal Telecommunications Recommendation 1080B-2002. Bonding, often referred to as channel aggregation, takes place through inverse multiplexing. Inverse multiplexing takes a high-bandwidth signal and splits it for transport through the network over multiple lower-bandwidth channels. At the receiving end, the multiple, lower-bandwidth signals are recombined into the original high-bandwidth signal.

Multiple two-way 112 - 384-kbps bonding mode 1 Multipoint and Point-to-Point test calls at different durations (15-minute, 30-minute, 1-hour, 24-hours, and 48-hours) were placed over the test network shown in figure 2-2 via all the combinations depicted in table 2-3. Table 2-3 depicts Multipoint and Point-to-Point bonding mode 1 VTC test calls at various precedence levels placed and results over the test configuration depicted in figure 2-2. A passed test result was based on 100% of the calls receiving a score of four or better on the subjective quality scale as defined in table 2-4. Seven- and ten-digit calls were placed to verify that the SUT met the capability to support both the North American Numbering Plan and the DSN World Wide Numbering and Dialing Plan (WWNDP) defined in GSCR, paragraph A8.5. Multilevel precedence video calls were placed from the SUT and established within the DSN at the respective precedence level dialing the DSN WWNDP access code. The SUT was also tested with secure video sessions using a KIV-7 Communications Security (COMSEC) device as shown in figure 2-2. Table 2-5 provides the KIV-7 COMSEC device configuration settings. The Criticom Dial Isolator (DI)-366 and the ADTRAN 512 provided the SUT dial isolation capability.

Table 2-3. SUT 112 - 384-kbps Multipoint and Point-to-Point Bonding Mode 1 Test Results

Multipoint and Point to Point VTC Calls		
SUT Serial Interface to the ADTRAN 830 Integrated Access Switch	ADTRAN 830 Interface to DSN	112 - 384-kbps Bonding Mode 1 Test Results
EIA-366A with EIA-530	ISDN BRI	Passed
EIA-366A with EIA-530	ISDN PRI T1/E1	Passed
SUT Serial Interface to the ADTRAN 512 Terminal Adapter	ADTRAN 512 Interface to DSN	112 - 384-kbps Bonding Mode 1 Test Results
EIA-366A with EIA-530	ISDN BRI	Passed
SUT ITU-T H.323 End Point Interface to SUT	SUT Interface to DSN	112 - 384-kbps Bonding Mode 1 Test Results
TCP/IP 100BaseT	T1 ISDN	Passed
TCP/IP 100BaseT	E1 ISDN	Passed
TCP/IP 100BaseT	EIA-366A with EIA-530 (via ADTRAN 512 and 830)	Passed
SUT Interface to DSN		112 - 384-kbps Bonding Mode 1 Test Results
ISDN T1 PRI		Passed
ISDN E1 PRI		Passed
LEGEND: 100BaseT - 100 Mbps (Baseband Operation, Twisted Pair) Ethernet BRI - Basic Rate Interface DSN - Defense Switched Network E1 - European Basic Multiplex Rate (2.048 Mbps) EIA - Electronic Industries Alliance EIA-366A - Standard for interface between data terminal equipment and automatic calling equipment for data communication EIA-530 - Standard for 25-position interface for data terminal equipment and data circuit-terminating equipment employing serial binary data Interchange H.323 - Standard for multi-media communications on packet-based networks ISDN - Integrated Services Digital Network ITU-T - International Telecommunication Union - Telecommunication Standardization Sector kbps - kilobits per second Mbps - Megabits per second PRI - Primary Rate Interface SUT - System Under Test T1 - Digital Transmission Link Level 1 (1.544 Mbps) TCP/IP - Transmission Control Protocol/Internet Protocol VTC - Video Teleconferencing		

Table 2-4. Video and Voice Subjective Quality Scale

Rating	Reference	Definition
1	<i>Unusable</i>	<u>Quality is unusable.</u> Voice and video may be heard and seen but is unrecognizable.
2	<i>Poor</i>	<u>Quality is unusable.</u> Words and phrases are not fully understandable or video cannot be properly identified.
3	<i>Fair</i>	<u>Quality is seriously affected by distortion.</u> Repeating words and phrases are required to convey speech or video is seriously impacted and barely recognizable.
4	<i>Good</i>	<u>Quality is usable.</u> Audio or video is not impaired but some distortion is noticeable
5	<i>Excellent</i>	<u>Quality is unaffected.</u> No discernable problems with either audio or video.
NOTE: Audio and video quality during a conference will receive a subjective rating on the Data Collection Form. A rating of lower than 4 on this reference scale is considered a failure.		

Table 2-5. COMSEC Configuration

	KIV-7 HSB Serial Number	KIV-7 HSB SETUP Storage Location	Channel ID/Description	Date
		<input checked="" type="checkbox"/> STO 1 <input type="checkbox"/> STO2 <input type="checkbox"/> STO3	OC-256 KIV-7 HSB Setup	12-16-04
Setup ABCD	Setup Item	Options (Check the box to the left of the selected option. The highlighted box [x] indicates the setting during test)		
[-SETUP A]	[=CikSel]	<input type="checkbox"/> MASTER <input checked="" type="checkbox"/> SLAVE <input type="checkbox"/> STA CLK <input type="checkbox"/> TT SEL1 <input type="checkbox"/> TT SEL2		
	[=SyncSel]	<input type="checkbox"/> RED <input type="checkbox"/> RED-as <input checked="" type="checkbox"/> NR <input type="checkbox"/> NR-as <input type="checkbox"/> OP2 <input type="checkbox"/> ACT1 <input type="checkbox"/> ACT2 <input type="checkbox"/> HF <input type="checkbox"/> HF-as <input checked="" type="checkbox"/> EXT <input type="checkbox"/> EXT-as		
	[=CommSel]	<input checked="" type="checkbox"/> FDX <input type="checkbox"/> FDX Ind <input type="checkbox"/> TX only <input type="checkbox"/> RX only <input type="checkbox"/> SPLX 2W <input type="checkbox"/> SPLX 4W		
	[=DataMod]	<input type="checkbox"/> BB cond <input checked="" type="checkbox"/> BB <input type="checkbox"/> DP <input type="checkbox"/> DP cond		
	[=DataLen]	<input checked="" type="checkbox"/> Synch/S <input type="checkbox"/> Synch/A <input type="checkbox"/> 7 bits <input type="checkbox"/> 8 bits <input type="checkbox"/> 10 bits <input type="checkbox"/> 11 bits		
	[=TX Rate]	<input type="checkbox"/> 50 <input type="checkbox"/> 75 <input type="checkbox"/> 100 <input type="checkbox"/> 110 <input type="checkbox"/> 150 <input type="checkbox"/> 200 <input type="checkbox"/> 220 <input type="checkbox"/> 300 <input type="checkbox"/> 600 <input type="checkbox"/> 1.2k <input type="checkbox"/> 2.4k <input type="checkbox"/> 4.8k <input type="checkbox"/> 8.0k <input type="checkbox"/> 9.6k <input type="checkbox"/> 14.4k <input type="checkbox"/> 16k <input type="checkbox"/> 19.2k <input type="checkbox"/> 28.8k <input type="checkbox"/> 32k <input type="checkbox"/> 38.4k <input type="checkbox"/> 57.6k <input type="checkbox"/> 64k <input type="checkbox"/> 115.2k <input type="checkbox"/> 128k <input type="checkbox"/> 192k <input type="checkbox"/> 288k <input type="checkbox"/> EXT 32x <input checked="" type="checkbox"/> EXT DRC		
	[=RX Rate]	<input type="checkbox"/> 50 <input type="checkbox"/> 75 <input type="checkbox"/> 100 <input type="checkbox"/> 110 <input type="checkbox"/> 150 <input type="checkbox"/> 200 <input type="checkbox"/> 220 <input type="checkbox"/> 300 <input type="checkbox"/> 600 <input type="checkbox"/> 1.2k <input type="checkbox"/> 2.4k <input type="checkbox"/> 4.8k <input type="checkbox"/> 8.0k <input type="checkbox"/> 9.6k <input type="checkbox"/> 14.4k <input type="checkbox"/> 16k <input type="checkbox"/> 19.2k <input type="checkbox"/> 28.8k <input type="checkbox"/> 32k <input type="checkbox"/> 38.4k <input type="checkbox"/> 57.6k <input type="checkbox"/> 64k <input type="checkbox"/> 115.2k <input type="checkbox"/> 128k <input type="checkbox"/> 192k <input type="checkbox"/> 288k <input type="checkbox"/> EXT 32x <input checked="" type="checkbox"/> EXT DRC		
	[=TTY Mode]	<input checked="" type="checkbox"/> Auto <input type="checkbox"/> Manual <input type="checkbox"/> Unframd <input type="checkbox"/> SPLXint <input type="checkbox"/> SPLXext		
	[=I/Fctrl]	<input type="checkbox"/> OFF <input checked="" type="checkbox"/> PTRS <input type="checkbox"/> RS&CS <input type="checkbox"/> CTCS <input type="checkbox"/> PTTR <input type="checkbox"/> CTRR <input type="checkbox"/> CTDM <input type="checkbox"/> Resync Level		
	[-SETUP B]	[=Invert]	<input type="checkbox"/> BLKdata <input type="checkbox"/> REDdata <input type="checkbox"/> SyncTX <input type="checkbox"/> SyncRX <input checked="" type="checkbox"/> NONE	Notes:
[=TXClock]		<input checked="" type="checkbox"/> contTXC <input type="checkbox"/> gateTXC		
[=RXClock]		<input checked="" type="checkbox"/> contRXC <input type="checkbox"/> gateRC		
[=SyncOOS]		<input type="checkbox"/> Enabled <input checked="" type="checkbox"/> Disabled		
[=IdleSel]		<input type="checkbox"/> Enabled <input checked="" type="checkbox"/> Disabled		
[=AutoPhs]		<input checked="" type="checkbox"/> OFF <input type="checkbox"/> ON 2s <input type="checkbox"/> ON 5s <input type="checkbox"/> ON 10s <input type="checkbox"/> ON 15s		
[-SETUP C]	[=UpdateU]	<input checked="" type="checkbox"/> Enabled <input type="checkbox"/> Disabled <input checked="" type="checkbox"/> Clock Lock		
	[=RED I/F]	<input type="checkbox"/> RS-232 <input checked="" type="checkbox"/> EIA-530 <input type="checkbox"/> 422/423		
	[=BLK I/F]	<input type="checkbox"/> RS-232 <input checked="" type="checkbox"/> EIA-530 <input type="checkbox"/> 422/423		
	[=FIL I/F]	<input checked="" type="checkbox"/> 102/Std <input type="checkbox"/> 102/Tag <input type="checkbox"/> 101/Std <input type="checkbox"/> 101/Tag		
	[=FILAddr]	254 Record selected address 1 – 254. Default is 254		
	[=RCUAddr]	31 Record selected address 1 – 31. Default is 31		
	[=Display]	<input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low		
[=Speaker]	<input checked="" type="checkbox"/> Enabled <input type="checkbox"/> Disabled			
[-SETUP D]	[=Algorithms]	<input type="checkbox"/> Master <input checked="" type="checkbox"/> Slave <input checked="" type="checkbox"/> Algorithm 1		
[-SEL KEY]		<input checked="" type="checkbox"/> X01 <input type="checkbox"/> X02 <input type="checkbox"/> X03 <input type="checkbox"/> X04 <input type="checkbox"/> X05 <input type="checkbox"/> X06 <input type="checkbox"/> X07 <input type="checkbox"/> X08 <input type="checkbox"/> X09 <input type="checkbox"/> X10		

Table 2-5. COMSEC Configuration (continued)

LEGEND:	
ACT1	- Asynchronous cipher text to 288 kbps
ACT2	- Asynchronous cipher text to 288 kbps
as	- anti-spoof
Auto	- Automatic
Autophs	- Autophasing Select
BB	- Baseband
BB cond	- Baseband conditioned
BLK	- Invert Black
BLKdata	- Invert black data
ClkSel	- Clock Select
CommSel	- Communication Select
ContRXC	- Continuous receive clock
ContTXC	- Continuous transmit clock
CTCS	- Cipher text clear to send
CTDM	- Cyper Text Data Mode
CTRR	- Cipher text receiver ready
DataLen	- Data Length
DataMod	- Data Mode
DP	- Diphase
DP Cond	- Conditioned Diphase
EIA	- Electronic Industries Alliance
EIA-530	- Standard for 25-position interface for data terminal equipment and automatic calling equipment for data communications
EXT	- External
EXT DRC	- External Data Rate Clock
FDX	- Full duplex
FDX Ind	- Full duplex independent transmit and receive
FIL	- Fill
FILaddr	- Fill address select
gateRC	- Gated continuous receive clock
gateTXC	- Gated continuous transmit clock
HF	- High Frequency
HSB	- High Speed Bravo model
I/F	- Interface
I/Fctrl	- Interface control
ID	- Identification
IdleSel	- Idle Select
kbps	- kilobits per second
NR	- Non-Redundant
OC	- Outpost Communicator
OP2	- Operational Mode 2
PTRS	- Plain text request-to-send
PTTR	- Plain text terminal ready
RCUaddr	- Remote control address select
RED	- Redundant (listed under setup A)
RED-as	- Redundant anti-spoof
REDdata	- RED (encrypted) (listed under Setup B)
RED I/F	- RED (encrypted) interface (listed under Setup C)
Resync	- Resynchronization
RS&CS	- Ready to Send & Clear to Send
RS-232	- Recommended standard 232
RX	- Receive
RXClock	- Receive Clock
RX Rate	- Receive rate
s	- Second
SPLX 2W	- Simplex 2-Wire
SPLX 4W	- Simplex 4-Wire
SPLXext	- Simplex external
SPLXint	- Simplex internal
STA CLK	- Station Clock
Std	- Standard
STO	- Store
Synch/A	- 64 characters, asynchronous 10-bit
Synch/S	- 512 bits, Synchronous
SyncOOS	- Synchronization Out of Sync detect signal
SyncRX	- Invert Synchronization receive control signal
SyncSel	- Synchronization Select
SyncTX	- Invert Synchronization Transmit control signal
TT SEL1	- Terminal Timing Selection 1
TT SEL2	- Terminal Timing Selection 2
TTY	- Teletype
TX	- Transmit
TX Clock	- Transmit Clock
TX Rate	- Transmit rate
Unframd	- Frame transmit, but no receive
UpdateU	- Update Unique variable
X01	- Cryptographic traffic key position
X02	- Cryptographic traffic key position
X03	- Cryptographic traffic key position
X04	- Cryptographic traffic key position
X05	- Cryptographic traffic key position
X06	- Cryptographic traffic key position
X07	- Cryptographic traffic key position
X08	- Cryptographic traffic key position
X09	- Cryptographic traffic key position
X10	- Cryptographic traffic key position

b. Lessons Learned. During testing, it was noted that for the IPVC to place an outbound 112 kbps video call over the T1/E1 interface, a change to the gateway's default configuration needed to be made. The details of what field needed to be modified can be seen in figure 2-3. The user must click the Settings Tab, then the Advanced Tab and set the default service bit rate to 56 kbps from 64 kbps. This setting allows the user to place an outbound call at 112 kbps as well as all other Nx56 and Nx64 kbps rates.

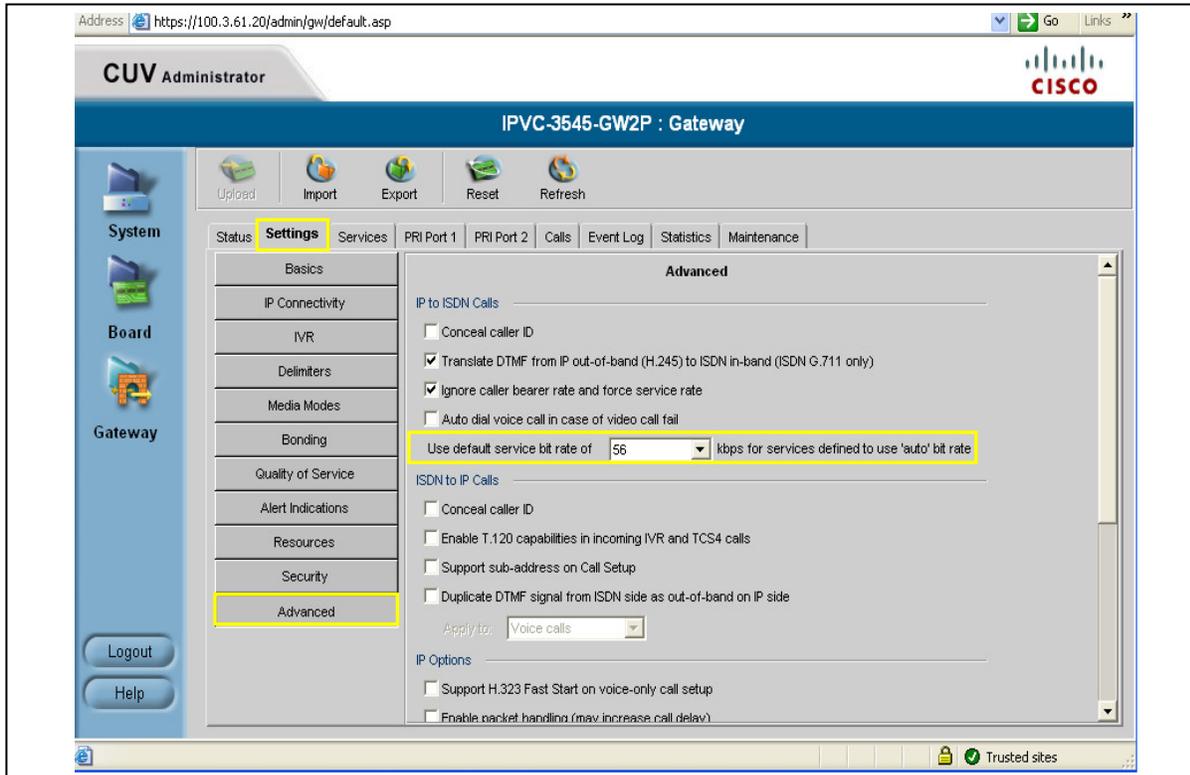


Figure 2-3. IPVC Lesson Learned Screen Capture

c. Test Summary. The SUT meets all of the critical interface and functional requirements for an MCU and is certified for joint use within the DSN. The SUT met the interface and functional requirements for an MCU as set forth in appendix 8 of reference (c). The SUT's ITU-T H.323 Internet Protocol interface did not meet the requirements for C2 or assured service. The ITU-T H.323 interface is certified for non-C2 use as set forth in appendix 8 of reference (c), therefore C2 and Special C2 VTC users are not authorized by the DSN Program Management Office to be served by ITU-T H.323.

12. TEST AND ANALYSIS REPORT. No detailed test report was developed, in accordance with the Program Manager's request. The 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 (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 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 website at <http://jitc.fhu.disa.mil/tssi>.