

APPENDIX 6
DOD GENERIC SWITCHING CENTER REQUIREMENTS (GSCR)
08 SEP 03
Integrated Access Switch/System (IAS) Requirements

A6.1 Background

This appendix describes the requirements that must be met by all Integrated Access Switch/System (IAS) Customer Premise Equipment (CPE) devices for them to be certified and used in the Defense Switched Network (DSN). An IAS is an ISDN device with one or more PRI interfaces to a DSN switch. It will only be used to support video and data services.

The requirements contained in this appendix are based on:

- a. Policy for DOD voice networks as outlined in the Chairman of Joint Chiefs of Staff Instruction (CJCSI) 6215.01B, *“Policy for Department of Defense Voice Networks”*. CJCSI 6215.01B defines the DSN as being “an interbase, nonsecure or secure C2 telecommunications system that provides end-to-end command use and dedicated telephone service, voice-band data, and dial-up VTC for C2 and non-C2 DOD authorized users in accordance with national security directives.” The CJCS instruction further specifies the need for the DSN to offer military unique features (MUFs) such as Multi-Level Precedence and Preemption (MLPP) and military Network Management (NM).
- b. *“Department Of Defense Voice Networks Generic Switching Center Requirements (GSCR)”*, 08 Sep 2003.
- c. Department of Defense Instruction (DODI) 8100.3, 16 January 2004, *“Department of Defense (DoD) Voice Networks”*.

A6.2 Purpose

The purpose of this Appendix to the Defense Switch Network (DSN) Generic Switching Center Requirements (GSCR) document is to specify the IAS Customer Premise Equipment (CPE) requirements so it can be certified for use in the Defense Switched Network (DSN).

A6.3 Applicability

This appendix applies to all DSN IAS CPE devices/systems procured or leased for installation in the DSN. All services, features and functions (both unique military and standard commercial) identified in this GSCR and associated Appendixes are to be implemented in DSN assets including switches, trunks, lines, Customer Premises Equipment (CPE), and ancillary equipment. This specification also applies to upgrades and new software loads for existing equipment.

The GSCR is the governing specification document that takes precedence over the explicit or implicit requirements of subsidiary or reference documents, standards, and specifications. In the event of conflict, the explicit requirements of the GSCR take precedence over the explicit or

implicit requirements of the LATA Switching Systems Generic Requirements (LSSGR), Generic Requirements (GR), and DISAC 370-175-13.

A6.3.1 Definitions

Integrated Access Switch (IAS): A CPE system that interconnects a DSN switch and Terminal Equipment (TE) such as Inverse Multiplexers (IMUXs), routers, VTC (Video Teleconference) Codecs, VTC Monitors, and Multipoint Control Units (see Figure A6.1). The IAS is able to originate multiple data and/or video calls IAW the world-wide numbering and dialing plan (WWNDP). Depending on the local implementation, PRI to PRI, PRI to BRI or BRI to PRI, interconnection is accomplished by the IAS. The IAS does not possess any functions of Multi-Level Precedence and Preemption (MLPP), but shall be able to originate calls that can be interpreted by the DSN switch as precedence calls and may be preempted on the DSN switching platforms and network trunks (see Figure A6.2). The IAS shall be provisioned in a manner such that the number of provisioned TE interface bearer channels shall not exceed the number of provisioned DSN or commercial interface bearer channels. This is to reduce the possibility of a call destined for a TE from being blocked by the DSN or commercial interfaces on the IAS not having available bearer channels for this call. It should also be noted that VTC call inherently has a “ROUTINE” precedence level. A typical layout of the IAS is illustrated in Figure A6.3.

Required: These are features and capabilities considered necessary for devices covered by this appendix for DoD mission support based on DoD policies. These features and capabilities require certification prior to introduction into the DSN.

Conditional: These are features and capabilities that are not considered critical for DoD mission support based on DoD policies. It is recognized however, that such features do have utility for some users or for specific operations. If these features and capabilities are provided, the switch shall perform and meet the specifications as identified in this appendix.

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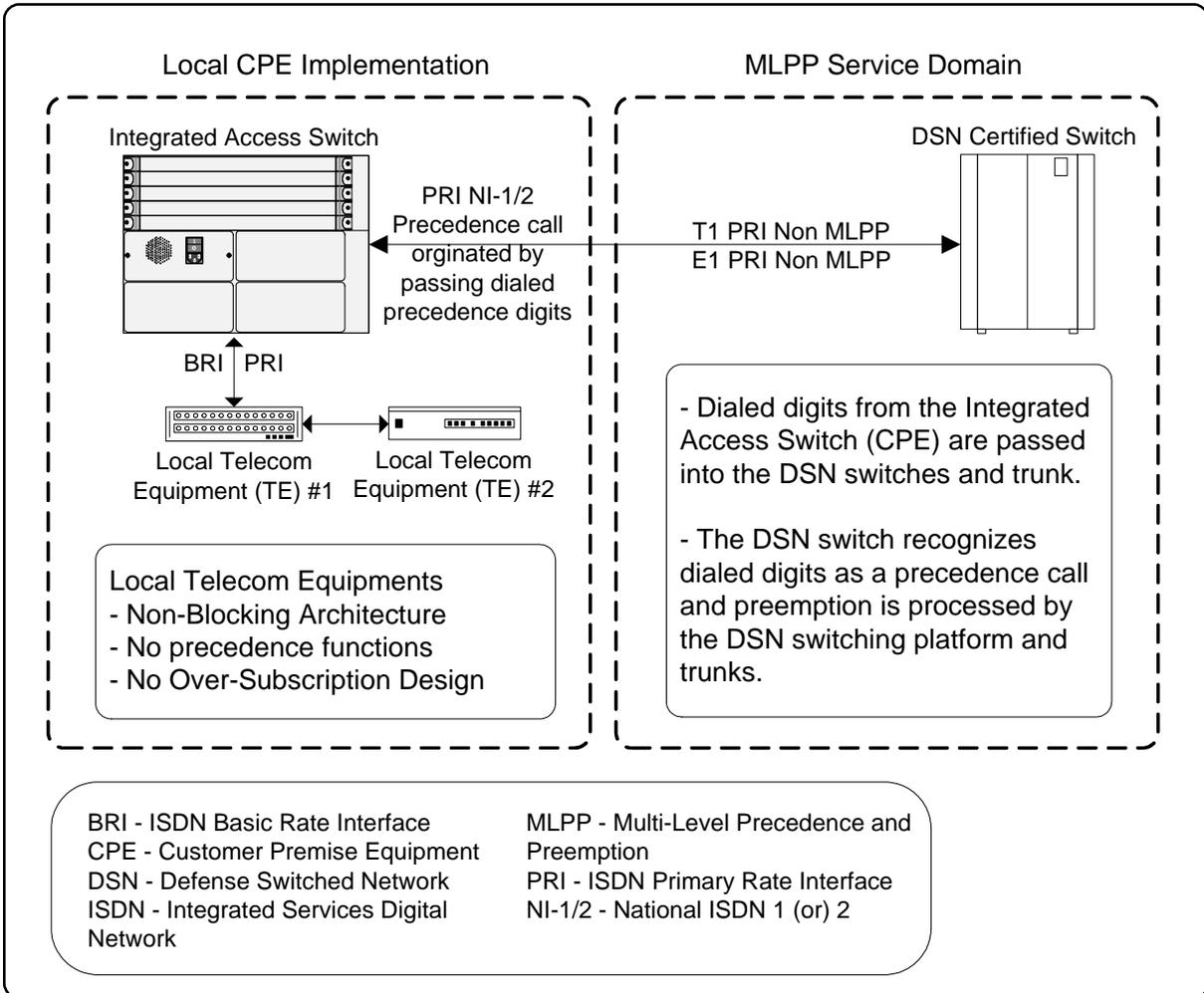


Figure A6.2 - MLPP Implementation and the Integrated Access Switch

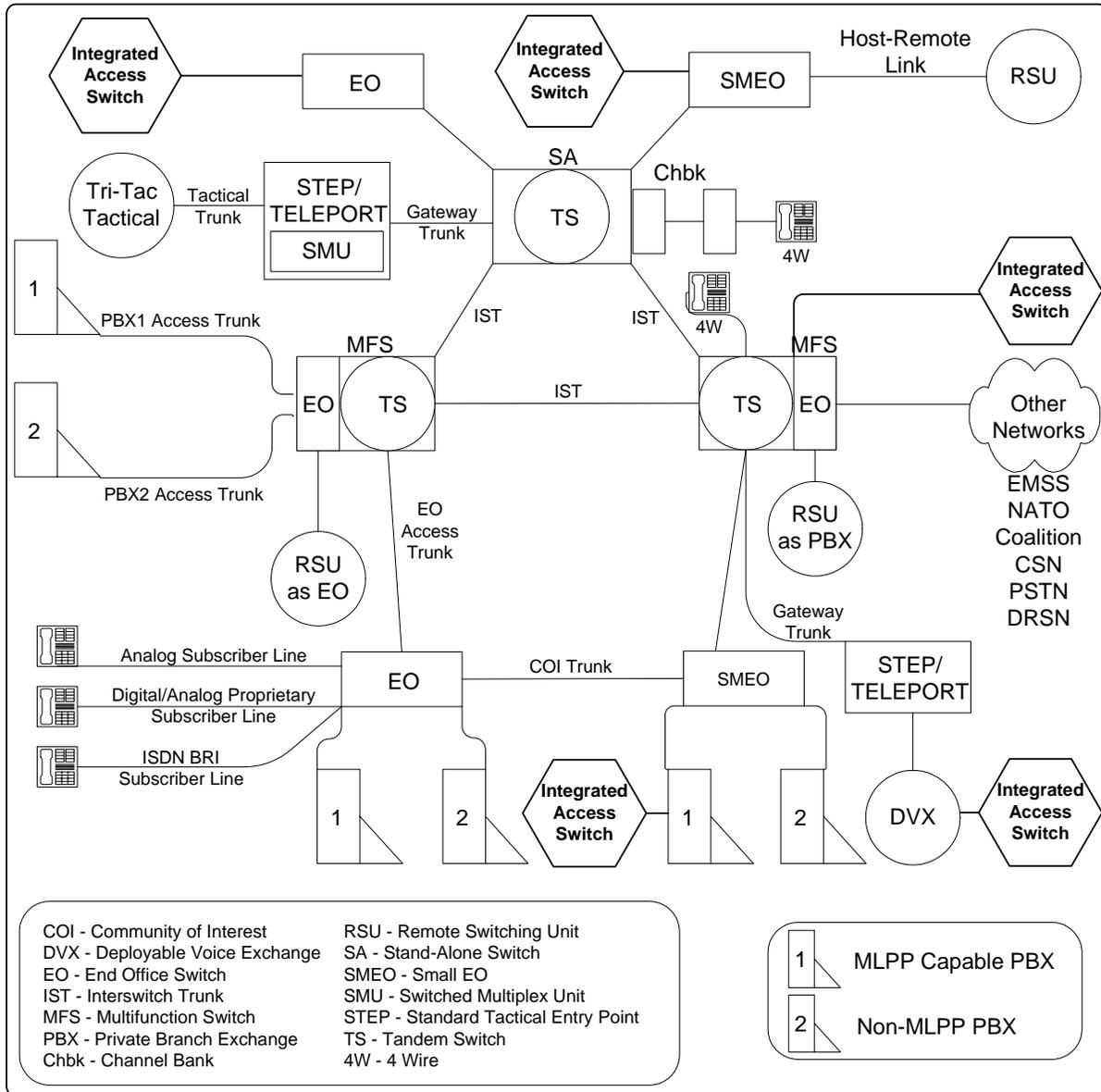


Figure A6.3 - Applications for the Integrated Access Switch

A6.4 Integrated Access Switch Requirements

All Integrated Access Switches are required to meet the following requirements.

A6.4.1 Interfaces

DSN interfaces:

[Required] T1 ISDN PRI NI 1/2

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- a. The IAS shall conform to GSCR Sections 2.3.4, and 5.7 inclusive and shall provide the ISDN PRI capabilities shown in Table A6.1.
- b. The IAS shall conform to Table 14-4 of Telcordia Technologies, SR-2275, “*Telcordia Notes on the Networks*”, Issue 4, October 2000, which provides the specific requirements for features and capabilities listed in Table A6.1.
- c. The IAS shall support line timing mode in accordance with GSCR Section 11.1.1.2.

Table A6.1 - T1 PRI Access, Call Control, and Signaling

Feature or Capability	Requirement
PRI Layer 1	Required
PRI Layer 2 (Circuit)	Required
PRI Call Control and Signaling	
Basic Call Control for Circuit-Mode Calls	Required
Multiple DS1 Facilities Controlled by a Single D-Channel	Conditional
D-Channel Backup	Conditional
Access to Selected Primary Rate Services on a Per-Call Basis	Conditional
PRI Interworking with SS7	Conditional
Uniform Cause Values and Location Indicators - Subset	Conditional
RESTART Procedures	
Support of Single Interface Initiated by the CPE	Conditional
Support of Restart of All DS1's Controlled by a D-channel, Initiated by the SPCS	Conditional
Support of Restart Collision Procedures	Conditional
SWF-DS1	Required
PRI Packet-Mode Call Control	Conditional

[Conditional] E1 ISDN PRI

- a. If provided the IAS shall conform to GSCR Section 5.7 inclusive.

TE Interfaces:

[Required] One of the following interfaces is required.

- a. **[Conditional]** T1 ISDN PRI NI 1/2
 - 1) The IAS shall conform to GSCR Sections 2.3.4, and 5.7 inclusive and provide the ISDN PRI capabilities shown in Table A6.2.
 - 2) The IAS shall conform to Table 14-4 of Telcordia Technologies, SR-2275, “*Telcordia Notes on the Networks*”, Issue 4, October 2000, which provides the specific requirements for features and capabilities listed in Table A6.2.

Table A6.2 - T1 PRI Access, Call Control, and Signaling

Feature or Capability	Requirement
PRI Layer 1	Required
PRI Layer 2 (Circuit)	Required
PRI Call Control and Signaling Basic Call Control for Circuit-Mode Calls Multiple DS1 Facilities Controlled by a Single D-Channel D-Channel Backup Access to Selected Primary Rate Services on a Per-Call Basis PRI Interworking with SS7	Required Conditional Conditional Conditional Conditional
Uniform Cause Values and Location Indicators - Subset	Conditional
RESTART Procedures Support of Single Interface Initiated by the CPE Support of Restart of All DS1's Controlled by a D-channel, Initiated by the SPCS Support of Restart Collision Procedures	Conditional Conditional Conditional
SWF-DS1	Required
PRI Packet-Mode Call Control	Conditional

b. **[Conditional]** E1 ISDN PRI NI 1/2.

1) The IAS shall conform to GSCR Section 5.7 inclusive.

c. **[Conditional]** ISDN BRI NI 1/2

1) The IAS shall conform to the requirements in GSCR Section 2.3.3 and Section 10 inclusive, with the exception that the IAS may include either the S/T or U interface, and provide the ISDN BRI capabilities shown in Table A6.3.

2) The IAS shall conform to Tables 14-1 through 14-3 of Telcordia Technologies, SR-2275, “*Telcordia Notes on the Networks*”, Issue 4, October 2000, which provides the specific requirements for features and capabilities listed in Table A6.3.

Table A6.3 - BRI Access, Call Control, and Signaling

Feature or Capability	Requirement
ISDN BRI Layer 1	Required
4:1 TDM Method for ISDN Basic Access	Conditional
ISDN BRI Layer 2	Required
BRI Circuit-Mode Call Control Basic Call Control	Required Required
Uniform Cause Values and Location Identifiers – Subset	Conditional
BRI Terminal Initialization	Required
Service Profile Identifier	Required

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Feature or Capability	Requirement
Parameter Downloading	Conditional
Parameter Downloading – Version 2 (Extensions for Virtual Key Service)	Conditional
Download Additional Data for Softkey Operations – Parameter Downloading – Version 2.1	Conditional
Automatic SPID	Conditional
Default Services for Terminals	Conditional
BRI Interworking with SS7	Conditional
ISDN BRI Packet-Mode Call Control	Conditional
User Originated, On-Demand B- Channel Packet	Conditional
Conditional Notification	Conditional

A6.4.2 Security

[Required] The IAS shall conform to the requirements outlined in Department of Defense Instruction (DODI) 5200.40, 30 December 1997, “*Defense Information Technology Security Certification and Accreditation Process (DITSCAP)*” and the DSN Security Technical Implementation Guide (STIG).

A6.4.3 Numbering Plan

[Required] The IAS shall provide the capability to integrate its numbering plan with the 10-digit format of the North American Numbering Plan (NANP) and conform to the GSCR Section 4.5.1 inclusive, which defines the DSN World Wide Numbering and Dialing Plan (WWNDP).

[Required] IAS line number assignments shall be within existing geographic DSN WWNDP office codes and shall support the same format that the local PSTN/POTS numbers are assigned (NPA-NXX-XXXX).

[Required] IAS numbering shall conform to ITU-T Recommendation E.164, “*The International Public Telecommunication Numbering Plan*”. It shall be able to send all digits defined in GSCR Table 4-6. The IAS shall be able to receive dialed digits and manipulate them as necessary to support the above requirement.

A6.4.4 Provisioning

[Conditional] The IAS shall provide software capability to ensure that the number of provisioned of TE interface bearer channels do not exceed the number of provisioned DSN or commercial interface bearer channels. This is to reduce the possibility of a call destined for a TE to be blocked by the DSN or commercial interfaces not having available bearer channels for this call.

[Required] The IAS shall provide the capability to allocate a specific amount of maximum bandwidth to each of the TE interfaces at the DS0 level. Calls originating from the TE interfaces shall be prevented from exceeding this bandwidth.

A6.4.5 Reliability

[Required] The EC reliability and availability shall conform to Section 5 of Telcordia Technologies Generic Requirements GR-512-CORE, “*LSSGR: Reliability, Section 12*”, Issue 2, January 1998 as specified for individual devices. The vendor shall provide a reliability model for the system, showing all calculations and showing also how the overall availability will be met, if requested.

A6.4.6 Loop Back Capability

[Conditional] The IAS shall provide loop back capability on each of the TE interfaces in accordance with ITU-T Recommendation V.54, “*Loop Test Devices For Modems*”.

A6.4.7 Inverse Multiplexer (IMUX) Capability

[Conditional] The IAS IMUX capability shall meet the ITU-T Recommendation H.244, “*Synchronized aggregation of multiple 64 or 56 kbit/s channels*” requirements and shall conform to Federal Telecommunications Recommendation 1080B-2002, August 15, 2002, “*Video Teleconferencing Services*” when connected to TE equipment. Additionally, the IAS IMUX shall provide one or more of the below interfaces:

- a. EIA-366-A, “*Interface Between Data Terminal Equipment and Automatic Calling Equipment for Data Communication*”.
- b. EIA-449-1, “*General Purpose 37-Position and 9-Position Interface for Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange*”.
- c. TIA/EIA-530-A, “*High Speed 25-Position Interface for Data Terminal Equipment and Data Circuit-Terminating Equipment, Including Alternative 26-Position Connector*”, Revised 1998.
- d. ITU-T Recommendation V.35, “*Data transmission at 48 kilobits per second using 60-108 kHz group band circuits*”.