Alcatel·Lucent

Alcatel-Lucent 7705

SERVICE AGGREGATION ROUTER | RELEASE 4.0

T1/E1 ASAP ADAPTER CARD INSTALLATION GUIDE

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Preface

About This Guide

This guide provides site preparation recommendations and step-by-step procedures to install, remove, and replace the Alcatel-Lucent 16-port and 32-port T1/E1 Any Service Any Port (ASAP) Adapter cards on the 7705 SAR-8 and 7705 SAR-18. After the hardware installation process is completed, refer to the List of Technical Publications for details on the boot process, software configuration, and Command Line Interface (CLI) information to configure system and network parameters.

The 16-port T1/E1 ASAP Adapter card and 32-port T1/E1 ASAP Adapter card support channelization down to DS0. Each port supports TDM, Inverse Multiplexing over ATM (IMA), and multilink bundles over PPP channels (MLPPP). A single 68-pin AMP connector on the 16-port T1/E1 ASAP Adapter card faceplate provides access and network connections for all ports. The 32-port T1/E1 ASAP Adapter card has two 68-pin AMP connectors that provide this functionality.

Warning: All plugs must be properly crimped and conform to FCC Code of Regulations (CFR) Part 68, Subpart F. Failure to comply will result in damage to the jack.

T1/E1 ASAP Card Versions

The 7705 SAR-8 and 7705 SAR-18 support the 16-port T1/E1 ASAP Adapter card version 1 (a16-chds1) and version 2 (a16-chds1v2), and the 32-port T1/E1 ASAP Adapter card version 2 (a32-chds1v2).

The 16-port T1/E1 ASAP Adapter card version 1 has a -48V/-60 VDC and +24 VDC variant. The 16-port T1/E1 ASAP Adapter card version 2 and 32-port T1/E1 ASAP Adapter card version 2 have a wide-range input and support -48/-60 VDC and +24 VDC power (+24 VDC power is not supported on the 7705 SAR-18).

Note: Unless otherwise stated, 16-port T1/E1 ASAP Adapter card in this guide means both versions and 32-port T1/E1 ASAP Adapter card means version 2 of the card.

List of Technical Publications

The 7705 SAR OS documentation set is composed of the following guides:

- 7705 SAR OS Basic System Configuration Guide

  This guide describes basic system configurations and operations.

- 7705 SAR OS System Management Guide

  This guide describes system security and access configurations as well as event logging and accounting logs.

- 7705 SAR OS Interface Configuration Guide

  This guide describes card and port provisioning.

- 7705 SAR OS Router Configuration Guide

  This guide describes logical IP routing interfaces, IP-based filtering, and routing policies.

- 7705 SAR OS MPLS Guide

  This guide describes how to configure Multiprotocol Label Switching (MPLS), Resource Reservation Protocol for Traffic Engineering (RSVP-TE), and Label Distribution Protocol (LDP).

- 7705 SAR OS Services Guide

  This guide describes how to configure service parameters such as service access points (SAPs), service destination points (SDPs), customer information, and user services.

- 7705 SAR OS Quality of Service Guide

  This guide describes how to configure Quality of Service (QoS) policy management.

- 7705 SAR OS Routing Protocols Guide

  This guide provides an overview of dynamic routing concepts and describes how to configure them.

- 7705 SAR OS OAM and Diagnostics Guide

  This guide provides information on Operations, Administration and Maintenance (OAM) tools.

Warnings and Notes

Observe the warnings and notes to avoid injury or router damage during installation and maintenance. Follow the safety procedures and guidelines when working with and near electrical equipment. Warning statements and notes are provided in each chapter.

Audience

This guide is intended for network installers and system administrators who are responsible for installing, configuring, or maintaining networks. This guide assumes you are familiar with electronic and networking technologies.

Information Symbols

Table 1 describes symbols contained in this guide.

Table 1: Information Symbols

Symbol	Meaning	Description
⚠	Danger	This symbol warns that improper handling and installation could result in bodily injury. Before you begin work on this equipment, be aware of hazards involving electrical circuitry, be aware of your networking environments, and instigate accident prevention procedures.
⚠	Warning	This symbol warns that improper handling and installation could result in equipment damage or loss of data.
⬡	Caution	This symbol warns that improper handling may reduce your component or system performance.
➡	Note	This symbol provides additional operational information.
Class 1 Laser Product		Class 1 laser products are listed in the Class 1 laser adapter card documents. Only approved Class 1 replaceable laser transceivers should be used with those products.

Multiple PDF File Search

You can use Adobe Reader, Release 6.0 or later, to search multiple PDF files for a term. Adobe Reader displays the results in a display panel. The results are grouped by PDF file. You can expand the entry for each file.

➡️ **Note:** The PDF files in which you search must be in the same folder.

To search multiple PDF files for a term:

Step 1. Open Adobe Reader.

Step 2. Choose Edit – Search from the Adobe Reader main menu. The Search panel appears.

Step 3. Enter the term to search for.

Step 4. Select the All PDF Documents in radio button.

Step 5. Choose the folder in which to search using the drop-down menu.

Step 6. Select the following criteria if required:

- Whole words only
- Case-Sensitive
- Include Bookmarks
- Include Comments

Step 7. Click on the Search button.

Adobe Reader displays the search results. You can expand the entries for each file by clicking on the + symbol.

Step 8. Click on a search result to go directly to that location in the selected file.

Technical Support

If you purchased a service agreement for your 7705 SAR and related products from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance. If you purchased an Alcatel-Lucent service agreement, check this link for instructions to contact Support personnel:

Web: http://support.alcatel-lucent.com

Installing Adapter Cards

In This Chapter

This chapter provides information about installing and removing the 16-port T1/E1 ASAP Adapter card and 32-port T1/E1 ASAP Adapter card on the 7705 SAR-8 and 7705 SAR-18 chassis:

- Power Consumption on page 14
- Provisioning Requirements on page 15
- Provisioning an Adapter Card on page 16
  → Configuration Example on page 17
- Removing an Adapter Card Configuration on page 19
- Installation Procedures on page 20
  → Warnings and Notes on page 20
  → Installing an Adapter Card on page 21
  → Removing and Replacing an Adapter Card on page 27

Power Consumption

Table 2 lists the power consumption for the 16-port T1/E1 ASAP Adapter card and 32-port T1/E1 ASAP Adapter card.

Table 2: Power Consumption

Description	Typical Power (W)	Maximum Power (W)
16-port T1/E1 ASAP Adapter card version 1 (a16-chds1)	14.1 W	17 W
16-port T1/E1 ASAP Adapter card version 2 (a16-chds1v2)	21 W	26 W
32-port T1/E1 ASAP Adapter card version 2 (a32-chds1v2)	24 W	30 W

Refer to "Power Consumption" in the 7705 SAR-8 Installation Guide or 7705 SAR-18 Installation Guide for more information on the power consumption of other hardware.

Provisioning Requirements

To configure cards and ports, you must be able to access the 7705 SAR-8 or 7705 SAR-18 by console or Telnet connection. Refer to the 7705 SAR-8 Installation Guide or 7705 SAR-18 Installation Guide for information and instructions on console and Telnet connections.

The CSM does not require provisioning. However, the IOM, which is an integral part of the CSM software module, must be activated before any adapter cards and port parameters can be provisioned and configured. The IOM is activated using the `card` and `card-type` CLI commands to specify its slot number and card type. Adapter cards must be provisioned before their ports can be configured.

Notes:
- IOMs are specified using the `card` and `card-type` commands (items 1 and 2 in the list below).
- Adapter cards are provisioned and configured using the `mda` and `mda-type` commands (items 3 and 4 in the list below).

Configure components in the following order:

1. Card slot number (use the `card` *slot-number* command)
2. Card type (use the `card-type` *card-type* command)
3. Adapter card slot number (use the `mda` *mda-number* command)
4. Adapter card type (use the *mda-type* command)
5. Ports (use the *port* command)

Provisioning an Adapter Card

After the IOM has been activated on the CSM (Steps 1 and 2 below), continue in the `config` context with the following CLI commands to provision the adapter card. The steps below provision a 16-port T1/E1 ASAP Adapter card version 1 in MDA slot 5 and a 32-port T1/E1 ASAP Adapter card in MDA slot 6.

The 7705 SAR-8 supports up to 6 adapter cards and the 7705 SAR-18 supports up to 12 adapter cards in any combination that does not exceed the maximum; however, for a network application, at least one of the installed cards must be a network-capable adapter card. Within this maximum, up to 6 16-port T1/E1 ASAP Adapter cards and/or 32-port T1/E1 ASAP Adapter cards can be configured on a 7705 SAR-8, and up to 12 16-port T1/E1 ASAP Adapter cards and/or 32-port T1/E1 ASAP Adapter cards can be configured on a 7705 SAR-18.

	Command Syntax	**Example**
Step 1.	card *slot-number*	card 1
Step 2.	card-type *card-type*	card-type iom-sar
	Note: The *slot-number* is always 1 and the *card-type* is always `iom-sar`.	
Step 3.	mda *mda-number*	mda 5
Step 4.	mda-type *mda-type*	mda-type a16-chds1
Step 5.	exit	exit
Step 6.	mda *mda-number*	mda 6
Step 7.	mda-type *mda-type*	mda-type a32-chds1v2
Step 8.	exit	exit

You can now install the adapter cards; see Installing an Adapter Card. If you need to install an additional adapter card, repeat the configuration process from Step 6 before installing the card.

Configuration Example

The following example displays the `card`, `card-type`, `mda` and `mda-type` commands to specify the IOM as an `iom-sar` type, and provision a 16-port T1/E1 ASAP Adapter card version 1 in MDA slot 5 and a 32-port T1/E1 ASAP Adapter card in MDA slot 6 on a 7705 SAR-8 or 7705 SAR-18.

```
ALU-1>config# card 1
ALU-1>config>card# card-type iom-sar
ALU-1>config>card# mda 5
ALU-1>config>card>mda# mda-type a16-chds1
ALU-1>config>card>mda# exit
ALU-1>config>card# mda 6
ALU-1>config>card>mda# mda-type a32-chds1v2
ALU-1>config>card>mda# exit
```

Sample Output

Use the `config>info` command to display card configuration information on a 7705 SAR-8 or 7705 SAR-18:

```
ALU-1>config# info
. . .
-----------------------------------------------
echo "Card Configuration"
#----------------------------------------------
 card 1
        card-type iom-sar
        mda 5
            mda-type a16-chds1
        exit
        mda 6
            mda-type a32-chds1v2
        exit
 exit
-----------------------------------------------
ALU-1>config#
```

Use the `config>show card state` command to display administrative and operational states for all provisioned cards on a 7705 SAR-8:

```
ALU-1>config# show card state
===============================================================================
Card State
===============================================================================
Slot/   Provisioned       Equipped          Admin Operational  Num   Num Comments
Id      Type              Type              State State         Ports MDA
-------------------------------------------------------------------------------
1       iom-sar           iom-sar           up    up                 6
1/5     a16-chds1         a16-chds1         up    up           16
1/6     a32-chds1v2       a32-chds1v2       up    up           32
A       csm-1g            csm-1g            up    up                      Active
B       csm-1g                              up    down                    Standby
===============================================================================
ALU-1>config#
```

Use the `config>show card state` command to display administrative and operational states for all provisioned cards on a 7705 SAR-18:

```
ALU-1>config# show card state
===============================================================================
Card State
===============================================================================
Slot/   Provisioned       Equipped          Admin Operational  Num   Num Comments
Id      Type              Type              State State         Ports MDA
-------------------------------------------------------------------------------
1       iom-sar           iom-sar           up    up                 12
1/5     a16-chds1         a16-chds1         up    up           16
1/6     a32-chds1v2       a32-chds1v2       up    up           32
A       csm-10g           csm-10g           up    up                      Active
B       csm-10g                             up    down                    Standby
===============================================================================
ALU-1>config#
```

Use the `config>show mda` command to display provisioned adapter card information on a 7705 SAR-8 or 7705 SAR-18:

```
ALU-1>config# show mda
===============================================================================
MDA Summary
===============================================================================
Slot   Mda   Provisioned          Equipped             Admin       Operational
             Mda-type             Mda-type             State       State
-------------------------------------------------------------------------------
1      5     a16-chds1            a16-chds1            up          up
       6     a32-chds1v2          a32-chds1v2          up          up
===============================================================================
```

Removing an Adapter Card Configuration

If you remove an adapter card and will not be replacing it, or will be replacing it with a card of a different type, you must first remove the associated configuration, such as SAPs, SDPs, and port connections, prior to removing the installed card. If you will be replacing it with a card of the same type, you do not need to remove the associated configuration.

Refer to the 7705 SAR OS Interface Configuration Guide for details on configuring cards and ports.

In the example below, a 16-port T1/E1 ASAP Adapter card version 1 in MDA slot 2 is being removed. In this example, only the port configuration must be removed.

	Command Syntax	**Example**
Step 1.	port *port-id*	port 1/2/1
Step 2.	shutdown	shutdown

Note: The port>shutdown command must be repeated for all enabled ports on the adapter card.

	Command Syntax	**Example**
Step 3.	exit	exit
Step 4.	card *slot-number*	card 1
Step 5.	mda *mda-number*	mda 2
Step 6.	shutdown	shutdown
Step 7.	exit	exit
Step 8.	no mda *mda-number*	no mda 2

You can now remove the installed card and replace it if required; see Removing and Replacing an Adapter Card. If you are simply removing the card, insert a filler plate in the empty slot. If you are replacing the card with a different type, provision the new card before installing it. If you are replacing the card with the same type, you do not need to provision it.

Installation Procedures

Warnings and Notes

⚠️ **Warnings:**
- Electrostatic discharge (ESD) damage can occur if adapter cards are mishandled. Always wear an ESD-preventive wrist or ankle strap connected to a nearby ground point that is connected to the site grounding point (typically, the grounding stud on the 7705 SAR-8 or 7705 SAR-18, or a properly grounded rack or work bench).
- Always place components on an anti-static surface.
- Do not power up a 7705 SAR-8 or 7705 SAR-18 before verifying that all common equipment (chassis, power, cooling, and grounding) is connected properly.
- The Fan module and all cards in the 7705 SAR-8 chassis must have the same voltage type.
- Filler plates are required in all empty slots to prevent excess dust accumulation and to help control airflow and electromagnetic interference.
- To comply with the GR-1089-CORE requirement R4-9 [31] standard for electromagnetic compatibility and safety, all intra-building ports are specified for use with shielded and grounded cables at both ends.
- The intra-building port(s) of the equipment or sub-assembly is suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building port(s) of the equipment or sub-assembly must not be metallically connected to interfaces that connect to the Outside Plant (OSP) or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

🛑 **Caution:** When a T1/E1 ASAP Adapter card port that is configured for T1 is connected to external equipment or is in physical loopback, ensure that the external equipment's transmit signal is attenuated according to the distance to the T1/E1 ASAP Adapter card receiver. Adjust LBO settings appropriately so that the T1/E1 ASAP Adapter card receiver's nominal input voltage level is < 3Vp. Refer to "Configuring DS1 Line Buildout" in the 7705 SAR OS Interface Configuration Guide for detailed information on attenuating transmit signals.

➡️ **Notes:**
- Ports cannot be configured until the adapter card is provisioned.
- Services cannot be configured until the ports are configured.
- Adapter card slot numbers are MDA 1 through MDA 6 on the 7705 SAR-8 and MDA 1 through MDA 12 on the 7705 SAR-18.
- T1/DS1 terminations support 100Ω impedance; E1 terminations support 75Ω and 120Ω termination impedances.

Installing an Adapter Card

A maximum of 6 16-port T1/E1 ASAP Adapter cards and/or 32-port T1/E1 ASAP Adapter cards can be installed in the 7705 SAR-8 in MDA slots 1 through 6. On the 7705 SAR-18, a maximum of 12 16-port T1/E1 ASAP Adapter cards and/or 32-port T1/E1 ASAP Adapter cards can be installed in MDA slots 1 through 12.

When the 7705 SAR-8 chassis is used in +24 VDC operation, it requires the installation of the +24 VDC variant of the Fan module and the +24 VDC variant of the CSM. It also requires the +24 VDC variant of the 16-port T1/E1 ASAP Adapter card version 1, the wide-range DC variant of the 16-port T1/E1 ASAP Adapter card version 2, 32-port T1/E1 ASAP Adapter card, and Auxiliary Alarm card. The Fan module and all cards in a single chassis must have the same voltage type.
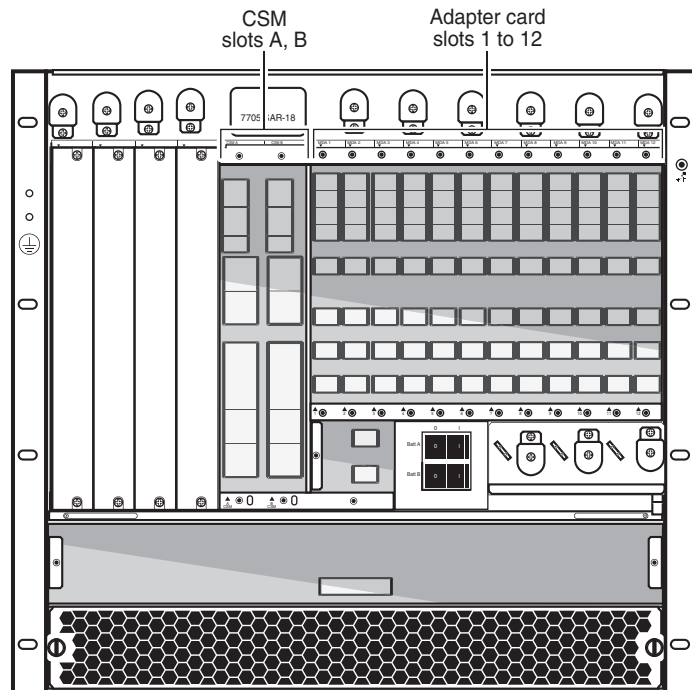
Figure 1 identifies the location of the CSM and MDA slots on a 7705 SAR-8. Figure 2 identifies the location of the CSM and MDA slots on a 7705 SAR-18.

Figure 1: 7705 SAR-8 CSM and MDA Slot Identification
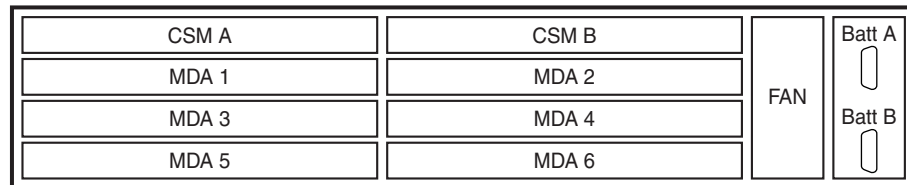
19635

Figure 2: 7705 SAR-18 CSM and MDA Slot Identification

The 16-port T1/E1 ASAP Adapter card has one 68-pin AMP connector on its faceplate for high-density, direct connections, or for connection to a distribution panel available from Alcatel-Lucent. The 32-port T1/E1 ASAP Adapter card has two 68-pin AMP connectors on its faceplate. Refer to the 7705 SAR-8 Installation Guide or the 7705 SAR-18 Installation Guide for more information on the distribution panels. Figure 3, Figure 4, and Figure 5 show the connectors and installation features of the 16-port T1/E1 ASAP Adapter card version 1, 16-port T1/E1 ASAP Adapter card version 2, and 32-port T1/E1 ASAP Adapter card respectively. Table 3 describes the faceplate features.

See LED Descriptions for a description of the LEDs found on the faceplates of the 16-port T1/E1 ASAP Adapter card and 32-port T1/E1 ASAP Adapter card. See T1/E1 Cable Pinout Assignments for a description of the cables and associated pinout assignments for the cables used with the 16-port T1/E1 ASAP Adapter card and 32-port T1/E1 ASAP Adapter card.

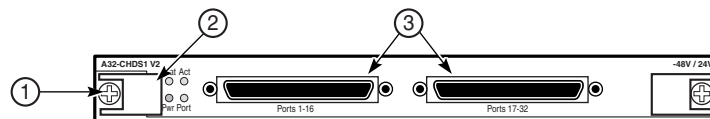**Figure 3: 16-port T1/E1 ASAP Adapter Card Version 1 Faceplate**
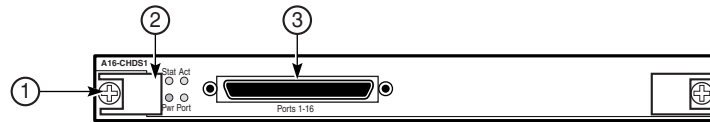
21537

Figure 4: 16-port T1/E1 ASAP Adapter Card Version 2 Faceplate
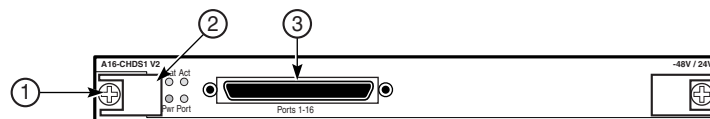
21538

Figure 5: 32-port T1/E1 ASAP Adapter Card Faceplate

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Table 3: 16-port T1/E1 ASAP Adapter Card and 32-port T1/E1 ASAP Adapter Card Faceplate Features
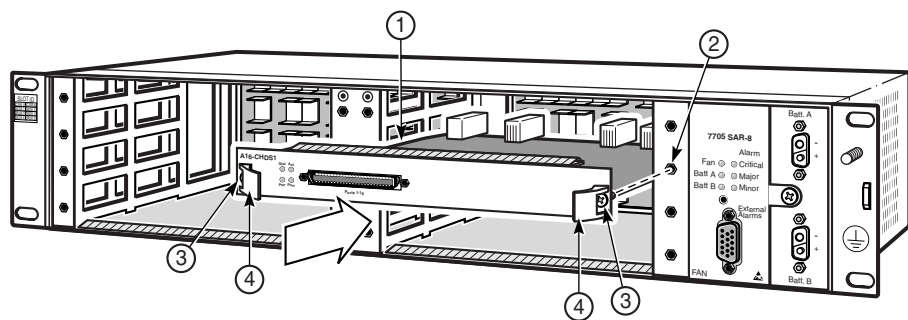
Key	Description
1	Captive screw
2	Ejector lever
3	68-pin AMP connector

Figure 6 illustrates the installation of a 16-port T1/E1 ASAP Adapter card version 1 in a 7705 SAR-8. Figure 7 illustrates the installation of a 32-port T1/E1 ASAP Adapter card in a 7705 SAR-18. Table 4 describes the 16-port T1/E1 ASAP Adapter card and 32-port T1/E1 ASAP Adapter card installation features. Ejector levers help install and remove the adapter card; captive screws secure the card in place.

If the MDA slot for the adapter card has not been provisioned or configured before installing the card, see Provisioning an Adapter Card.

Figure 6: Installing a 16-port T1/E1 ASAP Adapter Card in a 7705 SAR-8

Figure 7: Installing a 32-port T1/E1 ASAP Adapter Card in a 7705 SAR-18
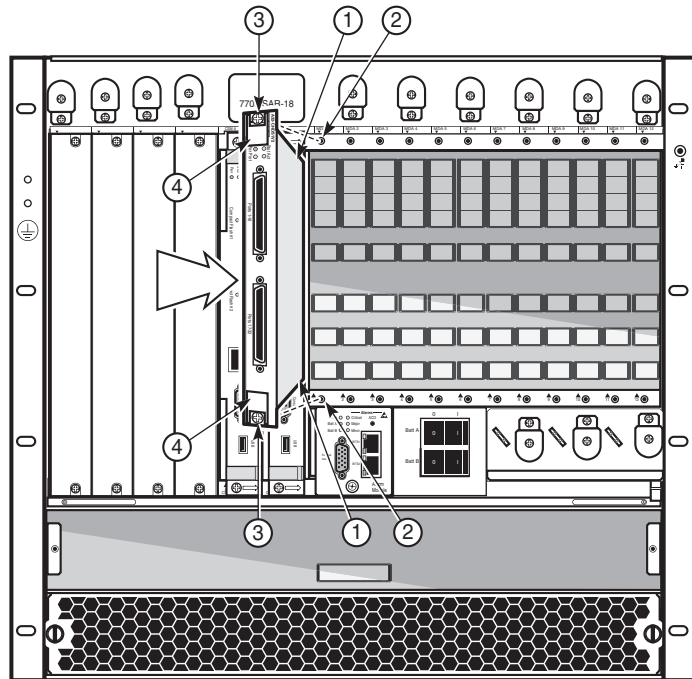
21530

Table 4: 16-port T1/E1 ASAP Adapter Card and 32-port T1/E1 ASAP Adapter Card Installation and Removal Features

Key	Description
1	Slot guide
2	Threaded receptacle
3	Captive screw
4	Ejector lever

Tools required:

- torque driver for Phillips screws

To install an adapter card:

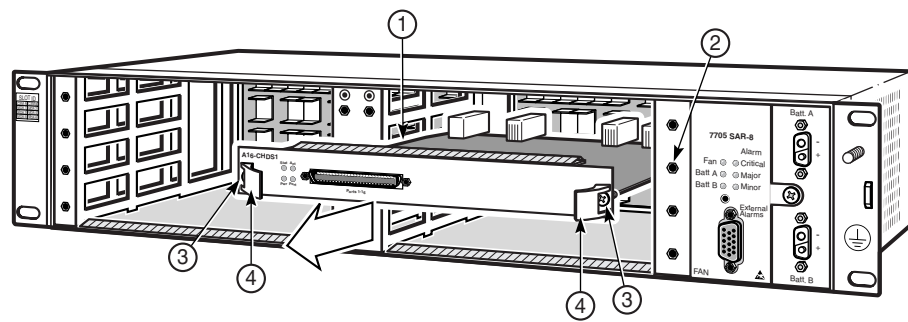**Step 1.** Remove the adapter card from the packaging and place on an anti-static work surface. Avoid touching the board components and connector pins.

Step 2. With the ejector levers rotated inward, hold the adapter card by the levers, align the card with the slot guides, and slide the adapter card into the slot.

Step 3. Press the adapter card firmly into the slot. Make sure that the card connectors are seated in the backplane connectors.

Step 4. Tighten the captive screws to secure the card. Do not over-tighten. The recommended torque is 3 to 4 lbf-in (0.34 to 0.45 N·m).

Step 5. Check the Power LED on the adapter card faceplate. If the adapter card is properly inserted and the 7705 SAR-8 or 7705 SAR-18 has valid power, the Power LED is lit blue. See LED Descriptions for a description of LED activity.

Removing and Replacing an Adapter Card

Before you remove and replace an adapter card, see Removing an Adapter Card Configuration.

Figure 8 illustrates removing a 16-port T1/E1 ASAP Adapter card version 1 from a 7705 SAR-8. Figure 9 illustrates removing a 32-port T1/E1 ASAP Adapter card from a 7705 SAR-18. Table 4 describes the 16-port T1/E1 ASAP Adapter card and 32-port T1/E1 ASAP Adapter card removal features.

Figure 8: Removing a 16-port T1/E1 ASAP Adapter Card from a 7705 SAR-8

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Figure 9: Removing a 32-port T1/E1 ASAP Adapter Card from a 7705 SAR-18
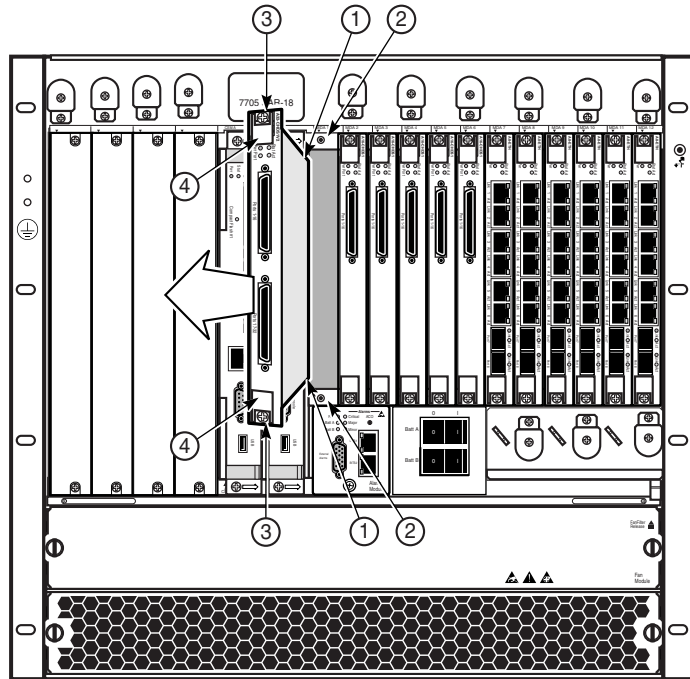
21531

Tools required:

- #2 Phillips screwdriver
- torque driver for Phillips screws

To remove and replace an adapter card:

Step 1. If you are replacing the adapter card, unpack the replacement adapter card from the protective packaging and place the card on an anti-static work surface. Avoid touching board components and connector pins.

Step 2. Disconnect all cable connections to the adapter card being removed.

Step 3. Use a Phillips screwdriver to loosen the captive screws and release the card.

> **Caution:** Do not try to remove the adapter card from the slot before the captive screws are loosened.

Step 4. Simultaneously rotate both ejector levers outward to release the adapter card connectors from the backplane.

Step 5. Hold the adapter card by the ejector levers and pull the card out of the slot.

Step 6. Place the adapter card on an anti-static surface.

Step 7. If you are not replacing the adapter card immediately, cover the empty adapter card slot with a filler plate. If you are replacing the adapter card, see Installing an Adapter Card.

Step 8. If you replaced the adapter card, reconnect all cable connections to the card.

LED Descriptions

In This Chapter

This chapter provides information on the following topics:

16-port T1/E1 ASAP Adapter Card and 32-port T1/E1 ASAP Adapter Card LEDs

Figure 10 shows the LEDs on the 16-port T1/E1 ASAP Adapter Card version 1. Figure 11 shows the LEDs on the 16-port T1/E1 ASAP Adapter Card version 2. Figure 12 shows the LEDs on the 32-port T1/E1 ASAP Adapter card. Table 5 describes the LEDs on the adapter cards.

Figure 10: 16-port T1/E1 ASAP Adapter Card Version 1 LEDs
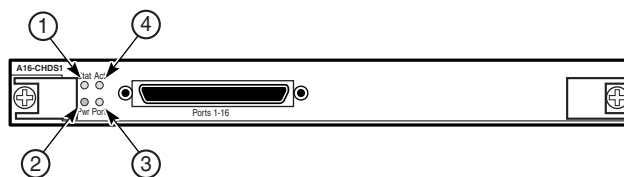
21534

Figure 11: 16-port T1/E1 ASAP Adapter Card Version 2 LEDs

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Figure 12: 32-port T1/E1 ASAP Adapter Card LEDs
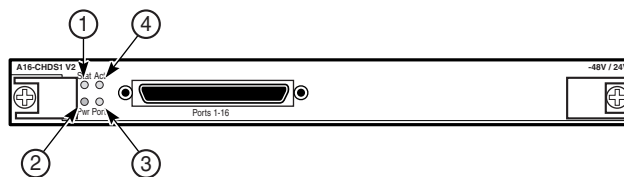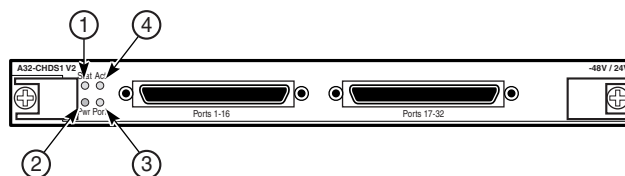
21533

Table 5: 16-port T1/E1 ASAP Adapter Card and 32-port T1/E1 ASAP Adapter Card LEDs

Key	Label	Description
1	Stat(us)	**Green (blinking):** Initializing **Green (solid):** Operationally up, administratively up **Amber:** Operationally down, administratively up; or, hardware booting up **Off:** Administratively down, operationally down
2	Pwr	**Blue:** Valid power **Unlit:** No power or faulty power
3	Port	**Green (solid):** All ports up **Amber (solid):** At least one configured port has no link **Amber (blinking):** At least one configured port is in a loopback state **Unlit:** All ports disabled or shut down
4	Act(ive)	**Green (solid)**: Card is active **Green (blinking):** Card is in standby **Unlit:** No link; operationally down; disabled or shut down

LED Descriptions

T1/E1 Cable Pinout Assignments

In This Chapter

There are two types of T1/E1 cable available for the 16-port T1/E1 ASAP Adapter card and 32-port T1/E1 ASAP Adapter Card. The pinout assignments described in this chapter are:

- 68-pin AMP to 68-pin AMP T1/E1 Cable — Pinout Assignments on page 36
- 68-pin AMP to Open-ended Wire T1/E1 Cable — Pinout Assignments on page 40

68-pin AMP to 68-pin AMP T1/E1 Cable — Pinout Assignments

Figure 13 shows the 68-pin AMP to 68-pin AMP T1/E1 cable used with the 16-port T1/E1 ASAP Adapter card and 32-port T1/E1 ASAP Adapter card; Table 6 describes the cable pinout assignments.

➡️ **Notes:**
- The Tx and Rx references in Table 6 are from the point of view of the port, where Tx = output from the card and Rx = input to the card.
- A second cable used with the 32-port T1/E1 ASAP Adapter card provides connections to ports 17 to 32 in the same order as ports 1 to 16 for the first cable.

The cable is 3.25 ft (1 m) long. The connectors at each end of the cable have identical pinout assignments. Pins 1, 34, 35, and 68 are ground connections. The connectors are attached to the cable such that when connected to a card or distribution panel, the cable can run to the left or the right side depending on which connector is used. The T1/E1 cable is available from Alcatel-Lucent.

Figure 13: 68-pin AMP to 68-pin AMP Cable
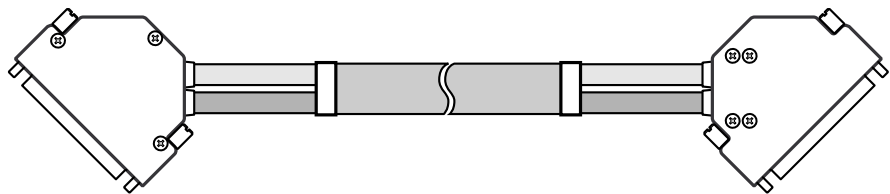
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Table 6: 68-pin AMP to 68-pin AMP T1/E1 Cable Pinout Assignments

Port	Cable (Tx or Rx)	Pin	Tx/Rx Tip/Ring
GND		1, 34, 35, 68	
1	Tx	2	Tx Tip
		36	Tx Ring
	Rx	3	Rx Tip
		37	Rx Ring

Table 6: 68-pin AMP to 68-pin AMP T1/E1 Cable Pinout Assignments (Continued)

Port	Cable (Tx or Rx)	Pin	Tx/Rx Tip/Ring
2	Tx	4	Tx Tip
		38	Tx Ring
	Rx	5	Rx Tip
		39	Rx Ring
3	Tx	6	Tx Tip
		40	Tx Ring
	Rx	7	Rx Tip
		41	Rx Ring
4	Tx	8	Tx Tip
		42	Tx Ring
	Rx	9	Rx Tip
		43	Rx Ring
5	Tx	10	Tx Tip
		44	Tx Ring
	Rx	11	Rx Tip
		45	Rx Ring
6	Tx	12	Tx Tip
		46	Tx Ring
	Rx	13	Rx Tip
		47	Rx Ring
7	Tx	14	Tx Tip
		48	Tx Ring
	Rx	15	Rx Tip
		49	Rx Ring
8	Tx	16	Tx Tip
		50	Tx Ring
	Rx	17	Rx Tip
		51	Rx Ring

Table 6: 68-pin AMP to 68-pin AMP T1/E1 Cable Pinout Assignments (Continued)

Port	Cable (Tx or Rx)	Pin	Tx/Rx Tip/Ring
9	Tx	18	Tx Tip
		52	Tx Ring
	Rx	19	Rx Tip
		53	Rx Ring
10	Tx	20	Tx Tip
		54	Tx Ring
	Rx	21	Rx Tip
		55	Rx Ring
11	Tx	22	Tx Tip
		56	Tx Ring
	Rx	23	Rx Tip
		57	Rx Ring
12	Tx	24	Tx Tip
		58	Tx Ring
	Rx	25	Rx Tip
		59	Rx Ring
13	Tx	26	Tx Tip
		60	Tx Ring
	Rx	27	Rx Tip
		61	Rx Ring
14	Tx	28	Tx Tip
		62	Tx Ring
	Rx	29	Rx Tip
		63	Rx Ring
15	Tx	30	Tx Tip
		64	Tx Ring
	Rx	31	Rx Tip
		65	Rx Ring

Table 6: 68-pin AMP to 68-pin AMP T1/E1 Cable Pinout Assignments (Continued)

Port	Cable (Tx or Rx)	Pin	Tx/Rx Tip/Ring
16	Tx	32	Tx Tip
		66	Tx Ring
	Rx	33	Rx Tip
		67	Rx Ring

68-pin AMP to Open-ended Wire T1/E1 Cable — Pinout Assignments

Figure 14 show the 68-pin AMP to open-ended wire T1/E1 cable used with the 16-port T1/E1 ASAP Adapter card and 32-port T1/E1 ASAP Adapter Card; Table 8 describes the cable features. The T1/E1 cable consists of two cables: one for transmit (Tx) wires and another for receive (Rx) wires. Tx+ and Rx+ are tip connections. Tx- and Rx- are ring connections. Table 9 provides the pinout assignments for a 28 AWG wire and Table 10 provides the pinout assignments for a 26 AWG wire. Pins 1, 34, 35, and 68 are ground connections and are connected to the braided shield of the cable.

Notes:
- The Tx and Rx references in Table 9 and Table 10 are from the point of view of the port, where Tx = output from the card and Rx = input to the card.
- A second cable used with the 32-port T1/E1 ASAP Adapter card provides connections to ports 17 to 32 in the same order as ports 1 to 16 for the first cable.

The open-ended wire T1/E1 cable is available from Alcatel-Lucent in 28 AWG and 26 AWG and in lengths of 49 ft (15 m) or 98 ft (30 m). Use 28 AWG for installations using 28 AWG-compliant punch-down blocks, wire-wrap posts, or screw-down terminals. In general, 26 AWG is the standard AWG used for installations.

Tx and Rx wires should connect to a terminal block.

Within the T1/E1 cable, there are two cables: Transmit (Tx) and Receive (Rx). For 28 AWG, each Tx and Rx cable consists of 16 twisted pairs. For 26 AWG, each Tx and Rx cable consists of unique "quads", which are groupings of four wires.

To identify cable quads for 26 AWG wire:

Step 1. Identify the Transmit (Tx) and Receive (Rx) cables. The Transmit cable is labeled "TX", and the Receive cable is labeled "RX".

Step 2. For each Tx and Rx cable, strip the end of the outer jacket of the cable. Note that the wires are twisted in groups of four (quads), each quad containing one white wire, one turquoise wire, one violet wire, and one uniquely colored wire. The uniquely colored wire identifies the quad number, and the same color is used for both the Tx and the Rx cables. See Table 7 for quad identification wire colors.

Step 3. For each Tx and Rx cable, after identifying the quads by color, label the quads as Transmit 1 to 8 and Receive 1 to 8. Perform this step before untwisting the wires.

Note: To maintain signal integrity, wires should not be untwisted more than 0.5 in. (13 mm).

Table 7: Quad Identification Wire Color

Quad Number	Unique Wire Color	Identified
1	Blue	❑
2	Orange	❑
3	Green	❑
4	Brown	❑
5	Gray	❑
6	Red	❑
7	Black	❑
8	Yellow	❑

Figure 14: 68-pin AMP to Open-ended Wire T1/E1 Cable
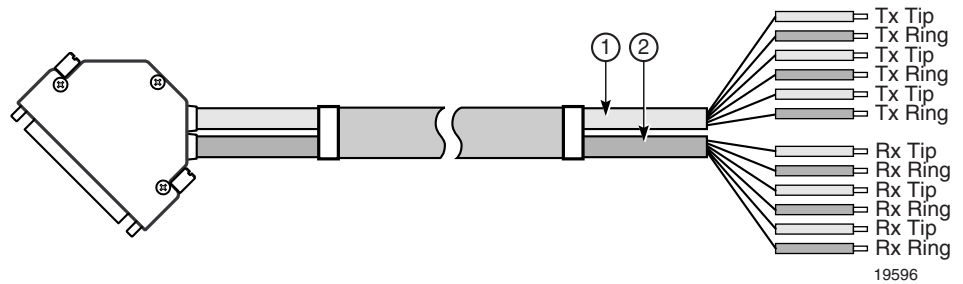
Table 8: 68-pin AMP to Open-ended Wire T1/E1 Cable Features

Key	Description
1	Transmit cable
2	Receive cable

Table 9: 68-pin AMP to Open-ended Wire Pinout Assignments — 28 AWG

Port	Cable (Tx or Rx)	Tip/Ring	28 AWG Color	68-pin AMP Pin	Done
GND				1, 34, 35, 68	❑
1	Tx	Tip	White	2	❑
		Ring	Blue	36	❑
	Rx	Tip	White	3	❑
		Ring	Blue	37	❑
2	Tx	Tip	White	4	❑
		Ring	Orange	38	❑
	Rx	Tip	White	5	❑
		Ring	Orange	39	❑
3	Tx	Tip	White	6	❑
		Ring	Green	40	❑
	Rx	Tip	White	7	❑
		Ring	Green	41	❑
4	Tx	Tip	White	8	❑
		Ring	Brown	42	❑
	Rx	Tip	White	9	❑
		Ring	Brown	43	❑
5	Tx	Tip	White	10	❑
		Ring	Gray	44	❑
	Rx	Tip	White	11	❑
		Ring	Gray	45	❑
6	Tx	Tip	Yellow	12	❑
		Ring	Blue	46	❑
	Rx	Tip	Yellow	13	❑
		Ring	Blue	47	❑
7	Tx	Tip	Yellow	14	❑
		Ring	Orange	48	❑

**Table 9: 68-pin AMP to Open-ended Wire Pinout
Assignments — 28 AWG (Continued)**

Port	Cable (Tx or Rx)	Tip/Ring	28 AWG Color	68-pin AMP Pin	Done
	Rx	Tip	Yellow	15	❏
		Ring	Orange	49	❏
8	Tx	Tip	Yellow	16	❏
		Ring	Green	50	❏
	Rx	Tip	Yellow	17	❏
		Ring	Green	51	❏
9	Tx	Tip	Yellow	18	❏
		Ring	Brown	52	❏
	Rx	Tip	Yellow	19	❏
		Ring	Brown	53	❏
10	Tx	Tip	Yellow	20	❏
		Ring	Gray	54	❏
	Rx	Tip	Yellow	21	❏
		Ring	Gray	55	❏
11	Tx	Tip	Violet	22	❏
		Ring	Blue	56	❏
	Rx	Tip	Violet	23	❏
		Ring	Blue	57	❏
12	Tx	Tip	Violet	24	❏
		Ring	Orange	58	❏
	Rx	Tip	Violet	25	❏
		Ring	Orange	59	❏
13	Tx	Tip	Violet	26	❏
		Ring	Green	60	❏
	Rx	Tip	Violet	27	❏
		Ring	Green	61	❏
14	Tx	Tip	Violet	28	❏
		Ring	Brown	62	❏

**Table 9: 68-pin AMP to Open-ended Wire Pinout
Assignments — 28 AWG (Continued)**

Port	Cable (Tx or Rx)	Tip/Ring	28 AWG Color	68-pin AMP Pin	Done
	Rx	Tip	Violet	29	❏
		Ring	Brown	63	❏
15	Tx	Tip	Violet	30	❏
		Ring	Gray	64	❏
	Rx	Tip	Violet	31	❏
		Ring	Gray	65	❏
16	Tx	Tip	Black	32	❏
		Ring	Blue	66	❏
	Rx	Tip	Black	33	❏
		Ring	Blue	67	❏

Note: Tip connections are positive (+), and Ring connections are negative (-)

Table 10: 68-pin AMP to Open-ended Wire Pinout Assignments — 26 AWG

| Quad | 26 AWG Color | Port | Tx Cable | | | Rx Cable | | |
			Tip/Ring	68-pin AMP Pin	Done	Tip/Ring	68-pin AMP Pin	Done
		GND		34, 68	❏		1, 35	❏
1	White	1	Tip	2	❏	Tip	3	❏
1	BLUE	1	Ring	36	❏	Ring	37	❏
1	Turquoise	2	Tip	4	❏	Tip	5	❏
1	Violet	2	Ring	38	❏	Ring	39	❏
2	White	3	Tip	6	❏	Tip	7	❏
2	ORANGE	3	Ring	40	❏	Ring	41	❏
2	Turquoise	4	Tip	8	❏	Tip	9	❏
2	Violet	4	Ring	42	❏	Ring	43	❏
3	White	5	Tip	10	❏	Tip	11	❏
3	GREEN	5	Ring	44	❏	Ring	45	❏
3	Turquoise	6	Tip	12	❏	Tip	13	❏
3	Violet	6	Ring	46	❏	Ring	47	❏
4	White	7	Tip	14	❏	Tip	15	❏
4	BROWN	7	Ring	48	❏	Ring	49	❏
4	Turquoise	8	Tip	16	❏	Tip	17	❏
4	Violet	8	Ring	50	❏	Ring	51	❏
5	White	9	Tip	18	❏	Tip	19	❏
5	GRAY	9	Ring	52	❏	Ring	53	❏
5	Turquoise	10	Tip	20	❏	Tip	21	❏
5	Violet	10	Ring	54	❏	Ring	55	❏
6	White	11	Tip	22	❏	Tip	23	❏
6	RED	11	Ring	56	❏	Ring	57	❏
6	Turquoise	12	Tip	24	❏	Tip	25	❏

**Table 10: 68-pin AMP to Open-ended Wire Pinout
Assignments — 26 AWG (Continued)**

Quad	26 AWG Color	Port	Tx Cable			Rx Cable		
			Tip/Ring	68-pin AMP Pin	Done	Tip/Ring	68-pin AMP Pin	Done
6	Violet	12	Ring	58	❑	Ring	59	❑
7	White	13	Tip	26	❑	Tip	27	❑
7	BLACK	13	Ring	60	❑	Ring	61	❑
7	Turquoise	14	Tip	28	❑	Tip	29	❑
7	Violet	14	Ring	62	❑	Ring	63	❑
8	White	15	Tip	30	❑	Tip	31	❑
8	YELLOW	15	Ring	64	❑	Ring	65	❑
8	Turquoise	16	Tip	32	❑	Tip	33	❑
8	Violet	16	Ring	66	❑	Ring	67	❑

Notes:

- Wire colors that are entirely capitalized uniquely identify the quad; see Table 7 for more information
- Tip connections are positive (+), and Ring connections are negative (-)

Customer documentation and product support

Customer documentation

http://www.alcatel-lucent.com/myaccess
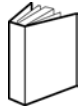
Product manuals and documentation updates are available at alcatel-lucent.com. If you are a new user and require access to this service, please contact your Alcatel-Lucent sales representative.

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