Alcatel-Lucent 7705

SERVICE AGGREGATION ROUTER | RELEASE 2.1

8-PORT ETHERNET 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 an 8-port Ethernet Adapter card.

There are two versions of the 8-port Ethernet Adapter card. The two versions are identical except that version 2 adds support for Synchronous Ethernet as a timing source, has more memory for storage of MPLS labels, and supports a +24 VDC variant.

Each 8-port Ethernet Adapter card has six RJ-45 ports and two small form-factor pluggable (SFP) ports on its faceplate. The six RJ-45 ports are 10/100 Mb/s-capable ports that support autosense and autonegotiation.The two SFP ports are for 10/100/Gigabit Ethernet SFPs (optical or electrical) and T3 SFPs.

SFPs are hot-swappable input/output devices that plug into the adapter card ports, linking the ports to fiber-optic or copper networks. Refer to SFPs for a list of supported SFP modules.

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.

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, user services, and Operations, Administration and Maintenance (OAM) tools.
- 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.

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.

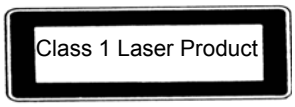
Audience

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 products are listed in the Class 1 laser adapter card documents. Only approved Class 1 replaceable laser transceivers should be used with those products.

Technical Support

If you purchased a service agreement for your 7705 SAR-8 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, contact your welcome center at:

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

Installing Adapter Cards

In This Chapter

This chapter provides information about installing and removing the adapter cards in the 7705 SAR-8.

This chapter provides information on the following topics:

Provisioning Requirements

To configure cards and ports, you must be able to access the 7705 SAR-8 by console or Telnet connection. Refer to the 7705 SAR-8 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).

Provision components in the following order:

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

Ethernet Card Versions

There are two versions of the 8-port Ethernet Adapter card. The two versions are identical except that version 2 adds support for Synchronous Ethernet as a timing source, has more memory for storage of MPLS labels (more label space), and supports a +24 VDC variant. For more information on Synchronous Ethernet, see the 7705 SAR OS Basic System Configuration Guide.

The CLI identifiers for the two versions are `a8-eth` and `a8-ethv2`.

Note: The electrical SFP (part number 3HE00062AA) does not support Synchronous Ethernet when used with version 2 of the 8-port Ethernet Adapter card. For more information, refer to the 7705 SAR OS Basic System Configuration Guide. For a list of supported SFPs, see SFP Support.

Component Power Consumption

Table 2 lists the power consumption for the chassis, CSM, and 8-port Ethernet Adapter card.

Table 2: Component Power Consumption

Component	Conservative Estimate (Watts)
SAR-8 chassis (unpopulated, all fans operating)	28 W
CSM	17 W
8-port Ethernet Adapter card	20 W
8-port Ethernet Adapter card, version 2	20 W

Refer to the 7705 SAR-8 Installation Guide for more information on the power consumption of other components.

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 8-port Ethernet Adapter cards in slots MDA 1 and 2. Six 8-port Ethernet Adapter cards can be configured on a 7705 SAR-8 chassis.

	Command Syntax	**Example**
Step 1.	`card` *`slot-number`*	`card 1`
Step 2.	`card-type` *`card-type`*	`card-type iom-1g`
	Note: The *slot-number* is always 1 and the *card-type* is always iom-1g.	
Step 3.	`mda` *`mda-number`*	`mda 1`
Step 4.	`mda-type` *`mda-type`*	`mda-type a8-eth`
Step 5.	`exit`	`exit`

To provision an additional adapter card, continue the configuration process with Step 6:

Step 6.	`mda` *`mda-number`*	`mda 2`
Step 7.	`mda-type` *`mda-type`*	`mda-type a8-eth`
Step 8.	`exit`	`exit`

Configuration Example

The following example displays the `card`, `card-type`, `mda` and `mda-type` commands to specify the IOM as an `iom-1g` type, and provision 8-port Ethernet Adapter cards in slots MDA 1 and 2.

```
ALU-1>config# card 1
ALU-1>config>card# card-type iom-1g
ALU-1>config>card# mda 1
ALU-1>config>card>mda# mda-type a8-eth
ALU-1>config>card>mda# exit
ALU-1>config>card# mda 2
ALU-1>config>card>mda# mda-type a8-eth
ALU-1>config>card>mda# exit
```

Sample Output

Use the `config>info` command to display card configuration information:

```
ALU-1>config# info
. . .
----------------------------------------------
echo "Card Configuration "
#----------------------------------------
 card 1
        card-type iom-1g
        mda 1
            mda-type a8-eth
        exit
        mda 2
            mda-type a8-eth
        exit
 exit
----------------------------------------------
ALU-1>config#
```

Use the `config>show card state` command to display administrative and operational states for all cards:

```
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-1g           iom-1g           up    up            6
1/1    a8-eth           a8-eth           up    up            8
1/2    a8-eth                            down  provisioned   8
A      csm-1g           csm-1g           up    up                      Active
B      csm-1g                            up    down                    Standby
===============================================================================
ALU-1>config#
```

Use the `config>show mda` command to display provisioned adapter card information:

```
ALU-1>config# show mda

===============================================================================
MDA Summary
===============================================================================
Slot  Mda   Provisioned           Equipped             Admin     Operational
            Mda-type             Mda-type             State     State
-------------------------------------------------------------------------------
1     1     a8-eth               a8-eth               up        up
      2     a8-eth                                    down      provisioned
===============================================================================
ALU-1>config#
```

Installation Procedures

Warnings and Notes

Dangers:

- Invisible laser radiation can be emitted from an adapter card's port apertures when no cable is connected. Avoid exposure and do not stare into open apertures.
- Always assume that fiber-optic cables are connected to a light source.

Warnings:

- Electrostatic discharge (ESD) damage can occur if adapter cards are mishandled. Always wear an ESD-preventive wrist or ankle strap and always connect an ESD strap to a nearby ground point that is connected to the site grounding point when working with an adapter card. Typical ground points include the ground stud on the 7705 SAR-8 mounting bracket, or a properly grounded rack or work bench.
- Always place components on an anti-static surface.
- Do not power up a 7705 SAR-8 before verifying that all common equipment (chassis, power, cooling, and grounding) is connected properly and that the fan module and all cards in the chassis 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.
- Use only approved small form-factor pluggable (SFP) fiber-optic devices in adapter card ports.
- 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.

Notes:

- Ports cannot be configured until the adapter card is provisioned.
- Services cannot be provisioned until the ports are configured.
- Adapter card slot numbers are MDA 1 through MDA 6.

Installing an Adapter Card

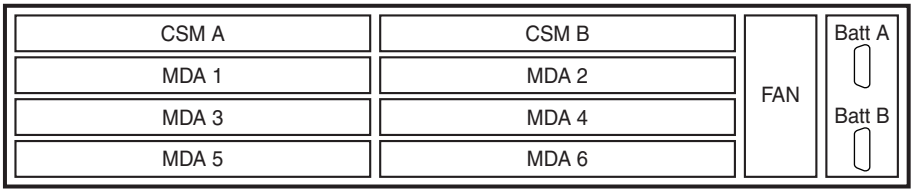
Version 2 of the 8-port Ethernet Adapter card is available in either a -48 VDC variant or a +24 VDC variant. Version 1 supports -48 VDC only.

If the 7705 SAR-8 is used for +24 VDC operation, +24 VDC variants of the Fan module, CSM, T1/E1 ASAP Adapter card, and Ethernet Adapter card must be installed in the chassis.

The Fan module and all cards in the chassis must have the same voltage type.

A maximum of six 8-port Ethernet Adapter cards may be installed on the 7705 SAR-8 in MDA slots 1 through 6. Figure 1 identifies the location of the MDA slots. Figure 2 illustrates the installation of an adapter card. Ejector levers help install and remove the adapter card; captive screws secure the card in place.

Figure 1: 7705 SAR-8 Slot Identification



The 8-port Ethernet Adapter card has six RJ-45 ports for copper connections and two SFP ports for fiber or copper connectivity via SFP modules. Table 4 lists the Alcatel-Lucent approved SFP modules supported by the 8-port Ethernet Adapter card. For more information on installing an SFP, see SFPs.

Refer to Connector and LED Descriptions for information on the connectors and LEDs on the 8-port Ethernet Adapter card.

Figure 2: Installing an Adapter Card

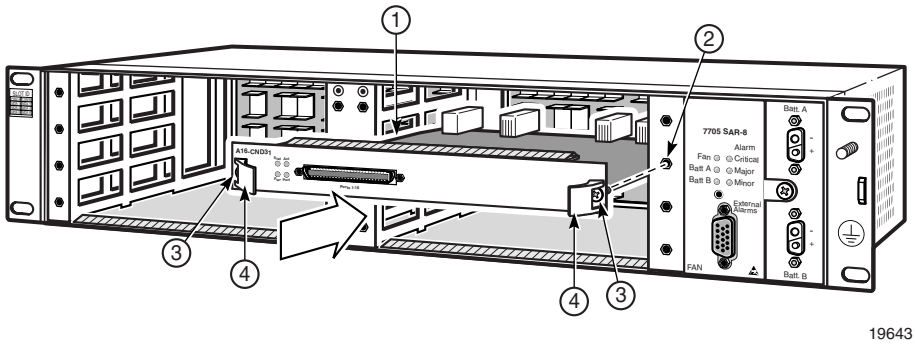


Table 3: Adapter Card Installation Features

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 (see Figure 2).

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 4-6 lbf.-in.

Step 5. Check the Power LED. If the adapter card is properly inserted and power to the 7705 SAR-8 has been applied, the Power LED is lit blue. See Connector and LED Descriptions for a description of LED activity.

Step 6. Install any SFPs and attach cables. Refer to SFPs for information on SFPs.

Removing and Replacing an Adapter Card

If you replace an adapter card with a different type, you must change the configuration to reflect the new adapter card type prior to removing the installed card. Each active port must be shut down before you shut down and remove an adapter card configuration (see Changing an Adapter Card Configuration). If you replace an adapter card with the same type, no configuration change is necessary. Refer to the 7705 SAR OS Interface Configuration Guide for details on configuring cards and ports.

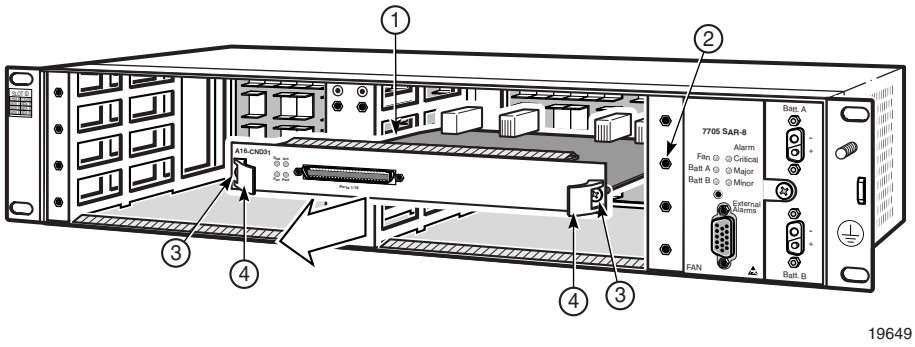
If you are removing the card, but not replacing it, install a filler plate over the empty slot.

Changing an Adapter Card Configuration

	Command Syntax	Example
Step 1.	`port` *`port-id`*	`port 1/1/5`
Step 2.	`shutdown`	`shutdown`
	Note: The `port>shutdown` command must be repeated for all enabled ports on the adapter card.	
Step 3.	`exit`	`exit`
Step 4.	`card` *`slot-number`*	`card 1`
Step 5.	`mda` *`mda-slot`*	`mda 1`
Step 6.	`shutdown`	`shutdown`
Step 7.	`exit`	`exit`
Step 8.	`no mda` *`mda-slot`*	`no mda 1`
Step 9.	`mda` *`mda-slot`*	`mda 1`
Step 10.	`mda-type` *`mda-type`*	`mda a8-eth`
Step 11.	`no shutdown`	`no shutdown`
Step 12.	`exit`	`exit`

Figure 3 illustrates removing an adapter card. Table 3 identifies the installation features.

Figure 3: Removing an Adapter Card



Tools required:

- Phillips screwdriver
- torque driver for Phillips screws

To remove and replace an adapter card:

Step 1. If you are replacing an adapter card with a different type, change the configuration to reflect the new adapter card type. See Changing an Adapter Card Configuration.

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

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. Immediately install a replacement adapter card in the slot or cover the slot with a filler plate.

Step 8. Tighten the captive screws to secure the card or filler plate. Do not over-tighten. The recommended torque is 4-6 lbf.-in.

Step 9. Check the Power LED on the adapter card faceplate. If the chassis is powered **ON**, the Power LED on the adapter card is lit blue. Refer to 8-port Ethernet Adapter Card Connectors and LEDs for more information on the LEDs.

Step 10. If you replaced the adapter card, reconnect all cable connections to the card.

SFPs

In This Chapter

This chapter provides information about installing and removing SFP transceivers on adapter card ports that support these devices.

This chapter provides information on the following topics:

Installing and Removing SFPs

Warnings and Notes

Danger:

- Invisible laser radiation can be emitted from an adapter card's or SFP's port apertures when no cable is connected. Avoid exposure and do not stare into open apertures.
- Always assume that fiber-optic cables are connected to a light source.

Warning:

- Before using the optics on this adapter card, verify that the optical path is in compliance with the parameters of the optical components. In particular, pay close attention to any minimum attenuation requirements for the optics. If minimum attenuation requirements are not met, the optical receiver components may be permanently damaged. Contact the appropriate technical support center for assistance and further information about your Alcatel-Lucent products.
- Ensure that the ports on an SFP are protected by an SFP protective plug when you install or remove an optical SFP. Only remove the plug when you are ready to install an optical cable.
- Electrostatic discharge (ESD) damage can occur if adapter cards are mishandled. Always wear an ESD-preventive wrist or ankle strap and always connect an ESD strap to a nearby ground point that is connected to the site grounding point when working with an adapter card. Typical ground points include the ground stud on the 7705 SAR-8 mounting bracket, or a properly grounded rack or work bench.
- Always place router components on an anti-static surface.
- Avoid bending fiber-optic cable beyond its minimum bend radius. Do not exceed the recommended 1.2 inches (30 mm) for fiber-optic cables.

Caution:

- Ensure that the connector on the fiber cable is protected by a dust cover until you are ready to attach the cable to an SFP.
- Ensure that protective plugs are installed on the SFPs if they are seated in the adapter card but are not attached to fiber cables.
- Always replace the dust cover on the connector of a fiber cable when the cable is disconnected from an SFP.

Notes:

- Discard SFPs according to all local laws and regulations.
- SFPs can be installed and replaced without disabling the interfaces or removing the adapter card from the 7705 SAR-8.
- SFPs are keyed to prevent incorrect insertion. If an SFP is not seated properly, remove it and confirm that the orientation is correct before reinserting it.

Fiber Cable Preparation

Clean the connector on the fiber cable before inserting it into the SFP to prevent transferring small particles and contaminating the transceiver.

If you switch SFPs from one port to another, ensure that you clean the fiber connectors before reinserting them.

Apply high standards when inspecting and cleaning fiber connectors. Use a “dry” cleaning method to clean fiber connectors.

Caution: Improper handling, cleaning, and inspection techniques can compromise the fiber connection, resulting in data transmission errors. Refer to Alcatel-Lucent Online Customer Support (OLCS) (http://www.alcatel-lucent.com/myaccess), under the 7705 SAR documentation, for the Optical Handling Reference Guide (part number 95-5795-01-00).

Locking Mechanisms

SFPs approved by Alcatel-Lucent can use different lock and release methods. Possible lock and release mechanisms include:

- locking handle—a locking handle or lever on the front of the SFP that you gently raise or lower to insert or remove the SFP from the port
- bail—a bar or latch in the front of the SFP that you pull down and outward to release the module
- tabs—tabs on the sides or bottom of the SFP that you press inward to release the module

SFP Support

Table 4 lists the Alcatel-Lucent approved SFPs for the 8-port Ethernet Adapter card.

Table 4: SFPs for the 8-port Ethernet Adapter Card

Part Number	Short Description	Media	Wavelength	Connector Type	Distance	Operating Temperatures
3HE00062AA	PBA GigE TX SFP Copper Module 1000BASE-T, Category 5, 10/100/1000 Mbps (1)	Copper	N/A	RJ-45	100 m	0° to 85°C (32° to 185°F)
3HE00027AA	PBA GigE SX SFP Optics Module - LC (1000BASE-SX)	Fiber	850 nm	LC	220 m	-20° to 85°C (-4° to 185°F)
3HE00028AA	PBA GigE LX SFP Optics Module - LC (1000BASE-LX)	Fiber	1310 nm	LC	10 km	-40° to 85°C (-40° to 185°F)
3HE00867AA	KIT GigE EX SFP Optics Module - LC (1000BASE-EX)	Fiber	1310 nm	LC	40 km	-40° to 85°C (-40° to 185°F)
3HE00029AA	PBA GigE ZX SFP Optics Module - LC (1000BASE-ZX)	Fiber	1550 nm	LC	70 km	-5° to 85°C (23° to 185°F)
3HE00024AA	PBA 100FX SFP Optics Module - LC	Fiber	1310 nm	LC	400 m (2) 2 km (3)	-40° to 85°C (-40° to 185°F)
3HE04524AA	100M LX SFP ROHS-6/6 Optics Module - LC - DDM 100BASE-FX Single Mode	Fiber	1310 nm	LC	10 km	-40° to 85°C (-40° to 185°F)
3HE00868AA	GigE BX10-U SFP Optics Module - LC 1000Base-BX-U Bidirectional	Fiber	Tx: 1310 nm Rx: 1490 nm	LC	10 km	-40° to 85°C (-40° to 185°F)
3HE00868AB	GigE BX10-D SFP Optics Module - LC 1000Base-BX-D Bidirectional	Fiber	Tx: 1490 nm Rx: 1310 nm	LC	10 km	-40° to 85°C (-40° to 185°F)

Table 4: SFPs for the 8-port Ethernet Adapter Card (Continued)

Part Number	Short Description	Media	Wavelength	Connector Type	Distance	Operating Temperatures
3HE04324AA	GigE BX40-U SFP ROHS-6/6 Optics Module - LC 1000Base-BX-U Bidirectional	Fiber	Tx: 1310 nm Rx: 1490 nm	LC	40 km	-40° to 85°C (-40° to 185°F)
3HE04324AB	GigE BX40-D SFP ROHS-6/6 Optics Module - LC 1000Base-BX-D Bidirectional	Fiber	Tx: 1490 nm Rx: 1310 nm	LC	40 km	-40° to 85°C (-40° to 185°F)
3HE04685AA	T3/E3 SFP	Copper	N/A	DIN 1.0/2.3	68.5 m	-40° to 65°C (-40° to 149°F)
3HE00070BA	GigE CWDM SFP Optics Module - LC	Fiber	1471 nm	LC	120 km	-5° to 85°C (23° to 185°F)
3HE00070BB	GigE CWDM SFP Optics Module - LC	Fiber	1491 nm	LC	120 km	-5° to 85°C (23° to 185°F)
3HE00070BC	GigE CWDM SFP Optics Module - LC	Fiber	1511 nm	LC	120 km	-5° to 85°C (23° to 185°F)
3HE00070BD	GigE CWDM SFP Optics Module - LC	Fiber	1531 nm	LC	120 km	-5° to 85°C (23° to 185°F)
3HE00070BE	GigE CWDM SFP Optics Module - LC	Fiber	1551 nm	LC	120 km	-5° to 85°C (23° to 185°F)
3HE00070BF	GigE CWDM SFP Optics Module - LC	Fiber	1571 nm	LC	120 km	-5° to 85°C (23° to 185°F)
3HE00070BG	GigE CWDM SFP Optics Module - LC	Fiber	1591 nm	LC	120 km	-5° to 85°C (23° to 185°F)
3HE00070BH	GigE CWDM SFP Optics Module - LC	Fiber	1611 nm	LC	120 km	-5° to 85°C (23° to 185°F)
3HE00070CA	GigE CWDM SFP ROHS-6/6 Optics Module - LC DDM	Fiber	1471 nm	LC	120 km	-40° to 85°C (-40° to 185°F)
3HE00070CB	GigE CWDM SFP ROHS-6/6 Optics Module - LC DDM	Fiber	1491 nm	LC	120 km	-40° to 85°C (-40° to 185°F)

Table 4: SFPs for the 8-port Ethernet Adapter Card (Continued)

Part Number	Short Description	Media	Wavelength	Connector Type	Distance	Operating Temperatures
3HE00070CC	GigE CWDM SFP ROHS-6/6 Optics Module - LC DDM	Fiber	1511 nm	LC	120 km	-40° to 85°C (-40° to 185°F)
3HE00070CD	GigE CWDM SFP ROHS-6/6 Optics Module - LC DDM	Fiber	1531 nm	LC	120 km	-40° to 85°C (-40° to 185°F)
3HE00070CE	GigE CWDM SFP ROHS-6/6 Optics Module - LC DDM	Fiber	1551 nm	LC	120 km	-40° to 85°C (-40° to 185°F)
3HE00070CF	GigE CWDM SFP ROHS-6/6 Optics Module - LC DDM	Fiber	1571 nm	LC	120 km	-40° to 85°C (-40° to 185°F)
3HE00070CG	GigE CWDM SFP ROHS-6/6 Optics Module - LC DDM	Fiber	1591 nm	LC	120 km	-40° to 85°C (-40° to 185°F)
3HE00070CH	GigE CWDM SFP ROHS-6/6 Optics Module - LC DDM	Fiber	1611 nm	LC	120 km	-40° to 85°C (-40° to 185°F)

Notes:
1. This electrical SFP (part number 3HE00062AA) does not support Synchronous Ethernet when used with version 2 of the 8-port Ethernet Adapter card. For more information, refer to the 7705 SAR OS Basic System Configuration Guide.
2. Half duplex, multimode fiber
3. Full duplex, multimode fiber

Bidirectional SFPs

SFPs 3HE00868AA and 3HE00868AB and SFPs 3HE04324AA and 3HE04324AB are bidirectional SFPs. The optical interface provides single-fiber, bidirectional connectivity operating at 1310 nm and 1490 nm wavelengths. One SFP must be installed at the near end and the other SFP must be installed at the far end of the link. To achieve connectivity, if the far-end SFP transmits at 1310 nm and receives at 1490 nm, the near-end SFP must transmit at 1490 nm and receive at 1310 nm.

T3/E3 SFP

The T3/E3 SFP is used to interconnect two 7705 SAR routers over a T3 physical interface. In Release 2.1, the E3 interface is not supported. The SFP can only operate with 7705 SAR routers at either end.

The T3/E3 SFP has two DIN 1.0/2.3 screw-on connectors. The SFP is supplied with two 1 m adapter cables with a 1.0/2.3 screw-type connector on one end and a female BNC connector on the other end. For information on connecting the SFP, refer to the 7705 SAR-8 Installation Guide.

The T3/E3 SFP is preconfigured with the settings listed in Table 5. These are the default settings and they cannot be changed.

Table 5: T3/E3 Configured Settings

Parameter	Configured Setting
Interface type	T3
Flow Control	Enabled
Tx clock source	LBT (line timed)
Line type	Framed C-bit
Protocol	GFP-F
VCAT Overhead	Disabled
FCS	Disabled
Scrambler	Enabled
GFP keepalive	Disabled
Line code	B3ZS

Table 5: T3/E3 Configured Settings (Continued)

Parameter	Configured Setting
FEAC code	Enabled
Line length	Up to 225 ft (68.5 m)

Note: The T3/E3 SFP appears as a DS3 SFP on the CLI and on the 5620 SAM.

Installing SFPs

To install an SFP:

Step 1. Remove the SFP from the packaging and place it on an anti-static work surface.

Step 2. Hold the SFP by its sides and insert it into the appropriate port until it clicks into place.

Step 3. For optical SFPs, remove the protective plug from the SFP port when you are ready to attach the fiber cable.

Removing and Replacing SFPs

When you are replacing an SFP, have the following parts ready:

- a replacement SFP
- protective plugs for the SFP and a dust cover for the fiber cable connector
- an anti-static mat or electrostatic bag

To replace an SFP:

Step 1. Disconnect the cable from the SFP connector.

Step 2. Place a protective plug in the SFP that is being removed.

Step 3. Release the locking mechanism on the SFP with your thumb and forefinger. See Locking Mechanisms for descriptions of the different SFP lock and release methods. Slide the SFP out of the port.

Step 4. Place the SFP on an anti-static mat or in an electrostatic bag.

Step 5. Install a replacement SFP into the adapter card port.

Step 6. Connect the fiber or copper cable, or if you are not immediately connecting a fiber cable, insert a protective plug into the SFP optical port and place a dust cover on the fiber cable connector.

Note: If you are not immediately replacing the SFP, leave the adapter card port empty. It is not necessary to install protective plugs in the ports on the adapter card.

Connector and LED Descriptions

In This Chapter

This chapter provides information on the following topics:

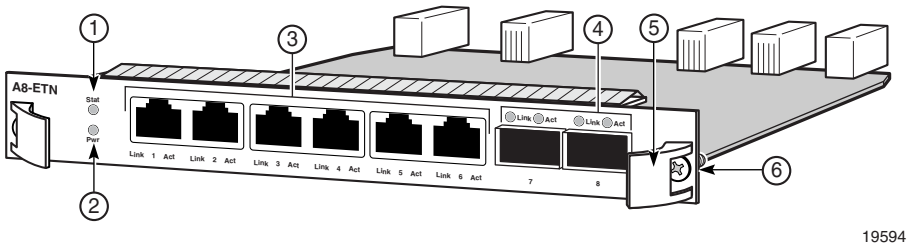
8-port Ethernet Adapter Card Connectors and LEDs

Figure 4 shows the connectors and LEDs on the 8-port Ethernet Adapter card. Table 6 describes the features on the card.

Figure 5 shows the pin orientation for the RJ-45 ports (ports 1 through 6). Table 7 identifies the pinout assignments.

Caution: This is a Class 1 laser product. Only approved Class 1 replaceable laser transceivers should be used on this product.

Figure 4: 8-port Ethernet Adapter Card Connectors and LEDs



Note: In Figure 4, port 1 is the left-most port on the card.

Table 6: 8-port Ethernet Adapter Card Features

Key	Label	Description
1	Stat(us)	**Green (blinking):** Initializing **Green (solid):** Operationally up, administratively up **Amber:** Operationally down, administratively up; or hardware booting up **Unlit:** Administratively down, shut down
2	Pwr	**Blue:** Valid power **Unlit:** No power or faulty power

Table 6: 8-port Ethernet Adapter Card Features (Continued)

Key	Label	Description
3	RJ-45 ports	The RJ-45 port number (1 through 6) is displayed below the port, between the Link and the Act(ivity) silkscreen labels.
	Link	**Green:** Link is up **Unlit:** No link; operationally down; disabled or shut down
	Act	**Amber (blinking):** active (receiving or transmitting) **Unlit:** Down or disabled
4	SFP ports	The SFP port number (7 or 8) is displayed below the port. The associated Link and Act(ivity) LEDs are located above the port.
	Link	**Green:** Valid communication link established **Unlit:** Disabled, shut down; SFP optics installed but no link present; no SFP
	Act	**Amber (blinking):** active (receiving or transmitting) **Unlit:** No activity
5	Ejector lever	Rotate the ejector levers inward to insert the adapter card in the slot and outward to release the card from the slot.
6	Captive screw	Tighten both captive screws to secure the adapter card; loosen both screws to remove the card.

Figure 5: RJ-45 Connector Pin Orientation

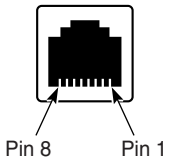


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Table 7: RJ-45 Port Pinouts – RJ-45 Female

Pin	Signal	Direction	Description
1	TX+	Output	Differential transmit data - positive
2	TX-	Output	Differential transmit data - negative
3	RX+	Input	Differential receive data - positive
4	NC	—	Not connected
5	NC	—	Not connected
6	RX-	Input	Differential receive data - negative
7	NC	—	Not connected
8	NC	—	Not connected

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.

Technical Support

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