



# Cisco 10005 ESR Fan Assembly Installation

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**March 30, 2001**

This installation note provides procedures for replacing the fan assembly in a Cisco 10005 edge services router (ESR).

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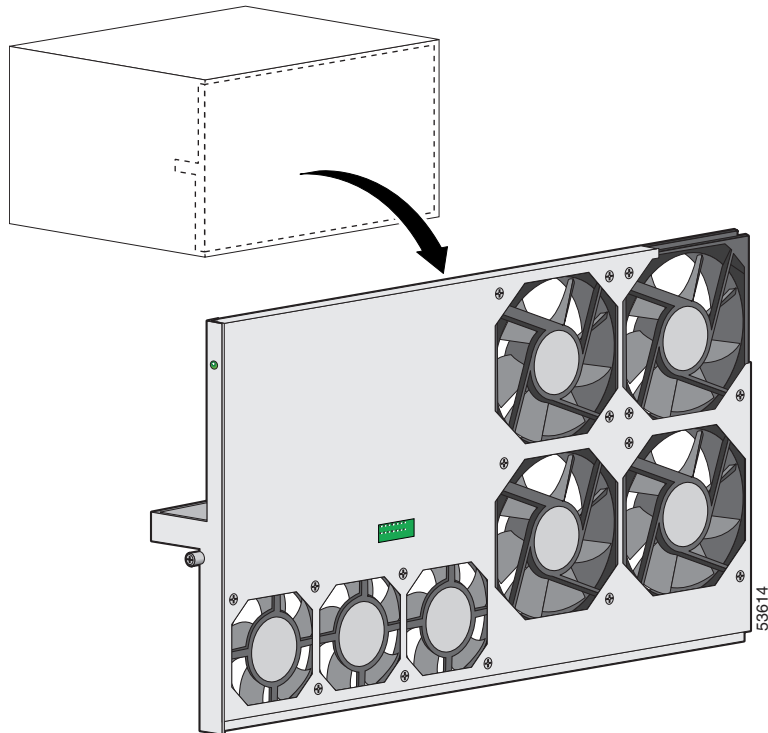
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**78-12654-01**

# Product Description

To supply cooling air to the chassis, the Cisco 10005 ESR uses a fan assembly (Figure 1) containing seven fans.

**Figure 1** Fan Assembly



The fan assembly is located on the left side of the chassis. It is accessible from the rear only. (From the rear, look for the fan assembly on the right side of the chassis.)

1. Seven internal fans draw cooling air into the right side of the chassis and direct it across the internal components to maintain an acceptable operating temperature.
2. The air is exhausted through openings in the left side of the chassis.

The fan assembly supports hot-swapping and can be replaced without interruption to system operation. However, to prevent overheating, do not operate the system without the fan unit for more than a few minutes.

**Note**

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The chassis contains an air filter. Replace or clean the air filter regularly, as described in the *Cisco 10005 ESR Hardware Overview and Maintenance Guide*, an online document available at Cisco.com.

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## Prerequisites and Preparation

Before you perform any of the procedures in this installation note, we recommend that you:

- Read the safety guidelines in the next section and review the electrical safety and ESD-prevention guidelines in the *Cisco 10005 ESR Hardware Installation Guide*.
- Ensure that you have all of the necessary tools and equipment (see the [“Required Tools and Equipment” section on page 6](#)).
- Have access to the following documents during the installation:
  - *Technology of Edge Aggregation: Cisco 10000 Series Edge Services Router* (shipped with your router and available for viewing or download at Cisco.com)
  - *Cisco 10005 ESR Hardware Installation Guide*
  - *Cisco 10000 Series ESR Troubleshooting Guide* (an online document available for viewing or download at Cisco.com)
  - *Cisco 10000 Series ESR Software Configuration Guide* (an online document available for viewing or download at Cisco.com)

## Safety Guidelines

Before you begin the installation or replacement procedure, review the safety guidelines in this section to avoid injuring yourself or damaging the equipment.

## Safety Warnings

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, may harm you. A warning symbol precedes each warning statement.

Before you install, configure, or perform maintenance on the router, review the documentation for the procedure you are about to perform, paying special attention to the safety warnings. If you need translations of the safety warnings, refer to the “Translated Safety Warnings” appendix of the *Cisco 10005 ESR Hardware Installation Guide*.



### Warning

**This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. (To see translations of the warnings that appear in this publication, refer to the appendix “Translated Safety Warnings” in the installation guide that accompanied this device.)**

### Waarschuwing

**Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen. (Voor vertalingen van de waarschuwingen die in deze publicatie verschijnen, kunt u het aanhangsel “Translated Safety Warnings” (Vertalingen van veiligheidsvoorschriften) in de installatiegids die bij dit toestel is ingesloten, raadplegen.**

### Varoitus

**Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. (Tässä julkaisussa esiintyvien varoitusten käännökset löydät tämän laitteen mukana olevan asennusoppaan liitteestä “Translated Safety Warnings” (käännetyt turvallisuutta koskevat varoitukset).)**

- Attention** Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures. Avant d'accéder à cet équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures courantes de prévention des accidents. Pour obtenir les traductions des mises en garde figurant dans cette publication, veuillez consulter l'annexe intitulée « Translated Safety Warnings » (Traduction des avis de sécurité) dans le guide d'installation qui accompagne cet appareil.
- Warnung** Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt. (Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise finden Sie im Anhang mit dem Titel "Translated Safety Warnings" (Übersetzung der Warnhinweise) in der diesem Gerät beiliegenden Installationsanleitung.)
- Avvertenza** Questo simbolo di avvertenza indica un pericolo. Si è in una situazione che può causare infortuni. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nell'appendice, "Translated Safety Warnings" (Traduzione delle avvertenze di sicurezza), del manuale d'installazione che accompagna questo dispositivo.
- Advarsel** Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du være oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. (Hvis du vil se oversettelser av de advarslene som finnes i denne publikasjonen, kan du se i vedlegget "Translated Safety Warnings" [Oversatte sikkerhetsadvarsler] i installasjonsveiledningen som ble levert med denne enheten.)

<b>Aviso</b>	<b>Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. (Para ver as traduções dos avisos que constam desta publicação, consulte o apêndice “Translated Safety Warnings” - “Traduções dos Avisos de Segurança”, no guia de instalação que acompanha este dispositivo).</b>
<b>¡Advertencia!</b>	<b>Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes. (Para ver traducciones de las advertencias que aparecen en esta publicación, consultar el apéndice titulado “Translated Safety Warnings,” en la guía de instalación que se acompaña con este dispositivo.)</b>
<b>Varning!</b>	<b>Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador. (Se förklaringar av de varningar som förekommer i denna publikation i appendix "Translated Safety Warnings" [Översatta säkerhetsvarningar] i den installationshandbok som medföljer denna anordning.)</b>

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## Required Tools and Equipment

You need the following tools and equipment to install a fan assembly:

- Number 2 phillips screwdriver
- Electrostatic discharge (ESD) preventive wrist or ankle strap with connection cord

# Replacing a Fan Assembly

This section describes how to replace a fan assembly in a Cisco 10005 chassis. It contains these procedures:

- [Removing and Replacing a Cisco 10005 Fan Assembly](#)
- [Troubleshooting Fan Assembly Installation](#)

## Removing and Replacing a Cisco 10005 Fan Assembly

Follow the steps below to replace the fan assembly. The fan assembly supports hot-swapping (for up to 2 minutes) and can be replaced without interruption to system operation.

The fan assembly is accessible from the rear of the chassis. It occupies a vertical slot on the right side of the unit (viewed from the rear).

**Caution**

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To prevent the system from overheating during this procedure, be sure that the replacement fan assembly is out of its box and packaging, so it is ready to install as soon as the defective module is removed.

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**Step 1**

Put on an antistatic wrist strap and connect the strap to the ESD jack on the front of the chassis or to a bare metal surface of the chassis.

**Step 2**

Move any interface cables away from the fan assembly (rear of chassis).

**Step 3**

Loosen the captive screw on the fan assembly and slide the assembly out of the chassis ([Figure 2](#)).

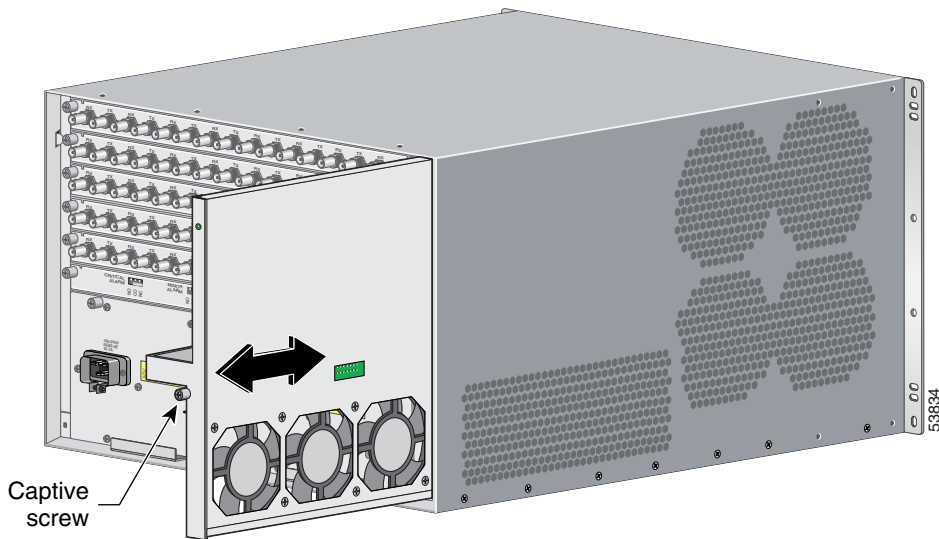
**Warning**

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**The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.**

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**Figure 2** Removing or Installing the Fan Assembly



**Step 4** Slide the new fan assembly into the chassis, being sure it makes a secure connection to the midplane.

If the fan assembly is operating properly, its Fan Status LED turns green and the fans start to turn.

If the Fan Status LED turns red, try reseating the fan assembly.

**Step 5** Tighten the captive screw on the fan assembly.

**Step 6** Rerun all interface cables through the cable management bracket.

# Troubleshooting Fan Assembly Installation

Table 1 provides instructions on solving problems with the fan assembly.

**Table 1 Troubleshooting the Fan Assembly**

Symptom	Steps to Take
Fan failure	If the Fan Status LED on the fan assembly turns red, reseal the fan assembly. If the LED remains red, replace the fan assembly.
System overheats	<p>Overheating can be caused by any of the following:</p> <ul style="list-style-type: none"> <li>• Failure of one or more fans (see “Fan failure” above).</li> <li>• Insufficient ventilation. <ul style="list-style-type: none"> <li>– The Cisco 10005 ESR is not designed for installation in an enclosed cabinet or an unventilated space.</li> <li>– Allow at least 3 inches (7.6 cm) of unobstructed space on each side of the chassis for intake and exhaust of air.</li> <li>– Install the chassis so that its air intake vents (on the right side) are well away from the exhaust vents of other devices.</li> <li>– Make sure that each card slot and power bay is filled with an appropriate module or covered with a blank faceplate. If the chassis is not fully enclosed, the flow of cooling air may be weakened or diverted.</li> </ul> </li> <li>• Excessively high ambient temperature. The Cisco 10005 ESR can function for short periods at temperatures up to 131°F (55°C). To assure stable operation, however, we recommend that you maintain the system’s environment within the range of 41°F to 104°F (5°C to 40°C).</li> </ul> <p>See the <i>Cisco 10000 Series ESR Troubleshooting Guide</i> for additional information.</p>

# FCC Class B Compliance

The equipment described in this manual generates and might radiate radio-frequency energy. If it is not installed in accordance with Cisco installation instructions, it might cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

Modifying the equipment without written authorization from Cisco might result in the equipment no longer complying with FCC requirements for Class A or Class B digital devices. In that event, your right to use the equipment might be limited by FCC regulations, and you might be required to correct any interference to radio or television communications at your own expense.

You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Cisco equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the equipment to one side or the other of the television or radio.
- Move the equipment farther away from the television or radio.
- Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

Modifications to this product not authorized by Cisco Systems, Inc. could void the FCC approval and negate your authority to operate the product.

# Related Documentation

This section lists the manuals in the Cisco 10000 series documentation set.

## Manuals for All Cisco 10000 Series Routers

- *Technology of Edge Aggregation: Cisco 10000 Series Edge Services Router*
- *Cisco 10000 Series ESR Performance Routing Engine Installation*
- *Cisco 10000 Series ESR OC-12 Packet Over SONET Line Card Installation*
- *Cisco 10000 Series ESR OC-12 ATM Line Card Installation*
- *Cisco 10000 Series ESR Single-Port Gigabit Ethernet Line Card Installation*
- *Cisco 10000 Series ESR Channelized OC-12 Line Card Installation*
- *Cisco 10000 Series ESR 6-Port Channelized T3 Line Card Installation*
- *Cisco 10000 Series ESR Channelized STM-1 Line Card Installation*
- Release notes for the Cisco 10000 series ESR

These documents, which are available at Cisco.com, are online only:

- *Cisco 10000 Series ESR Software Configuration Guide*
- *Cisco 10000 Series ESR Troubleshooting Guide*
- *Cisco 10000 Series ESR Useful Links*
- Cisco 10000 technical reference documents

## Hardware Documents for Cisco 10008 Routers

- *Cisco 10008 ESR Hardware Installation Guide*
- *Cisco 10008 ESR AC Power Entry Module Installation*
- *Cisco 10008 ESR DC Power Entry Module Installation*
- *Cisco 10008 ESR Blower Module Installation*

## Hardware Documents for Cisco 10005 Routers

- *Cisco 10005 ESR Hardware Installation Guide*
- *Cisco 10005 ESR Hardware Overview and Maintenance Guide* (online only)
- *Cisco 10005 ESR AC Power Supply Installation*

- *Cisco 10005 ESR DC Power Entry Module Installation*
- *Cisco 10005 ESR Fan Assembly Installation*

## Obtaining Documentation

The sections that follow provide sources for obtaining documentation from Cisco Systems.

### World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>

### Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

### Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products Marketplace:

[http://www.cisco.com/cgi-bin/order/order\\_root.pl](http://www.cisco.com/cgi-bin/order/order_root.pl)

- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:  
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS (6387).

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## Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

## Cisco.com

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To access Cisco.com, go to the following website:

<http://www.cisco.com>

## Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

### Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

<http://www.cisco.com/tac>

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

<http://www.cisco.com/register/>

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

<http://www.cisco.com/tac/caseopen>

## Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

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Use this document in conjunction with the documents listed in the “[Related Documentation](#)” section.

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