Cisco ASR 9000 Series Line Card Quick Reference Guide

The Cisco ASR 9000 Series Routers meet the regulatory compliance and safety approval requirements.

Note: Unless specified otherwise, the images are for only representational purposes.

For detailed safety information, see: Regulatory Compliance and Safety Information for the Cisco ASR 9000 Series Routers.

Safety Warnings

Failure to observe the safety warnings may result in serious injury to personnel or damage to the hardware.

For hardware installation documentation, see

Cisco ASR 9000 Series Aggregation Services Router Hardware Installation Guide

Cisco ASR 9000 Series Aggregation Services Router Ethernet Line Card Installation Guide

Cisco ASR 9000 Series Aggregation Services Router Overview and Reference Guide

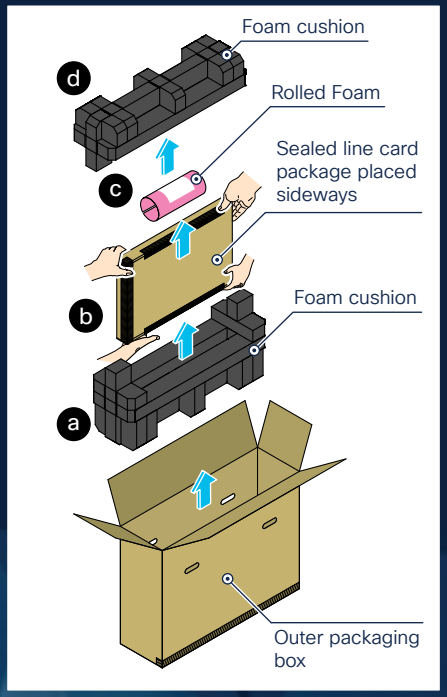
Topics

Cisco ASR 9000 Series Line Card

For packaging guidelines, see Page 6

Package Contents

- Foam Cushion
- Pink Antistatic Rolled Foam
- Sealed Line Card Package

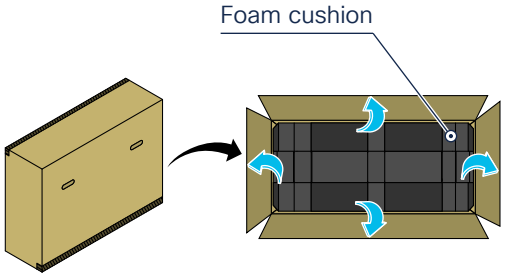


Caution!

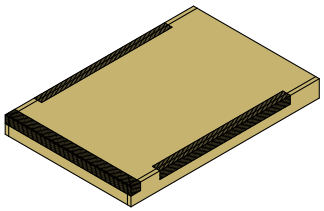
- For convenience and safety purposes, two persons should handle the line card.
- To avoid damage, place the line card horizontally on a flat antistatic surface. The outer packaging box contains an antistatic pink rolled foam that can be used for this purpose.
- Wear ESD gloves to unwrap the ESD bag, and remove the line card.

Unpacking the Line Card

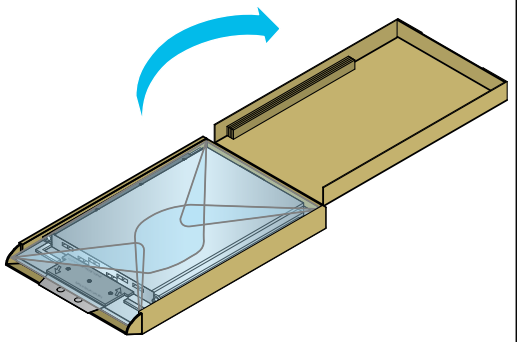
1. Open the seal on the outer packaging box. Remove the foam cushion.



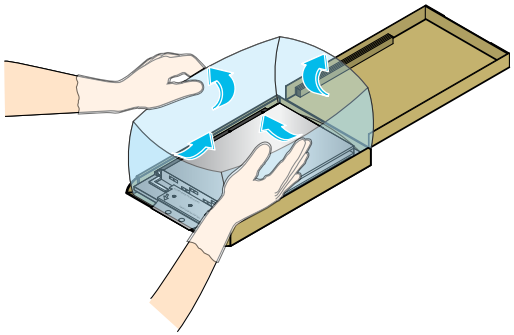
2. Lift the inner packaging box that contains the line card and place it on a flat surface.



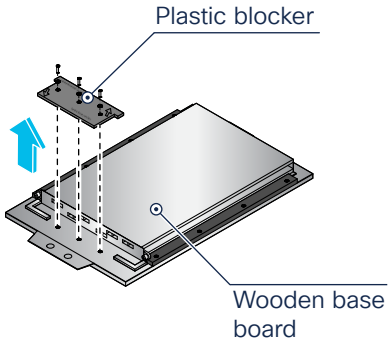
3. Open the seal of the inner packaging box.



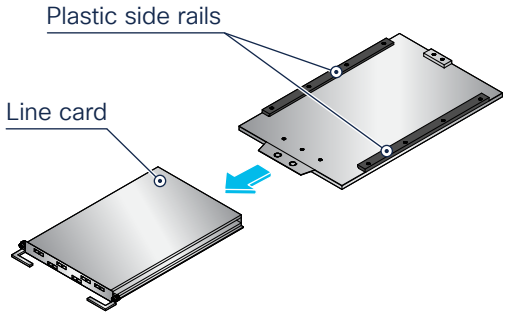
4. Wear ESD gloves and unwrap the ESD bag, which contains the line card placed on a wooden base board.



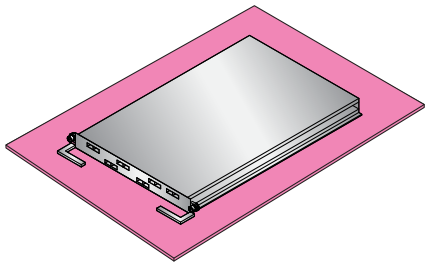
5. Unscrew the screws from the plastic blocker that is on the wooden base board.



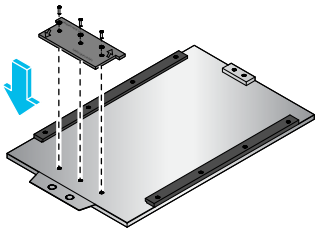
6. Remove the line card from the plastic side rails of the wooden base board.



7. Place the line card on an antistatic surface while preparing the chassis for card installation.



8. Screw back the plastic blocker on the wooden base board.



9. For future use, store the packaging boxes.

To repack a line card to return it, perform the steps in the reverse order.

Follow the directions provided on the plastic blocker for its correct orientation while reinserting the card on the wooden base board.

Cisco ASR 9000 Series Line Card

This procedure explains installing the line card in the horizontal position.

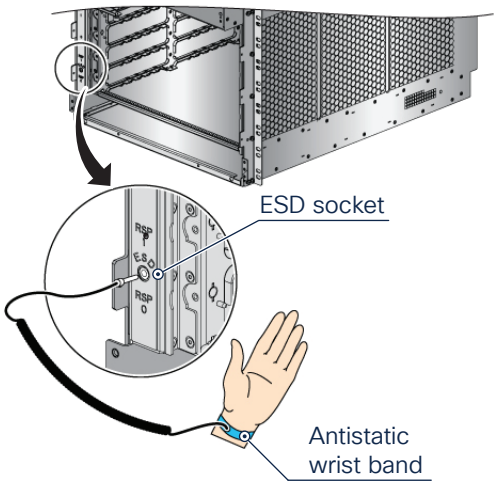
To install the line card in the vertical position, follow the same steps but hold the card vertically.

Caution!

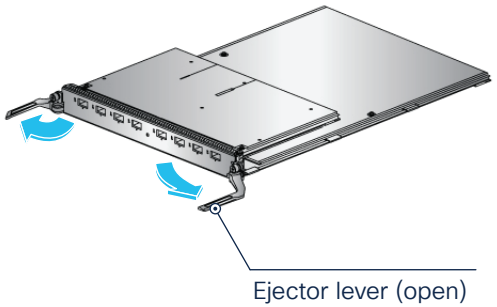
- For convenience and safety purposes, two persons should handle the line card.
- Never carry the line card by holding it by the ejector levers or put pressure on the captive screws.
- To avoid damage, place the line card horizontally on a flat antistatic surface. The outer packaging box contains an antistatic pink roller foam that can be used for this purpose.
- Retain the dust caps on the line card throughout the installation procedure. Also, use dust caps on unused ports in the line card.

Installing the Line Card

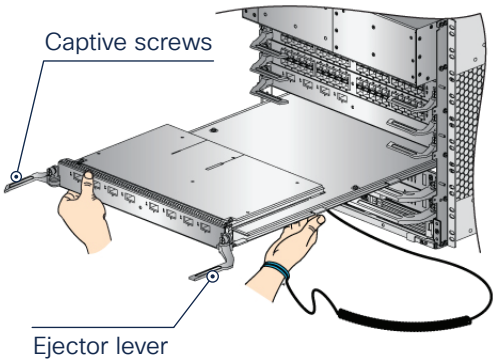
1. Attach an antistatic wrist strap to your wrist and to the ESD socket of the chassis, or to a bare metal surface on the chassis or frame.
   Ensure to verify the effectiveness of ESD wrist strap before handling the hardware.



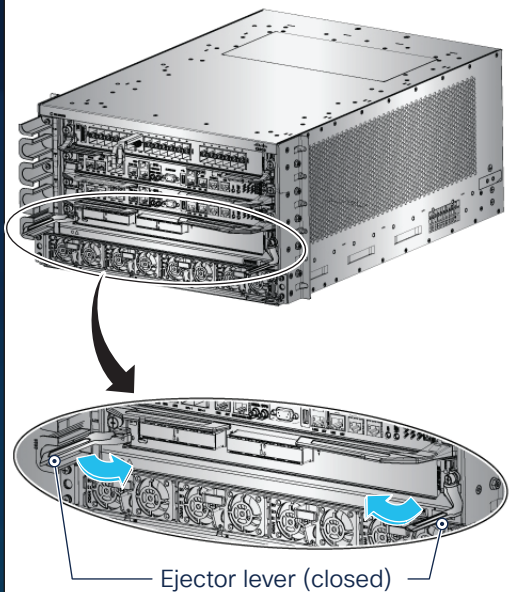
2. Open the ejector levers on either side of the line card.



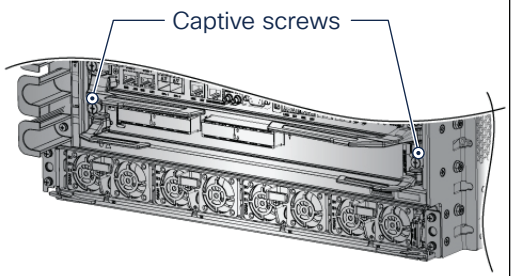
3. Carry the line card and slide the card into the slot to connect with the backplane connector. Start with the lowest numbered line card slot.



4. Pivot the ejector levers to seat the card into the backplane connector.



5. Tighten the captive screws on either side of the line card to a torque of 10 ±1 in-lb.



6. Repeat Step 2 through Step 5 to install another line card.

To uninstall a line card, perform the steps in the reverse order.

For manual OIR (online insertion and removal) of cards, disengage the line card from the backplane connector, and partially pull out the line card. Reseat the card to establish the connection again.

Cable Management

Cisco ASR 9000 Series Line Card

Cable management brackets keep the cables organized. Ensure cables from other equipment installed in the rack do not restrict access to the card cages.
To avoid noise interference in network interface cables, do not route them directly across or along power cables.

Cable management can be achieved by routing the cables through the following brackets:

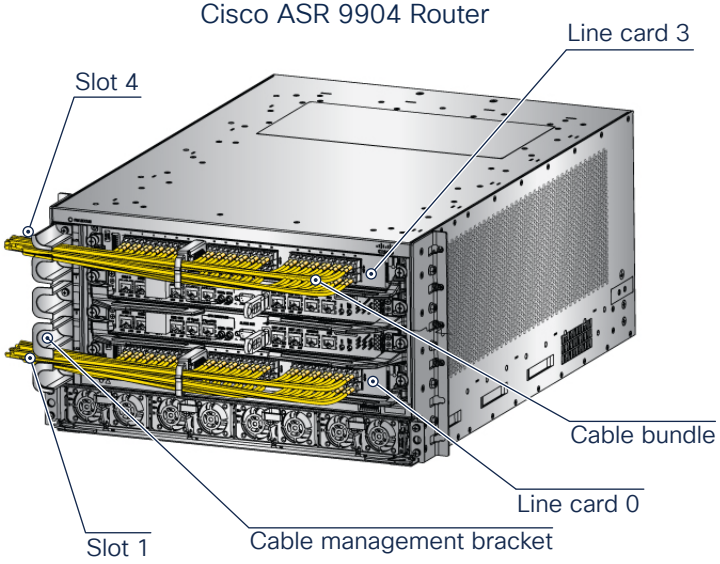
1. Chassis cable management bracket.
2. Cable management tray.

Note: Use cable dust cap to protect the cables from dust when the cables are not in use.

Chassis cable management bracket

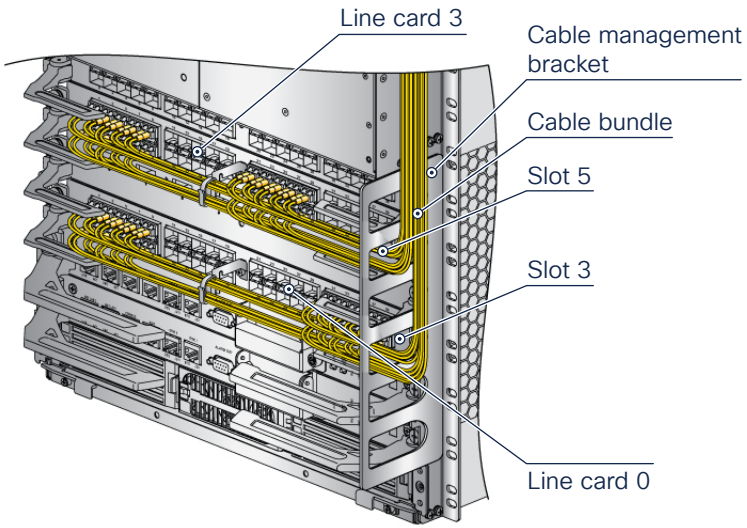
1. Install the cable management bracket on one side of the chassis.

Cisco ASR 9904 Router



2. Route the cable bundle from the line card through the cable management bracket slot. Each line card has its own cable routing slot.

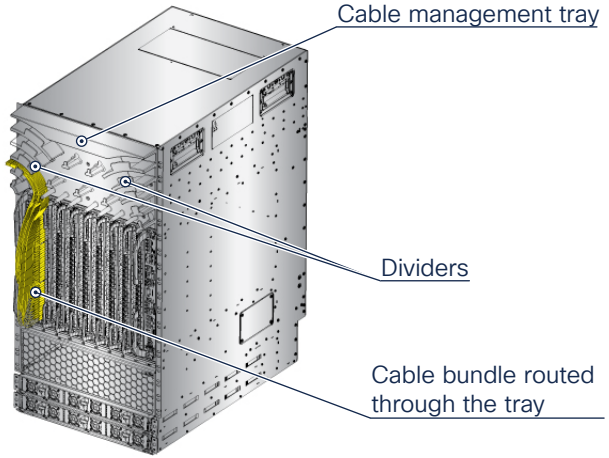
Cisco ASR 9006 Router



Cable management tray

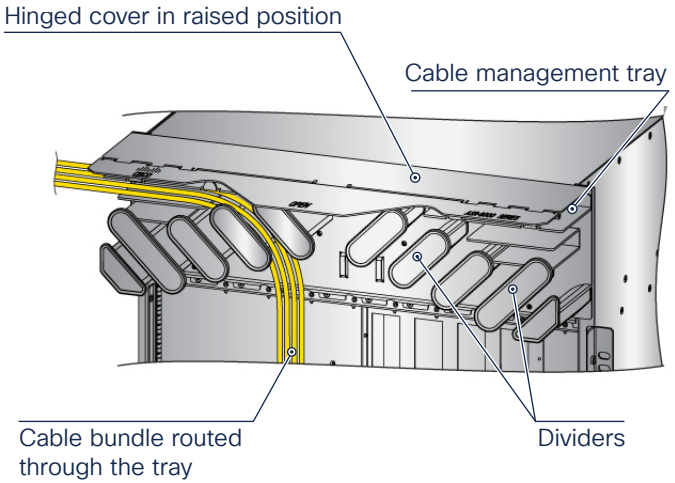
1. Each line card has its own cable routing divider in the cable management tray. Route the cable or cable bundle from the line card through the dividers of the cable management tray.

Cisco ASR 9910 Router



2. (Cisco ASR 9010 Router) Raise the hinged cover to increase access to the dividers.

Cisco ASR 9010 Router



Maintenance Best Practices

Cisco ASR 9000 Series Line Card

Chassis Airflow

- Provide unrestricted airflow by maintaining adequate clearance at both the inlet and exhaust openings of the chassis and the power modules. For more details on chassis airflow clearance, click here.
- Prevent any airflow obstruction that may be caused by cables or blocked filters. Manage and route the cables in ideal directions to prevent such airflow obstructions.

ESD

- While performing any function or replacement on the chassis, ensure that you use an ESD-preventive antistatic wrist strap (or ankle strap) to avoid damage by static electricity.
- Periodically, check the resistance value of the ESD-preventive strap. The measurement should be between 1 and 10 M Ohm. For more details, click here.

Compatible Modules

- Use only compatible versions of power modules and fan trays for operations. For the product datasheet, click here.

Replacement

- Inspect air filters once every 3 months. If there is an increase in temperature, please check the air filters and fans for any malfunctioning. For troubleshooting, reach out to Cisco TAC and isolate any possible hardware failure.
- Replace air filters that are clogged or damaged. Cleaning the air filters is not recommended.
- During maintenance, to avoid dust accumulation and air leakage that can increase the chassis temperature, do not keep the fan tray slot empty for a long duration.

Maintenance Best Practices

Cisco ASR 9000 Series Line Card

Packaging

- While packing and transporting line cards or other modules, use only Cisco provided packaging. Any other improper packaging for moving equipment may severely damage the product.
- Repackage the components the same way as it was packaged at the time of product delivery by including all packaging materials. Orienting the product incorrectly inside the package may cause damage to the product during transportation.
- Always use the ESD cover to wrap the hardware before packing it into packaging cartons. Handle any failed hardware with care, and use an ESD wrist band or an antistatic bag.

Clean Environment

- Ensure that the chassis installation site is dust free.
- Use filler cards in empty slots to prevent dust accumulation and to maintain proper airflow.
- Always use dust caps on empty optical ports to prevent dust accumulation and airflow leakage.
- Clean the optical ports according to standard cleaning procedures.
- Maintain good air quality, and check air chemical composition at regular intervals. Impure air with high levels of chemical concentration can cause corrosion that, in turn, would result in product degradation.

Operating Temperature

- Operate the chassis only within the limits of the recommended temperature. For technical specifications, refer to the respective product datasheet- click here.
- Maintain normal operations by anticipating and correcting environmental anomalies before they approach critical values by properly planning and preparing your site before you install the router.
- If the temperature or power requirement of the line card or the chassis exceeds the operating temperature or power requirement, a thermal shutdown procedure is initiated as applicable.

Maintenance Best Practices

Cisco ASR 9000 Series Line Card

Grounding

Corrosion

Grounding

- Ensure that all equipment racks are grounded to the building. Otherwise, it can pose a serious safety risk to personnel. Additionally, an electrical current can cause operational deficiencies or expose the networking equipment to the risk of permanent failure due to ESD risks.
- Verify the effectiveness of a good ground connection using a multimeter. The multimeter readings should display less than 1 Ohm for good point-to-point resistivity.

For more details on grounding, click here.

Corrosion

- Over a period of time, corrosion can degrade the performance of the components. It leads to blocked currents, brittle connection points, and overheated electrical systems. As chemical reactions continue, the corrosion by-products form insulating layers on circuits, and they usually cause electronic failure, short circuits, pitting, and metal loss. Therefore, ensure that the maximum concentration of contaminants for indoor installation does not exceed the prescribed limit.
- Avoid touching contacts on modules and protect the equipment from extreme temperatures and moist, salty environments. Monitor the environmental factors that impact the corrosion rate: ambient pressure, humidity, and temperature. Whenever possible, ensure that the installation site is fully air conditioned to ensure that the environmental factors are under control.
- Install real-time corrosion measurement systems. Corrosion monitors enable you to take preventive action before serious damage occurs.
- The use of HEPA filters is advised to maintain clean air circulation systems.
- Avoid using direct air cooling on the product (network equipment).