Installing Optional Chassis Accessories

The Cisco ASR 9000v satellite shelf and ASR901 router have an optional air plenum kit (ASR9000V-901-DEF=) for mounting the router chassis in a 2-post or 4-post adjustable 23-inch rack or a 2-post flat 19-inch rack. The air plenum kit includes:

- One plenum base

- One set of rack-mounting brackets (common for 19-inch and 23-inch racks)

- Two air baffles (left and right), with adjustment plate pre-installed on each baffle

- One air deflector

- Grounding lug

- Four M4 x 6mm flat-head screws

- Twelve M4 x 8mm pan-head screws with washers

Air baffles allow for front to back airflow through the chassis and help to isolate the exhaust air from the intake air.

Note When the air plenum kit is installed with the Cisco ASR 9000v satellite shelf, the maximum system operating temperature is 55 degrees Celsius (131 degrees Fahrenheit). When the air plenum kit is installed with the Cisco ASR 901 router, the maximum system operating temperature is 65 degrees Celsius (149 degrees Fahrenheit). In the event of fan failure, the system can operate at 60 degrees Celsius (140 degrees Fahrenheit) for four hours maximum.

The air plenum kit is mounted in the rack before the Cisco ASR 9000v satellite shelf or ASR901 router is installed. The steps for mounting the air plenum kit in the rack are different, depending on the whether the components of the air plenum kit are pre-assembled before mounting in the rack or assembled after the plenum base is mounted in the rack.

If the components of the air plenum kit are pre-assembled before mounting in the rack, the side baffles and air deflector are attached to the plenum base outside the rack. The plenum assembly is then installed from the rear of the 19-inch rack, or from the front or rear of the 23-inch rack.

If the air plenum kit components are assembled after the plenum is mounted in the rack, the plenum base is first installed from the front (applicable to 19-inch rack). The side baffles and air deflector are then installed in the plenum base after it has been mounted in the rack.

The orientation of the air deflector in the plenum base depends on the type of router being installed.

- For the Cisco ASR9000v satellite shelf, the air deflector is placed in the plenum base with left-front to right-back orientation, with the flanges facing frontwards. See the figure *Orientation of Air Deflector in Plenum Base—Cisco ASR 9000v Satellite Shelf* .

- For the Cisco ASR901 Router, the air deflector is placed in the plenum base with right-front to left-back orientation, with the flanges facing frontwards. See the figure *Orientation of Air Deflector in Plenum Base—Cisco ASR 901 Router*.

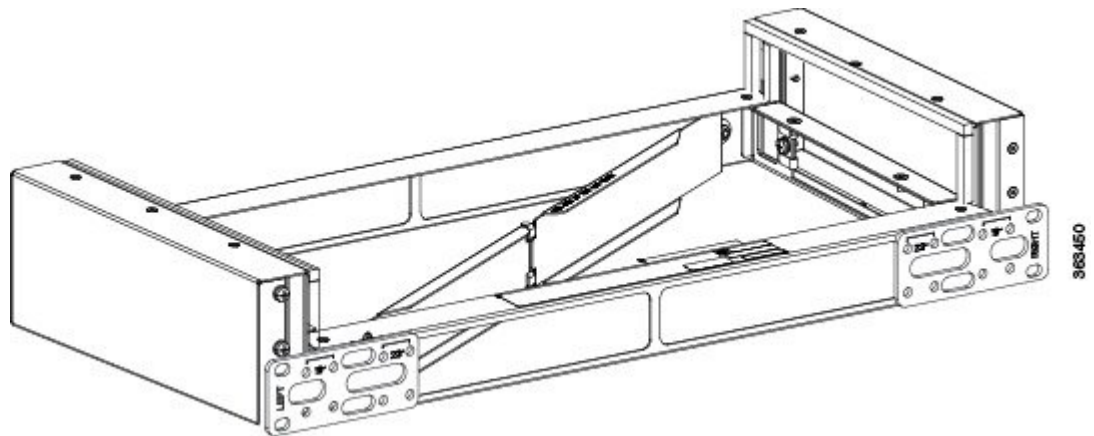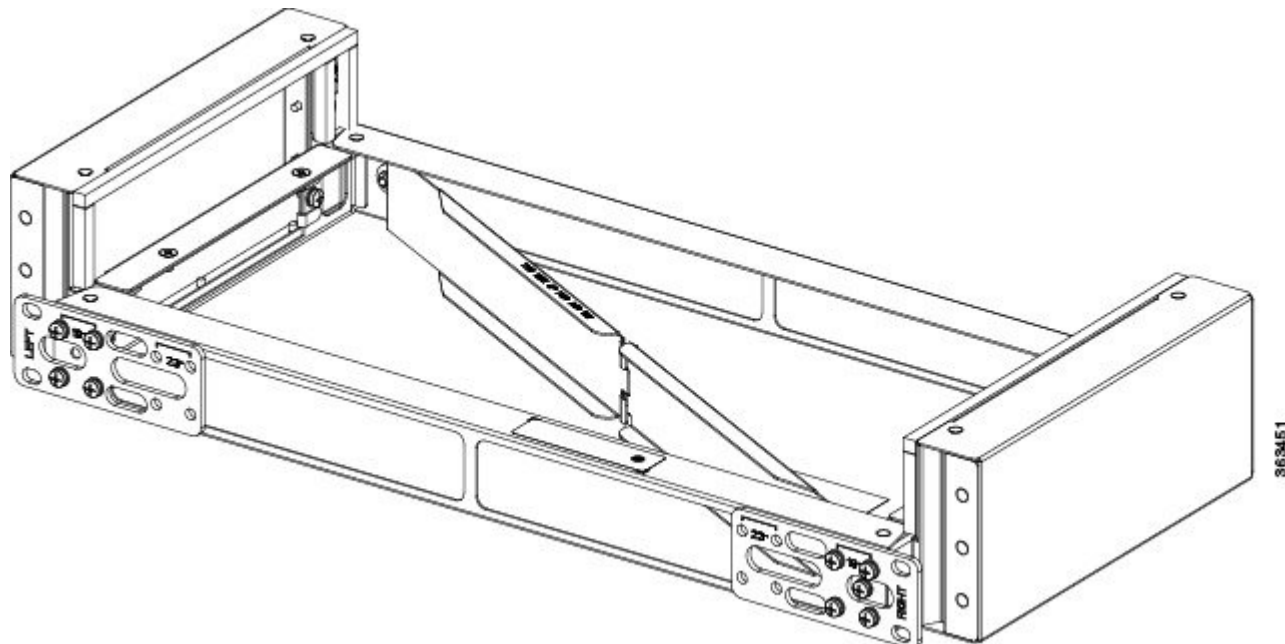**Figure 1: Orientation of Air Deflector in Plenum Base—Cisco ASR 9000v Satellite Shelf**

Figure 2: Orientation of Air Deflector in Plenum Base—Cisco ASR 901 Router

- Pre-assembly of Plenum Before Mounting in Rack, on page 3

Pre-assembly of Plenum Before Mounting in Rack

Summary of Installation

1. The plenum base is pre-assembled with the air baffles and air deflector outside the rack.
2. The plenum base is inserted from the rear of the 19-inch rack. The plenum can be inserted from the front or rear of the 23-inch rack.
3. The router is installed in the rack.

Follow these steps to pre-assemble the air plenum kit before mounting in the 19-inch or 23-inch rack.
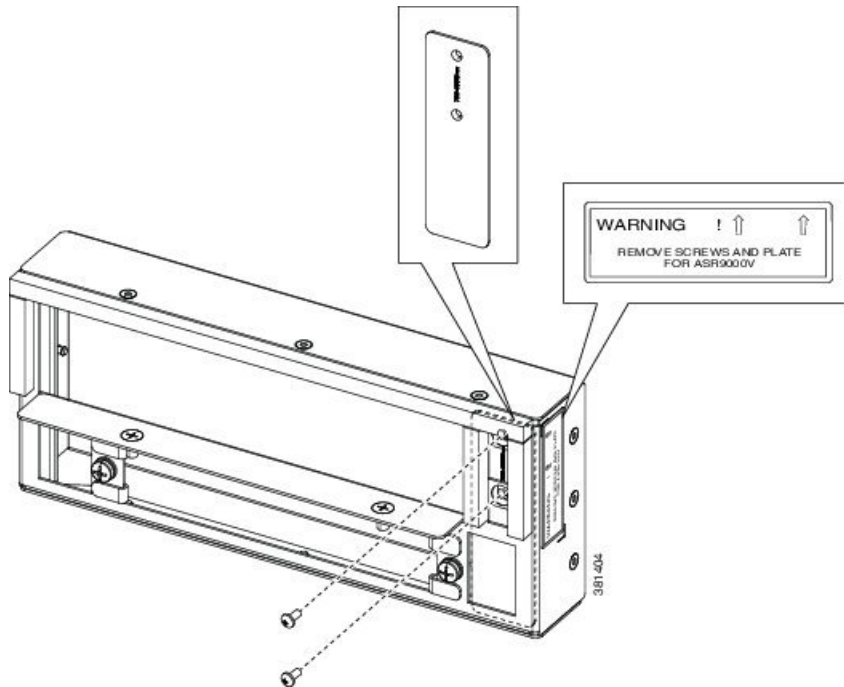
SUMMARY STEPS

1. Prepare the components of the air plenum kit for installation. If you are installing a Cisco ASR 9000v satellite shelf in the rack, remove the adjustment plate and M4 x 8mm pan-head screws from the left and right air baffles and discard them, two screws per adjustment plate.
2. Attach the left and right air baffles to the plenum base with vertical screws, using the four Cisco supplied M4 x 6mm flat-head screws (two per baffle). See this figure.
3. Attach the air deflector to the plenum base using two pan-head M4 x 8mm pan-head screws, as shown in the figure *Attaching Air Deflector to Plenum Base-Cisco ASR 9000v Satellite Shelf Orientation Shown* .
4. If installing from the rear of the 19-inch or 23-inch rack:
5. If installing from the front of the 23-inch rack:
6. Using the Cisco-supplied grounding lug, construct a suitable ground cable of sufficient length. Attach the grounding lug to the rear of the plenum base using two Cisco supplied M4 x 8mm pan-head screws and attach the other end to the grounding source. See the figure *Mounting Plenum Assembly in Rack and Attaching Grounding Lug-Cisco ASR 9000v Satellite Shelf Orientation Shown* .
7. Install the router in the rack. See the Installing the Cisco ASR 9000v Satellite Shelf and the Mounting the Cisco ASR 901 Router for more information. This figure shows the Cisco ASR 9000v satellite shelf and air plenum kit installed in the rack.
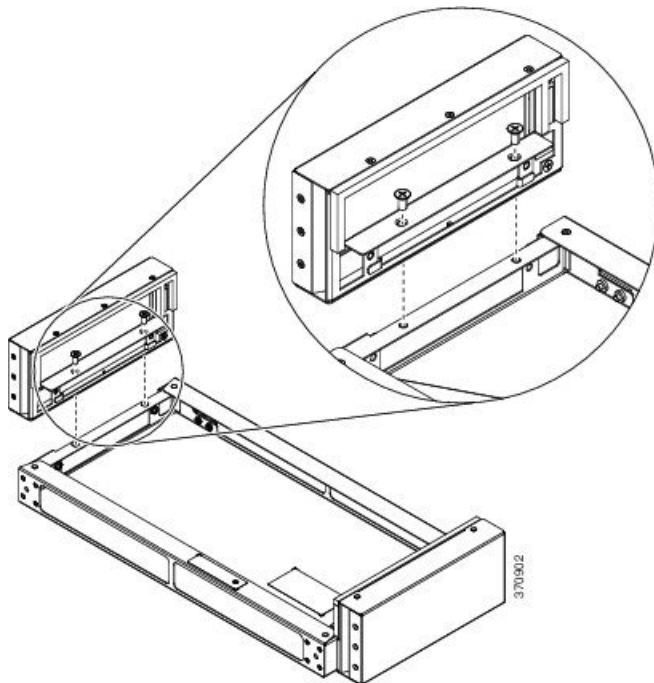
DETAILED STEPS

Step 1   Prepare the components of the air plenum kit for installation. If you are installing a Cisco ASR 9000v satellite shelf in the rack, remove the adjustment plate and M4 x 8mm pan-head screws from the left and right air baffles and discard them, two screws per adjustment plate.

Figure 3: Removing Adjustment Plate from Air Baffle—ASR9000v Satellite Shelf Only

Step 2   Attach the left and right air baffles to the plenum base with vertical screws, using the four Cisco supplied M4 x 6mm flat-head screws (two per baffle). See this figure.

Figure 4: Attaching Air Baffles to Plenum Base—Cisco ASR 9000v Satellite Shelf Orientation Shown

Step 3   Attach the air deflector to the plenum base using two pan-head M4 x 8mm pan-head screws, as shown in the figure *Attaching Air Deflector to Plenum Base-Cisco ASR 9000v Satellite Shelf Orientation Shown* .

- For the Cisco ASR9000v satellite shelf, the air deflector is placed in the plenum base with left-front to right-back orientation, with the flanges facing frontwards.

- For the Cisco ASR901 Router, the air deflector is placed in the plenum base with right-front to left-back orientation, with the flanges facing frontwards.

This figure shows the orientation of the air deflector for the ASR9000v satellite shelf and the Cisco ASR901 Router.

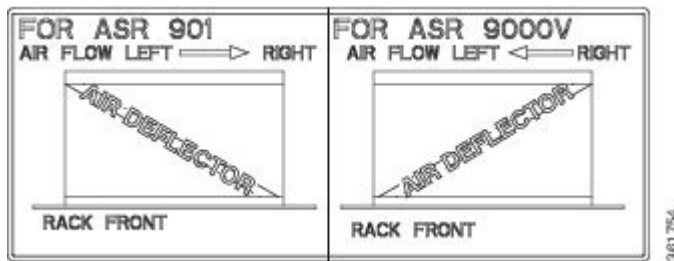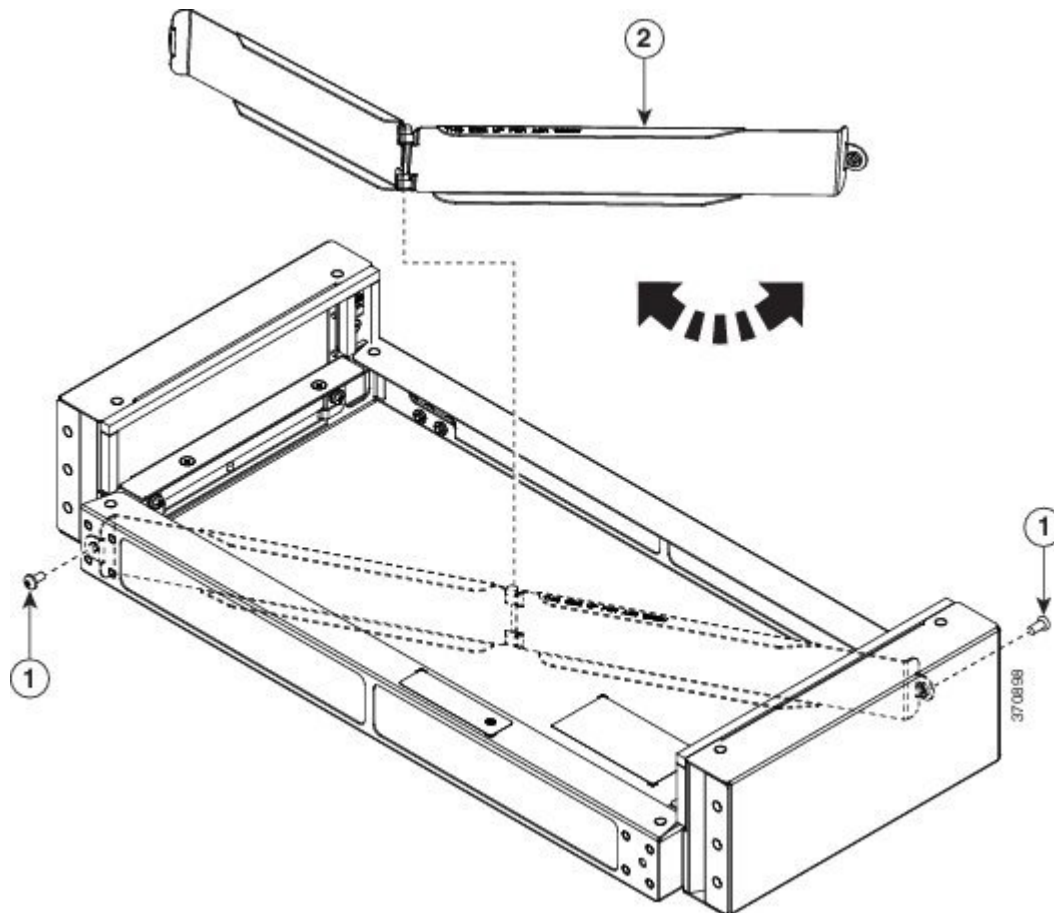*Figure 5: Orientation of Air Deflector in Plenum Base*

Figure 6: Attaching Air Deflector to Plenum Base—Cisco ASR 9000v Satellite Shelf Orientation Shown
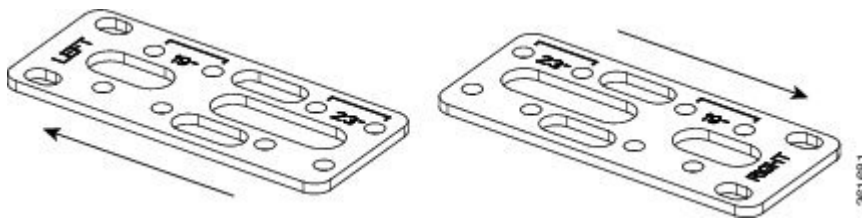
1	Screws attaching air deflector to plenum
2	Air deflector

Step 4   If installing from the rear of the 19-inch or 23-inch rack:

   a) Insert the plenum assembly from the rear of the rack.

   b) Attach the rack-mounting brackets, shown in the figure *Rack-Mounting Brackets* , to the front of the plenum assembly using eight Cisco supplied M4 x 8mm pan-head screws, four on each mounting bracket.

   c) Attach the plenum assembly to the left and right rack rails using customer-supplied rack mounting screws. We recommend using two screws per side. These screws can vary in size and type depending on the rack that you use. Torque the screws to the weight specified for your particular rack. See the figure *Mounting Plenum Assembly in Rack and Attaching Grounding Lug-Cisco ASR 9000v Satellite Shelf Orientation Shown* .
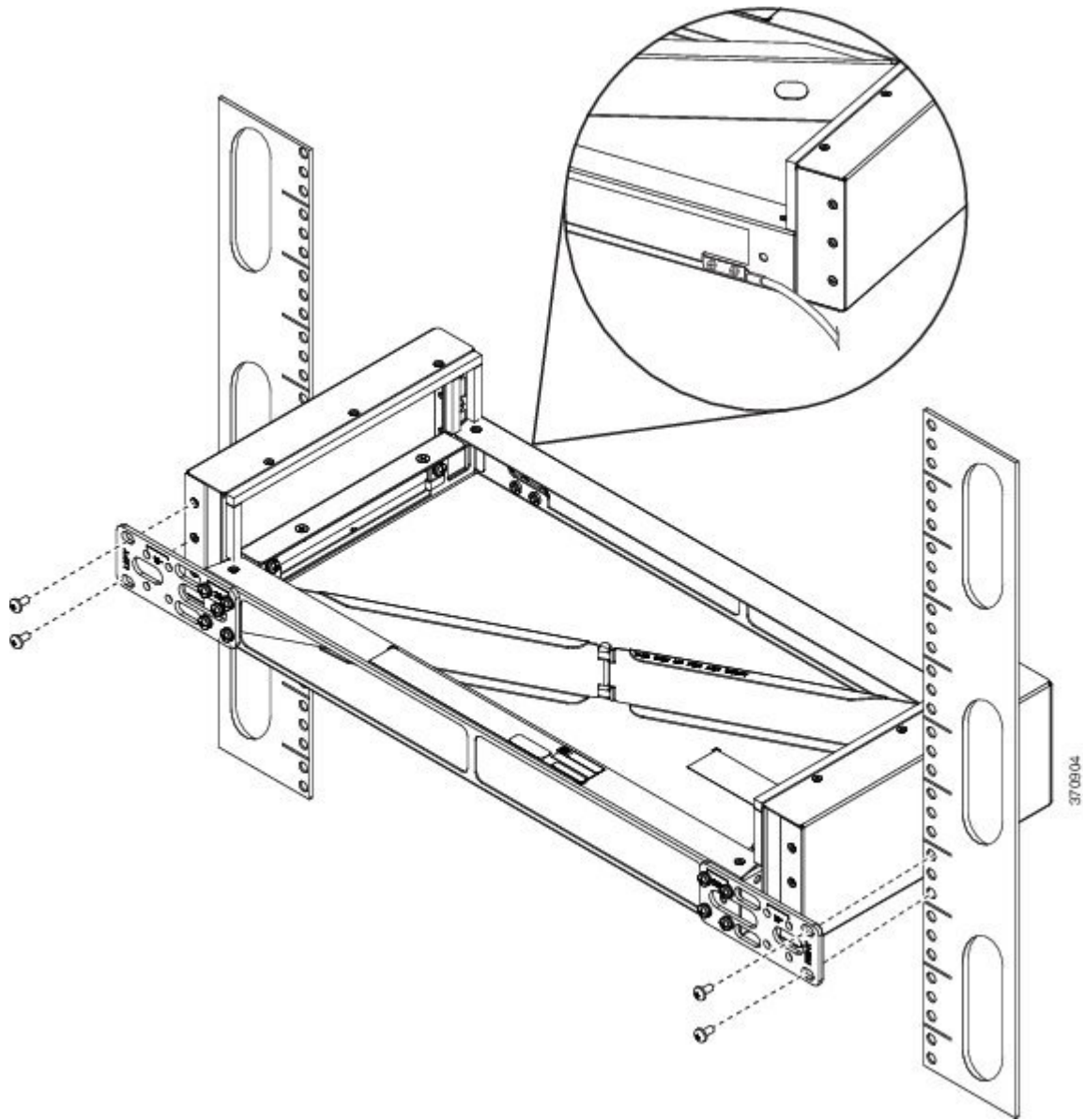
Figure 7: Rack-Mounting Brackets

Step 5   If installing from the front of the 23-inch rack:

   a) Place the plenum base on a flat and stable surface.

   b) Attach the rack-mounting brackets, shown in the figure *Rack-Mounting Brackets* , to the front of the plenum assembly using eight Cisco supplied M4 x 8mm pan-head screws, four on each mounting bracket.

   c) Attach the plenum assembly to the left and right rack rails using customer-supplied rack mounting screws. We recommend using two screws per side. These screws can vary in size and type depending on the rack that you use. Torque the screws to the weight specified for your particular rack. See the figure *Mounting Plenum Assembly in Rack and Attaching Grounding Lug-Cisco ASR 9000v Satellite Shelf Orientation Shown* .

Step 6   Using the Cisco-supplied grounding lug, construct a suitable ground cable of sufficient length. Attach the grounding lug to the rear of the plenum base using two Cisco supplied M4 x 8mm pan-head screws and attach the other end to the grounding source. See the figure *Mounting Plenum Assembly in Rack and Attaching Grounding Lug-Cisco ASR 9000v Satellite Shelf Orientation Shown* .
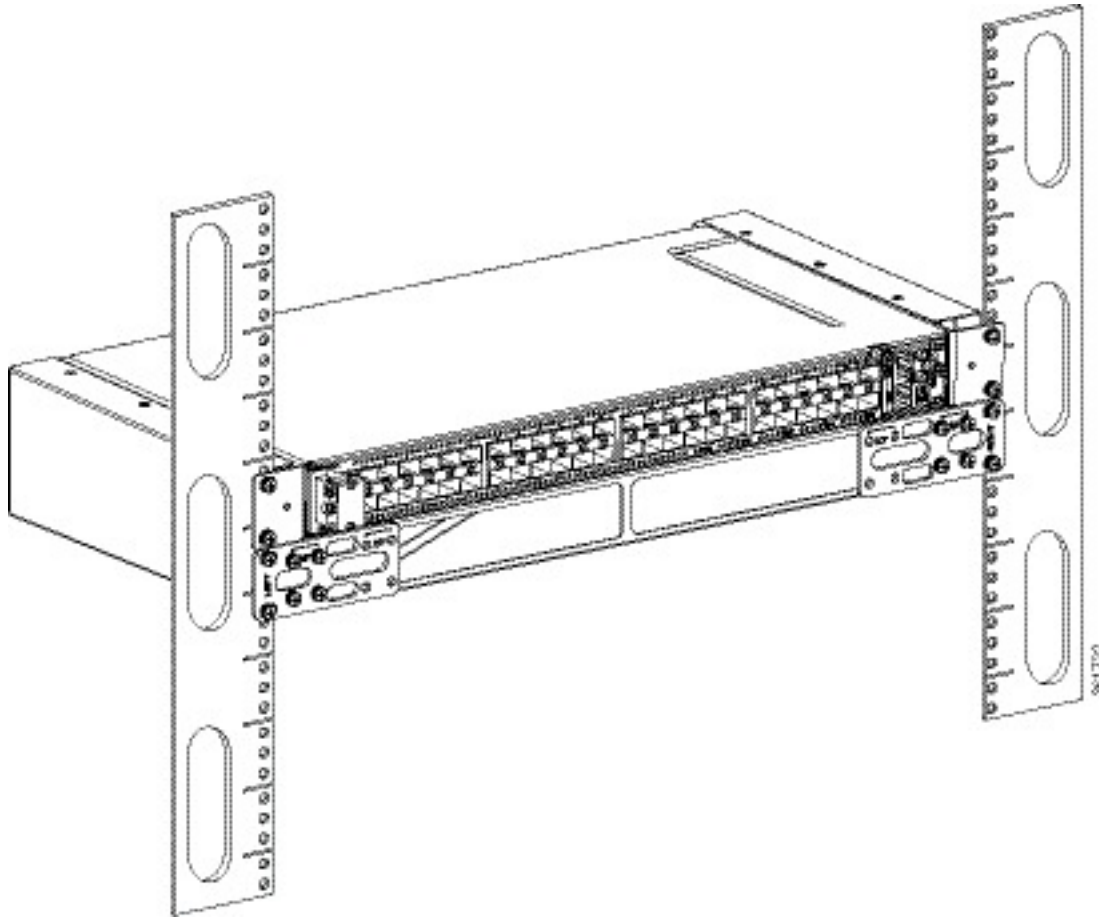
Step 7   Install the router in the rack. See the Installing the Cisco ASR 9000v Satellite Shelf and the Mounting the Cisco ASR 901 Router for more information. This figure shows the Cisco ASR 9000v satellite shelf and air plenum kit installed in the rack.

Note   Before installing the Cisco ASR 9000v satellite shelf or Cisco ASR901 router in the rack, verify that the air deflector is installed in the plenum base in the correct orientation for the specified router.

Figure 8: Air Plenum Assembly and Cisco ASR9000v Satellite Shelf Installed in Rack

Assembly of Plenum After Mounting in Rack

Summary of Installation

1. The rack-mounting brackets are attached to the plenum base.
2. The plenum base is installed in the 19-inch rack.
3. The air baffles and air deflector are attached to the rack-mounted plenum base. Installation of the air baffles within the rack will require a total of 3 RU clearance to install the air baffles.
4. The router is installed in the rack.

Follow these steps to assemble the air plenum kit after the plenum base is mounted in the 19-inch rack when rack/cabinet clearance prevents pre-assembly.
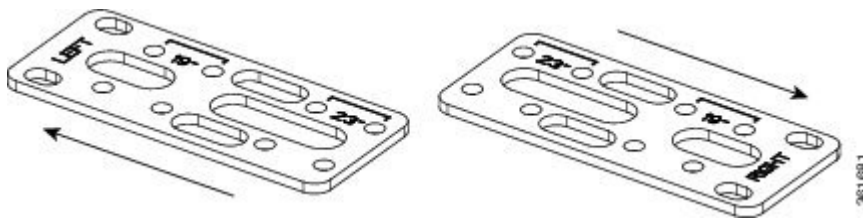
SUMMARY STEPS

1. Prepare the components of the air plenum kit for installation. If you are installing a Cisco ASR 9000v satellite shelf in the rack, remove the adjustment plate and M4 x 8mm pan-head screws from the left and right air baffles and discard them, two screws per adjustment plate.

2. Attach the rack-mounting brackets to the plenum base using eight Cisco supplied M4 x 8mm pan-head screws, four on each mounting bracket. See this figure.

3. Attach the plenum base to the left and right rack rails using customer-supplied rack mounting screws. We recommend using two screws per side. These screws can vary in size and type depending on the rack that you use. Torque the screws to the weight specified for your particular rack. See this figure.

4. Attach the left and right air baffles to the rack-mounted plenum base using the four Cisco supplied M4 x 6mm flat-head screws (two per baffle). See the figure *Attaching Baffles and Air Deflector to Rack-Mounted Plenum Base—Cisco ASR 9000v Satellite Shelf Orientation Shown*.Use the vertical screws to secure the air baffles to the plenum base. If there is no free space available above the plenum base to install the vertical screws use the horizontal screws to secure the air baffles.

5. Attach the air deflector to the plenum base using two M4 x 8mm pan-head screws. This figure shows the air-deflector orientation for the Cisco ASR9000v satellite shelf.

6. Using the Cisco-supplied grounding lug, construct a suitable ground cable of sufficient length. Attach the grounding lug to the rear of the plenum base using two Cisco supplied M4 x 8mm pan-head screws and attach the other end to the grounding source. See this figure.

7. Install the router in the rack. See the Installing the Cisco ASR 9000v Satellite Shelf and the Mounting the Cisco ASR 901 Router for more information. This figure shows the Cisco ASR901 router and air plenum kit installed in the rack.
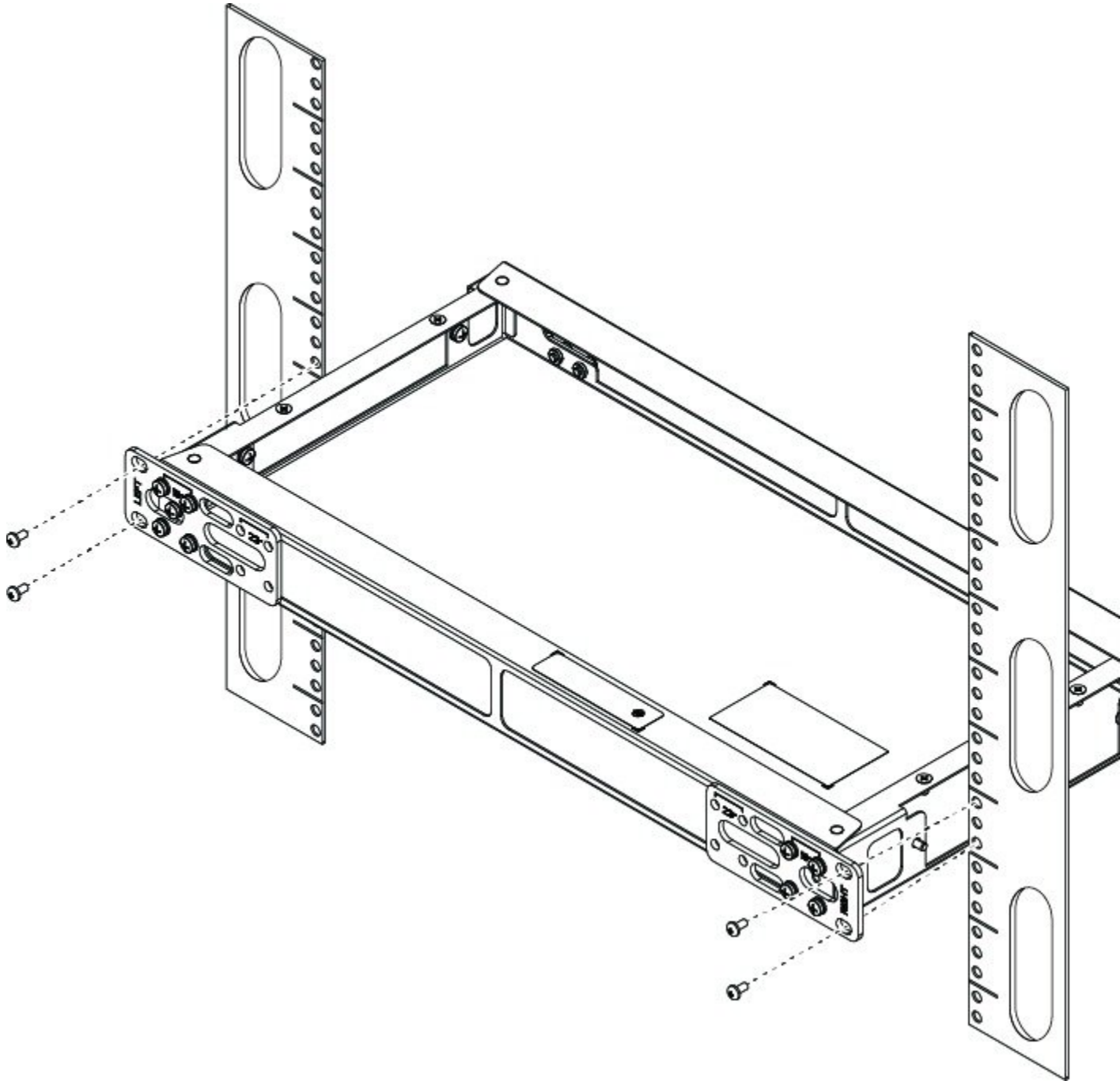
DETAILED STEPS

Step 1 Prepare the components of the air plenum kit for installation. If you are installing a Cisco ASR 9000v satellite shelf in the rack, remove the adjustment plate and M4 x 8mm pan-head screws from the left and right air baffles and discard them, two screws per adjustment plate.

Step 2 Attach the rack-mounting brackets to the plenum base using eight Cisco supplied M4 x 8mm pan-head screws, four on each mounting bracket. See this figure.

Figure 9: Rack-Mounting Brackets

Step 3 Attach the plenum base to the left and right rack rails using customer-supplied rack mounting screws. We recommend using two screws per side. These screws can vary in size and type depending on the rack that you use. Torque the screws to the weight specified for your particular rack. See this figure.
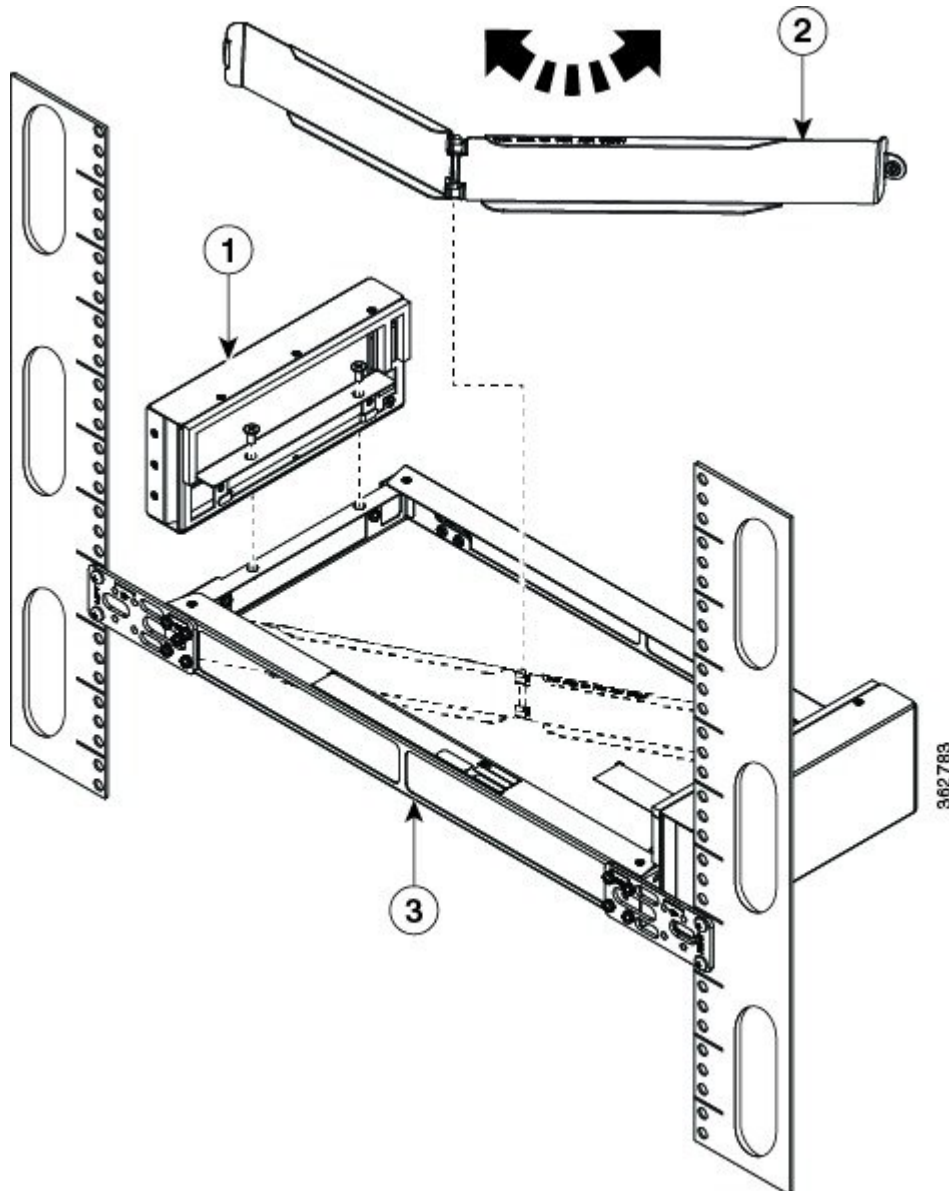
Figure 10: Installing the Plenum Base in the Rack

Step 4 Attach the left and right air baffles to the rack-mounted plenum base using the four Cisco supplied M4 x 6mm flat-head screws (two per baffle). See the figure *Attaching Baffles and Air Deflector to Rack-Mounted Plenum Base—Cisco ASR 9000v Satellite Shelf Orientation Shown*.Use the vertical screws to secure the air baffles to the plenum base. If there is no free space available above the plenum base to install the vertical screws use the horizontal screws to secure the air baffles.

Step 5 Attach the air deflector to the plenum base using two M4 x 8mm pan-head screws. This figure shows the air-deflector orientation for the Cisco ASR9000v satellite shelf.

- For the Cisco ASR9000v satellite shelf, the air deflector is placed in the plenum base with left-front to right-back orientation, with the flanges facing frontwards.

- For the Cisco ASR901 Router, the air deflector is placed in the plenum base with right-front to left-back orientation, with the flanges facing frontwards.
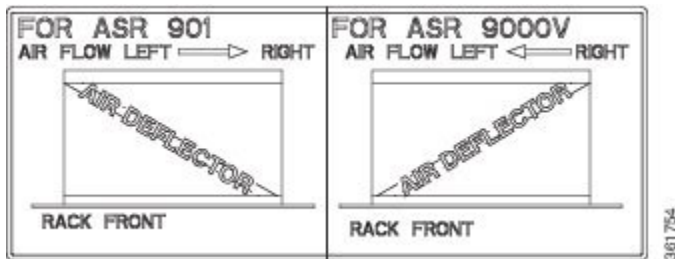
Figure 11: \Attaching Baffles and Air Deflector to Rack-Mounted Plenum Base—Cisco ASR 9000v Satellite Shelf Orientation Shown

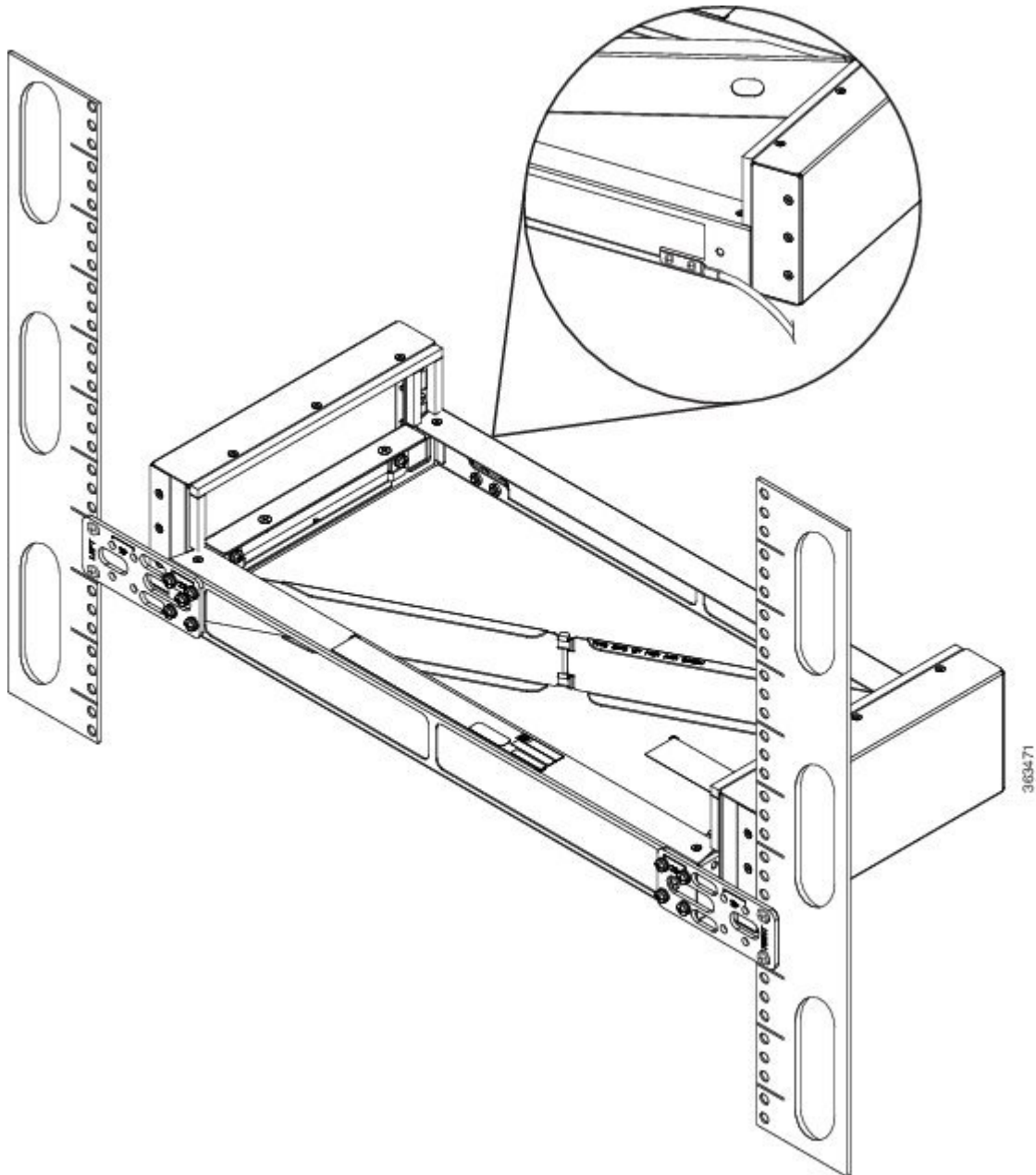| 1	Air baffle	3	Plenum base
2	Air deflector		

This figure shows the orientation of the air deflector for the Cisco ASR9000v satellite shelf and the Cisco ASR901 Router.

Figure 12: Orientation of Air Deflector in Plenum Base

Step 6 Using the Cisco-supplied grounding lug, construct a suitable ground cable of sufficient length. Attach the grounding lug to the rear of the plenum base using two Cisco supplied M4 x 8mm pan-head screws and attach the other end to the grounding source. See this figure.

Figure 13: Attaching Grounding Lug to Plenum Assembly—Cisco ASR 9000v Satellite Shelf Orientation Shown

Step 7   Install the router in the rack. See the Installing the Cisco ASR 9000v Satellite Shelf and the Mounting the Cisco ASR 901 Router for more information. This figure shows the Cisco ASR901 router and air plenum kit installed in the rack.

Note   Before installing the Cisco ASR 9000v satellite shelf or Cisco ASR901 router in the rack, verify that the air deflector is installed in the plenum base in the correct orientation for the specified router.

Figure 14: Air Plenum Kit and Cisco ASR 901 Router Installed in Rack