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Santa Clara, CA 95054

Nortel Networks WLAN Access Port 2230/2231 Quick Install Guide

System Release 2.0



NORTEL
NETWORKS™

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Introduction

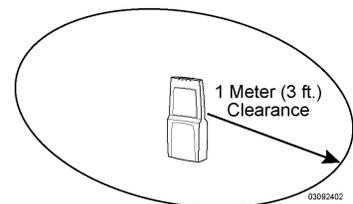
This guide contains several sections allowing you to install a Nortel Networks WLAN - Access Port (2230/2231) and contains the following sections:

- [Overview on page 2](#)
- [Step 1: Collecting Required Tools and Supplies on page 3](#)
- [Step 2: Configuring the WLAN Access Port \(2230/2231\) Before Installation on page 4](#)
- [Step 3: Preparing Mounting Locations on page 9](#)
- [Step 4: Mounting the WLAN Access Ports \(2230/2231\) on page 11](#)
- [Step 5: Returning MAC Information on page 19](#)
- [Planning Notes on page 20](#)
- [How to get help on page 23](#)
- [FCC Statements for WLAN Access Ports \(2230/2231\) on page 24](#)

ATTENTION!

While Nortel Networks WLAN - Access Ports (2230/2231) have been engineered for easy installation, there are some guidelines that are very important to the end users:

- PLACE Nortel Networks WLAN - Access Ports (2230/2231) NO MORE THAN 140 FEET APART FROM EACH OTHER. Placing WLAN Access Ports (2230/2231) further apart almost always results in poor coverage.
- DO NOT MOUNT WLAN Access Ports (2230/2231) OUTSIDE BUILDINGS.
- DO NOT MOUNT WLAN Access Ports (2230/2231) ON BUILDING PERIMETER WALLS UNLESS THE OPERATOR WANTS TO PROVIDE COVERAGE OUTSIDE THE BUILDING.
- MAKE SURE THAT THE Nortel Networks WLAN - Access Ports (2230/2231) ARE INSTALLED VERTICALLY. Nortel Networks WLAN - Access Ports (2230/2231) ARE DESIGNED TO BE INSTALLED VERTICALLY, either standing up in a plenum or hanging from a ceiling, to create the largest coverage area per WLAN Access Port (2230/2231). Hanging the WLAN Access Port (2230/2231) from the ceiling provides the best RF coverage.
- DO NOT MOUNT Nortel Networks WLAN - Access Port (2230/2231) ANTENNAS WITHIN ONE METER (3 FT.) OF ANY METAL OBSTRUCTIONS. THE RF WAVES FROM Nortel Networks WLAN - Access Ports (2230/2231) ARE BLOCKED AND/OR REFLECTED BY METAL OBJECTS, such as metal HVAC ducts, conduit, pipes, bookcases, elevator shafts, stairwells, and metal walls. REFER TO THE Nortel Networks WLAN - Access Port (2230/2231) Deployment Guide BEFORE MOUNTING WLAN Access Ports (2230/2231) NEAR METAL OBSTRUCTIONS.
- WHEN MOUNTING WLAN Access Ports (2230/2231) IN THE CORNER OF A RIGHT-ANGLE HALLWAY INTERSECTION, MOUNT THE WLAN Access Port (2230/2231) AT A 45-DEGREE ANGLE TO THE TWO HALLWAYS. The WLAN Access Port (2230/2231) internal antennas are not omnidirectional, and will cover a larger area if mounted this way.



Overview

This guide is designed to provide you with the information needed to mount Nortel Networks WLAN - Access Ports (2230/2231). WLAN Access Ports (2230/2231) are part of the innovative Nortel Networks 2200 Series, and require no manual configuration after they are mounted.

This document assumes that a site survey has been performed as described in the Nortel Networks WLAN - Access Port (2230/2231) Deployment Guide, that WLAN Access Port (2230/2231) locations and mounting options have been selected, and that you have one Nortel Networks WLAN - Access Port (2230/2231).

After the site survey is done, you should have a map indicating the following:

- AP locations.
- AP mounting options: in the middle of a ceiling/hallway, in the ceiling plenum, projecting away from the wall, or flat against the wall.
- AP power options: power supplied by the AC-to-DC power supply orderable from Nortel Networks, or Power over Ethernet (PoE) from another network device, or a PoE injector/hub (usually located in a wiring closet).

If you do not have a map, make one so you can record the MAC addresses from each location and return them to the person who is planning or managing this wireless network.

Refer to the following sections to install the WLAN Access Ports (2230/2231).



Note: When mounting WLAN Access Ports (2230/2231), make sure to maintain a 20 cm (8 in.) separation between the WLAN Access Ports (2230/2231) and bystanders to comply with FCC RF exposure regulations. Refer to the [FCC Statements for WLAN Access Ports \(2230/2231\)](#) section for more information.

For more details about Nortel Networks WLAN - Access Port (2230/2231) installations, refer to the [Planning Notes](#) section at the end of this document.

Step 1: Collecting Required Tools and Supplies

- One Nortel Networks WLAN - Access Port (2230/2231) per location.
 - WLAN Access Port (2230/2231) Mounting Kits, factory-supplied with each WLAN Access Port (2230/2231).
 - Optional WLAN Access Port (2230/2231) Mounting Kits, factory-orderable.
 - Optional external AC-to-DC power supplies, factory-orderable.
 - Optional external 802.11b/g antennas.
-  **Note:** Refer to the Nortel Networks 2200 series Release Notes for 802.11a external antenna information. Contact your authorized Nortel Networks distributor or authorized reseller for a list of approved 802.11a and 802.11b/g external antennas. See [“How to get help” on page 23](#) for more information.
- Map showing Nortel Networks WLAN - Access Port (2230/2231) locations, and mounting and power options.
 - Screwdrivers, drills, and ladder.
 - An assortment of sheet metal and drywall screws and toggle bolts.
 - CAT-5 (or higher) cables to connect the Nortel Networks WLAN - Access Port (2230/2231) locations and the Nortel Networks WLAN - Security Switch or other network device.
 - Optional Kensington MicroSaver Security Cable to secure each Nortel Networks WLAN - Access Port (2230/2231).

Continue with [Step 2: Configuring the WLAN Access Port \(2230/2231\) Before Installation](#).

Step 2: Configuring the WLAN Access Port (2230/2231) Before Installation

The following procedures are designed to make sure that your WLAN Access Port (2230/2231) physical installation goes smoothly and that initial operation is as expected. See “How to get help” on page 23 if you are unable to prepare your WLAN Access Port (2230/2231) for deployment.

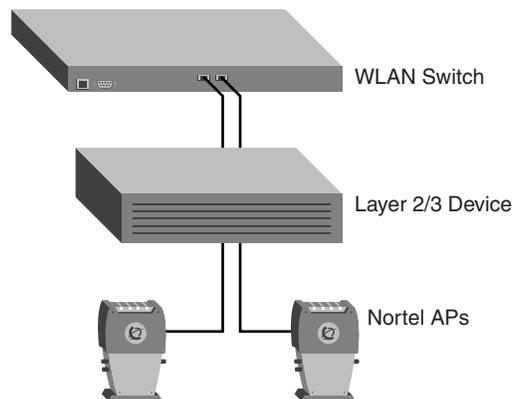
- ▶ **Note:** Perform the following procedure on each Nortel Networks WLAN - Access Port (2230/2231) BEFORE deploying the WLAN Access Port (2230/2231) in its final location.
- [Preparing a Nortel Networks WLAN - Access Port \(2230/2231\)](#) for installation in a Version 2.0 Nortel Networks 2200 series environment

Preparing a Nortel Networks WLAN - Access Port (2230/2231)

If your Nortel Networks WLAN - Access Port (2230/2231) has Operating System 2.0 or a later version loaded on it, continue with this procedure.

- ▶ **Note:** This procedure assumes that you are preparing a version 2.0 Nortel Networks WLAN - Access Port (2230/2231) to interoperate with a version 2.0 WLAN Security Switch (2270).

Configuration Setup



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Does My AP Qualify for this Procedure?

- See “How to get help” on page 23 if your 2.0 or later version later Nortel Networks WLAN - Access Port (2230/2231)(s) cannot be configured for any reason using the following procedure.

Configuration Steps for a Nortel Networks WLAN - Access Port (2230/2231)

1. Configure the WLAN Security Switch (2270) in **LWAPP Layer 3 Mode** and make sure its DS Port is connected to the network. Use CLI, Web Browser and/or WLAN Management System procedures as described in the WLAN Security Switch (2270) Quick Installation Guide and the Nortel Networks Product Documentation.

- ▶ **Note:** When you are installing a WLAN Access Port (2230/2231), a DHCP server must be accessible by the WLAN Access Port (2230/2231).

-
- Make sure AP ports are available through the WLAN Security Switch (2270) Management/AP-Manager Interface).
 - Set the WLAN Security Switch (2270) as the Master, so new WLAN Access Ports (2230/2231) always associate with it.
 - Refer to the Nortel Networks Product Documentation for other settings.
2. Take the AP out of the box and connect through the same subnet that WLAN Security Switch (2270) is on.
 3. Apply power to the AP:
 - Use 802.3af-compliant Power Over Ethernet (PoE) from an orderable inline power injector or other network device. If you do not have PoE available, use the external AC-to-48 VDC Power Supply available from your Nortel Networks distributor or authorized reseller.
 - After powering up the AP, the RED Alarm LED comes on for a short period (about 15-20 seconds) and then all the LEDs blink sequentially back and forth, indicating that the AP is trying to find a WLAN Security Switch (2270) to connect to. This can continue for up to five minutes. If the AP remains in this mode for more than five minutes, the AP is unable to find the Master WLAN Security Switch (2270). Check the connection between the AP and the WLAN Security Switch (2270) and make sure the AP and the WLAN Security Switch (2270) are on the same subnet.
 - If the power light does not come on, check the power (it can be powered either with Power over Ethernet or a from an orderable AP External Power Supply).
 - Make sure that a DHCP server is configured in the WLAN Security Switch (2270) for both the Management Interface and AP-Manager Interface using the CLI, Web Browser, or WLAN Management System interface, and that the DHCP server is operating correctly.
 - Once the AP finds the WLAN Security Switch (2270), it attempts to download the new Operating System code if the AP code version differs from the WLAN Security Switch (2270) code version. While this is happening, the LEDs on the top of the AP blink on and off together.
 4. Once the Operating System code download is successful, the AP reboots. The GREEN LED turns on and the two YELLOW/AMBER/ORANGE LEDs indicate the states of the 802.11a and 802.11b/g networks. If any part of the network is disabled in the WLAN Security Switch (2270), the corresponding YELLOW/AMBER/ORANGE LED remains off.
 - Note that the Red LED can light for a short period (10-20 seconds) when the AP reboots. If the RED LED comes on AND STAYS ON for more than a minute, disconnect the AP and call Nortel Networks Technical Support.
 - From the CLI, Web Browser or WLAN Management System interface, configure the AP with its Primary WLAN Security Switch (2270) name as described in the Nortel Networks Product Documentation.
 - If required, use the CLI, Web Browser or WLAN Management System interface to customize the AP-specific 802.11a, 802.11b and 802.11g network settings. Once again, the two YELLOW/AMBER/ORANGE LEDs indicate the states of the 802.11a and 802.11b/g networks. If any part of the network is disabled, the corresponding YELLOW/AMBER/ORANGE LED remains off.
 5. If everything works (the GREEN LED is on and the RED LED is off), disconnect the AP and take it to its final destination and install it as described in this document. See [“How to get help” on page 23](#) if your WLAN Access Port (2230/2231) fails this visual test.



Note: When you are installing Layer 3 WLAN Access Port (2230/2231) on a different subnet than the WLAN Security Switch (2270), MAKE SURE that a DHCP server is available on the subnet where you will be installing the AP, and that the subnet has a route back to the WLAN Security Switch (2270). Also make sure that the route back to the Nortel Networks WLAN - Security Switch (2270) has destination UDP ports 12222 and 12223 open for LWAPP communications. Ensure the route back to the Primary WLAN Security Switch (2270) allows IP packet fragments. Finally, make sure that if address translation is used, that the Access Port (2230/2231) and the WLAN Security Switch (2270) have a static 1-to-1 NAT to an outside address. (Port Address Translation is not supported.)

6. When you have installed and powered up the AP in its final destination, verify that the LEDs are in the same state they were in at the end of Step 4. If no LEDs are on, the AP is most likely not receiving power. If all the LEDs blink sequen-

tially back and forth for more than five minutes, the AP is unable to find its Primary WLAN Security Switch (2270). Check the connection between the AP and the WLAN Security Switch (2270), and make sure the AP and the WLAN Security Switch (2270) are either on the same subnet or that the AP has a route back to its Primary WLAN Security Switch (2270). Also, if the Nortel Networks WLAN - Access Port (2230/2231) is not on the same subnet as the WLAN Security Switch (2270), make sure there is a DHCP server on the same subnet as the Nortel Networks WLAN - Access Port (2230/2231).

After you have prepared all WLAN Access Ports (2230/2231), reconfigure the WLAN Security Switch (2270) so it is not the Master. A Master WLAN Security Switch (2270) should only be used for configuring WLAN Access Ports (2230/2231) and not in a working network.

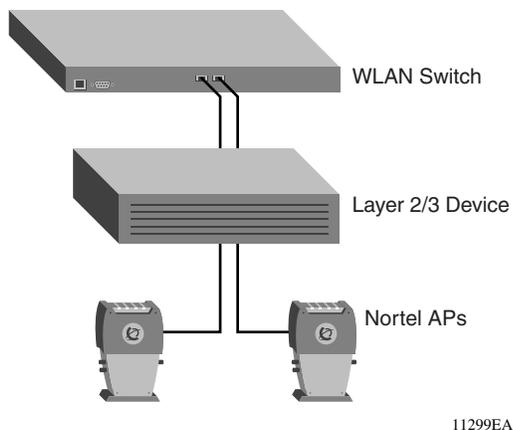
After completing [Step 2: Configuring the WLAN Access Port \(2230/2231\) Before Installation](#) for all WLAN Access Ports (2230/2231), continue with [Step 3: Preparing Mounting Locations](#).

Alternate Preparing Nortel Networks WLAN - Access Port (2230/2231)

If your WLAN Access Port (2230/2231) has Operating System 2.0 or a later version loaded on it, you may choose to use this procedure.

 **Note:** This procedure assumes that you are preparing a version 2.0 Nortel Networks WLAN - Access Port (2230/2231) to interoperate with a version 2.0 WLAN Security Switch (2270). It also assumes that your WLAN Security Switch (2270) is already operating in **LWAPP Layer 3 Mode**. It also assumes that you are using the Internet Software Consortium (ISC) DHCP Server V3.0p11. Finally, it assumes that if you have deployed multiple WLAN Security Switches (2270), that the WLAN Security Switch (2270) you use to initialize the WLAN Access Port (2230/2231) is in an Nortel Networks Mobility Group with the Primary WLAN Security Switch (2270) you want to assign to the new WLAN Access Port (2230/2231).

Configuration Setup



Configuration Steps for a Nortel Networks WLAN - Access Port (2230/2231)

1. Configure the Internet Software Consortium (ISC) V3.0p11 DHCP Server to provide the vendor-specific Option 43 using the following entries:

```
option nortel-controller code 43 = text;  
option nortel-controller "Nortel-Controller: <Switch IP Address>;"
```

in which **<Switch IP Address>** is the IP address of the WLAN Security Switch (2270) you are going to use to prepare the WLAN Access Port (2230/2231).

(These commands direct all unconfigured WLAN Access Ports (2230/2231) discovery messages to the configuring WLAN Security Switch (2270).)

2. Make sure the configuring WLAN Security Switch (2270) is in **LWAPP Layer 3 Mode**, that if the configuring WLAN Security Switch (2270) is in the same mobility group as the planned Primary WLAN Security Switch (2270). Use CLI, Web Browser and/or WLAN Management System procedures as described in the WLAN Security Switch (2270) Quick Installation Guide and the Nortel Networks Product Documentation.
3. Also make sure that the DHCP server is configured in the WLAN Security Switch (2270) for both the Management Interface and AP-Manager Interface using the CLI, Web Browser, or WLAN Management System user interface.



Note: When you are installing a WLAN Access Port (2230/2231), a DHCP server must be accessible by the Nortel Networks WLAN - Access Port (2230/2231).

4. Take the AP out of the box and plug it into the network so that it can request an IP address from the DHCP server.
5. Apply power to the AP:
 - Use 802.3af-compliant Power Over Ethernet (PoE) from an orderable inline power injector or other network device. If you do not have PoE available, use the external AC-to-48 VDC Power Supply available from your Nortel Networks distributor or authorized reseller.
 - After powering up the AP, the RED Alarm LED comes on for a short period (about 15-20 seconds) and then all the LEDs blink sequentially back and forth, indicating that the AP is trying to find a WLAN Security Switch (2270) to connect to. This can continue for up to five minutes. If the AP remains in this mode for more than five minutes, the AP is unable to find the Master WLAN Security Switch (2270). Check the connection between the AP and the WLAN Security Switch (2270) and make sure the AP and the WLAN Security Switch (2270) are on the same subnet.
 - If the power light does not come on, check the power (it can be powered either with Power over Ethernet or a from an orderable AP External Power Supply).
6. The AP requests an IP address from the DHCP server, and the DHCP server returns an IP address for the AP, and also returns the **<Switch IP Address>** of the configuring WLAN Security Switch (2270).

Once the AP finds the configuring WLAN Security Switch (2270), it attempts to download the new Operating System code if the AP code version differs from the configuring WLAN Security Switch (2270) code version. While this is happening, the LEDs on the top of the AP blink on and off together.
7. Once the Operating System code download is successful, the AP reboots. The GREEN LED turns on and the two YELLOW/AMBER/ORANGE LEDs indicate the states of the 802.11a and 802.11b/g networks. If any part of the network is disabled in the configuring WLAN Security Switch (2270), the corresponding YELLOW/AMBER/ORANGE LED remains off.
 - Note that the Red LED can light for a short period (10-20 seconds) when the AP reboots. If the RED LED comes on AND STAYS ON for more than a minute, disconnect the AP and call Nortel Networks Technical Support.
 - From the CLI, Web Browser or WLAN Management System interface, configure the AP with its Primary WLAN Security Switch (2270) name (which can be the name of the configuring WLAN Security Switch (2270)) as described in the Nortel Networks Product Documentation.
 - If required, use the CLI, Web Browser or WLAN Management System interface to customize the AP-specific 802.11a, 802.11b and 802.11g network settings. Once again, the two YELLOW/AMBER/ORANGE LEDs indicate the states of the 802.11a and 802.11b/g networks. If any part of the network is disabled, the corresponding YELLOW/AMBER/ORANGE LED remains off.
8. If everything works (the GREEN LED is on and the RED LED is off), reboot the AP and install it as described in this document. If your Nortel Networks WLAN - Access Port (2230/2231) fails this visual test, refer to RMA Procedures in the Nortel Networks Product Documentation to return your WLAN Access Ports (2230/2231).



Note: When you are installing a Layer 3 Nortel Networks WLAN - Access Port (2230/2231) on a different subnet than the WLAN Security Switch (2270), MAKE SURE that a DHCP server is available on the subnet where you will be installing the AP, and that the subnet has a route back to the Primary WLAN Security Switch (2270). Also make sure that the route back to the Nortel Networks WLAN - Security Switch (2270) has destination UDP ports 12222 and 12223 open for LWAPP communications. Ensure the route back to the Primary WLAN Security Switch (2270) allows IP packet fragments. Finally, make sure that if address translation is used, that the Access Port (2230/2231) and the WLAN Security Switch (2270) have a static 1-to-1 NAT to an outside address. (Port Address Translation is not supported.)

9. When you have installed and powered up the AP in its final destination, verify that the LEDs are in the same state they were in at the end of Step 7. If no LEDs are on, the AP is most likely not receiving power. If all the LEDs blink sequentially back and forth for more than five minutes, the AP is unable to find its Primary WLAN Security Switch (2270). Check the connection between the AP and the WLAN Security Switch (2270), and make sure the AP and the WLAN Security Switch (2270) are either on the same subnet or that the AP has a route back to its Primary WLAN Security Switch (2270). Also, if the Nortel Networks WLAN - Access Port (2230/2231) is not on the same subnet as the WLAN Security Switch (2270), make sure that a DHCP server is accessible on the same subnet as the Nortel Networks WLAN - Access Port (2230/2231).

After completing [Step 2: Configuring the WLAN Access Port \(2230/2231\) Before Installation](#) for all WLAN Access Ports (2230/2231), continue with [Step 3: Preparing Mounting Locations](#).

Step 3: Preparing Mounting Locations

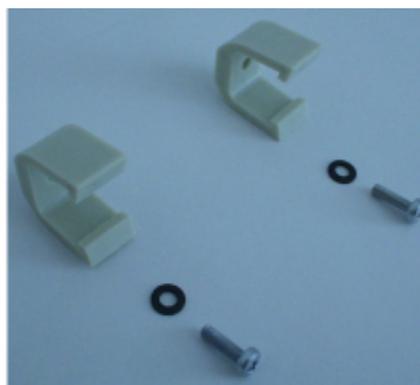
On your map, you should have the WLAN Access Port (2230/2231) locations, mounting options, and power options.

- Find the required mounting locations.
- Use the ceiling-mount base to mark the wall or ceiling locations for sheet metal, drywall, or other screws. Make sure you leave enough space around the WLAN Access Port (2230/2231) and base to plug the CAT-5 cable, optional external antenna cable(s), optional power supply cable, and optional Kensington MicroSaver Security Cable into the sides of the WLAN Access Port (2230/2231).

Figure - Factory-Supplied Mounting Options



A. Ceiling-Mount Base



B. Hanging-Ceiling Clips

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- Alternatively, attach the hanging ceiling clips to the WLAN Access Port (2230/2231). Make sure you leave enough space around the WLAN Access Port (2230/2231) to plug the CAT-5 cable, optional external antenna cable(s), optional power supply cable, and optional Kensington MicroSaver Security Cable into the sides of the WLAN Access Port (2230/2231).
- Alternatively, use the optional mounting bases and/or brackets to mark the wall or ceiling locations for sheet metal, drywall, or other screws. Make sure you leave enough space around the WLAN Access Port (2230/2231) and brackets to plug the CAT-5 cable, optional external antenna cable(s), optional power supply cable, and optional Kensington Micro-Saver Security Cable into the sides of the WLAN Access Port (2230/2231).

Figure - Factory-Orderable Mounting Brackets



A. Projection-Mount Bracket



B. Flush-Mount Bracket

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- If necessary, drill holes for the various cables where they can be mostly hidden from casual view. When you are mounting the WLAN Access Port (2230/2231) using a projection-mount L-bracket (the one with two long legs) the cables can be routed through the 5/8-inch (15.9 mm) holes in the bracket.
 - Route the CAT-5, optional power supply, optional external antenna cable(s), and optional Kensington MicroSaver Security cables to where they can plug into the WLAN Access Port (2230/2231). Make sure to leave about 6 inches (15 cm) of slack in the cables for future modifications.
 - Attach the brackets to the wall or ceiling, or install screws for ceiling-mount base:
 - Where you are going to use the projection-mount or flush-mount bracket, use customer-supplied sheet metal, drywall, or other screws to attach the bracket to the ceiling or wall.
 - Where you are going to use the ceiling-mount base, install customer-supplied sheet metal, drywall, or other screws with 1/4 inch (6.35 mm) or smaller heads protruding from the ceiling about 0.1 inch (2.5 mm).

You are now ready to install the WLAN Access Ports (2230/2231). Continue with [Step 4: Mounting the WLAN Access Ports \(2230/2231\)](#).

Step 4: Mounting the WLAN Access Ports (2230/2231)

Using the mounting kits supplied with each Nortel Networks WLAN - Access Port (2230/2231), mount each Nortel Networks WLAN - Access Port (2230/2231) in its indicated location, oriented as shown on the map. Note that you can mount the WLAN Access Ports (2230/2231) in the ceiling plenum or below the ceiling, but the WLAN Access Ports (2230/2231) perform best when mounted below the ceiling.

Note that the Nortel Networks 2200 series supports Antenna Sectorization, which can be used to increase the number of clients and/or client throughput in a given air space. Installers can mount two WLAN Access Ports (2230/2231) back-to-back and the Nortel Networks 2200 series operator can disable the second antenna in both WLAN Access Ports (2230/2231) to create a 360-degree coverage area with two sectors.

The WLAN Access Ports (2230/2231) can be mounted in one of four configurations:

- [Ceiling Mount Base](#)
- [Ceiling-Mount Clips](#)
- [Projection Wall Mount](#)
- [Flush Wall Mount](#)

Ceiling Mount Base

When you are mounting the Nortel Networks WLAN - Access Port (2230/2231) in the middle of a ceiling (flat sides toward the room or hallway), use the ceiling-mount base to mount the Nortel Networks WLAN - Access Port (2230/2231) as shown in the following figure and as described below:

Figure - Assembling the Nortel Networks WLAN - Access Port (2230/2231) and Ceiling-Mount Base



- Copy the MAC address(es) from the label(s) on the Nortel Networks WLAN - Access Port (2230/2231) onto the corresponding location on the map. MAC addresses have the format 000B85xxxxxx.
- Attach the ceiling-mount base to the bottom of the Nortel Networks WLAN - Access Port (2230/2231) using the factory-supplied machine screws and washers.
- Position the ceiling-mount base so its keyhole slots are partly on the drywall, sheet metal, or other screw heads installed in [Step 3: Preparing Mounting Locations](#).
- ▶ **Note:** If the screws do not securely hold the ceiling-mount base, remove the Nortel Networks WLAN - Access Port (2230/2231) and adjust the screws until they hold the ceiling-mount base securely.
- Attach the cables to the sides of the Nortel Networks WLAN - Access Port (2230/2231).



Note: When the Nortel Networks WLAN - Access Port (2230/2231) is powered up and is associated with an Nortel Networks WLAN - Security Switch (2270) (Green/Power and Yellow/802.11b/g and/or Yellow or Amber/802.11a LEDs lit), the Nortel Networks WLAN - Access Port (2230/2231) is broadcasting its beacon signal(s). When this happens, complete the installation as quickly as possible to remove yourself from within 8 inches (20 cm) of the WLAN Access Port (2230/2231) to comply with FCC RF radiation exposure guidelines.

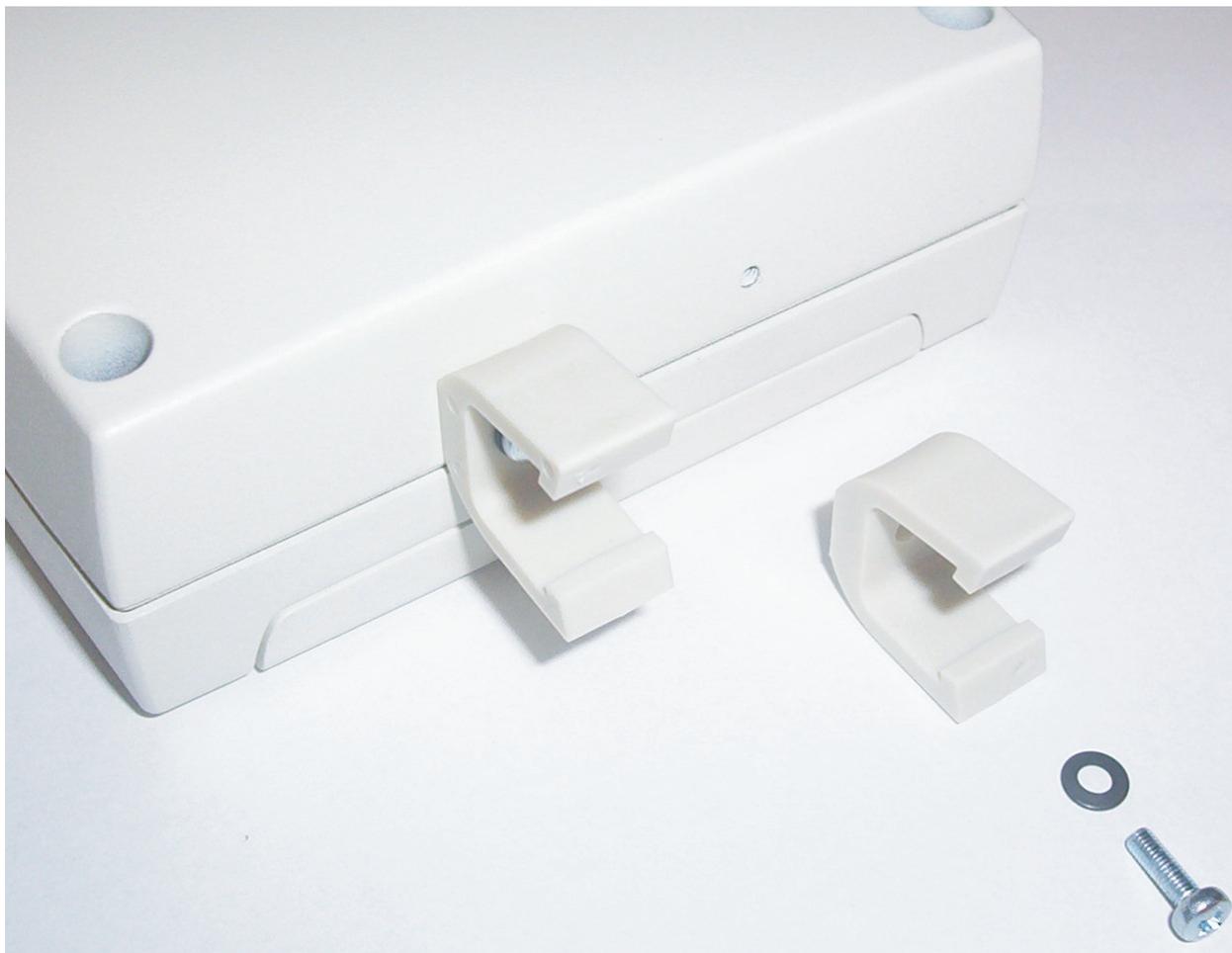
- Slide the ceiling-mount base onto the drywall, sheet metal, or other screw heads until it snugs into place.

You have installed the Nortel Networks WLAN - Access Port (2230/2231). Repeat [Step 4: Mounting the WLAN Access Ports \(2230/2231\)](#) for each Nortel Networks WLAN - Access Port (2230/2231) location, and then continue with [Step 5: Returning MAC Information](#).

Ceiling-Mount Clips

When you are mounting the WLAN Access Port (2230/2231) on the extruded aluminium rails of a hanging ceiling, use the ceiling-mount clips to mount the WLAN Access Port (2230/2231) as shown in the following figure and as described below:

Figure - Assembling the WLAN Access Port (2230/2231) and Ceiling-Mount Clips



- Copy the MAC address(es) from the label(s) on the WLAN Access Port (2230/2231) onto the corresponding location on the map. MAC addresses have the format 000B85xxxxxx.
- Attach the ceiling-mount clips to the bottom of the WLAN Access Port (2230/2231) using the factory-supplied machine screws and washers.

-
- Snap the ceiling-mount clips onto a hanging ceiling rail.

Figure - Clipping the WLAN Access Port (2230/2231) and Ceiling-Mount Clips to a Hanging-Ceiling Rail



- Attach the cables to the sides of the WLAN Access Port (2230/2231).



Note: Make sure the cables are routed away from the WLAN Access Port (2230/2231) antennas.



Note: When the WLAN Access Port (2230/2231) is powered up and is associated with an Nortel Networks WLAN - Security Switch (2270) (Green/Power and Yellow/802.11b/g and/or Yellow or Amber/802.11a LEDs lit), the WLAN Access Port (2230/2231) is broadcasting its beacon signal(s). When this happens, complete the installation as quickly as possible to remove yourself from within 8 inches (20 cm) of the WLAN Access Port (2230/2231) to comply with FCC RF radiation exposure guidelines.

You have installed the WLAN Access Port (2230/2231). Repeat [Step 4: Mounting the WLAN Access Ports \(2230/2231\)](#) for each WLAN Access Port (2230/2231) location, and then continue with [Step 5: Returning MAC Information](#).

Projection Wall Mount

When you are mounting the WLAN Access Port (2230/2231) out from a wall (flat sides along the wall or hallway), use an optional factory-orderable projection-mount L-bracket.

- Before proceeding, gently screw the two factory-supplied screws and spring washers into the bottom of the WLAN Access Port (2230/2231). Make sure the spring washers have their convex (high center sections) pointing toward the screw heads.



Note: The WLAN Access Port (2230/2231) threaded holes have precision-depth threads. Do not overtighten the screws, or the bracket will not fit under the screw heads.

Figure - Assembling the Mounting Screws and Spring Washers to the WLAN Access Port (2230/2231)



A. Screws and Spring Washers



B. Completed Assembly

04022105

- Copy the MAC address(es) from the label(s) on the WLAN Access Port (2230/2231) onto the corresponding location on the map. MAC addresses have the format 00B85xxxxxx.
- You have already attached the projection-mount L-bracket to the wall in [Step 3: Preparing Mounting Locations](#).
- Slide the screws into the keyhole slots on the mounting bracket as shown in the following figure.

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- ▶ **Note:** If the screws do not securely hold the bracket, remove the WLAN Access Port (2230/2231) and adjust the screws until they securely hold the bracket.

Figure - Assembling the WLAN Access Port (2230/2231) to the Projection-Mount Bracket



- Attach the cables to the sides of the WLAN Access Port (2230/2231).

- ▶ **Note:** Make sure the cables are routed away from the WLAN Access Port (2230/2231) antennas.

- ▶ **Note:** When the WLAN Access Port (2230/2231) is powered up and is associated with an Nortel Networks WLAN - Security Switch (2270) (Green/Power and Yellow/802.11b/g and/or Yellow or Amber/802.11a LEDs lit), the WLAN Access Port (2230/2231) begins broadcasting its beacon signal(s). When this happens, complete the installation as quickly as possible to remove yourself from within 8 inches (20 cm) of the WLAN Access Port (2230/2231) to comply with FCC RF radiation exposure guidelines.

You have installed the WLAN Access Port (2230/2231). Repeat [Step 4: Mounting the WLAN Access Ports \(2230/2231\)](#) for each WLAN Access Port (2230/2231) location, and then continue with [Step 5: Returning MAC Information](#).

Flush Wall Mount

When you are mounting the WLAN Access Port (2230/2231) against a wall (flat side toward the inside of the building), use an optional factory-orderable flush-mount bracket.

- Before proceeding, gently screw the two factory-supplied screws and spring washers into the bottom of the WLAN Access Port (2230/2231). Make sure the spring washers have their convex (high center sections) pointing toward the screw heads.



Note: The WLAN Access Port (2230/2231) threaded holes have precision-depth threads. Do not overtighten the screws, or the bracket will not fit under the screw heads.

Figure - Assembling the Mounting Screws and Spring Washers to the WLAN Access Port (2230/2231)



A. Screws and Spring Washers



B. Completed Assembly

04022105

- Copy the MAC address(es) from the label(s) on the WLAN Access Port (2230/2231) onto the corresponding location on the map. MAC addresses have the format 00B85xxxxxx.
- You have already attached the flush-mount bracket to the wall in [Step 3: Preparing Mounting Locations](#).
- Slide the screws into the keyhole slots on the mounting bracket as shown in the following figure.



Note: Make sure the side of the WLAN Access Port (2230/2231) with the door is facing away from the wall. This ensures that the correct antenna is facing the building, and makes future upgrades easier.

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- ▶ **Note:** If the screws do not securely hold the bracket, remove the WLAN Access Port (2230/2231) and adjust the screws until they securely hold the bracket.

Figure - Assembling the WLAN Access Port (2230/2231) to the Flush-Mount Bracket



- Attach the cables to the sides of the WLAN Access Port (2230/2231).

- ▶ **Note:** Make sure the cables are routed away from the WLAN Access Port (2230/2231) antennas.

- ▶ **Note:** When the WLAN Access Port (2230/2231) is powered up and is associated with an Nortel Networks WLAN - Security Switch (2270) (Green/Power and Yellow/802.11b/g and/or Yellow or Amber/802.11a LEDs lit), the WLAN Access Port (2230/2231) begins broadcasting its beacon signal(s). When this happens, complete the installation as quickly as possible to remove yourself from within 8 inches (20 cm) of the WLAN Access Port (2230/2231) to comply with FCC RF radiation exposure guidelines.

You have installed the WLAN Access Port (2230/2231). Repeat [Step 4: Mounting the WLAN Access Ports \(2230/2231\)](#) for each WLAN Access Port (2230/2231) location, and then continue with [Step 5: Returning MAC Information](#).

Step 5: Returning MAC Information

When you have completed the installations as outlined in [Step 4: Mounting the WLAN Access Ports \(2230/2231\)](#), return the MAC addresses and their locations on the maps or floor plans to the network planner or manager. The Nortel Networks WLAN - Management System Software (WLAN Management System Software) operators will use the MAC address and location information to create maps for precise wireless Operating System management.

Also return any unused mounting kit hardware and external power supplies to the network planner or manager for use in future deployments.



Note: Please remind the Network Planner or Manager that now is a good time to register the WLAN Access Ports (2230/2231) at <http://www.nortelnetworks.com/>.

Planning Notes

About Cables

- You will run one CAT-5 Ethernet cable from the WLAN Access Port (2230/2231) to a network device, or a PoE injector/hub.

When the WLAN Access Port (2230/2231) will be mounted below the ceiling using the ceiling mount or wall mount brackets, you may have to drill a hole into the ceiling plenum to run the CAT-5 cable to the wiring closet. When the CAT-5 cable cannot be run through the ceiling plenum, find another path to route the cable from the WLAN Access Port (2230/2231) to the wiring closet.

When the WLAN Access Port (2230/2231) will be mounted above the ceiling using the ceiling mount or wall mount brackets, run the CAT-5 cable to the wiring closet through the ceiling plenum. When the CAT-5 cable cannot be run through the ceiling plenum, find another path to route the cable from the WLAN Access Port (2230/2231) to the wiring closet.

- When you are powering the WLAN Access Port (2230/2231) from AC power, route the power supply cable from the AC convenience outlet to the WLAN Access Port (2230/2231). Make sure you secure the AC power plug so it will be difficult for people to pull on the power cord or unplug the power supply from the AC power outlet.
- When you are powering the WLAN Access Port (2230/2231) from a PoE source (a network device, or a PoE injector/hub), you do not need to route a separate power cable to the WLAN Access Port (2230/2231), because the WLAN Access Port (2230/2231) will receive its power across the CAT-5 Ethernet cable. Return the power supply to the wireless network planner/manager.

About External Antennas

- Refer to the WLAN Access Port (2230/2231) External Antennas section in the Nortel Networks Product Documentation for an overview of the external 802.11a and 802.11b/g external antennas available for use with the WLAN Access Ports (2230/2231).



Note: Refer to the Nortel Networks 2200 series Release Notes for 802.11a external antenna information. Contact your Nortel Networks distributor or authorized reseller for a list of FCC-approved 802.11a and 802.11b/g external antennas.

- When you are attaching external antennas to the WLAN Access Port (2230/2231), use cables with female reverse-TNC connectors to connect antennas to the ports on the side of the WLAN Access Port (2230/2231). See the following figure for antenna port markings.

Figure - WLAN Access Port (2230/2231) External Antenna Port Markings



A. 2.4 GHz/802.11b Left External Antenna Port



B. 5 GHz/802.11a and 2.4 GHz/802.11b Right External Antenna Ports

About Mounting Options

- ▶ **Note:** Because the WLAN Access Port (2230/2231) internal antennas have been designed to reduce inter-floor interference, it is strongly recommended that you mount the WLAN Access Port (2230/2231) standing or hanging straight up or down.
- ▶ **Note:** You can mount the WLAN Access Ports (2230/2231) in the ceiling plenum or below the ceiling using the ceiling mount base or wall mount brackets, but the WLAN Access Ports (2230/2231) perform best when mounted below the ceiling.
- When you are mounting the WLAN Access Port (2230/2231) in the middle of a ceiling, hallway, or ceiling plenum, you will typically use the color-coordinated ceiling-mount base to stabilize the WLAN Access Port (2230/2231) after it is mounted. Use the mounting base to mark the sheet metal, drywall, or other screw locations.

The mounting base attaches to the bottom of the WLAN Access Port (2230/2231) with two supplied screws, and then the assembly slides and locks onto two sheet metal, drywall, or other screws.

- When you are mounting the WLAN Access Port (2230/2231) out from a wall (flat sides along the room or hallway), use the projection-mount L-bracket supplied with the WLAN Access Port (2230/2231). Use the L-bracket to mark the sheet metal, drywall, or other screw locations.
- When you are mounting the WLAN Access Port (2230/2231) against a wall (flat Side A toward the inside of the building), use the flush-mount bracket supplied with the WLAN Access Port (2230/2231). The flush-mount L-bracket is the one with one long and one short leg. Use the L-bracket to mark the sheet metal, drywall, or other screw locations.

About Physical Security

Regardless of mounting, the WLAN Access Port (2230/2231) can be secured with a Kensington MicroSaver Security Cable. If required, use any MicroSaver Security Cable to attach either side of your WLAN Access Port (2230/2231) to a solid beam, pipe, or support.

How to get help

If you purchased a service contract for your Nortel Networks product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance.

If you purchased a Nortel Networks service program, contact Nortel Networks Technical Support. To obtain contact information online, go to the www.nortelnetworks.com/cgi-bin/comments/comments.cgi URL, then click on Technical Support.

From the Technical Support page, you can open a Customer Service Request online or find the telephone number for the nearest Technical Solutions Center.

If you are not connected to the Internet, you can call 1-800-4NORTEL (1-800-466-7835) to learn the telephone number for the nearest Technical Solutions Center.

An Express Routing Code (ERC) is available for many Nortel Networks products and services. When you use an ERC, your call is routed to a technical support person who specializes in supporting that product or service. To locate an ERC for your product or service, go to the <http://www.nortelnetworks.com/help/contact/erc/index.html> URL.

FCC Statements for WLAN Access Ports (2230/2231)

This section includes the following FCC statements for the WLAN Access Port (2230/2231):

- [Class A Statement](#)
- [RF Radiation Hazard Warning](#)
- [Non-Modification Statement](#)
- [Deployment Statement](#)

Class A Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RF Radiation Hazard Warning

To ensure compliance with FCC RF exposure requirements, this device must be installed in a location such that the antenna of the device will be greater than 20 cm (8 in.) from all persons. Using higher gain antennas and types of antennas not covered under the FCC certification of this product is not allowed.

Installers of the radio and end users of the Nortel Networks 2200 Series must adhere to the installation instructions provided in this manual.

Non-Modification Statement

Use only the supplied internal antenna, or external antennas supplied by the manufacturer. Unauthorized antennas, modifications, or attachments could damage the badge and could violate FCC regulations and void the user's authority to operate the equipment.

Deployment Statement

This product is certified for indoor deployment only. Do not install or use this product outdoors.