

Setting Up Your First SkyPilot Network

Using this guide

This document provides a quick start guide to setting up a baseline SkyPilot wireless mesh network.

You can set up a fully-functional, demonstration network using any of the three topologies shown in the figures.

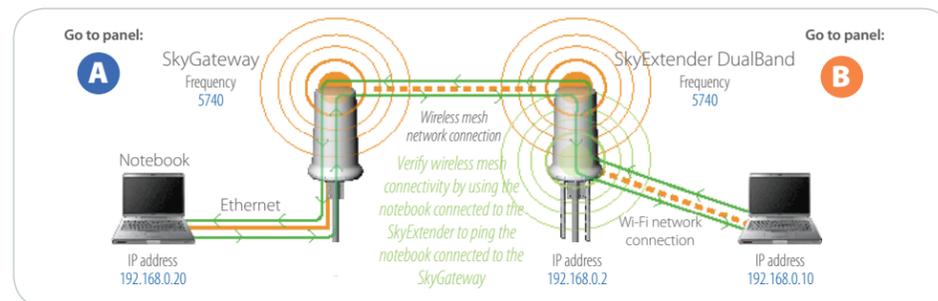
What you need

- Product kits for the network you will be setting up, including mounting hardware and extra cabling.
- Two notebook computers to use as consoles for configuration and verification. (One notebook must have Wi-Fi capability if you're setting up a SkyPilot Extender DualBand.)

Tags in the figures identify the panels that provide instructions for installing and manually configuring SkyPilot devices. (Each topology requires a SkyGateway.)

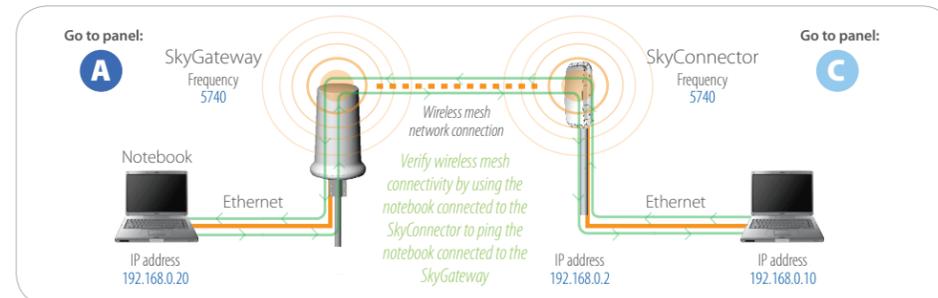
Note: To ensure mesh network connectivity, make sure you specify the same frequency and domain for all SkyPilot devices on the network.

SkyGateway with SkyExtender DualBand node



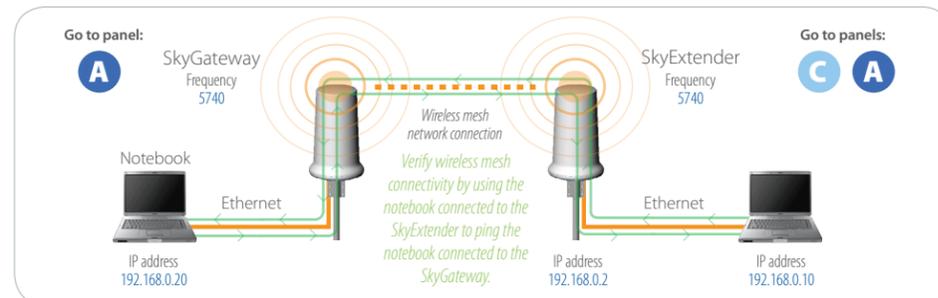
Follow the instructions in Panel **A** to set up and configure a SkyGateway. Next, follow the instructions in Panel **B** to set up and configure a SkyExtender DualBand to operate as a node on the SkyPilot network. Verify that the mesh network connection is active by "pinging" the notebook attached to the SkyGateway.

SkyGateway with SkyConnector node



Follow the instructions in Panel **A** to set up and configure a SkyGateway. Next, follow the instructions in Panel **C** to set up and configure a SkyConnector to operate as a node on the SkyPilot network. Verify that the mesh network connection is active by "pinging" the notebook attached to the SkyGateway.

SkyGateway with SkyExtender node



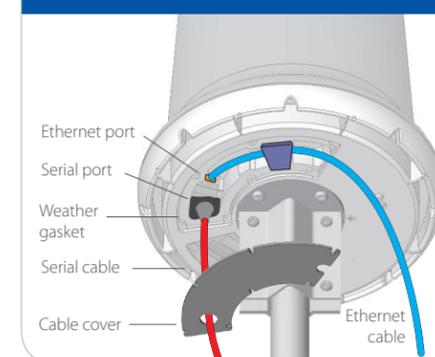
Follow the instructions in panel **A** to set up and configure a SkyGateway. Next, follow the instructions in panel **C** and **A** to set up and configure a SkyExtender to operate as a node on the SkyPilot network. Verify that the mesh network connection is active by "pinging" the notebook attached to the SkyGateway.

A SkyGateway

The SkyGateway operates as a hub for your wireless mesh network. As the interface to wired infrastructure, a SkyGateway provides subscribers with access to the internet or WAN.

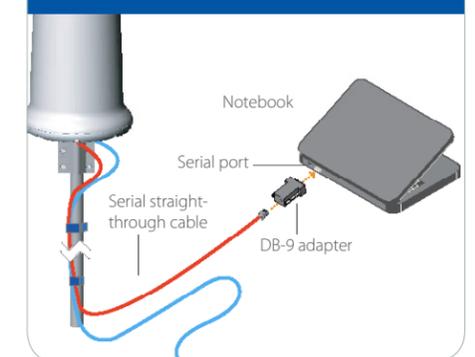
SkyGateways and SkyExtenders use a GPS signal to synchronize with other devices on the network. To ensure optimal reception, mount the unit outdoors with an unobstructed view of the sky and use a handheld GPS receiver to check signal strength.

1 Attach cables



Connect Ethernet and serial cables, threading the cables through the provided cable cover and gaskets. Reattach the cover, making sure the Ethernet cable passes through the cutout.

2 Connect notebook



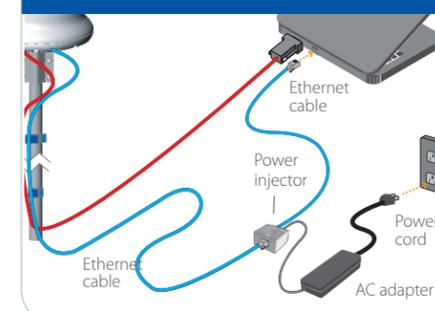
Connect the serial straight-through cable extending from the SkyGateway to the provided DB-9 adapter, then plug the adapter into a serial port on the notebook computer.

3 Make terminal connection



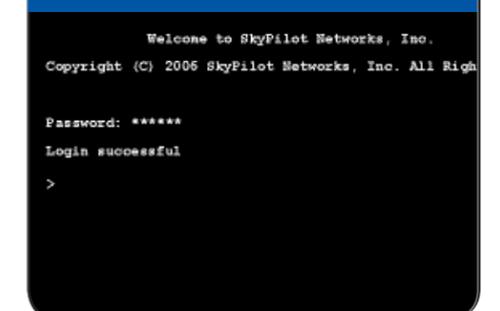
From the notebook, start a terminal emulation program (for example, Tera Term) and select the COM port on which the serial cable is attached. Connect to the device using these serial communication settings: 38400 bps, 8 data bits, no parity, one stop bit, and no flow control.

4 Power and Ethernet



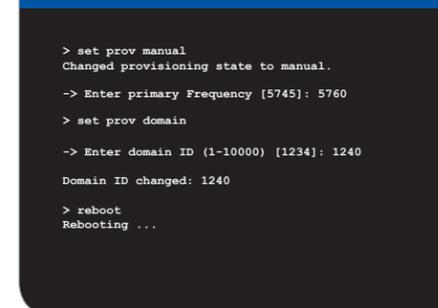
Connect the Ethernet cable extending from the SkyGateway to the port labeled "CPE" on the power injector. Connect an Ethernet cable between the port labeled "Computer" on the power injector and an Ethernet port on the notebook computer. Plug the AC adapter into the power injector and connect the power cord to the AC adapter. Plug the power cord into an outlet to power on the SkyGateway.

5 Log into SkyGateway



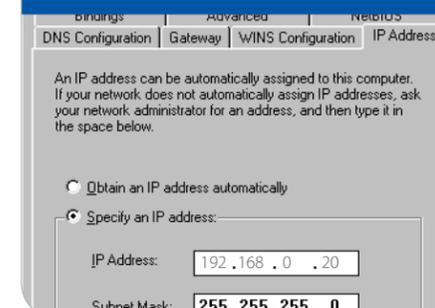
Observe the boot messages in the terminal window. If the "waiting for GPS" fails to resolve, confirm that a GPS signal is present. **Note:** GPS acquisition can take up to 15 minutes, even with optimal GPS reception. When the welcome message appears, log in to the device by entering the default password, *public*.

6 Configure and reboot



Enter *set prov manual* to enable manual provisioning. At the prompt, enter a primary frequency. Use *set prov domain* to supply a domain. Enter *reboot* to apply the configuration to Flash memory and restart.

7 Create network connection



On the notebook computer, open the Network control panel and configure a new network connection. Give the notebook an IP address of 192.168.0.20 and a Netmask of 255.255.255.0.

What's next?

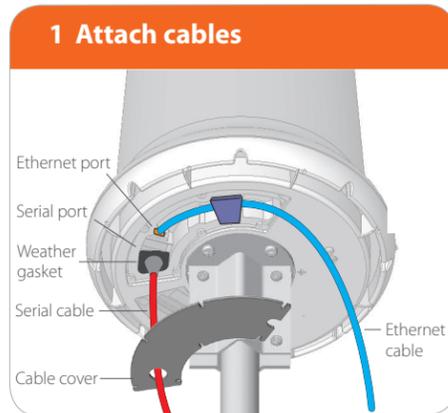
To set up a SkyPilot SkyExtender DualBand to provide access to the mesh network via Wi-Fi enabled devices, go to panel **B**.

To set up a SkyConnector or SkyExtender to provide access to the mesh network via a PC or LAN, go to panel **C**.

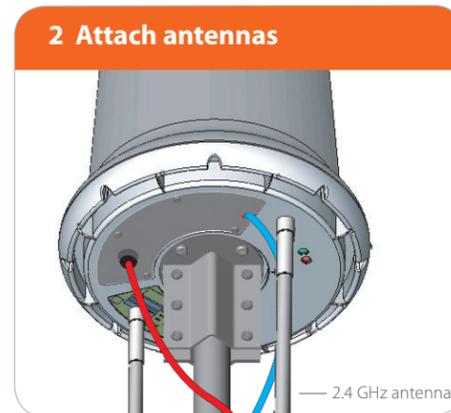
B SkyExtender DualBand

In addition to extending network range, a SkyExtender DualBand can operate as a node providing a wireless access point for Wi-Fi enabled devices.

SkyGateways and SkyExtenders use a GPS signal to synchronize with other devices on the network. To ensure optimal reception, mount the unit outdoors with an unobstructed view of the sky and use a handheld GPS receiver to check signal strength.



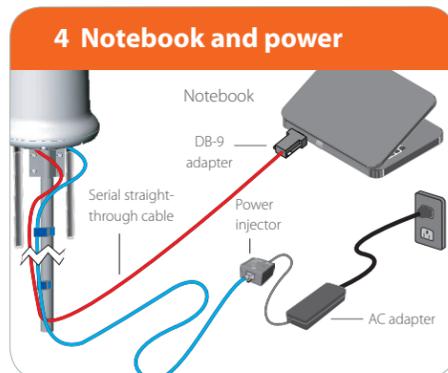
Connect Ethernet and serial cables, threading the cables through the provided cable cover and gaskets. Reattach the cover, making sure the Ethernet cable passes through the cutout.



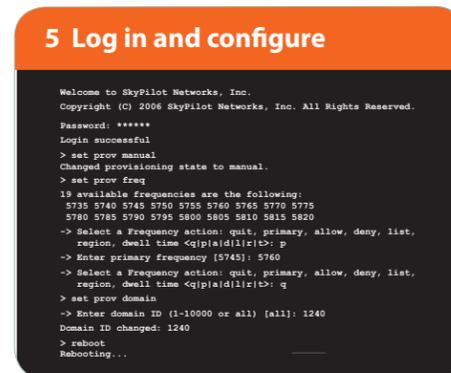
Attach the two 2.4 GHz antennas included with the device to the standard N connectors on the base of the SkyExtender DualBand.



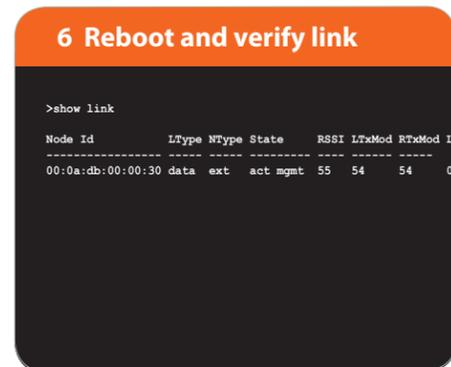
From the notebook, start a terminal emulation program (for example, Tera Term) and select the COM port which the serial cable is attached. Connect to the device using these serial communication settings: 38400 bps, 8 data bits, no parity, one stop bit, and no flow control.



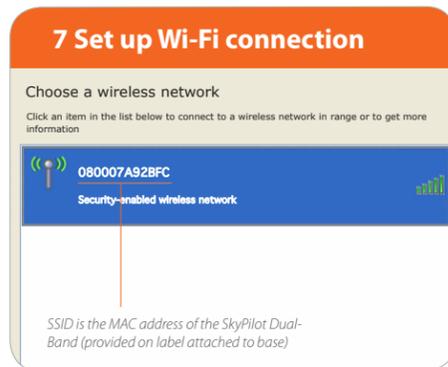
Connect the serial straight-through cable extending from the SkyExtender DualBand to the provided DB-9 adapter, then plug the adapter into a serial port on the notebook computer. Connect the Ethernet cable to the port labeled "CPE" on the power injector. Plug the AC adapter into the power injector and connect the power cord to the AC adapter. Plug the power cord into an outlet.



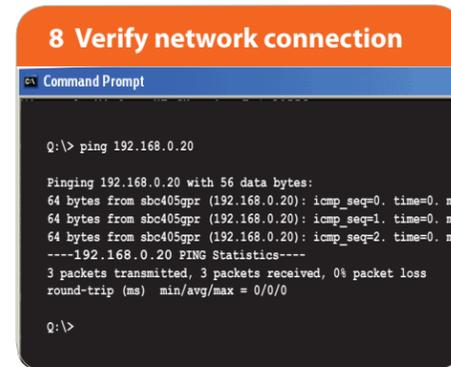
In the terminal window, watch the boot messages to confirm acquisition of a GPS signal. When a welcome message appears, log in to the device by entering the default password, *public*. Enter *set prov manual* to enable manual provisioning mode. Enter *set prov freq* and supply a primary frequency. Enter *set prov domain* and provide a domain. Enter *reboot* to save the configuration to flash memory and restart.



After reboot, log in to the device and enter *show link* to view the current network status of the device. If an active path is present, the SkyExtender DualBand is communicating with the network. Note: link formation may take several minutes.



Open the Network control panel and set up a wireless connection with the IP address 192.168.0.10 and Netmask 255.255.255.0. From the Network Connection control panel choose the SSID associated with the device access point. (The network key is *publicpublic*.)

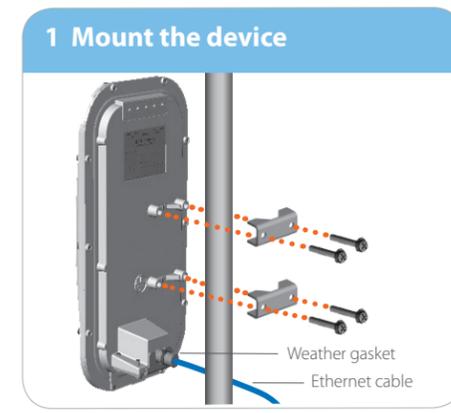


From the notebook, open a DOS command window and *ping* the IP address of the notebook computer connected to the SkyGateway, 192.168.0.20. If *ping* fails to return packets, repeat steps 3-7.

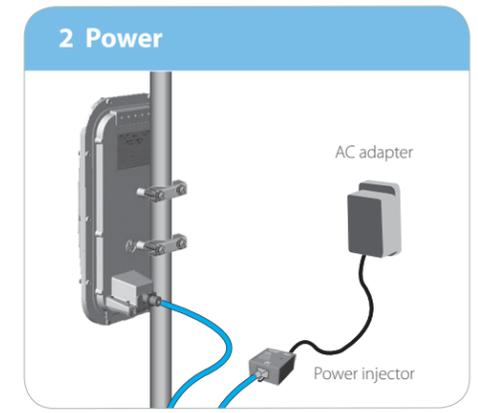
C SkyConnector or SkyExtender

A SkyConnector or SkyExtender can operate as a node on the wireless mesh network, providing Internet access via a PC or router connected to the device.

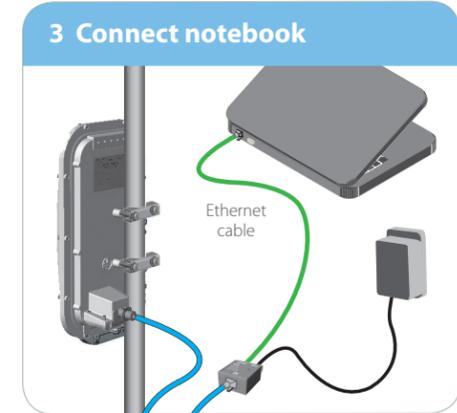
Note: If using a SkyExtender instead of a SkyConnector, perform steps 1 through 5 in panel **A** then return to this panel and pick up the installation at step 4.



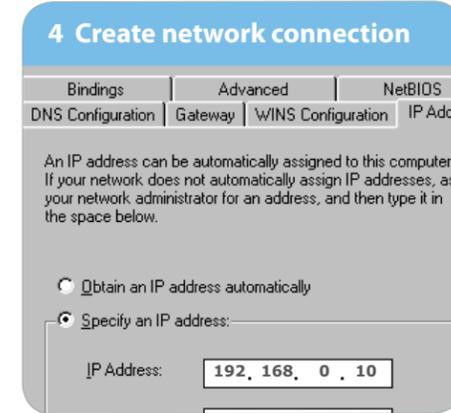
Insert an Ethernet cable through the weather gasket and connect to the Ethernet port on the back of the SkyConnector. Attach the device to a pole.



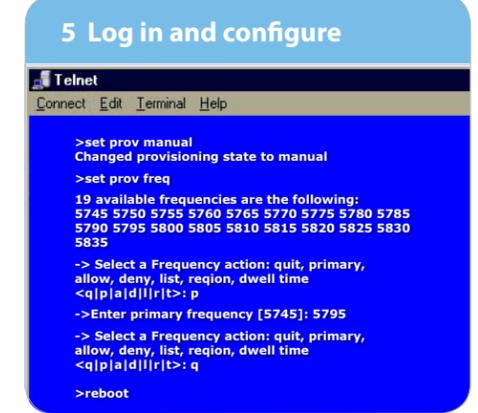
Connect the Ethernet cable to the port labeled "CPE" on the power injector. Plug the AC adapter into the power injector then plug the adapter into an outlet.



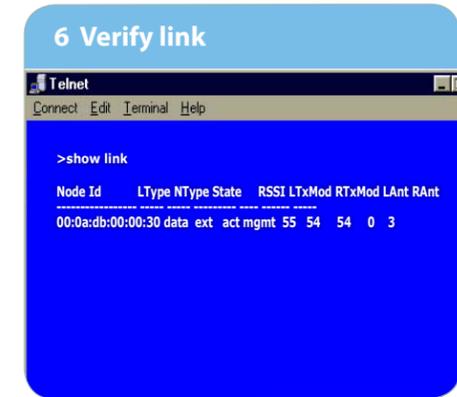
Connect a second Ethernet cable from the power injector port labeled "Computer" to a notebook computer.



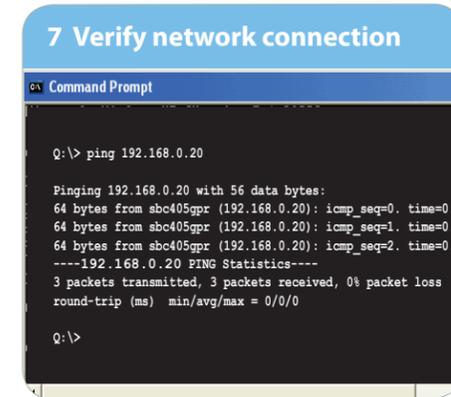
On the notebook computer, open the Network control panel and configure a new network connection. Give the notebook an IP address of 192.168.0.10 and a Netmask of 255.255.255.0.



Telnet to the device at IP address 192.168.0.2. Log in by entering the password *public*. Enter *set prov manual* and choose the same frequency you gave the SkyGateway. Enter *q* to exit the command, then enter *reboot* to apply the configuration to Flash memory.



After rebooting the device, enter the *show link* command to view the current network status of the device. Enter *q* to quit the command-line interface.



From the notebook, open a DOS command window and *ping* the IP address of the notebook computer connected to the SkyGateway, 192.168.0.20. If *ping* fails to return packets, repeat steps 4-7.

What's next?

For more detailed documentation on setting up SkyPilot devices and managing a wireless mesh network, visit www.skypilot.com/support.



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