Small Business VoIP Router: Poor or No Signal

Document ID: 108654

Contents

IntroductionWhat should I do if I'm getting poor signal or no signal?Related Information

Introduction

This article is one in a series to assist in the setup, troubleshooting, and maintenance of Cisco Small Business products.

Q. What should I do if I get a poor signal or no signal?

A.

Low or poor signal is mainly caused by four major factors:

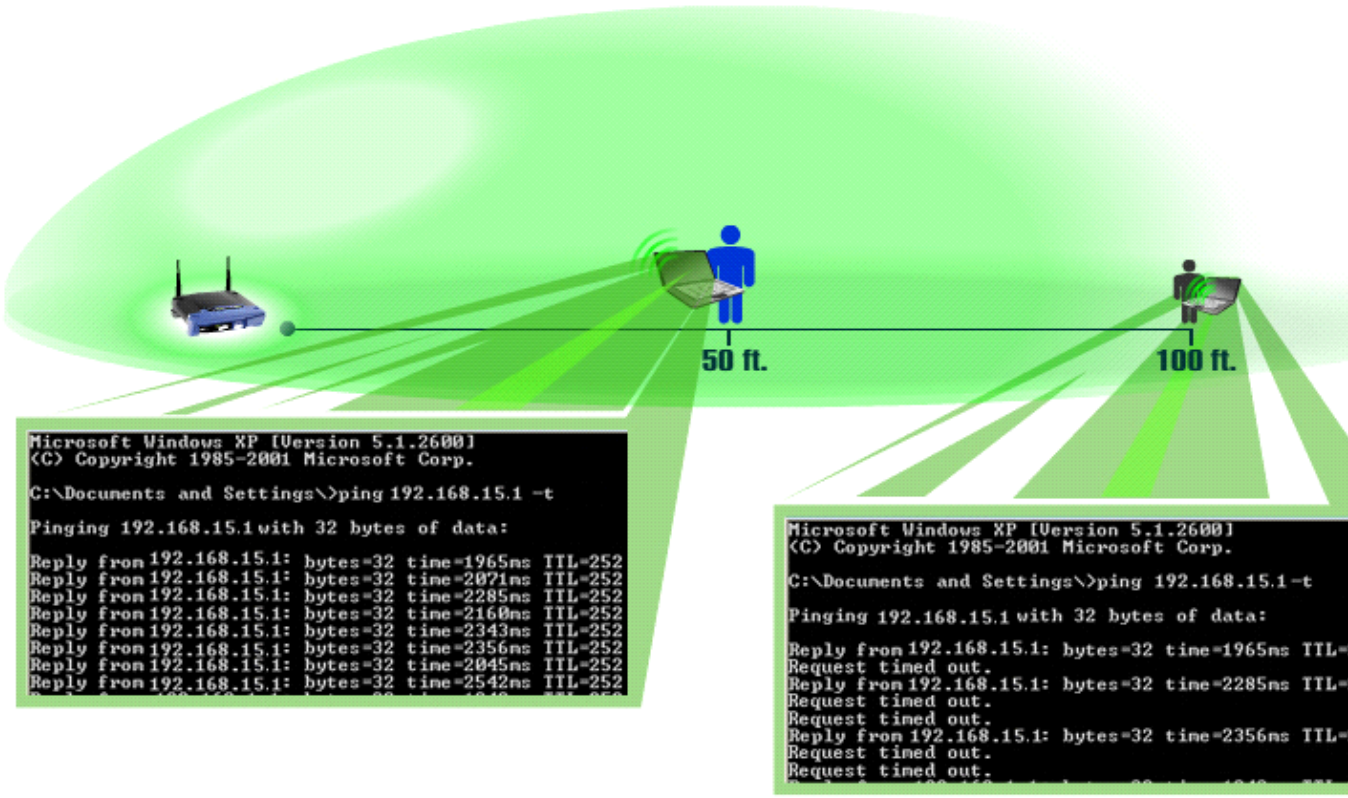
- Distance
- Obstructions
- Interferences
- Transmit Rate on the Access Point and/or the Wireless Adapter Not Set to Auto

Solving Distance−Related Problems

Keep in mind that wireless devices have limitations when it comes to their range. For devices running on 2.4 GHz, the range can go up to 100−150 feet. If your wireless network is too far from its range, consider relocating the devices. One important thing to remember is that distance is directly proportional to signal strength. The farther you are from the Access Point (AP), the lower the signal. In order to check if you are getting a stable connection, perform a continuous ping. If you receive replies most of the time, this means the connection is stable. If it times out the majority of the time, the connection is not stable. For instructions, click here.

Note: If you are using an ***SRX and/or SRX400*** device, the range is three times that of Wireless−G. If you are using SRX200 devices, the wireless range is double that of Wireless−G. On the other hand, if you are using a ***Wireless−N*** device, the wireless range is four times compared to Wireless−G.

Wireless Technology	Wireless Range
SRX and/or SRX400	3x than Wireless-G
SRX200	2x than Wireless-G
Wireless-A (802.11a)	25-75 feet
Wireless-N	4x than Wireless-G



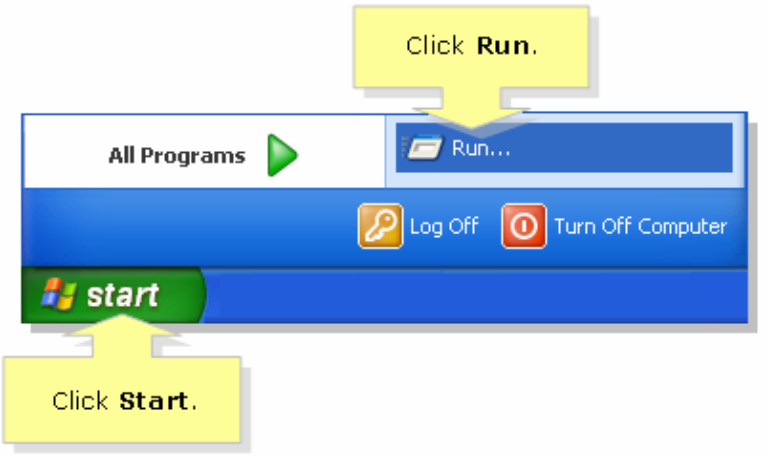
Perform a Continuous Ping

Note: This document assumes that the LAN IP address of the wireless router is 192.168.15.1. If you have changed the router's IP address, that is the IP address you will be pinging.

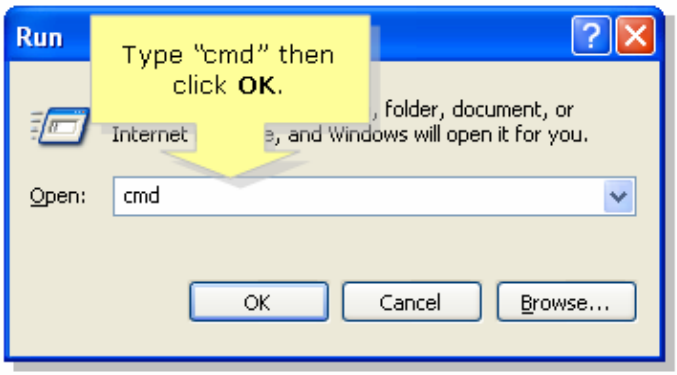
Windows 2000/XP

Note: In order to perform continuous ping using Windows 98/ME, click here.

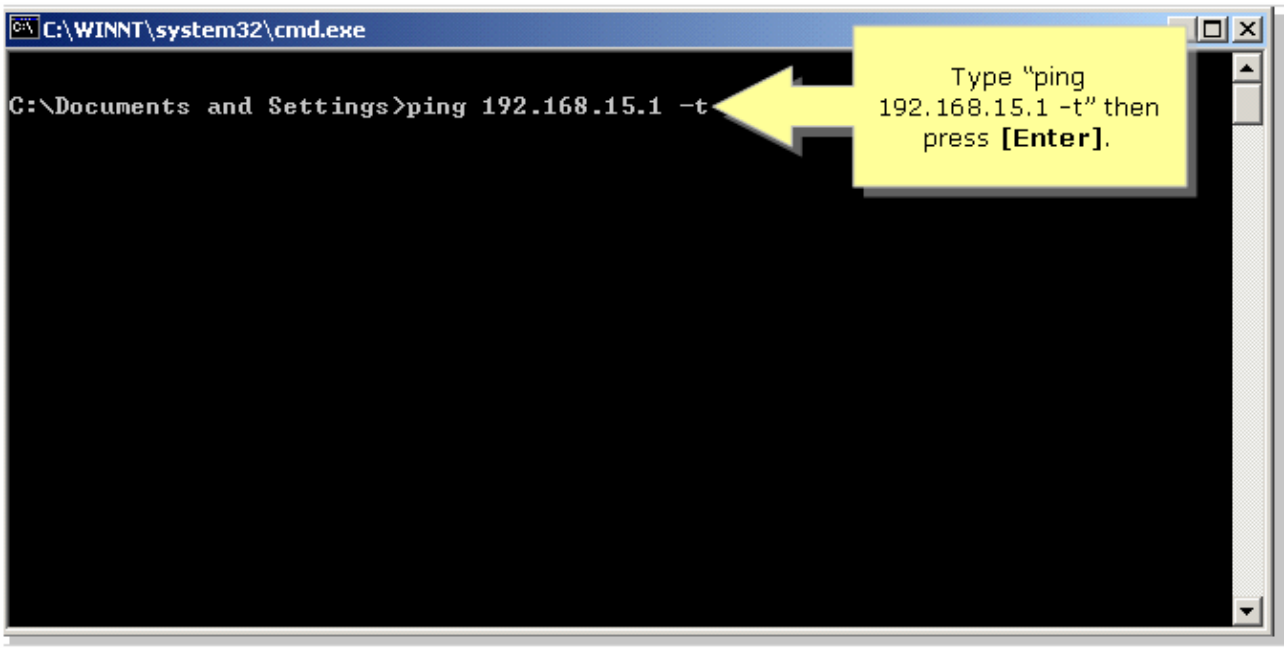
Step 1:
Click ***Start*** > ***Run***.



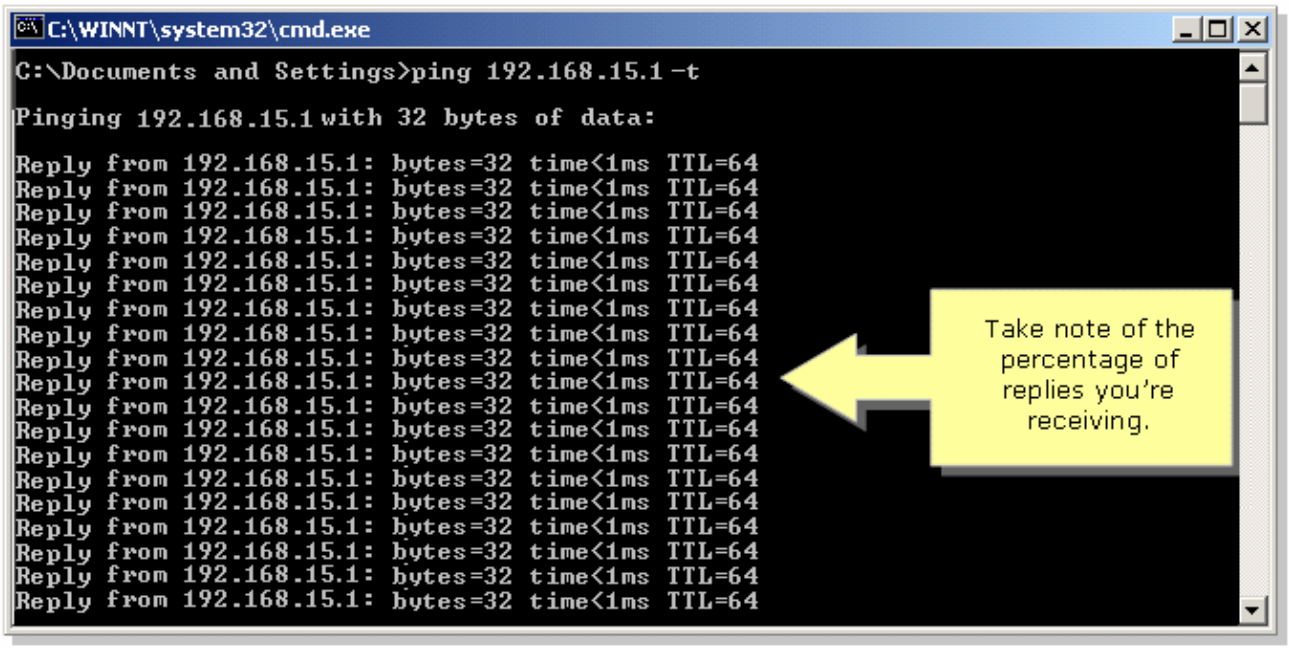
Step 2:
When the ***Run*** window opens, type "cmd" in the ***Open*** field, and click ***OK***.



Step 3:
When the ***MS DOS Prompt*** appears, type "ping 192.168.15.1 −t" or the IP address of the wireless router, and press ***[Enter]***.

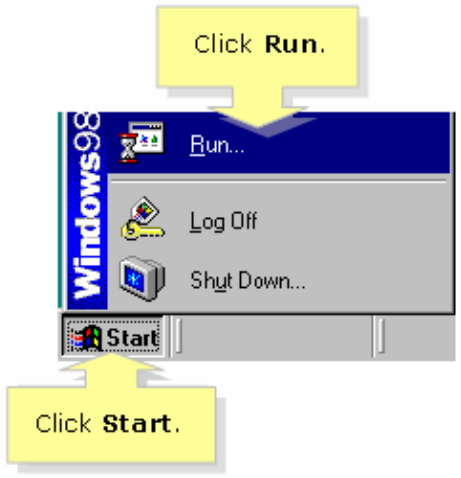


Step 4:
Note the percentage of replies you receive.

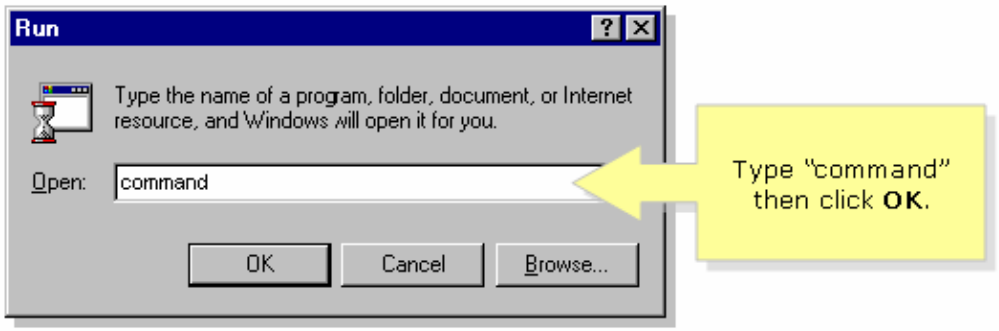


Windows 98/ME

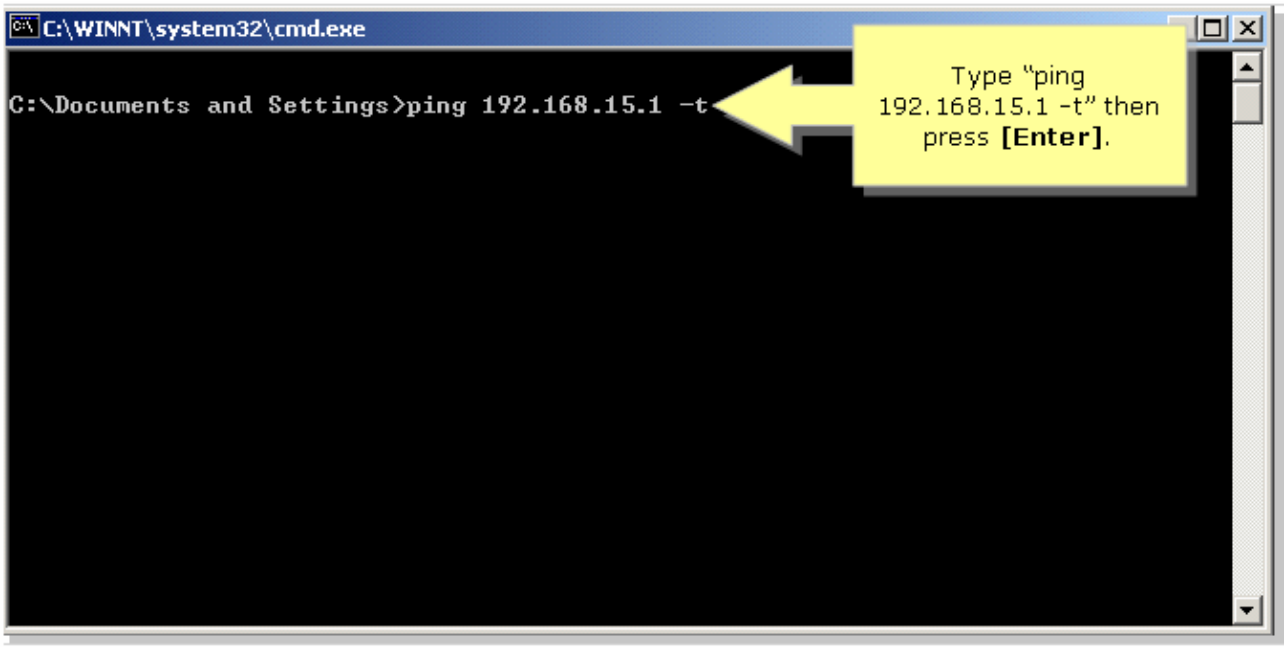
Step 1:
Click ***Start*** > ***Run***. A window similar to Step 2 appears.



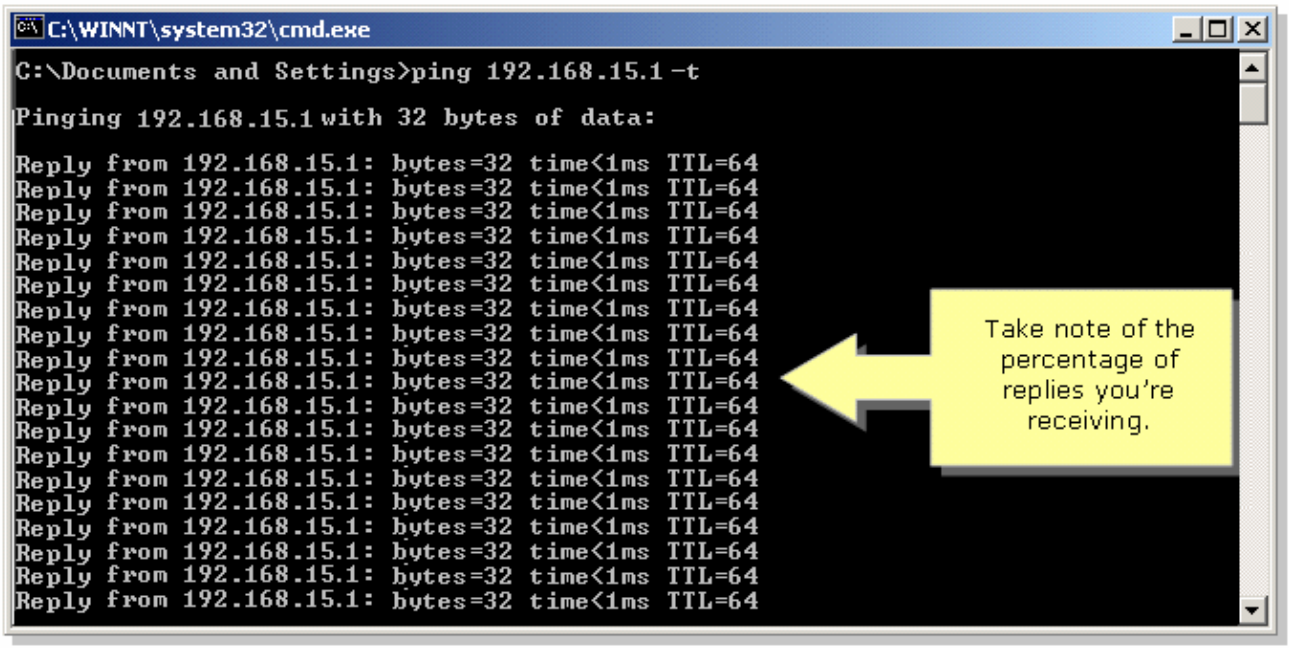
Step 2:
Once the ***Run*** window appears, type "command" in the ***Open*** field, and click ***OK***.



Step 3:
When the ***MS DOS Prompt*** appears, type "ping 192.168.15.1 −t" or the IP Address of the wireless router, and press ***[Enter]***.



Step 4:
Note the percentage of replies you receive.



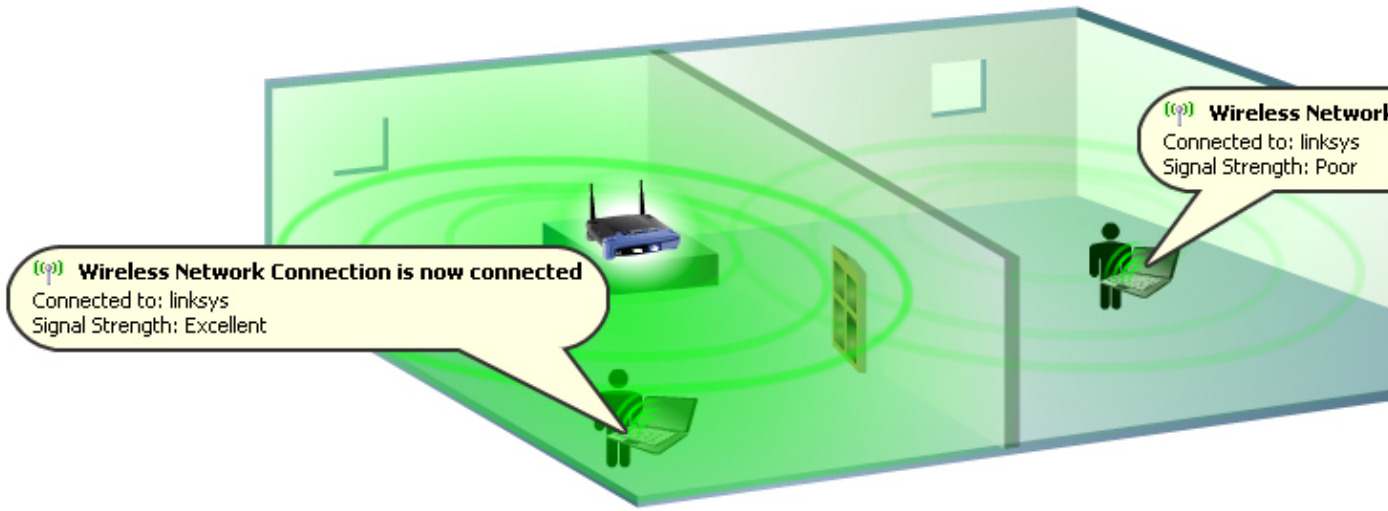
Going Around Physical Obstructions

Wireless networks are also susceptible to obstructions that may lead to low signal. Often, the signal gets reflected, refracted, or absorbed by the obstruction.

Common obstructions are:

- Cabinets
- Mirrors
- Glasses
- Metal objects
- Thick walls and ceilings

If you have any of these objects between your wireless adapter and AP, consider relocating your AP somewhere high to get around the obstruction.



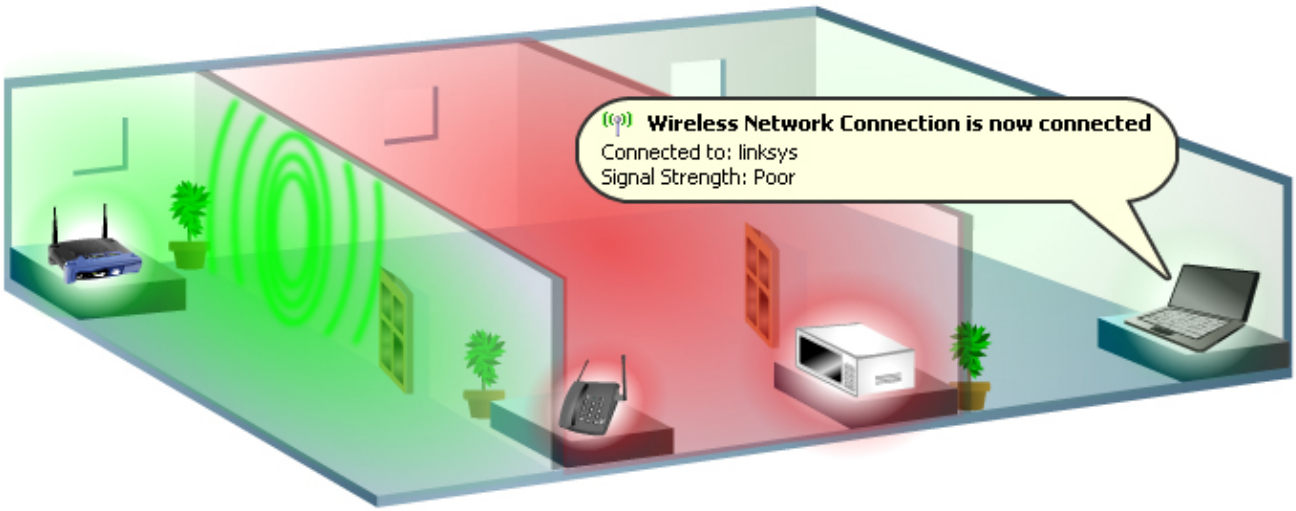
Encountering Wireless Interferences

Neighboring wireless networks or any appliance that operates on the same frequency as your wireless device (for example, 2.4 GHz) may cause interference and therefore may affect your wireless connection and signal.

Common sources of interference are:

- Neighboring wireless networks
- Microwave ovens
- 2.4 GHz cordless telephones
- Bluetooth devices
- Wireless baby monitors

In order to solve the problem, change the channel and SSID on your AP. Preferred channels to use are 1, 6, and 11 since they are considered non−overlapping channels.



Changing Channels

The 802.11b and 802.11g standards use the 2.4 Gigahertz (GHz) band. With this frequency, 802.11b and 802.11g equipment can encounter interference from microwave ovens, cordless telephones, Bluetooth devices, and other appliances using the same band.

An important concept to note regarding channel assignments is that the channel actually represents the center frequency that the transceiver uses within the radio and AP (for example, 2.412 GHz for channel 1 and 2.417 GHz for channel 2). Remember that there is a 5 MHz separation between frequencies and that an 802.11b signal has a frequency spectrum or range of approximately 30 MHz. A signal falls within about 15 MHz both sides of the center frequency which results to an 802.11b signal overlap when using several adjacent channel frequencies. This leaves you with only three channels (channels 1, 6, and 11 for the U.S.) that you can use without causing interference between APs.

In order to change the channel on your wireless router, click here.

Make sure that the Transmit Rate on the Wireless Router is Set to Auto

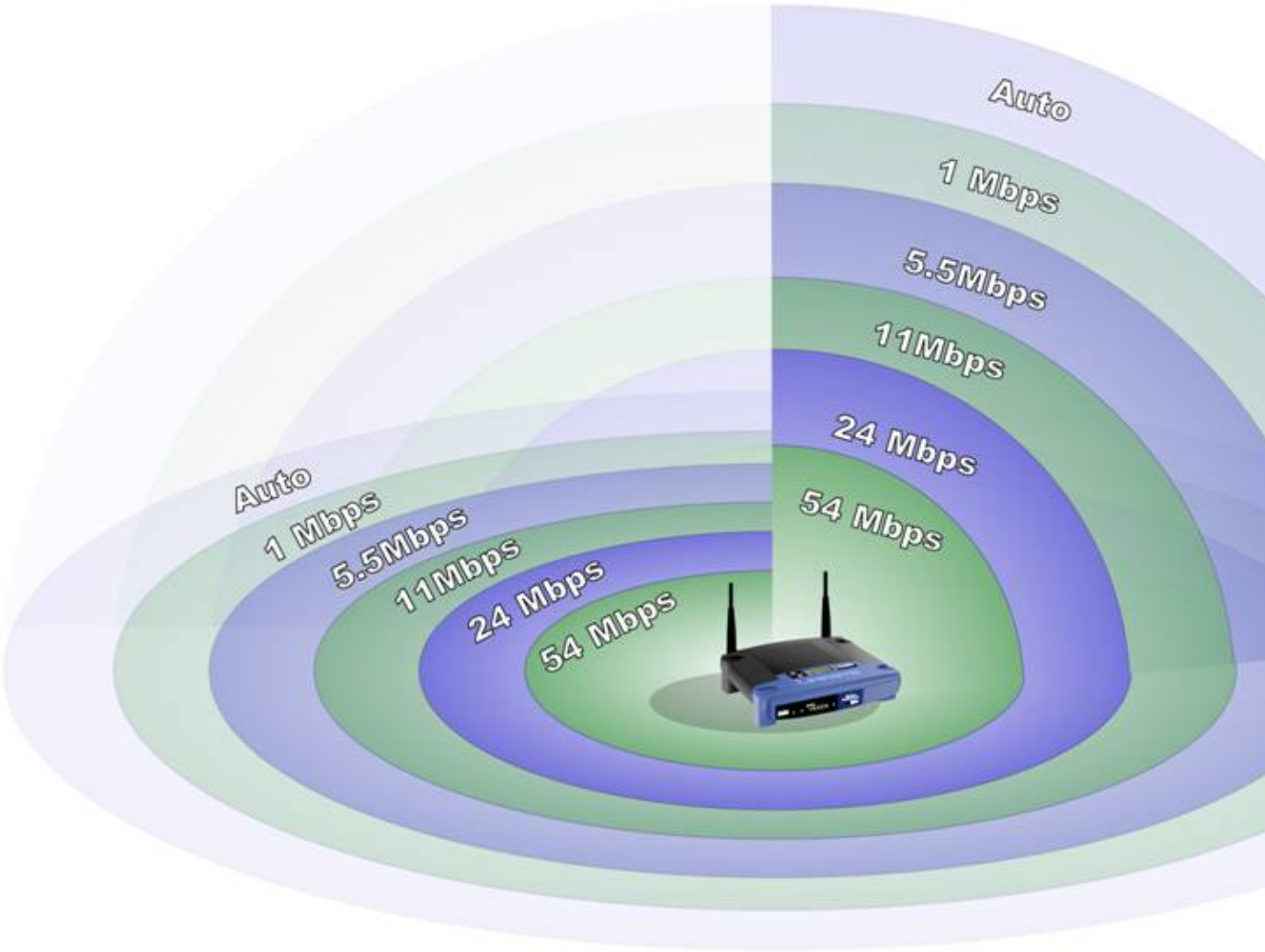
Changing the Transmit Rate on the router allows the device to work at a specific speed for wireless transmissions. The default Transmit Rate is ***Auto*** with a range of 1 to 54Mbps.

The rate of data transmission should be set depending on the speed of your wireless network. You can select from a range of transmission speeds or keep the default setting (***Auto***). This will allow the router to automatically use the fastest possible data rate and enable the ***Auto−Fallback*** feature, which will negotiate the

best possible connection speed between the router and a wireless client.

Note: If the transmit rate on the router or the adapter is not set to ***Auto***, the Auto−Fallback feature will be disabled. If the Auto−Fallback is disabled, you will not be able to experience the maximum range of the wireless router as it will not be able to adapt to the environment's condition.

Cisco Small Business does not recommend changing the transmit rate of the router other than the default value. A change in the Transmit Rate will shorten the range of the wireless network, as illustrated here:



Using Range Expander, Wireless−N, SRX Devices, and/or High−Gain Antennas

- If you are not yet using Cisco Small Business' Pre−N or SRX Technology, you may want to use these Wireless Routers, APs, and Wireless Adapters:

Wireless Routers and Access Points	Wireless Adapters
Wireless-N	**Wireless-N**
WRT300N	WPC300N
	WMP300N
SRX	**SRX**
WRT54GX	WPC54GX
WAP54GX	WMP54GX
SRX200	**SRX200**
WRT54GX2	WPC54GX2
SRX400	**SRX400**
WRT54GX4	WPC54GX4
	WUSB54GX4
	WMP54GX4

- If you are using wireless devices such as:
  WRT54G
  WRT54GS
  WAP54G
  BEFW11S4
  WAP11

  You may use the WRE54G, a Wireless−G Range Expander. Unlike adding a traditional APs to your network in order to expand wireless coverage, the Wireless−G Range Expander does not need to be connected to the network by a data cable. Just put it within range of your main AP or wireless router and it "bounces" the signals out to remote wireless devices.

- If you are using wireless devices such as:
  WRV54G
  WMP54GS
  WMP54G
  WET54G
  WET54GS5

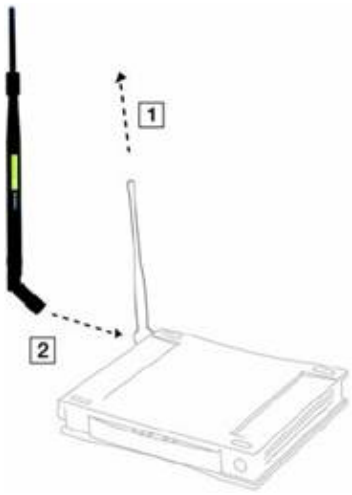
  You may use an ***AS1SMA*** in order to relocate your Wireless−B or Wireless−G antennas in order to avoid obstacles and improve signal strength.

- If you are using wireless devices such as:
  WRT54GS
  WRT54G
  WAP54G
  BEFW11S4
  WAP11
  HGA7T (High Gain Antennas)

  You may use an ***AS2TNC*** in order to relocate your Wireless−B or Wireless−G antennas in order to avoid obstacles and improve signal strength.

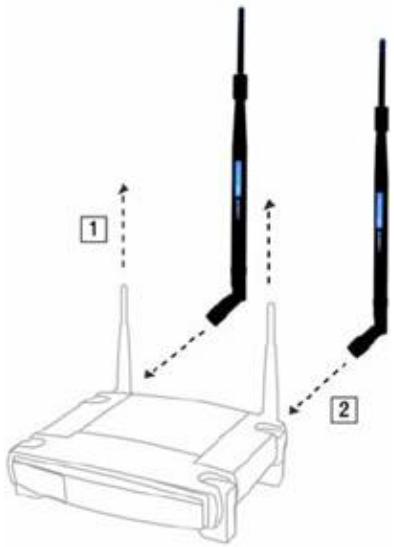
- If you are using wireless devices such as:
  WRV54G
  WMP54GS
  WMP54G
  WET54G
  WET54GS5
  AS1SMA (Antenna Stand)

  You may use an ***HGA7S*** in order to increase the wireless signal of your Cisco Small Business Wireless−G or Wireless−B devices.



- If you are using wireless devices such as:
  WRT54GS
  WRT54G
  WAP54G
  BEFW11S4
  WAP11
  AS2TNC (Antenna Stand)

  You may use an ***HGA7T*** in order to increase the wireless signal of your Cisco Small Business Wireless−G or Wireless−B devices.



Related Information

- **Technical Support &Documentation − Cisco Systems**

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