Signal-to-Noise Ratio (SNR) and Wireless Signal Strength

SNR is not actually a ratio but the difference in decibels between the received signal and the background noise level (noise floor). For example, if a radio (client device) receives a signal of -75 dBm and the noise floor is measured at -90 dBm, the SNR is 15 dB. Data corruption and therefore re-transmissions will occur if the received signal is too close to the noise floor. In 802.11 networks, re-transmissions adversely affect throughput and latency.

All Cisco Meraki access points use SNR as a measure of signal strength. A client's SNR can be seen in two ways:

On Dashboard:

1. Log in to Dashboard
2. Navigate to **Network-wide > Monitor > Clients**
3. Click on the desired client
Local Status page (my.meraki.com)

1. Connect to the SSID

2. Go to my.meraki.com using a browser

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SNR is a better way to judge the quality of signal because it also takes the noise floor or ambient noise of the RF environment into account. For instance, a received signal of -65 dBm can be considered good at location that has a noise floor of -90 dBm (SNR 25 dB) but not so much at a location with a noise floor of -80 dBm (SNR 15 dB).
The WLAN card on a laptop is not designed to measure the noise floor of its surrounding and special adapters like the Wi-Spy dBx are needed. As explained above, Cisco Meraki access points use SNR to measure the signal strength on a particular client. Using a tool like Metageek inSSIDer or similar tools, one can find the received signal strength on a client and therefore calculate the noise floor at a location by subtracting the SNR value from the received signal value.

Generally, a signal with an SNR value of 20 dB or more is recommended for data networks where as an SNR value of 25 dB or more is recommended for networks that use voice applications. Learn more about Signal-to-Noise Ratio.

See also:

Troubleshooting poor wireless performance

Common sources of wireless interference

Checking Signal Strength and Throughput on a Cisco Meraki Wireless network