

Wireless Point-to-Point Troubleshooting Guide

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Introduction

This document is an aid to troubleshoot wireless connections. The first steps to take is to answer the questions in this document to become familiar with what kind of wireless link you use, and with what type of equipment. From there, you can proceed to the chart and perhaps find your possible problem and the necessary steps to take to resolve the issue.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

Refer to [Cisco Technical Tips Conventions](#) for more information on document conventions.

Where is the Potential Problem?

When you troubleshoot wireless connections, consider these questions:

- What type of link is this?? Microwave Multi-point Distribution System (MMDS) Unlicensed National Information Infrastructure (UNII)? Refer to [Unlicensed Frequencies](#).
- How far is the link? (miles)
- Is the link a line-of-sight link?? If yes, how do you know??
- If this is a UNII link, check for interference as a higher priority on your checklist.
- What is the antenna size?? Gain?? Is the antenna properly polarized? Refer to [Antennas](#).
- What is the cable length from the transverter to the antenna?? What type of cable? Refer to [Cable and Connector Loss](#).
- Are there other antennas close to yours?? If so, can you determine if they emit signals that cause you an interference problem? The mere proximity of other antennas generally does not pose a problem if: The antennas do not emit signals that can interfere with yours; and The antennas are not within your path axis.

For additional help with these questions, see the "Related Information" section.

Status Line Condition

Radio x is Up -- Line Protocol is Up

Possible Problems	Checks & Observations	Solutions	Comments
-----	-----	This is the proper status line condition. No action is required.	

Radio x is Up -- Line Protocol is Down

Possible Problems	Checks & Observations	Solutions	Comments
Interference	Run histograms and/or snapshots; measure SNR and Rx signal level at both ends of the link	Try to locate source of interference (for example, nearby antennas) Change polarization of antennas or frequency channel (UNII only)	If interference is the source of trouble, the SNR readings must show a degradation that correlates in time with the noted periods of poor link performance or outages
Poor (weak)	Check antenna alignment	Change bandwidth and	Change the throughput

Receive signal level	Check cable/connector integrity (possible moisture in cables) Check transmit power level for the link Check for path blockage of link (for example, trees, buildings, etc.)	throughput setting Replace faulty cables if necessary Reconfigure Tx power setting if necessary Realign antennas	setting as a work-around. Only change throughput settings after you try the other solutions given.
Loop back enabled	Check the configuration and issue the show run and show interface radio slot/port commands	Disable loopback command	
Incorrect throughput setting	Check the configuration, and issue the show run command Run a histogram to check the SNR	- Adjust throughput setting accordingly	This parameter must be set the same at both ends of the link
Faulty control cable connection ;	Check all control cable connections; wiggle suspected control cable while you monitor link status to verify faulty connection	Replace cable or connections if necessary	

Radio x is Down -- Line Protocol is Down

Possible Problems	Checks & Observations	Solutions	Comments
Radio interface shutdown	Check the configuration and issue the show	No shut the radio interface	Note that if this is the problem, the output of show interface will

wn	interface radio slot/port command		display "Radio x is administratively down"
Interference	Run histograms and/or snapshots; measure SNR and Rx signal level at both ends of the link	Try to locate source of interference (for example, nearby antennas) Change polarization of antennas or frequency channel (UNII only)	If interference is the source of trouble, the SNR readings must show a degradation that correlates in time with the noted periods of poor link performance or outages
Wireless line card faulty	Run IF and RF loopback tests and ping the radio interface to verify	Replace line card	
Frequencies configured incorrectly	Check configuration, and issue the show run command	Fix the configuration; Tx at one end of the link matches to the Rx of the other end	
Radio ARQ configured incorrectly	Check the configuration, and issue the show interface radio arq command	Fix the configuration	This parameter must be set the same at both ends of the link
Number of antennas set correctly	Check the configuration and issue the show run command	Fix the configuration	
Incorrect throughput setting	Check the configuration; measure the SNR	-Adjust the throughput setting accordingly	This parameter must be set the same at both ends of the link
Radio privacy	Check the configuration	Fix the configuration	This parameter must be set the

set the same on both sides	n, and issue the show run command		same at both ends of the link
Transmit power configured incorrectly	Check the configuration, and issue the show run command	Fix the configuration, and set radio transmit power to a valid value for the link	
No power to one or both transverters (ODUs)	Use a voltmeter to check DC voltage at input to PFPs Check that DC breaker switches on PFPs are turned on	Repair/replace DC power supplies Turn on breaker switches on PFPs	
	Check cable integrity and connections Ensure that cable is 50 ohm type Run debug radio log verbose	Replace the cable if necessary	Be sure all outdoor connections are properly sealed, only use Coax-Seal or an equivalent
Control cable between PFP and transverter bad or disconnected	Check cable integrity, especially cable-to-LEMO connector junction Run debug radio log verbose	Replace the cable if necessary	Weather proofing not required for LEMO connector
Poor or no receive signal level	Verify by measuring SNR from histograms Be sure antennas are set for the same polarization	Have both sides of the link with the same polarization (horizontal or vertical) Align the antennas Replace the	

	Be sure the antennas are aligned properly Check all cabling, IF and RF	cables if necessary	
Incorrect duplexer installed	Check the sticker on duplexer at each end of the link to ensure both ends are for the same band plan		Duplexers cannot be re-tuned, they must be replaced
Incorrect duplexer set-up	Duplexer at one end must be installed for tx high and the other side for tx low	Remove, reverse, and reinstall ONE of the duplexers	
ODU not detected	Run IF loopback test, ping radio interface to verify whether the line card is good Run debug radio log verbose to verify the problem	Replace ODU	

Related Information

- [Wireless Point-to-Point Quick Reference Sheet](#)
- [Wireless Point-to-Point Frequently Asked Questions](#)
- [Wireless Troubleshooting FAQs and Checklist](#)
- [Wireless Sample Configuration and Command Reference](#)
- [Wireless Debug Outputs From Possible Physical Connection Problems](#)