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Orbit MCR-900 Repeater Methods

Introduction

There are three methods to implement repeater functionality using the Orbit MCR-900. This document diagrams those three methods and provides a listing of the benefits and drawbacks of each method.

Scope

This bulletin is intended for system engineers and end users who are familiar with the Orbit radio and are interested in understanding trade-off considerations regarding repeater implementations.

Firmware Compatibility

This is bulletin is applicable to Orbit MCR devices running firmware version 1.5.1 or greater.

Method #1: Access Point Repeater

The first method places a Remote radio at the near end and the Access Point at a remote site. In this case, the Access Point relays all of the messages from the first Remote to the rest of the Remotes in the network. This provides a simple repeater function but may not be suitable for certain situations. Since the Access Point needs to be reachable by all of the Remotes, its antenna still needs to be located in a good location.
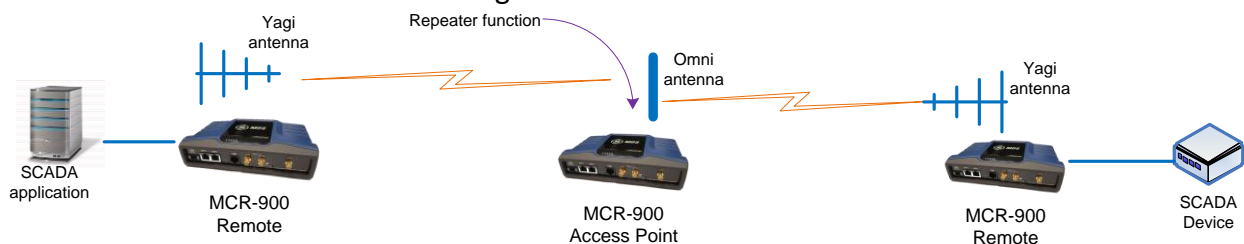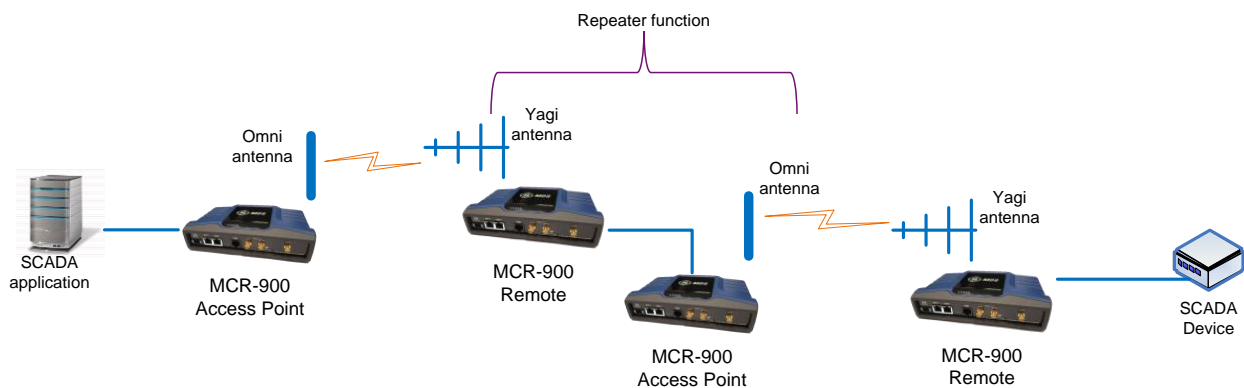
Method #2: Store-and-Forward Repeater

The second method uses the Orbit's native Store-and-Forward mode to provide a single-unit repeater. In this case, the Store-and-Forward node uses an omni antenna to relay messages from the Access Point to downstream Remotes.
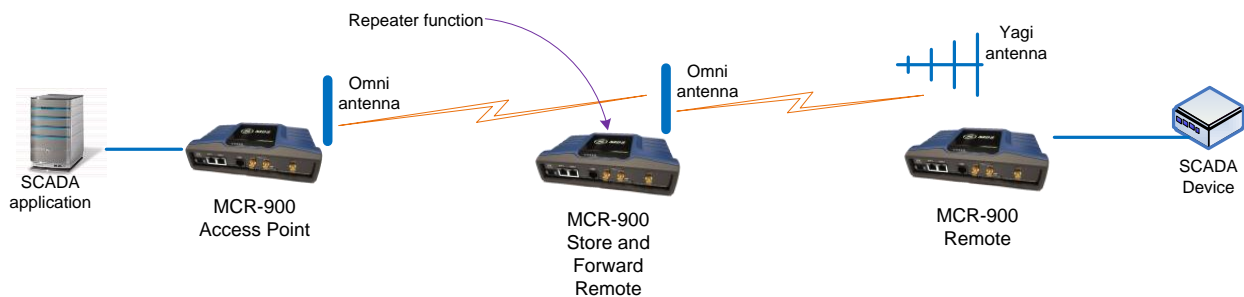
Method #3: Back-to-Back Repeater

The third method places two Orbit radios at the repeater site connected "back-to-back" with an Ethernet cable. This method generally delivers the highest throughput and lowest latency while also requiring the highest cost.

Comparison of the Methods

Method	Benefits	Challenges
Access Point Repeater	• No special device configuration required. • Single radio, single antenna at repeater site.	• Significant throughput reduction and latency increase since most traffic needs to travel from Remote to AP to Remote • Limited to single hop repeater extension. • May not be applicable in many terrains and network topographies since all Remotes must hear the AP directly.
Store and Forward Repeater	• Single radio, single antenna at repeater site. • Multiple repeater hops supported (up to 8). • Can be used to provide redundancy. • Most expansive coverage.	• Throughput reduction and latency increase for traffic that goes through Store-and-Forward nodes.
Back-to-Back Repeater	• Best throughput, especially for multiple hops. • Unlimited repeater hops. • Potential for range increase via dual directional antennas.	• Dual antennas at repeater site. • Antennas require minimum 10' vertical separation. • Increased power consumption due to multiple radios at repeater site.

End of application bulletin.