

# RPR Topology Discovery Proposal

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# Goals

- Scalable from 1 to 100's of stations
- Determine/validate connectivity and ordering of stations on the ring
- Provide the same information to all stations on the ring
- Operable at both initial connection to the ring and periodically after connection establishment
- Operate independently of and in the absence of and management stations on or external to the ring

# Goals, continued

- Usable with all supported topologies: ring, linear (broken ring), and "star" (single station)
- Support dynamic addition and removal of stations to/from the ring
- Detect mis-cabling between stations
- Provide means of sharing additional information between stations
- Cause minimal overhead

# Non Goals

- RPR Topology Discovery is not used to discover dynamic link status
  - RPR Topology is used by dynamic algorithms such as Steering and Congestion Avoidance
  - Steering and Congestion Avoidance must be run on the order of 1 ms;  
Topology Discovery can be run on the order of 1 second.

# Algorithm Overview

1. Send Hello to neighbors with station ID
2. Receive back Hellos from neighbors with their IDs and local link information
3. If no topology image, also receive back Hellos for all stations known by neighbors
4. On change in topology or on timer pop, resend Hello to neighbors with current link information

# PDU Exchange

- Topology PDUs sent on well known MAC addresses
  - Direction specific addresses
  - Terminated at one hop in each direction
- Management frame indication in RPR header