What do I need to know about MRP?

- 2022-01-10 - Redundancy Solutions

MRP is standardized by IEC 62439-2 since 2008.

Structure: Ring consisting of Ring Switches (RS) and one Ring Manager (RM).

Function: The Ring Manager periodically transmits test packets on both of its ring ports registering the reception on the opposite ring port. One of the ring ports in normal state blocks normal data packets. After a defined number of test packets are lost, the standby ring port opens for normal traffic, thus mending a link failure or Ring Switch failure. If a Ring Switch recognizes a link down at one of its ring ports it can signal this event to the Ring Manager, which in Advanced Mode needs not to wait till sufficient loss of test packets, but immediately activates the second ring port and thus speeds-up recovery a lot.

Parameter values:
MRP packets with EtherType 0x88E3
Test packets with destination MAC address 01:15:4E:00:00:01
Topology/Link change with destination MAC 01:15:4E:00:00:02
Configurable recovery time (max.): 500 ms or 200 ms (less lost test packets, thus could be less stable)
Typical recovery time is 100 ms in a ring with 50 switches
Hirschmann supports up to 200 switches in a ring.

Configuration Rules

1. Exact 1 Ring Manager RM in MRP ring
2. All devices in ring must support the same ring protocol - MRP
3. All devices in ring must be connected by their ring ports
4. No other device in connected trees should be configured RM or RS
5. VLAN settings for MRP ports:
   - ingress rules: PVID arbitrary, ingress filtering = off
   - egress rules: ring ports in VLAN configured in MRP menu, tagged ("T")
6. RM shall not participate in Redundant Ring Coupling, i.e. CS or CM

Please note: any deviation from these rules might cause problems.