PTP 820C/S 1+1 & 2+2 HSB Radio Protection

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Cambium Networks™

Agenda

- What is Protection?
- ACM and 1+1/2+2 HSB
- Configuration Guide
- Cabling
- Disabling Protection Admin

Different types of protections systems

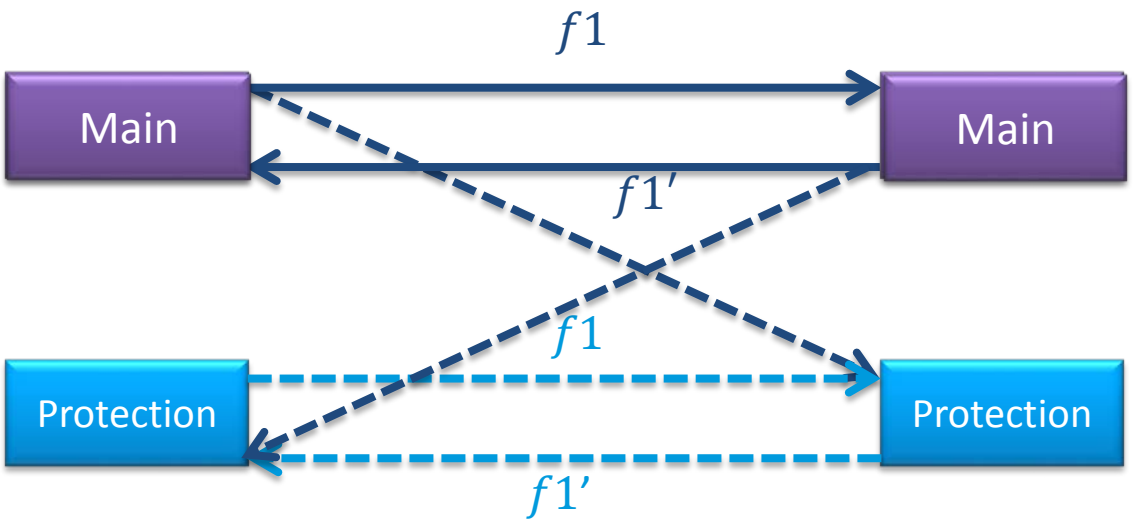
What is Protection?

- A method of using one or more devices in a standby mode in order to have a secondary link up when failure occurred to the active link
- In order to achieve a full protected link each and every device should be protected
- The number of multiplied devices depends on the link importance

"The process of keeping (something or someone) safe"

Wikipedia.com

Hot standby in general



In case of ch1 failure, will be traffic switched to Protection channel

- HSB system is using same frequency for Main and Standby channel (f1 & f1')
- HSB system is typically 1+1 / 2+2
- Protection channel is internally muted. Just in case Main channel failure will be Protection channel Unmuted.
- Space diversity with baseband switching is based on HSB system (selection of better input level)

- In Hot Standby mode only one transmitter is active, the other transmitter is standby. Both receivers are active and hitless switching is performed if Space diversity was configured. The TX- and RX- switching at a terminal normally operates independently, but they may be configured to operate together.

Switchover Triggers

In the event of switchover, the standby unit becomes the active unit and the active unit becomes the standby unit. Switchover takes less than 50 msec.

The following events trigger switchover for HSB protection according to their priority, with the highest priority triggers listed first:

1. No mate/hardware failure/Power Failure
2. Lockout
3. Force switch from GUI
4. Radio/Signal Failures

ACM and 1+1/2+2 HSB

- When ACM is activated together with 1+1/2+2 HSB protection, it is essential to feed the active unit via the main channel of the coupler (lossless channel), and to feed the standby unit via the secondary channel of the coupler (-6db attenuated channel). This maximizes system gain and optimizes ACM behavior for the following reasons:
  - In the TX direction, the power will experience minimal attenuation.
  - In the RX direction, the received signal will be minimally attenuated. Thus, the receiver will be able to lock on a higher ACM profile (according to what is dictated by the RF channel conditions).
- The following ACM behavior should be expected in a 1+1 or 2+2 configuration:
  - In the TX direction, the Active TX will follow the remote Active RX ACM requests (according to the remote Active Rx MSE performance).
  - The Standby TX might have the same profile as the Active TX, or might stay at the lowest profile (profile-0). That depends on whether the Standby TX was able to follow the remote RX Active unit's ACM requests (only the active remote RX sends ACM request messages).
  - In the RX direction, both the active and the standby carriers follow the remote Active TX profile (which is the only active transmitter).

Preparation to HSB configuration

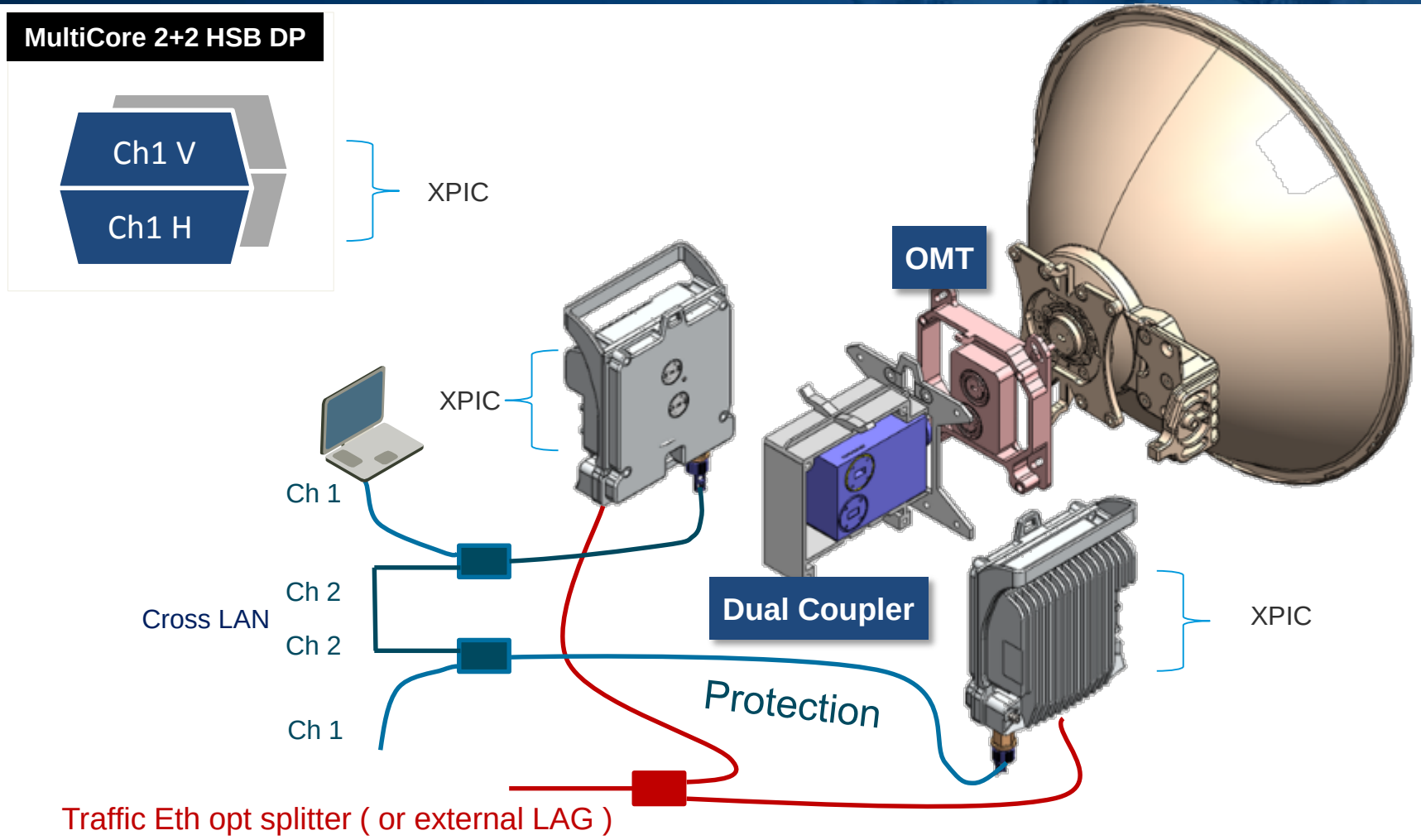
To configure HSB radio protection:

- Verify that both units have the same hardware part number and the same software version. If the units do not have the same software version, upgrade each unit to the most recent software release
- Assign an IP address to each unit.
- Establish a management connection to one of the units. You can select either unit; once you enable Protection Administration, the system will determine which unit becomes the Active unit.

Configuration Guide

1. Physical connection
   - Connect MNG splitter cable between Main and HSB unit via CH2 with Cross LAN cable
2. Configuration
   1. Enable *Protection Admin* on the HSB unit, on the Main is activated automatically
   2. Configure Main unit in term of Radio parameters and Services
   3. Provide *Copy to Mate*
3. Verify no Active alarm on the Main and HSB unit occur

MultiCore 2+2 HSB DP XPIC / Single Core 1+1



Flexible, Easy to Install DIRECT MOUNT options

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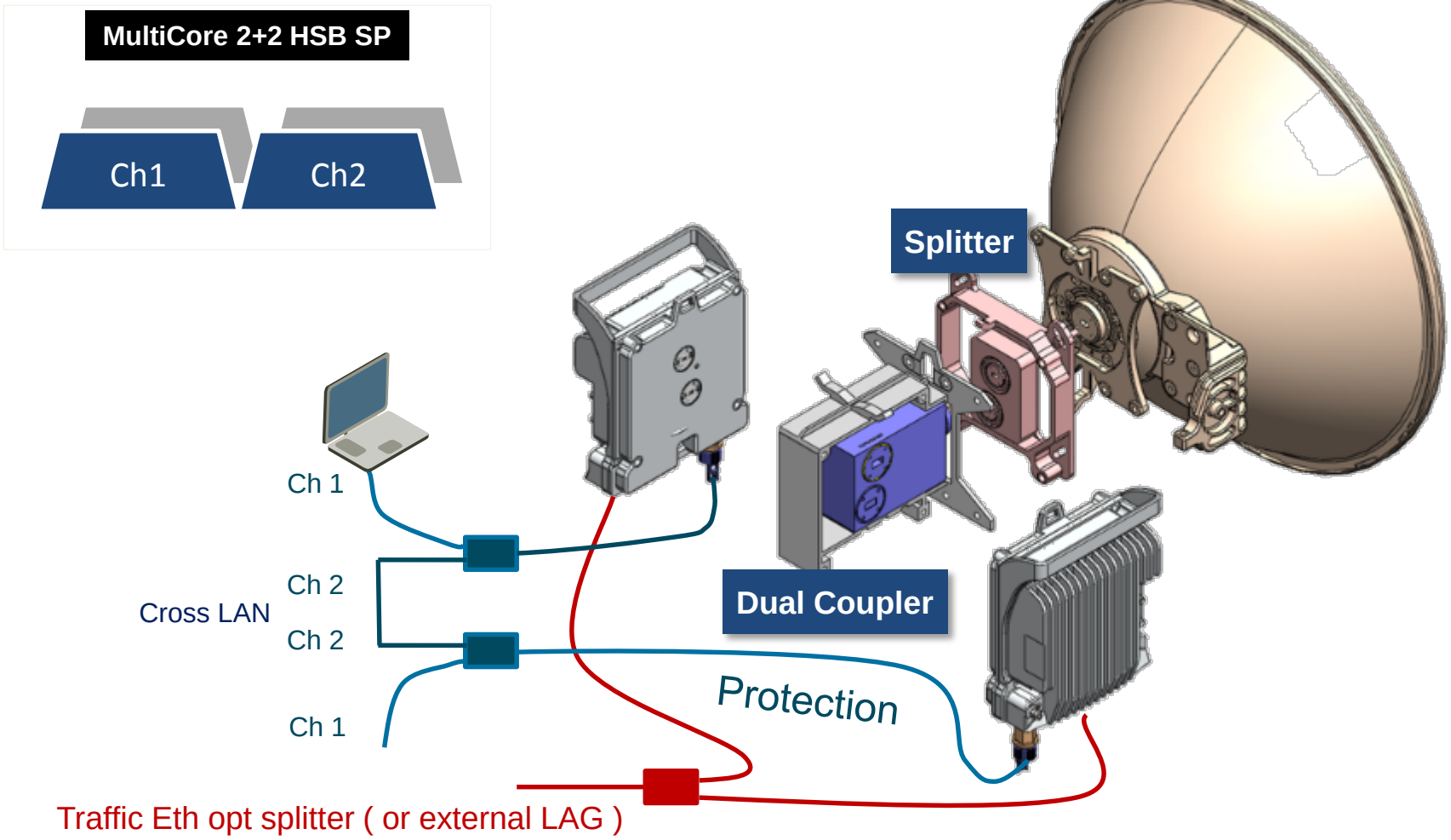
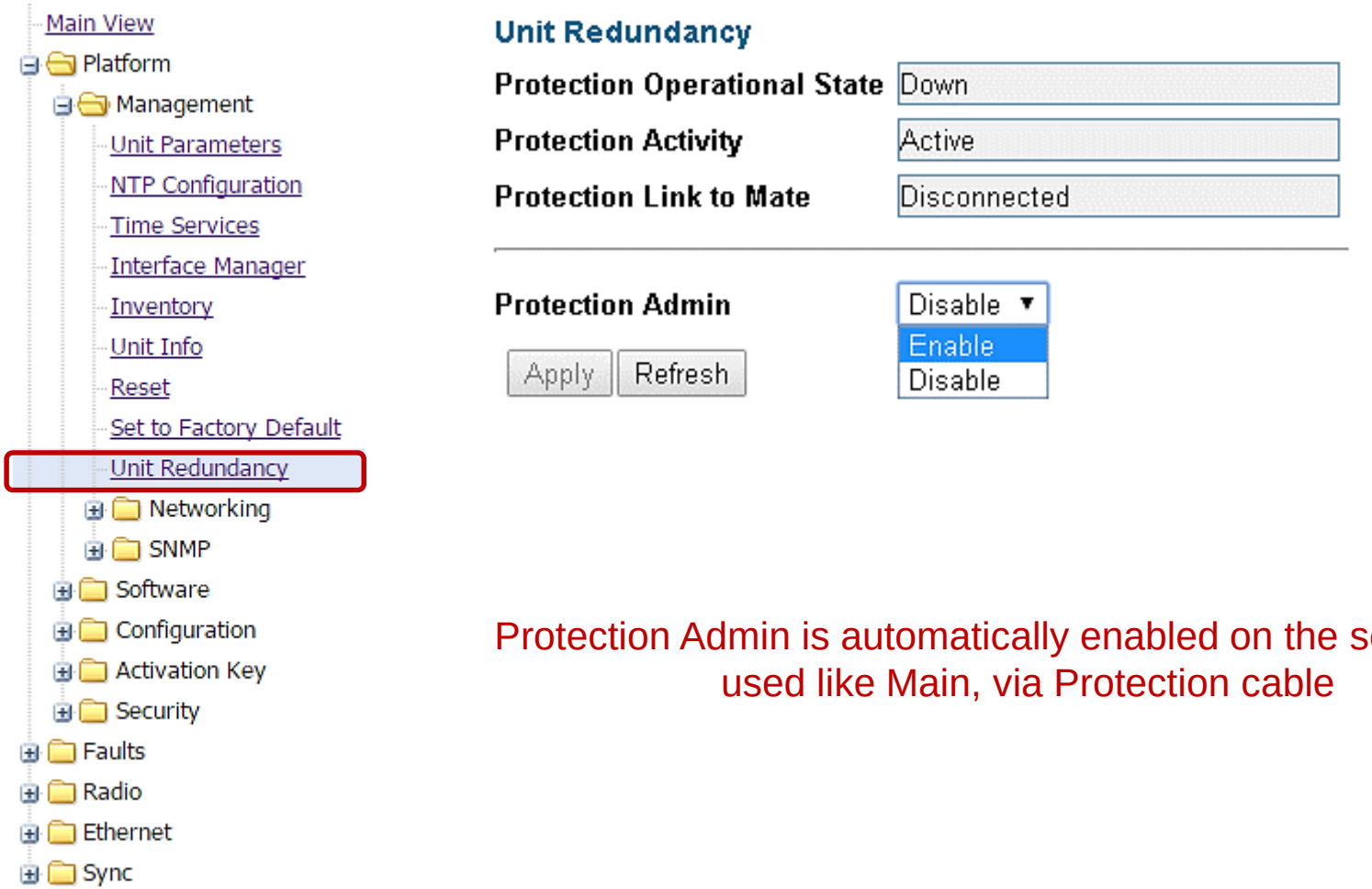
MultiCore 2+2 HSB SP / Single Core 1+1



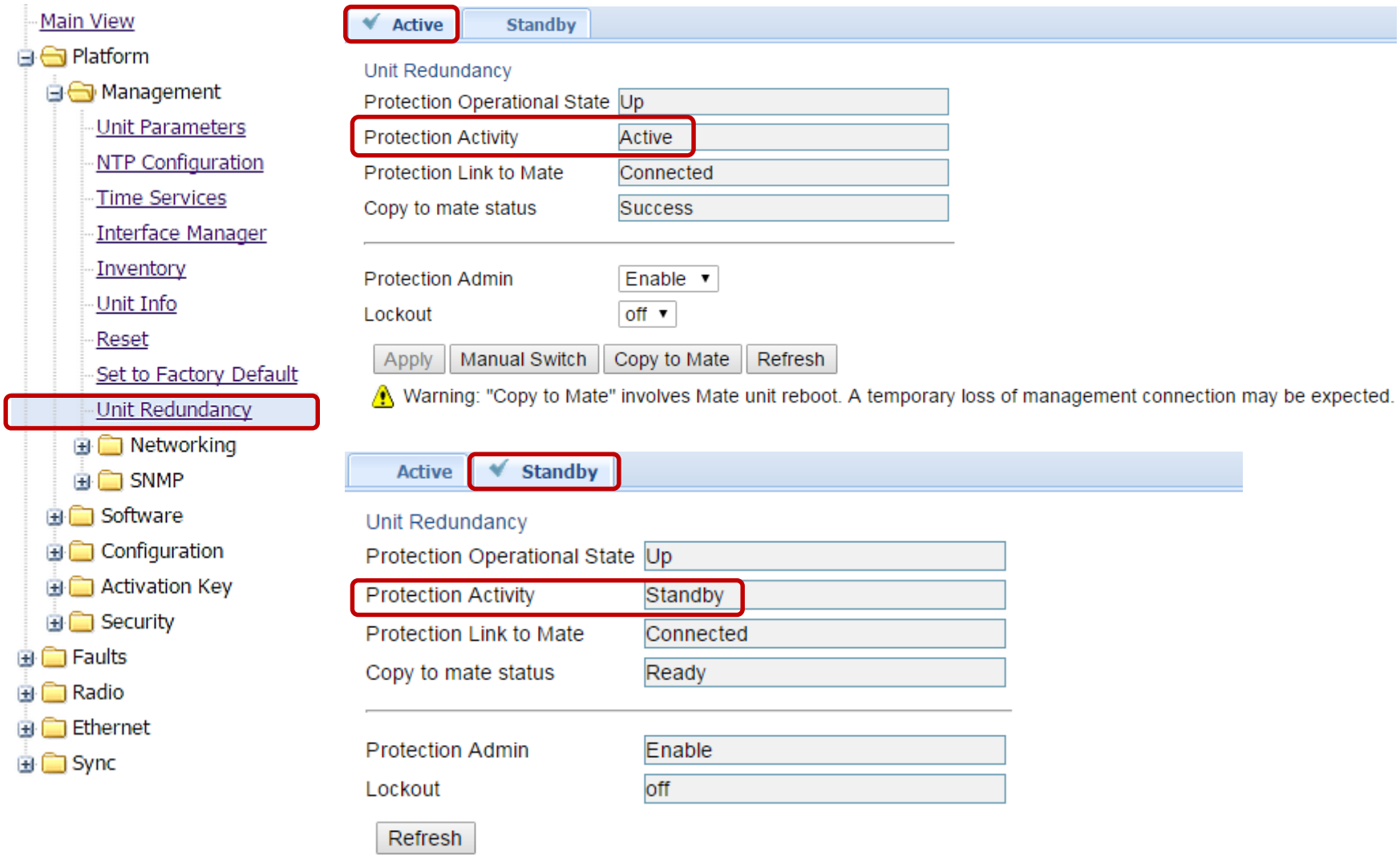
Flexible, Easy to Install DIRECT MOUNT options

2. StandBy Unit Redundancy – Enable



Protection Admin is automatically enabled on the second unit, used like Main, via Protection cable

Active vs Standby setting



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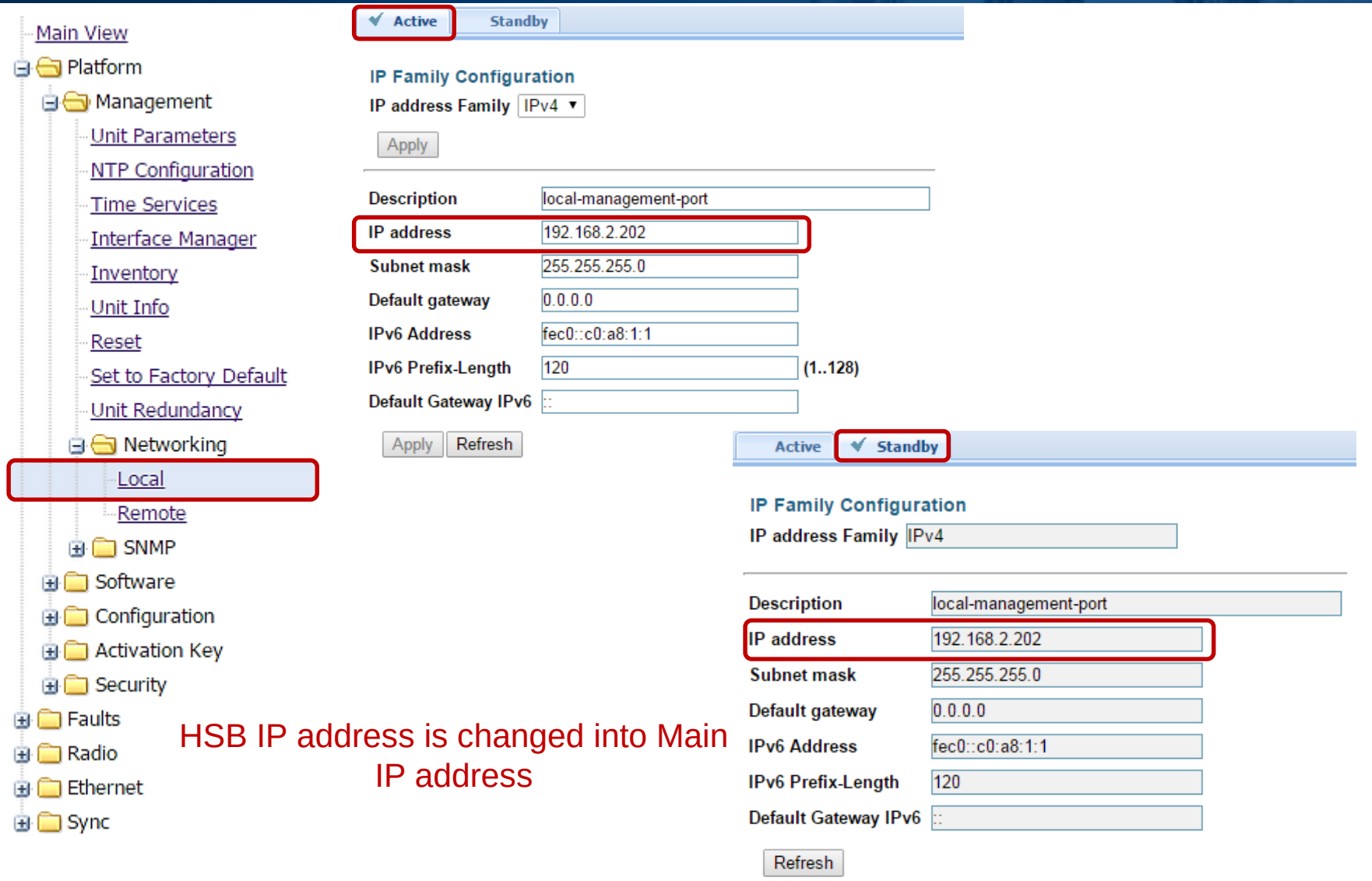
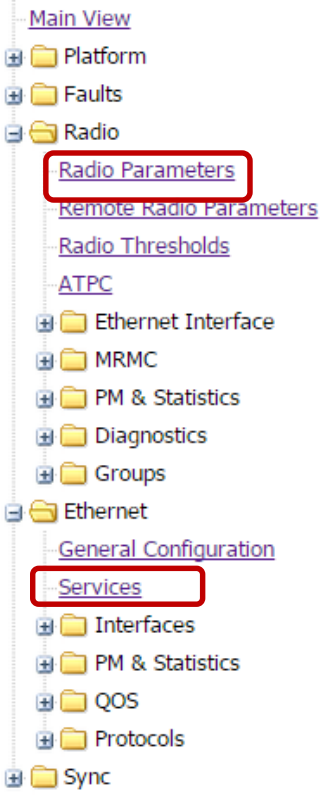
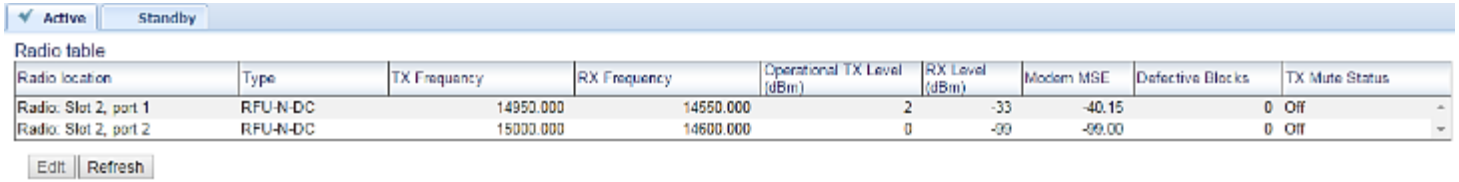
IP setting

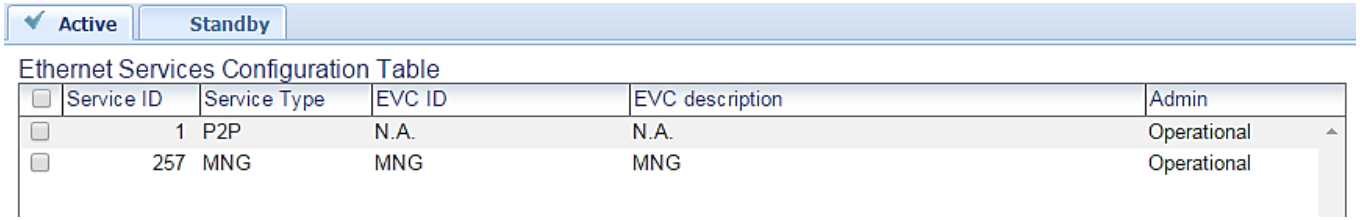


HSB IP address is changed into Main IP address

Radio & Service Configuration on the Main







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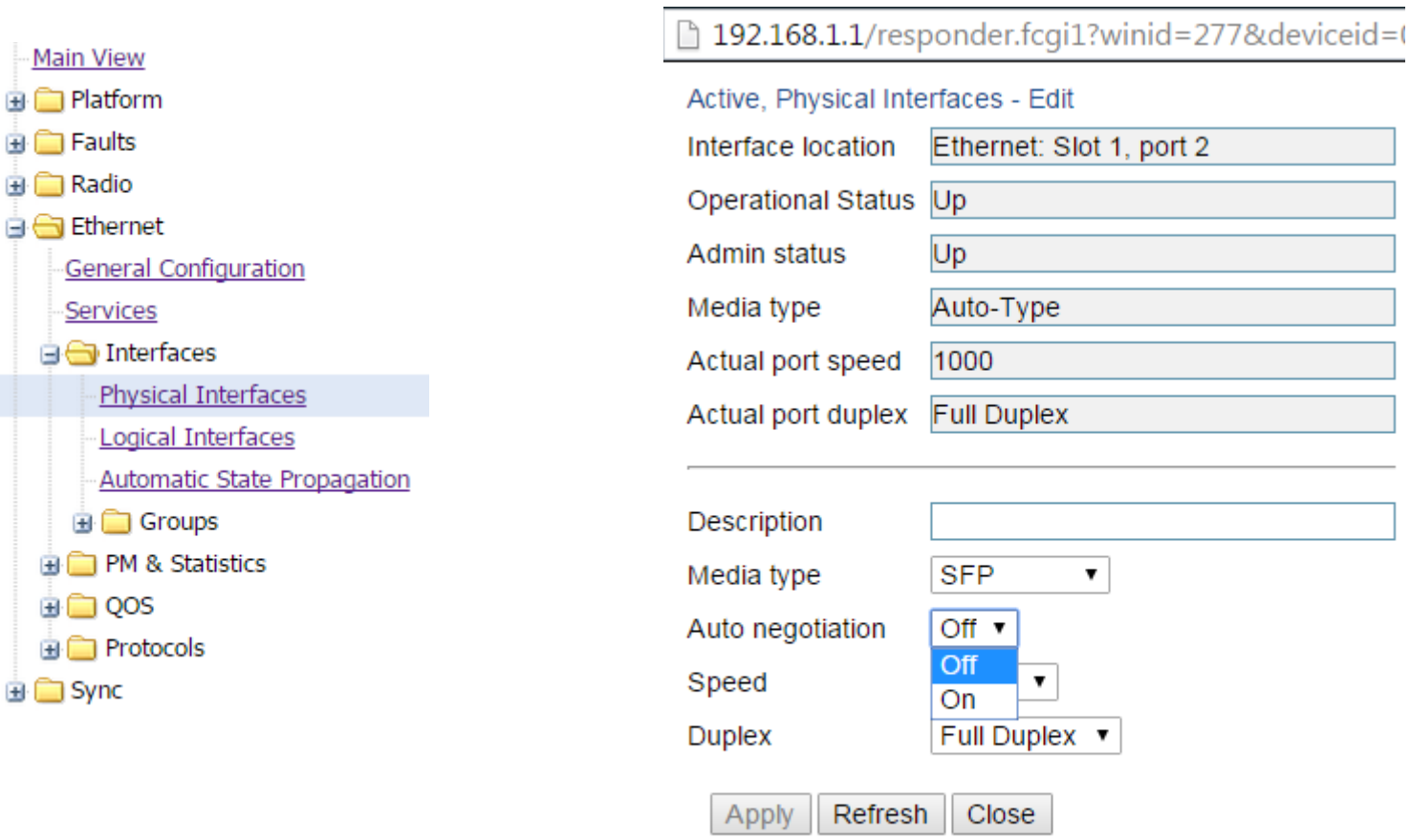
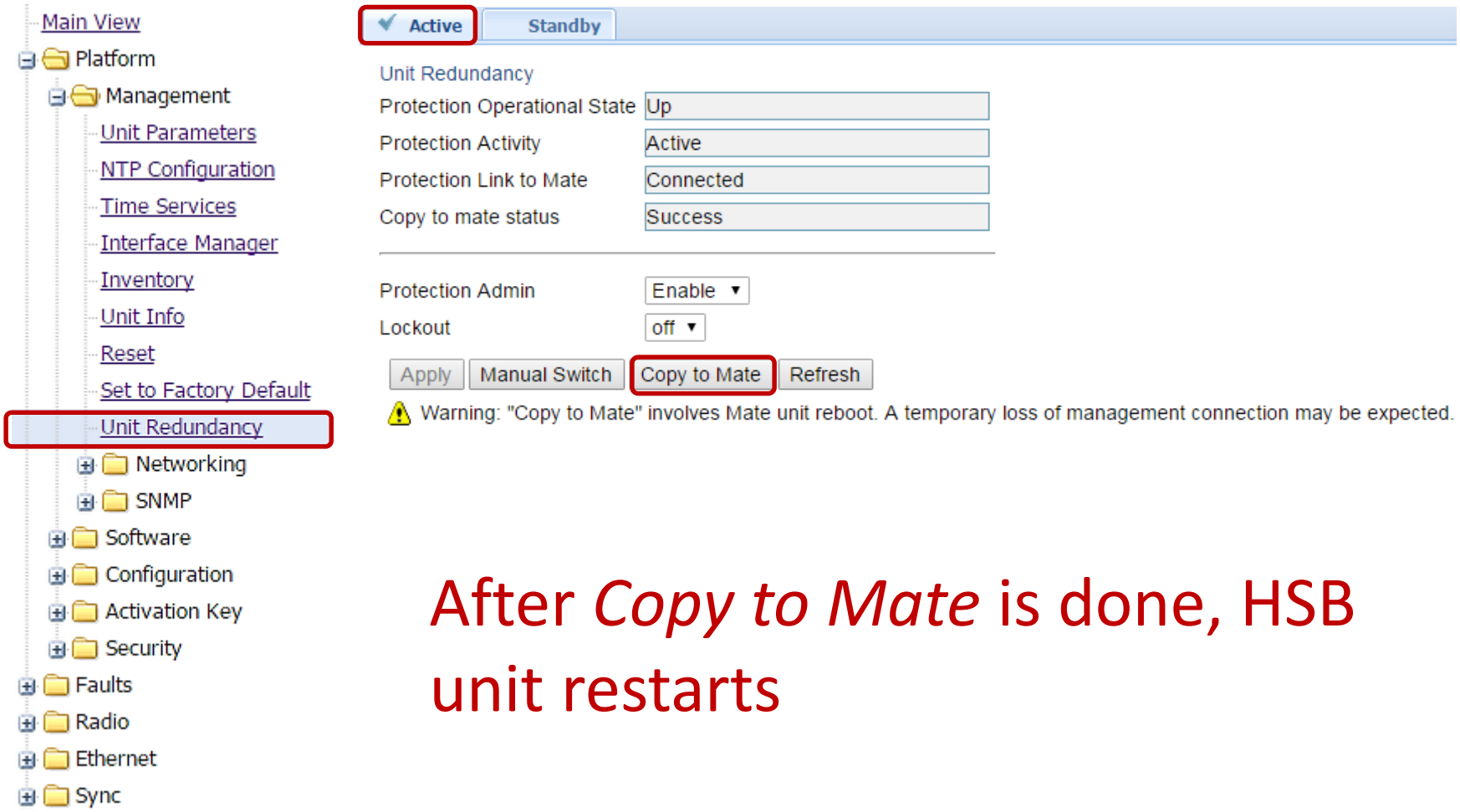
Disable Auto Negotiation of Fiber Port



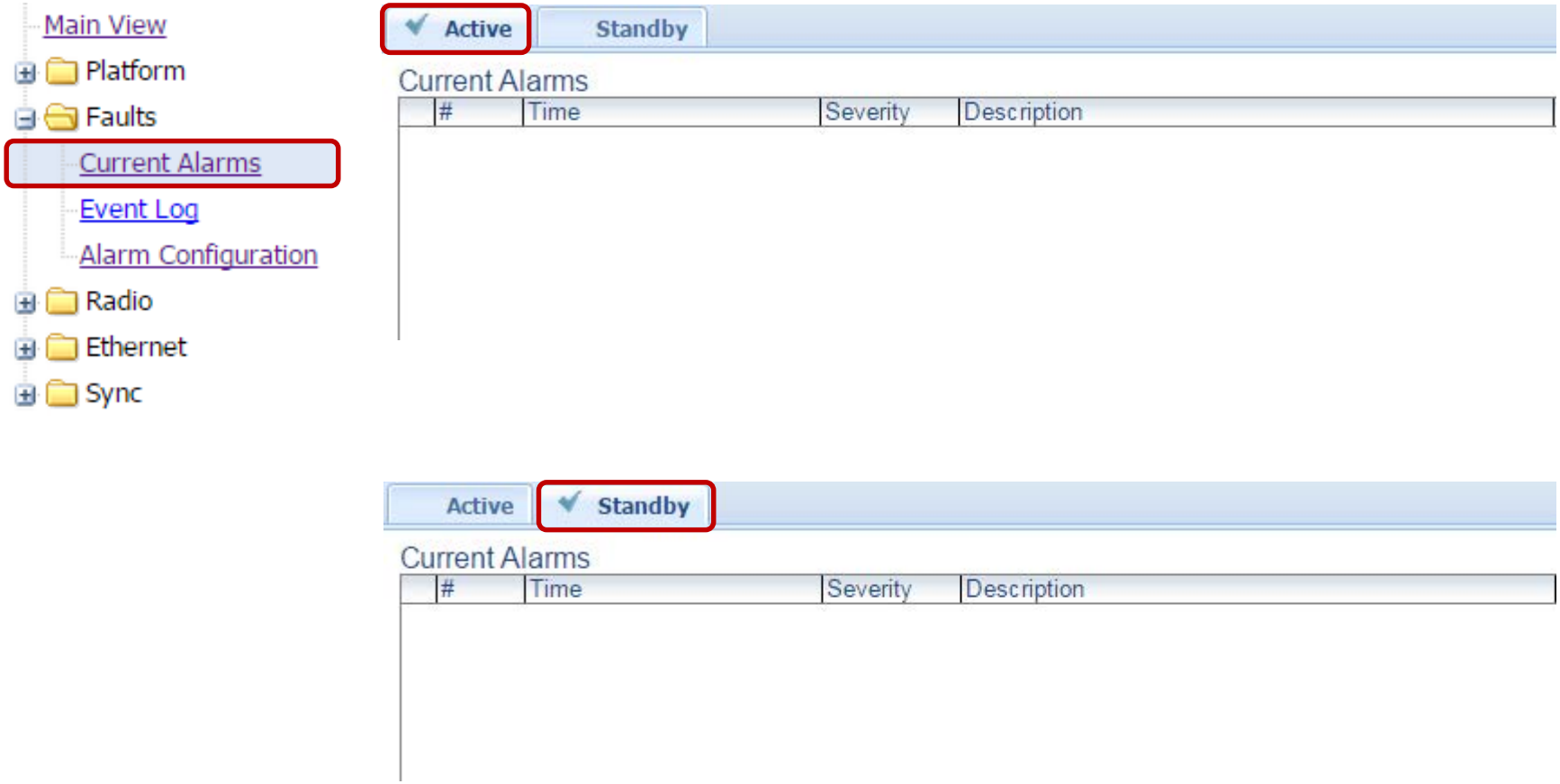
The Fiber Port " Auto Negotiation" MUST set to "Off"

Copy to Mate

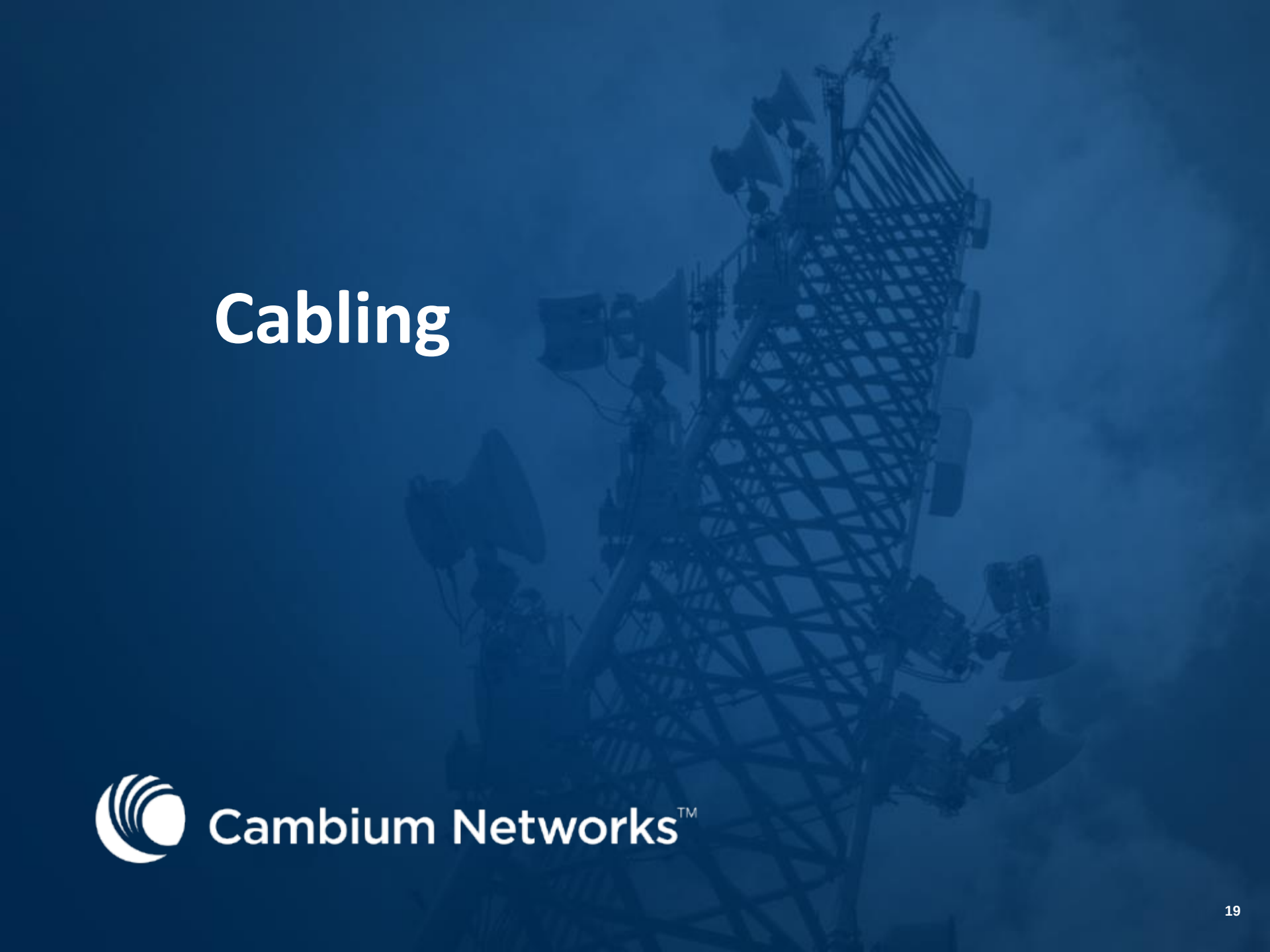


After *Copy to Mate* is done, HSB unit restarts

No Current Alarms



Cabling



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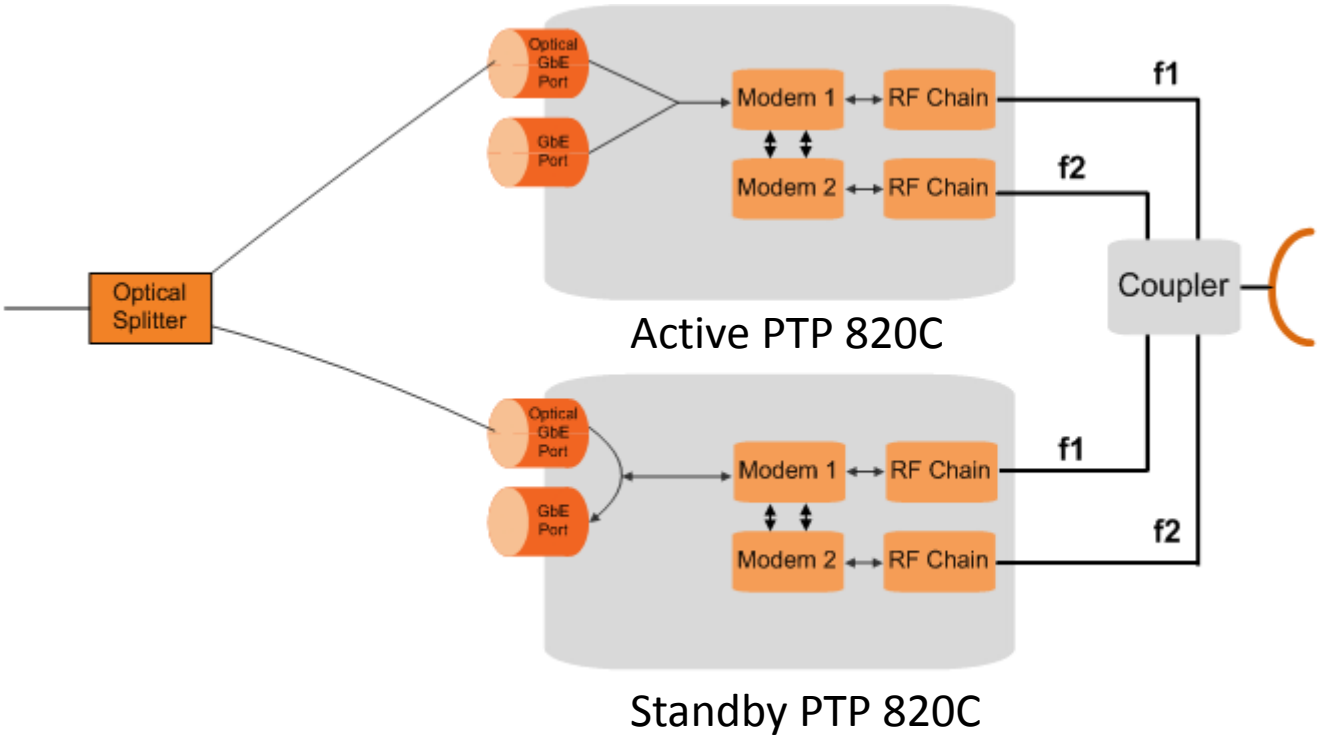
External Traffic Protection

- One GbE port on each PTP 820C is connected to an optical splitter. Both ports on each PTP 820C unit belong to a LAG, with 100% distribution to the port connected to the optical splitter on each PTP 820C unit.
- Traffic must be routed to an optical GbE port on each PTP 820C unit. No protection forwarding cable is required.

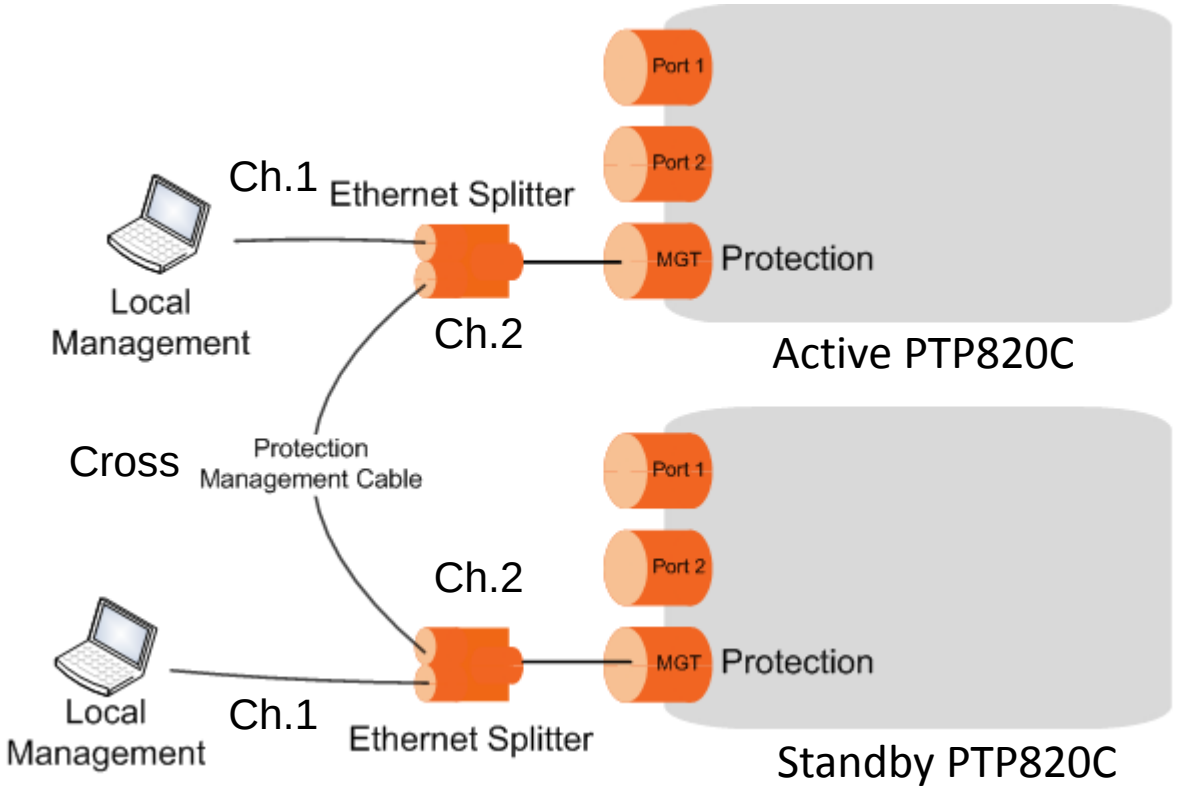
MultiCore 2+2 HSB Protection



Management for External Protection

- The standby unit is managed via the active unit.
- A protection cable connects the two PTP 820C units via their management ports. This cable is used for internal management.
- By placing an Ethernet splitter on the protection port, the user can add another cable for local
- A single IP address is used for both PTP 820C units, to ensure that management is not lost in the event of switchover.

Internal and Local Management



Disabling Protection Admin

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How to disable 1+1 / 2+2 HSB

1. Disable *Protection Admin* on the Main Unit
2. HSB unit will automatically disable *Protection Admin* via Protection cable
3. HSB unit is set to the default IP address *192.168.1.1*
4. Change default IP address
5. Provide *Reset* on the previous HSB unit
6. Provide *Reset* on the previous Main unit


Thank You
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