

# IEEE Std 802.17 Resilient packet ring (RPR)

# IEEE Std 802.17 Resilient packet ring Overview

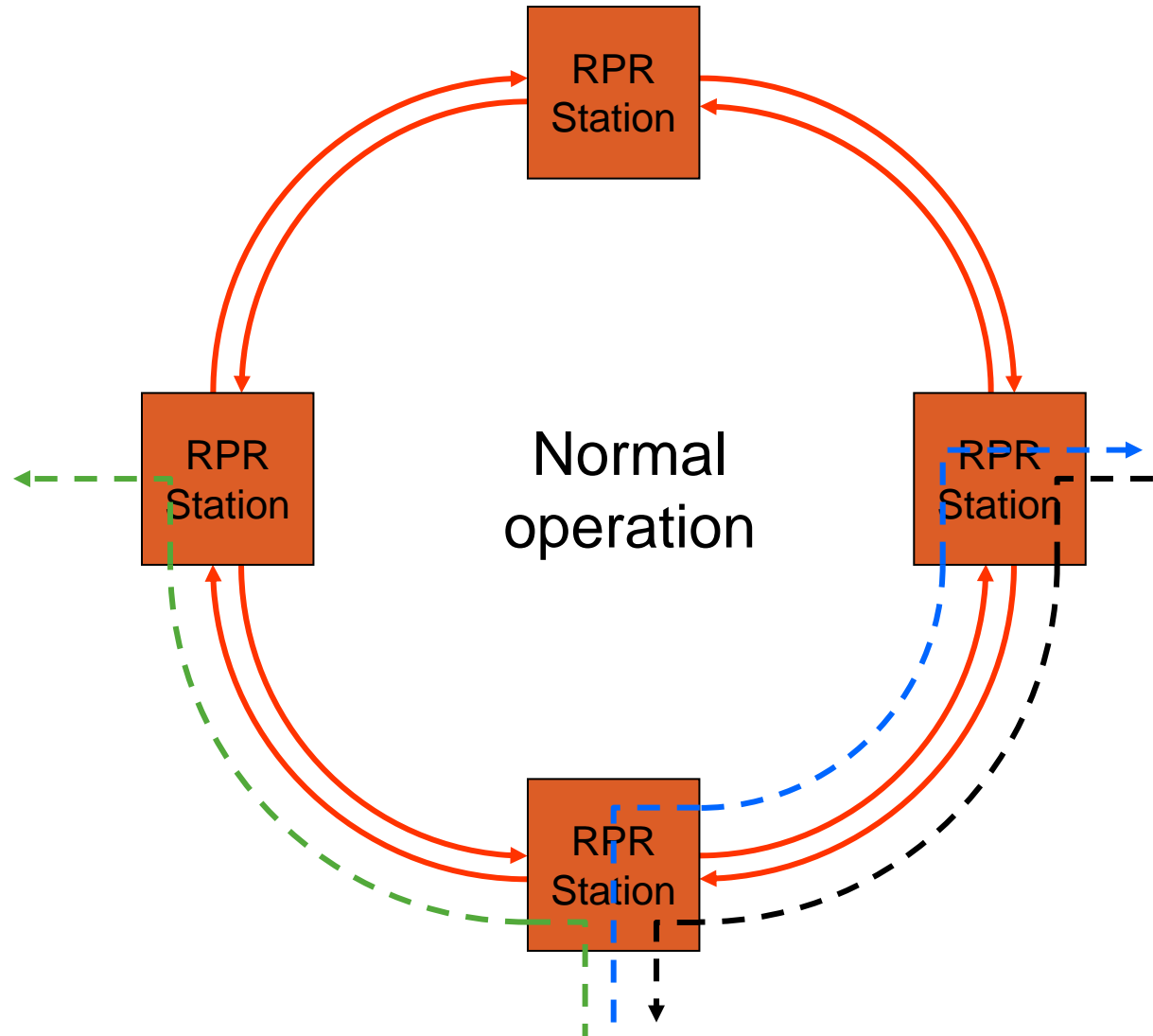
Dual counter-rotating ringlets  
Concurrent transmission  
Bandwidth reuse

Three traffic classes

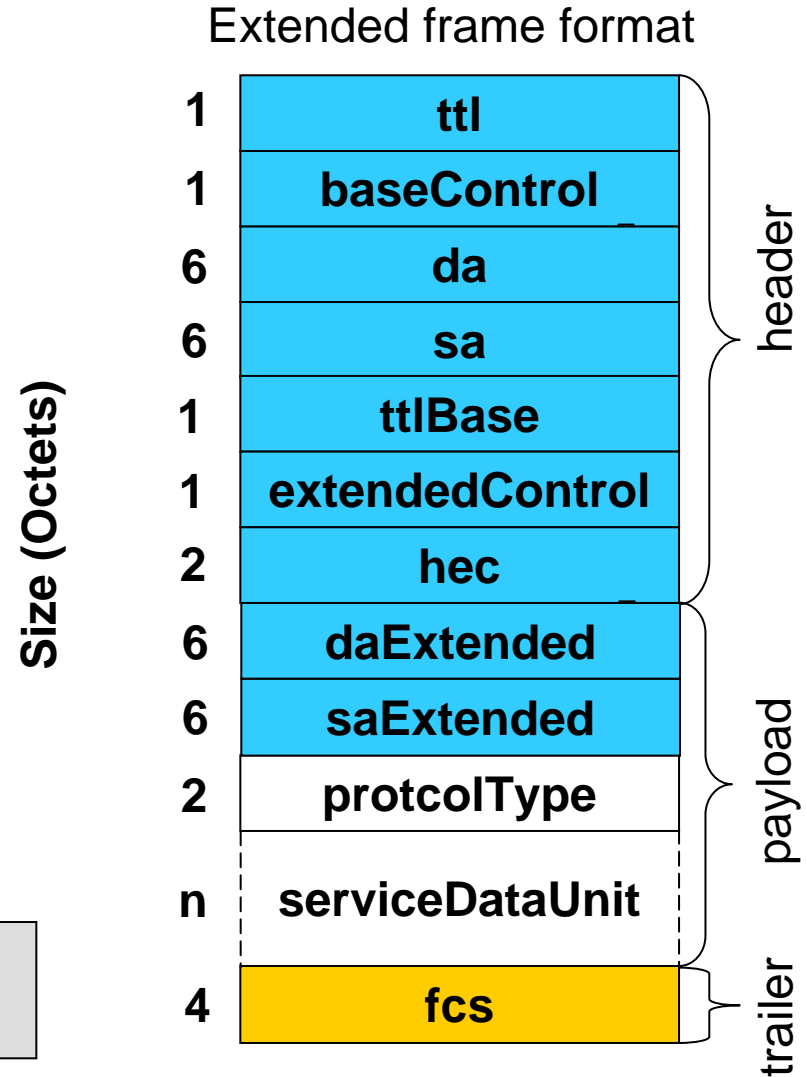
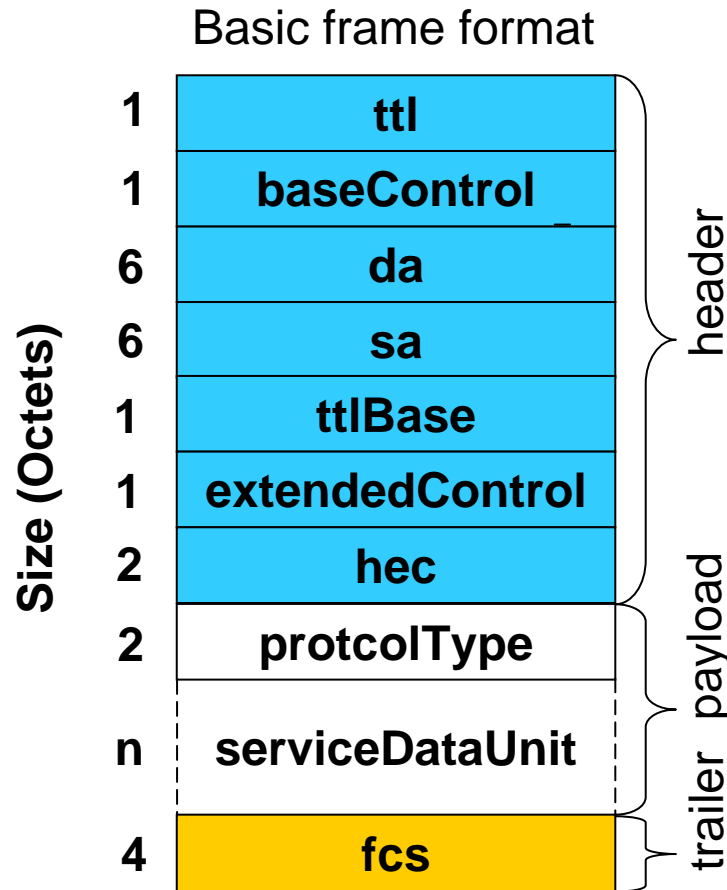
Fairness

Plug-and-play  
Automatic topology discovery

Robustness  
Sub 50ms fault restoration  
Fault tolerant



# IEEE Std 802.17 Frame format



Key:

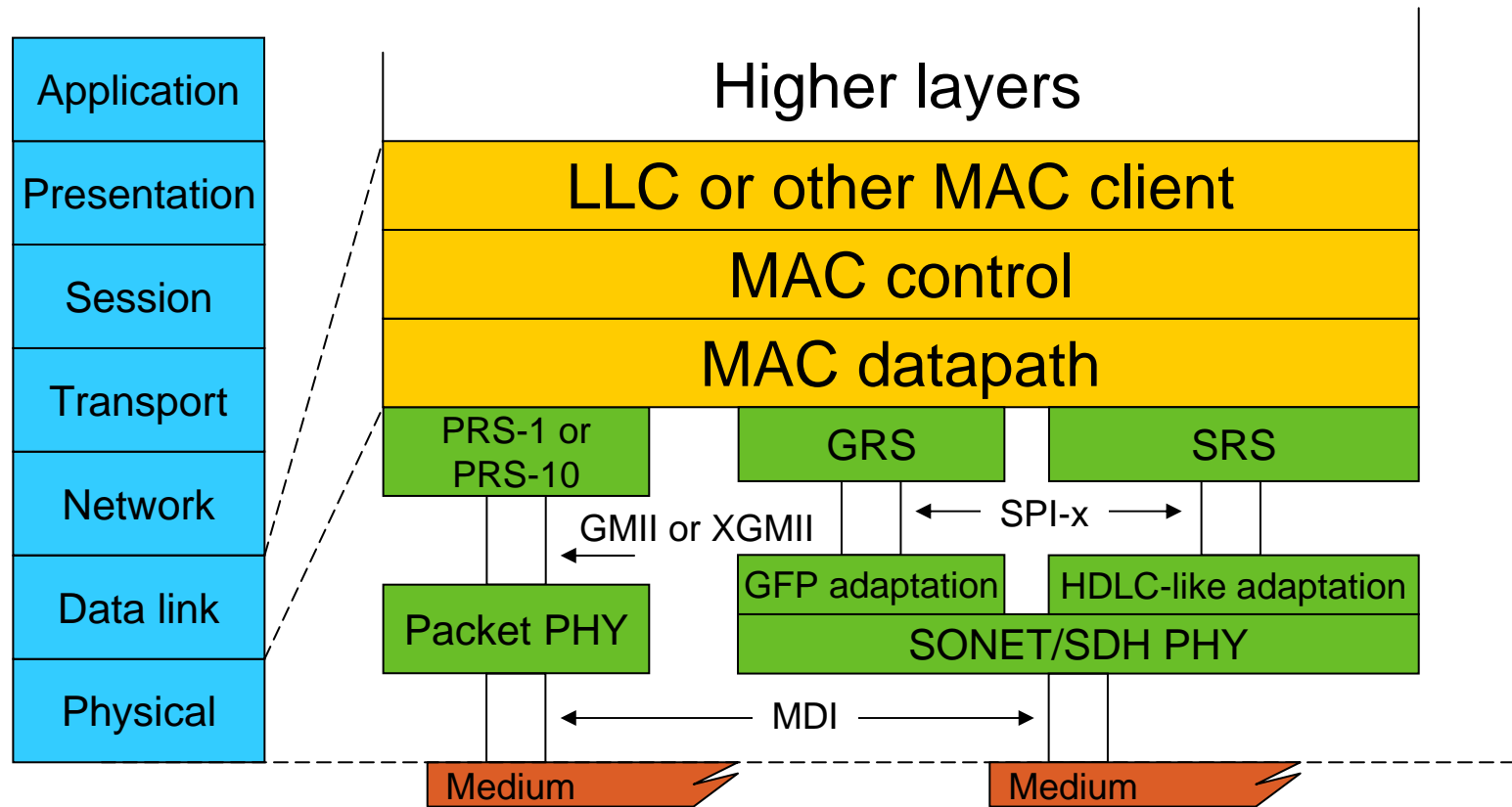
da – Destination address

ttl – Time to live

sa – Source address

fcs – Frame check sequence

# IEEE Std 802.17 RPR layer diagram



GMII – Gigabit media independent interface

XGMII – 10 Gigabit media independent interface

PRS-1 - 1 Gb/s PacketPHY reconciliation sublayer

PRS-10 - 10 Gb/s PacketPHY reconciliation sublayer

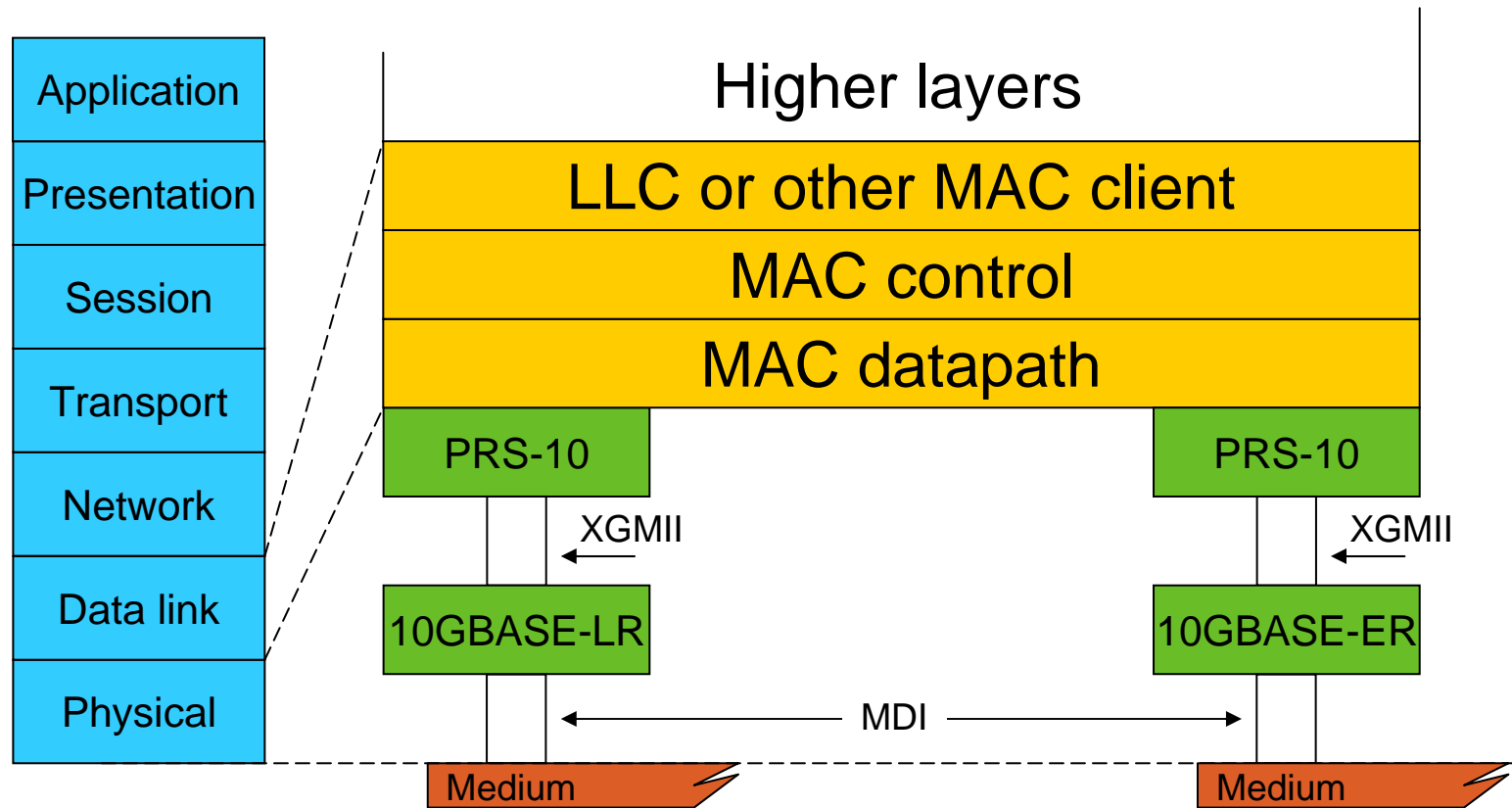
GRS - GFP reconciliation sublayer

SRS -SONET/SDH reconciliation sublayer

GFP - Generic framing procedure

HDLC - High-level data link control

# IEEE Std 802.17 RPR – 10GBASER PHYs



GMII – Gigabit media independent interface  
XGMII – 10 Gigabit media independent interface  
PRS-1 - 1 Gb/s PacketPHY reconciliation sublayer  
PRS-10 - 10 Gb/s PacketPHY reconciliation sublayer

# IEEE Std 802.17 RPR

## PHY

Must be same speed on all links  
Media can be different

## West PHY

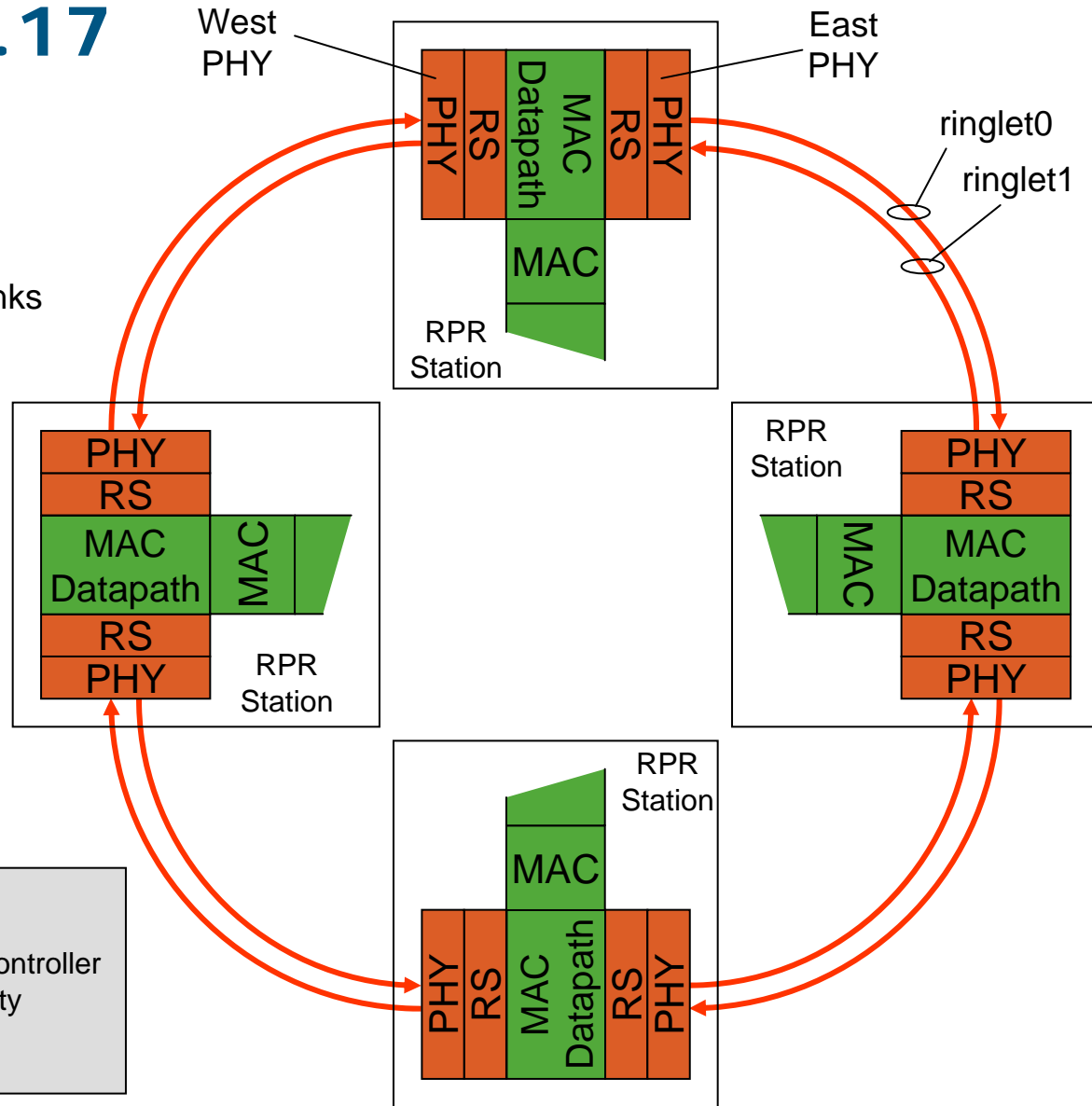
Receiving on ringlet0  
Transmitting on ringlet1

## East PHY

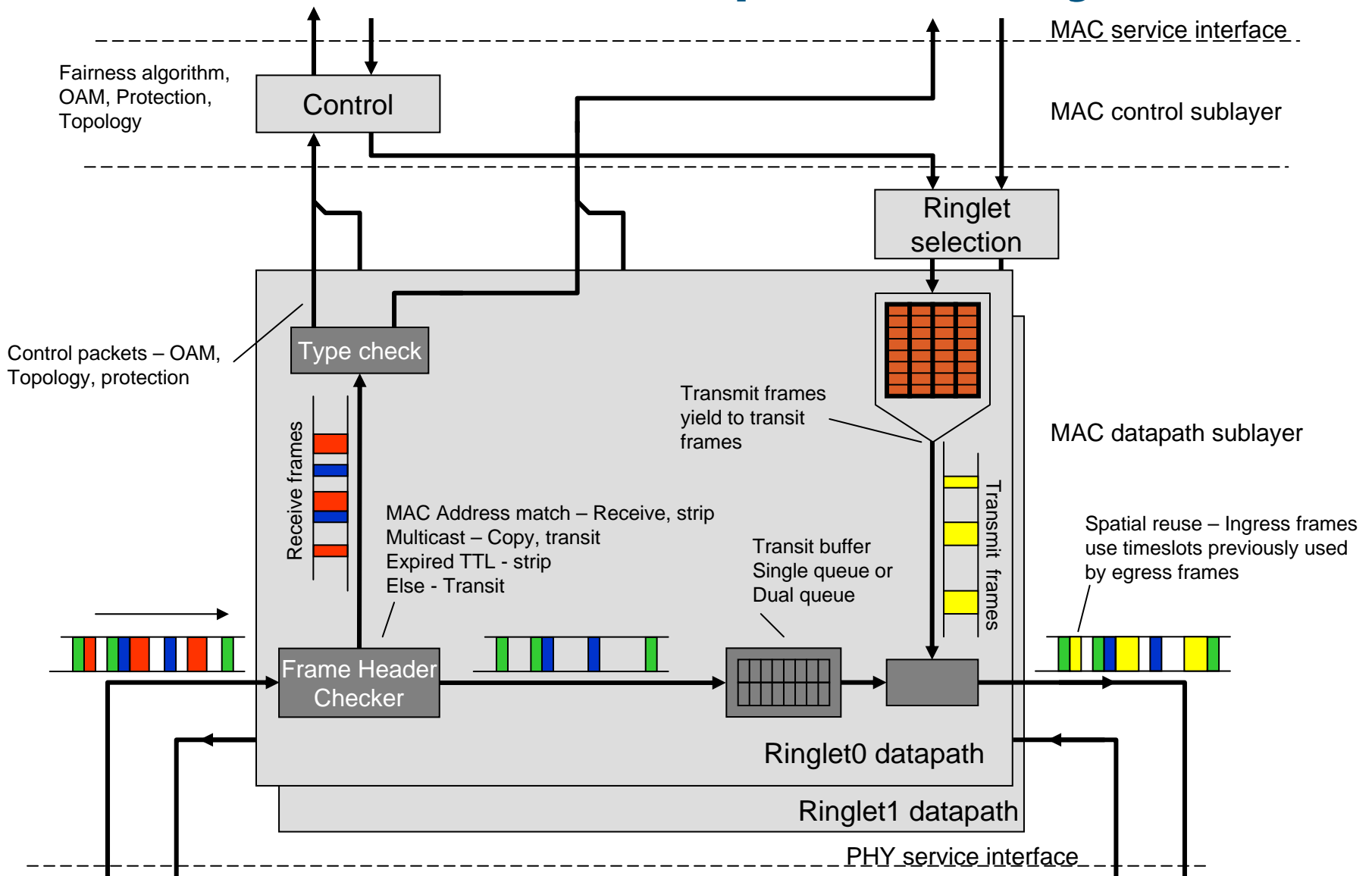
Transmitting on ringlet0  
Receiving on ringlet1

### Key:

MAC – Medium access controller  
PHY – Physical layer entity  
RS – Reconciliation layer

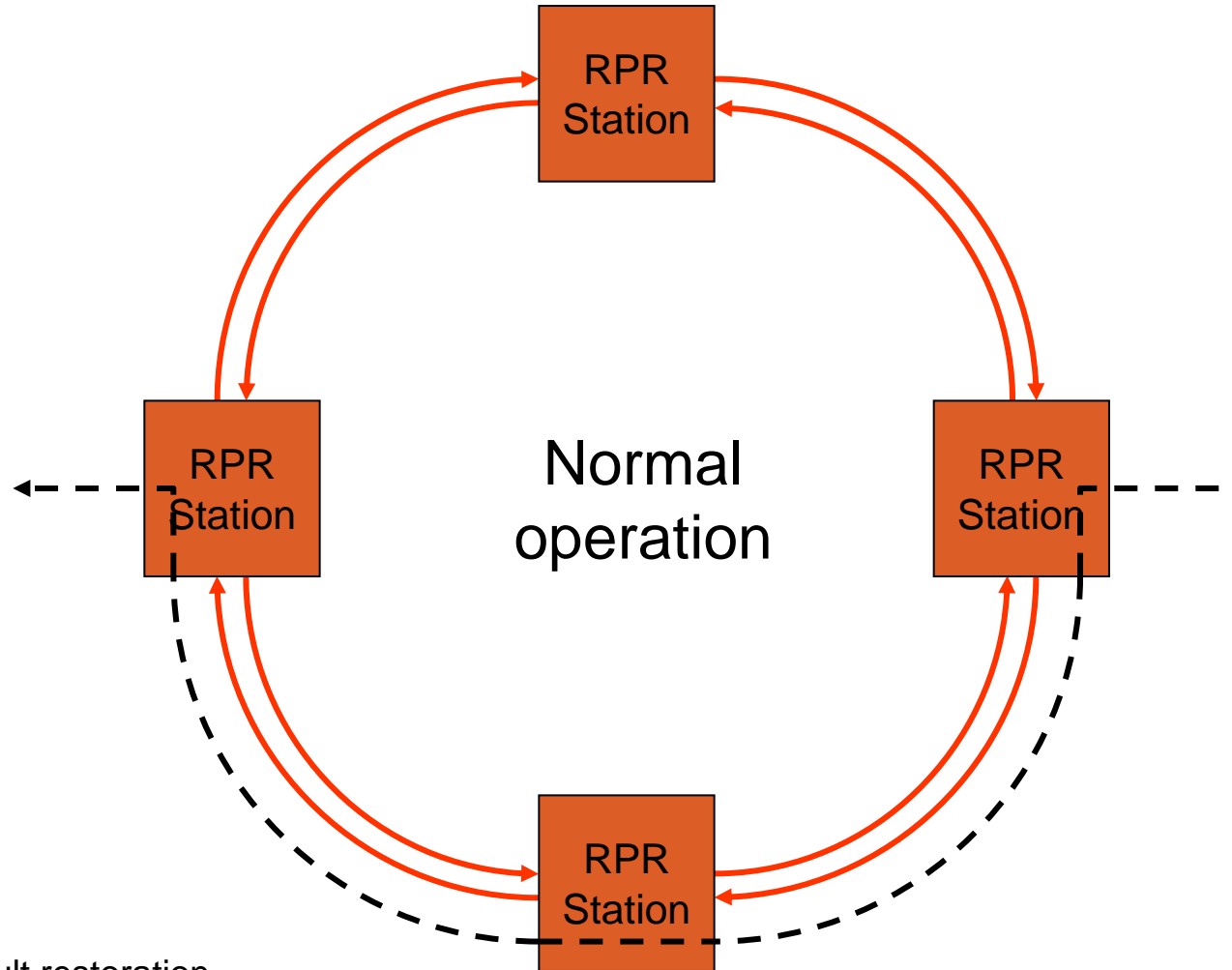


# IEEE Std 802.17 Datapath sublayer



# IEEE Std 802.17 protection mechanisms

## Normal operation

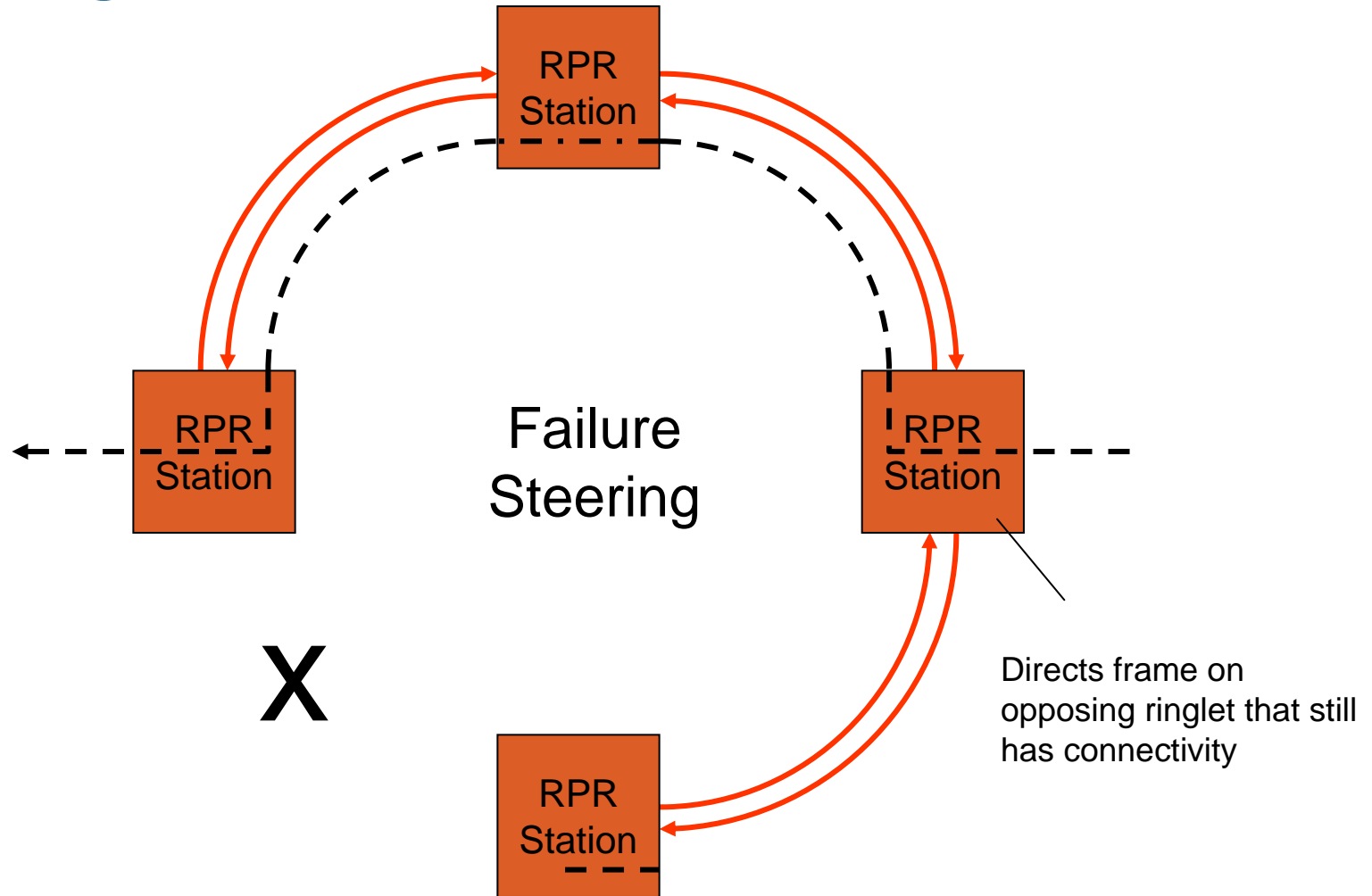


- Sub 50ms fault restoration
- Two paths available between any two nodes



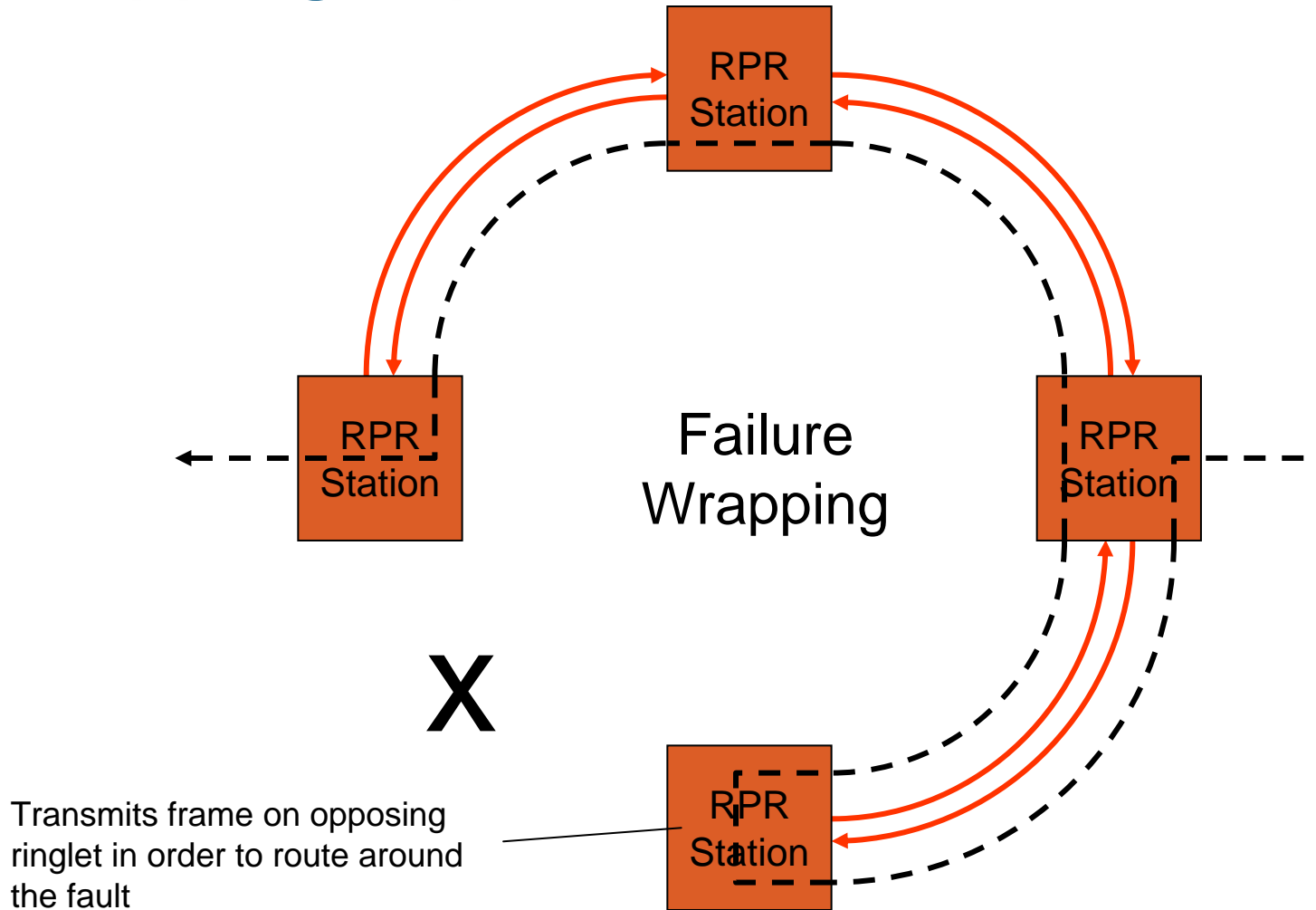
# IEEE Std 802.17 protection mechanisms

## Steering



# IEEE Std 802.17 protection mechanisms

## Wrapping (optional)



# IEEE 802.17 Standards

- IEEE 802.17-2004™ Resilient packet ring (RPR) access method and physical layer specifications
  - IEEE 802.17a-2004 Amendment 1: Bridging of IEEE Std 802.17
  - IEEE 802.17b-2007 Amendment 2: Spatially aware sublayer

All available through Get IEEE 802

<http://standards.ieee.org/getieee802/802.17.html>

# Revision history

Version	Date	Comment
1.0	23 <sup>th</sup> Feb 2010	Initial version based on IEEE Standards Education Committee GlobeCom 2009 Workshop presentation.