
# PAR for “Media Converters”

**Norman Finn**


# What is a “Media Converter”

# What is a Media Converter?

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## Suggestions for discussion Purposes:

- At least, an MC is a two-port relay device that is less complex than an 802.1D or .1Q bridge, but more complex than an 802.3 repeater (hub).
- At most, an MC is an *N* downlink + *M* uplink multiplexing device that is VLAN-aware.
- An MC does not make forwarding decisions based on MAC address except, perhaps, to support a "brain".

# What is a Media Converter?

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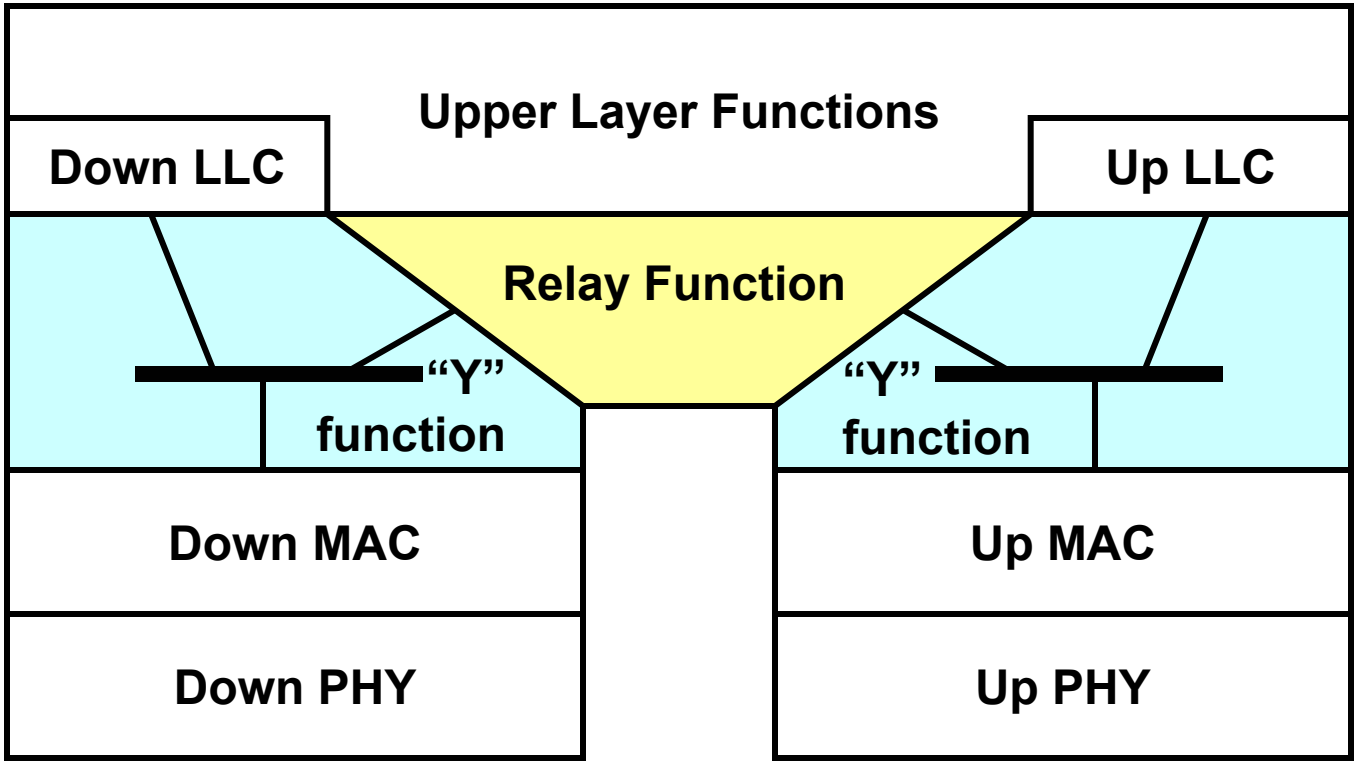
## Suggestions for discussion Purposes:

- **The range of possible devices to be covered in the PAR is To Be Determined.**
- **It would be best if the functionality is a proper subset of the functionality of a current standard 802.1 bridge.**


# Manageable Two-Port Relay Device

# Manageable One-to-One-Port Relay Device
## Model 1: Two LLC

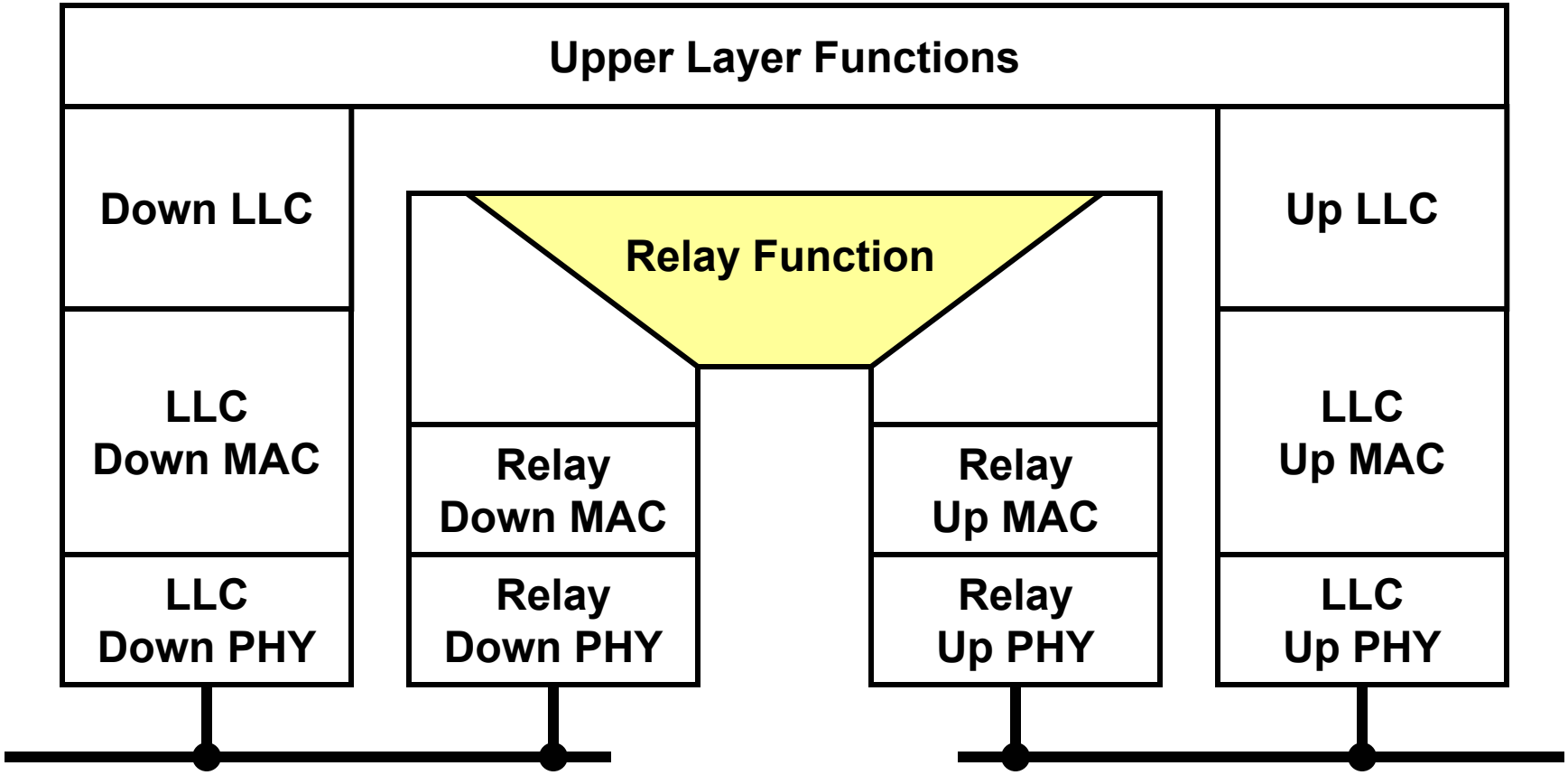





- **Same Baggy Pants diagram as a bridge, but a much simpler Relay Function: No learning.**

# Manageable 1-to-1-Port Relay Device
## Model 1: Two LLC

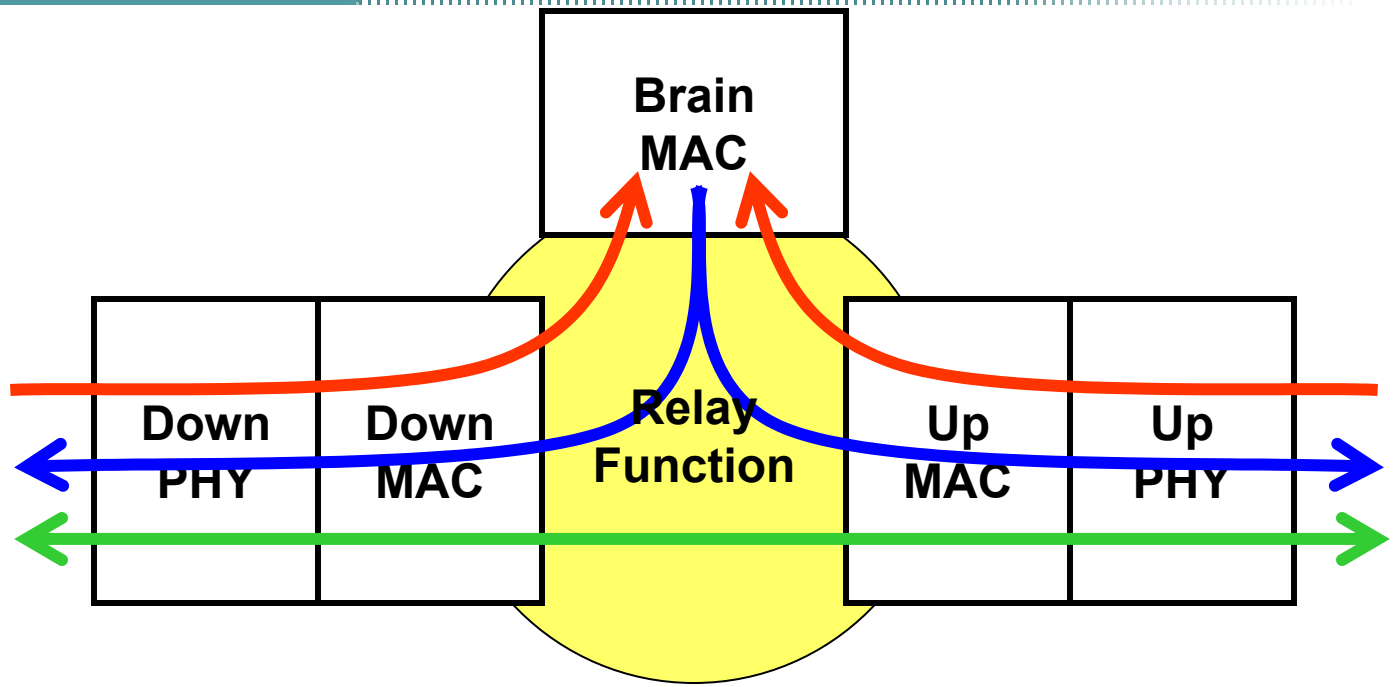





- (This is supposed to be the same thing.)

# Manageable 1-to-1-Port Relay Device
## Model 2: Brain MAC






- Relay Function directs frames to Brain MAC address only to Brain.
- Frames from Brain exit in both directions: No learning!

# Manageable 1-to-1-Port Relay Device
## Model 3: Software Relay

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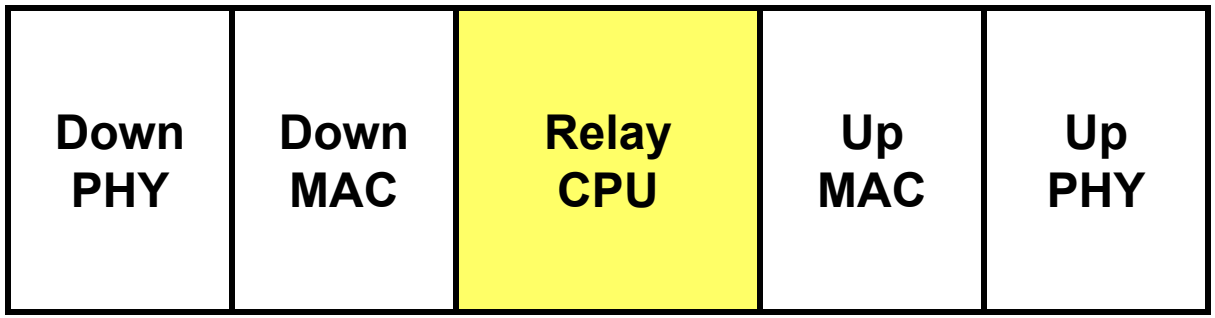
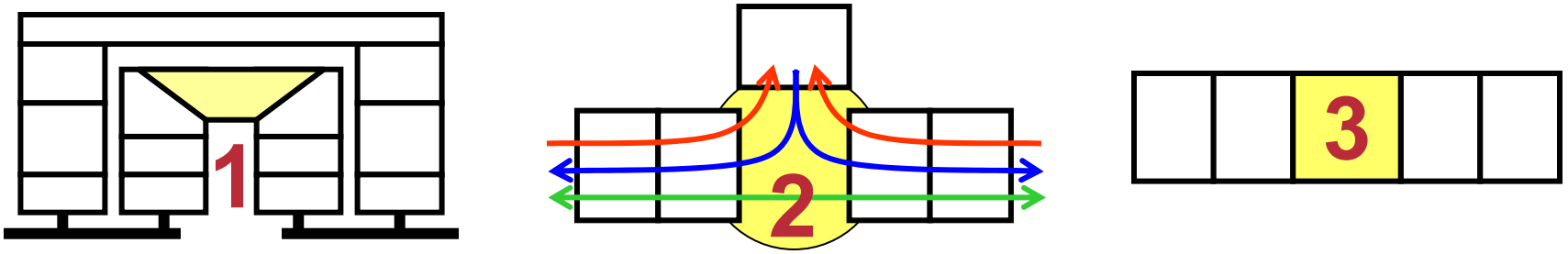



- Relay CPU is a computer with two MACs.
- No “Y” function.

# Which model to choose?



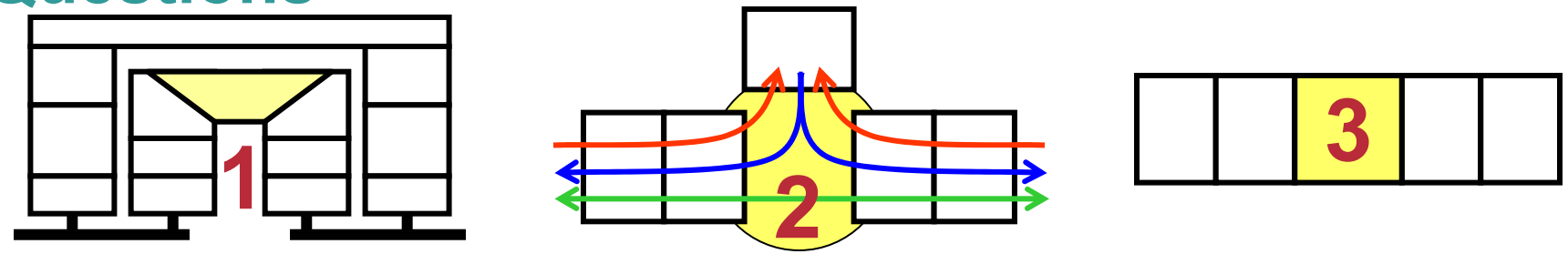



- It is reassuring to use the bridge baggy pants model (1).
- It is not clear that the bridge baggy pants model is the best for this device.
- Everything depends on the details of where the frames go.

# Which model to choose?



## Questions




- **Does the “brain” need to know from which port a unicast to its MAC address entered the device?**
- **Should the “brain” also relay frames addressed to its unicast MAC address, or should it sink them?**

# Operational Requirements

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- If the two ports operate at different speeds (beyond the PHY's clock tolerances), then the queuing model from IEEE Std. 802.1D must be employed.
- Loopback capability (outside to Uplink outside) is required.
- Loopback capability (outside to Uplink to Downlink to Uplink to outside) is required.

# Operational Requirements

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- **Plug-and-play capability in the Service Provider space is required.**
- **IEEE Std. 802.3ah OAM support is required.**
- **IEEE P802.1ag CFM support is desired.**
- **Both the Uplink and the Downlink must be manageable from the Uplink side.**
- **The device must not be manageable from the Downlink side.**

# Operational Requirements

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- The making and breaking of either the Uplink or the Downlink must be made known to the other link.
- The device must be transparent to all standard Spanning Tree and GARP protocols.
- The transparency and/or participation in other 802.1 and 802.3 protocols, including whether the choices are set by the standard, the implementation, or by management, is To Be Determined.

# Operational Requirements

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- The method chosen for managing the device must not require assigning the device an IP address (though, of course, this would not be prohibited).
- Expanding 802.3ah OAM with new TLVs is one possibility.
- SNMP over Ethernet is another possibility. (There is an EtherType for carrying SNMP queries/responses at Layer 2.)


# Other Devices to Consider for Definition

# Telephone?

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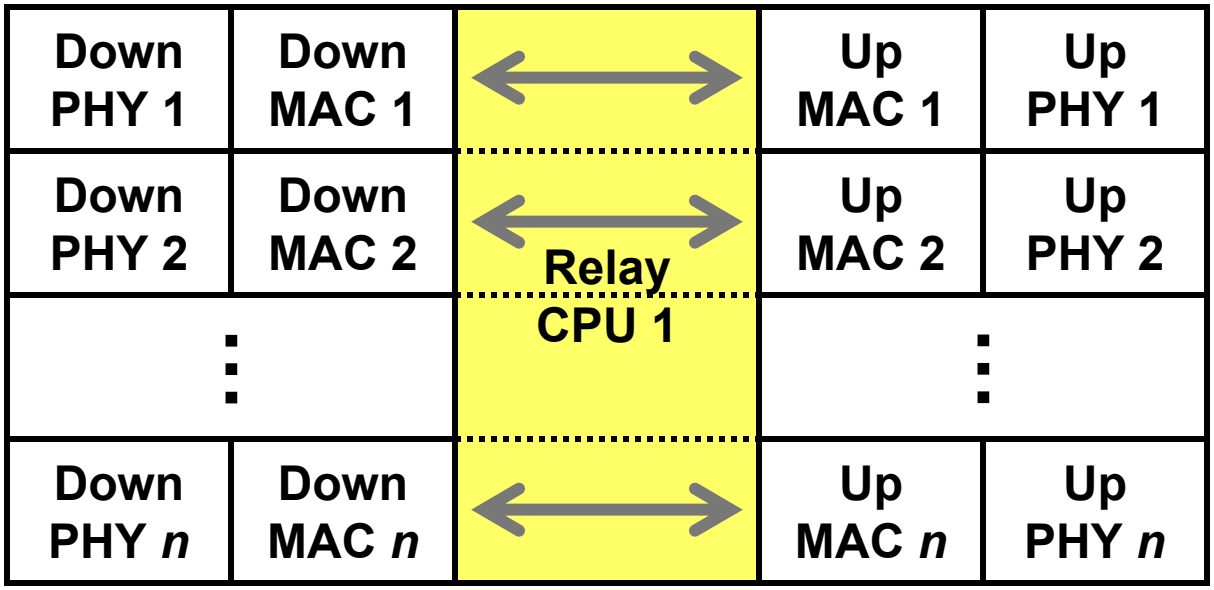
- One may note that any of these models should be applicable to an IP desktop telephone with a “line” link and a “PC” link.
- The work of other standards bodies should be examined before considering this definition.

# Manageable *n**(1-to-1)-Port Relay Device






- A number of two-port Relay Devices ganged together.
- Perhaps manageable on only one (or two) ports.
- **Model 3: Software Relay** is shown, but the other two models are equally applicable.

# Manageable *p*-to-1-Port Relay Device

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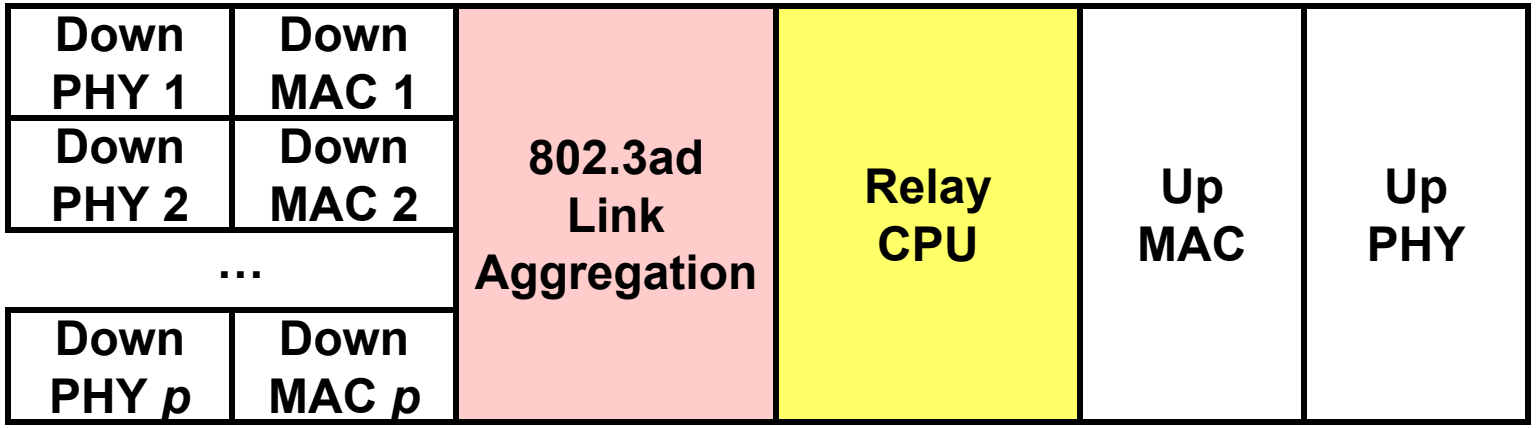


- ***p* Downlinks following the 802.3ad Link Aggregation standard.**

# Manageable *n***p*-to-*q*-Port Relay Device

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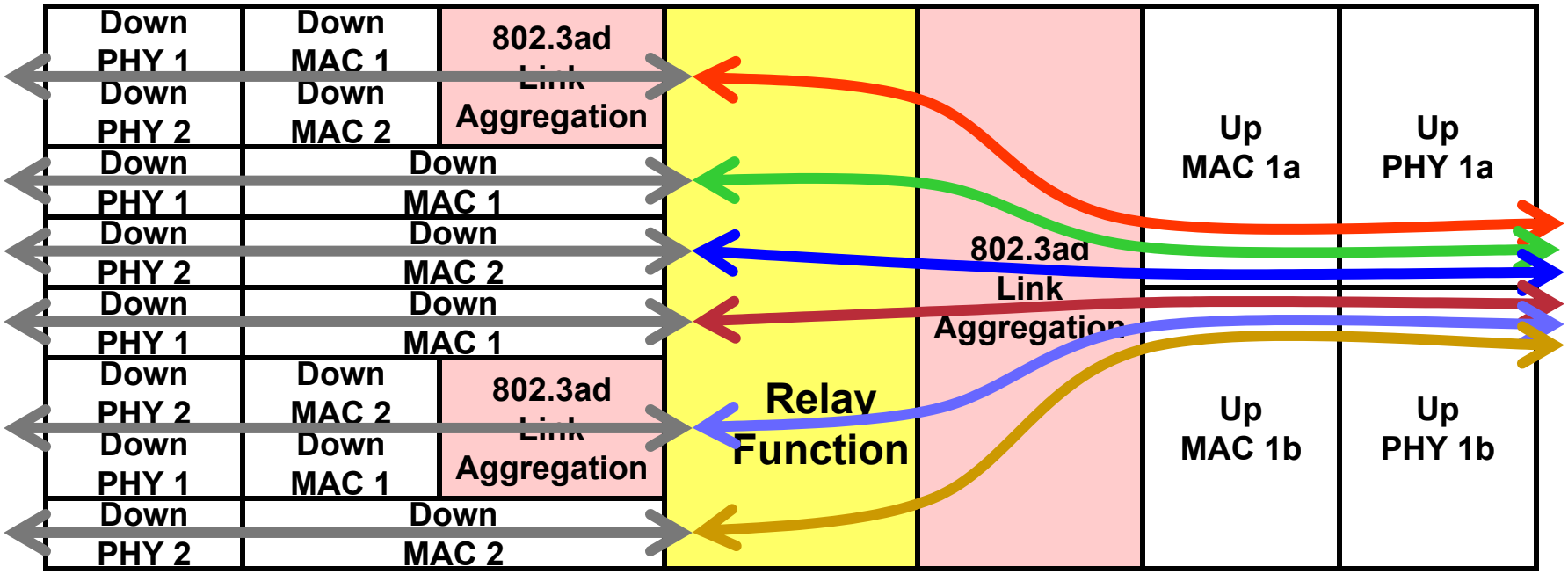


- Rather like PVIDs, the Relay Function tags and untags frames on the Downlinks, and uses VLAN tags to multiplex the Uplink.

# More??



- We can imagine multiple Uplinks to different Layer 2 network devices.
- At some point, you must give up and use a bridge.
- That point is To Be Determined.


# Summary

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## In order to create a PAR

- **We must agree on most of the basic requirements for capability, manageability, and plug-and-playability.**
- **We must agree on which device types are required, desirable, or out of scope.**
- **We must meet the five criteria.**

# Summary

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## After we have a PAR

- **We must agree on the specific requirements for capability, manageability, and plug-and-playability.**
- **We must agree on which of the basic models is to be used, or agree that the gozintas and comzoutas will be compatible with multiple selected models.**
- **We must hammer out the details of which protocols are relayed, blocked, or peered.**

# Summary

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## After we have a PAR

- **Oh, yes.  We must write the standard.**


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