802.1AS Hot Standby Amendment: 4 Domains

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Introduction

- This presentation is a response to this proposal, which shows 4 domains for 802.1AS hot standby
- This presentation assumes January PAR scope
  - No BMCA, 2 domains

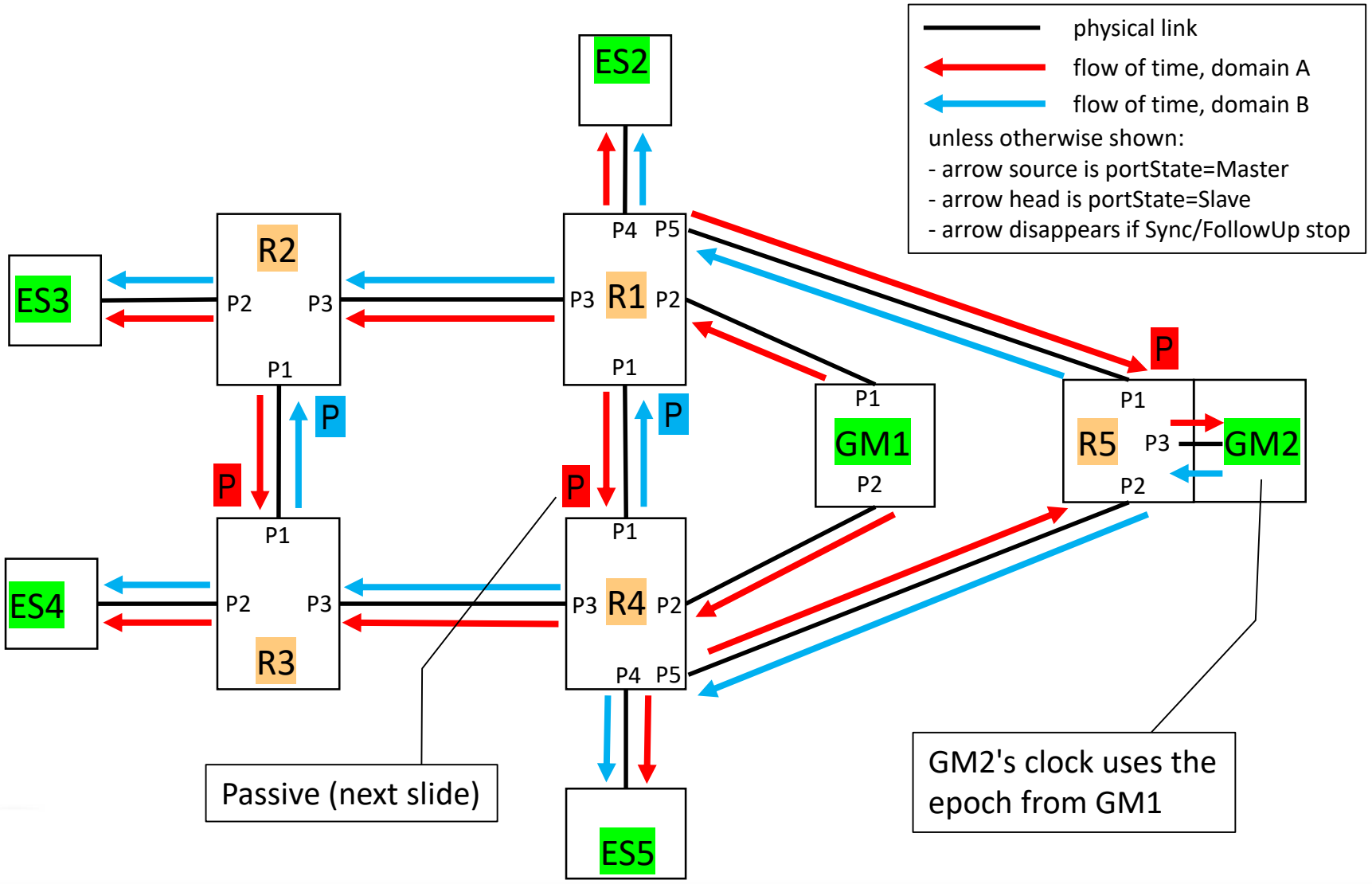
Assumptions

- Time sync performance requirement is network-wide
  - Conformance/certification is per system (hardware product)
  - For example, see P60802 drafts
- Goal for hot-standby: maintain network performance
  - Unlike BMCA, goal is not to find best-performing path
  - All paths meet network requirement
- Use as many paths as possible for availability

What is a Domain?

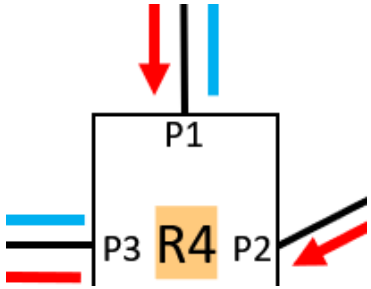
- Message headers have distinct domainNumber value
  - Not relevant by itself... it's just a number
- Each domain carries a distinct time
  - Do two GMs carry different time? Yes
    - Yes; each GM has its own clock
      - "Clock" per 1588 definition: "A device that can provide a measurement of the passage of time since a defined epoch."
  - Do two paths carry different time?
    - Technically Yes, but under the previous assumptions... No
    - All paths meet network performance, so effectively the same
- Are there limitations on the path a domain can use?
  - Yes, but there are simple ways to work around limitations

Two Domains

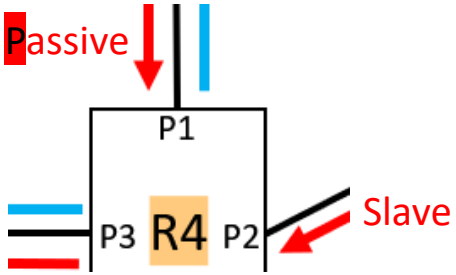

physical link
flow of time, domain A
flow of time, domain B
unless otherwise shown:
- arrow source is portState=Master
- arrow head is portState=Slave
- arrow disappears if Sync/FollowUp stop
ES2
ES3
ES4
ES5
R1
R2
R3
R4
R5
GM1
GM2
P1
P2
P3
P4
P5
P
Passive (next slide)
GM2's clock uses the epoch from GM1

Multiple Flows Into Relay

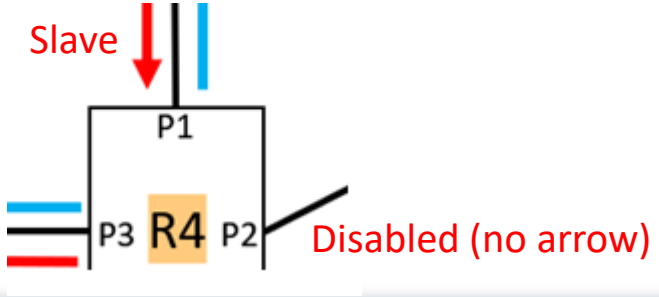
How do we support this?



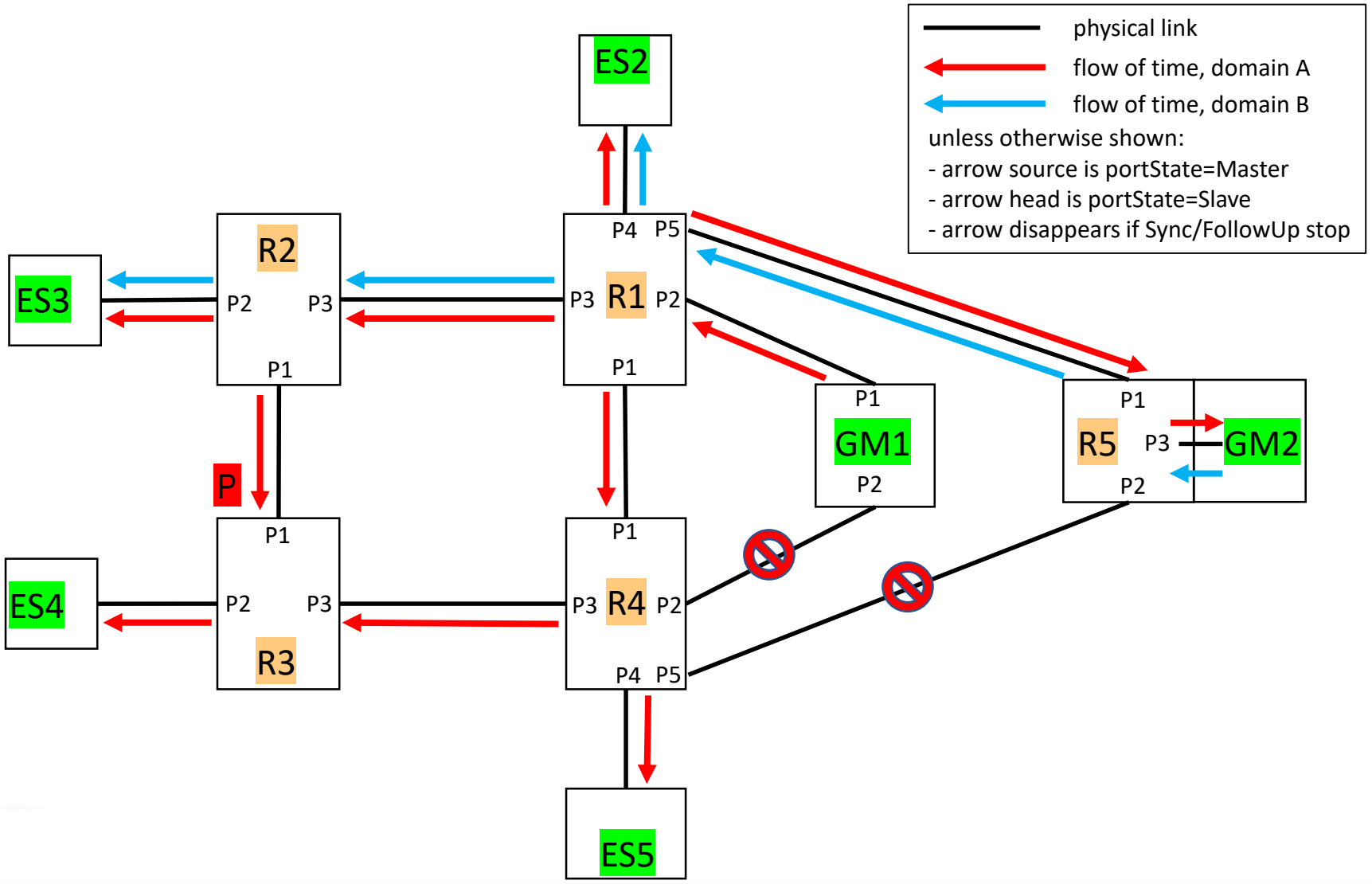
- Assume we have boolean isSynced per port
- Initial portState configuration:



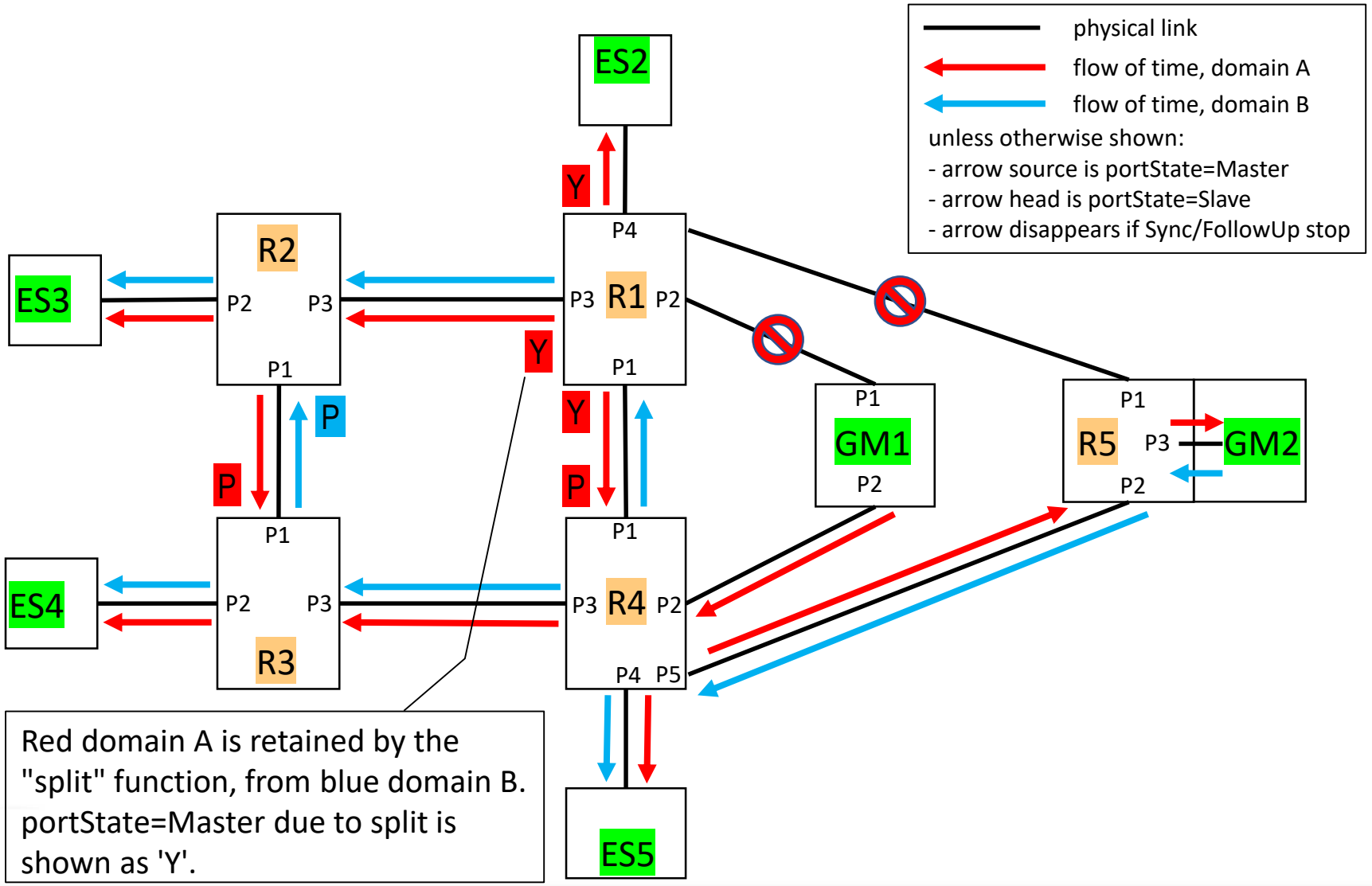
- If isSynced for P2 becomes false, local hot-standby state machine changes configuration to:



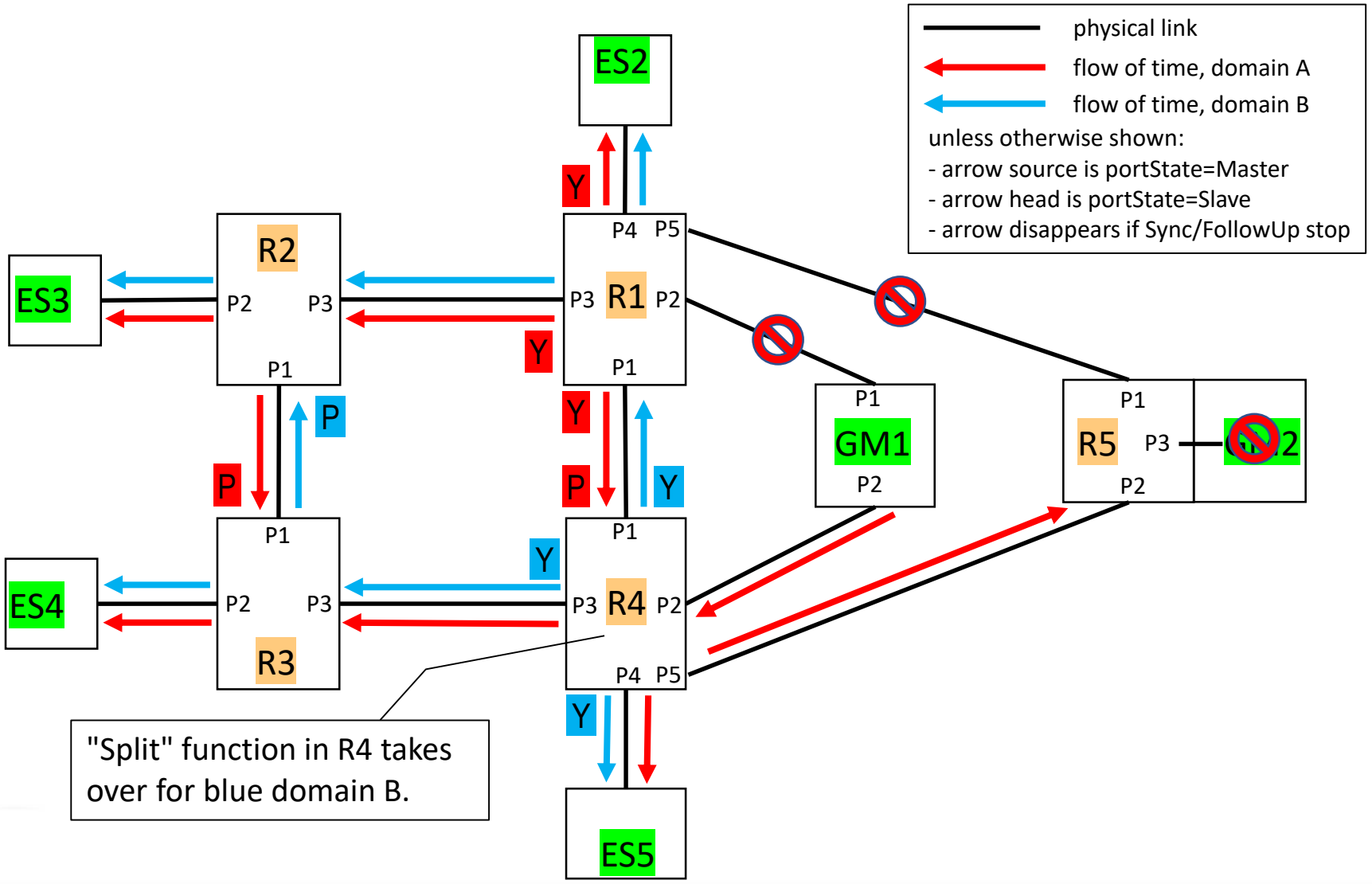
Two Links Fail: Mitigated



Other Two Links Fail: Mitigated



Two Links & One GM Fail: Mitigated



Thank You