

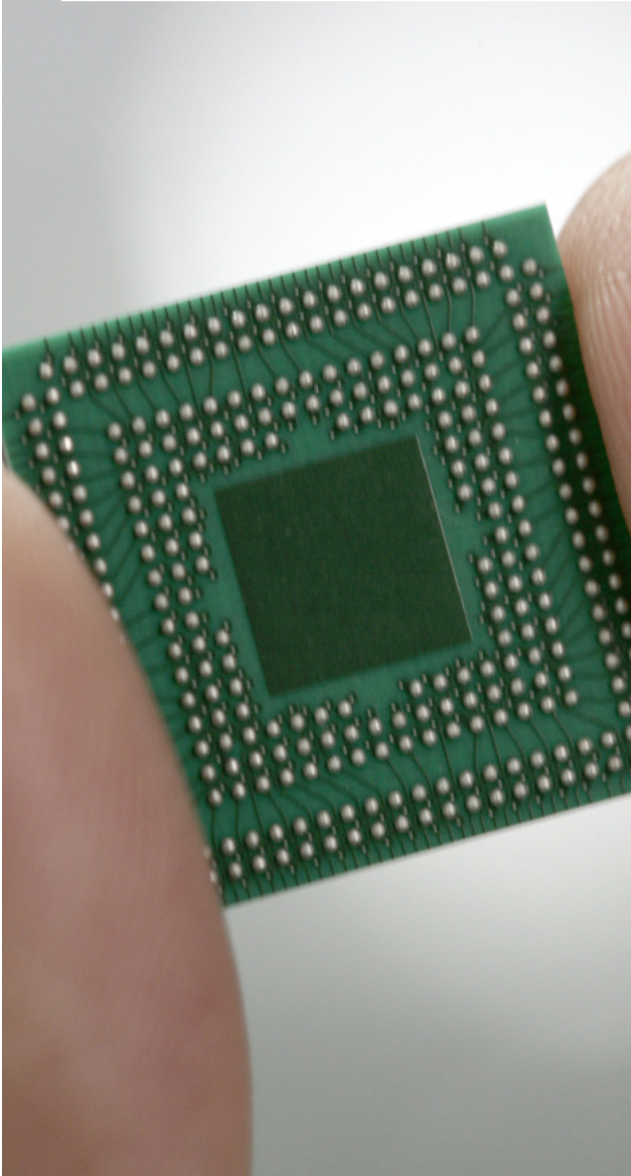
Mechanism to support Multiple Sync Domains @ IEEE 802.1AS Gen 2

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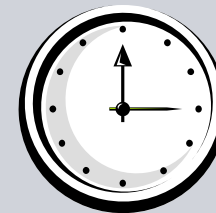
Why Multiple Sync Domains @ Industry ?

See: <http://www.ieee802.org/1/files/public/docs2012/as-goetz-ind-req-7015-v2.pdf>

Reasons for multiple time scales in .1AS:

Universal Time (time of day)

- More flexible, plug & play
- High accuracy for universal time (< 100µs over 128 hops)
- Low requirements on availability and reconfiguration
 - Sync tree for sync message
 - One active GM
- Available on the whole network
- Only one sync domain for universal time within a network

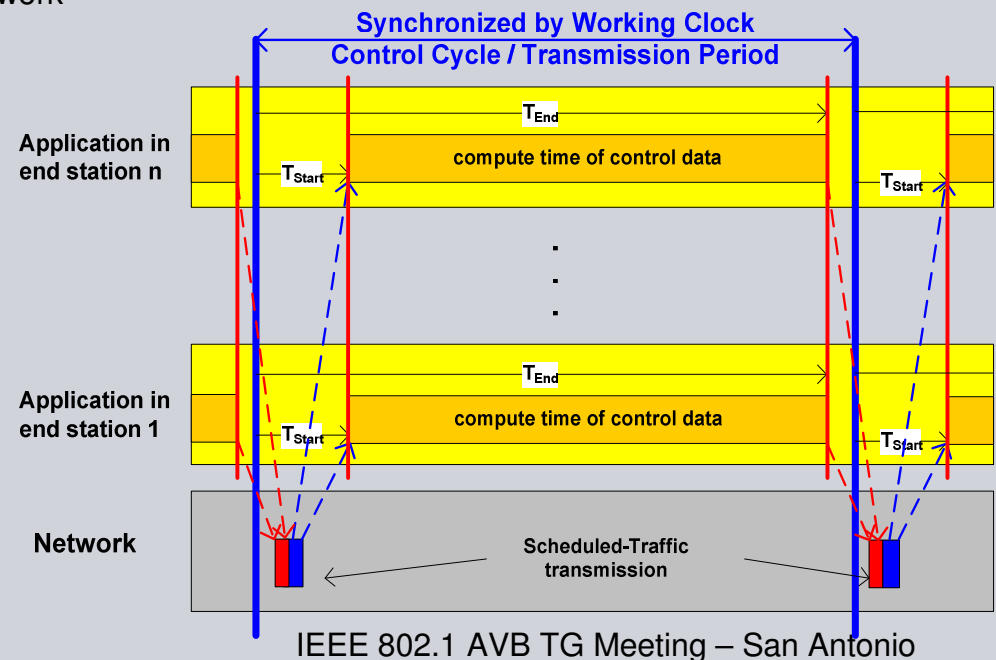


Universal time

Working Clock

(synchronized applications, scheduler, ...)

- Engineered or planned
- Very high accuracy
 - <1µs over 64 hops, <100ns over 8 hops
- High requirements on availability
 - Multiple sync path for sync messages
 - One active GM + cold- or hot-stand-by GM
- Available only within geographically limited areas
 - functional cells can overlap
- Parameter set
 - sync interval << 125ms (application specific)
- Multiple Working Clock domains can overlap

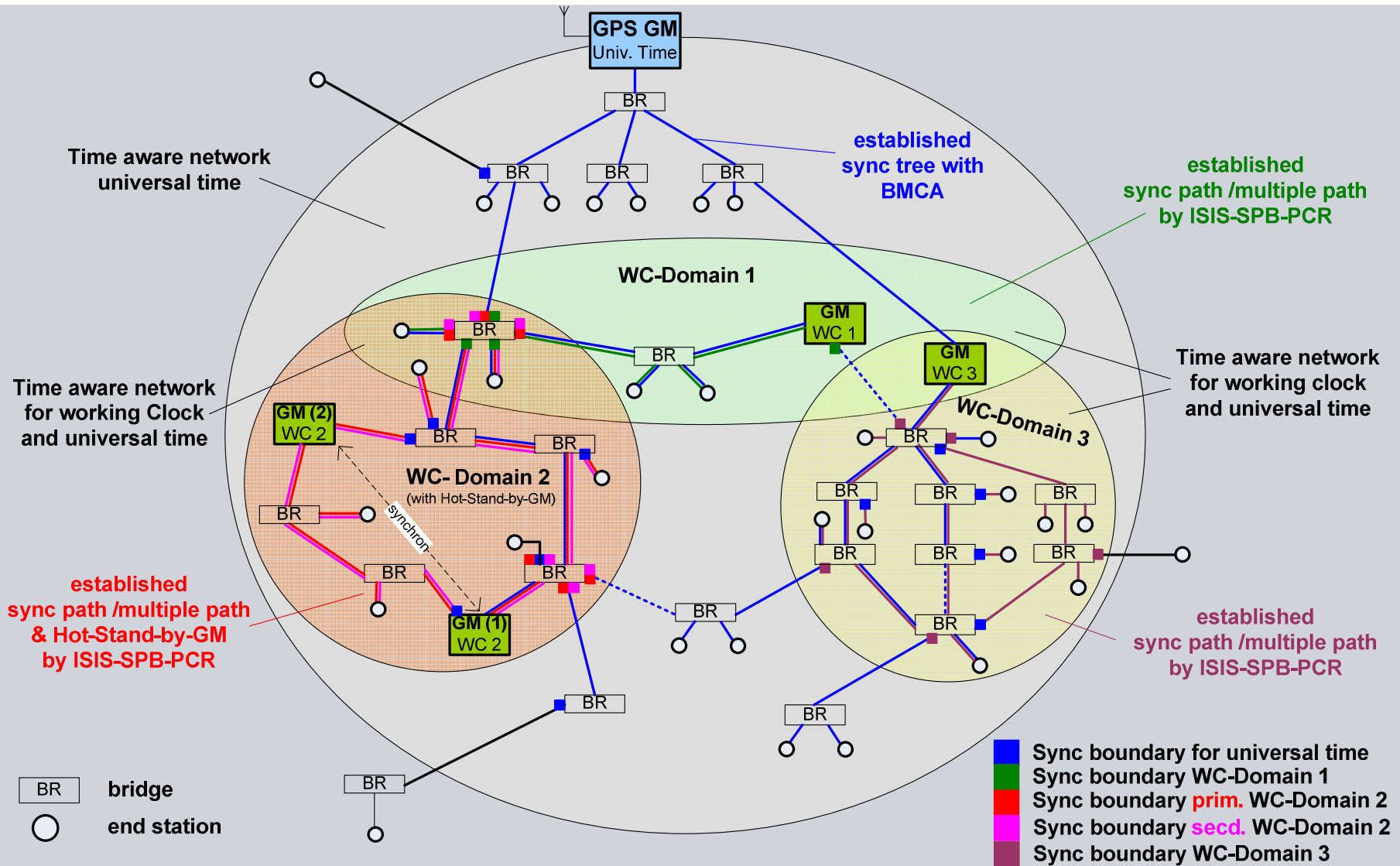


Why we need Sync Boundaries?

Reasons:

- **ONE common PDdelay measurement for all sync domains (time scales)**
- **Avoid flooding of sync messages from different sync domains**
(For forwarding sync messages get same behavior as specified in .1AS Gen 1)
- **Avoid circulating sync messages while different mechanism for different domains are used to create the sync path(s):**
 - P2P announce message + BMCA
(comparable with RSTP, IEEE 802.1AS Gen 1)
 - ISIS-SPB-PCR
(Routing, IEEE 802.1AS Gen 2)

Sync Boundaries for Multiple Sync Domains



Proposal to establish Sync Boundaries Using PDelay Mechanism specified in IEEE 802.1AS



Add Sync-Domain-TLV to PDelay message to control forwarding of sync message

ONE common PDelay measurement

Default behavior:

- No Sync-Domain-TLV from neighbor & PDelay measurement successful & Slave port

-> forward sync message

New behavior:

- Adjacent nodes support sync domain number & PDelay measurement is successful & port in Slave state

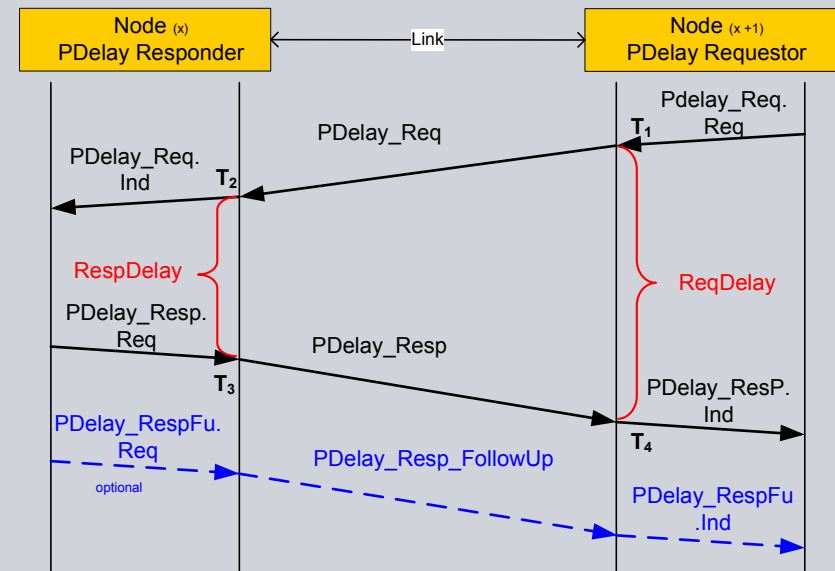
-> forward sync message for corresponding sync domain

- The neighbor does not support sync domain number

-> set sync boundary for sync domain

- Adjacent nodes which do not support a certain sync domain number

-> for unknown sync domains nothing to do



Sync-Domain-TLV

| | Octet | Length |
|----------------|-------|--------|
| Type | 1 | 1 |
| Length | 2 | 1 |
| Domain Tuple 1 | 3 | 1 |
| ... | | |
| Domain Tuple n | n + 2 | 1 |

Next Steps?

Thank you for your attention!

Questions?