802.1AS-2020-Rev Draft 1.0 Comments Rationale & Proposed Solutions

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BTCA as an optional feature: Agreed concept, but not clear in the standard

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Status quo

Existing consensus in this group

1. Support of BTCA in domains other than 0 is not mandatory
2. Support of domain 0 is not mandatory
3. Implementation of BTCA is not mandatory for a PTP instance that does not support domain 0

Summary

Domain0 support	At least one domain in the range between 1 to 127 requires BTCA	BTCA implementation required
False	False	False
False	True	True
True	False	True
True	True	True

Implementation of BTCA is not mandatory for a PTP instance that does not support domain 0

However, some clauses do not cover this conclusion

- 5.4.3 PTP Instance defaults and recommendations

"An implementation of a PTP Instance shall, by default, support the following best timeTransmitter clock algorithm (BTCA) requirements:

a) Implement the BTCA (10.3.1.1, 10.3.1.2, 10.3.2, 10.3.3, 10.3.4, 10.3.5, 10.3.6, 10.3.8, and 10.3.10).

Proposed change for this clause (in green)

- 5.4.3 PTP Instance defaults and recommendations

"An implementation of a PTP Instance shall, by default, support the following best timeTransmitter clock algorithm (BTCA) requirements:

a) For domain 0, implement the BTCA (10.3.1.1, 10.3.1.2, 10.3.2, 10.3.3, 10.3.4, 10.3.5, 10.3.6, 10.3.8, and 10.3.10).

PICS proforma

Annex 9

Status of all 23 items must be changed to cover these conditions

Domain0 support	At least one domain in the range between 1 to 127 requires BTCA	BTCA implementation required
False	False	False
False	True	True
True	False	True
True	True	True

A.9 Best timeTransmitter clock

Item	Feature	Status	References	Support
BTC-1	Does the PTP Instance implement the functionality specified by the PortAnnounceReceive state machine in Figure 10-13 on each PTP Port in compliance with the requirements of 10.3.11?	M	10.3.11	Yes [ ]
BTC-2	Does the PTP Instance implement the functionality specified by the PortAnnounceInformation state machine in Figure 10-14 on each PTP Port in compliance with the requirements of 10.3.12?	M	10.3.12	Yes [ ]
BTC-3	Does the PTP Instance implement the functionality specified by the PortStateSelection state machine in Figure 10-15 on each PTP Port in compliance with the requirements of 10.3.13? NOTE—There is one instance of the PortStateSelection state machine for the PTP Instance, for each gPTP domain. Some of the PortStateSelection state machine computations are performed for each PTP Port, and some of the computations are performed for the PTP Instance as a whole (and all the computations are performed for each gPTP domain).	M	10.3.13	Yes [ ]
BTC-4	If the value of clockA's SystemIdentity is less than that of clockB, is clockA selected as Grandmaster PTP Instance in compliance with the requirements of 10.3.2?	M	10.3.2	Yes [ ]
BTC-5	Does the value of priority1 comply with the requirements of 8.6.2.1?	M	8.6.2.1	Yes [ ]

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PICS proforma

Proposed change for this clause (in green)

Ensure that each item in A.9 has the current semantic if BTCA is implemented:

1. as mandatory item whenever domain 0 is implemented, OR
2. if domain 0 is not implemented AND a domain in the range 1 to 127 decides to implement BTCA

Add the following to the status of items BTC-1 to BTC-23

- DOM0 OR BTCX
- E.g. DOM0 OR BTCX:M, (DOM0 or BTCX) and !BRDG:M

Proposed change for this clause (in green)

Conditions currently represented as Major capabilities

- DOMADD: Does the time-aware system support one or more PTP Instances with domainNumber in the range 1 to 127?
- DOM0: Does the time-aware system support one or more PTP Instances with domainNumber 0
  - Status O
  - Support Yes, No
- BTCX: Does any PTP Instance with domainNumber in the range 1 to 127 implement the best timeTransmitter clock algorithm?
  - Status DOMADD:O
  - Support Yes, No, N/A

Typo in 5.4.3 line 28

2.5.4.3 line 28: rename PICS to PCS (assuming that a profile standard has a PCS rather than a PICS)

BTCA as a not-mandatory feature in conjunction with Hot Standby

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Scenario

Thesis: Hot Standby can work in conjunction with BTCA for some scenarios.

Therefore, the requirement “BTCA must be disabled” should be removed from 802.1AS-2020-Rev.

Assuming a scenario where:

1. Only one PTP instance configured as gmCapable per domain
2. syncLocked := TRUE for all PTP Instances in the domain
    1. Sync Messages are only sent after a Sync message arrives

Then:

1. In case of a GM (or a link of the sync tree) fails
    1. BTCA does not find a new GM for that domain
    2. No Sync messages are sent beyond the “failure point” (GM or link)
2. This is the behavior expected by Hot Standby (described in 7.5.2 Time-aware network with hot standby)

Current Status and Proposed Changes [1]

Clause 18.1 General

Current status

“For time synchronization using hot standby, two distinct domains are statically configured in the network and the best timeTransmitter clock algorithm (BTCA) is disabled for these domains.“

Proposed change

“For time synchronization using hot standby, it is assumed that: a) two distinct domains are statically configured in the network and b) the best timeTransmitter clock algorithm (BTCA) is disabled for these domains. In cases where these assumptions do not hold, the system integrator is responsible to ensure that BTCA does not alter the Hot Standby functionality described in this Clause”

Current Status and Proposed Changes [2]

Clause 18.3 PTP Instance configuration

Current status

“b) For both PTP Instances, externalPortConfigurationEnabled is set to TRUE;

c) If a PTP Instance (primary or secondary) is grandmaster, externalPortConfigurationPortDS.desiredState is configured to TimeTransmitterPort or PassivePort for all PTP Ports (portNumber 1 and higher); otherwise, externalPortConfiguration.desiredState is configured to TimeReceiverPort for one PTP Port, and is configured to TimeTransmitterPort or PassivePort for other PTP Ports; and

d) Each PTP Instance shall have a corresponding PtpInstanceSyncStatus state machine (see 18.4).”

Proposed change

“ b) Each PTP Instance shall have a corresponding PtpInstanceSyncStatus state machine (see 18.4)

if BTCA is disabled:

c) For both PTP Instances, externalPortConfigurationEnabled is set to TRUE;

d) If a PTP Instance (primary or secondary) is grandmaster, externalPortConfigurationPortDS.desiredState is configured to TimeTransmitterPort or PassivePort for all PTP Ports (portNumber 1 and higher); otherwise, externalPortConfiguration.desiredState is configured to TimeReceiverPort for one PTP Port, and is configured to TimeTransmitterPort or PassivePort for other PTP Ports;”