

ITU-T Q13/15 UPDATES

TICTOC / IETF-87

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INTRODUCTION

- › Q13/15 met in July 2013 (ITU-T SG15 plenary)
- › Mainly dealing with Time sync (G.827x series) and review of G.8263 (Packet Timing frequency sync)
- › Several document consented:
 - -G.8272 Amd1 (GM combined with the PRTC),
 - New G.8273 (Time sync clock framework and testing)
 - New G.8275 (Time sync architecture)
 - Amd 1 to G.8260 (definitions on time sync and handling of re-routing in the network)
 - Amd 1 to G.8271 (additional time sync info on time sync interface)
 - New G.8271.1 (Time sync network limits)
 - Rev G.8261 (updates in the first packet timing recommendation),
 - G.8263 Amd1 (packet clock improvements)
- › Important progress on the IEEE1588 time sync profile (G.8275.1) and Boundary Clock spec. (G8273.2)

TIME SYNC NETWORK LIMITS: G.8271.1

- › Network Limits (G.8271.1)
 - Consented at the meeting
 - Time sync limits :
 - › Time sync Limit in terms of max $|TE|$ (1100 ns to meet 1500 ns e.g. At the output of a base station)
 - › Stability requirements (MTIE and TDEV) still under study
 - Example of time error budgeting in the next slide

- › Note: Creation of new work item dealing with the network limits for partial timing support (G.8271.2)

TIME ERROR BUDGETING

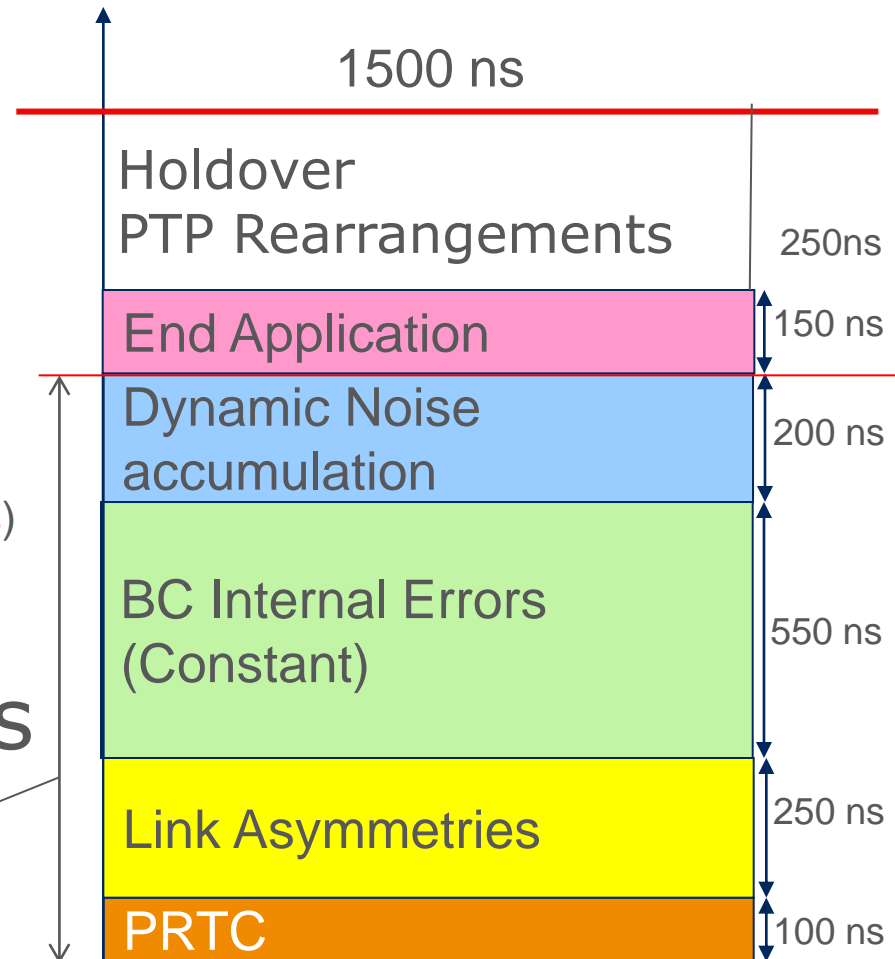
Budgeting Example (10 hops)

Dynamic Error (dTE (t))

- simulations performed using HRM with SyncE support
- It looks feasible to control the max |TE| in the **200 ns** range

Constant Time Error (cTE)

- Constant Time Error per node: **50 ns**
- PRTC (see G.8272): **100 ns**
- End Application: **150 ns**
- Rearrangements: **250 ns** (one of the main examples)
- Remaining budget to Link Asymmetries (**250 ns**)



1.1 us

Network Limit (max |TE|)

TIME SYNC PROFILES

- › Time sync Profile with full 1588 support: G.8275.1
 - Almost ready but decision to wait to consent it for additional check
 - Based on PTP/Ethernet and multicast
 - Reserved domain number
 - Alternate BMCA allowing for multiple masters
 - Specific clockclass have been defined
- › Time sync profile with Partial timing support: 8275.2
 - Planned for 2014 (partial timing support)
 - Mapping: PTP/IP unicast. No progress at last meeting, but expected to get contributions as G.8275.1 is almost finalized.

TIME SYNC CLOCKS

- › PRTC (G.8272)
 - Defining possible combined PRTC and T-GM
- › Telecom GM (T-GM): G.8273.1
 - No significant progress at last meeting.
- › Telecom BC (T-BC): G.8273.2
 - Constant Time error might include 2 classes: 50 ns (already agreed) and a lower value, e.g. 20 ns (under discussion)
 - Additional characteristics being defined (filtering of SyncE transients, clock bandwidth, etc.)
- › Transparent Clock (T-TC): G.8273.3
 - No progress at last meeting
- › New work items dealing with clocks for partial timing support will start at next meetings (G.8273.4?)

CURRENT DOCUMENT STRUCTURE

