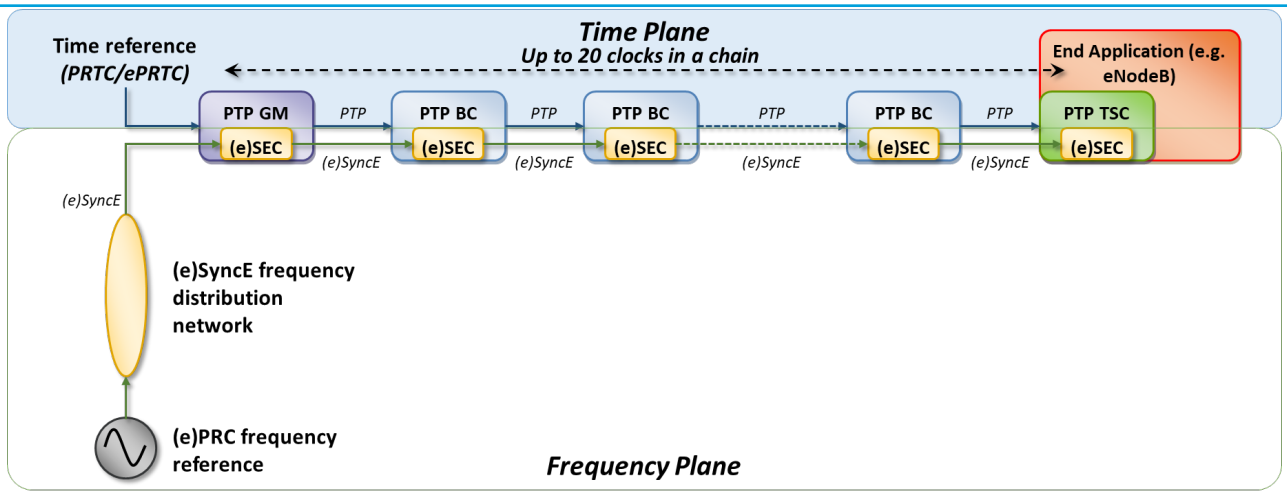
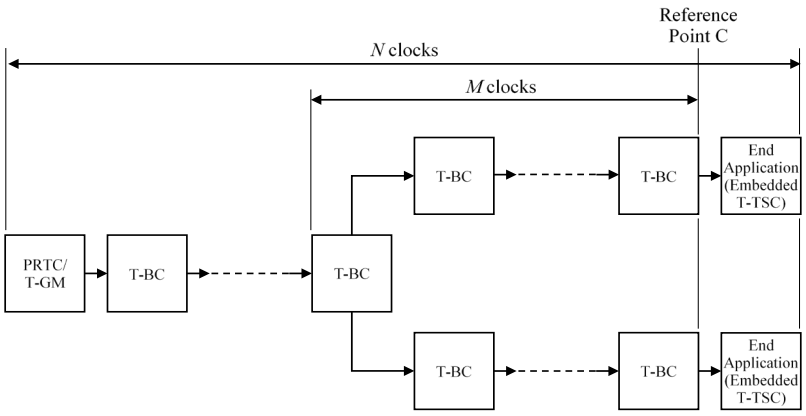
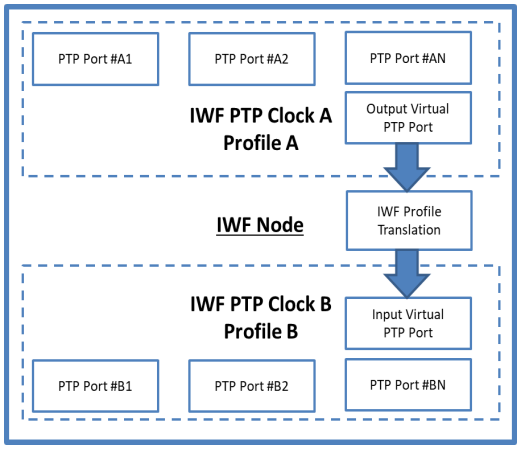
ITU-T Study Group 15

G.8271, G.8271.1, G.8271.2, G.8275 Time Sync Requirements, Architectures

- Time synchronization requirements and synchronization methods. Support for various applications including 5G
- Time synchronization via distributed time synchronization masters and via timing distribution over networks
- End-to-end network limits for time synchronization. Absolute and relative time error requirements
- Time synchronization architectures. Common aspect of the PTP Telecom profiles for time synchronization







1. ITU-T G.8271 – Time and phase synchronization aspects of Telecommunication networks

This Recommendation defines time and phase synchronization aspects in telecommunication networks.

It specifies the suitable methods to distribute the reference timing signals that can be used to recover the phase synchronization and/or time synchronization according to the required quality.

It also specifies the relevant time and phase synchronization interfaces and related performance.

2. ITU-T G.8271.1 – Network limits for time synchronization in packet networks with full timing support from the network

This Recommendation addresses the case of time and phase distribution across a network by a packet-based method with full timing support (FTS) to the protocol level from the network.

It specifies the maximum network limits of phase and time error that should not be exceeded. It specifies the minimum equipment tolerance to phase and time error that should be provided at the boundary of packet networks at phase and time synchronization interfaces. It applies to the FTS architectures described in [ITU-T G.8275] and the precision time protocol (PTP) profile defined in [ITU T G.8275.1].

The physical layers (PHY) that are relevant to this specification are typically the Ethernet media types as defined in [IEEE 802.3]. Time sync clocks may be linked via various physical layer technologies: microwave, xDSL, xPON or OTN.

3. ITU-T G.8271.2 – Network limits for time synchronization in packet networks with partial timing support from the network

This Recommendation specifies the maximum network limits of phase and time error that should not be exceeded in the distribution of time and phase across a network, using the packet-based method with partial timing support (PTS) to the protocol level from the network. In particular, it applies to the assisted partial timing support (APTS) and PTS architectures described in [ITU-T G.8275] and the precision time protocol (PTP) profile defined in [ITU T G.8275.2].

4. ITU-T G.8275 – Architecture and requirements for packet-based time and phase distribution

This Recommendation describes the general architecture of time and phase distribution using packet-based methods.

It focuses on the distribution of time and phase using the standard for precision time protocol (PTP) [IEEE 1588].

The requirements and architecture in this Recommendation provide a base for the specification of other functionalities that are needed to achieve packet-based time and phase distribution in a carrier environment.

The architecture described covers the case where protocol interaction is at all nodes, between a packet master clock and a time receiver clock or only a subset of the nodes between a packet master clock and a time receiver clock.

It provides specifications common to the PTP Telecom profiles specified by ITU-T (G.8265.1, G.8275.1 and G.8275.2).

For more information, please visit the ITU-T Study Group 15 website at: www.itu.int/go/tsg15