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Abstract

Accelerating Digital Transformation to Create New Value

NTT is working to accelerate digital transformation to create new value by leveraging research results that are the most advanced in the world. In particular, we believe that through collaboration with B2B2X (business-to-business-to-X) partners, we can combine the different strengths of NTT and our partners, which will lead to the creation of value that can transform the world. In this article, the process of value creation—from the significance of collaboration and generating ideas to technical verification and promotion—is explained.

Trends in Standardization of High-precision Time- and Frequency-synchronization Technology for Creating a 5G Mobile Network

High-precision time- and frequency-synchronization technology has received worldwide attention in recent years for its importance in creating a future fifth-generation (5G) mobile network. Consequently, standardization of this technology is underway by ITU-T (International Telecommunication Union - Telecommunication Standardization Sector) Study Group 15. This article introduces the function of time- and frequency-synchronization technology in 5G mobile networks and describes standardization trends concerning technical requirements such as synchronization-network architecture and synchronization accuracy.

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Synchronous telecom requirements, clock devices, network architecture, test methods, etc., are specified.

Frequency synchronization: ITU-T G.826x series
- In addition to SyncE, frequency synchronization and transmission by PTP are specified, and most recommendations are completed. Discussions on high-precision frequency synchronization (Enhanced SyncE) equipment are underway.

Time and phase synchronization: ITU-T G.827x series
- Standardizing next-generation mobile technology
- Share mobile requirements
- 3GPP
- Standardizing next-generation mobile technology

IEEE
- IEEE1588-2008
- IEEE1588-2008
- Standardizing PTP for industrial applications in general
- IEEE1582-1CM
- Standardizing Ethernet-based timing network
- Extend PTP for telecom use, share synchronization network requirements
- Share mobile requirements
- 3GPP
- 3GPP
- Standardizing next-generation mobile technology

Feedback to NTT laboratories
- High reality
- Products and services
- Markets
- Industry know-how
- Manufacturing technology
- Fields of expertise

NTT laboratories
- World’s most advanced technologies
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