

Spirent Paragon-neo

Customer Needs:

- Network Operators validating 5G synchronization solutions
- Operators with specific network timing requirements
- Equipment Manufacturers proving conformance to ITU-T 5G Timing Standards

Customer Challenge:

Achieving sub-nanosecond timing performance for PTP and SyncE testbed

Spirent Solution:

Integrated ITU-T Sync test cases, run with sub-nanosecond accuracy on Spirent Paragon-neo

ITU-T 5G Conformance Use Case–NEM with Global Network

The vendor with global development sites throughout the US, Europe and India, was in the process of developing a range of independent platforms that leverage PTP and SyncE synchronization capabilities for multiple target markets.

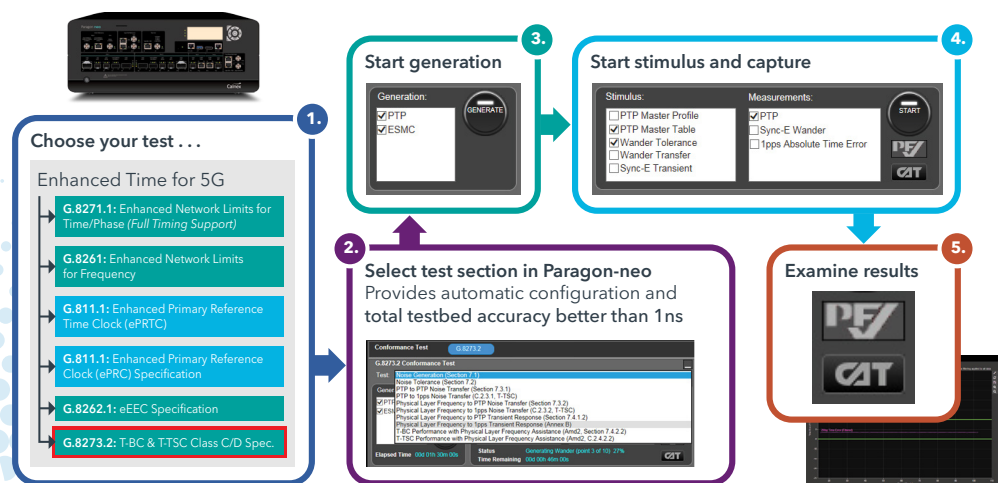
However, as development started on next generation 5G networking devices, synchronization test requirements were expanded to include **sub-nanosecond test accuracy** as well as various specifications required by regional markets.

Paragon-neo provided a single platform to serve vendor’s current and future test needs ensuring **test accuracy required for ITU-T 5G timing standards**, such as enhanced SyncE (G.8262.1) and Class C/D PTP Clocks (G.8273.2). The solution also offered options for higher Ethernet rates that were added whenever teams needed them.

Combined with the intuitive workflow that allows users to quickly familiarise themselves with the essential test items, the vendor is experiencing significant cost and time savings allowing them to **ensure tight development and test cycles and win key network deployment contracts**.

“Having a single PTP and SyncE test and measurement solution throughout the company enabled easy cross-site collaboration, reducing development time, and allowing us to meet strict project deadlines.”

– Senior R&D Manager,
Tier-1 NEM



ITU-T 5G Sync Standards focused workflow

5G Network Equipment Validation Use Case—Major Network Operator

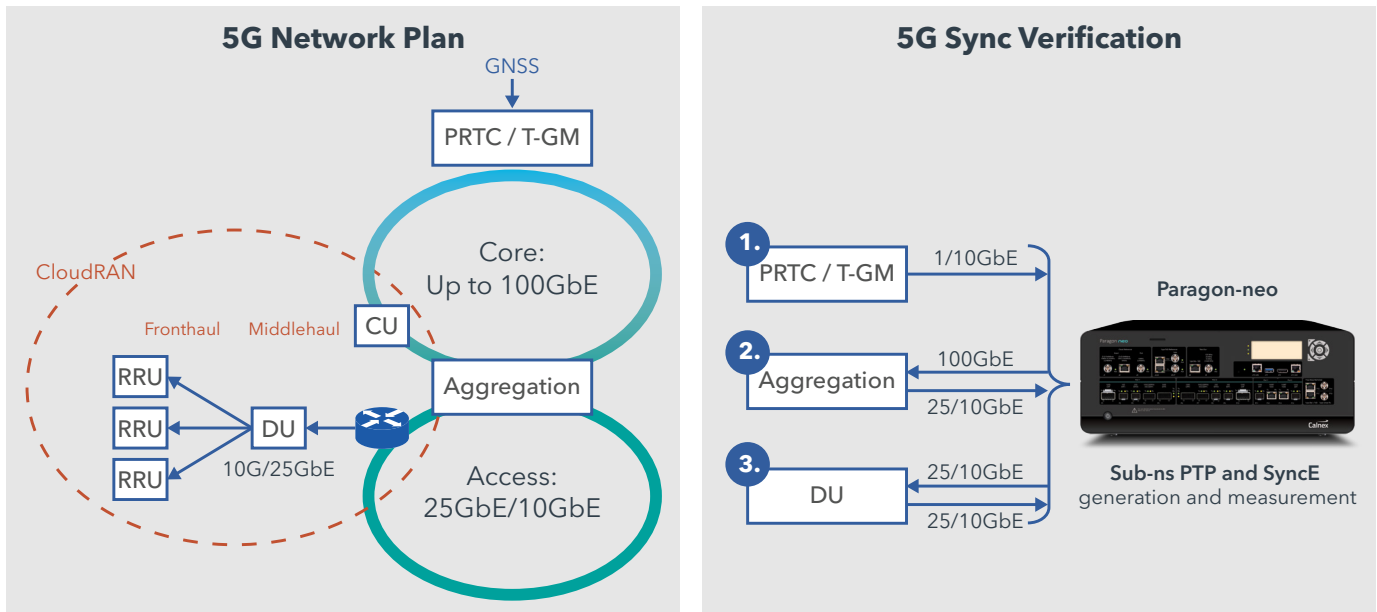
A global top 10 Network Operator chose Paragon-neo to validate high-accuracy PTP and SyncE synchronization performance of potential vendor equipment for future 5G network rollouts. This single test and measurement solution is playing a crucial role in helping them **maintain market-leading timescales for full 5G deployment**.

As a fundamental part of the operator’s 5G plans, which includes enabling distributed fronthaul applications, the following synchronization performance related questions must be answered:

- Does device timing performance meet high-accuracy PTP and SyncE specifications? e.g. ITU-T G.8273.2 Class D (5ns)
- What is the timing impact across rates? e.g. 100GbE or 25GbE input, 1/10GbE output
- PTP Protocol and interoperability: does the configuration and behaviour match the operator’s specific requirements?

As a fully integrated synchronization testing tool, Paragon-neo is essential to reaching the accuracy levels required for operator confidence in the solutions which will be deployed to support 5G. It enables the operator to **generate and measure PTP to sub-nanosecond accuracy**, with tools available to create test scenarios tailored to their specific network requirements.

Non-conforming vendor equipment is immediately identified, with detailed reports provided to vendors, allowing them to quickly troubleshoot and resolve any issues detected. By reducing the downtime between equipment evaluations, the **Network Operator remains on course to meet their goal of full 5G rollout in 2020**.



Primary Reference Time Clock (PRTC), Telecom Grand Master (T-GM), Central Unit (CU), Distributed Unit (DU), Remote Radio Unit (RRU)

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