GARLAND
See every bit, byte, and packet®

Monitoring: 5G Environments

Troubleshooting User Performance Issues At the Fronthaul

A mobile wireless provider is launching a national 5G network where throughput can reach 25Gbps. Achieving gigabit speeds and 1-millisecond latency raises the bar for all aspects of the 5G infrastructure, including the established boundaries of communication between the radios and base band units (fronthaul). The 5G design required full packet-level visibility for thorough testing and monitoring at elevated speeds.

Challenge: When moving to a 5G deployment, the service provider required new towers and additional base-stations for their edge data centers in order to complement the existing 4G deployment. The existing packet visibility solutions of combined Network TAP and packet capture devices only supported a maximum of 10Gbps. The new 5G radio to baseband eCPRI based interfaces allow maximum traffic throughput of up to 25Gbps, well beyond the performance capacity of the existing packet capture solutions.

Goal: The engineering team required 100% packet capture visibility at any front-haul site quickly and on an as-needed basis when performance issues arise during deployment, testing, and post-launch stages. The packet data would be used by the internal team during troubleshooting sessions but would also be made available to the network software and hardware vendors as proof of equipment failures.

Solution: SYNESIS 25G Portable paired with Garland Technology's 25G Passive Fiber Network TAPs, provided packet capture visibility at a moment's notice. The SYNESIS Portable was pre-configured before delivery to any problematic site in its custom-sized hard case. The Garland Technology network TAP and SYNESIS deployment procedures were simple enough to be carried out by on-site personnel. Capture sessions were started within minutes of unpacking. The unit was remotely accessible to the network engineers for ongoing troubleshooting sessions through an out-of-band management network. Providing 100% visibility, the passive Network TAP was invisible to the network, with no IP or MAC address ensuring zero hacks.

The SYNESIS and network TAP allowed packets to be saved at rates of up to 25Gbps directly to its large capacity storage system, providing complete trace files for troubleshooting sessions. Since "zero packet loss" was guaranteed by the solution, the network engineers were able to place more confidence in their analysis results.

Versus a traditional rack-mount solution, this portable option allowed the engineering team to realize: lower shipping expenses due to the more efficient deployment procedure, reduction in on-site space and power requirements, lessened travel time and associated expenses to sites. The mobility of the Garland network TAP and SYNESIS didn't require a unit to be assigned to each site. The solution was easily sent to locations so the overall cost versus multiple units of the previous solution meant a lower initial investment with only a single maintenance renewal per subsequent year.
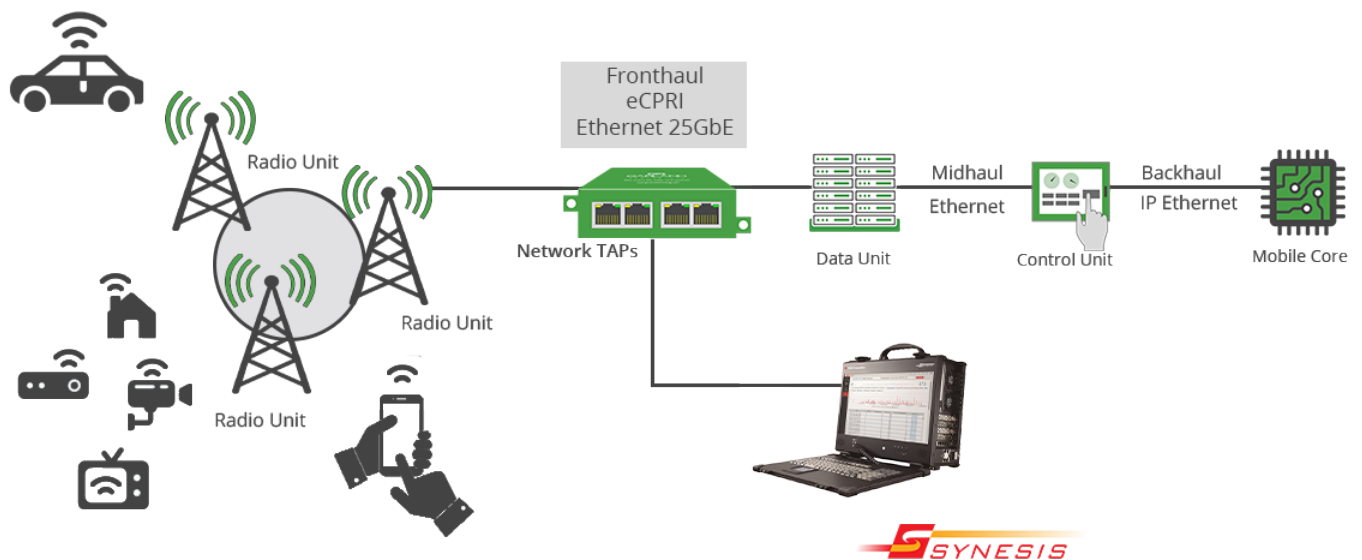
Benefits:
- Lowered CapEx cost for portable high-density equipment
- Lowered OpEx cost for onsite personnel
- Met need for quick deployment
- Eliminated need for large space and power requirements versus rackmount systems
- Provided complete packet visibility to the service provider and their equipment vendor

This Garland Technology and SYNESIS solution addresses the challenge of troubleshooting user performance issues at the fronthaul in 5G environments. Looking to learn how to provide visibility into your environment? Contact us for a free Design-IT session with our engineer team today!

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