Case Study

Validating a Tier 1 Vendor's New 5G SA Network

Overview

Working with a Tier 1 vendor, VIAVI provided test equipment to validate their Standalone 5G Core Network.

Challenge

A Tier 1 vendor is developing a 5G Standalone Core Network according the 3GPP standards but they need to know it works, works at load and works when things go wrong. The biggest challenge when developing new 5G Core elements such as AMF, SMF, UPF is having test tools that match 3GPP specs and are available in lock step with the development cycle.

Solution

The Tier 1 vendor used the TeraVM Core Tester virtual SW test tool which is designed to emulate a vRAN and test an entire 5G Core Network or the individual elements of the Core such as:

AMF – Access and Mobility Function
SMF – Session Management Function
UPF – User Plane Function

They used TeraVM to emulate UEs and register, set up data sessions, request handover and perform every task a Core Network can be prompted to do. TeravM is designed against the same 3GPP standards the vendors Core Network is developed against. TeraVM not only emulates 5G UEs and gNBs but it can stress test the Core as well by generating high traffic load with data traffic and control traffic such as a signalling storm.

Real traffic mixed with control traffic in high volumes replicates real mobile operator environments and is necessary to properly test the Core Network to ensure it is safe to deploy and won't fall over when the first overload scenario occurs.

Customer Impact:

The vendor found that TeraVM was the ideal test tool for their 5G Core Network as it emulates real life subscribers in their millions and presents a thorough test environment. It was however a unique TeraVM feature which made the difference to the vendor when deciding on their test tool – Error Insertion.

TeraVM's unique Error insertion technology allows manipulation of the messages being sent to the System Under Test in order to trick it and see how it responds when erroneous conditions occur. This is crossing the T's and dotting the I's when it comes to testing.

TeraVM can also be deployable in the cloud and cloud edge. With more and more telecoms equipment being cloud and edge hosted it makes sense to also test in that same environment. VIAVI can help vendors by deploying TeraVM on all public and private cloud and cloud edge platforms allowing testing to be performed outside of the lab and at the convenience of the test team.

The Facts

In a recent survey conducted by the Technology Innovation Council on behalf of VIAVI to Service Providers on Subscriber Experience, COVID, and Disruptive Network Trends, it was reported that:

More than two-thirds (**70%**) of CSPs identify access network performance as the primary factor that most impacts subscriber experience, with transport network performance (**41%**) and core network performance (**37%**) also of concern.

Core Network Performance ▮▮▮▮▮▮ **37%**

When asked about the top factors impacting subscriber experience, a North American service provider noted:

"Access network coverage and performance in the core, have the biggest impact to service accessibility and quality"

Why TeraVM?

TeraVM Core Test gives Core Network engineers a controllable and repeatable test environment that helps implement 3GPP standards rapidly. It also simplifies the development lifecycle of the 5G SA Core Network and the introduction of 5G services to the market.

View the TeraVM High-Performance 5G Core Testing Video – where you can see TeraVM emulate: 4.3 Million Subscribers, 60,000 5G Base Stations, 200Gbps traffic throughput, that's 520,000 transactions per second! All registered in under 1 minute.

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