Addressing the Challenges of testing on the 5G Core Network

A Valid8 Whitepaper

Challenges of Testing on the 5G Core Network

The introduction of 5G mobile architecture goes beyond just the new, faster radios. 5G introduces dramatic design changes to mobile network design to better support the ever-increasing requirements for bandwidth, reliability, and security.

The combination of hardware and software to authenticate subscribers and devices, personalize policies and route traffic requires that new base stations or nodes that need to connect to the core network be thoroughly tested. Until recently, those options for testing were resource or cost-prohibitive.

Valid8 has developed a 5G core emulation platform that offers flexibility, privacy, and configurability to test new base stations or nodes before deployment.

The Problem

Companies deploying a base station or any other 5G node to connect to the core need a method to test the node. Not testing the node before deployment creates a high level of risk. If the base station or other node isn't tested, there is the risk of the node not operating as expected, or as specified, potentially impacting network reliability, security or creating other issues on the network.

In addition, sales executives want the ability to demonstrate their node to potential customers in a "real word" environment at customer meetings or tradeshows.

Typically testing or demonstrating on a 5G core network is costly. Companies would have to purchase an expensive deployable core from a provider. Often 5G deployable cores are either not available, due to high demand, or cost-prohibitive – often more than $250K.

Devices must be tested, what are other options?

Current Options

Since purchasing a core is high-priced, some companies may decide to develop the core themselves or work with a development partner. This can be not only costly but can tie up valuable time and resources needed for other activities.

Another risk to partnering is the visibility of coding limitations or design flaws of the node to the partner. For example, during a test it may be revealed that a field has been coded incorrectly, this level of error, easily corrected, it best worked through internally rather than exposed to a partner or 3rd party.

Valid8's Core and RAN Network Emulator

Valid8 has developed a 5G core emulator as part of their industry-leading testing platform to offer another, more cost-effective option to address the challenge of testing on the 5G core network.

The 5G core network emulator can be deployed in a lab environment or in cloud environments such as OpenStack® and VMWare®, to support development, demonstration, testing and training on 5G.

The easy to deploy, highly configurable technology creates a realistic emulation of the 5G core for testing of base stations or other 5G nodes for things like protocol compliance.

With the Valid8 5G Network Emulators, businesses realize the following benefits:

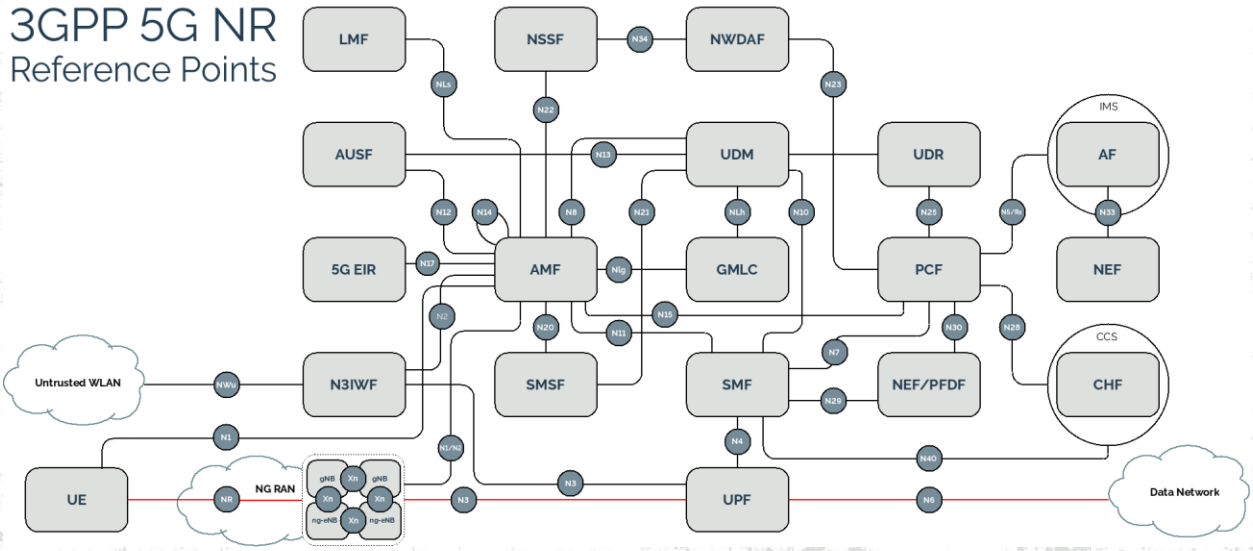
- Resource Savings: The emulator eliminates the need to use valuable resources to build a 5G core
- Time and $$ Savings: With options including "on-demand", the cost-effective platform saves time in setup and expenditures for a deployable 5G core
- Flexibility: With Lab or cloud-based options available, Vald8 offers multiple options to best fit the testing need
- Adaptability: As network requirements change, or new products are developed, the Emulator can adapt to ensure tests represent the real-world environment
- Editable to address any proprietary differences with the node: The platform is built to be configured to meet any unique components

For businesses struggling to find an economical way to test base stations and other nodes on the 5G network, Valid8's solution offers a flexible, in house, cost effective option.

Example Use Cases

Valid8's 5G Core and RAN Network Emulator supports several use cases, includes the following examples.

- *Verification of standards implementaiton and performance*. Small cell GNodeB vendors can connect Valid8 to emulate a mobile 5G core and verify their product meets standards and performance requirements.
- *Support for product demonstrations:* AUSF and other node vendors can easily emulate the 5G network to verify and demonstrate their product functions under load at prospective customers
- *Issue Simulation:* Security research groups can use Valid8 to create a realistic, flexible 5G "playground" to simulate specific issues and observe how the network reacts, along with the ability to test threat detection tools
- *Support University Labs:* Valid8's cost effective option enhances university coursework on 5G mobile technologies with realistic emulation in a laboratory setting.



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Summary

5G Core Testing can be a costly, resource-intensive process. With Valid8's 5G Core Emulator test engineers have the flexibility to emulate the 5G core in a lab or virtual environment. User-friendly, comprehensive, cost-effective and flexible, Valid8's 5G Emulator includes available extensive support and a clear upgrade path through Valid8. Businesses can be confident in their current and future testing.

About Valid8:

Valid8 helps the world's networks operate by providing the best methods to simulate & test any network equipment and communication protocol. With 17 years of proven results, Valid8 believes that testing tools should start with a flexible and affordable base with the ability to customize solutions to needs. Clients should only pay for what they need. Valid8 is dedicated to customer success with a comprehensive support program providing direct access to engineers to assist with training, integration, and problem-solving. Over 90% of customer feedback points to Valid8's flexibility and service as the reason they have chosen to partner with the company. Valid8 has succeeded in giving clients a refreshing change from the testing status quo.