

Accelerated Adoption through Open-Source Un-trusted Non-3GPP Compliant ePDG Implementation

Customer Overview

The customer is one of the largest wireless carriers in the United States with 100+ million subscribers and annual revenue of over \$40 billion. They provide wireless voice and data services and also serve as the host network for many mobile virtual network operators.

The Context

Proprietary solutions of prominent vendors have controlled the telecom industry and slowed LTE adoption. So, the customer wanted to create an open-source solution to promote private LTE adoption by developing an un-trusted non-3GPP specification-compliant ePDG for telecom 4G/LTE architecture.

Type of Service Provided

Product Engineering

Technologies Used

Telecom Core Architecture, 3GPP Standards, EPC Protocols, Linux, IP Networking, C, C++, Shell Scripts, Python

Solution Summary

GS Lab | GAVS is a significant contributor to ONF's OMEC project and a partner to 4G research teams of several leading industry players. Leveraging the extensive experience gained through these projects, the GS Lab | GAVS team developed the solution that required core technical expertise since 3GPP specifications mention what functionalities may be supported, but not how. Solution components include:

- Architecture and design of ePDG to support un-trusted non-3GPP procedures
- Implementation of un-trusted non-3GPP procedures in ePDG per specifications
- Implementation of 3GPP specification-compliant ePDG interfaces (AAA, SWm, S2b, NAPTR, SWu, etc.)
- Correct mapping of element values by converging multiple 3GPP specifications since there is no definition for conversion of element values received on one interface to values to be sent on another
- Support for bare metal and VM deployments
- Failure recovery and restoration
- Comprehensive test cases for all procedures and functionalities

The objective of this project was that this open-source gateway implementation could be adopted by many players to deploy reliable, scalable private 4G/5G platforms over public and private cloud.

To find out how GS Lab | GAVS can help your organization, please visit www.gavstech.com

Challenges

- Telecom industry controlled by proprietary solutions from large vendors
- Lack of opportunities for smaller players to adopt private LTE
- Unavailability of any reference implementation
- Requirement of core technical expertise in several protocols, specifications, interfaces, technologies
- Absence of 3GPP definition for conversion of element values between interfaces

Solution Highlights

- Architecture and design of un-trusted non-3GPP specification-compliant ePDG
- Implementation of un-trusted non-3GPP procedures in ePDG per specifications
- Implementation of 3GPP specification-compliant ePDG interfaces
- Correct mapping of element values to be used across interfaces
- Support for bare metal and VM deployments
- Failure recovery and restoration
- Extensive test cases for all procedures and functionalities

Solution Impact

- Availability of open-source un-trusted non-3GPP specification-compliant ePDG
- Provision of open-source reference architecture and implementation for other players
- Solution leveraged by customer for pre-qualification of un-trusted non-3GPP access through ePDG
- Enablement of verification of other non-compliant software/nodes/NF

Accelerated Adoption through Open-Source Un-trusted Non-3GPP Compliant ePDG Implementation

Solution Architecture

