

SOLUTION DESCRIPTION

MAVENIR 5G CORE



1 Mavenir 5G Core (5GC) Cloud-Native Architecture

The Mavenir 5G Core uses cloud-native architecture with granular micro-services, following Webscale principles which provide the required scalability, agility and reliability in order to meet the wide range of 5G use cases and stringent 5G performance requirements when it comes to e2e latency, high throughput demand and overall network availability. The 5GC NF applications are de-coupled and built independent of the platform, allowing the Mavenir 5GC NFs to run in any underlying CaaS/PaaS and IaaS layers. In addition, Mavenir has de-coupled the 5GC NF application services from the common management services (i.e. alarm reporting, configuration, operation measurements, etc.) in order to provide a truly disaggregated and independently scalable packet core architecture. These management services are common across all Mavenir 5GC NFs, as well as, other Mavenir products including the Mavenir Open vRAN and IMS Core, which in turn provides a common integration and management layer. Operators get the best of both worlds, a common management integration layer designed specifically to meet the telco operation needs, while providing independent 5GC application services which are fully compliant to the latest 3GPP specifications.

The key tenets of the Mavenir 5G Core Architecture principles are the following:

- **Cloud-native:** Stateless Microservices, elastically scalable with service migration support, service orchestration, and CI/CD
- **Service Mesh:** Configurable infrastructure layer for microservices application, service discovery, load balancing, encryption, authentication and authorization, support for the circuit breaker pattern, and other capabilities.
- **Service Based Architecture:** Web-based APIs, decoupling application service for the underlying network and platform infrastructure, different functions composed into an end-to-end service over standardized application programming interfaces.
- **Containers:** Portable, extensible open-source platform for managing workloads and services, Platform as a Service (PaaS) with the flexibility of Infrastructure as a Service (IaaS)
- **Analytics & Automation:** Service orchestration closed loop policy control, better end user service experience, accurately configured/adjusted slice resource

2 Mavenir Key 5G Core Differentiators

- **Architecture:** Highly innovative micro-services-based architecture renders itself adaptable to diverse use cases like IoT, MEC, Enterprise, Webscale MNO, etc.
- **Scalability:** Cloud-native design guarantees scaling, availability and performance in a fully containerized environment. Each micro-service can be dimensioned independently based on the services offered by that micro-service and associated load for a given deployment
- **Flexible Network Functions:** Mavenir 5G NFs can adapt to any underlying services' framework. A shim adaptor layer with these network functions allows faster integration with framework like ONAP, SDN, etc.
- **Converged Mobile Core:** Common packet core supporting 4G, 5G and non-3GPP access to provide seamless mobility with service and session continuity across various access domains.
- **User Plane:** Mavenir's highly efficient user plane uses DPDK, SRIOV, VPP and SmartNIC technologies to offer high throughput with the smallest possible UPF footprint.
- **Automation:** Mavenir provides all the required artefacts to automate the deployment and maintenance of 5GC applications that can be integrated directly with any platform, like VMWare. Since the 5G core products are based on micro-services and truly cloud-native in nature automation in terms of

deployment, upgrade is very easy. This is radically different operational model, automating traditional labour-intensive and time-consuming onboarding process.

- **CICD:** Mavenir offers CICD pipeline with in-service upgrades. Canary deployments with closed loop automation eliminate human error, without need of maintenance window resulting in massive reduction in operational workforce.

3 Mavenir 4G/5G Packet Core Portfolio

Mavenir’s end-to-end portfolio of 4G and 5G Packet Core solution significantly reduces time-to-market for operators with reduced system integration overhead. The entire Mavenir packet core portfolio is built in-house and all the NFs are built on the same 5G webscale architecture. This enables Mavenir to provide an optimized solution with optimal footprint and reusable common services across NFs. Mavenir also relies on our globally distributed development centres in order to create a “best of breed” centres of excellent and deliver on products across multiple functional layers (i.e. User Plane Function, Control Plane Function, Signalling and Security, and Common Data Layer Functions). A view of the full 5G and 4 G Packet Core Portfolio is shown below, including support for combo nodes in order to provide a converged 4G/5G Packet Core solution.

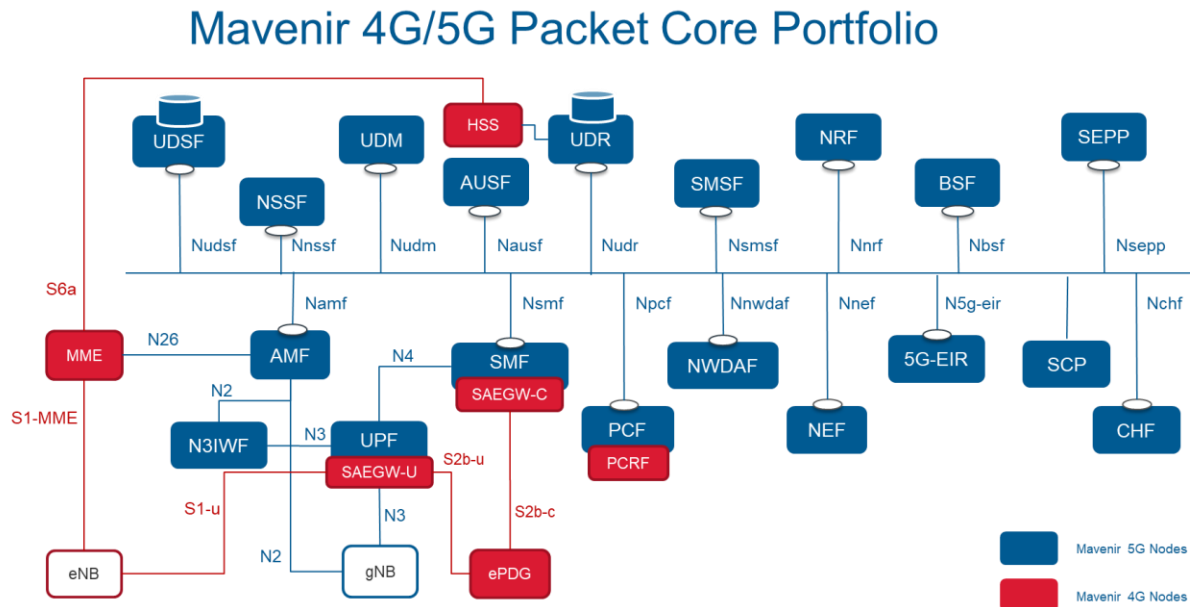


Figure 1: Mavenir 5GC Portfolio

Mavenir has invested heavily in developing the 5G Core solution from the ground-up on cloud-native principles that can still be retrofitted on EPCs. The solution encompasses all the major 5G core elements, such as AMF, SMF, UPF, NRF, UDSF, PCF, UDM, UDR, NSSF, AUSF, BSF, N3IWF, SCP, SEPP, SMSF, NEF, NWDAF, and 5G-EIR. All these functions are implemented as micro-services in containers.

The Mavenir 5G Core also combines 4G EPC functionality and offers a Converged Mobile Core solution that supports both 4G and 5G subscribers. In addition, the Mavenir 5G Core supports all Standalone (SA) and Non-Standalone (NSA) options. This includes 5G SA Option 2 and Option 5, as well as 5G NSA Option 4 and Option 7. With this comprehensive solution, operators will be able to support in parallel existing 4G subscribers, deploy new commercial grade 5G use cases and reap the benefit of a full array of features and capabilities that 5G enables.