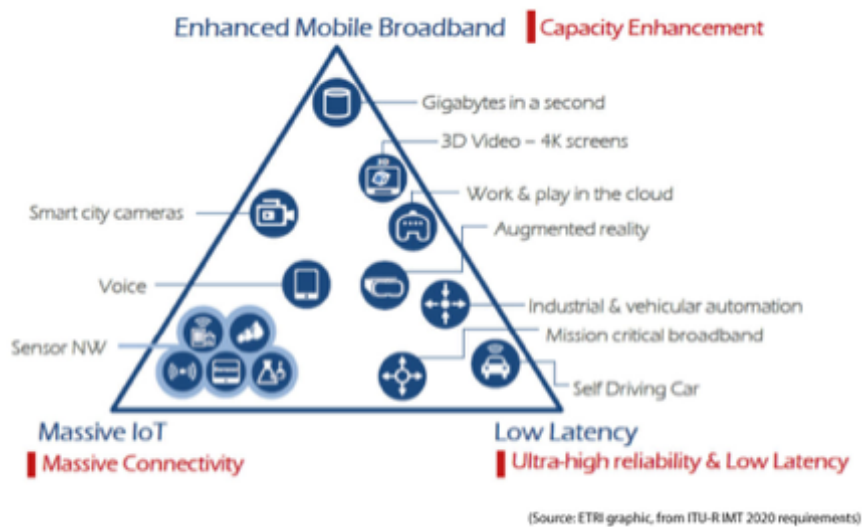


# Mavenir 5G Core Solution

## 5G Core

### 5G Drives the Need for a New Core to Enable Services

- **Enhanced Mobile Broadband:** Requires higher data rate and better coverage – for video and multimedia
- **Ultra-Reliable, Low Latency:** Requires high reliability with no discernible delay – for virtual and augmented reality, autonomous driving, and Ultra High-Definition video
- **Massive IoT:** Requires support for a very large number of devices (e.g., sensors, meters, point-of-sale terminals) in a small area sending small amounts of data at infrequent intervals.



The 3GPP 5G Core is designed to support the different throughput, latency and mobility requirements of each service category with the introduction of Services Based Architecture (SBA) and Control and User Plane Separation (CUPS).

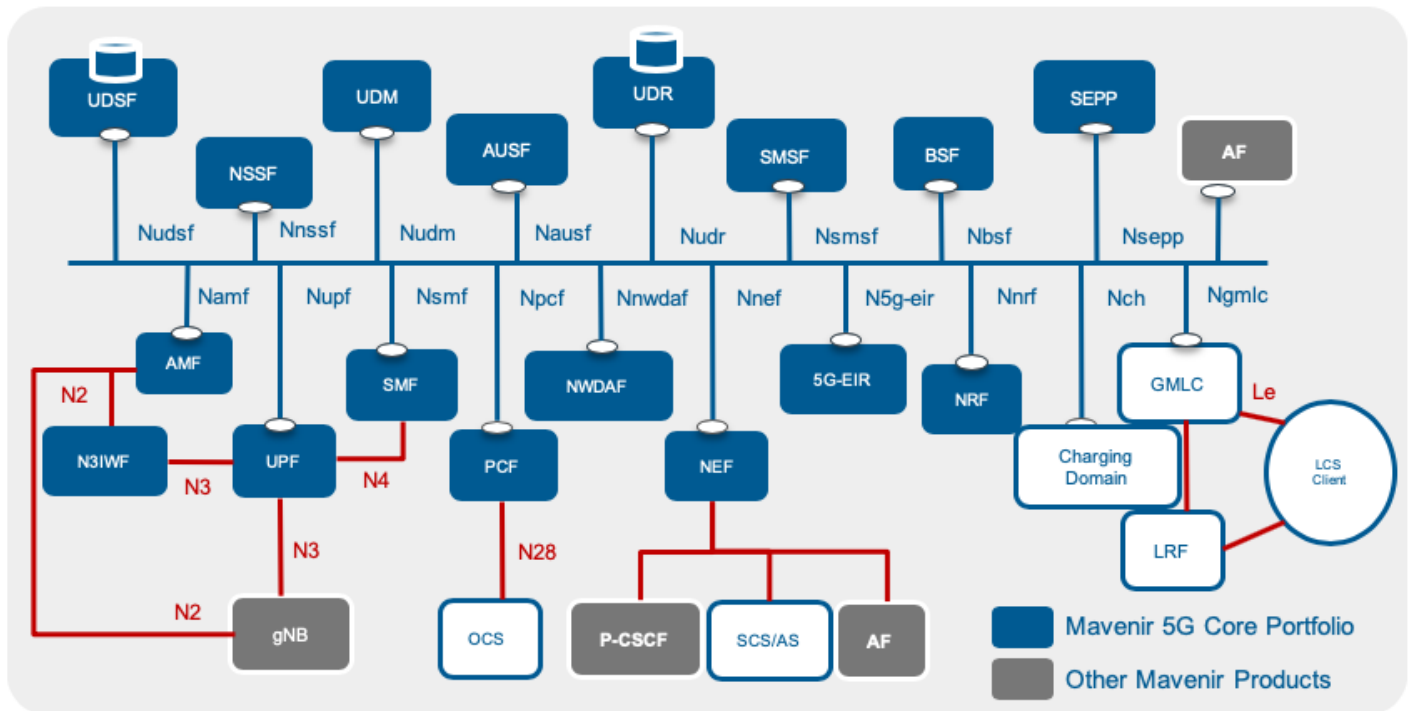
## Mavenir’s Approach to 5G Core Transition

The key is how to make the transition to a 5G Core. The Services-Based 5G Core is the key component critical for the success of 5G. It changes the way the mobile core network is implemented, so it’s important to have a solid foundation before beginning the transition. Multiple evolution architecture options are possible, depending on different combinations of Core, Standalone, and Non-Standalone.

Mavenir’s approach is helping CSPs begin transitioning to disaggregated and modular software-based networks running on general purpose processing platforms. This approach yields dramatic capex and opex savings rather than continuing to invest in proprietary, hardware-based infrastructure.

## Mavenir’s 5G Core Design

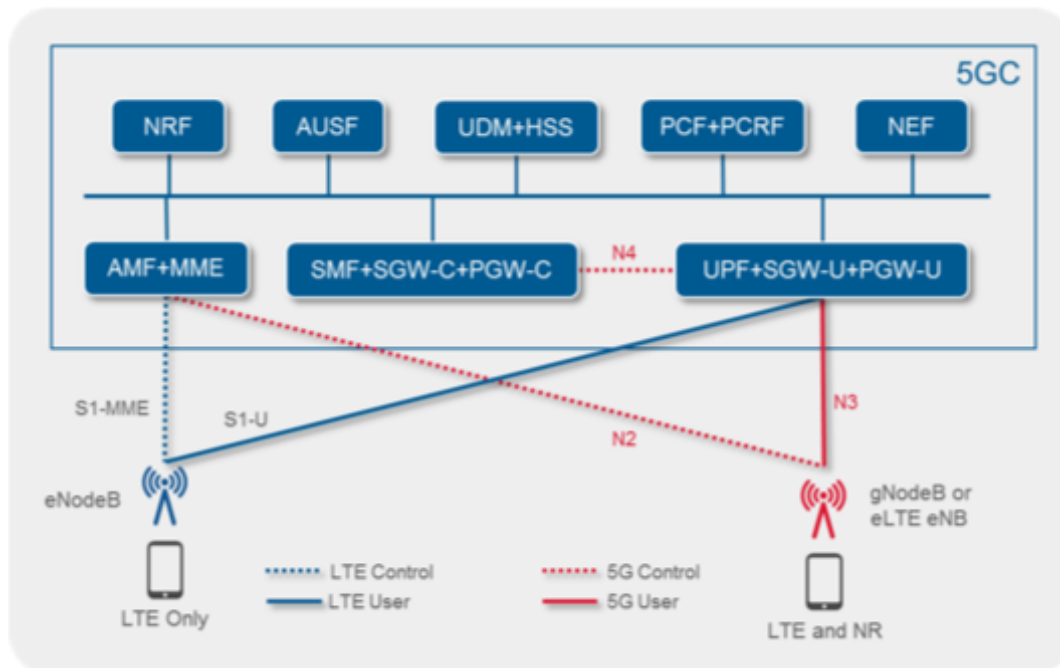
Mavenir’s 5G Core, built on cloud-native principles, is an integrated service-centric framework – which is critical for highly granular scalability, elasticity, dynamic control, and orchestration. It is designed to support high bandwidth (network performance gains of up to 20 Gbps on downlink per subscriber), Massive IoT connectivity and ultra-low latency (ULL) applications as well as local offload to the enterprise edge.



### Supports Interworking Between 4G and 5G

Mavenir’s 5G Core Network Functions (NF) leverage the microservices-based [virtualized Evolved Packet Core \(vEPC\)](#) architecture. The vEPC is already built with a tiered design that directly aligns with 3GPP 5G CUPS. Mavenir’s packet core supports all the migration options from 4G to 5G, while also supporting integrated 4G/5G functions.

Because it leverages existing vEPC components, Mavenir’s 5G core can continue to support LTE-EPC interfaces, allowing both 5G devices and legacy devices to work seamlessly. The 5G core is an integrated packet core that supports LTE-EPC as represented in the figure below.



## Supports 5G New Radio

Mavenir's 5G Core supports 3GPP's [5G New Radio](#) (NR) standard, which provides major performance, cost and efficiency improvements over previous wireless technologies, featuring sector speeds of 20 Gbps on the downlink and 10 Gbps on the uplink. Mavenir's 5G NR offers improved spectral efficiency and network capacity.

## Provides Upward and Downward Scalability

Mavenir's [Network Functions Virtualization](#) (NFV) compliant, cloud-native 5G core design guarantees scaling, availability and performance in a fully virtualized environment. The design was built natively from the beginning – it did not evolve to cloud-native as with some competitive solutions. Each NF can be dimensioned independently for throughput, transaction rate and session capacity based on the services offered by that NF.

This microservices architecture with disaggregated NFs provides the ability to easily scale up to support millions for applications like Massive IoT, and also scale down to support a small number of subscribers on a very small footprint - a challenge for competitive vendors with proprietary infrastructure. The ability to scale down cost-efficiently to small form factors of commodity hardware creates new business models for edge deployments or standalone network slices. For example, Mavenir can put a complete standalone network in the enterprise running on a few computing cores at a very low cost.

## Enables Zero Touch White Box or COTS Deployments

Mavenir's hardware-agnostic 5G Core simplifies operational complexity via support for open interfaces, leading to zero touch white box or Commercial Off-the-Shelf (COTS) deployments. This approach removes the reliance on traditional infrastructure vendors' proprietary solutions, release timelines and high costs.

## Supports Early Deployment of End-to-End Network Slicing

End-to-end [network slicing](#) capability is supported for 4G Networks, serving as a solid foundation for evolution to 5G based network slicing. Deployment is efficient – the end-to-end portfolio with all the NFs reduces the need for system integration, and the design enables optimization by consolidating NFs.

## Enables Early Rollout of Massive IoT

Mavenir's [virtualized Cellular IoT Serving Gateway Node](#) (vCSGN) is ready to support Massive IoT and is available for operators to deploy now. The vCSGN allows operators to create network slices that can be dedicated to IoT device traffic.

## Minimizes System Integration and Enables Network Optimization

Mavenir's end-to-end portfolio reduces time-to-market by minimizing system integration overhead and allowing consolidation of capabilities provided by multiple network elements into a single element, eliminating unnecessary network hops.

## Enables Faster Integration with NFV Infrastructure

Mavenir's 5G Core provides easy integration with the operators' automation platform and infrastructure. Flexible and extensible interface plugins enable faster integration with frameworks such as Open Network Automation Platform (ONAP), Software-Defined Networking (SDN), and others.

## Supports Combined 4G-5G Network Capability Exposure

3GPP previously introduced the Service Capability Exposure Function (SCEF) node in the EPC to enable opening of the mobile core service capability to third-party service providers as a revenue opportunity for CSPs. The Network Exposure Function (NEF) is a 5G Core Network Function with functions similar to the SCEF, hence Mavenir's SCEF functionality in the vEPC evolves to become NEF within the 5G Core. The NEF supports monitoring, provisioning, and policy/charging capabilities which enable new offers like [Ad Sponsored Messaging](#).

## MAVENIR'S 5G CORE:

- Supports interworking between 4G and 5G
- Supports 3GPP's 5G New Radio (NR) standard and Mavenir's 5G NR for improved spectral efficiency and network capacity
- Scales up to support Massive IoT and scales down to a very small, low-cost footprint
- Enables zero touch white box/COTS deployments
- Supports early deployment of End-to-End Network Slicing
- Enables early rollout of Massive IoT
- Minimizes system integration and enables network optimization
- Enables faster integration with NFV infrastructure
- Supports Combined 4G-5G Network Capability Exposure