MAVENIR

SOLUTION BRIEF
MAVENIR'S CONVERGED PACKET CORE

MAVcore

As part of the MAVcore™ portfolio of products, Mavenir's Converged Packet Core enables Communication Service Providers (CSPs) to deliver 5G connectivity speeds, ultra-low latency, and ultra-high throughput. The fully containerized and cloud-native converged packet core seamlessly bridges existing mobile networks to advanced 5G cores – empowering CSPs with optimal flexibility and cost-effectiveness while maximizing network performance.

Mavenir's Converged Packet Core is designed to help CSPs modernize their existing mobile networks with a high-performing, flexible, and cost-effective 5G core. By leveraging the powerful cloud-native design and automation capabilities of the Converged Packet Core, CSPs can significantly improve their network performance, reduce costs, and stay ahead in the 5G market.
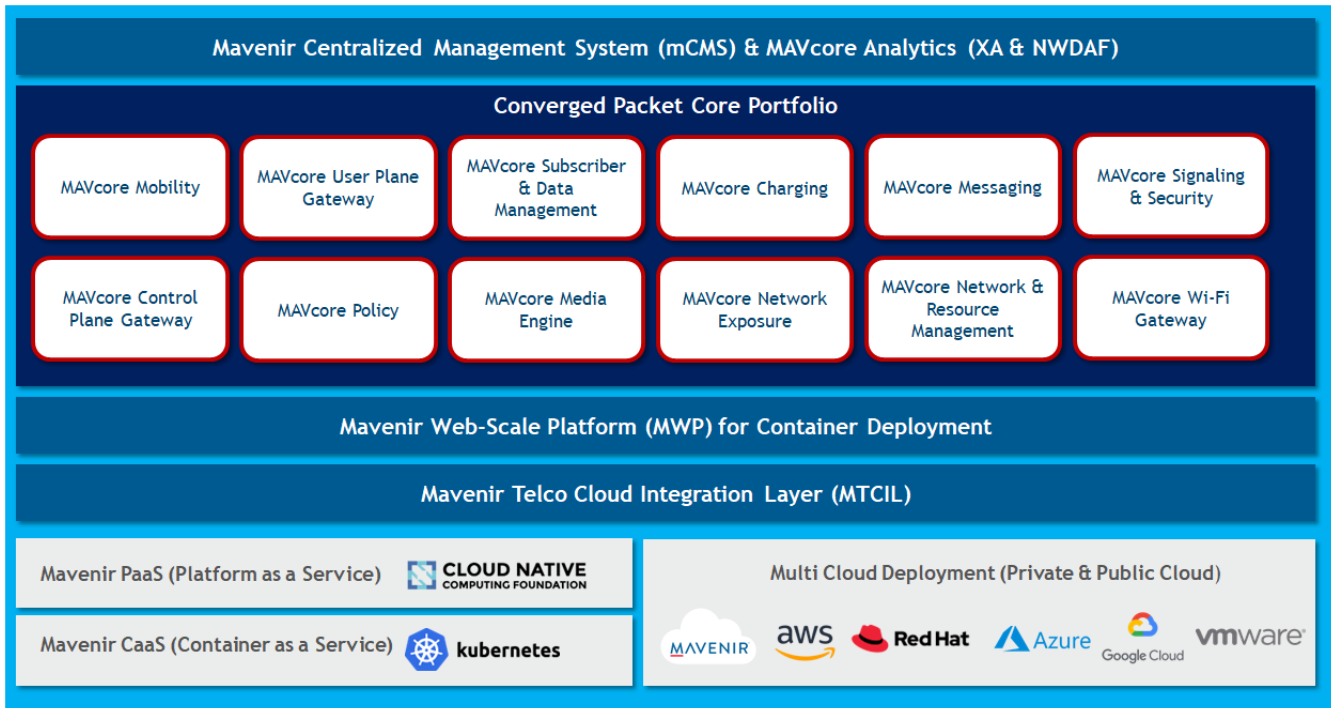
Converged Packet Core Portfolio

Figure 1: Mavenir Converged Packet Core Solution Components

The Mavenir Converged Packet Core solution, as shown in Figure 1, offers 5GC NF applications that are de-coupled and built independently of the platform, allowing the Mavenir 5GC NFs to run in any underlying CaaS, PaaS, and IaaS layers. Moreover, Mavenir has de-coupled the 5GC NF application services from the common management services to provide a truly disaggregated and independently scalable packet core architecture.

MAVcore Mobility	*AMF – Access and Mobility Management Function* *MME – Mobility Management Entity* *SGSN – Serving GPRS Support Node*
MAVcore Control Plane Gateway	*SMF – Session Management Function* *SMF + SGW-C/PGW-C + GGSN-C – for converged 5G, 4G, and 3G/2G subscriber support.*
MAVcore User Plane Gateway	*UPF – User Plane Function* *NOTE: The Mavenir UPF supports user plane packet processing for 5G, 4G (SGW-C/PGW-C), and 3G/2G (GGSN-C) subscribers*
MAVcore Policy	*PCF – Policy Control Function* *PCRF – Policy and Charging Rules Function* *PCF + PCRF Combo Node for converged Policy Control*
MAVcore Subscriber & Data Management	*UDM – Unified Data Management* *UDR – Unified Data Repository* *HSS – Home Subscriber Server* *AUSF – Authentication Server Function* *UDSF – Unified Data Storage Function*
MAVcore Media Engine	*CGNAT – Carrier-Grade NAT* *Gi-LAN Value-Add Services*
MAVcore Charging	*CCS/CHF – Converged Charging System* *CGF – Charging Gateway Function*
MAVcore Network Exposure	*NEF – Network Exposure Function* *SCEF – Service Capability Exposure Function* *NEF + SECEF Combo Node for converged 4G/5G support*
MAVcore Messaging	*MCO – Message Controller for (SMSF, SMSC, IPSM Gateway)*
MAVcore Analytics	*NWDAF – Network Data Analytics Function*

MAVcore Network & Resource Management	*NSSF – Network Slice Selection Function*
	NRF – Network Repository Function
MAVcore Signaling & Security	*SCP – Service Communication Proxy*
	SEPP – Security Edge Protection Proxy
	BSF – Binding Support Function
	EIR – Equipment Identity Register
	SeGW —Security Gateway
MAVcore Wi-Fi Gateway	*ePDG – Evolved Packet Data Gateway*
	N3IWF – N3 Interworking Function

Converged Packet Core Features

Mavenir's Converged Packet Core provides an open, and interoperable, fully containerized 5G Core portfolio. It supports **multi-generational networks** (2G, 3G, 4G, 5G) including non-3GPP access on the same core, it is fully containerized, microservices-based and runs in any cloud environment (private, public or hybrid). Mavenir delivers a **flexible and cost-effective journey to 5G** by providing a scalable core, an optimal footprint, and reusable common services across NFs – including **automated cloud deployment for 5G core.** Mavenir's Converged Packet Core offers ultimate flexibility and customization, allowing CSPs to design and deploy mobile networks that are tailor-made to fit their unique infrastructure and business needs.

Mavenir's cloud-native, highly optimized packet processing design for **UPF** uses DPDK and VPP technology to deliver **ultra-high throughput** combined with a low hardware footprint and reduced costs (with SmartNIC offload), incorporating support for 2G, 3G, and 4G.

The solution uses a **common cloud infrastructure, common automation framework, CI/CD integration** and a **common observability framework** – meaning that CSPs can deploy and manage their networks more efficiently, reduce costs, improve reliability, and enhance agility.

Upgrading to Mavenir's 5G Converged Packet Core is an affordable solution due to its use of open and interoperable standards, that allows CSPs to choose the best of breed products for their specific needs without being tied to a single vendor empowering CSPs to become truly **multi-vendor operators.**

CONVERGED PACKET CORE FEATURES

100% Cloud-native

100% Microservices-based

100% Containerized

Low-cost, low-touch 5G upgrade

Automated deployment

Cloud-Native CI/CD integration

Access agnostic core

Ultra-high throughput UPF

Common tools & infrastructure

Interoperability / Multi-vendor

Mavenir is committed to transforming network economics and driving positive business outcomes for customers. Mavenir's Converged Packet Core network architecture simplifies network transformation and focuses on core principles that consistently result in customer success (Figure 2).
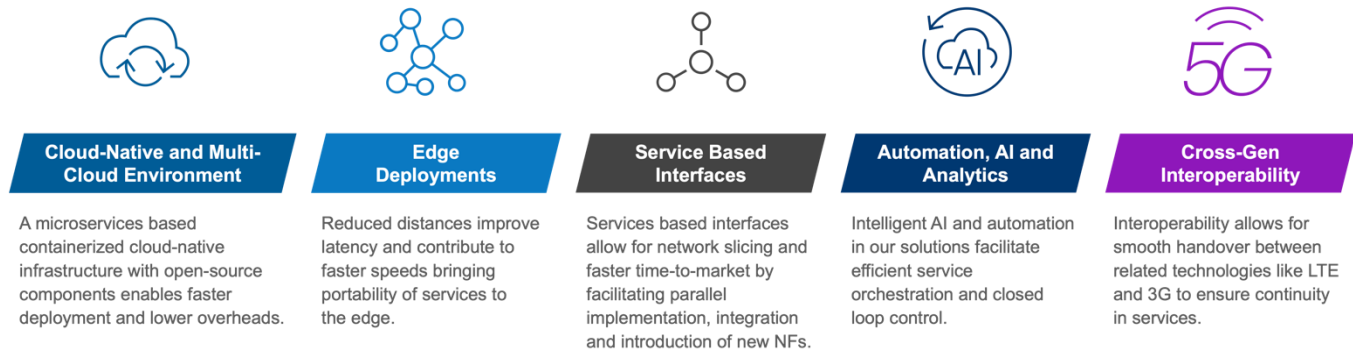

Cloud-Native and Multi-Cloud Environment	Edge Deployments	Service Based Interfaces	Automation, AI and Analytics	Cross-Gen Interoperability
A microservices based containerized cloud-native infrastructure with open-source components enables faster deployment and lower overheads.	Reduced distances improve latency and contribute to faster speeds bringing portability of services to the edge.	Services based interfaces allow for network slicing and faster time-to-market by facilitating parallel implementation, integration and introduction of new NFs.	Intelligent AI and automation in our solutions facilitate efficient service orchestration and closed loop control.	Interoperability allows for smooth handover between related technologies like LTE and 3G to ensure continuity in services.

Figure 2: Key Tenets for Converged Packet Core

A glimpse into Mavenir Converged Packet Core's future-ready solutions.

Mavenir's Converged Packet Core plays a crucial role in empowering operators with a unified network for 4G LTE and 5G Fixed Wireless Access, alongside providing support for IoT, enhanced Mobile Broadband, and mission-critical services. By maximizing capacity per pcore, Mavenir ensures network performance improvement, delivering high throughput with a minimal footprint. This enables Fixed Wireless Access solutions to efficiently handle data processing – guaranteeing seamless connectivity and a superior user experience with low latency and maximum throughput. In addition, the flexible deployment options facilitate multi-cloud support, while advanced traffic management and policy control mechanisms ensure differentiated Quality of Service (QoS), creating a lean solution that optimizes resource utilization and efficiently delivers high-speed internet access.

Mavenir's Remote Packet Gateway uses its Converged Packet Core Session Management (SMF) and User Plane Functionality (UPF), which supports both 5G and 4G, replicating the Packet Gateway's (PGW) control and user planes. With the separation of control and user planes (CUPS architecture), user data can be processed with reduced latency, enabling quick data processing and improved data management.

Mavenir's 5G Signaling solution enhances CSPs' network performance, facilitating roaming and reducing traffic congestion and outages.

The Continuous Mining Solution from Mavenir ensures almost zero downtime for autonomous operations with 4G and 5G wireless networks. Mavenir's Private Network Solution for Continuous Mining is inherently open, flexible, and future-proofed to take advantage of the rapidly developing 5G technologies. The solution's ability to instantaneously recover from failover –without manual intervention – eliminates downtime during network issues. Its in-built resilience enhances safety and productivity in continuous mining operations, offering a reliable and trusted solution for critical applications.

Mavenir's Cloud Automation for Telco is an end-end fully automated platform that simplifies the deployment of 5G Core and, additionally, automates the deployment and configuration of all underlying Infrastructure, Kubernetes, CaaS and PaaS components. Intelligent automation accelerates the transition to 5G by introducing easy and faster deployment, eliminating human error and easy scaling and flexibility.

Mavenir's Converged Packet Core solution offers flexible deployment models that allow agile and efficient implementations of network functions. The solution supports a centralized control plane hosted in public cloud or in an on-prem centralized location, and remote or distributed user planes located in edge servers, optimizing the cost and resource utilization of the network. Mavenir's containerized UPF can also be deployed on public cloud platforms, demonstrating the network agility and adaptability of the solution, as well as its ability to customize deployment based on each customer's business needs.

Mavenir's award-winning cloud-native Converged Packet Core goes beyond 3GPP standards to empower CSPs and enterprise customers with one of the industry's most innovative, flexible, and cost-effective solutions.

About Mavenir

Mavenir is building the future of networks and pioneering advanced technology, focusing on the vision of a single, software-based automated network that runs on any cloud. As the industry's only end-to-end, cloud-native network software provider, Mavenir is transforming the way the world connects, accelerating software network transformation for 300+ Communications Service Providers in over 120 countries, which serve more than 50% of the world's subscribers.

For more on Mavenir solutions please visit our website at www.mavenir.com