![6WIND Virtualized Networking Software]

UPF

Key features

▶ **Dual stack support**

▶ **Complete IP and Routing functions**

▶ **QoS Management**

▶ **Basic Charging Functions**

▶ **High capacity, connection rate and throughput**

Benefits

▶ Fully virtualized (xNF)

▶ COTS based (x86 & ARM)

▶ High performance and ultra-low latency (multi-Gbps support per instance)

▶ High scalability and efficiency

▶ Low power consumption

▶ Support for centralized and distributed deployment

▶ Low TCO

User Plane Function (UPF)

The 5G User Plane Function (UPF) is a critical and pivotal component within the 5G core network architecture, specifically engineered to optimize data transmission in both upstream and downstream directions. As a central element of the user plane, the UPF plays a critical role in managing the escalating volumes of data generated by the proliferation of connected devices, ensuring seamless and high-performance communication.

The 6WIND User Plane Function (UPF) is designed to facilitate seamless and high-performance data transmission between devices and the network. Leveraging 6WIND's accelerated dataplane, the 6WIND UPF achieves heightened performance and ultra-low latency, specifically catering to bandwidth-intensive and latency-sensitive applications.

6WIND UPF is designed to support core and edge deployments enabling localized data processing and analysis, improving response times, and optimizing overall network efficiency.

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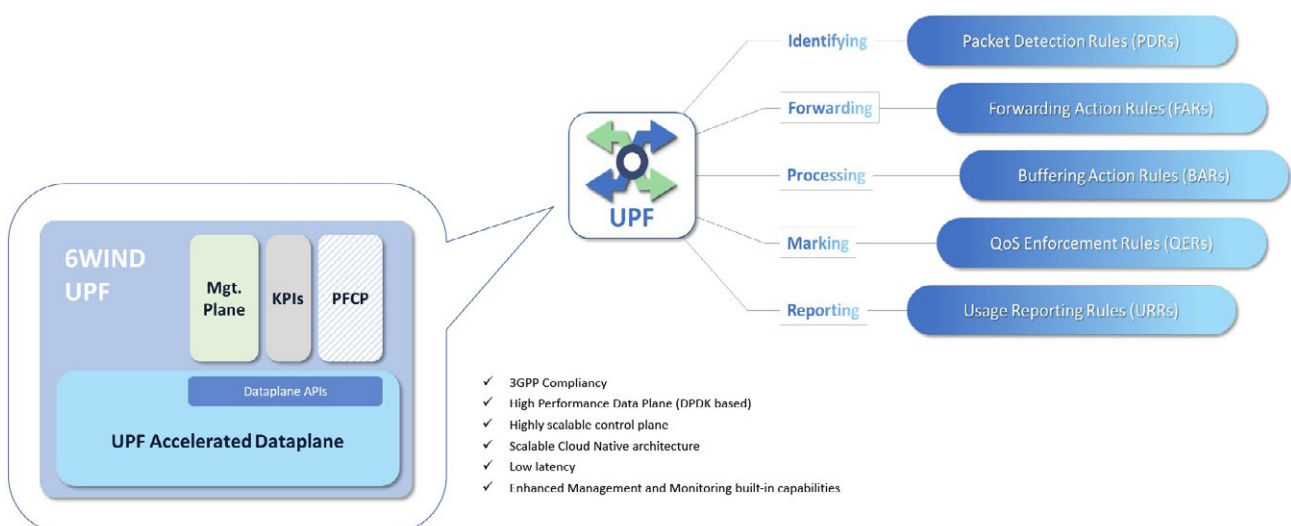Santa Clara, CA

6WIND APAC
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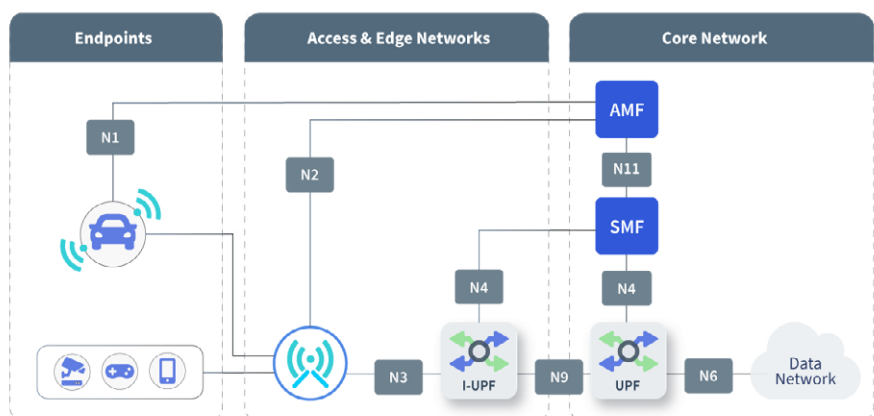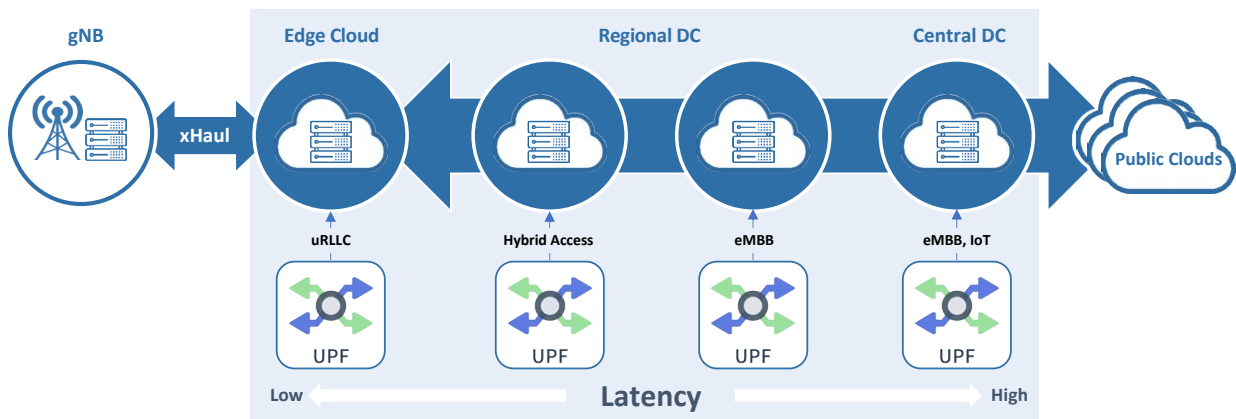
With its capability to create virtualized and isolated network instances, the 6WIND UPF provides a tailored foundation for implementing an efficient network slicing to support diverse use cases within a unified 5G infrastructure ranging from massive IoT deployments to ultra-reliable low-latency communications.

The 6WIND UPF onboards comprehensive features in compliance with the latest applicable 3GPP standards. This compliancy is instrumental in fostering a unified and standardized approach to 5G deployment, enabling interoperability among different network elements, and facilitating a cohesive and efficient 5G network infrastructure.

Built on 6WIND's accelerated dataplane, the 6WIND UPF inherits from the high-performance and the ultra-low latency the dataplane delivers. This combines with a NETCONF based management layer and a rich KPI streaming telemetry agent for seamless management, monitoring, and automation.

6WIND UPF onboards a PFCP daemon that implements required capabilities for the exchange of session-related information with the SMF as defined in 3GPP. This includes establishing and managing user-plane sessions to enable dynamic control and optimization of data flows.

- ✓ 3GPP Compliancy
- ✓ High Performance Data Plane (DPDK based)
- ✓ Highly scalable control plane
- ✓ Scalable Cloud Native architecture
- ✓ Low latency
- ✓ Enhanced Management and Monitoring built-in capabilities

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Specification

IP Networking:
- Dual Stack IPv4/v6
- Multitenancy (VRF/L3VRF)
- IPv4/IPv6 tunneling
- IPv4/IPv6 filtering
- Network address translation

Routing:
- Static routes
- Dynamic Routing (BGP, OSPF, ISIS)
- Policy base routing (PBR)
- MPLS, SR, SRv6

Service functions:
- Session and Path management
- Data forwarding
- QoS and traffic management
- Downlink buffering

IP Services:
- DHCP client
- NTP
- TWAMP

L2 and Encapsulations:
- GRE, mGRE
- VLAN (802.1Q, QinQ)
- VXLAN
- LAG (802.3ad, LACP)
- Ethernet bridge

Security:
- ACLs (stateless & stateful)
- CP protection
- BGP FlowSpec (IPv4, IPv6)

Basic charging functions:
- Service Time-Based Charging (*)
- Service Volume-Based Charging

Management / Monitoring:
- SSH
- CLI, NETCONF/YANG
- SNMP
- KPIs/telemetry (YANG-based)
- RBAC (Radius, Tacacs+)
- Syslog 802.1ab
- IPFIX, Netflow v9

Compliance:
- 3GPP Standards (R15, R16)

System Requirements

Processor:
- Single or multi-sockets
- Intel® Xeon® and Atom® processors
- AMD based servers
- ARM based servers

CPU/vCPU cores:
- 2 minimum (one for control, one for data plane)

Memory:
- 4GB minimum

NICs:
- Intel: 1, 10, 40, 100G (E810)
- Nvidia (CX4, CX5, CX6): 10, 25, 40, 50, 100G
- Broadcom: NetExtreme E-Series

I/O virtualization:
- virtIO (Linux KVM)
- SR-IOV
- PCI passthrough
- VMXNET3 (VMware ESXi)

Deployments

Environments:
- KVM (RH, Ubuntu, CentOS)
- VMWare ESXi (6.5+)
- Kubernetes / Docker
- VMWare Tanzu
- RH OpenShift

Deployment models:
- Bare metal
- Virtual machines
- Containers (Kubernetes/Docker)

Installation:
- PXE, USB, ISO, Qcow2, OVA
- Update and Rollback support
- Provisioning (Cloud-init, Ansible)

*Roadmap item