vCSR

Virtual Cell Site Router (vCSR)

5G adoption is, nowadays, taking place in all major Mobile Network Operators (MNOs). With the new 5G service introductions, MNOs seek out for new densification strategies at the RAN, placing the RAN purchases at about 80 percent of mobile operators' CAPEX.

In addition, densifying the RAN brings new challenges and puts a huge pressure on mobile operators to improve operational economics while meeting the increasing demands of the legacy services, and the new 5G offerings.

Thus, transforming and evolving the RAN by virtualizing it and making it software defined makes it the most viable solution to address these challenges.
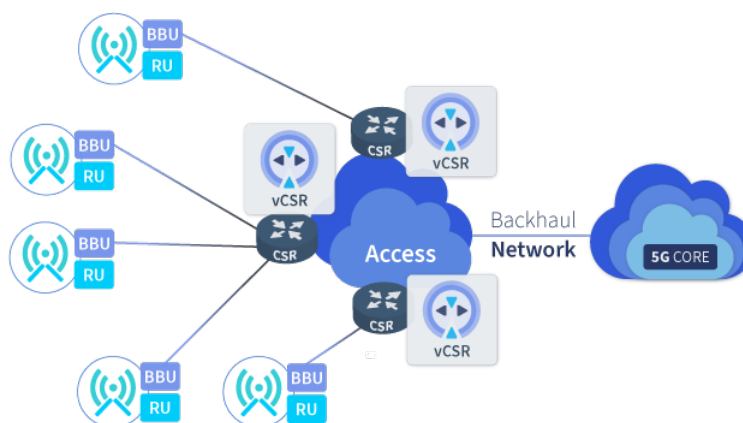
The 6WIND Virtual Service Router provides a virtual Cell Site Router (vCSR) solution that aligns with this evolution.

The 6WIND vCSR is designed to be deployed as virtual or containerized network function on an x86 or ARM COTS server. It provides all the required features to deliver layer 3 connectivity between the access network and the 5G core network.

The 6WIND vCSR simplifies the mobile network architecture and significantly reduces operator TCO. It is optimized to develop high performance routing and IPsec VPN connectivity with minimal CPU resource usage.

In addition, the 6WIND vCSR comes with an open and automated management to ease integration with Operator's NMS and OSS/BSS.

The 6WIND Cell Site Router can be enhanced with additional IP/MPLS capabilities to connect with a Provider Edge network.

Benefits

▶ High performance and scalable full featured cell site gateway router

▶ Deployed as PNF, VNF or CNF on x86 and ARM COTS servers

▶ Optimized resource usage for minimal hardware requirements

▶ Low TCO

▶ Provides scalable and high-performance routing and IPsec VPN security

▶ Extendible with additional IP/MPLS capabilities

WWW.6WIND.COM

6WIND EMEA
Paris, France

6WIND Inc. Americas
Santa Clara, CA

6WIND APAC
Singapore

Specification

IP Networking:
- IPv4 and IPv6
- IPv6 auto-configuration
- Multitenancy (VRF)
- IPv4/IPv6 tunneling
- IPv4/IPv6 filtering
- Network address translation
- multicast (PIM/IGMP)

Routing:
- BGP4, BGP4+, BGP RPKI
- IS-IS, OSPFv2, OSPFv3
- RIPv1, RIPv2, RIPng
- Static routes & path monitoring
- BGP multi-path (ECMP)
- Policy base routing (PBR)
- MPLS
- BGP L3VPN, BGP-LU
- Bidirectional Forwarding Detection (BFD)
- NHRP
- VXLAN EVPN
- Segment Routing, ISIS-SR, SR-TE
- SRv6*, SRv6-TE*

Quality of Service:
- Rate limiting per Interface
- Rate limiting per VRF
- Hierarchical QoS (H-QoS)
- Class-based QoS
- Classification:
  – ToS/IP/DSCP/CoS
- Shaping and policing
- Scheduling:
  – PQ, PB-DWRR

Management / Monitoring:
- SSHv2
- CLI, NETCONF/YANG
- SNMP
- KPIs/telemetry (YANG-based)
- RBAC with AAA
- Syslog
- 802.1ab LLDP
- sFlow
- IPFIX, Netflow v9

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

IP Services:
- DHCP server / client / relay
- DNS client / proxy
- NTP
- TWAMP

Security:
- ACLs (stateless & stateful)
- uRPF
- CP protection
- BGP FlowSpec (IPv4, IPv6)
- Zone-Based Firewall*

Timing and Synchronization:
- Precision Time Protocol (PTP)**
- Synchronous Ethernet (SyncE)**

VPN IPsec:
- IKE v1/v2 pre-shared keys or X509 certificates
- MOBIKE
- Encryptions:
  – 3DES, AES-CBC/GCM (128, 192, 256)
- Hash:
  – MD5, SHA-1, SHA-2 (256, 384, 512) AES-XCBC (128)
- Key management:
  – RSA, DH MODP groups 1 (768 bits), 2 (1024 bits), 5 (1536 bits) and 14 (2048 bits), DH PFS
- EAP/Radius, EAP-MSCHAPv2
- Extended sequence numbers (ESN), large anti-replay windows
- High performance (AES-NI, QAT)
- Tunnel, transport or BEET mode
- Static and dynamic VTI
- Dynamic multi-point VPN

High Availability:
- IKE/IPsec synchronization
- VRRPv2 (IPv4/IPv6)
- VRRPv3 (IPv6)

System Requirements

Processor:
- Single or multi-sockets Intel® Xeon® and Atom® processor
- Arm based processors (Ampere Altra, Graviton2)

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

Memory:
- 2GB minimum

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

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

Supported Hypervisors
- KVM (RH, Ubuntu, CentOS)
- VMware ESXi (6.5+)
- Microsoft Hyper-V

Public Clouds Support
- Amazon Web Services
- Microsoft Azure
- Google Cloud Platform

Deployments
- Bare metal, virtual machines, containers (Kubernetes/Docker)
- Installation: PXE, USB, ISO, QCOW2, OVA
- Update / rollback support
- Provisioning: cloud-init, Ansible, ZTP
- Licensing: Online licensing system for feature and capacity enablement

*Roadmap item
**Requires specific HW support