VOLTA Networks

Data Sheet

VEVRE Software Release 20.4

Volta Networks has transformed the router with the first cloud-based control plane, providing unprecedented scale in processing and virtual routing. The Volta Elastic Virtual Routing Engine (VEVRE) can run on any public, private or hybrid cloud and works with a broad range of open networking devices such as white box switches. This combination of a disaggregated and elastic control plane with open networking devices reduces cost by an order of magnitude compared to legacy routers.

The VEVRE consists of three major elements:

The **Volta Cluster** is a set of processes running on a dedicated container management system within a set of virtual machines. The system can run on any public, private, or hybrid cloud infrastructure. It is a turnkey system with everything needed to administer resources and dependencies to manage the scale out for many independent processes.

The Volta Cluster hosts the **Virtual Router Processor** (VRP) which is a set of containers running the network protocols and control plane services (e.g. IS-IS, BGP etc.) and operating as a distinct administrative domain. VRPs provide the same functionality as a routing engine or processors. As a container-based system, network operators run only the processes that their customers or users need while resources are dynamically allocated.

The **Volta Agent** (vAgent) is software which runs on the operating system of a networking device and provides for connection to the Volta Cluster and VRP as well as local autonomous control. The vAgent runs as an application on the OS and controls the switching ASIC through its SDK.

Volta supports up to 255 separate virtual routers on a single device such as a white box switch. In this multi-tenant scenario, each virtual router is a separate set of processes in the cloud and can be administered independently. This significantly simplifies service creation and provisioning by having a separate configuration file for every customer. This all leads to faster service delivery, as well reducing errors.

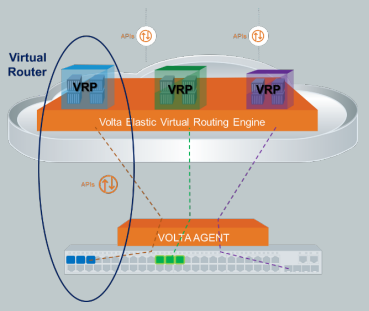
Management

Volta's powerful YANG model service library powered by an API complies with all the key standards for management, administration and network orchestration (MANO) integration. The API provides a single point of connection for optimizing automation as compared to appliance-based routing solutions that still require network operators to manage every single box. This approach allows the network operator to manage at a service level rather than building the service via low level CLI configuration. VEVRE also supports CLI for further operational control.

Cloud based virtual routing platform reduces total cost of ownership by 90% compared to legacy routers with full support for standard routing protocols and complete interoperability

Platform built for carrier automation with support for key standards including gRPC, YANG and NETCONF

Delivers unprecedented scale with up to 255 virtual routers per switch



The vAgent works in tandem with a Volta Cluster to create Virtual Routers. Up to 255 VRs can be supported on a single device.

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Software Features

Category	Specification
L3	IPv4 and IPv6 VRF / VRF-lite L3VPN PE-CE communication w/ OSPFv2, BGP and Static Routing
Routing	OSPFv2, OSPFv3 IS-IS BGP-4, MP-BGP, BGP LU ECMP Static Routes Route Redistribution Between All Protocols Routing integration with Path Computation Element (PCE) via PCEP Autonomous Re-route on Link Failure
L2	Virtual Switching Interface (VSI) 802.1ad QinQ (stacked VLAN)
QoS	CoS w/ L2 Ports, VLAN, 802.1p/PCP bits MPLS TC(EXP) bits L3 DSCP mappings Ingress policing and rate limiting Egress hierarchical scheduling and shaping
Security	ACL
Network Timing & Synchronization	IEEE 1588 PTP G.8275.1, G.8265.1 & G.8275.2. SyncE
Management	Networkwide gRPC API with TLS encryption Per virtual router SNMP v2 and V3 NETCONF/YANG per virtual router Software ZTP CLI Role based access control RADIUS authentication and authorization Log & Event Streaming via Syslog
MPLS	LDP, BGP-LU (RFC 8277), LDP/IS-IS Synchronization Segment routing IS-IS and OSPF (RFCs 8402, 8660, 8667) SR -Node, Prefix SIDs, Adjacency SID and Binding SID BGP MPLS L3VPN L2VPN: VPLS (LDP based), VPWS (point to point) MPLS SR-TE, PCEP support with external PCE