CORSA

DP2000 Open, Programmable SDN Switching and Routing Platform

DP2100

32 x 1/10G SFP+ Ports

100G Capacity

DP2200

32 x 1/10G SFP+ Ports
2 x 100G QSFP28 Ports

200G Capacity

DP2400

32 x 1/10G SFP+ Ports
2 x 100G QSFP28 Ports

200G Capacity
Up to 600G Capacity when stacked or 2.4T with scale-out fabric

Corsa's DP2000 SDN switching and routing family is open, programmable hardware for Software Defined Networking at the WAN and metro edge.

The platform has fine-grained flow forwarding and advanced features for complex packet processing and traffic management. Corsa delivers SDN traffic shaping, bandwidth on demand, per flow traffic tapping and analytics, routing applications, and more. Easily integrating with existing network management frameworks, the platform enables innovative service offerings, better service level assurance and network management.

Multi-context Virtualization

The platform allows for full virtualization of the hardware, where all the switch hardware resources can be exposed as independent virtual SDN switches or routers. This capability to create virtual forwarding contexts (VFC) leads to improved bandwidth management for each tenant, traffic isolation, automation of new service commissioning, and more efficient use of hardware resources. These all play an important role in realizing CAPEX and OPEX savings.

Performance, Flexibility and Scale

The hardware is architected with Programmable Processing Units, powerful search engines and DDR3 memory, and best in class ASIC based fabrics. These elements are combined to ensure line-rate per flow forwarding and traffic management at any speed, with the ability to meter and shape traffic down to the precise logical interface within any of the virtual forwarding contexts.

Networking Simplified

This capability is matched with a flexible selection of both open and Corsa developed control plane software. For optimal top-down programmability use any form of open programmatic access such as OpenFlow, ODL, RYU, Quagga, ONOS, Atrium, SDN-IP, Faucet among others.

This offers the best of both the open source world and the production hardened commercial side, for tasks like circuit switching, routing, and VPNs. REST APIs are also provided for integration with management and orchestration software.

Key Features

Hardware Virtualization with Virtual Forwarding Contexts (VFC)

Allows hardware resources to be exposed as independent logical SDN Virtual Forwarding Contexts (VFCs) running at 10G and 100G physical network speed. Under SDN application control, VFCs are created in the logical overlay. Three context types are fully optimized for production network applications: L2 Learning Bridge, L3 IPv4/IPv6 Routing, and L2 Circuit Switching. A Generic OpenFlow Switch context type is provided for advanced networking applications where the user wants to use OpenFlow to define any forwarding logic.

Each packet entering the DP2000 platform is processed with full awareness of which VFC it belongs to. Each VFC is assigned its own dedicated hardware resources that are isolated from other VFCs and cannot be affected by other VFCs scavenging. Each VFC can be controlled by its own, separate SDN application.

The physical ports of the underlay are abstracted from the logical interfaces of the overlay. The logical interfaces defined for each VFC correspond to a physical port or an encapsulated tunnel, such as VLAN, MPLS pseudowire, GRE tunnel, or VXLAN tunnel, in the underlay. Logical interfaces of any VFC can be metered and shaped to their own required bandwidth.
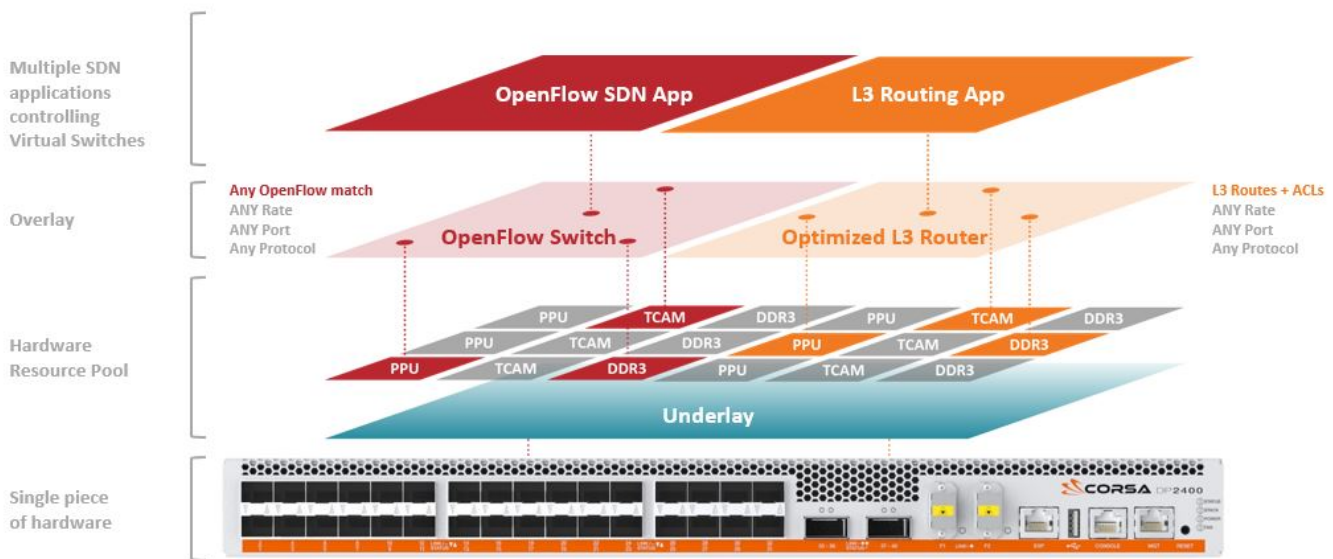
Multi-Terabit Capacity

Stack 3 DP2400 boxes directly (600G), or up to 12 via an external fabric box (2.4T). Scaling does not require the use of any data ports or external optical modules. Multiple systems are connected using integrated front facing optical stacking ports and simple MPO fiber cables. The stacked system produces a single forwarding device, managed as a monolithic entity via a single management port.

600 Gbps Stacked System

Internet Scale

For IPv4 and IPv6, handle the full internet routing table (>500K FIB/RIB entries) within each and every VFC. Support for ACLs and L2 circuits without compromising internet scale.

Per-Flow Statistics

Precise per flow traffic awareness at any speed and at any scale. Statistics are available real-time and include actual packet and byte counters for every flow within the platform. Presented via OpenFlow Channel, REST and SNMP. Multiple, hierarchical views of statistics available.

Advanced Traffic Engineering

Deep packet buffering with 6GB of memory, customizable queue depth, buffer allocation and scheduling. Powerful packet processing to allow internet scale and throughput and deliver full line-rate forwarding on all 10G to 100G interfaces in all VFCs.

For real-time control over QoS policies, REST APIs offer programmable metering and policing of traffic for every packet. Shapers available for all traffic and can be dynamically configured not only on physical ports, but also to logical interfaces.
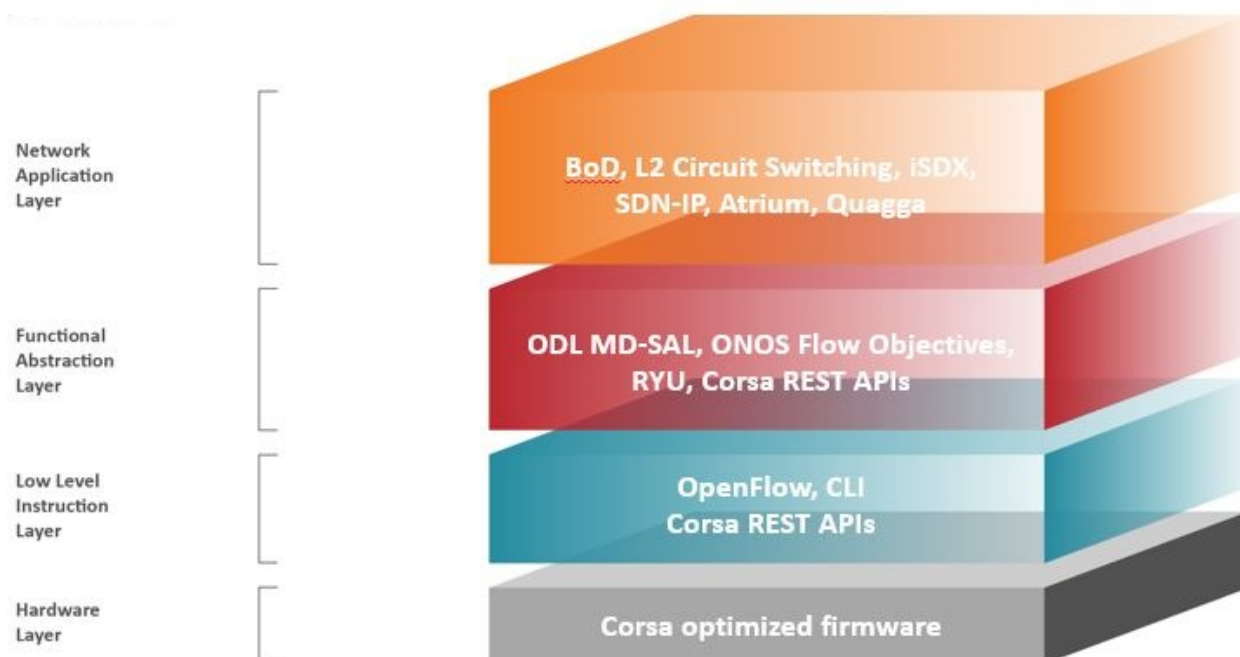
OpenFlow Support

The multiple generic OpenFlow switches created as virtual forwarding contexts each support wide matches for any field, with any action. Compliant with OpenFlow 1.3+.

Open Programmability

For top-down control, program the Corsa platform using either open source SDN ecosystem applications or Corsa open REST APIs. For instance, use the model driven service abstraction layer (MD-SAL) in OpenDaylight, or flow objectives in ONOS. Develop the application to be independent of the underlying hardware layers to offer maximum portability of applications software. Adapt existing open source software to create unique network systems while avoiding propriety software or SDKs.

Network Application Layer — BoD, L2 Circuit Switching, iSDX, SDN-IP, Atrium, Quagga

Functional Abstraction Layer — ODL MD-SAL, ONOS Flow Objectives, RYU, Corsa REST APIs

Low Level Instruction Layer — OpenFlow, CLI Corsa REST APIs

Hardware Layer — Corsa optimized firmware

Performance

- Multi-context virtualization enabling multiple logical L2 and L3 network services with full SDN programmatic control

- Full line-rate forwarding on all 10G to 100G interfaces

- Deep memory buffers with customizable queue depth, buffer allocation and WFQ scheduling

- Over a million flow table entries in programmable OpenFlow 1.3+ multi-table pipelines

- High flow modification rate important for WAN aggregation or NFV deployments

- SDN traffic management with dynamic programmable Two-Rate, Three-Color Meter table with 8 queues per port

- High performance Intel® Core™ based internal control processor with optional guest VM

- IEEE 1588 Timestamping

- WAN-PHY (DP2100)

Corsa DP2000 Technical Highlights

Platform Configurations			
	DP2100	**DP2200**	**DP2400**
Forwarding Capacity [1]	100G	200G	200G – 2.4T
1/10G SFP+	32	32	32
100G QSFP28	-	2	2
Stacking Ports	-	-	2x 200G

[1]   Full line-rate forwarding on all ports

Traffic Classification & Management	
IPv4 and IPv6 support	Yes
Packet Buffer Memory	6GB
OpenFlow Version	1.3+
Active Flow Entries	One million+
Flow Tables	10+
Flow Modification Rate	15,000+ mods/sec
Meter Table	Two-Rate, Three-Color - RFC 4115
Quality of Service (QoS)	8 queues per port WFQ and strict priority scheduling Metering on physical ports or logical interfaces
Traffic Shaping	On egress of physical ports or logical interfaces
Traffic Statistics	Packet and byte counters: Per flow, per physical port, per logical interface

Virtualization	
Virtual Forwarding Contexts (VFC)	Up to 256

Internal Control Plane	
CPU	Intel® Core™ Processor
Memory	16GB DDR3, 120GB HD
Management Interface	1 x 10/100/1000Base-T RJ-45 1 x Serial Console RJ-45 - 1 x USB 3.0
Software	Full Linux Server based
OpenFlow Control Module	Open vSwitch 2.3.1+
Configuration Management Protocol	REST API
Guest Virtual Machine	1 core, 2GB RAM, 5GB disk space

Management	
Configuration Interfaces	Enhanced CLI, REST API
Monitoring	SNMPv2c, sFlow, syslog

Physical	
Chassis Rack Height	1 RU
Typical Power	375W (DP2100), 450W (DP2200/DP2400)
Power Supplies	2 x AC or 2 x DC Redundant
Ventilation	Front-to-back or back-to-front
Regulatory Compliance	FCC, CE, NRTL, VCCI, BSMI, RoHS, WEEE, IEC, CSA, RCM