AS5610-52X-C

10GbE Data Center Switch
Powered By Cumulus® Linux®

Product Overview

The Edge-Core AS5610-52X-C hardware switch meets the high-performance, availability, and network-scaling requirements of enterprise and cloud data centers. The AS5610-52X-C provides full line-rate switching at Layer 2 or Layer 3 across 48 x 10GbE ports and 4 x 40GbE uplinks. The switch can be deployed either as a top-of-rack switch, or as part of a 10GbE or 40GbE distributed spine, forming a non-blocking folded CLOS data center fabric. The AS5610-52X hardware is designed for data centers, with a high port density of 64 x 10GbE in a 1 RU enclosure; redundant, hot-swappable, load-sharing AC or -48VDC PSUs, or 12VDC power input; fan tray with n+1 redundant fans; and port-to-power or power-to-port airflow options. The AS5610-52X-C comes with Cumulus Linux — the leading network OS for data center switching systems.

Cumulus Linux

Cumulus Linux is a Linux operating system that runs on top of industry-standard networking hardware. It is a software-only solution that accelerates robust networking functions at wire rate on a variety of platforms and is the ultimate choice when it comes to flexibility and innovation, enabling the best-of-breed hardware ecosystem and best-of-breed application ecosystem.

Cumulus Linux is Linux. It is not just based on Linux, it is Linux and offers the entirety of the Linux experience on networking hardware. Existing open source and commercial Linux applications run natively on industry-standard switches. New applications can be developed and integrated rapidly, enabling innovation cycles on par with software and application cycles.

Modern Data Center Networking with Cumulus Linux

Cumulus Linux is first and foremost a networking-focused Linux distribution. It enables modern data center architectures while providing a transition path for traditional data center architectures.

- High-capacity IP fabrics enable scale, simplicity and rapid evolution
- Automation: zero touch install and zero touch provisioning simplify operations
- Modern data center orchestration, monitoring and troubleshooting provide operational efficiencies
- Prescriptive Topology Manager simplifies operations from physical/logical topology consistency to simplified configuration based on a user-specified network graph
- Overlay networks enable flexibility and rapid provisioning of multi-tenant network

Broad Application Ecosystem

Cumulus Linux is the foundation for a rich application ecosystem. Being Linux, it is a platform that can leverage existing Linux applications, and it is the foundation for development and rapid integration of third party applications. Modern data center network orchestration tools such as Ansible, CFEngine, Chef and Puppet work on Cumulus Linux. Modern data center monitoring tools such as collectd and Ganglia work on Cumulus Linux. Leverage scores of applications across compute and network from the more than 40,000 Debian applications available. Customize the platform and build applications for specific business needs to innovate faster!

Cumulus Linux Features

Functionality	Description
Operating System Install & Upgrade	Server-style upgrade/patching across minor releases, server-style process restart/ termination. Support for zero touch OS installation using ONIE loaded on industry standard switches.
Extensibility	Linux extensibility — Any language supported in Linux today, including scripting with Bash, Python, Perl, Ruby
Hardware Management	The switch hardware abstraction layer accelerates Linux kernel networking constructs in hardware, including the routing table, ARP table, bridge FDB, ip/ebtables, bonds, VLANs, VXLAN bridges. Hardware management also includes jumbo frames support and environmental management
Layer 3 Features	Enhanced Quagga IPv4/v6 routing suite including OSPFv2, OSPFv3, BGPv4/v6, Equal-Cost Multi-Path (ECMP). Bidirectional Forwarding Detection (BFD).
Layer 2 Features	Bridge management with MSTPd including STP (IEEE 802.1d), RSTP (IEEE 802.1w), PVRST, PVST, bridge assurance, BPDU guard, BPDU filter. VLAN trunks (IEEE 802.1q), LACP (IEEE 802.3ad), unicast/broadcast storm control, LLDP, CDP, IPv6 neighbor discovery, IPv6 route advertisement. Host HA (through Host-MLAG). IGMPv2/v3 snooping, MLDv1/v2 snooping. Virtual Router Redundancy (VRR).
Network Virtualization	VXLAN support*, L2 gateway services integration with VMware NSX *, Lightweight Network Virtualization (LNV)*.
Management	Native Linux management tools such as OpenSSH, SCP, FTPS. Automated Install/ Upgrade: zero touch install and zero touch provisioning. DHCP, v4/v6 DHCP relays. Authentication with LDAP, authorization with sudo NTP. Advanced management/ orchestration through third party add-on packages.
Monitoring & Troubleshooting	Traditional monitoring with SNMPv2/v3 and network-specific MIB, analytics with SPAN, ERSPAN, ACL-based counters, DOM optics data, thermal sensors, real time queue-depth and buffer utilization reporting. Troubleshooting with dnsutils, syslog, reachability tools, hardware inventory, log fles, server-style filesystem, and merchant silicon specific commands.A dvanced troubleshooting and ease of use with Prescriptive Topology Manager.
Security	Access control lists (ACLs) L2-L4 classification through ip/ebtables, CPU protection through hardware enforced ACL-based rate limiting.
QoS	Classification based on Class of Service (CoS) (IEEE 802.1p) or DSCP (queuing, scheduling (DWRR and Strict Priority), buffer allocation)*. Ingress ACL-based classification/policing.

*Check the appropriate hardware guide for platform-specifc support.

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AS5610-52X-C Datasheet

www.edge-core.com

Hardware Specifications

- Cost-effective, bare-metal switch infrastructure for data center fabric.
- 48 x SFP+ switch ports, supporting 10GbE (DAC, 10GBASE-SR/LR) or 1GbE (1000BASE-T/SX/LX).
- 4 x 40 QSFP+ switch ports, supporting 40GbE (DAC, 40GBASE-SR4/LR4) or 4 x 10GbE (DAC or fiber breakout cable).
- Port Grouping to group 4 x 10G ports into one 40G port at the physical layer for maximum bandwidth utilization, and for 300m optical reach over MMF.
- Full line-rate Layer 2 or Layer 3 forwarding of 1.28Tbps
- Supports hot/cold aisle with port-to-power and power-to-port airflow SKUs.
- All ports on front; PSUs, fan tray on rear.
- Hot-swappable, load-sharing, redundant AC PSUs or -48VDC PSUs; or 12VDC power input.
- Swappable fan tray with 3:1 fans.
- Energy Efficiency: 170W typical power consumption.
- Management: Ethernet and console RJ-45 ports; USB storage port.

Ports

Switch Ports:
- 48 x SFP+ each supporting 10GbE or 1GbE
- 4 x QSFP+ each supporting 40GbE or 4 x 10GbE

Management Ports on Front Panel:
- 1 x RJ-45 serial console
- 1 x RJ-45 100/1000BASE-T management
- 1 x USB Type A storage port

Key Components

Switch Silicon: Broadcom BCM56846 Trident+ 640Gbps
CPU: Freescale P2020 dual-core 1.2GHz
Memory: 2GB DDR3 SDRAM ECC
Flash: 8MB NOR Flash, 2GB NAND Flash

Performance

Wire Speed Forwarding: L2 and L3
Switching Capacity: 1.28Tbps
Forwarding Rate: 960Mpps
MAC Addresses: 128K
VLAN IDs: 4K
Jumbo frames (9216 Bytes)
L3 Routes IPv4 16K, IPv6 8K
Packet Buffer Size: 9MB shared buffer pool
Latency (RFC2544): 860ns to 1.2us (L2/L3, cut thru, full line rate)

LEDs

10G SFP+ Port LEDs: Link Speed, Link Status, Activity
40G QSFP Port LEDs: Link Status, Activity
Ethernet Management Port LED: Link Status, Activity
Console Port LED: Link Status
System LEDs: PSU1, PSU2, Diagnostic, Fans, Locator

Physical and Environmental

Dimensions (WxDxH): 438.4 x 473 x 43.4mm (17.26 x 18.62 x 1.71inches)
Weight: 8.5kg (18.74lbs), with two installed power supply modules
Fan Tray: hot-swappable tray with 3+1 redundant fans
Operating Temperature: 0°C to 40°C (32°F to 104°F)
Storage Temperature: -40°C to 70°C (-40°F to 158°F)
Operating Humidity: 5% to 95% non-condensing

Software

Preloaded with Cumulus Linux. License cost included in the price for the specific term described in the SKU.

Supported Optics and Cables

SFP+ Ports:
- 10GBASE-CR DAC: 0.5m to7m; Passive and Active
- 10GBASE-SRL/SR: up to 100/300m over OM3 MMF
- 10GBASE-LR: Up to 10km over SMF
- 1000BASE-SX, 1000BASE-LX, 100/1000BASE-T

QSFP Ports:
- 40GBASE-CR4 DAC; 0.5m to 7m; Passive and Active
- 40GBASE-CR4 DAC to 4 x SFP+ 10GBASE-CR DAC; 0.5m to7m
- 40GBASE-SR4: Up to 100m over OM3 MMF, 150m over OM4 MMF
- 40GBASE-SR4 to 4 x 10GBASE-SR: 100m over OM3, 150m OM4
- 40GBASE-LR4: Up to 10km over SMF

Power

PSUs: 2 redundant, load-sharing, hot-swappable AC or -48VDC
Input Voltage: 90 to 264VAC at 50-60Hz. -48 to -72VDC.
Input Current: Max 6A @100/120VAC, 3A @200/240VAC, 10A @-72VDC
PSU Efficiency: Up to 93% for AC PSUs
12VDC power input option
Max Power: 218W, line-rate, 48 x 10GBASE-SR, 4 x 40GBASE-SR4, AC
Typical Power: 170W, line-rate, 48 x 10G DAC, 4 x 40GBASE-SR4, AC

Regulatory

EMI
- CE Mark (EN55022 Class A)
- FCC Part 15 Class A
- VCCI

Safety
- CB, EN 60950
- UL/CUL

Environmental:
- Temperature: IEC 68-2-14
- Drop: ISTA 2A

RoHS-6 Compliant

Warranty

Please check www.edge-core.com for the warranty terms in your country. The warranty provides return-to-factory hardware replacement for a three year period in North America.

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Ordering Information

5610-52X-C-AC-F	AS5610-52X 48-Port 10G SFP+ with 4x40G QSFP uplinks, Pre-loaded Cumulus Linux, dual AC PSUs, port-to-power airflow, 1 year OS license with standard support included
5610-52X-C-AC-B	AS5610-52X 48-Port 10G SFP+ with 4x40G QSFP uplinks, Pre-loaded Cumulus Linux, dual AC PSUs, power-to-port airflow, 1 year OS license with standard support included
5610-52X-SVC-C	AS5610-52X Additional 2 year Cumulus Linux Software License and Maintenance (*must order together with above model)

***Note: Customers can order yearly subscription licenses for Cumulus Linux to extend beyond 3 years.**

For More Information

To find out more about Edge-Core Networks products and solutions, visit www.edge-core.com.

About Edge-Core Networks

Edge-Core Networks is in the business of providing innovative network solutions. In the service provider network, in the data center or in the cloud, Edge-Core Networks delivers the software and systems that transform the way the world connects. Edge-Core Networks serves customers and partners worldwide. Additional information can be found at www.edge-core.com.

Edge-Core Networks is a subsidiary of Accton Technology Corporation, the leading network ODM company. The Edge-Core data center switches are developed and manufactured by Accton.

To purchase Edge-Core solutions, please contact your Edge-Core Networks representatives at +886 3 563 8888 (HQ) or +1 (877) 828-CORE (877-828-2673) or authorized resellers.

About Cumulus Networks®

Cumulus Networks is bringing the Linux revolution to networking. Founded by veteran networking engineers from Cisco and VMware, Cumulus Networks makes the first Linux operating system for networking hardware and fills a critical gap in realizing the promise of the software-defined data center. Just as Linux completely transformed the economics and innovation on the server side of the data center, Cumulus Linux is doing the same for the network. It is radically reducing the costs and complexities of operating modern data center networks for service providers and enterprises. Cumulus Networks has received venture funding from Andreessen Horowitz, Battery Ventures, Sequoia Capital, Peter Wagner and four of the original VMware founders. For more information visit www.cumulusnetworks.com or follow us on Twitter @cumulusnetworks.

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