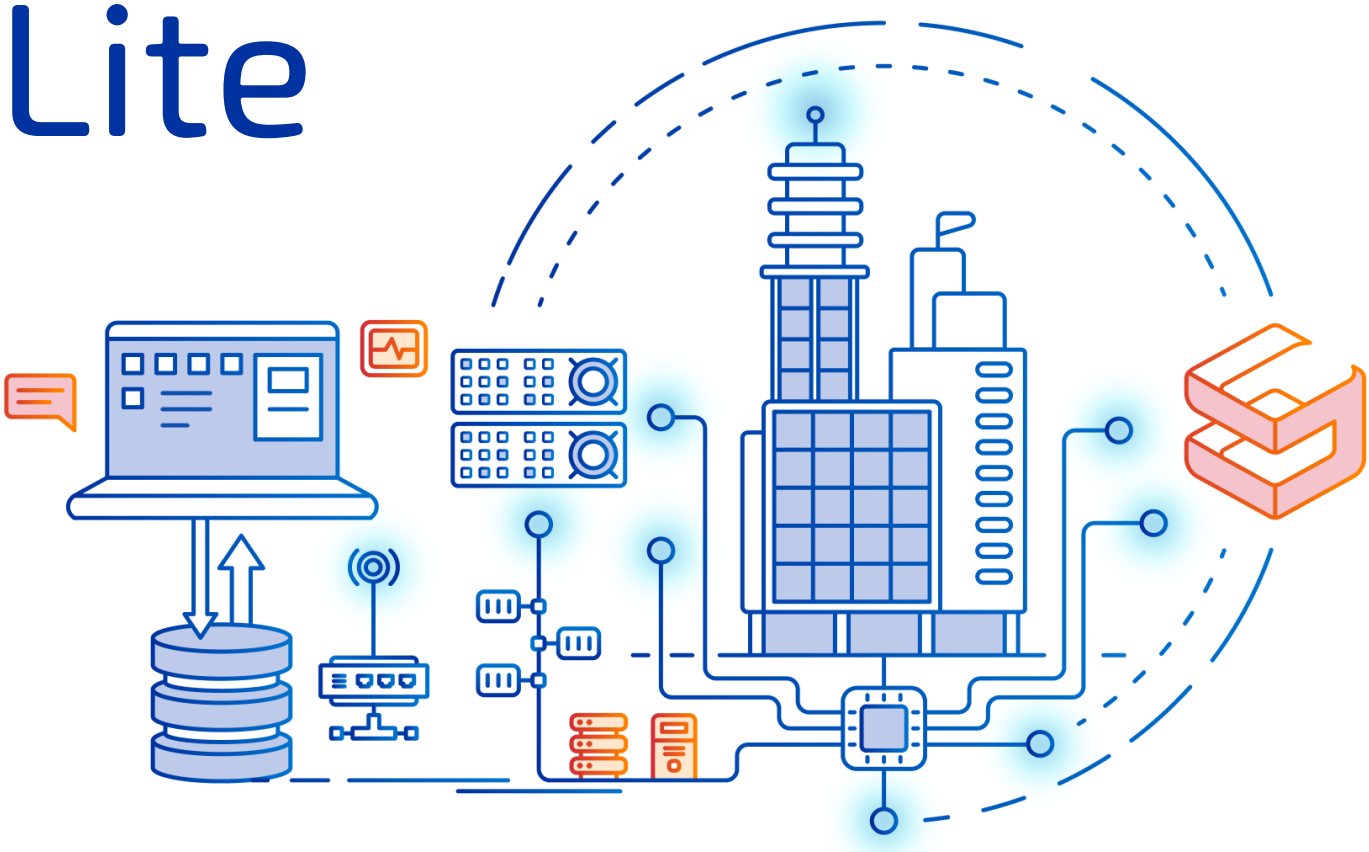
PLVISION

Connectivity of Tomorrow

SONiC Lite



SONiC Lite is an enterprise distribution of SONiC by PLVision for cost-effective management and access platforms (those with limited CPU performance and with less RAM and storage capacity) in data center, edge, and campus deployments. The PLVision team optimized the SONiC components while preserving vendor-specific elements such as SAI and platform integrations.

Addressing Industry Challenges with SONiC Lite

Equipment vendors and enterprises face a critical challenge: finding a solution that meets the efficiency requirements of access and management switches without compromising performance or functionality. Traditional SONiC, designed primarily for data centers with higher power, cost, and resource considerations, falls short in scenarios where lightweight, cost-effective platforms are essential.

The key issue lies in the resource-intensive nature of traditional SONiC, which demands powerful CPUs, substantial storage, and extensive RAM – making it unsuitable for campus and edge deployments that prioritize efficiency. Additionally, the unique functional demands of these environments introduce further complexities.

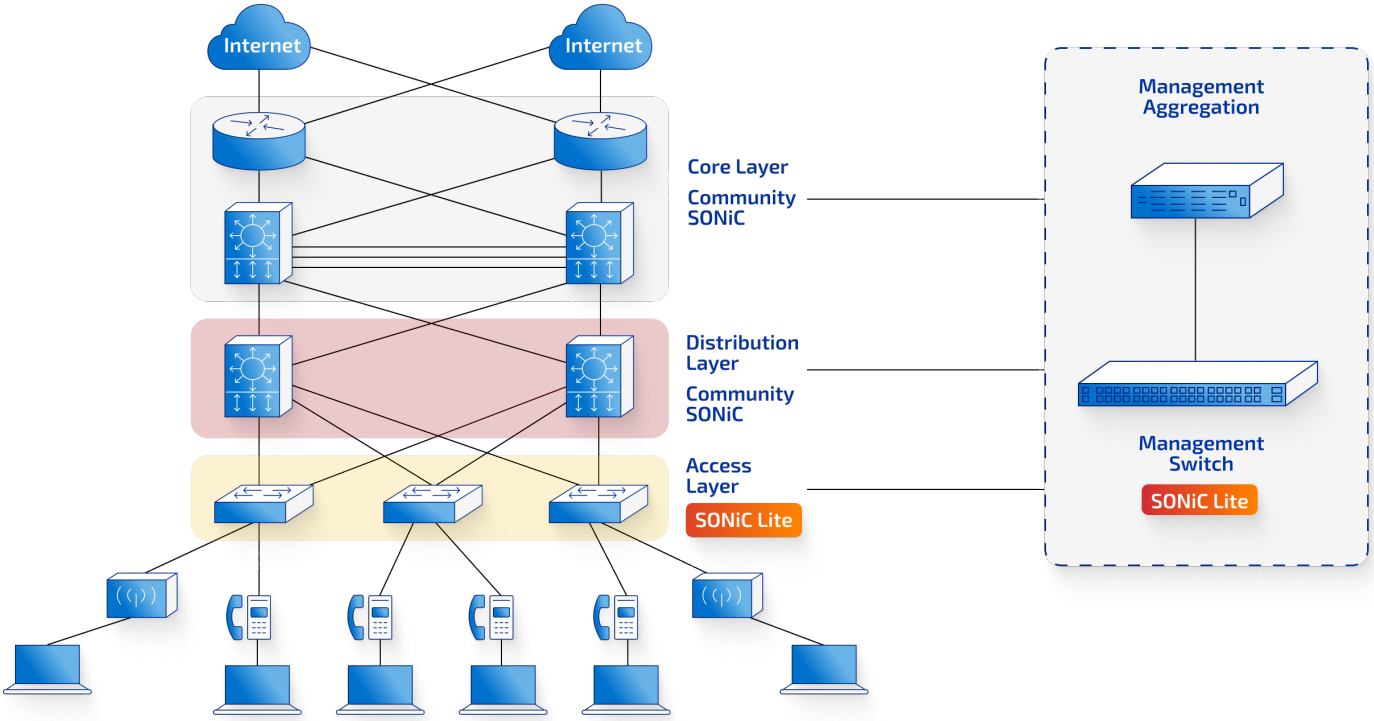
This is where SONiC Lite emerges as a transformative solution. Tailored for campus and edge networks, our solution redefines efficiency by optimizing SONiC for cost-effective platforms. It not only enables seamless network transformation but also reduces operational expenses and drives innovation in environments where streamlined hardware and functionality are paramount.

The Role of SONiC Lite in Management and Access Plane Networking

SONiC Lite network operating system (NOS) is an enterprise distribution of SONiC by PLVision for cost-effective management and access platforms in data center, edge, and campus deployments. SONiC Lite prioritizes core functionalities and performance, enabling organizations of all sizes to build scalable and efficient networks using white-box networking platforms. This solution fosters vendor neutrality while optimizing the total cost of ownership (TCO).

Management and access switches are integral to network infrastructure, serving as centralized hubs for overseeing, configuring, and troubleshooting network devices and their connections. The performance and reliability of these switches directly influence the overall effectiveness of your network. SONiC Lite is an ideal choice for deployment within management networks due to its focus on efficiency, security, and scalability.

Access switches form the L1 connect with distribution layer switches and end devices and ensure the packets are delivered to end devices. They also must meet the requirements of the layer to provide certain functions (network management simplification, security, etc.) for the specific network environment.



SONiC Lite Use Cases

We have tailored Community SONiC specifically for the access layer, focusing on optimizing the most critical functionalities primarily used in data centers. By carefully selecting and enhancing essential features, SONiC Lite empowers you to build a simple, reliable, and secure networking operating system. This streamlined version of SONiC ensures dependable performance on access and management switches.

SONiC Lite operates as a critical component in the management plane, situated above edge switches to oversee and optimize their performance.

In addition to multiple cleanups and optimizations, SONiC Lite offers extended functionality, including PoE, xSTP, 802.1x, and static routing.

Key features:

- reduced CPU utilization
- reduced RAM consumption
- reduced image size

Minimal requirements:

- CPU 2 ARM cores
- RAM 2Gb (1GB for Lite L3)
- ~3 Gb storage

Access Switch Use Case

At the access layer – the foundation of the hierarchical inter-networking model – SONiC Lite enables seamless connectivity for end devices such as PCs, printers, and wireless access points. This layer ensures continuous network connections for end devices regardless of their location while aligning its design with the requirements of the upper network layers.

Out-of-Band (OOB) Management Switch Use Case

SONiC Lite is an optimized network OS distribution specifically designed for OOB management switches in data center, edge, and campus networks. It offers a cost-effective, scalable, and efficient solution that centralizes and simplifies network management through a unified control plane. With SONiC Lite, network monitoring and maintenance become streamlined, ensuring smoother operations and enhanced operational efficiency.

PLVision has equipped SONiC Lite with targeted functionalities to ensure that the management switch fulfils its intended purpose, delivering:

Centralized Management

SONiC Lite simplifies network administration by providing a unified interface for managing all connected devices. Tasks such as configuring network settings, updating firmware, and monitoring performance can be executed seamlessly from a single platform.

Traffic Segmentation

With the ability to create virtual networks (VLANs), SONiC Lite enhances network performance and security by isolating different types of traffic. This ensures effective separation of management traffic from user data, reducing the risk of interference and potential vulnerabilities.

Security Features

SONiC Lite strengthens network defenses with advanced security capabilities, including access control lists (ACLs), port security, and real-time network monitoring. These measures protect against unauthorized access and potential threats, ensuring the integrity of your network.

Quality of Service (QoS)

By enabling traffic prioritization, SONiC Lite ensures that critical applications and services receive the necessary bandwidth to operate without interruption, thereby maintaining high performance and reliability.

Common Control Plane

Supporting the SONiC REST interface, SONiC Lite ensures seamless integration and control within SONiC-based environments. This allows network administrators to manage SONiC Lite-equipped management switches as easily as other SONiC devices.

Benefits of SONiC Lite for Enterprises

Enterprises can unlock transformative advantages with SONiC Lite, including:

- **White Box Model Flexibility:** Eliminate vendor lock-in with the flexibility and independence offered by the white box approach.
- **Enhanced Security and Updates:** Stay secure and up to date with regular updates and timely security patches.
- **Continuous Feature Development:** Adapt seamlessly to dynamic ecosystems with ongoing feature development tailored to evolving needs.
- **Cost Efficiency:** Reduce operational expenses through optimized hardware utilization and streamlined network management.
- **Customizable NOS Features:** Develop tailored NOS functionalities to meet unique operational requirements.

Why OEM and ODM Vendors Choose SONiC Lite

SONiC Lite delivers tangible business value to OEM and ODM vendors:

- **Expanded Hardware Feature Set:** Empower your customers with tailored capabilities designed for campus and edge deployments.
- **Reduced BOM Costs:** Offer competitive pricing with lower Bill of Materials costs per switch, helping you stand out in the market.

Want to experience SONiC Lite? Get started today with our new SONiC Lite Demo.

SONiC Lite Capabilities

Building on the latest updates from Community SONiC, SONiC Lite delivers a comprehensive suite of features designed to enhance security, streamline network management, and optimize performance.

SONiC Lite provides centralized authentication, authorization, and accounting through advanced protocols such as TACACS+ and RADIUS. It also includes 802.1X for port-based network access control (PNAC), ensuring that only authorized devices can access your network. Learn how to configure PNAC with our step-by-step guide.

The platform offers essential Layer 2 functionalities, including:

- **LLDP:** Device discovery and topology mapping for better network visibility.
- **xSTP:** Rapid network convergence and loop prevention.
- **VLANs:** Network segmentation and isolation for enhanced performance and security.
- **LACP:** Link aggregation and redundancy to ensure seamless network availability.

SONiC Lite supports IPv4/IPv6 for seamless IP operations and static routing for flexible configuration. It also provides Access Control Lists (L3-L4) for secure traffic filtering and enhanced Quality of Service (QoS) features to prioritize critical traffic, ensuring optimal performance for essential applications.

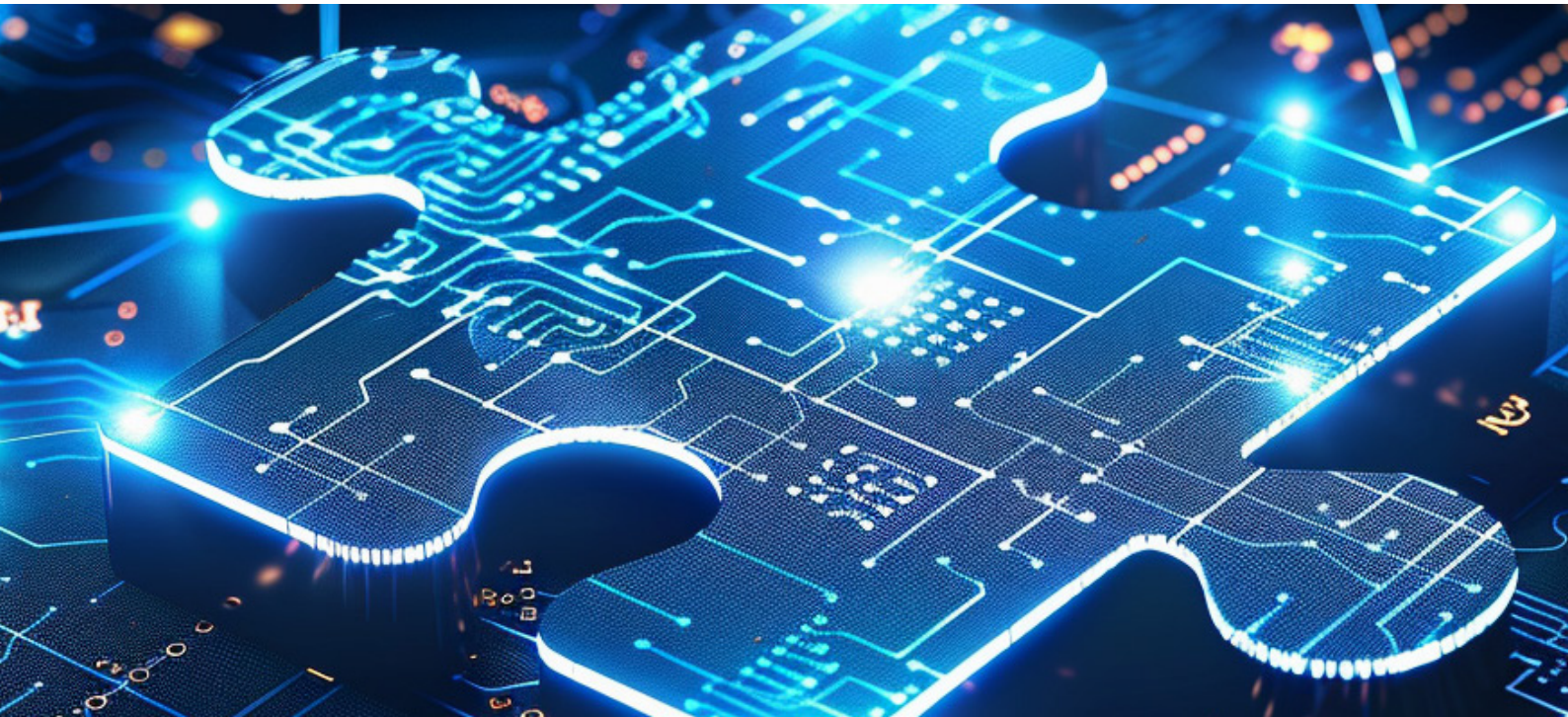
Additional features include:

- **DHCP Server:** Automatic IP address assignment for simplified network management.
- **PoE++:** Centralized power management for connected devices.
- **Storm Control:** Prevents disruptions caused by excessive traffic.

With regular updates from PLVision, SONiC Lite evolves to meet the demands of modern networks. The latest release introduces:

- **Full KLISH CLI support:** A Cisco-like interface for simplified configuration and management.
- **Migration to SONiC 202405:** Improved scalability and performance.

The enhanced OLS capabilities enable cloud-based management for campus and multi-dwelling unit (MDU) deployments. This update future-proofs networks for high-bandwidth, low-latency applications, paving the way for full OLS functionality in upcoming releases.



Explore the full feature list and see how SONiC Lite can transform your network:

Ethernet	
Discovery and Management	IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
Security	IEEE 802.1AE (MACsec)**
	IEEE 802.1x (NAC)
Spanning Tree Protocol	IEEE 802.1s (MSTP)
Link Aggregation	IEEE 802.3ad Link Aggregation Bundles / LACP
Quality of Service (QoS)	IEEE 802.1p Class-of-Service Prioritization and Tagging
	IEEE 802.1Qbb Priority Pause frames (PFC)
	IEEE 802.3x Flow Control (Pause Frames)
VLAN Management	IEEE 802.1Q VLAN Tagging
Layer 2 and Layer 3 Protocols	
Address Resolution and Discovery	Address Resolution Protocol (ARP)
	Neighbor Discovery Protocol (NDP)
Spanning Tree Protocol	Per VLAN Spanning Tree (PVST)
	Multiple Spanning Tree Protocol (MSTP)
	BPDU Guard
	BPDU filtering
	Root Guard
Link Aggregation and Redundancy	Static LAG
	LACP Fast Rate and LACP Fallback
DHCP Services	DHCP IPv4/v6 Client
	DHCP IPv4/v6 Relay
	DHCP IPv4/v6 Server
Routing Protocols	IPv4 and IPv6 routing
	Static routing
	Border Gateway Protocol (v4, v6)*
	IBGP*
	EBGP*
	BGP-Allow AS*
	Dynamic BGP Neighbor*
	Route Policies**
	Route Reflector**
	Equal-Cost Multi-Path (ECMP)
Virtual Routing and Forwarding	VRF
	Management VRF

Quality of Service	
Traffic Scheduling	Scheduling: Strict Priority (SP)
	Weighted Round-Robin (WRR)
	Deficit Weighted Round-Robin (DWRR)
Traffic Management	BUM Storm Control
QoS	Class of Service (CoS) IEEE 802.1p
	DSCP Marking / Remarking
	DSCP to Traffic Class Mapping
Congestion Management	Explicit Congestion Notification (ECN)
	Random Early Discard (RED)
	Weighted Random Early Detection (WRED)
Flow Control	Control Plane Policing (CoPP)
	Priority Flow Control (PFC)
	PFC Watchdog
Manageability, Automation, and Monitoring	
Monitoring and Management	Critical Resource Monitoring (CRM)
	IPv4/IPv6 Management
	Syslog
	SNMP v1, SNMP v2C, and SNMP v3
	SNMP Trap Infra Support
	Link Layer Discovery Protocol (LLDP) IEEE 802.1AB
Network Interfaces	REST and gNMI Interfaces through OpenConfig YANG
Access and Control	Command Line Interface (CLI)
	SSH/SSHv2
	Telnet
	FTP / TFTP
Management Protocols	Out-of-band management
Diagnostic Tools	Traceroute IPv4/IPv6
	Ping IPv4/IPv6
Time Synchronization	Network Time Protocol (NTP)
Security	
Authentication and Authorization	RADIUS
	TACACS+
Access Control	Access Control List (ACL)
	Media Access Control Security (MACsec)**
Secure Access	SSH/SSHv2
Protocol Security	MD5 authentication for BGP*

System and Platform Infrastructure	
Port Management	Port utilities
	Dynamic Port Breakout
	SFP Utilities
	Transceiver Parameter Tuning**
Monitoring and Diagnostics	DOM Information Display**
	Interface Statistics
	Temperature monitoring and thermal alarms
	Power Monitoring (Power, Current, Voltage)
	System Health
	System State
	Hardware Watchdog
	Locator LED Support (Beacon)
	Fan Control
	Board information (EEPROM)
Configuration Management	Backup / Restore
	Full System Reset / reboot
	Factory Reset Configuration
Container Management	Third-Party Container Management
Performance Optimization	Jumbo Frames
Interface Management	Interface Aliasing (IS-standard Interface Naming)
Debug and Service	
Logging and Diagnostics	Audit Logging and Syslog
	Linux Kernel Dump
	Flow & Drop Counters
Other	
System Management	Wake-on-LAN Commands
Network Configuration	Loopback Interfaces
	Sub interfaces
Power over Ethernet (PoE)	PoE

* Planned for Q2 2025 ** Planned for Q3 2025

Hardware Compatibility List

A wide range of switch models, including popular white-box options, supports SONiC Lite, providing businesses with unmatched flexibility and choice.

SKU	Model	ASIC	Port Config
wistron	ES-2227-54TS PoE and no PoE	Marvell AC5X family	32x1G+16x2, 5G+6x25G
wistron	ES-2221-54TS PoE and no PoE	Marvell AC5X family	32x1G+16x2, 5G+6x25G
Edge-corE NETWORKS	ECS4650-54P PoE	Marvell AC5X family	48x1G+6x25G
Edge-corE NETWORKS	ECS4650-54T	Marvell AC5X family	48x1G+6x25G
Edge-corE NETWORKS	ECS5550-54X	Marvell Prestera Aldrin2	48x10G SFP+ & 6x100G
Edge-corE NETWORKS	ECS5550-30X	Marvell Prestera Aldrin2	24x10G SFP+ & 6x100G
Edge-corE NETWORKS	ECS4655-30P PoE	Marvell AC5X family	24x2.5G+6x25G
MiCAS NETWORKS	M2-W6510-48GT4V	Broadcom	48x1G+4x25G
ufiSpace	S7801-54XS	Broadcom	48x10G SFP+ & 6x100G QSFP28

We are actively expanding our hardware compatibility list and enhancing functionality to better align with the evolving needs of our clients and the dynamic market demands. Stay tuned for further expansions of SONiC Lite's HCL, which can be viewed here.

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