

Marvell ROS

ROS Functions

Whole range of applications

- Access
- Campus
- Data Center
- Industrial

Carrier grade features

- Layer 2+ switching
- Layer 3 Diverse routing protocol support* (Option)
- Full support for POE+ with extensive power budget management
- Dual Power Supply support (hot swap)
- Dying Gasp support
- Dual FAN support (hot swap)
- System health monitoring and alarms
- DDoS protection
- Industrial devices and technologies support

Optional Features

- OpenROS extensibility
- BGP routing
- 1588 PTP & SyncE Clock synchronization
- McLAG
- ERPS G.8032
- VxLAN
- MACsec
- HSR/PRP
- TSN

Centralized fleet management

- SNMP
- Miyagi.io

Basic Functions

- Port Speed/duplex management
- Port Auto management
- VCT Diagnostics Port features
- Jumbo Frames (FE and GE)
- LAG / LACP
- Green Ethernet
- STP/RSTP/MSTP etc.
- VLANS (Protocol / MAC / IPv4 based)
- GVRP/GARP
- Multicast/CPE(Triple Play) VLAN
- QinQ
- Flow Control 802.3x
- Back Pressure
- Loopback and UDLD (Unidirectional link) detection
- Optical Transceiver Analysis

Quality of Service

- Basic / Advanced QOS (Port/Flow)
- CoS/QoS
- Ingress/egress Rate Limiting/Shaping
- SP/WRR Queue settings
- L2/L3 CoS->Queue mapping
- Per-Flow Actions

Security

- Access Control and logging
- Time based ACL
- MAC/Port based security
- Ace priority
- 802.1x enhanced (all variants)
- 802.1x MAC/Port/Web/Time based
- Radius Authentication/Accounting/802.1x
- TACACS+ Client and Accounting
- Syslog
- DHCP Snooping
- ARP inspection
- IP Source Guard
- Secure Control Technology (protect CPU)
- DoS Attack prevention
- *MACSec (GCM-AES-(XPN)-128/256)

Monitoring

- Mirroring SPAN/RSPAN
- RMON/SMON
- SNMP v1/2/3 with MIBs
- Environmental PS/RPS, FAN, Temperature
- SFLOW v5
- Counters with History

Multicast

- IGMP Snooping v1/2/3
- MLD Snooping v1/2
- MLD Querier
- Unregistered Mcast
- *PIM-SM (optional)
- IGMP/MLD Proxy

Management

- OOB & serial Console support
- CLI/SNMP management (IPv4,IPv6) over Telnet or SSH
- USB/SD flash storage support
- DHCP based Self-Configuration/Update
- RMON, Syslog, Radius, TACACS+

- DNS, DHCP, SNTP, LLDP-MED, UpnP
- LLDP 802.1ab + LLDP MED
- WEB-GUI interface for basic management
- *Detailed REST compatible API (Optional)
- *Full WEB-GUI with flexible configuration options (Optional)

*Power Over Ethernet (Optional)

- PoE 802.3af 802.3at 60W PoE
- PoE Budget with LLDP negotiation
- Time Based PoE
- PoE Consumption monitor

*IP Routing (Optional)

- L3 DHCP Relay
- Proxy ARP for IP Routing
- OSPF / RIP
- Equal Cost Multiple Path (ECMP)
- VRRP
- IP SLA
- Loopback IP interface (Source Address Selection)
- UDP Relay
- IPv6 static unicast routing

*Stacking (Optional)

- Optional Stacking up to 8(16) units using uplinks
- Real cross-unit features, not just Management
- Stand-alone and Stack-mode operation
- Stack Master Election process
- Stack Backup capabilities
- Unit joining or leaving the stack
- Stacking Fast Failover & LAG

*Industrial Features (Optional)

- G.8032, ERPS Ring Protection
- High accuracy one-step and two-step PTP compliant with IEEE 1588v1/v2 and ITU-T G.8273.2 Class C and IEEE 802.1AS-2020 support
- SyncE compliant
- IEC 62439-3 - HSR/PRP High available seamless redundancy (Parallel Redundancy Protocol)

*TSN (Optional)

- IEEE 802.1CM-2018 Profile B
- IEEE 802.1AS-2020 - Timing and Synchronization 4-time domains plus 1 free running clock
- IEEE 802.1Qav, IEEE 802.1Qbv, IEEE 802.1Qbu and 802.3br, IEEE 802.1Qci, IEEE 802.1CB

*Synchronization and Precision Time Protocol (PTP)

- High accuracy one-step and two-step PTP compliant with
- IEEE 1588v1/v2 and ITU-T G.8273.2 Class C
- SyncE compliant
- IEEE 802.1AS-2020 support



Industrial ROS for Marvell packet processor-based devices.
With support of Marvell eDSA stacking capabilities

Larch Hardened SONiC

A Linux-based, containerized

Open source based NOS
optimized for data-center
scale and AI

Larch Hardened SONiC adds:

- Feature hardening & bug fixing
- Feature extension
- Feature management
- Documentation

Highlights:

- Cloud-scale underlays (BGP) with VXLAN overlays automating McLAG for redundancy by design ZTP, API-driven workflows;
- "Machines configure machines."
- Containerized services for isolation, extensibility, and faster iteration.
- Fast/Warm reboot capabilities;
- Multi-vendor silicon via SAI;
- Runs on server-class switch platforms.
- Active roadmap toward SRv6 and AI-DC use cases.

Whole range of applications

- Data Center
- Access / Campus
- OpenLAN

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Basic Functions

Switching

- VLAN access port creation
- VLAN Trunk port creation
- Default VLAN setting on a port
- port description setting
- port duplex setting
- port auto-negotiation setting
- port loopback mode setting
- port speed setting
- Dynamic LAG (LACP based & Load share)
- Static LAG (Active-Standby & Load Share)
- **RPVST & MSTP with compatibility**
- Inventory Information
- Environmental Information
- Cooling Unit Information
- Active alarms
- Flow Control
- Auto MDI/MDIX

Routing

- IPv4 / IPv6 Dual Stack
- Static Routing
- OSPFv2, v3
- BGPv4, v6
- ECMP
- Routing stack graceful restart
- **VRRP Hardened**
- **ISIS**
- **HW Assisted BFD**

Data Center Switching

- BGP-EVPN support
- VRF
- Network Virtualization using Generic Routing Encapsulation (NVGRE)
- **VXLAN Hardened**
- **McLAG Hardened**

Security

- Storm Control (Unknown Unicast, Multicast and Broadcast)
- L2/L3/L4 ACLs
- Idle Session Timeout
- TACACS/RADIUS AAA Hardened

QoS

- QoS Packet Classifiers
- Traffic Marking
- Traffic Scheduling (SP, WFQ and CIR/EIR)
- Ingress Policing / Rate Limiting
- Congestion Avoidance
- Queue scheduling: SP, WRR, SP+WRR
- Class of Service
- DSCP

Multicast

- **IGMP/MLD Snooping L2MCD**
- **PIM and IP IGMP**
- **PIMv6**

Management

- SSH/Telnet
- HTTPS for XMP / REST APIs
- gRPC, Management & Console port
- ICMP, ping, traceroute DNS resolver / Client
- DHCPv4/ DHCPv6 client
- sFlow
- Port/VLAN Mirroring
- DHCP v4/v6 Relay Agent
- LLDP / LLDP-MED
- Jumbo MTU and MTU setting
- SONiC to SONiC upgrade
- ONIE install
- Performance optimisations
- Power Over Ethernet
- PoE 802.3af 802.3at 60W PoE

Hardened for AI NeoClouds with Marvell Teralynx

- **High Rates 800G and 1600G**
- **Support for RoCE v2 (RDMA over Converged Ethernet).**
- **Programmable forwarding pipeline protects investment, enables reconfiguration**
- **Visibility & Analytics Engines for Extensive Telemetry**
- **High-bandwidth of 800 and 1600Gbit**
- **RoCEv2 (RDMA over Converged Ethernet).**
- **PFC Priority Flow Control**
- **DCB/DCQC Data Center Quantized Congestion Notification**
- **Ultra-low latency**
- **ALB Auto-Load Balancing & Packet Spraying**
- **PFC Watchdog (PFCWD)**
Mitigates priority flow control loops in real-time to completely prevent cluster-wide fabric freezes.
- **Dynamic ECN & Buffer Tuning**
Allows code-driven, real-time optimization of switch buffers and Explicit Congestion Notification to eliminate packet drops.
- **Weighted ECMP & Advanced Scheduling**
Utilizes DWRR and intelligent hashing to smoothly distribute massive AI "Elephant Flows" across all 800G/1.6T paths.
- **Line-Rate gNMI Streaming & INT**
Streams microsecond-level telemetry (queue depths, latency) directly to orchestration pipelines to instantly isolate performance drops.
- **Containerized Warm Boot**
- **Zero Touch Provisioning (ZTP)**



Larch Fastboot is a productized switch initialization software package for systems built on the **Marvell Prestera® family of Ethernet switch devices**.

The solution specifically supports **AlleyCat (AC5, AC5Y, AC5X, AC5P), Ironman, Aldrin** as well as other packet processor families.

Fastboot initializes the switch packet processor, ports, and forwarding plane at power-on, enabling static Layer 2 connectivity without requiring a full Network Operating System (NOS).

Designed as a commercial off-the-shelf software product, Fastboot provides customers with:

Defined scope

Predictable cost

Documented deliverables

Validation on target hardware

Warranty and support coverage

This approach offers a practical alternative to a custom software development project.

Standard board enablement (bring-up) is included as part of the package.

Running on the integrated **ARMv7 Cortex-M3 (CM3)** auxiliary uController embedded within the packet processor ASIC, Fastboot can operate as a lightweight standalone switching environment or provide early network availability while the main system CPU and NOS continue their startup sequence if present.

Fast switch initialization for Marvell Prestera based systems

FASTBOOT

Who it is for

- Board manufacturers and OEMs building products around Marvell Prestera
- Aerospace, defense, industrial, electro-optics, and embedded networking platforms requiring rapid network availability
- Systems where the Ethernet switch is a subsystem managed by a host processor
- Products requiring deterministic switch startup, minimal software footprint, and static forwarding behavior
- Organizations seeking a commercially supported software product rather than a custom engineering engagement

Commercial Terms

The standard offer includes:

- **Licensed Fastboot Software** - A licensed software package including: Fastboot runtime software, Configuration framework, Integration documentation. The license covers a single target board design based on supported Marvell Prestera silicon.
- **Board Enablement (Bring-Up)** - SerDes configuration and tuning, Port profiles, Board port mapping, Boot-flow integration, customer hardware specifications
- **Static Configuration Baseline** - One agreed static switch configuration, including Port speeds, VLAN definitions, One defined boot environment, One approved integration workflow
- **Validation** - Validation on customer hardware, including Link establishment testing, Traffic forwarding verification, Validation report. Testing is performed using customer-provided hardware and documentation.
- **Documentation** - Integration guide, Release notes
- **Warranty Support** - Bug fixes, Delivery and integration support during the agreed warranty period

What the product does

Fastboot provides the following capabilities:

- Initializes Prestera switch silicon from the auxiliary CM3 uController, including SerDes or PHY firmware, port mapping and board-specific port profiles.
- Built on a robust RTOS-based software architecture
- Loads static switch configuration from human-readable text files
- Supports configuration of:
 - ports, VLANs, FDB entries, forwarding parameters as well as a range of pluggable modules, their recognition and initialization
- Provides a lightweight CLI for diagnostics and troubleshooting, including packet processor register access
- Brings up Ethernet links and enables traffic forwarding within 15 seconds of power-on, with optional optimization for faster startup where platform characteristics permit
- Integrates with customer-specific boot environments, including U-Boot-based platforms
- Provides operational status through a dedicated console interface

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	ARMv8.2 Cortex-A55 Dual Cluster	Linux CPSS SDK SAI NOS (ROS/SONIC) Loads in >100 sec
	ARMv7 Cortex-M3	RTOS Fast boot Loads in <15 sec

IRONMAN MODULES

Designed for

- Industry 4.0 and IoT
- Support for TSN/HSR
- Scalable, high-performance, low-power, small-footprint
- Optional PoE (PSE/PD)

Whole range of modules and port layouts & SKU

MO-P8Cx-4F

8x1+4x10 (50 Gbps)

MO-16Cx-4F

16x1+4x10 (72 Gbps)

MO-24Cx-6F

24x1+6x10 (86 Gbps)

MO-48Cx-6F

48x1+6x10 (110Gbps)

MO-24Cx-28F

24x1+24x2.5+4x10

MO-13F

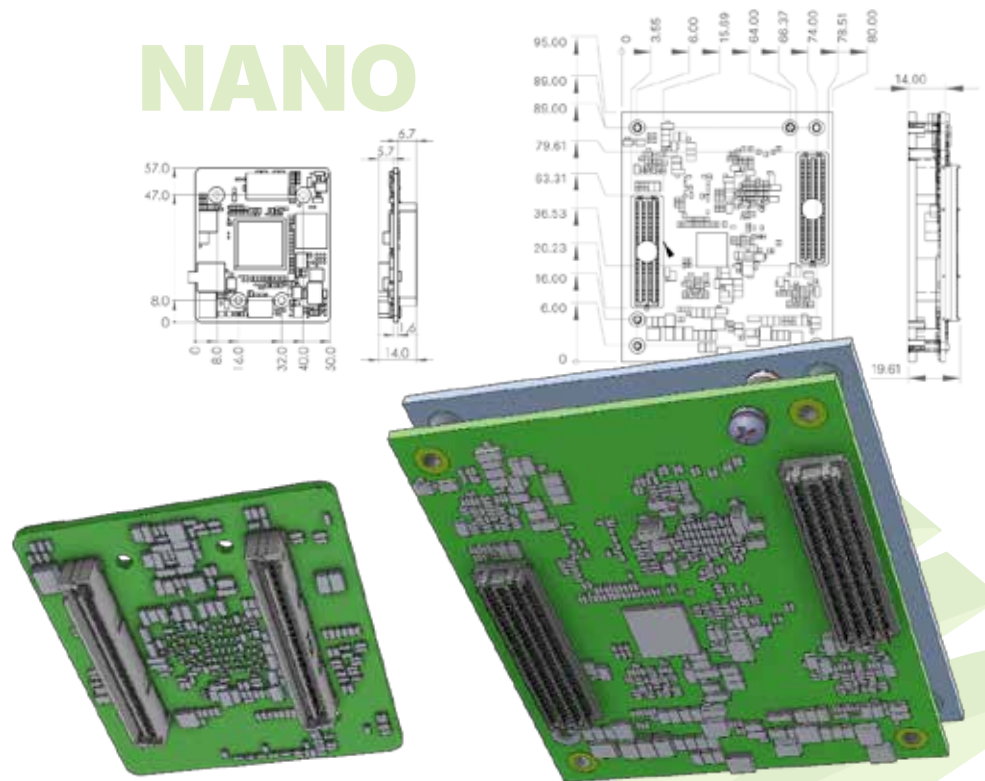
13x10 (132Gbps)

Based on new generation of highly integrated packet processors this module is designed to deliver a full portfolio of scalable, high-performance, low-power, small-footprint, feature-rich Ethernet switch modules, optimized for industrial and Internet of Things (IoT) applications operating in extended temperature range.

The extensive support in Time-Sensitive Networking (TSN) IEEE standards and High-availability Seamless Redundancy (HSR/PRP), empowers the transition to real-time communication solutions. Offering these standards in a single chip guarantees end-to-end transmission of high-priority traffic with deterministic latency and increased

reliability.

Ironman integration of groundbreaking technologies TIPS (Telemetry, Intelligence, Performance, Security) technology lays out the essential foundation for innovations in network visibility, intelligence, performance, and security. Intelligent workload management provides optimized data processing at or near the network access edge, reducing hybrid cloud bandwidth requirements; insightful telemetry reinforces automation and expedites forensic analytics; advanced security features underpin trustworthiness and provide network embedded protection from ever evolving security threats.



Ironman NANO Module

57x50mm 98DX1508

- Integrated PHYs on NANO module
- Universal carrier board as RD reference design

Ironman Module

95x80mm 98DX15xx

- Full sett of Ironman
- Features Industrial, TSN, HSR support
- Dual ARM-v8.2 Cortex-A55 CPU