Marvell® Prestera® 98DX73xx Ethernet Switches

A Family of Carrier-Optimized Ethernet Access and Edge Switches

Overview

The Marvell Prestera 98DX73xx family is designed to intelligently enable secure and efficient data movement throughout radio access and carrier access networks. As the combined demands of 5G and IoT traffic are driving a shift in network infrastructure, the 98DX73xx family is built with flexibility and feature richness to fulfill the imminent needs of radio access and carrier edge networks to support 5G transformation.

Innovative RAN disaggregation and virtualization deployments rely on the network's ability to seamlessly deliver deterministic secured connectivity for fronthaul streams within ubiquitous and flexible Ethernet-bridged networks. The 98DX73xx family's low-latency, high-bandwidth and secured switches are tailored to meet the stringent performance, security and resiliency demands of the fronthaul transport network — fundamental to enable the new deployment models.

The 98DX73xx devices are small footprint, low-power and intelligent multilayer Ethernet switches, with integrated multi-core CPU, MACsec, high-precision timing synchronization, 802.1CM Time-Sensitive-Network (TSN), eCPRI-awareness, network slicing, insightful telemetry and comprehensive programmable capabilities. They are ideally suited for cellular fronthaul aggregation platforms, cell site gateways, 5G Base Transceiver Stations (BTS), and a variety of other applications.

The introduction of pluggable 400G-ZR optical modules enables carrier and data center edge applications with high-capacity, long reach connectivity directly from an Ethernet switch. The 98DX73xx cutting-edge Prestera Ethernet switches can scale port speeds from 1Gbps to 400Gbps and support high-capacity MACsec. The new devices are tailored to empower agile Multi-Access Edge Computing (MEC), edge Data Center Interconnect (DCI) and secured high-speed interconnect applications, which can benefit from traffic efficiency, openness and economics of packet Ethernet networks.

98DX73xx is an integral part of the unified Prestera Ethernet switch architecture, featuring groundbreaking TrackIQ, NetIQ and SecureIQ technologies that lay out the essential foundation for innovations in network visibility, intelligence and security.

SecureIQ secure boot and storage and line-rate 256b MACsec encryption delivers the network-embedded trustworthiness and provides protection to the hardware and network software from ever-evolving security threats.

TrackIQ precise flow-aware telemetry collection at line-rate and predictive health reporting enable actionable analytics applications and expedite forensic troubleshooting. A variety of data export and streaming options provide a high degree of integration with analytics tools.

Class C compliant PTP and SyncE provide nanosecond-scale time accuracy, enabling applications with rigorous time synchronization demands.
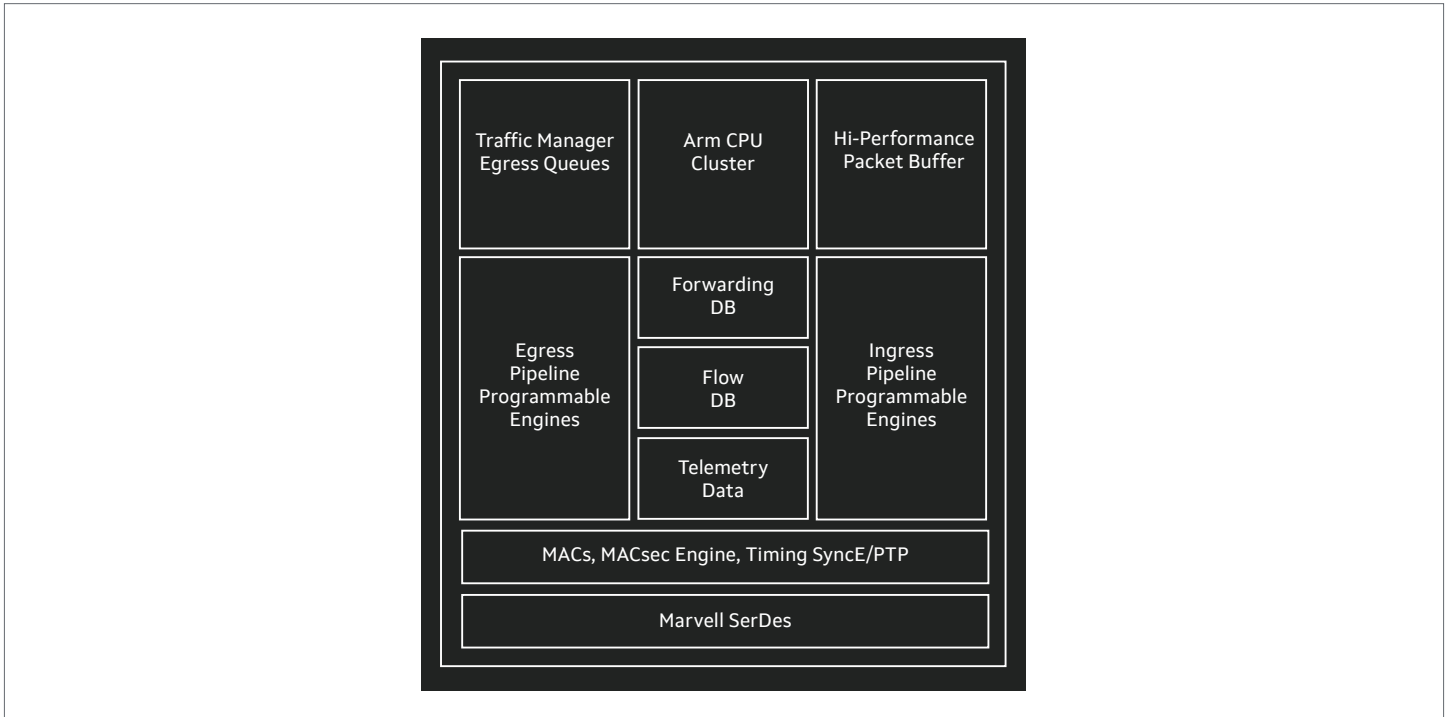
Integrated Arm®-based CPU cluster offloads embedded applications and services, delivering significant savings to the platform Bill Of Materials (BOM).

98DX73xx switches are powered by a modern Marvell Software Development Kit (SDK), sharing a set of common application programming interfaces (APIs) with other Marvell switching products. This interoperability is designed to simplify the development effort and accelerate system introduction. Marvell brings strong support of a rich ecosystem of open-source and commercial networking software solutions. The solutions, which include Marvell's own turnkey networking software stack, provide a comprehensive platform of options from original device manufacturers (ODMs).

The 98DX73xx family's unified software and hardware reduce development effort, improve supply-chain economics and enable new business models, laying out the essential foundation to meet the cost, capacity and performance requirements of 5G radio and carrier access and edge networks.

The 98DX73xx series facilitates 5G transformation of radio and carrier access networks, enabling high-performance secured connectivity while reducing management complexity.

Block Diagram

Key Features

Features	Benefits
· Multi-Rate 1/2.5/5/10/25/40/50/100/200/400G Ethernet ports	· Flexible access and aggregation at speeds ranging from 1G to 400G
· High Precision Time Synchronization · Precision Time Protocol (PTP) compliant with IEEE 1588v1/v2 standard · ITU-T G.8273.2 Class C compliant stringent timing synchronization · Synchronous Ethernet (SyncE) frequency synchronization based on the ITU-T G.8261 and G.8264 recommendations	· Meeting the rigorous synchronization requirements for 5G fronthaul and other highly accurate time synchronization applications
· Time sensitive networking (TSN) · IEEE 802.1Qbu frame preemption	· EEE 802.1CM-2018 Profile B to control packet delay and packet delay variation for deterministic Ethernet implementations
· Hardware-based Operations, Administration, and Maintenance (OAM) · Support for IEEE 802.1ag, ITU-T Y.1731 continuity check, delay measurement, loss measurement, MPLS OAM, ITU-T G.8113.1	· Hardware OAM provides the highest level of Carrier Ethernet service performance assurance
· Feature-rich Prestera architecture feature-set · VXLAN, VXLAN-GPE, Geneve, IP-GRE, EVPN, SRv6, MPLS-SR	· Comprehensive enterprise and carrier access feature-set · Flexible network virtualization overlays · Investment protection to support future use cases
· Media Access Control Security (MACsec) Engine · IEEE 802.1AE GCM-AES-128/256 and GCM-AES-XPN-128/256 compliant	· Protective cryptography-based Ethernet traffic security on all network-facing downlink and uplink ports

| Features	Benefits
· SecureIQ multilayer network-embedded advanced security · Secure boot and secured storage · Programmable security sensors · Micro-segmentation to security-groups · Secure Control Technology (SCT) and Network Shield Technology (NST)	· Trustworthy hardware and network software immunity · Zero-trust access security with detective mechanisms for suspicious patterns identifications and encrypted traffic analytics enablement · Proactive security of security zones and agile group policies for lateral movement prevention and remediation · Reactive control and management plane security and DDOS protection
· TrackIQ Flow-aware telemetry · Accurate scalable line-rate traffic telemetry without missing a flow · Flexible telemetry export methods, protocols and formats · Latency measurement and statistics for every packet · Anomaly and exceptions detection · Elephant and mice flow detection, burst and duration measurements · Performance, utilization and queuing status and statistics monitoring	· Application and service aware visibility with predictive health reporting to enable actionable analytics and expedite root cause analysis
· NetIQ Intelligent processing accelerators, programmable engines and embedded compute elements	· Enables intelligent data processing at the network edge, in-network compute, AI-feature-engineering, auto-healing and auto-adaptation
· Protocol and Flow-aware programmable data processing	· eCPRI and GTP awareness
· Control and Management Subsystem with integrated Arm CPU cores and advanced management interfaces.	· Embedded applications and services offload

Target Applications

Marvell's 98DX73xx switching family is built with flexibility and feature richness to fulfill the imminent needs of radio access and carrier edge networks' 5G transformation, fitting a variety of use cases, such as fronthaul aggregation, cell site gateways, 5G Base Transceiver Stations (BTS), Multi- Access Edge Computing (MEC), edge Data Center Interconnect (DCI) and secured high-speed interconnect applications..
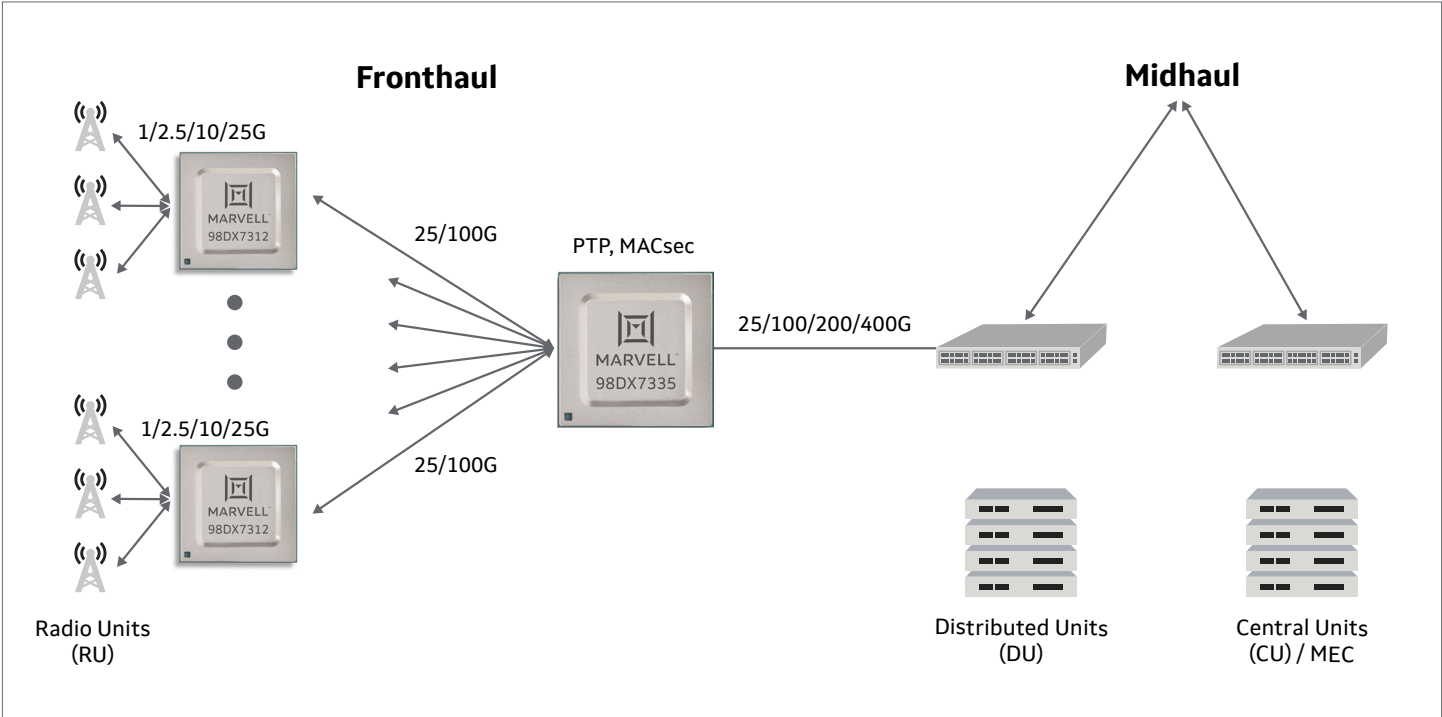
Deployment Scenario – Secured Fronthaul Aggregation
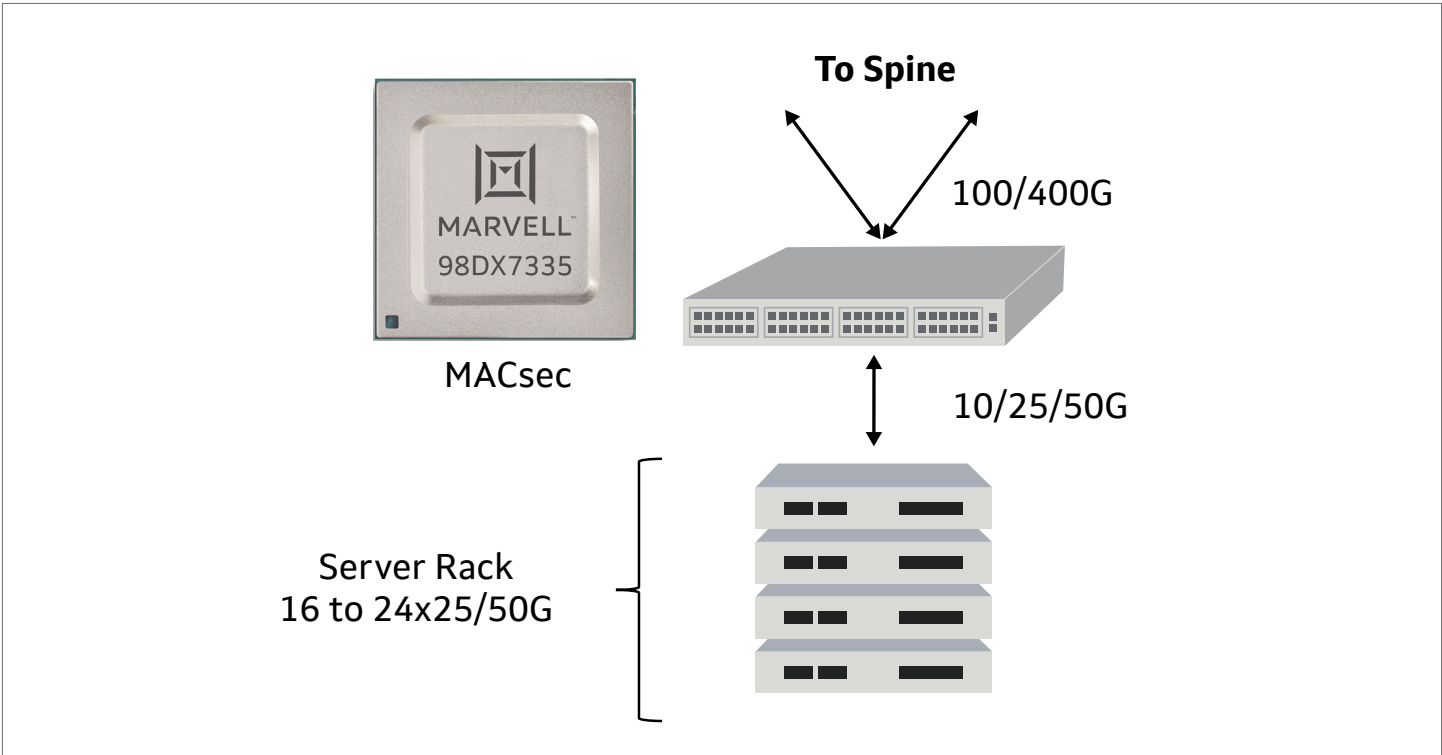
Deployment Scenario – Top of Rack switch for Edge Compute
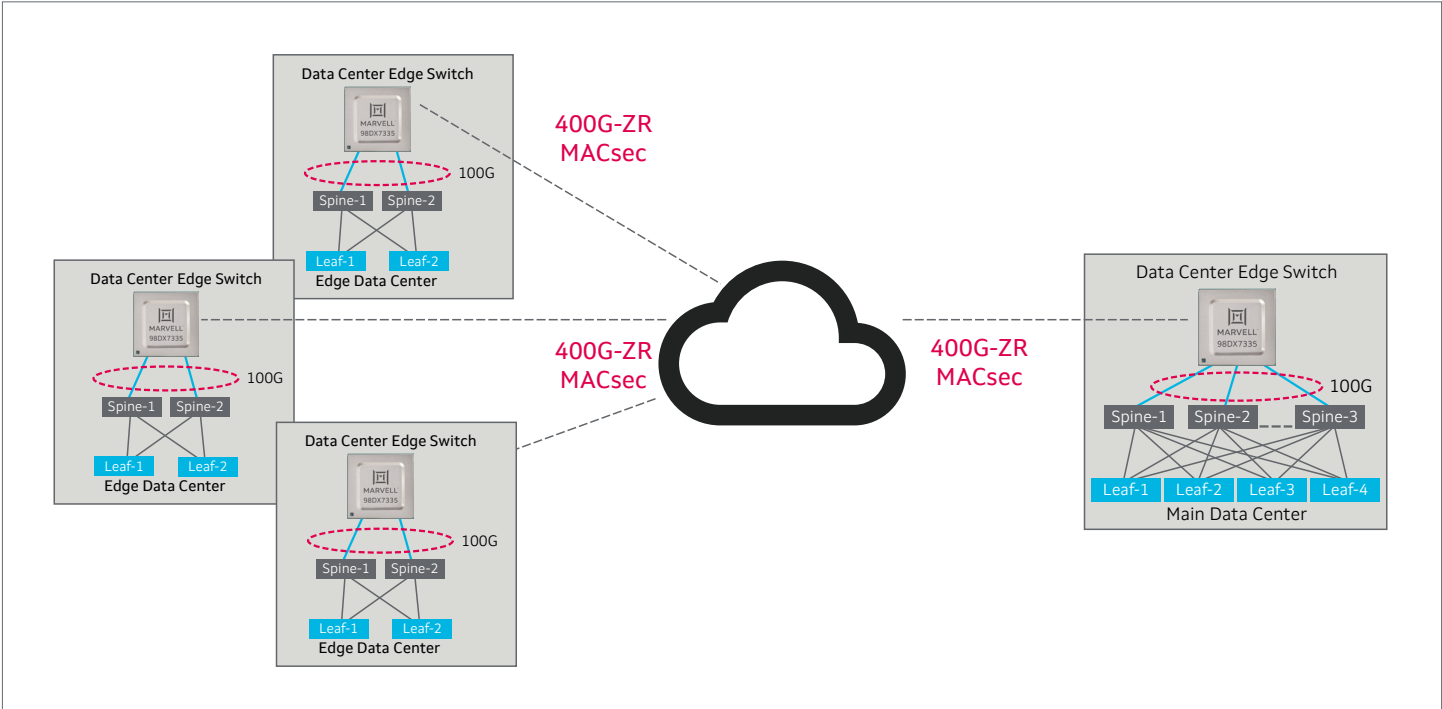
Deployment Scenario – Edge Data Center Interconnect (DCI)

Ordering Information

Part Number	Description	Bandwidth
98DX7308	8x25G	200Gbps
98DX7312	8x25G + 1x100G-R4	300Gbps
98DX7324	24x25G / 6x100G-R4	600Gbps
98DX7332	32x25G / 8x100G-R4	800Gbps
98DX7325	24x50G / 12x100G-R2 / 6x100G-R4 / 6x200G-R4 / 3x400G-R8	1200Gbps
98DX7335	32x50G / 16x100G-R2 / 8x100G-R4 / 8x200G-R4 / 4x400G-R8	1600Gbps

Note: Some features not available on all devices. Contact Marvell Sales for further information.