

BCM78920

51.2 Tb/s StrataXGS® Tomahawk Ultra Low-Latency Ethernet Switch Series



Key Features

- Ultra-low 250 ns latency Ethernet switch
- Link Layer Retransmission (LLR) recovers link errors autonomously in hardware, improving system reliability and uptime
- Credit-based flow control (CBFC) allows very high traffic loading and link utilization without blocking, improving system performance
- In-Network Collectives (INC) are supported in hardware on-chip, accelerating standard Collective Communications Library (CCL) operations such as AllReduce
- Support for compressed network headers down to 10B (AI Fabric Headers [AFH]) to reduce network overhead and improve system performance
- Supports 64B packets at full 51.2 Tb/s without blocking or dropping
- Topology-aware routing supports advanced HPC network topologies such as Mesh, Torus, and Dragonfly

Overview

The Broadcom® BCM78920 family is a class of ultra-low latency, high-bandwidth Ethernet switch reimaged for high-performance computing (HPC) and AI scale-up applications, supporting 64 × 800GbE, 128 × 400GbE, and 256 × 200GbE ports. The device family features integrated 106.25G PAM-4 SerDes cores. The BCM78920 delivers high-performance, high-reliability, and lossless network connectivity of up to 51.2 Tb/s on a single chip.

The BCM78920 supports 250 ns latency and is designed to meet the requirements of the lossless, highly reliable networks needed by AI, ML, and HPC environments. The BCM78920 has new features optimized for AI scale up and HPC such as Link Layer Retransmission (LLR), Credit-based flow control (CBFC), and support for configurable, low-overhead network headers (AI Fabric Headers [AFH]). The BCM78920 supports over 76 billion packets per second (Bpps), processing 64B frames at the full 51.2 Tb/s, a key requirement for HPC small messages.

Benefits

The BCM78920 series provides the following benefits:

- High-performance, high-reliability Ethernet optimizes HPC and AI systems designs.
- Best-in-class 100G SerDes increases DAC cable reach to 5 meters and supports lower optics power with Linear Pluggable Optics (LPO).
- Compatible with any standard Ethernet endpoints and switches.

Applications

- AI scale-up clusters up to 256 XPU
- Multi-tier HPC clusters up to any size

Ordering Information

Part Number	Description
BCM78920A0KFRBG	51.2 Tb/s Low-Latency Ethernet Switch