

GDN-Traffic Classifier

40 Gbps packet switching

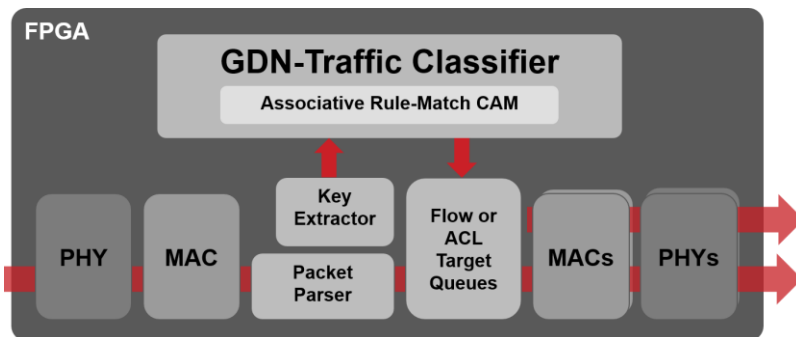
Advanced

Description:

To provision Cloud Services in rack-scale networks, GDN-Traffic Classifier forwards packets and load balances traffic across numerous hosts. For frequently accessed tables, the Top-of-Rack (TOR) such as Juniper Networks' QFX5100-24Q-AA Application Acceleration Switch evenly distributes network traffic across all of the machines that can service the same request.

Algo-Logic's Gateway Defined Networking® (GDN) Traffic Classifier can selectively forward packets from two 40 Gbps input port to multiple 10 Gbps or 40 Gbps endpoints within a Datacenter rack. Via software user-interface, rules can be programmed in the TOR to load the switching rules that determine how packets are switched and translated.

By using GDN Traffic Classifier rather than traditional x86/software switches, network operators can substantially increase their network performance with not only high throughput, but also reduce their network latency and power resulting in significantly lower Total Cost of Ownership (TCO).



To achieve this level of high performance, deterministic low latency, high throughput, and low power in datacenters networks, Algo-Logic designs 2x40 Gbps Traffic Classifiers that use its proprietary Associative Search Accelerator (ASA) and Hyper-speed Content Flow Manager (HCFM) GDN cores. Algo-Logic Systems' 2x40 Gbps GDN Traffic Classifier solutions are available today.

Applications and Use-cases:

- Optimized for rack-scale cloud service provisioning
- Perfect for north/south packet forwarding in racks
- Ideal for Top-of-Rack (TOR) load balancing
- Supports Network Function Virtualization (NFV) in Software Defined Networking (SDN)

Key Features:

- Handles full line-rate of two 40Gbps Ethernet traffic streams up to 150 million packets/second
- Deterministic, jitter-free packet processing
 - Sub-microsecond switching latency
- Supports multiple use case deployments
 - Network Address Translation (NAT)
 - 1-to-many packet forwarding
- Includes precise intra-rack latency monitoring
 - Measures delays to 6.4 nanoseconds
- Fully programmable under software control
- Large Table capacity

Implementation Platform

The QFX5100-24Q-AA Application Acceleration Switch speeds up time-sensitive applications using the QFX-PFA-4Q Packet Flow Accelerator (PFA) expansion module, which features a high-performance 320 Gbps Altera Stratix V FPGA with 1 million logical elements.



QFX5100-24Q-AA



QFX-PFA-4Q

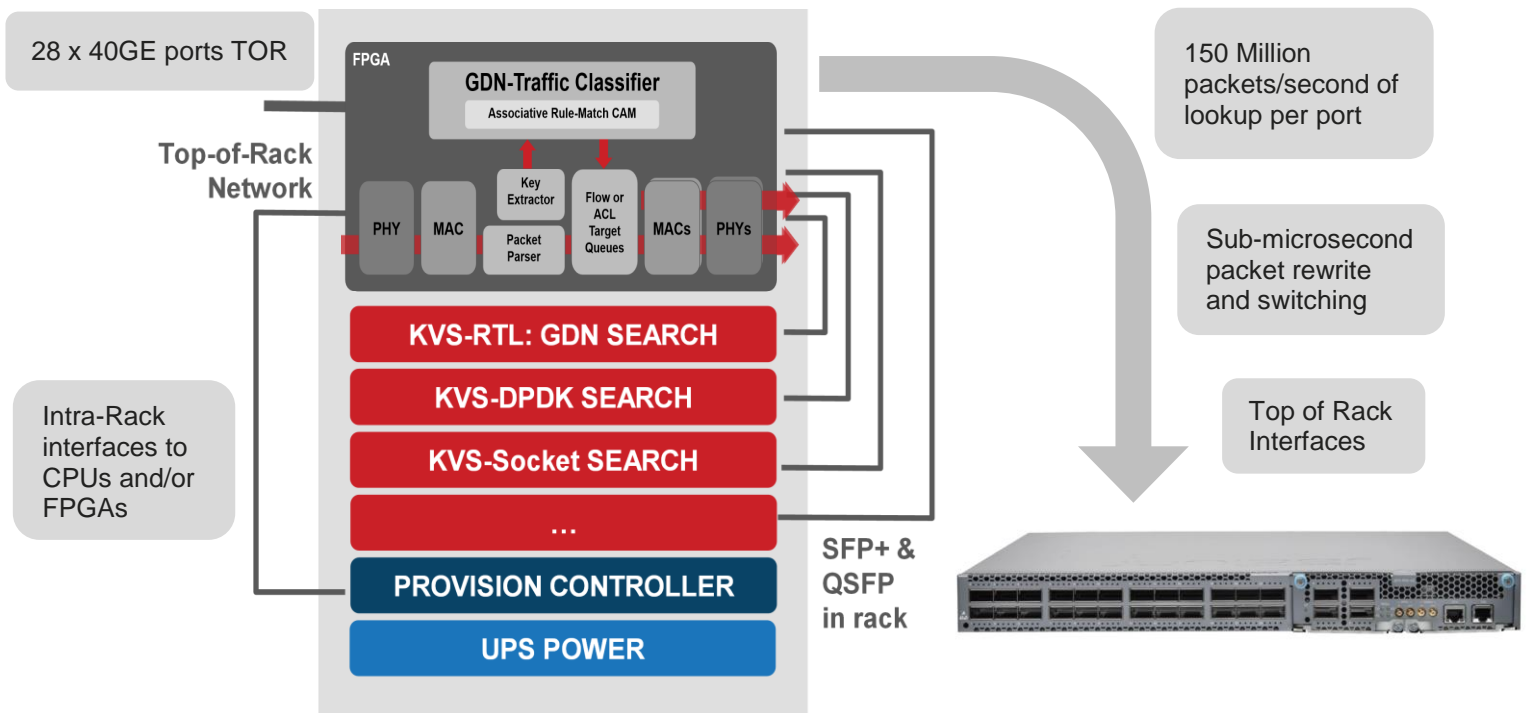
Software Controller API Options

- Command-line and GUI Interfaces
- Standard C/C++, Java, Python, and multiple other language software APIs
- RESTful web service interface for SDN

GDN-Traffic Classifier Reference Design Metrics:

Packet Forwarding Rate	Up to 150 MPPS (Million Packets Per Second) per EMSE2 core
Latency	Less than 1 microsecond (~45x less latency than with sockets)
Throughput	Line-rate network interface speeds of 40GE per port
Power Consumption Rate	Less than 0.12 μ -Joules/packet (~100x less than with software sockets)
FPGA Devices Supported	Altera Stratix V AB FPGA
Platforms Supported	Juniper Networks' QFX5100-24Q-AA Application Acceleration Switch with QFX-PFA-4Q Packet Flow Accelerator (PFA) expansion module
Overall GDN Gain vs. Software	Gains between 100x to 1000x for datacenters, storage, ISPs/HSPs & security industries

GDN-Traffic Classifier Reference Design Architecture:



Ordering Codes:

AL-GDN-Traffic Classifier: (FPGA Device) (Platform) (Interface speed) (# Ports) (Memory): Example (with sample default):

- FPGA Device: Altera Stratix V, AB
- Platform: Juniper Networks' QFX5100-24Q-AA Application Acceleration Switch with QFX-PFA-4Q Packet Flow Accelerator (PFA) expansion module
- Ethernet Interface Speed: 10GE, 40GE
- Number of Data Ports: 4 x 40Gps QSFP+
- Memory: On-Chip RAM, QDRII, DDR3