

# GDN-Traffic Classifier

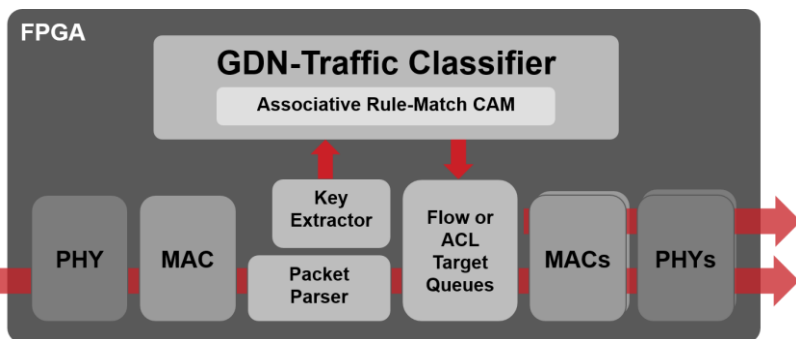
## 10/40/100 Gbps packet switching

### 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) 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 a 40 Gbps or 100 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 10/40/100 Gbps Traffic Classifiers that use its proprietary Associative Search Accelerator (ASA) and Hyper-speed Content Flow Manager (HCFM) GDN cores. Algo-Logic Systems 10/40/100 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 Ethernet traffic from
  - From 40Gbps and 100 Gbps ports
  - To 40 Gbps and 10 Gbps ports
  - Up to 150 Million packets/seconds
- 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
- Consumes significantly low power

### Implementation Platform

- Reference design fits in 1U rackmount chassis
- Portable gateway can be embedded in multiple types of customer end-products



GDN Switch-100 on Altera 100G Stratix® V GX Board

### 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

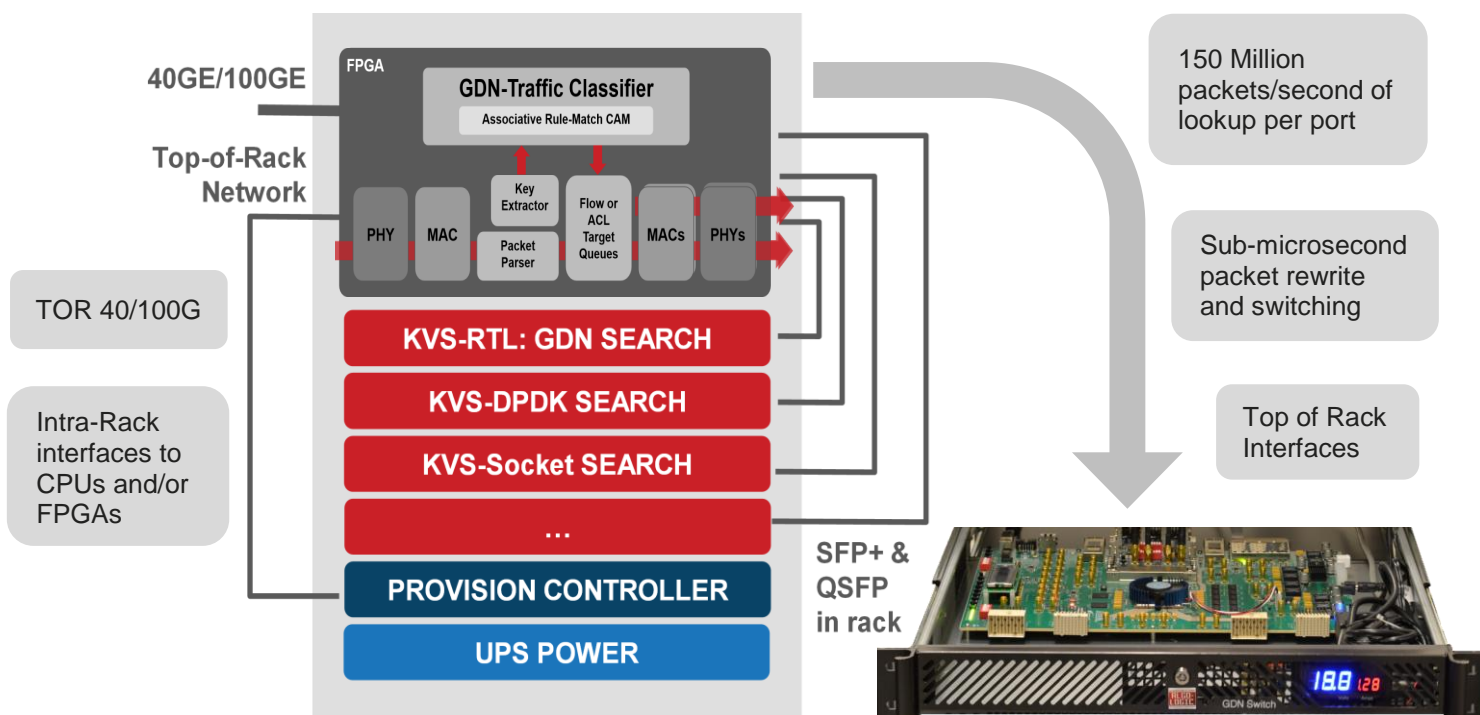
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### GDN-Traffic Classifier Reference Design Metrics:

<b>Packet Forwarding Rate</b>	Up to 150 MPPS (Million Packets Per Second) per EMSE2 core
<b>Latency</b>	Less than 1 microsecond (~45x less latency than with sockets)
<b>Throughput</b>	Line-rate network interface speeds of 40GE to 100GE per port
<b>Power Consumption Rate</b>	Less than 0.12 $\mu$ -Joules/packet (~100x less than with software sockets)
<b>FPGA Devices Supported</b>	Altera Stratix V A7, AB
<b>Platforms Supported</b>	Altera Stratix V A7 100G Development Kit GX Edition, custom HW
<b>Overall GDN Gain vs. Software</b>	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: (e.g.: Altera Stratix V, A7, AB)
- Platform: (Altera 100Gbps Stratix V GX Board, custom HW)
- Ethernet Interface Speed (10GE, 40GE and 100GE)
- Instances (Number of data ports per card: 4x SFPs, 2x QSFPs and 1 CFP)
- Memory: On-Chip RAM, QDRII, DDR3