

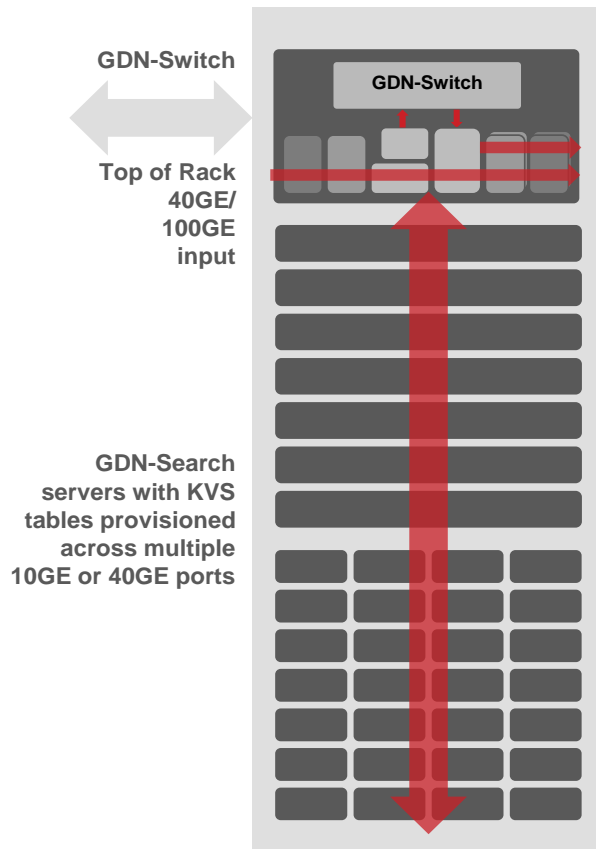
# GDN® Rack Solutions for Scalable 40G/100GE+ Datacenter Services

ALGORITHMS IN LOGIC



## Description

Algo-Logic Systems Gateway Defined Networking® (GDN) datacenter systems are comprised of a 40 Gbps or 100 Gbps Top of Rack (TOR) service mapping switch, multiple 10 Gbps or 40 Gbps Key/Value Store (KVS) servers, a Black Diamond Rackmount (BDR) power measurement server, and an Uninterruptable Power Supply (UPS) unit for battery-backed storage.



The TOR switch is equipped with Altera Stratix V 100G GX board to switch and load balance east/west data center traffic to multiple north/south KVS servers. Each 40 Gbps QSFP+ switch port services up to 7 10 Gbps SFP+ ports while each 100 Gbps port serves up to 11 SFP+ ports and/or 2 QSFP+ ports. All switching and searching is performed in FPGA hardware.

## Datacenter Applications

- 40 and 100 Gbps Ethernet Top of Rack (ToR) service switching with load balancing.
- Key Value Store (KVS) with sub- $\mu$ s latency
- N-Tuple packet classification and forwarding
- Access Control List (ACL) filtering for firewalls, routers, and flow switching.
- Network Functions Virtualization (NVF)
- In-memory database acceleration



## Key Features and Use-cases

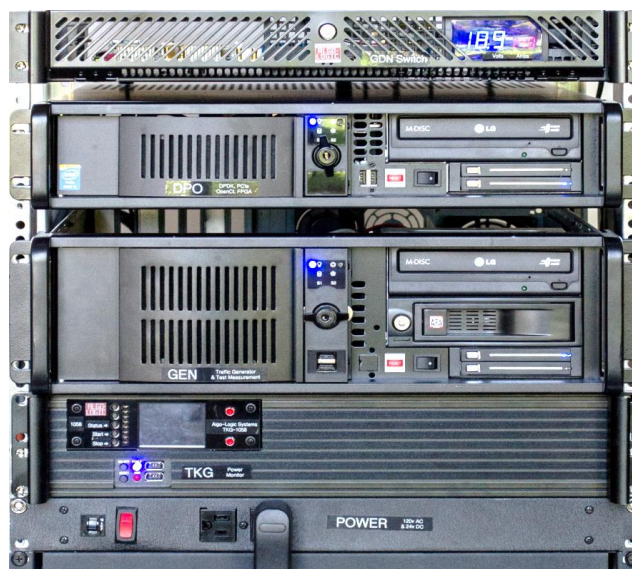
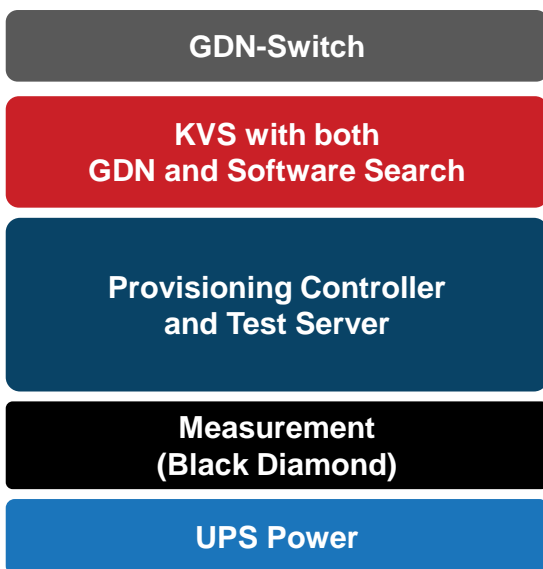
- 150 Million Packets Per Second (MSPS) of deterministic and jitter-free packet processing
- Sub microsecond Key/Value Store (KVS)
- Low power consumption rate of 0.12  $\mu$ J/message
- Flexible interface to any SDN controller
- Optional Black Diamond Rackmount (BDR) for measurement of power
- Optional UPS for battery-backed KVS

## GDN-Switch/GDN-Search System Specifications

<b>Top of Rack GDN Switch</b>	40 Gbps or 100 Gbps Input Port, each supporting up to 11 SFP+ 10 Gbps ports and/or 2 QSFP+ 40 Gbps ports.
<b>Key Value Store</b>	Sub-microsecond Key Value Store supporting up to 4 SFP+ 10 Gbps ports per FPGA card
<b>Linux Control System</b>	Intel i7 4770k, 3.4 GHz with CentOS v6.4
<b>FPGA cards Supported</b>	Stratix V Nallatech P385, DE5Net, and other FPGA cards
<b>DPDK support</b>	Intel 82598 NIC
<b>Power Measurement</b>	Black Diamond (BD) for detailed power measurements via 16 channels
<b>AC/DC Power System</b>	120/240 V AC input with internal DC power system

## Datacenter Deployment Example

The GDN Switch load balances traffic from 40G/100G TOR to multiple compute and storage servers in each datacenter rack. Key-Value Search performed with 10G/40G FPGA boards.



## Ordering Codes

AL-Datacenter Mobile Rack: (GDN-Switch ports) (GDN-Search ports) (GDN-Search platform) (Options):

- Number of 100G and 40G ports for GDN-Switch
- GDN-Switch parameters (100G, 40G, 10G)
- Number of 40G and 10GE Ports for GDN-Search
- GDN-Search Platforms: DE5Net or Nallatech P385 card with Stratix V A7
- Option 1: Traffic generation server with 40G NIC
- Option 2: BDR DC power measurement server