NoviFlow
switching made smarter

NoviSwitch™ 2128 High Performance OpenFlow Switch

NoviSwitch 2128 is an OpenFlow switch offering genuine wire-speed performance using the OpenFlow V 1.3 standard and has been specifically designed for use in high bandwidth / flow-intensive network deployments. Includes the *NoviWare™ 300* OpenFlow Switch Software for use with the EZchip high performance NP-5 network processor.

Today's major network operators demand flexible, scalable switching solutions that deliver wire-speed performance.

NoviFlow Inc.™ aims to change the traditional approach to networking by making switching smarter. The company was founded to deliver upon the promise of OpenFlow and SDN by combining the benefits of virtualization and programmability with network processors that can handle complex flows to make it possible for data centers to keep up with today's exponentially growing networking demand.

NoviSwitch 2128 was specifically designed for deployment in data centers looking to leverage the benefits of Software Defined Networking to improve the cost/performance, security, scalability and flexibility of networks. It is a compact hardware/software platform delivering maximum OpenFlow capability in a compact form factor. The system is provided in a stand-alone, self-contained, 1U rack-mountable enclosure box that can be configured to support a wide variety of networking applications to deliver unmatched performance levels.

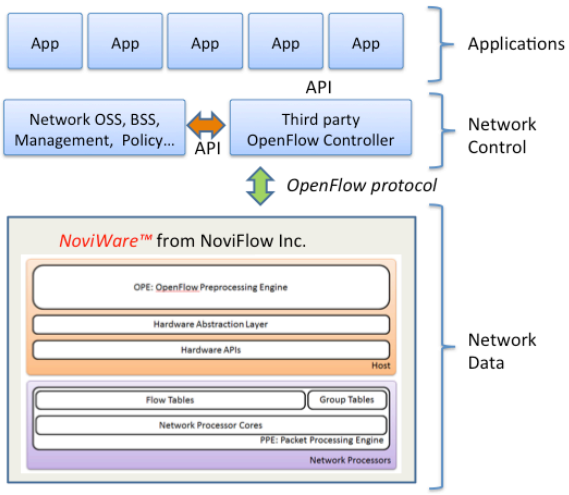
Key Features:

Features the NoviWare 300 OpenFlow switching software, supporting all required and optional OpenFlow 1.3 match fields, instructions, actions and counters, as well as key OpenFlow 1.4 features.

240 Gbps of packet processing throughput powered by an EZchip NP-5 NPU

28 data plane ports:

- *4 QSFP+ transceiver cages for 40/10GE connectivity (10GE with adaptor cable)*
- *20 SFP+/SFP transceiver cages for 10GE/1GE connectivity*
- *4 SFP+ only transceiver cages for 10GE connectivity*



Host Processor: Intel Core i7-4700EQ Quad core 2.4GHz with up to 16GB of DDR3 memory and 32GB M.2 SATA SSD for permanent storage

Up to 12,000 flow-mods/second

Supports OpenFlow pipeline processing with up to 28 flow tables (stages)

Optimized TCAM memory supports up to 1 Million entries in flow table

L4-L7 matching, packet processing and flow management based on UDP or IP packet payload via OpenFlow Experimenter Feature support (user defined UDP or IP payload match and set fields)

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Special Features:

- Support of Multicast
- Link Aggregation Group (LAG)
- Tunnel Metadata for GRE, MPLS and VxLAN
- Additional stats counters and logs:
  - Number of packets received, dropped and transmitted per protocol (e.g. VLAN, MLPS, IP, ICMP, TCP, ARP etc.)
  - Counters for all the ports together along with per port counters.
  - Logs: dropped packets, errors, table entries
  - Matching entries per protocol
  - Multipart message support
  - Queues support
  - Per-flow meters
- OF-Config 1.1.1
- O&M CLI:
  - TACACS+ for AAA services
  - Radius for CLI access control and accounting
  - Access Control Lists (allowed IP addresses) for access control to management ports
  - CLI Log with accessing IP address for configuration change traceability
  - CLI Log export to external Log server
  - SNMP traps for hardware fault alarms
  - Set max packet length per port
  - Port configuration
  - Set tables, user names, passwords
  - Remote reboot
  - Load new/rollback to previous s/w revisions
  - Show configuration for switch, controller, OF channel, tables, users
  - Set traces on/off
  - Show stats, logs, s/w revision, OF channel status
  - Manual and automatic (server based) configuration load and restore
  - VLAN on management port
  - Switch configuration export/import in binary and text format
  - Dynamic configuration and reporting via CLI

Includes OpenFlow 1.3.5 features:

- Multiple Controllers and Controller role-change
- All OpenFlow 1.3 required and optional actions, instructions, and matching fields
- IPv6 support
- Extensible match support
- Extensible 'set field' packet rewriting support
- Extensible context expression in 'packet-in'
- Multiple Tables support (pipeline processing)
- Groups for complex forwarding including multipath and fast reroute
- Logical ports
- Up to 8 queues per port (port slicing)
- On demand flow counters
- Meters (Drop, DHCP Remark) e.g. RFC2697 srTCM and RFC2698/ MEF 5 trTCM
- Tags: Push/Pop MPLS, multiple MPLS, VLAN (802.1Q) and multiple VLAN (802.1ad "QinQ") and Provider Backbone Bridging (802.1ah) tags to/from packets
- Version Negotiation
- Support for QoS (Packet flow)

Includes OpenFlow 1.4 features:

- Bundles
- Flow Monitoring

Hardware features:

- Dual redundant power supplies, each one capable of operating appliance under full load
- Power saving option: switch power usage can be reduced automatically when not under full load
- Minimum boot and soft reboot time
- Separate LEDs for link and data traffic for each data plane port
- 32 GB M.2 SATA SSD storage
- Four front-facing triple speed Ethernet ports:
  - OF1 and OF2: redundant OF Controller ports
  - CLI: Remote management via CLI (SSH)
  - MGT: for hardware management
- RJ45 serial console port (to BMI)
- USB (type A) console interface (to host)
- Power LED: Green ON, Orange Standby, Red blinking: Fault, Green blinking 1 out of 2 power supply is missing
- Alarm logs
- Linux® operating system on host
- Remote power and reset control
- Remote KVM and upgrade capability
- Platform temperature and power supply monitoring

Physical and Electrical Specifications

- EIA/TIA standard 19" rack mount in 1U high and 16" deep
- Dual Redundant 90~264V AC power supplies
- Field serviceable, reversible ventilation
  - Five (5) dual rotors fan located at the rear of the chassis
  - Each Fan rotor can be individually monitored and throttled reducing noise level under lower power load
- Operating Temperature: 0°C to +40°C
- Relative Humidity: 0% to 95% non condensing
- Compliance: FCC Class A, CE, IEC 60950
- Typical power consumption: 350W

Ordering Information

Model Number:

- 100-000-601: AC, front-to-back airflow
- 100-000-602: AC, back-to-front airflow
- 100-000-603: DC, front-to-back airflow
- 100-000-604: DC, back-to-front airflow

NoviFlow's products uniquely bring together Open Systems, Network Virtualization and fully Programmable Network Logic. Our flexible platform design makes it possible for us to customize our solutions to our customers' specific network needs, whether they run a commercial Data Center, are Network Service Providers, or are building innovative SDN applications. For more information, please visit www.noviflow.com™ or e-mail us at contact@noviflow.com