

NoviSwitch™ 1248 High Performance OpenFlow Switch



NoviSwitch 1248 is an OpenFlow switch offering genuine wire-speed performance using the OpenFlow V 1.3 to 1.5 standard and has been specifically designed for use in high bandwidth / flow-intensive network deployments. Includes the NoviWare™ 400.3 OpenFlow Switch Software for use with the EZchip high performance NP-4 network processor.

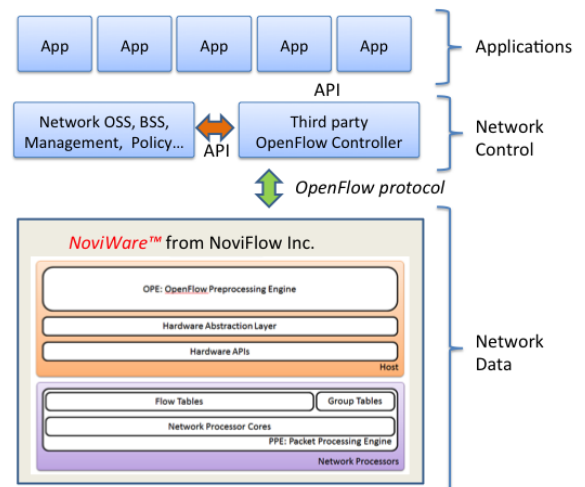
Today's major network operators demand flexible, scalable switching solutions that deliver genuine wire-speed performance. **NoviFlow Inc.™** is changing the traditional approach to networking by making switching smarter. The company delivers upon the promise of OpenFlow and Software Defined Networking (SDN) by combining the benefits of virtualization and programmability with network processors that can handle complex flows to make it possible for carriers, cloud providers and hyperscale data centers to keep up with today's exponentially growing networking demand.

NoviSwitch 1248 was specifically designed for deployment in Access Networks and 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 400.3 OpenFlow switching software, supporting all required and optional OpenFlow 1.3 and 1.4 match fields, instructions, actions and counters, as well as key OpenFlow 1.5 features.

- 400 Gbps throughput powered by two EZchip NP-4 network processors
- 48 data plane ports:
 - 20 SFP+/SFP transceiver cages for 10GE/1GE connectivity
 - 28 SFP transceiver cages for 1GE connectivity
- Up to 1 Million wildcard match flow entries in TCAM, in up to 60 tables
- Up to 3 Million exact match flow entries in DRAM, in up to 60 tables
- Up to 3,200 flow-mods/second
- Up to 250,000 meters and 10,000 entries in Groups table
- Intel Core i7-620LE processor: Dual core 2.0GHz with up to 8GB of DDR3 memory and 16GB SSD NAND flash for storage
- Extensive O&M features optimized for large scale deployments including Plug-and-Play features such as gRPC remote automated provisioning and Switch IP address set via DHCP
- Adaptors for NoviWare specific OpenFlow Experimenter-based extensions available for ODL, ONOS and RYU controllers
- OpenFlow Experimenter-based extensions:
 - L2-L7 matching, packet processing and flow management
 - OF1.5 Copy-Field also supported on OF1.3 to 1.5 through OpenFlow Experimenter action
 - Ethernet, IP, UDP, and MPLS payload matching
 - L2 tunneling protocol encapsulation/decapsulation
 - Swap fields



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NoviSwitch 1248 High-Performance Programmable Forwarding Plane Data Sheet

NoviWare 400.3 Features Summary:

- Multiple Controllers and Controller role-change
- OpenFlow version negotiation (1.3, 1.4 and 1.5)
- All OpenFlow 1.3/1.4 required and optional match fields (41 of 41)
- All OpenFlow 1.3/1.4 instructions (6 of 6)
- 59 of 60 OpenFlow 1.3/1.4 actions
- TAGS: Push/Pop MPLS, multiple MPLS, VLAN (802.1Q), multiple VLAN (802.1ad "Q-in-Q") and Provider Backbone Bridging (802.1ah "MAC-in-MAC") tags to/from packets
- Flexible flow entry width (10B, 20B, 40B or 80B) for wild card matching in TCAM based flow tables
- 48-byte flow entry width for exact matching in DRAM based flow tables
- Multiple tables support: any match field or combination of match fields, any instruction and any action may be used in any table
- Group Table supporting all Group types for complex forwarding such as multicasting
- Up to 8 queues per port (port slicing)
- Up to 1 Million meters (Drop, DHCP Remark) compliant with RFC2697 srTCM and RFC2698/MEF 5 trTCM
- Bundles, Eviction, Vacancy Events, Role Status Events, Group and Meter change notifications
- Link Aggregation Group (LAG) with dynamic provisioning of ports
- Up to 32-byte wide user defined (width and offset) IP and UDP payload exact or wild card match fields and maskable set fields actions through experimenter match field and actions
- Network virtualization via transport of Ethernet frames inside VxLAN/L2GRE/L2MPLS/GTP frames
- MPLS networks for layer 2 PTP or PTMP MPLS services

Special Features:

- Support of Multicast
- Support for fan-out cables (for 40 Gbps ports)
- BFD Link Monitoring
- Tunnel Metadata for GRE, MPLS and VxLAN
- Matching on Logical Port
- Additional stats counters and logs:
 - Number of packets received, dropped and transmitted per flow
 - Per port counters
 - Logs: errors, table entries
 - Matching entries per protocol
 - Multipart message support
 - Queues support
 - Per-flow meters
- O&M Features:
 - TACACS+ for AAA services
 - RADIUS for CLI access control and accounting
 - Access Control Lists (allowed IP addresses) for switch management ports
 - VLAN on management ports
 - CLI command log file with accessing IP address for configuration change traceability
 - CLI command log file export to external server
 - Load new/rollback to previous switch software revision

- Set port configuration, set tables, user names, passwords
- TLS CA certificates
- Commands for adding and deleting flow entries
- Set traces on/off for monitoring of OpenFlow messages to/from the controller
- Show configuration for switch, controller, OF channel, tables, users
- Show switch stats, logs, software revision, OF channel status
- Manual and automatic (remote server based) switch configuration
- Switch configuration file export/import to remote server in binary and text formats
- OF-Config 1.1.1/1.2
- SNMP v2/v3 traps for hardware fault alarms, SNMPGet, SNMPwalk (port status, CPU usage, etc.)
- Redundant physical OF Channel ports

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
- Support for QoS (Packet flow)
- Better handling of Packet_In using buffers
- Minimum boot and soft reboot time
- Separate LEDs for link and data traffic for each data plane port
- 16 GB NAND flash for storage
- Internal 480 Gbps switching fabric
- External facing triple speed Ethernet port for OpenFlow management
- Equipped with standard board management controller [BMC] Interfaces on front panel
 - Triple speed Ethernet port for remote access
 - RJ45 serial console port
 - USB port (type A) to host CPU
- Power LED: Green ON, Orange Standby, Green blinking missing power supply, Red blinking: Fault, Green blinking 1 out of 2 power supply is missing
- Alarm LED: Red blinking for alarm
- Event logs
- Linux® operating system
- 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, 1U, 21" deep
- Dual Redundant 90~264V AC power supplies
- Front-to-back ventilation
 - Six (6) dual rotors fan located rear of chassis
 - Each Fan rotor can be individually monitored and throttled reducing noise level under lower power load
- Operating Temperature: 0°C to +45°C
- Relative Humidity: 0% to 95% non condensing
- Compliance: FCC Class A, CE, IEC 60950
- Typical power consumption: 500W

Ordering Information (Model Number)

- Model Number: 100-000-002

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 flow management, cybersecurity or SDN applications. For more information, please visit www.noviflow.com™ or e-mail us at: contact@noviflow.com