PICOS Open vSwitch Configuration Guide

The OpenFlow protocol is driven by ONF (Open Networking Foundation), a leader in software-defined networking (SDN). The OpenFlow protocol encompasses three essential components of an SDN framework:

1. A physical OpenFlow switch.
2. A virtual OpenFlow switch to manage virtual machines.
3. An OpenFlow controller, to organize all network pieces.

Warning:

On N3048EP-ON, N3048ET-ON and N3132PX switches, run "save_config" command when set OVS commands. Otherwise, the OVS configuration will be lost after PicOS reboot. For detail, please refer to Configuration Saving Guide.

The Pica8 PicOS software supports features in OpenFlow 1.0 / OpenFlow 1.1 / OpenFlow1.2 / OpenFlow 1.3.x and OpenFlow 1.4. The details of feature supports in OpenFlow1.3.0 and OpenFlow 1.4.0 please see PicOS Support for OpenFlow 1.3.0 and PicOS Support for OpenFlow 1.4.0.

The following websites provide detailed information on Open vSwitch and the OpenFlow protocol.

- **Open vSwitch:** http://openvswitch.org
- **OpenFlow:** http://www.opennetworking.org/sdn-resources/openflow

PicOS can run in two different modes:

- **OVS (Open vSwitch) mode:** In this mode, PicOS is dedicated and optimized for Openflow applications.
- **L2/L3 (Layer 2/Layer 3) mode:** In this mode, PicOS can run switching and routing protocols, as well as OpenFlow applications

In OVS mode, L2/L3 daemons are not running; the system is fully dedicated to Openflow and OVS.

In L2/L3 mode, L2/L3 daemons are running, but OVS can also be activated if CrossFlow is activated.

This chapter assumes that the PicOS OVS mode is active. Please see PICOS Mode Selection to modify the PicOS mode.

The N1148T-ON switch does not support OVS features.

OpenFlow Support Matrix

- PicOS Support for OpenFlow 1.3
- PicOS Support for OpenFlow 1.3.0
- PicOS Support for OpenFlow 1.4
- PicOS Support for OpenFlow 1.4.0

Introduction to Open vSwitch

Introduction to OpenFlow

OVS Web User Interface

- Login Interface
- Monitoring the Switch
- Adding a Bridge
- Add a Port
- Add GRE Port
- Add Group Table
- Add or Edit a Controller
- Edit Flow Tables
- Edit Lag Interface

Configuring Open vSwitch

- Basic Configuration in OVS Mode
- Configuring sFlow v5
- Configuring Port Mirroring
- OVSDB file
- OVS LLDP
- Enabling Radius in PicOS OVS Mode
- Inventory Database
- Broadcom Chip Limitation in OVS
- OVS CLI Enhancements
- Configuring Meter
- Configuration saving
- Configuring Buffer management

- Configuring snmp
- Configuring Precision Time Protocol
- Configuring Tunneling
- Configuring Bridge and Ports
- Configuring LAG and LACP
- Configuring QoS
- Configuring Flow Table
- Configuring Group
- Configuring Controller or Manager
- Configuring Counter
- Switching Open vSwitch version
- Configuring rate limit
- Configuring IPv4/IPv6 address for management port
- Configuring the Duplex Mode of Optical Port

Examples and Topologies

- 802.1Q VLAN
- ECMP
- GRE Tunnel
- MPLS Network
- Multiple Virtual Bridges
- SSL Connection to Controller

PICOS OpenFlow Tutorials

- Basic Bridge Configuration
- Basic Flow Configurations
- Connection to a RYU Controller
- Connection to OpenDaylight Controller
- Connection to a Floodlight Controller
- Configuration Guide for Atrium Stack on ONOS Controller

Feature Supported in PicOS OVS

- Feature supported in different platform
- Match fields supported