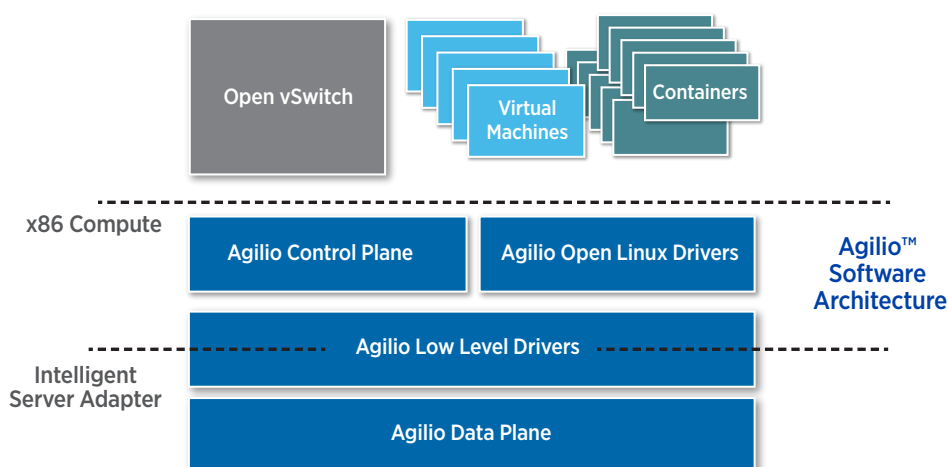


# Agilio OVS Software

## OFFLOAD AND ACCELERATE SERVER-BASED NETWORKING

Operators are challenged to do more with their compute resources. There is a constant strive to extract the maximum output per service, application, or virtual machine (VM) while keeping costs as low as possible. Optimizing on dimensions such as networking PPS per CPU cycle, PPS per Watt, and PPS per dollar are critical to the success of a data center. Agilio OVS Software, combined with Agilio intelligent server adapters (ISAs), significantly improves server-based networking performance and restores valuable CPU cores by offloading Open vSwitch (OVS) and Linux networking functions to Netronome's family of ISAs.

The Agilio solution is a drop-in accelerator for OVS with seamless integration, making it compatible with existing network tools and controllers. Use cases for Agilio include compute nodes for IaaS or SaaS, Network Functions Virtualization (NFV), and non-virtualized service nodes, among others. In these use cases it is common to have a large number of network overlays and/or security policies that are enforced on the server potentially several thousands of policies per VM. Agilio provides the ability to support very high flow and policy capacities without degradation in performance.



### KEY FEATURES

- Full offload of OVS data path to Agilio intelligent server adapter
- Connectivity to VMs over SR-IOV
- Tunnel termination for VXLAN and NVGRE tunnels
- Standard host interfaces through Linux netdev and DPDK Poll Mode Driver (PMD)
- Configuration through standard OVS tools (ovsctl) and protocols (OVSDB, OpenFlow)
- Integration with cloud orchestration, such as OpenStack, through OVS
- Offload for millions of microflows
- Support for 64K rules and policies
- Traditional networking offloads for overlay and underlay packets

### BENEFITS

- 5X to 10X improvement in vSwitch performance
- Low CPU consumption: 1 CPU core for control plane
- Improved VM density and application performance
- High scale for tunnel capacity and security policies
- Leverage pre-existing networking software and automation tools
- Open source drivers



## VERSION 2.1 FEATURES AND SPECIFICATIONS

Open vSwitch Offload	<ul style="list-style-type: none"> <li>• Version 2.3.90</li> <li>• Offload kernel data path</li> <li>• Acceleration via Exact Match Flow Cache</li> <li>• Transparent offload via OVS fallback and data path hooks</li> <li>• OVSDB (configuration)</li> <li>• OpenFlow Protocol (data path)</li> <li>• OVS CLI</li> <li>• Optional Local Flow API</li> <li>• Stand-alone or Controller modes</li> <li>• OVS statistics</li> <li>• Match/Action Offload</li> <li>• NVGRE tunnel encap/decap</li> <li>• VXLAN tunnel encap/decap</li> </ul>
Advanced Features	<ul style="list-style-type: none"> <li>• Load Balancing for up to 32 OF Groups to Host and to Ports</li> <li>• Sample applications and configs</li> <li>• Data path bypass</li> </ul>
Networking I/O	<ul style="list-style-type: none"> <li>• 60 Data path VFs</li> <li>• 60 netdevs, or</li> <li>• 60 DPDK PMD instances</li> <li>• SR-IOV</li> <li>• Checksum offloads (inner and outer headers)</li> <li>• NIC stats via Ethtool</li> <li>• Jumbo frame support</li> </ul>
Operating Systems	Ubuntu 14.04, CentOS/RHEL 7, Linux Kernels 3.13 - 3.19
Supported Platforms	<ul style="list-style-type: none"> <li>• Agilio CX dual-port 10GbE Intelligent Server Adapter</li> <li>• Agilio CX single-port 40GbE Intelligent Server Adapter</li> <li>• Agilio LX dual-port 40GbE Intelligent Server Adapter</li> <li>• Agilio LX single-port 100GbE Intelligent Server Adapter</li> <li>• PCIe expansion for each of the Agilio LX Intelligent Server Adapters</li> <li>• 4x10GbE Breakout cables for 40GbE interfaces</li> <li>• 10x10GbE Breakout cables for 100GbE interfaces</li> <li>• Advantech FWA-6522C platform</li> </ul>

## OVS Actions

- Output to port
- Fallback to userspace
- Set header
  - Set tunnel header: Sets tunnel fields tun\_id, ipv4\_src, ipv4\_dst, tun\_flags, ipv4\_tos, and ipv4\_ttl.
  - Set ethernet header
  - Sets ethernet fields eth\_src, and eth\_dst.
  - Set IPv4 header
  - Sets IPv4 fields ipv4\_src, ipv4\_dst, ip\_tos, and ip\_ttl.
  - Set IPv6 header
  - Sets IPv6 fields ipv6\_src, ipv6\_dst, ip\_tos, and ip\_ttl.
  - Set TCP header
  - Sets transport layer fields tp\_src, and tp\_dst.
  - Set UDP header
  - Sets transport layer fields tp\_c, and tp\_dst.
  - Set MPLS header
  - Sets MPLS top label stack entry.

Push VLAN header

Pop VLAN header

Push MPLS header

Pop MPLS header

## OVS Match Fields

- Tunnel ID
- Tunnel IPv4 Source
- Tunnel IPv4 Destination
- Tunnel Flags
- Tunnel IPv4 TOS
- Tunnel IPv4 TTL
- Input port
- Ethernet source address
- Ethernet destination address
- Ethernet TCI
- Ethernet Type
- MPLS top label stack entry
- IPv4 source address
- IPv4 destination address
- IPv6 source address
- IPv6 destination address
- IPv6 flow label
- IP protocol
- IP TOS
- IP TTL
- IP Fragmentation
- Transport layer SRC
- Transport layer DST
- Transport layer flags



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