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# **OF-DPA 2.0 GA Release Notes**

Version 1.2

28-Mar-2016

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## **1 Overview**

OF-DPA is a software component that provides a hardware adaption layer between OpenFlow and Broadcom switch ASICs.

OF-DPA 2.0 GA is the next major release after OF-DPA1.0. This version adds the following new features:

- SDK 6.4.7
- MPLS-TP VPWS
- MPLS LSR
- MPLS L3 VPN
- MPLS LSR ECMP
- MPLS ACL
- MPLS 1:1 protection
- Bridging and Routing QoS
- MPLS QoS
- Policy ACL Meters
- L2 Policer Meters
- Ethernet Service OAM
- G.8113.1 OAM for MPLS-TP
- Section OAM
- VLAN translation, Ingress and Egress.
- Egress PCP-DSCP Remark Table
- Color Blind actions in Policy ACL table
- Platform support for:
  - Accton AS6700
  - Celestica Redstone XP
  - Quanta LY2
  - Quanta LY2R
  - Quanta LY8
- Fixes to issues found in earlier releases

Support is available for L2, L3 and ACL with the following limitations:

- The output to CONTROLLER instruction is not supported.
- A goto table of zero is not supported (except on the Policy ACL flow table which requires a goto table of zero)
- The Clear Actions instruction is not supported.
- ECMP for L3 forwarding is not supported.

OAM support also continues to be of EA3 quality.

## **2 Deliverables**

### **2.1 Date of Delivery**

02/16/16

### **2.2 Distribution Method**

GitHub.

### **2.3 Items included in delivery**

Following are the items included in this delivery:

- OF-DPA 2.0 GA Software (includes Indigo OpenFlow agent)
- OF-DPA 2.0 GA Doxygen Documentation
- OF-DPA 2.0 GA Release Notes

### **2.4 OpenFlow Controllers and Agents**

The following OpenFlow Controllers were used for limited testing of this release:

- RYU extensions, EA quality (fork from v3.26)
- dpctl extensions, EA quality (fork from v1.3.0)
- Open Daylight; EA quality (Helium SR3 version 3.0.1)

The following OpenFlow Agents are supported in this release:

- Indigo 2.0 extensions to support OF-DPA 2.0 Experimenter protocol definitions.

## **3 Platform Support**

This release contains support for the following platforms:

- Accton AS6700
- Celestica Redstone XP
- Quanta LY2
- Quanta LY2R
- Quanta LY8

### 3.1 Supported Features

The following table identifies which features are supported on which platforms in OF-DPA 2.0 GA CDP.

Features supported in OF-DPA 2.0 GA CDP							
Feature	Spec (v1.75) Section	All XGS Platforms	Accton AS6700-32x	Celestica Redstone XP	Quanta LY8	Quanta LY2	Quanta LY2R
Bridging and Routing	3.2	GA	GA	GA	GA	GA	GA
Policy ACL	3.2	GA	GA	GA	GA	GA	GA
Policy ACL MAC + IPv6 wide match	3.2		GA	GA	GA		
Data center overlay tunnels (VxLAN)	3.3		GA	GA	GA		
MPLS ECMP Groups		GA	GA	GA	GA	GA	GA
MPLS-TP VPWS PE	3.4.1	GA	GA	GA	GA	GA	GA
MPLS L3 VPN LER	3.5	GA	GA	GA	GA	GA	GA
MPLS LSR	3.6	GA	GA	GA	GA	GA	GA
Bridging and Routing QoS	3.8.3	GA	GA	GA	GA	GA	GA
MPLS QoS - Trust Tables	3.8.5	GA	GA	GA	GA	GA	GA
VLAN translate		GA	GA	GA	GA	GA	GA
Egress PCP DSCP Remark Table		GA	GA	GA	GA	GA	GA

## 4 Testing

GA level testing has been done for all features with the exceptions below for which only development level testing has been done and claimed to be at par with EA3 quality:

- OAM feature support
- DPCTL (v1.3.0)
- RYU (v3.26)
- OpenDaylight Controller (Helium SR3 v 3.0.1)

## 5 Known Issues

The following table lists the known issues with this release. Additional platform related feature support limitations are located in the Doxygen documentation.

Key	Summary	Customer Experience	Workaround Available	Frequency, Likelihood, Severity?
<a href="#">FP-237308</a>	Wrong "outPort" detail is displayed in ./client_flowtable_dump of Termination MAC flow entry when action as Copy to Controller port is applied .	Display issue in debug command	No	Only display issue. No functionality impact.
<a href="#">FP-237134</a>	Incorrect lmCounters.tNFLR value in Loss measurement counters	Incorrect Loss measurement counter calculation	No	Happens all the time. OAM support only EA3 quality.
<a href="#">FP-236909</a>	Traffic is not forwarding to configured Queue with Policy ACL on LY2R Quanta platform	Traffic will not be forwarded to configured queue resulting in default QoS behavior	No	Happens all the time
<a href="#">FP-236701</a>	IP Multicast packets are not routed when egressing an MPLS L3 VPN tunnel	Failure in IP Multicast routing for packets egressing MPLS L3 VPN	No	Happens all the time.
<a href="#">FP-236473</a>	LM Counters are not incremented in ETHERNET-OAM, if we remove "oamLmRxCountAction" from Egress Maintenance Point Flow Table.	LM functionality for Ethernet OAM will not work	No	Happens all the time.
<a href="#">FP-236371</a>	OFDPA: ECN value set in IPV6 Policy ACL flow entry is not getting marked in the egress packet on some platforms.	Policy ACL QoS action fails on IPv6 egress packet	No	Happens all the time.
<a href="#">FP-236024</a>	Rule - 10 in vlan flow table - Priority tagged traffic is getting dropped at ingress port.	Priority tagged traffic dropped at ingress on a VPWS tunnel.	Yes. use MPLS L2 Allow All Traffic on Port flows in the VLAN table.	Workaround available to be used.

Key	Summary	Customer Experience	Workaround Available	Frequency, Likelihood, Severity?
<a href="#">FP-236020</a>	Rule - 9 in vlan flow table - Untagged traffic is getting dropped at ingress port.	. Untagged traffic dropped at ingress on a VPWS tunnel.	Yes. use MPLS L2 Allow All Traffic on Port flows in the VLAN table.	Workaround available to be used.
<a href="#">FP-234078</a>	OFDPA: QOS fields- Vlan PCP, Vlan DEI, DSCP fields remarking is not done properly using Egress DSCP PCP remark actions in specific platform	Egress DSCP table does not match on non zero traffic class values.	No	Platform specific issue with a non lead platform on particular configuration. This works fine on our lead platforms.
<a href="#">FP-234074</a>	OFDPA: In Ethernet OAM during CCM packet exchange, port rx packets count is not incrementing	CCMs will not update the packet counters	No	Happens all the time. OAM support only EA3 quality.
<a href="#">FP-233599</a>	Agent sent OFPT_ERROR messages in reply to OFPT_MULTIPART_REQUEST OFPMP_TABLE_FEATURES message",	The expected info is returned to the controller, so not a functionality issue, just an incorrect msg type.	No	Display message issue. Overall functionality is fine.
<a href="#">FP-233354</a>	OFDPA: QOS fields remarking of Egress DSCP PCP actions are overridden by QOS field actions in Policy ACL flow entry.	ACL actions will have higher priority over Egress DSCP table actions for the same action fields	Yes. Use either ACL or Egress DSCP table to configure egress packet header fields	Customer would need to use the work-around
<a href="#">FP-233278</a>	OFDPA: Traffic belonging to a certain traffic class is not flowing through the mapped egress CoS queue in L2 and L3 Multicast	Traffic Class to cos queue mapping fails.	No	LY2R Platform specific issue which is a non lead platform on particular configuration. This works fine on our lead platforms.

Key	Summary	Customer Experience	Workaround Available	Frequency, Likelihood, Severity?
<a href="#">FP-232409</a>	Ipv4 traffic (with increment in Src ip address) is not getting load balanced to ECMP paths.	Traffic will not be load balanced with ECMP in TD+	No	Problem occurs only on a single platform all the time.
<a href="#">FP-232332</a>	OFDPA: Ports are not UP when we connect some platforms	Specific cable issue.	Yes. Use a different cable. Ports link up with DAC, Avago transceivers and a fiber cable.	Appears to be specific to a cable. Other cables work.
<a href="#">FP-231728</a>	Loss Measurement counters are not updated as expected	Incorrect updates of LM counters	No	Happens all the time. OAM support only EA3 quality.
<a href="#">FP-231698</a>	OFDPA: OAM endpoint creation fails when MPLS flow entry for Tunnel OAM is created without any PW flows.	Tunnel OAM will not work on LSRs.	No	Happens all the time. OAM support only EA3 quality.
<a href="#">FP-230159</a>	TSR Originated: OF-DPA/Indigo group all delete functionality.	Group delete all fails	Yes. Groups can be deleted one at a time.	Customer would need to use the work-around
<a href="#">FP-228756</a>	LBR is not received when LBM is initiated with lbpaket length greater than 1493	Loopback test fails with LBM packet greater than 1493 bytes	Yes. Smaller LBM packet needs to be used.	Customer would need to use the work-around
<a href="#">FP-228712</a>	MIP creation with the same MEG index as MEP is failing with error code -32.	For BHH, we cannot have MIPs and MEPs with the same MEG on a single switch.	No	Happens all the time. OAM support only EA3 quality.
<a href="#">FP-226147</a>	OFDPA: Memory issue while loading python after installing latest OFDPA build on LY2R platform.	Configuration using local python scripts is not possible due to the unavailability of python on the switch.	Yes. Use Indigo agent and a Controller to configure OF-DPA.	OF-DPA functionality is not impacted.



Key	Summary	Customer Experience	Workaround Available	Frequency, Likelihood, Severity?
<a href="#">FP-225913</a>	Service Metering is not working for Yellow and Red traffic.	Color Aware Service meter does not consider incoming packet color in this particular sequence of configuration	Yes. The ingress port trust flow entry should be configured before any MPLS configurations	Customer would need to use the work-around
<a href="#">FP-225838</a>	OFDPA: VLAN tagged priority traffic is not forwarding to configured port queue	Traffic is directed through default queue. May be an issue during congestion.	No	Issue appears only on a particular platform
<a href="#">FP-225568</a>	TrafficClass in MPLS flow table when applied in "mpls l2 vpn flow" doesn't work due to SDK issue	Egress ethernet traffic is not marked with appropriate qos header fields in the termination direction.	No	Happens all the time.
<a href="#">FP-224988</a>	OFDPA: Only one port(10G mode) is coming up, when we connecting back to back link between platforms with 40G Fiber DAC cable.	Only one of the 4 physical ports come up.	No	Happens only on one platform which is not a lead platform for this release. Other platforms work fine.
<a href="#">FP-224500</a>	LY2R - QSFP LEDs do not work correctly.	Port LEDs only work on SFP+ ports.	No	Cannot monitor QSFP port status by observing the LEDs.
<a href="#">FP-223361</a>	Python installation is getting failed in LY2 DUT because of memory problems.	Configuration using local python scripts is not possible due to the unavailability of python on	Yes. Use Indigo agent and a Controller to configure OF-DPA.	OF-DPA functionality is not impacted.

Key	Summary	Customer Experience	Workaround Available	Frequency, Likelihood, Severity?
		the switch.		
<a href="#">FP-223187</a>	OFDPA: When client_cfg_purge command is issued, clear or disable all tests and session on a given MEP before deleting MEP config.	Customer might see some OAM traffic for some time even after deleting MEG/MEP/MIP configuration and it happens all the time.	Yes. Disable all running tests before clearing configuration.	Customer would need to use the work-around
<a href="#">FP-223008</a>	Observing ECC errors messages on console after execute the loopback script.	Packet transmission on port 10 will not work and it happens all the time.	Yes. Use Port 9 instead of Port 10	Customer would need to use the work-around
<a href="#">FP-222598</a>	Green, Red and Yellow packets(egress) ordering is not in sequence in Policy metering.	Sequence of packets marked with different colors is unpredictable.	No	Overall packet metering functionality works fine
<a href="#">FP-222331</a>	Inconsistency in field names of Loss measurement counters in OFDPA spec and OFDPA 2.0 reference manual.	Inconsistent field names seen	No	This is a Cosmetic issue. No functionality impact.
<a href="#">FP-221898</a>	OFDPA - Maximum VLAN flow entries configuration result in error on platform	Maximum flow entries will not be configured.	No	Overall functionality is not affected. Can't scale to max entries.
<a href="#">FP-221842</a>	Why group bucket modification is not supported for "MPLS Label Group", also the error code provide while trying to modify it is not correct.	Unable to modify MPLS label group	Yes. To modify group bucked, it needs to be deleted and added again.	Customer would need to use the work-around
<a href="#">FP-221743</a>	MPLS_LSR - PW Ethernet CW and sequence number are set even though these are not configured.	Ccntrl Word is seen in the packet.	No	Control word will be handled by the receiver. No major

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Key	Summary	Customer Experience	Workaround Available	Frequency, Likelihood, Severity?
				functionality impact.
<a href="#">FP-221311</a>	Accton-6700:while booting got the warning like "WARNING: (usb2_off) could not find compatible node fsl-usb2-dr: FDT_ERR_NOTFO	Harmless error message.	No	Overall functionality is not affected.
<a href="#">FP-220872</a>	OFDPA - Getting a message while transferring the required files using tftp for the first time.	Harmless message.	No	Message shows up on console.
<a href="#">FP-214835</a>	LY8 LEDs turn off when sending traffic on a port	Display issue. No major functionality impact.	No	Inability to detect traffic through port LEDs.
<a href="#">FP-194036</a>	OF-DPA:ACL redirect issues on tunnel port	Policy ACL redirection does not work correctly with Overlay Tunnels	No	Happens all the time.
<a href="#">FP-192796</a>	OF-DPA: On modifying the physical port number in tunnel next hop flow ,packets other than UDP (IP,VLAN,ETHERNET) are also r	Malformed packets seen at egress on next hop flow modification	Yes. Use delete and add tunnel_next_hop instead of modifying it	Customer would need to use the work-around
<a href="#">FP-192368</a>	OF-DPA: Traffic does not hash between the VTEPs with incrementing source mac.	Doesn't prevent traffic from flowing. Only an issue if one physical link is saturated	No	Possible degraded performance in this situation
<a href="#">FP-185121</a>	OF-DPA: Encapsulated packet does not come out with new multicast address after modification of tunnel next-hop	Incorrect multicast address in egress packet	Yes. The caller should delete the VXLAN endpoint port and reconfigure it with the new mcast next hop information.	Customer would need to use the work-around

Key	Summary	Customer Experience	Workaround Available	Frequency, Likelihood, Severity?
<a href="#">FP-185080</a>	OF-DPA:Traffic still received on the egress ports of tunnel though bridging entry is deleted.	It is not that a functionality is 'not working'	No	In specific configurations, user could see traffic received on the egress ports of the tunnel when the bridging entry is deleted

## 6 Issues Fixed Since OF-DPA 1.0.0.1

The following issues were fixed since release 1.0.0.1:

Key	Summary
<a href="#">FP-184285</a>	OFDPA:Traffic is not distributed according to the configured minrate and max rates to the queues on egress port.
<a href="#">FP-184170</a>	Received packets counter is not incrementing if the received packet frame size is > 64 bytes.
<a href="#">FP-183886</a>	Get and clear port queue stats fails on platform.
<a href="#">FP-183818</a>	Able to configure invalid values for port advertising feature.

## 7 Previous Releases

Date	Release Number	Feature Set
4/8/2014	OF-DPA 1.0	ACL, Bridging, Unicast Routing (Ipv4/IPv6), Multicast Routing (IPv4, IPv6), Packet-In, Packet-Out, VxLAN, Port events, Flow age events, Indigo OpenFlow Agent, Interop with RYU Controller