

This Quarter's Highlights Include:

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DPDK Moves to The Linux Foundation

At the recent Open Networking Summit, Jim Zemlin, Executive Director of The Linux Foundation, announced that the DPDK project has moved to The Linux Foundation. This is the culmination of work that's been occurring in the open source community since October of last year, and helps to position DPDK for continued growth. Initial project members include:



DPDK 17.05 Released

DPDK 17.05 was successfully released on Thursday 11th May, and is now available for [download from dpdk.org](#). The release contains a number of significant enhancements, including:

- **New PMDs were added in this release for:**
 - Cavium's LiquidIO II server adapter.
 - NXP's Data Path Acceleration Architecture Gen2 (DPAA2),

Open Source Project

[Open source website](#)
[Source code](#)
[Documentation](#)
[Mailing lists](#)
[Public Roadmap](#)

2017 Events

Our first ever DPDK Summit in India was held in Bangalore on April 25th and 26th. See the [DPDK Summit India 2017](#) section below for details.

A half-day mini summit on DPDK and FD.io will be held at the [OPNEV Summit](#) in Beijing on Tuesday 13th June. There will also be a half-day mini summit on FD.io on the same day.

Plans for other DPDK Summits in 2017 are being investigated now that the transition of the project to The Linux Foundation is complete. Plans will be announced as soon as they're finalized.

Meet-Ups and Training:

Out of the Box Network Developers Meet-Ups are now taking place in the following locations:

[Santa Clara](#)
[Portland](#)
[Bangalore](#)
[Dublin](#)

[Intel® Developer Zone SDN/NFV Dev Lab](#), Tuesday

- including a new bus driver (FSLMC).
- o Atomic Rules Arkville, which supports data movement on FPGAs.
- o Wind River's Accelerated Virtual Port (AVP), which is a shared memory device only available on virtualization platforms from Wind River Systems.
- **Cryptodev Enhancements:**
 - o **DOCSIS BPI+:** To enable DPDK crypto support for the cable segment, the cryptodev API has been enhanced to enable processing of packets according to the Baseline Privacy Interface Plus (BPI+) specification described in the Data-over-Cable Service Interface Specification (DOCSIS) Security Specification.
 - o **Packet-Based Scheduler:** This allows packets to be encrypted/decrypted in either SW or HW depending on packet size and HW utilization. Reordering will be supported so that packet order can be preserved. This allows an application to make optimum use of both hardware accelerators and cores, by encrypting/decrypting smaller packets in software thereby saving the offload costs, and handling larger packets in hardware where the benefit of acceleration outweighs the offload cost.
 - o **NXP DPAA2 Support:** A new PMD was added for NXP's Data Path Acceleration Architecture Gen2 (DPAA2) crypto accelerators.
- **Generic APIs:**
 - o **Eventdev API:** The eventdev API allows DPDK to be used with an event-driver programming model. The API itself, a software implementation contributed by Intel, and a hardware implementation from Cavium based on the Octeon TX™ have all been added to 17.05.
The Eventdev API provides an alternative way to build DPDK applications. In a polling model, lcores poll ethdev ports and associated Rx queues directly to look for packets. In an event-driven model, by contrast, lcores call the scheduler that selects packets for them based on programmer-specified criteria. This allows applications to avail of automatic multi-core scaling, dynamic load balancing, pipelining, packet ingress order maintenance, and synchronization services to simplify application packet processing.
Use of the eventdev API is optional. Applications are free to choose whichever model (polling, event-driven, or a combination of the two) best suits their needs.
 - o **Mbuf Enhancements:** These included: reorganizing the mbuf structure including extending the port and number of segments fields to 2 bytes, and adding a timestamp field; adding an mbuf raw free API; adding a free Tx mbuf on demand API.
- **Virtualization Enhancements:**
 - o **Generic Vhost API:** The vhost library was modified to make it more generic, so that other vhost-user drivers can be built on top of it. This can be used in future to support new device types such as SCSI and block.
- **Service Assurance:**
 - o **Metrics Library:** Created a new metrics library that implements a mechanism by which producers can publish numeric information for later querying by consumers. In practice producers will typically be other libraries or primary processes, whereas consumers will typically be applications. Metrics themselves are statistics that are not generated by PMDs. Metric information is populated using a push model, where producers update the values contained within the metric library by calling an update function on the relevant metrics. Consumers receive metric information by querying the central metric data, which is held in shared memory.
 - o **Latency and Bit Rate Statistics:** New libraries have been added

June 13th, Santa Clara

Intel® Network Builders University Videos:

[DPDK 101: Introduction to DPDK](#)

[DPDK 201: New Features Deep Dive](#)

[DPDK 16.04 New Features](#)

[DPDK 2.2 New Features](#)

[Accelerating Your Cloud & Enterprise with DPDK](#)

[DPDK Setup and Configuration](#)

[Testing VNF Performance Using Data Plane Performance Demonstrator](#)

[Maximising NFV Performance on IA](#)

[Setting up DPDK on Different Operating Systems](#)

[DPDK Sample Applications](#)

[Writing a Simple DPDK Forwarding Application](#)

[DPDK Packet Framework](#)

[Testing DPDK performance and features with TestPMD](#)

[Building and Installing Vector Packet Processing \(VPP\) with Vagrant](#)

[DPDK-in-a-Box - The DPDK Starter Kit](#)

[DPDK 16.11 & 17.02 New Features](#)

Other DPDK-Related Videos:

[DPDK 16.04 New Features](#)

[DPDK 16.07 New Features](#)

[Enabling the Storage Transformation with SPDK](#)

[Building Blocks for Scalable, High Performance Storage](#)

[Open vSwitch with DPDK in OVS 2.4.0](#)

[Open vSwitch with DPDK in](#)

that can be used with the metrics library described above to support the collection and reporting of latency and bit rate measurements. Latency statistics include min, max and average latency, and jitter. Bit rate statistics include peak and average bit rate aggregated over a user-defined time period.

This is the biggest DPDK release ever, including 1,263 patches from 128 different authors. The full feature list is available in the [Release Notes](#).

Thanks to everybody who contributed to making this another successful DPDK release!

FD.io 17.04 Released



The fourth open source release the [Fast Data \(FD.io\)](#) project was completed in April. FD.io builds on DPDK and supports the creation of high performance, flexible, and scalable software packet processing solutions. The 17.04 release includes updates to several FD.io projects, including:

[VPP \(Vector Packet Processing\)](#) :

- Host stack. An experimental TCP/IP stack has been added to VPP 17.04. This will be further developed in future releases.
- Upgrade to DPDK 17.02. DPDK is now handled as a plugin and VPP-lite (the previous non-DPDK version of VPP) has been retired.
- Performance and functionality improvements have been added for IP Multicast FIB, Bridging, SNAT, Security Groups, Segment Routing v6, IOAM, GPE, MPLS, BFD, IPsec and VXLAN.
- Further details, including the full feature list, are available in the [Release Notes](#).

[NSH SFC \(Network Service Header Service Function Chaining\)](#) :

- NSH MD-Type 2. The MD-Type field specifies the format of the metadata, and support has been added for type 2.
- iOAM Trace over NSH.
- NSH-aware SNAT

DPDK Summit India 2017

[OVS 2.5.0](#)

[Open vSwitch with DPDK in OVS 2.6.0](#)

[Accelerating Your Cloud with DPDK](#)

[Intel Software Defined Infrastructure: Tips, Tricks and Tools for Network Design and Optimization](#)

[IP Flow Analytics Enabled by Saisei and DPDK](#)

[Ubuntu 16.04 + Intel: Expanding the Possibilities of Data Center Networking](#)

[Intel® Multi-buffer Crypto for IPsec on DPDK - Get Started](#)

[DPDK Crypto - Get Started with Intel® QuickAssist Technology](#)

Intel® Developer Zone Articles:

[Data Plane Development Kit \(DPDK\): Getting Started](#)

[Using Open vSwitch with DPDK on Ubuntu](#)

[QoS Configuration and usage for Open vSwitch with DPDK](#)

[vHost User Multiqueue for Open vSwitch with DPDK](#)

[Profiling DPDK Code with Intel® VTune™ Amplifier](#)

[DPDK Packet Capture Framework](#)

[Build Your Own Packet Generator - DPDK-in-a-Box](#)



The first ever DPDK Summit in India was held in Bangalore on April 25th and 26th. The first day was our standard DPDK Summit format, with ~200 attendees representing a broad range of networking companies including Wipro, TCS, Sasken, Happiest Minds, GlobalEdge, Aricent, Adva, Avaya, Alcatel, Brocade, Cavium, Cisco, Ericsson, HPE, IBM, Juniper Networks, Nokia, Tech Mahindra, Vodafone, NXP. Technical talks included presentations on the DPDK architecture and roadmap, cryptodev, supporting SoC devices in DPDK, Vector Packet Processing (VPP), Transport Layer Development Kit (TLDK), sample DPDK-enabled VNFs in OPNFV and many more topics. There were also demo booths from Avaya, TCS, WIPRO, Redhat and Intel.

Day 2 involved hands-on DPDK training for ~50 attendees. This was focused on networking developers who currently use, or plan to use, DPDK in their products.

Slides and videos from the event will be posted shortly on the [DPDK Summit](#) website.



New Intel® Network Builders University & Intel® Developer Zone Videos

The DPDK module in the Intel® Network Builders University program has been enhanced with a number of new videos:

- [Testing DPDK performance and features with TestPMD](#)
- [Building and Installing Vector Packet Processing \(VPP\) with Vagrant](#)
- [DPDK-in-a-Box - The DPDK Starter Kit](#)
- [DPDK 16.11 & 17.02 New Features](#)

In addition, two new DPDK videos have been added to the Intel® Developer Zone:

- [Intel® Multi-buffer Crypto for IPsec on DPDK - Get Started](#)
- [DPDK Crypto - Get Started with Intel® QuickAssist Technology](#)

17.08 Roadmap

The public version of the roadmap is available [here](#), and currently includes the following features:

- Hotplug Notification
- Automatic Device Binding
- Xen Netfront Driver
- Enhance bnxt driver and update the HWRM version
- Enic flow API support
- NXP DPAA2 PMD Performance and Feature Enhancements
- NXP DPAA2 Eventdev Driver
- NXP DPAA1 Bus, Mempool and PMD
- ARM Architecture support in Atomic Rules Arkville Driver

In addition, some further details on [Intel plans for 17.08](#) were sent to the mailing list. A patch has been submitted to update the public roadmap page with these additional items. They include:

- Cryptodev Enhancements:
 - Multi-Core Packet Scheduler: The cryptodev scheduler will be enhanced to use the packet distributor library to balance software crypto processing workload across multiple Icores.
 - RFC for Inline Crypto: An RFC will be created to begin discussion in the open source community on APIs required for inline crypto.
- Generic APIs:
 - Generic QoS API: The proposed API is currently being added to the "[next-tm](#)" repository. In 17.08, implementations of that API will be added for I40E, IXGBE, and the existing software QoS implementation. The API will move from next-tm to the main DPDK repository.
 - Generic Flow Enhancements: The `rte_flow` API was added in 17.02 and implemented for IXGBE and I40E. Support will be added for IGB, and enhancements will also be implemented for IXGBE (NVGRE/L2 Tunnel filters).
- Virtualization Enhancements:
 - VF Restore After PF Reset:
- Performance Optimisation:
 - GRO (Generic Receive Offload): Generic Receive Offload is a widely used SW-based offloading technique to reduce per-packet processing overhead. It improves performance by reassembling small packets into large ones. A new library will be added to DPDK which will implement GRO.

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