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INTERESTED

DPDK vs SR-IOV for NFV? – Why a wrong decision can impact performance!

[134 Comments](#) / [NFV, SDN](#) / [By Faisal Khan](#) / [July 18, 2019](#)

It is not easy to settle the debate for DPDK vs SR-IOV-the technologies used to optimize packet processing in NFV servers.

However although both are used to increase the packet processing performance in servers, the decision on which one is better comes down to design rather than the technologies themselves.

So a wrong decision on DPDK vs SR-IOV can really impact the throughput performance as you will see towards the conclusion of the article.

To understand why design matters, it is a must to understand the technologies, starting from how Linux processes packets.

In particular, this article attempts to answer the following questions!

1. What is DPDK
2. What is SR-IOV
3. How DPDK is different than SR-IOV
4. What are the right use cases for both and how to position them properly?
5. How DPDK/SR-IOV affects throughput performance.

I recommend that you start from the beginning until the end in order to understand the conclusion in a better way.

What is DPDK?

DPDK stands for Data Plane Development Kit.

In order to understand DPDK , we should know how Linux handles the networking part

By default Linux uses kernel to process packets, this puts pressure on kernel to process packets faster as the NICs (Network Interface Card) speeds are increasing at fast.

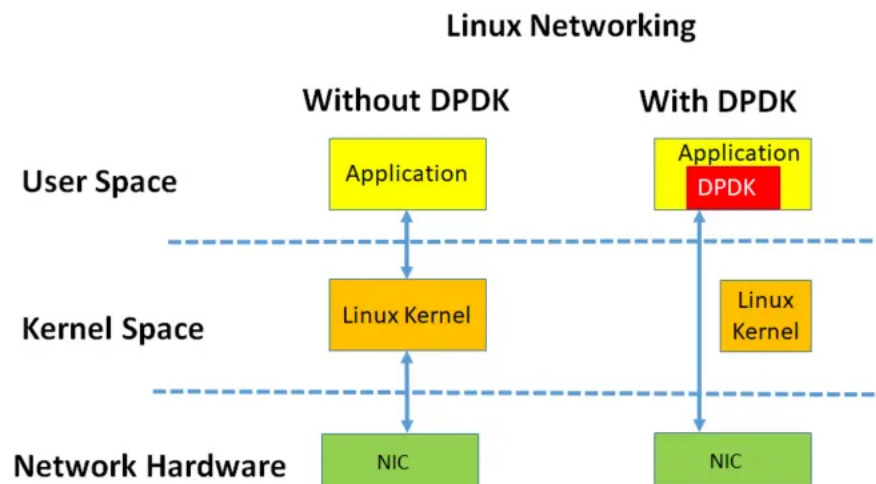
There have been many techniques to bypass kernel to achieve packet efficiency. This involves processing packets in the userspace instead of kernel space. DPDK is one such technology.

User space versus kernel space in Linux?

Kernel space is where the kernel (i.e., the core of the operating system) runs and provides its *services*. It sets things up so separate user processes see and manipulate only their own memory space.

User space is that portion of system memory in which *user processes* run. Kernel space can be accessed by user processes only through the use of *system calls*.

Let's see how Linux networking uses kernel space:



For normal packet processing, packets from NIC are pushed to Linux kernel before reaching the application.

However, the introduction of DPDK (Data Plane Developer Kit), changes the landscape, as the application can talk directly to the NIC completely bypassing the Linux kernel.

Indeed fast switching, isn't it?

Without DPDK, packet processing is through the kernel network stack which is interrupt-driven. Each time NIC receives incoming packets, there is a kernel interrupt to process the packets and a context switch from kernel space to user space. This creates delay.

With the DPDK, there is no need for interrupts, as the processing happens in user space using Poll mode drivers. These poll mode drivers can poll data directly from NIC, thus provide fast switching by completely bypassing kernel space. This improves the throughput rate of data.

DPDK with OVS

Now after we know the basics of how Linux networking stack works and what is the role of DPDK, we turn our attention on how OVS (Open vSwitch) works with and without DPDK.

What is OVS (Open vSwitch)?

Open vSwitch is a production quality, multilayer virtual switch licensed under the open source [Apache 2.0](#) license. This runs as software in hypervisor and enables virtual networking of Virtual Machines.

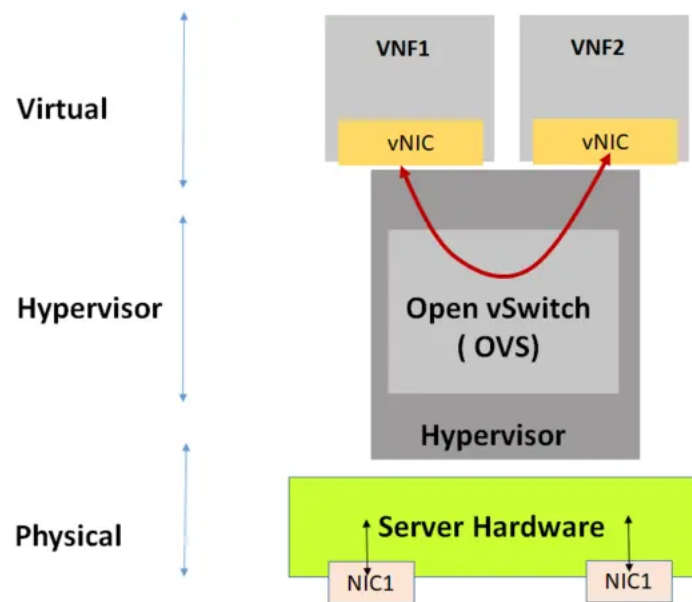
Main components include:

Forwarding path: Datapath/Forwarding path is the main packet forwarding module of OVS, implemented in kernel space for high performance

Vswitchd is the main Open vSwitch userspace program

An OVS is shown as part of the VNF implementation. OVS sits in the [hypervisor](#). Traffic can easily transfer from one VNF to another VNF through the OVS as shown

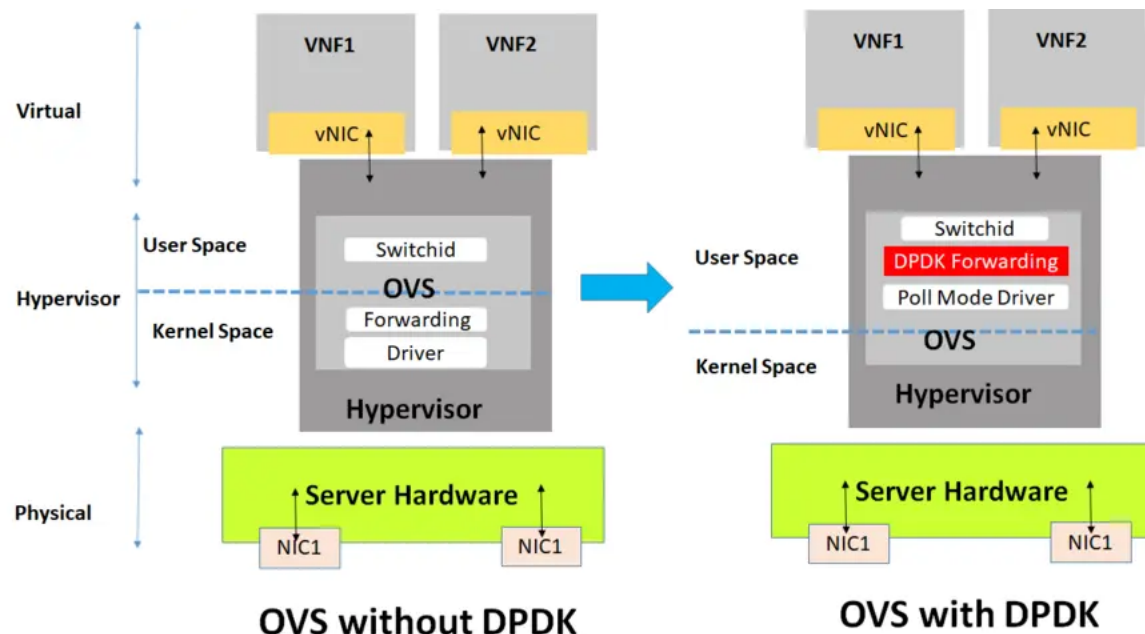
In fact, OVS was never designed to work in the telco workloads of NFV. The traditional web applications are not throughput intensive and OVS can get away with it.



Now let's try to dig deeper into how OVS processes traffic.

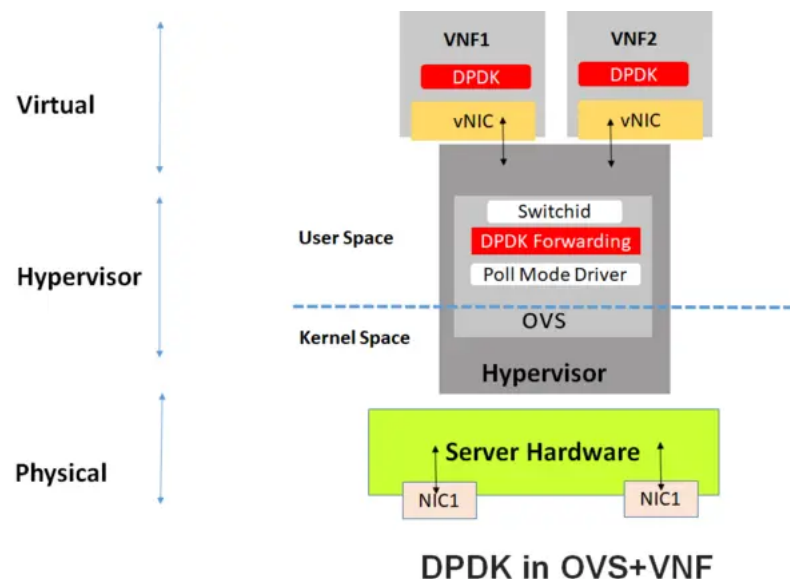
OVS, no matter how good it is, faces the same problem as the Linux networking stack discussed earlier. The forwarding plane of OVS is part of the kernel as shown below, therefore a potential bottleneck as the throughput speed increases.

Open vSwitch can be combined with DPDK for better performance, resulting in a DPDK-accelerated OVS (OVS+DPDK). The goal is to replace the standard OVS kernel forwarding path with a DPDK-based forwarding path, creating a user-space vSwitch on the host, which uses DPDK internally for its packet forwarding. This increases the performance of OVS switch as it is entirely running in user space as shown below.



DPDK (OVS + VNF)

It is also possible to run DPDK in VNF instead of OVS. Here the application is taking advantage of DPDK, instead of standard Linux networking stack as described in the first section.



While this implementation can be combined with DPDK in OVS but this is another level of optimization. However, both are not dependent on one another and one can be implemented without the other.

SR-IOV

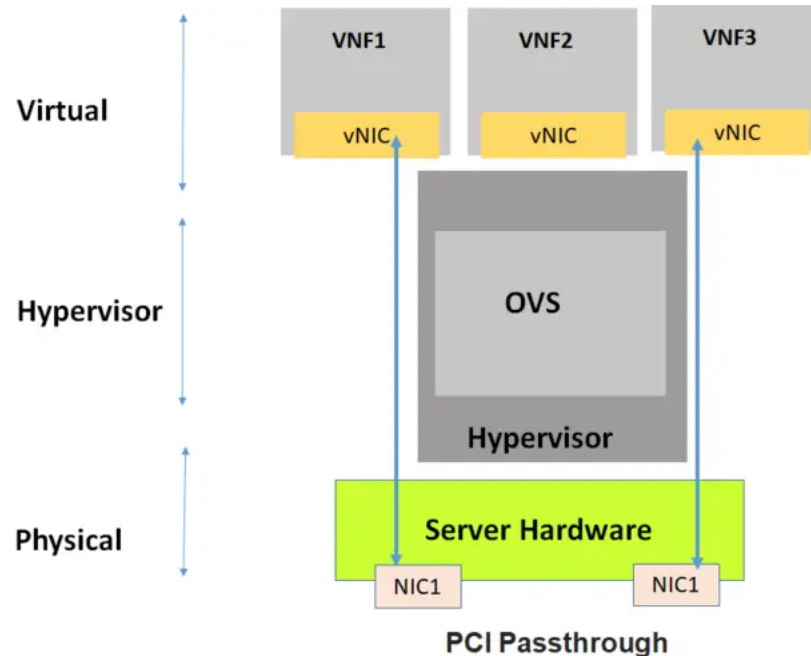
SR-IOV stands for "Single Root I/O Virtualization". This takes the performance of the compute hardware to the next level.

The trick here is to avoid hypervisor altogether and have VNF access NIC directly, thus enabling almost line throughput.

But to understand this concept properly, let's introduce an intermediate step, where hypervisor pass-through is possible even without using SR-IOV.

This is called PCI pass through. It is possible to present a complete NIC to the guest OS without using a hypervisor. The VM thinks that it is directly connected to NIC. As shown here there are two NIC cards and two of the VNFs, each has exclusive access to one of the NIC cards.

However the downside: As the two NICs below are occupied exclusively by the VNF1 and VNF3. And there is no third dedicated NIC, the VNF2 below is left without any access.



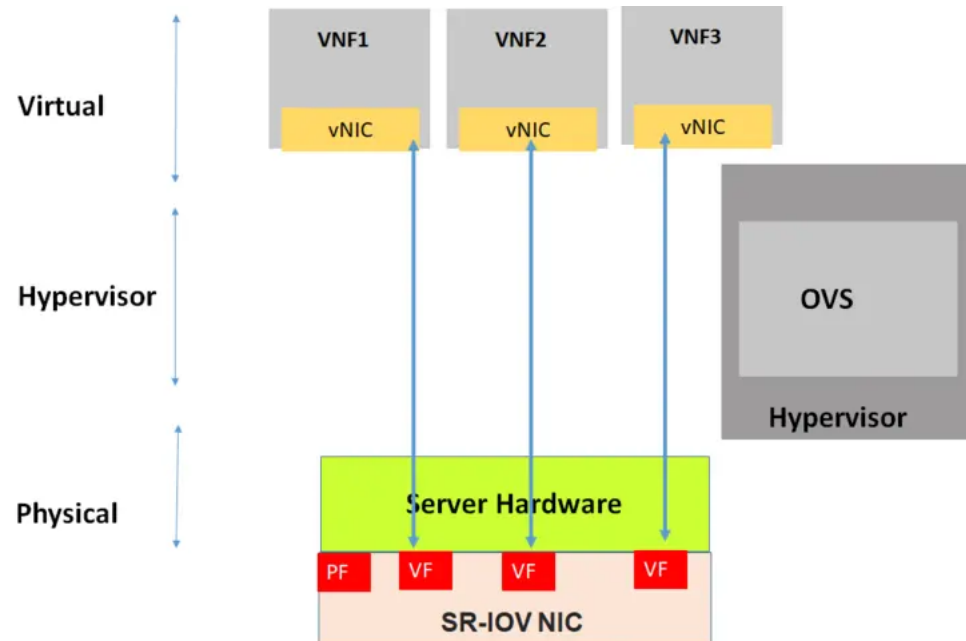
SR-IOV solves exactly this issue:

The SR-IOV specification defines a standardized mechanism to virtualize PCIe devices. This mechanism can virtualize a single PCIe Ethernet controller to appear as multiple PCIe devices.

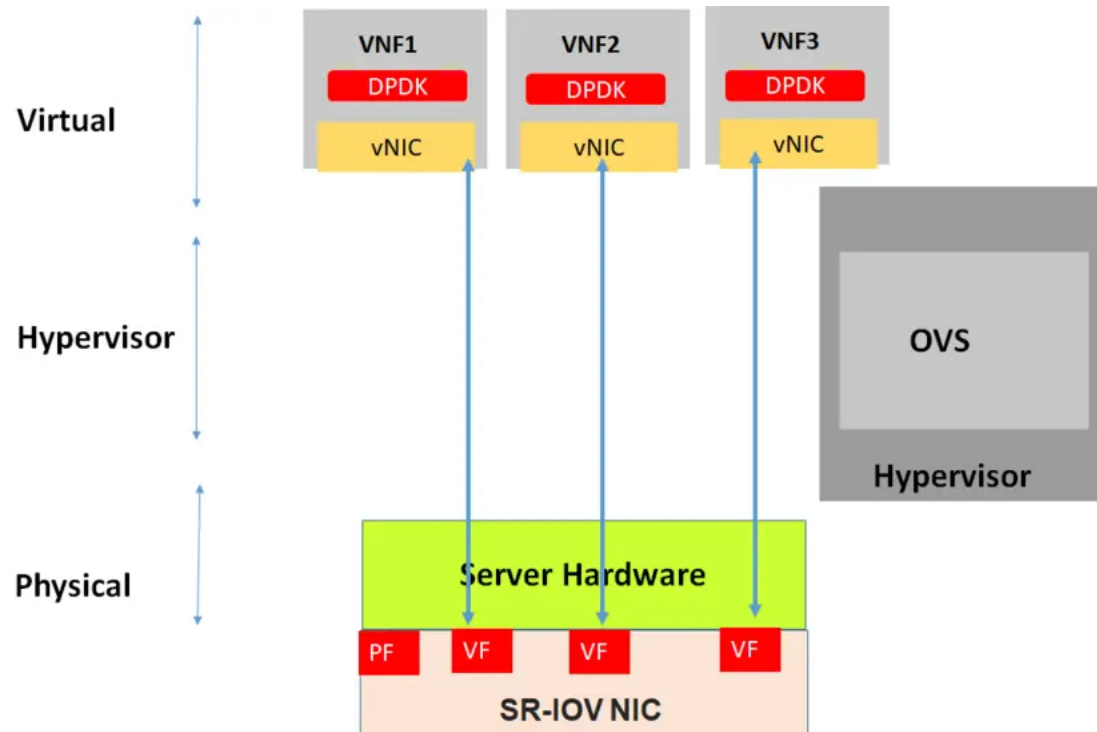
By creating virtual slices of PCIe devices, each virtual slice can be assigned to a single VM/VNF thereby eliminating the issue that happened because of limited NICs

Multiple Virtual Functions (VFs) are created on a shared NIC. These virtual slices are created and presented to the VNFs.

(The PF stands for Physical function, This is the physical function that supports SR-IOV)



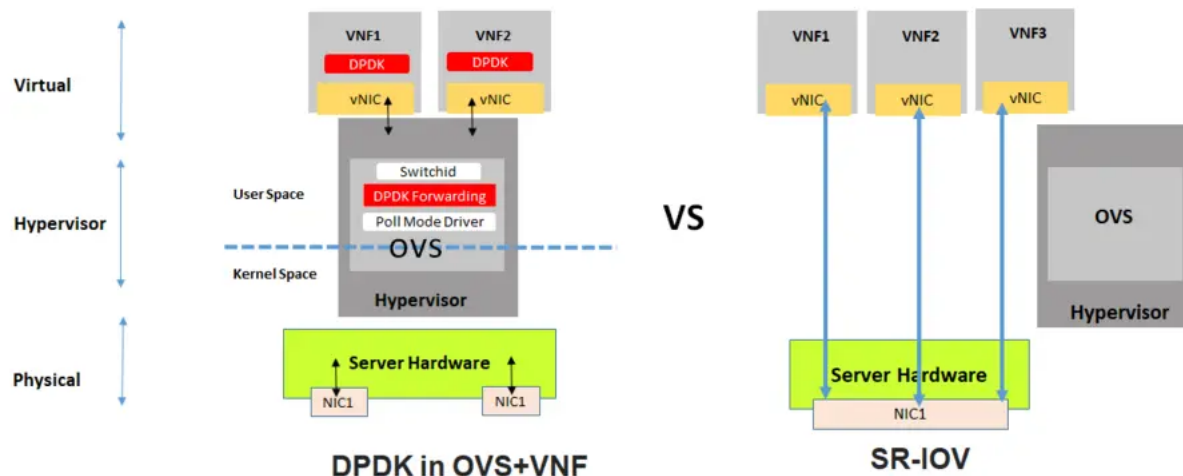
This can be further coupled with DPDK as part of VNF, thus taking combined advantage of DPDK and SR-IOV.



When to use DPDK and/or SR-IOV

The earlier discussion shows two clear cases. One using a pure DPDK solution without SR-IOV and the other based on SR-IOV. (while there could be a mix of two in which SR-IOV can be combined with DPDK) The earlier uses OVS and the later does not need OVS. For understanding the positioning of DPDK vs SR-IOV, we will use just these two cases.

Which one is better ?



On the face of it, it may appear that SR-IOV is a better solution as it uses hardware-based switching and not constrained by the OVS that is a purely software-based solution. However, this is not as simple as that.

To understand their positioning, we should understand what is East-West vs North-South traffic in Datacenters.

What is East-West and North-South Traffic in Data Center?

"East-West" traffic refers to traffic within a data center — i.e. server to server traffic. "North-south" is between the server and outside the data center. Over the past few years, the East-West traffic has increased versus North-South traffic owing to increase of virtualization and the concentration of services inside a data center thus requiring the traffic to stay inside the data center (aka service chaining) instead of going out.

There is a [good study](#) done by intel on DPDK vs SR-IOV; they found out two different scenarios where one is better than the other.

if Traffic is East-West, DPDK wins against SR-IOV

In a situation where the traffic is East-West within the same server (and I repeat same server), DPDK wins against SR-IOV. The situation is shown in the diagram below.

This is clear from this [test report](#) of Intel study as shown below the throughput comparison

It is very simple to understand this: If traffic is routed/switched within the server and not going to the NIC. There is NO advantage of bringing SR-IOV. Rather SR-IOV can become a bottle neck / Traffic path can become

long and NIC resources utilized) so better to route the traffic within the server using DPDK.

If traffic is North-South, SR-IOV wins against DPDK

In a scenario where traffic in North-South (also including traffic that is East-West but from one server to another server), SR-IOV wins against DPDK. The correct label for this scenario would be the traffic going from one server to another server.

The following report from the Intel [test report](#) clearly shows that SR-IOV throughput wins in such case

It is also easy to interpret this as the traffic has to pass through the NIC anyway so why involve DPDK based OVS and create more bottlenecks. SR-IOV is a much better solution here

Conclusion with an Example

So lets summarize DPDK vs SR-IOV discussion

I will make it very easy. If traffic is switched within a server (VNFs are within the server), DPDK is better. If traffic is switched from one server to another server, SR-IOV performs better.

It is apparent thus that you should know your design and traffic flow. Making a wrong decision would definitely impact the performance in terms of low throughput as the graphs above show.

So let say you have a service chaining application for microservices within one server, DPDK is the solution for you. On the other hand, if you have a service chaining service, where applications reside on different servers, SR-IOV should be your selection. But don't forget that you can always combine SR-IOV with DPDK in VNF (not the DPDK in OVS case as explained above) to further optimize the SR-IOV based design.

What's your opinion here. Leave a comment below?

[← Previous Post](#)[Next Post →](#)

134 thoughts on “DPDK vs SR-IOV for NFV? – Why a wrong decision can impact performance!”

JAVIER

SEPTEMBER 24, 2020 AT 6:25 PM

Using SRIOV networking means physical server release the adapter (from host kernel space) and is assigned to VM kernel space (you can validate this by yourself running a simple test looking inside /proc/net to watch how network card disappear from you physical server and comeback after vm stop).

in summary, troubleshooting since vm is quite similar you would do from physical server.

[Reply](#)**SAI**

SEPTEMBER 23, 2020 AT 1:18 AM

Hi Faisal,
Thanks for the detailed analysis and explanation.

I have a question, are there any other methods apart from SR-IOV and DPDK to optimize packet processing in Virtualized environments ? If yes could please share some insights on those.

[Reply](#)



FAISAL KHAN

OCTOBER 18, 2020 AT 4:34 PM

Hi Sai, yes there are , as Omar mentioned Virtio is one of them !

[Reply](#)

OMAR

SEPTEMBER 21, 2020 AT 4:04 AM

Hi

it is a very good article.

I think it will be better if you add VIRTIO to the same topic, it is also an important part of the IO in virtualization.

[Reply](#)



FAISAL KHAN

OCTOBER 18, 2020 AT 4:33 PM

Hi Omar, that sounds like a good idea !

[Reply](#)**CHANGSU IM**

SEPTEMBER 9, 2020 AT 9:37 AM

Thank you for sharing this article. Can I translate this article into Korean?

[Reply](#)**FAISAL KHAN**

OCTOBER 18, 2020 AT 4:32 PM

Hi Changsu Im, I know you already translated to korean. Thanks a lot

[Reply](#)**ATUL**

AUGUST 12, 2020 AT 7:32 AM

Good Articulation and clear explanation.

Good Work Faisal.

[↩](#) [⌵](#)

**FAISAL KHAN**

AUGUST 12, 2020 AT 10:09 AM

Thanks Atul, Glad you liked it !

[Reply](#)**JACK ANDREAS**

JULY 31, 2020 AT 9:51 AM

Hi, I have a question. Im still confused about where DPDK should be installed. As far as I know, DPDK only installed on host server and then combined with OVS. But, in the above picture, there is DPDK installed inside VNF. So each time we create VNF, we should install DPDK? And VNF in here is VM/Instance right?

[Reply](#)**FAISAL KHAN**

AUGUST 2, 2020 AT 6:38 PM

DPDK is installed on server for sure and that is the default way. But some VNFs are optimized for DPDK stack. Yes VNF is a virtual machine.

[Reply](#)

KARTHIK

JULY 16, 2020 AT 7:12 AM

It was nicely summed up. Thanks for the insights.

Would it be possible to share some insights on the RAM and CPU utilization comparison for OVS-DPDK and SRIOV based Networks?

Also, how do we troubleshoot SRIOV networking between the VM and the Physical NICs?

[Reply](#)**FAISAL KHAN**

JULY 30, 2020 AT 11:19 PM

Hi Karthik,

I am afraid these questions are beyond the scope of this article and I am not familiar with them

[Reply](#)**JAVIER**

SEPTEMBER 24, 2020 AT 6:24 PM

Using SRIOV networking means physical server release the adapter (from host kernel space) and is assigned to VM kernel space (you can validate this by yourself running a simple test looking inside /proc/net to watch how network card disappear from you physical server and comeback after vm stop).

in summary, troubleshooting since vm is quite similar you would do from physical server.

[Reply](#)**SAROJ**

JUNE 23, 2020 AT 8:56 AM

Very well explained thanks

[Reply](#)**FAISAL KHAN**

JULY 11, 2020 AT 2:01 PM

Thanks Saroj

[Reply](#)**HEM**

JUNE 10, 2020 AT 5:26 PM

Hello FAISAL KHAN,

Thank you so much for the neat explanation. Any one can understand on how SR-IOV and DPDK works.

One question : Does DPDK work well on hybrid setup like baremetal and VM combinations located in a same data center ? or its a wise idea to go with SRIOV in this case.

Thanks again,
Hem

[Reply](#)



FAISAL KHAN

JULY 11, 2020 AT 2:07 PM

Hello Hem, I am not sure if I understood your question well. Can you clarify.

[Reply](#)

SUBHAJIT CHATTERJEE

MAY 27, 2020 AT 1:33 PM

Hi,

Thanks for this lucid yet informative blog post!

Can you please elaborate my below points:

You wrote that

“East-West” traffic refers to traffic within a data center — i.e. server to server traffic.

Also it is better to use OVS-DPDK for east-west traffic.

However while you described about North-South traffic (heading : "If traffic is North-South, SR-IOV wins against DPDK"), you mentioned in the picture to use SR-IOV for within server or outside DC? Doesn't it conflict the previous statements?

[Reply](#)**RAVI**

JUNE 29, 2020 AT 4:28 PM

@Faizal. Thanks for this detailed write-up

@subhajit. The scenario defined to compare both technologies are subject to a condition where VM1 and VM2 reside in the same compute/hypervisor/host.

East-West also includes scenario where VM1 and VM2 are on separate compute/hypervisor/host as shown above North-South diagram. This is by far the most common kind of East-West communication that I have seen in the multiple on-premise cloud sites I have worked on. So SR-IOV is preferable.

But again, it all depends on your VNF network architecture.

[Reply](#)**FAISAL KHAN**

JULY 11, 2020 AT 2:03 PM

Thanks Ravi ! for your inputs here

[Reply](#)

**ASHOK**

MAY 23, 2020 AT 9:18 PM

Hi,

Very nice explanation thanks.

I see in the DPDK diagram, OVS is included in your explanation but not in SR-IOV.

Is the OVS required for switching traffic? How do you explain that?

Thanks

[Reply](#)**FAISAL KHAN**

MAY 27, 2020 AT 8:53 AM

you are correct Ashok, not needed in case of SR-IOV, but needed for DPDK for switching traffic.

[Reply](#)**ISHRAT GUL**

MAY 23, 2020 AT 6:53 PM

Wonderful comparison , thanks for knowledge sharing

**FAISAL KHAN**

MAY 27, 2020 AT 8:54 AM

Thanks Ishrat, Glad that you liked it.

[Reply](#)**RANJEET**

MAY 22, 2020 AT 5:38 PM

Awesome for any new learner . Basic to deep explanation. Very simple way feeding full meal.

[Reply](#)**FAISAL KHAN**

MAY 27, 2020 AT 8:54 AM

Hello Ranjeet, glad that you liked it.

[Reply](#)

RAHUL

MAY 18, 2020 AT 6:17 PM

great work!! excellent

[Reply](#)**FAISAL KHAN**

MAY 27, 2020 AT 8:56 AM

Thanks Rahul, its nice to see that you liked it.

[Reply](#)**EDUARDO**

MAY 14, 2020 AT 12:26 PM

Very well explained Faisal, thank you!

I have a little doubt, however. As you explained, with SR-IOV the VM can already talk directly to the server NIC (using a VF). What does DPDK provide for in a SR-IOV+DPDK scenario?

Cheers!

[Reply](#)

**FAISAL KHAN**

MAY 27, 2020 AT 8:59 AM

Hi Eduardo, thanks for your question. Some applications are customized for DPDK (does not necessarily mean they have to use OVS for switching), they can still be used with SR-IOV, thus taking advantage of SR-IOV fast switching.

[Reply](#)**CHANDRA**

MAY 10, 2020 AT 7:52 PM

Wow...Amazing explanation... right on target...So difficulty subject but you made it so easy...well done

[Reply](#)**FAISAL KHAN**

MAY 11, 2020 AT 7:23 PM

Glad that you liked it Chandra, keep visiting back !

[Reply](#)

KELING JI

APRIL 11, 2020 AT 9:33 AM

very very good article , but some pic can not be found , could you please to fix it ? many thanks

[Reply](#)**FAISAL KHAN**

APRIL 11, 2020 AT 9:55 AM

Thanks, keling, Can you clarify, as everything is visible at my end. which browser you are using, can you change it.

[Reply](#)**AMARINDER**

APRIL 5, 2020 AT 11:22 PM

Thanks Faisal, So easy to understand your write up on complex technologies

[Reply](#)**FAISAL KHAN**

APRIL 11, 2020 AT 9:54 AM

Thanks Amarinder

[Reply](#)**SAURABH MISHRA**

APRIL 30, 2020 AT 5:31 PM

Very nice explanation .. Awesome Job Faisal

[Reply](#)**FAISAL KHAN**

MAY 2, 2020 AT 1:59 PM

Thanks Saurabh, Glad that you liked it

[Reply](#)**AJAY**

APRIL 1, 2020 AT 8:39 PM

can you please correct the typo "DPDK stands for Data Plan Development Kit".
it is awesome to see how simplified your contents are even though the topic are complex .thumbs up !!

[Reply](#)**FAISAL KHAN**

APRIL 1, 2020 AT 9:39 PM

Good feedback Ajay, this post guests hundreds of visitors every day, you are the first one to point it out.

[Reply](#)

SAIF

MARCH 31, 2020 AT 9:37 AM

Thanks, Faisal for this excellent write-up. This was really helpful.

[Reply](#)

FAISAL KHAN

APRIL 1, 2020 AT 9:38 PM

Thanks Saif, Glad that you liked it

[Reply](#)

SYED ASFAR

MARCH 31, 2020 AT 4:07 AM

appreciate this topic explanation.

indeed very helpful.

Reply



FAISAL KHAN

MARCH 31, 2020 AT 6:11 AM

Thanks Syed asfar, for taking time to read and liking it.

Reply

JATIN

MARCH 6, 2020 AT 9:17 PM

Thanks Faisal for making the Complex topic so Simple. Kudos to you.
How about next blog on VPP ?

Thanks.

Reply



FAISAL KHAN

MARCH 25, 2020 AT 9:05 PM

[Reply](#)**ANAND**

FEBRUARY 27, 2020 AT 9:40 PM

Hi,

Brilliant explanation! Its simple and precise.

As you explained in DPDK, kernel is bypassed and userspace polls for the packets. Are you aware of Enhanced Network Stack of VMware? It is a DPDK based stack in which the kernel itself does the polling.

Do you think it will be a better solution for telcos? Better than simple DPDK or SRIOV?

[Reply](#)**FAISAL KHAN**

MARCH 1, 2020 AT 11:58 AM

Hi Anand, thanks for commenting. I am not aware of VMWare stack, I will have to check it up.

[Reply](#)**SIMON CHAPMAN**

FEBRUARY 27, 2020 AT 2:07 AM

nicely explained.

Reply



FAISAL KHAN

FEBRUARY 22, 2020 AT 5:50 PM

Thanks Simon

Reply

SUNIL SINGH

FEBRUARY 16, 2020 AT 7:42 PM

simple and superb, as i am fresher to this technology still
grasped the essence!!
Thanks a Lot!!

Reply



FAISAL KHAN

FEBRUARY 16, 2020 AT 10:15 PM

Thank you so much Sunil, you made my day 😊

Reply

NAGA

FEBRUARY 15, 2020 AT 4:27 PM

Excellent Sir !!

please share the DPDK and SR-IOV commands for regular operations and debug ?

[Reply](#)**FAISAL KHAN**

FEBRUARY 16, 2020 AT 10:17 PM

Thanks Naga ! I am not sure, can you clarify further

[Reply](#)**JESSICA**

JANUARY 21, 2020 AT 11:21 AM

“If You Can’t Explain it Simply, You Don’t Understand it Yourself”

Excellent Description. Thanks,

**FAISAL KHAN**

JANUARY 25, 2020 AT 9:20 AM

Thanks a lot Jessica

[Reply](#)**LATHA SUNKARA**

JANUARY 31, 2020 AT 11:22 PM

Really explained very well and any one can understand it. Keep posting more and more pls. to educate rest of the world. Rarely seen such detailed write-ups.

[Reply](#)**FAISAL KHAN**

FEBRUARY 1, 2020 AT 9:11 AM

Thanks Latha for taking to read and commenting. Glad that you liked it

[Reply](#)**ZAHID**

JANUARY 20, 2020 AT 9:19 PM

Faisal, indeed a great way and simplified one to explain the complex topics together.

[Reply](#)



FAISAL KHAN

JANUARY 21, 2020 AT 9:14 AM

Zahid, great to know that you liked it

[Reply](#)

AJAY KUMAR

JANUARY 14, 2020 AT 12:44 AM

great explination ..excellent 😊

Many thanks...

[Reply](#)



FAISAL KHAN

JANUARY 14, 2020 AT 4:04 PM

Thanks Ajay for stopping by to read and liking it.

[Reply](#)

SANDEEP SHARMA

JANUARY 13, 2020 AT 1:28 PM

Really very well explained. good article.

[Reply](#)



FAISAL KHAN

JANUARY 14, 2020 AT 4:04 PM

Thanks Sandeep, good that you liked it

[Reply](#)

SIMITER

DECEMBER 23, 2019 AT 12:28 PM

good report!!

In "If traffic is North-South, SR-IOV wins against DPDK", who decide the route to VNF2?

To controll the route to VNF1,3, OVS-like Switch is nessesary. Outer switch?

[Reply](#)



FAISAL KHAN

JANUARY 10, 2020 AT 7:57 PM

Sorry Simiter, not able to get you !

[Reply](#)

NEETESH

DECEMBER 19, 2019 AT 8:48 AM

Excellent Article !!!

[Reply](#)



FAISAL KHAN

DECEMBER 19, 2019 AT 5:49 PM

Thanks Neetesh

[Reply](#)

SANDEEP

JANUARY 9, 2020 AT 1:40 PM

Really, explained in very easy format.
really helpful

[Reply](#)**FAISAL KHAN**

JANUARY 10, 2020 AT 7:59 PM

Sandeep, thanks for visiting and liking it.

[Reply](#)**THUAN T. NGUYEN**

NOVEMBER 27, 2019 AT 11:12 AM

This post does open my mind. But it is so good if we can show steps to be practical. To see and trust.

[Reply](#)**FAISAL KHAN**

NOVEMBER 27, 2019 AT 8:43 PM

Thanks Thuan, can you elaborate a little bit

[Reply](#)

DUY NGUYEN

NOVEMBER 5, 2019 AT 6:46 AM

Good morning FAISAL KHAN,

This article very clear and easy to understand. Can I translate and add some more info this article to Vietnamese before share to my Colleagues?

Original link will be keep at heading of my article.

Thanks you!

[Reply](#)**FAISAL KHAN**

NOVEMBER 6, 2019 AT 11:57 AM

thanks duy, answered through mail

[Reply](#)**KARUN**

NOVEMBER 9, 2019 AT 7:23 PM

sir, for me vnf and nfv is quite confusing and hardly can differentiate these two, can you please add some detail to differential both

[Reply](#)

RAKESH SHRIVASTAVA

NOVEMBER 4, 2019 AT 6:52 AM

Very very neatly explained Faisal. Good work !

[Reply](#)**FAISAL KHAN**

NOVEMBER 6, 2019 AT 11:58 AM

Great to have you here Rakesh !

[Reply](#)**ARVIND**

NOVEMBER 1, 2019 AT 7:32 AM

Excellent post Faisal. You really simplified it for me. My team is in the process of implementing SR-IOV vs DPDK for a Telco and this is the kind of information I needed to understand the concepts better. I will probably come back in a few months with some practical view point that I can add from our field experience.

[Reply](#)**FAISAL KHAN**

NOVEMBER 6, 2019 AT 11:58 AM

Wow that will be wonderful to get the practical viewpoint

[Reply](#)

ESLAM SEWEILAM

OCTOBER 31, 2019 AT 9:47 AM

Very Informative Article , Thanks Faisal!

[Reply](#)



FAISAL KHAN

NOVEMBER 6, 2019 AT 11:59 AM

Thanks Eslam for stopping by to read this piece.

[Reply](#)

ARVIND KUMAR

OCTOBER 23, 2019 AT 10:57 PM

You have dealt with a complex topic in the best possible simple way. Really amazed by your capability to

[Reply](#)**FAISAL KHAN**

OCTOBER 26, 2019 AT 9:01 AM

Thanks Arvind for stopping by to read the blog...

[Reply](#)**AKMAL**

OCTOBER 21, 2019 AT 12:30 AM

Excellent review in a very simply and logical steps. Thank you for the great efforts

[Reply](#)**FAISAL KHAN**

OCTOBER 21, 2019 AT 9:30 AM

Thanks Akmal, Glad that you stopped by and liked this piece.

[Reply](#)

ASHWANI

OCTOBER 18, 2019 AT 1:15 PM

This is one of the simplest explanation of such a complex topic that I have seen till now. This article is like a treasure for me. I am thankful to you that you have published it to educate others.

[Reply](#)**FAISAL KHAN**

OCTOBER 18, 2019 AT 3:04 PM

Dear Ashwani, Thanks a lot. This is very encouraging comment for me....please spread the good and share the article to your circle...

[Reply](#)**JAYAPRAKASH REDDY(JP)**

OCTOBER 18, 2019 AT 12:07 PM

Really very useful and informative article with clear explanation and logical diagrams. Thanks

[Reply](#)**FAISAL KHAN**

OCTOBER 18, 2019 AT 3:03 PM

Thanks a lot Jayaprakash ! glad that it was of help to you

[Reply](#)

SORFARAZ

OCTOBER 15, 2019 AT 10:58 AM

Is there any relationship here with SDN enable network?

[Reply](#)



FAISAL KHAN

OCTOBER 16, 2019 AT 1:31 PM

Salam Sorfaraz, the behaviour should be same irrespective of the use of SDN or not.

[Reply](#)

SANDEEP

OCTOBER 8, 2019 AT 4:01 PM

Another great article Faisal!!!

I am hooked to your articles.

[Reply](#)



FAISAL KHAN

OCTOBER 14, 2019 AT 8:52 AM

Thank you so much Sandeep

[Reply](#)

SAM GAD

OCTOBER 5, 2019 AT 4:07 PM

Never seen anyone explain it better. thank you so much

[Reply](#)



FAISAL KHAN

OCTOBER 5, 2019 AT 4:11 PM

Thanks Sam, glad that you liked it

[Reply](#)

BUDIHARTO

SEPTEMBER 15, 2019 AT 7:36 AM

thanks for the article, very informative. for real NE in telco, it most likely will need to use SR-IOV for high throughput reason and surely it will sit on top of multiple hosts/phy servers (for redundancies and capacity), but it comes with the cost: it not easy to do "live" migration without interrupting the service and less flexible as it require special mapping to phy NIC (compared to OVS).
the logical choice will be limit SRIOV for telco "NE" and OVS for the rest (EMS, management etc.)

[Reply](#)**FAISAL KHAN**

SEPTEMBER 15, 2019 AT 8:24 AM

Agreed Budiharto

[Reply](#)**JEFF TANTSURA**

SEPTEMBER 13, 2019 AT 8:12 AM

Thanks for great article!

I think workload mobility and implications of SR-IOV for such cases should be included in the overview.

[Reply](#)

**FAISAL KHAN**

SEPTEMBER 15, 2019 AT 8:24 AM

Thanks for your feedback Jeff Tantsura

[Reply](#)**SATYAM KUMAR**

SEPTEMBER 13, 2019 AT 2:35 AM

Excellent explanation.You made my day .Need some more !!

[Reply](#)**FAISAL KHAN**

SEPTEMBER 13, 2019 AT 4:54 AM

and you made my day 😊 ...thanks Satyam

[Reply](#)

MOHIT

SEPTEMBER 12, 2019 AT 10:10 AM

Thanks Faisal for educating others in a very simplified way!

[Reply](#)**FAISAL KHAN**

SEPTEMBER 12, 2019 AT 10:34 AM

Thanks Mohit for your feedback

[Reply](#)**KUNAL**

SEPTEMBER 12, 2019 AT 8:52 AM

Great Explanation.

Would it be possible to include VPP as well?

[Reply](#)**FAISAL KHAN**

SEPTEMBER 12, 2019 AT 9:10 AM

[Reply](#)**LUCIANO**

SEPTEMBER 6, 2019 AT 4:23 PM

The best article I've ever seen about DPDK and SR-IOV. Thanks !

[Reply](#)**FAISAL KHAN**

SEPTEMBER 12, 2019 AT 6:50 AM

Hi Luciano, thank you...you made my day 😊

[Reply](#)**SHUBHRA SRIVASTAV**

JULY 30, 2019 AT 10:56 PM

Excellent explanation, Faisal. Thank you! Can you comment on the limitations of SW based DPDK and SRIOV in terms of performance and latency and how using an accelerator (FPGA) can improve both of those.

[⋮](#)

HOSSAM ABDELMONIEM

JULY 30, 2019 AT 2:01 PM

Thanks a lot, Well described and explained.

Very very informative article!

[Reply](#)

SAMIR DIXIT

JULY 31, 2019 AT 6:37 AM

Detailed and yet simple to understand.

A must read for beginners in networking enthusiast

[Reply](#)

JAVED

JULY 30, 2019 AT 1:27 PM

Thanks, very informative

PRIYESH

JULY 30, 2019 AT 7:45 AM

Nice and simple explanation. Thanks for sharing 😊

[Reply](#)



FAISAL KHAN

JULY 30, 2019 AT 8:52 AM

Thank you Priyesh for visiting and commenting

[Reply](#)

KRANTHI

JULY 29, 2019 AT 10:37 AM

Nice comparison. Very helpful.

Request to provide more scenarios on OVS-DPDK, where you use it in real time.

[Reply](#)

**FAISAL KHAN**

JULY 30, 2019 AT 8:52 AM

Thank you Kranthi for your comments !

[Reply](#)**FAISAL KHAN**

JULY 30, 2019 AT 8:54 AM

Thanks Kranthi, I am not sure if I got your question correctly..

[Reply](#)**DAVID KORMAN**

JULY 25, 2019 AT 8:10 AM

A very good comparison and source of information.

[Reply](#)**FAISAL KHAN**

JULY 25, 2019 AT 9:42 AM

Thanks David, Glad that you liked it

HARISH SHAH

JULY 27, 2019 AT 4:25 AM

A very good read. Thanks for explaining it so nicely.

[Reply](#)**FAISAL KHAN**

JULY 27, 2019 AT 11:15 AM

Thanks Harish, Glad that you liked it

[Reply](#)**KARUN**

NOVEMBER 9, 2019 AT 7:17 PM

Amazing explanation and presentation in simple way to understand easily
sir, if you may post something on below topics

1. L3VPN
2. L2Gw
3. VxLAN
4. overlay and underlay
5. GRE

all in respect of current use into virtual data centers.

[Reply](#)

KARUN

NOVEMBER 9, 2019 AT 7:18 PM

in addition
SD WAN
and orchestration

[Reply](#)**FAISAL KHAN**

NOVEMBER 24, 2019 AT 8:56 PM

Thanks Karun for stopping by to read my blog. I will consider your feedback for future blogs....

[Reply](#)**ADRIE T**

JULY 25, 2019 AT 5:55 AM

I just know that there is an implementation of DPDK in VNF for optimizing the VNF in accessing the virtual network layer. Is this using the same DPDK kit or there is another DPDK for this purpose?

[Reply](#)**FAISAL KHAN**

JULY 25, 2019 AT 9:42 AM

Thanks for commenting. Yes, this is the same DPDK used in VNF. But as the article shows that DPDK can be implemented in OVS as well as VNF...

[Reply](#)

ASKAR

JULY 24, 2019 AT 10:20 PM

That was brilliant article Faisal. Thanks.

It appears to me that still there are a lot of details on NFV true implementation challenges that need to be discussed. Thank you for opening this topic.

[Reply](#)



FAISAL KHAN

JULY 25, 2019 AT 9:40 AM

Thanks Askar for stopping by to read my blog

[Reply](#)

**CHRISTOPHER ADIGUN**

JULY 24, 2019 AT 10:31 AM

This is a concise explanation.. I have a question, is it possible to combine DPDK and SR-IOV in way that traffic between VNFs within a server use OVS+DPDK while traffic between a VNF and outside is routed via SR-IOV directly? In other words maybe there can be a process that decides when to use OVS+DPDK or SR-IOV (i.e. if you have a capable NIC that supports SR-IOV)

[Reply](#)**FAISAL KHAN**

JULY 25, 2019 AT 9:43 AM

Interesting Comment Christopher !, I am not aware of this kind of implementation. Yet this would be interesting to have to get the best of both worlds

[Reply](#)**AMAN KAUSHIK**

JULY 24, 2019 AT 8:48 AM

Excellent Comparison & great insight of NFV performance challenges. Thanks.

[Reply](#)**SAROJ PANDA**

JULY 24, 2019 AT 10:58 AM

Excellent write up. Thanks Faisal.

Can you also share few successful deployments

[Reply](#)



FAISAL KHAN

JULY 25, 2019 AT 9:40 AM

Thanks Saroj, I am afraid I dont have any public info about deployments

[Reply](#)



FAISAL KHAN

JULY 25, 2019 AT 9:45 AM

Thanks Aman ! Glad that you liked it

[Reply](#)

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