DPDK on Azure
Past, Present and Future

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• DPDK on Azure – Today
  – DPDK support is in production
  – Latest Enterprise distributions support it
  – Many partners are updating their applications
Topics

- Why is Azure different?
- How does it work?
- Need to Know
- What should I do?
The problem

High performance & Security
• HW implementation of SDN
  - Programmable Generic Flow Tables
  - QoS
  - Overlay Network
• Why bother?
  – works with or without SR-IOV
  – Less overhead
  – Smaller
  – Simpler
UIO driver

- Pass VMBus to Userspace
  - Like igb_uio
- Handle control channel
  - Subchannel creation
Failsafe vs Netvsc PMD

- Failsafe
  - Stable
    - Kernel 4.2
    - DPDK 18.02
  - Supported
    - Ubuntu, SLES, RHEL, CentOS
  - Bifurcated model
  - Requires SR-IOV

- Netvsc PMD
  - Experimental
    - Kernel 4.18
    - DPDK 18.11
  - Device Assignment
  - Vswitch or SR-IOV
DPDK on Azure Roadmap

2017
- Azure AN preview
- Ubuntu 18.04+
- DPDK 17.11

2018
- Azure AN default
- Ubuntu, SLES, RHEL, Debian, CoreOS, Oracle, ...
- DPDK 18.02
- Netvsc PMD
  - 18.08 early
  - 18.11 AN

Microsoft
Performance

- Accelerated Networking
  - SR-IOV 40G
  - Direct Device Assignment 10G
- Fallback
  - TAP (failsafe)
  - Netvsc PMD

NOT Azure Testpmd transmit only, single queue

Windows server 2016, Ubuntu 18.04, Xeon E5-1620
Backports

• Older versions of DPDK?
  – Netvsc PMD need bus (17.11)
  – Failsafe etc needs vdev (17.11)
  – vdev_netvsc needs devargs (18.02)
OS support

- Linux
  - Netvsc needs uio_hv_generic
    - 4.16 single queue
    - 4.18 multi queue
  - TAP needs eBPF/flower
    - Classifier 4.2
    - RSS 4.9
- FreeBSD?
  - TAP issues
  - VMBus UIO
Future Possibilities

- Performance
  - Ring copy avoidance
  - Optimize descriptor
- Offloads
  - Flow
  - RSS parameters
- FreeBSD?
- ARM?
Questions?

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