ons

OPEN NETWORKING //
HARMONIZE, HARNESS, CONSUME

APRIL 3-6, 2017
SANTA CLARA

Container Networking

Albert Greenberg, Corporate Vice President, *Microsoft*

Representing the work of the Azure Networking team

Azure Momentum

>90%

of Fortune 500
use Microsoft Cloud

- 120K new customers/month
- 150 billion Azure SQL queries/ day
- 715 million Azure Active directory users
- 120 billion Azure website hits/ month

Microsoft ♡ Linux

Container Momentum

ONS 2016

SONiC—Open source switch stack

Foray into open container networking

Container World

February 2017—Kubernetes generally available on Azure Container Services

OCP 2017

SONiC—Containerization

Azure SDN Momentum: Rich and Scalable VNets

2013:

- Virtual networks
- Public load balancing
- Managed NAT

2014:

- Internal load balancing
- VPN based on premise connectivity

2015:

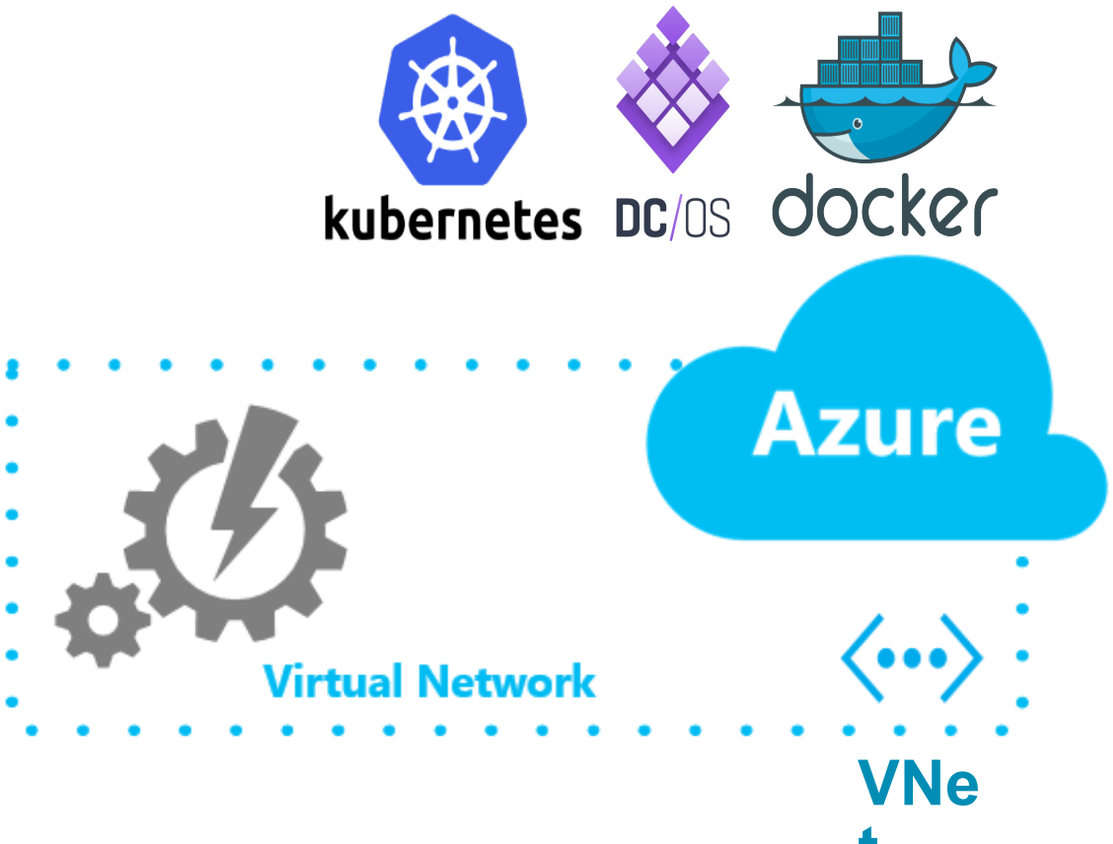
- Network security groups
- Service chaining
- Private peering
- Multi-NIC
- Reserved IP
- Instance IP

2016+:

- Container support
- Application gateway
- Accelerated networking
- Virtual network peering
- IPv6
- Mac persistence
- Netwatcher
- Multiple IPs per NIC

Announcing

Azure VNet for Containers
One SDN



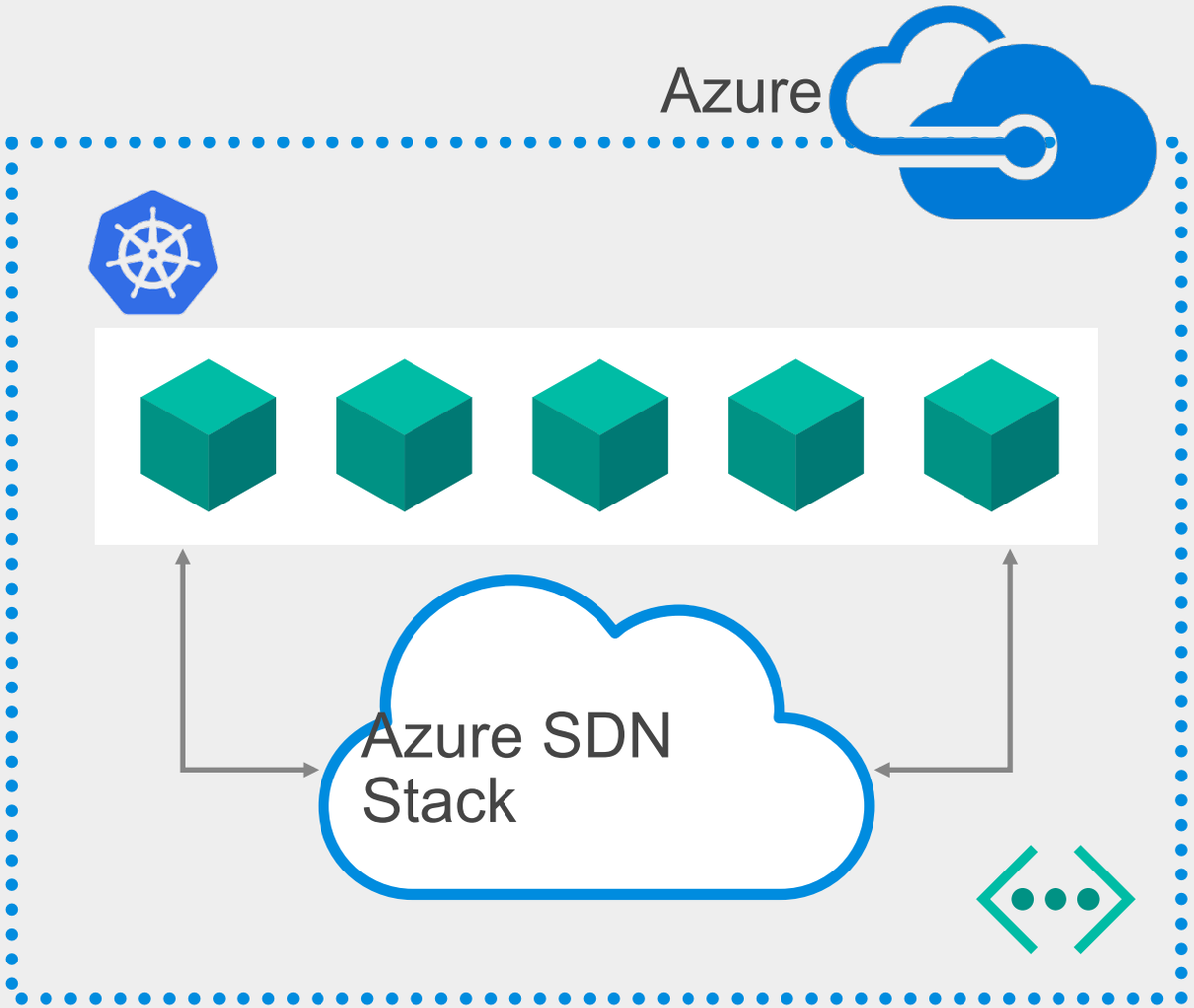
Public Preview

Open SDN solution for containers in Azure

Connects containers to Azure network

One SDN, connectivity, security, network and infrastructure management

Available with Azure Container Service (ACS)

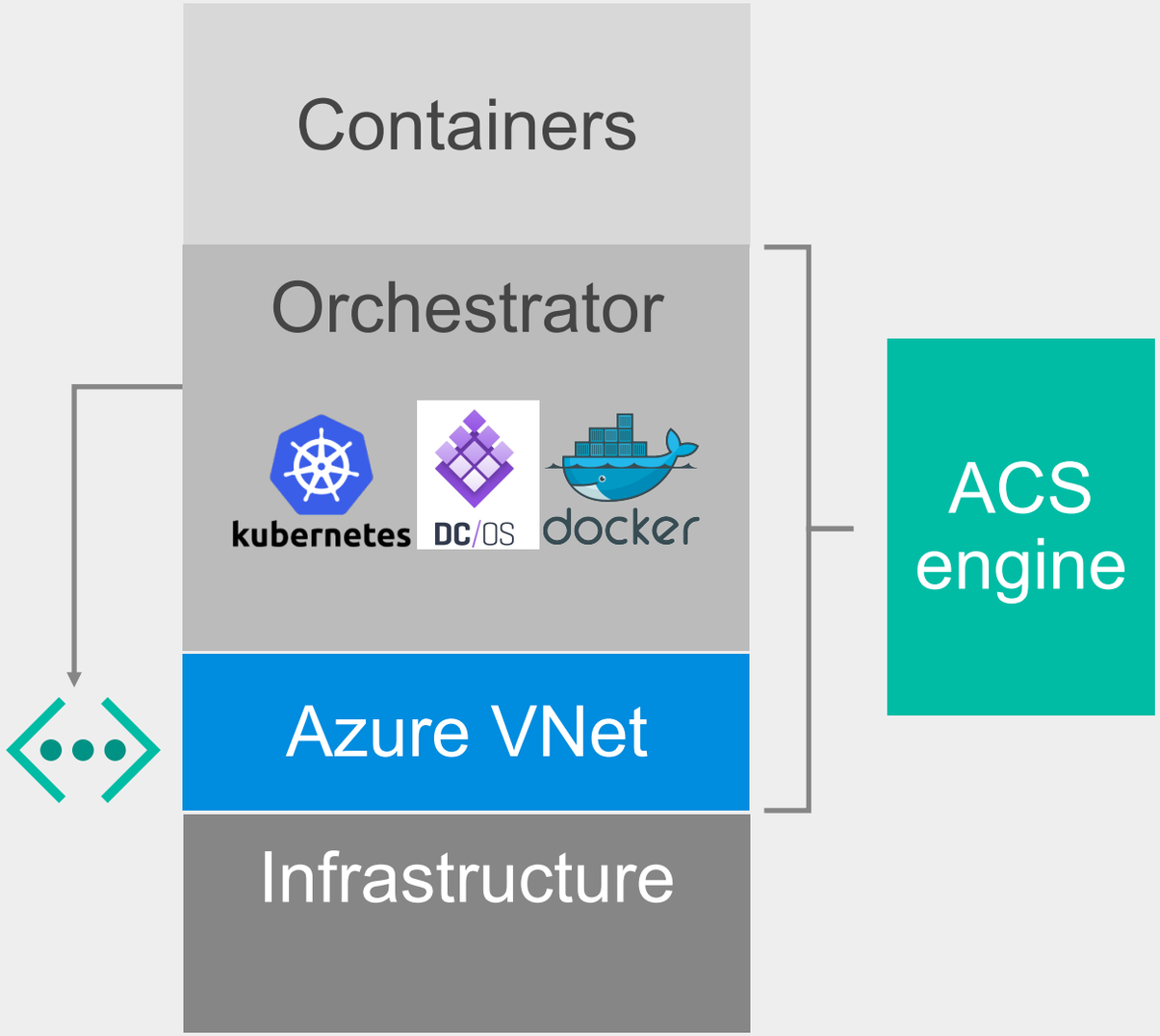


Azure Container Service + SDN

ACS—deploys and manages the infrastructure to run containers

ACS—creates clusters with chosen orchestrators

Orchestrators can now plug in to Azure SDN stack with a single click



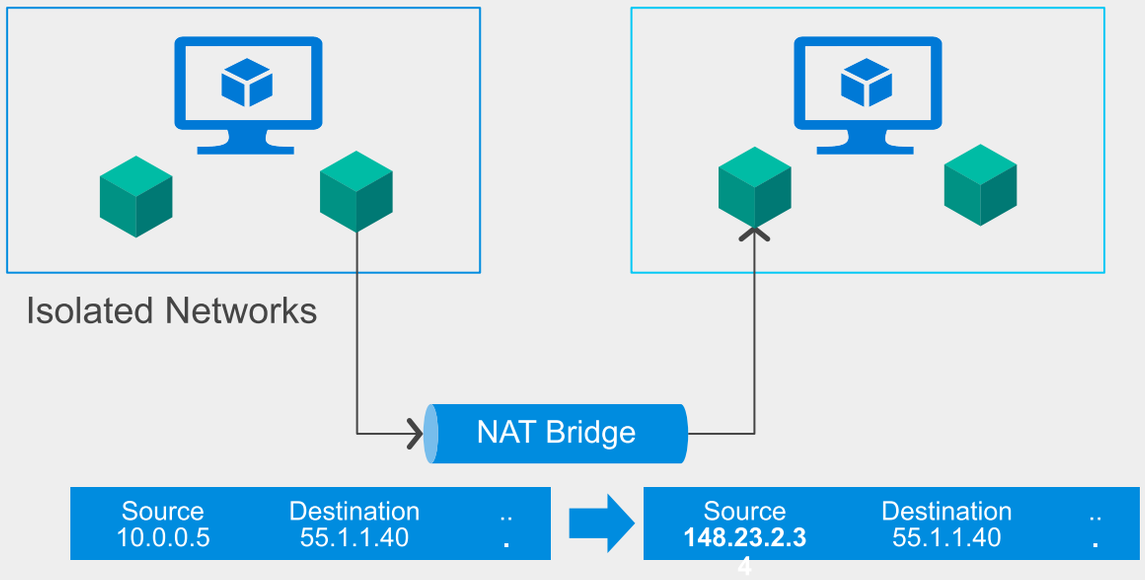
Container networking so far

Bridge/NAT Mode

Orchestrator Default

Connectivity within containers in same Host

Connectivity outside the host requires NAT

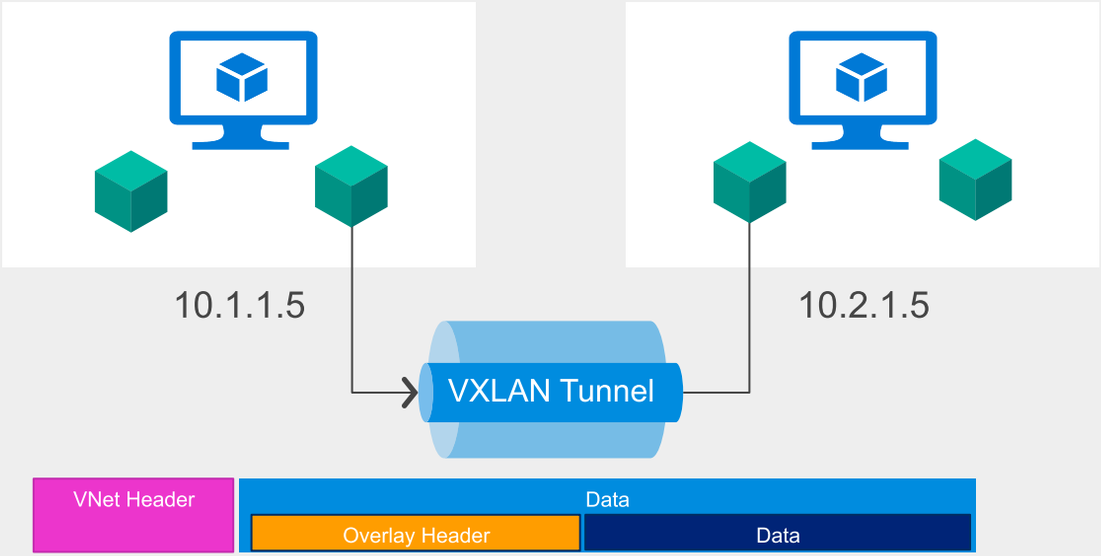


Overlay network Mode

Connectivity with containers outside the same host

Double encapsulation: performance degradation

Two networking stacks

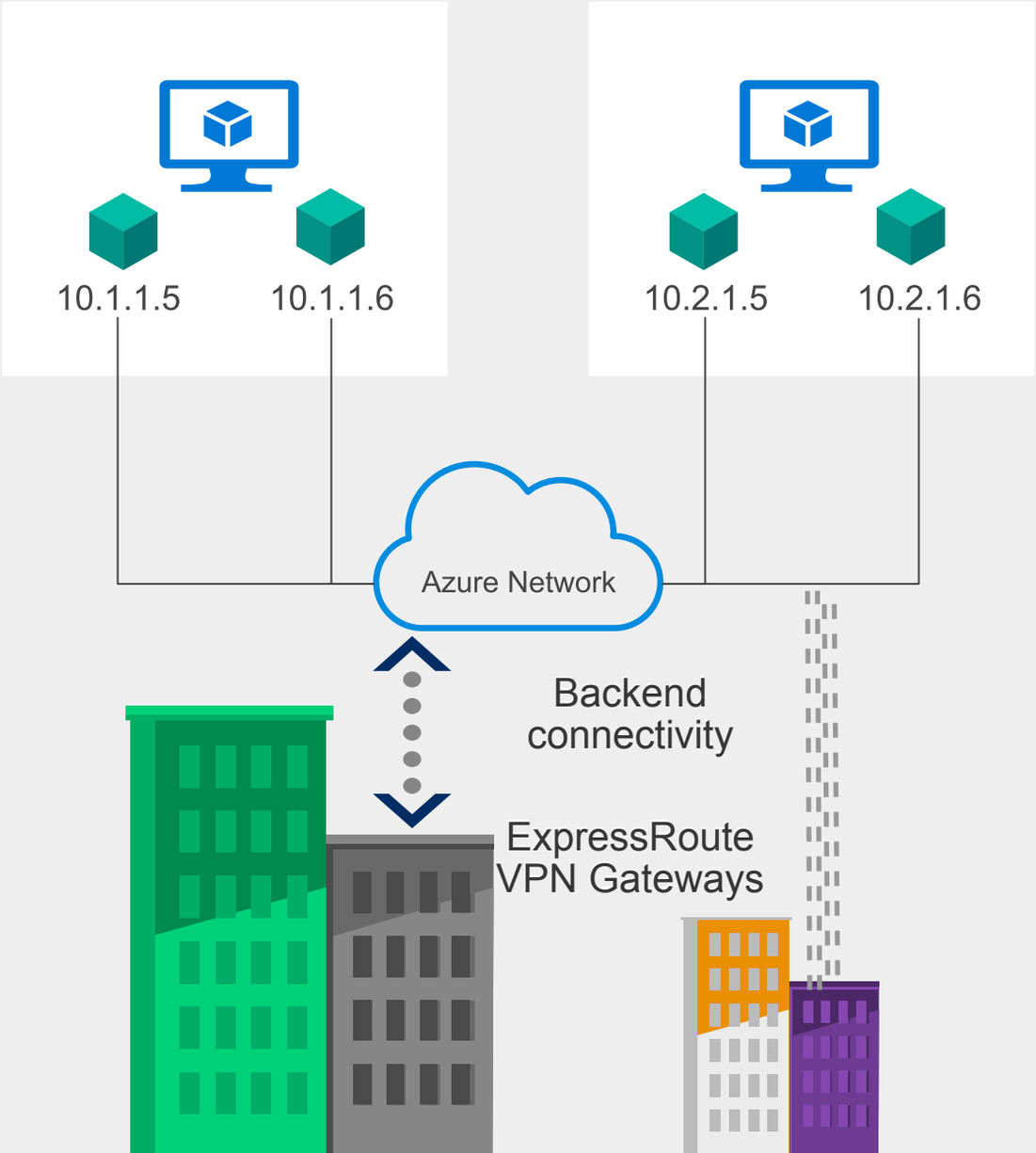


Azure VNet for containers—now

Connected to entire network (container, VM, on-premises)

Native support for containers on Azure's virtual network - all offloads supported with native performance

Unified network policies for all workloads



Azure VNet for containers—ecosystem

Orchestrator/ Plugin	For CNI (Kubernetes, DC/OS) and CNM (Docker Engine)	kubernetes DC/OS docker
Platform	For Linux and Windows	Windows
Cloud	For Azure and Azure Stack for on premises	Microsoft Azure

Container orchestrator Cloud network

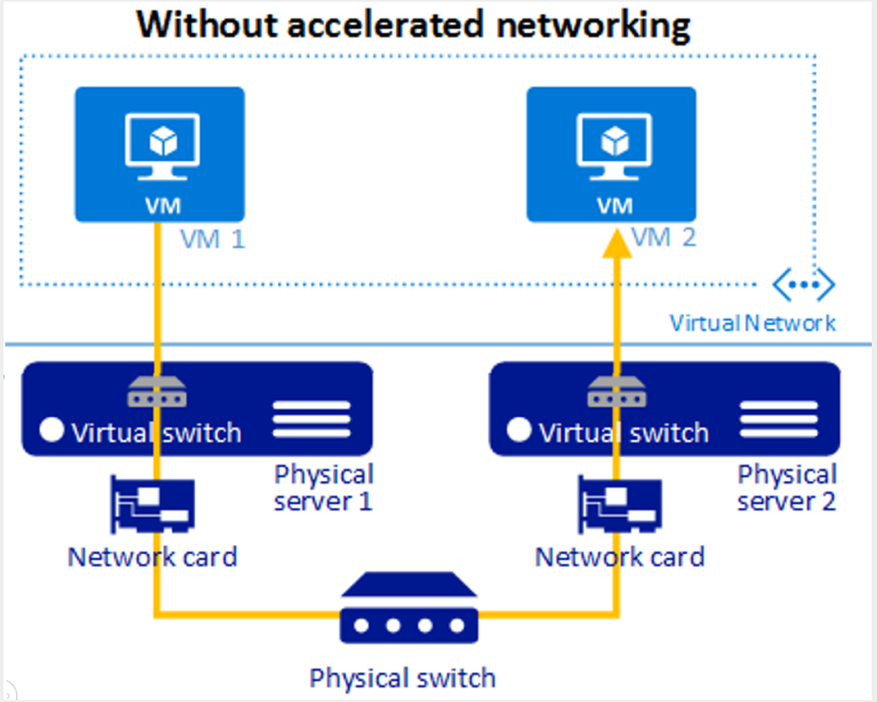
Preview – Accelerated Networking for Linux

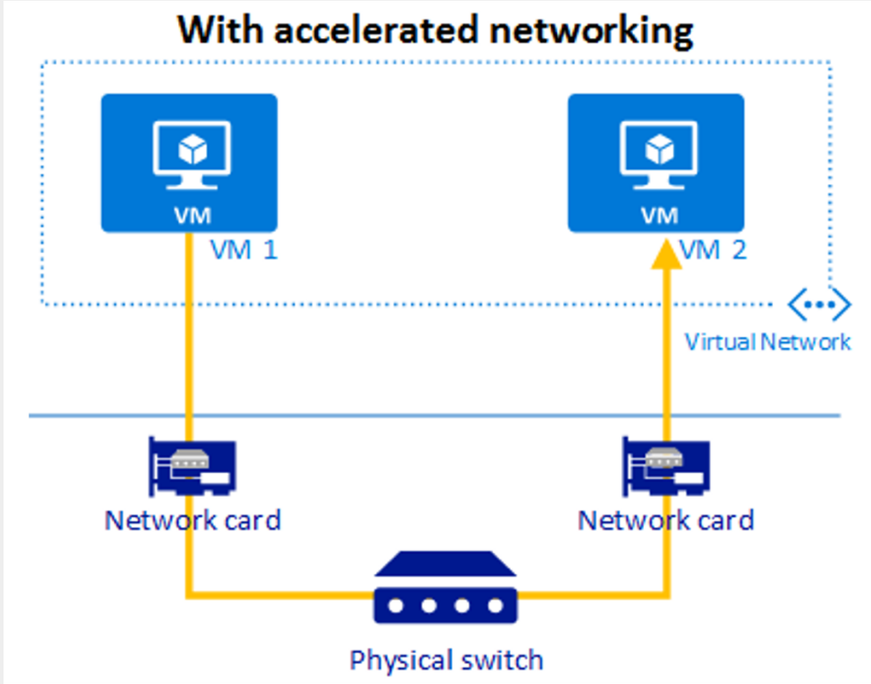
One accelerated SDN for both VMs and Containers

25Gbps and up to 10x lower latency for Linux VMs, containers, and network appliances

Support released upstream in Linux kernel

See the Accelerated SDN in Azure talk tomorrow





Takeaways

One SDN

On premises & Cloud

VMs & Containers

Linux & Windows

Benefits:

- Battle tested

- Designed to scale

Performance

High performance networks – Azure Accelerated Networking

Low-latency, high-bandwidth connections on Linux and Windows

Integration

Click of a button, fully integrated to ACS

Open Source

Azure VNet for Containers

Microsoft Azure

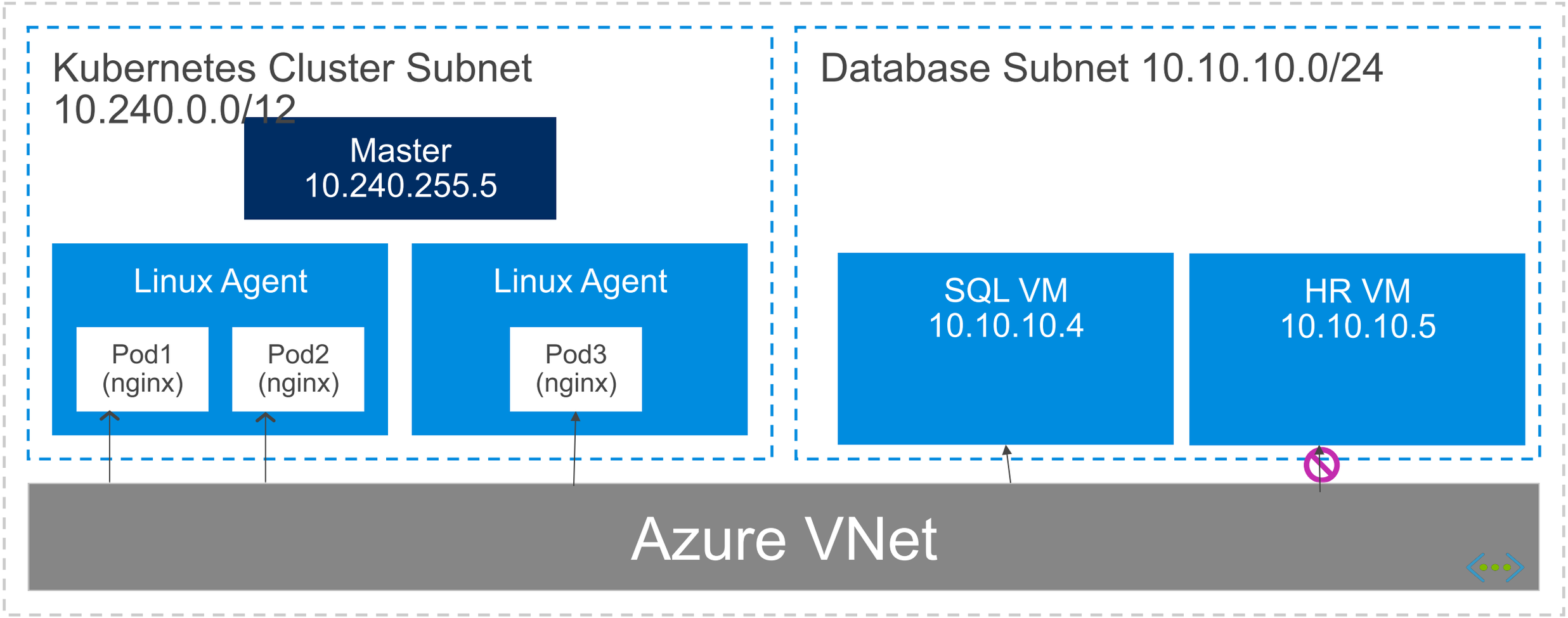
A single Azure open-source project for all things container networking on Azure

https://github.com/Azure/azure-container-networking

Demo

Deepak Bansal

Demo Setup


Kubernetes Cluster Subnet
10.240.0.0/12
Master
10.240.255.5
Linux Agent
Pod1
(nginx)
Pod2
(nginx)
Linux Agent
Pod3
(nginx)
Database Subnet 10.10.10.0/24
SQL VM
10.10.10.4
HR VM
10.10.10.5
Azure VNet

Deepak Bansal (AZUR...

Meeting start time: Sunday, April 2, 2017 9:05:57 AM

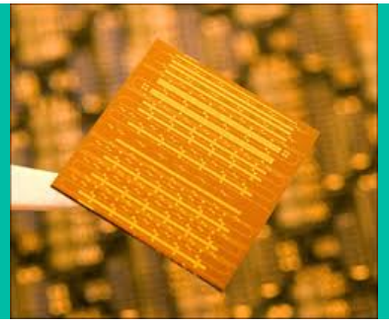
Organizer: Deepak Bansal (AZURE)

SONiC

Containerized open networking stack on Linux

Innovations in the switch world

Abstraction | SAI



Serviceability
SONiC |

Announcing Alibaba Joins SONiC Community

Alibaba Group 阿里巴巴集团

SONiC

ARISTA BAREFOOT NETWORKS BROADCOM CANONICAL CAVIUM centec networks DELL docker

Edge-corE NETWORKS ingrasys MARVELL Mellanox TECHNOLOGIES metaswitch Microsoft Nephos

http://azure.github.io/SONiC/

Summary

Azure VNet for Containers

- Public Preview
- Open Source
- Accelerated on Linux and Windows

New SONiC Partners

- Alibaba Group