Microsoft Networking Academy
with the C+E Global Black Belts

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Bryan Woodworth (@brwoodwo) – Networking TSP GBB
Before we get started

• Welcome customers and partners!!!
• Material is public information ➞ No NDA info here.
• Use the IM window for questions.
• Agenda is posted at [http://aka.ms/mna](http://aka.ms/mna) (and emailed to interested parties!)
• Sessions are recorded and posted here:
  • [http://aka.ms/mna-ch9](http://aka.ms/mna-ch9)
Microsoft Networking Academy

• Runs every 4 week with typical agenda:
  • Partner-Focused Sessions
    • Azure Networking and Security Updates (10 minutes)
    • Partner Spotlight of the week (20-30 minutes)
    • Q&A (10 minutes)
  • Deep Dive Sessions
    • Short introduction (5 minutes)
    • Deeper dive topic of the week (35-45 minutes)
    • Q&A (10 minutes)
• Email GBB-ANF@microsoft.com to receive detailed schedules for the upcoming sessions!
• Recordings available on Channel 9!
Agenda for September 22nd, 2017

• Introduction
• What’s new in Networking!
  • Container Networking
  • New Portal Experiences
• Open Q&A
Container Networking
Microsoft  ❤️  Linux
Container Momentum

ONS 2016
SONiC—Open source switch stack
Foray into open container networking

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

Backend connectivity

ExpressRoute

VPN Gateways
Azure VNet for containers—ecosystem

<table>
<thead>
<tr>
<th>Orchestrator/Plugin</th>
<th>For CNI (Kubernetes, DC/OS) and CNM (Docker Engine)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform</td>
<td>For Linux and Windows</td>
</tr>
<tr>
<td>Cloud</td>
<td>For Azure and Azure Stack for on premises</td>
</tr>
</tbody>
</table>

Container orchestrator ➔ Cloud network
Open Source

Azure VNet for Containers

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

https://github.com/Azure/azure-container-networking
What’s new in networking?
Performance!

• Accelerated networking (up to 25 Gbps with SR-IOV on Linux in Preview) : opens NVA scenarios

• VM network performance documented here :
  • https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sizes
  • https://docs.microsoft.com/en-us/azure/virtual-machines/linux/sizes
Performance!

Dv2-series
ACU: 210 - 250

<table>
<thead>
<tr>
<th>Size</th>
<th>vCPU</th>
<th>Memory: GiB</th>
<th>Temp storage (SSD) GiB</th>
<th>Max temp storage throughput: IOPS / Read MBps / Write MBps</th>
<th>Max data disks / throughput: IOPS</th>
<th>Max NICs / Expected network performance (Mbps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard_D11_v2</td>
<td>2</td>
<td>14</td>
<td>100</td>
<td>6000 / 93 / 46</td>
<td>4 / 4x500</td>
<td>2 / 1500</td>
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<tr>
<td>Standard_D12_v2</td>
<td>4</td>
<td>28</td>
<td>200</td>
<td>12000 / 187 / 93</td>
<td>8 / 8x500</td>
<td>4 / 3000</td>
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<tr>
<td>Standard_D13_v2</td>
<td>8</td>
<td>56</td>
<td>400</td>
<td>24000 / 375 / 187</td>
<td>16 / 16x500</td>
<td>8 / 6000</td>
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<tr>
<td>Standard_D14_v2</td>
<td>16</td>
<td>112</td>
<td>800</td>
<td>48000 / 750 / 375</td>
<td>32 / 32x500</td>
<td>8 / 6000 - 12000</td>
</tr>
<tr>
<td>Standard_D15_v2*</td>
<td>20</td>
<td>140</td>
<td>1,000</td>
<td>60000 / 937 / 468</td>
<td>40 / 40x500</td>
<td>8 / 20000**</td>
</tr>
</tbody>
</table>

*Instance is an isolated node that guarantees that your VM is the only VM on our Intel Haswell node.

**25000 Mbps with Accelerated Networking.

https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sizes

Performance numbers are listed on the web page per VM size!
Portal experiences – VPN

• Advanced VPN gateway parameters available on the portal:
  • BGP configuration
    • ASN for the Vnet
    • BGP peering addresses (for on premises device configuration)
  • Active-active vs active-passive configuration
Portal experiences – VPN

• New Portal Experiences for VPNs
  • VPN Connections :
    • Activating BGP per connection on the portal
Portal experiences – VPN

Configure the ASN that the VPN GW is attached to

Can enable BGP configuration after connection is established!
Portal experiences – Network Interfaces

Quickly see effective security (NSG) rules
At a glance, see public IP and private IPs
See and add inbound/outbound rules on the NIC NSG
Route filters for Microsoft Peering

Select services, reduce routes
No effect on existing Microsoft Peering
• Customer will continue to receive all the Office 365 and Dynamics 365 routes

New Microsoft Peering
• Any subscription can create
• No routes are advertised by default

Steps to create a route filter
Opt-in for current customers
Datacenter Strategy, ExpressRoute Locations and Partner Ecosystem
Microsoft Azure Datacenter Investments

1 China regions operated by 21 Vianet
2 German data trustee services provided by T-systems
3 France and South Korea regions have been announced but are not generally available currently

- Global regions
- Sovereign regions
31 ExpressRoute locations for Commercial Cloud
ExpressRoute partner ecosystem
Azure Networking Customer Reception

Location: Tommy Bahamas, 9101 International Dr. #1200, Orlando, FL 32819

Date/Time: Tuesday, September 26, 2017, 7:00pm – 10:00pm

To RSVP: https://www.surveybuilder.com/s/AXDX1

Azure Networking Ignite Sessions

BRK1037 – State of the Union for Microsoft Azure Networking
BRK4023 – Azure ExpressRoute – new features, best practices and customer experiences
BRK4019 – Network Security for Applications in Azure
BRK4017 – High-Performance Data Center Expansion with Azure Networking
BRK4028 – Building highly available, secure and scalable services for the enterprise with Azure Networking
BRK4032 – Monitoring, diagnosing and debugging with Azure Networking
THR3027 – Surprise...

Watch the keynote live and session recordings at http://ignite.Microsoft.com
Open Q&A
Thank you!
Session recording will be posted shortly here
http://aka.ms/MNA