Managing Azure Virtual Machines with PowerShell

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#azure

Topics

Azure Virtual Machines

The Many Ways of Creating an Azure VM

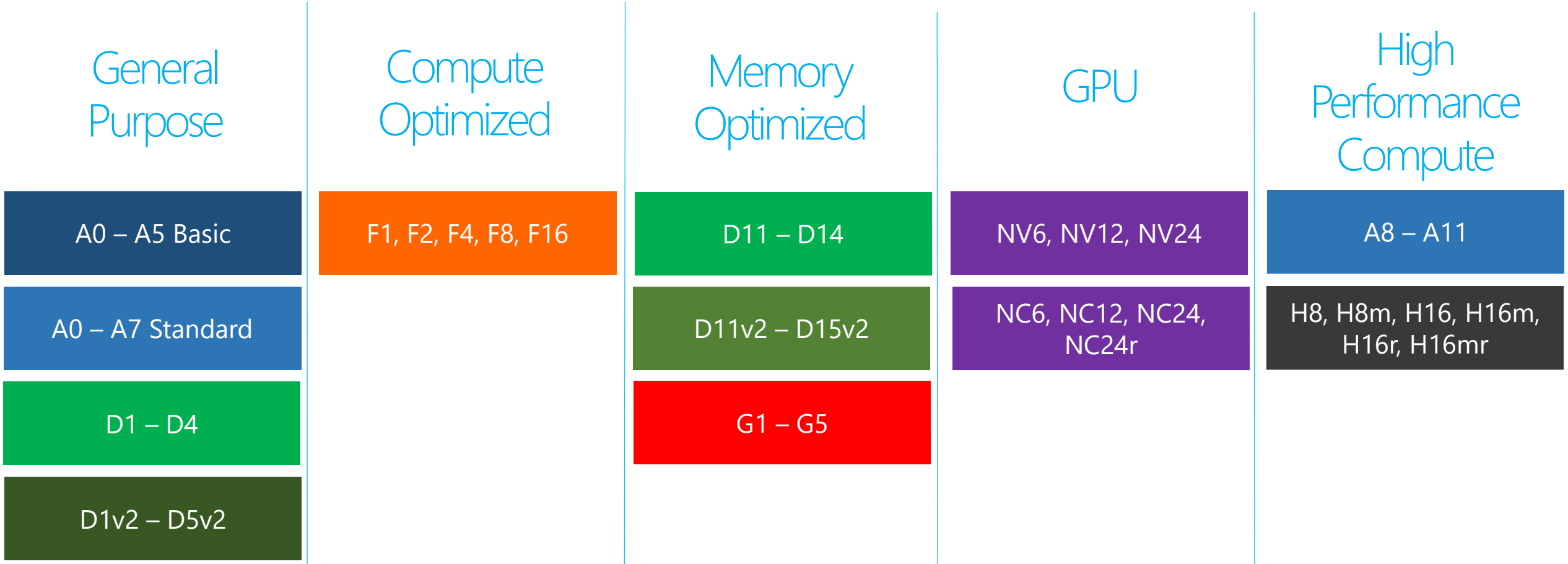
The Portal

PowerShell

Azure Virtual Machine Benefits

- Choice
  - Choose from thousands of pre-configured VM images or configure, capture, and upload your own custom images
  - Leverage VM Extensions to do custom post-deployment configuration
- Scalability & Reliability
  - Select system profiles to best match your workload
  - Configure drives for size and performance
  - Leverage VM Scale Sets to scale from one to thousands of VM instances
- Access & Security
  - Configure Azure networking to the topology you require
  - Extend your on-premises infrastructure into the Cloud

Choosing a VM Size



**Not all sizes available in all regions*

Storage Disks

Standard Storage

- Cloud-scale reliable storage
- Maximum 500 IOPS, 60 MB per second throughput per disk
- Available in all VM Sizes

Premium Storage

- High-performance, low-latency disk support, ideal for I/O intensive workloads
- Maximum 5000 IOPS, 200 MB per second throughput per disk
- Only supported in “S” series VMS (DS, DSv2, GS, FS)
- Locally redundant storage only

Azure File Storage

- Mount Azure Storage as network share volumes
- Can be accessed via SMB 3.0 or REST APIs
- Up to 1000 IOPS, up to 60 MB/second throughput per share
- Max share size = 5TB, Max file size = 1 TB.

Disks vs Images

OS Images

- Microsoft
- Partner
- User

Base OS image for new Virtual Machines
Sys-Prepped/Generalized/Read Only
Created by uploading or by capture

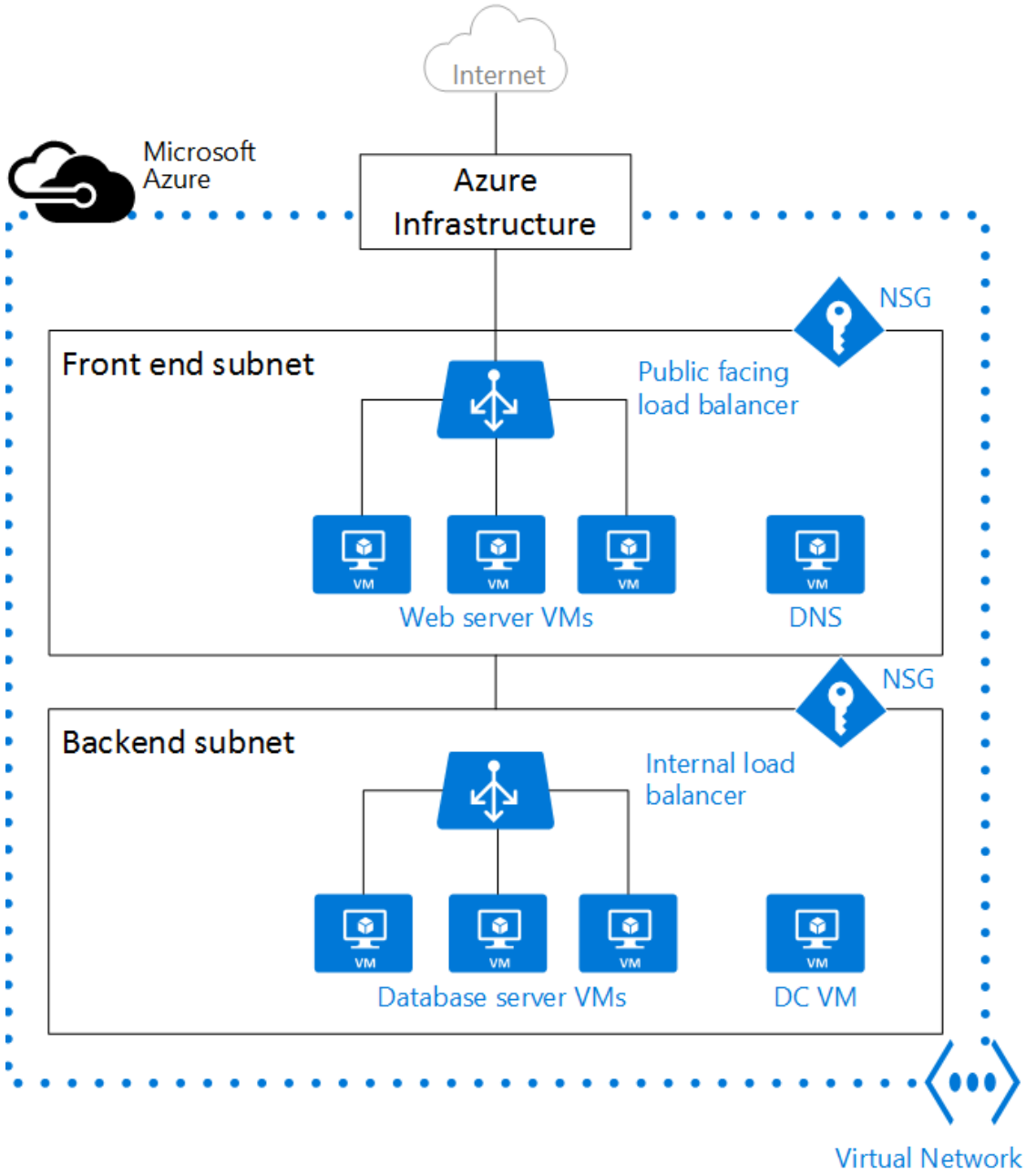
Disks

- OS Disks
- Data Disks

Writable Disks for Virtual Machines
Created during VM creation or during upload of existing VHDs.

Virtual Networks

- "Bring your own network"
- Provides security and isolation by creating a private network inside of Azure
- Supports:
  - Defining subnets
  - "Peering" with other non-overlapping VNETs in the same region
  - Defining Network Security Groups (ACL rules)
- Allows you to create complex and/or sophisticated network topologies around your VM's



Control Your Spend

https://azure.microsoft.com/en-us/pricing/calculator/

****Different regions, different prices! *(http://map.buildazure.com)***

Save Some Credits

- Stopped vs Stopped (Deallocated)
- Resize Overprovisioned VM's
- Use VM Scale Sets
- Licensing – Use Marketplace images (*AHUB)
- Optimize your custom images
- Need SMB Shares? Use Azure File Shares & not a VM
- Use Azure App Service for web, API, & mobile apps
- Clean up messy resources
- Use the Dev/Test Labs
- Always audit your usage

Be Aware of your Limits

https://docs.microsoft.com/en-us/azure/azure-subscription-service-limits

Resource	Default Limit	Max Limit
Cores per sub	20	10,000
VMs per sub (RM)	20 per region	10,000 per region
VM total cores (RM)	20 per region	10,000 per region
VM per series	20 per region	10,000 per region
Resource Groups per sub	800	800
RM API Reads	15000 per hour	15000 per hour
RM API Writes	1200 per hour	1200 per hour
RM API Request Size	4194304 bytes	4194304 bytes
VMs per cloud service (ASM)	50	50

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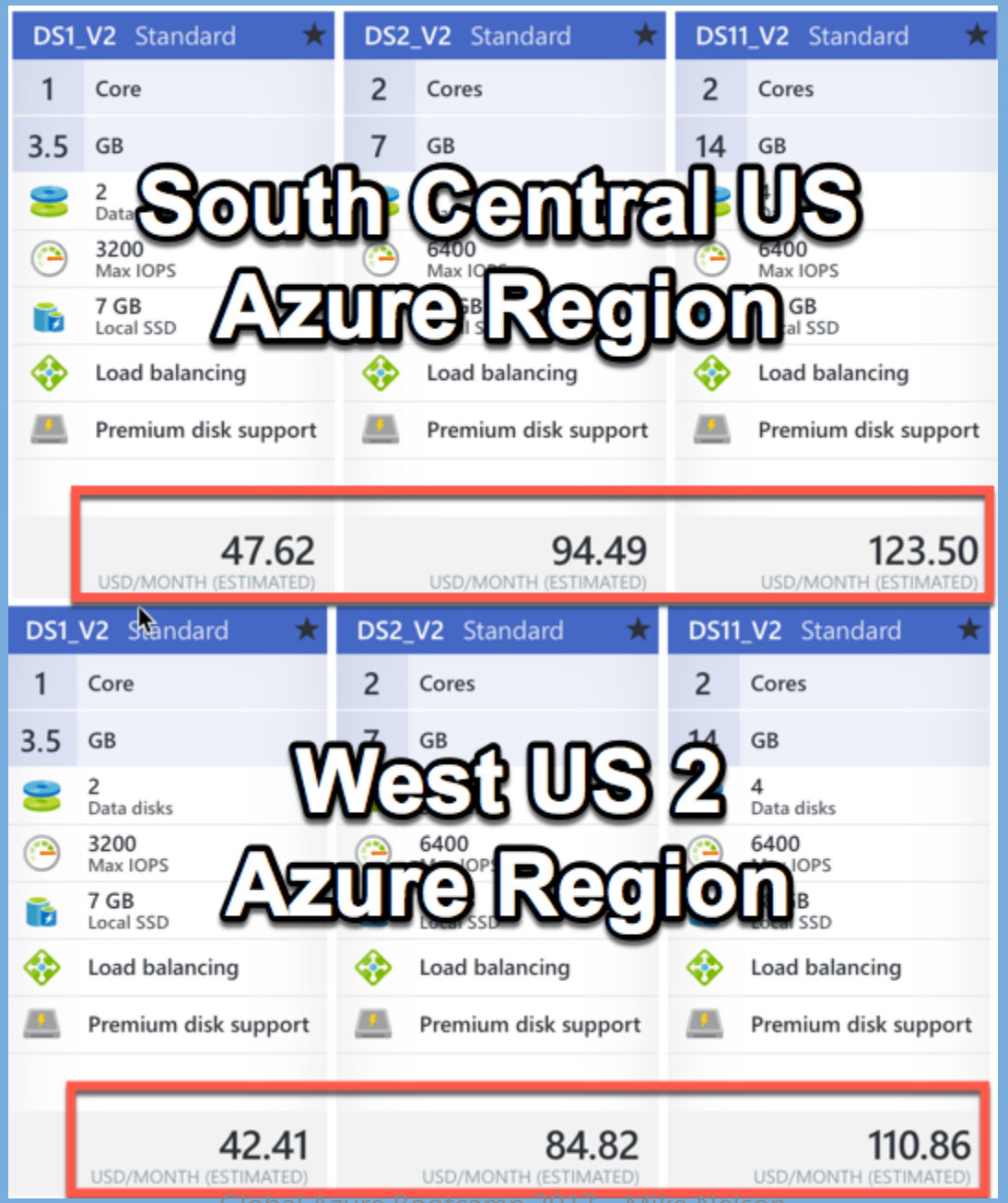
DS1_V2 Standard
1 Core
3.5 GB
2 Data
3200 Max IOPS
7 GB Local SSD
Load balancing
Premium disk support
47.62 USD/MONTH (ESTIMATED)
DS2_V2 Standard
2 Cores
7 GB
6400 Max IOPS
Load balancing
Premium disk support
94.49 USD/MONTH (ESTIMATED)
DS11_V2 Standard
2 Cores
14 GB
6400 Max IOPS
Load balancing
Premium disk support
123.50 USD/MONTH (ESTIMATED)
South Central US Azure Region
DS1_V2 Standard
1 Core
3.5 GB
2 Data disks
3200 Max IOPS
7 GB Local SSD
Load balancing
Premium disk support
42.41 USD/MONTH (ESTIMATED)
DS2_V2 Standard
2 Cores
6400
Load balancing
Premium disk support
84.82 USD/MONTH (ESTIMATED)
DS11_V2 Standard
2 Cores
14 GB
4 Data disks
6400
Load balancing
Premium disk support
110.86 USD/MONTH (ESTIMATED)
West US 2 Azure Region

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Partial Credit – Chris Pietschmann – Buildazure.com

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Provisioning a VM

Provisioning Steps

Image

- Select an image from the VM Gallery
- Upload your own Custom-Prepped Image
- Use a Custom ARM Template

Scale

- General Purpose
- Compute Optimized
- Memory Optimized
- GPU
- High Performance Compute

Boot

- Create new disk in Storage
- Boot the machine

Many Ways to Create a VM

Portal

PowerShell

Azure CLI

ARM - ASM Template

REST API

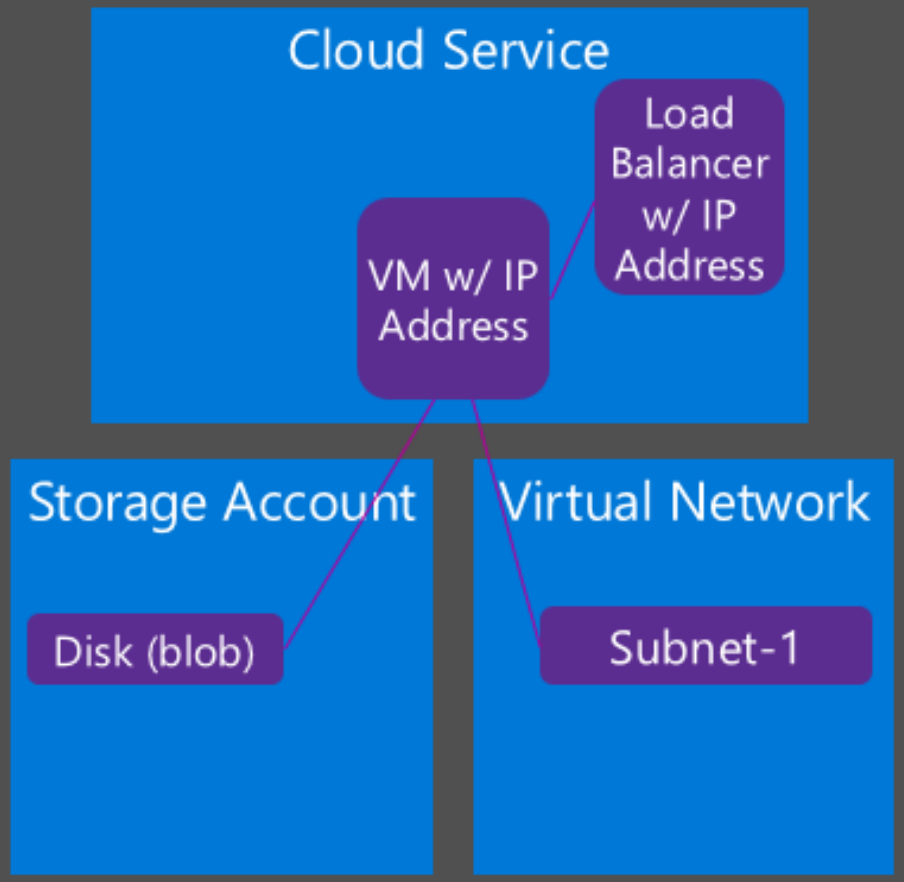
VS SDK

SCCM App Controller

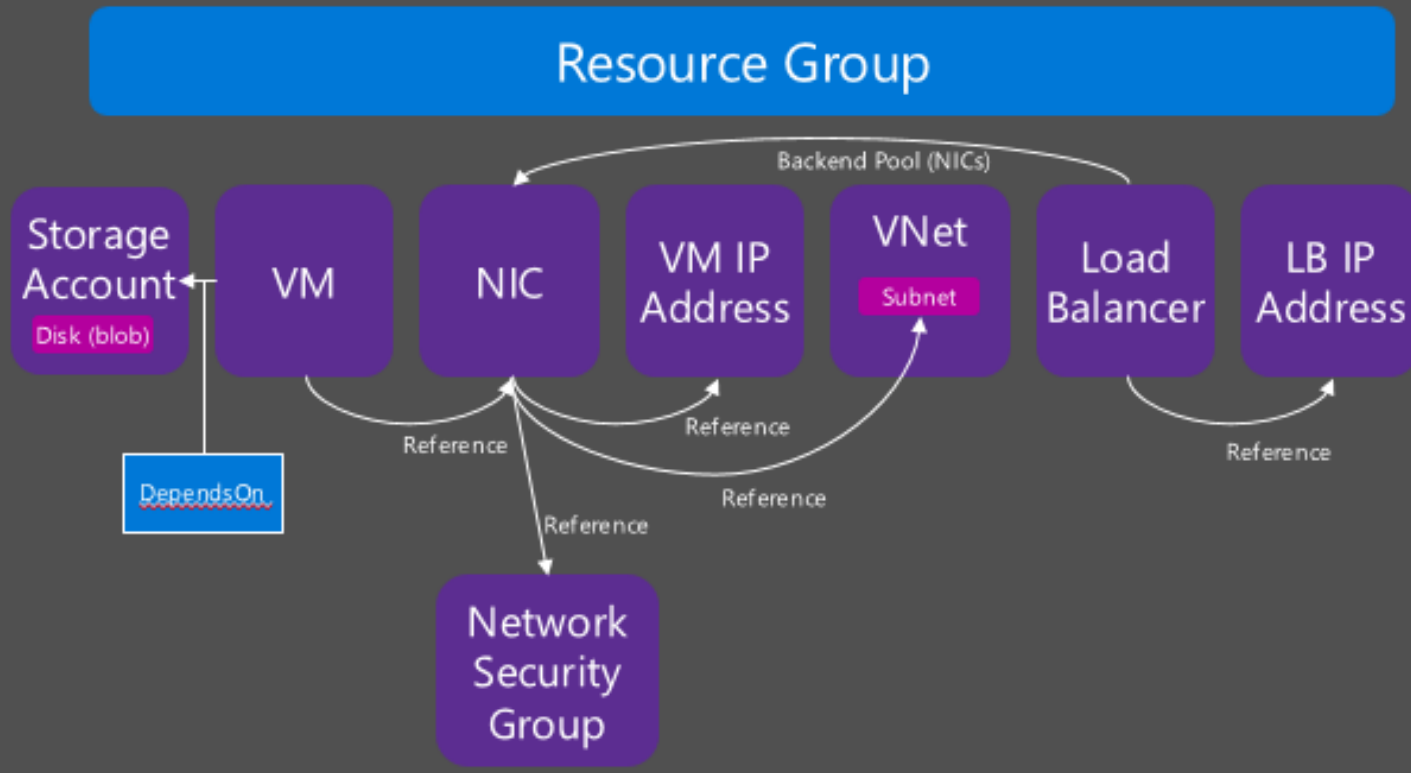
3rd Party Admin

Azure Networking: ASM vs. ARM

ASM (v1)



ARM (V2)



Make Way for ARM

ASM (Classic)

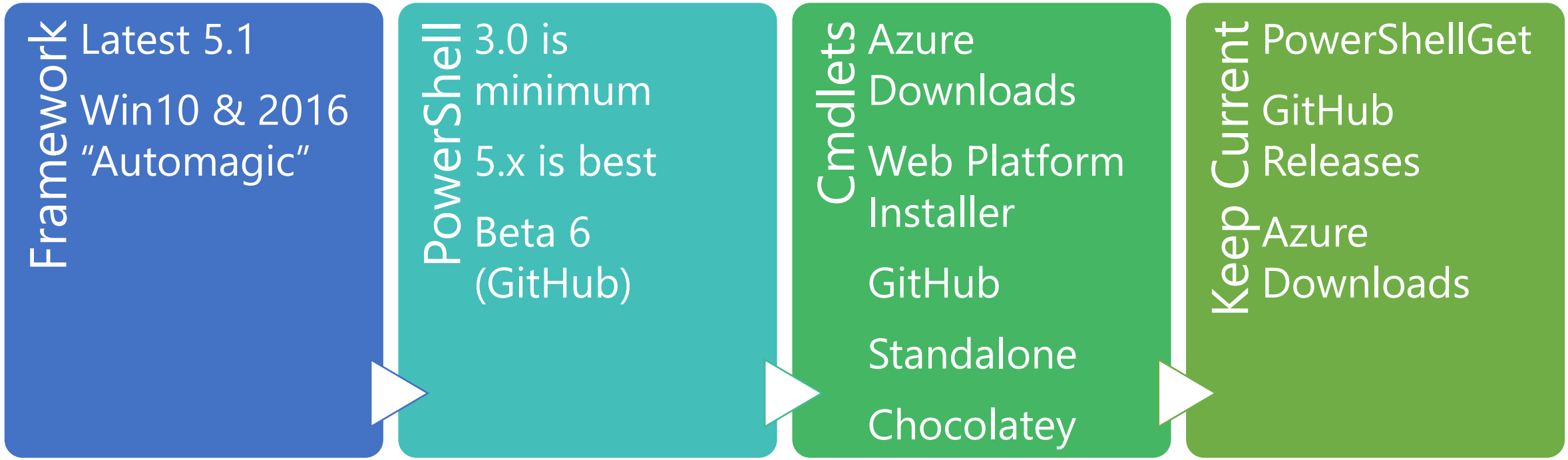
- Traditional deployments
- K.I.S.S.
- Commands run 1-by-1 = slow
- Is being deprecated

ARM – The New Way

- Logical Grouping
- Shared and reusable
- Tagging
- Commands run batched = faster
- Some new resources require it

The Azure Portal

Setting Up PowerShell



PowerShell DSC - Learn It!

PowerShell Management Methods

- ASM (Classic) – Built-In access via WinRM
- ARM – Requires Config pre or post VM (w/certs)
- Internal
  - Windows Jump Box
  - Linux OMI Provider via PSRP
  - SMT
- External
  - RDP / SSH
  - HTTPS WinRM tcp/5986 – PoSH Remoting (Certs)
  - SMT

Demos & Scripts