

Administer Hyper-V Guest Virtual Machines



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Overview



Implement high availability for virtual machines

Manage VHD and VHDX files

Configure Hyper-V network adapter

Configure NIC teaming

Configure Hyper-V switch



Manage Virtual Machines and Containers

Configure Hyper-V

Manage Hyper-V

Administer Hyper-V Guest VMs

Create and Manage Containers

Manage Azure VMs that Run Windows Server



Hyper-V High Availability



High Availability (HA)

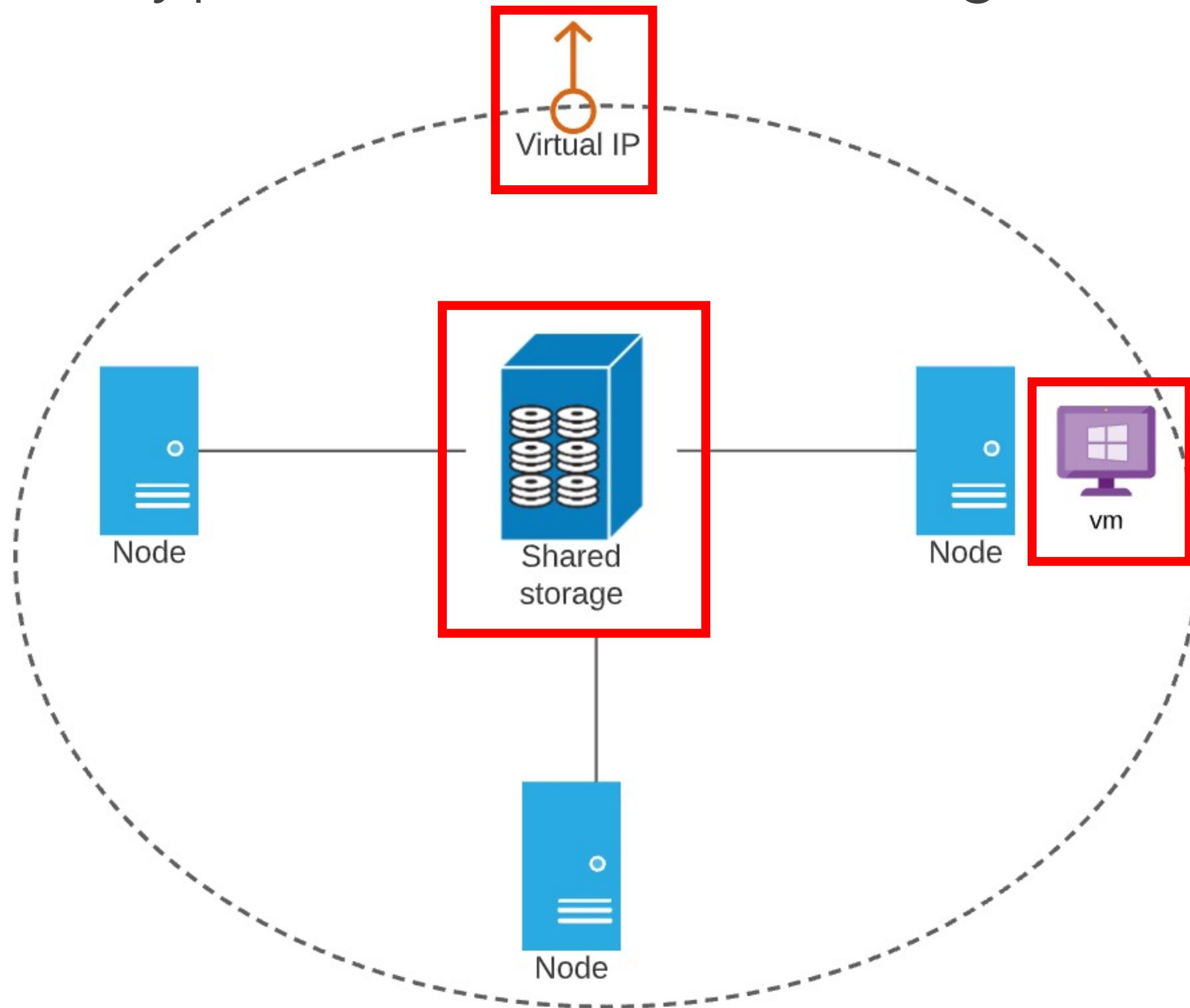
Controls that guarantee your workload is up and running despite maintenance operations and outages.



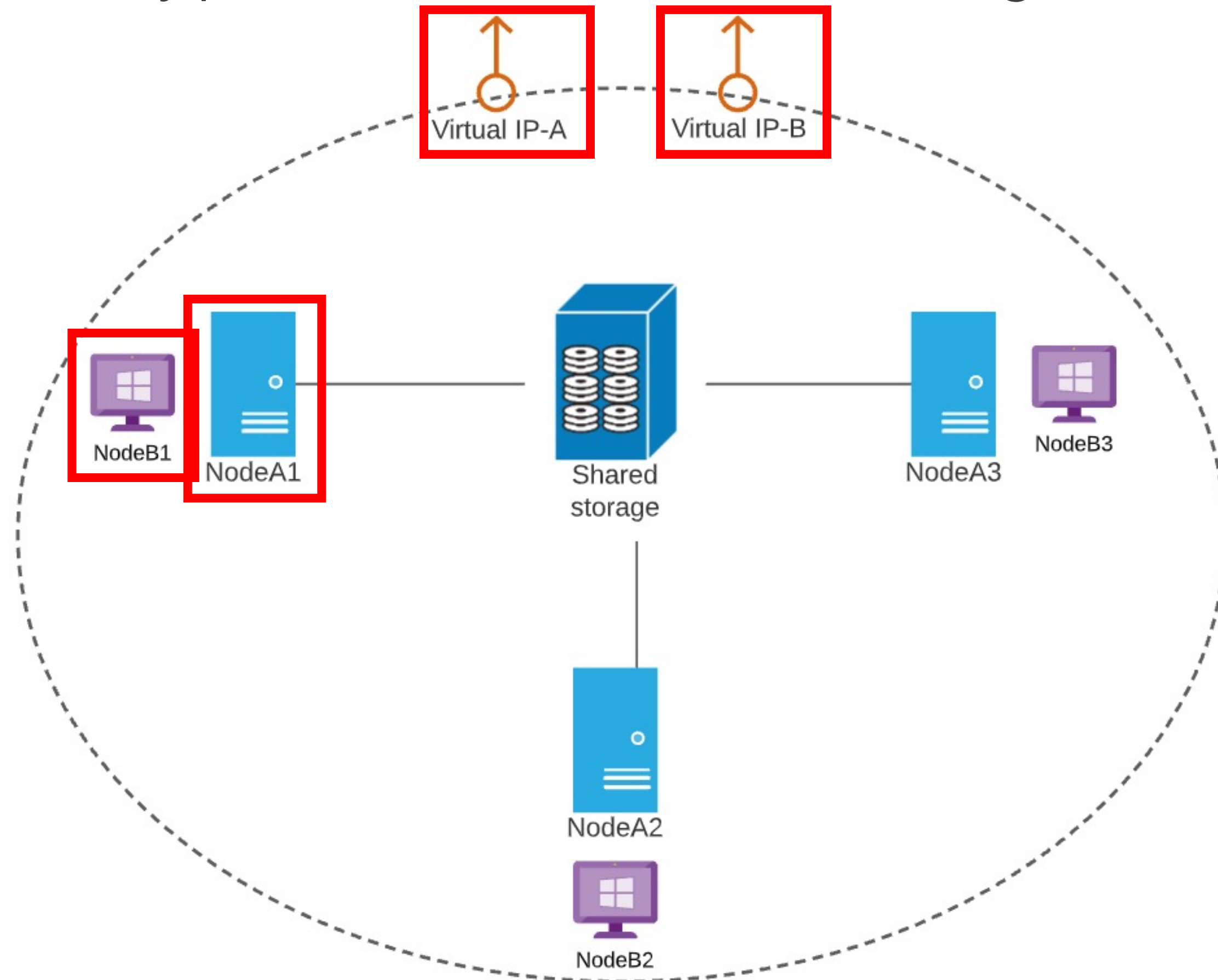
Hyper-V High Availability Options



Hyper-V Host Clustering



Hyper-V Guest Clustering



Hyper-V NLB

NLB is a Windows Server feature

← Virtual IP



webvm1



webvm2



webvm3



Hyper-V Storage



Hyper-V Virtual Disk Comparison

Generation 1

VHD or VHDX extension

2 TB max disk size

1 TB max RAM

64 max 32- or 64-bit vCPUs

512 byte allocation units

BIOS firmware

No security extensions

Generation 2

VHDX extension

64 TB max disk size

12 TB max RAM

240 max 64-bit vCPUs

4 KB allocation units

UEFI firmware

Support for Secure Boot, TPM, etc.



Many Microsoft Azure VM role sizes support Generation 2 fixed-size virtual disks with a VHD file extension

Point to Ponder



Convert a Hyper-V Disk with PowerShell

```
# Prepare a dynamic VHDX
```

```
Optimize-VHD -Path 'E:\VMs\winserv01.vhdx'
```

```
Resize-VHD -Path 'E:\VMs\winserv01.vhdx' -ToMinimumSize
```

```
# Convert a dynamic Gen 2 disk to a fixed Gen 2 disk
```

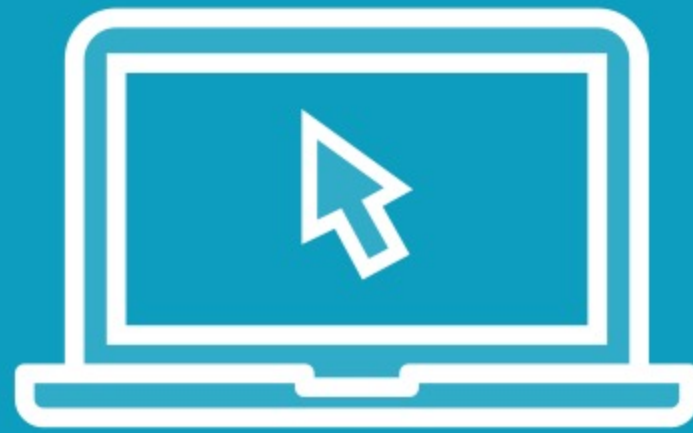
```
Convert-VHD -Path 'E:\VMs\winserv01.vhdx' `
```

```
    -DestinationPath F:\azure\winserv01.vhd `
```

```
    -VHDType Fixed
```



Demo



1

Prepare a generalized Hyper-V VHD for Azure

Use Storage Explorer to upload the file

Create image in Azure

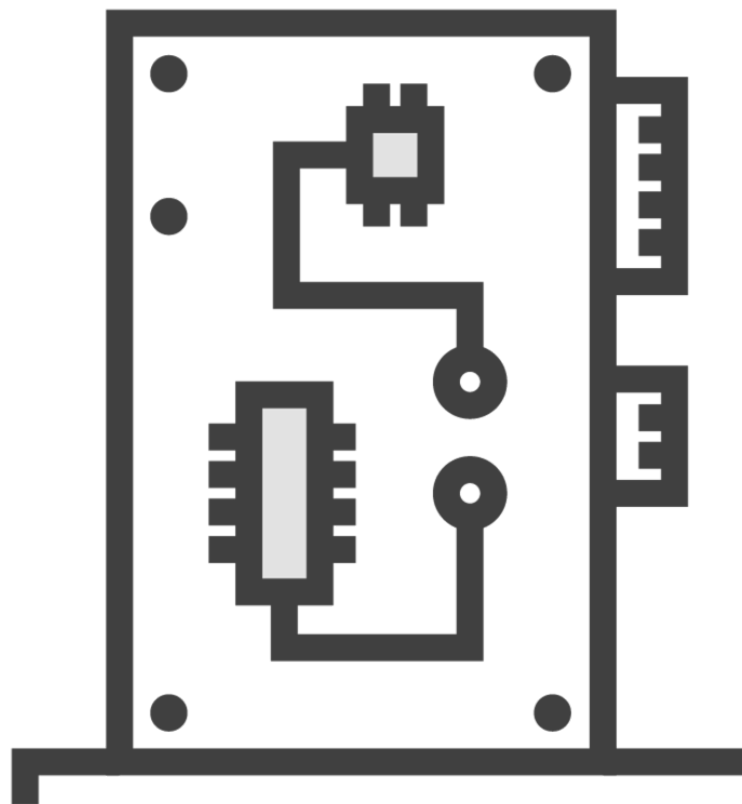
Create VM from image



Hyper-V Networking



Hyper-V Network Adapter and Virtual Switches



Network adapter
SR-IOV (host hardware must support)



External switch
Guest VMs have access to the physical network



Internal switch
Guest VMs can communicate with host and other VMs



Private switch
Guest VMs communicate only with each other



Hyper-V NIC Teaming

Group 1-32 physical NICs into one or more software vNICs

Advantages:

- Speed
- Fault tolerance

Process:

- Create NIC team on Hyper-V host
- Create external switch connected to MS "Network Adapter Multiplexor Driver" (team interface)
- Create vNICs
- Attach vNICs to Hyper-V VMs



Demo



2

Create a switch

Bind a new VM adapter to switch

Demonstrate external switch connectivity



Summary



These features highlight some differences between local and Azure-based Windows Server

- PaaS instead of failover clustering
- Azure load balancer instead of NLB
- Azure Accelerated Networking

You can count on "massaging" your local VHDs to prepare them for Azure



Up Next:
Create and Manage Containers

