

# Manage Hyper-V

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# Overview



**Configure Integration Services**

**Configure Discrete Device Assignment**

**Configure VM Resource Groups/CPU Groups**

**Configure hypervisor scheduling types**

**Manage VM checkpoints**



# 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 VM Management Topics



# Hyper-V Integration Services

**Windows services that allow the VM to communicate with its Hyper-V host**

**Analogous to the Azure VM agent**

- Hyper-V Heartbeat Service



# Hyper-V Integration Services

**Guest Shutdown  
Service**

**Time  
Synchronization  
Service**

**Data Exchange  
Service**

**Volume Shadow  
Copy Requestor**

**Guest Service  
Interface**

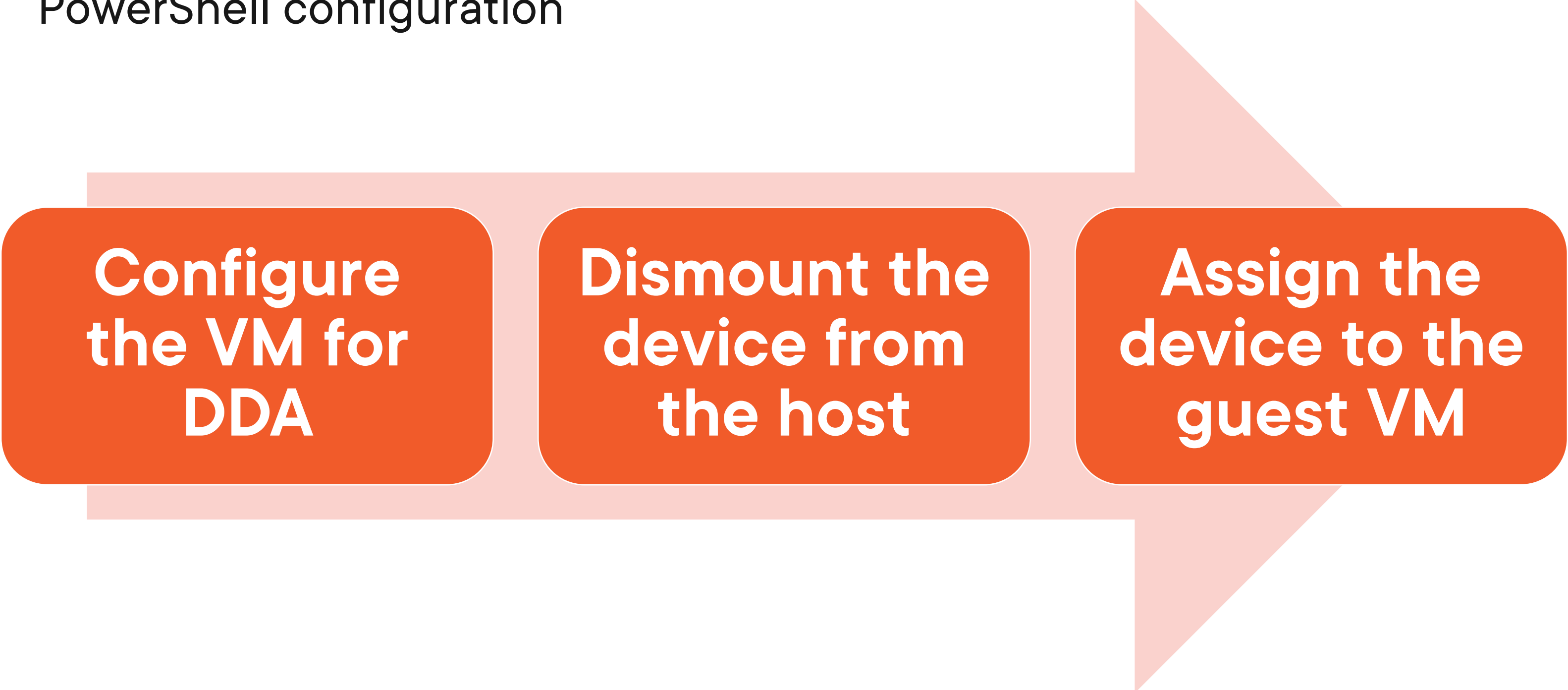
**PowerShell Direct  
Service**



# Hyper-V Discrete Device Assignment

Pass an entire PCIe device (graphics card, NVMe storage) into the VM

PowerShell configuration



**Configure  
the VM for  
DDA**

**Dismount the  
device from  
the host**

**Assign the  
device to the  
guest VM**



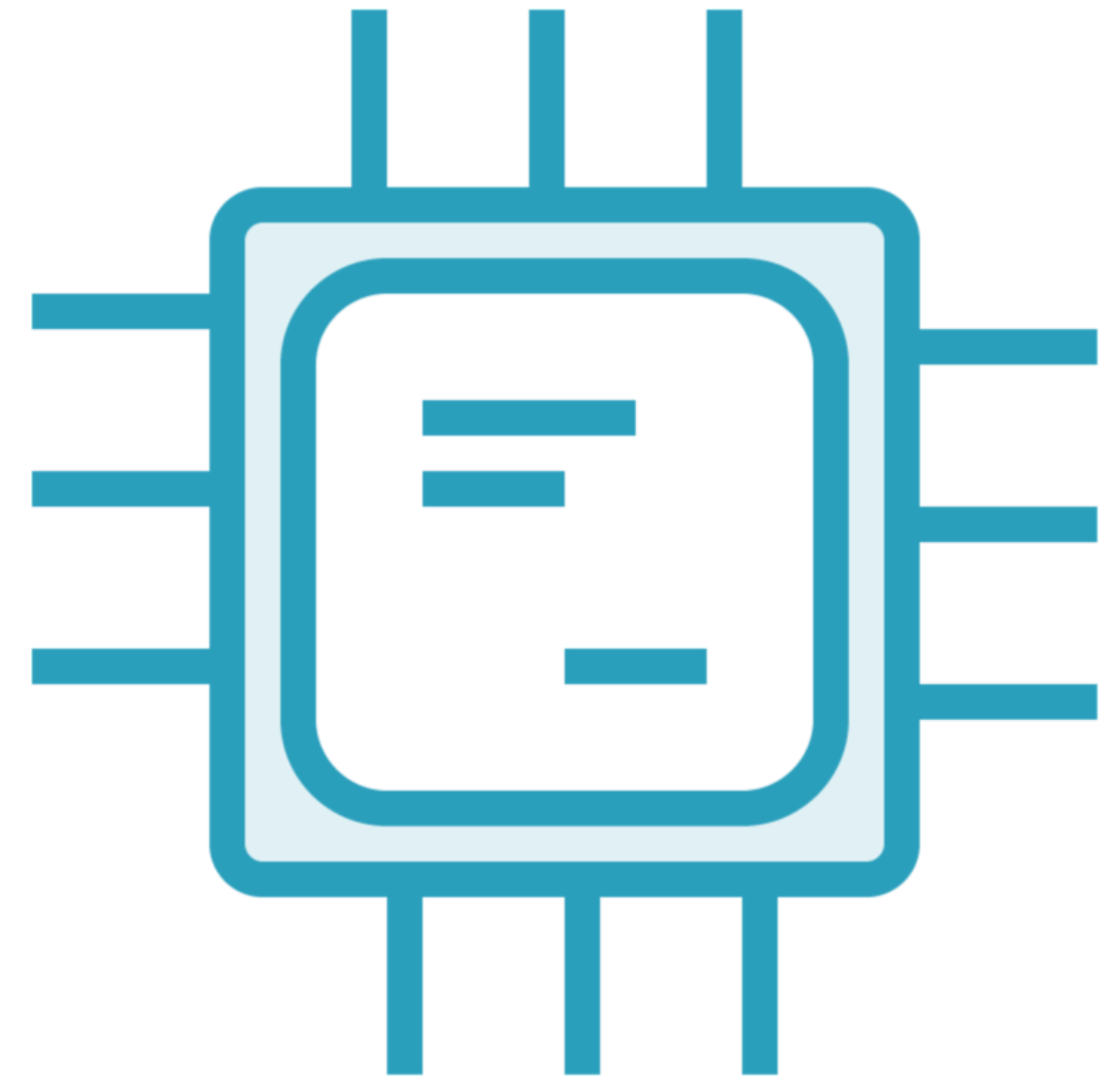
# Hyper-V CPU Groups

Allows an administrator to better allocate  
host CPU to guest VMs

QoS

Requires cpugroups.exe, which abstracts  
the Hyper-V Host Compute Service (HCS)

Divide logical VM resource groups into CPU  
service tiers





# Hyper-V CPU Groups

# Discover CPU topology

```
CpuGroups.exe GetCpuTopology
```

# Create a group including 4 logical processors (LPs)

```
CpuGroups.exe CreateGroup /GroupId:36AB08CB-3A76-4B38-992E-  
000000000001 /GroupAffinity:0,1,16,17
```

# Set cap to 50% (range is 0 to 65536)

```
CpuGroups.exe SetGroupProperty /GroupId:36AB08CB-3A76-4B38-992E-  
000000000001 /CpuCap:32768
```

# Bind a VM to a CPU group

```
CpuGroups.exe SetVmGroup /VmName:vm1 /GroupId:36AB08CB-3A76-4B38-992E-  
000000000001
```



# Hyper-V Hypervisor Scheduler Types

## Definitions

- Scheduler types determine how the Hyper-V host assigns work across guest virtual CPUs
- Normally VM VPs run 1:1 with the host's LPs
- A guest VM can be scheduled to use any host LP

## Type: Classic scheduler

- Default mode
- Fair share, round-robin CPU scheduling

## Type: Core scheduler

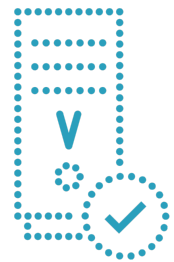
- Security-oriented mode
- Guest VPs are constrained to physical LP cores, providing strong isolation

## Type: Root scheduler

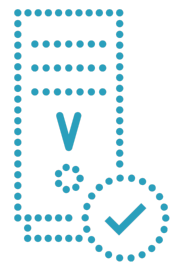
- Default mode in Windows Client Hyper-V
- Hypervisor cedes control over work scheduling to the operating system (NT scheduler)



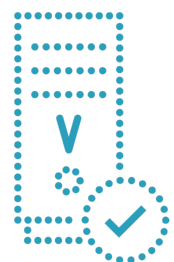
# Hyper-V VM Checkpoints



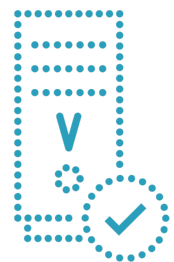
Checkpoints allow you to save and restore a VM's state at a particular point in time (after a failed update or config change, for instance)



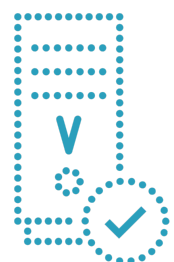
Checkpoints are NOT a replacement for VM backups; they are a rollback method



**Standard Checkpoint:** Application-consistent snapshot of VM and its memory state



**Production Checkpoint:** VSS-based data-consistent snapshot of VM disk state (not memory state)



Checkpoints can be applied, renamed, deleted, or exported



# Demo



# 1

## Hyper-V checkpoints

- Hyper-V Manager
- Windows PowerShell



## Summary



**Microsoft gives Hyper-V administrators a basket of tools to control and secure their virtual infrastructure**

**Nested virtualization unlocks these capabilities in Microsoft Azure**

- Verify supported VM sizes



Up Next:  
Administer Hyper-V Guest Virtual Machines

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