HYPER-V CLUSTERING

SOWMYA KRISHNAN
Who are we?

- Has been contributing and driving PRs / features in community
- Prior to that, through Citrix
- Committed to community
Hyper-V support evolvement over releases

CloudStack 4.3

Both Hyper-V Server (non GUI) and Windows Server

• Initial support

• SMB

• Basic support for VM, storage and networking
Hyper-V support evolvement over releases

CloudStack 4.4

- VPC
- Storage Migration
- Zone Wide Primary Storage
- Multiple Nics
Hyper-V Clustering

- HA using Failover Clusters
- Cluster Shared Volume
- iSCSI
Failover Cluster

- Independent nodes of a cluster working together to increase availability of services

- In conjunction with Cluster Shared Volume

- Multiple nodes read from and write to the same Cluster Shared Volume

- Multiple nodes can access files from same volume at the same time
Cluster Shared Volume

• Failover Cluster

• Volumes in CSV can be accessed by all nodes in the Failover Cluster

• All nodes in cluster have files in the same volume
Quorum Configuration

• To avoid single point of failure

• Number of failures that are allowed in a cluster

• Different Quorum choices based on capacity
Select features

Features

- Client for NFS
- Data Center Bridging
- Direct Play
- Enhanced Storage
- **Failover Clustering (Installed)**
- Group Policy Management
- IIS Hostable Web Core
- Ink and Handwriting Services
- Internet Printing Client
- IP Address Management (IPAM) Server
- iSNS Server service
- LPR Port Monitor
- Management OData IIS Extension
- Media Foundation
- Media Services
- Media Transcoding
- Remote Server Manager
- Shared File System
- System Configuration
- Windows Deployment Services
- Windows PowerShell
- Windows Remote Management
- Windows Server Backup
- Windows System Image Manager
- Windows Update

Description

Failover Clustering allows multiple servers to work together to provide high availability of server roles. Failover Clustering is often used for File Services, virtual machines, database applications, and mail applications.
Adding Hyper-V Failover Cluster to CloudStack
• Failover Cluster created by Admin and added to CloudStack

• 1-1 mapping between Failover Cluster and CloudStack Cluster

• Hosts to be added to the Failover Cluster before adding to CloudStack

• Use PreSetup Option to add CSV
Add Primary Storage

Scope: Cluster
Zone: HVCluster
Pod: P1
Cluster: Cl1
Name: 
Protocol: PreSetup
SR Name-Label: PreSetup
Provider: DefaultPrimary
Storage Tags: 

For XenServer, choose NFS, iSCSI, or PreSetup. For KVM, choose NFS, SharedMountPoint, RDB, CLVM or Gluster. For vSphere, choose VMFS (iSCSI or FiberChannel) or NFS. For Hyper-V, choose SMB/CIFS or PreSetup. For LXC, choose NFS or SharedMountPoint. For OVM, choose NFS or ocfs2.
Name: HA Offering

Description: HA Offering

Storage Type: shared

 Provisioning Type: thin

Custom: 

# of CPU Cores: 1

CPU (in MHz): 500

Memory (in MB): 512

Network Rate (Mb/s):

QoS Type:

Offer HA: Yes

Storage Tags:

Host Tag:

CPU Cap: 

If yes, the administrator can choose to have the VM be monitored and as highly available as possible.
HA VMs have higher priority

Non HA VMs added to Cluster with priority: 0 (No Auto Start)
HIGH AVAILABILITY
Two node cluster

<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
<th>Assigned Vote</th>
<th>Current Vote</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYPERV CLOUD13</td>
<td>Up</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HYPERV CLOUD17</td>
<td>Up</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
Priority is assigned to HA Virtual machines running on Hyper-V cluster

Possible priority values: High (3000), Medium (2000): The default setting, Low (1000) or No Auto Start (0)
Node goes down
<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
<th>Type</th>
<th>Owner Node</th>
<th>Priority</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>i-4-3-VM</td>
<td>Running</td>
<td>Virtual Machine</td>
<td>HYPERV.CLOUD13</td>
<td>No Auto Start</td>
<td></td>
</tr>
<tr>
<td>i-4-5-VM</td>
<td>Running</td>
<td>Virtual Machine</td>
<td>HYPERV.CLOUD13</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>i-4-6-VM</td>
<td>Running</td>
<td>Virtual Machine</td>
<td>HYPERV.CLOUD13</td>
<td>Medium</td>
<td></td>
</tr>
</tbody>
</table>

HA VMs get migrated to other Host
Live Migration from Event Viewer
HA VMs migrated to host13
2017-05-11 14:41:47,678 INFO [c.c.v.VirtualMachineManagerImpl] (DirectAgentCronJob-303:ctx-99440fa4) (logId:749b2562) Detected out of band VM migration from host 2 to host 1


2017-05-11 14:41:48,516 INFO [o.a.h.i.c.DefaultHttpClient] (DirectAgent-306:ctx-9dd9ce8b) (logId:a52ac500) I/O exception (java.net.NoRouteToHostException) caught when connecting to {s} - >https://10.102.192.17:8250: No route to host
<table>
<thead>
<tr>
<th>Name</th>
<th>Internal name</th>
<th>Display Name</th>
<th>Zone Name</th>
<th>State</th>
<th>Quickview</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAVM2</td>
<td>i-4-6-VM</td>
<td>HAVM2</td>
<td>HVC Cluster</td>
<td>Running</td>
<td>+</td>
</tr>
<tr>
<td>HAVM1</td>
<td>i-4-5-VM</td>
<td>HAVM1</td>
<td>HVC Cluster</td>
<td>Running</td>
<td>+</td>
</tr>
<tr>
<td>sowmyavm1</td>
<td>i-4-3-VM</td>
<td>sowmyavm1</td>
<td>HVC Cluster</td>
<td>Running</td>
<td>+</td>
</tr>
</tbody>
</table>
Admin needs to first add Host to the Failover Cluster

Use the ‘presetup’ option while adding CSV

When user creates HA VM it is added to Failover Cluster

When user creates non-HA VM it is added to Failover Cluster with priority as 0

VMs migrated (HA-ed) to other hosts will be automatically synced by VM Sync

Any other VM and Volume operations work normally
Thank You