Hyper-V Replica Broker: Introduction

With non-clustered hosts we did the following:

- 1. Enabled an inbound replication policy in the Hyper-V Settings of the secondary site host using the primary site host computer name as the authorized source.
- 2. Configured per-VM replication on the primary site host, using the secondary site host computer name as the destination.

Imagine that you wanted to replicate VMs from one 8-node cluster to another 8-node cluster, or maybe we could push Windows Server to the extreme and replicate from a 64-node cluster to another 64-node cluster. Do you really want to configure all those hosts, one at a time, and configure 1-1 replication between nodes, thus preventing the mobility that is inherent within a failover cluster?

Failover clustering gives us a role called the Hyper-V Replica Broker. The role of the broker is:

- **Primary Site Identification**: The entire primary site cluster will be identified for Hyper-<u>V Replica purposes using the computer name of the broker. This simplifies policy</u> creation in the secondary site; you authorize the broker instead of each cluster node.
- Secondary Site Administration: The secondary site is configured once, in the broker's settings, instead of managing the Hyper-V Settings of each node in the cluster. The settings are automatically synchronized throughout the entire cluster.

There is an additional use of the Hyper-V Replica Broker; you normally should configure inbound replication from the secondary site to the primary site. This allows you to reverse replication, which is required for a planned failover.

Add Hyper-V Replica Broker

You should add the Hyper-V Replica Broker role to any host cluster (primary or secondary site) that will be involved in Hyper-V Replica. You do this by:

- Place the cluster's computer accounts (including any CAPs) into an OU, where the cluster has the ability to create computer objects. The new broker requires a computer object and the role will fail to start if you do not grant the cluster the Add Computer right to create it.
- Launch Failover Cluster Manager and connect to the cluster.
- Click Configure Role.
- Select Hyper-V Replica Broker.
- Enter in the desired computer name for the new broker, select the network that it should communicate on, and give it a routable IP address. Note that this is the network that will be used for replication traffic to and from the other host/cluster.

8 3	High Availability Wizard		x
Client Ac	ccess Point		
Before You Begin Select Role Clert Access Point Confirmation Configure High	Type the name that clients will use when accessing this clustered role: Ngme: Demo-FSC1-Bikor The NetBIOS name is limited to 15 characters. One or more IPv4 addresses could not be automatically. For each network to be used, make sure the network is selected, and ther addresses	configured n type an	
Availability Summary	Networks Address 172.16.1.0/24 Click here to type an ad 172.16.2.0/24 Click here to type an ad 172.16.2.0/24 Click here to type an ad 192.168.1.0/24 192 . 168 . 1 .	idress ≡ Idress . . 71] ↓	

Adding the Hyper-V Replica Broker.

Note that the computer name that you enter in this wizard will be the name used for Hyper-V Replica:

- **Primary Site Broker Name:** Will be used in the secondary site to define authorized replication clusters.
- Secondary Site Broker Name: Will be used in the primary site to specify the destination for replication.

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Configure a Primary Site Broker

You will probably want to make reverse replication from the secondary site to the primary site possible. To do this, do the following:

- Configure the Hyper-V Replica Broker on any primary site host clusters to allow inbound replication from secondary site hosts/clusters.
- Configure the Windows Firewall and any firewall appliances to allow inbound replication.

If reverse replication is not required then you've already done everything you need when creating the broker – you specified a computer name and IP address.

Configure a Secondary Site Broker

You will configure replication settings on the secondary site broker instead of configuring Hyper-V Settings on each host:

- Open Failover Cluster Manager, select the Hyper-V Replica Broker, and select the Replication Settings action.
- Enable replication on HTTP and/or HTTPS, depending on the trust level of the replication network and if both hosts are in the same AD forest (HTTP is possible) or not (HTTPS is required).
- Specify the Authorization And Storage to list what primary site hosts/clusters (broker name) are authorized to replicate and where their replica VMs will be stored in the secondary site.

The below example is configured to accept replication over HTTP (Kerberos authentication). A cluster with a Hyper-V Replica broker called *demo-hvc1-brkr* will be allowed to replicate to this cluster and its virtual machines will be stored in a sub-folder called *Demo-HVC1* in the Cluster Shared Volume called *CSV1*.

		Hyper-V Replica Broker Configur	ration
Enable this cluster a	s a Replica server		
Authentication and po	rts		
Specify the authentic firewall.	ation types to allo	ow for incoming replication traffic. Ensure that	the ports you specify are open in the
Use Kerberos (H	TTP):		
Data sent over t	he network will no	t be encrypted.	
Specify the ports	80		
Use certificate-b	ased Authenticatio	, an (HTTPS):	
Data sent over t	he network will be	encrypted.	
Specify the ports	443		
Specify the certil	Scate:		
Expiration Date Intended Purpo	: se:		Sglect Certificate
Authorization and sto	age		
Specify the servers t	hat are allowed to	replicate virtual machines to this cluster.	
 Allow replication 	from any authenti	cated server	
Specify the defa	ult location to stor	e Replica files:	
			Browse
Allow replication	from the specified	servers:	
Primary Server		Storage Location	Trust Group
demo-hvc1-briz	.demo.internal	C:\OusterStorage\csv1\Demo+HVC1	Demo

A configured secondary site Hyper-V Replica Broker.

Configure Firewalls

You have quite a bit of firewall engineering to do to enable inbound replication from the primary site hosts to the secondary site hosts. You need to configure any firewall appliances and the Windows Firewall to allow the replication traffic. If you have a lot of hosts you can save some time by configuring Windows Firewall with some remotely executed PowerShell. The following example authorizes Demo\Administrator to configure the Windows Firewall on Demo-Host3 and Demo-Host4 for replication over the HTTP protocol:

Invoke-Command -ComputerName Demo-Host3,Demo-Host4 -ScriptBlock { Enable-NetFirewallRule -DisplayName "Hyper-V Replica HTTP Listener (TCP-In)" } -Credential "Demo\Administrator"

Enable Replication from a Primary Site Cluster

When you have a Hyper-V cluster then you should do all of your VM administration in Failover Cluster Manager. This includes enabling per-VM replication.

- Open Failover Cluster Manager, select the VM you want to replicate, and start the Replication action.
- Configure VM replication as you would from a non-clustered host.

The below example shows a VM being replicated to a cluster with a Hyper-V Replica broker called *Demo-FSC1-Brkr.demo.internal*.

Specify Col	nnection Parameters
Before You Begin Specify Replica Server Specify Connection Parameters	Replica gerver: Demo #SC1-Brkr.demo.internal Replica server pgrt: 80 Authentication Type
Croste Replication Frequency Configure Additional Recovery Points Choose Initial Replication Method Summary	Class generos automacadon (nr. (P)) Data will not be encrypted while being transmitted over the network. Use certificate-based automatication (HTTPS) Data will be crypted while being transmitted over the network. Issued To: Issued To: Issued By: Explanation Date: Interded Purpose!
	Select Certificate

Replicating a Linux VM to a Hyper-V Cluster in the secondary site.