# vSphere4 下如何实现集群

## 1. HA群集和DRS群集配置前提

### 配置环境:

ESX Server 1: esx1.test.com	
Service Console: 192.168.0.10/24	标签: Production
VMKernel: 10.10.10/24	标签: VMotion
ESX Server 2: esx2.test.com	
Service Console: 192.168.0.20/24	标签: Production
VMKernel: 10.10.10.20/24	标签: VMotion
vCenter Server: center.test.com 192.	168.0.250

首先,进行 DRS 及 HA 配置必须要两个条件:

- 必须将每台主机都配置为使用共享存储器;
- 每台主机必须满足 VMotion 的网络要求。
  - (1) 配置 VM kernel 并启用 VM otion。如图:

🛃 Add Network Wizard	
YMkernel - Connection Set Use network labels to iden	tings tify VMkernel connections while managing your hosts and datacenters.
Connection Type Network Access Connection Settings IP Settings Summary	Port Group Properties          Network Label:       Vmotion         VLAN ID (Optional):       Image: Comparison of the sport group for Whotion         Use this port group for Fault Tolerance logging         Preview:         VMMemel Port         Vmotion         Image: Comparison of the sport group for Whotion         VMmotion         Image: Comparison of the sport group for Fault Tolerance logging
Help	Back Next ≥ Cancel

(2)确保虚拟机在源主机和目标主机上可以访问相同的子网。



(3)确保用于虚拟机端口组的网络标签在主机之间是一致的。此例中两台主机的标签名 均为 production。



(4)建议加入群集中的每台主机要有冗余的 Service Console 和 VMKernel。且用于 VMotion 的 VMKernel 网络是千兆网卡。

# 2. 创建配置HA群集和DRS群集

Step 1:右键点击创建的 datacenter,选择[New Cluster]。

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	Virtual Machine Sw	apfile Location	💭 Vmotion	👱 🖕 🖕 💼 🎫 vm	nic1 100 Full 🖓	
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### Step 2: Cluster Features

Rew Cluster Wizard Cluster Features What features do you want	to enable for this cluster?
Cluster Features MMware DRS Power Management VMware HA Vitual Machine Options VM Monitoring VMware EVC VM Swapfile Location Ready to Complete	Name         test         Cluster Features         Select the features you would like to use with this cluster.         ✓         Turn On VMware HA         Wilware HA detects failures and provides rapid recovery for the virtual machines running within a cluster. Core functionality includes host monitoring and virtual machine monitoring to minimize downtime when heartbeats are lost.         VMware HA must be turned on if Fault Tolerance protection will be enabled.         ✓         Turn On VMware DRS         VMware DRS enables vCenter Server to manage hosts as an aggregate pool of resources. Cluster resources can be divided into smaller resource pools for users, groups, and virtual machines.         VMware DRS enables vCenter to manage the assignment of virtual machines to hosts automatically, suggesting placement when virtual machines are powered on, and migrating running virtual machines to balance load and enforce resource allocation policies.
Help	_≤Back Next ≥ Cancel

- 键入集群名称。
- 选择 VMware HA 和 VMware DRS 集群,可单独启用 HA 或 DRS 群集,也可全部 启用。

Step 3:VMware DRS 为 DRS 群集配置选项。

New Cluster Wizard     VMware DRS     What level of automation do y	ou want this cluster to use?
Cluster Features WHware DRS Power Management VMware HA Virtual Machine Options VM Monitoring VMware EVC VM Swapfie Location Ready to Complete	Automation level            • Manual         vCenter will suggest migration recommendations for virtual machines.             • Partially automated         Virtual machines will be automatically placed onto hosts at power on and vCenter will         suggest migration recommendations for virtual machines.             • Fully automated         Virtual machines will be automatically placed onto hosts when powered on, and will be         automatically migrated to attain best use of resources.             Migration threshold: Conservative         Aggressive         Apply priority 3 or higher recommendations         vCenter will apply recommendations that promise at least good improvement to the         cluster's load balance.
Help	≤ Back Next ≥ Cancel

- 为 DRS 群集配置选项。
  - o [Manual]虚拟机启动时,显示推荐主机,运行中显示迁移建议
  - o [Partiallly automated] 虚拟机启动时自动放置,运行中显示迁移建议
  - o [Fully automated] 虚拟机启动时自动放置,自动应用迁移建议

Step 4: Power Management

🕝 New Cluster Wizard	
Power Management Do you want to enable power management	gement for this cluster?
Cluster Features YMware DRS Power Management VMware HA Virtual Machine Options VM Monitoring VMswapite Location Ready to Complete	Power Management         DPM uses Wake-on-LAN, IPMI, or iLO to power on hosts. When using IPMI or iLO, configure IPMI or iLO separately for each participating host prior to enabling DPM. For all power on methods, test exit standby for each participating host prior to enabling DPM.         Specify the default power management for this cluster.            • Off <ul> <li>vCenter will not provide power management recommendations.</li> <li>Individual host overides may be set, but will not become active until the cluster default is either Manual or Automatic.</li> </ul> <b>Manual</b> vCenter will recommend evacuating a host's virtual machines and powering off the host when the cluster's resource usage is low, and powering the host back on when necessary. <b>Manual</b> vCenter will automatically execute power management related recommendations. <b>DPM</b> Threshold: Conservative <b>Aggressive</b> Apply priority 3 or higher recommendations produced to meet VMware HA requirements or user-specified capacity requirements. Power on recommendations produced to meet vMware HA requirements or user-specified capacity requirements.             Power of recommendations produced to meet valization becomes higher than the target utilization range.
Help	Back Next ≥ Cancel

- [Off] 关闭电源管理。
- [Manual] vCenter 根据资源使用给出电源管理建议
- [Automatic] vCenter 自动执行电源管理建议

#### Step 5: VMware HA

🛃 New Cluster Wizard	
VMware HA What admission control do you	u want to be enforced on this cluster?
Cluster Features YMware DRS YMware HA YM Monitoring YMware EVC YM Swapfile Location Ready to Complete	Host Monitoring Status         ESX hosts in this cluster exchange network heartbeats. Disable this feature when performing network maintenance that may cause isolation responses.         Imable Host Monitoring         Admission Control         Admission control is a policy used by Wilware HA to ensure failover capacity within a duster. Raising the number of potential host failures will increase the availability constraints and capacity reserved.         Image: Prevent VMs from being powered on if they violate availability constraints         Image: Admission Control Policy         Admission Control Policy         Admission Control Policy         Image: Admission Control Policy         Image: Admission Control Policy         Image: Admission Control Policy         Specify the type of policy that admission control should enforce.         Image: Percentage of cluster resources         Image: Percentage of cluster resources         Image: Percentage of cluster resources         Image: Percentage of cluster hogt:
Help	≤ Back Next ≥ Cancel

- [Enable Host Monitoring]设置是否启用主机监控
- 设置主机不满足接入控制时虚拟机的动作
  - o [Prevent VMs from being power on if they violate availability constraints]。阻止虚 拟机在超过故障切换容量时启动。
  - o [Allow virtual machines to be powered on even if they violate availability constraints]。即使超过故障切换容量,也允许虚拟机启动。
- 设置接入控制策略
  - o [Host failures cluster tolerates] 指定故障切换容量,即要保证故障切换的主机 故障数。
  - o [Percentage of cluster resources reserved as failover spare capacity] 保留一定比 例的资源作为故障切换容量。
  - o [Specify a failover host] 指定一台主机作故障切换。

Step 6: Virtual Machine Options

🕜 New Cluster Wizard			
Virtual Machine Options			
What restart options do you w	vant to set for VMs in this cluster?		
Cluster Features	Set options that define the behav	vior of virtual machines for VMware HA.	
VMware DRS	Cluster Default Settings		
Virtual Machine Options	UM veskavk evieviku	Maali wa	
VM Monitoring	VM restart priority:	Medium	
VMware EVC VM Swapfile Location	Host Isolation response:	Shut down	
Ready to Complete	-	Power off	
		Shut down	
1			
1			
<u> </u>			
Help		≤ Back Next ≥	Cancel

- [VM Restart Priority]: 配置主机发生故障时重新启动虚拟机的顺序。可选值为:
   [Disabled]、 [Low]、 [Medium]、 [High]。默认为[Medium]。可以为各个虚拟机自定义该属性。
- [Host Isolation Response]:确定当 HA 群集中的某个主机失去其控制台网络连接但仍 在运行时发生的情况。可选值为: [Leave VM powered on] (默认)、[Power off VM] 和 [Shut down VM]。此设置为群集的默认设置。

#### **Step 7:** VM Monitoring

🛃 New Cluster Wizard	
VM Monitoring What monitoring do you want	to set on virtual machines in this cluster?
Cluster Features VMware DRS VMware HA Virtual Machine Options VM Monitoring VMware EVC	VM Monitoring Status VM Monitoring restarts individual VMs if their VMware tools heartbeats are not received within a set time.  I Enable VM Monitoring Default Cluster Settings
Ready to Complete	Monitoring sensitivity: Low High HA will restart the VM if the heartbeat between the host and the VM has not been received within a 30 second interval. HA restarts the VM after each of the first 3 failures every hour.
Help	≤Back Next ≥ Cancel

选择是否监控虚拟机状态。通过启用虚拟机监控功能,可以监控 VMware HA 群集中的虚拟机。该功能使用 VMware Tools 捕获的检测信号信息作为客户操作系统可用性的代理。

● [监控敏感度(Monitoring sensitivity)] 滑块上,选择设置[High]、[Medium] 或 [Low]。

Step 8: VMware EVC

🕗 New Cluster Wizard	
VMware EVC	rad VMotion Connatibility for this sluster?
Do you want to chable Enhal	
<u>Cluster Features</u> VMware DRS VMware HA	Enhanced VMotion Compatibility (EVC) configures a cluster and its hosts to maximize VMotion compatibility. Once enabled, EVC will also ensure that only hosts that are compatible with those in the cluster may be added to the cluster.
YMware EVC VM Swapfile Location Ready to Complete	Disable EVC     C     Enable EVC for AMD Hosts     C     Enable EVC for Intel® Hosts
	VMware EVC Mode: Disabled
	Description
Help	≤Back Next ≥ Cancel

- 是否启用 VMotion 兼容性。默认为关闭。
- 如启用,根据主机 CPU 类型进行选择。

Step 9: Virtual Machine Swapfile Location

New Cluster Wizard	
Virtual Machine Swapfile Lo	cation
which swaprile location pol	cy should virtual machines use while in this cluster?
Iluster Features	Swapfile Policy for Virtual Machines
Mware HA	
Mware EVC	Store the swapfile in the same directory as the virtual machine (recommended)
M Swapfile Location	
eady to Complete	
	Store the swaphile in the datastore specified by the host To be a store the swaphile at the swapfile is the same direction as the without excision
	If not possible, store the swaprile in the same directory as the virtual machine.
	affected virtual machines.
Help	< Back Next > Cancel

 为虚拟机的交换文件选择位置。可以将交换文件与虚拟机本身存储在同一目录中, 或者将交换文件存储在主机指定的数据存储中 (主机-本地交换)

Step 10: Ready to Complete

🛃 New Cluster Wizard			
Ready to Complete	The state of the s		
Review the options you have select	ed for this cluster and click Finish to c	complete.	
Charles Frankrise			
VMware DDS	The cluster will be created with the	following options:	
VMware HA	Cluster Name:	test.	
VMware EVC	VMware DRS:	Enabled	
VM Swapfile Location	VMware DRS Automation Level:	Fully Automated	
Ready to Complete	VMware DRS Migration Threshold:	Apply priority 3 or higher recommendations	
	VMware HA Host Monitoring:	Running	
	Admission Control:	Enabled	
	Host Failures Allowed:	1	
	Host Isolation Response:	Mealum Shut down	
	Monitoring Sensitivity:	Suspended High	
	VMware EVC Mode:	Disabled	
	Virtual Machine Swapfile Location:	Same directory as the virtual machine	
ļ	-		
Help		<u>≤</u> Back <u>Einish</u>	Cancel

• 确认无需修改后,点[Finish],群集可建立。

# 3. 群集中添加主机

Step 1:选中列表中的 ESX 主机,拖到新创建的群集。

**Step 2:** Choose the Destination Resource Pool

Add Host Wizard Choose the Destination Resour Choose where to place this host	rce Pool t's virtual machines in the resource pool hierarchy.
Choose Resource Pool Ready to Complete	Virtual Machine Resources What would you like to do with the virtual machines and resource pools for this host? Put all of this host's virtual machines in the cluster's root resource pool. Resource pools currently present on the host will be deleted. C create a new resource pool for this host's virtual machines and resource pools. This preserves the host's current resource pool hierarchy. Name: Grafted from esx2.test.com
Help	≤Back Cancel

● 选择主机上资源池中的虚拟机在集群中存放的位置。

Step 3: Ready to Complete

🛃 Add Host Wizard		
Ready to Complete Review the options you have se	elected and click Finish to add the host.	
Choose Resource Pool Ready to Complete	Review this summary before finishing the wizard. Resources Destination: test	
Help	<u>≤ Back</u>	Cancel

● 确认无误点击[Finish]。

### 4. 虚拟机启用Fault Tolerance

启用 FT 的前提条件 ESX 必须为 4.0 以上, Build 版本相同,在同一个 HA Cluster 中 VM 要放在共享存储上 每个 VM 只能分配一个 vCPU 要有专门的 VMKernel 负责 FT Logging BIOS 中要启用 VT 及禁用 Hyperthreading VM 的配置文件必须为版本 7

**Step 1:** 在 Hosts & Clusters 视图选中 HA 群集中的一台虚拟机,右键选择 Fault Tolerance > Turn Fault Tolerance On。

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		Fault Tolerance	Turn On Fault Tolerance	vSphere Client
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### Step 2: Turn On Fault Tolerance

Turn On F	Fault Tolerance 🛛 🛛 🛛 🕅
1	Turning Fault Tolerance On will take thin-provisioned disks and disks with blocks zeroed out when written to and convert them to disks with all blocks zeroed out. This disk conversion requires that a virtual machine use more disk space and requires some processing time.
	The DRS automation level for this VM will change to disabled.
	The memory reservation of this VM will be changed to the memory size of the VM and maintained equal to it until Fault Tolerance is turned off.
	Do you want to turn On Fault Tolerance?
	<u>Y</u> es

- 提示 FT 不支持 thin 硬盘类型,如虚拟机的硬盘为此类型,将转换为 thick 类型。
- 虚拟机的 DRS 自动化选项将被禁用。
- 虚拟机的内存预留将被更改成与虚拟机的实际内存相同。
- 单击[Yes]。

Step 3: 进行验证,是否满足启用 FT 的条件,若不满足则会给出提示。若满足条件,则将 此虚拟机标识为 primary 并在 HA 群集中的另一台主机上建立此虚拟机的映射(Seccondary)。 创建完成后,在虚拟机页面可以看到已得到 FT 保护。

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iuest OS:	Debian GNU/Linux 5 (32-bit) (experimenta	Consumed Host CF	Consumed Host CPU:				
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