

Revision History

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1. Preface

This document describes the procedure for using Windows Server Failover Clustering (hereafter referred to as WSFC) to set up a cluster configuration that has two nodes (for duplication). WSFC is a Microsoft product that can be used to switch running processes between nodes in a duplicated system.

In this document, a host system included in a cluster is referred to as a node.

1.1 Supplemental information

If the incorrect procedure is used to upgrade the OS on a cluster server, failovers might occur at unexpected times. In the worst case, this might damage the system.

1.2 Application range

This document applies to WSFC of Windows Server 2012 and Windows Server 2012 R2.

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2. Configuration Procedure

This chapter describes a procedure for configuring a MasterScope SystemManager (hereafter referred to as SystemManager) cluster environment.

2.1 Setting up WSFC

Install WSFC and set up the cluster environment in advance.

2.2 Setting up SystemManager

Install the SystemManager manager on the Windows computers to be used as active and standby nodes.

For details about the installation, see the "MasterScope Media Release Notes".

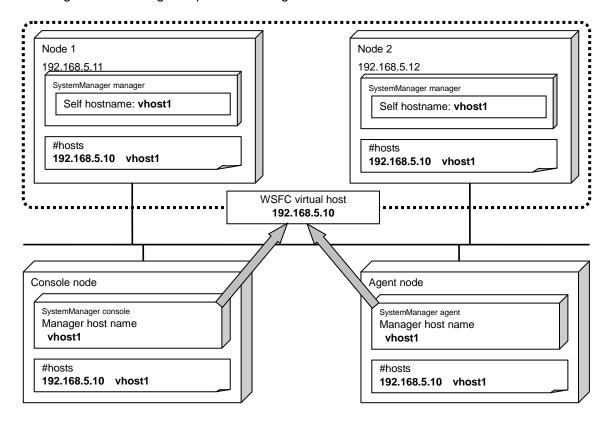
Notes:

- ✓ Install SystemManager on the active node first, and then on the standby node.
- ✓ The shared disks must be referenceable when installing the manager on an active server node. The shared disks need not be referenceable by the standby server node.
- ✓ Use the same drive and folder names as the installation destination for SystemManager on both active and standby nodes.
- ✓ Replace the virtual host names and shared disks according to each environment.

The following shared resources are assumed:

- Virtual host name: vhost1
- Shared disk: X drive

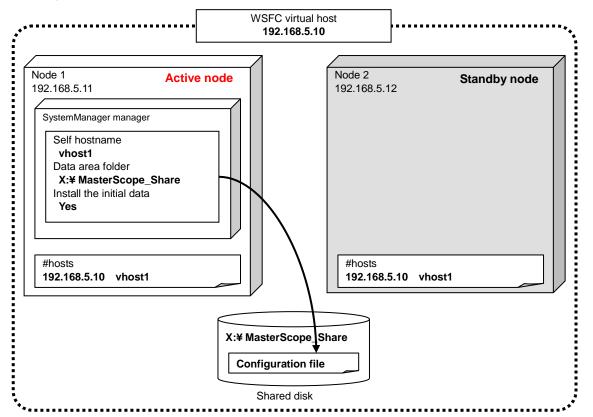
The image of the manager duplication configuration is shown below.



The agent and console are assumed to be connected to the virtual host.

The following describes the procedure for installing the SystemManager manager functions.

First, install the SystemManager manager on the active server node. The image of installation on the active server node is shown below.



Specify each item in the Product Installation Settings dialog box for the SystemManager manager on the active server node as described below.

- Specify any values for Install directory path, Agent port and Viewer port. For details about the setting values for each item, see the "MasterScope Media Release Notes".
- Specify the virtual host name for Self hostname and any folder on the shared disk for Data Directory.
- Select Yes for Change Data Directory and Store initial setting data .

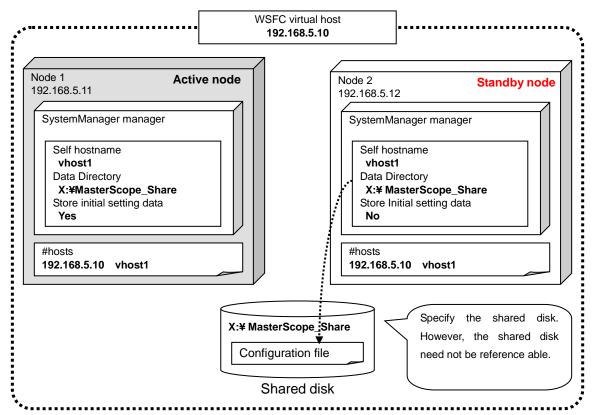
A setting example is shown below.

Setting item name	Setting value	Remarks		
Install directory path	C:¥Program Files¥NEC¥UMF¥Operations	Local disk path		
Self hostname (optional)	vhost1	Virtual host name		
Agent port	12520	(Any value)		
Viewer port	12521	(Any value)		
Change Data Directory	Yes	(Fixed)		
Data Directory	X:¥MasterScope_Share	Shared disk path		
Store initial setting data	Yes	(Fixed)		

¥Manager¥sg" is automatically added to the data area folder, and the setting information that must be shared is stored here.

After the installation is completed, confirm that "¥Manager¥sg" has been created in the data area folder.

Then, install the SystemManager manager on the standby server node. The image of installation on the standby server node is shown below.



Specify each item in the Product Installation Settings dialog box for the SystemManager manager on the standby server node as described below.

- Specify the same values as for the active node except for the Store initial setting data setting item.
- Select No (only on the standby server in the cluster) for Store initial setting data.

A setting example is shown below.

Setting item name	Setting value	Remarks
Install directory path	C:¥Program Files¥NEC¥UMF¥Operations	Local disk path
Self hostname (optional)	vhost1	Virtual host name
Agent port	12520	(Any value)
Viewer port	12521	(Any value)
Change Data Directory	Yes	(Fixed)
Data Directory	X:¥MasterScope_Share	Shared disk path
Store initial setting data	No (only on the standby server in the cluster)	(Fixed)

After the installation is completed, change the service startup type on both the active and standby nodes.

In the Start window displayed by pressing the Windows key, click Administrative Tools and then Services, then, stop the MasterScope UMF Operations Manager_ N service (For "N", see "4.1.1.3. Default values for each product" in the "MasterScope Media Release Notes".), and then change the Startup type in the properties from Automatic to Manual. "MasterScope UMF Operations

Manger_1" is used in the example below.

MasterScope UMF Operations Manager_1 Properties (L	x						
General Log On Recovery Dependencies							
Service name: MasterScope UMF Operations Manager_1							
Display name: MasterScope UMF Operations Manager_1							
Description:							
Path to executable: "C:\Program Files (x86)\NEC\UMF\Operations\Manager\bin\SysMonMgr.e							
Startup type: Manual 🗸							
Service status: Stopped							
Start Stop Pause Resume							
You can specify the start parameters that apply when you start the service from here.							
Start parameters:							
OK Cancel Apply							

Figure 2-1 Service Properties

* If using the bundled DB, change the [Startup type] for the bundled DB service to [Manual] in the same way.

2.3 <u>Setting up SystemManager service monitoring</u> <u>resources</u>

Add the service monitoring resources to WSFC in order to monitor SystemManager service abnormalities.

In the Start window displayed by pressing the Windows key, click Administrative Tools and then Failover Cluster Manager, then create resources using one of the following methods.

- To create resources by creating a new service: See "2.3.1 Creating resources by creating a new service" Normally, this method is used to perform setup.
- To create resources using the high availability wizard: See "2.3.2 Creating resources using the high availability wizard" A floating IP address other than the cluster floating IP address is required.

2.3.1 Creating resources by creating a new service

(1) Creating resources

Right-click Role from the tree in the left pane, and then select Create Empty Role from the displayed pop-up menu.

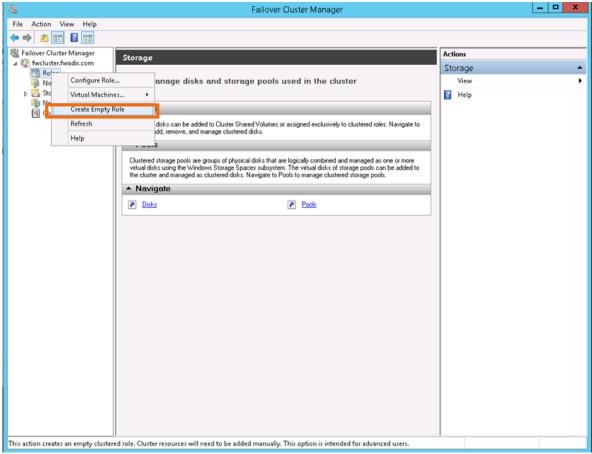


Figure 2-2 Creating an Empty Role

The New Role node is created. Right-click this node and change the name to any name in the Property dialog box. "MasterScope_Service" is used in the example below.

New Role Properties	x
General Failover	
New Role	
Name:	
MasterScope_Service	
Preferred Owners	
Select the <u>preferred owners</u> for this clustered role. Use the buttons to list them in order from most preferred at the top to least preferred at the bottom.	
FW245 Up FW247 Down	
Priority: Medium	
Status: Running	
Node: FW245	
OK Cancel Apply	

Figure 2-3 Property Setting for Role

- 温			Failover Cluste	r Manager			Ŀ	- 🗆 X
File Action View Help								
ka 🔿 🖄 📰 📓 🖬								
📲 Failover Cluster Manager	Roles (1)					A	tions	
⊿ 🎲 fwcluster.fwadir.com	Search	✓ R	oles					
Roles	Name	Status	Type	Owner Node			Configure Role	
⊿ 📇 Storage	MasterScope_Service	(A) D		FW245	Medium		Virtual Machines	•
Disks		诸 Start Rol	le					
Pools		🚯 Stop Rol	le			408	View	
Networks		Move 1	•					r
		Change	Startup Priority			9		
		-	tion Details			2	Help	
		-	itical Events			N	lasterScope_Service	•
		😫 Add Stor				0	Start Role	
						0	Stop Role	
		-					Move	•
		More Ac	tions •				Change Startup Priorit	ty 🕨
		K Remove				6		
		Propertie	es				-	
				-		3		
				-				
	<							
	V MasterScope			•				
	MasterScope	e_service		rie	ferred Owners: Any no		Remove	
	Status: Priority:	Running Medium				2	Help	
	Owner Node:	FW245						
	Summary Resources							
Roles: MasterScope_Service								

Right-click the MasterScope_Service node and select Add Storage.

Figure 2-4 Adding Storage

Select the check box for the disk in the Add Storage dialog box, and then click the OK button.

	Add Storage 🗙									
Select the disk or disks that	Select the disk or disks that you want to add.									
Available disks:										
Name	Status		Capacity							
🗹 🕀 📇 Cluster Disk 2	💽 Online									
🔲 🖽 📇 Cluster Disk 3	🕥 Unline	•								
				ОК	Cancel					
					.4					

Figure 2-5 Add Storage Dialog Box

趨				Failover Clu	ster M	anager				L		x
File Action View Help												
🧇 🧼 🖄 📰 📓 🖬												
📲 Failover Cluster Manager	Roles (1)								Act	ions		
⊿ is fwcluster.fwadir.com Roles	Search	• •	Roles									
Nodes	Name	Sta	atus	Туре		Owner Node	Priority	Informati	89	Configure Role		
a 📇 Storage	MasterScope_Service	-	Start Role			FW245	Medium			Virtual Machines		•
Disks Pools			Stop Role						1	Create Empty Role		
Networks			Move		•					View		•
Cluster Events		•	Change Star	etus Deiseitu					Q	Refresh		_
			-		-				?	Help		
		6	Information Show Critica						Ma	asterScope_Service		•
		_	Add Storage							Start Role		_
		2 13			•	Client Access Po			0	Stop Role		
						Generic Applicat				Move		•
		More Actions				Generic Script Generic Service More Resources				Change Startup Priority	v	-
1		Remove Image: Properties								Information Details	,	-
										Show Critical Events		
								_				
									🕹 🔁	Add Resource		•
								>				-
	MasterScope_Service Preferred Owners: Any node								-	Remove		
										Properties		_
	Status:	Runnir	g						2	Help		_
		Mediur								(inclusion)		
	Owner Node:	FW24	5									
	Summary Resources											
Roles: MasterScope_Service	,											

Next, right-click the MasterScope_Service node, select Add Resource and then Generic Service.

Figure 2-6 Adding Resources

The Select Service dialog box is displayed. Specify MasterScope UMF Operations Manager_n (For "n", see 4.1.1.3. Default values for each product" in the "MasterScope Media Release Notes".), and then click the Next button. "MasterScope UMF Operations Manager_1" is specified in the example below.

1	New Resource Wizard							
📑 Select Se	ervice							
Select Service	Select the service you want to use from the list:							
Configure Generic Service Summary	Name MasterScope UMF Operations Agent_1 MasterScope UMF Operations Agent_LRTYL-HP MasterScope UMF Operations Agent_zhengshilit MasterScope UMF Operations Manager_1 MasterScope UMF Operations Remote Agent_L Masterscope UMF Operations Remote Agent_L Masterscope UMF Operations Remote Agent_w Microsoft iSCSI Initiator Service Microsoft Software Shadow Copy Provider	Description Manages Internet SCSI (iSCSI) sessions from th Manages software-based volume shadow copi Next > Cancel	<					

Figure 2-7 Select Servide Dialog Box

Click the Next button in the Confirmation dialog box.

E	N	lew Resource Wizard	x
Confirmat	tion		
Select Service	You are ready to make a Ge	eneric Service.	
Configure Generic Service Summary	Service: Parameters: To continue, click Next.	MasterScope UMF Operations Manager_1 (MasterScope UMF Operations Manager_1) This Generic Service has no startup parameters.	
		< <u>Previous</u> <u>N</u> ext > Cance	el

Figure 2-8 Confirmation Dialog Box

Click the Finish button in the Summary dialog box.

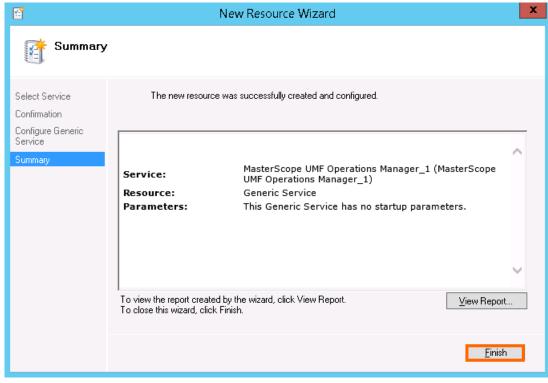


Figure 2-9 Summary Dialog Box

* If using the bundled DB, add the resource for the bundled DB service in the same way. Set up the resource dependencies so that the bundled DB is dependent on SystemManager. Service name is [fdb_wfdbn].

n indicates a service number of 1 or higher.

(The value is set during installation of MasterScope products.)

(2) Starting resources

If the service is not started automatically, start the service by performing the following procedure.

- 1. In the Failover Cluster Manager dialog box, right-click the icon of the created resource (MasterScope_Service in this example).
- 2. Select Start Role from the displayed pop-up menu to start the service.

槛			Failover Cluster Manage	er				_	
File Action View Help									
🗢 🧼 🖄 🖬 📓 🖬									
📲 Failover Cluster Manager	Roles (1)						Act	ions	
⊿ 🎲 fwcluster.fwadir.com	Search				P Queries	▾◱▾◈	Ro	les	
Roles	Name	Status	Туре	0	Owner Node Priority			Configure Role	
⊿ 🛃 Storage	MasterScope_Service	Stoppe	01		W245	Medium	-	Virtual Machines	•
📇 Disks		0	G Start Role						
Pools			Contraction Stop Role				-00	View	
Networks			Move	•					· ·
E contentione			(1) Change Startup Priority				Q	Refresh	
			Information Details				?	Help	
			Show Critical Events				Ma	asterScope_Service	•
			Add Storage				0	Start Role	
			Add Storage				0	Stop Role	
				-	-		Move	•	
			More Actions	•			Change Startup Priority		
			🗙 Remove					Information Details	
			Properties					Show Critical Events	
								Add Storage	
								2	
	< III >							Add Resource	•
	MasterScope_Service Preferred Owners: Any node							More Actions	· ·
								Remove	
								Properties	
		topped						Help	
		ledium W245							
	owner Node.	11245							
	Summary Resources								
Roles: MasterScope_Service									

Figure 2-10 Making Resources Available Online

In addition, if the service has been started on the standby node, start the service on the active node by performing the following procedure.

- 1. In the Failover Cluster Manager dialog box, right-click the icon of the role (MasterScope_Service in this example).
- 2. Select Select Node... from the displayed pop-up menu.

3. In the Move Clunstered Role dialog box, select the destination node to move the standard services.

50 C		, i i i i i i i i i i i i i i i i i i i	allover Cluster Manage	er	
File Action View Help					
🗢 🔿 🙍 📅 👔 🖬					
📲 Failover Cluster Manager	Roles (1)				Actions
⊿ is fwcluster.fwadir.com	Search			🔎 Queries 🔻 🔛 💌	Roles
Roles	Name	Status	Type	Owner Node Priority	len Configure Role
🔺 🙇 Storage	MasterScope_Service	Bunning	04	W245 Medium	Virtual Machines
Disks		G	Start Role		Create Empty Role
Pools		6	Stop Role		View
Cluster Events		12	Move	Best Possible Node	Refresh
		3	Change Startup Priority	, 🔯 Select Node	P Help
		E	Information Details		
			Show Critical Events		MasterScope_Service
		4	Add Storage		Start Role
		C	Add Resource	•	🗘 Stop Role
		E	More Actions	•	Move •
		×	Remove		😒 Change Startup Priority 🕨
			Properties		🚯 Information Details
			Properties		Show Critical Events
					🛃 Add Storage
	<				> Add Resource >
					More Actions
	MasterScope	_Service		Preferred Owners: Any no	🗠 💥 Remove
					Properties
		Running			🛛 Help
		Medium FW245			
	Owner Node:	FW240			
	Summary Resources				
Roles: MasterScope_Service	Continery Resources				

Figure 2-11 Moving Resources

Move Clustered Role		×
Select the destination node for moving 'MasterScop from 'FW245'.	e_Service'	
Look for:		
₽ Search	Clear	
Cluster nodes:		
Name Status		.
🗍 FW247 💿 Up		
ОК	Cancel	

Figure 2-12 Selecting Node to Move

This concludes the WSFC setup.

2.3.2 Creating resources using the high availability wizard

(1) Creating resources

To create resources using the high availability wizard, the floating IP address setting is required. This IP address must be different from the cluster IP address.

The value described in ""

" is assumed for the WSFC shared disk and the following value is assumed for the floating IP address.

Shared disk: P driveIP address: 172.28.160.251

Note

※ Replace the shared disk and IP address according to each environment.

Right-click Role from the tree in the left pane, and then select Configure Role... from the displayed pop-up menu.

槛				F	ailover Cluster Ma	nager					- • ×	
File Action Vie	w Help											
🗢 🏟 🖄 💼	? 📅											
🍓 Failover Cluster	Manager	Roles (0)							Act	ions		-
⊿ 🎲 fwcluster.fw	adir.com	Count				P.	Queries	▾◱▾◡	Ro	les	-	
Roles	Configure Ro	ole		Status	Туре	Owner Node		Priority In	-	Configure Role		Т
🔺 🙇 Stora	Virtual Mach	ines 🕨								Virtual Machines	,	Ē
2≣ D ₿ P	Create Empty	y Role							1	Create Empty Role		1
🗿 Netw	View	•								View	,	,
🏐 Netw 😫 Clust	Refresh								a	Refresh		
	Help								?	Help		
_												
					No items found.							
		~										
This action enables y	you to select a ro	ole that you can	configure for	high availability.								

Figure 2-13 Creating Resources

A wizard dialog box to configure the role is displayed. Click the Next button.

Ø	High Availability Wizard
Before Y	ou Begin
Before You Begin Select Role	This wizard configures high availability for a role. After you successfully complete this wizard, if a clustered server fails while running the role, another clustered server automatically begins running the role (a process known as failover). If the role itself fails, it can be automatically restarted, either on the same server or on another server in the cluster, depending on options that you specify. If you want to cluster a complex application such as a mail server or database application, see that application's documentation for information about the correct way to install it.
	<u>N</u> ext > Cancel

Figure 2-14 High Availability Wizard

The Select Role dialog box is displayed. Select Generic Service, and then click the Next button.

80	High Availability Wizard
to Select Ro	le
Before You Begin Select Role	Select the role that you want to configure for high availability:
Select Service Client Access Point Select Storage Replicate Registry Settings Confirmation Configure High Availability Summary	 DHCP Server Distributed Transaction Coordinator (DTC) File Server Generic Application Generic Script Generic Service Hyper-V Replica Broker iSNS Server
	< <u>P</u> revious <u>N</u> ext > Cancel

Figure 2-15 Selecting Service or Application

The Select Service dialog box is displayed. Specify MasterScope UMF Operations Manager_N (For "N", see 4.1.1.3. Default values for each product" in the "MasterScope Media Release Notes".), and then click the Next button. "MasterScope UMF Operations Manager_1" is specified in the example below.

80	High Availability W	izard	x
to Select Se	ervice		
Before You Begin Select Role	Select the service you want to use from the list:		
Select Service	Name	Description	^
Client Access Point	MasterScope UMF Operations Agent_LRTYL-HP MasterScope UMF Operations Agent_zhengshilrt		
Select Storage	MasterScope UMF Operations Manager_1		
Replicate Registry Settings	MasterScope UMF Operations Manager_mop Masterscope UMF Operations Remote Agent_L		
Confirmation	Masterscope UMF Operations Remote Agent_w		
Configure High Availability	Microsoft iSCSI Initiator Service Microsoft Software Shadow Copy Provider Microsoft Storage Spaces SMP	Manages Internet SCSI (iSCSI) sessions from th Manages software-based volume shadow copi Host service for the Microsoft Storage Spaces	
Summary	MICrosoft Storage Spaces SMP	Host service for the Microsoft Storage Spaces	~
		< <u>P</u> revious <u>N</u> ext > Cancel	

Figure 2-16 Selecting Service

The Client Access Point dialog box is displayed. Specify the virtual host name for the name used by the client (MasterScope_Sv in this example) and the floating IP for the IP address (172.28.160.251 in this example), and then click the Next button.

朝		Hi	gh Availability Wizard		x
Client Ac	cess Point				
Before You Begin Select Role Select Service Client Access Point Select Storage	N <u>a</u> me: The NetBIOS nam	Maste	will use when accessing this clustered role orScope_Sv nited to 15 characters. One or more IPv4 n network to be used, make sure the netw	addresses could not be configured]
Replicate Registry Settings			Networks	Address	
Confirmation		✓	172.28.160.128/25	172.28.160.251	
Configure High Availability			172.28.160.0/24	Click here to type an address	
Summary					
			< <u>P</u> revious	Next > Cancel	

Figure 2-17 Client Access Point

The Add Storage dialog box is displayed. Select the check box of the cluster disk containing the shared disk (P drive in this example) specified in "2.2 Setting up SystemManager", and then click the Next button.

8 7	High Availability Wizard	x
Select St	orage	
Before You Begin Select Role Select Service Client Access Point Select Storage Replicate Registry Settings	Select only the storage volumes that you want to assign to this clustered role. You can assign additional storage to this clustered role after you complete this wizard. Name Status The Cluster Disk 2 Online The Cluster Disk 3 Online	
Confirmation Configure High Availability Summary	< <u>P</u> revious <u>N</u> ext > Cancel	

Figure 2-18 Selecting Memory Area

The Replicate Registry Settings dialog box is displayed. Click the Next button without specifying anything.

80	High Availability Wizard	x
Replicate	Registry Settings	
Before You Begin Select Role Select Service Client Access Point Select Storage Replicate Registry Settings Confirmation Configure High Availability Summary	Programs or services may store data in the registry. Therefore, it is important to have this data available or the node on which they are running. Specify the registry keys under HKEY_LOCAL_MACHINE that should be replicated to all nodes in the cluster.	
	< <u>P</u> revious <u>N</u> ext > Cancel	

Figure 2-19 Replicating Registry Settings

The Confirmation dialog box for the standard service configuration is displayed. Check the settings, and then click the Next button.

初	н	igh Availability Wizard	x
Confirmation	tion		
Before You Begin Select Role	You are ready to configure	high availability for a Generic Service.	
Select Service Client Access Point Select Storage Replicate Registry Settings Confirmation Configure High Availability	Service: Storage: Network Name: OU: IP Address: Parameters:	MasterScope UMF Operations Manager_1 (MasterScope UMF Operations Manager_1) Cluster Disk 3 MasterScope_Sv CN=Computers,DC=fwadir,DC=com 172.28.160.251 This Generic Service has no startup parameters.	< >
Summary] To continue, click Next.	< <u>P</u> revious <u>N</u> ext > Cancel	

Figure 2-20 Confirming Standard Service Configuration

When the Summary dialog box is displayed, click the Finish button.

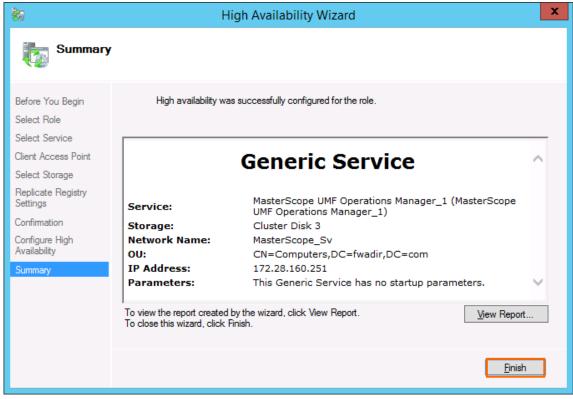


Figure 2-21 Completion of Resource Creation

After the creation is completed, confirm that the standard service resources have been created in the Role window displayed by clicking the Role node in the Failover Cluster Manager dialog box.

趨		Failov	ver Cluster Manager			_	. 🗆 X
<u>File Action View H</u> elp	5						
🗢 🏟 🖄 🖬 🚺 🖬							
📲 Failover Cluster Manage	Roles (1)		-			Actions	
⊿ \$\$ fwcluster.fwadir.cor Roles	Search			P Querie	s T 🔒 T 🗸	Roles	-
Nodes	Name	Status	Type	Owner Node	Priority	🧑 Configure Role.	
🔺 📇 Storage	🔅 MasterScope_Sv	Running	Generic Service	FW247	Medium	Virtual Machine	is 🕨
Disks Pools						Create Empty Re	ole
Networks						View	•
月 Cluster Events						Q Refresh	
						Help	
	<	Ш			>		
	*						
< III >							

Figure 2-22 Failover Cluster Manager Dialog Box (After the resources are created)

* If using the bundled DB, add the resource for the bundled DB service in the same way. Set up the resource dependencies so that the bundled DB is dependent on SystemManager. Service name is [fdb_wfdbn].

n indicates a service number of 1 or higher.

(The value is set during installation of MasterScope products.)

(2) Starting resources

If the standard services are not started automatically, start them by performing the following procedure.

- 1. In the Failover Cluster Manager dialog box, right-click the icon of the created resource (MasterScope_Sv in this example).
- 2. Select Start Role from the displayed pop-up menu to start the standard services.

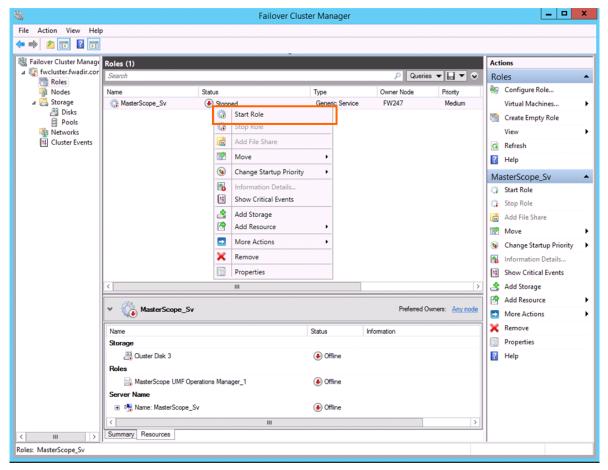


Figure 2-23 Making Resources Available Online

In addition, if the service has been started on the standby node, start the service on the active node by performing the following procedure.

- 1. In the Failover Cluster Manager dialog box, right-click the icon of the created resource (MasterScope_Sv in this example).
- 2. Select Select Node from the displayed pop-up menu.
- 3. In the Move Clusterd Role dialog box, select the destination node to move the standard services.

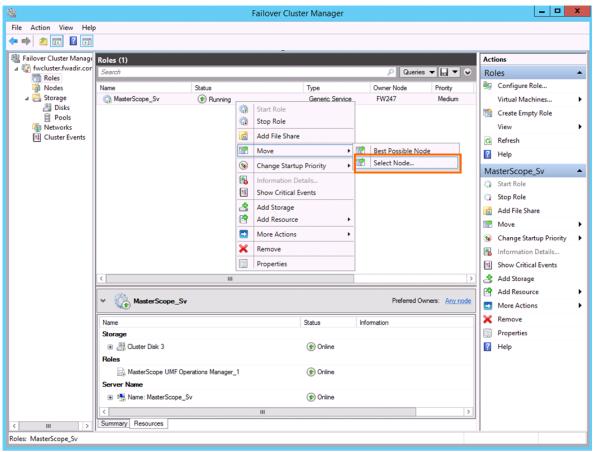


Figure 2-24 Moving Resources

Ν	Nove Clustered Role	
Select the destination 'FW247'.	n node for moving 'MasterScope_S	ov' from
<u>L</u> ook for:		
🔎 Search		Cl <u>e</u> ar
Cluster nodes:	_	
Name	Status	
FW245	🕑 Up	
I		
	OK	Cancel
	UK I	Cancel

Figure 2-25 Selecting Node to Move

This concludes the WSFC setup.

3.1 Deleting WSFC resource settings

Delete the resources created in "2.3 Setting up SystemManager service monitoring resources". Be sure to stop the target resources (standard services) by selecting Stop Role in the Failover Cluster Manager dialog box before deleting resources.

3.2 Uninstalling SystemManager

Uninstall SystemManager by performing the procedure described in the SystemManager Release Memo.

3.3 Deleting files

After SystemManager is uninstalled, files and directories remain on the shared disk. Manually delete directories on the shared disk specified during installation.

4.1 <u>Registering licenses</u>

Register licenses for a cluster environment on both the active and standby nodes.