

OnCommand™ Site Recovery Plug-in 1.0 for Microsoft® **Installation and Administration Guide**

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Understanding OnCommand Site Recovery Plug-in for Microsoft

What the site recovery plug-in is

OnCommand Site Recovery Plug-in for Microsoft enhances the reliability and availability of your data in a Microsoft Windows Server Failover Cluster (WSFC) environment by monitoring and managing your storage to provide automatic failover of services and storage in the event of node failure or site-wide disaster.

The site recovery plug-in enables you to create and add cluster resources to applications in your WSFC environment. These cluster resources monitor your storage, detect storage failure, and automatically initiate failover. You add a site recovery plug-in cluster resource to a specific application using the Windows Server Failover Cluster Manager. You must create and add a cluster resource to each application that you want the site recovery plug-in to monitor.

The initial release of OnCommand Site Recovery Plug-in for Microsoft supports MetroCluster configurations by providing the MetroCluster cluster resource.

How the site recovery plug-in works with MetroCluster

OnCommand Site Recovery Plug-in for Microsoft enables you to quickly recover from various storage system and site-wide failures by taking different actions depending on the type of failure the MetroCluster cluster resource detects.

In general, the site recovery plug-in works for a MetroCluster storage environment by taking the following actions:

1. The plug-in verifies that the storage used by the application that you have added a MetroCluster cluster resource to is online.
2. The plug-in allows the application to start.
3. When the plug-in detects a storage disruption, it initiates a recovery scenario.

Recovery from storage system failures

Storage system failures involve a complete loss of the storage controller and disk shelves, resulting in the following recovery scenario:

1. The site recovery plug-in detects the storage failure.
2. The WSFC brings the application offline and restarts the plug-in.

3. The plug-in verifies the disaster conditions.
4. The plug-in initiates "cluster failover on disaster" to restore system availability at the disaster site.
5. The plug-in monitors the storage system for takeover completion.
6. The WSFC restarts the application.

Recovery from site-wide failures

With site-wide failures, there is a complete loss of storage system and Windows cluster nodes, resulting in the following recovery scenario:

1. The WSFC moves application and site recovery plug-in instances to the surviving cluster node at the surviving site.
2. The WSFC restarts the plug-in.
3. The plug-in verifies the disaster conditions.
4. The plug-in initiates cluster failover to restore availability at the disaster site.
5. The plug-in monitors the storage system to be sure takeover has completed.
6. The WSFC restarts the application, which is now using storage at the surviving site.

Recovery from other failures

Other failures include the following:

- Controller and shelf failures, which are managed by MetroCluster
- Windows cluster node failures, which are managed by the WSFC
- Network failures, which are handled by the WSFC as long as a quorum can be established (which depends on the quorum settings)

Site recovery plug-in authentication

OnCommand Site Recovery Plug-in for Microsoft logs in to your storage controllers over HTTPS or HTTP with user names and passwords that you provide in the properties for each site recovery plug-in cluster resource.

By default, the plug-in connects to storage systems using HTTPS if it is available and HTTP if it is not. You can require the plug-in to use HTTPS by selecting the Require SSL option in the properties for each resource.

The plug-in stores passwords in the cluster database in a replicated registry hive. Passwords are encrypted using AES under a known hidden key and are never logged.

Related references

[Setting the basic properties for a new site recovery MetroCluster cluster resource](#) on page 9

Installing and configuring OnCommand Site Recovery Plug-in for Microsoft

Installing the site recovery plug-in for use with MetroCluster

The OnCommand Site Recovery Plug-in for Microsoft installation wizard guides you through the process of installing the site recovery plug-in software. You must install the same version of the site recovery plug-in on every node in the WSFC cluster.

Before you begin

You must have the following systems configured before you install OnCommand Site Recovery Plug-in for Microsoft:

- A WSFC cluster with each node running at least Microsoft Windows Server 2008 R2 x64 Enterprise or Datacenter with the following features:
 - Windows Server Failover Cluster (WSFC)
 - Microsoft .NET Framework 3.5.1
 - Windows Host Utilities 5.3
 - For MPIO iSCSI configurations: Data ONTAP DSM 3.4 or Microsoft DSM
- A MetroCluster controller pair running Data ONTAP 7.3.x or 8.0.x

For the most up-to-date information on system requirements, see the *OnCommand Site Recovery Plug-in for Microsoft Release Notes*.

Steps

1. Browse to the location of the OnCommand Site Recovery Plug-in for Microsoft installation package and double-click the executable file.
2. Follow the instructions in the installation wizard.

The site recovery plug-in components are installed in the directory %SystemRoot%\cluster.

Configuring the site recovery plug-in for use with MetroCluster

To use OnCommand Site Recovery Plug-in for Microsoft, add a site recovery plug-in cluster resource to an application in your WSFC cluster, set the properties for the resource, bring the resource online, and then set the resource as a dependency for the application.

Before you begin

The site recovery plug-in must be already installed on every node in the WSFC cluster.

About this task

All of the site recovery plug-in configuration tasks are performed in Failover Cluster Manager, the MMC (Microsoft Management Console) snap-in for WSFC.

Steps

1. [Adding a site recovery MetroCluster cluster resource to an application](#) on page 8
2. [Setting the basic properties for a new site recovery MetroCluster cluster resource](#) on page 9
3. [Bringing a site recovery cluster resource online](#) on page 9
4. [Setting dependency on a site recovery MetroCluster cluster resource](#) on page 10

Adding a site recovery MetroCluster cluster resource to an application

To use the site recovery plug-in MetroCluster functionality with an application, you must add a site recovery MetroCluster cluster resource to the application in your WSFC cluster using Failover Cluster Manager.

Steps

1. In the left navigation pane of Failover Cluster Manager, expand the cluster that you want to manage.
2. Click **Services and applications**, then select the application to which you want to add a cluster resource.
3. From the menu choices at the top of Failover Cluster Manager, navigate to **Action > Add a resource > More resources > Add MetroCluster Resource**.

Setting the basic properties for a new site recovery MetroCluster cluster resource

Before a MetroCluster cluster resource can communicate with your storage system, you must set its controller properties by entering the host names and login credentials of the primary and secondary storage controllers.

Steps

1. In the left navigation pane of Failover Cluster Manager, expand the cluster that you want to manage.
2. Click **Services and applications**, then select the application you added a MetroCluster cluster resource to.
3. In the center pane, under "Other Resources," right-click **New MetroCluster Resource**, then select **Properties**.

The New MetroCluster Resource Properties window opens.

4. In the **General** tab, type a name for the MetroCluster cluster resource.
5. In the **Controllers** tab, enter the host name, user name to log in as, and password for each of the primary and secondary controllers.

The primary controller is the storage controller that currently hosts the application's storage, and the secondary controller is the one that will take over hosting the application's storage if the site recovery plug-in detects a failure.

6. If you want to require HTTPS for controller logins, select the "Require SSL" checkbox.
7. Click **OK**.

Bringing a site recovery cluster resource online

Before you can use a site recovery cluster resource, you must bring it online.

Steps

1. In the left navigation pane of Failover Cluster Manager, expand the cluster that you want to manage.
2. Click **Services and applications**, then select the application you added a site recovery cluster resource to.
3. In the center pane, under "Other Resources," right-click the name of the cluster resource you want to bring online, then select **Bring this resource online**.

The resource status changes to "Online Pending" while the resource is coming online, then to "Online" when it finishes.

Setting dependency on a site recovery MetroCluster cluster resource

You must set an application's storage resource to be dependent on a MetroCluster cluster resource so that the site recovery plug-in can detect failures, and so the resources come online in the correct order. A dependent resource in WSFC is brought online after and offline before the resource or resources it depends on.

Steps

1. In the left navigation pane of Failover Cluster Manager, expand the cluster that you want to manage.
2. Click **Services and applications**, then select the application that you have added a site recovery MetroCluster cluster resource to.
3. In the center pane, under "Disk Drives," right-click the name of the storage system that you want the MetroCluster cluster resource to monitor, then select **Properties**.
4. In the **Dependencies** tab, click **Click here to add a dependency**, then select the MetroCluster cluster resource from the drop-down Resource menu.
5. Click **OK**.

Data ONTAP user credentials required for the site recovery plug-in

The user names specified in the OnCommand Site Recovery Plug-in for Microsoft cluster resource properties must have certain Data ONTAP user credentials for the plug-in to successfully function with your storage.

Admin user

- api-*

Non-admin user

- login-http-admin
- api-aggr-list-info
- api-cf-force-takeover
- api-cf-status
- api-ems-autosupport-log
- api-iscsi-service-status
- api-lun-list-info
- api-volume-get-root-name
- api-volume-list-info

Monitoring OnCommand Site Recovery Plug-in for Microsoft

The site recovery plug-in provides diagnostic and reporting messages through the Windows event log, AutoSupport, and the WSFC logging infrastructure.

When the site recovery plug-in triggers a MetroCluster failover, it logs an AutoSupport message for the surviving controller.

You can view the WSFC cluster log data using the Microsoft Windows Server Failover Cluster cmdlets.

Related concepts

[Microsoft Windows Server Failover Cluster cmdlets](#) on page 17

Viewing the site recovery plug-in log

You can view the Windows event log data for the site recovery plug-in from Failover Cluster Manager.

Steps

1. In the left navigation pane of Failover Cluster Manager, expand the cluster that you want to manage.
2. Click **Cluster Events**, then navigate to **Action > Query**.
The Cluster Events Filter window opens.
3. In the **Nodes** area, select the nodes for which you want to display log data.
4. In the **Event Logs** area, select **OnCommand Site Recovery** to display site recovery plug-in log data.
5. In the **Level** area, select the levels of event messages that you want to see.
6. If you want to see event messages with specific IDs, enter them in the **Event IDs** area text box.
7. In the **From** area, specify the date and time of the first event message that you want to see. Select **Events On** from the drop-down menu to specify a date and time, or select **First Event** from the drop-down menu to specify the beginning of the log.
8. In the **To** area, specify the date and time of the last event message that you want to see. Select **Events On** from the drop-down menu to specify a date and time, or select **Last Event** from the drop-down menu to specify the end of the log.

9. Click **OK**.

OnCommand Site Recovery Plug-in for Microsoft PowerShell cmdlets

The OnCommand Site Recovery Plug-in for Microsoft Windows PowerShell cmdlets enable you to perform a subset of operations using the familiar Windows PowerShell command line.

Help for any PowerShell cmdlet is available by entering the following command in PowerShell:

help *cmdlet*

Common cmdlet parameters

The Windows PowerShell cmdlets include both common command parameters and risk-mitigation parameters that you can use to customize the operation that the cmdlet performs.

Cmdlet parameters

[-Verbose {True | False}]

Displays expanded information about the operation.

[-Debug {True | False}]

Displays technical information about the operation.

[-WarningAction {SilentlyContinue | Continue | Inquire | Stop}]

Determines how the cmdlet responds to a warning when performing the operation. The following list describes what each value means:

SilentlyContinue	Suppresses the warning message and continues with the operation.
Continue	Displays the warning message and continues with the operation. This is the default value for this parameter.
Inquire	Displays the warning message and asks if you want to continue.
Stop	Displays the warning message and stops the operation.

-WarningVariable | *Variable_name*

Stores warnings about the command in the specified variable.

[-ErrorAction {SilentlyContinue | Continue | Inquire | Stop}]

Determines how the cmdlet responds to a warning when performing the operation. The following list describes what each value means:

SilentlyContinue	Suppresses the warning message and continues with the operation.
Continue	Displays the warning message and continues with the operation. This is the default value for this parameter.
Inquire	Displays the warning message and asks if you want to continue with the operation.
Stop	Displays the warning message and stops the operation.

-ErrorVariable | *Variable_name*

Stores errors about the command in the specified variable.

-OutVariable | *Variable_name*

Displays objects output by the command and then stores them in the specified variable.

-OutBuffer | *Object_number*

Determines the number of objects that can reside in the buffer before they are sent.

Risk mitigation parameters

[-WhatIf {True | False}]

Displays a message about the outcome of the command instead of executing the operation.

[-Confirm {True | False}]

Prompts you for input before executing the operation.

Importing the required PowerShell modules

To use the PowerShell cmdlets with OnCommand Site Recovery Plug-in for Microsoft, you must import the site recovery plug-in and WSFC PowerShell modules.

Steps

1. In PowerShell, enter the following command to import the site recovery plug-in PowerShell module:

```
Import-Module OnCommand.SiteRecovery
```

2. Then, enter the following command to import the WSFC PowerShell module:

Import-Module FailoverClusters

Site recovery plug-in cmdlets

The site recovery plug-in provides the OnCommand.SiteRecovery PowerShell module, which contains the Get-MetroClusterResource, Set-MetroClusterResource, and Test-MetroClusterResource cmdlets.

Get-MetroClusterResource

This cmdlet enables you to retrieve the configured properties for site recovery plug-in MetroCluster cluster resources.

Syntax

```
Get-MetroClusterResource [ResourceName] [<CommonParameters>]
```

Description

This cmdlet shows the properties of a specific site recovery plug-in MetroCluster cluster resource, or all configured MetroCluster cluster resources if no named resource is specified.

Parameters

ResourceName

Specifies a MetroCluster cluster resource you want to see the properties of.

Example

The following example retrieves the properties of a MetroCluster cluster resource named MCResSQL.

Get-MetroClusterResource MCResDTC

```
ResourceName      : MCResDTC
PrimaryHostname   : 10.61.132.11
PrimaryCredential : System.Management.Automation.PSCredential
PrimaryRequireSSL : False
SecondaryHostname : 10.61.132.10
```

```
SecondaryCredential : System.Management.Automation.PSCredential
SecondaryRequireSSL : False
```

Set-MetroClusterResource

This cmdlet enables you to set the controller properties for a site recovery plug-in MetroCluster cluster resource.

Syntax

```
Set-MetroClusterResource <ResourceName> [-PrimaryHostname <hostname | IP>]
[-PrimaryCredential <username>] [-PrimaryRequireSSL] [-SecondaryHostname
<hostname | IP>] [-SecondaryCredential <username>] [-SecondaryRequireSSL]
[<CommonParameters>]
```

Description

This cmdlet sets the properties specified by the input parameters for the named site recovery plug-in MetroCluster cluster resource.

Parameters

ResourceName

Specifies the MetroCluster cluster resource that you want to modify.

-PrimaryHostname *hostname* | *IP*

Specifies the hostname (or IP address) of the primary controller.

-PrimaryCredential *username*

Specifies the username to use when logging in to the primary controller.

-PrimaryRequireSSL

Specifies to require HTTPS for connecting to the primary controller.

-SecondaryHostname *hostname* | *IP*

Specifies the hostname (or IP address) of the secondary controller.

-SecondaryCredential *username*

Specifies the username to use when logging in to the secondary controller.

-SecondaryRequireSSL

Specifies to require HTTPS for connecting to the secondary controller.

Example

The following example sets the primary controller hostname and username for a MetroCluster cluster resource named MCResSQL.

```
Set-MetroClusterResource MCResSQL -PrimaryHostname 10.61.132.11 -
PrimaryCredential root
```

Test-MetroClusterResource

This cmdlet enables you to validate the login credentials for a site recovery plug-in MetroCluster cluster resource.

Syntax

```
Test-MetroClusterResource <ResourceName> [<CommonParameters>]
```

Description

This cmdlet tests the login credentials set for the named site recovery plug-in MetroCluster cluster resource.

Parameters

ResourceName

Specifies the MetroCluster cluster resource for which you want to test login credentials.

Example

The following example tests the login credentials for a MetroCluster cluster resource named MCResDTC and finds that the username or password for the primary controller is not correct.

```
Test-MetroClusterResource MCResDTC
```

```
ResourceName Successful PrimaryControllerErrors
-----
MCResDTC          False User name and/or password is not correct
for storage controller '10.61.169.28'.
```

Microsoft Windows Server Failover Cluster cmdlets

WSFC provides the FailoverClusters PowerShell module, which contains several cmdlets that enable you to manage site recovery plug-in cluster resources.

Get-ClusterGroup

This WSFC cmdlet enables you to see a list of the services and applications in the cluster.

Syntax

```
Get-ClusterGroup [<CommonParameters>]
```

Description

When invoked without any parameters, this cmdlet lists all of the services and applications in the cluster.

Example

The following example lists the services and applications in a cluster.

Get-ClusterGroup

Name	State
OwnerNode	

-----	-----
SQL Server (MSSQLSERVER)	
win2k8devrre1	Online
WSFCRRE_Dtc	
win2k8devrre1	Online
Cluster Group	
win2k8devrre1	Online
Available Storage	
wsfcrre3	Online

Add-ClusterResource

This WSFC cmdlet enables you to add a new MetroCluster cluster resource to an application in the cluster.

Syntax

```
Add-ClusterResource -Name ResourceName -ResourceType "MetroCluster  
Resource" -Group <ApplicationName> [<CommonParameters>]
```

Description

This cmdlet adds a new named MetroCluster resource to the named application.

Parameters

-Name *ResourceName*

Specifies a name for the new MetroCluster cluster resource.

-ResourceType "MetroCluster Resource"

Specifies that the resource is a MetroCluster cluster resource.

-Group ResourceName

Specifies the name of the application to which you want to add the new MetroCluster cluster resource.

Example

The following example creates a new MetroCluster cluster resource named MCResSQL and adds it to the application called SQL Server (MSSQLSERVER).

Add-ClusterResource -Name MCResSQL -ResourceType "MetroCluster Resource" -Group "SQL Server (MSSQLSERVER)"

Name Group	State ResourceType	
----	----	
MCResSQL (MSSQLSERVER)	Offline MetroCluster Resource	SQL Server

Start-ClusterResource

This WSFC cmdlet enables you to bring a cluster resource online.

Syntax

Start-ClusterResource *ResourceName* [*<CommonParameters>*]

Description

This cmdlet brings the named cluster resource online.

Parameters

ResourceName

Specifies the cluster resource that you want to bring online.

Example

The following example brings a MetroCluster cluster resource named MCResSQL online.

Start-ClusterResource MCResSQL

Name Group	State ResourceType
----	----

-----	-----	
MCRessQL (MSSQLSERVER)	Online MetroCluster Resource	SQL Server

Get-ClusterLog

This WSFC cmdlet enables you to retrieve information from the cluster log.

Syntax

```
Get-ClusterLog -Destination <DirectoryPath> [-Span <NumberOfMinutes>]
[<CommonParameters>]
```

Description

This cmdlet retrieves data from the cluster log and saves it to text files in a directory that you specify using the -Destination parameter. The files are named by node: for example, node1_cluster.log and node2_cluster.log.

Parameters

-Destination *DirectoryPath*

Specifies the directory to which you want to save the collected log data.

-Span *NumberOfMinutes*

Specifies for how many minutes in the past you want to collect log data. If this parameter is not used, all existing log data is collected.

Example

The following example retrieves the most recent 60 minutes of log data and saves it to the directory C:\mylogs.

```
Get-ClusterLog -Destination C:\mylogs -Span 60
```

Set-ClusterLog

This WSFC cmdlet enables you to set the cluster log level, which specifies what kind of messages are stored in the log.

Syntax

```
Set-ClusterLog -Level 1 | 2 | 3 | 4 | 5 [-Size LogSize]
[<CommonParameters>]
```

Description

This cmdlet sets the level of detail you want for the cluster log. The default level is 3, which includes errors, warnings, and some additional information.

There are five levels of logging:

1. Error
2. Warning
3. Informational
4. Verbose
5. Debug (which generates a great deal of data)

Parameters

-Level 1 | 2 | 3 | 4 | 5

Specifies the log level.

-Size *LogSize*

Specifies the size of the log in MB. Values can be from 8 through 1024.

Example

The following example sets the cluster log to level 3.

```
Set-ClusterLog -Level 3
```


Troubleshooting OnCommand Site Recovery Plug-in for Microsoft

Validating a cluster

You can use Failover Cluster Manager to validate many aspects of a cluster's configuration, inventory, network settings and connectivity, storage resources, and systems configuration.

Steps

1. In the left navigation pane of Failover Cluster Manager, select the cluster that you want to validate.
2. In the **Configure** area, click **Validate This Cluster**.
3. Follow the instructions in the **Validate a Configuration** wizard.
4. When validation completes, click **View Report** to see the results.

Checking the site recovery plug-in version

The same version of OnCommand Site Recovery Plug-in for Microsoft must be installed on every node in the WSFC cluster. You can check the site recovery plug-in version from the Windows Control Panel.

Steps

1. On each node, navigate to **Start > Control Panel**.
2. Click **Programs and Features** or **Programs > Programs and Features**.
3. In the list of installed programs, select OnCommand Site Recovery Plug-in for Microsoft.

The product version is displayed at the bottom of the window.

Checking controller connectivity

You can verify connectivity, ONTAP version, and user capabilities from the Properties window of a MetroCluster cluster resource.

Steps

1. In the left navigation pane of Failover Cluster Manager, expand the cluster that you want to manage.
2. Click **Services and applications**, then select an application that has a MetroCluster cluster resource.
3. In the center pane, under "Other Resources," right-click the MetroCluster cluster resource, then select **Properties**.

The New MetroCluster Resource Properties window opens.

4. In the **Controllers** tab, click **OK** to test the controllers for which you have entered information.

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