

Using the vRealize Orchestrator Plug-In for Site Recovery Manager 8.1

Site Recovery Manager 8.1



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Using the Site Recovery Manager Plug-In

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Using the vRealize Orchestrator Plug-In for Site Recovery Manager 8.1 guide provides information and instructions about configuring and using the VMware® vRealize Orchestrator plug-in for VMware Site Recovery Manager.

Intended Audience

The information in *Using the vRealize Orchestrator Plug-In for Site Recovery Manager 8.1* guide is intended for experienced administrators who want to automate protection and recovery configuration tasks on a vSphere environment using the Site Recovery Manager plug-in. The information is written for experienced users who are familiar with virtual machine technology, with vRealize Orchestrator workflow development, and with VMware Site Recovery Manager.

For more information about vRealize Orchestrator, see the *vRealize Orchestrator Documentation*.

For more information about Site Recovery Manager, see the *VMware Site Recovery Manager Documentation*.

Automated Operations That the vRealize Orchestrator Plug-In for Site Recovery Manager Provides

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With vRealize Orchestrator plug-in for Site Recovery Manager, you can automate the creation of your Site Recovery Manager infrastructure to manage resource mappings between sites, configure protection groups and recovery plans, add virtual machines to protection groups, configure recovery settings of virtual machines, and run recoveries.

With vRealize Orchestrator plug-in for Site Recovery Manager you can protect virtual machines by adding them to array-based replication or to vSphere Replication protection groups. The plug-in does not automate the configuration of vSphere Replication on virtual machines. You can use the vRealize Orchestrator Plug-In for vSphere Replication to configure vSphere Replication on virtual machines, or configure vSphere Replication manually. For information about the vRealize Orchestrator Plug-In for vSphere Replication, see the release notes of the vRealize Orchestrator Plug-In for vSphere Replication.

The vRealize Orchestrator plug-in for Site Recovery Manager includes vRealize Orchestrator actions, workflows, policy templates to trigger actions when certain events occur, and scripting objects to expose selected elements of the Site Recovery Manager API to workflows.

The plug-in provides workflows to configure local and remote sites, to remove local sites and to log in to remote site.

Note The workflows to configure local and remote sites assume that the vRealize Orchestrator trust store already contains the local site infrastructure node SSL certificate and the local site vCenter Server SSL certificate. In an embedded configuration, the vRealize Orchestrator trust store contains only one certificate. You must rerun the appropriate workflows if an administrator updates any of the SSL certificates.

The plug-in provides actions and workflows to manage inventory mappings in Site Recovery Manager infrastructure:

- Add, get, or remove Folder Mapping
- Add, get, or remove Network Mapping
- Add, get, or remove Resource Mapping
- Add, get, or remove Test Network Mapping

The plug-in provides actions and workflows that manage and configure protection groups:

- Create, list, or remove protection groups for array-based replication or vSphere Replication
- Add or remove replicated virtual machines from vSphere Replication protection groups
- Protect or unprotect virtual machines
- Protect all virtual machines associated with protection group
- List protected datastores
- Get unassigned replicated datastores
- Find array-based replication protection group by datastore

The plug-in provides actions and workflows that manage and configure recovery plans:

- Create or delete recovery plan
- Add to or remove protection group from recovery plan
- Add to or remove test network mapping from recovery plan
- Configure virtual machine recovery settings
- List recovery plans and get recovery plan state
- Initiate:

Test recovery plan

Cleanup recovery plan

Failover recovery plan

Reprotect recovery plan

Cancel recovery plan

Planned migration recovery plan

Note When the plug-in starts test, cleanup, failover, reprotect, planned migration, or cancel recovery plan, it performs an initial check on the recovery plan state. The workflow then succeeds or fails but does not provide information on the progress of the operation. You can monitor the plan progress in vSphere Web Client.

The plug-in provides sample automated actions and workflows:

- Convert single or multiple virtual machines to UnassignedReplicatedVM
- Create an array-based protection group, protect existing virtual machines, and add to a recovery plan
- Create and protect a virtual machine

Installing the Site Recovery Manager Plug-In

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To create and run workflows on the protected and recovery Site Recovery Manager sites, you must install and configure the Site Recovery Manager plug-in in vRealize Orchestrator.

This chapter includes the following topics:

- [Site Recovery Manager Plug-In Functional Prerequisites](#)
- [Installing, Upgrading, and Uninstalling the Site Recovery Manager Plug-In](#)

Site Recovery Manager Plug-In Functional Prerequisites

To install and use the Site Recovery Manager plug-in, your system must meet certain functional prerequisites.

Site Recovery Manager

Verify that the version of your Site Recovery Manager plug-in is compatible with your Site Recovery Manager.

For information about the compatibility between the Site Recovery Manager plug-in and Site Recovery Manager, see *vRealize Orchestrator plug-in for Site Recovery Manager 8.1 Release Notes*.

For information about setting up Site Recovery Manager, see the *Site Recovery Manager Installation and Configuration* documentation.

vRealize Orchestrator

Verify that you have a running instance of Orchestrator and its version is compatible with the versions of your Site Recovery Manager and Site Recovery Manager plug-in.

For information about the compatibility between Site Recovery Manager and Orchestrator, see the *vRealize Orchestrator plug-in for Site Recovery Manager 8.1 Release Notes* and *Compatibility Matrices for Site Recovery Manager 8.1* documentation.

For information about setting up Orchestrator, logging in the Orchestrator client, and available authentication methods, see the *Installing and Configuring VMware vRealize Orchestrator* documentation.

Other Prerequisites

Verify that you have installed a vCenter Server plug-in. See the *Using the vCenter Server Plug-In* topic in the vRealize Orchestrator documentation.

Installing, Upgrading, and Uninstalling the Site Recovery Manager Plug-In

You can use the Site Recovery Manager plug-in after you install it on an Orchestrator instance. The version of the Site Recovery Manager plug-in must be compatible with your Site Recovery Manager and Orchestrator.

Installing the Site Recovery Manager Plug-In

You can install the Site Recovery Manager plug-in if your Site Recovery Manager sites are paired and your Orchestrator instance is configured to work with your vSphere environment.

You must configure Orchestrator to use the vSphere environment. For information about how to configure your Orchestrator to work with a vSphere environment, see the *Configuring vRealize Orchestrator* section in the *Installing and Configuring VMware Realize Orchestrator* documentation.

You can download the Site Recovery Manager plug-in installation .vmoapp file from the download page of Site Recovery Manager.

You can install the Site Recovery Manager plug-in by using the `https://your_orchestrator_server:8283/vco-controlcenter` configuration interface. For information about how to install the .vmoapp file on your Orchestrator instance, see the *Manage the Orchestrator Plug-Ins* topic in the *Installing and Configuring VMware Realize Orchestrator* documentation.

Upgrading and Uninstalling the Site Recovery Manager Plug-In

You can upgrade your Site Recovery Manager plug-in by uninstalling your plug-in and installing the new version.

You can uninstall your Site Recovery Manager plug-in by using the `https://your_orchestrator_server:8283/vco-controlcenter` configuration interface. For more information about how to uninstall your Site Recovery Manager plug-in, see the *Uninstall a Plug-in* topic in the *Installing and Configuring VMware Realize Orchestrator* documentation and the following KB : <http://kb.vmware.com/kb/2064575>, *Uninstalling a plug-in from vRealize Orchestrator 5.5.x, 6.0.x, and 7.x*.

Using the Site Recovery Manager Plug-In Workflows

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The Site Recovery Manager plug-in workflow library contains workflows that you can use to automate Site Recovery Manager tasks. With the predefined workflows you can run tests and cleanup, run recoveries and reprotect, and cancel recovery plans. You can use the predefined workflows to create custom workflows.

You can use the **Inventory** view in the Orchestrator client to manage the available Site Recovery Manager resources. You can use the scripting API of the plug-in to create custom workflows.

This chapter includes the following topics:

- [Available Workflows in Site Recovery Manager Plug-In](#)
- [Prerequisites for Using the Site Recovery Manager Plug-In](#)
- [Configuration Workflows](#)
- [Inventory Mapping Workflows in Site Recovery Manager Plug-In](#)
- [Protection Group Workflows in Site Recovery Manager Plug-In](#)
- [Recovery Plan Workflows in Site Recovery Manager Plug-In](#)
- [Sample Workflows for Site Recovery Manager Plug-In](#)
- [Storage Workflows in Site Recovery Manager plug-in](#)
- [Limitations of the Site Recovery Manager Plug-In](#)

Available Workflows in Site Recovery Manager Plug-In

Site Recovery Manager plug-in provides Configuration, Inventory Mappings, Protection Groups, Site Recovery Manager Samples, and Storage workflows

Table 4-1. Configuration workflows

Workflow	Description of Operation
Configure Local Sites	Gets Site Recovery Manager URL, validates connection, imports certificate, and registers local sites associated with the local or provided Platform Services Controller
Configure Remote Site	Gets remote lookup service URL, imports certificate, gets remote vCenter Server URL, and imports certificate

Table 4-1. Configuration workflows (Continued)

Workflow	Description of Operation
Login Remote Site	Logs in to remote site
Remove Local Sites	Removes local site

Table 4-2. Inventory Mapping workflows

Workflow	Description of Operation
Add Folder Mapping	Adds folder mapping between paired sites
Add Network Mapping	Adds network mapping between paired sites
Add Resource Mapping	Adds resource pool mapping between paired sites
Add Test Network Mapping	Adds test network mapping to remote site
Get Folder Mappings	Lists folder mappings for local site
Get Network Mappings	Lists network mappings for local site
Get Resource Mappings	Lists resource mappings for local site
Get Test Network Mappings	Lists test network mappings for remote site
Remove Folder Mapping	Removes folder mapping from local site
Remove Network Mapping	Removes network mapping from local site
Remove Resource Mapping	Removes resource mapping from local site
Remove Test Network Mapping	Removes remote test network mapping

Table 4-3. Protection Group workflows

Workflow	Description of Operation
Add Replicated VM to vSphere Replication Protection Group	Adds selected replicated virtual machine to existing vSphere Replication protection group
Create Protection Group for Array Based Replication	Creates array-based replication protection group based on unassigned replicated datastore
Create Protection Group for vSphere Replication	Creates vSphere Replication protection group and adds virtual machines to the protection group
Find ABR Protection Group by Datastore	Lists array-based replication protection groups on local site
Get Unassigned Replicated Datastores	Lists unassigned replicated datastores on local site
List Protected Datastores	Lists replicated datastores in protection group
List Protection Groups	Lists protection groups on local site
Protect All Unprotected Virtual Machines Associated with Protection Group	Enables protection for all unprotected virtual machines members of a protection group
Protect Virtual Machine	Enables protection for unprotected virtual machine member of a protection group
Remove Protection Group	Removes protection group

Table 4-3. Protection Group workflows (Continued)

Workflow	Description of Operation
Remove Replicated VM from vSphere Replication Protection Group	Removes selected virtual machine from vSphere Replication protection group
Unprotect Virtual Machines	Disables protection for the selected virtual machines

Table 4-4. Recovery Plan workflows

Workflow	Description of Operation
Add Protection Group to Recovery Plan	Adds protection group to recovery plan
Add Test Network Mapping to Recovery Plan	Adds test network mapping to recovery plan
Create Recovery Plan	Creates recovery plan
Delete Recovery Plan	Deletes recovery plan
Get Recovery Plan State	Lists recovery plan state
Initiate Cancel Recovery Plan	Cancels running recovery plan
Initiate Cleanup Recovery Plan	Clean ups recovery plan after test
Initiate Failover Recovery Plan	Starts fail over to recovery site process
Initiate Planned Migration Recovery Plan	Starts planned migration to recovery site
Initiate Reprotect Recovery Plan	Starts reprotect of site and reverses protection
Initiate Test Recovery Plan	Starts test of recovery plan
List Recovery Plans	Lists recovery plans
Remove Protection Group from Recovery Plan	Removes protection group from recovery plan
Remove Test Network Mapping from Recovery Plan	Removes test network mapping from recovery plan
Set VM Recovery Settings	Sets priority group, power state, pre power on commands and prompts, and post power on commands and prompts for a virtual machine in a recovery plan

Table 4-5. Site Recovery Manager Sample workflows

Workflow	Description of Operation
Convert Multiple VMs to UnassignedReplicatedVMs	Converts multiple vCenter Server objects into Site Recovery Manager objects
Convert VM to UnassignedReplicatedVM	Converts single vCenter Server object into Site Recovery Manager object
Create ABR Group, Protect Existing VMs, Add to Recovery Plan	Creates array-based protection group, protects virtual machines in the protection group, and adds the protection group to a recovery plan
Create VM and Protect It	Creates a virtual machine with specified configuration and adds it to a protection group
Wait Task End	Monitors task execution

Table 4-6. Storage workflows

Workflow	Description of Operation
Discover Replicated Devices	Initiates discover replicated devices operation for all available array pairs

Prerequisites for Using the Site Recovery Manager Plug-In

To use the Site Recovery Manager plug-in, your environment must meet certain requirements.

- Verify that you have Site Recovery Manager server instances installed on both sites and that they are paired.
- Verify that your Orchestrator instance is configured to work with the vSphere infrastructure. For information about how to configure your Orchestrator to work with a vSphere environment, see the *Configuring vRealize Orchestrator* section in the *Installing and Configuring VMware Realize Orchestrator* documentation.

Configuration Workflows

Configuration workflows register information about vCenter Server and Site Recovery Manager topology including lookup services, authentication providers, and platform services controllers.

Configuration workflows are a functional prerequisite - before running workflows from the inventory tree you must run **Configure Local Sites**, **Configure Remote Site**, and **Login Remote Site** workflows.

Running Configuration Workflows

You can run workflows under the **Configuration** directory in Site Recovery Manager plug-in with these steps:

Procedure

- 1 Log in to the Orchestrator client as an administrator and select **Design** or **Run** from the drop-down menu in the left upper corner.
- 2 Click the **Workflows** view.
- 3 Select **Library > SRM > Configuration**.
- 4 Right-click the workflow element and select **Start workflow**.

Configure Local Sites

The workflow registers Site Recovery Manager sites with the plug-in to provide access to the Site Recovery Manager and vCenter Server inventory.

The workflow requires that your vCenter Server is registered with your Orchestrator client. For information about how to configure your Orchestrator to work with a vSphere environment, see the *Configuring vRealize Orchestrator* section in the *Installing and Configuring VMware Realize Orchestrator* documentation. In case the vCenter Server is not registered with Orchestrator, the plug-in is unable to get the Site Recovery Manager URL and cannot import the Site Recovery Manager certificate.

Registering a Site Recovery Manager site as a local site in the plug-in defines the functional direction of workflows for that site. For example, running inventory mapping workflows on a local site maps inventory objects from the local sites to inventory objects on the remote site. You can register as local sites both Site Recovery Manager protected and recovery sites in a single Orchestrator instance. This requires that both vCenter Server are registered with the Orchestrator client. You can then run the rest of the available workflows from the chosen direction for both sites from a single Orchestrator client.

Table 4-7. Configure Local Sites workflow inputs

Input	Description
Platform Services Controller	IP or host name of the local Platform Services Controller
Port	Port of the local site (default value is set to 443)
Path	Path to Lookup Service
User name	User name for local Site
Password	Password for local Site

Configure Remote Site

The workflow registers the paired remote Site Recovery Manager site with the Orchestrator instance.

The workflow imports certificates of the remote vCenter Server or Platform Services controller so that you can log in to the remote site. The local and remote Site Recovery Manager sites must be paired before running this workflow. If you have registered both the protected and the recovery site as local sites, you must run the **Configure Remote Site** for both sites to run workflows in both directions.

Table 4-8. Configure Remote Site workflow inputs

Input	Description
Local Site	Local Site Recovery Manager site

Login Remote Site

The workflow logs you to the remote site, so that you can run other Site Recovery Manager workflows.

The workflow requires that Site Recovery Manager sites are paired. You must run this workflow once per each Orchestrator client session. Orchestrator logs out of the remote Site Recovery Manager site when you log out of the Orchestrator client. If you have registered the recovery and protected sites as local sites, you must run the workflow for both sites. In case Site Recovery Manager protected and recovery sites are configured in Enhanced Linked Mode, it is not necessary to run the **Login Remote Site** workflow.

Table 4-9. Mandatory inputs for Login Remote Site workflow

Input	Description
Local Site	Local Site Recovery Manager site
User name	User name for local site
Password	Password for local site

Remove Local Sites

The workflow unregisters the local Site Recovery Manager site and refreshes the internal plug-in cache.

Removing a local site does not remove previously set configurations such as mappings, protection groups, and so on.

Table 4-10. Remove Local Sites workflow inputs

Input	Description
Local Platform Services Controller	Local Platform Services Controller for which Site Recovery Manager site is added

Inventory Mapping Workflows in Site Recovery Manager Plug-In

With inventory mappings you can configure how Site Recovery Manager maps virtual machine resources on the protected site to resources on the recovery site. Inventory mappings provide default objects in the inventory on the recovery site for the recovered virtual machines to use when you run recovery.

For array-based replication and vSphere Replication, if you configure site-wide inventory mappings before you create protection groups, these mappings are used by default for all protected virtual machines. Site Recovery Manager applies the site-wide mappings to all virtual machines in an array-based replication protection group or a vSphere Replication protection group when you create the protection group. You can set site-wide inventory mappings between corresponding objects on the protected and recovery sites:

- Networks, including test networks
- Datacenters or virtual machine folders
- Resource pools, standalone hosts, vApps, or clusters

Note Recovery site resource pool, folder, or network must be in the same remote datacenter.

Running Inventory Mapping Workflows

You can run workflows under the **Inventory Mappings** directory in Site Recovery Manager plug-in with these steps:

Procedure

- 1 Log in to the Orchestrator client as an administrator and select **Design** or **Run** from the drop-down menu in the left upper corner.
- 2 Click the **Workflows** view.
- 3 Select **Library > SRM > Inventory Mappings**.
- 4 Right-click the workflow element and select **Start workflow**.

Add Folder Mapping

The workflow adds site-wide mappings of datacenters or virtual machine folders on the local site to datacenters or virtual machine folders on the remote site.

The workflow requires that the Site Recovery Manager sites are paired. If pairing is broken, all existing mappings are deleted and no additional mappings can be added. You can map multiple parent (datacenter) and child (virtual machine folder) objects to a single object. A single object can have only one mapping. You can run the workflow multiple times for a single object, the latest workflow run sets the site-wide mapping. You can map a datacenter to a virtual machine folder and a virtual machine folder to a datacenter.

Table 4-11. Add Folder Mapping workflow inputs

Input	Description
Site	Local Site Recovery Manager site
Local Folder	Local datacenter or virtual machine folder
Remote Folder	Remote datastore or virtual machine folder

Add Network Mapping

The workflow adds site-wide mappings of networks on the local site to networks on the remote site.

The workflow requires that Site Recovery Manager sites are paired. If pairing is broken, all existing mappings are deleted and no additional mappings can be added.

Table 4-12. Add Network Mapping workflow inputs

Input	Description
Site	Local Site Recovery Manager site
Local Network	Local network mapped to remote network
Remote Network	Remote network to which virtual machines connect when recovered

Add Resource Mapping

The workflow adds site-wide mappings of computer resources, including pools, standalone hosts, vApps, or clusters from the local site to computer resources, including pools, standalone hosts, vApps, or clusters on the remote site.

The workflow requires that Site Recovery Manager sites are paired. If pairing is broken, all existing mappings are deleted and no additional mappings can be added.

Table 4-13. Add Resource Mapping workflow inputs

Input	Description
Site	Local Site Recovery Manager site
Local Resource	Local resource - resource pool, standalone host, vApp, or cluster
Remote Resource	Remote resource - resource pool, standalone host, vApp, or cluster

Add Test Network Mapping

The workflow adds site-wide mappings of networks on the remote site to test networks on the remote site.

The workflow requires that Site Recovery Manager sites are paired. If pairing is broken, all existing mappings are deleted and no additional mappings can be added.

The workflow maps an existing network on the remote site to another existing network on the remote site which assumes the role of a test network.

Table 4-14. Add Test Network Mapping workflow inputs

Input	Description
Site	Local Site Recovery Manager site
Remote Network	Remote site network
Test Network	Remote site test network

Get Folder Mappings

The workflow lists datacenters or virtual machine folders on the local site that have existing mappings.

If the protected and the recovery sites are registered as local sites, you can check all datacenters or virtual machine folders which have existing mappings on both sites. The workflow does not show the exact mapping between corresponding objects.

Table 4-15. Get Folder Mappings workflow inputs

Input	Description
Site	Local Site Recovery Manager site

Get Network Mappings

The workflow lists networks on the local site that have existing mappings.

If the protected and the recovery sites are registered as local sites, you can check all networks which have existing mappings on both sites. The workflow does not show the exact mapping between corresponding objects.

Table 4-16. Get Network Mappings workflow inputs

Input	Description
Site	Local Site Recovery Manager site

Get Resource Mappings

The workflow lists resources on the local site that have existing mappings.

If the protected and the recovery site are registered as local sites, you can check all resources which have existing mappings on both sites. The workflow does not show the exact mapping between corresponding objects.

Table 4-17. Get Resource Mappings workflow inputs

Input	Description
Site	Local Site Recovery Manager site

Get Test Network Mappings

The workflow lists networks that have existing mappings to test networks on the remote site.

If the protected and the recovery site are registered as local sites, you can check all remote networks which have existing mappings to remote test networks on both sites. The workflow does not show the exact mapping between corresponding objects.

Table 4-18. Get Test Network Mappings workflow inputs

Input	Description
Site	Local Site Recovery Manager site

Remove Folder Mapping

The workflow removes an existing site-wide mapping between a local folder or datacenter and remote folder or datacenter.

Table 4-19. Remove Folder Mapping workflow inputs

Input	Description
Site	Local Site Recovery Manager site
Folder Mapping	Folder mapping to be removed

Remove Network Mapping

The workflow removes an existing site-wide mapping between a network on the local site and a network on the remote site.

Table 4-20. Remove Network Mapping workflow inputs

Input	Description
Site	Local Site Recovery Manager site
Network Mapping	Network mapping to be removed

Remove Resource Mapping

The workflow removes an existing site-wide mapping between resources on the local site and resources on the remote site.

Table 4-21. Remove Resource Mapping workflow inputs

Input	Description
Site	Local Site Recovery Manager site
Resource Mapping	Resource mapping to be removed

Remove Test Network Mapping

The workflow removes an existing site-wide mapping between network on the remote site and test network on the remote site.

Table 4-22. Remove Test Network Mapping workflow inputs

Input	Description
Site	Local Site Recovery Manager site
Test Network Mapping	Test network mapping to be removed

Protection Group Workflows in Site Recovery Manager Plug-In

Protection groups are collections of virtual machines or replicated datastores that Site Recovery Manager protects together. The Site Recovery Manager plug-in enables you to organize virtual machines into protection groups based on array-based replication or vSphere Replication.

Running Protection Group Workflows

You can run workflows under the **Protection Groups** directory in Site Recovery Manager plug-in with these steps:

Procedure

- 1 Log in to the Orchestrator client as an administrator and select **Design** or **Run** from the drop-down menu in the left upper corner.
- 2 Click the **Workflows** view.
- 3 Select **Library > SRM > Protection Groups**.

- 4 Right-click the workflow element and select **Start workflow**.

Add Replicated Virtual Machine to vSphere Replication Protection Group

The workflow adds a virtual machine configured for vSphere Replication to a vSphere Replication protection group.

Table 4-23. Add Replicated VM to vSphere Replication Protection Group workflow inputs

Input	Description
Protection Group	Local vSphere Replication protection group
Virtual Machine	Virtual machine for which vSphere Replication is enabled

Create Protection Group for Array-Based Replication

The workflow creates an array-based replication protection group.

Table 4-24. Create Protection Group for Array-Based Replication workflow inputs

Input	Description
Protection Folder	Folder under local Site Recovery Manager site in which the protection group is placed
Name	Protection group name
Description	Short description
Datastore	Datastore for which array-based replication is enabled

Create Protection Group for vSphere Replication

The workflow creates a vSphere Replication protection group.

Table 4-25. Create Protection Group for vSphere Replication workflow inputs

Input	Description
Protection Folder	Folder under local Site Recovery Manager site in which the protection group is placed
Name	Name of protection group
Description	Short description
VMs	Virtual machines added to the protection group

Find Array Based Replication Protection Group by Datastore

The workflow lists the array-based replication protection group for a local datastore.

Table 4-26. Find Array Based Replication Protection Group by Datastore workflow inputs

Input	Description
Site	Local Site Recovery Manager site
Datastore	Datastore attached to the local vCenter Server

Get Unassigned Replicated Datastores

The workflow lists all replicated datastores on the local site that are not associated with an array-based replication protection group.

Table 4-27. Get Unassigned Replicated Datastores workflow inputs

Input	Description
Site	Local Site Recovery Manager site

List Protected Datastores

The workflow lists all replicated datastores that are associated with an array-based replication protection group.

The workflow accepts as input array-based replication protection groups only, returns a list of datastores that have array-based replication enabled and are associated with the selected protection group.

Table 4-28. List Protected Datastores workflow inputs

Input	Description
Protection Group	Array-based replication protection group only

List Protection Groups

The workflow lists existing array-based replication and vSphere Replication protection groups.

Table 4-29. List Protection Group workflow inputs

Input	Description
Site	Local Site Recovery Manager site

Protect All Unprotected Virtual Machines Associated with Protection Group

The workflow enables protection for all unprotected virtual machines that are members of a protection group and creates placeholder virtual machines on the recovery site.

Table 4-30. Protect All Unprotected Virtual Machines Associated with Protection Group workflow inputs

Input	Description
Protection Group	Protection group on the local Site Recovery Manager site

Protect Virtual Machine

The workflow enables protection for a virtual machine and creates a placeholder virtual machine on the recovery site.

Table 4-31. Protect Virtual Machine workflow inputs

Input	Description
Protection Group	Protection group on the local Site Recovery Manager site
VM	Virtual machine with enabled replication

Remove Protection Group

The workflow removes a protection group.

When removing a protection group, Site Recovery Manager removes all virtual machines from the group, stops protection, and removes all placeholder virtual machines on the recovery site.

Table 4-32. Remove Protection Group workflow inputs

Input	Description
Protection Group	Local protection group to be removed

Remove Replicated Virtual Machine from vSphere Replication Protection Group

The workflow removes a virtual machine from a vSphere Replication protection group.

When running the workflow, you must select a virtual machine from the vCenter Server inventory that is a member of the protection group.

Table 4-33. Remove Replicated VM from vSphere Replication Protection Group workflow inputs

Input	Description
Protection Group	Local Site Recovery Manager
VM	Virtual machine member of the selected vSphere Replication protection group

Unprotect Virtual Machines

The workflow unprotects virtual machines from the selected protection group and removes placeholder virtual machines from the recovery site.

Table 4-34. Unprotect Virtual Machines workflow inputs

Input	Description
Protection Group	Local Site Recovery Manager site protection group
Protected Virtual Machines	Protected virtual machine member of the selected protection group

Recovery Plan Workflows in Site Recovery Manager Plug-In

Recovery plans hold instructions on how Site Recovery Manager recovers virtual machines from the protected to the recovery site.

A recovery plan can include one or more protection groups. You can add or remove protection groups to a recovery plan using the **Add Protection Group to Recovery Plan** and **Remove Protection Group from Recovery Plan** workflows. A recovery plan can contain both array-based replication protection groups and vSphere Replication protection groups.

Running Recovery Plan Workflows in Site Recovery Manager Plug-In

You can run workflows under the **Recovery Plans** directory in Site Recovery Manager plug-in with these steps:

Procedure

- 1 Log in to the Orchestrator client as an administrator and select **Design** or **Run** from the drop-down menu in the left upper corner.
- 2 Click the **Workflows** view.
- 3 Select **Library > SRM > Recovery Plans**.
- 4 Right-click the workflow element and select **Start workflow**.

Add Protection Group to Recovery Plan

The workflow adds a protection group to the selected Site Recovery Manager site.

The protection group added to the recovery plan must be local to the selected Site Recovery Manager site.

Table 4-35. Add Protection Group to Recovery Plan workflow inputs

Input	Description
Site	Local Site Recovery Manager site
Protection Group	Protection group that was created on the local Site Recovery Manager site

Add Test Network Mapping to Recovery Plan

The workflow adds a mapping between an existing network and existing test network on the remote site for the selected recovery plan.

The test network must be created manually or automatically through the **Create Recovery Plan** workflow. You must configure a test network for every network that a recovery plan uses during recovery.

Table 4-36. Add Test Network Mapping to Recovery Plan workflow inputs

Input	Description
Recovery Plan	Recovery plan under local Site Recovery Manager site
Remote Network	Remote network that maps to the test network
Test Network	Remote network that assumes the role of test network

Create Recovery Plan

The workflow creates a recovery plan and adds existing protection groups.

Table 4-37. Create Recovery Plan workflow inputs

Input	Description
Recovery Folder	Folder under local Site Recovery Manager site in which to place the recovery plan
Name	Name of recovery plan
Description	Short description
Protection Groups	Existing array-based or vSphere Replication protection groups to add to the recovery plan

Delete Recovery Plan

The workflow deletes a recovery plan.

The workflow performs a check for the recovery plan state when running. The workflow fails with `This operation is not allowed in the current state` error message if the recovery plan is in an incorrect state.

Table 4-38. Delete Recovery Plan workflow inputs

Input	Description
Recovery Plan	Recovery plan under the local Site Recovery Manager site

Get Recovery Plan State

The workflow lists the selected recovery plan state.

Table 4-39. Get Recovery Plan State workflow inputs

Input	Description
Site	Local Site Recovery Manager site

Site Recovery Manager external API assigns different recovery plan states compared to the default internal ones. Table 4-39 shows the mapping between external API recovery plan states and internal Site Recovery Manager recovery plan statuses.

Table 4-40. Mapping of External Recovery Plan States

State	Local state	Peer state
running	testInitiated	testInitiated
	testInProgress	testInProgress
	cleanupInProgress	cleanupInProgress
	failoverInitiated	failoverInitiated
	failoverInProgress	failoverInProgress
	reprotectInitiated	reprotectInitiated
	reprotectInProgress	reprotectInProgress
	rollbackInitiated	rollbackInitiated
failedOver	rollbackInProgress	rollbackInProgress
	failedOver	failedOver
needsReprotect	partialRollback	partialRollback
	partialReprotect	partialReprotect
	reprotectIncomplete	reprotectIncomplete
needsCleanup	reprotectInterrupted	reprotectInterrupted
	testComplete	testComplete
	cleanupIncomplete	cleanupIncomplete
needsFailover	cleanupInterrupted	cleanupInterrupted
	partialFailover	failedOverSplit
	failedOverSplit	failoverIncomplete
	failoverIncomplete	failoverInterrupted
needsRollback	failoverInterrupted	
	rollbackIncomplete	rollbackIncomplete
error	rollbackInterrupted	rollbackInterrupted
	readyMixed	readyMixed
	noProtectionGroups	noProtectionGroups
	deleting	deleting
	groupsInUse	groupsInUse
	unknownState	unknownState
ready	syncConflict	syncConflict
	readyReceiving	
	testInterrupted	

Initiate Cancel Recovery Plan

The workflow initiates a cancel of failover or test of recovery plan.

When you cancel a test or recovery, Site Recovery Manager does not start processes, and uses certain rules to stop processes that are in progress. Canceling a failover requires you to re-run the failover.

Canceling a test requires you to run a cleanup.

- Processes that cannot be stopped, such as powering on or waiting for a heartbeat, run to completion before the cancellation finishes.
- Processes that add or remove storage devices are undone by cleanup operations if you cancel.

The workflow performs a check for the recovery plan state when running. You can cancel a recovery or a test if the recovery plan is in state **running**.

Recovery plans are created with a specified direction of protection between the paired sites. You can run **Initiate Cancel Recovery Plan** workflow to cancel recovery or test on the recovery (receiving) site.

Table 4-41. Initiate Cancel Recovery Plan workflow inputs

Input	Description
Recovery Plan	Recovery plan on the remote Site Recovery Managersite in state running .

Initiate Cleanup Recovery Plan

The workflow initiates a cleanup of recovery plan.

The workflow performs a check for the recovery plan state when running. You can clean up a test if the recovery plan is in state **needsCleanup**.

Recovery plans are created with a specified direction of protection between the paired sites. You can run **Initiate Cleanup Recovery Plan** workflow to clean up a test of a recovery plan on the recovery (receiving) site.

Table 4-42. Initiate Cleanup Recovery Plan workflow inputs

Input	Description
Recovery Plan	Recovery plan on the recovery Site Recovery Manager site

Initiate Failover Recovery Plan

The workflow starts a disaster recovery failover from the protected to the recovery site through the selected recovery plan. When completing a disaster recovery failover, Site Recovery Manager recovers virtual machines to the recovery site. If an error occurs on the protected site during operations, the disaster recovery failover continues and does not fail.

You can run the **Initiate Failover Recovery Plan** workflow on the recovery site.

The workflow performs a check for the recovery plan state when running. You can run a failover if the recovery plan is in state **ready**.

Table 4-43. Initiate Failover Recovery Plan workflow inputs

Input	Description
Recovery Plan	Recovery plan that fails over from the protected to the recovery site

Initiate Planned Migration Recovery Plan

The workflow starts a planned migration failover from the protected to the recovery site through the selected recovery plan. When completing a planned migration failover, Site Recovery Manager migrates virtual machines to the recovery site and attempts to shut down corresponding virtual machines on the protected site. If errors occur on the protected site, the planned migration operation stops so that you can resolve the errors and rerun the plan.

Recovery plans are created with a specified direction of protection between the paired sites. You can run **Initiate Planned Migration Recovery Plan** workflow on the recovery (receiving) site.

Table 4-44. Initiate Planned Migration Recovery Plan workflow inputs

Input	Description
Recovery Plan	Recovery plan on the recovery Site Recovery Manager site

Initiate Reprotect Recovery Plan

The workflow starts a reprotect process to protect the virtual machines on the recovery site after a failover has been completed.

You can initiate reprotect process only if the recovery finishes without errors and the originally protected site is operational. Reverse folder, network and resource mappings must exist from the original recovery to the original protected sites. During a reprotect process Site Recovery Manager reverses the direction of protection, then forces synchronization of the storage from the new protected site to the new recovery site.

You can run the **Initiate Reprotect Recovery Plan** workflow on the recovery site.

The workflow performs a check for the recovery plan state when running. You can run a reprotect workflow if the recovery plan is in state **failedOver**.

Table 4-45. Initiate Reprotect Recovery Plan workflow inputs

Input	Description
Recovery Plan	Recovery plan that is failed over from the protected to the recovery site

Initiate Test Recovery Plan

The workflow starts a test of the selected recovery plan.

The workflow performs a check for the recovery plan state when running. You can run a test if the recovery plan is in state **ready**.

Recovery plans are created with a specified direction of protection between the paired sites. You can run **Initiate Test Recovery Plan** workflow on the recovery site. After test of a recovery plan you must run a cleanup of the recovery plan to return it to its original state.

Table 4-46. Initiate Test Recovery Plan workflow inputs

Input	Description
Recovery Plan	Recovery plan to run a test on the recovery site

List Recovery Plans

The workflow lists all array-based replication and vSphere Replication recovery plans.

Table 4-47. List Recovery Plans workflow inputs

Input	Description
Site	Local Site Recovery Manager site

Remove Protection Group from Recovery Plan

The workflow removes a protection group from a recovery plan.

The workflow performs a check for the recovery plan state when running. You can remove a protection group from a recovery plan if the recovery plan is in state **ready**.

Table 4-48. Remove Protection Group from Recovery Plan workflow inputs

Input	Description
Recovery Plan	Local Site Recovery Manager site recovery plan
Protection Group	Protection group member of the selected recovery plan

Remove Test Network Mapping from Recovery Plan

The workflow removes a test network mapping from a recovery plan.

The workflow performs a check for the recovery plan state when running. You can remove a protection group from a recovery plan if the recovery plan is in state **ready**.

Table 4-49. Remove Test Network Mapping from Recovery Plan workflow inputs

Input	Description
Recovery Plan	Local Site Recovery Manager site recovery plan
Test Network	Remote test network

Set Virtual Machine Recovery Settings

When recovering a virtual machine, Site Recovery Manager runs predefined steps in a specific order.

You can use the **Set VM Recovery Settings** to configure and customize how the virtual machine is recovered. You can add custom steps by using the **Command** or **Prompt** inputs available in the workflow.

Table 4-50. Set VM Recovery Settings workflow inputs

Input			Description
Recovery Plan			Local Site Recovery Manager site recovery plan
Virtual Machine			Virtual machine to configure recovery settings
Power			Virtual machine final power state
Priority Group			Specifies the shut-down and power-on order of virtual machines from highest 1 to lowest 5
Pre and Post power on steps	Command	Command name	Specifies the command name
		Command text	Specifies the command or script to run
		Command timeout	Sets timeout after execution
	Prompt	Prompt name	Specifies the prompt name
		Prompt text	Prompts user to perform task or provides information the user must acknowledge

Sample Workflows for Site Recovery Manager Plug-In

The **SRM Samples** directory provides sample workflows which automate tasks for configuring protection of virtual machines, creation of Site Recovery Manager infrastructure, and so on.

Running SRM Sample Workflows

You can run workflows under the **SRM Samples** directory in Site Recovery Manager plug-in with these steps:

Procedure

- 1 Log in to the Orchestrator client as an administrator and select **Design** or **Run** from the drop-down menu in the left upper corner.
- 2 Click the **Workflows** view.
- 3 Select **Library > SRM > SRM Samples**.
- 4 Right-click the workflow element and select **Start workflow**.

Convert Multiple VMs to UnassignedReplicatedVMs

UnassignedReplicatedVM is a Site Recovery Manager specific programming object. The workflow converts multiple vCenter Server objects, in this case virtual machines with enabled replication that do not belong to a protection group, into a Site Recovery Manager objects that can be used in running available workflows.

Table 4-51. Convert Multiple VMs to UnassignedReplicatedVMs workflow inputs

Input	Description
Site	Local Site Recovery Manager site
VM	Virtual machine to be converted to Site Recovery Manager object

Convert Virtual Machine to UnassignedReplicatedVM

UnassignedReplicatedVM is a Site Recovery Manager specific programming object. The workflow converts a vCenter Server object, in this case a virtual machine with enabled replication that does not belong to a protection group, into a Site Recovery Manager object that can be used in running available workflows.

Table 4-52. Convert VM to UnassignedReplicatedVM workflow inputs

Input	Description
Site	Local Site Recovery Manager site
VM	Virtual machine to be converted to Site Recovery Manager object

Create ABR Group, Protect Existing Virtual Machines, Add to Recovery Plan

The workflow creates an array-based replication protection group, enables protection for all unprotected virtual machines in the protection group, adds the protection group to the selected recovery plan, and displays the selected recovery plan state.

Table 4-53. Create ABR Group, Protect Existing VMs, Add to Recovery Plan workflow inputs

Input	Description
Protection Folder	Protection group folder on local Site Recovery Manager site
Name	Protection group name
Description	Short description
Datastores	Local datastores with configured array-based replication
Recovery Plan	Recovery plan on local Site Recovery Manager site

Create Virtual Machine and Protect It

The workflow creates a virtual machine with specified configuration, adds it to a protection group and enables protection.

Table 4-54. Create VM and Protect It workflow inputs

Input	Description
Virtual machine name	Name of the created virtual machine
Guest operating system to use with the virtual machine	Guest operating system (search for intended guest operating system)
Virtual machine folder	Folder in the vCenter Server inventory in which to place the virtual machine
Resource pool in which to create the virtual machine	Resource pool in the vCenter Server inventory in which to place the virtual machine
Host on which to create the virtual machine	Host in the vCenter Server inventory on which to place the virtual machine
Size of virtual disk in GB	Size of virtual machine hard drive in GB
Virtual machine memory in MB	Size of virtual machine memory in MB
Number of virtual processors	Number of virtual processors allocated to the virtual machine
The network to connect to	vCenter Server network to which the virtual machine connects
Datastore in which to store the virtual machine files	Datastore in vCenter Server in which the virtual machine files are placed
Make disk thin-provisioned	Thin or thick provisioned virtual machine disk
Protection Group	Protection group on local Site Recovery Manager. The protection group determines the type of replication.

Wait Task End

The workflow monitors a Site Recovery Manager scripting object task execution and outputs the task state on completion.

Table 4-55. Wait Task End workflow input

Input	Description
Task	Discover replicated devices task or user created scripting object task

Storage Workflows in Site Recovery Manager plug-in

Running Storage Workflows

You can run workflows under the **Storage** directory in Site Recovery Manager plug-in with these steps:

Procedure

- 1 Log in to the Orchestrator client as an administrator and select **Design** or **Run** from the drop-down menu in the left upper corner.
- 2 Click the **Workflows** view.

- 3 Select **Library > SRM > Storage**.
- 4 Right-click the workflow element and select **Start workflow**.

Discover Replicated Devices

The workflow initiates discover replicated devices operation on all enabled array pairs.

Table 4-56. Discover Replicated Devices workflow inputs

Input	Description
Site	Local Site Recovery Manager site

Limitations of the Site Recovery Manager Plug-In

Site Recovery Manager plug-in is subject to limitations.

When working with the Site Recovery Manager plug-in, consider the following limitations:

- You cannot customize IP settings by using the Site Recovery Manager plug-in.