Using the vRealize Orchestrator Plug-In for vSphere Replication 8.1

vSphere Replication 8.1

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Contents

Using the vSphere Replication Plug-In

1

Using vSphere Replication Plug-In provides information and instructions about configuring and using the VMware® vRealize Orchestrator plug-in for VMware vSphere Replication.

Intended Audience

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

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

For more information about vSphere Replication, see the *VMware vSphere Replication Documentation*.

Automated Operations That vRealize Orchestrator Plug-In for vSphere Replication Provides

2

The vRealize Orchestrator plug-in for vSphere Replication extends automation capabilities for certain vSphere Replication operations.

The vSphere Replication plug-in includes vRealize Orchestrator actions, workflows, and scripting objects to expose selected elements of the vSphere Replication API to workflows. With the plug-in you can automate the configuration of replication for virtual machines, run migrations and real recoveries, manage local and remote site, and synchronize virtual machine data.

The plug-in provides actions and workflows to configure and manage replications:

- Configure a forward replication for virtual machines to a target vCenter Server or cloud site.
- Configure a reverse replication for virtual machines from a target vCenter Server or cloud site.
- Pause, resume, or stop a forward replication for virtual machines to a target vCenter Server or cloud site.
- Pause, resume, or stop a reverse replication for virtual machines from a target vCenter Server or cloud site.

The plug-in provides actions and workflows to run recovery:

- Run a planned migration to or from a target cloud site.
- Run a real recovery to or from a target cloud site.
- Run a test clean to and from a target cloud site.
- Run a test recovery to and from a target cloud site.

The plug-in provides actions and workflows to manage remote sites:

- Pair the local site with a target vCenter Server or cloud site.
- Register a standalone organization, cloud, or vCenter Server site.
- Unregister standalone organization, cloud, or vCenter Server site.

The plug-in provides actions and workflows to synchronize virtual machine data:

- Full synchronization to a target vCenter Server or cloud site.
- Offline synchronization to or from a target cloud site.
- Offline synchronization to a target vCenter Server site.

- Synchronize a replication to or from a target cloud site.
- Synchronize a replication to a target vCenter Server site.

Installing the vSphere Replication Plug-In

3

To create and run workflows on the local vSphere Replication site, you must install and configure the vSphere Replication plug-in in vRealize Orchestrator.

This chapter includes the following topics:

Functional Prerequisites

To install and use the vSphere Replication plug-in, your system must meet certain functional prerequisites.

vSphere Replication

Verify that the version of your vSphere Replication plug-in is compatible with your vSphere Replication.

For information about the compatibility between the vSphere Replication plug-in and vSphere Replication, see *VMware vRealize Orchestrator Plug-In for vSphere Replication 8.1 Release Notes*.

For information about setting up vSphere Replication, see the *vSphere Replication Installation and Configuration* documentation.

vRealize Orchestrator

Verify that you have a running instance of vRealize Orchestrator and its version is compatible with the versions of your vSphere Replication and vSphere Replication plug-in.

For information about the compatibility between vSphere Replication and Orchestrator, see the *vSphere Replication 8.1 Release Notes* and *Compatibility matrices for vSphere Replication* documentation.

For information about setting up vRealize 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 the vCenter Server plug-in for vRealize Orchestrator. See the *Using the vCenter Server Plug-In* topic in the vRealize Orchestrator documentation.
- Verify that you have added all vCenter Server instances that you want to use for replications, by using the Add vCenter Server workflow. For more information, see the *Configure the Connection to a vCenter Server Instance* topic in the vRealize Orchestrator documentation.

Installing, Upgrading, and Uninstalling the vSphere Replication Plug-In

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

Installing the vSphere Replication Plug-In

You can install the vSphere Replication plug-in if 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 vSphere Replication plug-in installation `.vmoapp` file from the download page of vSphere Replication.

You can install the vSphere Replication 8.1 plug-in in vRealize Orchestrator 7.4 by using the `https://your_orchestrator_server:8283/vco-controlcenter` configuration interface, click **Manage Plug-Ins** and upload the file. For more information about how to manage the Orchestrator plug-ins, see the *Manage the Orchestrator Plug-Ins* topic in the *Installing and Configuring VMware Realize Orchestrator* documentation.

Upgrading the vSphere Replication Plug-In

You can upgrade your vSphere Replication plug-in by uninstalling the previous version and installing the new version.

Note After you upgrade the vSphere Replication plug-in, you cannot revert to a previous version without doing a reinstallation.

Uninstalling the vSphere Replication Plug-In

For more information about uninstalling the vSphere Replication plug-in, see Uninstall a Plug-in or VMware knowledge base article https://kb.vmware.com/s/article/2064575.

Using the vSphere Replication Plug-In Workflows

4

The vSphere Replication plug-in workflow library contains workflows that you can use to automate vSphere Replication tasks. With the predefined workflows you configure and control replication for virtual machines, add, pair or remove remote sites, run test, recovery, and cleanup to and from cloud sites. You can use the predefined workflows and the scripting API of the plug-in to create custom workflows.

This chapter includes the following topics:

Available Workflows in vSphere Replication Plug-In

vSphere Replication plug-in provides Configure, Pause, Resume, Stop Replication workflows, Recover from and to Cloud workflows, Remote Site Management and Synchronization workflows.

Table 4-1. Remote Site Management Workflows

Workflow	Description of operation
Pair with a VC Site	Connect and pair local site to a remote vCenter Server site
Pair with Cloud Site	Connect and pair local site to a remote cloud site
Register Cloud Site	Register login credentials for a paired cloud site
Register Standalone Org	Register login credentials for a paired standalone organization
Register VC site	Register login credentials for a paired vCenter Server site

Table 4-1. **Remote Site Management** Workflows (Continued)

Workflow	Description of operation
Unregister Cloud Site	Delete stored login credentials for a paired cloud site
Unregister Standalone Org	Delete stored login credentials for a paired cloud site
Unregister VC Site	Delete stored login credentials for a paired vCenter Server site

Table 4-2. **Sync** Workflows

Workflow	Description of operation
Full Sync Replication to Cloud	Run initial full synchronization for a replicated virtual machine to cloud site
Full Sync Replication to VC	Run initial full synchronization for a replicated virtual machine to remote vCenter Server site
Offline Sync Replication from Cloud	Run offline synchronization for a replicated virtual machine from remote cloud site
Offline Sync Replication to Cloud	Run offline synchronization for a replicated virtual machine to remote cloud site
Offline Sync Replication to VC	Run offline synchronization for a replicated virtual machine to remote vCenter Server site
Sync Replication from Cloud	Run delta synchronization for a replicated virtual machine from remote cloud site
Sync Replication to Cloud	Run delta synchronization for a replicated virtual machine to remote cloud site
Sync Replication to VC	Run delta synchronization for a replicated virtual machine to remote vCenter Server site

Table 4-3. **Configure Replication** Workflows

Workflow	Description of operation
Configure Replication	Configure replication for a virtual machine from local site to a target vCenter Server site
Configure Replication from Cloud	Configure replication for a virtual machine from target cloud site to local site
Configure Replication to Cloud	Configure replication for a virtual machine from local site to a target cloud site
Protect Multiple VMs	Configure replication for multiple virtual machines to target cloud or vCenter Server site
Reverse a Cloud Replication	Reverse replication for a recovered virtual machine on target cloud site

Table 4-4. **Pause** Workflows

Workflow	Description of operation
Pause Replication from Cloud	Pause replication for a virtual machine from cloud to local site
Pause Replication to Cloud	Pause replication for a virtual machine from local to target cloud site
Pause Replication to VC	Pause replication for a virtual machine from local site to remote vCenter Server site

Table 4-5. **Resume** Workflows

Workflow	Description of operation
Resume Replication from Cloud	Resume replication for a virtual machine from cloud to local site
Resume Replication to Cloud	Resume replication for a virtual machine from local to cloud site
Resume Replication to VC	Resume replication for a virtual machine from local site to remote vCenter Server site

Table 4-6. **Stop Replication** Workflows

Workflow	Description of operation
Stop Replication	Stop replication for a virtual machine from local site to remote vCenter Server site
Stop Replication from Cloud	Stop replication for a virtual machine from cloud to local site
Stop Replication to Cloud	Stop replication for a virtual machine from local to cloud site

Table 4-7. **Recover to Cloud** Workflows

Workflow	Description of operation
Run Planned Migration to Cloud	Migrate a virtual machine from local site to target cloud site
Run Real Recovery to Cloud	Recover a virtual machine replicated from local site to target cloud site
Run Test Cleanup at the Cloud Site	Clean up test recovery results for a replicated virtual machine at the target cloud site
Run Test Cleanup to Cloud	Clean up test recovery result for a virtual machine replicated to target cloud site
Run Test Recovery at the Cloud Site	Run a test recovery at the target cloud site for a virtual machine replicated to the target cloud site
Run Test Recovery to Cloud	Run a test recovery at the local site for a virtual machine replicated to the target cloud site

Table 4-8. **Recover from Cloud** Workflows

Workflow	Description of operation
Run Planned Migration from Cloud	Migrate a virtual machine from target cloud site to local site
Run Real Recovery from Cloud	Recover a virtual machine replicated from remote cloud site to local site
Run Test Cleanup from Cloud	Clean up test recovery results for a replicated virtual machine from remote cloud site to local site
Run Test Recovery from Cloud	Run a test recovery for a replicated virtual machine from remote cloud site to local site

Prerequisites for Using the vSphere Replication Plug-In

To use vSphere Replication plug-in, your environment must meet certain requirements.

- Before managing the objects in your vSphere inventory by using Orchestrator and running workflows on the objects, you must configure the vCenter Server plug-in and define the connection parameters between Orchestrator and the vCenter Server you want to orchestrate. 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.
- Before running workflows to or from a target site, verify that you have registered the target site with the available workflows under **vSphere Replication > Remote Site Management**.

Remote Site Management Workflows

With **Remote Site Management** workflows, you can configure the connection between the local site and the remote site managed by a different vCenter Server or the remote cloud site. Before you configure replication tasks to the remote sites, you must pair the local and the remote sites.

Pair with a vCenter Server Site Workflow

The workflow configures the connection between the local site and a remote vCenter Server site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Remote Site Management > Pair**.
4. Right-click the **Pair with a VC Site** workflow element and select **Start workflow**.

5 Follow the prompts of the wizard.

Table 4-9. Pair with a vCenter Server Site Workflow Inputs

Input		Description
Local site	Local site	Local vCenter Server site
	Local site Lookup Service address	Address of the local Lookup Service
Remote site	Remote site Lookup Service address	Address of the remote Lookup Service
	Remote username	Remote vCenter Single Sign-On user
	Password	Password for the remote vCenter Single Sign-On user
	Ignore certificate warnings	Accept remote site certificate without a prompt

Pair with Cloud Site Workflow

The workflow configures the connection between the local site and the target cloud site.

Before you configure replication tasks to the cloud, you must configure the connections between your vSphere environment and virtual data centers that belong to your cloud organizations.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Remote Site Management > Pair**.

4 Right-click the **Pair with Cloud Site** workflow element and select **Start workflow**.

5 Follow the prompts of the wizard.

Table 4-10. Pair with Cloud Site Workflow Inputs

Input		Description
Local Site	Local site	Local vCenter Server site
Cloud Site	Remote cloud API endpoint address	The IP address of your cloud provider
	Cloud organization name	Standalone organization name
	Username for cloud organization	Cloud user credentials
	Password	
	Ignore certificate warnings	Accept remote site certificate without a prompt

Register vCenter Server Site Workflow

The workflow registers the login credentials for a remote vCenter Server site.

Prerequisites

Verify that the local site is paired with a vCenter Server site. See Pair with a vCenter Server Site Workflow.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Remote Site Management**.

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

5 Follow the prompts of the wizard.

Table 4-11. Register vCenter Server Site Workflow Inputs

Input		Description
Site	Site	Paired remote vCenter Server site address
	Username	Remote SSO user
	Password	Remote SSO user password

Register Cloud Site Workflow

The workflow registers the login credentials for a cloud site that is paired with the local site.

Prerequisites

Verify that the local site is paired with a cloud site. See Pair with Cloud Site Workflow.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Remote Site Management**.

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

5 Follow the prompts of the wizard.

Table 4-12. Register Cloud Site Workflow Inputs

Input		Description
Site	Cloud site	Paired remote cloud site
	Username	Remote cloud site user
	Password	Remote user password
	Ignore certificate warnings	Accept remote certificate without a prompt

Register Standalone Organization Workflow

The workflow registers the login credentials for a cloud organization. This workflow does not require the organization to be paired with a local site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Remote Site Management**.
4. Right-click the **Register Standalone Organization** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-13. Register Standalone Organization Workflow Inputs

Input		Description
Cloud Organization Details	Cloud address	Remote cloud site address
	Organization name	Name of the cloud organization
	username	Remote cloud site user
	password	Remote cloud site user password
	Ignore certificate warnings	Accept remote certificate without a prompt

Unregister Cloud Site Workflow

The workflow removes the stored credentials for a cloud site that is paired with the local site. The workflow does not break the pairing.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Remote Site Management**.
4. Right-click the **Unregister Cloud Site** workflow element and select **Start workflow**.
5. Select the cloud site that you want to unregister and click **Submit**.

Table 4-14. Unregister Cloud Site Workflow Inputs

Input		Description
Site	Cloud site	Paired remote cloud site

Unregister Standalone Organization Workflow

The workflow removes the stored credentials for a registered cloud organization.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Remote Site Management**.

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

5 Select the standalone organization that you want to unregister and click **Submit**.

Table 4-15. Unregister Standalone Organization Workflow Inputs

Input		Description
Site	Registered standalone organization to unregister	Standalone organization on a cloud site

Unregister vCenter Server Site Workflow

The workflow removes the stored credentials for a vCenter Server site paired with the local site. The workflow does not break the pairing.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Remote Site Management**.

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

5 Select the vCenter Server site that you want to unregister and click **Submit**.

Table 4-16. Unregister vCenter Server Site Workflow Inputs

Input		Description
Site	Site	Paired remote vCenter Server site

Sync Workflows

With synchronization workflows you can replicate data for virtual machines with configured replication between the local site and a remote vCenter Server or cloud sites.

Full Sync Replication to Cloud Workflow

The workflow runs a full synchronization for a virtual machine with a configured forward replication from the local site to the target cloud site.

Prerequisites

Verify that the virtual machine for which you want to run a full synchronization is powered on.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Sync**.

4 Right-click the **Full Sync Replication to Cloud** workflow element and select **Start workflow**.

5 Select the replication that you want to sync and click **Submit**.

Table 4-17. Full Sync Replication to Cloud Workflow Inputs

Input		Description
Common Parameters	Replication to sync	Virtual machine with a configured forward replication to target cloud site for which to run the full synchronization

Full Sync Replication to vCenter Server Workflow

The workflow runs a full synchronization for a virtual machine with a configured forward replication from the local site to the target vCenter Server site.

Prerequisites

Verify that the virtual machine for which you want to run a full synchronization is powered on.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Sync**.

4 Right-click the **Full Sync Replication to vCenter Server** workflow element and select **Start workflow**.

5 Select the replication that you want to sync and click **Submit**.

Table 4-18. Full Sync Replication to vCenter Server Workflow Inputs

Input		Description
Common Parameters	Replication to sync	Virtual machine with a configured forward replication to target vCenter Server site for which to run the full synchronization

Offline Sync Replication from Cloud Workflow

The workflow runs an offline synchronization for a virtual machine with a configured reverse replication from the target cloud site to the local site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Sync**.
4. Right-click the **Offline Sync Replication from Cloud** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-19. Offline Sync Replication from Cloud Workflow Inputs

Input		Description
Common Parameters	Remote VDC site	Target cloud site
	Replication to sync	Virtual machine with a configured reverse replication from the target cloud site for which to run the offline synchronization

Offline Sync Replication to Cloud Workflow

The workflow runs an offline synchronization for a virtual machine with a configured forward replication from the local site to the target cloud site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Sync**.
4. Right-click the **Offline Sync Replication to Cloud** workflow element and select **Start workflow**.
5. Select the replication that you want to sync and click **Submit**.

Table 4-20. Offline Sync Replication to Cloud Workflow Inputs

Input		Description
Common Parameters	Replication to sync	Virtual machine with a configured forward replication from the local site to the target cloud site

Offline Sync Replication to vCenter Server Workflow

The workflow runs an offline synchronization for a virtual machine with a configured forward replication to the target vCenter Server site.

Procedure

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

3 Select **Library > vSphere Replication > Sync**.

4 Right-click the **Offline Sync Replication to VC** workflow element and select **Start workflow**.

5 Select the replication that you want to sync and click **Submit**.

Table 4-21. Offline Sync Replication to vCenter Server Workflow Inputs

Input		Description
Common Parameters	Replication to sync	Virtual machine with a configured forward replication to the target vCenter Server

Sync Replication from Cloud Workflow

The workflow runs a delta synchronization for a virtual machine with a configured reverse replication from the target cloud site.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Sync**.

4 Right-click the **Sync Replication from Cloud** workflow element and select **Start workflow**.

5 Select the replication that you want to sync and click **Submit**.

Table 4-22. Sync Replication from Cloud Workflow Inputs

Input		Description
Common Parameters	Remote VDC site	Target cloud site
	Replication to sync	Virtual machine with a configured reverse replication from the target cloud site for which to run the delta synchronization

Sync Replication to Cloud Workflow

The workflow runs a delta synchronization for a virtual machine with a configured forward replication to the target cloud site.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Sync**.

4 Right-click the **Sync Replication to Cloud** workflow element and select **Start workflow**.

5 Select the replication that you want to sync and click **Submit**.

Table 4-23. Sync Replication to Cloud Workflow Inputs

Input		Description
Common parameters	Replication to sync	Virtual machine with a configured forward replication to the target cloud site for which to run the delta synchronization

Sync Replication to vCenter Server Workflow

The workflow runs a delta synchronization for a virtual machine with a configured forward replication to the target vCenter Server site.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Sync**.

4 Right-click the **Sync Replication to VC** workflow element and select **Start workflow**.

5 Select the replication that you want to sync and click **Submit**.

Table 4-24. Sync Replication to vCenter Server Workflow Inputs

Input		Description
Common parameters	Replication to sync	Virtual machine with a configured forward replication to the target vCenter Server for which to run the delta synchronization

Configure Replication Workflows

With **Configure Replication** workflows in vSphere Replication plug-in, you can configure replication for virtual machines between the local site and remote vCenter Server or cloud sites.

When you configure a virtual machine for replication, vSphere Replication starts an initial configuration task during which a replica virtual machine is created on the target site, and data synchronization occurs between the source and the target site. You can set multiple point in time (MPIT) instances in the recovery settings of the selected workflow. vSphere Replication retains a maximum of 24 of snapshot instances of the virtual machine on the target site.

You can configure replications for powered-off virtual machines, but the data synchronization begins when the virtual machine is powered on. When the source virtual machine is powered off, the replication appears in `Not active` status.

Configure Replication Workflow

The workflow configures replication for a virtual machine from the local site to another vCenter Server site.

Prerequisites

- Verify that the vSphere Replication appliance is deployed at the source and the target sites.
- To enable the quiescing of virtual machines that run Linux guest OS, install the latest version of VMware Tools on each Linux machine that you plan to replicate.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Configure Replication**.
4. Right-click the **Configure Replication** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-25. Configure Replication Workflow Inputs

Input			Description
Source	Site		Local vSphere site
	Source VM		Virtual machine to be replicated
Target	Site		Remote vSphere site
	Target Datastore		Remote datastore to replicate to
Replication Settings	RPO in minutes		Recovery point objective in minutes (default value is 240)
	Guest OS quiescing		Enabling OS quiescing improves data consistency, but limits RPO time
	Network compression		Enabling replication data compression reduces the network bandwidth, but increases CPU utilization
	Point in time instances		Maximum supported number of snapshots per virtual machine is 24
	Points in time enabled	Instances per day (multiplied by number of days should not exceed 24)	Number of snapshots taken per day
		Number of days	Number of days for which snapshots are kept

Configure Replication to Cloud Workflow

The workflow configures replication for a virtual machine from the local site to a registered cloud site.

If the virtual machine is not powered on, replication is configured but full initial synchronization is completed upon powering on the virtual machine. You cannot run the workflow for a virtual machine which has a configured replication.

Prerequisites

- Verify that you have a configured the connection between your vSphere environment and a virtual data center. For more information on how to pair with a cloud site, see Pair with Cloud Site Workflow.
- Verify that you have registered the login credentials for the cloud site that you want to use. See Register Cloud Site Workflow.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Configure Replication**.
4. Right-click the **Configure Replication to Cloud** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-26. Configure Replication to Cloud Workflow Inputs

Input			Description
Source	Site		Local vSphere site
	Source VM		Virtual machine to be replicated
Target	Cloud Site		Remote cloud site
	Use replication seeds		Use virtual machine disk files for initial synchronization
	A previously imported vApp to use as a replication seed		vApp or virtual machine with imported replication seed
Replication Settings	RPO in minutes		Recovery point objective in minutes (default value is 240)
	Guest OS quiescing		Enabling OS quiescing improves data consistency, but limits RPO time
	Network compression		Enabling replication data compression reduces the network bandwidth, but increases CPU utilization
	Point in time instances		Maximum number of supported snapshots per virtual machine is 24
	Points in time enabled	Instances per day (multiplied by number of days should not exceed 24)	Number of snapshots taken per day
		Number of days	Number of days for which snapshots are kept

Configure Replication from Cloud Workflow

The workflow configures replication for a virtual machine or vApp from a cloud site to the local site.

If the virtual machine is not powered on, replication is configured but full initial synchronization is completed when the virtual machine is powered on. You cannot run the workflow for a virtual machine which has a configured replication.

Prerequisites

- Verify that you have a configured the connection between your vSphere environment and a virtual data center. For more information on how to pair with a cloud site, see Pair with Cloud Site Workflow.
- Verify that you have registered the login credentials for the cloud site that you want to use. See Register Cloud Site Workflow.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Configure Replication**.
4. Right-click the **Configure Replication from Cloud** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-27. Configure Replication from Cloud Workflow Inputs

Input			Description
Source	Cloud Site		Remote cloud site
	Source vApp		vApp or virtual machine to be replicated
Target	Datastore		Local datastore to replicate to
Replication Settings	RPO in minutes		Recovery point objective in minutes (default value is 240)
	Guest OS quiescing		Enabling OS quiescing improves data consistency, but limits RPO time
	Network compression		Enabling replication data compression reduces the network bandwidth, but increases CPU utilization
	Point in time instances		Maximum supported number of snapshots per virtual machine is 24
	Points in time enabled	Instances per day (multiplied by number of days should not exceed 24)	Number of snapshots taken per day
		Number of days	Number of days for which snapshots are kept

Protect Multiple Virtual Machines Workflow

The workflow configures replication for multiple virtual machines from the local site to remote vSphere or cloud site.

If one or all of the selected virtual machines are not powered on, replication is configured but full initial synchronization is completed upon powering on the virtual machines. You can run the workflow with a replicated virtual machine included in the VM array, however the workflow does not reconfigure the replication for that virtual machine. The rest of the virtual machines included in the VM array which are not already replicated are configured for replication.

Prerequisites

- Verify that you have a configured the connection between your local site and the remote vCenter Server or cloud site. For more information, see Pair with a vCenter Server Site Workflow or Pair with Cloud Site Workflow.
- Verify that you have registered the login credentials for the remote vCenter Server or cloud site. that you want to use. See Register vCenter Server Site Workflow or Register Cloud Site Workflow.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Configure Replication**.
4. Right-click the **Protect multiple VMs** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-28. Protect Multiple Virtual Machines Workflow Inputs

Input			Description
Source	vCenter Server managing the VM to be protected		Local vCenter Server site
	Select the type of the target site		Type of target site - remote vCenter Server site or cloud site
	Virtual machine to be replicated		Array of virtual machines to be replicated to the remote site
Credentials Target Site	Site to be used as replication target		Choose available vCenter Server or cloud site depending on the type of target site you selected in the previous step
	User name		Credentials for the selected target site
	Password		
	Ignore certificate warnings		Accept remote site certificate without a prompt
Target location	Target vCenter Server site	Target datastore	Datastore to replicate to if target is vCenter Server site
	Target cloud site	Use replication seeds	Use replication seeds for replication if target is cloud site
		A previously imported vApp to use as a replication seed	
Replication Settings	Guest OS quiescing		Enabling OS quiescing improves data consistency but limits RPO time

Table 4-28. **Protect Multiple Virtual Machines** Workflow Inputs (Continued)

Input			Description
	RPO in minutes		Recovery point objective in minutes (default value is 240)
	Network compression		Enabling replication data compression reduces the network bandwidth, but increases CPU utilization
	Point in time instances		Maximum supported number of snapshots per virtual machine is 24
	Points in time enabled	Instances per day (multiplied by number of days should not exceed 24)	Number of snapshots taken per day
		Number of days	Number of days for which snapshots are kept

Reverse a Cloud Replication Workflow

The workflow reverses and reconfigures the replication for a virtual machine recovered at the cloud site.

Prerequisites

Verify that the virtual machine is in the `Recovered` state and is powered off on the local vCenter Server site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Configure Replication**.
4. Right-click the **Reverse a Cloud Replication** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-29. **Reverse a Cloud Replication** Workflow Inputs

Input		Description
Replication	Site	Target cloud site
	Replication	Virtual machine replicated to or from the selected cloud site

Pause Workflows

With **Pause** workflows, you can pause replications for virtual machines between the source and the target sites. When a replication is paused, all synchronization calls are blocked and no data is synchronized between the source and the target sites. The replication is not unconfigured and can be resumed.

Pause Replication to vCenter Server

The workflow pauses the replication for a virtual machine from the local site to a remote vCenter Server site.

Prerequisites

Verify that you have a configured replication from the local site to a remote vCenter Server site. See Configure Replication Workflow or Protect Multiple Virtual Machines Workflow.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Pause**.
4. Right-click the **Pause Replication to VC** workflow element and select **Start workflow**.
5. Select the virtual machine for which you want to pause the replication and click **Submit**.

Pause Replication to Cloud Workflow

The workflow pauses the replication for a virtual machine from the local site to a remote cloud site.

Prerequisites

Verify that you have a configured a replication from the local site to a remote cloud site. See Configure Replication to Cloud Workflow.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Pause**.
4. Right-click the **Pause Replication to Cloud** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-30. Pause Replication to Cloud Workflow Inputs

Input		Description
Common parameters	Replication to pause	Replicated to cloud site virtual machine for which to pause the replication

Pause Replication from Cloud Workflow

The workflow pauses the replication of a vApp or virtual machine from a remote cloud site to the local site.

Prerequisites

Verify that you have a configured replication from a remote cloud site to the local site. See Configure Replication from Cloud Workflow.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Pause**.

4 Right-click the **Pause Replication from Cloud** workflow element and select **Start workflow**.

5 Follow the prompts of the wizard.

Table 4-31. Pause Replication from Cloud Workflow Inputs

Input		Description
Common parameters	Remote VDC site	Remote cloud site
	Replication to pause	Replicated from cloud site virtual machine or vApp for which to pause replication

Resume Workflows

With **Resume** workflows, you can resume paused replications configured between the local site and remote vCenter Server or cloud sites.

Resume Replication to vCenter Server Workflow

The workflow resumes a paused forward replication to the target vCenter Server site.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Resume**.

4 Right-click the **Resume Replication to VC** workflow element and select **Start workflow**.

5 Select the replication that you want to resume and click **Submit**.

Table 4-32. Resume Replication to vCenter Server Workflow Inputs

Input		Description
Replication	Replication to resume	Replicated to vSphere site virtual machine for which to resume the replication

Resume Replication to Cloud Workflow

The workflow resumes a paused forward replication to the target cloud site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Resume**.
4. Right-click the **Resume Replication to Cloud** workflow element and select **Start workflow**.
5. Select the replication that you want to resume and click **Submit**.

Table 4-33. Resume Replication to Cloud Workflow Inputs

Input		Description
Common parameters	Replication to resume	Replicated to cloud site virtual machine for which to resume the replication

Resume Replication from Cloud Workflow

The workflow resumes a paused reverse replication from the target cloud site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Resume**.
4. Right-click the **Resume Replication from Cloud** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-34. Resume Replication from Cloud Workflow Inputs

Input		Description
Common parameters	Remote VDC site	Remote cloud site
	Replication to resume	Replicated from cloud site virtual machine for which to resume the replication

Stop Replication Workflows

With **Stop Replication** workflows, you can stop replications for virtual machines configured between the local and remote vCenter Server or cloud sites. When you stop a replication, the replication is unconfigured and replicated data at the target location is removed.

Stop Replication Workflow

The workflow stops a forward replication for a virtual machine to a target vCenter Server site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Stop Replication**.
4. Right-click the **Stop Replication** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-35. Stop Replication Workflow Inputs

Input	Description
Site	Remote vCenter Server site
Replication	Virtual machine for which replication is stopped

Stop Replication to Cloud Workflow

The workflow stops a forward replication from the local site to the target cloud site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Stop Replication**.
4. Right-click the **Stop Replication to Cloud** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-36. Stop Replication to Cloud Workflow Inputs

Input	Description
Cloud site	Remote target cloud site
Replication	Virtual machine for which the forward replication is stopped

Stop Replication from Cloud Workflow

The workflow stops a reverse replication from a target cloud site to the local site.

Procedure

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

3 Select **Library > vSphere Replication > Stop Replication**.

4 Right-click the **Stop Replication from Cloud** workflow element and select **Start workflow**.

5 Follow the prompts of the wizard.

Table 4-37. Stop Replication from Cloud Workflow Inputs

Input	Description
Cloud site	Remote cloud site
Replication	Virtual machine for which the reverse replication is stopped

Recover to Cloud Workflows

With **Recover to Cloud** workflows, you can run planned migration, test, and real recoveries to a remote cloud site from the local site. Each workflow runs for a single virtual machine at a time.

Run Test Recovery to Cloud Workflow

The workflow runs a test recovery on the local site for a virtual machine with a configured forward replication to a cloud site.

The recovery is tested on the local site. You must select a virtual machine with a configured forward replication to the target cloud site. Verify that any previous test recovery results are cleaned before running the workflow. When the workflow finishes, the virtual machine test status is changed and must be cleaned up to run planned migration or real recovery.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Recover to Cloud**.

4 Right-click the **Run Test Recovery to Cloud** workflow element and select **Start workflow**.

5 Follow the prompts of the wizard.

Table 4-38. Run Test Recovery to Cloud Workflow Inputs

Input		Description
Replication	Site	Target cloud site to which the test recovery is run
	Replication	Virtual machine with a configured forward replication for which the test recovery is run

Table 4-38. **Run Test Recovery to Cloud** Workflow Inputs (Continued)

Input		Description
Recovery Settings	Power on recovered virtual machine	Power state of recovered virtual machine
	Synchronize recent changes	Online synchronization of changes to the virtual machine within the RPO period

Run Test Recovery at the Cloud Site Workflow

The workflow runs a test recovery on the remote cloud site for a virtual machine with a configured forward replication to the target cloud site.

The workflow runs on the target cloud site. You must run the workflow for a virtual machine with a configured forward replication from the local to the target cloud site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Recover to Cloud**.
4. Right-click the **Run Test Recovery at the Cloud Site** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-39. **Run Test Recovery at the Cloud Site** Workflow Inputs

Input		Description
Recovery settings	Replication	Virtual machine with a configured forward replication to the target cloud site for which to run the test recovery
	Synchronize recent changes	Online synchronization of changes to the virtual machine within the RPO period
	Power on the recovered virtual machine	Power state of the recovered virtual machine

Run Test Cleanup to Cloud Workflow

The workflow cleans up test recovery results on the local site for a virtual machine with a configured forward replication to the target cloud site.

The workflow checks the virtual machine test status before running. You must run the workflow for a virtual machine that has been tested for recovery. You must select a virtual machine with a configured forward replication to the target cloud site.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Recover to Cloud**.

4 Right-click the **Run Test Cleanup to Cloud** workflow element and select **Start workflow**.

5 Follow the prompts of the wizard.

Table 4-40. Run Test Cleanup to Cloud Workflow Inputs

Input		Description
Site	Cloud Site	Target cloud site to which the test recovery is run
Replication	Replication	Virtual machine with a configured forward replication from the local site to the target cloud site

Run Test Cleanup at the Cloud Site Workflow

The workflow cleans up test recovery results on the remote cloud site for a virtual machine with a configured forward replication to the target cloud site.

Prerequisites

The workflow runs on the target cloud site. You must run a test recovery on the target cloud site for the virtual machine before running the workflow.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Select **Library > vSphere Replication > Recover to Cloud**.

3 Right-click the **Run Test Cleanup at the Cloud Site** workflow element and select **Start workflow**.

4 Follow the prompts of the wizard.

Table 4-41. Run Test Cleanup at Cloud Site Workflow Inputs

Input	Description
Replication	Virtual machine with a configured forward replication from the local to the target cloud site

Run Planned Migration to Cloud Workflow

The workflow runs a planned migration for a virtual machine with a configured forward replication from the local site to the target cloud site.

You must select a virtual machine with a configured forward replication from the local site to the target cloud site.

Prerequisites

If you have run test recoveries for the virtual machine that you want to migrate, verify that you have cleaned up the results. You can view the virtual machine test status in the vSphere Replication user interface.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Recover to Cloud**.
4. Right-click the **Run Planned Migration to Cloud** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-42. Run Planned Migration to Cloud Workflow Inputs

Input		Description
Replication	Cloud site	Target cloud site to which the virtual machine will be migrated
	Replication	Virtual machine migrated to the cloud site
Recovery settings	Power on recovered virtual machine	Power state of recovered virtual machine after migration is complete
	Guest shutdown (requires VMware Tools)	Power state of source virtual machine after migration is complete

Run Real Recovery to Cloud Workflow

The workflow recovers a virtual machine from the local site to the target cloud site.

You must select a virtual machine with a configured forward replication to the target cloud site.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Recover to Cloud**.
4. Right-click the **Run Real Recovery to Cloud** workflow element and select **Start workflow**.

5 Follow the prompts of the wizard.

Table 4-43. Run Real Recovery to Cloud Workflow Inputs

Input		Description
Recovery Settings	Replication	Virtual machine to be recovered to cloud site
	Power on the recovered virtual machine	Power state of recovered virtual machine

Recover from Cloud Workflows

With **Recover from Cloud** workflows, you can run planned migration, test, and real recoveries from a remote cloud site to the local site. Each workflow runs for a single virtual machine at a time.

Run Test Recovery from Cloud Workflow

The workflow runs a test recovery on the local site for a virtual machine with a configured reverse replication from the target cloud site.

The recovery is tested on the local site.

Prerequisites

- You must select a virtual machine with a configured reverse replication from the target cloud site.
- Verify that any previous test recovery results are cleaned up before running the workflow.

Procedure

1 Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.

2 Click the **Workflows** view.

3 Select **Library > vSphere Replication > Recover from Cloud**.

4 Right-click the **Run Test Recovery from Cloud** workflow element and select **Start workflow**.

5 Follow the prompts of the wizard.

Table 4-44. Run Test Recovery from Cloud Workflow Inputs

Input		Description
Replication	Cloud site	Target cloud site from which the test recovery is run
	Replication	Virtual machine with configured reverse replication for which the test recovery is run
Recovery settings	VM folder	Virtual machine folder on the local vCenter Server in which the virtual machine recovery is tested

Table 4-44. **Run Test Recovery from Cloud** Workflow Inputs (Continued)

Input		Description
	Resource pool	Resource pool on the local vCenter Server in which the virtual machine recovery is tested
	Synchronize recent changes	Online synchronization of changes to the virtual machine within the RPO period
	Power on the recovered virtual machine	Power state of recovered virtual machine

What to do next

The virtual machine test status is changed and must be cleaned up to run planned migration or real recovery.

Run Test Cleanup from Cloud Workflow

The workflow cleans up test recovery results on the local site for a virtual machine with a configured reverse replication from the target cloud site.

The workflow does not check the virtual machine test status before running. You can run the workflow for a virtual machine which has not been tested for recovery. You must select a virtual machine with a configured reverse replication from the remote cloud site to the local site.

Prerequisites

- Run Test Recovery from Cloud Workflow

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Recover from Cloud**.
4. Right-click the **Run Test Cleanup from Cloud** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-45. **Run Test Cleanup from Cloud** Workflow Inputs

Input		Description
Site	Cloud site	Target cloud site from which the test recovery is run
Replication	Replication	Virtual machine with configured reverse replication from target cloud site to local site

Run Planned Migration from Cloud Workflows

The workflow runs a planned migration of a virtual machine with a configured reverse replication from a remote cloud site to the local site.

You must select a virtual machine with configured reverse replication from the remote cloud site to the local site.

Prerequisites

If you have run test recoveries for the virtual machine that you want to migrate, verify that you have cleaned up the results. You can view the virtual machine test status in the vSphere Replication user interface.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Recover from Cloud**.
4. Right-click the **Run Planned Migration from Cloud** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-46. Run Planned Migration from Cloud Workflow Inputs

Input		Description
Replication	Cloud site	Target cloud site from which the virtual machine is migrated
	Replication	Virtual machine to be migrated to the local site
Recovery settings	VM folder	Virtual machine folder on the local vCenter Server in which to migrate VM
	Resource pool	Resource pool on the local vCenter Server in which to migrate the virtual machine
	Power on recovered virtual machine	Power state of recovered virtual machine after migration is complete
	Guest shutdown (requires VMware Tools)	Power state of source virtual machine after migration is complete

Run Real Recovery from Cloud

The workflow recovers a virtual machine from the target cloud site to the local site.

You must select a virtual machine with a configured reverse replication from the target cloud site. You must select a virtual machine folder and resource pool for the recovered virtual machine which are in the same data center.

Procedure

1. Log in to Orchestrator client as an administrator and select **Design** or **Run** from the left upper corner.
2. Click the **Workflows** view.
3. Select **Library > vSphere Replication > Recover from Cloud**.
4. Right-click the **Run Real Recovery from Cloud** workflow element and select **Start workflow**.
5. Follow the prompts of the wizard.

Table 4-47. Run Real Recovery from Cloud Workflow Inputs

Input		Description
Replication	Cloud site	Target cloud site from which the virtual machine is recovered
	Replication	Virtual machine to be recovered to the local site
Recovery settings	VM folder	Virtual machine folder on the local vCenter Server in which to recover the VM
	Resource pool	Resource pool on the local vCenter Server in which to recover the virtual machine
	Power on recovered virtual machine	Power state of recovered virtual machine