Dell RecoverPoint for Virtual Machines 6.0.3 and later

Product Guide

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Rev. 01

DELL Technologies

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Preface

As part of an effort to improve product lines, we periodically release revisions of software and hardware. Therefore, some functions described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features.

Contact your technical support professional if a product does not function properly or does not function as described in this document.

NOTE: This document was accurate at publication time. Go to **Online Support** at Dell Support to ensure that you are using the latest version of this document.

Purpose

This document describes the system architecture of RecoverPoint for Virtual Machines.

Audience

This document is intended for anyone who wants to understand the RecoverPoint for VMs system architecture.

Related documentation

The following publications provide additional information:

- *Dell RecoverPoint for Virtual Machines Release Notes*
- *Dell RecoverPoint for Virtual Machines Quick Start Installation Poster*
- *Dell RecoverPoint for Virtual Machines Installation and Deployment Guide*
- *Dell RecoverPoint for Virtual Machines Product Guide*
- *Dell RecoverPoint for Virtual Machines HTML5 Plugin Administrator's Guide*
- *Dell RecoverPoint for Virtual Machines CLI Reference Guide*
- *Dell RecoverPoint for Virtual Machines Security Configuration Guide*
- *Dell RecoverPoint for Virtual Machines RESTful API* at Explore APIs

In addition to the core documents, we also provide white papers, technical notes, and demos.

Typographical conventions

This document uses the following style conventions:

Table 1. Style conventions

Formatting	Description
Bold	Used for names of interface elements, such as names of windows, dialog boxes, buttons, fields, tab names, key names, and menu paths (what the user specifically selects or clicks).
Italic	Used for full titles of publications referenced in text
`Monospace`	Used for: • System code • System output, such as an error message or script • Pathnames, filenames, prompts, and syntax • Commands and options
Monospace italic	Used for variables

Table 1. Style conventions (continued)

Formatting	Description
`Monospace bold`	Used for user input
[ ]	Square brackets enclose optional values.
|	Vertical bar indicates alternate selections - the bar means "or"
{ }	Braces enclose content that the user must specify, such as x or y or z.
...	Ellipses indicate nonessential information that is omitted from the example.

Product documentation

- For release notes and user guides, go to **Online Support** at Dell Support.
- For API documentation, see Dell Developer Portal.

Product information

For documentation, release notes, software updates, or information about products, go to **Online Support** at Dell Support.

Where to get help

Go to **Online Support** at Dell Support and click **Contact Support**. To open a service request, you must have a valid support agreement. Contact your sales representative for details about obtaining a valid support agreement or with questions about your account.

Where to find the support matrix

Consult the **Simple Support Matrix** for RecoverPoint for Virtual Machines at E-Lab Navigator.

Your comments

Your suggestions help Dell Technologies continue to improve the accuracy, organization, and overall quality of the user publications. Send your opinions of this document to Content Feedback Platform.

1

RecoverPoint for Virtual Machines system

RecoverPoint for Virtual Machines is a hypervisor-based, software-only data protection solution for VMware virtual machines and their datastores. RecoverPoint for Virtual Machines supports local and remote replication, and recovery to any point in time. This solution runs in VMware virtual environments and does not depend on any specific hardware. Unlike any other data recovery solutions, RecoverPoint for Virtual Machines allows recovery to any point in time, with minimum interruptions.

Topics:

RecoverPoint for Virtual Machines system architecture

The RecoverPoint for Virtual Machines system architecture consists of a **vSphere Client plugin**, a **RecoverPoint write-splitter**, and a **virtual appliance (vRPA cluster)** that is integrated into the VMware ESXi server environment.

The write-splitter is embedded in the ESX hypervisor and enables replication from any storage type to any storage type. Using the **vSphere Client plugin**, you can protect VMs, and manage VM protection, from within the vSphere Client.

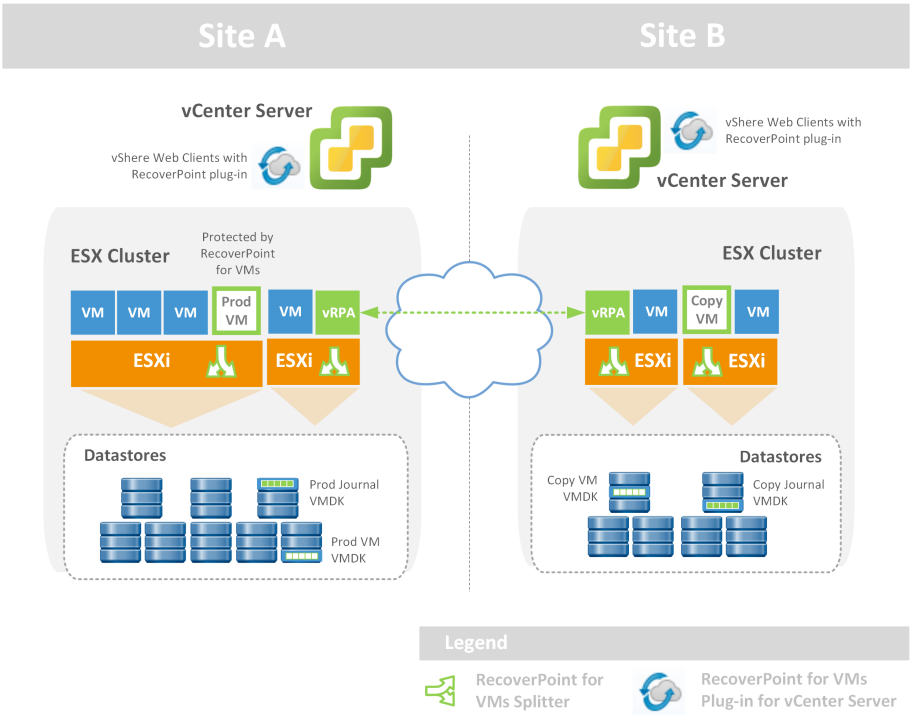


Figure 1. General system architecture

The RecoverPoint for VMs architecture contains the following components:

RecoverPoint for VMs system	A local vRPA cluster and all remote vRPA clusters to which it is replicating. There can be several RecoverPoint for VMs systems that are hosted on the same vCenter Server.
RecoverPoint for Virtual Machines splitter	Proprietary software that is automatically installed on every ESXi server in an ESXi cluster that is involved in RecoverPoint for Virtual Machines replication, or that is hosting vRPA clusters. The RecoverPoint for Virtual Machines splitter splits every write to the production VM and sends a copy of the write to the local vRPA cluster, first.

vSphere HTML5 plugin server	A dedicated HTML5 plugin server VM that communicates with RecoverPoint for Virtual Machines systems through the RESTful API. The plugin server provides a single endpoint for the HTML5 plugin server and the RESTful API for replication management over several RecoverPoint for Virtual Machines systems. The plugin server is a VM deployed from an OVA template. See Network interfaces.
vSphere HTML5 plugin	The RecoverPoint for VMs plugin within **vSphere Client (HTML5)**. This plugin is the user interface for managing VM replication. The **vSphere HTML5 plugin** does not communicate directly with the vRPA clusters. It communicates with the vRPA clusters, through the HTML5 plugin server.
vRPA	The RecoverPoint for Virtual Machines virtual data appliance, called a vRPA that manages all aspects of data replication. The vRPA is a VM deployed from an OVA template.
vRPA cluster	A group of vRPAs that work together to replicate and protect data.

The following networking interfaces are required in RecoverPoint for Virtual Machines:

- LAN
- WAN
- Data (IP)

NOTE: Options for distributing interfaces across network adapters are available in the Choosing a network adapter topology section of the *Dell RecoverPoint for Virtual Machines Installation and Deployment Guide*.

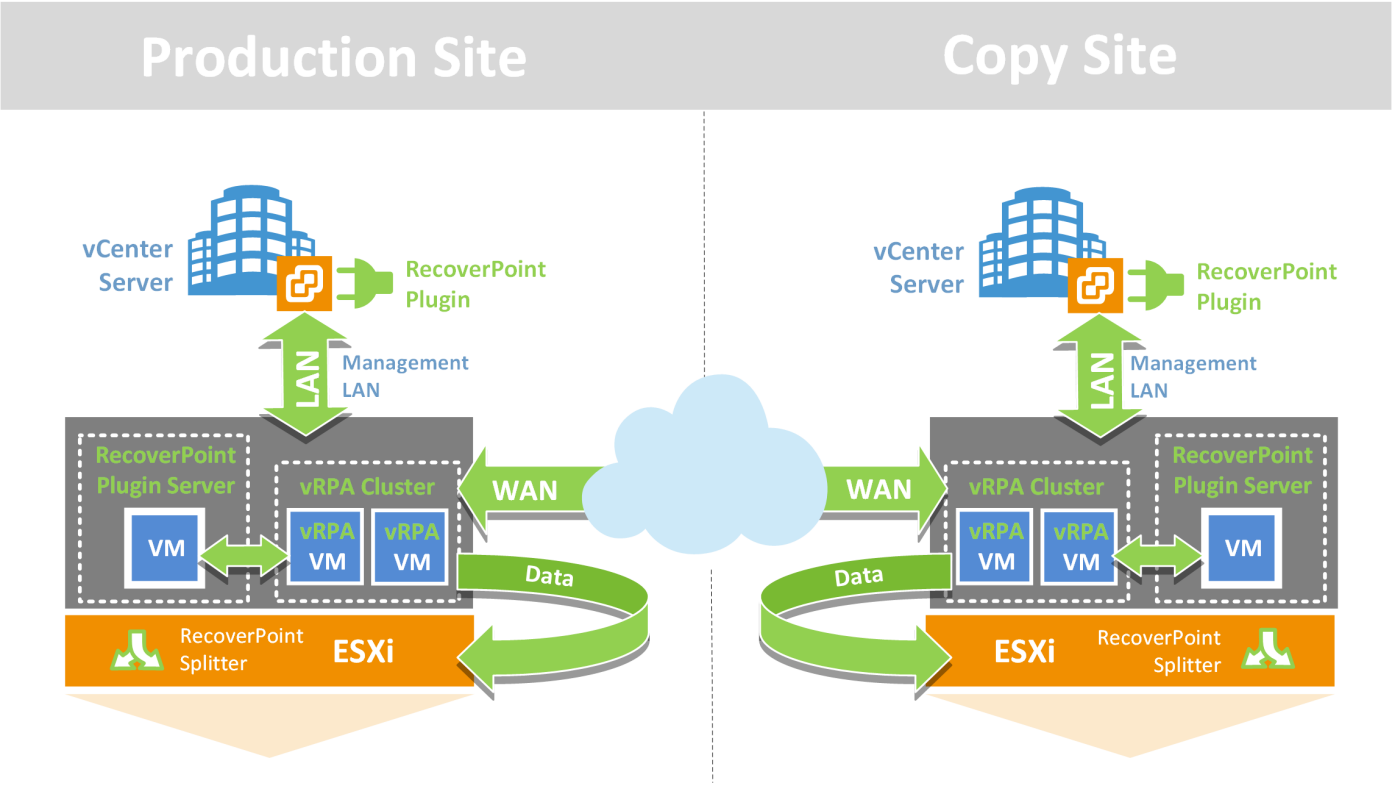


Figure 2. Network interfaces

vSphere HTML5 plugin

The RecoverPoint for VMs **vSphere HTML5 plugin** enables system management through the vSphere HTML5 interface.

The RecoverPoint for VMs **vSphere HTML5 plugin** is the user interface within **vSphere Client (HTML5)** that communicates with a separate, dedicated vSphere HTML plugin server. The plugin server enables the **HTML5 plugin** to provide one-click protection of VMs and multiple VMs on an ESX cluster, right through the vSphere Client.

To display the **HTML5 plugin**, connect to a vCenter Server hosting RecoverPoint for VMs components, and click **Launch vSphere Client (HTML5)**.

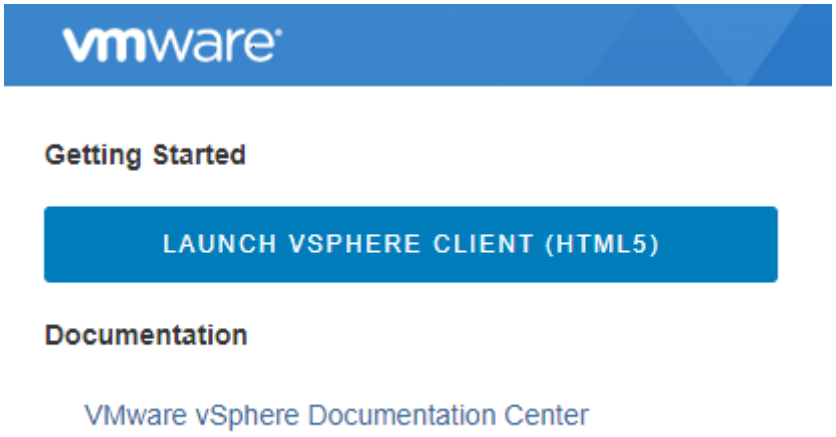
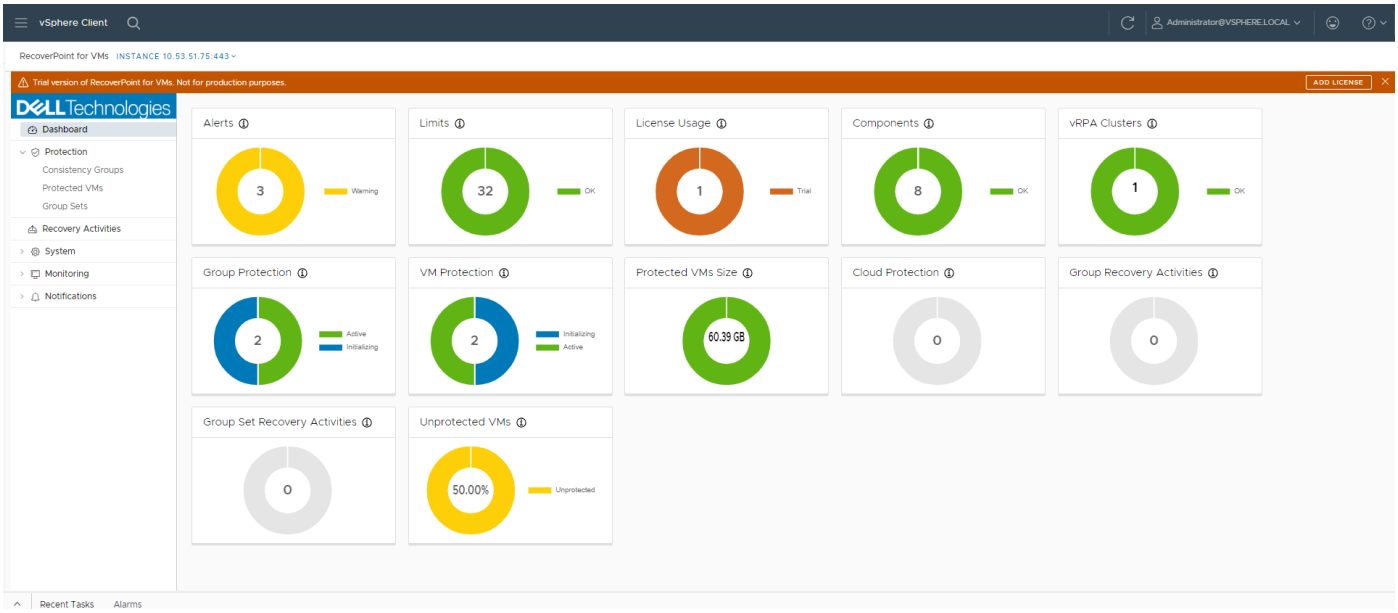


Figure 3. vSphere Client page

NOTE: You can also launch the **vSphere Client (HTML5)** directly by entering `https://vCenter-IP or FQDN:/ui/` into your address bar.

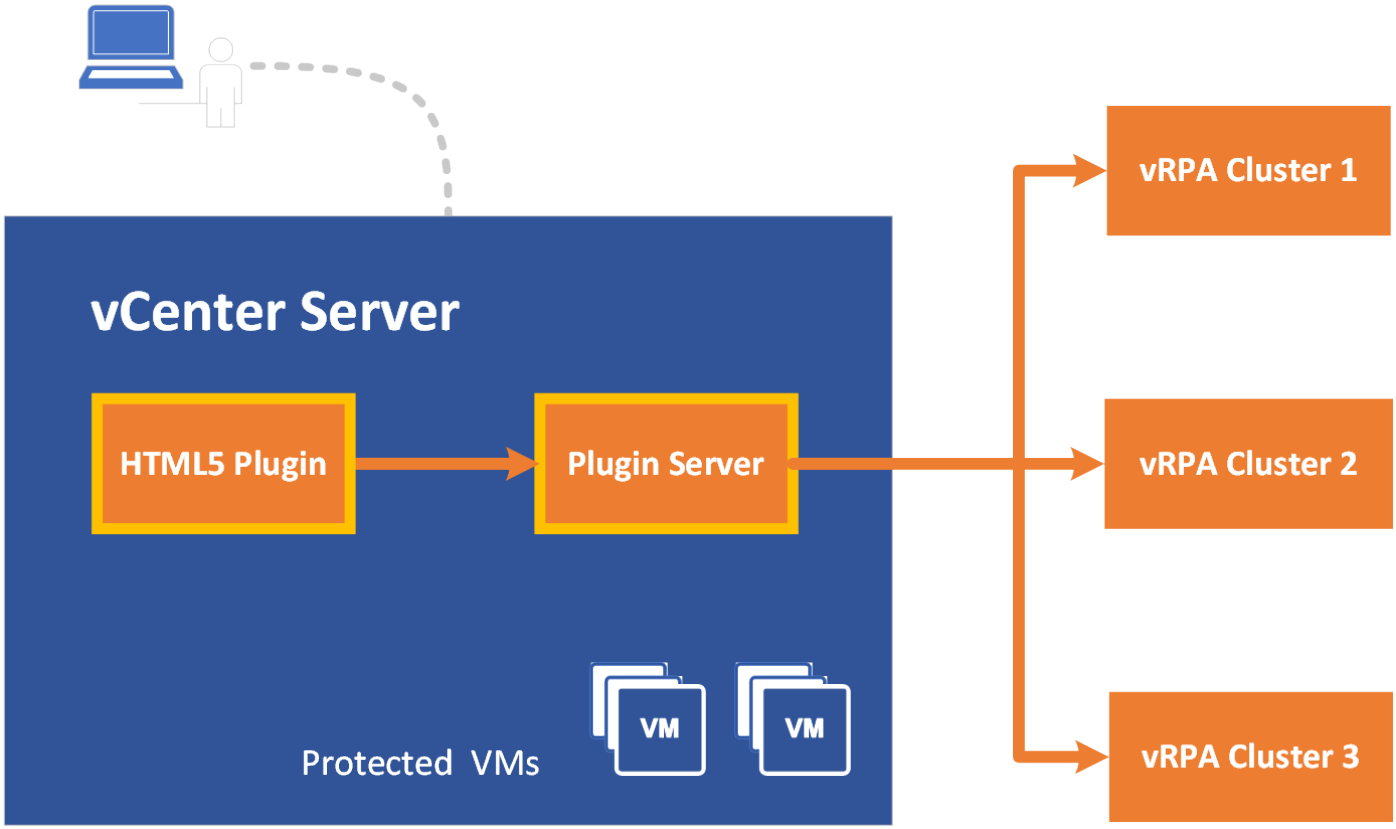
Figure 4. RecoverPoint for VMs HTML5 plugin Dashboard



vSphere HTML5 plugin server

To use the vSphere HTML5 plugin or the new RESTful API, configure a RecoverPoint for VMs plugin server for each vCenter Server, or for linked vCenter Servers.

The RecoverPoint for VMs plugin server is a dedicated server VM running SUSE Linux 12.5. It hosts the HTML5 plugin and UI logic. It also serves as a single endpoint for the new RESTful API, managing all RecoverPoint for VMs systems (5.3 or later) on the vCenter Server. The plugin server is a VM deployed from an OVA template.



NOTE: The plugin server is installed and the registration of the first vCenter Server with the plugin server is completed during system deployment, through the **RecoverPoint for VMs Deployer**. See the *RecoverPoint for VMs Installation and Deployment Guide* for more information about installing the plugin server.

More vCenter Servers can be registered with the plugin server through the **RecoverPoint for VMs vSphere plugin**. Up to 4 vRPA clusters are supported per vCenter Server and plugin server.

The plugin server communicates securely with every registered vCenter Server, and with every vRPA cluster that is registered with a vCenter Server. The plugin server requires that all vRPA clusters have the same admin password. When a vCenter Server at one site is linked to a vCenter Server at another site, a plugin server can be installed and registered at each linked vCenter Server. As shown in Local and remote plugin servers, other linked-mode topologies are also possible. See examples in the "Linked vCenter Servers" section of the *RecoverPoint for VMs HTML Plugin Administrator's Guide* to understand the different topologies, how to register your system per topology, and how system registration affects what is displayed in the HTML5 plugin.

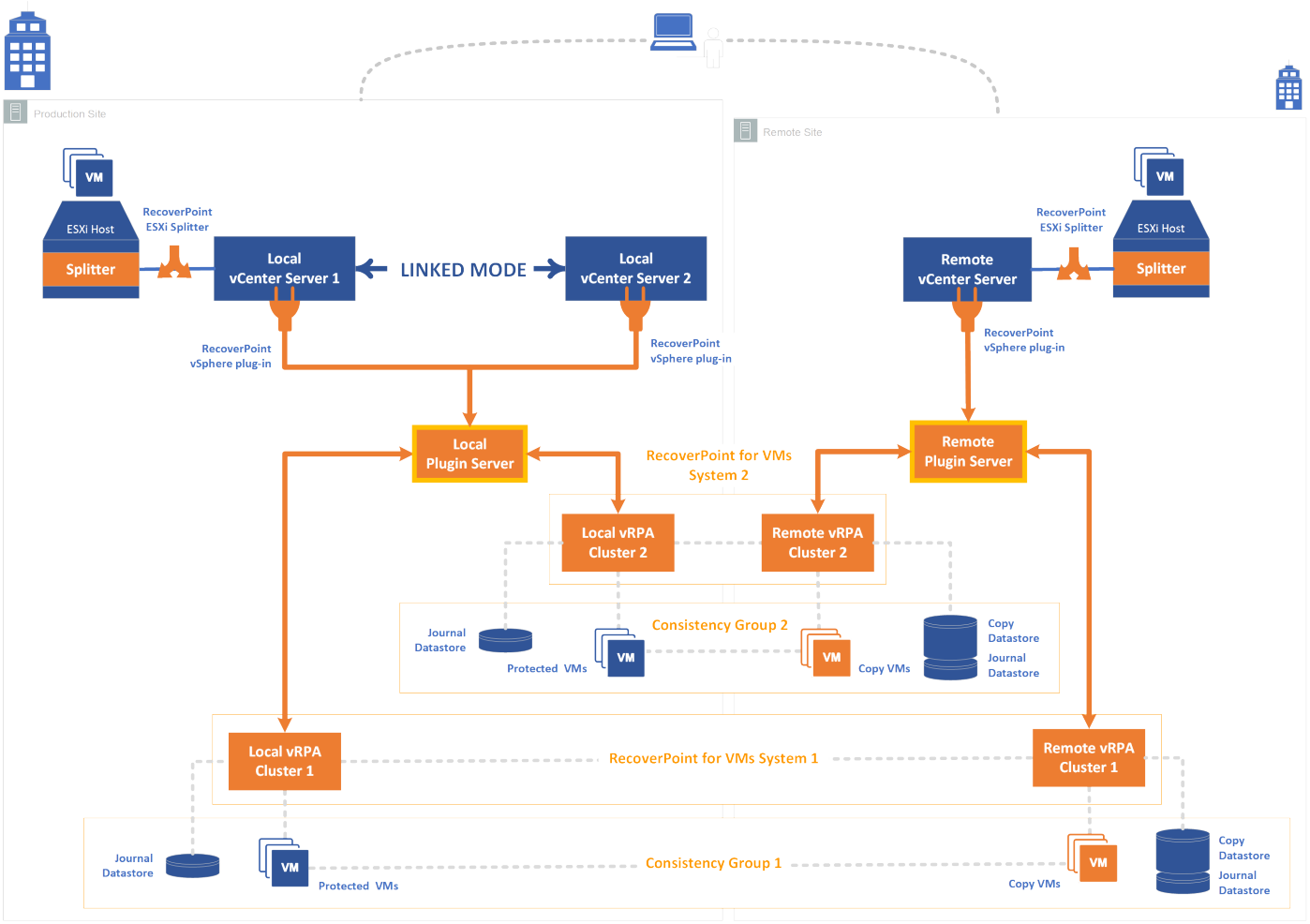


Figure 5. Local and remote plugin servers

The **plugin server** has 2 roles:

- As a server for the HTML5 plugin:
  - The **HTML5 plugin** does not reside on the vCenter Server. It resides on the **plugin server VM**.
  - The **HTML5 plugin** does not communicate directly with the vRPA clusters.
  - The plugin server discovers the vRPA clusters and communicates with them on port 443.
- As an API server, it serves as a proxy for API calls to registered vRPA clusters and contains its own APIs for life cycle and governance.

The plugin server receives the API security certificate from all vRPA clusters from the vCenter Server. The plugin server certificates can be displayed, added, or removed through the new RESTful API. API authentication is performed with the vCenter Server users.

2

RecoverPoint for VMs key concepts

RecoverPoint for VMs administrators should be familiar with system concepts, such as consistency groups, copies, replication sets, and snapshots.

Topics:

Consistency groups

A container for virtual machines and all their copies whose application data must be replicated to a consistent point in time.

Group sets

A group set is a user-defined set of consistency group that is used to perform operational and recovery activities and periodically bookmark the same consistent point in time, across volumes in multiple groups, simultaneously.

Copies

A copy represents the VMs of a consistency group that are either a source or a target of replication at a particular vRPA cluster, including their journal volumes. All VM copies include the `.copy` extension at the end of the VM name.

After failover, the `*.copy` extension at the end of the VM name is not automatically changed. To prevent confusion, it is a best practice to remove the `*.copy` extensions from the new production VMs.

The following types of copies exist in a consistency group:

Production copy	Consists of all of the VMs that are the sources of replication for a consistency group and the copy journal.
Local copy	Consists of all of the VMs that are the targets of replication for a specific consistency group and the copy journal. The local copy is geographically located at the same site as the production VMs, and is replicated by the local vRPA cluster.
Remote copy	Consists of all of the VMs that are the targets of replication, for a specific consistency group, and the copy journal. The remote copy is geographically located in a different site than the production VMs.

Related components include the following:

Shadow VM	For internal RecoverPoint use only; user action on shadow VMs is not supported. In version 5.1 and later, shadow VMs are not created, and the copy VM accesses the copy image directly. When a copy image is accessed during copy testing, failover, and production recovery, before Release 5.1, the copy VM was replaced by a shadow VM. Shadow VMs allow the target vRPAs to access the copy image, and RecoverPoint to manage its VMDKs.
Journal	Each copy of a consistency group must have one or more VMs that are dedicated to holding important information critical to the replication environment.

Production journal	Store information about the replication process that makes synchronization between the production and copies more efficient. After failing over, the production journal becomes a copy journal.
Copy journal	Receives successive writes that are written to production. Since the write-order is maintained, it is possible to apply or undo writes so that the copy image can reflect any point in time.

Links

A link is the communication channel between RecoverPoint copies. When the link is open, data can be transferred between copies.

Replication sets

A replication set is a set of VMDKs consisting of a production VMDK and any local and remote VMDKs to which it is replicating, per consistency group. The number of replication sets in the system is equal to the number of production VMDKs being replicated.

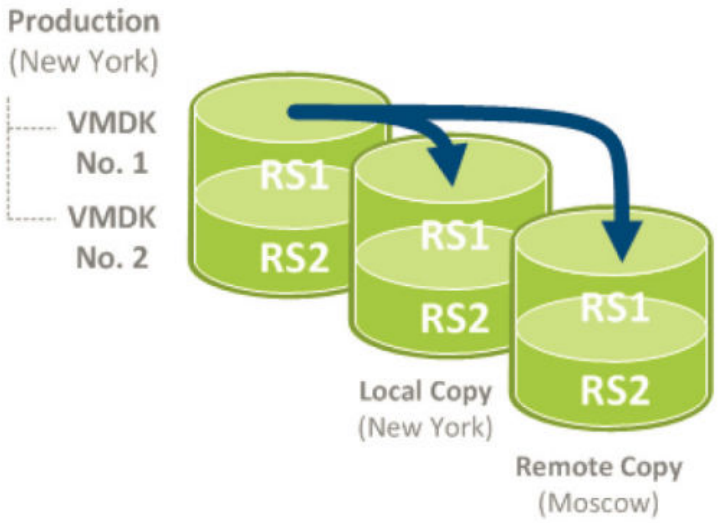


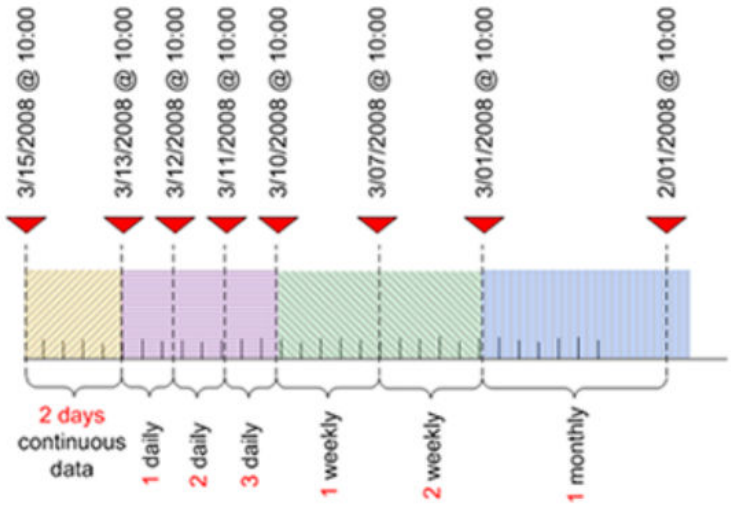
Figure 6. Replication sets

NOTE: RecoverPoint for VMs replicates VMs, but you can include or exclude their VMDKs from replication.

Snapshots

Snapshot	A snapshot represents the difference between one consistent image of stored data and the next. Snapshots of each copy are stored in the copy's journal.
Snapshot consolidation	Snapshot consolidation describes a process that consolidates the data of multiple snapshots into a single snapshot to allow a longer history to be retained in the journal. Automatic snapshot consolidation settings can be specified in the copy protection policy. For example, the settings in the following figure maintain 2 days of continuous data, three daily consolidations, two weekly consolidations, and monthly consolidations up to the capacity of the journal.

Figure 7. Snapshot consolidation



Bookmark A label that you apply to identify a snapshot. Parallel bookmarks are bookmarks with the same name that is applied at the same time to multiple consistency groups in a group set.

Figure 8. Bookmarks

Point in Time	Size	Bookmark	Snapshot Type
Aug 25, 2020 10:5...	216 B		Crash-consistent
Aug 25, 2020 10:5...	648 B		Crash-consistent
Aug 25, 2020 10:5...	9.48 KB	Loaded x-Form	Crash-consistent
Aug 25, 2020 10:5...	657.78 KB	Server Restored	Crash-consistent
Aug 25, 2020 10:...	143.28 KB		Crash-consistent

3

RecoverPoint for VMs protection and recovery

RecoverPoint for VMs provides tools for orchestration of replication, testing, failover, and recovery of the data on VMs that you need to protect.

Topics:

Protection

Protection is the replication of a production VM to a copy VM by adding it to a consistency group. The copy VM protects the production VM and can be used to recover from logical data corruption (by using the copy VM data to roll the production VM back to a point in time before the corruption), or a physical disaster (by failing the production over to the copy).

Replication modes

RecoverPoint for VMs supports both asynchronous and synchronous replication.

Protection policy

A protection policy defines how replication is carried out for each consistency group, copy, and link. The protection settings that are defined in the policy affect how replication behavior changes depending on the level of system activity and the availability of network resources.

Initialization

Initialization describes the process that is used to ensure consistency by synchronizing the data of the copy VMs with their corresponding production VMs.

A *full sweep* is an initialization that is performed on all of the virtual machines in a consistency group. A full sweep initialization occurs when a consistency group is created. Full sweeps are also required when you enable a disabled consistency group and when there is production journal loss.

Distribution

The RecoverPoint replication phase is responsible for the writing of the production snapshots to the copy storage. The target vRPA writes those production snapshots. Since the copy storage is being written to during this process, during distribution, the state of the copy storage is No Access. By default, the system distributes in Five-phase distribution mode. In rare cases, the system switches to Three-phase distribution mode, and in some initialization scenarios, the system switches to One-phase distribution mode. The copy journal of each VM consists of snapshots that have already been distributed to the copy storage and snapshots that are still waiting for distribution. When the vRPA receives data faster than it can be distributed to the copy storage volumes, it accumulates in the queue of snapshots waiting for distribution in the copy journal.

The Maximum Journal Lag setting dictates:

- The maximum amount of snapshot data (in MB or GB) that is permissible to retain in the copy journal before distribution to the copy storage.
- The amount of data that would have to be distributed to the copy storage before failover to the latest image could take place.
- In terms of RecoverPoint's role in the RTO, the maximum time that would be required to bring the copy up-to-date with production.

One-phase distribution is a process in which the target vRPA writes the initialization data directly to the copy VMDK, bypassing the copy journal. Use this process to accelerate initialization when:

- Saving the journal history is not critical (for example, in first-time initialization, when the first snapshot being transferred contains the whole image).
- The initialization snapshot is too large for the capacity of the journal that is dedicated on storage.

Enabling this distribution mode saves the cost of adding additional journal volumes. Note, however, that from the start of the process, and until the end of the process, the copy is not consistent with its production source. Therefore, if a disaster occurs during this process, you are not able to failover to the copy VM until a full sweep is performed.

Group start-up sequence

Defines the order in which the consistency groups in a group set power on when image access is enabled during a recovery activity (such as testing a copy, failover, or production recovery). The group start-up sequence complements the VM start-up sequence.

VM start-up sequence

The VM start-up sequence defines the order of turn on sequence of the VMs in a consistency group is initiated when image access is enabled during a RecoverPoint for VMs recovery activity (such as testing a copy, failover, or production recovery). VMs are turned on in order of priority, as defined by the user. The start-up sequence can also be defined between consistency groups within the same group set. When the start-up sequence for a VM is set to critical, if it fails to turn on, the system pauses the start-up sequence, and no other VMs are turned on.

User script	Runs a script during image access of a VM script has a mandatory time-out period. The start-up sequence does not begin until the script runs successfully. If the script does not run within the set time, the system retries the script a predefined number of times (set by the user) for the specified timeout period, and then the start-up sequence begins. A message indicates that the script ran or failed.
User prompt	Defines a message to be displayed in vCenter to prompt the user to perform specified tasks before proceeding with the start-up sequence. The user must dismiss the prompt before the start-up sequence continues. If the user defines a time-out, the user prompt automatically is dismissed if the set time-out period passes. If no time-out is defined and the user does not dismiss the start-up prompt, the start-up sequence does not continue until the user dismisses the prompt.
External host	A dedicated system for running user scripts. It can be a computer or a VM in the RecoverPoint for VMs system. If the external host is a VM, it must be turned on when any image access flow is initiated.

Automatic network configuration

Automatic network configuration is used to manage VM networking by automatically changing all of the network settings of every VM in a RecoverPoint system or at a consistency group copy. The user displays and exports the current network configuration of a RecoverPoint for VMs system or a specific consistency group copy to a CSV file, reconfigures that CSV file with new network settings, and then imports the new network configuration (automatically applying it to the system).

Test copy

When you replicate, copies are read-only. Testing a copy suspends the read-only property of the copy. RecoverPoint for Virtual Machines allows you to select any point-in-time image for testing.

Test copy supports read/write access to a selected point in time at a copy. Image access is used to test a copy to verify that it is a reliable and consistent replica of its corresponding production source. It is also the first step in restoring production from the copy, rolling back to a previous point in time, recovering data, and failing over to the copy.

Failover

Failover sets a non-production copy to be the production copy and the original production copy to become the non-production copy. Failing over to a copy can be used to recover from a disaster at the production site and allows system operations to continue at the non-production copy. Failing over temporarily can be used to restore the production copy; failing over permanently can be used to move production to this copy. During failover, transfer is paused and access to the original production is blocked. After failover, system operations can be resumed at the original production source by failing back.

Production recovery

Production recovery restores the production from the selected point in time at the copy.

Direct access mode

To write directly to the copy storage, enable the direct access mode.

You can enable direct access mode during these operations:

- Recover production from a copy
- Test a copy
- Failover to a copy

Direct access imposes no limit to the amount of data that you can write to the copy storage volumes.

In direct access mode, changes made to the copy storage cannot be automatically undone because when a snapshot is directly accessed, the journal at the copy is deleted.

When direct access is enabled, replication stops to the copy. When direct access is disabled, a short initialization is required on group volumes.

Glossary

A

account ID
Part of a customer's account settings. The account ID is a unique identifier of a RecoverPoint for VMs customer account.

account settings
The details that comprise a RecoverPoint customer account. The account settings are comprised of:

- One account ID
- One installation ID per installed RecoverPoint for VMs system
- One software serial ID per vRPA cluster
- A RecoverPoint for VMs license key

ACK
To send an acknowledgment, which is a signal to confirm receipt of data. In synchronous replication, an acknowledgment must be sent before the next host write can be made to the production storage.

See also acknowledgment

action regulation
A state that a copy can be placed into when the system quickly changes between two states for a set period of time.

See also control action regulation

activated license
A RecoverPoint license for which an activation key has been defined. An activated license can be a temporary license or a permanent license.

activation key
A code that is used to activate or re-activate the RecoverPoint license, and is generated per installation ID. You get this code when you type the account ID and RecoverPoint license key into the RecoverPoint licensing server, and then request an activation code.

See also activation code

alert rule
The rules that specify the events on which the system alert mechanism should send notifications, and the desired sending frequency. For each alert rule, you can specify the following:

- Event topic (Site, vRPA, Group, Splitter, or Management)
- Event level (Info, Warning, or Error)
- Event scope (Detailed or Advanced)
- Event type (Immediate, Daily)
- Email address (of alert recipient)

array throttling
The act of controlling the write activity. Throttling mechanism of RecoverPoint for Virtual Machine enables users to limit the read-rate of vRPAs in a RecoverPoint cluster, allowing the storage to handle the I/O rate during initialization.

asynchronous replication
A replication mode that uses ACKs from the local vRPA to confirm data transfer.

See also async, async replication

B

bookmark
A label that is applied to a snapshot (PIT) so that the snapshot can be explicitly called (identified) during recovery processes (for example, during image access).

bottleneck
One of a predefined set of potential types of RecoverPoint performance-related problems resulting from a high write-rate (high-load), poor storage or journal performance, or problems in communication between vRPAs.

C

CLI
The RecoverPoint Command Line Interface. Using the RecoverPoint CLI, management and monitoring activities can be run textually, interactively, or through scripts. For information about the command line interface, see the *RecoverPoint Command Line Interface Reference Guide*.

cluster control
The process that manages an vRPA cluster.

cluster management IP
A virtual, floating IP address assigned to the vRPA that is currently active (runs the cluster control).

NOTE: Unofficially, can be referred to as a **floating IP**.

compression
The process of encoding data to reduce its size. RecoverPoint uses lossless compression (compression using a technique that preserves the entire content of the original data, and from which the original data can be reconstructed).

There are two kinds of compression in RecoverPoint:

- Journal compression – Used to compress the data in the journal of each copy, and configured through each copy's general settings.
- WAN compression – Used to compress consistency group data before transferring it over the WAN, and configured through the consistency group bandwidth reduction policy.

consistency group
A logical entity that constitutes a container for virtual machines and all their copies, used to replicate virtual machine application data to a consistent point in time.

copy

A logical entity that constitutes all of the data that is copied and used to protect the production data, at a specific location. A copy includes the replicated data, and a journal to hold the copy history.

current image
The image that is either currently being distributed to the copy storage (typically), or that has been distributed to the copy storage (when no more writes are received by the host and all of the snapshots in the journal have been distributed to the storage).

Also known as: latest image, latest snapshot, current image, current snapshot, current PIT

D

delta marking
The process of writing marking information that is used when the link between the production and a copy of a consistency group is down, and host writes cannot be saved as snapshots in the copy journal. In this case, a short initialization process is triggered to synchronize the copy volumes with their production volumes, using the marking information. At least one vRPA at the production vRPA cluster must be available for marking to occur.

See also marking on vRPA, hotspots, write-folding

direct access
An image access mode in which hosts write directly to the copy storage. These changes cannot be automatically undone, because when an image is directly accessed, the journal at the copy is deleted. However, direct access mode does not impose a limit to the amount of data that you can write to a copy storage.

E

event
A notification that a change has occurred in the state of a managed device or component. In some cases, the change indicates an error or warning condition for the device or component. Multiple events can occur simultaneously on a single monitored device or service module. A single incident can generate events across multiple system components. Events in RecoverPoint have a level (*Info*, *Warning*, *Error*), scope (*Normal*, *Detailed*, *Advanced*), and a topic (*All*, *Cluster*, *vRPA*, *Group*, *Splitter*, *Management*).

F

failback
Reversal of failover, that is, when the production and copy resume their original roles in the replication process after a failover.

failover
The process of changing the replication direction between the production and the copy.

flipover
When a non-preferred vRPA (at the same site) takes over replication responsibilities and is used to transfer the data of a consistency group, instead of the consistency group's preferred vRPA.

Also known as: switchover

full sweep
An initialization process that is performed on all of the volumes in a consistency group.

G

group set

A collection of consistency groups to which the system applies parallel bookmarks at a user-defined frequency. Group sets are useful for consistency groups that are dependent on one another or that must work together as a single unit.

guest operating system
The operating system running on a virtual machine. Each virtual machine can run operating systems such as Windows, Linux, Solaris, or Netware. Applications are run on the virtual machine unmodified.

H

high-load

A system state that indicates resource depletion during replication. There are two kinds of high-loads in RecoverPoint:

- Permanent high-loads – RecoverPoint stops and waits for a user action in order to come out of high-load.
- Temporary high-load – RecoverPoint tries to recover from the high-load and keeps trying until the condition that triggered the high-load changes.

hot spot
A single disk location to which multiple writes have been written.

I

image
All of the snapshots that, together, constitute a specific point in time. An image consists of snapshots in the journal, and the data that has already been transferred to the copy storage.

image access
A user-triggered operation that is performed on a copy journal to enable read/write access to a selected PIT at a copy.

image access log
The dedicated area of the copy journal that is used to hold all of the information of the writes to the copy that occur while image access is enabled.

initialization
The process that is used to synchronize the data of the copy volumes with their corresponding production volumes, and ensure consistency. Generally, all synchronization processes are called Initialization.

See also synchronization

initialization snapshot
The first consistent snapshot in a copy journal. Whenever an initialization process completes, this initialization snapshot is created.

Install Base
An database that is used to manage and support software installed at customer sites. When new software is installed, it is important to update the database with the new information and IDs of the newly installed software. The information in the installation base is also used to enable the RecoverPoint system report mechanism.

J

journal
One or more volumes that are dedicated on the storage at each copy in a system, to hold the production data history. Journals are defined per copy, and can consist of multiple volumes.

journal history
The PIT images (or snapshots) in the journal.

journal lag
The amount of data (represented by snapshots) in the copy journal that has not yet been distributed to the copy storage.

journal loss
The loss of an entire copy journal and all of the data in it.

journal volume
The volumes that make up a journal. Each journal can be composed of one or more journal volumes.

L

lag
The current RPO of the consistency group. In RecoverPoint, lag starts being measured when a write made by the production host reaches the local vRPA, and stops being measured when the write reaches either the target vRPA, or the target journal (depending on the `transfer_by_non_preferred` parameter of the `set_policy` CLI command).

latency
The number of milliseconds or microseconds that it takes for data to get from the local vRPA to the vRPA or journal at the remote vRPA cluster.

latest image
The most current image available in the journal. The last snapshot that was created at the production and transferred to the journal at the copy.

See also latest snapshot

link
The communication pipe through which data is transferred between the production and a copy.

See also pipe

local replication
A replication configuration that continuously captures or tracks modified data and replicates them to a copy at the local vRPA cluster, storing changes independent of the primary data, and enabling recovery from any point in the past. Local replication provides fine granularities and restorations to any point in time.

See also local recovery

M

maintenance mode
The RecoverPoint for VMs vSphere system enters maintenance mode when undergoing any of the following operations:

- minor version upgrade
- major version upgrade
- replacing an vRPA in an existing cluster
- adding new vRPAs to existing clusters
- modifying system settings

In maintenance mode, RecoverPoint for VMs can only monitor the system; user-initiated capabilities are disabled.

management default gateway
The default gateway IP address assigned to the vRPA LAN interface and used for all non-replication IP communication.

management interface
An Ethernet interface that is used primarily for configuration maintenance and monitoring. The management interface is usually accessed through a virtual site-management IP address using the CLI or the GUI.

Also known as: LAN interface.

management IP
The IP address assigned to the LAN interface in order to define the management interface network.

Also known as: LAN IP

management subnet mask
A network subnet mask assigned to the LAN interface in order to define the management interface network.

manual snapshot consolidation
The process of consolidating snapshots manually through the CLI `consolidate_snapshots` command. This option is useful when you want to specify a specific PIT to consolidate to. For example, a script can be run once a day at a specific time to create a bookmark, and set the specific bookmark as the starting snapshot.

marking mode
A system state that signifies the consistency group is enabled, the splitter is replicating to the vRPAs, but the vRPAs are unable to transfer to the copy journal (for example, because the link is closed). When the remote vRPA cluster is available again, only the disk segments or blocks that have changed are synchronized, and both transfer and replication are resumed. At least one vRPA at the production vRPA cluster must be available for marking to occur.

See also marking mode, delta marking mode

metadata
Metadata can be defined as either data about other data or data about the container of other data. In RecoverPoint, metadata lists are used in the marking process (along with bitmaps) to ensure data consistency, and these metadata lists contain the following information:

- The GUID of the source LUN
- The offset (for example, location) of the data in the target LUN
- The length (for example, size) of the data

MIB
Management Information Base. A (virtual) database used to manage the devices in a communications network (routers, switches, and so forth), and tune the network according to real-time requirements.

O

oldest image
The snapshot that was taken the longest time ago, and is still available in the journal.

P

parallel bookmark
A RecoverPoint feature that enables you to apply a bookmark with the same name to a single PIT across multiple consistency groups, while at the same time marking a consistent PIT (with the same name) across all specified consistency groups.

PIT
Point In Time. A fully usable copy of a defined collection of data that contains an image of the data as it appeared at a single instant in time.

See also snapshot

preferred vRPA
An vRPA that whenever possible, handles replication for the consistency group. If an error occurs in the preferred vRPA, in most cases, another vRPA at the same vRPA cluster handles replication.

See also primary vRPA, preferred primary vRPA

pre-replication image
An image that represents the state of the production data before initialization.

See also initialization snapshot

private default gateway
In local replication, the IP address that the vRPA uses to route any private network communications.

See also WAN default gateway

private IP
In local replication, the IP address assigned to the WAN interface of a vRPA.

See also WAN IP

private network
The network that is created when a single vRPA cluster is deployed (in local replication). The private network is used for inter-cluster communication (exchange state of vRPA nodes and cluster LEP (cluster leader arbitration).

private subnet mask
In local replication, the IP assigned to the WAN interface to define the management interface network.

See also WAN subnet mask

production
The data that is being replicated and protected.

See also production source, protected copy

R

reboot regulation
A state of regulation that allows the system to detach a vRPA from its vRPA cluster in the event of frequent unexplained reboots or internal failures.

RecoverPoint for VMs plug-in
The vSphere web client user interface that is used for managing VM replication. The plug-in is installed automatically after the vRPA cluster has been installed.

RecoverPoint for VMs splitter
Proprietary software that is installed on every ESXi host in an ESXi cluster that is involved in RecoverPoint for VMs replication or running virtual RPAs. The splitter splits every write to the VMDK and sends a copy of the write to the vRPA and then to the designated storage volumes. It is installed automatically after you register the ESXi cluster.

Recoverpoint for VMs system
One or more vRPA clusters that have been installed using the RecoverPoint for VMs Deployer.

recover production
A user-triggered disaster recovery procedure that is used to repair the production source using the copy data.

remote replication
A system configuration where data is transferred between vRPA clusters. In this configuration, the vRPAs, storage, and splitters exist at both the local and the remote vRPA cluster.

See also two-site configuration, remote recovery

replication policy
A user-specified set of parameters driven by business objectives that control system operation during replication.

replication set
A production source and the target(s) at a copy to which it replicates.

replication set volumes
All of the sources that have been added to a replication set.

repository volume
A dedicated volume that must be allocated at the production, for each vRPA cluster.

resource allocation
A consistency group policy that controls the bandwidth that RecoverPoint allocates for group replication, with regard to other groups using the same preferred vRPA.

RPO
Recovery Point Objective. The maximum amount of data, per application, that an organization is willing to lose if there is a disaster. For example, an RPO of 5s means that if there is a disaster, RecoverPoint ensures that no more than the last 5s of data can be lost.

RTO
Recovery Time Objective. The duration of time and a service level within which a business process must be restored after a disaster (or disruption) in order to avoid unacceptable consequences associated with a break in business continuity.

S

secondary vRPA
When using distributed consistency groups, an additional vRPA that can be the preferred vRPA to transfer the data of a consistency group.

See also preferred secondary vRPA

Secure Remote Services
Secure Remote Support (Secure Remote Services) is a server and set of services that allow Customer Support to remotely access vRPAs to collect system information and provide preemptive support.

shadow VM
A secondary copy VM that RecoverPoint creates, configures, and manages to allow access to copy VMDK and vRDM devices. A copy shadow VM has the .copy.shadow extension at the end of the virtual machine name. User action on copy shadow VMs is not supported.

short initialization
An initialization process that uses marking information to re-synchronize a copy's data with its production sources. Because this initialization process uses delta markers to synchronize the copy with the production, the initialization process is much faster and more efficient. Generally occurs when restarting transfer for a consistency group after a pause in transfer.

See also short init, short resync, short resynchronization, resynchronization, resync

snapshot consolidation
A manual or automatic process that consolidates the data of multiple snapshots into a single snapshot.

snapshot dilution
A process that is performed on snapshots in a copy journal to hide or display a snapshot, over others, according to a pre-set system algorithm.

software serial ID
The identification that is used by the install base to support equipment that is installed at customer sites using the system reporting and Secure Remote Services mechanisms. A software serial ID is supplied per vRPA cluster in a system installation.

See also SSID

source
The object that RecoverPoint is replicating from. For example, the source vRPA or the source copy (for example, production). After failover, the source becomes the target and the target becomes the source.

splitter
Proprietary software that is installed on storage subsystems that splits application writes so that they are sent to their normally designated storage and the vRPA simultaneously.

synchronous replication
In this replication mode the production host initiates a write operation. For each initiated write, an intra-site latency is added to the write latency. Then, the production host waits for an acknowledgment from the remote RPA before initiating the next write. This process ensures that the RPO value remains zero.

See also sync, synchronous, sync replication

system alerts
A mechanism that allows vRPAs to send system events about system components in real-time, to a specified email or the system reports database, via SMTP.

system reports
A mechanism that provides one-way communication between a system installation and the system reports database. This mechanism supports two types of information: system alerts and system reports.

See also SYR

system settings
The output of the `save_settings` CLI command.

See also configuration file, system configuration file, configuration settings

T

target
The object at the copy that the protected data is being replicating to. For example, the target vRPA, or the target storage. After failover, the target becomes the source, and the source becomes the target.

temporary failover
One of four disaster recovery methods that is only relevant for configurations with more than one copy. Temporary failover is user-triggered when it is not possible to run host applications at the production site, and therefore, there is a need to temporarily fail over to a specific copy to work from the copy site until the production is repaired, or you have recovered from the disaster at the production site. Temporary failovers are not possible when there is only one copy of the production data. In these cases, every failover is a permanent failover.

testing a copy
A user-triggered procedure used to ensure that a copy can be used to restore data, recover from disaster, or seamlessly take over for the production.

throughput
The total amount of writes made by the production hosts and received by the local vRPA.

tweak parameters
A configuration parameter that only Customer Support can change. Tweak parameters enable Customer Support to change the hard-coded values of specific internal settings without requiring the RecoverPoint for VMs code to be recompiled or re-loaded onto the vRPAs.

U

user authentication
The method of establishing the authenticity of users in RecoverPoint. RecoverPoint provides two independent mechanisms for authenticating users:

- Appliance-based authentication
- Authentication through LDAP (Lightweight Directory Access Protocol)

user authorization
The method of establishing user access permissions to RecoverPoint resources. User authorization is identical, regardless of whether RecoverPoint or an LDAP server authenticated the user.

V

volume sweep
An Initialization process that is performed on a specific replication set in a consistency group.

vRPA
The virtual RecoverPoint Appliance that manages data replication.

vRPA cluster
A group of vRPAs that work together to replicate and protect data.

vRPA data network
The IP data path network used for traffic between the vRPA and the splitter.

vRPA LAN network
The vRPA cluster management network that is used for communication between vRPAs and to other entities such as the vCenter.

vRPA WAN network
The vRPA inter-cluster network that is used for communication between vRPA clusters. A basic configuration that uses a unified topology (a single WAN + LAN network) does not require an additional gateway to communicate between sites.

W

WAN default gateway
The default gateway IP address for replication IP communications assigned to the vRPA WAN interface. In local replication, the WAN default gateway is referred to as the *private* default gateway.

WAN interface
An Ethernet interface that is used primarily for the transfer of protected data to the remote vRPA cluster as well as for inter-cluster communication (management of component states, resource discovery, and cluster leader arbitration). In local replication, the WAN interface is referred to as the *private* interface.

WAN IP
The IP address assigned to the WAN interface to define the management interface network. In local replication, the WAN IP is referred to as the *private* IP.

WAN subnet mask
A network subnet mask assigned to the WAN interface to define the WAN interface network. In local replication, the WAN subnet mask is referred to as the *private* subnet mask.