

Image Management for Horizon View Desktops using Horizon Mirage

Horizon Mirage 4.4

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About This Horizon View and Horizon Mirage Interoperability Guide

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The Image Management for Horizon View Desktops using Horizon Mirage document describes the interoperability between desktops using the Horizon View Agent and Horizon Mirage for device image management.

Intended Audience

This information is intended for the Horizon View administrator to provide the capabilities of using Horizon Mirage as a device image management for Horizon View users.

Managing Horizon View Desktops with Horizon Mirage

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Horizon Mirage allows administrators to use Horizon Mirage base and app layering capabilities to manage full-clone, dedicated assignment Horizon View desktop machines.

With Horizon Mirage, a View administrator of a large scale environment can automatically update operating system and infrastructure software, add and remove application layers, and fix software problems. Users in View persistent desktop pools with Mirage image management can preserve user data customizations and user installed applications through Mirage image updates.

Desktop devices undergoing a Horizon Mirage layer update require more resources than usual. Mass image management operations can affect user experience for users in an updated pool and in neighboring pools with which it shares resources. To diminish this effect, Horizon Mirage must limit the level of concurrency when you perform image management operations in the Horizon View pool. An administrator can control the concurrent level via the concurrency value, which controls the effect Horizon Mirage has on the ESX resources.

Supported Configurations

Horizon Mirage supports the following Horizon View configurations.

- VMware Horizon View 5.3, 5.3 Feature Pack 1, or later
- Full-clone, dedicated assignment desktop pools

Supported Horizon Mirage Operations

The following Horizon Mirage operations are supported with Horizon View:

Table 2-1. Supported Horizon Mirage Operations in Horizon View

Mirage Operation	Supported with Horizon View
App layer assignment	Yes
Base layer assignment	Yes
Enforce layers	Yes
Apply driver library	Yes
Centralization	No
File Portal	No
HW migration	No
Provisioning base layer	No
Restore	No
Revert to snapshot	No

Table 2-1. Supported Horizon Mirage Operations in Horizon View (Continued)

Mirage Operation	Supported with Horizon View
Steady state uploads	No
Windows 7 migration	No

Supporting the Horizon View Agent Updates using Horizon Mirage

The Horizon View Agent can be updated by the base layer or the app layer from Horizon Mirage. There can only be a single layer, either the base layer or the app layer, to manage the Horizon View Agent.

It is recommended to manage the Horizon View Agent with app layers.

The Horizon View Agent cannot be downgraded to a previous version in a Horizon Mirage environment.

Behavior of Horizon Mirage CVDs with the Horizon View Policy

CVDs that use the Horizon View-optimized policy have special characteristics.

No data protection	The corresponding devices do not upload files to the data center. You cannot revert the devices to a Horizon Mirage snapshot or restore user files to previous versions. Horizon Mirage only periodically uploads metadata about these devices, for example the list of installed applications.
No WAN optimizations	To improve performance for managing Horizon View pools, Horizon Mirage disables most WAN optimizations for these CVDs because they are assumed to be hosted in the same data center as the Horizon Mirage server.

Workflow for Managing Horizon View Desktops

This topic describes the general workflow of how to manage a Horizon View desktop pool with Horizon Mirage. This workflow comprises the following procedures:

- 1 Capture initial base and app layers.
- 2 Create a virtual machine.
- 3 Assign the base layer and any app layers to the virtual machine.
- 4 Create a template from the virtual machine and create a full-clone Horizon View desktop pool from the template.
- 5 Create CVDs for all desktops in the newly created pool.

When a base or app layer update is needed, you perform an image update on the relevant CVDs. This process comprises the following procedures:

- 1 Capturing new or updated base or app layers.
- 2 Assigning the new layers to the pool.

The desktop machines are updated gradually, until all the machines have the new layers.

This chapter includes the following topics:

- [“Capturing a Base Layer,”](#) on page 9
- [“Capturing App Layers,”](#) on page 9
- [“Creating a Virtual Machine Template for the Horizon View Pool,”](#) on page 9
- [“Creating a Horizon View Desktop Pool,”](#) on page 10

- “Verifying the Horizon View Agent Installation,” on page 10
- “Create Horizon Mirage CVDs,” on page 10

Capturing a Base Layer

The base layer usually contains the operating system, and core or infrastructure software, and common applications, for example, Microsoft Office.

Follow the instructions described in *Horizon Mirage Administrator’s Guide* to create a base layer.

Considerations and Recommendations when Creating the Base Layer

Keep the following information in mind when you create the base layer.

- Use a virtual machine as the reference machine for base layer capture.
- When you create the reference CVD, select the default Horizon Mirage policy. Do not select the Horizon View policy.
- If you are using the VMware OS Optimization Tool to optimize the performance of the operating system for Horizon View, do not disable the following features, as they are required for the Horizon Mirage operation:
 - Volume Shadow Copy Service
 - Microsoft Software Shadow Copy Provider

Capturing App Layers

App layers are useful when you are distributing certain applications to a discrete group of users. You can also use them to update or replace specific applications, instead of having to recapture new base layers.

Follow the instructions described in *Horizon Mirage Administrator’s Guide* to create app layers.

Considerations and Recommendations when Creating App Layers

Keep the following information in mind when you create app layers.

- When you create the reference CVD, select the default Horizon Mirage policy.

Creating a Virtual Machine Template for the Horizon View Pool

To create a Horizon View desktop pool, you require a virtual machine template that is fully cloned to create all desktop virtual machines.

Follow the instructions in *vSphere Basic System Administration* for information about using vSphere Client to create virtual machine templates.

Considerations and Recommendations when Creating a Virtual Machine Template

Keep the following information in mind when you create a virtual machine template.

- The virtual machine template must have the Horizon Mirage client, the Horizon View Agent, and VMware Tools installed.
- To shorten the mass CVD creation process, allow the designated virtual machine template to complete Horizon Mirage centralization with the default Mirage CVD policy before it is converted to a template.

- To further shorten the mass CVD creation process, ensure that the virtual machine template contains the same content as the base layer that you created. Assign the base layer and any common app layers, for example, the app layer that contains the Horizon View Agent, to the virtual machine before you convert it to a template.

Creating a Horizon View Desktop Pool

Horizon Mirage is optimized for dedicated assignment desktop pools of full-clone virtual machines.

Follow the instructions in the *VMware Horizon View Administration* to create a dedicated assignment desktop pool that contains full-clone virtual machines.

Considerations and Recommendations when Creating a Desktop Pool

Keep the following information in mind when you create a desktop pool.

- Select **Ensure desktops are always powered on** so that the virtual machines receive image updates as they become available.
- When prompted, specify the virtual machine that you created earlier. See [“Creating a Virtual Machine Template for the Horizon View Pool,”](#) on page 9.
- To simplify management when you use Horizon Mirage, use a name pattern for the created desktops.

Verifying the Horizon View Agent Installation

Verify that the Horizon View Agent is installed on the virtual machine template when the template is created. The Horizon View Agent must be installed on the virtual machine template before creating a View desktop pool.

It is recommended to capture the Horizon View Agent in an app layer. This enables you to:

- Upgrade the Horizon View Agent in the future with Horizon Mirage to a new version of the Horizon View Agent
- Ensure that the Horizon Mirage layer update and enforce operations do not conflict with the Horizon View Agent installed on the target machine

Create Horizon Mirage CVDs

When the Horizon View pool creation operation is finished, multiple pending devices appear in the Horizon Mirage management console

Prerequisites

Verify that all the virtual machines in the pool are powered on.

Procedure

- 1 Use the Horizon View Administrator to disable the newly created pool.
This action prevents users from logging in to their Horizon View desktops while the centralization process is underway.
- 2 On the Common Wizards node, select the Centralize Endpoint wizard to create CVDs for all the devices in the newly created pool.
 - a Filter by using the name pattern you defined when you created the Horizon View desktop pool to select all the devices in the newly created pool.
 - b Select the **Optimize for Horizon View** policy.
 - c Select the base layer that you previously created.

- d Select the app layer that contains the Horizon View Agent, if you created one.
 - e (Optional) Select other common app layers to deploy to the desktops.
- 3 Create a dynamic collection that contains all the CVDs in the pool, using the same filter you used in step [Step 2a](#).

This dynamic collection will be useful when you apply updates to the entire pool. If you did not use a name pattern, you can create a static collection and add the CVDs manually.

What to do next

- After this process is finished, an Assign Base Layer task is created. Follow the progress of this layer creation to monitor the centralization process. When the task is complete, the CVDs have completed centralization and the machines are ready for use. See the *Horizon Mirage Administrator's Guide*.
- Enable the newly created pool.

Update Base or App Layers for Horizon View Desktops

3

After you finish the setup for using Horizon Mirage to manage Horizon View desktops, you can update base or app layers.

NOTE Because Horizon Mirage does not protect virtual desktops, you should test the layer updates on a small scale deployment before proceeding to a large-scale deployment. You can use the layer conflict reports to check if there are any conflicts with user installed applications. See the *Horizon Mirage Administrator's Guide* for more information about layer reports.

Horizon View uses concurrent layer updates to maintain a high level end-user experience during the time in which Horizon Mirage is performing updates. The setting also enables you to balance between the end-user experience and the urgency of the update.

- Use the default value, or a value close to the default, to provide a good user experience.
- Use a value that is 20-25% of the pool size for faster image deployment.

Such a setting allocates more resources to the virtual machines and underlying ESX hosts to perform the update, resulting in a smaller resource share being available to the end user.

- Use the maximum value when the entire system is offline for maintenance and the underlying resources are exclusively available for the update process.

By default, the degradation of the user experience when layers are being updated is, at most, 20%. With large pools, the machines that you are updating might be distributed across different ESX hosts and storage devices. In that case, you can set higher concurrency values.

Prerequisites

- Verify that the concurrent desktop operations threshold is set. See [“Set the Concurrent Desktop Operations Threshold,”](#) on page 14.
- Verify that the Horizon View setup performance concurrency value is appropriate.
- Verify that all the virtual machines are powered on.
- Capture a new base or app layer, as required for your layer update.

Procedure

- 1 Use the Horizon Mirage Management console to assign the new base layer or app layers to the CVD collection of the Horizon View pool. When you select which layer updates to perform, make sure that, after the updates are completed, the CVDs are still assigned to at least one layer, base or app, that contains the Horizon View agent.
- 2 Wait for the layer assignment task to finish successfully.

This chapter includes the following topics:

- [“Set the Concurrent Desktop Operations Threshold,”](#) on page 14
- [“Sizing Considerations and Expected Performance,”](#) on page 14

Set the Concurrent Desktop Operations Threshold

This setting defines the maximum number of concurrent base or app layer updates that are performed by Horizon Mirage on the Horizon View desktop machines.

This configuration is not pool-specific. If several pools are undergoing layer updates simultaneously, the overall number of Horizon View machines undergoing layer updates are limited by that process. The limitation affects all Mirage servers, indicating that the Mirage servers will not perform a simultaneous layer update operation that is more than this value.

Procedure

- 1 In the Horizon Mirage Management console, right-click **System Configuration** and select **Settings**.
- 2 On the **General** tab, adjust the **Horizon View concurrent layer updates** parameter as required.

Sizing Considerations and Expected Performance

The impact of Horizon Mirage activities on the end-user experience depends on several factors.

The following factors can impact the user experience on Horizon Mirage activities:

- Initial load and utilization of the system
- Resource boundaries for dedicated resources such as ESX host CPU and memory
- Resource boundaries for shared resources such as storage IOPS and network bandwidth

The optimal number of concurrent layer updates should take into consideration all of the above factors. As a result, the absolute value can vary between different environments.

The baseline load and utilization of the system provides an initial range or additional load that can be applied on certain resources to the pool. Typically, VDI systems are designed to be under 85% of CPU load allowing some room for peaks. Depending on the decision by the Horizon Mirage administrator, part of this buffer can be used to address the calculations related to layer updates.

Dedicated resources, typically CPU and memory of the ESX host, are linearly scaled. When a single ESX host can handle 20% of the updating endpoints, the whole pool can handle a similar amount of updating endpoints assuming random distribution.

When the system is finally bounded by shared resources, typically back-end storage arrays, the amount of concurrent updates reflect the overall load that is done on the storage array by all users, even when a single ESX host can handle the load.

For additional sizing considerations in Horizon View environments, see the *Architecture Design Elements and Planning Guidelines* in the *VMware Horizon View Architecture Planning* documentation.

The following reference tests describe the potential end-user impact on a single ESX host performance using different values for concurrent layer updates. All the tests were performed using a VDI workload generator that automates and measures a typical end-user activity. The automated applications used for the tests were Microsoft Office, Adobe Reader, watching a video, and so forth. Operations used on these applications were opening a file, browsing the Web, modifying files, and saving and closing files. In addition to these activities, a defined number of endpoints performed Mirage layer updates.

Test Setup

The reference tests used the following configurations:

- Single ESX host (16 cores, 196GB RAM)
- SAS Storage
- 100 VMs
- 20 and 50 concurrent layer updates
- Two types of loads:
 - Group A - CPU intensive
 - Group B - IO intensive

Test Results

The following table displays the reference test results for the number of endpoints concurrently performing Mirage layer updates.

Table 3-1. Reference Test Results

	Baseline	20 Endpoints	50 Endpoints
Response time increase: Group A	-	21%	74%
Response time increase: Group B	-	17%	83%

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