

VMware Horizon Mirage Load Balancing

Solution Guide

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PREFACE

Welcome to the *VMware Horizon Mirage Load Balancing Solution Guide*. Read this preface for an overview of the information provided in this guide and contact information. This preface includes the following sections:

- About This Guide
- Contacting Riverbed

About This Guide

The *VMware Horizon Mirage Load Balancing Solution Guide* describes how to configure Riverbed SteelApp to load balance VMware Horizon Mirage servers. This guide includes information relevant to the following products:

- Riverbed SteelApp
- VMware Horizon Mirage

Audience

This guide is written for VMware Horizon Mirage administrators that need to scale their Mirage deployments past 1500 Centralized Virtual Devices (CVDs). This involves the addition of Mirage Servers and using SteelApp to load balance the Mirage Servers.

This guide assumes that you are familiar with VMware Horizon Mirage.

Contacting Riverbed

This section describes how to contact departments within Riverbed.

Internet

You can learn about Riverbed products through the company Web site: <http://www.riverbed.com>.

Technical Support

If you have problems installing, using, or replacing Riverbed products, contact Riverbed Support or your channel partner who provides support. To contact Riverbed Support, open a trouble ticket by calling 1-888-RVBD-TAC (1-888-782-3822) in the United States and Canada or +1 415 247 7381 outside the United States. You can also go to <https://support.riverbed.com>.

Professional Services

Riverbed has a staff of professionals who can help you with installation, provisioning, network redesign, project management, custom designs, consolidation project design, and custom coded solutions. To contact Riverbed Professional Services, email proserve@riverbed.com or go to http://www.riverbed.com/us/products/professional_services/.

Chapter 1 Solution Overview

This chapter describes how Riverbed® SteelApp™ provides advanced load balancing and application delivery controller (ADC) features for VMware® Horizon Mirage™, the factors to consider when designing a Horizon Mirage deployment, and how and when to implement the most commonly used features.

This chapter includes the following sections:

- Riverbed SteelApp Overview
- Solution Architecture
- Requirements

Riverbed SteelApp Overview

Riverbed SteelApp is a software-based application delivery controller (ADC) designed to deliver faster and more reliable access to public web sites and private applications. SteelApp frees applications from the constraints of legacy, proprietary, hardware-based load balancers, which enables them to run in any physical, virtual, or cloud environment. With SteelApp products, organizations can:

- Make applications more reliable with local and global load balancing
- Scale application servers by up to 3x by offloading TCP and SSL connection overhead
- Accelerate applications by up to 4x by using web content optimization (WCO)
- Secure applications from the latest application attacks, including SQL injection, XSS, CSRF, and more
- Control applications effectively with built-in application intelligence and full-featured scripting engine

SteelApp offers much more than basic load balancing. SteelApp controls and optimizes end-user services by inspecting, transforming, prioritizing, and routing application traffic. The powerful TrafficScript® engine facilitates the implementation of traffic management policies that are unique to an application by allowing organizations to build custom functionality or to leverage existing features in SteelApp in a specialized way. With SteelApp, organizations can deliver:

Performance

Improve application performance for users by offloading encryption and compression from the web server by dynamic caching and reducing the number of TCP sessions on the application.

Reliability and scalability

Increase application reliability by load balancing traffic across web and application servers, balancing load across multiple data centers (private or public clouds), monitoring the response time of servers in real-time to decide the fastest way to deliver a service, protecting against traffic surges, and by managing the bandwidth and rate of requests used by different classes of traffic.

Advanced scripting and application intelligence

Manage application delivery more easily with fine-grained control of users and services using TrafficScript, an easy-to-use scripting language that can parse any user transaction, and take specific, real-time action based on user, application, request, or more. Development teams use TrafficScript to enable a point of control in distributed applications, while operations teams use it to quickly respond to changing business requirements or problems within an application before developers can fix it.

Application acceleration

Dramatically accelerate web-based applications and websites in real-time with optional web content optimization (WCO) functionality. It dynamically groups activities for fewer long distance round trips, resamples and sprites images to reduce bandwidth, and minifies JavaScript and combines style sheets to give the best possible response time for loading a web page on any browser or device.

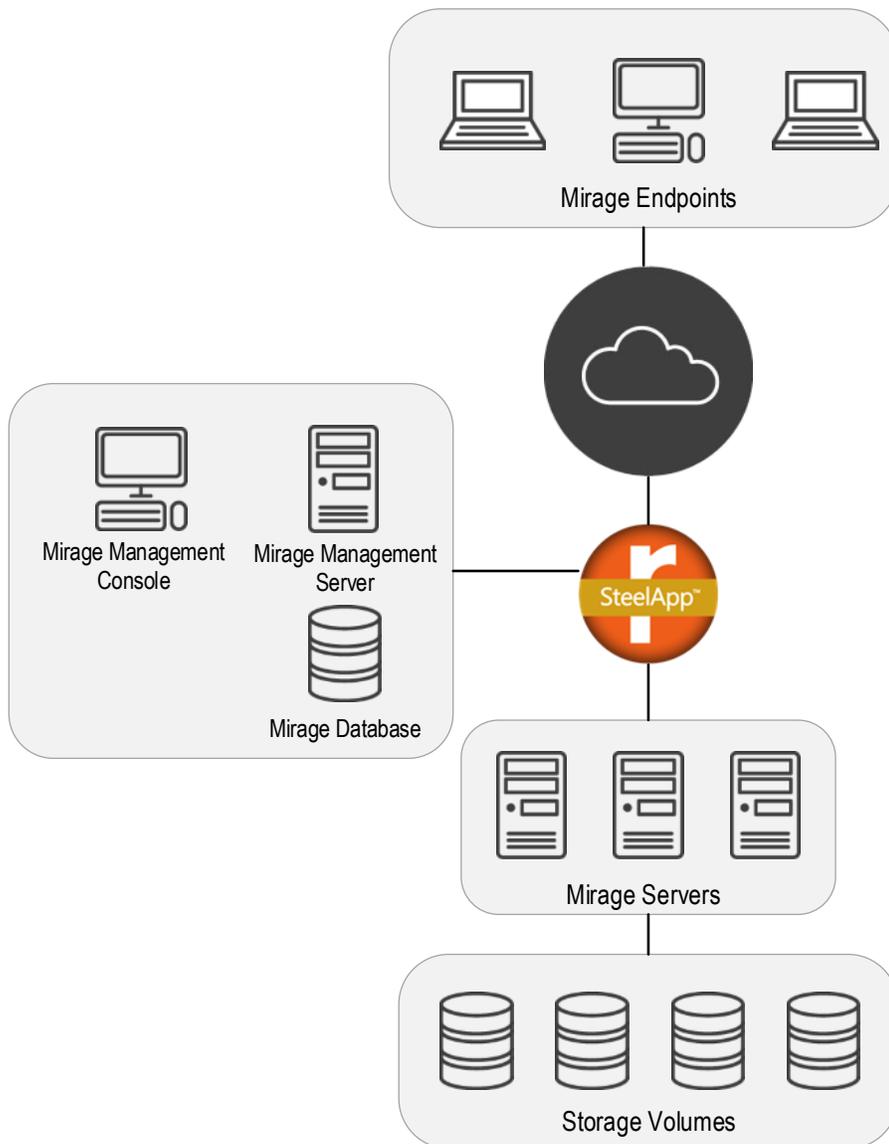
Application-layer security

Enhance application security by filtering out errors in web requests, and protecting against external threats, with the option of a comprehensive Layer-7 firewall to defend against deliberate attacks.

Solution Architecture

Figure 1-1 below depicts a typical SteelApp deployment. A single Mirage server supports up to 1500 CVDs. SteelApp allows the Mirage system to be scaled past that limit. SteelApp load balances traffic coming from Mirage Endpoints to one of many Mirage Servers. Session persistence based on the SSL session ID ensures clients do not bound between different servers in the middle of uploads.

Figure 1-1 Mirage deployment with SteelApp load balancing Mirage Servers



Requirements

The following table describes the hardware and software requirements for optimizing VMware Horizon Mirage with SteelHead appliances.

Requirement	Notes
Riverbed SteelApp 9.0 or later	A SteelAppTraffic Manager is need to load balance and scale mirage as in Figure 1-1.
VMware Horizon Mirage version 4.3 or later	For more information on VMware Horizon Mirage please consult the official VMware Horizon Mirage site

Chapter 2 Deploying SteelApp

This chapter describes the process and procedures for deploying SteelApp to load balance VMware Horizon Mirage servers. It includes the following sections:

- Deployment Prerequisites
- Understanding the Deployment Process
- Verifying the Deployment

Deployment Prerequisites

The following items should be completed before beginning the deployment:

- The SteelApp should be configured following the *SteelApp Installation and Configuration Guide*
- The Mirage FQDN should be configured to resolve to an IP Address that the SteelApp will be listening on
- The Mirage Servers should be deployed and configured following the *VMware Horizon Mirage Installation Guide*

Note: The Mirage servers must be configured with a Transport Type of SSL. SSL offloading with SteelApp is not supported. To check the Transport Type go to **System Configuration -> Servers** in the VMware Horizon Mirage console.

Understanding the Deployment Process

The following table displays the process for deploying and configuring SteelApp to load balance Mirage servers:

Component	Procedure	Description
Riverbed SteelApp	Create a virtual server and pool using the Manage a new service wizard.	From the Wizards drop down menu, start the Manage a new service wizard. Input the following parameters in step 2: <ul style="list-style-type: none"> • Name: Enter any descriptive name • Protocol: SSL • SSL sub-protocol: Other SSL wrapped protocol • Port: 8000 (default port used by Mirage) In step 3 add in the IP Addresses or Hostnames of the individual Mirage Servers.
	Set the Load Balancing Algorithm to Least Connections .	Go to Services -> Pools and select the pool with name entered in the previous step. Scroll down and click on Load Balancing . Set the Algorithm to Least Connections and then click Update to save the changes.
	Set the session persistence class for the pool to SSL Session ID persistence .	Go to Catalogs -> Persistence and create a new session persistence class. In the session persistence class, set the type to SSL Session ID persistence . Click Update to save the changes. Now go back to Services -> Pools and select the pool with the name entered in the step 1. Scroll down and click on Session Persistence . Select the session persistence class just created from the list and click Update to save the changes.
	Set the Health Monitoring for the pool to Connect .	Go to Services -> Pools and select the pool with the name entered in step 1. Scroll down and click on Health Monitoring . Under Monitors remove the default Ping monitor and add in the Connect monitor. Click Update to save the changes.
	Create and assign a Traffic IP Group. The IP address used here should be what the Mirage FQDN resolves to. Endpoints will connect directly to SteelApp, which will then load balance to the appropriate Mirage Server.	Go to Services -> Traffic IP Groups . Under Create a new Traffic IP Group , enter the following: <ul style="list-style-type: none"> • Name: Enter any descriptive name • IP Addresses: Enter the IP Address (s) the Mirage FQDN resolves to. And then click Create Traffic IP Group to save the changes.

Riverbed SteelApp/Mirage client	The final step is to verify the deployment by installing the Mirage client on a PC and connecting to Mirage using the Mirage FQDN.	<p>Now assign the Traffic IP Group to the virtual server by going to Services -> Virtual Servers and selecting the virtual server with the name entered in step 1. Under Listening on select Traffic IP Groups... and then select the Traffic IP Groups just created.</p> <p>Install the Mirage client on a client machine using the Mirage FQDN and checking the Use SSL to connect to the server checkbox.</p> <p>After the Mirage client connects verify that it goes through the SteelApp by going to Activity -> Connections.</p> <p>For details, see "Verifying the Deployment"</p>
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Verifying the Deployment

To verify the deployment, first install the Mirage client on a client machine using the Mirage FQDN and checking the **Use SSL to connect to the server** checkbox.

After the Mirage client connects verify that it goes through the SteelApp by going to **Activity -> Connections**. Figure 2-1 below shows two clients connecting to SteelApp and being load balanced to two separate Mirage Servers (10.32.162.64 and 10.32.162.63 in this example). Each client creates two connections.

Figure 2-1 Connections going from Mirage Client to Mirage Server via SteelApp

 Time ^	From	To	State	VS	Pool
 28-Apr 15:41:13	10.32.162.101:49307	10.32.162.63:8000	Node Reading	Horizon Mirage	Horizon Mirage
 28-Apr 15:41:13	10.32.162.101:49306	10.32.162.63:8000	Node Reading	Horizon Mirage	Horizon Mirage
 28-Apr 15:41:12	10.32.162.104:49164	10.32.162.64:8000	Node Reading	Horizon Mirage	Horizon Mirage
 28-Apr 15:41:12	10.32.162.104:49163	10.32.162.64:8000	Node Reading	Horizon Mirage	Horizon Mirage

Chapter 3 Troubleshooting

This chapter describes common deployment problems and solutions. This chapter includes the following sections:

- Save more recent connections
- Virtual Server request logging

Save more recent connections

Older versions of SteelApp did not save any recently closed connections. The **Activity -> Connections** page would only show open connections. To verify or change this, go to **System -> Global Settings -> Logging** and look at the value for **recent_conns**. For debugging it is recommended to set this to 500 or greater.

Virtual Server request logging

Virtual server request logging logs all requests to a virtual server and is a helpful debugging tool. To enable virtual server request logging go to **Services -> Virtual Servers** for the virtual server associated with Mirage. Scroll down and click on **Request Logging**. Set **log!enabled** to **Yes** and then click **Update** to save the changes.

Appendix A Additional Resources

This section describes resources that supplement the information in this guide. It includes the following:

- SteelApp Getting Started Guide
- VMware Horizon Mirage Installation Guide

SteelApp Getting Started Guide

The *SteelApp Getting Started Guide* and the *SteelApp Virtual Appliance Getting Started Guide* describes how to install and configure SteelApp. It is available at:

<https://support.riverbed.com/content/support/software/stingray/traffic-manager.html>

VMware Horizon Mirage Installation Guide

The *VMware Horizon Mirage Installation Guide* provides information about how to install and deploy the Horizon Mirage components and prepare the system to centralize endpoint devices. It is available at:

https://www.vmware.com/support/pubs/mirage_pubs.html



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