



September 2015

53-1003969-01

Brocade Virtual Traffic Manager and SAP NetWeaver

Deployment Guide

© 2015 Brocade Communications Systems, Inc. All Rights Reserved.

ADX, Brocade, Brocade Assurance, the B-wing symbol, DCX, Fabric OS, HyperEdge, ICX, MLX, MyBrocade, OpenScript, The Effortless Network, VCS, VDX, Vplane, and Vyatta are registered trademarks, and Fabric Vision and vADX, vTM, vWAF, and SD are trademarks of Brocade Communications Systems, Inc., in the United States and/or in other countries. Other brands, products, or service names mentioned may be trademarks of others.

Notice: This document is for informational purposes only and does not set forth any warranty, expressed or implied, concerning any equipment, equipment feature, or service offered or to be offered by Brocade. Brocade reserves the right to make changes to this document at any time, without notice, and assumes no responsibility for its use. This informational document describes features that may not be currently available. Contact a Brocade sales office for information on feature and product availability. Export of technical data contained in this document may require an export license from the United States government.

The authors and Brocade Communications Systems, Inc. assume no liability or responsibility to any person or entity with respect to the accuracy of this document or any loss, cost, liability, or damages arising from the information contained herein or the computer programs that accompany it.

The product described by this document may contain open source software covered by the GNU General Public License or other open source license agreements. To find out which open source software is included in Brocade products, view the licensing terms applicable to the open source software, and obtain a copy of the programming source code, please visit <http://www.brocade.com/support/oscd>.

Contents

Preface.....	5
About This Guide	5
Audience.....	5
Contacting Brocade	5
Internet.....	5
Technical Support.....	5
Professional Services.....	5
Chapter 1: Solution Overview	6
Virtual Traffic Manager Overview	6
Performance.....	6
Reliability and scalability	6
Advanced scripting and application intelligence.....	6
Application acceleration.....	7
Application-layer security.....	7
SAP NetWeaver Application Suite	7
Chapter 2: SAP NetWeaver Architecture	7
Chapter 3: Deploying Traffic Manager for SAP NetWeaver Components.....	8
Requirements	8
Configure vTM for SAP Portal	8
Create Traffic IP Group.....	9
Configure Health Monitor	9
Create Pool.....	9
Create Virtual Server	9
Configure Traffic Script.....	10
Configure Session Persistence.....	11
Configure vTM for SAP ERP.....	11
Create Traffic IP Group.....	11
Configure Health Monitor	12
Create Pool.....	12
Create Virtual Server	12
Configure vTM for SAP Composite	13
Create Traffic IP Group.....	13
Configure Health Monitor	13
Create Pool.....	14
Create Virtual Server	14
Configure Traffic Script.....	15

Configuration Summary 15

Chapter 4: Conclusion 15

Preface

Welcome to the Brocade Virtual Traffic Manager (vTM) and SAP NetWeaver Deployment 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 Brocade

About This Guide

The Brocade Virtual Traffic Manager and SAP NetWeaver Deployment guide describes optimization of SAP NetWeaver Server farms.

Audience

This guide is written for network operations professionals, server administrators and DevOps professionals familiar with administering and managing Application Delivery Controllers (ADCs), Servers and Applications.

You must also be familiar with:

- SAP NetWeaver Application Suite
- Brocade Virtual Traffic Manager

For more details on the Brocade vADC product family, see:

<http://www.brocade.com/vADC>

Contacting Brocade

This section describes how to contact departments within Brocade.

Internet

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

Technical Support

If you have problems installing, using, or replacing Brocade products, contact Brocade Support or your channel partner who provides support. To contact Brocade Support, see

<http://www.brocade.com/en/support.html>.

Professional Services

Brocade Global Services has the expertise to help organizations build scalable, and efficient cloud infrastructures. Leveraging 15 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world- class professional services, technical support, and education services, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

Chapter 1: Solution Overview

This chapter includes the following sections:

- Virtual Traffic Manager Overview
- SAP NetWeaver Application Suite

Virtual Traffic Manager Overview

Brocade Virtual Traffic Manager (vTM) is a software-based application delivery controller (ADC) designed to deliver faster and more reliable access to public web sites and private applications. vTM frees applications from the constraints of legacy, proprietary, hardware-based load balancers, which enables them to run on any physical, virtual, or cloud environment. With vADC products from Brocade, 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

Virtual Traffic Manager offers much more than basic load balancing. It 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 Virtual Traffic Manager in a specialized way. With vTM, 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.

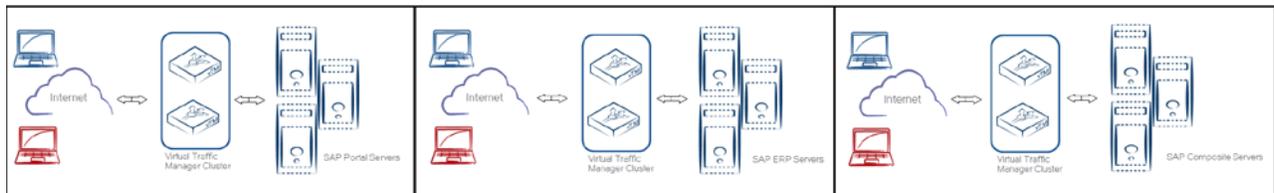
SAP NetWeaver Application Suite

SAP ERP Central Component is NetWeaver-based application platform which provides the architectural foundation. Its Service Oriented Architecture is focal point of ECC’s architectural strategy and covers all the major functionalities inside ECC. The SAP Enterprise Service Oriented Architecture (SOA) provides a blueprint for services-based, enterprise scale business solutions that are adaptable, flexible, and open. Enterprise Services Architecture takes the concept of service-oriented architecture to a new level by transforming Web services into enterprise services. This deployment guide walks through the step-by-step details on configuring the Stingray Traffic Manager for use as front-end to SAP Portal for end-user traffic, Composite Application Framework and SAP ERP Web Services platforms.

Chapter 2: SAP NetWeaver Architecture

The deployment architecture, including the Traffic Manager and SAP NetWeaver servers, is shown in the following topology:

Figure 2-1: Configuration Components of Brocade Virtual Traffic Manager for SAP Application



The topology above shows Traffic Manager deployed for three different components of the SAP NetWeaver Application Suite. Subsequent sections show different configuration requirements for each of these components.

Chapter 3: Deploying Traffic Manager for SAP NetWeaver Components

This chapter describes the process for deploying Virtual Traffic Manager to optimize the SAP NetWeaver Components. It includes the following sections:

- Requirements
- Configure vTM for SAP Portal
- Configure vTM for SAP ERP
- Configure vTM for SAP Composite

Requirements

- Brocade Virtual Traffic Manager (10.1 or later)
- SAP NetWeaver (7.0 or later)

Note: This deployment guide was certified while the product was with Riverbed and for 9.x or earlier versions of the Traffic Manager.

Configure vTM for SAP Portal

This section contains step by step instructions on configuring Traffic Manager for SAP Portal component:

Component	Procedure	Description
Virtual Traffic Manager (once)	Create Traffic IP Group for SAP Portal	A single Traffic IP Group must be created For details, see "Create Traffic IP Group"
	Configure HTTP health monitor	For details, see "Configure Health Monitor"
	Create Pool for the SAP Portal servers	A Pool needs to have a set of servers to load-balance. Enter the hostname or IP address of the node along with the TCP/UDP port For details, see "Create Pool"
	Create Virtual Server for the application. Change TCP timeout settings and enable Caching	Create and associate the Virtual Server to the server pool. For details, see "Create Virtual Server"
	Configure Session Persistence	Configure Session persistence to persist client connections. For details, see "Configure Session Persistence"
	Configure and associate TrafficScript	Configure and associate Traffic script for accumulating the complete response For details, see "Configure Traffic Script"

Create Traffic IP Group

A Traffic IP Group (also known as a Virtual IP) will need to be created on which the Virtual server will be listening on. To create a new Traffic IP Group:

1. Navigate to **Services -> Traffic IP Groups** and scroll down to **Create a new Traffic IP Group**.
2. Fill in the fields as follows:
 - **Name:** A descriptive name for the SAP Portal service.
 - **IP Addresses:** An IP Address that is mapped to FQDN of the service.
3. Click **Create Traffic Group**.

Configure Health Monitor

The HTTP monitor is used for port 80 on the SAP Portal pool.

1. Navigate to **Catalogs -> Monitors**.
2. Scroll down to **Create new monitor**.
3. Enter a name for the new monitor. Set the type to **HTTP** and the scope to **Node**.
4. Click **Create Monitor**.
5. In the subsequent configuration page, scroll down and change the path to **/**
6. Change **body_regex** to.*

Create Pool

A Pool has to be created for each application server farm as shown in the topology diagram. To create a new Pool:

1. Navigate to **Services -> Pools** and scroll down to **Create a new Pool**.
2. Fill in the fields as follows:
 - **Pool Name:** A descriptive name for the pool ex. SAP-Portal-servers
 - **Nodes:** hostname:port or ipaddress:port as appropriate for the service
 - **Monitor:** Select the created health monitor (in the step above).
3. Navigate to **Service -> Pools -> Load Balancing** and select the load balancing algorithm to **Perceptive**.

Create Virtual Server

Create a Virtual server that will handle all the application Traffic. Change the TCP timeout settings to allow for high latency responses so as to keep the connections alive. Enabling caching feature on the Traffic Manager helps optimize the delivery of web content and applications. SAP has architected their applications to make use of browser caches for static content, and thus sends directives to the browser cache through the Cache-Control header in responses to the client. SAP recommends that dynamic caching not be implemented for their applications.

To create and modify settings of a new Virtual Server:

1. Navigate to **Services->Virtual Servers** and scroll down to **Create a new Virtual Server**.
2. Enter the following:
 - **Virtual Server Name:** A descriptive name for the Virtual Server
 - **Protocol:** HTTP
 - **Port:** 443
 - **Default Traffic Pool:** Select the pool created in the step above.
3. Click on **Create Virtual Server**.
4. In the next screen, under **Listening on**, select **Traffic IP Groups** and check the appropriate Traffic IP Group that was created earlier.
5. Set **Enabled** to **Yes**.
6. Click on the **Update** button to apply changes.
7. Navigate to **Services->Virtual Servers** and select the Virtual Server created above and select **Connection Management**.
8. Under **Timeout Settings**, change timeout to **120**.
9. Navigate to **Services ->Virtual Servers** and select the Virtual Server created above and select **Content Caching**.
10. Under Cache settings, set **webcache!enabled** to **Yes**.

Configure Traffic Script

This TrafficScript rule will accumulate the entire response from the server to improve the performance of portal responses.

```
#!/ TS Rule for accumulating the complete response
$debug = 0; // Change value to 1 if debug needed
$data = http.getResponseBody();
if ($debug > 0) { log.info("Accumulated the whole response: " . $data);}
```

Associate the TrafficScript to the virtual server:

1. Navigate to **Services --> Virtual Server**.
2. Click the Virtual Server that was created above.
3. Click on **Rules**.
4. Under **Response Rules**, select the rule that was created in the above step from the dropdown.
5. Click **Add Rule**.

Configure Session Persistence

To ensure that clients persist their connections to the load-balanced servers after login, configure the following:

1. Go to **Catalogs -> Persistence** and create a new class called **SAP Portal Persistence**.
2. Set this class to use the **Transparent Session Affinity** method and the failure mode of **choose a new node to use**.
3. Click **Update** to finish.
4. Go to **Services -> Pools -> <SAP Portal pool> -> Session Persistence**.
5. Select the class from the list and click **Update**.

Configure vTM for SAP ERP

This section contains step by step instructions on configuring Traffic Manager for SAP ERP component:

Component	Procedure	Description
Virtual Traffic Manager (once)	Create Traffic IP Group for SAP ERP	A single Traffic IP Group must be created For details, see "Create Traffic IP Group"
	Configure HTTP health monitor	For details, see "Configure Health Monitor"
	Create Pool for the SAP ERP servers	A Pool needs to have a set of servers to load-balance. Enter the hostname or IP address of the node along with the TCP/UDP port For details, see "Create Pool"
	Create Virtual Server for the application. Change TCP timeout settings.	Create and associate the Virtual Server to the server pool. For details, see "Create Virtual Server"

Create Traffic IP Group

A Traffic IP Group (also known as a Virtual IP) will need to be created on which the Virtual server will be listening on. To create a new Traffic IP Group:

1. Navigate to **Services->Traffic IP Groups** and scroll down to **Create a new Traffic IP Group**.
2. Fill in the fields as follows:
 - **Name:** A descriptive name for the SAP ERP service.
 - **IP Addresses:** An IP Address that is mapped to FQDN of the service.
3. Click **Create Traffic Group**.

Configure Health Monitor

The HTTP monitor is used for port 80 on the SAP ERP pool.

1. Navigate to **Catalogs -> Monitors**.
2. Scroll down to **Create new monitor**.
3. Enter a name for the new monitor. Set the type to **HTTP** and the scope to **Node**.
4. Click **Create Monitor**.
5. In the subsequent configuration page, scroll down and change the path to **/**
6. Change **body_regex** to.*

Create Pool

A Pool has to be created for each application server farm as shown in the topology diagram. To create a new Pool:

1. Navigate to **Services->Pools** and scroll down to **Create a new Pool**.
2. Fill in the fields as follows:
 - **Pool Name:** A descriptive name for the pool ex. SAP-ERP-servers.
 - **Nodes:** hostname:port or ipaddress:port as appropriate for the service.
 - **Monitor:** Select the created health monitor (in the step above).
3. Navigate to **Service -> Pools->Load Balancing** and select the load balancing algorithm to **Perceptive**.

Create Virtual Server

Create a Virtual server that will handle all the application Traffic. Change the TCP timeout settings to allow for high latency responses so as to keep the connections alive.

To create and modify settings of a new Virtual Server:

1. Navigate to **Services->Virtual Servers** and scroll down to **Create a new Virtual Server**.
2. Enter the following:
 - **Virtual Server Name:** A descriptive name for the Virtual Server.
 - **Protocol:** HTTP.
 - **Port:** 443.
 - **Default Traffic Pool:** Select the pool created in the step above.
3. Click on **Create Virtual Server**.
4. In the next screen, under **Listening on**, select **Traffic IP Groups** and check the appropriate Traffic IP Group that was created earlier.
5. Set **Enabled** to **Yes**.
6. Click on the **Update** button to apply changes.

7. Navigate to **Services->Virtual Servers** and select the Virtual Server created above and select **Connection Management**.
8. Under **Timeout Settings**, change timeout to **120**.

Configure vTM for SAP Composite

This section contains step by step instructions on configuring Traffic Manager for SAP Composite component:

Component	Procedure	Description
Virtual Traffic Manager (once)	Create Traffic IP Group for SAP Composite	A single Traffic IP Group must be created For details, see "Create Traffic IP Group"
	Configure HTTP health monitor	For details, see "Configure Health Monitor"
	Create Pool for the SAP Composite servers	A Pool needs to have a set of servers to load-balance. Enter the hostname or IP address of the node along with the TCP/UDP port For details, see "Create Pool"
	Create Virtual Server for the application. Change TCP timeout settings	Create and associate the Virtual Server to the server pool. For details, see "Create Virtual Server"
	Configure and associate TrafficScript	Configure and associate Traffic script for adding SSL offload header to HTTPS virtual server For details, see "Configure Traffic Script"

Create Traffic IP Group

A Traffic IP Group (also known as a Virtual IP) will need to be created on which the Virtual server will be listening on. To create a new Traffic IP Group:

1. Navigate to **Services->Traffic IP Groups** and scroll down to **Create a new Traffic IP Group**.
2. Fill in the fields as follows:
 - **Name:** A descriptive name for the SAP Composite service.
 - **IP Addresses:** An IP Address that is mapped to FQDN of the service.
3. Click **Create Traffic Group**.

Configure Health Monitor

The HTTP monitor is used for port 80 on the SAP Composite pool.

1. Navigate to **Catalogs -> Monitors**.
2. Scroll down to **Create new monitor**.
3. Enter a name for the new monitor. Set the type to **HTTP** and the scope to **Node**.
4. Click **Create Monitor**.

5. In the subsequent configuration page, scroll down and change the path to /
6. Change **body_regex** to.*

Create Pool

A Pool has to be created for each application server farm as shown in the topology diagram. To create a new Pool:

1. Navigate to **Services->Pools** and scroll down to **Create a new Pool**.
2. Fill in the fields as follows:
 - **Pool Name:** A descriptive name for the pool ex. SAP-Composite-servers.
 - **Nodes:** hostname:port or ipaddress:port as appropriate for the service.
 - **Monitor:** Select the created health monitor (in the step above).
3. Navigate to **Service -> Pools->Load Balancing** and select the load balancing algorithm to **Perceptive**.

Create Virtual Server

Create a Virtual server that will handle all the application Traffic. Change the TCP timeout settings to allow for high latency responses so as to keep the connections alive.

To create and modify settings of a new Virtual Server:

1. Navigate to **Services->Virtual Servers** and scroll down to **Create a new Virtual Server**.
2. Enter the following:
 - **Virtual Server Name:** A descriptive name for the Virtual Server.
 - **Protocol:** HTTP.
 - **Port:** 443.
 - **Default Traffic Pool:** Select the pool created in the step above.
3. Click on **Create Virtual Server**.
4. In the next screen, under **Listening on**, select **Traffic IP Groups** and check the appropriate Traffic IP Group that was created earlier.
5. Set **Enabled** to **Yes**.
6. Click on the **Update** button to apply changes.
7. Navigate to **Services -> Virtual Servers** and select the Virtual Server created above and select **Connection Management**.
8. Under **Timeout Settings**, change timeout to **120**.

Configure Traffic Script

This TrafficScript is used for rewriting the content body machine-to-machine, soap:xml requests, and to ensure that all requests served by the Traffic Manager are load-balanced and transported over secure communications using HTTPS when the nodes are listening on a non-standard ports (e.g., for port 50000 on the SAP Composite Application Framework).

```
#!/ TS Rule for replacing HTTP urls to HTTPS
$debug = 0; // Change value to 1 if debug needed
$path = http.getPath();
if (string.startsWith($path, "/inspection.wsil")) {
    $response = http.getResponseBody();
    $response = string.replaceAll($response, "http://<SAP-composite-
node>:50000", "https://<Traffic-IP for SAP composite>");
    http.setResponseBody($response);
if ($debug > 0) { log.info("Modified the Response: " . $response);}
}
```

Associate the TrafficScript to the virtual server:

1. Navigate to **Services --> Virtual Server**.
2. Click the Virtual Server that was created above.
3. Click on **Rules**.
4. Under **Response Rules**, select the rule that was created in the above step from the dropdown.
5. Click **Add Rule**.

Configuration Summary

By accessing the **Services -> Config Summary** on the web UI, a complete snapshot of all the configured services is provided. This is very useful table to glance through to get a good understanding of how the services are configured.

Chapter 4: Conclusion

This document briefly discusses how to configure Traffic Manager to load balance traffic to a farm of SAP NetWeaver and its various components. Traffic Manager is able to manage traffic in a wide variety of ways, to improve the performance, security, reliability and integrity. Please refer to the product documentation on the Brocade Community Forums (<http://community.brocade.com>) for examples of how Brocade Virtual Traffic Manager can be deployed to meet a range of service hosting problems.