BROCADE

Brocade Virtual Traffic Manager and Oracle EBS 12.1

Deployment Guide

Contents

Preface

Welcome to the Brocade Virtual Traffic Manager (vTM) and Oracle EBS 12.1 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 Oracle EBS 12.1 Deployment guide describes optimization of Oracle based suite of business applications.

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:

- Oracle E-business 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:

- Oracle E-business Suite
- Virtual Traffic Manager Overview
- Oracle E-business 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.

Oracle E-business Suite

Oracle E-Business Suite is a fully integrated, comprehensive suite of business applications for the enterprise which provides better business information for effective decision-making and enables an adaptive enterprise for optimal responsiveness.

With hundreds of cross-industry capabilities spanning enterprise resource planning, customer relationship management, and supply chain planning, Oracle E-Business Suite applications help customers manage the complexities of global business environments no matter if the organization is small, medium, or large in size. As part of Oracle's Applications Unlimited strategy, Oracle E-Business Suite applications will continue to be enhanced, thus protecting and extending the value of your software investment.

Chapter 2: Oracle E-business Suite Architecture

The Oracle E-Business Suite Release 12 architecture, as shown in the figure below, is a framework for multi-tiered, distributed computing that supports various Oracle Applications products. In this model, various servers are distributed among multiple levels, or tiers.

A server is a process or group of processes that runs on a single machine and provides a particular class of functionality, often referred to as a service. For example, the Oracle HTTP server is a process that listens for and processes HTTP requests; a Concurrent Processing server is a server that process batch jobs submitted through concurrent requests.
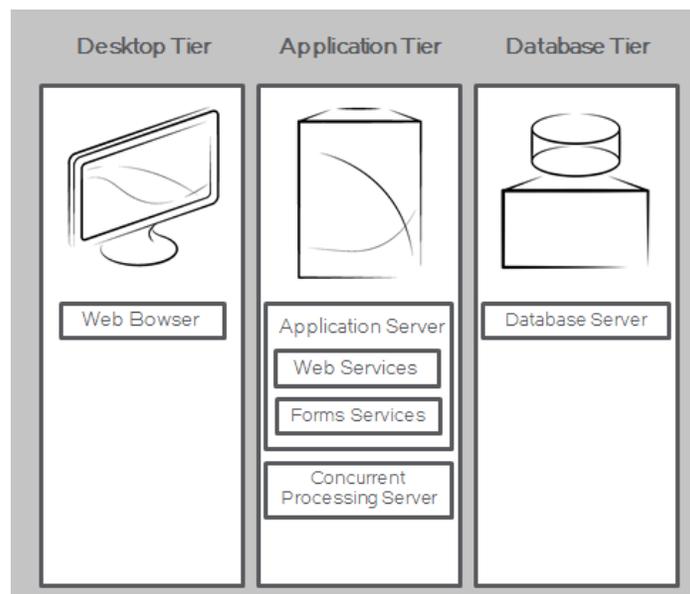
The three-tier architecture that comprises an Oracle E-Business Suite installation is made up of:

1. The database tier, which supports and manages the Oracle database.

2. The application tier, which supports and manages the various Applications components, and is sometimes known as the middle tier.

3. The desktop tier, which provides the user interface via a supported web browser, either natively in HTML or via Forms running in the Sun Java Runtime Engine. For more information on Oracle E-Business Suite, see http://www.oracle.com/us/products/applications/ebusiness/overview/index.html.

Here are some key definitions as they apply to E-Business Suite:

Tier

A tier is a logical grouping of services, potentially spread across more than one physical machine.

Client Tier

The client interface is provided through HTML for the HTML-based applications, and via a Java applet in a Web browser for the traditional Forms-based interface. In Oracle Applications Release 12, each user logs in to Oracle Applications through the E- Business Suite Home Page on a desktop client web browser. The E-Business Suite Home Page provides a single point of access to HTML-based applications, Forms-based applications, and Business Intelligence applications.

Application Tier

The application tier hosts the various services that process the business logic and manage communication between the desktop tier and the database tier. This tier runs the web server and the associated processes, concurrent processing server, Interaction and Oracle fulfillment server.

Database Tier

The database tier contains the Oracle database server which stores all the data maintained by Oracle Applications. This tier has the Oracle data server files and Oracle Applications database executables that physically store the tables, indexes, and other database objects in the system.

OPMN

Oracle Process Manager and Notification Server (OPMN) is installed and configured on every tier designated to run the web application. OPMN provides an integrated way to manage all Oracle Application Server components. OPMN consists of two main pieces: The Process Manager and the Notification Server. The Process manager (PM) is the centralized process management mechanism in Oracle Application Server and is used to manage all Oracle Application Server processes. The PM starts, restarts, stops, and monitors every process it manages. It also performs death-detection and automatic restart of the processes. Oracle Notification Server (ONS) is the transport mechanism for failure, recovery, startup, and other related notifications between components in Oracle Application Server.

OHS

Oracle HTTP Server (OHS) is installed and configured on every tier that is designated to run the web application. It provides the key infrastructure required for serving the static and dynamic content generated by Oracle E Business Suite products.

OC4J

Oracle Containers for J2EE (OC4J) is the core Java 2 Platform Enterprise Edition (J2EE) runtime component of Oracle Application Server. It is installed and configured on every tier that is designated to run the web application. It is a fully J2EE 1.5 compliant container that runs on a standard file based JDK 1.5 Java Virtual Machine and provides complete support for Java Server Pages (JSP), Servlets, Enterprise Java Beans (EJB), Web Services and all J2EE services.

Web Entry Point

Web Entry Point refers to the host name which is designated to be used by all users to access the Oracle E-Business Suite Release 12 system. By default, the web entry point is set to the hostname of the application server where Oracle E-Business Suite is installed. In the case where a load-balancer is used, the Web Entry Point becomes the virtual host name resolved to the virtual IP of the load-balancer.

Server Load Balancer

Load balancing is the means by which network traffic directed to a particular Web site is divided between one or more machines in a cluster of servers. Typically, the servers will all be running the same application, and use of load balancing presents the outside world with the appearance of a single server rather than a cluster. The relevant hardware device, in our case, software, often called a server load balancer, receives the relevant network traffic for the site, and distributes it to the various servers in the cluster based on the load balancing methodology that it supports. By sending requests to different nodes within the server cluster, system performance is optimized, scalability is simplified, and application availability (a key requirement of Web-based applications) is greatly enhanced. Additional features of load balancing include monitoring server availability and context-based load distribution. Typical load balancer deployment is shown below:
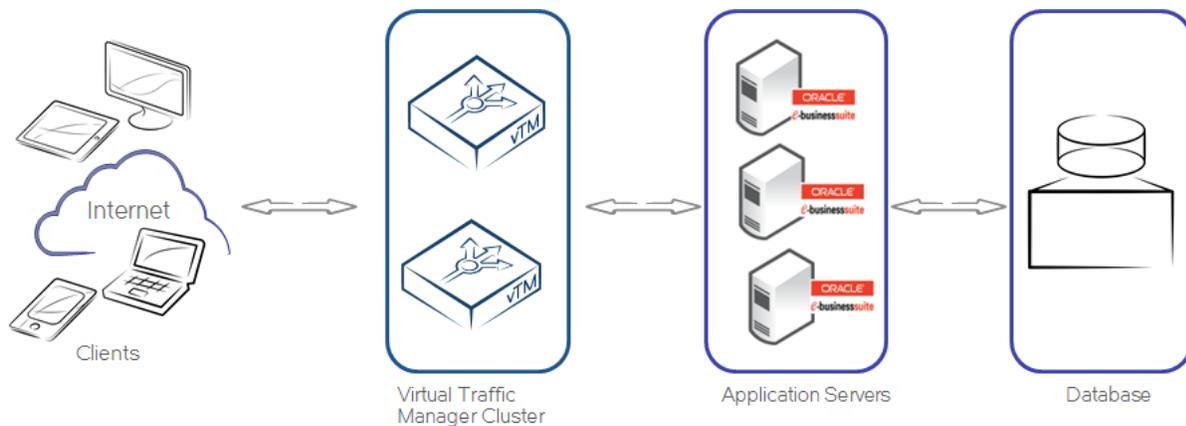
Chapter 3: Deploying Traffic Manager for Oracle E-business Suite

This chapter describes the process for deploying Virtual Traffic Manager to optimize an Oracle E-business application. It includes the following sections:

Requirements

- Configure vTM for Oracle E-business Suite

- Brocade Virtual Traffic Manager (10.1 or later)

- Oracle E-business Suite (12.1)

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

Update E Business Suite Applications Context File

Certain configuration values need to be changed in the application context file to enable Virtual Traffic Manager. The table below describes an example of the context values changed with Virtual Traffic Manager configured in front of the application servers.

Context Variable Name	Old Context Value	New Context Value
s_webentryprotocol	http	https
s_webentryhost	brocadeapp1	app
	brocadeapp2	app
	brocadeapp3	app
s_webentrydomain	company.com	company.com
s_activewebport	8000	443
s_login_page	http://brocadeapp1.company.com:8000/OA_HTML/AppsLogin	https://app.company.com/OA_HTML/AppsLogin
	http://brocadeapp2.company.com:8000/OA_HTML/AppsLogin	https://app.company.com/OA_HTML/AppsLogin
	http://brocadeapp3.company.com:8000/OA_HTML/AppsLogin	https://app.company.com/OA_HTML/AppsLogin
s_external_url	http://brocadeapp1.company.com:8000/OA_HTML/AppsLogin	https://app.company.com
	http://brocadeapp2.company.com:8000/OA_HTML/AppsLogin	https://app.company.com
	http://brocadeapp3.company.com:8000/OA_HTML/AppsLogin	https://app.company.com

The values listed for the context variables in the table above should only be used as a reference to change your applications context file. It is possible that system administrators may have changed the default values to perform other advanced configurations.

After completing the changes shown above, do the following:

1. Run the AutoConfig utility on all the application tier Servers.

2. Restart application server processes.

3. Test sign on from different entry points.

Configure vTM for Oracle E-business Suite

This section contains step by step instructions on configuring Traffic Manager for Oracle E-business suite:

Component	Procedure	Description
Virtual Traffic Manager (once per app)	Create Traffic IP Group for Oracle E-business suite	A single Traffic IP Group must be created For details, see "Create Traffic IP Group"
	Create Pool for the business applications	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"
	Select a Monitor for the Pool	Select a health monitor for the pool. For details, see "Create Monitor"
	Create Virtual Server for the business application	Create and associate the Virtual Server to the server pool. For details, see "Create Virtual Server"
	SSL decryption	Configure SSL Decryption to enable SSL offloads. For details, see "SSL Decryption"
	Configure Session Persistence	Configure SSL Decryption to enable SSL offloads. For details, see "Configure Session Persistence"
	Configure and associate Traffic script to redirect http users to use https	Configure and associate Traffic script for redirecting clients to https 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 E-business application.

   - **IP Addresses**: An IP Address that is mapped to FQDN of the application.

3. Click **Create Traffic Group**.

Create Pool

A Pool has to be created for each application managed by the Traffic Manager. 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

   - **Nodes:** hostname:8000 or ipaddress:8000

   - **Monitor:** Leave the default for now

3. In the next screen, click on **Load Balancing**.

4. Under **Algorithm**, select **Least Connections**.

5. Click on the **Update** button to apply changes.

Create Monitor

The following sections detail the steps to create these health monitor. Note: Advanced external monitors can be written in any language of choice and be associated with the pool. The HTTP monitor is used for port 8000 for the Oracle applications.

1. Navigate to **Catalogs->Monitors**.

2. Scroll down to **Create new monitor**.

3. Give the new monitor a descriptive Name.

4. Set the **type** to **HTTP monitor** and the **scope** to **Node**.

5. Click **Create Monitor** to create the monitor.

6. Change **Path**: to **/**

7. Change **body_regex** to .*

8. Scroll down to **Apply Changes** and click the **Update** button.

9. Navigate to **Services->Pools** and select the pool that the monitor will be attached to.

10. Scroll down and click **Health Monitoring**.

11. Add the appropriate health monitor.

Create Virtual Server

Create a Virtual server that will handle all the application Traffic. To create 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 for Exchange HTTP Service in the previous step

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.

HTTPS Redirect Virtual Server

Create a Virtual server that will handle http traffic and redirect that to https VS. The redirection is done via a Traffic Script that is explained later below.

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:** 80

   - **Default Traffic Pool:** discard

3. Click on **Create Virtual Server**.

4. Set **Enabled**: to **Yes**.

5. Click on the **Update** button to apply changes.

SSL Decryption

In order to perform SSL decryption, the certificate and the private key must be imported into the Traffic Manager.

1. Navigate to the **Catalogs->SSL->SSL Certificates** catalog.

2. Click on **Import Certificate** to import the appropriate certificate.

After importing the certificate, enable SSL decryption on the Virtual Server created:

1. Navigate to **Services->Virtual Servers** and select the virtual server that will be performing SSL decryption.

2. Scroll down and click on **SSL Decryption**.

3. Set **ssl_decrypt** to **Yes**.

4. Select the certificate imported in the previous step.

5. Scroll down to the bottom of the page and click **Update**.

Configure Session Persistence

This section details the steps to configure session persistence.

Create a new session persistence class.

A session persistence class only needs to be created once per type of persistence. For Oracle E-business applications, J2EE Session Persistence should be used. The appropriate persistence class will need to be created.

1. Navigate to **Catalogs → Persistence**.

2. Scroll down and create a new Session Persistence class.

3. Set the type to **Transparent Session Affinity**.

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Attach the session persistence class to the pool.

1. Navigate to **Services→ Pools** and select the pool created above.

2. Scroll down and click on **Session Persistence**.

3. Choose the appropriate Session Persistence class.

Configure Traffic Script

One of the virtual servers created above sends HTTPS redirects to clients who inadvertently try to access the application over HTTP. This is accomplished by creating a Traffic Script and associating the Traffic Script to this virtual server. In order to create the Traffic Script:

1. Navigate to **Catalogs → Rules**.

2. Scroll down to **Create new rule**.

3. Give the new rule a name.

4. Select **Use TrafficScript Language** and click **Create Rule**.

5. Under the **Rule:** space, enter the following text:

```
#// TS Rule for redirecting HTTP requests to HTTPS
$debug = 0; // Change value to 1 if debug needed
$hostheader = http.getHostHeader();
$path = http.getPath();
http.redirect( "https://".$hostheader.$path );
if ($debug > 0) { log.info("Redirect to HTTPS");}
```

6. Click **Update** button to create the rule.

Associate the TrafficScript to virtual server:

1. Navigate to **Services --> Virtual Server**.

2. Click the Virtual server that was created for HTTPS redirect.

3. Click on **Rules**.

4. Under **Request 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 webGUI 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.

Configuration Summary

This is a summary of your current configuration. Each row shows the logical associations between traffic management objects. The highlighted column shows the current sort order.

Virtual Servers ▽	Rules	Pools	Nodes	Monitors	Persistence	Protection	SLM	Bandwidth
app.company.com **192.168.168.200**:443	*Use default pool*	EBS-POOL	192.168.168.181:8000 192.168.168.182:8000 192.168.168.183:8000	**EBS-Monitor**	**EBS-Persistence**			
app.company.com_HTTPS_Redirect **192.168.168.200**:80	**HTTPS_Redirect**							
	Use default pool	discard						

Chapter 4: Monitoring

The Virtual Traffic Manager has some great tools to assist in managing and monitoring application traffic. These can be accessed via the web UI of the device, via the Activity Tab. Real-time graphs can be used to show the traffic passing through the vTM in a very granular way; monitoring can be down to an individual node or for an entire deployment.

Chapter 5: Conclusion

This document briefly discusses how to configure Traffic Manager to load balance traffic to a farm of Oracle E-Business suite application servers. 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.