

11

Network Channels and Virtual Hosts

Objectives

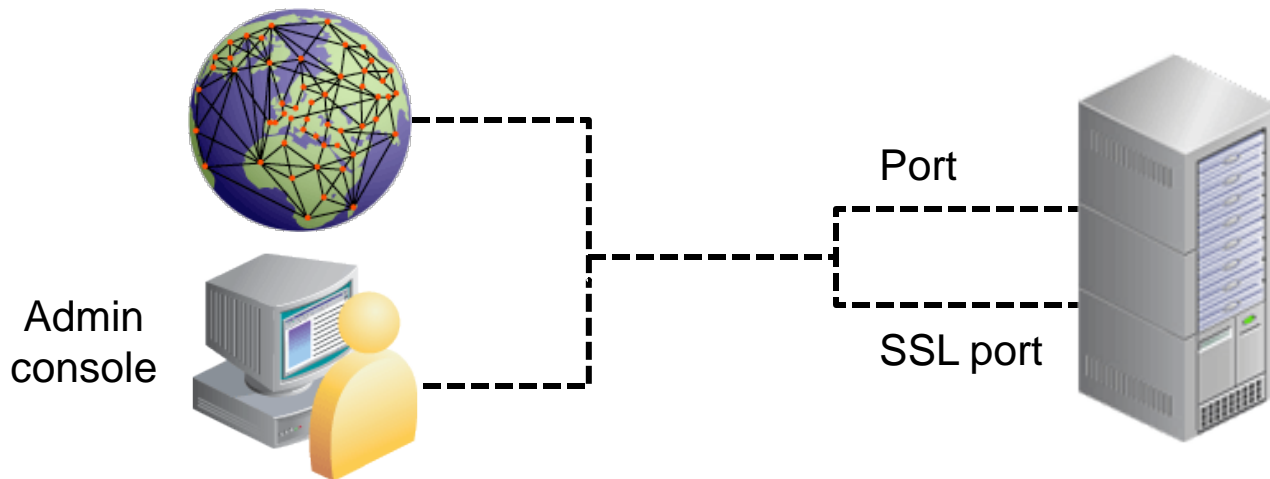
After completing this lesson, you should be able to configure:

- A WebLogic Server network channel
- WebLogic Server to use an administration port
- A virtual host for WebLogic Server

Default WebLogic Networking

By default, an instance of WebLogic Server binds:

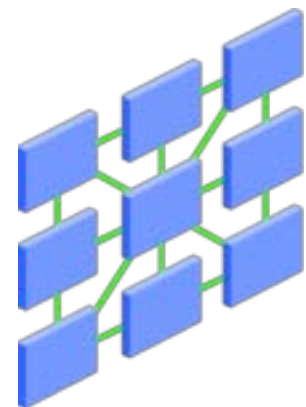
- To all available network interfaces on the host machine
- To a single port
- To a separate port for secure sockets layer (SSL) communication (if configured)



Default WebLogic Networking

The default server port:

- Accepts all protocols (HTTP, T3, IIOP, SNMP)
- Supports various security and tuning parameters
- Is used for client-server communication
- Is used for remote server management (admin console, WLST)
- Is used for internal server-server communication:
 - Server startup and management messages
 - Cluster messages



Additional Networking Scenarios

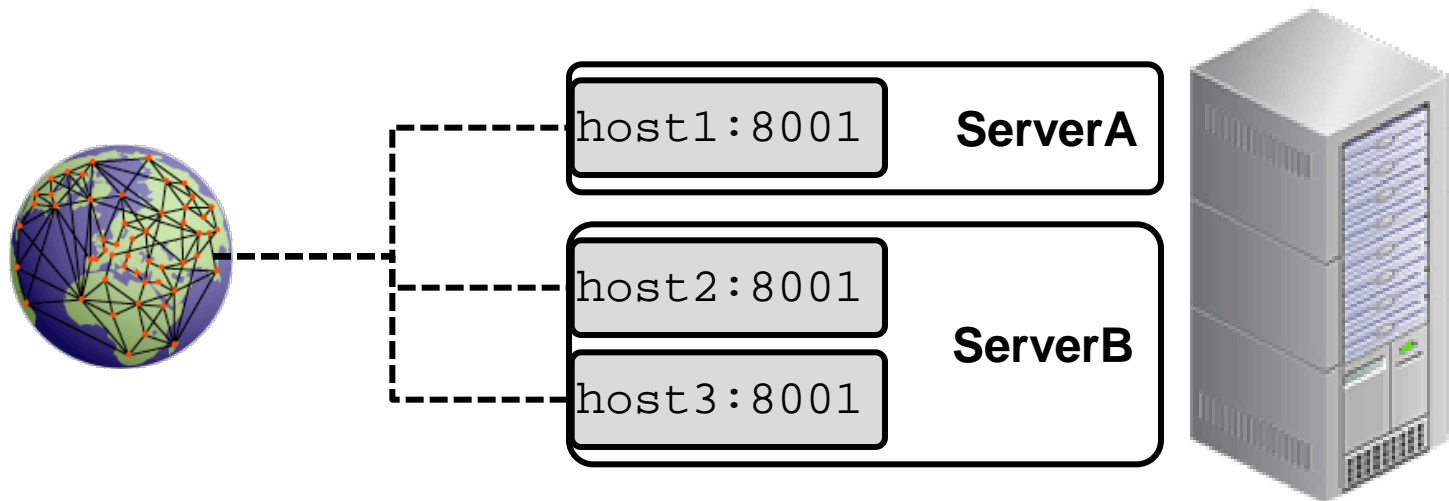
You can customize the default WebLogic Server network configuration to handle requirements such as:

- Dedicating network interfaces to specific servers
- Using multiple ports on a single server
- Isolating administrative communication
- Isolating internal cluster communication



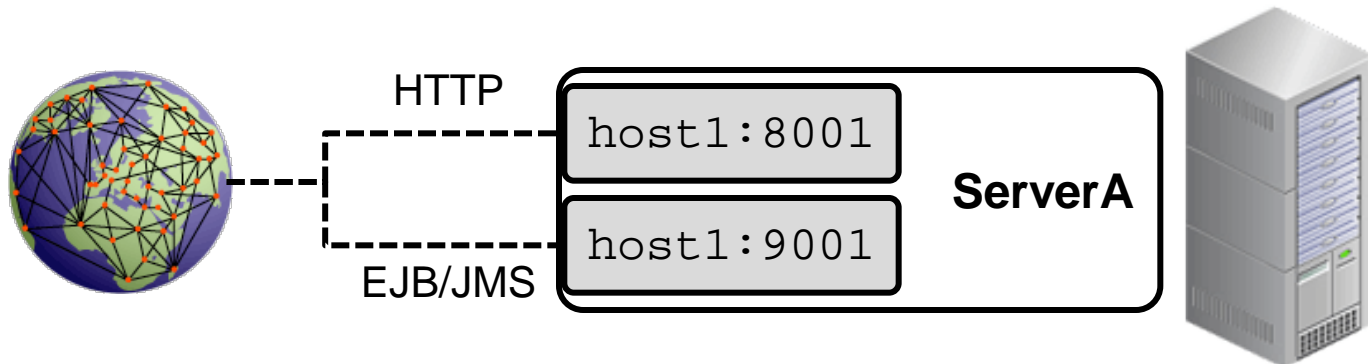
Dedicating Network Interfaces to Specific Servers

- You can dedicate specific network interfaces to multiple WebLogic Server instances running on the same machine.
- The characteristics for each network interface is set at the operating system level.



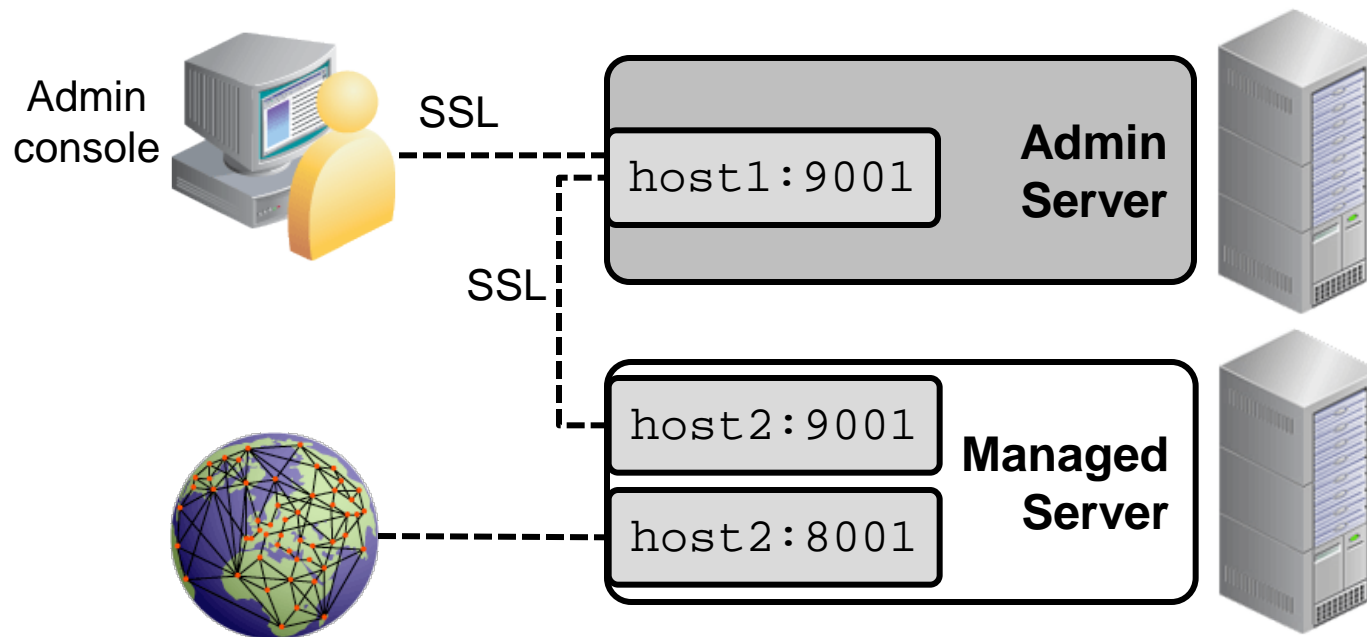
Using Multiple Ports on a Single Server

- You can dedicate specific ports for certain client protocols. This allows you to:
 - Configure different security, performance, or quality of service characteristics for each port
 - Enable and disable ports independently of one another



Isolating Administrative Communication

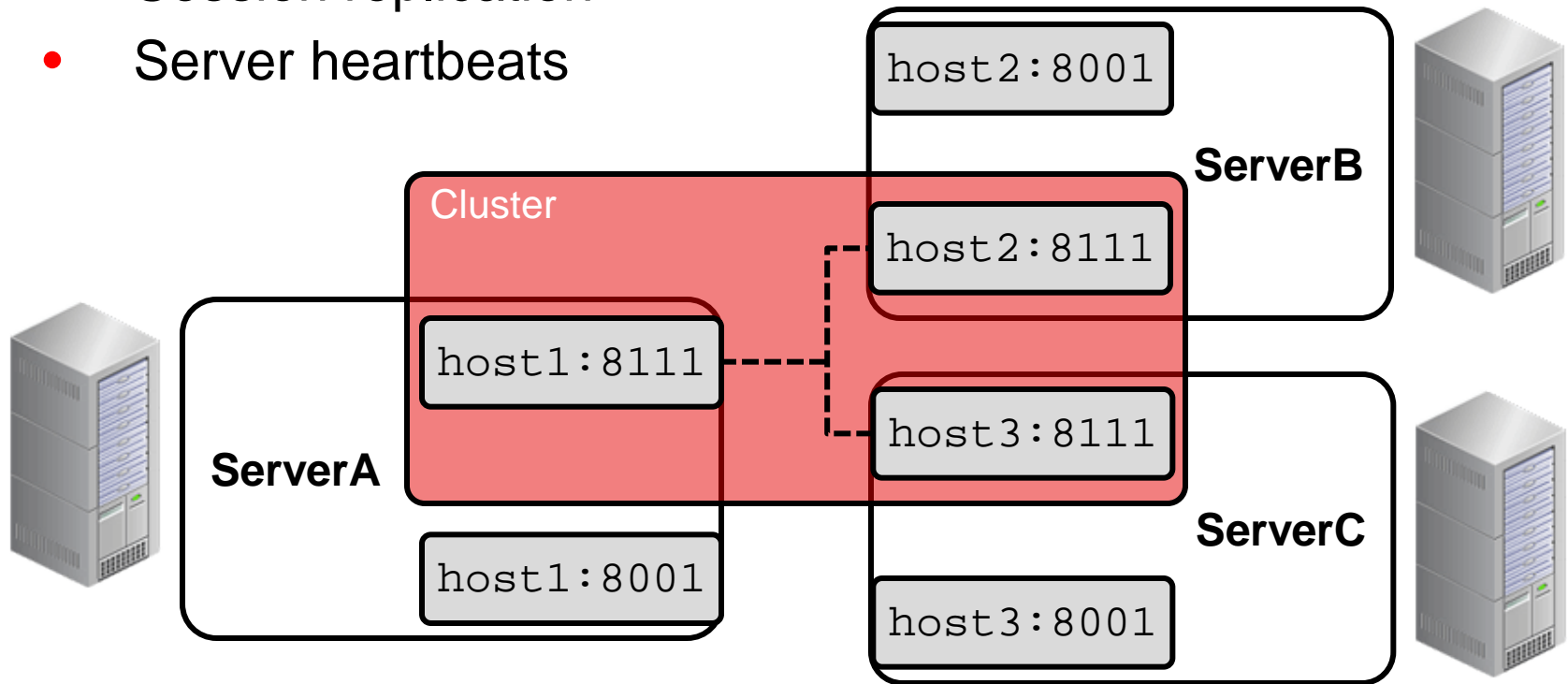
- Create a dedicated address and/or port for administrative traffic.
 - You can disable client access while retaining administrative access for server maintenance or troubleshooting.



Isolating Cluster Communication

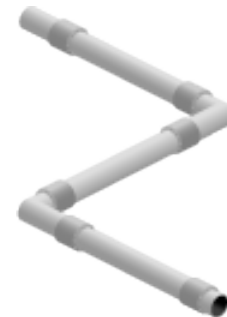
Use a dedicated address and/or port for peer-to-peer and one-to-many cluster messaging:

- Session replication
- Server heartbeats



Network Channel

- A network channel consists of:
 - A listen address and port
 - A single supported protocol along with its service characteristics
- Each server:
 - Has an implicit default channel, which can be disabled
 - Has a default SSL channel (if configured)
 - Supports all protocols by default
 - Can be assigned additional channels
- Channels can be created, enabled, or disabled dynamically without restarting the server.



Channel Selection

- For internal communication, WebLogic Server tries to select an available channel that best fits the requirements (supports the protocol).
- Examples include:
 - Monitoring a managed server from the administration server
 - Sending a cluster replication message
 - Accessing the embedded Lightweight Directory Access Protocol (LDAP)
- If multiple channels meet the criteria, messages are distributed across them:
 - Evenly (default)
 - Using channel weights



Creating a Channel

Configure channels for each individual server.

Settings for AdminServer

Configuration **Protocols** **1** Logging Debug Monitoring

General HTTP jCOM IIOP **Channels** **2**

New **3** Edit Delete Show

<input type="checkbox"/>	Name	Protocol	Enabled	Listen Address	Listen Port
<input type="checkbox"/>	SNMPChannel	snmp	true	localhost	8001

* Name: MyHTTPSChannel

What protocol will be used on this channel? **4**

* Protocol: https

Back Next

- snmp
- https**
- t3
- cluster-broadcast-secure
- ldaps
- cluster-broadcast
- ldap
- http
- iiop
- admin
- t3s
- iiops

Creating a Channel

Listen Address: **5**

Listen Port:

External Listen Address:

External Listen Port:

☒ **Two Way SSL Enabled** **7**

☒ **Client Certificate Enforced**

Does this channel support HTTP in addition to the selected protocol?

☒ **Enabled**

☐ **Tunneling Enabled**

☒ **HTTP Enabled for This Protocol** **6**

☒ **Outbound Enabled**

Can this channel be used for internal communication with other servers in this domain?

Channel Network Settings

Custom channels inherit their network settings from the default channel, if not overridden.

Settings for MyHTTPChannel

Configuration Monitoring

General Security

— ▾ Advanced —

Idle Connection Timeout: 65

Maximum Message Size: 10000

Channel Weight: 50

Monitoring Channels

The diagram illustrates the steps to monitor channels in Oracle WebLogic Server, numbered 1 through 4:

- 1**: In the **Servers (Filtered)** page, click the **server1** link.
- 2**: In the **Settings for server1** page, click the **Channels** tab.
- 3**: In the **Network Channels** page, click the **MyHTTPChannel** link.
- 4**: In the **Settings for MyHTTPChannel** page, click the **Overview** tab.

Annotations for step 4:

- Overview**: Overall statistics
- Connections**: Statistics for each active connection

Runtime statistics are available for each channel:

- Number of active connections
- Messages sent/received
- Bytes sent/received

Administration Port

- The domain's *Administration Port* is an alternative to creating a custom network channel with the explicit “admin” protocol on every server.
- This feature creates an implicit administration channel on every server using:
 - The listen address of the server's default channel
 - The same admin port number (entered by you) for each server
- Administration channels require SSL to be configured on each server.



Configure the Domain's Administration Port

Settings for MyDomain

Configuration Monitoring Control Security Web Services

General JTA EJBs Web Applications Logging Log File

☒ **Enable Administration Port**

Administration Port: 9002

Server Override of the Administration Port

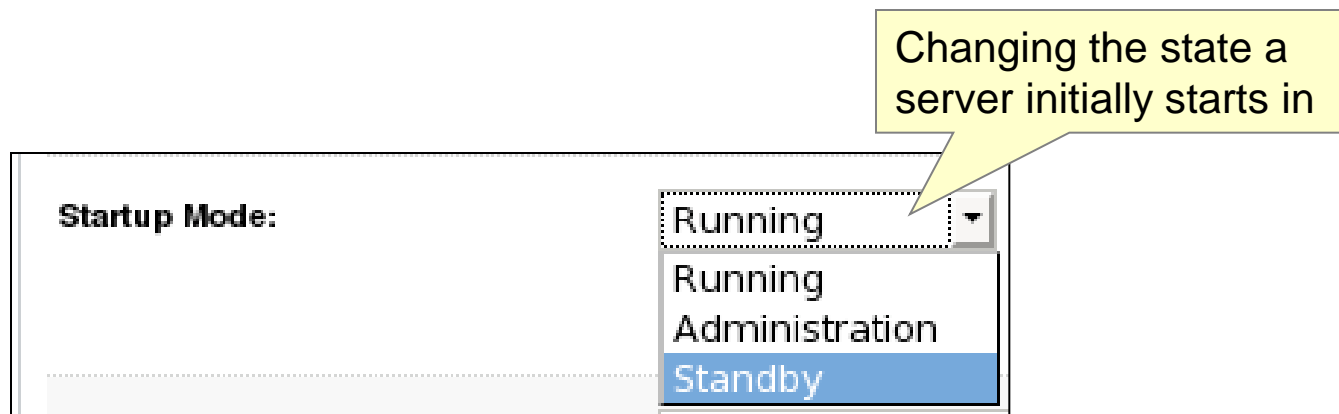
If multiple servers run on the same machine, you must perform one of the following:

- Bind each server to a unique network address.
- Override the administration port number for individual servers.

The screenshot shows a web-based configuration interface for 'ServerA'. The title bar reads 'Settings for ServerA'. Below the title bar is a row of tabs: 'Configuration' (selected), 'Protocols', 'Logging', 'Debug', 'Monitoring', and 'Control'. Under the 'Configuration' tab, there is a sub-row of tabs: 'General' (selected), 'Cluster', 'Services', 'Keystores', 'SSL', and 'Federation Services'. Below these are two more tabs: 'Health Monitoring' and 'Server Start'. A blue arrow points to the 'Advanced' section, which is expanded. In this section, the 'Local Administration Port Override' is set to '9012' in a text input field.

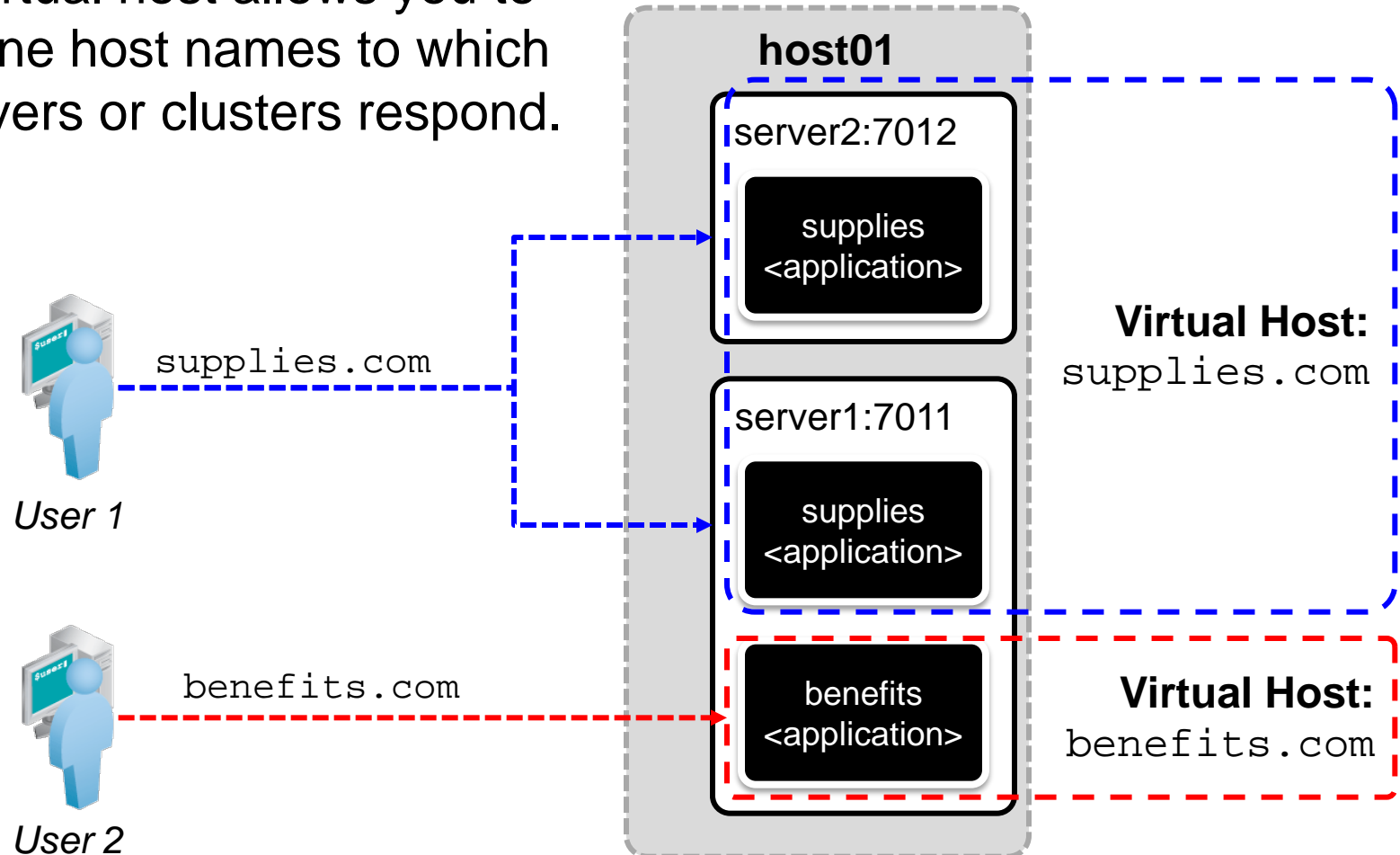
Server Standby Mode

- In the ADMIN state, all channels are opened but applications are only accessible to administrators.
- In the STANDBY state, only a server's administration channel is opened. All other channels remain closed.
- Administrators can later transition servers in the ADMIN or STANDBY state to the RUNNING state.

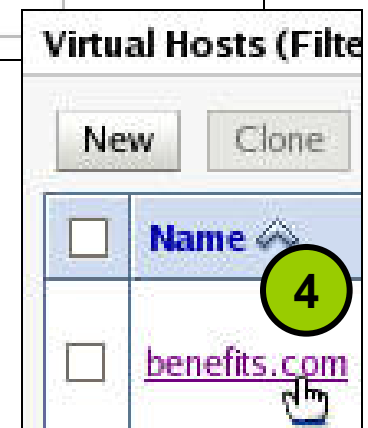
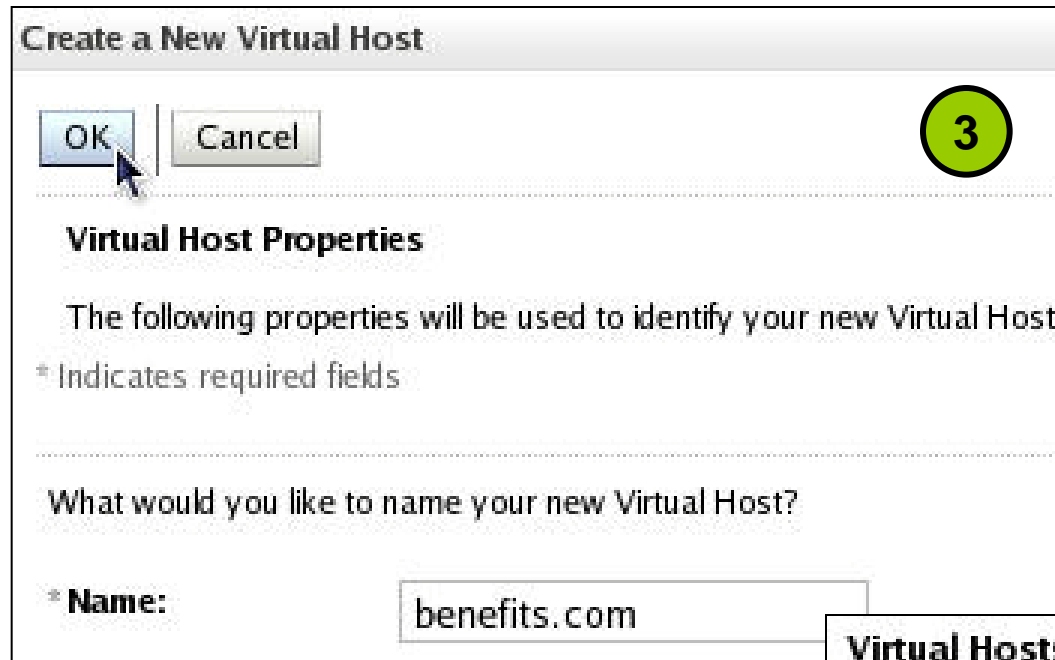
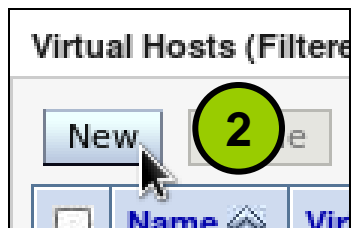


Virtual Host

A virtual host allows you to define host names to which servers or clusters respond.



Create a Virtual Host



Configure a Virtual Host

The screenshot illustrates the configuration of a virtual host in Oracle WebLogic Server. It is divided into several panels with numbered callouts:

- Virtual Hosts (Filter):** A table with columns for checkboxes and names. A callout '1' points to the 'Name' header, and another '1' points to the 'benefits.com' entry.
- Settings for benefits.com:** The main configuration area with tabs for 'Configuration', 'Targets', and 'Notes'. The 'Configuration' tab is active, showing sub-tabs for 'General', 'Logging', and 'HTTP'. A callout '2' points to the 'Save' button.
- Settings for benefits.com (Configuration):** A detailed view of the configuration. The 'Name' field is set to 'benefits.com'. The 'Virtual Host Names' section shows 'benefits.com'. The 'Network Access Point Name' field is empty. A callout '3' points to the 'Targets' tab.
- Servers:** A section with a checkbox for 'AdminServer'.
- Clusters:** A section with a checked checkbox for 'cluster1'. Under 'cluster1', there are radio buttons for 'All servers in the cluster' and 'Part of the cluster'. The 'Part of the cluster' option is selected, and there are checkboxes for 'server1' (checked) and 'server2' (unchecked). A callout '4' points to the 'server2' checkbox.

Each panel has a 'Save' button at the bottom.

Configure a Virtual Host in DNS or the hosts File

DNS Server

benefits.com = 192.0.2.11

Update
the DNS
Server.

```
# Do not remove the following line, or various programs  
# that require network functionality will fail.
```

```
127.0.0.1    localhost.localdomain localhost
```

```
192.0.2.11   host01.example.com host01 benefits.com
```

```
192.0.2.12   host02.example.com host02
```

Or update
the hosts
file.

/etc/hosts

Deploy to a Virtual Host

Available targets for benefits :

Servers
<input type="checkbox"/> AdminServer

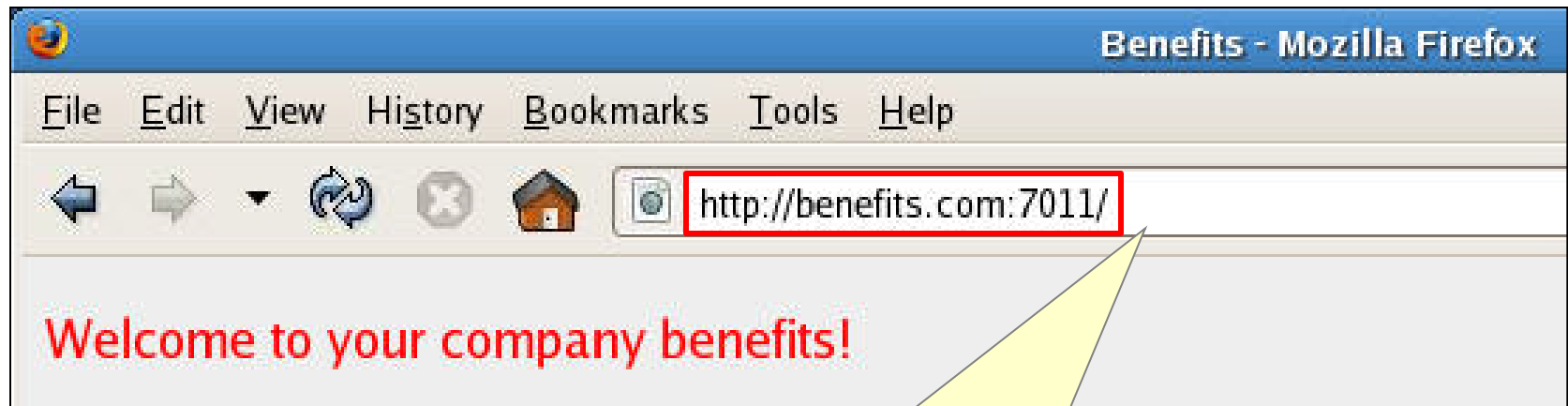
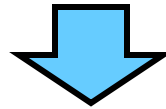
Clusters
<input type="checkbox"/> cluster1 <ul style="list-style-type: none"><input type="radio"/> All servers in the cluster<input type="radio"/> Part of the cluster<ul style="list-style-type: none"><input type="checkbox"/> server1<input type="checkbox"/> server2

Virtual Hosts
<input checked="" type="checkbox"/> benefits.com

Back Next Finish Cancel

Run the Application Using the Virtual Host

`http://benefits.com:7011`



The benefits application was set as the default web application for the virtual host, so no application context is needed in the URL.

Quiz

Which one is not a protocol that you can assign to a network channel?

- a. ADMIN
- b. T3
- c. HTTPS
- d. ORCL

Quiz

Setting up a domain-wide admin port *requires* that all servers in the domain:

- a. Use the same port number for it
- b. Have SSL configured
- c. Be changed to start in STANDBY or ADMIN mode

Summary

In this lesson, you should have learned how to configure:

- A WebLogic Server network channel
- WebLogic Server to use an administration port
- A virtual host for WebLogic Server

Practice 11-1 Overview: Configuring a Network Channel

This practice covers the following topics:

- Configuring a custom network channel for HTTP traffic
- Accessing an application by using the custom channel

Practice 11-2 Overview: Configuring the Administration Port

This practice covers the following topics:

- Configuring the domain-wide admin port
- Accessing the administration server by using the admin port
- Starting an application in Admin mode
- Accessing an application in Admin mode for testing

Practice 11-3 Overview: Creating a Virtual Host

This practice covers the following topics:

- Creating a virtual host
- Deploying an application to the virtual host
- Accessing an application through the virtual host