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# Load Balancing BEA WebLogic Servers with F5 Networks BIG-IP

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- Introducing BIG-IP load balancing for BEA WebLogic Server
- Configuring the BIG-IP for load balancing WebLogic Servers

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# Introducing BIG-IP load balancing for BEA WebLogic Server

F5 Networks and BEA® systems have created a highly effective way to direct traffic for WebLogic Server™ with the BIG-IP application traffic manager. BEA WebLogic Server is the number one application server on the market, and the core of today's most reliable enterprise applications. F5 Networks BIG-IP system is a secure, highly available and scalable application traffic management device. BEA Systems and F5 Networks have conducted complete interoperability testing between F5's BIG-IP and BEA WebLogic Server. This strong interoperability and integration provides a solution that delivers unparalleled load balancing functionality for those deploying services and applications on the WebLogic Enterprise Platform™.

This solution is powered by F5 Network's patented cookie persistence feature, which uses an HTTP cookie stored on a client's computer to allow the client to reconnect to the same server previously visited at a web site.

For more information on the interoperability of F5 products and BEA WebLogic, see the BEA WebLogic Application Ready Network Guide.

## Prerequisites and configuration notes

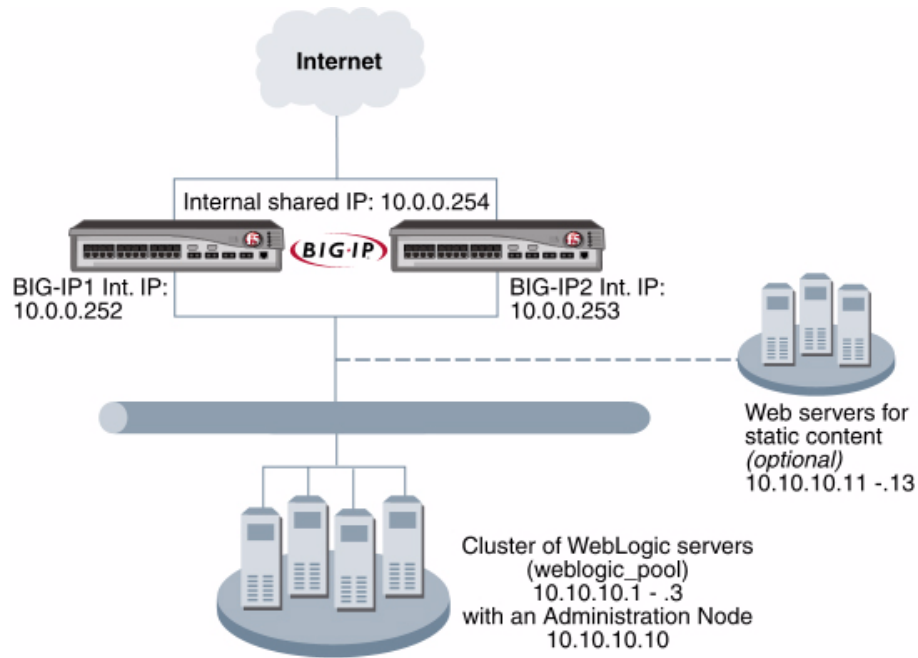
All of the procedures in this Deployment Guide are performed on the BIG-IP system. The configuration described in this document assumes that your WebLogic servers are already in a clustered environment. For information on how to configure a WebLogic server cluster, see the *BEA WebLogic Server: Using WebLogic Server Clusters* guide, available on the BEA web site at <http://www.bea.com>.

The WebLogic server should be running version 5.1 or later. This Deployment Guide has been tested with BEA WebLogic version 8.1.

The BIG-IP system must be running version 4.0 or later.

## Configuration example

Using the configuration in this guide, the BIG-IP system is optimally configured to load balance traffic to BEA WebLogic servers. Figure 1.1 shows a typical configuration with a redundant pair of BIG-IP devices, a cluster of WebLogic servers, and a WebLogic administration node. Figure 1.1 also shows an optional pool of Web servers which host static content for traffic that does not need to be sent to the WebLogic application servers.



*Figure 1.1 Example Configuration*

◆ **Note**

*For the rest of this document, we use the IP addresses shown in Figure 1.1 in our examples.*

## Configuring the BIG-IP for load balancing WebLogic Servers

To configure the BIG-IP product to load balance WebLogic Servers, you need to complete the following tasks:

- *Defining the pool*
- *Defining the virtual server*
- *Enabling persistence on the pool*
- *Configuring an optional health monitor*
- *Configuring an optional rule to send static content to the Web servers*
- *Synchronizing the BIG-IP configuration*

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## Defining the pool

The first step is to define a load balancing pool for the WebLogic servers. You can define a pool from the Configuration utility or the command line.

### To create a pool using the Configuration utility

1. In the navigation pane, click **Pools**.  
The Pools screen opens.
2. Click the **Add** button.  
The Add Pool screen opens.
3. In the **Pool Name** box, enter a name for your pool. In our example, we use **weblogic\_pool**.
4. In the **Load Balancing Method** box, enter your preferred load balancing method. We recommend one of the following load balancing methods, although testing different load balancing methods may yield more optimal results for a particular network.
  - **Least Connections**  
Least connections mode is relatively simple in that the BIG-IP system passes a new connection to the node that has the least number of current connections. Least Connections mode works best in environments where the servers or other equipment you are load balancing have similar capabilities.
  - **Fastest**  
Fastest mode passes a new connection based on the fastest response of all currently active nodes. Fastest mode may be particularly useful in environments where nodes are distributed across different logical networks, or where the servers have varying levels of performance.
5. In the **Resources** section, you add the WebLogic servers to the pool.
  - a) In the **Member Address** box, type the IP address of the WebLogic server. In our example, the first IP address we type is **10.0.0.1**.
  - b) In the **Service** box, type the service number you want to use for this node (for example **7001**), or specify a service by choosing a service name from the list (for example **http**). In our example, we use the default service for WebLogic, **7001**.
  - c) The **Member Ratio** and **Member Priority** boxes are optional.
  - d) Click the Add button (>>) to add the member to the **Current Members** list.
  - e) Repeat Steps a-d for each WebLogic server.
  - f) The other fields in the Add Pool screen are optional. Configure these fields as applicable for your network. (For additional information about configuring a pool, click the **Help** button.)
6. Click the **Done** button.

7. *Optional:* If your configuration includes Web servers to serve static content, repeat the procedure above to create a new pool for the Web servers. You will then create a *rule* that sends the static content to the Web server pool.

For information on how to configure this rule, see the *Configuring an optional rule to send static content to the Web servers* section at the end of this guide.

### To define the pool from the command line

To define a pool from the command line, use the following syntax:

```
b pool <pool_name> {member <member_definition> ... member <member_definition>}
```

In our example, the command is:

```
b pool weblogic_pool { \  
member 10.0.0.1:7001 \  
member 10.0.0.2:7001 \  
member 10.0.0.3:7001 }
```

## Defining the virtual server

The next step is to define a virtual server that references the pool. Again, you can define the virtual server from the Configuration utility or the command line.

### To define the virtual servers using the Configuration utility

1. In the navigation pane, click **Virtual Servers**.  
The Virtual Servers screen opens.
2. Click the **Add** button.  
The Add Virtual Server screen opens.
3. Enter the IP address and service for the virtual server, then click the **NEXT** button. In our example, we use **192.168.10.100** with service of **80**.  
The Configure Basic Properties screen displays.
4. On the Configure Basic Properties screen, leave **Enable Address Translation** and **Enable Port Translation** boxes checked. The other fields are optional, configure these fields as applicable to your network. Click the **NEXT** button.  
The Select Physical Resources screen displays.
5. Click the **Pool** option button, and from the list, select the pool you created in the *Defining the pool* section above.
6. You can click **Done** or **Next**. If you click the **Next** button, you have the option of configuring redundant and outbound properties of the virtual server.  
For additional information about configuring a virtual server, click the **Help** button.

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### To define the virtual servers from the command line

Use the bigpipe **virtual** command as shown below. You can use standard service names in place of port numbers. If you have DNS configured, you can also use host names in place of IP addresses.

```
b virtual <virt IP>:<port> use pool <pool_name>
```

In our example, we use:

```
b virtual 192.168.10.100:80 use pool weblogic_pool
```

## Enabling persistence on the pool

The next step in configuring the BIG-IP system to load balance WebLogic Servers is to configure persistence on the pool. For optimal load balancing, we recommend the Insert mode of F5's cookie persistence for BIG-IP versions 4.0 and later.

### ◆ Note

*The cookie used in cookie persistence Insert mode resides in memory, and is not written to disk.*

### To enable cookie persistence, Insert mode on the pool using the Configuration utility

1. In the navigation pane, click **Pools**.  
The Pools screen opens.
2. In the **Pool Name** list, click the name of the pool you created in the *Defining the pool* section above.  
This displays the properties of that pool.
3. Click the Persistence tab at the top of the screen.  
The persistence properties screen opens.
4. In the Persistence Type section, click the **Active HTTP Cookie** button.  
Type the following information:
  - **Method**  
From the **Method** list, select **Insert**.
  - **Expiration**  
In the **Expiration** section, you can specify an expiration value in days, hours, minutes, and seconds that a cookie remains valid on the client computer. If you do not enter anything, the cookie will expire when the client's browser closes.
5. Click the **Apply** button.

### To enable cookie persistence, Insert mode on the pool from the command line

To active cookie persistence Insert mode from the command line, use the following syntax:

```
b pool <pool_name> { <lb_mode_specification> \  
persist cookie \  
cookie_mode insert \  
cookie_expiration <timeout> \  
<member definition> }
```

The <timeout> value for the cookie is written using the following format:

<days>d hh:mm:ss

In our example, the command would be:

```
b pool weblogic_pool { fastest \  
persist cookie \  
cookie_mode insert \  
cookie_expiration 0 08:00:00 \  
member 10.0.0.1:7001 member 10.0.0.2:7001 member 10.0.0.3:7002 }
```

## Configuring an optional health monitor

You can choose to configure an optional Extended Content Verification (ECV) health monitor on the BIG-IP system. The ECV monitor goes much further than a standard ICMP health check, by actually using **send** and **recv** statements in an attempt to retrieve explicit content from nodes.

### To configure a health monitor for the WebLogic server using the BIG-IP Configuration utility.

1. In the navigation pane, click **Monitors**.  
The Network Monitors screen opens.
2. Click the **Add** button.  
The Add Monitor screen opens.
3. In the Add Monitor screen, type the name of your monitor (it must be different from the monitor template name), and in the **Inherits From** box, select the **http** monitor template from the list. Click the **Next** button.
4. In the Configure Basic Properties section, type an Interval and Timeout value. We recommend a 1:3 +1 ratio between the interval and the timeout (for example, the default setting has an interval of 5 and an timeout of 16. Note that if you are performing very complex ECV checks, the default setting of a five second interval could overload the servers. In this case we would recommend a longer interval). Click the **Next** button.

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5. In the Configure ECV HTTP Monitor section, enter the appropriate information for your configuration.

***Important Note:***

*If you are using the **GET** send string, you must end the string by including the **HTTP** protocol at the end of the statement. Use the following syntax:*

***GET <fully qualified path name> HTTP/1.0 \n\n***

*For example:*

***GET /www/support/customer\_info\_form.html HTTP/1.0 \n\n***

After completing the applicable information, click the **Done** button.

6. In the navigation pane, click **Monitors**.  
The Monitors screen opens.
7. Click the Node Associations tab.  
The Node Association screen displays.
8. In the **Choose Monitor** box, select the monitor you created in step 3 from the list.
9. If you want to associate more than one monitor, click the Move (>>) button to add the monitor name to the **Monitor Rule** box.
10. Repeat the previous two steps for each monitor you want to associate with a node.
11. From the list of Nodes, in the **Associate Current Monitor Rule** column, check the box for each WebLogic server you want to associate with this monitor.
12. Click the **Apply** button.  
For additional information associating a monitor, click the **Help** button.

## Configuring an optional rule to send static content to the Web servers

 **Important**

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*This section is only necessary if your configuration includes Web servers for static content. If you do not have Web servers for static content, you do not need to follow the procedures below.*

If your configuration includes Web servers to serve static content, you must create a rule on the BIG-IP system that sends the static content to the Web servers. You must have a pool that contains the Web servers. If you have not already created the Web server pool, follow the procedure in the *Defining the pool* section, substituting the information from the Web servers.

◆ **Note**

*In the procedure below, the rule uses the line **http\_uri ends\_with one of images**. **images** refers to a predefined rule class on the BIG-IP system that includes **.bmp**, **.jpg**, and **.gif** extensions. You can modify this rule class to include other types of files (such as **.html**), or create a new rule Class that contains the file types applicable to your configuration. For information on how to modify or create a rule class, see the **BIG-IP Reference Guide**, or the online help.*

### To create a rule for static content using the Configuration utility

1. In the navigation pane, click **Rules**.  
The Rules screen opens.
2. Click the **Add** button.  
The Add Rule screen opens.
3. In the **Name** box, type a 1- to 31-character name. In our example, we use **image\_rule**.
4. In the **Type** box, select **Text Input**.

A screen appears in which you type the complete text of the rule:

```
if ( http_uri ends_with one of images ) {  
  use pool image_pool  
}  
else {  
  use pool weblogic_pool  
}
```

Where **image\_pool** is the pool of Web servers that contains the static content.

5. Click **Done**.

### To create a rule for static content from the command line

To create a rule using the command line, use the following syntax:

```
rule <rule_name> {  
  if ( http_uri ends_with one of images ) {  
    use pool <static_pool name>  
  }  
  else {  
    use pool <weblogic_pool name>  
  }  
}
```

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In our example, the command would be:

```
rule image_rule {
  if ( http_uri ends_with one of images ) {
    use pool image_pool
  }
  else {
    use pool weblogic_pool
  }
}
```

## Changing the virtual server to use the rule

After you have completed the rule, you must the virtual server you created in the *Defining the virtual server* section above to use the rule you just created, and not the pool.

### To change the virtual server to use the rule

1. Open the BIG-IP web-based Configuration utility.
2. In the navigation pane, click **Virtual Servers**.  
The Virtual Servers screen opens.
3. Click the virtual server you created in the *Defining the virtual server* section.  
The Virtual Server Properties screen opens.
4. In the Resources section, click the **Rule** option button.
5. In the box next to Rule, select the name of the rule you created from the list. In our example, we use **image\_rule**.
6. Click the **Apply** button.

## Synchronizing the BIG-IP configuration

If you are using a redundant BIG-IP configuration, the final step is to synchronize the configuration to the peer BIG-IP device.

### To synchronize the configuration using the Configuration utility

1. In the navigation pane, click **System**.  
The Network Map screen opens.
2. Click the Redundant Properties tab.  
The Redundant Properties screen opens.
3. Click the **Synchronize Configuration** button.

### To synchronize the configuration from the command line

Synchronize the configuration from the command line using the **bigpipe config sync** command:

**bigpipe config sync all**

The **bigpipe config sync all** command synchronizes the following configuration files:

- The common **bigdb** keys
- All files in **/config** (except **bigip\_base.conf**)

Use the **bigpipe config sync** command without the **all** option to synchronize only the boot configuration file **/config/bigip.conf**.