



Deploying the BIG-IP System v9.x with  
Microsoft Office Live Communications  
Server 2005



**Microsoft**<sup>®</sup> Partner

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# Introducing the BIG-IP and Live Communications Server 2005 Enterprise Edition configuration

Microsoft® and F5 have collaborated on a highly effective way to intelligently direct traffic for Microsoft Office Live Communications Server 2005 Enterprise Edition with the F5 BIG-IP® application traffic management device. Microsoft and F5 Networks have conducted interoperability testing between the BIG-IP LTM system and Microsoft Live Communications Server 2005. Organizations using the BIG-IP LTM system benefit from mission-critical availability, intelligent traffic management, simple scalability, and enhanced security for Live Communications Server deployments.

Live Communications Server provides organizations with voice, video, chat, and an extensible platform that connects people, information, and business processes—enabling better decisions faster. With a familiar user experience integrated into Microsoft Office System programs, Live Communications Server allows people to communicate without the constraints of geography, office location, or time zone.

For more information on Live Communications Server, see <http://www.microsoft.com/livecomm>.

For more information on the BIG-IP LTM system, see <http://www.f5.com/products/big-ip/>.

## Prerequisites and configuration notes

The following are prerequisites for this deployment:

- ◆ The BIG-IP LTM system must be running version v9.0 or later. For versions 4.5.x - 4.6.x, see <http://www.f5.com/pdf/deployment-guides/lcs-bigip45-dg.pdf>.
- ◆ The Live Communications Server must be running the 2005 Enterprise Edition.
- ◆ Briefly review the basic configuration tasks and the few pieces of information, such as IP addresses, that you should gather in preparation for completing this configuration.

### ◆ Note

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*This document is written with the assumption that you are familiar with both the BIG-IP LTM system version 9.0 and the Live Communications Server 2005. For more information on configuring these products, consult the appropriate documentation.*

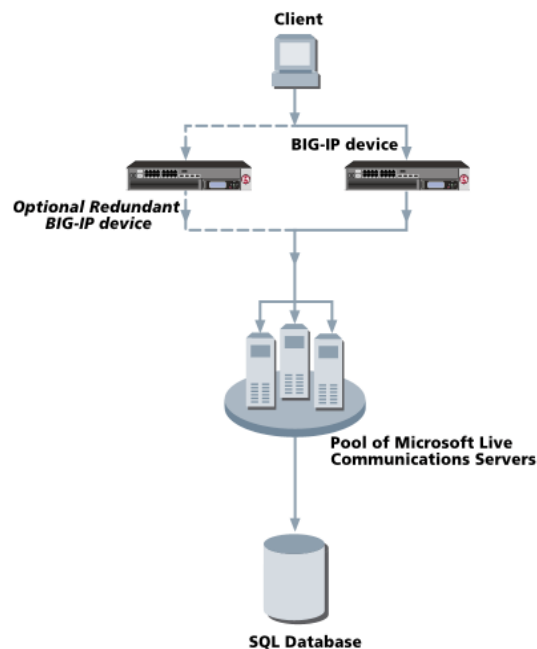
## Configuration example

The Live Communications Server 2005 Enterprise Edition introduces the concept of a pool. Multiple Live Communications Servers communicate with a single back-end SQL Server (or cluster of servers). *Pool* is used to describe this collection of multiple Live Communications Servers tied to a single back-end. Users are now homed to a pool as opposed to individual Live Communications Servers. This allows users to login using any Live Communications Server in a pool. Pools allow flexibility by increasing the capacity of the service by adding more Live Communications Servers on the fly. Failure of one or more Live Communications Servers will have a minimal effect on service availability, as the load is balanced between the remaining Live Communications Servers.

This configuration example shows a typical configuration with a BIG-IP LTM system and Microsoft Live Communications Server. With multiple Live Communications Servers in a Pool there is now a need for distributing the incoming session requests among the Live Communications Servers. Figure 1 shows how a BIG-IP device is located in front of a pool of Live Communications Servers.

### ◆ Tip

*Although only one BIG-IP device is necessary for this configuration, we strongly recommend a redundant BIG-IP device for the highest level of availability.*



**Figure 1** BIG-IP Live Communications Server logical configuration

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# Configuring the BIG-IP and Live Communications Server for deployment

To configure the BIG-IP and Live Communications Server for integration, you need to complete the following procedures:

- *Connecting to the BIG-IP device*
- *Creating a VLAN*
- *Creating a self IP*
- *Configuring a health monitor*
- *Creating pools*
- *Creating a profile*
- *Creating virtual servers*
- *Creating a SNAT*
- *Synchronizing the BIG-IP configuration if using a redundant system*

## ◆ Tip

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*We recommend you save your existing BIG-IP configuration before you begin the procedures in this Deployment Guide. To save your BIG-IP configuration, see **Appendix A: Backing up and restoring the BIG-IP system configuration**, on page 30.*

The BIG-IP LTM system offers both Web-based and command line configuration tools, so that users can work in the environment that they are most comfortable with. This Deployment Guide contains procedures to configure the BIG-IP LTM system using the BIG-IP Configuration utility only. Unless you are familiar with using the **bigpipe** command line interface, we recommend using the Configuration utility.

## Connecting to the BIG-IP device

The first step in this configuration is to connect to the BIG-IP LTM system. You can connect to the BIG-IP LTM system using the Configuration utility. You can also connect to the BIG-IP LTM system using the command line, however this Deployment Guide only contains configuration procedures from the Configuration utility.

Use the following procedure to access the BIG-IP web-based Configuration utility using a Web browser.

### **To connect to the BIG-IP LTM system using the Configuration utility**

1. In a browser, type the following URL:  
**https://<administrative IP address of the BIG-IP device>**  
A Security Alert dialog box appears, click **Yes**.  
The authorization dialog box appears.

2. Type your user name and password, and click **OK**.  
The Welcome screen opens.

Once you are logged onto the BIG-IP LTM system, the Welcome screen of the new Configuration utility opens. From the Configuration utility, you can configure and monitor the BIG-IP LTM system, as well as access online help, download SNMP MIBs and Plug-ins, and even search for specific objects.

## Creating a VLAN

A VLAN is a grouping of separate networks that allows those networks to behave as if they were a single local area network, whether or not there is a direct ethernet connection between them.

The next step in this configuration is to create a VLAN on the BIG-IP LTM system.

### To create a VLAN

1. On the Main tab, expand **Network**, and then click **VLANs**.  
The VLANs screen opens.
2. Click the **Create** button.  
The new VLAN screen opens.
3. In the **Name** box, type a unique name for the VLAN. In our example we use **lcs\_vlan**.
4. In the **Resources** section, select the interface that will have access to tagged traffic, and click the **untagged >>** button.  
In our example, we select **1.15**. See Figure 2.
5. Click the **Finished** button.

The screenshot displays the 'General Properties' and 'Resources' sections of the BIG-IP Configuration utility. In the 'General Properties' section, the 'Name' field contains 'lcs\_vlan' and the 'Tag' field is empty. The 'Resources' section shows three columns: 'Untagged', 'Available', and 'Tagged'. The 'Untagged' column contains '1.15', which has been moved from the 'Available' column. The 'Available' column lists interfaces 1.1, 1.10, 1.11, 1.12, and 1.13. The 'Tagged' column is currently empty. Below the 'Resources' section, the 'Configuration' dropdown is set to 'Basic', the 'Source Check' checkbox is unchecked, and the 'MTU' field is set to '1500'. At the bottom of the form are three buttons: 'Cancel', 'Repeat', and 'Finished'.

*Figure 2 Adding a VLAN in the BIG-IP Configuration utility*

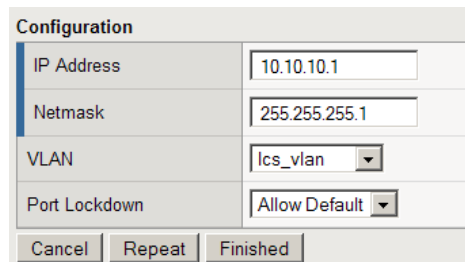
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## Creating a self IP

Self IP addresses are the IP addresses owned by the BIG-IP LTM system that you use to access the internal and external VLANs. The next step in this configuration is to create a self IP address for the VLAN we created in the preceding procedure.

### To create a self IP address using the Configuration utility

1. On the Main tab, expand **Network**, and then click **Self IPs**.  
The Self IP screen opens.
2. Click the **Create** button.  
The new Self IP screen opens.
3. In the **IP Address** box, type a static IP address in the VLAN you created in the preceding procedure. Note that this needs to be on the same network as the Live Communications Server devices. In our example, we use **10.10.10.1**.
4. In the **Netmask** box, type the corresponding subnet mask. In our example, we use **255.255.255.0**.
5. From the **VLAN** list, select the VLAN you created in the *Creating a VLAN* procedure. In our example, we select **lcs\_vlan**.
6. Click the **Finished** button.  
The new self IP address appears in the list.



The screenshot shows a 'Configuration' dialog box with the following fields and values:

IP Address	10.10.10.1
Netmask	255.255.255.1
VLAN	lcs_vlan
Port Lockdown	Allow Default

At the bottom of the dialog are three buttons: 'Cancel', 'Repeat', and 'Finished'.

*Figure 3 Adding a self IP address in the BIG-IP Configuration utility*

## Configuring a health monitor

The next step in this configuration is to configure a health monitor on the BIG-IP LTM system for the Live Communications Servers. We configure the health monitors first in version 9.0 and later, as health monitors are associated at the pool level. We use the template for the TCP monitor to create this monitor.

### To configure a health monitor

1. On the Main tab, expand **Local Traffic**, and then click **Monitors**.  
The Monitors screen opens.

2. Click the **Create** button.  
The New Monitor screen opens.
3. In the **Name** box, type a name for the Monitor.  
In our example, we type **lcs\_monitor**.
4. From the **Type** list, select **TCP**.  
The TCP Monitor configuration options appear.
5. From the Configuration list, select **Advanced**.  
The advanced configuration options appear.
6. In the Configuration section, in the **Interval** and **Timeout** boxes, type an Interval and Timeout. We recommend at least a 1:3 +1 ratio between the interval and the timeout. In our example, we use a **Interval** of **30** and a **Timeout** of **91**.
7. In the **Alias Service Port** box, type **5061**.
8. Click the **Finished** button.

General Properties	
Name	lcs_monitor
Type	TCP
Import Settings	tcp
Configuration: Advanced	
Interval	30 seconds
Timeout	91 seconds
Send String	
Receive String	
Transparent	<input type="radio"/> Yes <input checked="" type="radio"/> No
Alias Address	* All Addresses
Alias Service Port	5061 Other:
<input type="button" value="Cancel"/> <input type="button" value="Repeat"/> <input type="button" value="Finished"/>	

*Figure 4* Configuring the health monitor

## Creating pools

The BIG-IP LTM system also uses the term *pool* for a group of devices. A BIG-IP pool is a set of devices grouped together to receive traffic according to a load balancing method. You must create a separate pool for each service on which there will be traffic. In this configuration, we configure two pools

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on the BIG-IP device that contain the Live Communications Servers, one for TLS (Transport Layer Security) traffic and one for RPC (Remote Procedure Call) traffic.

## Creating the TLS pool

The first pool we create is for TLS traffic.

1. On the Main tab, expand **Local Traffic**, and then click **Pools**. The Pool screen opens.
2. In the upper right portion of the screen, click the **Create** button. The New Pool screen opens.
3. From the **Configuration** list, select **Advanced**. The advanced configuration options appear.
4. In the **Name** box, enter a name for your pool. In our example, we use **tls\_pool**.
5. In the **Health Monitors** section, select the name of the monitor you created in the *Configuring a health monitor* section, and click the Add (<<) button. In our example, we select **lcs\_monitor**.
6. From the **Allow SNAT** and **Allow NAT** lists, select **No** to disallow NAT and SNAT.
7. Complete the rest of the Configuration section as applicable for your deployment.

Configuration: <b>Advanced</b>													
Name	tls_pool												
Health Monitors	<table border="0"><tr><td>Active</td><td>Available</td></tr><tr><td>lcs_monitor</td><td>https</td></tr><tr><td></td><td>https_443</td></tr><tr><td></td><td>tcp</td></tr><tr><td></td><td>tcp_half_open</td></tr><tr><td></td><td>udp</td></tr></table>	Active	Available	lcs_monitor	https		https_443		tcp		tcp_half_open		udp
Active	Available												
lcs_monitor	https												
	https_443												
	tcp												
	tcp_half_open												
	udp												
Availability Requirement	All Health Monitor(s)												
Allow SNAT	No												
Allow NAT	No												
Action On Service Down	None												
Slow Ramp Time	0 seconds												
IP ToS to Client	Specify... 0												
IP ToS to Server	Specify... 0												
Link QoS to Client	Specify... 0												
Link QoS to Server	Specify... 0												

*Figure 5 Configuration options for the TLS pool*

8. In the Resources section, from the **Load Balancing Method** list, choose your preferred load balancing method (different load balancing methods may yield optimal results for a particular network).

For this configuration, we recommend selecting Least Connections. In Least Connections mode, the BIG-IP LTM 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. Using Live Communications Server, traffic from servers to clients is roughly the same on each connection.

9. In the **New Members** section, you add the Live Communications Servers to the pool.
  - a) In the **Address** box, type the IP address of the Live Communications Server.  
In our example, we type **10.10.10.11**.
  - b) In the **Service Port** box, type the service number you want to use for this device, or specify a service by choosing a service name from the list (for example **5061**). In our example, we type **5061**, the port for TLS traffic.
  - c) Click the **Add** button to add the member to the list.
  - d) Repeat steps a-c for each Live Communications Server you want to add to the pool. In our example, we repeat these steps twice for the other two Live Communications Servers (**10.10.10.12** and **10.10.10.13**). See Figure 6.
10. Click the **Finished** button.

The screenshot shows the 'Resources' configuration window. At the top, 'Load Balancing Method' is set to 'Least Connections (node)' and 'Priority Group Activation' is 'Disabled'. Below this, there are radio buttons for 'New Address' (selected) and 'Node List'. The 'Address' field contains '10.10.10.13' and the 'Service Port' field contains '5061'. An 'Add' button is visible below the 'Service Port' field. A list box titled 'New Members' contains three entries: 'R:1 P:1 10.10.10.11 :5061', 'R:1 P:1 10.10.10.12 :5061', and 'R:1 P:1 10.10.10.13 :5061'. Below the list box are 'Edit' and 'Delete' buttons. At the bottom of the window are 'Cancel', 'Repeat', and 'Finished' buttons.

*Figure 6* Configuring the resources for the pool

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## Creating the RPC pool

The next pool is for RPC traffic.

1. On the **Main** tab, expand **Local Traffic**, and then click **Pools**.  
The Pool screen opens.
2. In the upper right portion of the screen, click the **Create** button.  
The New Pool screen opens.
3. From the **Configuration** list, select **Advanced**.  
The advanced configuration options appear.
4. In the **Name** box, enter a name for your pool.  
In our example, we use **rpc\_pool**.
5. In the **Health Monitors** section, from the **Available** list, select **tcp** and click the Add (<<) button.
6. From the **Allow SNAT** and **Allow NAT** lists, select **No** to disallow NAT and SNAT.
7. The other fields in the Configuration section are optional. Configure these fields as applicable for your network. (For additional information about configuring a pool, click the **Help** button.)
8. In the Resources section, from the **Load Balancing Method** list, choose your preferred load balancing method (different load balancing methods may yield optimal results for a particular network).

For this configuration, we recommend selecting Least Connections. In Least Connections mode, the BIG-IP LTM 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. Using Live Communications Server, traffic from servers to clients is roughly the same on each connection.

9. In the **New Members** section, you add the Live Communications Servers to the pool.
  - a) In the **Address** box, type the IP address of the Live Communications Server.  
In our example, we type **10.10.10.11**.
  - b) In the **Service Port** box, type the service number you want to use for this device, or specify a service by choosing a service name from the list (for example **135**). In our example, we type **135**, the port for **RPC**.
  - c) Click the **Add** button to add the member to the list.
  - d) Repeat steps a-c for each Live Communications Server you want to add to the pool. In our example, we repeat these steps twice for the other two Live Communications Servers (**10.10.10.12** and **10.10.10.13**). See Figure 6.
10. Click the **Finished** button.

## Creating a profile

BIG-IP version 9.0 and later uses profiles. A *profile* is an object that contains user-configurable settings, with default values, for controlling the behavior of a particular type of network traffic, such as HTTP connections. Using profiles enhances your control over managing network traffic, and makes traffic-management tasks easier and more efficient.

Although it is possible to use the default profiles, we strongly recommend you create new profiles based on the default parent profiles. Creating new profiles allows you to easily modify the profile settings specific to this deployment, and ensures you do not accidentally overwrite the default profile.

In this Deployment Guide, we only configure a TCP profile. You can configure other profiles as applicable to your configuration. For more information on Profiles, see the *Configuration Guide for Local Traffic Management*.

## Creating the TCP profile

For this deployment, we configure a new TCP profile. In this profile, we set the Idle Timeout value to 604800 (one week). If a connection is completely idle for a period of a week, the BIG-IP LTM system will reset the connection.

### To create a new TCP profile

1. On the Main tab, expand **Local Traffic**.
2. Click **Profiles**.  
The HTTP Profiles screen opens.
3. On the Menu bar, from the **Protocol** menu, select **TCP**.
4. In the upper right portion of the screen, click the **Create** button.  
The New TCP Profile screen opens.
5. In the **Name** box, type a name. In our example, we type **lcs\_tcp**.
6. In the **Idle Timeout** row, check the **Custom** box. In the seconds box, type **604800**.
7. Modify the rest of the settings as applicable for your network. The default settings should suffice for most networks.

8. Click the **Finished** button.

The screenshot shows a configuration window with two main sections: "General Properties" and "Settings".

**General Properties:**

- Name: lcs\_tcp
- Parent Profile: tcp

**Settings:** (Custom)

Reset On Timeout	<input checked="" type="checkbox"/> Enabled	<input type="checkbox"/>
Time Wait Recycle	<input checked="" type="checkbox"/> Enabled	<input type="checkbox"/>
Delayed Acks	<input checked="" type="checkbox"/> Enabled	<input type="checkbox"/>
Proxy Maximum Segment	<input type="checkbox"/>	<input type="checkbox"/>
Proxy Options	<input type="checkbox"/>	<input type="checkbox"/>
Proxy Buffer Low	4096 bytes	<input type="checkbox"/>
Proxy Buffer High	16384 bytes	<input type="checkbox"/>
Idle Timeout	Specify... 605800 seconds	<input checked="" type="checkbox"/>
Time Wait	Specify... 2000 seconds	<input type="checkbox"/>
Fin Wait	Specify... 5 seconds	<input type="checkbox"/>
Close Wait	Specify... 5 seconds	<input type="checkbox"/>

*Figure 7 Creating the TCP profile*

For more information on creating or modifying profiles, or applying profiles in general, see the BIG-IP documentation.

## Creating virtual servers

A virtual server with its virtual address is the visible, routable entity through which the Live Communications Servers in a load balancing pool are made available to the client (the IP address to give clients or add to DNS).

The next step in this configuration is to define virtual servers that reference the pools. As with a pool, you must create a virtual server for each service. Again, you can define virtual servers from the Configuration utility or the command line.

## Creating the TLS virtual server

The first virtual server we create references the **tls\_pool** we created earlier.

### To create the TLS virtual server

1. On the Main tab, expand **Local Traffic**, and then click **Virtual Servers**.  
The Virtual Servers screen opens.
2. In the upper right portion of the screen, click the **Create** button.  
The New Virtual Server screen opens.

3. In the **Name** box, type a name for this virtual server. In our example, we type **tls\_virtual**.
4. In the **Destination** section, select the **Host** option button.
5. In the **Address** box, type the IP address of this virtual server. In our example, we use **192.168.10.16**.
6. In the **Service Port** box, type **5061**.

General Properties	
Name	tls_virtual
Destination	Type: <input checked="" type="radio"/> Host <input type="radio"/> Network
	Address: 192.168.10.16
Service Port	5061 Other: <input type="text"/>
State	Enabled

*Figure 8 The General Properties of the TLS virtual server*

7. From the **Configuration** list, select **Advanced**.
8. From the **Protocol Profile (Client)** list, select the name of the profile you created in the *Creating the TCP profile* section. In our example, we select **lcs\_tcp**.
9. In the Resources section, from the Default Pool list, select the name of the pool you created in the *Creating the TLS pool* section. In our example, we select **tls\_pool**.

Resources	
iRules	Enabled: <input type="text"/>
	Available: MainstreetHTTPtoHTTPS, _sys_auth_idap, _sys_auth_radius, _sys_auth_ssl_cc_idap, _sys_auth_ssl_ocsp
HTTP Class Profiles	Enabled: <input type="text"/>
	Available: httpclass
Default Pool	tls_pool
Default Persistence Profile	None
Fallback Persistence Profile	None
<input type="button" value="Cancel"/> <input type="button" value="Repeat"/> <input type="button" value="Finished"/>	

*Figure 9 Selecting the tls\_pool while creating the virtual server*

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10. Click the **Finished** button.  
For additional information about configuring a virtual server, click the **Help** button.

## Creating the RPC virtual server

The next virtual server we create references the **rpc\_pool**.

### To create the RPC virtual server

1. On the Main tab, expand **Local Traffic**, and then click **Virtual Servers**.  
The Virtual Servers screen opens.
2. In the upper right portion of the screen, click the **Create** button.  
The New Virtual Server screen opens.
3. In the **Name** box, type a name for this virtual server. In our example, we type **rpc\_virtual**.
4. In the **Destination** section, select the **Host** option button.
5. In the **Address** box, type the IP address of this virtual server. In our example, we use **192.168.10.17**.
6. In the **Service Port** box, type **135**.
7. In the **Resources** section, from the Default Pool list, select the name of the pool you created in the *Creating the RPC pool* section.  
In our example, we select **rpc\_pool**.
8. Click the **Finished** button.

## Creating a wildcard virtual server

The final virtual server in this configuration is a wildcard virtual server. This virtual server is for non-LCS specific traffic, such as domain authentication, and WINS traffic.

### To create the wildcard virtual server

1. On the Main tab, expand **Local Traffic**, and then click **Virtual Servers**.  
The Virtual Servers screen opens.
2. In the upper right portion of the screen, click the **Create** button.  
The New Virtual Server screen opens.
3. In the **Name** box, type a name for this virtual server. In our example, we type **lcs\_wildcard\_virtual**.
4. In the **Destination** section, select the **Host** option button.
5. In the **Address** box, type **0.0.0.0** to specify a wildcard virtual server.
6. From the **Service Port** list, select **\*All Ports**.

7. In the Configuration section, from the **Type** list, select **Forwarding (IP)**.
8. From the Protocol list, select **All Protocols**.
9. From the **VLAN Traffic** list, make sure that **All VLANS** is selected (see Figure 9).
10. Click the **Finished** button.

General Properties	
Name	lcs_wildcard_virtual
Destination	Type: <input checked="" type="radio"/> Host <input type="radio"/> Network Address: 0.0.0.0
Service Port	* <input type="text"/> * All Ports
State	Enabled
Configuration: <input type="text" value="Advanced"/>	
Type	Forwarding (IP)
Protocol	* All Protocols
Protocol Profile (Client)	fastL4
IIO Profile	None
RTSP Profile	None
XML Profile	None
Statistics Profile	None
VLAN Traffic	All VLANS
Rate Class	None
Connection Limit	0
SNAT Pool	None
Clone Pool (Client)	None
Clone Pool (Server)	None
Last Hop Pool	None

*Figure 10* Configuring the wildcard virtual server

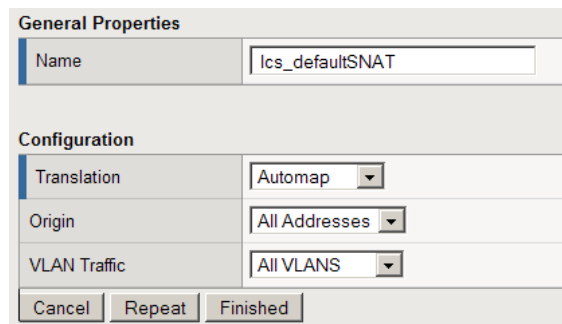
## Creating a SNAT

A secure network address translation (SNAT) provides the ability to perform certain Live Communications Server pool-level management operations from the servers in the pool.

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## To create a SNAT

1. On the Main tab, expand **Local Traffic**, and then click **SNATs**. The SNATs screen opens.
2. In the upper right portion of the screen, click the **Create** button. The New SNAT screen opens.
3. In the **Name** box, type a name for this SNAT. In our example, we type **lcs\_defaultSNAT**.
4. From the **Translation** list, select a setting appropriate for your configuration. In our example, we select **Automap**.
5. Click the **Finished** button.



The screenshot shows a configuration window for a SNAT. It is divided into two main sections: 'General Properties' and 'Configuration'. In the 'General Properties' section, the 'Name' field contains the text 'lcs\_defaultSNAT'. In the 'Configuration' section, there are three dropdown menus: 'Translation' is set to 'Automap', 'Origin' is set to 'All Addresses', and 'VLAN Traffic' is set to 'All VLANs'. At the bottom of the window, there are three buttons: 'Cancel', 'Repeat', and 'Finished'.

*Figure 11 Configuring a SNAT*

## Synchronizing the BIG-IP configuration if using a redundant system

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

1. On the Main tab, expand **System**.
2. Click **High Availability**. The Redundancy screen opens.
3. On the Menu bar, click **ConfigSync**.
4. Click the **Self --> Peer** button. The configuration synchronizes with its peer.

#### ◆ Important

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*If you have a redundant BIG-IP configuration (active-active or active-standby), you must also perform the first two procedures (Creating a VLAN and Creating a self IP) on both devices. The rest of the procedures only need to be performed on one BIG-IP device. The first two procedures are not included in the items that are synchronized between the BIG-IP devices.*

*In a redundant configuration, you also need to configure a Floating Self IP address for the VLAN on both devices. To create this Floating Self IP address, follow the procedure **Creating a self IP**, on page 5, but check the **Floating IP** box. On the redundant device, create a Floating Self IP address using the same IP address as the original device, and check the Floating IP box.*

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## Using Access Proxy and Director with the BIG-IP LTM system for remote access

The Live Communications Server 2005 product allows the network of an organization to federate (peer) with other Live Communications Server-enabled networks for core presence and instant messaging.

This feature is enabled using a proxy server, Microsoft® Office Live Communications Server 2005 Access Proxy, using TLS/MTLS (Mutually Authenticated Transport Layer Security) for connections on both internal and external interfaces. Outside legs and inside legs are designated by different IP addresses, on two separate Network Interface Cards (NICs) or both addresses on the same NIC.

The Access Proxy functions as a reverse-proxy operation, when outside users (users of an enterprise outside the enterprise's network) need access into the enterprise's internal Live Communications Server service. Employees traveling, or working from home or in remote offices, can use the 'outside user' mode to remotely access the service.

A Microsoft® Office Live Communications Server 2005, **Director** is a Live Communications Server 2005 device with no locally homed users that communicates with the Access Proxy to provide additional security for the internal network. The Director authenticates and authorizes external SIP traffic coming from the Access Proxy to prevent unauthenticated traffic from reaching the internal Live Communications Servers.

Access Proxies and Directors can be connected in tandem to provide scalability and availability. The distribution of new connections and routing of traffic on existing connections is performed using a BIG-IP LTM system.

The Access Proxy is the entry point into the enterprise Live Communications Server deployment. Its main role is to secure the internal network, these are some of the tasks performed by the Access Proxy:

- The Access Proxy performs connection management.
- Only TLS connections are accepted for connections from remote users and MTLS connection from federated servers.
- The Access Proxy ensures that when receiving a message from a server, it is from a well known server that has been configured by the administrator.
- The Access Proxy also blocks all messages coming from domains on its block list.

For specific information on how to configure the Access Proxy or Director devices, see the Microsoft documentation.

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◆ **Note**

*More than one Access Proxy device in a cluster is called a **Array**.*

**◆ WARNING**

*There are a wide variety of ways to deploy the BIG-IP LTM system with Access Proxy and Director devices, and the configuration depends on your network configuration. The following procedures give a base example, however, there may be differences in your configuration. We recommend you contact your F5 Field Representative or F5 Consulting before attempting this section.*

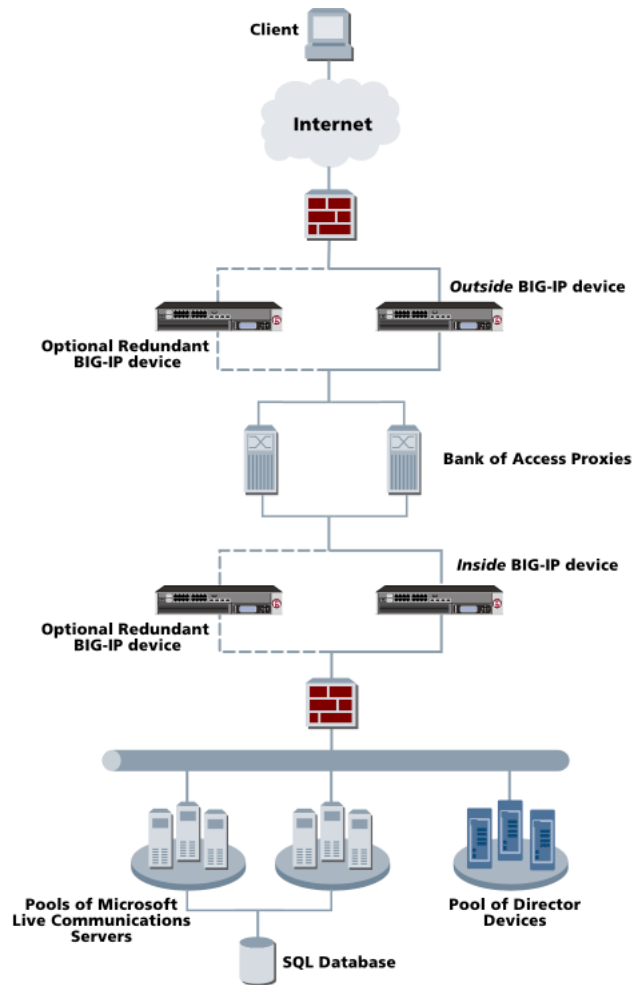
**◆ Important**

*This section is only necessary if your configuration contains Access Proxy devices to allow remote users to use the internal Live Communications Server system.*

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## Configuration example

In this configuration, there are BIG-IP devices on both sides of the array of Access Proxy devices, to direct traffic for inbound and outbound traffic.



*Figure 12 BIG-IP LTM systems with Access Proxy and Director devices*

### ◆ Tip

*To configure the BIG-IP LTM system to provide high availability for firewalls, we recommend a BIG-IP Firewall Sandwich configuration. For more information on the Firewall Sandwich and for configuration instructions, see the **BIG-IP Solutions Guide**.*

## Prerequisites

The following are prerequisites to the Access Proxy configuration.

- ◆ In the following procedures, we assume you have already created pools for the Live Communications Servers, as shown in **Creating pools**, on page 1-6, and virtual servers, as shown in **Creating virtual servers**, on page 1-11.  
If you have additional pools of Live Communications Servers, repeat the procedures in **Creating pools**, on page 1-6, and **Creating virtual servers**, on page 1-11 for the additional Live Communications Server pools, and then return to this section.
- ◆ If you have a firewall in your network in between the Internet and the BIG-IP LTM system (as shown in Figure 12), the firewall needs to be configured to allow TCP traffic on port **5061** in both directions, and TCP/UDP traffic on port **53** for outbound traffic only.
- ◆ If you have a firewall in your network between the Access Proxy devices and the inside BIG-IP LTM system (as shown in Figure 12), the firewall should be configured to allow only port **5061** traffic in both directions.
- ◆ The default gateway on the Access Proxy devices should be the IP address of the internal facing self IP on the *outside* BIG-IP LTM system.
- ◆ If you are using a Director in your deployment, you must modify the Hosts file on the Access Proxy devices to resolve the Director fully qualified domain name (FQDN) to the virtual server address of the Director.

## Configuring the BIG-IP LTM systems to direct traffic for the Access Proxy

Note that this Best Practice configuration requires two additional BIG-IP LTM systems to load balance traffic to the Access Proxy devices.

In the following sections, we first configure the outside BIG-IP LTM system, then the inside BIG-IP LTM system.

### ◆ Important

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*We assume the BIG-IP LTM systems are already installed in the network, and that you have created (or are using the default) VLANs on the external and internal network. If you need to create additional VLANs, see **Creating a VLAN**, on page 4.*

## Configuring the outside BIG-IP LTM system

We begin this deployment by configuring the *outside* BIG-IP LTM system (as shown in Figure 12). On the outside BIG-IP LTM system, you need to complete the following procedures:

- *Creating the self IP on the outside BIG-IP LTM system*
- *Configuring a health monitor*
- *Creating a pool for the Access Proxy devices on the outside BIG-IP LTM system*
- *Creating the TCP profile*
- *Creating the virtual server on the outside BIG-IP LTM system*
- *Creating a SNAT on the outside BIG-IP LTM system*

## Creating the self IP on the outside BIG-IP LTM system

The first step is to create a self IP address on the outside BIG-IP LTM system.

### To create a self IP address using the Configuration utility

1. On the Main tab, expand **Network**, and then click **Self IPs**. The Self IP screen opens.
2. Click the **Create** button. The new Self IP screen opens.
3. In the **IP Address** box, type a static IP address in the external facing VLAN. In our example, we type **172.168.10.1**.
4. In the **Netmask** box, type the corresponding subnet mask. In our example, we use **255.255.255.0**.
5. From the **VLAN** list, select the name of the External facing VLAN. In our example, we select **external**.
6. From the Port Lockdown list, select **Allow None**. Port Lockdown enables you to lock down a VLAN to prevent direct connection to the BIG-IP LTM system through that VLAN.
7. Click the **Finished** button (see Figure 13).

Configuration	
IP Address	172.168.10.1
Netmask	255.255.255.0
VLAN	external
Port Lockdown	Allow None
<input type="button" value="Cancel"/> <input type="button" value="Repeat"/> <input type="button" value="Finished"/>	

**Figure 13** *Creating a self IP address on the Outside BIG-IP LTM system*

You must also have a self IP address for the BIG-IP LTM system's internal facing VLAN. Repeat the preceding procedure, but in Step 3, type a static IP address in the internal facing VLAN (in our example we use **192.168.10.1**), and in Step 6, select the internal facing VLAN.

## Configuring a health monitor

The next step in this configuration is to configure a health monitor on the BIG-IP LTM system for the Access Proxy devices.

### To configure a health monitor

1. On the Main tab, expand **Local Traffic**, and then click **Monitors**.  
The Monitors screen opens.
2. Click the **Create** button.  
The New Monitor screen opens.
3. In the **Name** box, type a name for the Monitor.  
In our example, we type **ap\_monitor**.
4. From the **Type** list, select **TCP**.  
The TCP Monitor configuration options appear.
5. From the Configuration list, select **Advanced**.  
The advanced configuration options appear.
6. In the Configuration section, in the **Interval** and **Timeout** boxes, type an Interval and Timeout. We recommend at least a 1:3 +1 ratio between the interval and the timeout. In our example, we use a **Interval of 30** and a **Timeout of 91**.
7. In the **Alias Service Port** box, type **5061**.
8. Click the **Finished** button.

## Creating a pool for the Access Proxy devices on the outside BIG-IP LTM system

The next step is to create a BIG-IP pool for the Access Proxy devices.

### To create a pool for the Access Proxy devices from the Configuration utility

1. On the Main tab, expand **Local Traffic**, and then click **Pools**.  
The Pool screen opens.
2. In the upper right portion of the screen, click the **Create** button.  
The New Pool screen opens.
3. From the **Configuration** list, select **Advanced**.  
The advanced configuration options appear.
4. In the **Name** box, enter a name for your pool.  
In our example, we use **ap\_pool\_outside**.
5. In the **Health Monitors** section, select the name of the monitor you created in the *Configuring a health monitor* section, and click the Add (<<) button. In our example, we select **ap\_monitor**.

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6. The other fields in the Configuration section are optional. Configure these fields as applicable for your network. (For additional information about configuring a pool, click the **Help** button.)
  7. In the Resources section, from the **Load Balancing Method** list, choose your preferred load balancing method (different load balancing methods may yield optimal results for a particular network).

For this configuration, we recommend selecting Least Connections.

8. In the **New Members** section, you add the IP address and service of the Access Proxy servers to the pool.
  - a) In the **Address** box, type the IP address of the external interface of the Access Proxy server.  
In our example, we type **192.168.10.100**.
  - b) In the **Service Port** box, type the service number you want to use for this device, or specify a service by choosing a service name from the list. In our example, we type **5061**.  
*Note: If you are using HTTPS tunneling, use **443** for the service.*
  - c) Click the **Add** button to add the member to the list.
  - d) Repeat steps a-c for each Access Proxy device you want to add to the pool. In our example, we repeat these steps once for the other external interface of the Access Proxy: **192.168.10.101**.
9. Click the **Finished** button.

## Creating the TCP profile

For this deployment, we configure a new TCP profile. In this profile, we set the Idle Timeout value to 604800 (one week). If a connection is completely idle for a period of a week, the BIG-IP LTM system will reset the connection.

### To create a new TCP profile

1. On the Main tab, expand **Local Traffic**.
2. Click **Profiles**.  
The HTTP Profiles screen opens.
3. On the Menu bar, from the **Protocol** menu, select **TCP**.
4. In the upper right portion of the screen, click the **Create** button.  
The New TCP Profile screen opens.
5. In the **Name** box, type a name. In our example, we type **ap\_tcp**.
6. In the **Idle Timeout** row, check the **Custom** box. In the seconds box, type **604800**.
7. Modify the rest of the settings as applicable for your network.
8. Click the **Finished** button.

## Creating the virtual server on the outside BIG-IP LTM system

After you define the pool, the next step is to define the following virtual server on the BIG-IP devices to load balance the traffic to the Access Proxy pool.

### To create the virtual server for the Access Proxy pool on the outside BIG-IP device

1. On the Main tab, expand **Local Traffic**, and then click **Virtual Servers**.  
The Virtual Servers screen opens.
2. In the upper right portion of the screen, click the **Create** button.  
The New Virtual Server screen opens.
3. In the **Name** box, type a name for this virtual server. In our example, we type **ap\_outside**.
4. In the **Destination** section, select the **Host** option button.
5. In the **Address** box, type the IP address of this virtual server. In our example, we use **172.168.10.100**.
6. In the **Service Port** box, type **5061**.
7. From the **Configuration** list, select **Advanced**.
8. From the **Protocol Profile (Client)** list, select the name of the profile you created in the *Creating the TCP profile* section. In our example, we select **ap\_tcp**.
9. In the Resources section, from the **Default Pool** list, select the name of the pool you created in the *Creating a pool for the Access Proxy devices on the outside BIG-IP LTM system* section.  
In our example, we select **ap\_pool\_outside**.
10. Click the **Finished** button.

## Creating a SNAT on the outside BIG-IP LTM system

The next step is to configure a SNAT.

### To create a SNAT

1. On the Main tab, expand **Local Traffic**, and then click **SNATs**.  
The SNATs screen opens.
2. In the upper right portion of the screen, click the **Create** button.  
The New SNAT screen opens.
3. In the **Name** box, type a name for this SNAT.  
In our example, we type **ap\_defaultSNAT**.
4. In the **Translation** box, select **Automap**.
5. Click the **Finished** button.

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## Configuring the inside BIG-IP LTM system

The next section of this deployment is to configure the *inside* BIG-IP LTM system (as shown in Figure 12). On the inside BIG-IP LTM system, you need to complete the following procedures:

- *Creating self IPs on the inside BIG-IP LTM system*
- *Creating the health monitor on the inside BIG-IP LTM system*
- *Creating the pools on the inside BIG-IP LTM system*
- *Creating the TCP profile*
- *Creating the virtual servers on the inside BIG-IP LTM system*
- *Creating a default SNAT on the inside BIG-IP LTM system*

### Creating self IPs on the inside BIG-IP LTM system

The first step in configuring the inside BIG-IP LTM system is to configure self IP addresses.

To configure the self IPs on the inside BIG-IP LTM system, follow the same procedure as *Creating the self IP on the outside BIG-IP LTM system*, on page 21, using the appropriate IP addresses. In our example, we create an external facing (**10.10.10.1**) and an internal facing (**157.168.10.1**) self IP address.

### Creating the health monitor on the inside BIG-IP LTM system

The next step is to configure a health monitor on the inside BIG-IP LTM system.

To create this monitor, use the procedure *Configuring a health monitor*, on page 22.

### Creating the pools on the inside BIG-IP LTM system

On the inside BIG-IP LTM system, you need to configure a pool for Access Proxy devices and a pool for the next hop server in the enterprise network. The next hop server could be the IP address of a Standard Edition server or the virtual IP address of an Enterprise Edition pool. The Standard Edition server or the Enterprise Edition pool could be acting as Directors.

### Creating a pool for the Access Proxy devices on the inside BIG-IP LTM system

To configure a pool for the Access Proxy devices, follow the same procedure as *Creating a pool for the Access Proxy devices on the outside BIG-IP LTM system*, on page 22, but naming the pool **ap\_pool\_inside** and typing the IP address of the internal interface of the Access Proxy servers.

### To create a pool for the Access Proxy devices from the Configuration utility

1. On the Main tab, expand **Local Traffic**, and then click **Pools**.  
The Pool screen opens.
2. In the upper right portion of the screen, click the **Create** button.  
The New Pool screen opens.
3. From the **Configuration** list, select **Advanced**.  
The advanced configuration options appear.
4. In the **Name** box, enter a name for your pool.  
In our example, we use **ap\_pool\_inside**.
5. In the **Health Monitors** section, select the name of the monitor you created in the *Configuring a health monitor* section, and click the **Add (<<)** button. In our example, we select **ap\_monitor**.
6. The other fields in the Configuration section are optional. Configure these fields as applicable for your network. (For additional information about configuring a pool, click the **Help** button.)
7. In the Resources section, from the **Load Balancing Method** list, choose your preferred load balancing method (different load balancing methods may yield optimal results for a particular network).

For this configuration, we recommend selecting Least Connections.

8. In the **New Members** section, you add the IP address and service of the Access Proxy servers to the pool.
  - a) In the **Address** box, type the IP address of the internal interface of the Access Proxy server.  
In our example, we type **10.10.10.100**.
  - b) In the **Service Port** box, type the service number you want to use for this device, or specify a service by choosing a service name from the list. In our example, we type **5061**.  
*Note: If you are using HTTPS tunneling, use 443 for the service.*
  - c) Click the **Add** button to add the member to the list.
  - d) Repeat steps a-c for each Access Proxy device you want to add to the pool. In our example, we repeat these steps once for the other external interface of the Access Proxy: **10.10.10.101**.
9. Click the **Finished** button.

### Creating a pool for the next hop server in the enterprise network

The next step is to create a pool to access the next hop server in the enterprise network. The next hop server could be the IP address of a Standard Edition server or the virtual IP address of an Enterprise Edition pool. The Standard Edition server or the Enterprise Edition pool could be acting as Directors.

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A **Director** is a Pool (typically a Enterprise Edition server) with no locally homed users, and acts as a authorization/AD-routing proxy for outside users and domains, protecting internal Live Communications Servers against unauthenticated SIP traffic. A Director is typically needed when there are outside users and multiple pools (or servers) within an enterprise. Although a Director is not a requirement, it increases the security and manageability of the deployment.

### **To create a pool for the next hop server in the enterprise network**

1. On the Main tab, expand **Local Traffic**, and then click **Pools**.  
The Pool screen opens.
2. In the upper right portion of the screen, click the **Create** button.  
The New Pool screen opens.
3. From the **Configuration** list, select **Advanced**.  
The advanced configuration options appear.
4. In the **Name** box, enter a name for your pool.  
In our example, we use **internal\_nexthop\_pool**.
5. In the **Health Monitors** section, select the name of the monitor you created in the *Configuring a health monitor* section, and click the Add (<<) button. In our example, we select **ap\_monitor**.
6. The other fields in the Configuration section are optional. Configure these fields as applicable for your network. (For additional information about configuring a pool, click the **Help** button.)
7. In the Resources section, from the **Load Balancing Method** list, choose your preferred load balancing method (different load balancing methods may yield optimal results for a particular network).

For this configuration, we recommend selecting Least Connections.

8. In the **New Members** section, you add the IP address and service of the Access Proxy servers to the pool.
  - a) In the **Address** box, type the IP address of either the Standard Edition server or the virtual IP address of an Enterprise Edition pool. In our example, we use **157.168.10.100**
  - b) In the **Service Port** box, type the service number you want to use for this device, or specify a service by choosing a service name from the list. In our example, we type **5061**.  
*Note: If you are using HTTPS tunneling, use 443 for the service.*
  - c) Click the **Add** button to add the member to the list.
9. Click the **Finished** button.

## Creating the TCP profile

The next step is to create a TCP profile. To create this TCP profile, use the procedure *Creating the TCP profile*, on page 23.

## Creating the virtual servers on the inside BIG-IP LTM system

After you create the pools, you configure the virtual servers on the inside BIG-IP LTM system.

### Creating the Access Proxy virtual server on the inside BIG-IP LTM system

The next step is to define a virtual server on the inside BIG-IP LTM system to load balance the traffic to the inside Access Proxy pool.

#### **To create the virtual server for the Access Proxy pool on the inside BIG-IP device**

1. On the Main tab, expand **Local Traffic**, and then click **Virtual Servers**.  
The Virtual Servers screen opens.
2. In the upper right portion of the screen, click the **Create** button.  
The New Virtual Server screen opens.
3. In the **Name** box, type a name for this virtual server. In our example, we type **ap\_inside**.
4. In the **Destination** section, select the **Host** option button.
5. In the **Address** box, type the IP address of this virtual server. In our example, we use **157.168.10.200**.
6. In the **Service Port** box, type **5061**.
7. From the **Configuration** list, select **Advanced**.
8. From the **Protocol Profile (Client)** list, select the name of the profile you created in the *Creating the TCP profile* section. In our example, we select **ap\_tcp**.
9. In the Resources section, from the **Default Pool** list, select the name of the pool you created in the *Creating the Access Proxy virtual server on the inside BIG-IP LTM system* section.  
In our example, we select **ap\_pool\_inside**.
10. Click the **Finished** button.

### Creating a virtual server for the next hop pool

Next, you need a virtual server on the inside BIG-IP LTM system to load balance traffic to the next hop pool.

To configure this virtual server, use the procedure *Creating the Access Proxy virtual server on the inside BIG-IP LTM system*, on page 28, but you need to configure the virtual server to reference the pool created in *Creating*

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*a pool for the next hop server in the enterprise network, on page 26. In our example, this is **internal\_nexthop\_pool**, the virtual server IP address is **10.10.10.200** with a service of **5061**.*

## Creating a default SNAT on the inside BIG-IP LTM system

To create a default SNAT on the inside BIG-IP LTM system, follow the procedure *Creating a SNAT on the outside BIG-IP LTM system*, on page 24.

## Synchronizing the BIG-IP configuration

If you are using redundant BIG-IP LTM systems, the final step is to synchronize the configuration to the redundant BIG-IP device. Refer to *Synchronizing the BIG-IP configuration if using a redundant system*, on page 15 for instructions. Synchronize the configuration of both the inside and outside BIG-IP LTM systems.

## Appendix A: Backing up and restoring the BIG-IP system configuration

We recommend saving your BIG-IP configuration before you begin this configuration. When you save the BIG-IP configuration, it collects the following critical data and compress it into a single User Configuration Set (UCS) file:

- BIG-IP configuration files
- BIG-IP license and passwords
- SSL certificates
- SSH keys

### Saving and restoring the BIG-IP configuration

The Configuration Management screen allows you to save and restore all configuration files that you may edit to configure a BIG-IP system. These configuration files are called a User Configuration Set (UCS). The Configuration Management screen contains sections for saving and restoring a configuration. The list boxes in these sections display only files in the `/usr/local/ucs` directory. If you want to save or restore files from another directory, you must type the full path in the box.

#### To save the BIG-IP configuration using the Configuration utility

1. In the navigation pane, click **System Admin**.  
The User Administration screen displays.
2. Click the Configuration Management tab.  
The Configuration Management screen displays.
3. In the **Save Current Configuration** section, type the path where you want your configuration file saved or choose a path from the list box. If no path is specified, the BIG-IP saves files to `/usr/local/ucs`. The BIG-IP appends the extension `.ucs` to file names without it. In our example, we type **pre\_ucs\_backup.ucs**.
4. Click the **Save** button to save the configuration file.

#### To restore a BIG-IP configuration

1. In the navigation pane, click **System Admin**.  
The User Administration screen displays.
2. Click the Configuration Management tab.  
The Configuration Management screen displays.

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3. In the **Restore a Configuration** section, choose the configuration file you want to restore from the list box, or type the path where your configuration files were saved.
  4. Click the **Restore** button.  
To check the status of the restoration, click the **View Log** button. You should wait a few moments for the log file to start generating before you click **View Log**. Repeated clicking of this button will update your screen with the most current log file information until the restoration is complete.