Deploying F5 to Replace Microsoft TMG or ISA Server

Welcome to the F5 deployment guide for configuring the BIG-IP system as a forward and reverse proxy, enabling you to remove or relocate gateway security devices, such as Microsoft Threat Management Gateway (TMG) or Internet Security and Acceleration (ISA) servers. This guide describes the process for configuring the BIG-IP system as a reverse proxy to secure and optimize applications (such as Microsoft SharePoint Server), as well as a forward proxy to inspect and secure internet-bound traffic from internal clients.

Deploying the BIG-IP system in this way allows you to control access to resources by both external and internal clients, while also optimizing application performance and reducing load on application servers.

For more information on the BIG-IP system, see *http://www.f5.com/products/bigip/*

Why F5?

F5's Secure Web Gateway (SWG) is a great alternative to gateway security devices like TMG. The solution combines granular access control, robust compliance reporting, and a comprehensive categorization database to provide the single point of control enterprises need to ensure safe and appropriate web access.

- **Forward Web Proxy**
  F5 SWG provides full, forward web proxy functionality, including the ability to evaluate and proxy encrypted, SSL-based traffic. The solution can be configured to secure web access for a variety of clients, both internal and remote.
- **URL and Content Filtering**
  The threat intelligence behind SWG analyzes more than 5 billion web requests every day to produce a comprehensive categorization database of 40 million website URLs. SWG uses BIG-IP Access Policy Manager (APM) to give administrators the flexibility to evaluate and assign policy at an extremely granular level. For example, an administrator might apply a specific set of URL filters to a particular user within a certain Active Directory group for a specific period of time.
- **Compliance**
  Ensuring acceptable and secure web access is more than just good business; more often than not, it's corporate policy—with the potential for very real consequences if not appropriately managed. Secure Web Gateway Services provide IT administrators and HR professionals with the tools they need to ensure acceptable use policies are both effective and appropriate. The solution includes several dynamically generated and exportable reports that provide a clear picture of the enterprise's web activity. Additionally, the F5 solution can be integrated with many remote central logging systems.
- **Feature comparison**
  The following is a list of Microsoft TMG features comparable to those available in the F5 modules used in this guide:

HTTPS Inspection	Firewall	Secure Application Publishing	Networking and Performance
• URL Filtering • Anti-virus/anti-malware • HTTPS Inspection • NAT	• Multi-layer firewall • Application layer filtering • HTTP controls • DoS protection • Protocol support	• OWA/SharePoint publishing • Web server publishing • SSO • Pre-authentication • Link translation • SSL bridging	• NLB • Network-based configuration • Caching • HTTP compression

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Products and versions

Product	Version
BIG-IP LTM, APM, AAM, AFM	11.5. 11.5.1
Deployment guide version	1.0 (*Document Revision History on page 14)*

Important: *Make sure you are using the most recent version of this deployment guide, available at http://www.f5.com/pdf/deployment-guides/f5-tmg-replacement-dg.pdf*

To provide feedback on this deployment guide or other F5 solution documents, contact us at *solutionsfeedback@f5.com.*

Prerequisites and configuration notes

The following are general prerequisites for this deployment; each section contains specific prerequisites:

- This implementation uses F5's Secure Web Gateway (SWG) functionality. You must have licensed and provisioned BIG-IP APM and licensed SWG. For more information on licensing, contact your F5 Sales representative.
- This guide shows one specific way to configure the Secure Web Gateway to replace gateway security devices. For more information on additional features available in SWG, see the inline help in the iApp template, or the SWG Implementations Guide: *http://support.f5.com/kb/en-us/products/big-ip_apm/manuals/product/apm-secure-web-gateway-implementations-11-5-0.html*
- You must have imported the appropriate certificates onto the BIG-IP system before beginning the configuration. For the SSL interception functionality, you must have imported a subordinate Certificate Authority certificate and key onto the BIG-IP system. In the BIG-IP Configuration utility, see **System > File Management > SSL Certificate List** to import certificates, and for more information. Specific nstructions on importing certificates and keys is outside the scope of this guide.

Configuration example

In its traditional role, the BIG-IP system is a reverse proxy. The system is placed in the network between the clients and the servers. Incoming requests are handled by the BIG-IP system, which interacts on behalf of the client with the desired server or service on the server. This allows the BIG-IP system to provide scalability, availability, server offload, and much more, all completely transparent to the client.

The system can also be deployed as a forward proxy. In this guide, we configure the F5 Secure Web Gateway as an explicit forward proxy, which adds access control, based on URL categorization, to forward proxy. For more information on Secure Web Gateway, see *https://f5.com/solutions/architectures/secure-web-gateway*.

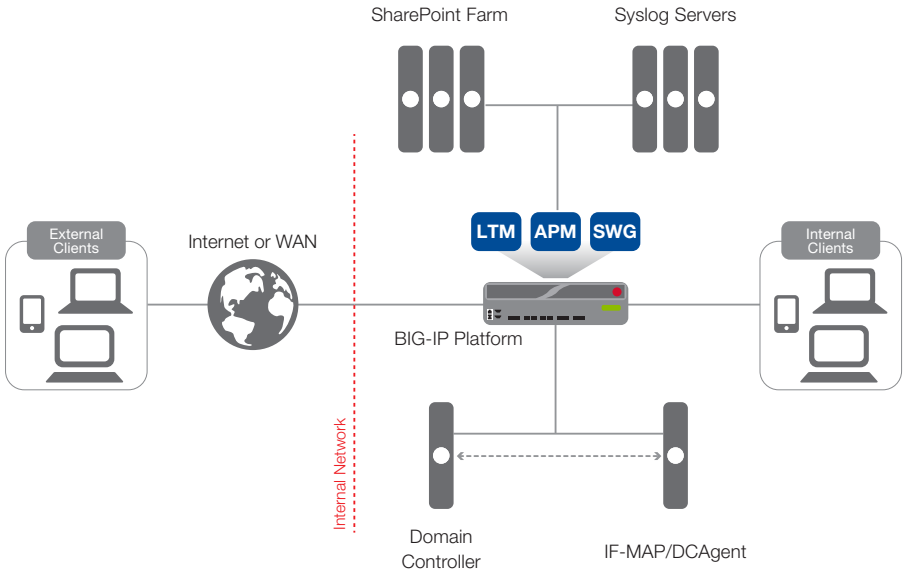

Figure 1: *Logical configuration diagram*

Downloading and importing the iApp templates

The first task is to download and import the iApp templates used in this configuration.

To download and import the iApp

1. Open a web browser and go to the following locations for each iApp
   - Secure Web Gateway iApp: *https://devcentral.f5.com/wiki/iApp.F5-Secure-Web-Gateway.ashx*.
   - IF-MAP iApp: *https://devcentral.f5.com/wiki/iApp.IF-MAP.ashx*
   - Logging iApp: *https://devcentral.f5.com/wiki/iApp.F5-Remote-Logging-iApp.ashx*
   - Optional: In this guide, we use Microsoft SharePoint as our example application. We use the F5 Contributed version of the iApp template (which includes BIG-IP AFM and the option to choose a Logging Profile) *https://devcentral.f5.com/wiki/iApp.Microsoft-SharePoint-2013-iApp-Template.ashx.*
     If you are deploying SharePoint and would prefer the fully supported version of the iApp template (does not include AFM), see *http://support.f5.com/kb/en-us/solutions/public/15000/000/sol15043.html*.
2. Download the iApp template to a location accessible from your BIG-IP system.

   Important

   You must download the file, and not copy and paste the contents. F5 has discovered the copy paste operation does not work reliably.

2. Extract (unzip) the **.tmpl** file.
3. Log on to the BIG-IP system web-based Configuration utility.
4. On the Main tab, expand **iApp**, and then click **Templates**.
5. Click the **Import** button on the right side of the screen.
6. Click a check in the **Overwrite Existing Templates** box.
7. Click the **Browse** button, and then browse to the location you saved one of the iApp files.
8. Click the **Upload** button.
9. Repeat steps 5-8 for each iApp template you downloaded.

Configuring the BIG-IP system to act as a reverse proxy

In this section, we provide guidance on configuring the BIG-IP system as a reverse proxy, the most common way of deploying the system. We use a SharePoint as an example application, but the majority of the guidance can be used for other applications as well.

You must at least have LTM licensed to configure the system as a reverse proxy. Additional features are available if you license and provision BIG-IP Application Acceleration Manager (AAM), Access Policy Manager (APM), Application Security Manager (ASM), and/or Advanced Firewall Manager (AFM). Contact your F5 Sales representative for more information on licensing these optional modules.

Optional: Configuring the BIG-IP system to log network firewall events if using BIG-IP AFM

If you are using the BIG-IP AFM, F5's Network Firewall module, for your application, you have the option of using an iApp template to log network firewall events to one or more remote syslog servers (recommended) or to log events locally. If you are using an iApp template to configure your application (SharePoint in our example), you use the logging profile created by this iApp when configuring the iApp for the application.

For specific information on logging on the BIG-IP system, see:

- Remote High-Speed Logging: *https://support.f5.com/kb/en-us/products/big-ip_ltm/manuals/product/tmos-implementations-11-5-0/22.html*
- Local logging: *https://support.f5.com/kb/en-us/products/big-ip_ltm/manuals/product/tmos-concepts-11-5-0/11.html*

To configure the logging profile iApp

1. Log on to the BIG-IP system.
2. On the Main tab, click **iApp > Application Services**.
3. Click **Create**. The Template Selection page opens.
4. In the **Name** box, type a name. In our example, we use **logging-iapp_.**
5. From the **Template** list, select **f5.remote_logging.v0.1.0**. The template opens. This is one of the iApp templates you imported in *Downloading and importing the iApp templates on page 4*.
6. Use the following table for guidance on configuring the iApp template. Questions not mentioned in the table can be configured as applicable for your implementation.

Question	Your selection
Do you want to create a new pool of remote logging servers, or use an existing one?	Unless you have already created a pool on the BIG-IP system for your remote logging servers, select **Create a new pool**.
Which servers should be included in this pool?	Specify the IP addresses of your logging servers. Click **Add** to include more servers.
What port do the pool members use?	Specify the port used by your logging servers, typically **514**.
Do the pool members expect UDP or TCP connections?	Specify whether your logging servers expect incoming connections to be TCP or UDP.
Do you want to create a new monitor for this pool, or use an existing one?	Unless you have already created a health monitor for your pool of logging servers, select **Use a simple ICMP (ping) monitor**.
Do your log pool members require a specific log format?	If your logging servers require a specific format, select the appropriate format from the list.

7. Click **Finished**.

Note

The iApp template creates a log publisher and attaches it to the logging profile. If the publisher does not appear in the BIG-IP Configuration utility (GUI), you can verify the configuration by running the following command from the Traffic Management shell (tmsh): **`list security log profile <your profile name>`**.

Configuring the BIG-IP system for your application

In this section, we refer to the SharePoint deployment guide and iApp template to provide guidance on configuring the BIG-IP system as a reverse proxy for an example application. While our example uses Microsoft SharePoint, you configure the BIG-IP system for any application, either manually or using an iApp template. For example, for typical applications using HTTP/HTTPS, you can use the f5.http iApp template that ships with your version of the BIG-IP system. See our list of deployment guides on f5.com to see if there is a specific guide and/or iApp template for your application: *https://f5.com/solutions/deployment-guides*. In our example, we use the latest Microsoft SharePoint iApp template to configure the BIG-IP system as a reverse proxy.

For guidance on configuring the SharePoint iApp template you imported in *Downloading and importing the iApp templates on page 4*, see the inline help and the deployment guide: *https://www.f5.com/pdf/deployment-guides/iapp-sharepoint-2010-2013-dg.pdf*

If you created a logging profile (either using the iApp as described earlier in this section, or manually) and are deploying this configuration for Microsoft SharePoint using the Release Candidate version of the iApp, you can select the policy you created within the iApp template. If you are using other iApp templates, or manually configuring the BIG-IP system for your application, you must manually attach the logging profile to the virtual server.

If you want to manually configure the BIG-IP APM to publish SharePoint Server as a Portal Resource, see chapter 2 of the Microsoft Forefront TMG Deployment Guide: *https://www.f5.com/pdf/deployment-guides/microsoft-forefront-tmg-dg.pdf*.

Configuring the BIG-IP Secure Web Gateway as an Explicit Forward Proxy

Use this section for guidance on configuring the BIG-IP system to inspect and secure outbound traffic from your organization to the Internet.

License and provisioning

- You must have licensed and provisioned the LTM and APM modules
- You must have licensed and provisioned the Secure Web Gateway feature

IF-MAP Configuration (Domain)

In this deployment, the BIG-IP system maintains a database of user-to-IP address mappings. You must install and configure the F5 DCAgent software on a computer that will query a domain controller for mapping information and forward it to the BIG-IP system.

1. Create a DCAgent service account on a domain controller
   a. Create a new user account, or select an existing user account, with the following attributes
      - The account must have domain administrator privileges
      - The account password must be set to never expire
2. Download and install the DCAgent on a Windows-based server

   Important

   Do not install the DCAgent on a domain controller.

   a. On the BIG-IP system, go to Welcome screen of the Configuration utility. Typically this is the first screen you see after you log in. If you are already logged in, click the F5 logo on the upper left to return to the Welcome screen.
   b. In the *Secure Web Gateway User Identification Agents* area, click the **DC Agent** link. The DCAgent.exe file downloads.
   c. Copy the DCAgent.exe file to a Windows-based server that is joined to a domain.
   d. From an account with both local and administrator privileges, click the **DCAgent.exe** file to start the installer. The installer displays instructions.
   e. Follow the instructions to complete the installation.
2. Edit the DCAgent initialization file
   a. Log on to the Windows-based server where you installed the F5 DC Agent.
   b. Navigate to **C:\Program Files\F5 Networks\bin\config**.
   c. Using a text editor, open the **transid.ini** file. The file contains one section, [DC Agent].
   d. For **IFMapServer**, type the protocol, host address, and port for the server. This is the virtual server that you create using the IF-MAP iApp template. Port 8096 is the default port. You can specify another port number when you deploy the application service. For example, **`IFMapServer=https://AA.BB.CC.DD:8096`**, where AA.BB.CC.DD is the IP address of the server.
   e. To authenticate to the BIG-IP system using clientless HTTP authentication, type values for the following parameters.
      - For **IFMapUsername**, type the name of the user that logs on to the IF-MAP server on behalf of the F5 DC Agent. This is the name of a user you created in the local user database on the BIG-IP system.
      - For **IFMapPassword**, type the password for the user. This is the password you typed in the local user database.
3. Configure the DCAgent service
   a. On the Windows-based server where the DCAgent is installed, click **Administrative Tools > Services**

b. Right-click the **DCAgent** service and then click **Stop** to stop the DCAgent service.
c. Double-click the service name.
d. Click the Log On tab.
e. Click **This account** and then type the account name and password for the service account you created.
f. Click **OK**.

4. Create a local user on the BIG-IP system
   a. From the BIG-IP Configuration, click **Access Policy > Local User DB**
   b. Click **Create New User**.
   c. In the **User Name** field, type the user name you specified in the DCAgent initialization file.
   d. In the **Password** fields, type and confirm the password.
   e. Click **OK**.
5. Start the DCAgent service
   a. On the Windows-based server where you installed DCAgent, click **Administrative Tools > Services**.
   b. Right-click the **DCAgent** service and then click **Start** to start the DCAgent service.

Configuring IF-MAP on the BIG-IP system

Use this section for configuring IF-MAP on the BIG-IP system using the iApp template. You must also import SSL Certificates for this part of the configuration.

1. Import certificate(s) onto the BIG-IP system
   a. From the BIG-IP Configuration utility, click **System > File Management > SSL Certificate List > Import**
   b. From the **Import Type** list, select **Certificate**.
   c. In the **Name** field, type a name for the Certificate.
   d. In the Certificate Source row, import the certificate you want to use to authentication the IF-MAP server.
   e. Click Import
   f. Optional: Repeat this procedure to import a certificate from a trusted certificate authority (CA) to authenticate the IF-MAP client.
2. Deploy the IF-MAP iApp
   a. On the Main tab, click **iApp > Application Services**.
   b. Click **Create**. The Template Selection page opens.
   c. In the **Name** box, type a name. In our example, we use **if-map_config_.**
   d. From the **Template** list, select **f5.ifmap.v1.0.0**. The template opens. This is one of the iApp templates you imported in *Downloading and importing the iApp templates on page 4*.
   e. Use the following table for guidance on configuring the iApp template. Questions not mentioned in the table can be configured as applicable for your implementation.

Question	Your selection
What IP address do you want to use for this virtual server?	Type the IP address for the BIG-IP virtual server that will receive IF-MAP traffic from the DCAgent. This IP address must match the **IFMapServer** value you defined in the **transid.ini** file in Step 3 of *IF-MAP Configuration (Domain) on page 7.*

Question	Your selection
What port do you want to use for this virtual server?	Type the associated port for the BIG-IP virtual server that will receive IF-MAP traffic from the DCAgent. This port must match the **IFMapServer** value you defined in the **transid.ini** file.
Which certificate do you want the BIG-IP system to use to authenticate the server?	Select the certificate and key you imported to authenticate the IF-MAP connection. Note that the default certificate and key on the BIG-IP system can be used for testing, but should not be used for production traffic.
Which key do you want the BIG-IP system to use for encryption?	Select the associated key you imported
Does the client have a certificate?	Specify whether the client has a certificate. If it does not, select No and then click Finished. If you imported a certificate for the client, continue with the following questions.
Which trusted certificate authority do you want the BIG-IP system to use to authenticate the client?	Select the trusted certificate you imported to authenticate the client.
Which advertised certificate authority do you want the BIG-IP system to use to authenticate the client?	Select the trusted certificate you imported to authenticate the client.

3. Click **Finished**.

Verifying IF-MAP APM sessions

The final task in this section is to verify the IF-MAP sessions on the BIG-IP system.

1. Click **Access Policy > Manage Sessions**.
2. In the Active Session table, you should see one or more authenticated sessions with a Logon that corresponds to the user name/ IFMapUsername value for the Local DB User you created.

   If you do not, confirm the IF-MAP configuration is correct on both the domain and the BIG-IP system. Consult the AskF5 implementation guide for more information.

BIG-IP Access Policy Manager and Secure Web Gateway Configuration

Use this section for guidance on configuring the BIG-IP Access Policy Manager and Secure Web Gateway.

1. Download the URL database
   a. From the BIG-IP Configuration utility Main tab, click **Access Policy > Secure Web Gateway > Database Download**.
   b. Click **Download Now**.

   Note

   The database download may take up to 60 minutes

2. Configure URL Categories
   a. On the Main tab, click **Access Policy > Secure Web Gateway > URL Categories**.
   b. In the URL Categories table, expand any of the categories and then click a subcategory (For example, expand Security and then click **Malicious Websites**).
   c. Add a site to the category you selected by typing the URL of the site.
   d. If you want to match requests for all URIs associated with the site you entered, click the **Prefix Match** box.
   e. Click **Add**.
   f. Repeat if necessary (to add sites to this category, or return to the URL Categories table to repeat for other categories) and then click **Update**.

3. Create a URL Filter
   a. On the Main tab, click **Access Policy > Secure Web Gateway > URL Filters**.
   b. Click the **Create** button.
   c. In the **Name** field, type a name for the URL Filter and then click **Finished**. The Properties page of the filter you created opens.
   d. To block any of the categories, check the box next to the category. For more granular options, expand any of the URL categories and check the box next to one or more subcategories.
   e. At the bottom of the page, click **Block**. If you want to allow any of the categories you previously blocked, check the appropriate box(es) and then click **Allow**.

4. Create the SWG Scheme
   a. On the Main tab, click **Access Policy > Secure Web Gateway > Schemes**.
   b. Click the **Create** button.
   c. In the **Name** field, type a name for the scheme.
   d. From the **SWG Service Failure Action** list, choose an action to be applied to uncategorized requests.
   e. From the **Default URL filter** list, if you created a URL filter in step 3, select it here. Otherwise, select a URL filter to determine how SWG responds to requests that match this scheme.

5. Create the APM Access Profile
   a. On the Main tab, click **Access Policy > Access Profiles > Access Profile List**.
   b. Click the **Create** button.
   c. In the **Name** field, type a name for the profile.
   d. From the **Profile Type** list, select **SWG-Explicit**.
   e. From the **User Identification Method** list, select **IP Address**.
   f. Leave the **NTLM Auth Configuration** list set to **None**.

g. In the **Languages** section, select the appropriate language and move it to the **Accepted Languages** list.

h. Click **Finished**.

6. Edit the APM Access Policy you just created

a. On the Main tab, click **Access Policy** > **Access Profiles**

b. Locate the Access Profile you created, and then, in the Access Policy column, click **Edit**. The Access Policy Visual Policy Editor (VPE) opens in a new window.

c. Click the **+** symbol between **Start** and **Deny**. A box opens with options for different actions.

d. Click the Authentication tab, click the button for **Transparent Identity Import**, and then click **Add Item**.

e. Click the **Save** button.

f. On the *Associated* path, click the **+** symbol between **Transparent Identity Import** and **Deny**.

g. Click the Assignment tab, click the button for **SWG Scheme Assign**, and then click **Add Item**.

h. Click the **Add/Delete** link, and then click the button next to the SWG Scheme you created.

i. Click **Save**.

j. On the *fallback* path after SWG Scheme Assign, click the **Deny** link/box. Click the **Allow** option button, and then click **Save**.

k. At the top of the screen, click the **Apply Access Policy** link.

7. Import CA certificate and certificate bundle

» As mentioned in the prerequisites, you must import a certificate and key from a certificate authority (CA), as well as a certificate bundle (or use the default bundle) that includes the list of trusted CAs. To import certificates, go to **System > File Management > SSL Certificate List > Import**.

Important

The certificate must be from a certificate authority that is trusted by the clients that will be connecting through the Secure Web Gateway proxy.

8. Deploy the Secure Web Gateway iApp

a. On the Main tab, click **iApp > Application Services**.

b. Click **Create**. The Template Selection page opens.

c. In the **Name** box, type a name. In our example, we use **swg_config_.**

d. From the **Template** list, select **f5.secure_web_gateway**. The template opens. This is one of the iApp templates you imported in *Downloading and importing the iApp templates on page 4*.

e. Use the following table for guidance on configuring the iApp template. Questions not mentioned in the table can be configured as applicable for your implementation.

Question	Your selection
Do you want to enable advanced options?	**Yes, enable advanced configuration options**
Which type of Secure Web Gateway configuration do you want to deploy?	**Explicit proxy**
What IP address and port do you want to use for the virtual server?	Type the IP address and Port you want to use for the forward proxy BIG-IP virtual server (this will be used in the client browser's proxy configuration in the following section)
What is the FQDN of this proxy?	Type the fully qualified domain name of the proxy
Which VLANs should listen for client traffic to the proxy virtual server?	For an additional level of security, you must configure the BIG-IP system to only listen on the VLANs that clients will use to connect to the proxy. Use the Remove button (>>) to move VLANs to the Options box, which will cause the system to ignore traffic from those VLANs for this configuration.
Should the virtual server support SSL interception?	Make sure this is set to **Yes**
Which SWG-Explicit Access Policy do you want to use?	Select the Access Policy you created in Step 5.

Question	Your selection
SSL Intercept Configuration: Which Subordinate CA certificate do you want to use?	Select the CA certificate you imported
Which CA key do you want to use?	Select the CA key you imported
Does the key require a password? If so, type it here.	If applicable, type the private key password
Which SWG Categories should bypass SSL filtering?	Select any URL categories that should bypass SSL filtering. Use the Add button (<<) to move categories to the Selected box, which will add those categories to the SSL filtering bypass list.
Which certificate bundle contains your Trusted Root CAs?	Select the certificate bundle containing your Trusted Root Certificate CAs. The default contains many of the most common CAs.

9. Configure any of the other settings as applicable for your implementation.
10. Click **Finished**.

Client Configuration

Use the following guidance to either manually configure the client browsers to point to the proxy, or implement the change via group policy.

- To modify the client configuration via Group Policy, see the following Microsoft TechNet article: *https://social.technet.microsoft.com/wiki/contents/articles/5156.how-to-force-proxy-settings-via-group-policy.aspx*
- To manually configure each browser:
  a. Open Internet Explorer
  b. Go to **Tools > Internet Options > Connections > LAN Settings**.
  c. In the Proxy server section, check the **Use a proxy server for your LAN** box.
     - In the **Address** field, type the IP address of the SWG virtual server you just created.
     - In the **Port** field, type the port of the SWG virtual server you created.
     - Click **OK**.

Appendix: Configuring DNS and NTP on the BIG-IP system

If you are using the BIG-IP APM, you must have DNS and NTP settings configured on the BIG-IP system. If you do not, use the following procedures.

Configuring the DNS settings

In this section, you configure the DNS settings on the BIG-IP system to point to the Active Directory server.

➲ **Note**: *DNS lookups go out over one of the interfaces configured on the BIG-IP system, not the management interface. The management interface has its own, separate DNS settings.*

➲ **Important:** *The BIG-IP system must have a Route to the Active Directory server. The Route configuration is found on the Main tab by expanding **Network** and then clicking **Routes**. For specific instructions on configuring a Route on the BIG-IP system, see the online help or the product documentation.*

To configure DNS settings

1. On the Main tab, expand **System**, and then click **Configuration**.
2. On the Menu bar, from the **Device** menu, click **DNS**.
3. In the **DNS Lookup Server List** row, complete the following:
   a. In the **Address** box, type the IP address of a DNS server that can resolve the Active Directory server.
   b. Click the **Add** button.
4. Click **Update**.

Configuring the NTP settings

The next task is to configure the NTP settings on the BIG-IP system for authentication to work properly.

To configure NTP settings

1. On the Main tab, expand **System**, and then click **Configuration**.
2. On the Menu bar, from the **Device** menu, click **NTP**.
3. In the **Address** box, type the fully-qualified domain name (or the IP address) of the time server that you want to add to the Address List.
4. Click the **Add** button.
5. Click **Update**.

To verify the NTP setting configuration, you can use the **ntpq** utility. From the BIG-IP command line, run **`ntpq -np`**.

See *http://support.f5.com/kb/en-us/solutions/public/10000/200/sol10240.html* for more information on this command.

Document Revision History

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