



Deploying the BIG-IP APM v10.2.1 with Citrix XenApp or XenDesktop

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Deploying the BIG-IP APM with Citrix XenApp or XenDesktop

- Introducing the F5 BIG-IP APM deployment guide for Citrix XenApp or XenDesktop
- Prerequisites and configuration notes
- Product versions and revision history
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Introducing the F5 BIG-IP APM deployment guide for Citrix XenApp or XenDesktop

Welcome to the BIG-IP APM deployment guide for Citrix® XenApp™ and XenDesktop. With the combination of BIG-IP Access Policy Manager (APM) version 10.2.1 and Citrix XenApp or XenDesktop, organizations can deliver a complete remote access solution that allows for scalability, security, compliance and flexibility.

While Citrix XenApp/XenDesktop products provide users with the ability to deliver applications “on-demand to any user, anywhere,” the F5 BIG-IP APM module, along with the BIG-IP LTM module, secures and scales the environment. The classic deployment of Citrix XenApp/XenDesktop allows organizations to centralize applications; this guide describes configuring access and delivering applications as needed with the BIG-IP system.

This guide is broken up into the following chapters:

- *Configuring the F5 BIG-IP APM Secure Proxy with Citrix XenApp*, on page 2-1
- *Configuring the BIG-IP APM with Citrix XenApp for Remote Network Access*, on page 3-1

For more information on the BIG-IP APM, see

www.f5.com/products/big-ip/product-modules/access-policy-manager.html

Using Edge Gateway instead of the APM Module

While this Deployment Guide outlines methods specifically for the APM module on BIG-IP system, the same procedures are applicable to the BIG-IP Edge Gateway. In BIG-IP Edge Gateway deployments either the BIG-IP LTM module or a separate BIG-IP LTM device can be used.

Specifically, if you are deploying this solution on two separate BIG-IP devices, follow all of the instructions in this document on your BIG-IP LTM and then follow all of the instructions for deploying BIG-IP APM on your Edge Gateway Device.

Prerequisites and configuration notes

The following are prerequisites for this solution.

- ◆ For this guide, the Citrix devices must be running the following versions:
 - For XenApp, the installation must be running version 5.0.x or 6.0.x
 - For XenDesktop installation must be running 5.0.
- ◆ The BIG-IP system **must** be running version 10.2.1 HF 1 or later. For previous versions of BIG-IP, see the [deployment guide index](#).
Critical: You must install 10.2.1 Hotfix 1 or higher before starting this guide.

- ◆ Session Reliability on the Citrix backend servers is supported, but not required. The configuration described in this guide is valid whether Session Reliability is enabled or disabled on the backend servers.
- ◆ We assume you have already configured your BIG-IP Local Traffic Manager (LTM) using the Application Template for XenApp found in BIG-IP LTM version 10.2.1. This updated template includes objects that had to be manually configured in previous versions.

This configuration *requires* the pool and health monitor for the Citrix Web Interface servers that are created by the Template.

- ◆ If you are using the BIG-IP system to offload SSL, we assume you have already obtained an SSL certificate and key, but it is not yet installed on the BIG-IP system. For more information, see *Creating a Client SSL profile*, on page 2-23.
- ◆ Because of the similarity in the BIG-IP LTM configuration for XenApp and XenDesktop, we include both products in this deployment guide. We clearly call out the few places where the configuration is different.
- ◆ Citrix Session configuration must be set to Direct mode. For specific information on configuring the Citrix Session mode, see the Citrix documentation.

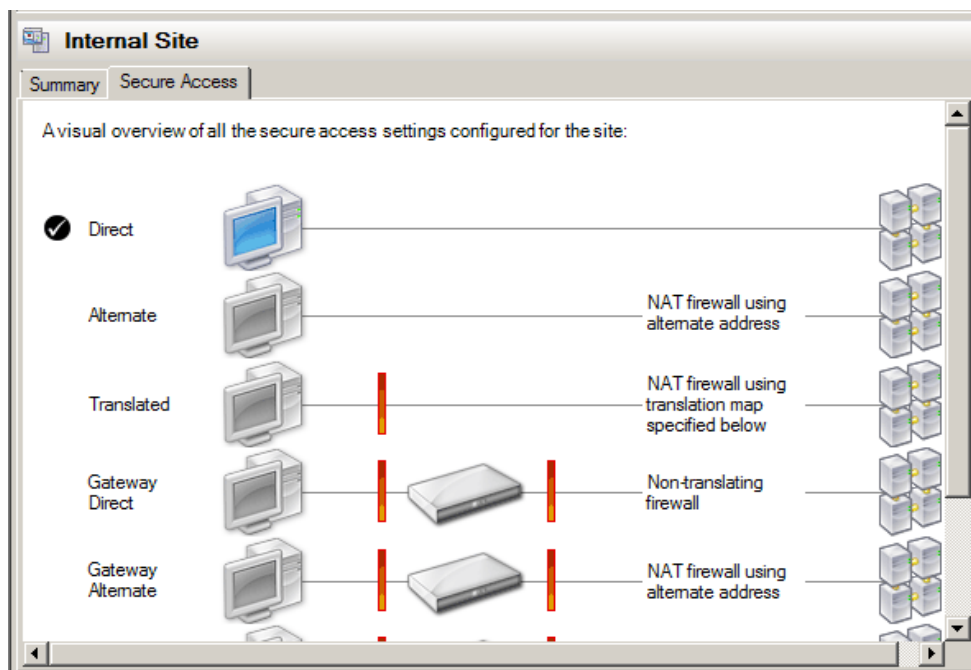


Figure 1.1 Citrix Session configuration

Product versions and revision history

Product and versions tested for this deployment guide:

Product Tested	Version Tested
BIG-IP APM/Edge Gateway	10.2.1 HF1
Citrix XenApp	5.0.1 and 6.0
Citrix XenDesktop	5.0

Document Version	Description
1.0	New guide for 10.2.1
1.1	Modified TCP profile Idle Timeout guidance from <i>Indefinite</i> to 600-900 seconds.
1.2	- Added note that the Citrix Session configuration must be set to Direct mode - Added additional information on tuning the TCP WAN optimized profiles for users with low bandwidth or high latency connections.

Configuration example

With BIG-IP APM, a front-end virtual server is created to provide security, compliance and control.

There are two recommended modes where APM can be deployed with Citrix XenApp/XenDesktop: secure proxy mode and network access client mode. Both modes have advantages that should be considered.

◆ Secure Proxy Mode

Secure Proxy mode is detailed in *Configuring the F5 BIG-IP APM Secure Proxy with Citrix XenApp*, on page 2-1. In secure proxy mode, no F5 BIG-IP APM client is required for network access. Through the setup of a secure proxy that traverses APM, remote access for user sessions originating from desktops or mobile devices is possible.

Secure proxy mode has many benefits to both users and administrators. For administrations, APM user authentication is tied directory to Citrix's Active Directory store allowing for compliance and administrative control. For users, TCP optimization and application delivery, plus the need for only the Citrix client, creates a fast and efficient experience.

◆ Remote Access Mode

Remote Access mode is detailed in *Configuring the BIG-IP APM with Citrix XenApp for Remote Network Access*, on page 3-1.

In Remote Access Mode, the BIG-IP APM client is used to provided a complete tunnel to the environment. The advantages to this mode are that

UDP based Datagram TLS (DTLS) can be used to achieve accelerated connections as well as finer grained control on user interactions with the system. With the remote access client, access to other parts of an organization's network may also be granted instead of a direct one-to-one relationship in secure proxy mode.

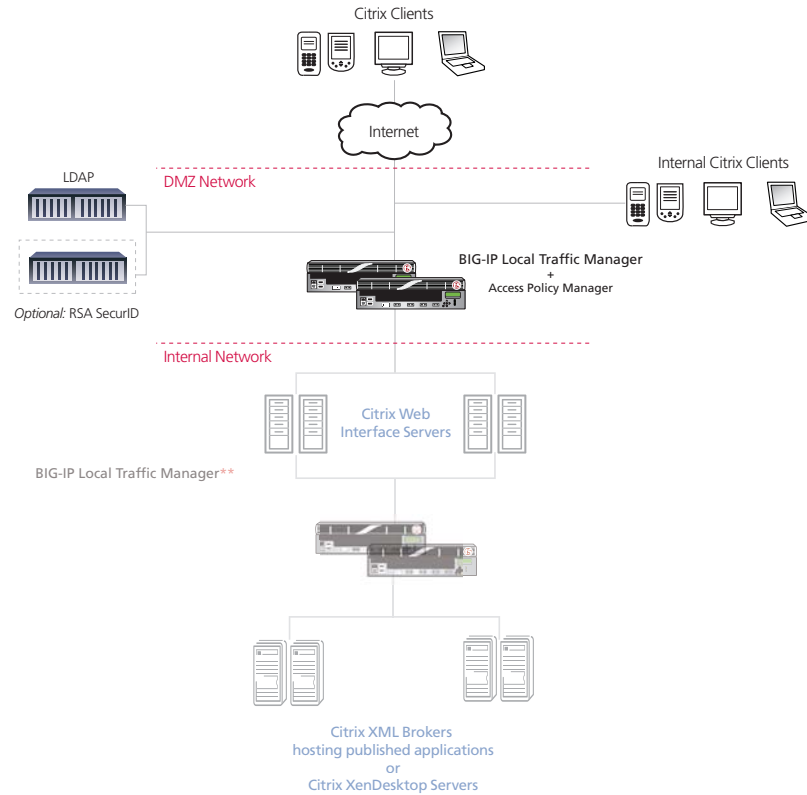


Figure 1.2 Logical configuration example

****** The BIG-IP LTM configuration is shown in this diagram for completeness; the step-by-step procedures are not a part of this deployment guide. We recommend using only the Application Template found in the BIG-IP LTM system v10.2.1 HF1 for this configuration.



2

Deploying the BIG-IP APM Secure Proxy with Citrix XenApp/XenDesktop

- Configuring the F5 BIG-IP APM Secure Proxy with Citrix XenApp or XenDesktop
- Configuring the BIG-IP system for authentication
- Configuring the BIG-IP APM for Citrix Secure Proxy
- Appendix A: Citrix Receiver Support with BIG-IP APM secure proxy example for iPhone/iPad

Configuring the F5 BIG-IP APM Secure Proxy with Citrix XenApp or XenDesktop

In this chapter, we configure the BIG-IP APM in Secure Proxy mode for Citrix XenApp/XenDesktop.

Traffic flow

This section describes the connection flow from a user perspective and then from the administrator's perspective.

Secure Proxy user traffic flow

In the Secure Proxy mode, the user experience takes the following path:

1. The user enters a Virtual Address such as `https://citrix.example.com`.
2. The user is prompted for a user name and password by a customizable login screen on the BIG-IP APM, and enters his or her credentials.
3. The user is logged into Citrix XenApp/XenDesktop.
4. If the user has never logged into the site or does not have the Citrix client, the user is prompted to download and install the client.
5. The user is presented with the list of available applications.

Secure Proxy administrative traffic flow

In the Secure proxy mode, the administrator has total control over the compliance, security, scalability and TCP connections of the citrix session.

1. The user enters a Virtual Address such as `https://citrix.example.com`. This request is answered by the BIG-IP APM. The APM provides SSL offload, terminating the SSL connection, reducing resource usage on the Active Directory and the Citrix Servers.
2. Optionally at this step, additional compliance and security checks may be carried out through the Visual Policy Editor (VPE™). For example, the APM can store for future evaluation whether the user is from a certain geographic region or whether the user has the correct browsers and be redirected to appropriate landing pages.
3. Once the user enters credentials, the BIG-IP APM contacts Active Directory and authenticates the user's credentials. Once the user is authenticated, appropriate cookies are transmitted to the user's browser to create session states. This authentication is then transparently (to the user) passed to the Citrix login form and the user is logged in. The user only ever sees the single login page.

4. The BIG-IP APM checks the users access against the configured policy to determine the capabilities of the client's browser. If the Citrix client is not installed, the user is prompted to download and install the client. BIG-IP APM's single-sign-on policy ensures the user does not have to login again because the user's credentials are cached and presented to the Citrix server when needed.
5. The administrator now has total control with the BIG-IP system to scale, secure, accelerate and optimize the connections from users to Citrix.

Configuring the BIG-IP system for authentication

For Single Sign On authentication to work properly, you must configure BIG-IP authentication. This requires configuring DNS and NTP settings on the BIG-IP system.

The configuration in this section is the same whether you are using XenApp or XenDesktop.

Configuring the DNS settings

The first task in this section is to 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 the Active Directory server.
 - b) Click the **Add** button (see Figure 2.1, on page 2-4).
4. Click **Update**.

The screenshot shows a web interface for configuring DNS properties. The breadcrumb navigation is "System >> Configuration : Device : DNS". Below this are tabs for "Device", "Local Traffic", and "Global Traffic". The "Properties" section contains four main areas:

- DNS Lookup Server List:** An "Address:" field contains "192.0.2.143". Below it is an "Add" button and a list box containing "192.0.2.143". Below the list box are "Edit" and "Delete" buttons.
- BIND Forwarder Server List:** An "Address:" field is empty. Below it is an "Add" button and an empty list box. Below the list box are "Edit" and "Delete" buttons.
- DNS Search Domain List:** An "Address:" field is empty. Below it is an "Add" button and an empty list box. Below the list box are "Edit" and "Delete" buttons.
- DNS Cache:** A checkbox that is currently unchecked.

An "Update" button is located at the bottom left of the configuration area.

Figure 2.1 DNS configuration properties

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**.

Configuring the BIG-IP APM for Citrix Secure Proxy

In this section, we configure the Access Policy Manager for the Citrix Secure Proxy. This is the main entry point into the configuration.

Choosing an authentication mechanism

This guide documents two methods of authentication when integrating BIG-IP APM Secure Proxy mode with your Citrix XenApp environment. The main difference is the ability to support RSA Two-Factor (or token based) authentication, and password-only authentication. We refer to the RSA authentication method in terms of Citrix's terminology as **Access Gateway mode**. For password-only authentication without two factor authentication, we refer to **Non-Access Gateway mode** or simply **standard mode**.

◆ Important

*In this section, there are certain configuration objects that have different procedures depending on which mode you choose. These are clearly marked with **OPTIONAL** in the heading.*

◆ Standard authentication

Unless you are using Citrix Receiver with RSA SecurID, you configure your authentication with standard, non-access gateway mode authentication. Authentication is carried out through password authentication. In this guide, we demonstrate the configuration of password authentication against Active Directory.

The BIG-IP APM caches users credentials so that users do not have to enter their user name and password twice.

◆ Access Gateway authentication for Citrix Receiver clients

For Citrix Receiver clients, configuring Access Gateway mode allows administrators to use RSA Two Factor authentication. For Access Gateway mode we use the BIG-IP APM Visual Policy Editor (VPE) to create an access policy that detects which client users are connecting from and authenticates the user to the correct source.

The BIG-IP APM caches users credentials so that users do not have to enter their user name and password twice.

Creating a AAA Server

The BIG-IP APM does not have a built-in authentication store therefore an authentication source must be specified. In the following example, we use Active Directory authentication; you may be using LDAP or another authentication source. Configure as appropriate for your implementation.

The configuration in this procedure is the same whether you are using XenApp or XenDesktop.

◆ Important

If you are using Access Gateway mode, there is an additional AAA server to create, which uses RSA SecurID (however, you still configure the following AAA server).

To create an AAA server

1. On the Main tab, expand **Access Policy**, and then click **AAA servers**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **Citrix_domain**.
4. From the **Type** list, select the authentication method appropriate for your implementation. In this example, we select **Active Directory**.
5. In the Configuration section, type the appropriate information relevant to your authentication method. In our Active Directory example, we provide the Domain Controller IP address, the Domain Name, the Admin Name, the Admin Password and we leave the timeout at default.
6. Click **Finished**.

Access Policy >> AAA Servers >> New Server...	
General Properties	
Name	Citrix_domain
Type	Active Directory
Configuration	
Domain Controller	192.0.2.145
Domain Name	mydomain.example.com
Admin Name	admin
Admin Password
Verify Admin Password
Timeout	15 seconds
<input type="button" value="Cancel"/> <input type="button" value="Finished"/>	

Figure 2.2 AAA server configuration

OPTIONAL: Configuring an additional AAA server for Access Gateway mode

*If you are using Access Gateway mode for Citrix Receiver, you must configure an **additional** AAA server for RSA SecurID.*

◆ Note

*If you are **not** using Access Gateway mode, you do not configure this AAA server, continue with **Creating the SSO configuration**, on page 8.*

For RSA SecurID, you need to have the SecurID Configuration file ready to upload from an accessible location, and the RSA device must already be configured to accept connections from the BIG-IP. For additional information about RSA SecurID, see the RSA documentation.

By configuring RSA SecurID as an authentication source, the BIG-IP APM proxies the authentication connection as part of the traffic flow for the Access Gateway connection.

You should already have a self IP address on the BIG-IP system that matches the IP address in the SecurID configuration File. If not, configure the self IP address before beginning this procedure. For specific instructions on configuring a self IP address, see the online help or BIG-IP documentation.

◆ Important

You only need to configure this AAA server if you are using Access Gateway mode.

To create an AAA server with RSA SecurID

1. On the Main tab, expand **Access Policy**, and then click **AAA servers**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **Citrix_SecurID**.
4. From the **Type** list, select **SecurID**.
5. In the Agent Host IP Address section, click the **Select from Self IP List** button. From the list, select the appropriate self IP address that matches the IP address in the SecurID configuration file.
6. In the **SecurID Configuration File** box, type the path to the SecurID configuration file, or click **Browse** and locate the file.
7. In the **File Description** box, you can optionally type a description.
8. Click **Finished**.

This is the end of this optional section for Citrix Receiver Access Gateway mode.

Creating the SSO configuration

The next task is to create a Single Sign-On Configuration that defines the credentials that are cached.

This procedure is slightly different depending on whether you are configuring the BIG-IP for XenApp or XenDesktop; follow the procedure applicable for your configuration:

- *Creating the SSO configuration for XenApp*, on this page
- *Creating the SSO configuration for XenDesktop*, on page 2-10

Creating the SSO configuration for XenApp

If you are configuring the BIG-IP APM for Citrix **XenApp**, use the following procedure to create a Single Sign-On configuration that defines the credentials that are cached.

◆ Note

You must complete this section no matter with authentication mechanism you are using.

To create the SSO configuration

1. On the Main tab, expand **Access Policy**, and then click **SSO Configurations**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **CitrixSSO**.
4. From the **SSO Method** list, select **Form Based**.
5. In the **Username Source** box, type the user name source. In our example, we leave the default: **session.sso.token.last.username**.
6. In the **Password Source** box, type the user name source. In our example, we leave the default: **session.sso.token.last.password**.
7. In the **Start URI** box, type **/Citrix/XenApp/auth/login.aspx**
8. From the **Form Method** box, select **POST**.
9. In the **Form Action** box, type **/Citrix/XenApp/auth/login.aspx**.
10. In the **Form Parameter For User Name** box, type **user**.
11. In the **Form Parameter For Parameter** box, type **password**.
12. In the **Hidden Form Parameters/Values** box, use the following syntax:

domain <domain-name>
LoginType Explicit

Note: For domain, you must enter the Active Directory domain name for the users being authenticated.

In our example, we type

```
domain LABDOMAIN
LoginType Explicit
```

13. From the **Successful Logon Detection Match Type** list, select **By Resulting Redirect URL**.
14. In the **Successful Logon Detection Match Value** box, type `/Citrix/XenApp/site/default.aspx` (see Figure 2.3, on page 2-9).
15. Click **Finished**.

◆ **Note**

In this SSO configuration we have documented the default installation for XenApp Web Interface which results in URLs beginning with `/Citrix/XenApp/`. If your default Web Interface is differently named (such as `DesktopWeb`) you have to adjust the URLs in this procedure accordingly.

General Properties	
Name	CitrixSSO
SSO Method	Form Based

Configuration	
Username Source	session.sso.token.last.username
Password Source	session.sso.token.last.password
Start URI	/Citrix/XenApp/auth/login.aspx
Form Method	POST
Form Action	/Citrix/XenApp/auth/login.aspx
Form Parameter For User Name	user
Form Parameter For Password	password
Hidden Form Parameters/Values	domain LABDOMAIN LoginType Explicit
Successful Logon Detection Match Type	By Resulting Redirect URL
Successful Logon Detection Match Value	/Citrix/XenApp/site/default.aspx

Cancel Finished

Figure 2.3 New SSO Configuration page

Creating the SSO configuration for XenDesktop

If you are configuring the BIG-IP LTM for **XenDesktop**, use the following procedure to create a Single Sign-On configuration that defines the credentials that are cached.

◆ Note

You must complete this section no matter with authentication mechanism you are using.

To create the SSO configuration

1. On the Main tab, expand **Access Policy**, and then click **SSO Configurations**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **CitrixSSO**.
4. From the **SSO Method** list, select **Form Based**.
5. In the **Username Source** box, type the user name source. In our example, we leave the default: **session.sso.token.last.username**.
6. In the **Password Source** box, type the user name source. In our example, we leave the default: **session.sso.token.last.password**.
7. In the **Start URI** box, type **/Citrix/DesktopWeb/auth/login.aspx**
8. From the **Form Method** box, select **POST**.
9. In the **Form Action** box, type **/Citrix/DesktopWeb/auth/login.aspx**.
10. In the **Form Parameter For User Name** box, type **user**.
11. In the **Form Parameter For Parameter** box, type **password**.
12. In the **Hidden Form Parameters/Values** box, use the following syntax:

domain <domain-name>
LoginType Explicit

Note: For domain, you must enter the Active Directory domain name for the users being authenticated.

In our example, we type

```
domain LABDOMAIN
LoginType Explicit
```

13. From the **Successful Logon Detection Match Type** list, select **By Resulting Redirect URL**.
14. In the **Successful Logon Detection Match Value** box, type **/Citrix/DesktopWeb/site/default.aspx**.
15. Click **Finished**.

Creating an Access Profile

The next task in this section is to create an Access profile. How you configure the Access Policy depends on whether you are using Access Gateway mode.

- If you are not using **Access Gateway mode**, use *Creating an Access Profile when not using Access Gateway mode*, on page 2-11
- If you are using **Access Gateway mode**, use *OPTIONAL: Creating an Access Profile in Access Gateway mode*, on page 2-15

The configuration in these procedures is the same whether you are using XenApp or XenDesktop.

◆ Important

Only use the section relevant to your configuration.

Creating an Access Profile when not using Access Gateway mode

Use the following procedures to create an Access profile *if you are not using Access Gateway mode*.

◆ Important

*This section is only if you are **not** using Access Gateway mode. If you are using Access Gateway mode, go back to **OPTIONAL: Creating an Access Profile in Access Gateway mode**, on page 2-15, or if you are finished, continue with **Creating the profiles**, on page 2-23.*

To create an Access Profile

1. On the Main tab, expand **Access Policy**, and then click **Access Profiles**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **Citrix-standard-authentication**.
4. In the Settings section, configure the options as applicable for your configuration. In our example, we leave all of the settings at their defaults. Note that depending on licensing, the number of concurrent users may be limited. The other timeouts are administrative choices.
5. In the Configuration section, from the **SSO Configuration** list, select the SSO configuration you created in *Creating the SSO configuration*, on page 2-8. In our example, we select **CitrixSSO**.
6. Configure the rest of the settings in the Configuration section as applicable to your environment. In our example, we leave **Secure Cookie** checked.

7. In the Language Settings section, if you are deploying in a language other than English, configure as applicable for your language.
8. Click **Finished**

Editing the Access Profile with the Visual Policy Editor for non Access Gateway mode

The next task is to edit the Access Policy you just created using the Visual Policy Editor (VPE). The VPE is a powerful visual scripting language that offers virtually unlimited options in configuring an Access Policy.

For additional or more sophisticated authentication and policy options, see the *Configuration Guide for BIG-IP Access Policy Manager*, available on Ask F5 (<https://support.f5.com/>).

To edit the Access Profile for non-Access Gateway mode

1. On the Main tab, expand **Access Policy**, and click **Access Profiles**.
2. Locate the Access Profile you just created, and in the Access Policy column, click **Edit**. The VPE opens in a new window.
3. Click the + symbol between **Start** and **Deny**. A box opens with options for different actions.
4. Click the **Empty** option button, and then click **Add Item**. The Properties box opens.
 - a) In the **Name** box, type a name. In our example, we type **User Agent Check**.
 - b) Click the *Branch Rules* tab.
 - c) Click **Add Branch Rule**.
 - d) In the **Name** box, type **Dazzle**.
 - e) Click the **change** link, and then click the *Advanced* tab.
 - f) In the box, copy and paste the following expression:

```
expr { [mcget {session.user.agent}] contains "Dazzle" }
```
 - g) Click **Finished**.
 - h) Click **Save**.

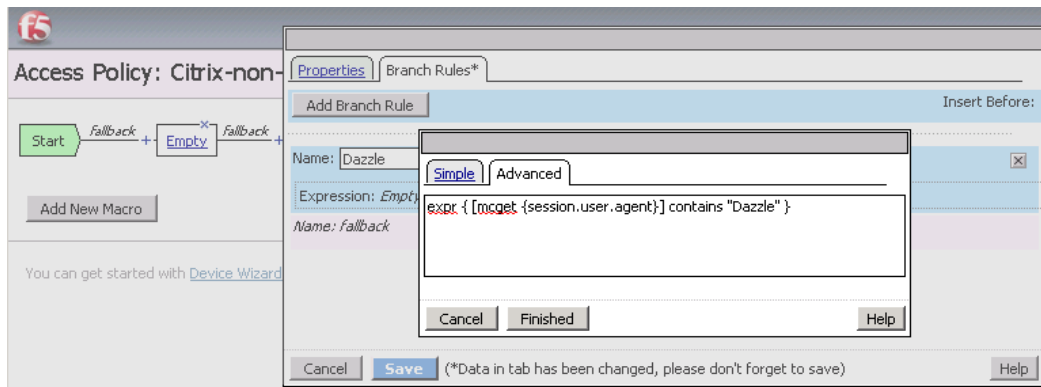


Figure 2.4 Branch Rule configuration for the Empty VPE object

5. Click the + symbol between **Dazzle** and **Deny**.
6. Click the **Logon Page** option button, and then click **Add Item**.
7. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults.
8. Click the **Save** button.
9. Repeat steps 5-7 for the **Fallback** path. After completing this step, your VPE should look like the following.

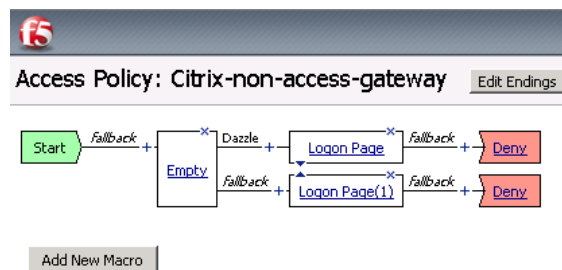


Figure 2.5 VPE after configuring the Logon Page options

10. Click the **Add New Macro** button. The new macro box opens.
 - a) In the **Name** box, type a name for this macro. In our example, we type **Password Based Auth**.
 - b) Click the **Save** button. The Macro appears under the Access Policy.
 - c) Click the Expand (+) button next to **Password Based Auth**.
 - d) Click the + symbol between **In** and **Out**. A box opens with options for different actions.
 - e) Click the **AD Auth** option button, and then click **Add Item**.

- f) From the **Server** list, select the name of the AAA server you created in *Creating a AAA Server*, on page 2-5. We select **Citrix_domain**.
 - g) Configure the rest of the Active Directory options as applicable, and then click **Save**. You now see two paths, **Successful** and **Fallback**.
 - h) Click the **Edit Terminals** button to the right of the Macro Name.
 - i) In the **Name** box, type **Successful**. The list to the right should be on a green #1.
 - j) Click **Add Terminal**.
 - k) In the **Name** box, type **Failure**. The list to the right should be on a red #2.
 - l) Click the Up arrow to the right of Successful to move it up.
 - m) Click **Save**.
 - n) Back in the Macro, on the *fallback* path, click the **Successful** box, click **Failure**, and then click **Save**.
When you are finished, your macro should look like Figure 2.11, on page 2-20.
11. On the *Dazzle* path, click the + symbol between **Logon Page** and **Deny**. The box opens with different actions. There is now a section at the top for Macrocalls.
 12. In the Macrocalls section, click the option button for the Macro you just created, and then click the **Add Item** button. In our example, we click **Password Based Auth**.
 13. On the Successful path between **Password Based Auth** and **Deny**, click the **Deny** box, click **Allow**, and then click **Save**.
This completes the Dazzle path.
 14. Click the + symbol on the *fallback* path between **Logon Page** and **Deny**. The options box opens.
 15. In the Macrocalls section, click the option button for the Macro you created, and then click the **Add Item** button. In our example, we click **Password Based Auth**.
 16. Click the + symbol on the *Successful* path between **Password Based Auth** and **Deny**. The options box opens
 17. Click the **SSO Credential Mapping** option button, and then click **Add Item**.
 18. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults.

Note: The Logon page can be customized to match the look-and-feel of your organization. For further information about this, see the BIG-IP APM Configuration Guide. If you do choose to customize the Logon page, we recommend creating the Logon item as a Macro (using step 10 as a guideline).

19. Click the **Save** button.
20. On the *fallback* path between **SSO Credential Mapping** and **Deny**, click the **Deny** box, click **Allow**, and then click **Save**. When you are finished, the VPE should look like Figure 2.6, on page 2-15.
21. Click the yellow **Apply Access Policy** link in the upper left part of the window. You must apply an access policy before it takes effect.
22. Click the **Close** button on the upper right to close the VPE.

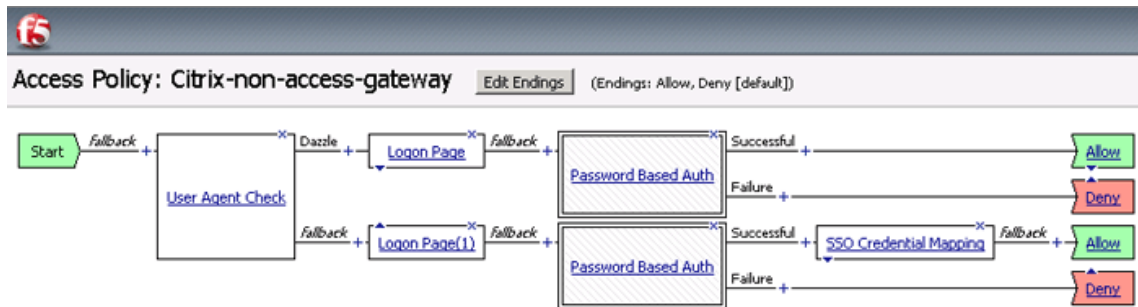


Figure 2.6 Completed VPE in non-Access Gateway mode

This completes the Access Profile and Visual Policy Editor configuration for the Standard/Non-Access Gateway mode. Continue with *Creating the profiles*, on page 2-23.

OPTIONAL: Creating an Access Profile in Access Gateway mode

Use the following procedure *if you are using Access Gateway mode for Citrix Receiver clients*. This includes creating the Access Profile and editing the profile with the Visual Policy Editor.

◆ Important

*If you are not using Access Gateway mode, go directly to **Creating an Access Profile when not using Access Gateway mode**, on page 2-11.*

To create an Access Profile

1. On the Main tab, expand **Access Policy**, and then click **Access Profiles**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **Citrix-ICA-SecureProxy**.

4. In the Settings section, configure the options as applicable for your configuration. In our example, we leave all of the settings at their defaults. Note that depending on licensing, the number of concurrent users may be limited. The other timeouts are administrative choices.
5. In the Configuration section, from the **SSO Configuration** list, select the SSO configuration you created in *Creating the SSO configuration*, on page 2-8. In our example, we select **CitrixSSO**
6. Configure the rest of the settings in the Configuration section as applicable to your environment. In our example, we leave **Secure Cookie** checked.
7. In the Language Settings section, if you are deploying in a language other than English, configure as applicable for your language.
8. Click **Finished** (see Figure 2.7, on page 2-16).

Access Policy > Access Profiles : Access Profiles List > New Profile...

General Properties

Name	Citrix-ICA-SecureProxy
Parent Profile	access

Settings Custom

Inactivity Timeout	900	seconds	<input type="checkbox"/>
Access Policy Timeout	300	seconds	<input type="checkbox"/>
Maximum Session Timeout	0	seconds	<input type="checkbox"/>
Max Concurrent Users	0		<input type="checkbox"/>
Max Sessions Per User	0		<input type="checkbox"/>

Configurations

SSO Configuration	+ CitrixSSO
Domain Cookie	
Secure Cookie	<input checked="" type="checkbox"/> Enabled

Figure 2.7 New Access Profile (truncated to show relevant settings)

Editing the Access Profile with the Visual Policy Editor for Access Gateway mode

The next task is to edit the Access Policy you just created for Access Gateway mode using the Visual Policy Editor (VPE). The VPE is a powerful visual scripting language that offers virtually unlimited options in configuring an Access Policy.

For additional or more sophisticated authentication and policy options, see the *Configuration Guide for BIG-IP Access Policy Manager*, available on Ask F5 (<https://support.f5.com/>).

To edit the Access Profile for Access Gateway mode

1. On the Main tab, expand **Access Policy**, and click **Access Profiles**.
2. Locate the Access Profile you just created, and in the Access Policy column, click **Edit**. The VPE opens in a new window.
3. Click the + symbol between **Start** and **Deny**. A box opens with options for different actions.
4. Click the **Empty** option button, and then click **Add Item**. The Properties box opens.
 - a) In the **Name** box, type a name. In our example, we type **User Agent Check**.
 - b) Click the *Branch Rules* tab.
 - c) Click **Add Branch Rule**.
 - d) In the **Name** box, type a name. We type **PNAgent**.
 - e) Click the **change** link. The Add Expression box opens.
 - f) Click the *Advanced* tab.
 - g) In the box, copy and paste the following expression:

```
expr { [mcget {session.user.agent}] contains "PNAMAIN" or [mcget {session.user.agent}]  
contains "PNAMain" }
```

- h) Click **Finished**.
- i) Click **Add Branch Rule** again.
- j) In the new **Name** box (called *Branch Rule 2*), type **Dazzle**.
- k) Click the **change** link, and then click the *Advanced* tab.
- l) In the box, copy and paste the following expression:

```
expr { [mcget {session.user.agent}] contains "Dazzle" }
```

See Figure 2.8.
- m) Click **Finished**.
- n) Click **Save**.

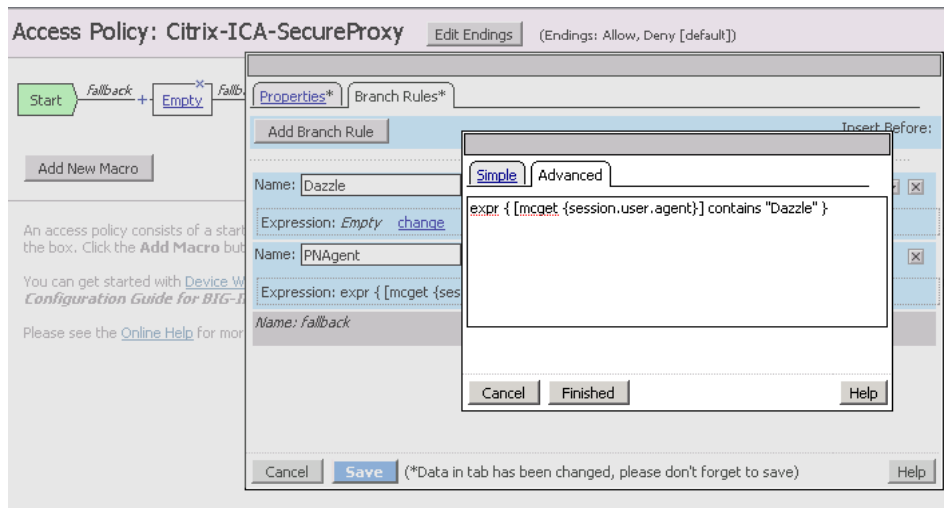


Figure 2.8 Branch Rule configuration for the Empty VPE object

When you are finished with the Branch rules in the Empty VPE object, your Visual Policy should look like the following.

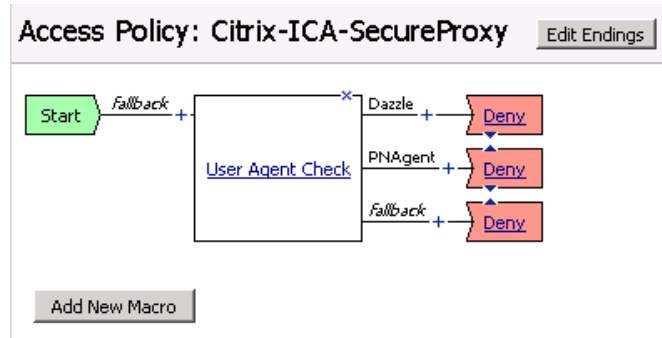


Figure 2.9 VPE after configuring the Empty object

5. Click the + symbol between **Dazzle** and **Deny**.
6. Click the **Logon Page** option button, and then click **Add Item**.
7. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults.

Note: The Logon page can be customized to match the look-and-feel of your organization. For further information about this, see the BIG-IP APM Configuration Guide. If you do choose to customize the Logon page, we recommend creating the Logon item as a Macro (using step 10 as a guideline).

8. Click the **Save** button.

9. Repeat steps 5-7 for the **PNAgent** and **Fallback** paths.

Your VPE should now look like the following:

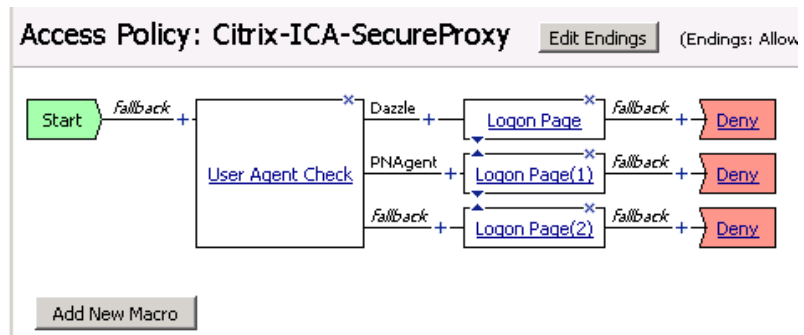


Figure 2.10 VPE after adding the Logon Pages

10. Click the **Add New Macro** button. The new macro box opens.
 - a) Leave the **Select macro template** list set to **Empty**.
 - b) In the **Name** box, type a name for this macro. In our example, we type **Password Based Auth**.
 - c) Click the **Save** button. The Macro appears under the Access Policy.
 - d) Click the Expand (+) button next to **Password Based Auth**.
 - e) Click the + symbol between **In** and **Out**. A box opens with options for different actions.
 - f) Click the **AD Auth** option button, and then click **Add Item**.
 - g) From the **Server** list, select the name of the AAA server you created in *Creating a AAA Server*, on page 2-5. We select **Citrix_domain**.
 - h) Configure the rest of the Active Directory options as applicable, and then click **Save**. You now see two paths, **Successful** and **Fallback**.
 - i) Click the **Edit Terminals** button to the right of the Macro Name.
 - j) In the **Name** box, type **Successful**. The list to the right should be on a green #1.
 - k) Click **Add Terminal**.
 - l) In the **Name** box, type **Failure**. The list to the right should be on a red #2.
 - m) Click the Up arrow to the right of Successful to move it up.
 - n) Click **Save**.

- o) Back in the Macro, on the *fallback* path, click the **Successful** box, click **Failure**, and then click **Save**.

When you are finished, your macro should look like the following:

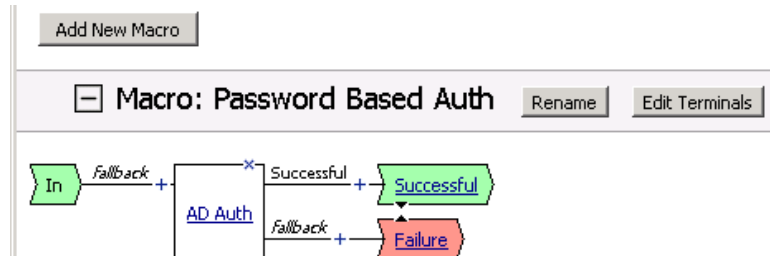


Figure 2.11 Completed Macro configuration

11. Click the + symbol on the *Dazzle* path between **Logon Page** and **Deny**. The box opens with different actions. There is now a section at the top for Macrocalls.
12. In the Macrocalls section, click the option button for the Macro you just created, and then click **Add Item**. In our example, we click **Password Based Auth**.
13. On the *Dazzle* Successful path after Password Based Auth, click the **Deny** box. In the **Select Ending** box, click **Allow** and then click the **Save** button.
This completes the *Dazzle* path.
14. On the *PNAgent* path between **Logon Page(1)** and **Deny**, click the + symbol.
15. In the Macrocalls section, click the option button for the Macro you just created, and then click **Add Item**. In our example, we click **Password Based Auth**.
16. Click **Save**.
17. On the *PNAgent* Successful path, click the + symbol between **Password Based Auth** and **Deny**.
18. Click the **SSO Credential Mapping** option button, and then click **Add Item**.
19. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults.
20. Click the **Save** button.
21. On the *PNAgent* Successful path after SSO Credential Mapping, click the **Deny** box, click **Allow**, and then click **Save**.
This completes the *PNAgent* path.

22. Click the + symbol on the *fallback* path between **Logon Page(2)** and **Deny**.
23. Click **RSA SecurID**, and then click **Add Item**.
 - a) From the **AAA Server** list, select the AAA server for RSA SecurID you created in *OPTIONAL: Configuring an additional AAA server for Access Gateway mode*, on page 2-7.
 - b) From the **Max Logon Attempts Allowed** list, select a number of attempts. In our example, we leave the list at **3**.
 - c) Click **Save**.
24. On the *fallback* Successful path after RSA SecurID, click the **Deny** box, click **Allow**, and then click **Save**.
25. On the Successful path between **RSA SecurID** and **Allow**, click the + symbol.
26. Click the **Variable Assign** button and then click **Add Item**.
27. Click the **Add new entry** button.
28. On the left side, select **Custom Variable** from the list, and then type the following:


```
session.logon.last.password
```
29. On the right side, select Custom Expression from the list, and then type the following:


```
mcget {session.logon.last.password1}
```
30. Click the **Finished** button.

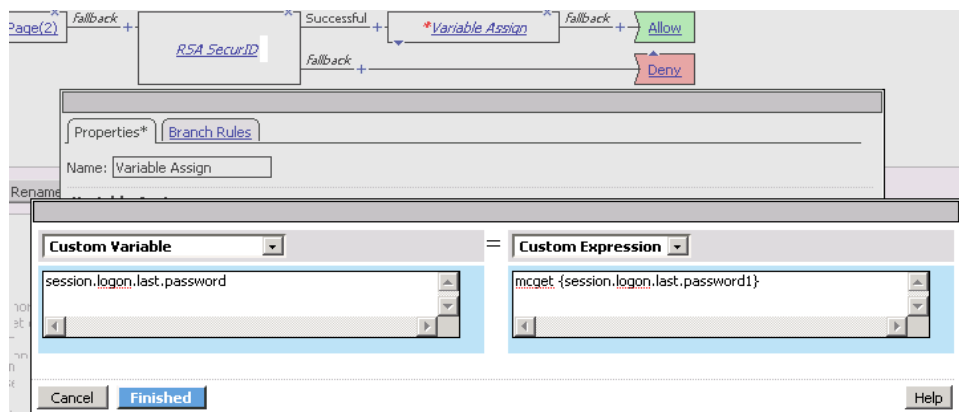


Figure 2.12 Variable Assign configuration

31. On the Successful path between **Variable Assign** and **Allow**, click the + symbol.
32. In the Macrocalls section, click the option button for the Macro you created, and then click **Add Item**. In our example, we click **Password Based Auth**.

33. On the Successful path between **Password Based Auth** and **Allow**, click the + symbol.
34. Click the **SSO Credential Mapping** option button, and then click **Add Item**.
35. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults.
36. Click the **Save** button. When you are finished, your VPE should look like Figure 2.13, on page 2-22.
37. Click the yellow **Apply Access Policy** link in the upper left part of the window. You must apply an access policy before it takes effect.
38. Click the **Close** button on the upper right to close the VPE.

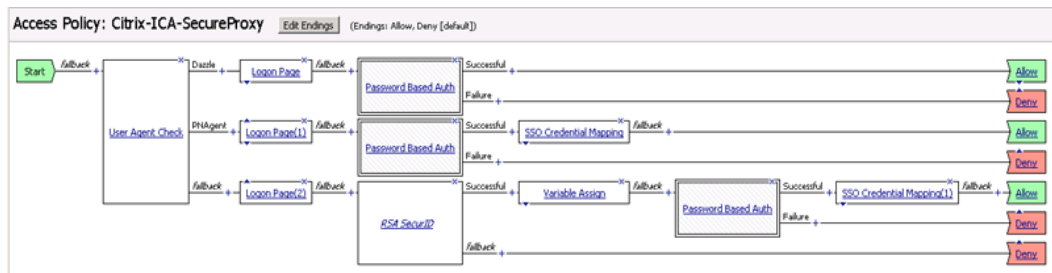


Figure 2.13 Completed VPE for Access Gateway mode

This completes the Optional procedure for Access Gateway mode for Citrix Receiver clients. The remainder of this guide applies to both authentication mechanisms; there are no more optional procedures for Access Gateway mode.

Creating the profiles

You have now created a Visual Policy for either Access Gateway mode or Standard mode. The next task is to create the profiles for this configuration.

The profile configuration is the same whether you are using XenApp or XenDesktop.

Creating the TCP profiles

The next profiles we create are the TCP profiles. With regard to the LTM TCP profiles and XenApp/XenDesktop, Citrix maintains keepalives using its own clients. This keepalive is configurable on a per client basis (see Citrix documentation instructions on adjusting this timeout). As an alternate approach, if premature session termination is a concern, we recommend setting the **Idle Timeout** value to a longer time period to prevent idle desktop sessions from being terminated prematurely.

◆ Important

*Setting TCP timeout to **Indefinite** may lead to session exhaustion and should be used with care.*

Optional: Certain WAN conditions such as users connecting over low bandwidth or high latency can be optimized further by using different options for the TCP WAN profile. We recommend that you review the following solutions for environments where users are connecting from more challenging WAN conditions. Significant improvements are possible. Specifically, we recommend setting **Nagle's Algorithm** to **Disabled** and setting **Congestion Control** to **Scalable**.

<http://support.f5.com/kb/en-us/solutions/public/7000/400/sol7402.html>

<http://support.f5.com/kb/en-us/solutions/public/7000/400/sol7405.html>

Creating the LAN optimized TCP profile

The first TCP profile we create is the LAN optimized profile. We recommend creating **tcp-lan-optimized** profile, with an additional **tcp-wan-optimized** profile, if you have you have remote users coming in.

To create a new LAN optimized TCP profile

1. On the Main tab, expand **Local Traffic**, and then click **Profiles**. The HTTP Profiles screen opens by default.
2. On the Menu bar, from the **Protocol** menu, select **TCP**.
3. In the upper right portion of the screen, click the **Create** button. The New TCP Profile screen opens.
4. In the **Name** box, type a name for this profile. In our example, we type **citrix_tcp_lan**.
5. In the **Idle Timeout** row, click the **Custom** box, and then type a number between 600 and 900, depending on your configuration.

6. Modify any of the other settings as applicable for your network. See the online help for more information on the configuration options. In our example, we leave the settings at their default levels.
7. Click the **Finished** button.

Creating the WAN optimized TCP profile

The next task is to create the WAN optimized profile. Again, we set the Idle Timeout value to Indefinite to prevent idle desktop sessions from being terminated prematurely.

To create a new WAN optimized TCP profile

1. On the Main tab, expand **Local Traffic**, click **Profiles**, and then, on the Menu bar, from the **Protocol** menu, select **TCP**.
2. Click the **Create** button. The New TCP Profile screen opens.
3. In the **Name** box, type a name for this profile. In our example, we type **citrix_tcp_wan**.
4. In the **Idle Timeout** row, click the **Custom** box, and then type a number between 600 and 900, depending on your configuration.
5. Modify any of the other settings as applicable for your network. See the online help for more information on the configuration options. In our example, we leave the settings at their default levels.
6. Click the **Finished** button.

Creating the persistence profile

The next profile we create is a Persistence profile.

To create a new persistence profile

1. On the Main tab, expand **Local Traffic**, and then click **Profiles**.
2. On the Menu bar, click **Persistence**.
3. Click the **Create** button. The New Persistence Profile screen opens.
4. In the **Name** box, type a name. In our example, we type **citrix-persistence**.
5. From the **Persistence Type** list, select **Source Address Affinity**.
6. Modify any of the settings as applicable for your network. In our example, we leave the settings at their default levels.
7. Click the **Finished** button.

Creating an HTTP profile

The next task is to create an HTTP profile.

To create a new HTTP profile

1. On the Main tab, expand **Local Traffic**, and then click **Profiles**. The HTTP Profiles screen opens.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **citrix-secureproxy-http**.
4. From the **Parent Profile** list, leave the default parent profile, **HTTP**.
5. From the **Redirect Rewrite** row, check the **Custom** box, and then select **All** from the list.
6. Click the **Finished** button.

Creating a Client SSL profile

The next step is to create an SSL profile. This profile contains SSL certificate and key information. The first task is to import the certificate and key (for this Deployment Guide, we assume that you already have obtained the required SSL certificates, but they are not yet installed on the BIG-IP LTM system. If you do not have a certificate and key, see the BIG-IP documentation).

To import a key or certificate

1. On the Main tab, expand Local Traffic.
2. Click **SSL Certificates**. This displays the list of existing certificates.
3. In the upper right corner of the screen, click **Import**.
4. From the **Import Type** list, select the type of import (**Certificate** or **Key**).
5. In the **Certificate** (or **Key**) **Name** box, type a unique name for the certificate or key.
6. In the **Certificate** (or **Key**) **Source** box, choose to either upload the file or paste the text.
7. Click **Import**.
8. If you imported the certificate, repeat this procedure for the key.

The next task is to create the SSL profile that uses the certificate and key you just imported.

To create a new Client SSL profile

1. On the Main tab, expand **Local Traffic**, click **Profiles**, and then, on the Menu bar, from the **SSL** menu, select **Client**.
2. Click the **Create** button.

3. In the **Name** box, type a name for this profile. In our example, we type **xenapp-secureproxy-ssl**.
4. In the Configuration section, click a check in the **Certificate** and **Key Custom** boxes.
5. From the **Certificate** list, select the name of the Certificate you imported in the *Importing keys and certificates* section.
6. From the **Key** list, select the key you imported in the *Importing keys and certificates* section.
7. Click the **Finished** button.

Creating the virtual server

The next task is to create the virtual server that serves as the **main entry point into the deployment**.

Important

As mentioned in the prerequisites section, we assume you have already configured your BIG-IP LTM using the Application Template in version 10.2.1. This virtual server references the Citrix Web Interface pool you created in that guide. If you have not run the application template, you must do so before continuing.

To create the HTTPS virtual server

1. On the Main tab, expand **Local Traffic**, and then click **Virtual Servers**. The Virtual Servers screen opens.
2. Click the **Create** button.
3. In the **Name** box, type a name. We type **CitrixICASecureProxy**.
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 **192.0.2.101**.

***Note:** The address here will most likely be an external address, the main entry point for users into the network. For example, the IP address might translate to a well understood DNS entry "Citrix.MyCompany.com." The use of a NAT'ed address which is translated somewhere else in the network (firewall, for example) is also supported with this configuration.*

6. In the **Service Port** box, type **443**.
7. From the **Protocol Profile (Client)** list, select the name of the profile you created in *Creating the WAN optimized TCP profile*. In our example, we select **citrix_tcp_wan**. This is optional.
8. From the **Protocol Profile (Server)** list, select the name of the profile you created in the *Creating the LAN optimized TCP profile* section. In our example, we select **citrix_tcp_lan**.

-
9. From the **HTTP Profile** list, select the profile you created in *Creating an HTTP profile*, on page 2-25. We select **citrix-secureproxy-http**.
 10. From the **SSL Profile (Client)** list, select the profile you created in *Creating a Client SSL profile*, on page 2-25. We select **citrix-secureproxy-ssl**.
 11. From the **SNAT Pool** list, select **Automap**.
 12. In the Access Policy section, from the **Access Profile** list, select the appropriate Access Profile you created:
 - If you used Standard/Non-Access Gateway mode, select the Access Profile you created in *Creating an Access Profile when not using Access Gateway mode*, on page 2-11.
 - If you used Access Gateway mode for Citrix Receiver clients, select the Access Profile you created in *OPTIONAL: Creating an Access Profile in Access Gateway mode*, on page 2-15.
 13. In the Resources section, from the **iRule Available** list, select the built-in iRule **_sys_APM_Citrix** and click the Add (<<) button.
Note: *As a reminder this iRule is built-in to APM versions 10.2.1 and later. For previous APM releases, see the appropriate deployment guide to create this iRule manually.*
 14. From the **Default Pool** list, select the pool created by the application template for the Citrix Web Interface devices.
 15. From the **Default Persistence Profile** list, select the profile you created in *Creating the persistence profile*, on page 2-24.

16. Click the **Finished** button (see Figure 2.14).

Access Policy	
Access Profile	Citrix-ICA-SecurePolicy
Connectivity Profile	None
Rewrite Profile	None

WAN Optimization	
iSession Profile	None Context: server
CIFS Profile	None
MAPI Profile	None

Resources					
iRules	<table border="1"> <thead> <tr> <th>Enabled</th> <th>Available</th> </tr> </thead> <tbody> <tr> <td>_sys_APM_Citrix</td> <td>APM-Citrix-helper HTTPConnectProxy HTTPConnectProxy_helper ICAPatcher XML_Patcher</td> </tr> </tbody> </table>	Enabled	Available	_sys_APM_Citrix	APM-Citrix-helper HTTPConnectProxy HTTPConnectProxy_helper ICAPatcher XML_Patcher
Enabled	Available				
_sys_APM_Citrix	APM-Citrix-helper HTTPConnectProxy HTTPConnectProxy_helper ICAPatcher XML_Patcher				
HTTP Class Profiles	<table border="1"> <thead> <tr> <th>Enabled</th> <th>Available</th> </tr> </thead> <tbody> <tr> <td></td> <td>DELETEALL_application_httpclass application-class httpclass</td> </tr> </tbody> </table>	Enabled	Available		DELETEALL_application_httpclass application-class httpclass
Enabled	Available				
	DELETEALL_application_httpclass application-class httpclass				
Default Pool	citrix-web_pool				
Default Persistence Profile	citrix-persistence				
Fallback Persistence Profile	None				

Cancel Repeat Finished

Figure 2.14 Virtual server configuration

Appendix A: Citrix Receiver Support with BIG-IP APM secure proxy example for iPhone/iPad

In this Appendix, we provide a sample client application configuration for Apple® iPhone® and iPad™ devices. Citrix Receiver allows users access to applications on their mobile devices. For each device, users install an application that then allows access to installed applications in your XenApp environment.

With BIG-IP Access Policy Module and Local Traffic Module in Secure Proxy mode, control, compliance and acceleration are all possible for mobile device users. The following instructions are intended to show how to configure Apple devices using the Citrix Receiver client and should be similar to the configuration of other devices, although the range of devices used in any organization (and the specific Citrix client configuration) is beyond the scope of this deployment guide.

◆ Important

No changes are required to your configuration for Citrix Receiver support if all instructions for Secure Proxy in this guide were followed, however, currently Android devices are not supported.

For a complete list of supported devices, visit the Citrix Receiver website.

This Appendix is broken in to the following sections:

- *Configuring the iPhone for Citrix Receiver support*, on this page
- *Configuring the iPad for Citrix Receiver support*, on page 2-34

Configuring the iPhone for Citrix Receiver support

Use the following procedure to configure the Apple iPhone for Citrix Receiver support.

To configure the iPhone for Citrix Receiver Support

1. Download and install the free Citrix Receiver application from the Apple Store for your iPhone.
2. Launch the application by pressing the **Citrix** icon. See the following example.

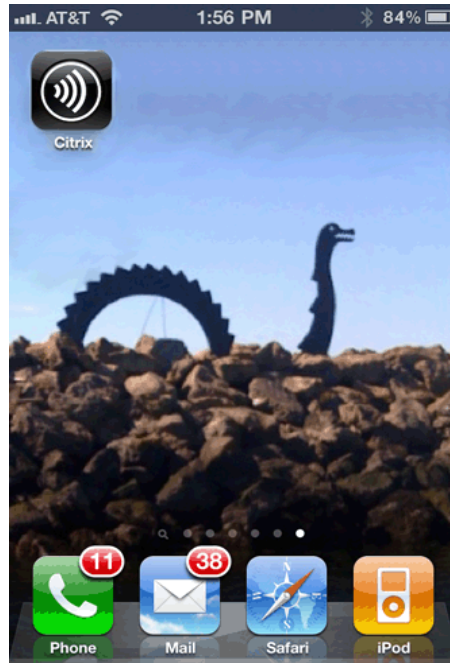


Figure 2.15 Citrix icon on the Apple iPhone

3. Once you open the Application, you are prompted to create an account or request a trial account. Select **Create an Account**, and then press the plus (+) sign.
4. Complete the General Settings as applicable for your implementation, noting the following:
 - **Address:** The address should start with **https://** and the URI should resolve to the BIG-IP APM HTTPS virtual server you created in *Creating the virtual server*, on page 2-26.

As an administrator, this is the address you will provide your users.

As a user, be sure to have the correct address from your administrator.

- **Access Gateway:** If you are not using Access Gateway, the setting should be **Off**. If you are using Access Gateway, see Step 5.

Press **Save**.



Figure 2.16 Add Account page on the iPhone

5. *Optional:* If you are using Access Gateway mode, you need to configure the Access Gateway. Perform the following:
 - a) On the Add Account page, turn the Access Gateway **ON** by swiping the switch.
 - b) In the Edition section, touch **Enterprise Edition**.
 - c) In the Authentication section, touch **Domain + RSA SecurID** (see Figure 2.17).
 - d) Press **Save**.

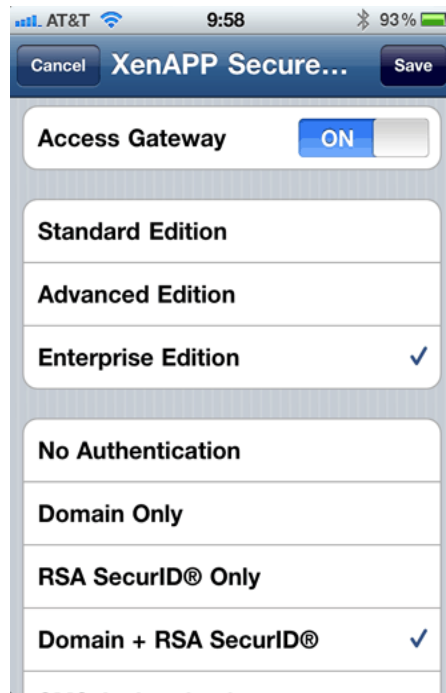


Figure 2.17 Optional Access Gateway configuration

6. Once the account has been created, you see it in the Account list. Press **XenAPP Secure Proxy** to launch the connection.



Figure 2.18 XenApp Secure Proxy Account

7. You are now logged in and able to see the applications that have been shared. In the following example, Microsoft Word 2010 and Notepad are available.



Figure 2.19 Available applications

8. To launch an application, press the appropriate line for the application you would like to use. In the following example, we launch Microsoft Word.

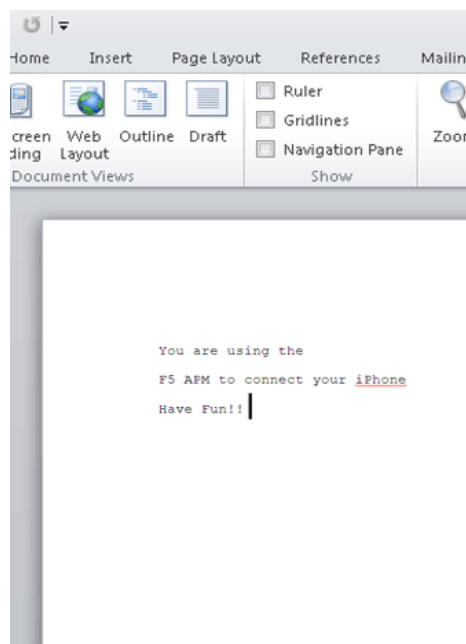


Figure 2.20 Microsoft Word on the iPhone via BIG-IP APM

Configuring the iPad for Citrix Receiver support

Use the following procedure to configure the Apple iPhone for Citrix Receiver support.

To configure the iPad for Citrix Receiver Support

1. Download and install the free Citrix Receiver application from the Apple Store for your iPad.
2. Launch the application by pressing the **Citrix** icon. You see the Welcome screen shown in Figure 2.21.



Figure 2.21 Citrix Receiver for iPad Welcome screen

3. In the Right pane, under Set up my virtual Workspace, click **Get Started**. The Set up my Workspace dialog box opens.
4. Complete the General Settings as applicable for your implementation, noting the following:
 - **Address:** The address should start with **https://** and the URI should resolve to the BIG-IP APM HTTPS virtual server you created in *Creating the virtual server*, on page 2-26As an administrator, this is the address you will provide your users. As a user, be sure to have the correct address from your administrator.
 - **Access Gateway:** If you are not using Access Gateway, the setting should be **Off**. If you are using Access Gateway, see Step 5.

Press **Save**.

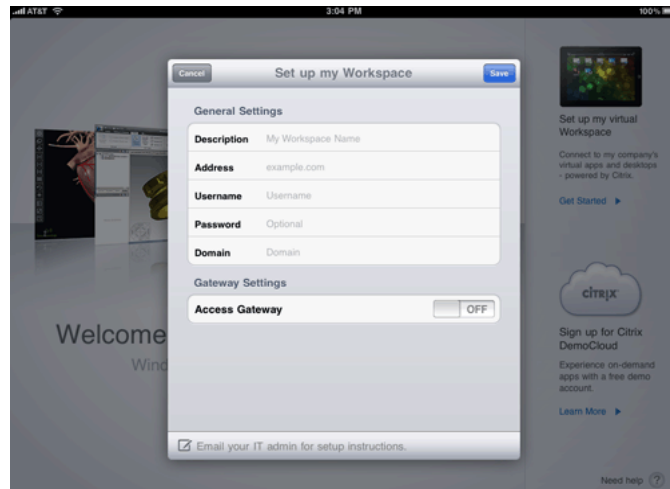


Figure 2.22 Set up my Workspace page on the iPad

5. *Optional:* If you are using Access Gateway mode, you need to configure the Access Gateway. Perform the following:
 - a) Turn the Access Gateway ON by swiping the switch to ON.
 - b) In the Edition section, touch **Enterprise Edition**.
 - c) In the Authentication section, touch **Domain + RSA SecurID** (see Figure 2.17).
 - d) Click **Save**.

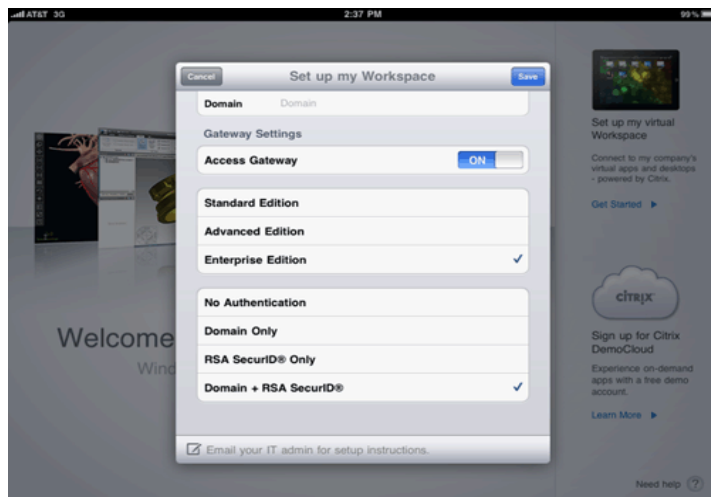


Figure 2.23 Optional Access Gateway configuration

6. Once the account has been created, you see a black screen titled F5 APM as shown in the following.

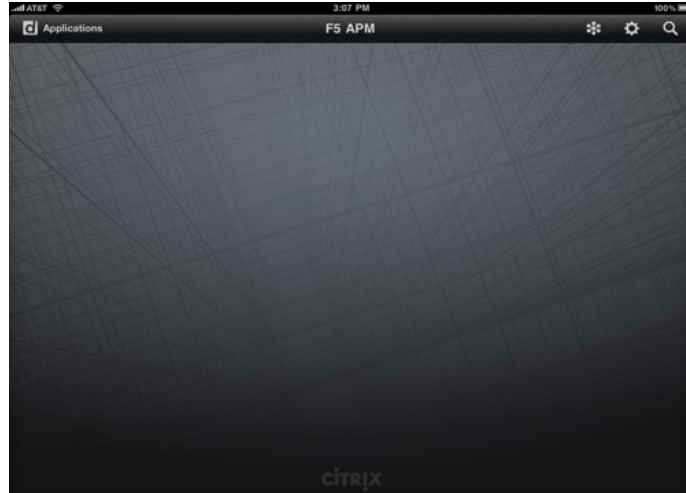


Figure 2.24 F5 APM page

7. Click **Applications**. You see the applications that have been shared. In the following example, Microsoft Word 2010 and Notepad are available.

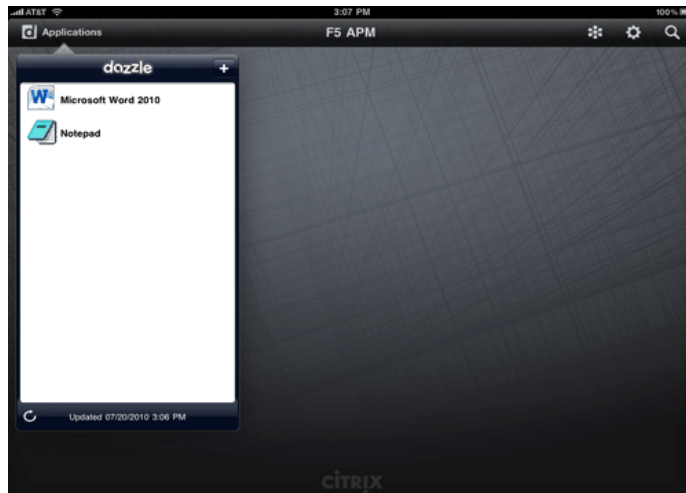


Figure 2.25 Available applications

8. To launch an application, press the appropriate line for the application you would like to use.

This completes this appendix.



3

Deploying the BIG-IP APM and Citrix XenApp/XenDesktop for Remote Network Access

- Configuring the BIG-IP APM with Citrix XenApp or XenDesktop for Remote Network Access

Configuring the BIG-IP APM with Citrix XenApp or XenDesktop for Remote Network Access

In this chapter, we configure the BIG-IP APM with Citrix XenApp or XenDesktop for Remote Network Access. In the Remote Network Access mode, the administrator has total control over the compliance, security, scalability and TCP connections of the Citrix session.

For more detail on the Remote Network Access configuration scenario, see *Configuration example and traffic flow for Remote Access Mode*, on page 3-1.

Using Edge Gateway instead of the APM Module

As a reminder, while this Deployment Guide outlines methods specifically for the APM module on BIG-IP system, the same procedures are applicable to the BIG-IP Edge Gateway. In BIG-IP Edge Gateway deployments either the BIG-IP LTM module or a separate BIG-IP LTM device can be used.

Specifically, if you are deploying this solution on two separate BIG-IP devices, follow all of the instructions in this document on your BIG-IP LTM and then follow all of the instructions for deploying BIG-IP APM on your Edge Gateway Device.

Configuration example and traffic flow for Remote Access Mode

In the Remote Network Access mode, the user experience takes the following path:

1. The user enters a Virtual Address for Remote Access such as `https://remoteaccess.example.com` into the browser or the user launches the BIG-IP Remote Network Access Edge client.
Note: The Edge client needs to be distributed by an administrator ahead of time, or a download link needs to be provided. Otherwise, the user can use any supported browser on all common operating system platforms (Windows, Linux, Mac).
2. The user is prompted for a user name and password by a customizable login screen on the APM and enters his or her credentials, or the BIG-IP Edge client requests the user name and password.
3. The user is now entered into the internal network and launches a new browser or Citrix ICA client and connects to the Citrix server.
4. The user is asked for the credentials and is logged into Citrix.

In the Remote Network Access mode, the administrator has total control over the compliance, security, scalability and TCP connections of the Citrix session.

1. The user enters a Virtual Address such as <https://remoteaccess.example.com>. This request is answered by the F5 BIG-IP APM. The APM module creates a secure remote access tunnel using TCP or UDP after authenticating the user against Active Directory or other authentication mechanism. The BIG-IP Client also can be configured to ensure compliance of the user's machine, including whether anti-virus software is installed, the operating system is up-to-date and other compliance criteria such as the country of origin.
2. Once the user enters credentials, the BIG-IP APM contacts Active Directory and authenticates the user's credentials. Once the user is authenticated, a network address lease is provided for the client's machine and a new network interface is setup. The client's routing table is updated to indicate where traffic should flow to for "internal" connections.
3. The administrator now has total control with APM to which internal networks the client can access, at what traffic rates (for example, traffic rate and QOS shaping) and other compliance criteria.

Configuring the BIG-IP APM

In this configuration, the BIG-IP APM Remote Access virtual server creates the secure remote access tunnel for the users. The Citrix XenApp servers should be configured using the Application Template for XenApp found in BIG-IP LTM version 10.2.1. This updated template includes objects that had to be manually configured in previous versions.

After the secure network access tunnel is established, users then separately launch a browser or Citrix ICA client and connect to the BIG-IP LTM virtual server. Part of this BIG-IP APM configuration is to allow access to the network hosting this BIG-IP LTM virtual server.

◆ Note

All procedures in this chapter are the same, whether you are running Citrix XenApp or XenDesktop.

Configuring remote access

To configure Remote Access, a Device Wizard is included in the product that assists in the setup of Network Access. In this guide, we describe the steps to complete the configuration manually.

To configure remote access

1. On the Main tab, expand **Access Policy**, and then click **Network Access**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this Network Access Profile. In our example, we type **London_Remote_Access**. You can optionally type a description.
4. In the General Settings section, next to **Lease Pool**, click the Add (+) button. The Lease Pool is the pool of IP Addresses that clients receive when they connect to the VPN.
 - a) In the **Name** box, type a name for the Lease pool. In our example, we type **London_Lease_Pool**.
 - b) Click the **IP Address Range** button.
 - c) In the **Start IP Address** and **End IP Address** boxes, type the appropriate IP addresses. In our example, we allow addresses from **10.0.1.1** to **10.0.1.255**.
 - d) Click the **Add** button.
 - e) Click the **Finished** button. You return to the Network Access list.

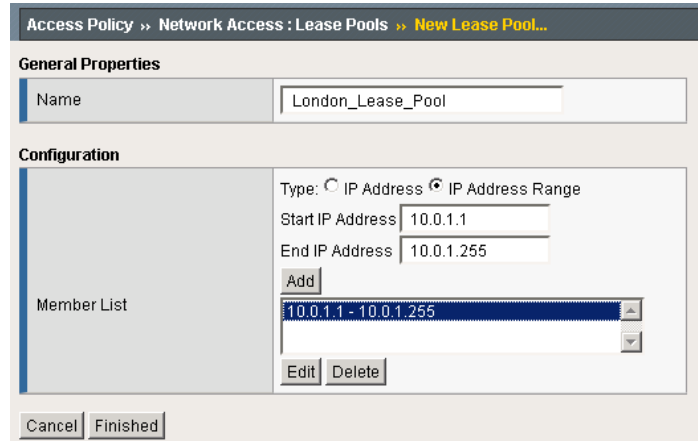


Figure 3.1 Configuring the Lease Pool

5. If necessary, from the **Lease Pool** list, select the lease pool you just created. In our example, we select **London_Lease_Pool**.
6. From the **Compression** list, select **GZIP Compression**. This allows both the web browser client and the thick client to take advantage of compression between the client and the remote access server.

***Note:** If DTLS is configured (UDP based communication between client and Remote Access Server) GZIP compression is automatically disabled. DTLS and GZIP for SSL VPN access is not currently supported.*

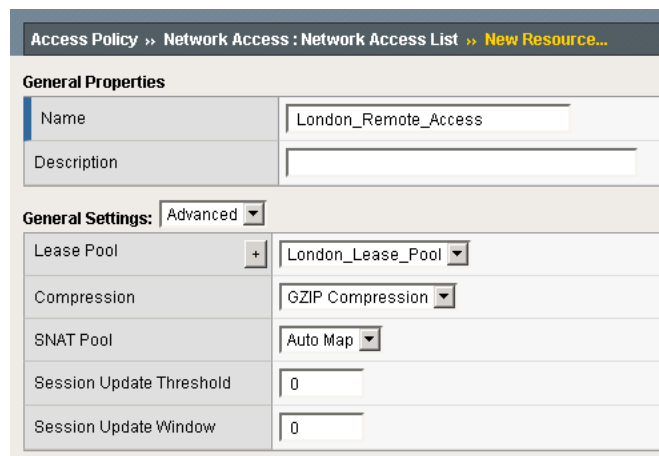


Figure 3.2 Configuring Network Access

7. From the **Client Settings** list, select **Advanced**.

8. In the Traffic Options section, you can choose to Force all traffic through the tunnel, or use split tunneling. With Split Tunneling enabled, the administrator needs to indicate which subnets should be routed through the VPN tunnel. If Split tunneling is not allowed, all traffic will go through the tunnel.

a) If you want all traffic to go through the tunnel, click **Force all traffic through tunnel**, and continue with Step 8.

b) If you want to use split tunneling, click **Use split tunneling** for traffic. The split tunneling options appear.

- In the LAN Address Space section, type the IP address and Mask of the LAN Address space that should go through the tunnel. In our example we indicate that 192.168.0.0/16 is all LAN space.

Note: In this example the BIG-IP LTM Virtual Server front-ending the Citrix ICA server would be located on the 192.168.0.0/16 LAN space.

- In the DNS Address Space section, type the DNS name(s) that are used in the target LAN.
- In the Exclude Address Space section, type the IP address and Mask of any address space that should be excluded. For example, if a portion of 192.168.0.0/16 should be excluded, it can be entered here. In our example, we indicate that 192.168.10.0/24 is excluded.

9. The remaining options are also administrative, configure the settings as applicable to your configuration. In our testing and architecture we generally recommend the following settings:

a) In the Client Side Security section, we select **Prohibit routing table changes during Network Access Connection**.

b) In the Reconnect To Domain section, we select **Synchronize with Active Directory policies on connection establishment**.

c) In the DTLS section, check the box to enable DTLS. We recommend using DTLS protocol for optimum performance.

Note: DTLS uses UDP port 4433 by default. Arrange to open this port on firewalls as needed.

*For DTLS, a UDP Virtual Server is required (described in **Creating the virtual servers, on page 3-12**).*

10. Click **Finished**.

Creating a Connectivity Profile

The next task is to create a connectivity profile.

To create a connectivity profile

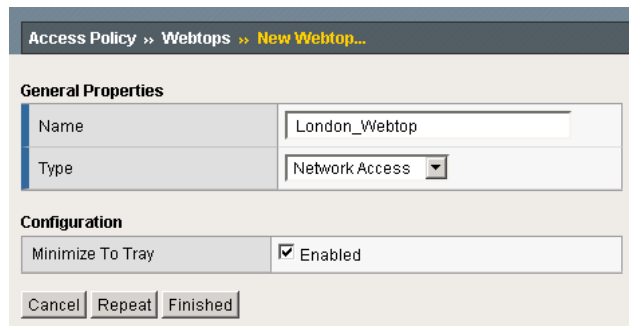
1. On the Main tab, expand **Access Policy**, and then click **Connectivity Profile**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **London_Connectivity**.
4. Configure the rest of the options as applicable to your configuration. In our example, we leave all settings at the default.
5. Click **Finished**.

Creating a Webtop

A BIG-IP APM network Webtop is used to deliver the BIG-IP Edge client components to the user's web browser session.

To create a Webtop

1. On the Main tab, expand **Access Policy**, and then click **Webtops**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this webtop. In our example, we type **London_Webtop**.
4. From the **Type** list, select **Network Access**.
5. If you want the browser window to be minimized to the system tray for Windows hosts, check the **Enabled** box.
6. Click **Finished**.



Access Policy >> Webtops >> New Webtop...	
General Properties	
Name	London_Webtop
Type	Network Access
Configuration	
Minimize To Tray	<input checked="" type="checkbox"/> Enabled
Cancel Repeat Finished	

Figure 3.3 Webtop configuration

Creating an AAA Server

The BIG-IP APM does not have a built-in authentication store therefore an authentication source must be specified. In this procedure, we create an AAA server.

To create an AAA server

1. On the Main tab, expand **Access Policy**, and then click **AAA servers**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **Seattle_LDAP_server**.
4. From the **Type** list, select the appropriate authentication method. For this example, we select **LDAP**.
5. In the Configuration section, type the appropriate information relevant to your authentication method. In our LDAP example, we provide the Host name for the LDAP server, the Admin DN, the Admin Password and we leave the timeout at default.
6. Click **Finished**.

Creating an Access Profile

The Access Profile ties together all of the other pieces in order to create a Network Connection VPN Tunnel. The Access Profile is also where the Visual Policy Editor (VPE) is located, which allows for complex workflows to be designed.

To create an Access Profile

1. On the Main tab, expand **Access Policy**, and then click **Access Profiles**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **London_Access_Policy**.
4. In the Settings section, configure the options as applicable for your configuration. In our example, we leave all of the settings at their defaults. Depending on licensing, the number of concurrent users may be limited. The other timeouts are administrative choices.
5. In the Configuration section, configure the settings as applicable to your environment. In our example, we accept all of the defaults.
6. In the Language Settings section, if you are configuring the BIG-IP APM in a language other than English, configure as applicable for your language. In our example, we accept English as the default.
7. Click **Finished**.

Editing the Access Profile with the Visual Policy Editor

The next task is to open the London Access Policy and edit the Access Policy using the Visual Policy Editor (VPE). The VPE is a powerful visual scripting language that offers virtually unlimited options in configuring an Access Policy. For detailed information on the VPE please see the product documentation.

In the following procedure, we configure a policy using the Visual Policy Editor. However, Device Wizards provide an easy way to create more interesting policies, including ones that check for Virus Software and other prerequisites before allowing a user to logon. In this guide, it is our goal to get you oriented with the concepts of the Visual Policy Editor. In this example, we create a Login Page, an LDAP auth, and assign the resources allowed.

To edit the Access Profile

1. On the Main tab, expand **Access Policy**, and then click **Access Profiles**.
2. Locate the Access Profile you just created, and in the Access Policy column, click **Edit**. The Visual Policy Editor opens.
3. Click the + symbol between **Start** and **Deny**. A box opens with options for different actions.
4. Click the **Logon Page** option button, and then click the **Add Item** button at the bottom of the box.
5. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults.
6. Click the **Save** button.
7. Click the + symbol between **Logon Page** and **Deny**.
8. In the Authentication section, click the **LDAP Auth** option button, and then click the **Add Item** button.
9. From the **Server** list, select the AAA Source you created in *Creating an AAA Server*, on page 3-7.
10. Add **SearchDN** and **SearchFilter** items as applicable.
11. Click the **Save** button. You now see two paths, **Successful** and **Fall Back**.
12. Click the **Deny** box from the path leading from Successful. The Select Ending box opens.
13. Click the **Allow** button, and then click **Save**. In our example, we leave the fallback as Deny.
14. Click the + symbol between **LDAP Auth** and **Allow**.
15. In the General Purpose section, click the **Resource Assign** option button, and then click **Add Item**.
16. Click the **Add new entry** button.

-
17. Click **Set Network Access Source**, and then click the option button for the Network Access Source you created in *Configuring remote access*, on page 3-3. In our example, we click **London_Remote_Access**. This associates the Lease Pool and other settings.
Click the **Update** button. You return to the Resource Assign page.
 18. Click **Set Webtop**, and then click the option button for the Webtop you created in *Creating a Webtop*, on page 3-6. In our example, we click **London_Webtop**. Click the **Update** button.
 19. Click the **Save** button. The Resource Assignment window closes and you return to the Visual Policy Editor main page.
At this point you have the basics for a functional access policy.
 20. Click the yellow **Apply Access Policy** link in the upper left part of the window. You always have to apply an access policy before it takes effect.
 21. Click the **Close** button on the upper right to close the VPE.

Creating the Network Access BIG-IP configuration objects

The next task is to create the external Virtual Server that allows users to initiate their connection to the SSL VPN from either the web browser or the BIG-IP Edge Client for Windows. In our example, we have chosen to allow DTLS as a connection method and we will create two virtual servers, one for TCP 443 and one for UDP 4433.

The first task is to create profiles that are used by the virtual servers.

Creating the profiles

The next step is to create the profiles. Although you may use the default profiles, we strongly recommend you create new profiles based on the default parent profiles. By creating new profiles, you may easily modify the profile settings specific to your deployment without altering default global behaviors.

Creating TCP profiles

The next profiles we create are the TCP profiles. With regard to the LTM TCP profiles and XenApp/XenDesktop, Citrix maintains keepalives using its own clients. This keepalive is configurable on a per client basis (see Citrix documentation instructions on adjusting this timeout). As an alternate

approach, if premature session termination is a concern, we recommend setting the **Idle Timeout** value to a longer time period to prevent idle desktop sessions from being terminated prematurely.

◆ **Important**

*Setting TCP timeout to **Indefinite** may lead to session exhaustion and should be used with care.*

Optional: Certain WAN conditions such as users connecting over low bandwidth or high latency can be optimized further by using different options for the TCP WAN profile. We recommend that you review the following solutions for environments where users are connecting from more challenging WAN conditions. Significant improvements are possible. Specifically, we recommend setting **Nagle's Algorithm** to **Disabled** and setting **Congestion Control** to **Scalable**.

<http://support.f5.com/kb/en-us/solutions/public/7000/400/sol7402.html>

<http://support.f5.com/kb/en-us/solutions/public/7000/400/sol7405.html>

Creating the LAN optimized TCP profile

The first TCP profile we create is the LAN optimized profile.

To create a new LAN optimized TCP profile

1. On the Main tab, expand **Local Traffic**, and then click **Profiles**. The HTTP Profiles screen opens by default.
2. On the Menu bar, from the **Protocol** menu, select **TCP**.
3. In the upper right portion of the screen, click the **Create** button. The New TCP Profile screen opens.
4. In the **Name** box, type a name for this profile. In our example, we type **apm_tcp_lan**.
5. In the **Idle Timeout** row, click the **Custom** box, and then type a number between 600 and 900, depending on your configuration.
6. Modify any of the other settings as applicable for your network. See the online help for more information on the configuration options. In our example, we leave the settings at their default levels.
7. Click the **Finished** button.

Creating the WAN optimized TCP profile

The next task is to create the WAN optimized profile.

To create a new WAN optimized TCP profile

1. On the Main tab, expand **Local Traffic**, click **Profiles**, and then, on the Menu bar, from the **Protocol** menu, select **TCP**.
2. Click the **Create** button. The New TCP Profile screen opens.

-
3. In the **Name** box, type a name for this profile. In our example, we type **apm_tcp_wan**.
 4. In the **Idle Timeout** row, click the **Custom** box, and then type a number between 600 and 900, depending on your configuration.
 5. Modify any of the other settings as applicable for your network. See the online help for more information on the configuration options. In our example, we leave the settings at their default levels.
 6. Click the **Finished** button.

Creating the HTTP profile

The next profile to create is the HTTP profile. This profile is required for the VPN to function. This should be a simple HTTP profile with no optimization (compression or caching).

To create the HTTP profile

1. On the Main tab, expand **Local Traffic**, click **Profiles**, and then click the **Create** button.
2. In the **Name** box, type a name for this profile. In our example, we type **apm-http**.
3. Modify any of the settings as applicable for your network, but **do not** enable compression or RAM Cache. See the online help for more information on the configuration options. In our example, we leave the settings at their default levels.
4. Click the **Finished** button.

Creating a Client SSL profile

The next step is to create an SSL profile. This profile contains SSL certificate and Key information for offloading SSL traffic. The first task is to import the certificate and key (for this Deployment Guide, we assume that you already have obtained the required SSL certificates, but they are not yet installed on the BIG-IP LTM system. If you do not have a certificate and key, see the BIG-IP documentation).

To import a key or certificate

1. On the Main tab, expand Local Traffic.
2. Click **SSL Certificates**. This displays the list of existing certificates.
3. In the upper right corner of the screen, click **Import**.
4. From the **Import Type** list, select the type of import (**Certificate** or **Key**).
5. In the **Certificate** (or **Key**) **Name** box, type a unique name for the certificate or key.

6. In the **Certificate** (or **Key**) **Source** box, choose to either upload the file or paste the text.
7. Click **Import**.
8. If you imported the certificate, repeat this procedure for the key.

The next task is to create the SSL profile that uses the certificate and key you just imported.

To create a new Client SSL profile

1. On the Main tab, expand **Local Traffic**, click **Profiles**, and then, on the Menu bar, from the **SSL** menu, select **Client**.
2. Click the **Create** button.
3. In the **Name** box, type a name for this profile. In our example, we type **apm_https**.
4. In the Configuration section, click a check in the **Certificate** and **Key Custom** boxes.
5. From the **Certificate** list, select the name of the Certificate you imported in the *Importing keys and certificates* section.
6. From the **Key** list, select the key you imported in the *Importing keys and certificates* section.
7. Click the **Finished** button.

Creating the virtual servers

The next task is to create the virtual servers for TCP 443 and UDP 4433.

To create the 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 **edge-tcp-443**.
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 **10.133.20.200**.
6. In the **Service Port** box, type **443**, or select **HTTPS** from the list.
7. In the Configuration section, select **Advanced** from the list. The Advanced configuration options appear.

-
8. From the **Protocol Profile (Client)** list, select the name of the profile you created in the *Creating the WAN optimized TCP profile* section. In our example, we select **apm_tcp_wan**. This is optional.
 9. From the **Protocol Profile (Server)** list, select the name of the profile you created in the *Creating the LAN optimized TCP profile* section. In our example, we select **apm_tcp_lan**.
 10. From the **HTTP Profile** list, select the name of the profile you created in the *Creating the HTTP profile* section. In our example, we select **apm-http**.
 11. From the **SSL Profile (Client)** list, select the SSL profile you created in the *Creating a Client SSL profile* section. In our example, we select **apm_https**.
 12. In the Access Policy section, from the **Access Profile** list, select the name of the policy you created in *Creating an Access Profile*, on page 7. In our example, we select **London_Access_Policy**.
 13. From the **Connectivity Profile** list, select the profile you created in *Creating a Connectivity Profile*, on page 3-6. In our example, we select **London_Connectivity_Profile**.
 14. Leave the **Rewrite Profile** list set to **None**.
 15. **Do not** configure any of the options in the WAN Optimization section.
 16. Click the **Finished** button (this virtual server does not have any Resources).
 17. Repeat this entire procedure for the UDP virtual server with the following exceptions.
 - In Step 3, give this virtual server a unique name.
 - In Step 5, use the appropriate IP address.
 - In Step 6, in the **Service Port** box, type **4433**.
 - After Step 7, from the **Protocol** list, select **UDP**.
 - All other settings are the same.

This concludes the configuration.