Deploying the BIG-IP System v11 with Microsoft Exchange 2010 and 2013 Client Access Servers

Welcome to the F5 and Microsoft® Exchange® 2010 and 2013 Client Access Server deployment guide. Use this document for guidance on configuring the BIG-IP system version 11 and later to provide additional security, performance and availability for Exchange Server 2010 and Exchange Server 2013 Client Access Servers.

When configured according to the instructions in this guide, whether using an iApp template or manually, the BIG-IP system will perform as a reverse proxy for Exchange CAS servers, and will also perform functions such as load balancing, compression, encryption, caching, and pre-authentication.

Why F5?

F5 offers a complete suite of application delivery technologies designed to provide a highly scalable, secure, and responsive Exchange deployment.

- Terminating HTTPS connections at the BIG-IP LTM reduces CPU and memory load on Client Access Servers, and simplifies TLS/SSL certificate management for Exchange 2010 and Exchange 2013 SP1.
- The BIG-IP LTM can balance load and ensure high-availability across multiple Client Access servers using a variety of load-balancing methods and priority rules.
- The BIG-IP LTM TCP Express feature set ensures optimal network performance for all clients and servers, regardless of operating system and version.
- The LTM provides content compression features which improve client performance.
- The BIG-IP Access Policy Manager (APM), F5's high-performance access and security solution, can provide pre-authentication and secure remote access to Exchange HTTP-based Client Access services.

Products and versions

Product	Version
Microsoft Exchange Server	2010, 2010 SP1, SP2, and SP3; 2013, 2013 CU1, 2013 CU2, 2013 CU3, 2013 SP1
BIG-IP system	11.0, 11.0.1, 11.1, 11.2.x, 11.3, 11.4, 11.4.1, 11.5, 11.5.1
BIG-IP iApp template	f5.microsoft_exchange_2010_2013_cas.v1.2.0 (download) **Important:** v1.3.0 has been released and is fully supported. See *http://support.f5.com/kb/en-us/solutions/public/13000/400/sol13497.html* for links to the iApp and new deployment guide. This guide will no longer be updated.
Deployment Guide version	2.5 (see *Document Revision History on page 112*)

Microsoft Partner Network

Contents

Introduction

This document provides guidance for using the ***updated, downloadable BIG-IP iApp*** Template to configure the Client Access server role of Microsoft Exchange Server, as well as instructions on how to configure the BIG-IP system manually. This iApp template was developed for use with both Exchange Server 2013 and 2010.

By using the iApp template, you can configure the BIG-IP system to support any combination of the following services supported by Client Access servers: Outlook Web App (which includes the HTTP resources for Exchange Control Panel), Exchange Web Services, Outlook Anywhere (RPC over HTTP, including the Offline Address Book), ActiveSync, Autodiscover, RPC Client Access (MAPI) for Exchange 2010 only, POP3 and IMAP4. This guide also contains manual configuration instructions for users familiar with F5 devices.

For more information on the Client Access Server role, see

- **2010**: *http://technet.microsoft.com/en-us/library/bb124915%28EXCHG.140%29.aspx*
- **2013**: *http://technet.microsoft.com/en-us/library/bb124558%28v=exchg.150%29.aspx*

For more information on the F5 devices in this guide, see *http://www.f5.com/products/big-ip/*.

You can also visit the Microsoft page of F5's online developer community, DevCentral, for Microsoft forums, solutions, blogs and more: *http://devcentral.f5.com/Microsoft/*.

Important: *Make sure you are using the most recent version of this deployment guide, available at http://www.f5.com/pdf/deployment-guides/microsoft-exchange-2010-2013-iapp-dg.pdf*

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

What is F5 iApp?

New to BIG-IP version 11, F5 iApp is a powerful set of features in the BIG-IP system that provides a new way to architect application delivery in the data center. iApp includes a holistic, application-centric view of how applications are managed and delivered inside, outside, and beyond the data center. The iApp template for Microsoft Exchange Server acts as the single-point interface for building, managing, and monitoring the Exchange 2010 and 2013 Client Access role.

For more information on iApp, see the White Paper *F5 iApp: Moving Application Delivery Beyond the Network: http://www.f5.com/pdf/white-papers/f5-iapp-wp.pdf*.

Prerequisites and configuration notes

The following are prerequisites and configuration notes for the Client Access Role. Items added since the last revision are marked New.

- This document provides guidance on using the **downloadable iApp** for Microsoft Exchange 2010 and 2013 available via *http://support.f5.com/kb/en-us/solutions/public/13000/400/sol13497.html*, and **not** the iApp found by default in BIG-IP version 11. ***You must use this downloadable iApp for BIG-IP versions 11.0 and later*** (we strongly recommend version 11.3 or later) as it contains a number of fixes and enhancements not found in the default iApp, or other downloadable versions.

  Note that the way we are versioning the downloadable iApp templates has changed. Previous versions of the downloadable templates included the date (04_06 and 06_08). Beginning with this version of the template, we are using a numbering system (this version is v1.2.0). The first number represents a major version, the second number a minor version, and the third number is used for important fixes to a previous version.

  For users familiar with the BIG-IP system, there are manual configuration tables at the end of this guide. Because of the complexity of this configuration, we strongly recommend using the iApp to configure the BIG-IP system.

- If you have an existing Exchange application service from a previous version of the downloadable iApp, see *Upgrading from a previous version of the iApp template on page 10* for instructions on how to upgrade the configuration.

- The overwhelming majority of the configuration guidance in this document is performed on F5 devices. We provide a summary of Exchange configuration steps for reference only; for complete information on how to deploy or configure the components of Microsoft Exchange Server, consult the appropriate Microsoft documentation. F5 cannot provide support for Microsoft products.

- For this deployment guide, the BIG-IP LTM system ***must*** be running version 11.0 or later. If you are using a previous version of the BIG-IP LTM, see the Deployment Guide index on F5.com. The configuration in this guide does not apply to previous versions.

  ⚠ ***Warning***

  To run the Microsoft Exchange iApp template, you must be logged into the BIG-IP system as a user that is assigned the admin role. For more information on roles on the BIG-IP system, see the BIG-IP User Accounts chapter of the BIG-IP TMOS: Concepts guide.

- If you are using the BIG-IP system to offload SSL (Exchange 2010 and Exchange 2013 SP1 and later only) or for SSL Bridging, we assume you have already obtained an SSL certificate and key, and it is installed on the BIG-IP LTM system. To configure your Client Access servers to support SSL offloading, you must first follow the Microsoft documentation. See *http://social.technet.microsoft.com/wiki/contents/articles/how-to-configure-ssl-offloading-in-exchange-2010.aspx*.

  Make sure you follow the correct steps for the version of Exchange Server that you are using.

- **New** While SSL offload was not supported in the RTM version of Exchange Server 2013, it is now supported in 2013 SP1 (*http://social.technet.microsoft.com/wiki/contents/articles/15946.how-to-configure-ssl-offloading-in-exchange-2013.aspx*).

  If you using Exchange 2013 and are not yet on SP1, you must change the default setting for Outlook Anywhere on each Client Access Server so that SSL offloading is not configured.

- **New** Exchange 2013 SP1 introduces the MAPI over HTTP transport protocol (*http://technet.microsoft.com/en-us/library/dn635177(v=exchg.150).aspx*). The iApp template does not yet support this new protocol. See *Optional: Configuring the BIG-IP system to support MAPI over HTTP in Exchange 2013 SP1 on page 49* for instructions on configuring the BIG-IP system for MAPI over HTTP.

- If deploying BIG-IP APM features, including Edge Gateway, you must fully license and provision APM before starting the iApp template. For the remainder of this guide, we refer to BIG-IP APM and Edge Gateway collectively as BIG-IP APM.

- *For Exchange Server 2010 and 2013 SP1 only*: We generally recommend that you do not re-encrypt traffic between your BIG-IP APM and BIG-IP LTM because both BIG-IP systems must process the SSL transactions. However, if you choose to re-encrypt, we strongly recommend you use a valid certificate (usually SAN-enabled) rather than the default, self-signed certificate for the Client SSL profile on your BIG-IP LTM system. If not re-encrypting traffic, you do not need a certificate on your BIG-IP LTM.

- This template currently only supports the use of a single DNS name and corresponding certificate and key for all services, or multiple DNS names using a SAN-enabled certificate and key. Support for multiple names, each with separate corresponding certificates and keys, will be in a future release.

- If you have existing, manually created Node objects on the BIG-IP system and given these nodes a name, you cannot use the IP addresses for those nodes when configuring the iApp. You must first manually delete those nodes and re-add them without a name, or delete the nodes and let the iApp automatically create them.

- If using a single virtual server for all HTTP-based Client Access services as recommended, you ***must*** obtain the Subject Alternative Name (SAN) certificate and key from a 3rd party certificate authority that supports SAN certificates, and then import it onto the BIG-IP system. In versions prior to 11.1, the BIG-IP system does not display SAN values in the web-based Configuration utility, but uses these certificates correctly.

  ➡ ***Note***

  For more information on SAN certificates, see Subject Alternative Name (SAN) SSL Certificates on page 103.

- F5's advanced monitors for Autodiscover, Exchange Web Services, and Outlook Anywhere support Basic and NTLMv1 authentication only. See *Troubleshooting on page 53* for more information.

- **Important:** v1.3.0 of the iApp template has been released and is fully supported. See *http://support.f5.com/kb/en-us/solutions/public/13000/400/sol13497.html* for links to the new iApp and deployment guide. This guide will no longer be updated. The latest version will always be linked from the Solution.

- If using BIG-IP APM, the following table shows the Exchange Server (Client Access Server) settings:

Role	Out-of-the-box setting	Your Setting	Notes
SSL Offload for all HTTP services[1]	Not enabled	**Enabled**	Exchange 2010 and 2013 SP1 only. Optional but strongly recommended
Client Access Array	Not configured	**Enabled**	Exchange 2010 only: Required
OWA Authentication[1]	Forms[2]	**Forms (default)**[2]	Required
Autodiscover Authentication[1]	Negotiate	**Negotiate (default)**	Required
ActiveSync Authentication[1]	Basic	**Basic (default)**	Required
Outlook Anywhere Authentication[1,3]	**2010**: Basic **2013**: Negotiate	**Basic (default)**	Required

[1] *Exchange Server 2010 and 2013 SP1 and later only. See the following link for more information on default authentication methods for Exchange Server 2010: http://technet.microsoft.com/en-us/library/bb331973.aspx*

[2] *You must change the default Forms logon format from Domain\username to just username. More information is available later in this guide.*

[3] *Outlook Anywhere is disabled by default in Exchange 2010; you must enable it before you can use it. You can optionally configure BIG-IP APM v11.3 and later for NTLM authentication for Outlook Anywhere. See page 50.*

In our example, we use the following conventions. In your configuration, you may have the same FQDN for Outlook Anywhere, OWA, and RPC Client Access (Exchange 2010 only), and/or use split DNS to direct internal and external clients to different virtual servers:

outlook.example.com	FQDN for Outlook Anywhere
owa.example.com	FQDN for all other HTTP services
mapi.example.com	FQDN for Client Access Array
192.0.2.0/24	Network configured for external use on the BIG-IP APM
10.0.0.0/24	Network configured for use on the BIG-IP LTM

Your network topology may differ considerably from the example shown.

Note

You may choose to use separate names for all four HTTP services and the RPC Client Access service (Client Access Array - Exchange 2010 only)

DNS Settings

This table contains information on DNS settings (and our example settings) for this deployment.

Record	External DNS	Internal DNS
A Records	owa.example.com: 192.0.2.10 outlook.example.com: 192.0.2.11 If the SRV record listed below is not used, you must also have at least one of these, set to the same IP as your OWA FQDN: example.com: 192.0.2.10 autodiscover.example.com: 192.0.2.10	owa.example.com: 192.0.2.10 mapi.example.com[1]: 10.0.0.10 If the SRV record listed below is not used and you don't want to use the SCP, you must also have at least one of these, set to the same IP as your OWA FQDN: example.com: 192.0.2.10 autodiscover.example.com: 192.0.2.10 To prevent internal users from receiving a password prompt, internal DNS must not have an A record for the FQDN for Outlook Anywhere.
SRV Records	_autodiscover._tcp.example.com: port 443, host 'owa.example.com'	_autodiscover._tcp.example.com: port 443, host 'owa.example.com' (optional; Outlook can use SCP instead. See note above and Further Reading below)

[1] *Exchange Server 2010 only. Exchange 2013 does not use RPC.*

Further reading:

- Summary of SRV records on Wikipedia: *http://en.wikipedia.org/wiki/SRV_record*
- Specification for SRV records (RFC2782): *http://tools.ietf.org/html/rfc2782*
- Microsoft KB article on SRV records and the Autodiscover service: *http://support.microsoft.com/kb/940881*
- 'Understanding the Autodiscover Service' (including SCP information): *http://technet.microsoft.com/en-us/library/bb124251.aspx*

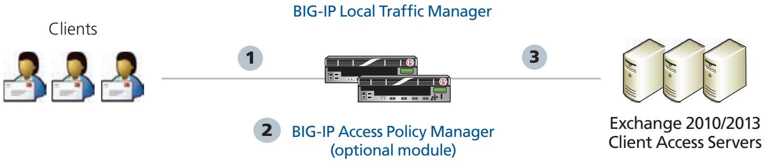
Deployment Scenarios

The iApp greatly simplifies configuring the BIG-IP system for Microsoft Exchange 2010 and 2013 Client Access Server roles. Before beginning the Application template, you must make a decision about the scenario in which you are using BIG-IP system for this deployment. The iApp presents the following three deployment options. You will choose one of these options when you begin configuring the iApp.

This BIG-IP LTM will load balance and optimize Client Access Server traffic

You can select this scenario to manage, secure, and optimize client-generated Client Access Server traffic using the BIG-IP system. This is the traditional role of the BIG-IP LTM and should be used in scenarios where you are not deploying BIG-IP Access Policy Manager (APM) on a *separate* BIG-IP system. In this scenario, you have the option of configuring the BIG-IP APM to secure HTTP-based virtual servers on *this* system.

You would not select this option if you intend to deploy a separate BIG-IP APM that will provide secure remote access to Exchange CAS HTTP services.

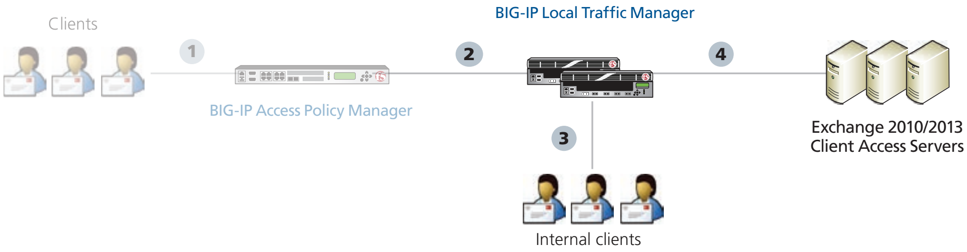


1. All Exchange Client Access traffic goes to the BIG-IP system.
2. You can optionally use the BIG-IP APM module to provide secure access and proxied authentication (pre-authentication) for HTTP-based Client Access services: Outlook Web App, Outlook Anywhere, ActiveSync, and Autodiscover). The BIG-IP APM presents a login page to end users that takes the place of the forms-based login page normally presented by Outlook Web App. Users provide credentials through the BIG-IP APM form; the BIG-IP APM then authenticates the user to Active Directory.
3. The BIG-IP LTM load balances and optimizes the traffic to the Client Access Servers, including the services which are not HTTP-based: RPC Client Access (MAPI), POP3, and IMAP4.

This BIG-IP LTM will receive HTTP-based Client Access traffic forwarded by a BIG-IP APM

You can select this scenario to configure BIG-IP LTM with a single virtual server that receives Exchange Client Access HTTP-based traffic that has been forwarded by a separate BIG-IP APM. The virtual server can also accommodate direct traffic, e.g. internal clients that do not use the BIG-IP APM, and non-HTTP traffic that is not handled by BIG-IP APM such as POP3 and IMAP4.

This scenario would be used together with the following scenario, in which you configure a separate BIG-IP APM to send traffic to this BIG-IP LTM device.



2. The BIG-IP LTM receives HTTP-based Client Access traffic from a separate BIG-IP APM, or directly received the non HTTP-based traffic.
3. If you have internal Exchange clients, all Client Access Server traffic from the internal clients goes directly to the BIG-IP LTM.
4. The BIG-IP LTM load balances and optimizes the traffic to the Client Access Servers, including the services which are not HTTP-based: RPC Client Access (MAPI), POP3, and IMAP4.

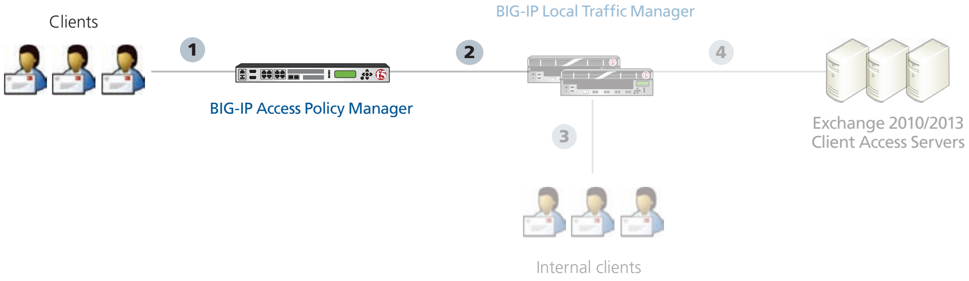
Note

While this scenario can accommodate internal clients, we do not recommend using this virtual server in that way. We strongly recommend creating a second instance of the iApp on this BIG-IP LTM for the direct traffic/internal users. You must use a unique virtual server IP address; all of the other settings can be identical. Once both iApps have been created, you would configure Split DNS (use the same domain name, but different zones and IP addresses for internal and external clients). For more information about Split DNS, refer to your DNS documentation.

This BIG-IP APM will provide secure remote access to CAS

You can select this scenario to configure the BIG-IP system as a BIG-IP APM that will use a single virtual server to provide proxy authentication (pre-authentication) and secure remote access to Exchange HTTP-based Client Access services without requiring the use of an F5 Edge Client. When you select this deployment scenario, the BIG-IP APM presents a login page to end users that takes the place of the forms-based login page normally presented by Outlook Web App. Users provide credentials through the BIG-IP APM form; the BIG-IP APM then authenticates the user to Active Directory. The BIG-IP system will only forward connections after a user has authenticated successfully. The traffic is then sent to another BIG-IP running LTM which provides advanced load balancing, persistence, monitoring and optimizations for HTTP-based Client Access services.

This scenario would be used together with the previous scenario, in which you configure a separate BIG-IP LTM to receive traffic from this BIG-IP APM device.



1. HTTP-based Client Access traffic goes to the BIG-IP APM, which provides proxy authentication and secure remote access.

    Note

    If you want to allow RPC Client Access, POP3 or IMAP4 access from external users, you must separately configure your BIG-IP system by re-running the iApp, selecting the first scenario ("This BIG-IP LTM will load balance and optimize Client Access Server traffic"), choosing which of those protocols you wish to allow, and then configuring your Client Access servers as pool members.

2. After authentication, the BIG-IP APM sends the traffic to a separate BIG-IP LTM for intelligent traffic management.

Guidance specific to each deployment scenario is contained later in this document.

Preparation worksheets

For each section of the iApp Template, you need to gather some information, such as Client Access server IP addresses and domain information. The worksheets do not contain every question in the template, but rather include the information that is helpful to have in advance. Use the worksheet(s) applicable to your configuration. More information on specific template questions can be found on the individual pages. You might find it useful to print these tables and then enter the information.

BIG-IP LTM Preparation worksheet		
Traffic arriving to this BIG-IP system is:	**Encrypted**	**Unencrypted**
	SSL Certificate: Key: If re-encrypting traffic to the Client Access Servers and not using the BIG-IP default certificate and key for the Server SSL profile: Certificate: Key:	If encrypting traffic to the Client Access Servers and not using the BIG-IP default certificate and key: Certificate: Key:
BIG-IP virtual servers and Client Access Servers will be on:	**Same Subnet**	**Different Subnets**
	If the maximum number of expected concurrent users per Client Access Server is more than 6,000, you need one IP address for each 6,000 users or fraction thereof:	If the Client Access Servers are a different subnet from the BIG-IP virtual servers, and do not use the BIG-IP as their default gateway: If the maximum number of expected concurrent users per Client Access Server is more than 6,000, you need one IP address for each 6,000 users or fraction thereof:
Single virtual IP address for all Client Access Services or multiple addresses	**Single virtual IP address**	**Different virtual IP addresses for different services**
	IP address for the BIG-IP virtual server:	You need a unique IP address for each of the Client Access services you are deploying: Outlook Web App: Outlook Anywhere: ActiveSync: Autodiscover: RPC Client Access (MAPI) - 2010 only: POP3: IMAP4:
All Client Access services handled by the same set of servers, or different Servers for different services	**Same set of Client Access Servers for all services**	**Different Client Access Servers for different services**
	IP addresses of the Client Access Servers:	IP addresses for Client Access Servers for each service: Outlook Web App: Outlook Anywhere: ActiveSync: Autodiscover: RPC Client Access (MAPI) Exchange 2010 only: POP3: IMAP4:
Outlook Web App URI	If you are deploying Outlook Web App, what is the URI for reaching OWA if different than the default (http(s)://<fqdn>/owa/):	
RPC Client Access ports (Exchange 2010 only)	If you are deploying RPC Client Access (MAPI), and do not want to use the default Dynamic port range, specify a port for: **MAPI**: **Address Book**:	

BIG-IP LTM Preparation Worksheet (continued): Server health monitor configuration		
Advanced Monitor configuration	If you want the iApp to configure advanced health monitors which perform logins to HTTP-based, POP3, and IMAP4 Client Access services (as opposed to simple monitors which only check network connectivity), you need the following information:	
	If deploying Autodiscover, email address for monitoring: Mailbox account name in Active Directory for the monitors: Associated password: Domain name (can be FQDN or NETBIOS) of the user account used for monitors: Important: Advanced monitors for Autodiscover, EWS, and Outlook Anywhere support Basic and NTLMv1 authentication only.	Second mailbox for monitoring (recommended): If deploying Autodiscover, 2nd email address for monitoring: 2nd mailbox account name in Active Directory for the monitors: Associated password for this account: 2nd domain name (can be FQDN or NetBIOS) of the user account used for monitors:
Outlook Web App authentication method	If deploying Outlook Web App, which authentication method have you configured: Forms-Based Authentication (default) Important: If you are deploying BIG-IP APM, you must use Forms-Based. Basic or Windows Integrated authentication	
Same FQDN for all HTTP-based Client Access services or different FQDNs	**Same FQDN**	**Different FQDNs**
	FQDN for all HTTP-based Client Access services:	You need a FQDN for each HTTP-based Client Access services you are deploying: Outlook Web App: Outlook Anywhere: ActiveSync: Autodiscover:

BIG-IP Access Policy Manager Preparation Worksheet		
Outlook Web App FQDN	If you are deploying BIG-IP APM and Outlook Web App, you need the FQDN this is used to access OWA (such as owa.example.com):	
Active Directory FQDNs and IP addresses that the BIG-iP system can contact	What are the Active Directory FQDNs and IP address that this BIG-IP system can contact (use FQDN and not NETBIOS name): 1. 3. 5.	 2. 4. 6.
Active Directory Domain name for Exchange users	What is the Active Directory Domain name (must be in FQDN format):	
Active Directory Anonymous binding	If Anonymous Binding is not allowed in your Active Directory implementation, you need an Active Directory account with administrative permissions: User name: Password:	
If deploying the "BIG-IP APM will provide secure remote access to CAS" scenario		
BIG-IP APM virtual server	What is the IP address you want to use for your BIG-IP APM virtual server:	
SSL Certificate and Key	SSL Certificate: Key:	
Re-encrypt the traffic to the BIG-IP virtual server	You must know if the remote BIG-IP LTM that will receive traffic from this BIG-IP APM is using a self-signed/default certificate and key or a certificate signed by a Certificate Authority.	
Remote LTM virtual server	What is the virtual server address on the remote BIG-IP LTM to which this BIG-IP APM will forward traffic:	

Downloading and importing the new iApp

The first task is to download and import the new Exchange Server Client Access Server iApp template.

To download and import the iApp

1. Open a web browser and go to *http://support.f5.com/kb/en-us/solutions/public/13000/400/sol13497.html*.
2. Follow the instructions to download the Microsoft Exchange iApp 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 **f5.microsoft_exchange_2010_2013_cas.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 the iApp file.
8. Click the **Upload** button. The iApp is now available for use.

Upgrading from a previous version of the iApp template

If you configured your BIG-IP system using a previous version of the downloadable iApp template (either **f5.microsoft_exchange_2010_cas.2012_04_06** or **f5.microsoft_exchange_2010_cas.2012_06_08**), we strongly recommend you upgrade the iApp template to this current version. You cannot upgrade an application service that was based on the f5.microsoft.exchange_2010 template; you can only upgrade if you used one of the downloadable iApp templates.

When you upgrade the template, you simply change the parent template on the application service you previously created, and then make any necessary modifications to take advantage of new functionality.

To upgrade an existing application service to the new iApp template

1. From the Main tab of the BIG-IP Configuration utility, expand **iApp** and then click **Application Services**.
2. Click the name of your existing Microsoft Exchange application service from the list.
3. On the Menu bar, click **Reconfigure**.
4. At the top of the page, in the **Template** row, click the **Change** button to the right of the list.
5. From the **Template** list, select **f5.microsoft_exchange_2010_2013_cas.v1.2.0**.
6. Review the questions in the new template, making any necessary modifications. Use the iApp walkthrough section of this guide for information on specific questions.

   If you used a previous version of the iApp to deploy BIG-IP APM, you must add the FQDN and IP address for each Active Directory server in your domain that the BIG-IP system can contact. The iApp now creates a pool for the Active Directory servers (even for only one server), where in previous versions of the template you could only specify a single Active Directory server.
7. Click **Finished**.

Configuring the BIG-IP iApp for Microsoft Exchange Server 2010 and 2013

Use the following guidance to configure the BIG-IP system for Microsoft Exchange Server Client Access Role using the iApp template.

Getting started with the Exchange iApp template

To begin the Exchange iApp Template, use the following procedure.

To start the iApp template

1. Log on to the BIG-IP system.
2. On the Main tab, expand **iApp**, and then click **Application Services**.
3. Click **Create**. The Template Selection page opens.
4. In the **Name** box, type a name. In our example, we use **Exchange-2013_.**
5. From the **Template** list, select **f5.microsoft_exchange_2010_2013_cas.v1.2.0**.
   The new Microsoft Exchange template opens.

Advanced options

If you select **Advanced** from the **Template Selection** list at the very top of the template, you see Device and Traffic Group options for the application. This feature, new to v11, is a part of the Device Management configuration. This functionality extends the existing High Availability infrastructure and allows for clustering, granular control of configuration synchronization and granular control of failover. To use the Device and Traffic Group features, you must have already configured Device and Traffic Groups before running the iApp. For more information on Device Management, see the product documentation.

1. ***Device Group***
   To select a specific Device Group, clear the **Device Group** check box and then select the appropriate Device Group from the list.
2. ***Traffic Group***
   To select a specific Traffic Group, clear the **Traffic Group** check box and then select the appropriate Traffic Group from the list.

Inline help

At the bottom of the Welcome section, the iApp template asks about inline help text.

1. ***Do you want to see inline help?***
   Select whether you want to see informational and help messages inline throughout the template, or if you would rather hide this inline help. If you are unsure, we recommend having the iApp display all inline help.
   Important and critical notes are always shown, no matter which selection you make.
   - **Yes, show inline help text**
     Select this option to see all available inline help text.
   - **No, do not show inline help**
     If you are familiar with this iApp template, or with the BIG-IP system in general, select this option to hide the inline help text.

Deployment Scenario

Choose the option that best describes how you plan to use the BIG-IP system you are currently configuring. The scenario you select from the list determines the questions that appear in the rest of the iApp. The scenarios were described in *Deployment Scenarios on page 6*.

1. ***Which scenario describes how you will use the BIG-IP system?***
   Choose the scenario that best describes the way you plan to use this BIG-IP system. Guidance for each scenario is contained in a separate section of this deployment guide. Click the link to go to the relevant section of the guide for the scenario you plan to deploy.

- **BIG-IP LTM will load balance and optimize CAS traffic**
  Select this scenario to manage, secure, and optimize client-generated Client Access Server traffic using the BIG-IP system. This is the traditional role of the BIG-IP LTM and should be used when you are not deploying APM on a separate BIG-IP system.

  In this scenario, if you have fully licensed and provisioned BIG-IP APM you have the option of configuring it to provide proxy authentication for HTTP-based services on this system.

  Do not select this option if you intend to deploy a separate BIG-IP APM that will provide secure remote access to Exchange CAS HTTP-based services.

  For this role, go to *Configuring the BIG-IP LTM to load balance and optimize Client Access Server traffic on page 13*.

- **BIG-IP LTM will receive HTTP-based CAS traffic forwarded by a BIG-IP APM**
  Select this scenario to configure BIG-IP LTM with a single virtual server that receives Exchange Client Access HTTP-based traffic that has been forwarded by an BIG-IP APM. The virtual server can also accommodate direct traffic, for example internal clients that do not use the BIG-IP APM, and non-HTTP traffic that is not handled by BIG-IP APM such as POP3 and IMAP4.

  For this role, go to *Configuring the LTM to receive HTTP-based Client Access traffic forwarded by a BIG-IP APM on page 31*.

- **BIG-IP APM will provide secure remote access to CAS**
  Select this role to configure the BIG-IP system as a BIG-IP APM that will use a single HTTPS (port 443) virtual server to provide proxy authentication and secure remote access to Exchange HTTP-based Client Access services without requiring the use of an F5 Edge Client. The traffic will be forwarded to another BIG-IP running LTM which will provide advanced load balancing, persistence, monitoring and optimizations for those services.

  For this role, go to *Configuring the BIG-IP APM to provide secure remote access to Client Access Servers on page 43*.

2. ***Which version of Exchange are you using?***
   Choose the version of Microsoft Exchange Server you are using. Some features of the iApp are available only to a particular version.

   - **Exchange Server 2010**
     Select this option if you are deploying the BIG-IP system for Microsoft Exchange 2010.

   - **Exchange Server 2013**
     Select this option if you are deploying the BIG-IP system for Microsoft Exchange 2013.

Configuring the BIG-IP LTM to load balance and optimize Client Access Server traffic

If you chose the first scenario, *LTM will load balance and optimize CAS traffic*, use this section for guidance on configuring the iApp. Again, do not chose this option if you will deploy a separate BIG-IP APM to provide secure remote access to HTTP-based Client Access services.

Analytics

This section of the template asks questions about Analytics. The Application Visibility Reporting (AVR) module allows you to view statistics specific to your Microsoft Exchange implementation. AVR is available on all BIG-IP systems v11 and later, however you must have the AVR provisioned for this option to appear. Note that this is only for application visibility reporting, you can view object-level statistics from the BIG-IP without provisioning AVR.

ⓘ ***Important***

Enabling Analytics may adversely affect overall system performance. If you choose to enable Analytics, we recommend gathering statistics for a set time period, such as one week, and then re-entering this template and disabling Analytics while you process the data.

If you plan on using AVR for analytics, we recommend creating a custom Analytics profile. To create a new profile, from the Main tab, select **Profiles** and then click **Analytics**. Click **New** and then configure the profile as applicable for your configuration. See the online help or product documentation for specific instructions. To select the new profile, you need to restart or reconfigure the iApp template.

1. ***Do you want to enable Analytics for application statistics?***
   Select whether you want to enable AVR for Analytics for HTTP-based services. Note that Analytics does not always properly report the HTTP methods of Outlook Anywhere.

   ▶ **No, do not enable Analytics**
   If you do not want to enable Analytics, leave this list set to **No**, and continue with the next section.

   ▶ **Yes, enable Analytics using AVR**
   If you choose to enable Analytics, select **Yes** from the list, and then answer the following questions.

   a. *Use the default Analytics profile or select a custom profile?*
   If you decide to use AVR, you must decide whether to use the default Analytics profile, or create a new one. As mentioned previously, we recommend creating a new profile to get the most flexibility and functionality out of AVR. If you have already started the iApp template configuration and then decide to create a new Analytics profile, you must exit the iApp, create the profile, and then restart the iApp template.

   ▸ **Select a custom Analytics profile**
   Select this option if you have already created a custom Analytics profile for Exchange Server.

   i). *Which Analytics profile do you want to use?*
   From the list, select the appropriate Analytics profile.

   ▸ **Use default profile**
   Select this option if you have not yet created a custom Analytics profile for Microsoft Exchange. We do not recommend using the default profile.

BIG-IP Access Policy Manager

The section in this scenario asks about BIG-IP APM. To use APM, it must be fully licensed and provisioned before starting the template. If you are not deploying BIG-IP APM, continue with the next section. As mentioned in the prerequisites, if you are deploying APM, you must have configured the BIG-IP system for DNS and NTP; see *Configuring DNS and NTP settings on page 60* for instructions.

1. ***Provide secure authentication to CAS HTTP-based services with BIG-IP Access Policy Manager?***
   Specify whether you want to deploy BIG-IP APM to provide proxy authentication and secure remote access for HTTP-based Client Access services.

   ▶ **No, do not provide secure authentication using BIG-IP APM**
   Select this option if you do not want to use the BIG-IP APM at this time. You can always reconfigure the iApp template at a later date should you decide to add BIG-IP APM functionality.

- **Yes, provide secure authentication using BIG-IP APM**
  Select this option if you want to use the BIG-IP APM to provide proxy authentication and secure remote access for your Exchange deployment.

  a. *Which Active Directory servers in your domain can this BIG-IP system contact?*
     Specify both the FQDN and IP address of each Active Directory server you want the BIG-IP APM to use for servicing authentication requests. Click **Add** to include additional servers.

  b. *What is the FQDN of your Active Directory domain for your Exchange users?*
     Specify the FQDN of the Active Directory deployment for your Exchange users. This is the FQDN for your entire domain, such as example.com, rather than the FQDN for any specific host.

  c. *Does your Active Directory domain allow anonymous binding?*
     Select whether anonymous binding is allowed in your Active Directory environment.

     - **Yes, anonymous binding is allowed**
       Select this option if anonymous binding is allowed. No further information is required.

     - **No, credentials are required for binding**
       If credentials are required for binding, you must specify an Active Directory user name and password for use in the AAA Server.

       i). *Which Active Directory user with administrative permissions do you want to use?*
       Type a user name with administrative permissions.

       ii). *What is the password associated with that account?*
       Type the associated password.

  d. *How do you want to handle health monitoring for this pool?*
     Specify whether you want the template to create a new LDAP monitor or a new ICMP monitor, or if you select an existing monitor. For more accurate monitoring, we recommend using an LDAP monitor.

     - **Select an existing monitor for the Active Directory pool**
       Select this option if you have already created a health monitor (only monitors with a **Type** of LDAP or External can be used) for the Active Directory pool that will be created by the template. If you want to create a health monitor, but have not already done so, you must exit the template and create the object before it becomes available from the list.

       The iApp allows you to select monitors that are a part of another iApp Application Service. If you select a monitor that is a part of another Application Service, be aware that any changes you make to the monitor in the other Application Service will apply to this Application Service as well.

       i). *Which monitor do you want to use?*
       From the list, select the LDAP or External monitor you created to perform health checks for the Active Directory pool created by the template. Only monitors that have a Type value of LDAP or External appear in this list. Continue with the next section.

     - **Use a simple ICMP monitor for the Active Directory pool**
       Select this option if you only want a simple ICMP monitor for the Active Directory pool. This monitor sends a ping to the servers and marks the server UP if the ping is successful.
       Continue with the next section.

     - **Create a new LDAP monitor for the Active Directory pool**
       Select this option if you want the template to create a new LDAP monitor for the Active Directory pool. You must answer the following questions:

       i). *Which Active Directory user name should the monitor use?*
       Specify an Active Directory user name for the monitor to use when attempting to log on as a part of the health check. This should be a user account created specifically for this health monitor, and *must* be set to never expire.

       ii). *What is the associated password?*
       Specify the password associated with the Active Directory user name.

iii). *What is the LDAP tree for this user account?*
Specify the LDAP tree for the user account. As noted in the inline help, ADSI editor, an tool for Active Directory LDAP administration, is useful for determining the correct LDAP tree value. For example, if the user name is 'user1' which is in the organizational unit 'Exchange Users' and is in the domain 'exchange.example.com', the LDAP tree would be: ou=Exchange Users, dc=Exchange, dc=example, dc=com.

iv). *Does your Active Directory domain require a secure protocol for communication?*
Specify whether your Active Directory implementation requires SSL or TLS for communication, or does not require a secure protocol. This determines the port the health monitor uses.

- **No, a secure protocol is not required**
  Select this option if your Active Directory domain does not require a secure protocol.
- **Yes, SSL communication is required**
  Select this option if your Active Directory domain requires SSL communication. The health check uses port 636 as the Alias Service Port.
- **Yes, TLS communication is required**
  Select this option if your Active Directory domain requires TLS communication. The health check uses port 389 as the Alias Service Port.

v). *How many seconds between Active Directory health checks?*
Specify how many seconds the system should use as the health check Interval for the Active Directory servers. We recommend the default of 10 seconds.

Tell us about your deployment

In this section, the iApp gathers general information about your Client Access Server deployment. Remember, you must import an SSL certificate and key that correspond to all fully-qualified DNS names that you are using for OWA, Outlook Anywhere, Autodiscover, ActiveSync, POP3, or IMAP4 traffic. Any certificate that you obtain with multiple names must be in SAN (Subject Alternative Name) format, not SNI (Server Name Indication) format.

1. ***Will incoming traffic arrive at this BIG-IP system encrypted or unencrypted?***
   This question does not appear if you chose to deploy APM in the previous section.
   If you selected to deploy APM, continue with the re-encrypt question (a) under Encrypted.

   Select whether any of the HTTP-based, POP3 and IMAP4 traffic will be encrypted or not when it arrives on this system. In nearly all cases for this deployment scenario, it will be encrypted (it would not be encrypted, for example, if you selected one of the other scenarios/roles for this iApp, and elected to offload SSL/TLS traffic at a separate BIG-IP APM).

   Note that the BIG-IP system does not offload the encryption used for RPC; the answer to this question should be based on the other Client Access protocols you intend to deploy.

▶ **Encrypted**
If you chose Encrypted in the previous question, additional questions appear.

a. *Do you want to re-encrypt this traffic to your Client Access Servers?*
If you are using Exchange 2010 or Exchange 2013 SP1 and later, and want the BIG-IP system to offload SSL processing from the Client Access Servers, select **Do not re-encrypt (SSL Offload)** from the list. Offloading SSL on the BIG-IP system can extend Exchange Server server capacity.

> ***Important***
>
> *If you are deploying Exchange Server 2013 and have not installed SP1 or later, you must choose* ***Re-encrypt (SSL Bridging)****.*

▶ **Do not re-encrypt (SSL Offload)**
Select this option if you want to offload SSL processing onto the BIG-IP system. If you choose SSL Offload, you must have followed the instructions described in the prerequisites for configuring the Exchange Server: *http://social.technet.microsoft.com/wiki/contents/articles/how-to-configure-ssl-offloading-in-exchange-2010.aspx*.

i). *Which Client SSL profile do you want to use?*
The iApp can create a new Client SSL profile, or if you have created a Client SSL profile which contains the appropriate SSL certificate and key for your Exchange implementation, you can select it from the list.

- *Select the Client SSL profile you created from the list*
  If you manually created a Client SSL profile, select it from the list, and then continue with #2.
- **Create a new Client SSL profile**
  Select this option if you want the iApp to create a new Client SSL profile.

  1). *Which SSL certificate do you want to use?*
  Select the SSL certificate you imported onto the BIG-IP system for decrypting client connections.

  If you have not yet imported a certificate, you can leave the default selections and reconfigure this iApp after obtaining the certificates. The deployment will not function correctly until you have selected the correct certificates here.

  ➡ ***Note***

  Any certificate that you obtain with multiple names must be in SAN (Subject Alternative Name) format, not SNI (Server Name Indication) format. For more information on SAN certificates, see Subject Alternative Name (SAN) SSL Certificates on page 103.

  2). *Which SSL key do you want to use?*
  Select the associated key from the list.

▸ **Re-encrypt (SSL Bridging)**
Select this option if your implementation requires encrypted traffic to the Client Access Servers, or you are using Exchange 2013. The BIG-IP system unencrypts, then re-encrypts the traffic headed for the Client Access Servers.

i). *Which Client SSL profile do you want to use?*
The iApp can create a new Client SSL profile, or if you have created a Client SSL profile which contains the appropriate SSL certificate and key for your Exchange implementation, you can select it from the list.

- *Select the Client SSL profile you created from the list*
  If you manually created a Client SSL profile, select it from the list, and then continue with #2.
- **Create a new Client SSL profile**
  Select this option if you want the iApp to create a new Client SSL profile.

  1). *Which SSL certificate do you want to use?*
  Select the SSL certificate you imported onto the BIG-IP system for decrypting client connections.

  If you have not yet imported a certificate, you can leave the default selections and reconfigure this iApp after obtaining the certificates. The deployment will not function correctly until you have selected the correct certificates here.

  ➡ ***Note***

  Any certificate that you obtain with multiple names must be in SAN (Subject Alternative Name) format, not SNI (Server Name Indication) format. For more information on SAN certificates, see Subject Alternative Name (SAN) SSL Certificates on page 103.

  2). *Which SSL key do you want to use?*
  Select the associated key from the list.

ii). *Which Server SSL profile do you want to use?*
Select whether you want the iApp to create an F5 recommended Server SSL profile, or if you want to choose a Server SSL profile you already created.

- *Select the Server SSL profile you created from the list*
  If you have previously created a Server SSL profile for your Exchange implementation, from the list, select the existing Server SSL profile you created.
- **Create a new Server SSL profile**
  Select this option if you want the iApp to create a new Server SSL profile.

The default, F5 recommended Server SSL profile uses the *serverssl* parent profile. For information about the ciphers used in the Server SSL profile, see *http://support.f5.com/kb/en-us/solutions/public/8000/800/sol8802.html*.

- **Unencrypted**
  Select this option if Client Access traffic is arriving at this BIG-IP system unencrypted (typically because you configured to offload SSL/TLS traffic at the BIG-IP APM that is sending Client Access traffic to this device).

  a. *Do you want to encrypt the traffic to your Client Access Servers?*
  If you are using Exchange 2010 and want the BIG-IP system to offload SSL processing from the Client Access Servers, select **Do not re-encrypt (SSL Offload)** from the list. Offloading SSL on the BIG-IP system can extend Exchange Server 2010 server capacity.

  Important

  *If you are deploying Exchange Server 2013, you must choose **Encrypt (SSL Bridging)**.*

  - **Do not encrypt (SSL Offload),**
    Select this option if you do not want the BIG-IP system to encrypt the traffic destined for the Client Access servers. The BIG-IP system does not modify the traffic, and you can continue with the next question.
  - **Encrypt (SSL Bridging)**
    Select this option if your implementation requires encrypted traffic to the Client Access Servers, or you are using Exchange 2013. The BIG-IP system unencrypts, then re-encrypts the traffic headed for the Client Access Servers.

    i). *Which Server SSL profile do you want to use?*
    Select whether you want the iApp to create an F5 recommended Server SSL profile, or if you want to choose a Server SSL profile you already created.

    - *Select the Server SSL profile you created from the list*
      If you have previously created a Server SSL profile for your Exchange implementation, from the list, select the existing Server SSL profile you created.
    - **Create a new Server SSL profile**
      Select this option if you want the iApp to create a new Server SSL profile.

      The default, F5 recommended Server SSL profile uses the *serverssl* parent profile. For information about the ciphers used in the Server SSL profile, see *http://support.f5.com/kb/en-us/solutions/public/8000/800/sol8802.html*.

2. ***Will clients be connecting to this BIG-IP virtual server primarily over a LAN or a WAN?***
   Select whether most clients are connecting over a WAN or LAN. The iApp uses your selection to configure the proper TCP optimization settings.

   - **WAN**
     Select this option if most Exchange server clients are coming into your Exchange environment over a Wide Area Network.
   - **LAN**
     Select this option if most Exchange server clients are coming into your Exchange environment over a Local Area Network.

3. ***Where will your BIG-IP virtual servers be in relation to your Client Access Servers?***
   Select whether your BIG-IP virtual servers are on the same subnet as your Client Access Servers, or on different subnets. This setting is used to determine the SNAT (secure NAT) and routing configuration.

   - **Same subnet for BIG-IP virtual servers and Client Access Servers**
     Select this option if the BIG-IP virtual servers and the Client Access Servers are on the same subnet. In this case SNAT is configured on the BIG-IP virtual server and you must specify the number of concurrent connections.

     a. *What is the maximum number of concurrent users you expect per Client Access Server?*
     Select whether you expect more or fewer than 6,000 concurrent users to each Client Access Server. This answer is used

to determine what type of SNAT (secure network address translation) that system uses. A SNAT is an object that maps the source client IP address in a request to a translation address defined on the BIG-IP device.

> **Note**
>
> *For specific information on SNAT Pools, including why we chose 6,000 concurrent users per Client Access Server, see Maximum number of concurrent users: SNAT Pool guidance on page 103.*

- **Fewer than 6000**
  Select this option if you expect fewer than 6,000 concurrent users per Client Access Server. With this option, the system applies SNAT Auto Map, which doesn't require any additional IP addresses, as the system uses an existing self IP address for translation.

- **More than 6000**
  Select this option if you expect more than 6,000 users at one time to each server. With this option, the iApp creates a SNAT Pool, for which you need one IP address for each 6,000 users you expect.

  i). Which IP addresses do you want to use for the SNAT pool?
  Specify one otherwise unused IP address for every 6,000 concurrent connections, or fraction thereof. Click **Add** for additional rows.

  > **Important**
  >
  > *If you choose more than 6,000 users, but do not specify enough SNAT pool addresses, after the maximum connection limit of 6,000 concurrent users per server is reached, new requests fail.*

- **Different subnet for BIG-IP virtual servers and Client Access Servers**
  If the BIG-IP virtual servers and Web Interface servers are on different subnets, the following question appears asking how routing is configured.

  a. How have you configured routing on your Client Access Servers?
  Select whether the Client Access Servers use this BIG-IP system's Self IP address as their default gateway.

  - **Client Access Servers do NOT use BIG-IP as their default gateway**
    Select this option if the Client Access Servers do not use the BIG-IP system as their default gateway. If the Client Access Servers do not use the BIG-IP as their default gateway, SNAT is configured on the BIG-IP virtual server and you must select the expected number of concurrent users in the next question.

    i). What is the maximum number of concurrent users you expect per Client Access Server?
    Select whether you expect more or fewer than 6,000 concurrent users to each Client Access Server. This answer is used to determine what type of SNAT that system uses. A SNAT is an object that maps the source client IP address in a request to a translation address defined on the BIG-IP device.

    > **Note**
    >
    > *For specific information on SNAT Pools, including why we chose 6,000 concurrent users per Client Access Server, see Maximum number of concurrent users: SNAT Pool guidance on page 103.*

    - **Fewer than 6000**
      Select this option if you expect fewer than 6,000 concurrent users per Client Access Server. With this option, the system applies SNAT Auto Map, which doesn't require any additional IP addresses, as the system uses an existing self IP address for translation.

    - **More than 6000**
      Select this option if you expect more than 6,000 users at one time to each server. With this option, the iApp creates a SNAT Pool, for which you need one IP address for each 6000 users you expect.

      1). Which IP addresses do you want to use for the SNAT pool?
      Specify one otherwise unused IP address for every 6000 concurrent connections, or fraction thereof. Click **Add** for additional rows.

ⓘ ***Important***

If you choose more than 6,000 users, but do not specify enough SNAT pool addresses, after the maximum connection limit of 6,000 concurrent users per server is reached, new requests fail.

- **Client Access Servers use the BIG-IP as their default gateway**
  Select this option if the Client Access Servers use the BIG-IP system as their default gateway. In this scenario, no additional configuration is necessary to ensure correct server response handling.

4. ***Will you use a single IP address for all CAS connections, or will you have separate IP addresses?***
   Select whether you want to use a single IP address for all Client Access connections, or separate IP addresses for the different services. If you chose a single IP address, the iApp creates a single virtual server for all of the Client Access services. If you choose different addresses, the BIG-IP creates individual virtual servers for each service. There are advantages to each method:

   - **Single IP address**
     With a single IP address, you can combine multiple functions on the same virtual server; for instance, you may wish to have a single fully-qualified domain name (FQDN) and associated SSL certificate for all HTTP-based Client Access methods. You only need to provision a single IP address for the virtual server. If you want the services to have unique DNS names despite sharing an IP address, you need to obtain an SSL certificate that supports Subject Alternative Names. For detailed information on SAN certificates*,* see *Subject Alternative Name (SAN) SSL Certificates on page 103*.

   - **Different IP addresses for different services**
     By maintaining a separate virtual server for each component, you can manage each service independently from one another. For instance, you may wish to have different pool membership, load balancing methods, or custom monitors for Outlook Web App and Outlook Anywhere. If each of those services are associated with a different virtual server, granular management becomes easier. You need to provision an available IP address for each virtual server, and obtain a valid SSL certificate with a unique subject name for each service.

5. ***How are you distributing the CAS protocols between servers?***
   Select whether all your Client Access services are handled by the same Client Access Servers, or if each service is handled by a unique set of Client Access Servers.

   This iApp creates separate pools and monitors for each service regardless of this setting. However, if you use the same set of servers for all services, you only have to specify the server IP addresses once.

   - **All services will be handled by the same set of Client Access Servers**
     Choose this option if you are using the same Client Access Servers for all of your Exchange Client Access services.

   - **Each service will be handled by a unique set of Client Access Servers**
     Choose this option if you are using different sets of Client Access Servers for each Client Access service.

Tell us about which services you are deploying

In this section, the iApp gathers information about which Client Access services you are deploying. Some questions only appear depending on your answers to previous questions. These contingencies are noted at the beginning of the question description.

1. ***Do you want to customize the server pool settings?***
   Select whether you want to customize the BIG-IP load balancing pools for Client Access services, or use the F5 recommended settings.

   - **Use settings recommended by F5**
     If you don't have a specific reason to customize the pool settings, leave this question set to this setting and continue with #2.

   - **Customize pool settings**
     If you need to modify individual pool options, select Customize pool settings and answer the following options that appear:

a. *Which load balancing method do you want to use?*
Select the load balancing method you want to use. We recommend the default, **Least Connections (member)**. See the BIG-IP documentation for a description of each method. If you chose a node-based load balancing method, such as Ratio (Node), and use a Ratio or Connection Limit (both optional), you must see *Adding Ratio or Connection Limit information to the nodes if using a node-based load balancing method on page 52* after completing the template.

b. *Do you want to give priority to specific groups of servers?*
Select whether you want to enable Priority Group Activation to send traffic first to groups of servers you specify. The BIG-IP system load balances traffic according to the priority number you assign to each server.

- **Do not use Priority Group Activation**
  Select this option if you do not want to enable Priority Group Activation.

- **Use Priority Group Activation**
  Select this option if you want to enable Priority Group Activation. You will need to add a priority number in the Priority box to each server . A higher number indicates higher priority. Traffic is only sent to the servers with the highest priority, unless the number of available servers in that priority group falls below the value you specify as the minimum in the following question. The BIG-IP system then sends traffic to the group of servers with the next highest priority, and so on. See the BIG-IP documentation for more details.

  i). *What is the minimum number of active members in a group?*
  Specify the minimum number of servers that must be active to continue sending traffic to the priority group. If the number of active servers falls below this minimum, traffic will be sent to the group of servers with the next highest priority group number.

c. *Do you want the BIG-IP system to queue TCP requests?*
Select whether you want the BIG-IP system to queue TCP requests. TCP request queuing provides the ability to queue connection requests that exceed the capacity of connections for a pool, as determined by the connection limit. Consequently, instead of dropping connection requests that exceed the capacity of a pool, TCP request queuing enables those connection requests to reside within a queue according to defined conditions until capacity becomes available. For more information on TCP Request Queuing, see the *Preventing TCP Connection Requests From Being Dropped* chapter in the ***BIG-IP Local Traffic Manager: Implementations*** guide, available on AskF5.

> ***Important***
>
> *TCP Request Queuing is an advanced feature and should be used only if you understand how it will affect your deployment, including application behavior and BIG-IP performance.*
> *If you enable TCP Request Queuing, you must have a Connection Limit set on at least one of the nodes when configuring the Address/Port for the Client Access Server nodes.*

- **Do not queue TCP requests**
  Select this option if you do not want the BIG-IP system to queue TCP requests.

- **Queue TCP requests**
  Select this option if you want to enable TCP request queuing on the BIG-IP system.

  i). *What is the maximum number of TCP requests for the queue?*
  Type the maximum number of requests you want to queue. We do ***not*** recommend using 0, which means unlimited and is only constrained by available memory.

  ii). *How many milliseconds should requests remain in the queue?*
  Type a number of milliseconds for the TCP request timeout value.

2. ***What IP address do you want to use for your virtual servers?***
This question appears only if you selected ***Single IP address*** *for all CAS connections in the previous section.*

Specify a valid IP address to use for the BIG-IP virtual server. This virtual server address is used for all Client Access services. The BIG-IP system intelligently directs traffic to the appropriate service using an iRule created by the template.

3. ***Do you want to add any iRules to this combined virtual server?***
If you chose to customize pool settings, you have the option of adding existing iRules to the virtual server. iRules allow an administrator to instruct the system to intercept, inspect, transform, direct and track inbound or outbound application traffic. For more information on iRules, see *https://devcentral.f5.com/HotTopics/iRules/tabid/1082202/Default.aspx.*

> ⓘ ***Important***
>
> *Improper use or misconfiguration of an iRule can result in unwanted application behavior and poor performance of your BIG-IP system. We recommended you verify the impact of an iRule prior to deployment in a production environment.*

If you want to add iRules, from the **Options** box, select the iRule(s) you want to include, and then click the Add (**<<**) button.

4. ***Are you deploying Outlook Web App (includes ECP)?***
Select whether you are deploying Outlook Web App at this time. This includes the Exchange Control Panel (ECP).

- **No**
Select this option if you are not deploying OWA at this time. You can always reconfigure the template later to add OWA.

- **Yes**
Select this option if you are deploying OWA at this time.

a. *Do you want to restrict Exchange Administration Center access by IP address or network?* Exchange 2013 only
*This question only appears if you selected **Exchange 2013** as your version of Exchange.*

Select whether you want the BIG-IP LTM to restrict Exchange Administration Center (EAC) access by IP address or network. In Microsoft Exchange Server 2013, Exchange administration is now performed via the EAC, a web-based console. You configure the iApp to control access to the EAC, allowing connections only from approved IP addresses or networks.

- **No, allow EAC access from all client IP addresses**
Select this option to allow EAC access from all client IP addresses and networks. In this case, the system does not restrict EAC access to specific IP addresses or networks, however, if you are deploying BIG-IP APM, you can still restrict access to EAC by Organizational Management group in question b.

- **Yes, restrict EAC access to specific client IP addresses or networks**
Select this option if you want to restrict EAC access to specific client IP addresses or networks. This adds an extra layer of security to your Exchange deployment. The system creates a data group with the IP addresses or networks you specify, and then uses an iRule to enforce the restrictions.

i). *What IP or network addresses should be allowed EAC access?*
Specify the IP addresses or networks should be allowed access to EAC. Click **Add** to include additional addresses or networks.

> ⓘ ***Important***
>
> *If you are not deploying BIG-IP APM, the iApp currently does not attach the proper data group and iRule. See Creating the Data Group and iRule for securing EAC access if not using BIG-IP APM on page 57 for information on how to configure these objects.*

b. *Should BIG-IP APM restrict EAC access to members of the Exchange Organization Management Security Group?* Exchange 2013 only
*This question only appears if you selected **Exchange 2013** as your version of Exchange and selected to provide secure authentication with BIG-IP APM.*

Select whether you want the BIG-IP APM to restrict Exchange Administration Center (EAC) access to members of Exchange 2013's Organizational Management group. The BIG-IP APM module queries Active Directory group membership for the user making the request to EAC. If the user is not a member of the Organization Management group, the BIG-IP APM policy denies access.

- **No, do not restrict EAC access by group membership**
Select this option and the BIG-IP APM will not restrict access to the EAC by group membership.

- **Yes, restrict EAC access by group membership**
  Select this option if you want to restrict EAC access to the Organization Management group. This adds an additional layer of security to your Exchange deployment, as the system denies access to the EAC from anyone who is not a member of the Organization Management group.

c. *What IP address do you want to use for the OWA virtual server?*
*This question only appears if you selected **Different IP addresses for different services** in the previous section.*

Specify the IP address the system will use for the Outlook Web App virtual server. Clients will use this IP address to access Outlook Web App.

d. *Do you want to add custom iRules to this virtual server?*
*This question only appears if you selected **Different IP addresses for different services** in the previous section.*

If you chose to customize pool settings, you have the option of adding existing iRules to this OWA virtual server. iRules allow an administrator to instruct the system to intercept, inspect, transform, direct and track inbound or outbound application traffic. For more information on iRules, see
https://devcentral.f5.com/HotTopics/iRules/tabid/1082202/Default.aspx.

If you want to add iRules, from the **Options** box, select the iRule(s) you want to include, and then click the Add (**<<**) button. Improper use or misconfiguration of an iRule can result in unwanted application behavior and poor performance of your BIG-IP system. We recommended you verify the impact of an iRule prior to deployment in a production environment.

e. *What are the IP addresses of your OWA servers?*
*This question only appears if you selected **Each service will be handled by a unique set of Client Access Servers** in the previous section.*

Specify the IP addresses of your Outlook Web App servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

2. ***Are you deploying Outlook Anywhere, EWS and OAB (or EWS only)?***
Select whether you are deploying Outlook Anywhere, Exchange Web Services (EWS), and Offline Address Book (OAB), or EWS only at this time.

- **No, not deploying Outlook Anywhere, EWS, or OAB**
  Select this option if you are not deploying Outlook Anywhere at this time. You can always reconfigure the template at another time to add Outlook Anywhere to the configuration.

- **Yes, deploying EWS only**
  Select this option if you are only deploying Exchange Web Services at this time, and not Outlook Anywhere or Offline Address Book. In this case, the BIG-IP system sends any Offline Address Book traffic to the Exchange Web Services pool.

a. *What IP address do you want to use for the Exchange Web Services virtual server?*
*This question only appears if you selected **Different IP addresses for different services** in the previous section.*

Specify the IP address the system will use for the Exchange Web Services virtual server.

b. *Do you want to add custom iRules to this virtual server?*
*This question only appears if you selected **Different IP addresses for different services** in the previous section.*

If you chose to customize pool settings, you have the option of adding existing iRules to this Exchange Web Services virtual server. iRules allow an administrator to instruct the system to intercept, inspect, transform, direct and track inbound or outbound application traffic. For more information on iRules, see
https://devcentral.f5.com/HotTopics/iRules/tabid/1082202/Default.aspx.

If you want to add iRules, from the **Options** box, select the iRule(s) you want to include, and then click the Add (**<<**) button. Improper use or misconfiguration of an iRule can result in unwanted application behavior and poor performance of your BIG-IP system. We recommended you verify the impact of an iRule prior to deployment in a production environment.

c. *What are the IP addresses of your EWS servers?*
*This question only appears if you selected **Each service will be handled by a unique set of Client Access Servers** in the previous section.*

Specify the IP addresses of your Exchange Web Services servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

- **Yes, deploying Outlook Anywhere, EWS, and OAB**
  Select this option if you are deploying Outlook Anywhere, EWS, and OAB at this time.

ⓘ ***Important***

*In Microsoft Exchange **2010**, you must enable Outlook Anywhere on each of your Exchange Client Access Servers before that service will be available. Outlook Anywhere is not enabled by default on Exchange Client Access Servers. See the Microsoft documentation for specific instructions.*

To prevent internal users from receiving a password prompt, your internal DNS must not have an 'A' record for the FQDN for Outlook Anywhere.

a. *What IP address do you want to use for the Outlook Anywhere virtual server?*
*This question only appears if you selected **Different IP addresses for different services** in the previous section.*

Specify the IP address the system will use for the Outlook Anywhere virtual server.

b. *Do you want to add custom iRules to this virtual server?*
*This question only appears if you selected **Different IP addresses for different services** in the previous section.*

If you chose to customize pool settings, you have the option of adding existing iRules to this Outlook Anywhere virtual server. iRules allow an administrator to instruct the system to intercept, inspect, transform, direct and track inbound or outbound application traffic. For more information on iRules, see *https://devcentral.f5.com/HotTopics/iRules/tabid/1082202/Default.aspx.*

If you want to add iRules, from the **Options** box, select the iRule(s) you want to include, and then click the Add (**<<**) button. Improper use or misconfiguration of an iRule can result in unwanted application behavior and poor performance of your BIG-IP system. We recommended you verify the impact of an iRule prior to deployment in a production environment.

c. *What are the IP addresses of your Outlook Anywhere servers?*
*This question only appears if you selected **Each service will be handled by a unique set of Client Access Servers** in the previous section.*

Specify the IP addresses of your Outlook Anywhere servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

d. *Which type of authentication do Outlook Anywhere clients use?*
This question only appears if you chose to deploy BIG-IP APM and are using BIG-IP version 11.3 or later.

Choose whether your Outlook Anywhere clients use Basic or NTLM authentication. Beginning in BIG-IP version 11.3, the iApp supports using NTLM authentication for Outlook Anywhere.

- **Outlook Anywhere clients use Basic Authentication**
  Select this option if your Outlook Anywhere clients use Basic Authentication. No further information is required, and you can continue with #6.

- **Outlook Anywhere clients use NTLM authentication**
  Select this option if your Outlook Anywhere clients use NTLM information. You must answer the following questions about your Active Directory implementation. Also see *Appendix E: Active Directory and Exchange Server configuration for NTLM on page 105*, and *Experiencing authentication issues when deploying the iApp using BIG-IP APM for client-side NTLM for Outlook Anywhere on page 58* for important information and modifications for NTLM.

ⓘ ***Important***

Before completing this section, you must create a user account in the same domain that has been properly configured for Kerberos delegation. You must create an NTLM Machine Account object on the BIG-IP system to join this system to the Active Directory domain. See Creating an NTLM Machine Account on page 61.

i). *Which NTLM machine account should be used for Kerberos delegation?*
Select the NTLM Machine Account you created to join the BIG-IP system to the Active Directory domain. If you have not already created an NTLM Machine Account on the BIG-IP system, see *Creating an NTLM Machine Account on page 61*. You must either exit the template now and start over once you have created the NTLM Machine Account, or choose Outlook Anywhere Clients use Basic Authentication from the previous question, and then re-enter the template at a later time.

ii). *What is the Kerberos Key Distribution Center IP or FQDN?*
Specify the IP address or fully qualified domain name of the Kerberos Key Distribution Center (KDC). If you type an FQDN, the BIG-IP system must be able to resolve the address. Otherwise, use the IP address.

iii). *What is the name of the Kerberos Realm?*
Specify the name of the Kerberos Realm. While this name should be in all capital letters, the iApp automatically turns any lower case letters to capital.

iv). *What is the user name for the Active Directory delegation account you created?*
Specify the user name for the Active Directory delegation account you created. This account must be correctly configured in Active Directory for Kerberos delegation. See *Appendix E: Active Directory and Exchange Server configuration for NTLM on page 105* details*.*

v). *What is the associated password?*
Specify the password associated with the account.

vi). *How do you want to construct the Kerberos ticket request?*
Select whether you want to use DNS reverse lookups or the Outlook Anywhere Host header to construct the ticket request.

- **Use DNS reverse lookups**
  Select this option to use DNS reverse lookups to build the Kerberos ticket request. Note that you must configure a reverse lookup zone containing a PTR record for each Client Access Server on a DNS server that is accessible from this BIG-IP system. Consult your DNS documentation for specific instructions.
- **Use the Outlook Anywhere host header**
  Select this option to use the Outlook Anywhere Host header to construct the ticket request. To use the host header value, you must configure IIS Application Pools for Outlook Anywhere, Autodiscover, and Exchange Web Services to run using the previously created Active Directory user account for Kerberos delegation. See *Appendix E: Active Directory and Exchange Server configuration for NTLM on page 105*.

6. ***Are you deploying ActiveSync?***
Select whether you are deploying ActiveSync at this time.

▶ **No**
Select this option if you are not deploying ActiveSync at this time. You can always reconfigure the template at another time to add ActiveSync to the configuration.

▶ **Yes**
Select this option if you are deploying ActiveSync at this time. See *iPhones and other iOS devices are displaying invalid certificate messages after deploying the iApp for ActiveSync on page 58* for important information.

a. *What IP address do you want to use for the ActiveSync virtual server?*
*This question only appears if you selected **Different IP addresses for different services** in the previous section.*

Specify the IP address the system will use for the ActiveSync virtual server. Be sure to see *ActiveSync and/or Autodiscover aren't working after deploying the iApp for separate virtual servers and using APM on page 55*

b. *Do you want to add custom iRules to this virtual server?*
*This question only appears if you selected **Different IP addresses for different services** in the previous section.*

If you chose to customize pool settings, you have the option of adding existing iRules to this ActiveSync virtual server. iRules allow an administrator to instruct the system to intercept, inspect, transform, direct and track inbound or outbound application traffic. For information on iRules, see *https://devcentral.f5.com/HotTopics/iRules/tabid/1082202/Default.aspx.*

If you want to add iRules, from the **Options** box, select the iRule(s) you want to include, and then click the Add (**<<**) button. Improper use or misconfiguration of an iRule can result in unwanted application behavior and poor performance of your BIG-IP system. We recommended you verify the impact of an iRule prior to deployment in a production environment.

c. *What are the IP addresses of your ActiveSync servers?*
This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

Specify the IP addresses of your Outlook Anywhere servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

7. ***Are you deploying Autodiscover?***
Select whether you are deploying Autodiscover at this time.

- **No**
Select this option if you are not deploying Autodiscover at this time. You can always reconfigure the template at another time to add Autodiscover to the configuration.

- **Yes**
Select this option if you are deploying Autodiscover at this time.

⚠ ***Warning***

To deploy Autodiscover, you must either create an 'SRV' record in DNS or create 'A' records in order for external clients to be able to make use of Autodiscover. If you do not want to use an 'SRV' record, then you must have 'A' records for either 'autodiscover.<yourdomain>' or '<yourdomain>' that resolve to the IP address you have designated for your Autodiscover virtual server.

a. *What IP address do you want to use for the Autodiscover virtual server?*
This question only appears if you selected ***Different IP addresses for different services*** *in the previous section.*

Specify the IP address the system will use for the Autodiscover virtual server. Be sure to see *ActiveSync and/or Autodiscover aren't working after deploying the iApp for separate virtual servers and using APM on page 55*.

b. *Do you want to add custom iRules to this virtual server?*
This question only appears if you selected ***Different IP addresses for different services*** *in the previous section.*

If you chose to customize pool settings, you have the option of adding existing iRules to this Autodiscover virtual server. iRules allow an administrator to instruct the system to intercept, inspect, transform, direct and track inbound or outbound application traffic. For iRule information, see *https://devcentral.f5.com/HotTopics/iRules/tabid/1082202/Default.aspx.*

If you want to add iRules, from the **Options** box, select the iRule(s) you want to include, and then click the Add (**<<**) button. Improper use or misconfiguration of an iRule can result in unwanted application behavior and poor performance of your BIG-IP system. We recommended you verify the impact of an iRule prior to deployment in a production environment.

c. *What are the IP addresses of your Autodiscover servers?*
This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

Specify the IP addresses of your Autodiscover servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

8. ***Are you deploying RPC Client Access (MAPI)?*** ***Exchange 2010 only***
This question does not appear if you are deploying the template for Exchange 2013. Exchange Server 2013 Client Access Servers do not offer MAPI as a connection option.

Select whether you are deploying RPC Client Access (MAPI) for your Exchange 2010 deployment at this time.

- **No**
Select this option if you are not deploying RPC Client Access at this time. You can always reconfigure the template at another time to add it to the configuration.

- **Yes**
Select this option if you are deploying RPC Client Access at this time.

⚠ **Warning**

You must enable and configure a Client Access Array in your Exchange Server site before RPC Client Access will function. See Creating a new Client Access Array on page 104 for more information.
If deploying RPC Client Access, you must also deploy Outlook Anywhere, to properly handle EWS (Exchange Web Services) traffic.

a. *Use the default dynamic range of ports for RPC Client Access traffic or set static ports?*
Select whether you want to use the default dynamic range of ports for RPC Client Access, or if you have configured your Client Access servers to use specific ports outside the default range.

- **Use the default dynamic port range**
Select this option to configure the iApp to use the default port range. If you choose the default dynamic range of ports, no additional information is necessary, continue with the next question.
- **Set static ports**
Select this option if you want to set static ports for RPC Client Access.

ⓘ **Important**

You must make sure each of your Client Access Servers is configured to use the static ports you specified here. See http://social.technet.microsoft.com/wiki/contents/articles/configure-static-rpc-ports-on-an-exchange-2010-client-access-server.aspx for more information.

i). *Which port will you use for MAPI?*
Specify the port you want to set for MAPI.

ii). *Which port will you use for the Address Book?*
Specify the port you want to use for the Address book.

b. *What IP address do you want to use for the RPC Client Access virtual server?*
This question only appears if you selected ***Different IP addresses for different services*** *in the previous section.*

Specify the IP address the system will use for the RPC Client Access virtual server.

c. *What are the IP addresses of your RPC Client Access servers?*
This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

Specify the IP addresses of your RPC Client Access servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

9. ***Are you deploying POP3?***
Select whether you are deploying POP3 at this time.

- **No**
Select this option if you are not deploying POP3 at this time. You can always reconfigure the template at another time to add POP3 to the configuration.
- **Yes**
Select this option if you are deploying POP3 at this time.

ⓘ **Important**

You must enable POP3 on each of your Exchange Client Access Servers before that service will be available. POP3 is not enabled by default on Exchange Client Access Servers.

If you are offloading SSL, you must configure the Authentication properties for POP3 on each of your Exchange Client Access Servers to allow logins using plain text. By default, POP3 is configured to only allow secure (encrypted) logins.

a. What IP address do you want to use for the POP3 virtual server?
This question only appears if you selected ***Different IP addresses for different services*** *in the previous section.*

Specify the IP address the system will use for the POP3 virtual server.

b. What are the IP addresses of your POP3 servers?
This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

Specify the IP addresses of your POP3 servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

10. ***Are you deploying IMAP4?***
Select whether you are deploying IMAP4 at this time.

- **No**
Select this option if you are not deploying IMAP4 at this time. You can always reconfigure the template at another time to add IMAP4 to the configuration.

- **Yes**
Select this option if you are deploying IMAP4 at this time.

ⓘ ***Important***

You must enable IMAP4 on each of your Exchange Client Access Servers before that service will be available. IMAP4 is not enabled by default on Exchange Client Access Servers.

If you are offloading SSL, you must configure the Authentication properties for IMAP4 on each of your Exchange Client Access Servers to allow logins using plain text. By default, IMAP4 is configured to only allow secure (encrypted) logins.

c. What IP address do you want to use for the IMAP4 virtual server?
This question only appears if you selected ***Different IP addresses for different services*** *in the previous section.*

Specify the IP address the system will use for the IMAP4 virtual server.

d. What are the IP addresses of your IMAP4 servers?
This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

Specify the IP addresses of your IMAP4 servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

11. ***What are the IP Addresses of your Client Access Servers?***
This question only appears if you selected ***All services will be handled by a unique set of Client Access Servers*** *in the previous section.*

If you chose that each Client Access service will be handled by the same Client Access Servers, the iApp asks for the IP addresses of the Client Access Servers. Type the IP addresses. Click the **Add** button to include additional servers.

If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

Server Health Monitors

The last section of the template asks for information about the health checks the iApp will configure for the Client Access Servers.

1. ***Do you want to use advanced or simple server health monitors?***
Choose whether you want to use advanced or simple health monitors to check the availability of the Client Access Servers:

- **Use simple monitors**
  Simple monitors check network connectivity but do not perform actual logins. If you use simple monitors, the BIG-IP LTM may not be able to completely determine status of Client Access services. In this case, the monitor interval is set to 10 seconds automatically, no matter what number is in the previous question.
- **Use advanced monitors**
  If you choose advanced monitors, the BIG-IP system performs logins to most of the Client Access services (all except RPC/MAPI in Exchange 2010 and Forms-based Outlook Web App) and checks for valid content in the response. Because these monitors attempt to access a specific mailbox, they can more accurately determine the actual health of Client Access services. However, account maintenance and Mailbox status must become a part of your monitoring strategy. For example, if an account used for monitoring is locked or deleted, the monitor will mark the services down for all users.

  ⓘ ***Important***

  F5's advanced monitors for Autodiscover, Exchange Web Services, and Outlook Anywhere support Basic and NTLMv1 authentication only. See Advanced monitors for Autodiscover, EWS, and Outlook Anywhere only support Basic and NTLMv1 authentication on page 56 for more information.

  We strongly recommend creating a mailbox account(s) specifically for use in the monitor(s). The accounts for those mailboxes should have no other privileges in the domain and should be configured with passwords that do not expire.

  a. *What email address do you want to use for the advanced monitors?*
     This question only appears if you specified you are deploying Autodiscover and/or Exchange Web Services .

     Type the email address associated with the account you are going to monitor (and that you specify in the following question).

  b. *Which mailbox account should be used for the monitors?*
     Type a mailbox account for use in the advanced monitors. This name corresponds to the account name field in Active Directory (rather than the email address).

  c. *What is the password for that mailbox account?*
     Type the associated password.

  d. *What is the domain name of the user account for the monitors?*
     Type the Domain name for the user account. This domain can be entered in either FQDN (mydomain.example.com) or NetBIOS (MYDOMAIN) format.

  e. *Do you want to monitor a second mailbox?*
     Choose whether you want to monitor a second mailbox. We strongly recommend configuring a second mailbox account to be used by a second set of monitors, using a mailbox that is configured to reside on a different Mailbox server. The BIG-IP LTM will only mark a Client Access service on a specific server down if both sets of credentials fail. This provides resiliency to accommodate configuration errors with a single account, mailbox, or Mailbox server.

     - **Monitor only one mailbox**
       Select this option if you do not want the BIG-IP system to monitor a second mailbox. Continue with #3.
     - **Monitor a second mailbox (recommended)**
       Select this option if you want the BIG-IP system to monitor a second mailbox. You must answer the following:

       i). *Which email address do you want to use for the second advanced monitor?*
       This question only appears if you specified you are deploying Autodiscover and/or Exchange Web Services .

       Type the email address associated with the account you are going to monitor (and that you specify in the following question).

       ii). *Which mailbox account should be used for the second monitor?*
       Type a mailbox account for use in the second monitors. Again, this name corresponds to the account name field in Active Directory (rather than the email address).

       iii). *What is the password for that mailbox account?*
       Type the associated password.

iv). *What is the domain name of the user account for the second monitors?*
Type the Domain name for the second user account. This domain can be entered in either FQDN (mydomain.example.com) or NetBIOS (MYDOMAIN) format.

2. ***Which authentication method have you configured for OWA?***
This question only appears if you specified you are deploying Outlook Web App.

If you configured the iApp to deploy Outlook Web App at this time, choose the authentication method you have configured for Outlook Web App. The health monitors will be customized to accommodate the authentication method you are using.

ⓘ ***Important***

If you are using APM in this scenario, you must choose Forms-Based. If you are using Forms-Based authentication for OWA, you must change the credential format required for OWA on each Exchange Client Access Server from the default domain\username format to just username.

- ▶ **OWA uses the default Forms-Based authentication**
  Select this option if you are using Forms-based authentication.

  If you chose Forms-based authentication, the BIG-IP system does not perform an actual login to the service, but checks the availability of the forms-based authentication page.

- ▶ **OWA uses Basic or Windows Integrated authentication**
  Select this option if you are using Basic/Windows Integrated authentication.

3. ***How many seconds should pass between health checks?***
Specifies how often the system checks the health of the servers. We recommend the default of 30 seconds. The maximum value for the interval is 28,799 seconds.

4. ***Are you using the same FQDN for all HTTP-based services?***
This question only appears if you specified you are using a single IP address for all CAS connections. If you selected Different IP addresses for different services, continue with #5.

Select whether you are using one FQDN for all HTTP-based services or separate FQDNs for each service. These values are used for HTTP 1.1-based health monitors.

- ▶ **One FQDN for all HTTP services**
  Select this option if you are using a single FQDN for all HTTP-based Client Access services.

  a. *What is the FQDN that you use for your HTTP-based services?*
  Specify the fully qualified domain name you are using for all of the HTTP-based CAS services.

- ▶ **Different FQDNs for each HTTP service**
  Select this option if you are using separate FQDNs for each HTTP-based CAS service. Additional questions appear. When you are finished adding the FQDNs, continue with *Additional Steps*.

  a. *What FQDN do you use for the OWA service?*
  This question only appears if you specified you are deploying Outlook Web App.

  Specify the fully qualified domain name you use for your Outlook Web App service.

  b. *What FQDN do you use for the Outlook Anywhere service?*
  This question only appears if you specified you are deploying Outlook Anywhere.

  Specify the fully qualified domain name you use for your Outlook Anywhere service.

  c. *What FQDN do you use for the ActiveSync service?*
  This question only appears if you specified you are deploying ActiveSync.

  Specify the fully qualified domain name you use for your ActiveSync service.

d. *What FQDN do you use for the Autodiscover service?*
This question only appears if you specified you are deploying Autodiscover.

Specify the fully qualified domain name you use for your Autodiscover service.

5. ***What FQDN do you use for the OWA service?***
This question only appears if you specified you are using different IP addresses for different services.

Specify the fully qualified domain name you use for your Outlook Web App service.

6. ***What FQDN do you use for the Outlook Anywhere service?***
This question only appears if you specified you are using different IP addresses for different services.

Specify the fully qualified domain name you use for your Outlook Anywhere service.

7. ***What FQDN do you use for the ActiveSync service?***
This question only appears if you specified you are using different IP addresses for different services.

Specify the fully qualified domain name you use for your ActiveSync service.

8. ***What FQDN do you use for the Autodiscover service?***
This question only appears if you specified you are using different IP addresses for different services.

Specify the fully qualified domain name you use for your Autodiscover service.

Additional Steps

Review the information in the Additional steps section, and take appropriate action if necessary. All of the notes in Additional Steps are found in the relevant section of this deployment guide.

Finished

Review your answers to the questions. When you are satisfied, click the **Finished** button. The BIG-IP system creates the relevant objects.

Continue with *Next steps on page 51*.

Configuring the LTM to receive HTTP-based Client Access traffic forwarded by a BIG-IP APM

If you chose the second scenario, *LTM will receive HTTP-based CAS traffic forwarded by a BIG-IP APM*, use this section for guidance on configuring the iApp. This selection configures BIG-IP LTM with a single virtual server that receives Exchange Client Access HTTP-based traffic that has been forwarded by a separate BIG-IP APM. The BIG-IP system can also accommodate non-HTTP traffic that is not handled by BIG-IP APM such as POP3 and IMAP4.

While this virtual server can be used for direct traffic (for example, internal clients that do not use the BIG-IP APM), we do not recommend using this virtual server in that way. For direct traffic, we strongly recommend creating a second instance of the iApp on this BIG-IP LTM for the direct traffic/internal users. You must use a unique virtual server IP address, all of the other settings can be identical. Once both iApps have been created, you would configure Split DNS (use the same domain name, but different zones and IP addresses for internal and external clients). For more information about Split DNS, refer to your DNS documentation.

Analytics

This section of the template asks questions about Analytics. The Application Visibility Reporting (AVR) module allows you to view statistics specific to your Microsoft Exchange implementation. AVR is available on all BIG-IP systems v11 and later, however you must have the AVR provisioned for this option to appear. Note that this is only for application visibility reporting, you can view object-level statistics from the BIG-IP without provisioning AVR.

ⓘ ***Important***

Enabling Analytics may adversely affect overall system performance. If you choose to enable Analytics, we recommend gathering statistics for a set time period, such as one week, and then re-entering this template and disabling Analytics while you process the data.

If you plan on using AVR for analytics, we recommend creating a custom Analytics profile. To create a new profile, from the Main tab, select **Profiles** and then click **Analytics**. Click **New** and then configure the profile as applicable for your configuration. See the online help or product documentation for specific instructions. To select the new profile, you need to restart or reconfigure the iApp template.

1. ***Do you want to enable Analytics for application statistics?***
   Choose whether you want to enable AVR for Analytics.

   - **No, do not enable Analytics**
     If you do not want to enable Analytics, leave this list set to **No**, and continue with the next section.

   - **Yes, enable Analytics using AVR**
     If you choose to enable Analytics, select **Yes** from the list, and then answer the following questions.

     a. *Use the default Analytics profile or select a custom profile?*
        If you decide to use AVR, you must decide whether to use the default Analytics profile, or create a new one. As mentioned previously, we recommend creating a new profile to get the most flexibility and functionality out of AVR. If you have already started the iApp template configuration and then decide to create a new Analytics profile, you must exit the iApp, create the profile, and then restart the iApp template.

        - **Select a custom Analytics profile**
          Select this option if you have already created a custom Analytics profile for Exchange Server.

          i). *Which Analytics profile do you want to use?*
          From the list, select the appropriate Analytics profile.

        - **Use default profile**
          Select this option if you have not yet created a custom Analytics profile for Microsoft Exchange. We do not recommend using the default profile.

Tell us about your deployment

In this section, the iApp gathers general information about your Client Access Server deployment.

1. ***Will incoming traffic arrive at this BIG-IP system encrypted or unencrypted?***
Select whether any of the HTTP-based, POP3 and IMAP4 traffic will be encrypted or not when it arrives on this system. Because you may have configured to offload SSL/TLS traffic at the BIG-IP APM that is sending Client Access traffic to this device, the traffic may be arriving at this system unencrypted.

   Note that the BIG-IP system does not offload the encryption used for RPC; the answer to this question should be based on the other Client Access protocols you intend to deploy.

   - **Encrypted**
   If you chose Encrypted in the previous question, additional questions appear.

     a. *Do you want to re-encrypt this traffic to your Client Access Servers?*
     If you are using Exchange 2010 or Exchange 2013 SP1 and later, and want the BIG-IP system to offload SSL processing from the Client Access Servers, select **Do not re-encrypt (SSL Offload)** from the list. Offloading SSL on the BIG-IP system can extend Exchange Server server capacity.

     Important

     *If you are deploying Exchange Server 2013 and have not installed SP1 or later, you must choose **Re-encrypt (SSL Bridging)**.*

     - **Do not re-encrypt (SSL Offload)**
     Select this option if you want to offload SSL processing onto the BIG-IP system. If you choose SSL Offload, you must have followed the instructions described in the prerequisites for configuring the Exchange Server: *http://social.technet.microsoft.com/wiki/contents/articles/how-to-configure-ssl-offloading-in-exchange-2010.aspx*.

       i). *Which Client SSL profile do you want to use?*
       The iApp can create a new Client SSL profile, or if you have created a Client SSL profile which contains the appropriate SSL certificate and key for your Exchange implementation, you can select it from the list.

       - *Select the Client SSL profile you created from the list*
       If you manually created a Client SSL profile, select it from the list, and then continue with #2.
       - **Create a new Client SSL profile**
       Select this option if you want the iApp to create a new Client SSL profile.

         1). *Which SSL certificate do you want to use?*
         Select the SSL certificate you imported onto the BIG-IP system for decrypting client connections.

         If you have not yet imported a certificate, you can leave the default selections and reconfigure this iApp after obtaining the certificates. The deployment will not function correctly until you have selected the correct certificates here.

         Note

         Any certificate that you obtain with multiple names must be in SAN (Subject Alternative Name) format, not SNI (Server Name Indication) format. For more information on SAN certificates, see Subject Alternative Name (SAN) SSL Certificates on page 103.

         2). *Which SSL key do you want to use?*
         Select the associated key from the list.

     - **Re-encrypt (SSL Bridging)**
     Select this option if your implementation requires encrypted traffic to the Client Access Servers, or you are using Exchange 2013. The BIG-IP system unencrypts, and then re-encrypts the traffic headed for the Client Access Servers.

       i). *Which Client SSL profile do you want to use?*
       The iApp can create a new Client SSL profile, or if you have created a Client SSL profile which contains the appropriate SSL certificate and key for your Exchange implementation, you can select it from the list.

- *Select the Client SSL profile you created from the list*
  If you manually created a Client SSL profile, select it from the list, and then continue with #2.
- **Create a new Client SSL profile**
  Select this option if you want the iApp to create a new Client SSL profile.

  1). *Which SSL certificate do you want to use?*
  Select the SSL certificate you imported onto the BIG-IP system for decrypting client connections.

  If you have not yet imported a certificate, you can leave the default selections and reconfigure this iApp after obtaining the certificates. The deployment will not function correctly until you have selected the correct certificates here.

  > ➡ ***Note***
  >
  > *Any certificate that you obtain with multiple names must be in SAN (Subject Alternative Name) format, not SNI (Server Name Indication) format. For more information on SAN certificates, see Subject Alternative Name (SAN) SSL Certificates on page 103.*

  2). *Which SSL key do you want to use?*
  Select the associated key from the list.

ii). *Which Server SSL profile do you want to use?*
Select whether you want the iApp to create an F5 recommended Server SSL profile, or if you want to choose a Server SSL profile you already created.

- *Select the Server SSL profile you created from the list*
  If you have previously created a Server SSL profile for your Exchange implementation, from the list, select the existing Server SSL profile you created.
- **Create a new Server SSL profile**
  Select this option if you want the iApp to create a new Server SSL profile.

  The default, F5 recommended Server SSL profile uses the *serverssl* parent profile. For information about the ciphers used in the Server SSL profile, see *http://support.f5.com/kb/en-us/solutions/public/8000/800/sol8802.html*.

▶ **Unencrypted**
Select this option if Client Access traffic is arriving at this BIG-IP system unencrypted (typically because you configured to offload SSL/TLS traffic at the BIG-IP APM that is sending Client Access traffic to this device).

a. *Do you want to encrypt the traffic to your Client Access Servers?*
If you are using Exchange 2010 or Exchange 2013 SP1 and later, and want the BIG-IP system to offload SSL processing from the Client Access Servers, select **Do not re-encrypt (SSL Offload)** from the list. Offloading SSL on the BIG-IP system can extend Exchange Server server capacity.

> ⓘ ***Important***
>
> *If you are deploying Exchange Server 2013 and have not installed SP1 or later, you must choose **Re-encrypt (SSL Bridging)**.*

▶ **Do not encrypt (SSL Offload),**
Select this option if you do not want the BIG-IP system to encrypt the traffic destined for the Client Access servers. The BIG-IP system does not modify the traffic, and you can continue with the next question.

▶ **Encrypt (SSL Bridging)**
Select this option if your implementation requires encrypted traffic to the Client Access Servers, or you are using Exchange 2013. The BIG-IP system unencrypts, then re-encrypts the traffic headed for the Client Access Servers.

i). *Which Server SSL profile do you want to use?*
Select whether you want the iApp to create an F5 recommended Server SSL profile, or if you want to choose a Server SSL profile you already created.

- *Select the Server SSL profile you created from the list*
  If you have previously created a Server SSL profile for your Exchange implementation, from the list, select the existing Server SSL profile you created.
- **Create a new Server SSL profile**
  Select this option if you want the iApp to create a new Server SSL profile.

  The default, F5 recommended Server SSL profile uses the *serverssl* parent profile. For information about the ciphers used in the Server SSL profile, see *http://support.f5.com/kb/en-us/solutions/public/8000/800/sol8802.html*.

2. ***Where will your BIG-IP virtual servers be in relation to your Client Access Servers?***
   Select whether your BIG-IP virtual servers are on the same subnet as your Client Access Servers, or on different subnets. This setting is used to determine the SNAT (secure NAT) and routing configuration.

▶ **Same subnet for BIG-IP virtual servers and Client Access Servers**
Select this option if the BIG-IP virtual servers and the Client Access Servers are on the same subnet. In this case SNAT is configured on the BIG-IP virtual server and you must specify the number of concurrent connections.

a. *What is the maximum number of concurrent users you expect per Client Access Server?*
Select whether you expect more or fewer than 6,000 concurrent users to each Client Access Server. This answer is used to determine what type of SNAT that system uses. A SNAT is an object that maps the source client IP address in a request to a translation address defined on the BIG-IP device.

Note

For specific information on SNAT Pools, including why we chose 6,000 concurrent users per Client Access Server, see Maximum number of concurrent users: SNAT Pool guidance on page 103.

▶ **Fewer than 6000**
Select this option if you expect fewer than 6000 concurrent users per Client Access Server. With this option, the system applies SNAT Auto Map, which doesn't require any additional IP addresses, as the system uses an existing self IP address for translation.

▶ **More than 6000**
Select this option if you expect more than 6000 users at one time to each server. With this option, the iApp creates a SNAT Pool, for which you need one IP address for each 6000 users you expect.

i). *Which IP addresses do you want to use for the SNAT pool?*
Specify one otherwise unused IP address for every 6000 concurrent connections, or fraction thereof. Click **Add** for additional rows.

Important

If you choose more than 6000 users, but do not specify enough SNAT pool addresses, after the maximum connection limit of 6000 concurrent users per server is reached, new requests fail.

▶ **Different subnet for BIG-IP virtual servers and Client Access Servers**
If the BIG-IP virtual servers and Web Interface servers are on different subnets, the following question appears asking how routing is configured.

a. *How have you configured routing on your Client Access Servers?*
Select whether the Client Access Servers use this BIG-IP system's Self IP address as their default gateway.

▶ **Client Access Servers do NOT use BIG-IP as their default gateway**
Select this option if the Client Access Servers do not use the BIG-IP system as their default gateway. If the Client Access Servers do not use the BIG-IP as their default gateway, SNAT is configured on the BIG-IP virtual server and you must select the expected number of concurrent users in the next question.

i). *What is the maximum number of concurrent users you expect per Client Access Server?*
Select whether you expect more or fewer than 6,000 concurrent users to each Client Access Server. This

answer is used to determine what type of SNAT that system uses. A SNAT is an object that maps the source client IP address in a request to a translation address defined on the BIG-IP device.

Note

For specific information on SNAT Pools, including why we chose 6,000 concurrent users per Client Access Server, see Maximum number of concurrent users: SNAT Pool guidance on page 103.

- **Fewer than 6000**
  Select this option if you expect fewer than 6000 concurrent users per Client Access Server. With this option, the system applies SNAT Auto Map, which doesn't require any additional IP addresses, as the system uses an existing self IP address for translation.
- **More than 6000**
  Select this option if you expect more than 6000 users at one time to each server. With this option, the iApp creates a SNAT Pool, for which you need one IP address for each 6000 users you expect.

  1). *Which IP addresses do you want to use for the SNAT pool?*
  Specify one otherwise unused IP address for every 6000 concurrent connections, or fraction thereof. Click **Add** for additional rows.

  Important

  If you choose more than 6000 users, but do not specify enough SNAT pool addresses, after the maximum connection limit of 6000 concurrent users per server is reached, new requests fail.

- **Client Access Servers use the BIG-IP as their default gateway**
  Select this option if the Client Access Servers use the BIG-IP system as their default gateway. In this scenario, no additional configuration is necessary to ensure correct server response handling.

3. ***How are you distributing the CAS protocols between servers?***
   Select whether all your Client Access services are handled by the same Client Access Servers, or if each service is handled by a unique set of Client Access Servers.

   This iApp creates separate pools and monitors for each service regardless of this setting. However, if you use the same set of servers for all services, you only have to specify the server IP addresses once.

   - **All services will be handled by the same set of Client Access Servers**
     Choose this option if you are using the same Client Access Servers for all of your Exchange Client Access services.
   - **Each service will be handled by a unique set of Client Access Servers**
     Choose this option if you are using different sets of Client Access Servers for each Client Access service.

Tell us about which services you are deploying

In this section, the iApp gathers information about which Client Access services you are deploying.

1. ***Would you like to customize the server pool settings?***
   Select whether you want to customize the BIG-IP load balancing pools for Client Access services, or use the F5 recommended settings.

   - **Use settings recommended by F5**
     If you don't have a specific reason to customize the pool settings, leave this question at Use settings recommended by F5 and continue with #2.
   - **Customize pool settings**
     If you have need to modify individual pool options, select Customize pool settings and answer the following options:

a. *Which load balancing method do you want to use?*
Select the load balancing method you want to use. We recommend the default, **Least Connections (member)**. See the BIG-IP documentation for a description of each method. If you chose a node-based load balancing method (such as Ratio (node)), and use a Ratio or Connection Limit (both optional), you must see *Adding Ratio or Connection Limit information to the nodes if using a node-based load balancing method on page 52* after completing the template.

b. *Do you want to give priority to specific groups of servers?*
Select whether you want to enable Priority Group Activation to send traffic first to groups of servers you specify. The BIG-IP system load balances traffic according to the priority number you assign to each server.

- **Do not use Priority Group Activation**
Select this option if you do not want to enable Priority Group Activation.

- **Use Priority Group Activation**
Select this option if you want to enable Priority Group Activation. You will need to add a priority number in the Priority box to each server . A higher number indicates higher priority. Traffic is only sent to the servers with the highest priority, unless the number of available servers in that priority group falls below the value you specify as the minimum in the following question. The BIG-IP system then sends traffic to the group of servers with the next highest priority, and so on. See the BIG-IP documentation for more details.

  i). *What is the minimum number of active members in a group?*
  Specify the minimum number of servers that must be active to continue sending traffic to the priority group. If the number of active servers falls below this minimum, traffic will be sent to the group of servers with the next-highest priority group number.

c. *Do you want the BIG-IP system to queue TCP requests?*
Select whether you want the BIG-IP system to queue TCP requests. TCP request queuing provides the ability to queue connection requests that exceed the capacity of connections for a pool, as determined by the connection limit. Consequently, instead of dropping connection requests that exceed the capacity of a pool, TCP request queuing enables those connection requests to reside within a queue according to defined conditions until capacity becomes available. For more information on TCP Request Queuing, see the *Preventing TCP Connection Requests From Being Dropped* chapter in the ***BIG-IP Local Traffic Manager: Implementations*** guide, available on AskF5.

ⓘ ***Important***

TCP Request Queuing is an advanced feature and should be used only if you understand how it will affect your deployment, including application behavior and BIG-IP performance.
If you enable TCP Request Queuing, you must have a Connection Limit set on at least one of the nodes when configuring the Address/Port for the Client Access Server nodes.

- **Do not queue TCP requests**
Select this option if you do not want the BIG-IP system to queue TCP requests.

- **Queue TCP requests**
Select this option if you want to enable TCP request queuing on the BIG-IP system.

  i). *What is the maximum number of TCP requests for the queue?*
  Type the maximum number of requests you want to queue. We do ***not*** recommend using 0, which means unlimited and is only constrained by available memory.

  ii). *How many milliseconds should requests remain in the queue?*
  Type a number of milliseconds for the TCP request timeout value.

2. ***What IP address do you want to use for your virtual servers?***
*This question appears only if you selected **Single IP address** for all CAS connections in the previous section.*

Specify a valid IP address to use for the BIG-IP virtual server. This virtual server address is used for all Client Access services. The BIG-IP system intelligently directs traffic to the appropriate service using an iRule created by the template.

3. ***Do you want to add any iRules to this combined virtual server?***
If you chose to customize pool settings, you have the option of adding existing iRules to the virtual server. iRules allow an

administrator to instruct the system to intercept, inspect, transform, direct and track inbound or outbound application traffic. For more information on iRules, see *https://devcentral.f5.com/HotTopics/iRules/tabid/1082202/Default.aspx.*

> ***Important***
>
> *Improper use or misconfiguration of an iRule can result in unwanted application behavior and poor performance of your BIG-IP system. We recommended you verify the impact of an iRule prior to deployment in a production environment.*

If you want to add iRules, from the **Options** box, select the iRule(s) you want to include, and then click the Add (**<<**) button.

4. ***Are you deploying Outlook Web App (includes ECP)?***
Select whether you are deploying Outlook Web App at this time. This includes the Exchange Control Panel (ECP).

    - **No**
    Select this option if you are not deploying OWA at this time. You can reconfigure the template at another time to add OWA.

    - **Yes**
    Select this option if you are deploying Outlook Web Access at this time.

        a. *What are the IP addresses of your OWA servers?*
        This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

        Specify the IP addresses of your Outlook Web App servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

5. ***Are you deploying Outlook Anywhere, EWS and OAB (or EWS only)?***
Select whether you are deploying Outlook Anywhere, Exchange Web Services (EWS), Offline Address Book (OAB), or EWS only.

    - **No, not deploying Outlook Anywhere, EWS, or OAB**
    Select this option if you are not deploying Outlook Anywhere at this time. You can always reconfigure the template at another time to add Outlook Anywhere to the configuration.

    - **Yes, deploying EWS only**
    Select this option if you are only deploying Exchange Web Services at this time, and not Outlook Anywhere or Offline Address Book. In this case, the BIG-IP system sends any Offline Address Book traffic to the Exchange Web Services pool.

        a. *What are the IP addresses of your EWS servers?*
        This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

        Specify the IP addresses of your Exchange Web Services servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

    - **Yes, deploying Outlook Anywhere, EWS, and OAB**
    Select this option if you are deploying Outlook Anywhere, EWS, and OAB at this time.

        > ***Important***
        >
        > *You must enable Outlook Anywhere on each of your Exchange Client Access Servers before that service will be available. Outlook Anywhere is not enabled by default on Exchange Client Access Servers. See the Microsoft documentation for specific instructions.*
        >
        > *To prevent internal users from receiving a password prompt, your internal DNS must not have an 'A' record for the FQDN for Outlook Anywhere.*

        a. *What are the IP addresses of your Outlook Anywhere servers?*
        This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

Specify the IP addresses of your Outlook Anywhere servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

6. ***Are you deploying ActiveSync?***
   Select whether you are deploying ActiveSync at this time.

   - **No**
     Select this option if you are not deploying ActiveSync at this time. You can always reconfigure the template at another time to add ActiveSync to the configuration.
   - **Yes**
     Select this option if you are deploying ActiveSync at this time. Be sure to see *ActiveSync and/or Autodiscover aren't working after deploying the iApp for separate virtual servers and using APM on page 55*, and *iPhones and other iOS devices are displaying invalid certificate messages after deploying the iApp for ActiveSync on page 58* for important information.

     a. *What are the IP addresses of your ActiveSync servers?*
     *This question only appears if you selected **Each service will be handled by a unique set of Client Access Servers** in the previous section.*

     Specify the IP addresses of your Outlook Anywhere servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

7. ***Are you deploying Autodiscover?***
   Select whether you are deploying Autodiscover at this time.

   - **No**
     Select this option if you are not deploying Autodiscover at this time. You can always reconfigure the template at another time to add Autodiscover to the configuration.
   - **Yes**
     Select this option if you are deploying Autodiscover at this time. Be sure to see *ActiveSync and/or Autodiscover aren't working after deploying the iApp for separate virtual servers and using APM on page 55.*

     Warning

     To deploy Autodiscover, you must either create an 'SRV' record in DNS or create 'A' records in order for external clients to be able to make use of Autodiscover. If you do not want to use an 'SRV' record, then you must have 'A' records for either 'autodiscover.<yourdomain>' or '<yourdomain>' that resolve to the IP address you have designated for your Autodiscover virtual server.

     a. *What are the IP addresses of your Autodiscover servers?*
     *This question only appears if you selected **Each service will be handled by a unique set of Client Access Servers** in the previous section.*

     Specify the IP addresses of your Autodiscover servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit.

8. ***Are you deploying RPC Client Access (MAPI)?*** ***Exchange 2010 only***
   This question does not appear if you are deploying the template for Exchange 2013. Exchange Server 2013 Client Access Servers do not offer MAPI as a connection option.

   Select whether you are deploying RPC Client Access (MAPI) for your Exchange 2010 deployment at this time.

   - **No**
     Select this option if you are not deploying RPC Client Access at this time. You can always reconfigure the template at another time to add it to the configuration.
   - **Yes**
     Select this option if you are deploying RPC Client Access at this time.

Warning

You must enable and configure a Client Access Array in your Exchange Server site before RPC Client Access will function. See Creating a new Client Access Array on page 104 for more information.
If deploying RPC Client Access, you must also deploy Outlook Anywhere, to properly handle EWS (Exchange Web Services) traffic.

a. *Use the default dynamic range of ports for RPC Client Access traffic or set static ports?*
Select whether you want to use the default dynamic range of ports for RPC Client Access, or if you have configured your Client Access servers to use specific ports outside the default range.

- **Use the default dynamic port range**
Select this option to configure the iApp to use the default port range. If you choose the default dynamic range of ports, no additional information is necessary, continue with the next question.

- **Set static ports**
Select this option if you want to set static ports for RPC Client Access.

Important

You must make sure each of your Client Access Servers is configured to use the static ports you specified here. See http://social.technet.microsoft.com/wiki/contents/articles/configure-static-rpc-ports-on-an-exchange-2010-client-access-server.aspx for more information.

i). *Which port will you use for MAPI?*
Specify the port you want to set for MAPI.

ii). *Which port will you use for the Address Book?*
Specify the port you want to use for the Address book.

b. *What are the IP addresses of your RPC Client Access servers?*
This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

Specify the IP addresses of your RPC Client Access servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

9. ***Are you deploying POP3?***
Select whether you are deploying POP3 at this time.

- **No**
Select this option if you are not deploying POP3 at this time. You can always reconfigure the template at another time to add POP3 to the configuration.

- **Yes**
Select this option if you are deploying POP3 at this time.

Important

You must enable POP3 on each of your Exchange Client Access Servers before that service will be available. POP3 is not enabled by default on Exchange Client Access Servers.

If you are offloading SSL, you must configure the Authentication properties for POP3 on each of your Exchange Client Access Servers to allow logins using plain text. By default, POP3 is configured to only allow secure (encrypted) logins.

a. *What are the IP addresses of your POP3 servers?*
This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

Specify the IP addresses of your POP3 servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

10. ***Are you deploying IMAP4?***
Select whether you are deploying IMAP4 at this time.

- **No**
Select this option if you are not deploying IMAP4 at this time. You can always reconfigure the template at another time to add IMAP4 to the configuration.

- **Yes**
Select this option if you are deploying IMAP4 at this time.

ⓘ ***Important***

You must enable IMAP4 on each of your Exchange Client Access Servers before that service will be available. IMAP4 is not enabled by default on Exchange Client Access Servers.

If you are offloading SSL, you must configure the Authentication properties for IMAP4 on each of your Exchange Client Access Servers to allow logins using plain text. By default, IMAP4 is configured to only allow secure (encrypted) logins.

a. *What are the IP addresses of your IMAP4 servers?*
This question only appears if you selected ***Each service will be handled by a unique set of Client Access Servers*** *in the previous section.*

Specify the IP addresses of your IMAP4 servers. Click **Add** to include additional servers. If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

11. ***What are the IP Addresses of your Client Access Servers?***
This question only appears if you selected ***All services will be handled by a unique set of Client Access Servers*** *in the previous section.*

If you chose that each Client Access service will be handled by the same Client Access Servers, the iApp asks for the IP addresses of the Client Access Servers. Type the IP addresses. Click the **Add** button to include additional servers.

If you chose to have the BIG-IP system queue TCP requests, you must specify a Connection Limit. If you chose to enable Priority Group Activation, you must specify a Priority.

Server Health Monitors

The last section of the template asks for information about the health checks the iApp will configure for the Client Access Servers.

1. ***Do you want to use advanced or simple server health monitors?***
Choose whether you want to use advanced or simple health monitors:

- **Use simple monitors**
Simple monitors check network connectivity but do not perform actual logins. If you use simple monitors, the BIG-IP LTM may not be able to completely determine status of Client Access services. In this case, the monitor interval is set to 10 seconds automatically, no matter what number is in the previous question.

- **Use advanced monitors**
If you choose advanced monitors, the BIG-IP system performs logins to most of the Client Access services (all except RPC/MAPI in Exchange 2010, and Forms-based Outlook Web App) and checks for valid content in the response. Because these monitors attempt to access a specific mailbox, they can more accurately determine the actual health of Client Access services. However, account maintenance and Mailbox status must become a part of your monitoring strategy. For example, if an account used for monitoring is locked or deleted, the monitor will mark the services down for all users.

ⓘ ***Important***

F5's advanced monitors for Autodiscover, Exchange Web Services, and Outlook Anywhere support Basic and NTLMv1 authentication only. See Advanced monitors for Autodiscover, EWS, and Outlook Anywhere only support Basic and NTLMv1 authentication on page 56.

We strongly recommend creating a mailbox account(s) specifically for use in the monitor(s). The accounts for those mailboxes should have no other privileges in the domain and should be configured with passwords that do not expire.

a. *What email address do you want to use for the advanced monitors?*
This question only appears if you specified you are deploying Autodiscover and/or Exchange Web Services .

Type the email address associated with the account you are going to monitor (and that you specify in the following question).

b. *Which mailbox account should be used for the monitors?*
Type a mailbox account for use in the advanced monitors. This name corresponds to the account name field in Active Directory (rather than the email address).

c. *What is the password for that mailbox account?*
Type the associated password. Note that credentials are stored in plain text on this BIG-IP system.

d. *What is the domain name of the user account for the monitors?*
Type the Domain name for the user account. This domain can be entered in either FQDN (mydomain.example.com) or NetBIOS (MYDOMAIN) format.

e. *Do you want to monitor a second mailbox?*
Choose whether you want to monitor a second mailbox. We strongly recommend configuring a second mailbox account to be used by a second set of monitors, using a mailbox that is configured to reside on a different Mailbox server. The BIG-IP LTM will only mark a Client Access service on a specific server down if both sets of credentials fail. This provides resiliency to accommodate configuration errors with a single account, mailbox, or Mailbox server.

- No
  Select this option if you do not want the BIG-IP system to monitor a second mailbox. Continue with #2.
- Yes
  Select this option if you want the BIG-IP system to monitor a second mailbox.

  i). *What email address do you want to use for the advanced monitors?*
  This question only appears if you specified you are deploying Autodiscover and/or Exchange Web Services .

  Type the email address associated with the account you are going to monitor (and that you specify in the following question).

  ii). *Which mailbox account should be used for the second monitor?*
  Type a mailbox account for use in the second monitors. Again, this name corresponds to the account name field in Active Directory (rather than the email address).

  iii). *What is the password for that mailbox account?*
  Type the associated password.

  iv). *What is the domain name of the user account for the second monitors?*
  Type the Domain name for the second user account. This domain can be entered in either FQDN (mydomain.example.com) or NetBIOS (MYDOMAIN) format.

2. ***Which authentication method have you configured for OWA?***
This question only appears if you specified you are deploying Outlook Web App.

If you configured the iApp to deploy Outlook Web App at this time, choose the authentication method you have configured for Outlook Web App. The health monitors will be customized to accommodate the authentication method you are using.

ⓘ ***Important***

If you are using APM in this scenario, you must choose Forms-Based. If you are using Forms-Based authentication for OWA, you must change the credential format required for OWA on each Exchange Client Access Server from the default domain\username format to just username.

- **OWA uses the default Forms-Based authentication**
  Select this option if you are using Forms-based authentication, which is the default authentication mechanism for OWA.

  If you chose Forms-based authentication, the BIG-IP system does not perform an actual login to the service, but checks the availability of the forms-based authentication page.
- **OWA uses Basic or Windows Integrated authentication**
  Select this option if you are using Basic/Windows Integrated authentication.

3. ***How many seconds should pass between health checks?***
   Specifies how often the system checks the health of the servers. We recommend the default of 30 seconds. The maximum value for the interval is 28,799 seconds.
4. ***What FQDN do you use for the OWA service?***
   Specify the fully qualified domain name you use for your Outlook Web App service.
5. ***What FQDN do you use for the Outlook Anywhere service?***
   Specify the fully qualified domain name you use for your Outlook Anywhere service.
6. ***What FQDN do you use for the ActiveSync service?***
   Specify the fully qualified domain name you use for your ActiveSync service.
7. ***What FQDN do you use for the Autodiscover service?***
   Specify the fully qualified domain name you use for your Autodiscover service.

Additional Steps

Review the information in the Additional steps section, and take appropriate action if necessary. All of the notes in Additional Steps are found in the relevant section of this deployment guide.

Finished

Review your answers to the questions. When you are satisfied, click the **Finished** button. The BIG-IP system creates the relevant objects.

Continue with *Next steps on page 51*.

Configuring the BIG-IP APM to provide secure remote access to Client Access Servers

If you chose *BIG-IP APM will provide secure remote access to CAS*, use this section for guidance on configuring the iApp. In this scenario, the BIG-IP will be configured as a BIG-IP APM that will use a single virtual server to provide proxy authentication and secure remote access to all Exchange HTTP-based Client Access services (Outlook Web App (including ECP), Outlook Anywhere (including EWS and OAB), ActiveSync, and Autodiscover) without requiring the use of the F5 Edge Client. The traffic will be forwarded to separate BIG-IP running LTM which will provide advanced load balancing, persistence, monitoring and optimizati*ons for those services.*

As mentioned in the prerequisites, because you are deploying BIG-IP APM, you must have configured the BIG-IP system for DNS and NTP. See *Configuring DNS and NTP settings on page 60* for instructions.

Analytics

This section of the template asks questions about Analytics. The Application Visibility Reporting (AVR) module allows you to view statistics specific to your Microsoft Exchange implementation. AVR is available on all BIG-IP systems v11 and later, however you must have the AVR provisioned for this option to appear. Note that this is only for application visibility reporting, you can view object-level statistics from the BIG-IP without provisioning AVR.

ⓘ ***Important***

Enabling Analytics may adversely affect overall system performance. If you choose to enable Analytics, we recommend gathering statistics for a set time period, such as one week, and then re-entering this template and disabling Analytics while you process the data.

If you plan on using AVR for analytics, we recommend creating a custom Analytics profile. To create a new profile, from the Main tab, select **Profiles** and then click **Analytics**. Click **New** and then configure the profile as applicable for your configuration. See the online help or product documentation for specific instructions. To select the new profile, you need to restart or reconfigure the iApp template.

1. ***Do you want to enable Analytics for application statistics?***
   Choose whether you want to enable AVR for Analytics.

   ▶ **No, do not enable Analytics**
   If you do not want to enable Analytics, leave this list set to **No**, and continue with the next section.

   ▶ **Yes, enable Analytics using AVR**
   If you choose to enable Analytics, select **Yes** from the list, and then answer the following questions.

   a. *Use the default Analytics profile or select a custom profile?*
   If you decide to use AVR, you must decide whether to use the default Analytics profile, or create a new one. As mentioned previously, we recommend creating a new profile to get the most flexibility and functionality out of AVR. If you have already started the iApp template configuration and then decide to create a new Analytics profile, you must exit the iApp, create the profile, and then restart the iApp template.

   ▸ **Select a custom Analytics profile**
   Select this option if you have already created a custom Analytics profile for Exchange Server.

   i). *Which Analytics profile do you want to use?*
   From the list, select the appropriate Analytics profile.

   ▸ **Use default profile**
   Select this option if you have not yet created a custom Analytics profile for Microsoft Exchange. We do not recommend using the default profile.

BIG-IP Access Policy Manager

The first section of the iApp in this scenario asks about the BIG-IP Access Policy Manager. You must have APM fully licensed and provisioned to use APM. For more information on BIG-IP APM, see *http://www.f5.com/products/big-ip/access-policy-manager.html*.

1. ***Which Active Directory servers in your domain can this BIG-IP system contact?***
Specify both the FQDN and IP address of each Active Directory server you want the BIG-IP APM to use for servicing authentication requests. Click **Add** to include additional servers.

2. ***What is the FQDN of your Active Directory domain for your Exchange users?***
Specify the FQDN of the Active Directory deployment for your Exchange users. This is the FQDN for your entire domain, such as example.com, rather than the FQDN for any specific host.

3. ***Does your Active Directory domain allow anonymous binding?***
Select whether anonymous binding is allowed in your Active Directory environment.

    - **Yes, anonymous binding is allowed**
    Select this option if anonymous binding is allowed. No further information is required.

    - **No, credentials are required for binding**
    If credentials are required for binding, you must specify an Active Directory user name and password for use in the AAA Server.

        a. *Which Active Directory user with administrative permissions do you want to use?*
        Type a user name with administrative permissions.

        b. *What is the password associated with that account?*
        Type the associated password.

4. ***How do you want to handle health monitoring for this pool?***
Specify whether you want the template to create a new LDAP monitor or a new ICMP monitor, or if you select an existing monitor. For more accurate monitoring, we recommend using an LDAP monitor.

    - **Select an existing monitor for the Active Directory pool**
    Select this option if you have already created a health monitor (only monitors with a **Type** of LDAP or External can be used) for the Active Directory pool that will be created by the template. If you want to create a health monitor, but have not already done so, you must exit the template and create the object before it becomes available from the list.

        The iApp allows you to select monitors that are a part of another iApp Application Service. If you select a monitor that is a part of another Application Service, be aware that any changes you make to the monitor in the other Application Service will apply to this Application Service as well.

        a. *Which monitor do you want to use?*
        From the list, select the LDAP or External monitor you created to perform health checks for the Active Directory pool created by the template. Only monitors that have a Type value of LDAP or External appear in this list.
        Continue with the next section.

            - **Use a simple ICMP monitor for the Active Directory pool**
            Select this option if you only want a simple ICMP monitor for the Active Directory pool. This monitor sends a ping to the servers and marks the server UP if the ping is successful.
            Continue with the next section.

            - **Create a new LDAP monitor for the Active Directory pool**
            Select this option if you want the template to create a new LDAP monitor for the Active Directory pool. You must answer the following questions:

                i). *Which Active Directory user name should the monitor use?*
                Specify an Active Directory user name for the monitor to use when attempting to log on as a part of the health check. This should be a user account created specifically for this health monitor, and *must* be set to never expire.

                ii). *What is the associated password?*
                Specify the password associated with the Active Directory user name.

                iii). *What is the LDAP tree for this user account?*
                Specify the LDAP tree for the user account. As noted in the inline help, ADSI editor, an tool for Active Directory LDAP administration, is useful for determining the correct LDAP tree value. For example, if the user name is

'user1' which is in the organizational unit 'Exchange Users' and is in the domain 'exchange.example.com', the LDAP tree would be: ou=Exchange Users, dc=Exchange, dc=example, dc=com.

iv). *Does your Active Directory domain require a secure protocol for communication?*
Specify whether your Active Directory implementation requires SSL or TLS for communication, or does not require a secure protocol. This determines the port the health monitor uses.

- **No, a secure protocol is not required**
  Select this option if your Active Directory domain does not require a secure protocol.
- **Yes, SSL communication is required**
  Select this option if your Active Directory domain requires SSL communication. The health check uses port 636 as the Alias Service Port.
- **Yes, TLS communication is required**
  Select this option if your Active Directory domain requires TLS communication. The health check uses port 389 as the Alias Service Port.

v). *How many seconds between Active Directory health checks?*
Specify how many seconds the system should use as the health check Interval for the Active Directory servers. We recommend the default of 10 seconds.

Tell us about your Access Policy Manager deployment

This section of the iApp asks about your BIG-IP Access Policy Manager deployment.

1. ***What IP address do you want to use for the BIG-IP APM virtual server?***
   Specify the IP address you want to use for the BIG-IP Access Policy Manager virtual server. This is the address clients will use to access the HTTP-based Client Access services.

2. ***Do you want to re-encrypt the traffic that will be forwarded to your BIG-IP LTM?***
   Select whether you want the system to re-encrypt traffic that will be sent from this BIG-IP APM to the BIG-IP LTM.

   We generally recommend you do not re-encrypt traffic between your BIG-IP APM and BIG-IP LTM because both BIG-IP systems must process the SSL transactions. However, if you do choose to re-encrypt, we strongly recommend you use a valid certificate (usually SAN-enabled) rather than the default, self-signed certificate for the Client SSL profile on your BIG-IP LTM system. If not re-encrypting traffic, you do not need a certificate on your BIG-IP LTM.

   ▶ **Re-encrypt (SSL Bridging)**
   Select this option if your implementation requires encrypted traffic to the Client Access Servers, or you are using Exchange 2013 and do not have SP1 or later. The BIG-IP system unencrypts, then re-encrypts the traffic headed for the Client Access Servers.

   a. *Which Client SSL profile do you want to use?*
   The iApp can create a new Client SSL profile, or if you have created a Client SSL profile which contains the appropriate SSL certificate and key for your Exchange implementation, you can select it from the list.

   ▸ *Select the Client SSL profile you created from the list*
   If you manually created a Client SSL profile, select it from the list, and then continue with #2.

   ▸ Create a new Client SSL profile
   Select this option if you want the iApp to create a new Client SSL profile.

   i). *Which SSL certificate do you want to use?*
   Select the SSL certificate you imported onto the BIG-IP system for decrypting client connections.
   If you have not yet imported a certificate, you can leave the default selections and reconfigure this iApp after obtaining the certificates. The deployment will not function correctly until you have selected the correct certificates here.

   ➡ ***Note***

   Any certificate that you obtain with multiple names must be in SAN (Subject Alternative Name) format, not SNI (Server Name Indication) format. For more information on SAN certificates, see Subject Alternative Name (SAN) SSL Certificates on page 103.

2). *Which SSL key do you want to use?*
Select the associated key from the list.

ii). *Which Server SSL profile do you want to use?*
Select whether you want the iApp to create an F5 recommended Server SSL profile, or if you want to choose a Server SSL profile you already created.

- *Select the Server SSL profile you created from the list*
If you have previously created a Server SSL profile for your Exchange implementation, from the list, select the existing Server SSL profile you created.

- **Create a new Server SSL profile**
Select this option if you want the iApp to create a new Server SSL profile.

  The default, F5 recommended Server SSL profile uses the *serverssl* parent profile. For information about the ciphers used in the Server SSL profile, see *http://support.f5.com/kb/en-us/solutions/public/8000/800/sol8802.html*.

iii). *Is the remote BIG-IP LTM receiving this traffic using a self-signed or default certificate for decryption, or is the certificate signed by a CA?*
Select whether the remote BIG-IP LTM receiving the traffic is using a self-signed (or default) certificate for decrypting the traffic from this system, or if the certificate is signed by a Certificate Authority. Your answer determines the Secure Renegotiation setting on the Server SSL profile. This BIG-IP system will not trust the remote BIG-IP default or a self-signed certificate unless specifically configured to do so in this question.

ⓘ ***Important***

This question pertains to the certificate used by the remote BIG-IP LTM, NOT the certificates present and assigned on the local BIG-IP system you are configuring.

- **Certificate Authority-provided certificate and key**
Select this option if the remote BIG-IP LTM is using a certificate from a Certificate Authority.

- **Self-signed or default certificate and key**
Select this option if the remote BIG-IP LTM is using a self-signed or default certificate.

▶ **Do not re-encrypt (SSL Offload)**
Select this option if you do not want the system to re-encrypt traffic to the BIG-IP LTM virtual server. We recommend not re-encrypting unless you have a requirement for SSL for the entire transaction. In this case, the system is offloading the BIG-IP LTM from also having to process the SSL transaction.

a. *Which Client SSL profile do you want to use?*
The iApp can create a new Client SSL profile, or if you have created a Client SSL profile which contains the appropriate SSL certificate and key for your Exchange implementation, you can select it from the list.

▸ *Select the Client SSL profile you created from the list*
If you manually created a Client SSL profile, select it from the list, and then continue with #2.

▸ **Create a new Client SSL profile**
Select this option if you want the iApp to create a new Client SSL profile.

i). *Which SSL certificate do you want to use?*
Select the SSL certificate you imported onto the BIG-IP system for decrypting client connections.
If you have not yet imported a certificate, you can leave the default selections and reconfigure this iApp after obtaining the certificates. The deployment will not function correctly until you have selected the correct certificates here.

➡ ***Note***

Any certificate that you obtain with multiple names must be in SAN (Subject Alternative Name) format, not SNI (Server Name Indication) format. For more information on SAN certificates, see Subject Alternative Name (SAN) SSL Certificates on page 103.

ii). Which SSL key do you want to use?
Select the associated key from the list.

3. ***What is the virtual IP address on the remote BIG-IP system to which you will forward traffic?***
Type the IP address of the virtual server on the remote BIG-IP LTM to which you will be forwarding Client Access traffic from this BIG-IP device*.* This BIG-IP APM sends traffic to this address after performing authentication.

4. ***Will clients be connecting to this BIG-IP virtual server primarily over a LAN or a WAN?***
Select whether most clients are connecting over a WAN or LAN. The system uses your selection to configure the proper TCP optimization settings.

   - **WAN**
   Select this option if most clients are coming over a WAN.
   - **LAN**
   Select this option if most clients are coming over a LAN.

5. ***Do you want to restrict Exchange Administration Center access by IP address or network?*** **Exchange 2013 only**
*This question only appears if you selected **Exchange 2013** as your version of Exchange.*

Select whether you want the BIG-IP LTM to restrict Exchange Administration Center (EAC) access by IP address or network. In Microsoft Exchange Server 2013, Exchange administration is now performed via the EAC, a web-based console. You configure the iApp to control access to the EAC, allowing connections only from approved IP addresses or networks.

   - **No, allow EAC access from all client IP addresses**
   Select this option to allow EAC access from all client IP addresses and networks. In this case, the system does not restrict EAC access to specific IP addresses or networks, however, if you are deploying BIG-IP APM, you can still restrict access to EAC by Organizational Management group in question b.
   - **Yes, restrict EAC access to specific client IP addresses or networks**
   Select this option if you want to restrict EAC access to specific client IP addresses or networks. This adds an extra layer of security to your Exchange deployment. The system creates a data group with the IP addresses or networks you specify, and then uses an iRule to enforce the restrictions.

      a. *What IP or network addresses should be allowed EAC access?*
      Specify the IP addresses or networks should be allowed access to EAC. Click **Add** to include additional addresses or networks.

      Important

      If you are not deploying BIG-IP APM, the iApp currently does not attach the proper data group and iRule. See Creating the Data Group and iRule for securing EAC access if not using BIG-IP APM on page 57 for information on how to configure these objects.

2. ***Should BIG-IP APM restrict EAC access to members of the Exchange Organization Management Security Group?*** **Exchange 2013 only**
*This question only appears if you selected **Exchange 2013** as your version of Exchange and selected to provide secure authentication with BIG-IP APM.*

Select whether you want the BIG-IP APM to restrict Exchange Administration Center (EAC) access to members of Exchange 2013's Organizational Management group. The BIG-IP APM module queries Active Directory group membership for the user making the request to EAC. If the user is not a member of the Organization Management group, the BIG-IP APM policy denies access.

   - **No, do not restrict EAC access by group membership**
   Select this option and the BIG-IP APM will not restrict access to the EAC by group membership.
   - **Yes, restrict EAC access by group membership**
   Select this option if you want to restrict EAC access to the Organization Management group. This adds an additional layer of security to your Exchange deployment, as the system denies access to the EAC from anyone who is not a member of the Organization Management group.

3. ***Which type of authentication do Outlook Anywhere clients use?***
Choose whether your Outlook Anywhere clients use Basic or NTLM authentication. Beginning in BIG-IP version 11.3, the iApp supports using NTLM authentication for Outlook Anywhere.

   - ▶ **Outlook Anywhere clients use Basic Authentication**
   Select this option if your Outlook Anywhere clients use Basic Authentication. No further information is required, and you can continue with #5.

   - ▶ **Outlook Anywhere clients use NTLM authentication**
   Select this option if your Outlook Anywhere clients use NTLM information. You must answer the following questions about your Active Directory implementation. Also see *Appendix E: Active Directory and Exchange Server configuration for NTLM on page 105* and *Experiencing authentication issues when deploying the iApp using BIG-IP APM for client-side NTLM for Outlook Anywhere on page 58* for important information and modifications for NTLM.

   Important

   Before completing this section, you must create a user account in the same domain that has been properly configured for NTLM delegation. You must create an NTLM Machine Account object on the BIG-IP system to join this system to the Active Directory domain. See Creating an NTLM Machine Account on page 61.

   a. *Which NTLM machine account should be used for Kerberos delegation?*
   Select the NTLM Machine Account you created to join the BIG-IP system to the Active Directory domain. If you have not already created an NTLM Machine Account on the BIG-IP system, see *Creating an NTLM Machine Account on page 61*. You must either exit the template now and start over once you have created the NTLM Machine Account, or choose Outlook Anywhere Clients use Basic Authentication from the previous question, and then re-enter the template later.

   b. *What is the Kerberos Key Distribution Center IP or FQDN?*
   Specify the IP address or fully qualified domain name of the Kerberos Key Distribution Center (KDC). If you type an FQDN, the BIG-IP system must be able to resolve the address. Otherwise, use the IP address.

   c. *What is the name of the Kerberos Realm?*
   Specify the name of the Kerberos Realm. While this name should be in all capital letters, the iApp automatically turns any lower case letters to capital.

   d. *What is the user name for the Active Directory delegation account you created?*
   Specify the user name for the Active Directory delegation account you created. This account must be correctly configured in Active Directory for Kerberos delegation. See *Appendix E: Active Directory and Exchange Server configuration for NTLM on page 105* details.

   e. *What is the associated password?*
   Specify the password associated with the account.

8. ***Do you want to add any iRules to this configuration?***
You have the option of adding existing iRules to the virtual server. iRules allow an administrator to instruct the system to intercept, inspect, transform, direct and track inbound or outbound application traffic. For more information on iRules, see *https://devcentral.f5.com/HotTopics/iRules/tabid/1082202/Default.aspx.*

   Important

   Improper use or misconfiguration of an iRule can result in unwanted application behavior and poor performance of your BIG-IP system. We recommended you verify the impact of an iRule prior to deployment in production.

   If you want to add iRules, from the **Options** box, select the iRule(s) you want to include, and then click the Add (**<<**) button.

Additional Steps

Review the information in the Additional steps section, and take appropriate action if necessary. All of the notes in Additional Steps are found in the relevant section of this deployment guide.

Finished

Review your answers to the questions. When you are satisfied, click the Finished button. The BIG-IP system creates the relevant objects.

Optional: Configuring the BIG-IP system to support MAPI over HTTP in Exchange 2013 SP1

Introduced in Exchange 2013 SP1, the new MAPI over HTTP transport protocol is for Outlook clients running Office 2013 SP1 and later (only). This new service is not yet included in the iApp template, so you must manually configure the BIG-IP system to support it.

If you are using Microsoft Exchange 2013 SP1 or later and using the new MAPI over HTTP transport protocol, use the following guidance to create the objects necessary to support MAPI over HTTP. If you configured the iApp template to use a combined virtual server, you create a health monitor, pool, and an iRule. Because BIG-IP APM is not yet supported for MAPI over HTTP, the iRule includes a line (commented out by default) to disable Access Policy processing for this new protocol only. If you configured the iApp to use separate virtual servers, you create the monitor, pool, and a virtual server. The iRule is not necessary at all in this case.

Use the following table to create the objects on the BIG-IP LTM. Unless otherwise specified, settings not mentioned in the table can be configured as applicable for your configuration. For instructions on configuring individual objects, see the online help or product manuals.

BIG-IP LTM Object	Non-default settings/Notes		
Health Monitors *(Main tab-->Local Traffic-->Monitors)*	***Simple Monitor***		
	Name	Type a unique name	
	Type	**HTTP** (if using SSL offload) or **HTTPS** (if using SSL bridging)	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	Send String	**GET /mapi/healthcheck.htm HTTP/1.1\r\nHost: mapi.example.local\r\nConnection: Close\r\n\r\n**	
	Receive String	**200 OK**	
	Advanced Monitor		
	The advanced monitor for MAPI over HTTP uses the same monitor as the advanced monitor for the EWS service. You simply add the EWS monitor to the pool in the next section and set the Availability Requirement to All as described.		
Pools *(Main tab-->Local Traffic -->Pools)*	***Name***	Type a unique name	
	Health Monitor	Select the monitor you created above. If you are using the advanced monitor, add both the advanced and simple monitor you created.	
	Availability Requirement	If using the advanced monitor (only), select **All**	
	Load Balancing Method	**Least Connections (Member)**	
	Address	Type the IP Address of your Exchange server	
	Service Port	**80** (if using SSL offload) or **443** (if using SSL bridging) Click **Add** to repeat Address and Service Port for all nodes	
Profiles *(Main tab-->Local Traffic -->Profiles)*	***HTTP***	Parent Profile	**http**
		Redirect Rewrite	**Matching**
	TCP WAN[2]	Parent Profile	**tcp-wan-optimized**
	TCP LAN[2]	Parent Profile	**tcp-lan-optimized**
	Client SSL	Parent Profile	**clientssl**
		Certificate/Key	Select the Certificate and Key you imported
	Server SSL[3]	Parent Profile	**serverssl**
	OneConnect	Parent Profile	**oneconnect**
		Source Mask	**255.255.255.255**
	NTLM	Parent Profile	**ntlm**
iRules *(Main tab-->Local Traffic -->iRules)*	***iRule for the combined virtual server scenario only***		
	Name	Type a unique name	
	Definition	See the following section for the iRule definition and for instructions on attaching the iRule to the virtual server using the iApp template.	

BIG-IP LTM Object	Non-default settings/Notes	
Virtual Servers *(Main tab-->Local Traffic -->Virtual Servers)*	***iRule for the separate virtual server scenario only***	
	Destination Address	IP address for the virtual server
	Service Port	**443**
	Profiles	Add each of the profiles you created from the appropriate list
	SNAT Pool	**Auto Map**[4]
	Default Pool	Select the pool you created for MAPI over HTTP

Creating the iRule definition

Use the following for the Definition of the iRule, omitting the line numbers, and ***changing the red text to the name your pool***. If you want MAPI over HTTP to bypass the BIG-IP APM, remove the comment (#) from line 5.

```
1   when HTTP_REQUEST {
2      switch -glob -- [string tolower [HTTP::path]] {
3         "/mapi*" {
4            ###uncomment the following line to bypass APM for MAPI-over-HTTP
5            #ACCESS::disable
6            pool mapi_http_pool
7            COMPRESS::disable
8            CACHE::disable
9            return
10        }
11     }
12  }
```

To attach the iRule to the combined virtual server

1. From the Main tab of the BIG-IP Configuration utility, expand **iApp** and then click **Application Services**.
2. Click the name of your existing Microsoft Exchange application service from the list.
3. On the Menu bar, click **Reconfigure**.
4. If necessary, from the *Do you want to customize your server pool settings?* question, select **Customize pool settings**.
5. From the *Do you want to add any iRules to this combined virtual server?* question, select the iRule you just created and then click the Add (**<<**) button to move it to the **Selected** list.
6. Click **Finished**.

Next steps

After completing the iApp Template, the BIG-IP Application Services page opens for the Exchange application service you just created. To see the list of all the configuration objects created to support Microsoft Exchange, on the Menu bar, click **Components**. The complete list of all Exchange related objects opens. You can click individual objects to see the settings.

Once the objects have been created, you are ready to use the new deployment.

Modifying DNS settings to use the BIG-IP virtual server address

Before sending traffic to the BIG-IP system, your DNS administrator may need to modify any DNS entries for the Exchange implementation to point to the BIG-IP system's virtual server address.

Modifying the iApp configuration

The iApp application service you just created can be quickly and easily modified if you find it necessary to make changes to the configuration. The Strict Updates feature of the iApp prevents users from manually modifying the iApp configuration (Strict Updates can be disabled, but use extreme caution). iApp allows you to re-enter the template, make changes, and then update the template. The modifications are automatically made to any of the associated objects.

To modify the configuration

1. On the Main tab, expand **iApp** and then click **Application Services**.
2. Click the name of your Exchange Application service from the list.
3. On the Menu bar, click **Reconfigure**.
4. Make the necessary modifications to the template.
5. Click the **Finished** button.

Restarting bigd in BIG-IP versions prior to 11.2 after a manual change

If you perform any modification that requires disabling Strict Updates feature on the Application Service, you must restart the bigd daemon from the BIG-IP command line if you are using a v11 version prior to 11.2. We recommend restarting bigd during a maintenance window or other scheduled downtime.

Important

This is only necessary if using a version prior to 11.2.

To restart bigd

1. From the command line, log into the BIG-IP system.
2. From the prompt, run the following command:
   ```
   bigstart restart bigd
   ```
3. Exit the command line interface.

Viewing statistics

You can easily view a number of different statistics on the BIG-IP system related to the Exchange configuration objects created by the iApp template. You can get statistics specific to the Application Service if you have provisioned AVR. Otherwise, you can always get object-level statistics.

AVR statistics

If you have provisioned AVR, you can get application-level statistics for your Exchange application service.

To view AVR statistics

1. On the Main tab, expand **iApp** and then click **Application Services**.
2. From the **Application Service** List, click the Exchange 2010 service you just created.
3. On the Menu bar, click **Analytics**.
4. Use the tabs and the Menu bar to view different statistics for your Exchange iApp.

Object-level statistics

If you haven't provisioned AVR, or want to view object-level statistics, use the following procedure.

To view object-level statics

1. On the Main tab, expand **Overview**, and then click **Statistics**.
2. From the **Statistics Type** menu, you can select **Virtual Servers** to see statistics related to the virtual servers.
3. You can also choose **Pools** or **Nodes** to get a closer look at the traffic.
4. To see networking statistics in a graphical format, click **Dashboard**.

For more information on viewing statistics on the BIG-IP system, see the online help or product documentation.

Adding Ratio or Connection Limit information to the nodes if using a node-based load balancing method

If you chose to customize the server pool settings, changed the load balancing method from the default to a node-based method (such as Ratio (node) or Least Connections (node)), and configured a Ratio or Connection Limit, the iApp applies the ratio or connection limit to the load balancing pool member, and not to the node itself. In this case, you must manually modify each node to include any Ratio or Connection Limit settings you want to configure.

To modify the nodes to include Ratio or Connection Limit settings

1. On the Main tab, expand **Local Traffic** and then click **Nodes**.
2. From the Node table, click a Client Access Server node you entered in the iApp template.
3. In the **Ratio** box, type the appropriate ratio, if applicable.
4. In the **Connection Limit** box, type the appropriate connection limit, if applicable.
5. Click **Update**.
6. Repeat this procedure for each node that is a part of your Exchange deployment.

Troubleshooting

This section contains common issues and troubleshooting steps

Advanced health checks are fail when using Windows Integrated Authentication (NTLM provider)

If you are using Windows Integrated Authentication (NTLM provider) only, the BIG-IP health checks using a valid account may fail, as the BIG-IP system fails to correctly form the authentication request headers.

If you are using Windows Authentication with NTLM and you have disabled Basic authentication for the Exchange service you are monitoring, you must manually delete the \r\n at the end of the Send String, and the <domain>\ information from the User Name field.

ⓘ ***Important***

F5 monitors support NTLMv1 authentication. You must ensure that the LmCompatibilityLevel setting in Group Policy for the domain used by the monitor credential is configured to support NTLMv1

Modifying the IIS authentication token timeout value

The iApp template configures most Exchange monitors to check service health every 30 seconds. However, to reduce traffic between the Exchange server and domain controllers, IIS virtual directories configured to use Basic authentication cache authentication tokens for up to 15 minutes before re-authenticating the user with Active Directory. This may result in the BIG-IP pool members for these services being marked UP incorrectly while Basic authentication tokens are cached.

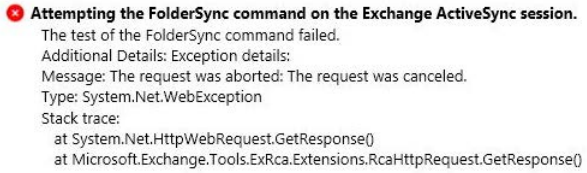
You can decrease the length of or disable this token caching period by editing the registry on the Exchange server. The length of time configured for the token cache combined with the timeout value of the monitor will determine how long it will take until a resource is marked down. For example, setting a token cache period of 60 seconds, combined with a monitor using a timeout value of 91 seconds, will result in a resource being marked down after 151 *seconds.*

For instructions on modifying the registry, see the following Microsoft article (while this article says IIS 6.0, we tested it on IIS 7.5 with no modifications):

Critical: *Use extreme caution any time you are editing the registry. Contact Microsoft for specific instructions and/or help editing the registry values*. *http://www.microsoft.com/technet/prodtechnol/WindowsServer2003/Library/IIS/6b2e7fcd-5fad-4ac8-ac0a-dcfbe771e9e1.mspx*

Microsoft Exchange Remote Connectivity Analyzer fails to successfully run the FolderSync command

If you deployed the BIG-IP system for ActiveSync, either using the iApp template or manually, and attempt to run the Microsoft Exchange Remote Connectivity Analyzer (ExRCA) against an Exchange mailbox, you may receive the following error:



Attempting the FolderSync command on the Exchange ActiveSync session.

```
The test of the FolderSync command failed.
Additional Details: Exception details:
Message: The request was aborted: The request was canceled.
Type: System.Net.WebException
Stack trace:
  at System.Net.HttpWebRequest.GetResponse()
  at Microsoft.Exchange.Tools.ExRca.Extensions.RcaHttpRequest.GetResponse()
```

This behavior affects versions of BIG-IP earlier than 11.4.0. To work around this error, you must create an iRule, and then use the iApp template to apply the iRule to the combined Exchange BIG-IP virtual server (or attach the iRule manually if you used the manual configuration tables).

To create the iRule

1. On the Main tab, expand **Local Traffic**, click **iRules**, and then click the **Create** button.
2. In the **Name** box, give the iRule a unique name.
3. In the **Definition** section, copy and paste one of the following iRules, omitting the line numbers, depending on whether you configured the system for a combined virtual server, or a separate virtual server for ActiveSync.

   Only use the definition applicable to your configuration.

Combined virtual server iRule definition

```
when HTTP_REQUEST {
    set isactivesync 0
    if { [string tolower [HTTP::path]] contains "/microsoft-server-activesync" } {
            set isactivesync 1
    }
}
when HTTP_RESPONSE {
    if { [HTTP::status] == 401 && [HTTP::header exists "Content-Length"] && $isactivesync == 1 } {
    HTTP::header insert "Connection" "Close"
    }
    unset isactivesync
}
```

Separate virtual server iRule definition

```
when HTTP_RESPONSE {
    if { [HTTP::status] == 401 && [HTTP::header exists "Content-Length"] } {
       HTTP::header insert "Connection" "Close"
    }
}
```

4. Click **Finished**.

The next task is to attach the iRule to the virtual server. This depends on whether you configured the BIG-IP system using the iApp template or manually.

Attaching the iRule if you used the iApp template to configure the BIG-IP system

Use the following procedure if you used the iApp template to configure the BIG-IP system.

To attach the iRule to the virtual server

1. From the Main tab of the BIG-IP Configuration utility, expand **iApp** and then click **Application Services**.
2. Click the name of your existing Microsoft Exchange application service from the list.
3. On the Menu bar, click **Reconfigure**.
4. If necessary, from the *Do you want to customize your server pool settings?* question, select **Customize pool settings**.
5. If you used a Combined virtual server, from the *Do you want to add any iRules to this combined virtual server?* question, select the iRule you just created and then click the Add (**<<**) button to move it to the **Selected** list.

   If you used Separate virtual servers, after the question *What IP address do you want to use for the ActiveSync virtual server?* from the *Do you want to add any custom iRules to this virtual server?* question, select the iRule you just created and then click the Add (**<<**) button to move it to the **Selected** list.
6. Click **Finished**.

Attaching the iRule if you manually configured the BIG-IP system

If you configured the BIG-IP system manually, and configured a combined virtual server, modify the combined virtual server you created to attach the combined iRule.

If you configured separate virtual servers, modify the ActiveSync virtual server you created to attach the separate virtual server iRule.

➤ iApp gives an error when using Analytics and deploying POP3 and IMAP4

If you are enabled Analytics in the iApp template and chose to deploy POP3 and IMAP4, you may see an error similar to the following:

010713d3:3: Virtual server /Common/exchange_test.app/exchange_test_pop3: AVR profile requires an HTTP profile.

This occurs because using Analytics requires an HTTP profile, and because POP3 and IMAP4 are not HTTP, the template correctly does not attach an HTTP profile to these virtual servers. This conflict causes the template to display the error.

Remember that enabling Analytics may adversely affect overall system performance. If you choose to enable Analytics, we recommend gathering statistics for a set time period, such as one week, and then re-entering this template and disabling Analytics while you process the data.

Use the following guidance to work around this error until an updated iApp template is released:

Run a separate instance of the iApp template for POP3 and IMAP4 only
The first time you run the Exchange iApp template, complete the iApp as applicable for your environment, however select **No** to the questions asking if you are deploying POP3 and IMAP4.

After completing the first instance of the iApp template, run the template again selecting **No** to the Analytics question, as well as all of the questions about deploying Exchange services. Select **Yes** to one or both of the questions for POP3 and IMAP4. Answer the other questions as applicable for your configuration.
After completing the second instance of the iApp, the configuration will then function as designed.

➤ ActiveSync and/or Autodiscover aren't working after deploying the iApp for separate virtual servers and using APM

If you are having trouble with ActiveSync and/or Autodiscover after running the template, and the ***all*** of the following conditions are true:

- » You are using a BIG-IP version between 11.0 and 11.3.x **and,**
- » You chose "Use different IP address for the difference [CAS] services" when configuring the iApp **and,**
- » You chose to deploy the iApp template for ActiveSync and/or Autodiscover **and,**
- » You chose to deploy BIG-IP APM

you may be receiving error messages in your log files due to the template attaching a legacy iRule to the ActiveSync virtual server. Use the following guidance to work around this issue:

Modifying the existing iApp template configuration

1. Re-enter the iApp template (on the Main tab, click **iApp** > **Application Services** > [name of your Exchange application service] and then from the Menu bar, click **Reconfigure**).
2. If you also deployed the iApp for Autodiscover:
   In the Tell us which services you are deploying section, from the "Do you want to customize your server pool settings" question, select **Customize pool settings**. Under the Autodiscover IP address question, from the "Do you want to add any custom iRules to this virtual server?" question, enable either the built-in **_sys_APM_ExchangeSupport_OA_BasicAuth** or **sys_APM_ExchangeSupport_OA_NTLMAuth** Rule as depending on your auth method.
3. From the "Are you deploying ActiveSync?" question, select **No**.
4. Click **Finished**.

Run a separate instance of the iApp template for ActiveSync only
After modifying the initial instance of the iApp template, run the Exchange iApp template again. Use all of the same settings with the following exceptions:

- » For the "Do you want to use a single IP address for all Client Access Server connections?" question, you must answer **Use a single IP address for all connections**. This ensures the proper iRules are assigned to the ActiveSync virtual server.
- » Answer No to each of the questions asking which Client Access services you are deploying, only answering Yes to ActiveSync.
  After you submit the template, you should experience this issue.

➤ Clients receiving error message when using BIG-IP APM with OWA 2013 and IE10 or Google Chrome

If you are using BIG-IP APM and Outlook Web App 2013, and have clients using Internet Explorer 10 or Google Chrome, clients may receive the following error message from the BIG-IP APM: *Access policy evaluation is already in progress for your current session.* If clients are receiving this error, you must apply the an iRule to the virtual server(s) used for OWA 2013.
To create the iRule and add it to the OWA 2013 virtual server

1. On the Main tab, expand **Local Traffic** and then click **iRules**.
2. Click **Create**.
3. In the **Name** box, type a unique name for this iRule.
4. In the **Definition** section, copy and paste the following iRule, omitting the line numbers.

```
when HTTP_REQUEST {
     if { [HTTP::cookie exists "IsClientAppCacheEnabled"] } {
     HTTP::cookie "IsClientAppCacheEnabled" False
     }
}
```

5. Click the **Finished** button.
6. Re-enter the iApp template (on the Main tab, click **iApp** > **Application Services** > [name of your Exchange application service] and then from the Menu bar, click **Reconfigure**).
7. In the Tell us which services you are deploying section, from the "Do you want to customize your server pool settings" question, select **Customize pool settings**. Either in the "Do you want to add any custom iRules to this combined virtual server?" (if you used a single IP address) or in the "Do you want to add any custom iRules to this virtual server?" question under the IP address for OWA question (if you used different IP addresses), enable the iRule you just created.
8. Click **Update**.

If you have Outlook Web App clients connecting to a BIG-IP APM virtual server externally, and the same clients connect to a non-APM virtual server internally, you must apply the iRule to both virtual servers.

If clients are still receiving this error after adding the iRule, you should request they delete Temporary Internet Files (IE10), or go to chrome://appcache-internals and remove the application cache for Outlook Web Access (Chrome).

➤ Experiencing issues with iOS devices and ActiveSync when the BIG-IP system is behind a device performing NAT

If the BIG-IP system is located behind a device that performs network address translation (NAT), and you are experiencing issues with iOS devices and ActiveSync, we recommend you modify the appropriate persistence iRule to include a wildcard character.

If you deployed BIG-IP APM and a combined virtual server, this iRule is [name of your Exchange application service]**_apm_combined_pool_irule**[random number]. If you deployed APM and separate IP addresses for separate services, the iRule is [name of your Exchange application service]**_combined_persist_irule**[random number]. If you did not deploy BIG-IP APM, the iRule is [name of your Exchange application service]**_oa_persist_irule** for both combined and separate IP addresses.

To disable Strict Updates

1. On the Main tab, expand **iApp** and then click **Application Services**.
2. Click the name of your Exchange Application service from the list.
3. From the **Application Service** menu, select **Advanced**.
4. In the **Strict Updates** row, clear the checkbox to disable Strict Updates.
5. Click **Update**.

To modify the iRule

1. On the Main tab, expand **Local Traffic** and then click **iRules**.
2. From the list, locate the name of the iRule produced by the iApp. See the preceding paragraph for a description of the names.
3. In the Definition section, find the section that looks like `"/microsoft-server-activesync"` and/or `"/rpc/rpcproxy.dll"`
4. Add an asterisk after each inside the quote marks, so they look like: `"/microsoft-server-activesync*"` and/or `"/rpc/rpcproxy.dll*"`
5. Click **Update**.

➤ Advanced monitors for Autodiscover, EWS, and Outlook Anywhere only support Basic and NTLMv1 authentication

The advanced monitors for Autodiscover, Exchange Web Services, and Outlook Anywhere support Basic and NTLMv1 authentication only. If you have configured your domain to use NTLMv2 only, you must modify the health monitors to remove the **--ntlm** option from the curl statement used in the Autodiscover, EWS, and Outlook Anywhere external monitors (if you deployed the template for these services) using the guidance in this section.

Additionally, you will need to enable Basic authentication for the EWS virtual directory using the IIS Manager snap-in on each Exchange Client Access Server. Consult the Microsoft documentation for instructions.

ⓘ ***Important***

This is only necessary if you have configured your domain to use NTLMv2.

To modify the health monitors

a. On the Main tab, click **System > File Management > External Monitor Program File List**.

b. Depending on which services you deployed, click either **autodiscover_eav**, **oa_eav**, or **ews_eav**.
The file name for Autodiscover is always autodiscover_eav and the file name for Outlook Anywhere is always oa_eav. If you deployed EWS without Outlook Anywhere, the file name is ews_eav. Unless you have multiple instances of the iApp, you should never have both an oa_eav and ews_eav.
Note: If you have multiple instances of the iApp template, make sure you click the file name in the applicable Partition/Path on the far right of the table. The file names are always the same.

c. Locate the line that begins with **curl** and remove the **--ntlm** portion only. When you are finished, this line should look similar to the following:

```
curl -g -s -k -X POST -H 'Content-Type: text/xml; charset=utf-8' -d "${XMLFULL}" -u
${DOMAIN}\\${USER}:${PASSWORD} https://${NODE}${ADSURI} | grep -i "${RECV}" 2>&1 > /dev/null
```

d. Click **Update**.

e. If you deployed other applicable services, repeat steps b - e for any to remove --**ntlm** from that file.

Important: If you re-enter the iApp template and modify the configuration using the Reconfigure option, you must make these changes again, as the iApp will overwrite the modifications.

➤ Creating the Data Group and iRule for securing EAC access if not using BIG-IP APM

The iApp template currently does not attach the necessary Data Group and iRule to the configuration if you are not deploying BIG-IP APM. In order for this feature to function as designed, you must manually create these objects. This is only necessary if you are not deploying APM.

To create the Data Group and iRule and attach the iRule to the virtual server

a. To configure the Data Group and iRule, see the procedures in *Optional: Securing Access to the Exchange 2013 Administration Center on page 92*, and then return to this section for instructions on attaching the iRule.

b. Re-enter the iApp template (on the Main tab, click **iApp** > **Application Services** > [name of your Exchange application service] and then from the Menu bar, click **Reconfigure**).

c. In the Tell us which services you are deploying section, from the "Do you want to customize your server pool settings" question, select **Customize pool settings**.

d. Either in the "Do you want to add any custom iRules to this combined virtual server?" (if you used a single IP address) or in the "Do you want to add any custom iRules to this virtual server?" question under the IP address for OWA question (if you used different IP addresses), enable the iRule you just created.

e. Click **Update**.

➤ Guest accounts on the BIG-IP system can view the persistence table

Since the Exchange iApp uses the Basic authorization header for ActiveSync and Outlook Anywhere session persistence, BIG-IP guest accounts that have been explicitly granted access to the Traffic Management Shell (tmsh) are able to view encoded user credential and password information. It is possible an attacker logging in to BIG-IP as a guest could decode these credentials. F5 recommends disabling tmsh access for any BIG-IP guest accounts by clicking **System>Users>User List>Terminal Access>Disabled>Finished**.

Alternately, you may edit the iRule(s) created by the iApp template to obfuscate the encoded credentials. These changes are not necessary if you have used the iApp template to deploy F5's Access Policy Manager module. Replace all instances of:

persist uie [HTTP::header "Authorization"] 7200 with:

set <service>_key [sha256 [HTTP::header "Authorization"]]

persist uie $<service>_key 7200

Where **<service>** indicates either ActiveSync or Outlook Anywhere. For example:

set oa_key [sha256 [HTTP::header "Authorization"]]

persist uie $oa_key 7200

➤ Experiencing authentication issues when deploying the iApp using BIG-IP APM for client-side NTLM for Outlook Anywhere

If you deployed the template to use BIG-IP APM, and selected Outlook Anywhere clients use NTLM authentication, you may experience authentication issues because the iApp creates an improperly configured Exchange profile.

To work around this issue, you must modify the Autodiscover, EWS, and OAB Front End Authentication type. Additionally, If you deployed the template for separate IP addresses for the Client Access services, you must change the Exchange profile's default NTLM configuration.

To modify Front End Authentication

1. If you have not already disabled Strict Updates, see *To disable Strict Updates on page 56*.
2. On the Main tab, expand **Access Policy**, and then click **Application Access > Microsoft Exchange**.
3. From the list, locate the appropriate Exchange NTLM profile, named **exchange_ntlm_exchange**. Check the associated box, and then click **Edit**.
   Note that if you have multiple copies of the iApp template, you may see multiple profiles with the same name. You'll have to check each and click Edit to find the proper one, which will have the name you gave the iApp template in the Exchange Name at the top of the box that appears.
4. In the left pane, under *Service Settings*, click **Autodiscover**. From the Front End Authentication list, select **Basic-NTLM**.
5. In the left pane, under *Service Settings*, click **Exchange Web Services**. From the Front End Authentication list, select **Basic-NTLM**.
6. In the left pane, under *Service Settings*, click **Offline Address Book**. From the Front End Authentication list, select **Basic-NTLM**.
7. Click the **OK** button.

Modifying NTLM Configuration

If you deployed the template for separate IP addresses for the Client Access services, deployed BIG-IP APM, and selected Outlook Anywhere clients use NTLM authentication, you must modify the Exchange profile's default NTLM configuration.

To modify the NTLM configuration setting

1. Follow steps 1-3 above to locate the appropriate Exchange profile. Check the associated box, and then click **Edit**.
2. Click the **NTLM Configuration** box, and from the list, select the NTLM profile that begins with **exch_ntlm_<name you gave the iApp>** and ends in **_oa_https**.
3. Click the **OK** button.

➤ iPhones and other iOS devices are displaying invalid certificate messages after deploying the iApp for ActiveSync

If you deployed the iApp template for ActiveSync (or manually configured the BIG-IP system) and iOS devices started showing invalid certificate messages even though the certificates were issued by an appropriate authority, you must manually create an Client SSL profile that uses a Chain certificate. Intermediate certificates, also called intermediate certificate chains or chain certificates, are used to help systems which depend on SSL certificates for peer identification.

Use the guidance in this solution to create a Client SSL profile that uses an intermediate certificate chain:
http://support.f5.com/kb/en-us/solutions/public/13000/300/sol13302.html.
Be sure **Secure Renegotiation** is set to **Require** (the default) on the Client SSL profile.

If you manually configured the system, add the Client SSL profile to your virtual server.

If you used the iApp, use this procedure:

a. Re-enter the iApp template (on the Main tab, click **iApp** > **Application Services** > [name of your Exchange application service] and then from the Menu bar, click **Reconfigure**).
b. In the *Tell us about your deployment* section, from the " Do you want to create a new client SSL profile or use and existing one?" question, select the profile you just created that uses the Chain certificate.
c. Click **Update**.

➤ Users experiencing slow response times when using calender functionality or reduced responsiveness when using RPC client Access in Exchange 2010 when us

This slowness or reduced responsiveness can be caused by a setting in the WAN-optimized TCP profile. You may experience this issue if:

» You configured the BIG-IP system using the iApp template, and
- You specified most clients are connecting to the BIG-IP virtual server primarily over a WAN, and
- You are deploying Outlook Anywhere and/or RPC Client Access

» You configured the system manually, and
- You used a TCP profile based on the default **tcp-wan-optimized** parent for the combined virtual server, Outlook Anywhere and/or RPC Client Access (2010 only).

This issue can be solved by either assigning a TCP profile to the virtual server that does not use Nagle's algorithm (such as **tcp-lan-optimized**, or the default **tcp** profile), or disabling Nagle's algorithm on the TCP profile. Use the appropriate procedure, depending on whether you used the iApp template to configure the BIG-IP system, or configured the BIG-IP system manually.

Modifying the configuration if you used the iApp template

If you used the iApp template to configure the iApp template, use the following guidance.

1. If you have not already disabled Strict Updates, see *To disable Strict Updates on page 56*.
2. On the Main tab, click **Local Traffic > Profiles > Protocols > TCP**.
3. From the TCP Profile list, click the appropriate profile created by the iApp.
   - If you deployed the iApp for a combined virtual server or a separate virtual server for Outlook Anywhere, click *<name you gave the iApp>***_wan-optimized_tcp_profile**.
   - If you deployed the iApp for RPC Client Access, click *<name you gave the iApp>***_rpc_wan-optimized_tcp_profile** (you may need to repeat this procedure for RPC Client Access if you deployed the iApp for either of the options above).
4. In the **Nagle's Algorithm** row, click the **Custom** box on the right if necessary, and then clear the check from the Enabled box to disable Nagle's Algorithm.
5. Click the **Update** button. Repeat for RPC Client Access if necessary.

Remember, if you use the Reconfigure option to make changes to the iApp, you need to make any of these manual changes again.

Modifying the configuration if you configured the BIG-IP system manually

If you configured the BIG-IP system manually, use the following guidance.

1. On the Main tab, click **Local Traffic > Profiles > Protocols > TCP**.
2. From the TCP profile list, click the TCP profile you created for either the combined virtual server, or the profile you created for Outlook Anywhere or RPC Client Access.
3. In the **Nagle's Algorithm** row, click the **Custom** box on the right if necessary, and then clear the check from the Enabled box to disable Nagle's Algorithm.
4. Click the **Update** button. Repeat for RPC Client Access if necessary.

Appendix A: Configuring additional BIG-IP settings

This section contains information on configuring the BIG-IP system for objects or settings that are required, but not part of the template.

Configuring DNS and NTP settings

If you are configuring the iApp to use BIG-IP APM, you must configure DNS and NTP settings on the BIG-IP system before beginning the iApp.

Configuring the DNS settings

In this section, you configure the DNS settings on the BIG-IP system to point to a DNS server that can resolve your Active Directory server or servers. In many cases, this IP address will be that of your Active Directory servers themselves.

➡ ***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 self IP address in the same local subnet and VLAN as the DNS server, or a route to the DNS server if located on a different subnet. 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 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.

Creating an NTLM Machine Account

If you are using BIG-IP APM to provide secure authentication and configuring the BIG-IP system for Outlook Anywhere clients using NTLM authentication, you must have an NTLM Machine Account object configured before you can successfully complete the template. Use the following procedure to create the NTLM Machine Account.

To create the NTLM Machine Account

1. On the Main tab, expand **Access Policy**, and then click **Access Profiles**.
2. On the Menu bar, from the **NTLM** menu, click **Machine Account List**.
3. Click the **Create** button.
4. In the **Name** box, type a name for the BIG-IP Machine Account object.
5. In the **Machine Account Name** box, type the name of the computer account that will be created in the domain after clicking Join.
6. In the **Domain FQDN** box, type the fully qualified domain name of the domain that you want the machine account to join.
7. In the **Domain Controller FQDN** box, if the machine account should have access to one domain only, type the FQDN for the domain controller for that domain.
8. In the **Admin** User box, type the name of a user with administrative privileges.
9. In the **Password** box, type the associated password.
10. Click the **Join** button.

Appendix B: Using X-Forwarded-For to log the client IP address

When you configure BIG-IP LTM to use SNAT, the BIG-IP system replaces the source IP address of an incoming connection with its local self IP address (in the case of SNAT Automap), or an address you have configured in a SNAT pool. As a result, Microsoft IIS logs each connection with its assigned SNAT address, rather than the address of the client. The iApp produces an HTTP profile on the BIG-IP system which inserts an X-Forwarded-For header, so the original client IP address is sent as well; however, in default IIS configuration, this information is not logged.

Beginning with IIS 7, Microsoft provides an optional Advanced Logging Feature for IIS that allows you to define custom log definitions that can capture additional information such as the client IP address included in the X-Forwarded-For header.

Deploying the Custom Logging role service

The first task is to deploy the Custom Logging role service. If you do not deploy this role service, you may receive a "Feature not supported" error when trying to edit the log definition in the next section.

To deploy the Custom Logging role service

1. From your Windows Server 2008 or Windows Server 2008 R2 device, open Server Manager.
2. In the Navigation pane, expand **Roles**.
3. Right-click **Web Server**, and then click **Add Role Services**.
4. Under Health and Diagnostics, check the box for **Custom Logging**, and then click **Next**.
5. On the Confirmation page, click **Install**.
6. After the service has successfully installed, click the **Close** button.

Adding the X-Forwarded-For log field to IIS

Before beginning the following procedure, you must have installed IIS Advanced Logging. For installation instructions, see *http://www.iis.net/community/files/media/advancedlogging_readme.htm*

If you are using IIS version 6, F5 has a downloadable ISAPI filter that performs a similar function to the Advanced Logging Feature discussed here. For information on that solution, see the DevCentral post at *http://devcentral.f5.com/weblogs/Joe/archive/2009/08/19/x_forwarded_for_log_filter_for_windows_servers.aspx*

To add the X-Forwarded-For log field to IIS

1. From your Windows Server 2008 or Windows Server 2008 R2 device, open the Internet Information Services (IIS) Manager.
2. From the Connections navigation pane, click the appropriate server, web site, or directory on which you are configuring Advanced Logging. The Home page appears in the main panel.
3. From the Home page, under IIS, double-click **Advanced Logging**.
4. From the Actions pane on the right, click **Edit Logging Fields**.
5. From the Edit Logging Fields dialog box, click the **Add Field** button, and then complete the following:
    a. In the **Field ID** box, type **X-Forwarded-For**.
    b. From the **Category** list, select **Default**.
    c. From the **Source Type** list, select **Request Header**.
    d. In the **Source Name** box, type **X-Forwarded-For**.
    e. Click the **OK** button.

6. Click a Log Definition to select it. By default, there is only one: %COMPUTERNAME%-Server. The log definition you select must have a status of Enabled.
7. From the Actions pane on the right, click **Edit Log Definition**.
8. Click the **Select Fields** button, and then check the box for the X-Forwarded-For logging field.
9. Click the **OK** button.
10. From the Actions pane, click **Apply**.
11. Click **Return To Advanced Logging**.
12. In the Actions pane, click **Enable Advanced Logging**.

Now, when you look at the logs, the client IP address is included.

Appendix C: Manual configuration tables

This table contains the BIG-IP configuration objects in this deployment and any non-default settings for advanced users. See the BIG-IP APM tables for additional APM configuration. Give each BIG-IP object a unique name in the **Name** field. Because of the complexity of this configuration, we strongly recommend using the iApp to configure Microsoft Exchange Server. For the new MAPI over HTTP service in Exchange 2013 SP1, see *Optional: Configuring the BIG-IP system to support MAPI over HTTP in Exchange 2013 SP1 on page 49*.

Configuration table if using a single virtual server for Exchange HTTP-based services

BIG-IP object	Non-default settings/Notes		
Health Monitors (*Local Traffic-->Monitors*) **NOTE:** We recommend using this section to create second monitors for each service, using a second mailbox account.	***Outlook Web App (includes ECP)***		
	Type	**HTTP** (SSL offload), **HTTPS** (SSL Bridging). If using Exchange 2013, you must use HTTPS.	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	Send String [1]	If using the default **forms-based** authentication for OWA	
		`GET /owa/auth/logon.aspx?url=https://mail.example.com/owa/&reason=0 HTTP/1.1\r\nUser-Agent: Mozilla/4.0\r\nHost: mail.example.com\r\n`	
		If using **Basic** or **Basic and WIndows Integrated Authentication** for OWA	
		`GET /owa/ HTTP/1.1\r\nUser-Agent: Mozilla/4.0\r\nHost: mail.example.com\r\n`	
	Receive String [2]	Exchange Server 2010: `OutlookSession=` Exchange Server 2013: `200 OK`	
	User Name	Type the appropriate user name of a valid mailbox account.	
	Password	Type the associated password	
	ActiveSync (includes ECP)		
	Type	**HTTP** (SSL offload), **HTTPS** (SSL Bridging). If using Exchange 2013, you must use HTTPS.	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	Send String [1]	`OPTIONS /Microsoft-Server-ActiveSync/ HTTP/1.1\r\nHost: mail.example.com\r\n`	
	Receive String	`MS-ASProtocolCommands: Sync,SendMail,SmartForward,SmartReply,GetAttachment,GetHierarchy,CreateCollection,DeleteCollection,MoveCollection,FolderSync`	
	User Name	Type the appropriate user name of a valid mailbox account.	
	Password	Type the associated password	
	Outlook Anywhere (includes EWS)		
	Type	**External**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	External Program	See *Importing the monitor script files on page 73* for the EAV script	
	Variables	Name	Value
		USER	The account name associated with a mailbox.
		PASSWORD	The password for the account
		DOMAIN	The Windows domain for the account
		EMAIL	The email address for the user mailbox (such as j.smith@example.com)
	Autodiscover		
	Type	**External**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	External Program	See *Importing the monitor script files on page 73* for the EAV script	
	Variables	Name	Value
		USER	The account name associated with a mailbox.
		PASSWORD	The password for the account
		DOMAIN	The Windows domain for the account
		EMAIL	The email address for the user mailbox (such as j.smith@example.com)

[1] *For Advanced Monitors only. Simple monitors only require the Type, Interval, and Timeout. Replace red text with your FQDN. It must be on a single line.*

[2] *This response string is part of a Cookie header that OWA returns. Although you may elect to use another string on the page, it must be on the first 5,120 bytes of the received data (including headers and payload). Strings found near the end of the HTTP response from OWA will not be properly detected. See http://support.f5.com/kb/en-us/solutions/public/3000/400/sol3451.html for more details.*

[3] *You must only include a single \r\n at the end of the string.*

BIG-IP object	Non-default settings/Notes		
Pools (*Local Traffic-->Pools*) ***(repeat for each Client Access Server role)***	***Health monitor***	Add the appropriate health monitor for the Client Access role you created above	
	Slow Ramp Time	**300** (must select Advanced from the Configuration menu for this option to appear)	
	Load Balancing Method	**Least Connections (member)** recommended	
	Address	IP Address of Client Access server running Outlook Web App	
	Service Port	**80** (**443** if configuring SSL Bridging) Repeat Address and Port for all members **Important**: *Repeat this section to create a pool for each Client Access Server role*	
iRules (*Local Traffic-->iRules*)	***OWA Redirect iRule***	Create the Redirect iRule, using the Definition found in on *page 74*	
	Persistence iRule	Create the Persistence iRule, using the Definition found in on *page 74*	
Profiles (*Local Traffic-->Profiles*)	***HTTP*** (*Profiles-->Services*)	Parent Profile	**http**
		Redirect Rewrite	**All**
	HTTP Compression (*Profiles-->Services*)	Content List-->Include List *(Copy and paste each entry to the* ***Content Type*** *box and click* ***Include****. This is optional but recommended.)*	text/(css | html | javascript | json | plain | postscript | richtext | rtf | vnd.wap.wml | vnd.wap.wmlscript | wap | wml | x-component | x-vcalendar | x-vcard | xml)
			application/(css | css-stylesheet | doc | excel | javascript | json | lotus123 | mdb | mpp | ms-excel | ms-powerpoint | ms-word | msaccess | msexcel | mspowerpoint | msproject | msword | photoshop | postscript | powerpoint | ps | psd | quarkexpress | rtf | txt | visio | vnd.excel | vnd.ms-access | vnd.ms-excel | vnd.ms-powerpoint | vnd.ms-pps | vnd.ms-project | vnd.ms-word | vnd.ms-works | vnd.ms-works-db | vnd.msaccess | vnd.msexcel | vnd.mspowerpoint | vnd.msword | vnd.powerpoint | vnd.visio | vnd.wap.cmlscriptc | vnd.wap.wmlc | vnd.wap.xhtml+xml | vnd.word | vsd | winword | wks | word | x-excel | x-java-jnlp-file | x-javascript | x-json | x-lotus123 | x-mdb | x-ms-excel | x-ms-project | x-mscardfile | x-msclip | x-msexcel | x-mspowerpoint | x-msproject | x-msword | x-msworks-db | x-msworks-wps | x-photoshop | x-postscript | x-powerpoint | x-ps | x-quark-express | x-rtf | x-vermeer-rpc | x-visio | x-vsd | x-wks | x-word | x-xls | x-xml | xhtml+xml | xls | xml)
			image/(photoshop | psd | x-photoshop | x-vsd)
	Web Acceleration (*Profiles-->Services*)	Parent Profile	**optimized-caching**
	TCP WAN[1] (*Profiles-->Protocol*)	Parent Profile	**tcp-wan-optimized**
	TCP LAN[1] (*Profiles-->Protocol*)	Parent Profile	**tcp-lan-optimized**
	Client SSL (*Profiles-->SSL*)	Parent Profile	**clientssl**
		Certificate/Key	Select the Certificate and Key you imported
	Server SSL[2] (*Profiles-->SSL*)	Parent Profile	**serverssl**
	Persistence (*Profiles-->Persistence*)	Persistence Type	**Cookie** (Exchange 2010 only)
	OneConnect (*Profiles-->Other*)	Parent Profile	**oneconnect**
		Source Mask	**255.255.255.255**
	NTLM (*Profiles-->Other*)	Parent Profile	**ntlm**
Virtual Servers (*Local Traffic--> Virtual Servers*)	***Port 443***	Destination Address	IP address for the virtual server (Service Port **443**)
		Profiles	Add each of the profiles you created above from the appropriate list
		SNAT Pool[3]	**Auto Map**[3]
		iRules	Add the Append and Persistence iRules. If using APM, enable the built-in **_sys_APM_ExchangeSupport_OA_BasicAuth** Rule (or if using 11.3.x and NTLM, **_sys_APM_ExchangeSupport_OA_NTLMAuth**). **Important**: *The Append iRule must be listed first*
		Default Pool	Do ***not*** select a default pool for this virtual
	Port 80 (optional, for redirect purposes only)	Destination Address	IP address for the virtual server (Service Port **80**)
		Profiles	HTTP profile only
		iRule	**_sys_https_redirect**

[1] *The optimized TCP profiles are optional. If not creating the optimized profiles, create a TCP profile with the base TCP parent*

[2] *Server SSL profile is only necessary if configuring SSL Bridging.*

[3] *If you expect more than 6,000 concurrent users per Client Access Server, create a SNAT Pool instead of using Auto Map. You must also create the iRule in Creating an iRule when using a SNAT pool on page 79. See the BIG-IP documentation for creating SNAT Pools. This field is called "Secure Address Translation in version" 11.3 and later.*

Configuration table if using separate virtual servers for Exchange HTTP-based services

Outlook Web App configuration table - includes the Exchange Control Panel (ECP)

BIG-IP object	Non-default settings/Notes		
Health Monitor (*Local Traffic-->Monitors*)	***Type***	**HTTP** (SSL offload), **HTTPS** (SSL Bridging). If using Exchange 2013, you must use HTTPS.	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	Send String [1]	If using the default **forms-based** authentication for OWA	
		`GET /owa/auth/logon.aspx?url=https://mail.example.com/owa/&reason=0 HTTP/1.1\r\nUser-Agent: Mozilla/4.0\r\nHost: mail.example.com\r\n`	
		If using **Basic** or **Basic and WIndows Integrated Authentication** for OWA	
		`GET /owa/ HTTP/1.1\r\nUser-Agent: Mozilla/4.0\r\nHost:  mail.example.com\r\n`	
	Receive String [2]	Exchange Server 2010: **`OutlookSession=`** Exchange Server 2013: **`200 OK`**	
	User Name	Type the appropriate user name of a valid mailbox account.	
	Password	Type the associated password	
Pool (*Local Traffic-->Pools*)	***Health monitor***	Add the health monitor you created above	
	Slow Ramp Time	**300** (must select Advanced from the Configuration menu for this option to appear)	
	Load Balancing Method	**Least Connections (member)** recommended	
	Address	IP Address of Client Access server running Outlook Web App	
	Service Port	**80** (**443** if configuring SSL Bridging) Repeat Address and Port for all members	
iRules (*Local Traffic-->iRules*)	***OWA Redirect iRule***	Create the Redirect iRule, using the Definition found on *page 74*	
	Persistence iRule	Create the Persistence iRule, using the Definition found on *page 74*	
Profiles (*Local Traffic-->Profiles*)	***HTTP*** (*Profiles-->Services*)	Parent Profile	**http**
		Redirect Rewrite	**All**
	HTTP Compression (*Profiles-->Services*)	Content List-->Include List *(Copy and paste each entry to the **Content Type** box and click **Include**. This is optional but recommended.)*	text/(css | html | javascript | json | plain | postscript | richtext | rtf | vnd.wap.wml | vnd.wap.wmlscript | wap | wml | x-component | x-vcalendar | x-vcard | xml) application/(css | css-stylesheet | doc | excel | javascript | json | lotus123 | mdb | mpp | ms-excel | ms-powerpoint | ms-word | msaccess | msexcel | mspowerpoint | msproject | msword | photoshop | postscript | powerpoint | ps | psd | quarkexpress | rtf | txt | visio | vnd.excel | vnd.ms-access | vnd.ms-excel | vnd.ms-powerpoint | vnd.ms-pps | vnd.ms-project | vnd.ms-word | vnd.ms-works | vnd.ms-works-db | vnd.msaccess | vnd.msexcel | vnd.mspowerpoint | vnd.msword | vnd.powerpoint | vnd.visio | vnd.wap.cmlscriptc | vnd.wap.wmlc | vnd.wap.xhtml+xml | vnd.word | vsd | winword | wks | word | x-excel | x-java-jnlp-file | x-javascript | x-json | x-lotus123 | x-mdb | x-ms-excel | x-ms-project | x-mscardfile | x-msclip | x-msexcel | x-mspowerpoint | x-msproject | x-msword | x-msworks-db | x-msworks-wps | x-photoshop | x-postscript | x-powerpoint | x-ps | x-quark-express | x-rtf | x-vermeer-rpc | x-visio | x-vsd | x-wks | x-word | x-xls | x-xml | xhtml+xml | xls | xml) image/(photoshop | psd | x-photoshop | x-vsd)
	Web Acceleration (*Profiles-->Services*)	Parent Profile	**optimized-caching**
		URI List	Add the following to the **Exclude** list: **/owa/ev.owa** and **uglobal.js**
	TCP WAN[3] (*Profiles-->Protocol*)	Parent Profile	**tcp-wan-optimized**
	TCP LAN[3] (*Profiles-->Protocol*)	Parent Profile	**tcp-lan-optimized**
	Client SSL (*Profiles-->SSL*)	Parent Profile	**clientssl**
		Certificate/Key	Select the Certificate and Key you imported
	Server SSL[4] (*Profiles-->SSL*)	Parent Profile	**serverssl**

[1] For Advanced Monitors only. Simple monitors only require the Type, Interval, and Timeout. Replace red text with your FQDN. It must be on a single line with a slingle \r\n.

[2] This response string is part of a Cookie header that OWA returns. Although you may elect to use another string on the page, it must be on the first 5,120 bytes of the received data (including headers and payload). Strings found near the end of the HTTP response from OWA will not be properly detected. See http://support.f5.com/kb/en-us/solutions/public/3000/400/sol3451.html for more details.

[3] The optimized TCP profiles are optional. If not creating the optimized profiles, create a TCP profile with the base TCP parent

[4] Server SSL profile is only necessary if configuring SSL Bridging

BIG-IP object	Non-default settings/Notes		
Profiles (*Local Traffic-->Profiles*)	***Persistence*** (*Profiles-->Persistence*)	Persistence Type	**Cookie** (Exchange 2010 only)
	OneConnect (*Profiles-->Other*)	Parent Profile	**oneconnect**
		Source Mask	**255.255.255.255**
	NTLM (*Profiles-->Other*)	Parent Profile	**ntlm**
Virtual Servers (*Local Traffic--> Virtual Servers*)	***Port 443***	Destination Address	IP address for the virtual server (Service Port **443**)
		Profiles	Add each of the profiles you created above from the appropriate list
		SNAT Pool[3]	**Auto Map**[3]
		iRules	Append, Persistence (the Append iRule must be listed first)
		Default Pool	Select the pool you created for Outlook Web App above
	Port 80 (optional, for redirect purposes only)	Destination Address	IP address for the virtual server (Service Port **80**)
		Profiles	HTTP profile only
		iRule	_sys_https_redirect

[3] *If you expect more than 6,000 concurrent users per Client Access Server, create a SNAT Pool instead of using Auto Map. You must also create the iRule in Creating an iRule when using a SNAT pool on page 79. See the BIG-IP documentation for creating SNAT Pools. This field is called "Secure Address Translation in version" 11.3 and later.*

Outlook Anywhere configuration table (for separate virtual servers) - includes EWS (Exchange Web Services) and OAB (Offline Address Book)

BIG-IP object	Non-default settings/Notes		
Health Monitors (*Local Traffic--> Monitors*)	***Type***	**External**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	External Program [1]	See *Importing the monitor script files on page 73* for the EAV script	
	Variables [1]	**Name**	**Value**
		USER	The account name associated with a mailbox.
		PASSWORD	The password for the account
		DOMAIN	The Windows domain for the account
		EMAIL	The email address for the user mailbox (such as j.smith@example.com)
Pool (*Local Traffic-->Pools*)	***Health monitor***	Add health monitor above	
	Slow Ramp Time	**300**	
	Load Balancing Method	**Least Connections (member)** recommended	
	Address	IP Address of Client Access server running Outlook Anywhere	
	Service Port	**80** (**443** if configuring SSL Bridging) Repeat Address and Port for all members	
iRules (*Local Traffic-->iRules*)	***OA Persist***	If using Exchange 2010, create the Persistence iRule for Outlook Anywhere, using the Definition found on *page 78*. You must create this iRule before creating the Persistence profile.	
Profiles (*Local Traffic-->Profiles*)	***HTTP***	Parent Profile	**http**
		Redirect Rewrite	**Matching**
	TCP WAN[2]	Parent Profile	**tcp-wan-optimized**
		Nagle's Algorithm	**Disabled** (clear the Enabled check box)
	TCP LAN[2]	Parent Profile	**tcp-lan-optimized**
	Client SSL	Parent Profile	**clientssl**
		Certificate/Key	Select the Certificate and Key you imported
	Server SSL[3]	Parent Profile	**serverssl**
	OneConnect	Parent Profile	**oneconnect**
		Source Mask	**255.255.255.255**
	NTLM	Parent Profile	**ntlm**
	Persistence (Exchange 2010 only)	Persistence Type	**Universal**
		iRule	Select the OA Persist iRule you created above

[1] *For Advanced Monitors only. Simple monitors only require the Type, Interval, and Timeout.*
[2] *The optimized TCP profiles are optional. If not creating the optimized profiles, create a TCP profile with the base TCP parent*
[3] *Server SSL profile is only necessary if configuring SSL Bridging.*

BIG-IP object	Non-default settings/Notes		
Virtual Servers *(Local Traffic--> Virtual Servers)*	***Port 443***	Destination Address	IP address for the virtual server (Service Port **443**)
		Profiles	Add each of the profiles you created above from the appropriate list
		SNAT Pool	**Auto Map**[4]
		iRules	If using APM, enable the built-in **_sys_APM_ExchangeSupport_OA_BasicAuth** rule (or if using 11.3.x and NTLM, **_sys_APM_ExchangeSupport_OA_NTLMAuth**).
		Default Pool	Select the pool you created for Outlook Anywhere above
	Port 80 (optional, for redirect purposes only)	Destination Address	IP address for the virtual server (Service Port **80**)
		Profiles	HTTP profile only
		iRule	**_sys_https_redirect**

Active Sync manual configuration table (for separate virtual server configuration)

BIG-IP object	Non-default settings/Notes		
Health Monitors *(Local Traffic--> Monitors)*	***Type***	**HTTP** (SSL offload), **HTTPS** (SSL Bridging). If using Exchange 2013, you must use HTTPS.	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	Send String [1]	`OPTIONS /Microsoft-Server-ActiveSync/ HTTP/1.1\r\nHost: mail.example.com\r\n`	
	Receive String	`MS-ASProtocolCommands: Sync,SendMail,SmartForward,SmartReply,GetAttachment,GetHierarchy,CreateCollection,DeleteCollection,MoveCollection,FolderSync`	
	User Name	Type the appropriate user name of a valid mailbox account.	
	Password	Type the associated password	
Pool *(Local Traffic--> Pools)*	***Health monitor***	Add health monitor above	
	Slow Ramp Time	**300**	
	Load Balancing Method	**Least Connections (member)** recommended	
	Address	IP Address of Client Access server running ActiveSync	
	Service Port	**80** (**443** if configuring SSL Bridging) Repeat Address and Port for all members	
Profiles *(Local Traffic-->Profiles)*	***HTTP***	Parent Profile	**http**
	TCP WAN[2]	Parent Profile	**tcp-wan-optimized**
	TCP LAN[2]	Parent Profile	**tcp-lan-optimized**
	Client SSL	Parent Profile	**clientssl**
		Certificate/Key	Select the Certificate and Key you imported
	Server SSL[3]	Parent Profile	**serverssl**
	Persistence	Persistence Type	**Source Address Affinity** (Exchange 2010 only)
iRules *(Local Traffic-->iRules)*	**ActiveSync Persist**	If you are using Exchange 2010, create the Persistence iRule for ActiveSync, using the Definition found *on page 74. This iRule is optional.*	
Virtual Servers *(Local Traffic--> Virtual Servers)*	***Port 443***	Destination Address	IP address for the virtual server (Service Port **443**)
		Profiles	Add each of the profiles you created above from the appropriate list
		SNAT Pool[4]	**Auto Map**[4]
		iRules	Enable the ActiveSync Persist iRule you created. If using APM, enable the built-in **_sys_APM_ExchangeSupport_OA_BasicAuth** rule (or if using 11.3.x and NTLM, **_sys_APM_ExchangeSupport_OA_NTLMAuth**).
		Default Pool	Select the pool you created for ActiveSync above
	Port 80 (optional, for redirect purposes only)	Destination Address	IP address for the virtual server (Service Port **80**)
		Profiles	HTTP profile only
		iRule	_sys_https_redirect

[1] *For Advanced Monitors only. Simple monitors only require the Type, Interval, and Timeout. Replace red text with your FQDN. It must be on a single line with a slingle \r\n.*

[2] *The optimized TCP profiles are optional. If not creating the optimized profiles, create a TCP profile with the base TCP parent*

[3] *Server SSL profile is only necessary if configuring SSL Bridging.*

[4] *If you expect more than 6,000 concurrent users per Client Access Server, create a SNAT Pool instead of using Auto Map. You must also create the iRule in Creating an iRule when using a SNAT pool on page 79. See the BIG-IP documentation for creating SNAT Pools. This field is called "Secure Address Translation in version" 11.3 and later.*

Autodiscover manual configuration table (for separate virtual server configuration)

BIG-IP object	Non-default settings/Notes		
Health Monitors (*Local Traffic--> Monitors*)	***Type***	**External**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	External Program[1]	See *Importing the monitor script files on page 73* for the EAV script	
	Variables[1]	Name	Value
		USER	The account name associated with a mailbox.
		PASSWORD	The password for the account
		DOMAIN	The Windows domain for the account
		EMAIL	The email address for the user mailbox (such as j.smith@example.com)
Pool (*Local Traffic--> Pools*)	***Health monitor***	Add health monitor above	
	Slow Ramp Time	**300**	
	Load Balancing Method	**Least Connections (member)** recommended	
	Address	IP Address of Client Access server running Autodiscover	
	Service Port	**80** (**443** if configuring SSL Bridging)	Repeat Address and Port for all members
Profiles (*Local Traffic-->Profiles*)	***HTTP***	Parent Profile	**http**
	TCP WAN[2]	Parent Profile	**tcp-wan-optimized**
	TCP LAN[2]	Parent Profile	**tcp-lan-optimized**
	Client SSL	Parent Profile	**clientssl**
		Certificate/Key	Select the Certificate and Key you imported
	Server SSL[3]	Parent Profile	**serverssl**
Virtual Servers (*Local Traffic--> Virtual Servers*)	***Port 443***	Destination Address	IP address for the virtual server (Service Port **443**)
		Profiles	Add each of the profiles you created above from the appropriate list
		SNAT Pool[4]	**Auto Map**[4]
		iRules	If using APM, enable the built-in **_sys_APM_ExchangeSupport_OA_BasicAuth** rule (or if using 11.3.x and NTLM, **_sys_APM_ExchangeSupport_OA_NTLMAuth**)
		Default Pool	Select the pool you created for Autodiscover above
	Port 80 (optional, for redirect purposes only)	Destination Address	IP address for the virtual server (Service Port **80**)
		Profiles	HTTP profile only
		iRule	**_sys_https_redirect**

[1] *For Advanced Monitors only. Simple monitors only require the Type, Interval, and Timeout.*

[2] *The optimized TCP profiles are optional. If not creating the optimized profiles, create a TCP profile with the base TCP parent*

[3] *Server SSL profile is only necessary if configuring SSL Bridging.*

[4] *If you expect more than 6,000 concurrent users per Client Access Server, create a SNAT Pool instead of using Auto Map. You must also create the iRule in Creating an iRule when using a SNAT pool on page 79. See the BIG-IP documentation for creating SNAT Pools. This field is called "Secure Address Translation in version" 11.3 and later.*

Configuration tables for RPC Client Access, POP3, and IMAP4

Use the following tables for RPC Client Access, POP3, and IMAP4, no matter which HTTP-based configuration you chose in the tables on the previous pages. For RPC Client Access, you must decide whether you will use static ports or the default dynamic port range for RPC Client Access traffic. Use the table appropriate for your configuration.

If deploying RPC Client Access, you must also deploy Outlook Anywhere, to properly handle EWS (Exchange Web Services) traffic.

Important

Exchange Server 2013 Client Access Servers do not offer MAPI as a connection option. If you are deploying Exchange Server 2013, do NOT configure the BIG-IP system for RPC Client Access.

RPC Client Access[1] dynamic port range manual configuration table

BIG-IP Object	Non-default settings/Notes		
Health Monitor (*Local Traffic--> Monitors*)	***Type***	**TCP**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	Alias Service Port	**135**	
Pool (*Local Traffic--> Pools*)	***Health monitor***	Add health monitor above.	
	Action on Service Down[2]	**Reject**	
	Slow Ramp Time[2]	**300**	
	Load Balancing Method	**Least Connections (member)** recommended	
	Address	IP Address of Client Access server running RPC Client Access	
	Service Port	*** All Services** (repeat Address and Port for all members)	
Profiles (*Local Traffic-->Profiles*)	***Persistence*** **(Exchange 2010 only)**	Parent Profile	**Source Address Affinity**
		Timeout	**7200**
		Match Across Services	Click a check in the **Match Across Services** box
		Match Across Virtual Servers	Click a check in the **Match Across Virtual Servers** box
	TCP WAN[3]	Parent Profile	**tcp-wan-optimized**
		Idle Timeout	**7200**
		Nagle's Algorithm	**Disabled** (clear the Enabled check box)
	TCP LAN[3]	Parent Profile	**tcp-lan-optimized**
		Idle Timeout	**7200**
Virtual Servers (*Local Traffic--> Virtual Servers*)	***Port 135***	***Destination Address***	IP address for the virtual server
		Service Port	**135**
		Profiles	Add each of the profiles you created above from the appropriate list
		SNAT Pool	**Auto Map**[4]
		Default Pool	Select the pool you created for RPC Client Access above
	All Ports	***Destination Address***	Same IP address used above (make sure you use a unique name)
		Service Port	***All Ports**
		Profiles	Add each of the profiles you created above from the appropriate list
		SNAT Pool	**Auto Map**[4]
		Default Pool	Select the pool you created for RPC Client Access above
Additional steps	After completing this virtual server, you must modify either the Single virtual server you created for the HTTP-based CAS services, or the separate virtual server you created for Outlook Anywhere to use the persistence profile you created in this section as a **Fallback** persistence profile. From the **Fallback Persistence Profile** list of the Single virtual, or the Outlook Anywhere separate virtual, select the profile you created in this section, and then click the **Update** button.		

[1] *In Exchange Server 2010, you must configure a Client Access Array for your site to use the FQDN you have set to resolve to the IP address of the BIG-IP LTM virtual server, and you must update the existing mailbox database attributes to use that array.*

[2] *You must select Advanced from the Configuration list for this option to appear*

[3] *The optimized TCP profiles are optional. If not creating the optimized profiles, create a TCP profile with the base TCP parent, but you must have an Idle Timeout of 7200.*

[4] *If you expect more than 6,000 concurrent users per Client Access Server, create a SNAT Pool instead of using Auto Map. You must also create the iRule in Creating an iRule when using a SNAT pool on page 79. See the BIG-IP documentation for creating SNAT Pools.*

RPC Client Access[1] static ports configuration table

BIG-IP Object	Non-default settings/Notes		
Health Monitors (*Local Traffic--> Monitors*)	***RPC Monitor***		
	Type	**TCP**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	MAPI Monitor		
	Type	**TCP**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	Alias Service Port[2]	**59532** Modify this port to match the RPC Client Access static port for MAPI on your Client Access Servers.	
	Address Book Monitor		
	Type	**TCP**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	Alias Service Port[2]	**59533** Modify this port to match the RPC Client Access static port for Address Book on your CAS Servers.	
Pools (*Local Traffic--> Pools*)	***Health monitor***	Add all three health monitors above.	
	Availability Requirement	**All**	
	Action on Service Down[2]	**Reject**	
	Slow Ramp Time[2]	**300**	
	Load Balancing Method	**Least Connections (member)** recommended	
	Address	IP Address of Client Access server running RPC Client Access	
	Service Port	**135** (repeat Address and Port for all members)	
	Create two additional pools, one for **MAPI** and one for **Address Book Service**, using the settings above; only the **Name**, **Health Monitor** and **Service Port** are different. Apply the associated Health Monitor you created. The Service Port depends on your configuration.		
Profiles (*Local Traffic-->Profiles*)	***Persistence*** **(Exchange 2010 only)**	Parent Profile	**Source Address Affinity**
		Timeout	**7200**
		Match Across Services	Click a check in the **Match Across Services** box
		Match Across Virtual Servers	Click a check in the **Match Across Virtual Servers** box
	TCP WAN[3]	Parent Profile	**tcp-wan-optimized**
		Idle Timeout	**7200**
	TCP LAN[3]	Parent Profile	**tcp-lan-optimized**
		Idle Timeout	**7200**
Virtual Servers (*Local Traffic--> Virtual Servers*)	***Destination Address***	IP address for the virtual server	
	Service Port	**135**	
	Profiles	Add each of the profiles you created above from the appropriate list	
	SNAT Pool	**Auto Map**[4]	
	Default Pool	Select the pool with members using Service Port 135 you created for RPC Client Access above	
	Create two additional virtual servers, one for **MAPI** and one for **Address Book Service**, using the settings above; only the **Name**, **Service Port** and **Pool** are different: The Service Port depends on your configuration. Use the associated pool you created.		
Additional steps	After completing this virtual server, you must modify either the Single virtual server you created for the HTTP-based CAS services, or the separate virtual server you created for Outlook Anywhere to use the persistence profile you created in this section as a **Fallback** persistence profile. From the **Fallback Persistence Profile** list of the Single virtual, or the Outlook Anywhere separate virtual, select the profile you created in this section, and then click the **Update** button.		

[1] *In Exchange Server 2010, you must configure a Client Access Array for your site to use the FQDN you have set to resolve to the IP address of the BIG-IP LTM virtual server, and you must update the existing mailbox database attributes to use that array.*

[2] *You must select Advanced from the Configuration list for this option to appear*

[3] *The optimized TCP profiles are optional. If not creating the optimized profiles, create a TCP profile with the base TCP parent*

[4] *If you expect more than 6,000 concurrent users per Client Access Server, create a SNAT Pool instead of using Auto Map. You must also create the iRule in Creating an iRule when using a SNAT pool on page 79. See the BIG-IP documentation for creating SNAT Pools.*

POP3 manual configuration table

BIG-IP Object	Non-default settings/Notes		
Health Monitors (*Local Traffic--> Monitors*)	***Type***	**POP3**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	User Name	If offloading SSL, type a user name of a POP3 account **(Exchange 2010 only)**	
	Password	If offloading SSL, type the associated password **(Exchange 2010 only)**	
Pool (*Local Traffic--> Pools*)	***Health monitor***	Add health monitor above	
	Slow Ramp Time[1]	**300**	
	Load Balancing Method	**Least Connections (member)** recommended	
	Address	IP Address of Client Access server running POP3	
	Service Port	**110** (repeat Address and Port for all members)	
Profiles (*Local Traffic-->Profiles*)	***Client SSL***	Parent Profile	**clientssl**
		Certificate/Key	Select the Certificate and Key you imported
	Server SSL[3]	Parent Profile	**serverssl**
	TCP WAN[2]	Parent Profile	**tcp-wan-optimized**
	TCP LAN[2]	Parent Profile	**tcp-lan-optimized**
Virtual Server (*Local Traffic--> Virtual Servers*)	***Destination Address***	IP address for the virtual server	
	Service Port	**995**	
	Profiles	Add each of the profiles you created above from the appropriate list	
	SNAT Pool	**Auto Map**[4]	
	Default Pool	Select the pool you created for POP3 above	

IMAP4 manual configuration table

BIG-IP Object	Non-default settings/Notes		
Health Monitors (*Local Traffic--> Monitors*)	***Type***	**IMAP4**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
	User Name	If offloading SSL, type a user name of a IMAP4 account **(Exchange 2010 only)**	
	Password	If offloading SSL, type the associated password **(Exchange 2010 only)**	
Pool (*Local Traffic--> Pools*)	***Health monitor***	Add health monitor above	
	Slow Ramp Time[1]	**300**	
	Load Balancing Method	**Least Connections (member)** recommended	
	Address	IP Address of Client Access server running IMAP4	
	Service Port	**143** (repeat Address and Port for all members)	
Profiles (*Local Traffic-->Profiles*)	***Client SSL***	Parent Profile	**clientssl**
		Certificate/Key	Select the Certificate and Key you imported
	Server SSL[3]	Parent Profile	**serverssl**
	TCP WAN[2]	Parent Profile	**tcp-wan-optimized**
	TCP LAN[2]	Parent Profile	**tcp-lan-optimized**
Virtual Server (*Local Traffic--> Virtual Servers*)	Destination Address	IP address for the virtual server	
	Service Port	**993**	
	Profiles	Add select each of the profiles you created above from the appropriate list	
	SNAT Pool	**Auto Map**[4]	
	Default Pool	Select the pool you created for IMAP4 above	

[1] *You must select Advanced from the Configuration list for this option to appear*

[2] *The optimized TCP profiles are optional. If not creating the optimized profiles, create a TCP profile with the base TCP parent*

[3] *Server SSL profile is only necessary if configuring SSL Bridging.*

[4] *If you expect more than 6,000 concurrent users per Client Access Server, create a SNAT Pool instead of using Auto Map. You must also create the iRule in Creating an iRule when using a SNAT pool on page 79. See the BIG-IP documentation for creating SNAT Pools.*

iRules and monitor scripts

This section contains the EAV script and iRule code referred to from the manual configuration table. The line numbers are provided for reference. Create a new iRule and copy the code, omitting the line numbers. You may need to modify pool names according to your configuration.

Importing the monitor script files

Before you can create the advanced monitors for ActiveSync and Autodiscover, you must download and import the applicable monitor files onto the BIG-IP system.

➡ ***Note***

If you are using a redundant BIG-IP system, you need to make sure any modifications to the script EAVs are manually copied between BIG-IP LTMs, and given the required permissions when configuration is synchronized.

If you are going to use two instances of the health check to monitor two mail boxes, you must use a unique user name and password for each monitor.

To download and install the script

1. Download the appropriate script:
   - **Outlook Anywhere (including EWS)**
     - If you configured SSL Offload (2010): *www.f5.com/solution-center/deployment-guides/files/outlookanywhere-eav-offload.zip*
     - If you configured SSL Bridging *www.f5.com/solution-center/deployment-guides/files/outlookanywhere-eav-ssl-bridging.zip*
   - **Autodiscover**
     - If you configured SSL Offload (2010): *www.f5.com/solution-center/deployment-guides/files/autodiscover-eav-offload.zip*
     - If you configured SSL Bridging *www.f5.com/solution-center/deployment-guides/files/autodiscover-eav-ssl-bridging.zip*
2. Extract the appropriate file(s) to a location accessible by the BIG-IP system.
3. Start a console session to the BIG-IP system.
4. Type the following command to change the permissions of the file using the following command syntax:

   ```
   chmod 755 /config/monitors/<file name>
   ```

   For example

   ```
   chmod 755 /config/monitors/autodiscover-monitor.sh
   ```

5. Exit the Console session.
6. From the Main tab of the BIG-IP Configuration utility, expand **System**, and then click **File Management**.
7. On the Menu bar, click **External Monitor Program File List**.
8. Click the **Import** button.
9. In the **File Name** row, click **Browse**, and then locate the appropriate file.
10. In the **Name** box, type a name for the file related to the script you are using.
11. Click the **Import** button.

Now when you create the advanced monitors, you can select the name of the file you imported from the **External Program** list.

iRules

This section contains the iRules referenced from the manual configuration tables. To create an iRule, from the Main tab, expand **Local Traffic**, and then click **iRules**. Click **Create**, give the iRule a unique name, and then copy and paste the iRule code into the **Definition** section (omitting the line numbers). If specified, you must replace any parts of the code in red text with the names of the appropriate BIG-IP object.

OWA Redirect iRule (formerly referred to as the Append iRule)

```
when HTTP_REQUEST {
   if { ([HTTP::uri] == "/") } {
      HTTP::redirect https://[HTTP::host]/owa/
    }
}
```

This iRule should appear at the top of the iRule list in the virtual server and come before any persistence iRules you might use.

ActiveSync persist iRule

If you are deploying ActiveSync on a BIG-IP behind a NAT or other address aggregating device, use this iRule to ensure even distribution of client connections.

If you are using Exchange 2013, do **NOT** create this iRule.

```
when HTTP_REQUEST {
    if { [HTTP::header exists "Authorization"] } {
        set oa_key [sha256 [HTTP::header "Authorization"]]
        persist uie $as_key 7200
    } else {
        persist source_addr
    }
}
```

Persistence iRule if using a single virtual server for all HTTP-based services

For this configuration, you must create an additional iRule which changes persistence methods based on the service being accessed. When using a single virtual server for OWA, Outlook Anywhere, ActiveSync, and Autodiscover, you need to use an iRule to separate the traffic that supports cookie persistence (Outlook Web App and ActiveSync) from that which does not (Outlook Anywhere) and assign appropriate persistence methods. This example creates a persistence iRule that uses correct persistence methods for each access type. This iRule assumes the use of separate pools for the services as configured by the template.

⚠ ***Critical***

You must change the pool names in the following iRules (shown in red) to match the names of the pools in your configuration.

Because of the length of this iRule, you can use the following text file to make the copy paste operation easier: *http://www.f5.com/solution-center/deployment-guides/files/exchange-persist.zip*.

However, ***if you download the zip file, you must still modify the iRule to match the name of the pools in your configuration***.

If you are using **Exchange 2013**, *you must use the iRule in Exchange 2013 only: Persistence iRule if using a single virtual server for all HTTP-based services on page 77*

Exchange 2010 only: Persistence iRule if using a single virtual server for all HTTP-based services

```
## iRule to select pool and persistence method when all Exchange Client
## Access HTTP-based services are accessed through the same BIG-IP virtual
## server. This iRule will use an HTTP header inserted by a BIG-IP Edge
## Gateway for persistence (if that header is present); otherwise it will
## set persistence according to traditional methods.

## CHANGE ALL POOL NAMES TO MATCH THOSE IN YOUR ENVIRONMENT.

when HTTP_REQUEST {

    ## Offline Address Book and Autodiscover do not require persistence.

    switch -glob -- [string tolower [HTTP::path]] {

        "/microsoft-server-activesync*" {
            ## ActiveSync.
            if { [HTTP::header exists "APM_session"] } {
                persist uie [HTTP::header "APM_session"] 7200
            } elseif { [HTTP::header exists "Authorization"] } {
                set as_key [sha256 [HTTP::header "Authorization"]]
                persist uie $as_key 7200
            } else {
                persist source_addr
            }
            pool as_pool_name
            COMPRESS::disable
            CACHE::disable
            return
        }

        "/owa*" {
            ## Outlook Web Access
            if { [HTTP::header exists "APM_session"] } {
                persist uie [HTTP::header "APM_session"] 7200
            } else {
                persist cookie insert timeout 0
            }
            pool owa_pool_name
            return
        }

        "/ecp*" {
            ## Exchange Control Panel.
            if { [HTTP::header exists "APM_session"] } {
                persist uie [HTTP::header "APM_session"] 7200
            } else {
                persist cookie insert timeout 0
            }
            pool owa_pool_name
            return
        }

        "/ews*" {
            ## Exchange Web Services.
            if { [HTTP::header exists "APM_session"] } {
                persist uie [HTTP::header "APM_session"] 7200
            } else {
                persist source_addr
            }
            pool oa_pool_name
            COMPRESS::disable
            CACHE::disable
            return
        }
```

➲ **Critical** *This iRule continues on the following page.*

➲ **Critical** *This iRule is a continuation of the iRule from the previous page.*

```
        "/oab*" {
            ## Offline Address Book.
            pool oa_pool_name
            return
        }

        "/rpc/rpcproxy.dll*" {
        ## Outlook Anywhere.
            if { [HTTP::header exists "APM_session"] } {
                persist uie [HTTP::header "APM_session"] 7200
                } elseif { [string tolower [HTTP::header "Authorization"]] starts_with "basic" } {
                set oa_key [sha256 [HTTP::header "Authorization"]]
                persist uie $oa_key 7200
                } else {
                persist source_addr
                }

            pool oa_pool_name
            COMPRESS::disable
            CACHE::disable
            return
        }

        "/autodiscover*" {
            ## Autodiscover.
            pool ad_pool_name
            return
        }

        default {
            ## This final section takes all traffic that has not otherwise
            ## been accounted for and sends it to the pool for Outlook Web App
            if { [HTTP::header exists "APM_session"] }  {
                persist uie [HTTP::header "APM_session"] 7200
            } else {
                persist source_addr
            }
            pool owa_pool_name
        }
   }
}

when HTTP_RESPONSE {
    if { [string tolower [HTTP::header values "WWW-Authenticate"]] contains "negotiate"} {
        ONECONNECT::reuse disable
        ONECONNECT::detach disable
        ## this command disables NTLM conn pool for connections where OneConnect has been disabled
        NTLM::disable
    }
    ## this command rechunks encoded responses
    if {[HTTP::header exists "Transfer-Encoding"]} {
        HTTP::payload rechunk
    }
}
```

Exchange 2013 only: Persistence iRule if using a single virtual server for all HTTP-based services

```
## iRule to select pool when all Exchange Client Access HTTP-based services are
## accessed through the same BIG-IP virtual server. This iRule is for users who
## do not require any persistence.
## CHANGE ALL POOL NAMES TO MATCH THOSE IN YOUR ENVIRONMENT.

when HTTP_REQUEST {
    switch -glob -- [string tolower [HTTP::path]] {
        "/microsoft-server-activesync*" {
            ## ActiveSync.
            pool as_pool_name
            COMPRESS::disable
            CACHE::disable
            return
        }
        "/owa*" {
            ## Outlook Web Access
            pool owa_pool_name
            return
        }
        "/ecp*" {
            ## Exchange Control Panel.
            pool owa_pool_name
            return
        }
        "/ews*" {
            ## Exchange Web Services.
            pool oa_pool_name
            COMPRESS::disable
            CACHE::disable
            return
        }
        "/oab*" {
            ## Offline Address Book.
            pool oa_pool_name
            return
        }
        "/rpc/rpcproxy.dll*" {
            ## Outlook Anywhere.
            pool oa_pool_name
            COMPRESS::disable
            CACHE::disable
            return
        }
        "/autodiscover*" {
            ## Autodiscover.
            pool ad_pool_name
            return
        }
default {
            ## This final section takes all traffic that has not otherwise
            ## been accounted for and sends it to the pool for Outlook Web App
            pool owa_pool_name
        }
    }
}
when HTTP_RESPONSE {
    if { [string tolower [HTTP::header values "WWW-Authenticate"]] contains "negotiate"} {
        ONECONNECT::reuse disable
        ONECONNECT::detach disable
        ## this command disables NTLM conn pool for connections where OneConnect
        ## has been disabled
        NTLM::disable
    }
    ## this command rechunks encoded responses
    if {[HTTP::header exists "Transfer-Encoding"]} {
        HTTP::payload rechunk
    }
}
```

Outlook Anywhere persistence iRule if using separate pools AND virtual servers

This iRule is necessary because the Microsoft Outlook client does not support HTTP cookies, so the BIG-IP LTM persists based on other HTTP header information. In some cases you may be able to use other persistence methods such as Source Address Affinity, which bases persistence on the IP address of the client. However, because proxy servers or NAT (network address translation) devices may aggregate clients behind a single IP address, such methods are not always effective. To ensure reliable persistence, we recommend using the following iRule and associated persistence profile. Use the appropriate iRule depending on your version of Exchange.

Outlook Anywhere persistence iRule for Exchange 2010 only

```
when HTTP_REQUEST {
   switch -glob -- [string tolower [HTTP::path]] {
      "/ews*" {
      ## Exchange Web Services.
         if { [HTTP::header exists "APM_session"] } {
            persist uie [HTTP::header "APM_session"] 7200
            } else {
            persist source_addr
            }
      }
      "/rpc/rpcproxy.dll*" {
      ## Outlook Anywhere.
         if { [HTTP::header exists "APM_session"] } {
            persist uie [HTTP::header "APM_session"] 7200
            } elseif { [string tolower [HTTP::header "Authorization"]] starts_with "basic" } {
            set oa_key [sha256 [HTTP::header "Authorization"]]
            persist uie $as_key 7200
            } else {
            persist source_addr
            }
      }
   }
}
when HTTP_RESPONSE {
    if { [string tolower [HTTP::header values "WWW-Authenticate"]] contains "negotiate"} {
        ONECONNECT::reuse disable
        ONECONNECT::detach disable
        ## disables NTLM conn pool for connections where OneConnect has been disabled
        NTLM::disable
    }
    ## this command rechunks encoded responses
    if {[HTTP::header exists "Transfer-Encoding"]} {
        HTTP::payload rechunk
    }
}
```

Outlook Anywhere persistence iRule for Exchange 2013 or deployments not using persistence only

```
when HTTP_RESPONSE {
    if { [string tolower [HTTP::header values "WWW-Authenticate"]] contains "negotiate"} {
        ONECONNECT::reuse disable
        ONECONNECT::detach disable
        ## disables NTLM conn pool for connections where OneConnect has been disabled
        NTLM::disable
    }
    ## this command rechunks encoded responses
    if {[HTTP::header exists "Transfer-Encoding"]} {
        HTTP::payload rechunk
    }
}
```

Creating an iRule when using a SNAT pool

If using a SNAT Pool, multiple connections from a single client are split between multiple source IP addresses by default. As a result, some services, such as the Outlook Client and Blackberry® Enterprise Server that use multiple connections to the RPC Client Access service, may not function properly without the following iRule.

To create the iRule, from the BIG-IP Configuration utility, expand **Local Traffic**, and then click **iRules**. Click the **Create** button, give the iRule a name, and then use the following code (omitting the line numbers) in the **Definition** section. You need one IP address for each 6,000 concurrent users you expect to each Client Access Server. Modify the IP addresses in the following example to your SNAT Pool IP addresses, adding or removing lines as necessary.

Make sure to attach the iRule to the virtual servers where you are using a SNAT pool.

```
when RULE_INIT {
  # Use a local array to configure SNAT addresses.
  # These addresses must be defined in a SNAT pool.
  # In this example, we use three addresses. Replace
  # these with the IP addresses used in your SNAT Pool.
  # Follow the pattern of the existing addresses to add more than three.

  set static::snat_ips(0) 10.0.0.1
  set static::snat_ips(1) 10.0.0.2
  set static::snat_ips(2) 10.0.0.3
}

when CLIENT_ACCEPTED {
  # Calculate the crc32 checksum of the client IP.
  # Use the modulo of the checksum and the number of SNAT IPs in the array
  # to select a SNAT IP address.

  snat $static::snat_ips([expr {[crc32 [IP::client_addr]] % [array size static::snat_ips]}])

}
```

Note

*If you are configuring multiple Exchange deployments on the same BIG-IP device and are using SNAT pools, you must change the variable names (**snat_ips**) in the iRule for each separate deployment.*

BIG-IP APM manual configuration

This section covers the following scenarios for BIG-IP APM:

1. A BIG-IP APM deployment on a separate BIG-IP than that providing your Exchange traffic management. There are two options in this scenario:

    a. SSL (HTTPS, port 443) connections will be terminated at the BIG-IP APM and forwarded to the BIG-IP LTM and then to your Exchange Client Access servers on HTTP port 80.

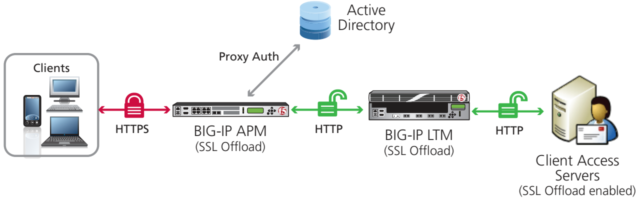


Figure 1: *BIG-IP APM with SSL Offload configuration example*

    b. Both the BIG-IP APM and the BIG-IP LTM will perform SSL Bridging; they will decrypt SSL traffic in order to process it, then re-encrypt the traffic before placing it back on the network.

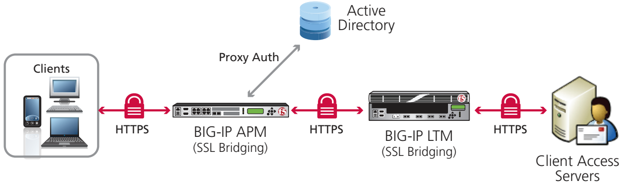


Figure 2: *BIG-IP APM with SSL Offload configuration example*

2. A single BIG-IP configured with both APM and LTM modules.
There are two options in this scenario:

    a. The BIG-IP will terminate SSL connections and forward traffic to your Exchange Client Access servers on HTTP port 80.

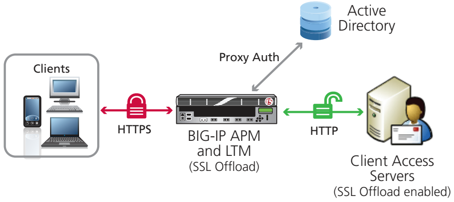


Figure 3: *BIG-IP APM with SSL Bridging configuration example*

    b. The BIG-IP will perform SSL bridging; SSL will be decrypted on the BIG-IP but re-encrypted before it is placed back on the network.

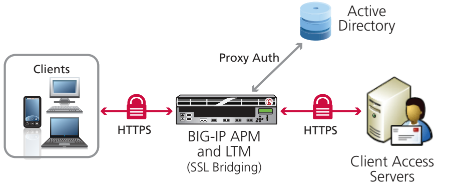


Figure 4: *BIG-IP APM with SSL Bridging configuration example*

BIG-IP APM Configuration

No matter which of the scenarios you are deploying, use the following table to create the BIG-IP APM configuration (scenario-specific configuration begins after this section). The tables in this section provide guidance on configuring the individual BIG-IP objects. For specific instructions on configuring individual objects, see the online help or product documentation.

Be sure to see *Clients receiving error message when using BIG-IP APM with OWA 2013 and IE10 or Google Chrome on page 55* to the troubleshooting section if applicable.

BIG-IP Object	Non-default settings/Notes	
DNS and NTP	See *Configuring DNS and NTP settings on page 60 for instructions.*	
Health Monitor (*Main tab-->Local Traffic-->Monitors*)	***Configuration***	Select **Advanced** from the Configuration list (if necessary).
	Name	Type a unique name, such as AD_LDAP_monitor.
	Type	**LDAP**
	Interval	**10** (recommended)
	Timeout	**31** (recommended)
	User Name	Type a user name with administrative permissions
	Password	Type the associated password
	Base	Specify your LDAP base tree. For example, CN=Exchange Users,DC=example,DC=com
	Filter	Specify the filter. We type **cn=user1**, using the example above: user1 in OU group "Exchange Users" and domain "example.com"
	Security	Select a Security option (either None, SSL, or TLS)
	Chase Referrals	**Yes**
	Alias Address	***All Addresses**
	Alias Address Port	**389** (for None or TLS) or **636** (for SSL)
AAA Server (*Main tab-->Access Policy-->AAA Servers*)	***Name***	Type a unique name. We use **exchange-aaa-server**.
	Type	**Active Directory**
	Domain Name	Type the FQDN of the Windows Domain name
	Server Connection	Click **Use Pool** if necessary.
	Domain Controller Pool Name	Type a unique name
	Domain Controllers	**IP Address**: Type the IP address of a domain controller **Hostname**: Type the FQDN of the domain controller Click **Add**. Repeat for each domain controller in this configuration.
	Server Pool Monitor	Select the monitor you created above.
	Admin Name[1]	Type the Administrator name
	Admin Password[1]	Type the associated password

[1] Optional; Admin Name and Password are only required if anonymous binding to Active Directory is not allowed in your environment

BIG-IP Object	Non-default settings/Notes	
SSO Configuration[2] *(Main tab-->Access Policy-->SSO Configurations)*	***Forms based SSO Configuration***	
	SSO Configurations By Type	**Forms-Client Initiated**
	SSO Configuration Name	Type a unique name. We use **Exchange-SSOv2**
	*In the left pane of the box, click **Form Settings**, and then click **Create**.*	
	Form Name	Type a unique name. We use **Exchange-Form**
	*In the left pane of the box, click **Form Parameters**, and then click **Create***	
	Form Parameters	**Form Parameter Name** Select **Username** from the list.
		Username Parameter Value **%{session.sso.token.last.username}**
		Click **Ok**, and then click **Create** again in the Forms Parameters box.
		Password Parameter Name **password**
		Password Parameter Value **%{session.sso.token.last.password}**
		Secure **Yes**
	Form Detection	In the left page of the Create New Form Definition box, click **Form Detection**.
	Detect Form by	**URI**
	Request URI	**/owa/auth/logon.aspx** .
	Logon Detection	In the left page of the Create New Form Definition box, click **Logon Detection**.
	Detect Logon by	**Presence of Cookie**
	Cookie Name	**sessionid** Click **Ok** twice to complete the SSO Configuration.
	NTLM SSO Configuration	
	Name	Type a unique name. We use **exchange-ntlm-sso**.
	SSO Method	**NTLMv1**
	Username Conversion	**Enable**
	NTLM Domain	The NTLM domain name where the user accounts are located
11.4 only: Exchange Profile[3] *(Main tab-->Access Policy-->Secure Connectivity--> Application Access--> Microsoft Exchange)*	***Name***	Type a unique name.
	Parent Profile	**/Common/exchange**
	*In the left pane of the box, click **Autodiscover***	
	SSO Configuration	From the Autodiscover SSO Configuration list, select the NTLM SSO Configuration you created above.
	*In the left pane of the box, click **Exchange Web Service***	
	SSO Configuration	From the EWS SSO Configuration list, select the NTLM SSO Configuration you created above.
	*In the left pane of the box, click **Offline Address Book***	
	SSO Configuration	From the OAB SSO Configuration list, select the NTLM SSO Configuration you created above.
Access Profile *(Main tab-->Access Policy-->Access Profiles)*	***Name***	Type a unique name. We use **exchange-access**.
	Microsoft Exchange[4]	If you created the Exchange profile, select the profile you created from the list.
	SSO Configuration	Select name of NTLM SSO configuration you created above
Access Policy *(See procedure below)*	***Edit***	Edit the Access Profile you just created using the Visual Policy Editor Continue now with configuring the Access policy below.

[2] If you are using BIG-IP version 11.3, you can optionally create a Kerberos SSO configuration for Outlook Anywhere. See *Optional: Configuring the BIG-IP Access Policy Manager for Outlook Anywhere with NTLM Authentication - BIG-IP version 11.3 or later only on page 97*

[3] If using the Exchange profile in 11.4 and later, you must remove any _sys_APM irules from the virtual server

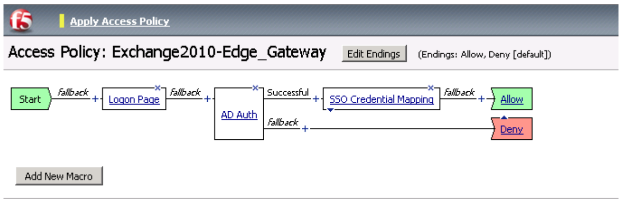
[4] Optional, only available in 11.4 and later, and only applicable if you created the Exchange profile.

Configuring the Access Policy

After creating the objects in the table above, use the following procedure to edit the Access Policy on the BIG-IP APM using the Visual Policy Editor (VPE). The Policy shown in the following procedure is just an example, you can use this Access Policy or create one of your own.

To configure the Access Policy

1. On the Main tab, expand **Access Policy**, and click **Access Profiles**.
2. Locate the Access Profile you created using the table above, and then, in the Access Policy column, click **Edit**.
3. Click the **+** symbol between **Start** and **Deny**. A box opens with options for different actions.
    a. Click the **Logon Page** option button, and then the **Add Item** button at the bottom.
    b. From the **Split domain from full Username** list, select **Yes**.
    c. Configure the rest of the Logon Page properties as applicable, and then click **Save**.
4. Click the **+** symbol between **Logon Page** and **Deny**.
    a. In the Authentication section, click the **AD Auth** option button, and click **Add Item**.
    b. In the **Active Directory** properties box, from the **Server** list, select the AAA server you created using the table above. The rest of the settings are optional. Click **Save**.
5. On the Successful path between **AD Auth** and **Deny**, click the **+** symbol.
    a. Click the **SSO Credential Mapping** option button, and then click **Add Item**.
    b. Configure the Properties as applicable for your configuration; we leave the settings at the defaults. Click the **Save** button.
6. On the fallback path between **SSO Credential Mapping** and Deny, click the **Deny** box. Click the **Allow** option button, and then click **Save**. See screenshot below.
7. 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.



Access Policy: Exchange2010-Edge_Gateway

(Endings: Allow, Deny [default])

Creating the iRule that chooses the SSO Configuration

The next task is to create an iRule that selects the appropriate SSO Configuration to support forms-based authentication of Outlook Web App.

To create the iRule

1. On the Main tab, expand **Local Traffic**, click **iRules**, and then click the **Create** button.
2. In the **Name** box, give the iRule a unique name. We use **select_SSO_irule**.
3. In the **Definition** section, copy and paste the following iRule, omitting the line numbers. If you used a different name for your forms-based SSO Configuration when creating it based on the table above, use that name in line 3

```
1   when RULE_INIT {
2        ##replace exchange_forms_sso here with your forms-based SSO name
3        set static::OWA_FORM_BASE_SSO_CFG_NAME      "exchange_forms_sso"
4   }
5   when ACCESS_ACL_ALLOWED {
6        set req_uri [HTTP::uri]
7        #selects the forms-based SSO when Outlook Web Access is detected
8        if { $req_uri contains "/owa/&reason=0" } {
9             WEBSSO::select $static::OWA_FORM_BASE_SSO_CFG_NAME
10  }
11      unset req_uri
12  }
```

Exchange 2013 only   If using Exchange 2013, line 8 is: `if { $req_uri contains "/owa" } {`

4. Click the **Finished** button.

Configuration table for scenario 1: BIG-IP APM sending traffic to a remote BIG-IP LTM

If you are using the BIG-IP APM for scenario 1 with either SSL offload or SSL Bridging, use the following table to configure the APM. There are additional procedures immediately following this table.

BIG-IP LTM Object	Non-default settings/Notes		
Health Monitor *(Main tab-->Local Traffic -->Monitors)*	***Type***	**TCP**	
	Interval	**30** (recommended)	
	Timeout	**91** (recommended)	
Pool *(Main tab-->Local Traffic -->Pools)*	***Health Monitor***	Select the monitor you created above	
	Load Balancing Method	**Round Robin**	
	Address	Type the IP Address of remote BIG-IP LTM virtual server to which this BIG-IP APM will forward traffic	
	Service Port	**80** if offloading SSL, **443** if re-encrypting for SSL Bridging	
iRule	See *Creating the persist iRule on the BIG-IP APM on page 85* and *Creating the iRule to terminate inactive APM sessions on page 88*. *You must also have created the OWA Redirect iRule (formerly referred to as the Append iRule) on page 74.*		
Profiles *(Main tab--> Local Traffic -->Profiles)*	***HTTP*** *(Profiles-->Services)*	Parent Profile	**http**
	HTTP Compression *(Profiles-->Services)*	Parent Profile	**wan-optimized-compression**
		Content List-->Include List *(Copy and paste each entry to the **Content Type** box and click **Include**. This is optional but recommended.)*	text/(css | html | javascript | json | plain | postscript | richtext | rtf | vnd.wap.wml | vnd.wap.wmlscript | wap | wml | x-component | x-vcalendar | x-vcard | xml)
			application/(css | css-stylesheet | doc | excel | javascript | json | lotus123 | mdb | mpp | ms-excel | ms-powerpoint | ms-word | msaccess | msexcel | mspowerpoint | msproject | msword | photoshop | postscript | powerpoint | ps | psd | quarkexpress | rtf | txt | visio | vnd.excel | vnd.ms-access | vnd.ms-excel | vnd.ms-powerpoint | vnd.ms-pps | vnd.ms-project | vnd.ms-word | vnd.ms-works | vnd.ms-works-db | vnd.msaccess | vnd.msexcel | vnd.mspowerpoint | vnd.msword | vnd.powerpoint | vnd.visio | vnd.wap.cmlscriptc | vnd.wap.wmlc | vnd.wap.xhtml+xml | vnd.word | vsd | winword | wks | word | x-excel | x-java-jnlp-file | x-javascript | x-json | x-lotus123 | x-mdb | x-ms-excel | x-ms-project | x-mscardfile | x-msclip | x-msexcel | x-mspowerpoint | x-msproject | x-msword | x-msworks-db | x-msworks-wps | x-photoshop | x-postscript | x-powerpoint | x-ps | x-quark-express | x-rtf | x-vermeer-rpc | x-visio | x-vsd | x-wks | x-word | x-xls | x-xml | xhtml+xml | xls | xml)
			image/(photoshop | psd | x-photoshop | x-vsd)
	Web Acceleration *(Profiles-->Services)*	Parent Profile	**optimized-caching**
		URI List	Add the following to the **Exclude** list: **/owa/ev.owa** and **uglobal.js**
	TCP WAN *(Profiles-->Protocol)*	Parent Profile	**tcp-wan-optimized**
	TCP LAN *(Profiles-->Protocol)*	Parent Profile	**tcp-lan-optimized**
	OneConnect *(Profiles-->Other)*	Parent Profile	**oneconnect**
	NTLM *(Profiles-->Other)*	Parent Profile	**ntlm**
	Client SSL *(Profiles-->SSL)*	Parent Profile	**clientssl**
		Certificate and Key	Select your Certificate and key
	Server SSL ***(for SSL Bridging only)*** *(Profiles-->SSL)*	Parent Profile	If the remote BIG-IP LTM receiving this traffic is using a self-signed or default certificate for decryption, select **serverssl-insecure-compatible** If it's using a certificate signed by a Certificate Authority, select **serverssl**
		Certificate and Key	Select your Certificate and key
BIG-IP APM Exchange virtual server (Main tab-->Local Traffic-->Virtual Servers)	***Name***	Type a unique name. We use **apm-exchange-virtual**.	
	Destination Address	The IP address clients use to access Microsoft Exchange. Your Exchange FQDN resolves to this IP address.	
	Service Port	**443**	
	OneConnect profile	Select the OneConnect profile you created above.	
	HTTP Profile	Select the HTTP profile you created above	
	HTTP Compression Profile	Select the HTTP Compression profile you created above.	
	Web Acceleration Profile	Select the Web Acceleration profile you created above	

BIG-IP LTM Object	Non-default settings/Notes	
BIG-IP APM Exchange virtual server (Main tab-->Local Traffic-->Virtual Servers)	***SSL Profile (Client)***	Select the Client SSL profile you created above
	SSL Profile (Server)	Select the Server SSL profile you created above (only for Scenario 2, SSL Bridging).
	Access Profile	Select the Access Profile you created above
	iRules[1]	Enable the **Append** iRule you created on page 74. Enable the iRule you created to terminate inactive sessions Enable either the built-in **_sys_APM_ExchangeSupport_OA_BasicAuth** or **sys_APM_ExchangeSupport_OA_NTLMAuth** Rule as depending on your auth method. This rule is necessary whether deploying Outlook Anywhere or not.[1] Enable the iRule that chooses the SSO configuration you created (**select_SSO_irule** in our example) Enable the APM session ID irule you created (**edge-gateway-irule** in our example)
	Default Pool	Select the Pool you created above

[1] Do not attach the _sys_APM_ExchangeSupport_OA_BasicAuth iRule if you are using BIG-IP v11.4 and the Exchange profile.

Creating the persist iRule on the BIG-IP APM

The first task is to create the iRule on the BIG-IP LTM for BIG-IP APM. The first iRule is necessary for all deployments with BIG-IP APM.

To create the iRule to persist connections based on APM session ID on the Edge Gateway

1. On the Main tab, expand **Local Traffic**, click **iRules**, and then click the **Create** button.
2. In the **Name** box, give the iRule a unique name. We use **edge-gateway-irule**.
3. In the **Definition** section, copy and paste the following iRule, omitting the line numbers.

```
when ACCESS_ACL_ALLOWED {
    set sessionid [ACCESS::session data get "session.user.sessionid"]
    HTTP::header insert APM_session $sessionid
}
when HTTP_RESPONSE {
    if { [string tolower [HTTP::header values "WWW-Authenticate"]] contains "negotiate"} {
        ONECONNECT::reuse disable
        ONECONNECT::detach disable
        ## disables NTLM conn pool for connections where OneConnect has been disabled
        NTLM::disable
    }
    ## this command rechunks encoded responses
    if {[HTTP::header exists "Transfer-Encoding"]} {
        HTTP::payload rechunk
    }
}
```

4. Click the **Finished** button.

BIG-IP LTM iRule if all traffic goes through the BIG-IP APM

If all of your Exchange traffic goes through the BIG-IP APM, and you do not have internal users who go directly to the BIG-IP LTM, you must modify the persistence iRule on the remote BIG-IP LTM to use the following iRule (and remove the existing persistence iRule).

Important *This iRule is only necessary if all traffic is going through the BIG-IP APM. If you have internal users who go directly to the BIG-IP LTM,* ***do not*** *use this iRule.*

To create the persistence iRule if all traffic goes through the BIG-IP APM to the LTM

1. On the Main tab, expand **Local Traffic**, click **iRules**, and then click the **Create** button to create a new iRule.
2. In the **Name** box, type a unique name. In our example, we type **edge-gateway-persist**.
3. In the **Definition** section, copy and paste the appropriate iRule (omitting the line numbers), depending on your version of Exchange.

BIG-IP APM iRule for Exchange 2010 only

```
when HTTP_REQUEST {

## CHANGE ALL POOL NAMES TO MATCH THOSE IN YOUR ENVIRONMENT.
## OAB and Autodiscover do not require persistence.

      switch -glob -- [string tolower [HTTP::path]] {
         "/microsoft-server-activesync*" {
                  pool my_Exchange_2010__single_as_pool
                  COMPRESS::disable
                  CACHE::disable
                  persist uie [HTTP::header "APM_session"] 7200
                  return
                  }
         "/ews*" {
                  pool my_Exchange_2010__single_oa_pool
                  COMPRESS::disable
                  CACHE::disable
                  persist uie [HTTP::header "APM_session"] 7200
                  return
                  }
         "/ecp*" {
                  pool my_Exchange_2010__single_owa_pool
                  persist uie [HTTP::header "APM_session"] 7200
                  return
                  }
         "/oab*" {
                  pool my_Exchange_2010__single_oa_pool
                  return
                  }

         "/rpc/rpcproxy.dll*" {
                  pool my_Exchange_2010__single_oa_pool
                  COMPRESS::disable
                  CACHE::disable
                  persist uie [HTTP::header "APM_session"] 7200
                  return
                  }
         "/autodiscover*" {
                  pool my_Exchange_2010__single_ad_pool
                  return
                  }
         default {
                  ## This final section takes all traffic that has not otherwise
                  ## been accounted for and sends it to the pool for Outlook Web
                  ## App
                  pool my_Exchange_2010__single_owa_pool
                  persist uie [HTTP::header "APM_session"] 7200
                  }
      }
}
when HTTP_RESPONSE {
    if { [string tolower [HTTP::header values "WWW-Authenticate"]] contains "negotiate"} {
        ONECONNECT::reuse disable
        ONECONNECT::detach disable
        ## disables NTLM conn pool for connections where OneConnect has been disabled
        NTLM::disable
    }
    ## this command rechunks encoded responses
    if {[HTTP::header exists "Transfer-Encoding"]} {
        HTTP::payload rechunk
    }
}
```

4. Click the **Finished** button.

BIG-IP APM iRule for Exchange 2013 only

```
when HTTP_REQUEST {

## CHANGE ALL POOL NAMES TO MATCH THOSE IN YOUR ENVIRONMENT.

      switch -glob -- [string tolower [HTTP::path]] {
         "/microsoft-server-activesync*" {
                   pool my_Exchange_2010__single_as_pool
                   COMPRESS::disable
                   CACHE::disable
                   return
                   }
         "/ews*" {
                   pool my_Exchange_2010__single_oa_pool
                   COMPRESS::disable
                   CACHE::disable
                   return
                   }

         "/ecp*" {
                   pool my_Exchange_2010__single_owa_pool
                   return
                   }
         "/oab*" {
                   pool my_Exchange_2010__single_oa_pool
                   return
                   }
         "/rpc/rpcproxy.dll*" {
                   pool my_Exchange_2010__single_oa_pool
                   COMPRESS::disable
                   CACHE::disable
                   return
                   }
         "/autodiscover*" {
                   pool my_Exchange_2010__single_ad_pool
                   return
                   }
         default {
                   ## This final section takes all traffic that has not otherwise
                   ## been accounted for and sends it to the pool for Outlook Web
                   ## App
                   pool my_Exchange_2010__single_owa_pool
                   }
      }
}
when HTTP_RESPONSE {
    if { [string tolower [HTTP::header values "WWW-Authenticate"]] contains "negotiate"} {
        ONECONNECT::reuse disable
        ONECONNECT::detach disable
        ## disables NTLM conn pool for connections where OneConnect has been disabled
        NTLM::disable
    }
    ## this command rechunks encoded responses
    if {[HTTP::header exists "Transfer-Encoding"]} {
        HTTP::payload rechunk
    }
}
```

Modifying the virtual server to use the new persistence iRule

If you just created the new persistence iRule on the BIG-IP LTM (*BIG-IP LTM iRule if all traffic goes through the BIG-IP APM on page 85*), and have an existing BIG-IP LTM configuration, you must modify the BIG-IP LTM virtual server to use the new persistence iRule and remove any existing persistence iRules.

This completes the BIG-IP APM configuration for scenario 1.

Creating the iRule to terminate inactive APM sessions

When using APM to secure Outlook Web Access, APM sessions can remain active after users have either manually logged out of OWA or the OWA session has timed out due to user inactivity. The following iRule checks the OWA session status and terminates the associated APM session if applicable.

Note: *This iRule is only effective if you are using Forms-based authentication for OWA*.

To add the APM session check iRule

1. On the Main tab, expand **Local Traffic** and then click **iRules.**
2. Click the **Create** button.
3. In the **Name** box, type a unique name such as apm-owa-session-irule.
4. In the **Definition** section, copy and paste the following iRule:

```
when RULE_INIT {
  set static::cookie_sessionid [format "sessionid=null; path=/; Expires=Thurs, 01-Jan-1970 00:00:00 GMT;"]
  set static::cookie_cadata [format "cadata=null; path=/; Expires=Thurs, 01-Jan-1970 00:00:00 GMT;"]
}

when ACCESS_SESSION_STARTED {
  if { [HTTP::uri] contains "UA=0" } {
    ACCESS::session remove
  }
}

when ACCESS_ACL_ALLOWED {
  set apm_mrhsession [HTTP::cookie value "MRHSession"]
  if { [table lookup $apm_mrhsession] == "EXCHANGE_LOGOUT" } {
    ACCESS::session remove
    table delete $apm_mrhsession
  }
}

when HTTP_REQUEST {
  set isset 0
  if {[string tolower [HTTP::uri]] starts_with "/owa" } {
    if {[string tolower [HTTP::uri]] contains "logoff" } {
      ACCESS::session remove
      HTTP::respond 302 Location "https://[HTTP::host]/vdesk/hangup.php3" "Set-Cookie" $static::cookie_sessionid "Set-Cookie" $static::cookie_cadata
        } else {
            if { [HTTP::uri] contains "UA=0" } {
                set mrhsession [HTTP::cookie value "MRHSession"]
                set isset 1
            }
        }
    }
}
when HTTP_RESPONSE {
    if { $isset == 1 } {
        if { $mrhsession != "" && [HTTP::status] == 440 } {
            table set $apm_mrhsession "EXCHANGE_LOGOUT"
            return
        }
    }
}
```

5. Click **Finished**.
6. On the Main tab, click **Virtual Servers**.
7. From the **Virtual Server** list, click the name of the appropriate virtual server (either the BIG-IP APM virtual server, the combined virtual server, or the separate OWA virtual server, depending on how you configured the BIG-IP system.
8. On the Menu bar, click **Resources**.

9. From the iRules section, click **Manage**.
10. From the **Available** list, select the iRule you just created and then click Add (**<<**).
11. If deploying for BIG-IP APM, click the **Up** button to move the this iRule just below the **<iapp-name>_sys_APM_ExchangeSupport_OA_BasicAuth** (or **<iapp-name>_sys_APM_ExchangeSupport_OA_NtlmAuth** if using NTLM for OA) rule. If you are using BIG-IP version 11.4 and deploying with the BIG-IP APM Exchange profile, this step is not necessary.
12. Click **Finished**.

Configuration for scenario 2: Single BIG-IP with LTM and APM

If you are configuring the BIG-IP APM as a module on the same physical BIG-IP device as the LTM configuration, you must modify your BIG-IP LTM configuration to use the following persistence iRule, and remove any existing persistence iRules on the LTM.

Creating the persistence iRule when using BIG-IP APM

The next task is to create a new persistence iRule on the BIG-IP system for APM.

To create the iRule

1. On the Main tab, expand **Local Traffic**, click **iRules**, and then click the **Create** button.
2. In the Name box, give the iRule a unique name. We use **apm-persistence-irule**.
3. In the **Definition** section, copy and paste the appropriate iRule (omitting the line numbers), depending on your version of Exchange.
4. When you have pasted the iRule, click **Finished**.

BIG-IP APM iRule for Exchange 2010 only

```
## CHANGE ALL POOL NAMES TO MATCH THOSE IN YOUR ENVIRONMENT.
## OAB and Autodiscover do not require persistence.

when ACCESS_ACL_ALLOWED {
     set sessionid [ACCESS::session data get "session.user.sessionid"]

     switch -glob -- [string tolower [HTTP::path]] {

          "/microsoft-server-activesync*" {
               pool my_Exchange_2010__single_as_pool
               COMPRESS::disable
               CACHE::disable
               persist uie $sessionid 7200
               return
          }
          "/ews*" {
               pool my_Exchange_2010__single_oa_pool
               COMPRESS::disable
               CACHE::disable
               persist uie $sessionid 7200
               return
          }
          "/ecp*" {
               pool my_Exchange_2010__single_owa_pool
               persist uie $sessionid 7200
               return
          }
          "/oab*" {
               pool my_Exchange_2010__single_oa_pool
               return
          }
          "/rpc/rpcproxy.dll*" {
               pool my_Exchange_2010__single_oa_pool
               COMPRESS::disable
               CACHE::disable
               persist uie $sessionid 7200
               return
          }
          "/autodiscover*" {
               pool my_Exchange_2010__single_ad_pool
               return
          }

          default {
          ## This final section takes all traffic that has not otherwise
          ## been accounted for and sends it to the pool for Outlook Web
          ## App
               pool my_Exchange_2010__single_owa_pool
               persist uie $sessionid 7200
          }
     }
}
when HTTP_RESPONSE {
    if { [string tolower [HTTP::header values "WWW-Authenticate"]] contains "negotiate"} {
        ONECONNECT::reuse disable
        ONECONNECT::detach disable
        ## disables NTLM conn pool for connections where OneConnect has been disabled
        NTLM::disable
    }
    ## this command rechunks encoded responses
    if {[HTTP::header exists "Transfer-Encoding"]} {
        HTTP::payload rechunk
    }
}
```

BIG-IP APM iRule for Exchange 2013 only

```
## CHANGE ALL POOL NAMES TO MATCH THOSE IN YOUR ENVIRONMENT.

when ACCESS_ACL_ALLOWED {
     set sessionid [ACCESS::session data get "session.user.sessionid"]

     switch -glob -- [string tolower [HTTP::path]] {
          "/microsoft-server-activesync*" {
               pool my_Exchange_2010__single_as_pool
               COMPRESS::disable
               CACHE::disable
               return
          }
          "/ews*" {
               pool my_Exchange_2010__single_oa_pool
               COMPRESS::disable
               CACHE::disable
               return
          }
          "/ecp*" {
               pool my_Exchange_2010__single_owa_pool
               return
          }
          "/oab*" {
               pool my_Exchange_2010__single_oa_pool
               return
          }
          "/rpc/rpcproxy.dll*" {
               pool my_Exchange_2010__single_oa_pool
               COMPRESS::disable
               CACHE::disable
               return
          }
          "/autodiscover*" {
               pool my_Exchange_2010__single_ad_pool
               return
          }
          default {
          ## This final section takes all traffic that has not otherwise
          ## been accounted for and sends it to the pool for Outlook Web
          ## App
               pool my_Exchange_2010__single_owa_pool
          }
     }
}
when HTTP_RESPONSE {
    if { [string tolower [HTTP::header values "WWW-Authenticate"]] contains "negotiate"} {
        ONECONNECT::reuse disable
        ONECONNECT::detach disable
        ## disables NTLM conn pool for connections where OneConnect has been disabled
        NTLM::disable
    }
    ## this command rechunks encoded responses
    if {[HTTP::header exists "Transfer-Encoding"]} {
        HTTP::payload rechunk
    }
}
```

Modifying the virtual server to use the iRules and Access Profile

The final task is to modify the BIG-IP LTM virtual server(s) to use the new persistence iRule (and remove any existing persistence iRules) , the terminate inactive sessions iRule, and add the Access Profile you created on BIG-IP APM.

If you created separate virtual servers, you must add the persistence iRule and Access Profile to all BIG-IP LTM virtual server for the HTTP-based Client Access Services (Outlook Web App, Outlook Anywhere, ActiveSync, and Autodiscover). The terminate inactive sessions iRule only needs to be assigned to the OWA virtual server.

Optional: Securing Access to the Exchange 2013 Administration Center

In Microsoft Exchange Server 2013, Exchange administration is now performed via a web-based console, the Exchange Administration Center (EAC). You can use iRules and Access Policy Manager to control access to the EAC, thus allowing connections only from approved users and/or IP addresses. You can apply both the iRule and APM Access Policy to the combined virtual server or a the separate OWA virtual server.

Creating the Data Group

In this procedure, you create a Data Group of trusted IP addresses. The iRule you will create uses this list to make access decisions. Use the following table for guidance on creating the Data Group. For specific instructions, see the online help or product documentation.

BIG-IP APM Object	Non-default settings/Notes	
Data Group *(Main tab-->Local Traffic--> iRules-->Data Group List)*	***Name***	Type a unique name.
	Type	Address
	Address Records	**Type:** *Host* **Address:** *Type a trusted IP Address* Click **Add** and repeat for all trusted IP addresses.

Creating the EAC access iRule

The following iRule limits access to the EAC based on the contents of the data group you created. The rule attempts to match the source IP address of the request with IP addresses contained in the Data Group, and rejects the connection if there is not a match. The following example assumes you are sending EAC requests to the OWA LTM pool.

Change *trustedAddresses* to match the name of the Data Group you created. Change the name of the pool in lines 7 and 10 to match the name of your OWA pool. You can also modify the response HTML code in line 3, which must be entered as a single line.

```
1    when HTTP_REQUEST {
2       if { [HTTP::uri] contains "/ecp" } {
3       set response "<html><head><title>EAC Access Denied</title></head><body>We are sorry, but access to the Exchange
        Administration Center is restricted to approved client IP addresses.  Your IP address, [IP::client_addr], is not
        approved.</body></html>"
5       if { [HTTP::header exists "Referer"] } {
6          if { [HTTP::header "Referer"] contains "rfr=owa" } {
7             pool my_iapp_2013_owa_pool
8          }
9       } elseif { [class match [IP::client_addr] equals "trustedAddresses"]} {
10         pool my_iapp_2013_owa_pool
11      } else {
12         HTTP::respond 200 content $response
13      }
14         unset response
15      }
16   }
```

Securing EAC with Access Policy Manager

In addition to the iRule, you can use F5's APM module to query Active Directory group membership for the user making the request to EAC. If the user is not a member of the Organization Management group, the APM policy denies access.

Creating the Access profile

This configuration requires creating a new APM Access Profile object. If you have previously deployed Exchange 2010 CAS servers with APM using the iApp template, the simplest way is to create the profile is to copy the existing policy created by the template.

Copying the Access Policy created by the iApp template
To copy the Access Policy created by iApp, use the following procedure.

To copy the Access Policy created by the iApp template

1. On the Main tab, expand **Access Policy**, and click **Access Profiles**.
2. In the Access Policy list, find the row for the Access Policy created by the Exchange iApp template. This policy starts with the name you gave the iApp, followed by **_apm_access**.
3. Click the **Copy** link that corresponds to the Access Policy.
4. In the **Copied Profile Name** box, type a new name for this profile.
5. Click the **Copy** button.
6. Continue with *Editing the APM Access Policy if you copied the existing Access Policy on page 95.*

Creating a new Access Policy

To create a new Access Policy, use the following table for guidance. For specific instructions, see the online help or product documentation.

BIG-IP APM Object	Non-default settings/Notes	
Access Profile *(Main tab-->Access Policy-->Access Profiles)*	***Name***	Type a unique name.
	SSO Configuration	Use the NTLMv1 SSO object created by the iApp template

Editing the APM Access Policy if you created a new Access Policy

Use this section to edit the Access Profile if you created a new Access Policy.

To edit the access policy

1. On the Main tab, expand **Access Policy**, and click **Access Profiles**.
2. Locate the Access Profile you created using the table above, and then, 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.
    a. Click the **Logon Page** option button, and then the **Add Item** button at the bottom.
    b. From the **Split domain from full Username** list, select **Yes**.
    c. Configure the rest of the Logon Page properties as applicable, and then click **Save**.
4. Click the **+** symbol between **Logon Page** and **Deny**.
    a. In the Authentication section, click the **AD Auth** option button, and click **Add Item**.
    b. In the **Active Directory** properties box, from the **Server** list, select the AAA server created by the iApp.
    c. The rest of the settings are optional. Click **Save**.
5. On the Successful path between **AD Auth** and **Deny**, click the **+** symbol.
    a. Click the **Empty** option button, and then click **Add Item**.
    b. In the **Name** box, type **EAC URI Check**.
    c. Click the Branch Rules tab.
    d. Click **Add Branch Rule**.
    e. In the **Name** box, type **is EAC**.

f. In the Expression row, click the **change** link.

g. Click **Add Expression**.

h. From the **Agent Sel** list, select **Landing URI**.

i. In the **Landing URI is** box, type **/ecp/default.aspx**.

j. Click **Add Expression**.

k. Click the **Finished** button.

l. Click the **Save** button.

6. On the **is EAC** path (if you did not modify the name, this is Branch Rule 1) between **EAC URI Check** and **Deny** click the **+** symbol.

    a. Click **AD Query**, and then click **Add Item**.

    b. In the **Name** box, type **EAC AD Query**.

    c. From the **Server** list, select the AAA server created by the iApp.

    d. In the **Search Filter** box, type **sAMAccountName=%{session.logon.last.username}**.

    e. Click the Branch Rules tab.

    f. In the **Name** box, delete any existing text, and then type **Organization Management**.

    g. In the Expression row, click the **change** link.

    h. Click the Delete (**x**) button to the right of the **User's Primary Group ID is** box.

    i. Click **Add Expression**.

    j. From the **Agent Sel** list, select **AD Query**.

    k. From the **Condition** list, select **User is a Member of**.

    l. In the **User is a member of** box, type **CN=Organization Management,OU=Microsoft Exchange Security Groups,DC=example,DC=com**.

    m. Click **Add Expression**.

    n. Click the **Finished** button.

    o. Click the **Save** button.

7. On the fallback path between **EAC URI Check** and **Deny**, click the **+** symbol.

    a. Click **SSO Credential Mapping**, and then click **Add Item**.

    b. Configure the settings as applicable. We leave the settings at the defaults.

    c. Click **Save**.

    d. On the fallback path between **SSO Credential Mapping** and **Deny**, click the **Deny** box/link.

    e. Click the **Allow** option button, and then click **Save**.

8. On the **Organization Management** path, between **EAC AD Query** and **Deny** click **+**.

    a. Click **SSO Credential Mapping**, and then click **Add Item**.

    b. Configure the settings as applicable. We leave the settings at the defaults.

    c. Click **Save**.

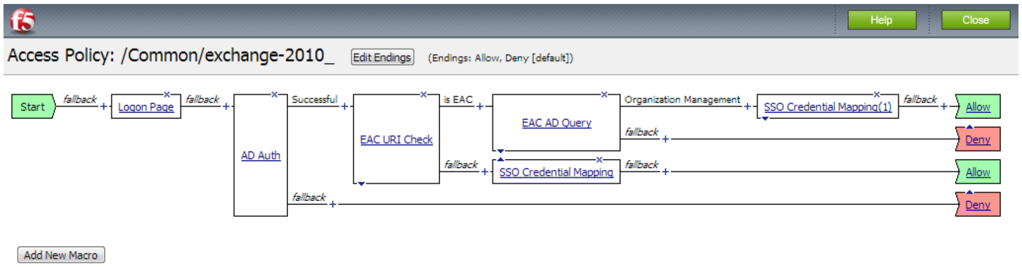
    d. On the fallback path between **SSO Credential Mapping** and **Deny**, click the **Deny** box/link.

   e. Click the **Allow** option button, and then click **Save**.

9. 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.

10. Continue with *Modifying the virtual server to use the new Access Policy on page 96*.

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



Access Policy: /Common/exchange-2010_ Edit Endings (Endings: Allow, Deny [default])

Editing the APM Access Policy if you copied the existing Access Policy

Use this section to edit the Access Profile if you made a copy of the Access Policy created by the iApp template.

To edit the access policy

1. On the Main tab, expand **Access Policy**, and click **Access Profiles**.

2. Locate the Access Profile you created using the table above, and then, in the Access Policy column, click **Edit**. The VPE opens in a new window.

3. On the Successful path between **AD Auth** and **SSO Credential Mapping**, click the **+** symbol.

   a. Click the **Empty** option button, and then click **Add Item**.

   b. In the **Name** box, type **EAC URI Check**.

   c. Click the Branch Rules tab.

   d. Click **Add Branch Rule**.

   e. In the **Name** box, type **is EAC**.

   f. In the Expression row, click the **change** link.

   g. Click **Add Expression**.

   h. From the **Agent Sel** list, select **Landing URI**.

   i. In the **Landing URI is** box, type **/ecp/default.aspx**.

   j. Click **Add Expression**.

   k. Click the **Finished** button.

   l. Click the **Save** button.

4. On the **is EAC** path (if you did not modify the name, this is Branch Rule 1) between **EAC URI Check** and **Deny** click the **+** symbol.

   a. Click **AD Query**, and then click **Add Item**.

   b. In the **Name** box, type **EAC AD Query**.

c. From the **Server** list, select the AAA Server created by the iApp.

d. In the **Search Filter** box, type **sAMAccountName=%{session.logon.last.username}**.

e. Click the Branch Rules tab.

f. In the **Name** box, delete any existing text, and then type **Organization Management**.

g. In the Expression row, click the **change** link.

h. Click the Delete (**x**) button to the right of the **User's Primary Group ID is** box.

i. Click **Add Expression**.

j. From the **Agent Sel** list, select **AD Query**.

k. From the **Condition** list, select **User is a Member of**.

l. In the **User is a member of** box, type **CN=Organization Management,OU=Microsoft Exchange Security Groups,DC=example,DC=com**.

m. Click **Add Expression**.

n. Click the **Finished** button.

o. Click the **Save** button.

5. On the **Organization Management** path, between **EAC AD Query** and **Deny** click the **+** symbol.

   a. Click **SSO Credential Mapping**, and then click **Add Item**.

   b. Configure the settings as applicable. We leave the settings at the defaults.

   c. Click **Save**.

   d. On the fallback path between **SSO Credential Mapping** and **Deny**, click the **Deny** box/link.

   e. Click the **Allow** option button, and then click **Save**.

6. 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.

7. Use the following procedure to add the Access Policy to the virtual server.

Modifying the virtual server to use the new Access Policy

The final task is to add the new Access Policy to the virtual server.

To modify the virtual server to use the Access Policy

1. On the Main tab, expand **Local Traffic** and then click **Virtual Servers.**

2. Click the name of the appropriate virtual server. This is either the single virtual server for all HTTP-based CAS services or the separate virtual server for OWA.

3. In the Access Policy section, from the **Access Profile** list, select the Access profile you just modified.

4. Click **Update**.

This completes the EAC configuration.

Optional: Configuring the BIG-IP Access Policy Manager for Outlook Anywhere with NTLM Authentication - BIG-IP version 11.3 or later only

F5's Access Policy Manager (APM) module supports NTLM authentication for Outlook clients using the RPC-over-HTTP protocol (Outlook Anywhere) in version 11.3 and later.

Before configuring BIG-IP system, you must perform prerequisite configuration steps on the Exchange Server(s) and Active Directory servers. See *Appendix E: Active Directory and Exchange Server configuration for NTLM on page 105*.

Use the following table for guidance on configuring the BIG-IP APM.

BIG-IP Object	Non-default settings/Notes	
AAA Server *(Access Policy-->AAA Servers)*	***Name***	Type a unique name. We use **exchange-aaa-server**.
	Type	**Active Directory**
	Domain Controller	Type the IP address or FQDN name of an Active Directory Domain Controller
	Domain Name	Type the Active Directory domain name
	Admin Name[1]	Type the AD user name with administrative permissions (optional)
	Admin Password[1]	Type the associated password (optional). Type it again in the Verify Password box
SSO Configuration *(Access Policy-->SSO Configurations)*	***Name***	Type a unique name. We use **exchange_kerberos_sso**
	SSO Method	**Kerberos**
	Kerberos Realm	Type the Kerberos Realm. This must be uppercase, such as **MYDOMAIN.COM**
	KDC[1]	IP address of the Kerberos Key Distribution Center. If you leave this field blank, the BIG-IP system uses DNS to find the address of the Key Distribution Center.
	Account Name	The account name of the Active Directory user account to which logon rights have been delegated; this must begin with **host/**, for example, **host/bigip_user_acct.mydomain.local**
	Account Password	Type the associated password
	SPN Pattern[1 2]	Specify a custom SPN pattern to create the ticket request using the host name from the HTTP request[2].
NTLM Machine Account *(Access Policy-->Access Profiles-->NTLM)*	***Name***	Type a unique name. We use **exchange-ntlm-ma**.
	Machine Account Name	The name of the account which will be joined to the Active Directory domain. This must be different than the account name specified in Kerberos SSO Configuration (such as **bigip_machine_acct)**.
	Domain FQDN	Type the FQDN for Active Directory (such as **mydomain.com**)
	Admin User	Type the user name of a user with permissions to join a computer account to the Active Directory domain.
	Admin Password[1]	Type the associated password.
NTLM Auth Configuration [3] *(Access Policy--> Access Profiles-->NTLM)*	***Name***	Use following syntax: **exch_ntlm_<vs-name>**, i.e. **exch_ntlm_my_exchange_iapp_combined_https**
	Machine Account Name	Select the NTLM Machine Account you created above
	Domain Controller FQDN List	Type the fully qualified name of your Active Directory domain controller and then click **Add**.
11.4 only: Exchange Profile[4] *(Main tab-->Access Policy-->Secure Connectivity--> Application Access--> Microsoft Exchange)*	***Name***	Type a unique name.
	Parent Profile	**/Common/exchange**
	NTLM Configuration	Select the NTLM Auth configuration you created.
	In the left pane of the box, click ***Autodiscover***	
	SSO Configuration	From the Autodiscover SSO Configuration list, select the Kerberos SSO Configuration you created above.
	In the left pane of the box, click ***Exchange Web Service***	
	SSO Configuration	From the EWS SSO Configuration list, select the Kerberos SSO Configuration you created above.
	In the left pane of the box, click ***Offline Address Book***	
	SSO Configuration	From the OAB SSO Configuration list, select the Kerberos SSO Configuration you created above.

[1] Optional

[2] By default, the SSO will attempt to use reverse DNS lookups of the pool member IP address to construct the Kerberos ticket request. If you do not wish to use DNS to find the host name to be used in the ticket request, you can specify a custom SPN pattern to create the ticket request using the host name from the HTTP request. The correct SPN pattern is: **HTTP/%h@REALM.COM**, where REALM.com is replaced with your fully-qualified Active Directory domain name. This configuration also requires that the DefaultAppPool, MSExchangeAutodiscoverAppPool, and MSExchangeServicesAppPool IIS application pools are configured to run under the user account specified for Kerberos Delegation, and that an SPN has been created for the hostname used to access Outlook Anywhere and Autodiscover

[3] You must create this object in the same partition and folder location as the virtual server to which the Access Profile is applied. **if you are manually reconfiguring the BIG-IP system from a previous iApp deployment, you will need to create this object from the tmsh command line**. See the following procedure.

[4] If using the Exchange profile in 11.4 and later, you must remove any _sys_APM irules from the virtual server

BIG-IP Object	Non-default settings/Notes	
11.4 only: **Exchange Profile**[1] (continued)	*In the left pane of the box, click **Outlook Anywhere***	
	Front End Authentication	**NTLM**
	SSO Configuration	From the OAB SSO Configuration list, select the Kerberos SSO Configuration you created above.
Access Profile *(Main tab-->Access Policy-->Access Profiles)*	***Name***	Type a unique name. We use **exchange-kerberos-access**.
	Microsoft Exchange[2]	If you created the Exchange profile, select the profile you created from the list.
	SSO Configuration	Select name of Kerberos SSO configuration you created above
Access Policy *(See procedure below)*	***Edit***	Edit the Access Profile. Continue now with configuring the Access Profile on this page.

[1] If using the Exchange profile in 11.4 and later, you must remove any _sys_APM irules from the virtual server

[2] Optional, only available in 11.4 and later, and only applicable if you created the Exchange profile.

Creating the NTLM Auth Configuration from the TMSH command line

As noted in the preceding table, you must create the NTLM Auth Configuration object in the same partition and folder location as the virtual server to which the Access Profile is applied.

If you are manually reconfiguring the BIG-IP system from a previous iApp deployment, you need to create this object from the **tmsh** command line. This is only necessary if configuring the BIG-IP system from a previous iApp deployment.

To create the NTLM Auth Configuration from the command line

1. Open a command line session to the BIG-IP system
2. Type **`tmsh`** and then press Enter.
3. Type the command, using the following command syntax:

```
create apm ntlm ntlm-auth <iapp-name>.app/exch_ntlm_<virtual-server-name> app-service <iapp-name>.app dc-fqdn-list
add { <domain-controller-fqdn> } machine-account-name <ntlm-machine-account-name>
```

For example, if the iApp is named **my_exchange_iapp**, the domain controller FQDN is **dc.mydomain.com**, the machine account is **bigip_machine_acct**, and the virtual server is named **my_exchange_iapp_combined_https**, the tmsh commands is:

```
create apm ntlm ntlm-auth my_exchange_iapp.app/exch_ntlm_my_exchange_iapp_combined_https app-service my_exchange_
iapp.app dc-fqdn-list add { dc.mydomain.com } machine-account-name bigip_machine_acct
```

Creating the Access Profile

The configuration in this section depends on whether you configured a separate virtual server for Outlook Anywhere, or configured a combined virtual server.

Creating the Access profile for Outlook Anywhere on a separate virtual server
Use the following procedure for configuring the Access Policy for a separate Outlook Anywhere virtual server.

To configure the Access Policy for Outlook Anywhere on a separate virtual server

1. On the Main tab, expand **Access Policy**, and click **Access Profiles**.
2. Locate the Access Profile you created using the table above, and then, in the Access Policy column, click **Edit**. The VPE opens.
3. Click the **+** symbol between **Start** and **Deny**. A box opens with options for different actions.
   a. Click the **Client for MS Exchange** option button, and then the **Add Item** button at the bottom.
   b. Click the **Save** button.
4. On the *Client for MS Exchange* path, click the **+** symbol between **Client for MS Exchange** and **Deny**. A box opens with options for different actions.

   a. Click the **NTLM Auth Result Check** option button, and then the **Add Item** button at the bottom.

   b. Click the **Save** button.

5. On the *Successful* path between **NTLM Auth Result Check** and **Deny**, click the **+** symbol.

   a. Click the **SSO Credential Mapping** option button, and then click **Add Item**.

   b. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults. Click the **Save** button.

6. On the *fallback* path between **SSO Credential Mapping** and **Deny**, click the **Deny** box. Click the **Allow** option button, and then click **Save**.

7. On the *Fallback* path between **NTLM Auth Result Check** and **Deny**, click the **+** symbol.

   a. Click the **Logon Page** option button, and then the **Add Item** button at the bottom.

   b. From the **Split domain from full Username** list, select **Yes**.

   c. Configure the rest of the Logon Page properties as applicable, and then click **Save**.

8. On the *Fallback* path between **Logon Page** and **Deny**, click the **+** symbol.

   a. In the Authentication section, click the **AD Auth** option button, and click **Add Item**.

   b. In the **Active Directory** properties box, from the **Server** list, select the AAA Server you created using the table above. The rest of the settings are optional.

   c. Click **Save**.

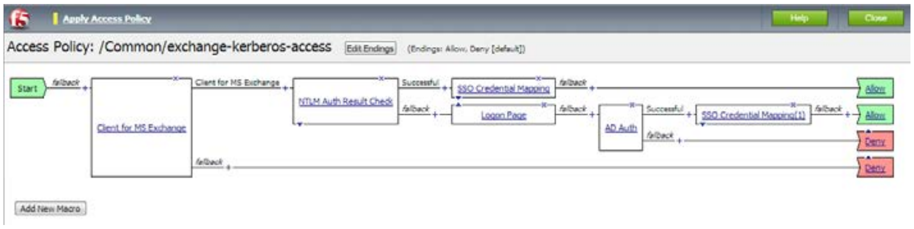
9. On the *Successful* path between **AD Auth** and **Deny**, click the **+** symbol.

   a. Click the **SSO Credential Mapping** option button, and then click **Add Item**.

   b. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults. Click the **Save** button.

10. On the *fallback* path between **SSO Credential Mapping** and **Deny**, click the **Deny** box. Click the **Allow** option button, and then click **Save**.

11. 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. Your VPE should look like the following example.



Access Policy: /Common/exchange-kerberos-access

(Endings: Allow, Deny [default])

This completes the Access Policy for the separate virtual server scenario. Continue with *Enabling the ECA Profile on Outlook Anywhere Virtual Server on page 101*.

Creating the Access profile for Outlook Anywhere on a combined virtual server

Use the following procedure for configuring the Access Policy if you configured Outlook Anywhere as a part of a combined virtual server.

To configure the Access Policy for Outlook Anywhere on a combined virtual server

1. On the Main tab, expand **Access Policy**, and click **Access Profiles**.
2. Locate the Access Profile you created using the table above, and then, 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.
   a. Click the **Client for MS Exchange** option button, and then the **Add Item** button at the bottom.
   b. Click the **Save** button.
4. On the *Client for MS Exchange* path, click the **+** symbol between **Client for MS Exchange** and **Deny**. A box opens with options for different actions.
   a. Click the **NTLM Auth Result Check** option button, and then the **Add Item** button at the bottom.
   b. Click the **Save** button.
5. On the *Successful* path between **NTLM Auth Result Check** and **Deny**, click the **+** symbol.
   a. Click the **SSO Credential Mapping** option button, and then click **Add Item**.
   b. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults. Click the **Save** button.
6. On the *fallback* path between **SSO Credential Mapping** and **Deny**, click the **Deny** box. Click the **Allow** option button, and then click **Save**.
7. On the *Fallback* path between **NTLM Auth Result Check** and **Deny**, click the **+** symbol.
   a. Click the **Logon Page** option button, and then the **Add Item** button at the bottom.
   b. From the **Split domain from full Username** list, select **Yes**.
   c. Configure the rest of the Logon Page properties as applicable, and then click **Save**.
8. On the *Fallback* path between **Logon Page** and **Deny**, click the **+** symbol.
   a. In the Authentication section, click the **AD Auth** option button, and click **Add Item**.
   b. In the **Active Directory** properties box, from the **Server** list, select the AAA Server you created using the table above. The rest of the settings are optional.
   c. Click **Save**.
9. On the *Successful* path between **AD Auth** and **Deny**, click the **+** symbol.
   a. Click the **SSO Credential Mapping** option button, and then click **Add Item**.
   b. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults. Click the **Save** button.
10. On the *fallback* path between **SSO Credential Mapping** and **Deny**, click the **Deny** box. Click the **Allow** option button, and then click **Save**.
11. On the *Fallback* path between **Client for MS Exchange** (the first box of the VPE) and **Deny**, click the **+** symbol.
    a. Click the **Logon Page** option button, and then the **Add Item** button at the bottom.
    b. From the **Split domain from full Username** list, select **Yes**.
    c. Configure the rest of the Logon Page properties as applicable, and then click **Save**.
12. On the bottom *Fallback* path between the new **Logon Page** and **Deny**, click the **+** symbol.

   a. In the Authentication section, click the **AD Auth** option button, and click **Add Item**.

   b. In the **Active Directory** properties box, from the **Server** list, select the AAA Server you created using the table above. The rest of the settings are optional.

   c. Click **Save**.

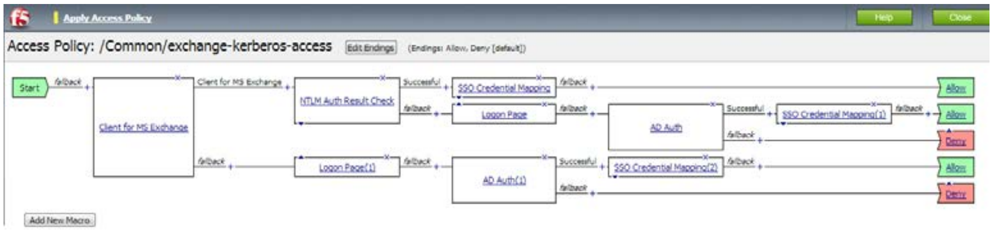
13. On the *Successful* path between **AD Auth** and **Deny**, click the **+** symbol.

   a. Click the **SSO Credential Mapping** option button, and then click **Add Item**.

   b. Configure the Properties as applicable for your configuration. In our example, we leave the settings at the defaults. Click the **Save** button.

14. On the *fallback* path between **SSO Credential Mapping** and **Deny**, click the **Deny** box. Click the **Allow** option button, and then click **Save**.

15. 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. Your VPE should look like the following example.



This completes the Access Policy for the combined virtual server.

Enabling the ECA Profile on Outlook Anywhere Virtual Server

The next task is to enable the ECA profile on the Outlook Anywhere virtual server. This profile allows the APM to manage NTLM authentication for Outlook Anywhere clients. In BIG-IP version 11.3, you must attach the ECA profile via the **tmsh** command line. Do NOT enable this profile if using BIG-IP version 11.4 and the Exchange Profile.

To attach the ECA profile to the virtual server from the command line

1. Open a command line session to the BIG-IP system

2. Type `tmsh`

3. Type the command, using the following command syntax:

   ```
   modify ltm virtual <iapp-name>.app/<virtual-server-name> profiles add { eca }
   ```

   For example:

   ```
   modify ltm virtual my_exchange_iapp.app/my_exchange_iapp_combined_https profiles add { eca }
   ```

Important

You must have enabled the ECA profile on the Outlook Anywhere virtual server as described above before applying the system iRule in the next step. Do NOT enable this profile or attach the system iRule if using BIG-IP version 11.4 and the Exchange Profile.

Applying the System iRule to Outlook Anywhere virtual server

Before attempting a connection via BIG-IP APM with Outlook Anywhere, you must apply the system iRule that manages NTLM authentication to either the separate Outlook Anywhere virtual server, or the combined virtual server.

To apply the system iRule to the virtual server

1. On the Main tab, expand **Local Traffic** and then click **Virtual Servers**.
2. Click the name of either the combined virtual server or the separate Outlook Anywhere virtual server.
3. Click the **Resources** tab.
4. In the iRules section, click the **Manage** button.
5. From the **Available** list, select **_sys_APM_ExchangeSupport_OA_NtlmAuth**, and then click the Add (**<<**) button.
6. If necessary, use the Up and Down buttons to ensure the iRules are in the following order when deployed on a single, combined virtual server:
   - *OWA Append iRule* (for combined virtual only)
   - *_sys_APM_ExchangeSupport_OA_NtlmAuth*
   - *Select SSO iRule*
   - *Combined Virtual Server Persist iRule*
7. Click **Finished**.

Setting the Default Pool on a combined virtual server

If you have configured the BIG-IP system use a single, combined virtual server for Exchange, the final task is to set the BIG-IP LTM pool for Outlook Anywhere as the default pool for the virtual server.

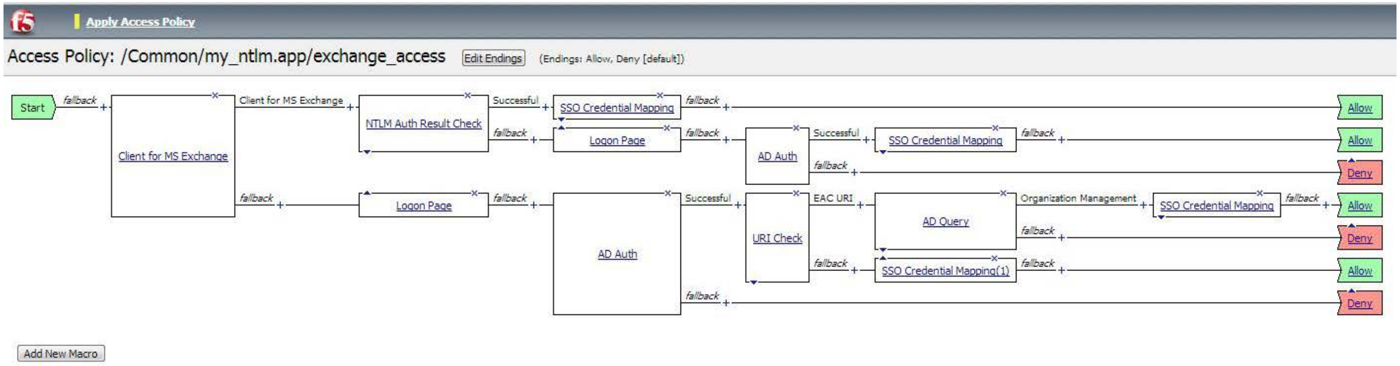
To set the default pool on the combined virtual server

1. On the Main tab, expand **Local Traffic** and then click **Virtual Servers**.
2. Click the HTTPS virtual server (port 443) virtual server.
3. Click the **Resources** tab.
4. In the Load Balancing section, from the **Default Pool** list, select the Outlook Anywhere pool
5. Click **Update**.

This completes the configuration for NTLM and Outlook Anywhere.

Access Policy example when using both EAC restricted access and NTLM for Outlook Anywhere

Using both EAC restricted access and NTLM for Outlook Anywhere in a single Access Policy is an acceptable configuration, although the step by step procedure is outside the scope of this document (use the iApp for this scenario if you need the walkthrough). The following screenshot shows what the VPE should look like with both EAC restricted access and NTLM for Outlook Anywhere.



Access Policy: /Common/my_ntlm.app/exchange_access

(Endings: Allow, Deny [default])

Appendix D: Technical Notes

The following contains additional information that may be helpful when configuring the BIG-IP system for Microsoft Exchange Server 2010 and 2013.

Slow Ramp Time

When you configure a Slow Ramp time, BIG-IP will not immediately send a full proportional share of incoming traffic to a pool member that has just come online. Instead, the BIG-IP will increase the proportion of traffic gradually over the time specified. This ensures that a newly-booted or newly-added server is not overwhelmed with incoming traffic, especially when you have selected a Least Connections load-balancing method.

Although advanced monitors that perform logins will prevent any traffic being sent to a Client Access server until at least those functions are enabled, other background services may not be fully ready to service connections. As such, we strongly recommend Slow Ramp even with advanced monitors. If you are not using advanced monitors but have only enabled simple TCP checks or HTTP queries that do not actually check for full client functionality, a Slow Ramp time is essential.

F5 testing has shown that 300 seconds (5 minutes) is generally sufficient to allow a rebooted Exchange Client Access server to fully start all services and be ready to handle a full load of traffic, but that time is highly dependent on local conditions. You may want to adjust the time period up or down in your environment based on your server capacity and load.

Subject Alternative Name (SAN) SSL Certificates

This template currently only supports the use of a single DNS name and corresponding certificate and key for all services, or multiple DNS names using a SAN-enabled certificate and key. Support for multiple names, each with separate corresponding certificates and keys, will be in a future release.

An SSL certificate that supports the Subject Alternative Name (SAN) extension allows more than one valid FQDN per certificate, without having to resort to a "wildcard" certificate for a domain. When used in conjunction with Exchange Server, SAN certificates make it simple to combine multiple services into a single virtual server while retaining the flexibility of separate FQDNs. Some examples of using SAN certificates with Exchange 2010 are shown here:
http://technet.microsoft.com/en-us/library/aa995942%28EXCHG.140%29.aspx

When you request a SAN certificate from a certification authority, you must define all desired FQDNs in the Subject Alternative Name field; clients will ignore the Common Name in the certificate Subject.

In BIG-IP versions prior to 11.1, the BIG-IP web-based Configuration utility does not display the Subject Alternative Name values of imported certificates, however, the use of SAN certificates is otherwise supported.

Maximum number of concurrent users: SNAT Pool guidance

If you expect fewer than 6,000 concurrent users per Client Access Server, the iApp configures SNAT Automap. If you expect more than 6,000 users, the iApp configures a SNAT Pool. This section describes how F5 chose 6,000 users as a rule of thumb, and contains additional information if you want to more precisely calculate the number of concurrent users for your SNAT Pool configuration.

The BIG-IP system can create roughly 64,000 connections per SNAT address (ephemeral or source ports used by connections from the BIG-IP range from 1024 to 65,535, or an absolute maximum 64,511 effective concurrent connections). Each user connected to a Client Access server can have about 10 concurrent connections (for example, if a user has Outlook on a PC, a mobile phone, and Lync running simultaneously). Therefore, you would need a SNAT address for each 6,000 concurrent users you expect. For example, if you have 12,000 users, you need two SNAT pool IP addresses; if you have 15,000 users, you need three addresses. The IP address(es) you specify must not be self IP addresses on this BIG-IP system.

Outlook Client Configuration

Exchange administrators will typically use Autodiscover to configure Outlook clients. If manual configuration is required, the following table provides the recommended settings to match the deployment scenarios described in this guide.

Connection Settings	Default	Your Setting	Notes
Connect to Microsoft Exchange using HTTP	Not selected	Selected	This enables Outlook Anywhere
Use this URL to connect to my Proxy server for Exchange	No default value	FQDN of your Outlook Anywhere virtual server on your BIG-IP APM	
Connect using SSL only	Selected	Selected	
On fast networks, connect using HTTP first, then connect using TCP/IP	Not selected	Selected	
On slow networks, connect using HTTP first, then connect using TCP/IP	Selected	Selected	
Proxy authentication settings	NTLM	Basic	

Creating a new Client Access Array

To create a new Client Access Array, use the Exchange Management Shell to run the following command:

```
New-ClientAccessArray -Name "ArrayName" -FQDN outlook.example.com -Site "SiteName"
```

You must replace *ArrayName* with the name you want for your Client Access Array, replace *outlook.example.com* with the FQDN you have configured in DNS, and replace *SiteName* with the name of your Active Directory site.

You must modify the attributes of any pre-existing mailbox databases to use the new array. Use the Exchange Management Shell to run the following command for each database in your array:

```
Set-MailboxDatabase "MailboxDatabaseName" -RPCClientAccessServer outlook.example.com
```

You must specify the correct mailbox databases for your site, and the correct FQDN for your Client Access Array. You can only configure one Client Access Array (and thus one FQDN and one BIG-IP virtual server) per site.

For complete documentation from Microsoft, see
http://technet.microsoft.com/en-us/library/ee332317.aspx

Note on creating advanced monitors manually

If you choose advanced monitors, the BIG-IP system performs logins to most of the Client Access services (all except RPC/MAPI in Exchange 2010 and Forms-based Outlook Web App) and checks for valid content in the response. Because these monitors attempt to access a specific mailbox, they more accurately determine the actual health of CAS services. However, account maintenance and Mailbox status must become a part of your monitoring strategy.

Important note about BIG-IP health monitors that use Exchange server accounts

The monitors described in this section require a valid Exchange server account and associated mailbox specifically for monitoring purposes. The accounts used for authentication must be associated with a valid mailbox. If authentication should fail for any reason, for instance, the account is locked, the Mailbox server associated with that account is down for maintenance, or the account password is changed, the monitors will mark all Client Access servers down for the relevant service (Autodiscover, ActiveSync, or Outlook Anywhere). Maintenance of the accounts and associated mailboxes thus becomes an integral part of your health status checks.

If you choose to use this method, we recommend using at least two separate instances of the monitor, with Mailboxes located on different servers. You should then configure the pool to only mark members down if all monitors fail.

You should create accounts (and associated mailboxes) for monitoring that are not accessed by actual users and that do not have privileged access anywhere else in your network. Because you have to store the user name and password in plain text on your BIG-IP devices, make sure the credentials *are* not used elsewhere in your organization for anything other than monitoring.
We strongly recommend creating a mailbox account(s) specifically for use in the monitor(s).

Appendix E: Active Directory and Exchange Server configuration for NTLM

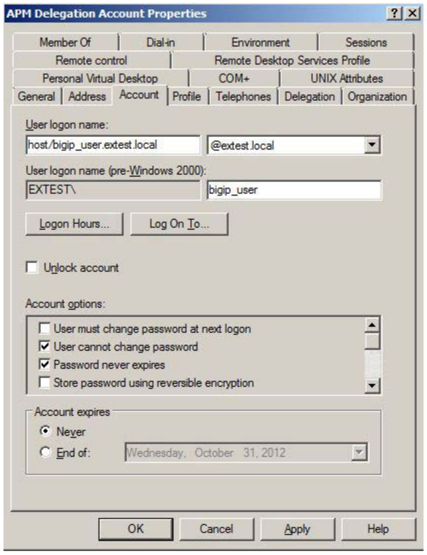
If you plan on configuring your BIG-IP system version 11.3 for NTLM authentication as described in *Optional: Configuring the BIG-IP Access Policy Manager for Outlook Anywhere with NTLM Authentication - BIG-IP version 11.3 or later only on page 97*, you must first perform the following tasks on your Active Directory and Exchange servers.

Note

This section provides guidance only; for specific instructions, consult the appropriate documentation. F5 cannot be responsible for improper configuration of Active Directory or Microsoft devices.

Create Delegation Account

You must create a user account for the BIG-IP system to use to perform Kerberos authentication. The user logon name must begin with **host/** and the account should be a member of the Domain Users, Exchange Trusted Subsystem, Exchange Windows Permissions, and IIS_USRS Active Directory security groups.



APM Delegation Account Properties

User logon name: host/bigip_user.extest.local @extest.local

User logon name (pre-Windows 2000): EXTEST\ bigip_user

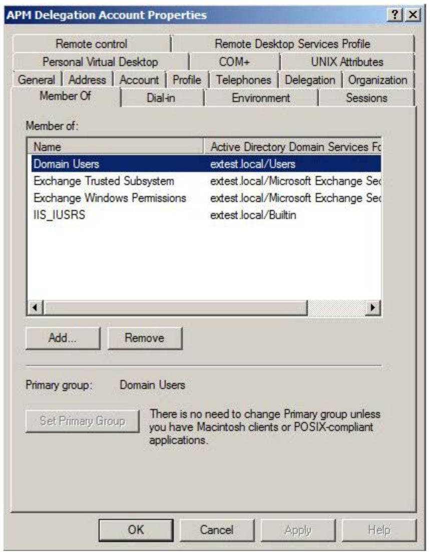
□ Unlock account

Account options:

- □ User must change password at next logon
- ☑ User cannot change password
- ☑ Password never expires
- □ Store password using reversible encryption

Account expires

- ● Never
- ○ End of: Wednesday, October 31, 2012



APM Delegation Account Properties

Member of:

Name	Active Directory Domain Services Fo
Domain Users	extest.local/Users
Exchange Trusted Subsystem	extest.local/Microsoft Exchange Sec
Exchange Windows Permissions	extest.local/Microsoft Exchange Sec
IIS_IUSRS	extest.local/Builtin

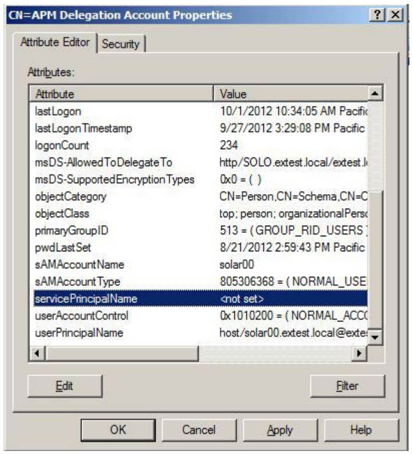
Primary group: Domain Users

There is no need to change Primary group unless you have Macintosh clients or POSIX-compliant applications.

F5 recommends that you do not use an account with domain administrator permissions for delegation, and that you select the **User cannot change password** and **Password never expires** check boxes under Account Properties.

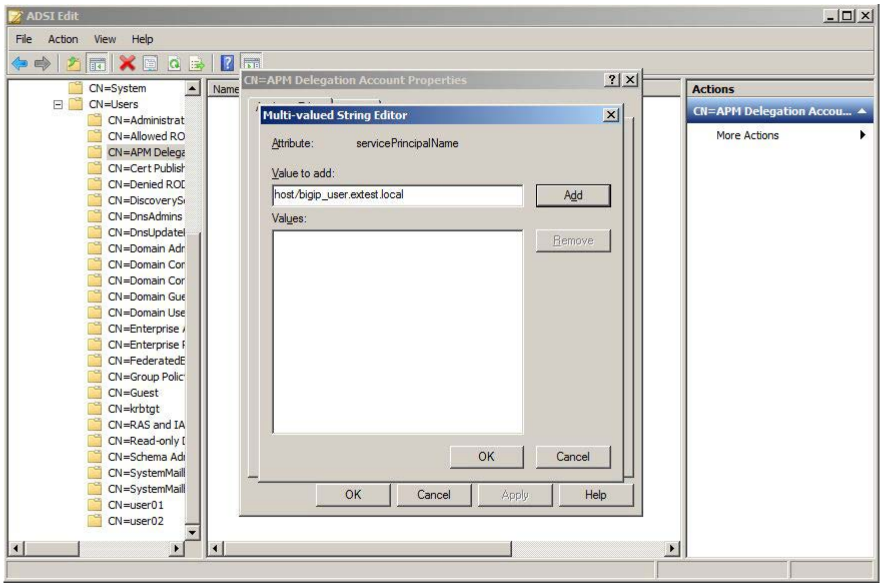
Modify Delegation Account in ADSIEdit

The next task is to modify the **servicePrincipalName** attribute of the Delegation Account from ADSIEdit (Default Context).



Attribute	Value
lastLogon	10/1/2012 10:34:05 AM Pacific
lastLogonTimestamp	9/27/2012 3:29:08 PM Pacific
logonCount	234
msDS-AllowedToDelegateTo	http/SOLO.extest.local/extest.l
msDS-SupportedEncryptionTypes	0x0 = ( )
objectCategory	CN=Person,CN=Schema,CN=C
objectClass	top; person; organizationalPers
primaryGroupID	513 = (GROUP_RID_USERS)
pwdLastSet	8/21/2012 2:59:43 PM Pacific
sAMAccountName	solar00
sAMAccountType	805306368 = (NORMAL_USE
servicePrincipalName	<not set>
userAccountControl	0x1010200 = (NORMAL_ACC
userPrincipalName	host/solar00.extest.local@exte

The **servicePrincipalName** value should match the user logon name of the delegation account.

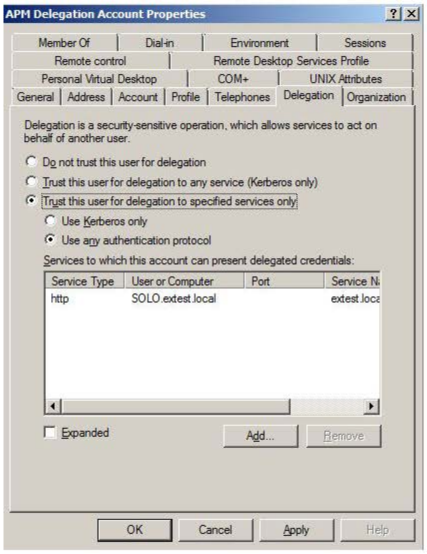


Attribute: servicePrincipalName

Value to add: host/bigip_user.extest.local

Enabling Delegation for Account

After configuring the servicePrincipalName attribute, the Delegation tab appears under the properties of the user account. Select **Trust the user for delegation to specified services only**, and then select **Use any authentication method**. Click **Add** to add a service for which this account can authenticate, and then add the HTTP service type for each Client Access Server.



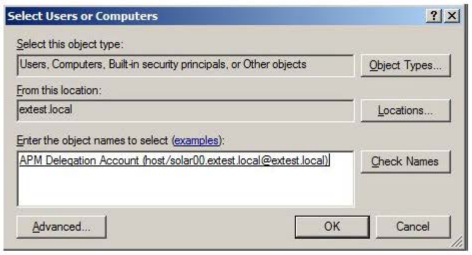
Delegation is a security-sensitive operation, which allows services to act on behalf of another user.

○ Do not trust this user for delegation
○ Trust this user for delegation to any service (Kerberos only)
● Trust this user for delegation to specified services only
○ Use Kerberos only
● Use any authentication protocol

Services to which this account can present delegated credentials:

Service Type	User or Computer	Port	Service Na
http	SOLO.extest.local		extest.loca

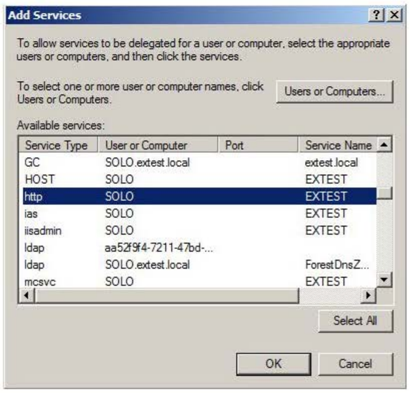
□ Expanded



Select this object type:
Users, Computers, Built-in security principals, or Other objects

From this location:
extest.local

Enter the object names to select (examples):
APM Delegation Account (host/solar00.extest.local@extest.local)



To allow services to be delegated for a user or computer, select the appropriate users or computers, and then click the services.

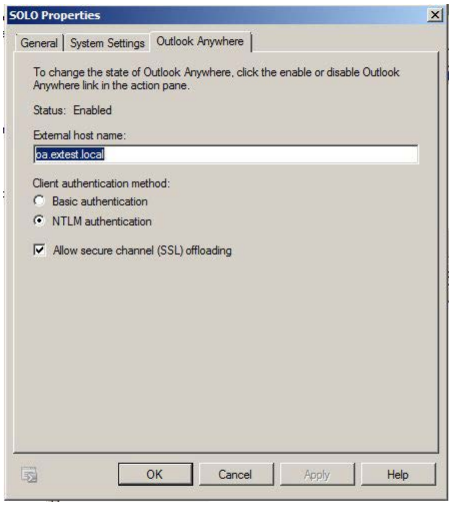
To select one or more user or computer names, click Users or Computers.

Available services:

Service Type	User or Computer	Port	Service Name
GC	SOLO.extest.local		extest.local
HOST	SOLO		EXTEST
http	SOLO		EXTEST
ias	SOLO		EXTEST
iisadmin	SOLO		EXTEST
ldap	aa52f9f4-7211-47bd-...		
ldap	SOLO.extest.local		ForestDnsZ...
mcsvc	SOLO		EXTEST

Configure Outlook Anywhere for NTLM Client Authentication

From the Exchange Management Console or Exchange Administration Center, enable NTLM authentication for Outlook Anywhere.



To change the state of Outlook Anywhere, click the enable or disable Outlook Anywhere link in the action pane.

Status: Enabled

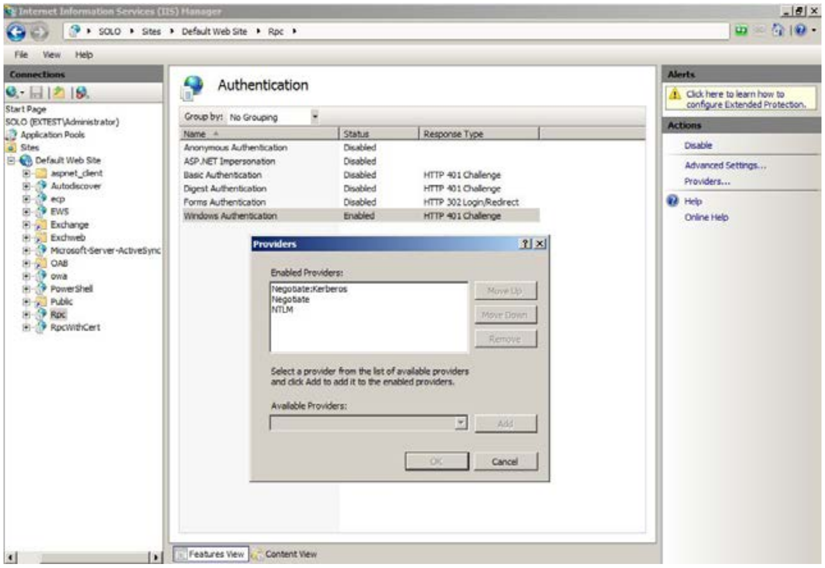
External host name:
pa.extest.local

Client authentication method:
○ Basic authentication
● NTLM authentication

☑ Allow secure channel (SSL) offloading

Enabling Kerberos Authentication for RPC IIS Virtual Directory

Enable the Negotiate:Kerberos authentication provider on the RPC virtual directory in IIS Manager.



Authentication

Group by: No Grouping

Name	Status	Response Type
Anonymous Authentication	Disabled	
ASP.NET Impersonation	Disabled	
Basic Authentication	Disabled	HTTP 401 Challenge
Digest Authentication	Disabled	HTTP 401 Challenge
Forms Authentication	Disabled	HTTP 302 Login/Redirect
Windows Authentication	Enabled	HTTP 401 Challenge

Providers

Enabled Providers:

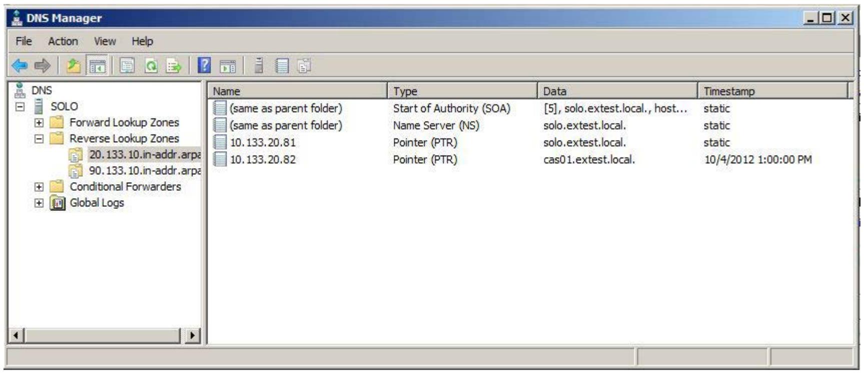
Negotiate:Kerberos
Negotiate
NTLM

Select a provider from the list of available providers and click Add to add it to the enabled providers.

Available Providers:

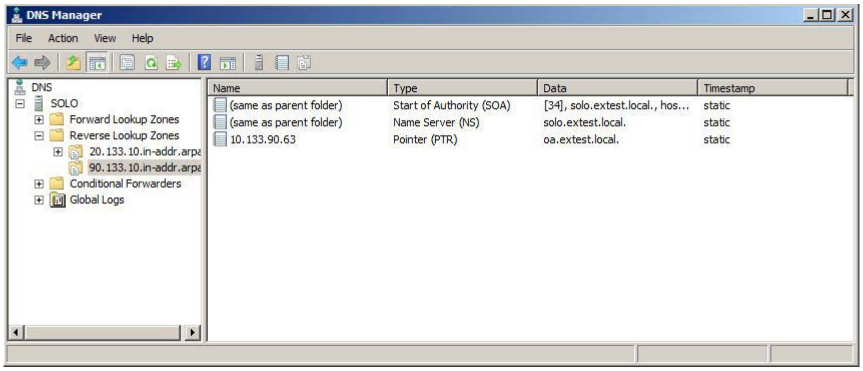
DNS Reverse Lookups

If the Outlook Anywhere IIS Application Pool is running under the LocalSystem or ApplicationPoolIdentity account, you must ensure that APM can successfully perform reverse DNS lookups against the IP address of the Outlook Anywhere pool member(s). These DNS lookups must return the host name of the Exchange CAS server (APM+LTM scenario):



Name	Type	Data	Timestamp
(same as parent folder)	Start of Authority (SOA)	[5], solo.extest.local., host...	static
(same as parent folder)	Name Server (NS)	solo.extest.local.	static
10.133.20.81	Pointer (PTR)	solo.extest.local.	static
10.133.20.82	Pointer (PTR)	cas01.extest.local.	10/4/2012 1:00:00 PM

DNS reverse zone configured for EDGE to LTM scenario (10.133.90.63 is the IP address of internal LTM virtual server, returning the host name matching the SPN created in the next section):

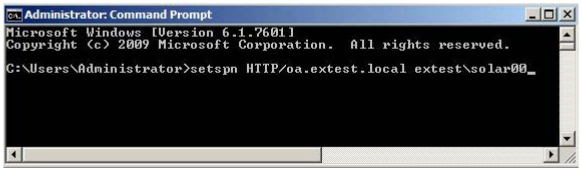


Name	Type	Data	Timestamp
(same as parent folder)	Start of Authority (SOA)	[34], solo.extest.local., hos...	static
(same as parent folder)	Name Server (NS)	solo.extest.local.	static
10.133.90.63	Pointer (PTR)	oa.extest.local.	static

BIG-IP APM/LTM without DNS lookups

If you have deployed BIG-IP APM to forward Outlook Anywhere traffic to a virtual server on an internal BIG-IP LTM, or you are deploying on a BIG-IP system running both LTM and APM and would like to eliminate the need for reverse DNS lookups, you must perform the following configuration steps in Active Directory and from the IIS Management Console on the Client Access Servers.

The first task in this section is to create a Service Principal Name for the Outlook Anywhere FQDN to allow authentication by the delegation user account (example: HTTP/oa.extest.local extest\solar00):

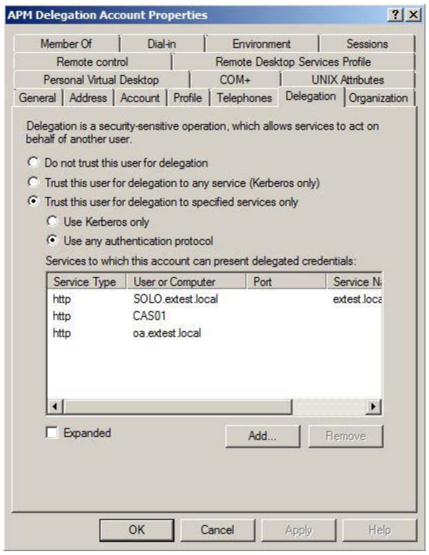


```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\Administrator>setspn HTTP/oa.extest.local extest\solar00_
```

Perform this step for every host name that you will be accessing using NTLM client authentication, which includes Autodiscover by default. The command to set an SPN for Autodiscover is **setspn HTTP/autodiscover.mydomain.com** where you substitute your Autodiscover DNS name for autodiscover.mydomain.com. Also, you must ensure that the previously created delegation account is allowed to log on for all of the SPNs you just created (see *Enabling Delegation for Account on page 106*).

Based on reverse DNS lookups *or* the SPN pattern specified in the Kerberos SSO configuration on page 97, APM will construct a Kerberos ticket request to the Active Directory domain controller for the SPN HTTP/oa.extest.local. You must allow Kerberos constrained delegation for HTTP/oa.extest.local via the Delegation tab within the properties of the previously created user account:



APM Delegation Account Properties

Delegation is a security-sensitive operation, which allows services to act on behalf of another user.

○ Do not trust this user for delegation
○ Trust this user for delegation to any service (Kerberos only)
● Trust this user for delegation to specified services only
○ Use Kerberos only
● Use any authentication protocol

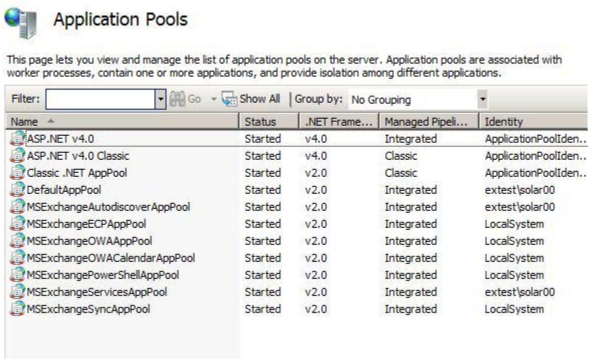
Services to which this account can present delegated credentials:

Service Type	User or Computer	Port	Service N
http	SOLO.extest.local		extest.loca
http	CAS01		
http	oa.extest.local		

□ Expanded

Finally, you must change the Application Pool Identity for the Application Pool used by Outlook Anywhere, Autodiscover, and Exchange Web Services to use the previously created delegation user account.

Begin by opening IIS Manager and selecting **Application Pools > DefaultAppPool > Advanced Settings**.

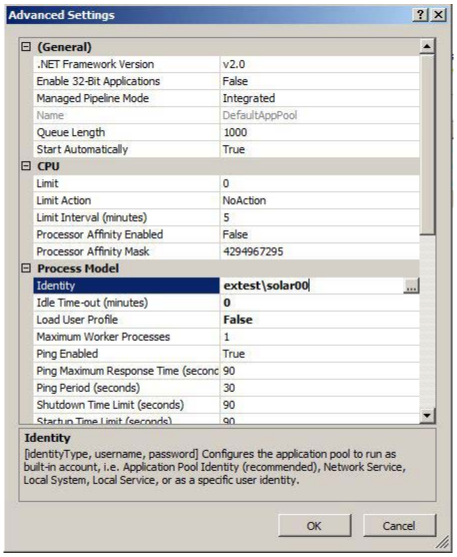


Application Pools

This page lets you view and manage the list of application pools on the server. Application pools are associated with worker processes, contain one or more applications, and provide isolation among different applications.

Name	Status	.NET Frame...	Managed Pipeli...	Identity
ASP.NET v4.0	Started	v4.0	Integrated	ApplicationPoolIden..
ASP.NET v4.0 Classic	Started	v4.0	Classic	ApplicationPoolIden..
Classic .NET AppPool	Started	v2.0	Classic	ApplicationPoolIden..
DefaultAppPool	Started	v2.0	Integrated	extest\solar00
MSExchangeAutodiscoverAppPool	Started	v2.0	Integrated	extest\solar00
MSExchangeECPAppPool	Started	v2.0	Integrated	LocalSystem
MSExchangeOWAAppPool	Started	v2.0	Integrated	LocalSystem
MSExchangeOWACalendarAppPool	Started	v2.0	Integrated	LocalSystem
MSExchangePowerShellAppPool	Started	v2.0	Integrated	LocalSystem
MSExchangeServicesAppPool	Started	v2.0	Integrated	extest\solar00
MSExchangeSyncAppPool	Started	v2.0	Integrated	LocalSystem

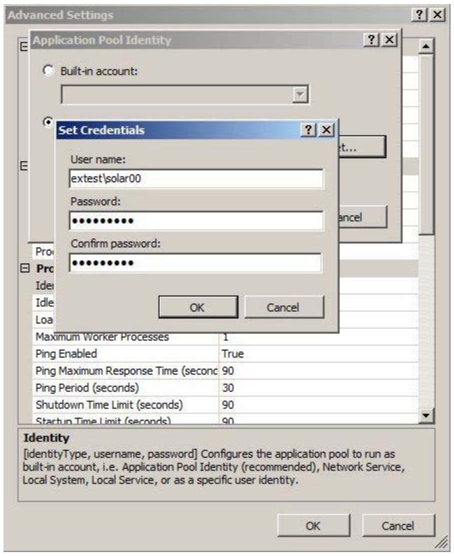
Under **Process Model**, click **Advanced Settings** and then click **...** to the right of **Identity**.



(General)	
.NET Framework Version	v2.0
Enable 32-Bit Applications	False
Managed Pipeline Mode	Integrated
Name	DefaultAppPool
Queue Length	1000
Start Automatically	True
CPU	
Limit	0
Limit Action	NoAction
Limit Interval (minutes)	5
Processor Affinity Enabled	False
Processor Affinity Mask	4294967295
Process Model	
Identity	extest\solar00
Idle Time-out (minutes)	0
Load User Profile	False
Maximum Worker Processes	1
Ping Enabled	True
Ping Maximum Response Time (seconc	90
Ping Period (seconds)	30
Shutdown Time Limit (seconds)	90
Startup Time Limit (seconds)	90

Identity
[identityType, username, password] Configures the application pool to run as built-in account, i.e. Application Pool Identity (recommended), Network Service, Local System, Local Service, or as a specific user identity.

Enter the credentials of the previously created user account for delegation, in DOMAIN\user format:



User name: extest\solar00

Password: •••••••••

Confirm password: •••••••••

Maximum Worker Processes	1
Ping Enabled	True
Ping Maximum Response Time (seconc	90
Ping Period (seconds)	30
Shutdown Time Limit (seconds)	90
Startup Time Limit (seconds)	90

Identity
[identityType, username, password] Configures the application pool to run as built-in account, i.e. Application Pool Identity (recommended), Network Service, Local System, Local Service, or as a specific user identity.

Repeat this process for the **MSExchangeAutodiscoverAppPool** and **MSExchangeServicesAppPool**. You need to restart Internet Information Services for these changes to take effect.

Troubleshooting NTLM Authentication

You can increase the logging level for Access Policy Manager to assist in troubleshooting issues with NTLM client authentication. Click **System > Logs > Configuration > Options**. Under **Access Policy Logging**, select **Debug** log level for either the Access Policy, SSO, or both. The debug setting causes BIG-IP to log all APM-related messages to this file: **/var/log/apm**.

These logs can be useful in diagnosing problems with NTLM auth/Kerberos SSO functionality.

If you have followed these steps and are receiving Kerberos errors in the APM log, you can clear any previously cached Kerberos tickets by restarting the websso service on the EDGE/APM BIG-IP system:

```
[root@ms-ve-v11-x2010-EDGE:Active:Standalone] config # bigstart restart websso
```

Document Revision History

Version	Description	Date
1.0	New deployment guide for the f5.microsoft_exchange_2010_2013_cas.v1.2.0 iApp template.	08-02-2013
1.1	- In "Appendix C: Manual Configuration Tables", added the section *Creating an iRule when using a SNAT pool on page 79* for deployments using SNAT Pool(s), and linked to this section from each applicable configuration table. No changes are required to configurations using the iApp, the template creates this iRule automatically. - Expanded the descriptions of the deployment scenarios which include BIG-IP APM on *page 6* and *page 7.*	08-08-2013
1.2	- Added the section *Microsoft Exchange Remote Connectivity Analyzer fails to successfully run the FolderSync command* to *Troubleshooting on page 53*. Only necessary on versions prior to 11.4. - Added to the description of the configuration and benefits of the BIG-IP system on the first page, calling out the fact that the BIG-IP system performs as a reverse proxy (in addition to other functions) using the configuration in this guide. - Added a note to *Creating the iRule to terminate inactive APM sessions on page 88* stating the iRule is only effective if using Forms-based authentication for OWA.	09-10-2013
1.3	Added *iApp gives an error when using Analytics and deploying POP3 and IMAP4 on page 54* to the troubleshooting section	09-27-2013
1.4	- Added *ActiveSync and/or Autodiscover aren't working after deploying the iApp for separate virtual servers and using APM on page 55* to the troubleshooting section. Updated the separate virtual server configuration tables to use the proper iRules. - Added support for BIG-IP version 11.4.1	10-08-2013
1.5	- Updated the iRule in the manual configuration section for *Creating the iRule to terminate inactive APM sessions on page 88* to match the iRule created by the iApp template. - Added *Clients receiving error message when using BIG-IP APM with OWA 2013 and IE10 or Google Chrome on page 55* to the troubleshooting section. - Added a note to the manual configuration tables that the _sys_APM_ExchangeSupport_OA_NTLMAuth iRule is only applicable if using BIG-IP v11.3.x (and NTLM authentication). - Added *Experiencing issues with iOS devices and ActiveSync when the BIG-IP system is behind a device performing NAT on page 56* to the troubleshooting section. Updated the persistence iRules in the manual configuration section with the resolution described in the troubleshooting section.	10-22-2013
1.6	- Added support for Exchange 2013 CU3 - Added *Advanced monitors for Autodiscover, EWS, and Outlook Anywhere only support Basic and NTLMv1 authentication on page 56* in the Troubleshooting section. Added cross references to this section from the Prerequisites and the applicable section of the iApp walkthrough. - Added *Creating the Data Group and iRule for securing EAC access if not using BIG-IP APM on page 57* to Troubleshooting. Added cross references to this section from the Prerequisites and the applicable section of the iApp walkthrough.	11-27-2013
1.7	Added an additional entry to the troubleshooting section concerning Guest accounts on the BIG-IP system that have been explicitly granted tmsh command line access. See *Troubleshooting on page 53*.	12-23-2013
1.8	Added an additional entry to the troubleshooting section concerning authentication issues when deploying the iApp using BIG-IP APM for client-side NTLM for Outlook Anywhere. See *Troubleshooting on page 53*.	01-09-2014
1.9	- Added an additional entry to the troubleshooting section concerning iOS users experiencing certificate errors after deploying the template for ActiveSync. See *Troubleshooting on page 53*. - Updated the applicable iRules to use SHA256 (replacing CRC32), as it is more secure.	01-22-2014
2.0	- Added support for BIG-IP version 11.5	01-31-2014
2.1	Removed a comment line about TMM sending gratuitous ARPs during failover from the SNAT Pool iRule on *page 79*	02-20-2014
2.2	- Added support for Microsoft Exchange 2013 SP1, which includes support for SSL offload. Modified all guidance for SSL offload to include 2013 SP1. - Added an optional section for MAPI over HTTP on page 49 which was introduced in 2013 SP1.	03-14-2014
2.3	- Added support for BIG-IP version 11.5.1	03-19-2014
2.4	- Added an additional entry to the troubleshooting section concerning slow response times for calendar functionality and reduced responsiveness. See *page 59*.	03-28-2014
2.5	- Noted that v1.3 of the iApp template for Exchange has been released. See *http://support.f5.com/kb/en-us/solutions/public/13000/400/sol13497.html* for a link to the new iApp and new deployment guide. This guide will no longer be updated.	07-09-2014

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