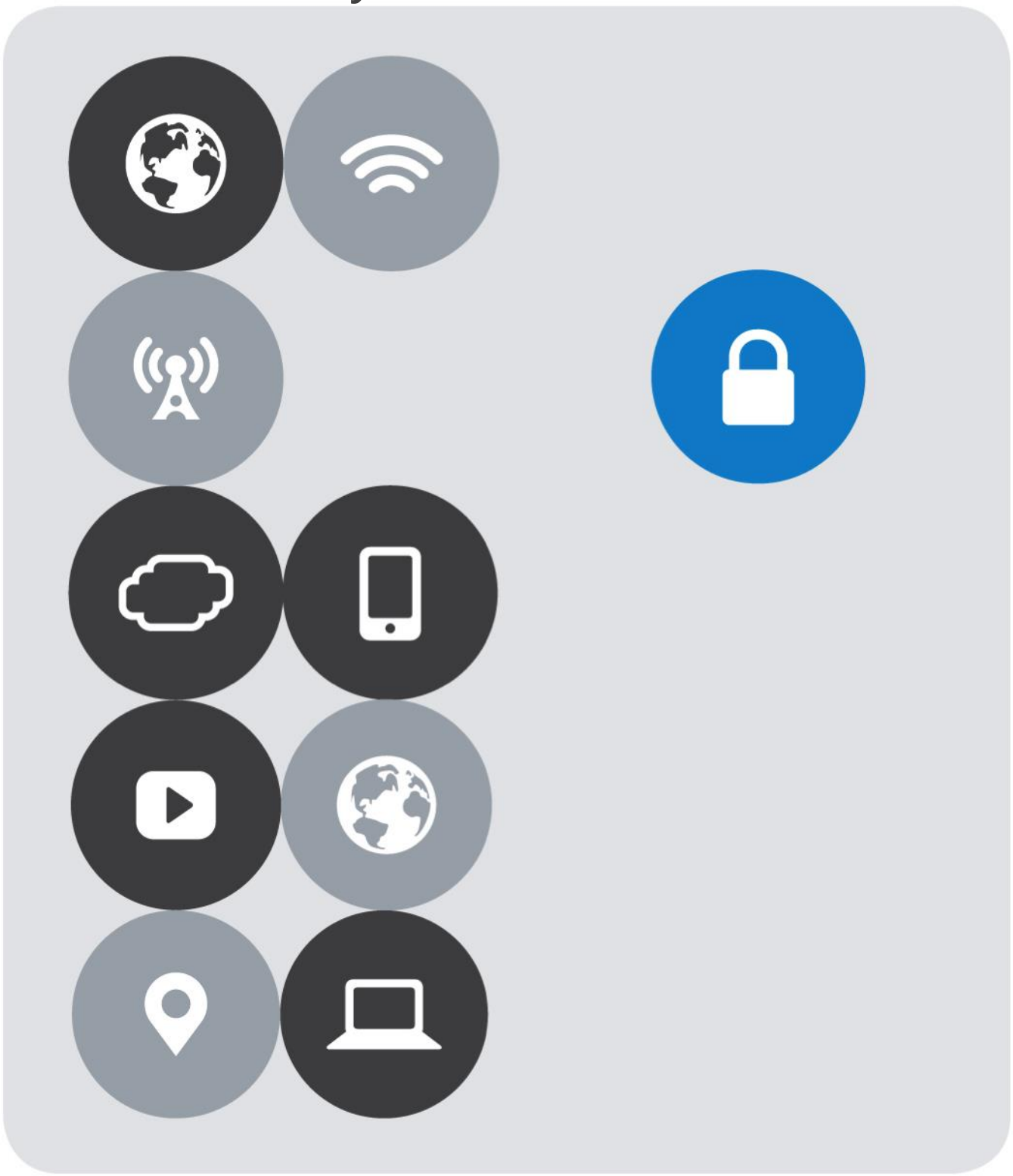
INTEGRATION GUIDE

Load Balancing VMware Unified Access Gateway



Version History

Date	Version	Author	Description	Compatible Versions
Dec 2020	3.0	Matt Mabis	Document Updates	Unified Access Gateway 2.x, 3.x, 2xxx (2)
Aug 2019	2.0	Matt Mabis	Document Updates and IAPP Integration Changes	Unified Access Gateway 2.x and 3.x (2)
Nov 2017	1.0	Matt Mabis	Initial Document with How-To Configure F5 LTM with VMware Unified Access Gateway (2)	VMware Access Point 2.5.x, 2.7.x, 2.8.x; Unified Access Gateway 2.9.x, 3.0.x (1) (2) (3)

NOTES:

(1) VMware Access Point was the name given to Unified Access gateway prior to 2.9.x Releases, it was changed after 2.9.0 to Unified Access Gateway and the branding will continue to be called Unified Access Gateway moving forward. This document will refer to Unified Access Gateway but is also applicable to VMware Access Point.

(2) Functionality for Blast Extreme UDP is only supported in VMware Unified Access Gateway 3.0.x and above

(3) Functionality for Blast Extreme TCP is supported in VMware Access Point 2.8.0 and above and VMware Unified Access Gateway 3.0.x and above

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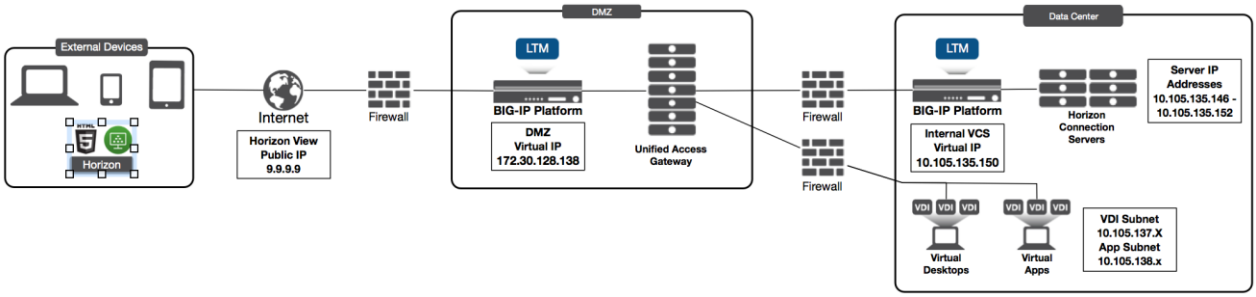
Overview



VMware Unified Access Gateway (UAG), formerly known as VMware Access Point is an appliance that is typically installed in the demilitarized zone (DMZ). UAG is designed to provide safe and secure access to desktop and application resources for remote access. UAG simplifies gateway access and provides tunneled and proxied resources for the following VMware product suites.

- VMware Horizon (Formerly known as Horizon View)
- VMware Horizon Air (Formerly known as DAAS)
- VMware Horizon Air Hybrid Mode
- VMware Workspace One (Cloud and On-Premise)
- AirWatch Tunnel Gateway/Proxy

Typically, UAG is designed to run in the DMZ as the appliance has the following settings:

- Up-to-date Linux Kernel and software patches
- Multiple NIC support for Internet and Intranet traffic
- Disabled SSH
- Disabled FTP, Telnet, Rlogin, or Rsh services
- Disabled unwanted services

F5's products and solutions bring an improved level of reliability, scalability, and security to UAG deployments. For large Horizon deployments requiring multiple pods or several data centers, F5's products provide the load balancing and traffic management needed to satisfy the requirements of customers around the world. F5 and VMware continue to work together on providing customers best-of-breed solutions that allow for better and faster deployments as well as being prepared for future needs, requirements, and growth.

F5 and VMware have a long-standing relationship that centers on technology integration and solution development. As a result, customers benefit from leveraging the experience gained by peers from deploying proven, real-world solutions.

VMware Horizon Protocols

When a Horizon Client user connects to a Horizon environment, several different protocols are used. The first connection is always the primary XML-API protocol over HTTPS. Following successful authentication, one or more secondary protocols are also made.

Primary Horizon Protocol

The user enters a hostname at the Horizon Client which starts the primary Horizon protocol. This is a control protocol for authentication, authorization, and session management. It uses XML structured messages over HTTPS (HTTP over SSL). This protocol is sometimes known as the Horizon XML-API control protocol. In a load balanced environment as shown in Figure 1, the load balancer routes this connection to one of the UAG appliances. The load balancer usually selects the appliance based first on availability, and then out of the available appliances routes traffic based on the least number of current sessions. This evenly distributes the traffic from different clients across the available set of UAG appliances.

Secondary Horizon Protocols

After the Horizon Client has established secure communication to one of the UAG appliances, the user authenticates. If this authentication attempt is successful, then one or more secondary connections are made from the Horizon client. These secondary connections can include:

- HTTPS Tunnel used for encapsulating TCP protocols such as RDP, MMR/CDR and the client framework channel (TCP 443).
- Blast Extreme display protocol (TCP 8443 and UDP 8443).
- PCoIP display protocol (TCP 4172 and UDP 4172).

These secondary Horizon protocols must be routed to the same UAG appliance to which the primary Horizon protocol was routed. This is so UAG can authorize the secondary protocols based on the authenticated user session. An important security capability of UAG is that it only forwards traffic into the corporate datacenter if the traffic is on behalf of an authenticated user. If the secondary protocols were to be misrouted to a different UAG appliance (different from the one where primary protocols were handled) they would not be authorized and would therefore be dropped in the DMZ and the connection would fail. Misrouting the secondary protocols is a common problem if the load balancer is not configured correctly.

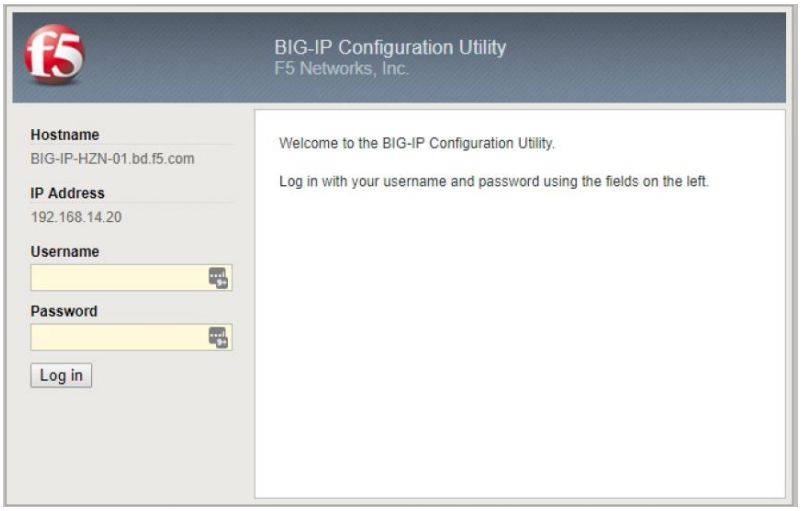
Prerequisites

The following are prerequisites for this solution and must be complete before proceeding with the configuration. Step-by-step instructions for prerequisites are outside the scope of this document, see the BIG-IP documentation on support.f5.com for specific instructions.

1. Create/import an SSL Certificate that contains the load balanced FQDN that will be used for the Horizon instance.
2. Upload the following to the BIG-IP system:
    - The SSL certificate.
    - The Private Key used for the load balanced FQDN certificate.
    - The Primary CA or Root CA for the SSL Certificate you uploaded to the BIG-IP.
3. Ensure the new FQDN for Horizon is in DNS with both forward and reverse records, and points to the Virtual Server IP address on the BIG-IP that will be used for load balancing the Horizon environment.
4. VMware Horizon deployed and functional within the environment. This includes Horizon Connection Servers, VDI, and Unified Access Gateway Servers.
5. Download the latest F5 iApp templates and extract to an accessible location at https://downloads.f5.com/esd/product.jsp?sw=BIG-IP&pro=iApp_Templates
6. An internal virtual server configured for Connection Servers - To create the Virtual IP (VIP) for the Internal Connection Server, refer to the Load Balancing VMware Horizon Connection Servers guide at https://www.f5.com/content/dam/f5/corp/global/pdf/deployment-guides/vmware-horizon-view-dg.pdf
7. Firewall ports have been configured for External DMZ Access (Front-End Firewall Rules) and firewall ports have been configured from DMZ to Internal Environment/VDI Network (Back-End Firewall Rules) to allow access to the environment as per VMware KB https://kb.vmware.com/kb/1027217. Also newest firewall rules can be referenced in VMware documentation for Unified Access Gateway in https://docs.vmware.com/en/Unified-Access-Gateway
8. For Single Namespace, internal vs external DNS need to be configured correctly for the Zones (Internet) to point at the Unified Access Gateway Servers Virtual IP (VIP) and the Internal DNS (LAN) would typically point at the Connection Servers Virtual IP (VIP).

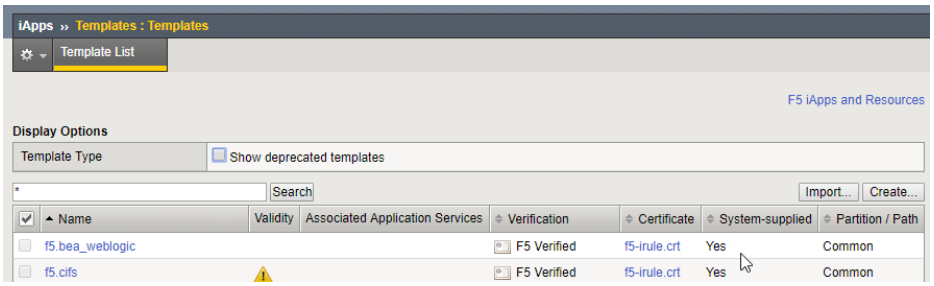
Importing the iApp Template into BIG-IP

1. Login to the F5 Configuration utility.

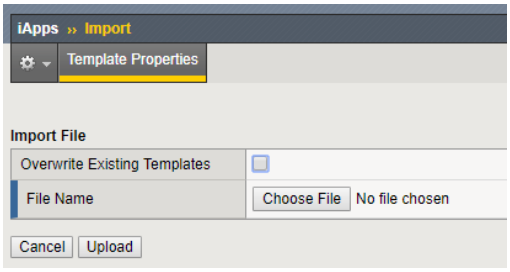


2. On the Main tab, click **iApps > Templates**.

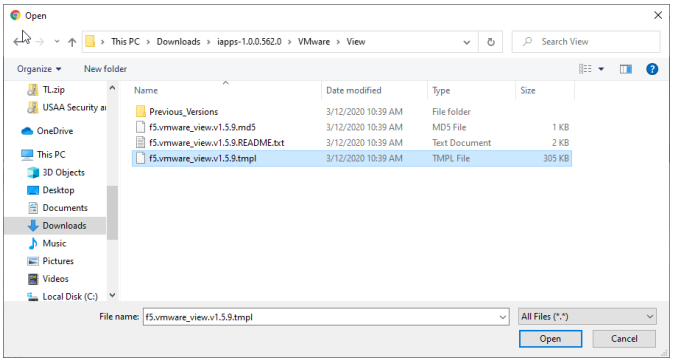
3. Click the **Import** button on the right upper side of the window.



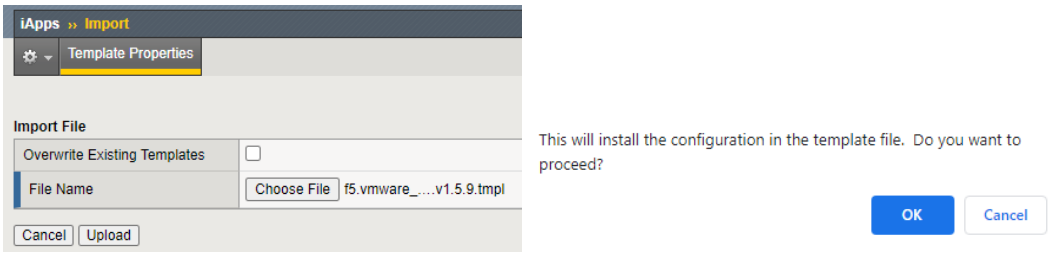
4. Click the **Choose File** button.



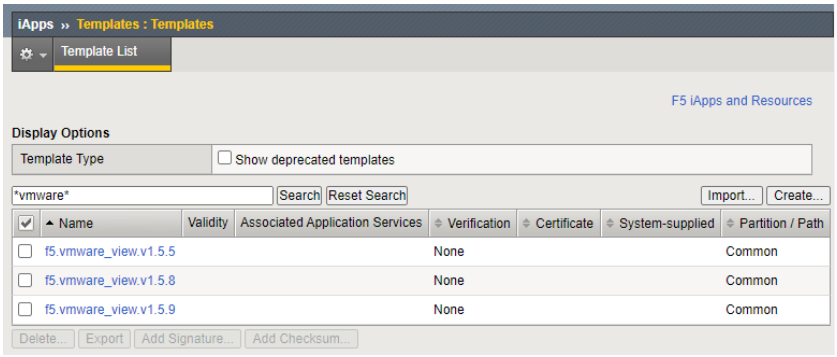
5. Browse to the location where you extracted F5 iApp templates. For more information see the Prerequisites section.



6. Once the TMPL file is selected, the file name appears next to the Choose File button. Once that is correct, click **Upload** (Click **OK** on the Popup Prompt to install the configuration file).



7. Once the upload is complete ensure the template is available. You can use the search *vmware* to find the template.

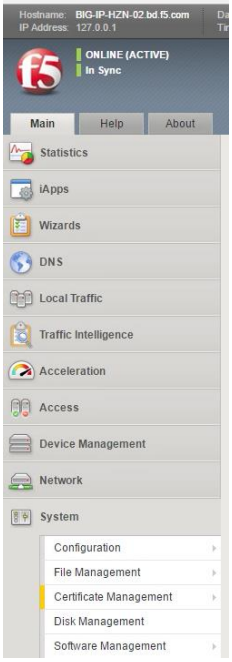


Importing a Certificate into BIG-IP

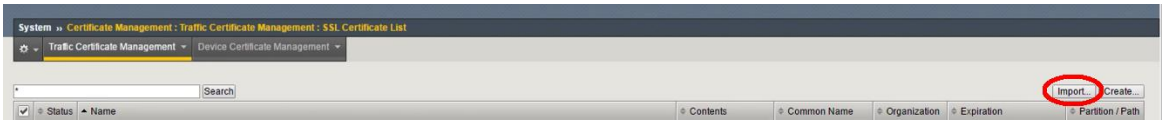
The next task is to import the certificate onto the BIG-IP.

1. Login to the F5 Configuration utility.

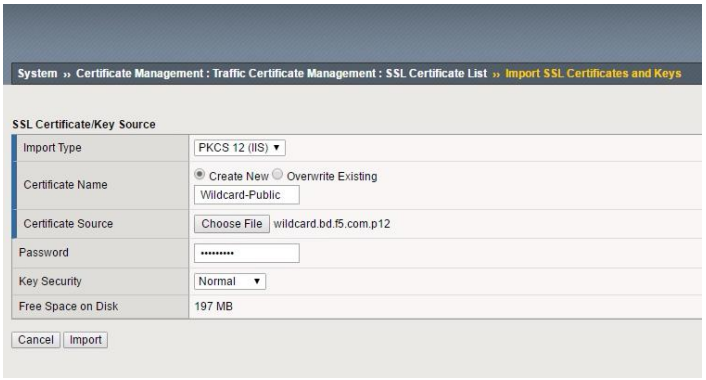
2. On the Main tab click **System > Certificate Management**.



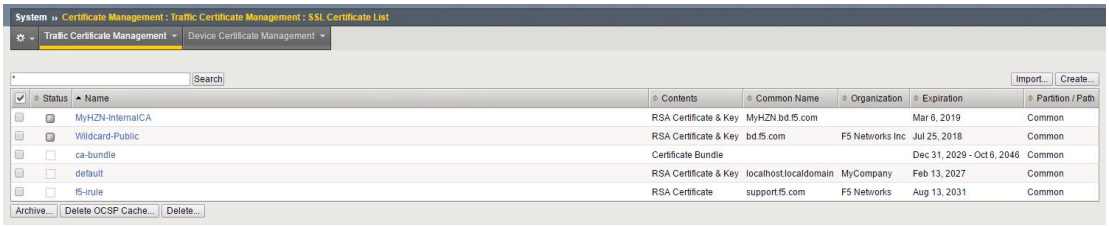
3. Click the **Import** button on the upper right side of the window.



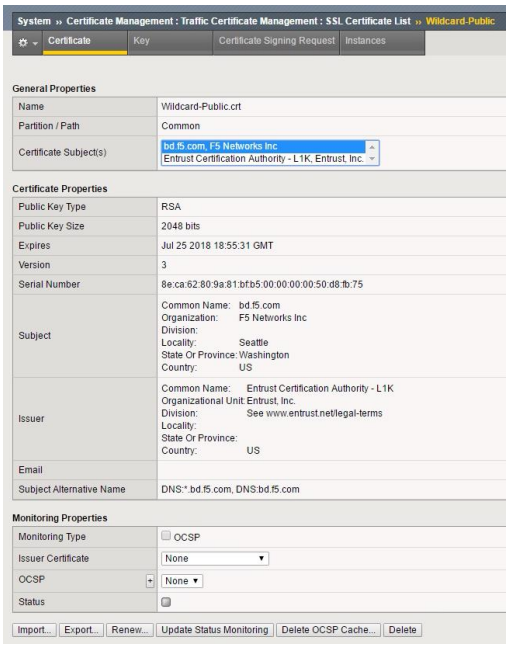
4. Complete the SSL Certificate/Key Source options. In this use case, we are importing a P12/PFX based file to the BIG-IP:
    a. From the **Import Type** list, select a certificate type.
    b. In the **Name** field, type a unique name for the certificate.
    c. Click the **Choose File** button and then locate your certificate file.
    d. In the **Password** field, type the password to decrypt the key in the file.
    e. Click **Import**.



After the import is completed you see your certificate in the window. Click the certificate to verify all the information in it.

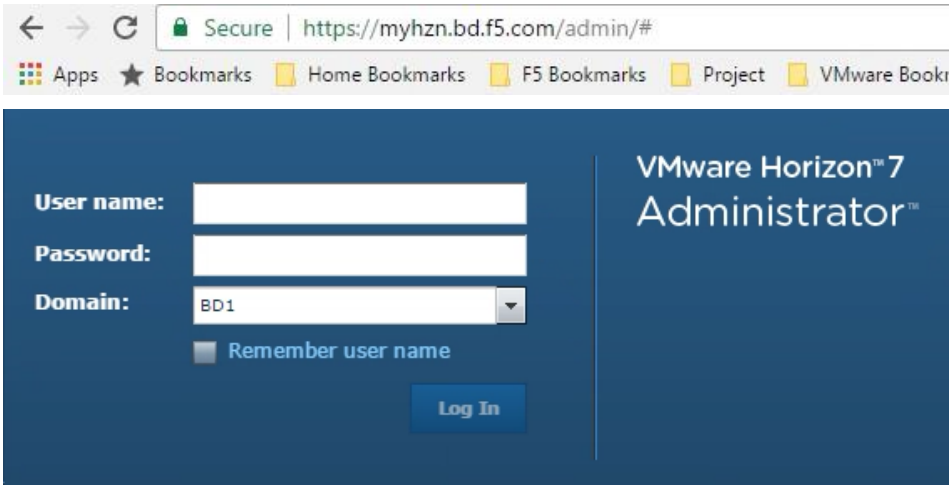


5. Verify the information in the Certificate/Key.



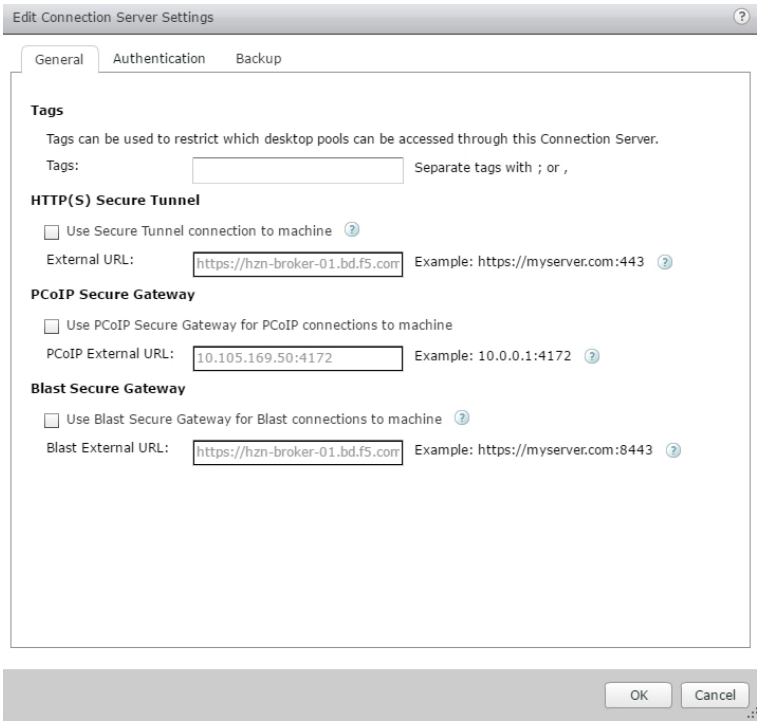
Configuring your Horizon 7 Environment for use with Unified Access Gateway.

1. Login to the VMware Horizon Admin using the FQDN or individual broker webpage.



2. In the Horizon Admin Window select a Broker, and then click **Edit**.

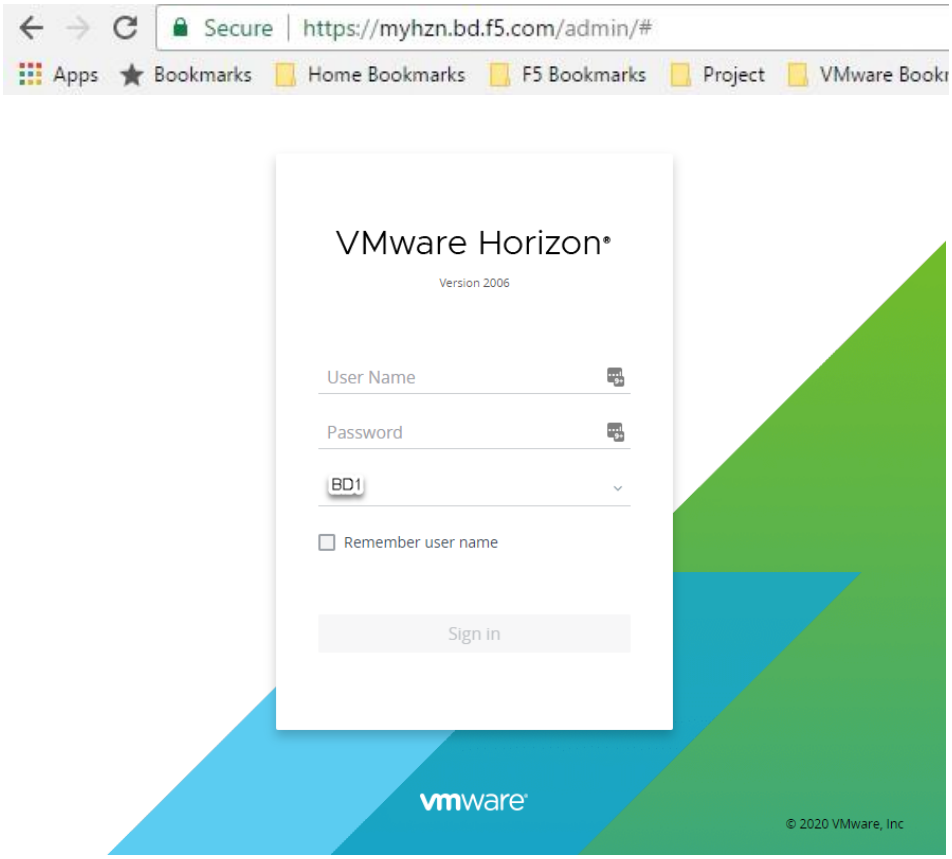
3. Ensure that the Checkboxes for **Use Secure Tunnel connection to machine**, **PCoIP Secure Gateway**, and **Use Blast Secure Gateway for Blast connections to machine** are ***UNCHECKED***, as having any of these checked will cause connection issues.



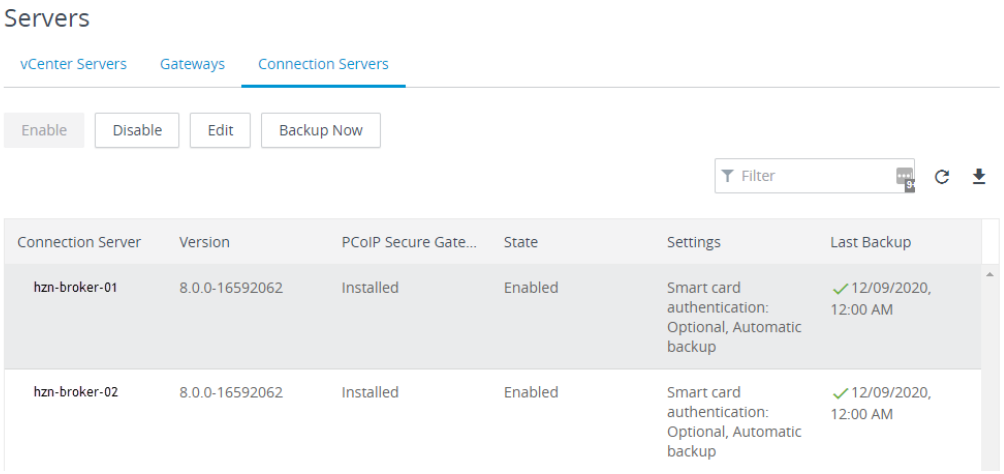
4. In the Horizon Admin Window, edit any additional brokers that will be a part of the pool used to connect to the Unified Access Gateway Servers virtual server, and modify them in the same way as Step 3 (ensuring all boxes are unchecked).

Configuring your Horizon 8 Environment for use with Unified Access Gateway.

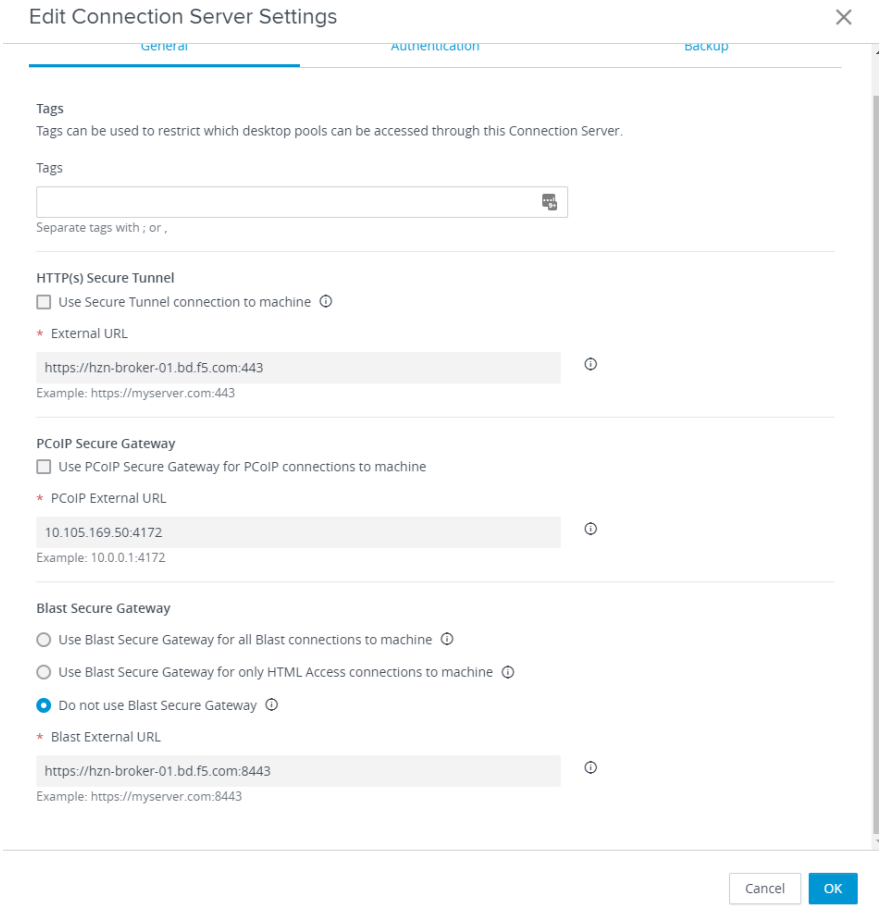
1. Login to the VMware Horizon Admin using the FQDN or individual broker webpage.



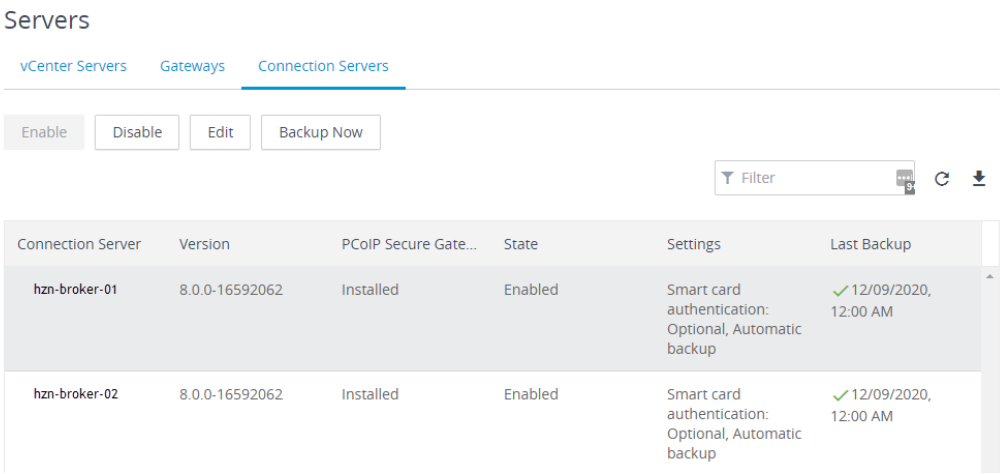
2. In the Horizon Admin go to (Settings → Servers → Connection Servers) select a Broker, and then click **Edit**.



3. Ensure that the Checkboxes for **Use Secure Tunnel connection to machine**, **PCoIP Secure Gateway** are ***UNCHECKED,*** and **Use Blast Secure Gateway** radio button is set to **Do not use Blast Secure Gateway** as having any of these checked/enabled will cause connection issues.



4. In the Horizon Admin Window, edit any additional brokers that will be a part of the pool used to connect to the Unified Access Gateway Servers virtual server, and modify them in the same way as Step 3 (ensuring all protocols are unchecked and disabled).



iRule for the Horizon Origin Header

With the release of Horizon 7 and 8, an implementation for accessing the Horizon admin page and HTML5 Blast was added. These changes require an additional implementation done either by the F5 BIG-IP as an iRule, or a configuration that must be done on each Connection Server to allow load balanced configurations to work correctly.

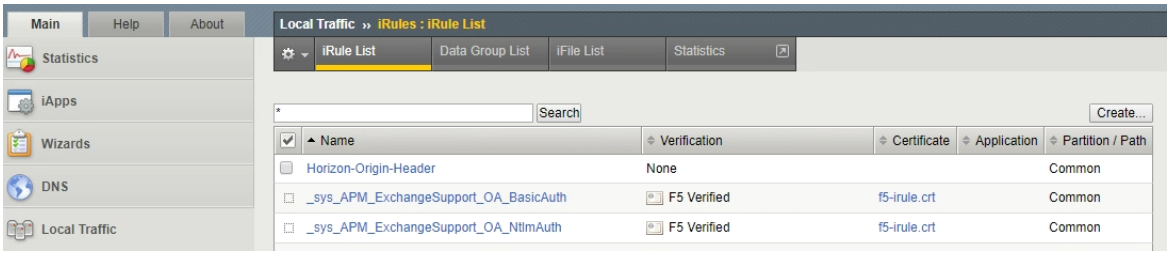
F5 has provided a KB https://support.f5.com/csp/article/K65620682 for resolution of this issue.

VMware has also provided a KB https://kb.vmware.com/kb/2144768 for resolution of this issue.
NOTE: Only one of these two methods are necessary.

Implementing an F5 iRule for Horizon Origin Header

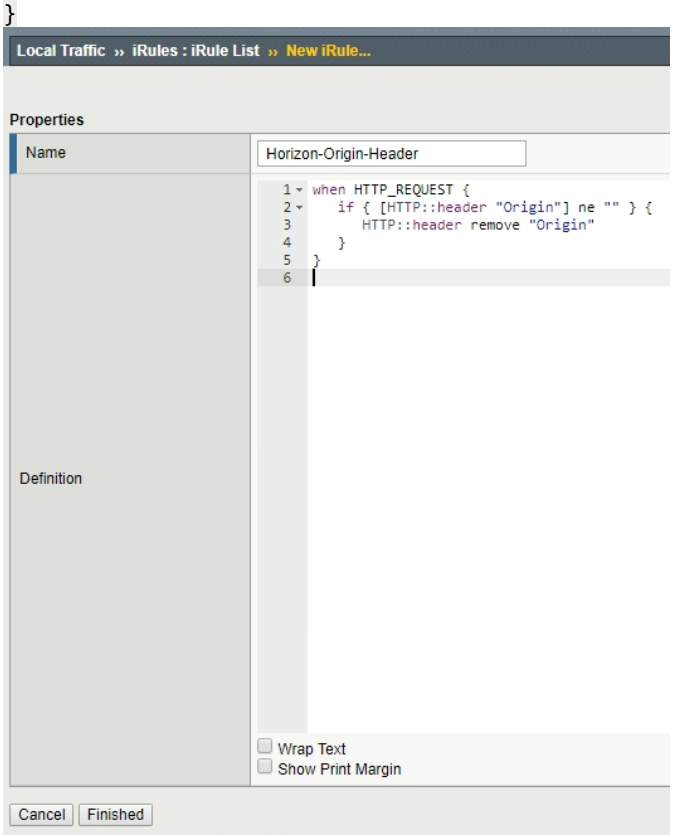
1. Login to the BIG-IP Configuration utility.

2. On the Main tab, click **Local Traffic > iRules** and then click **Create**.

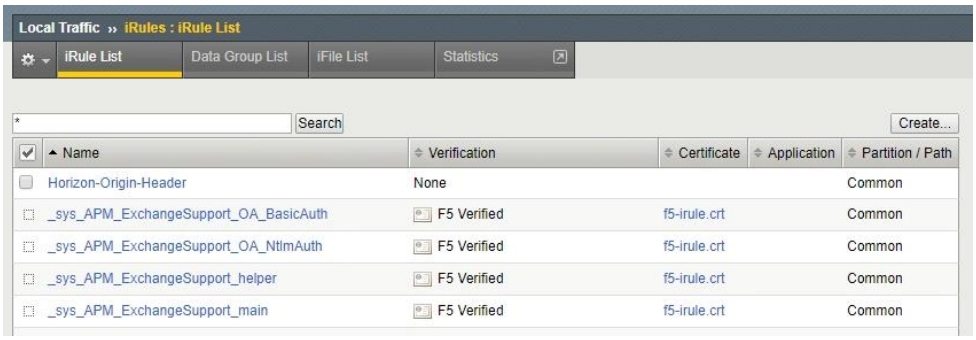


3. In the **Name** filed, type a unique name for the iRule.
4. In the **Description** field, type or copy/paste the following iRule (found in the KB article referenced above):

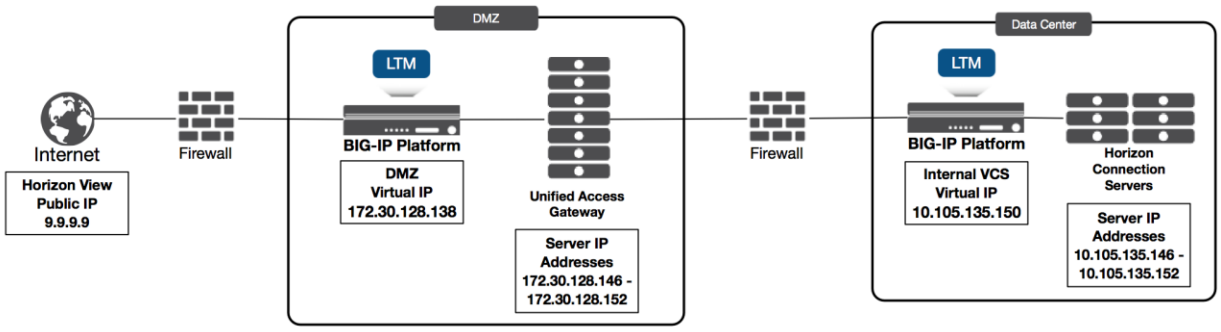
```
when HTTP_REQUEST {
   if { [HTTP::header "Origin"] ne "" } {
      HTTP::header remove "Origin"
   }
}
```



5. Click **Finished**. Once created you should see your newly created iRule in the list.



Creating/Deploying a Virtual IP for External Connections



As part of the workflow, the configuration has LTM placed in the front and behind the Unified Access Gateway (UAG) Servers. This is because in production scenarios, multiple UAG servers require load balancing. Connection servers that manage the Horizon environment in the datacenter must also be load balanced to prevent Single Points of Failure (SPoF).

A load balanced configuration is recommended, and an FQDN configured in DNS must be setup prior to deploying Unified Access Gateway. This ensures the Unified Access Gateway servers can access the load balanced Connection servers to prevent single points of failure.

Use this section to configure the BIG-IP for the UAG Servers for external use.

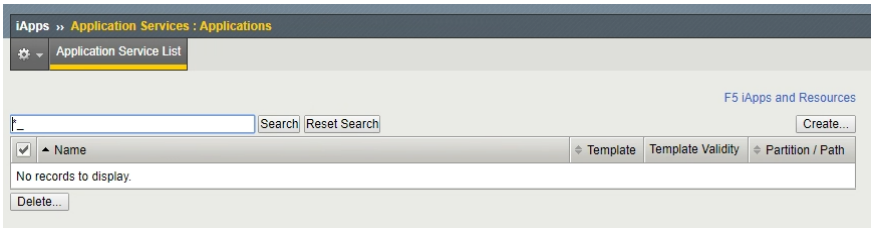
NOTE: There must be an internal Virtual IP (VIP) for the Horizon Connection Servers prior to configuring the UAG Servers. See Section Prerequisites for more details.

Using the iApp to Deploy a Virtual Server for UAG's

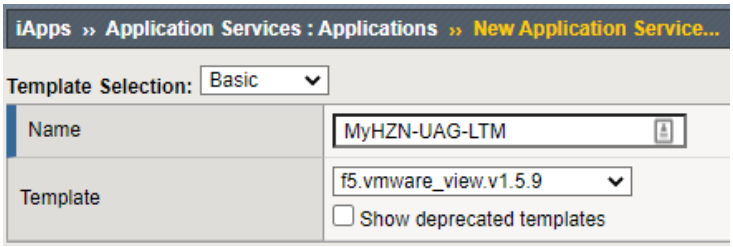
Before beginning this task, ensure you have previously imported the iApp Template as described in the Importing iApp Template into BIG-IP section.

Note: F5 Recommends using the latest iApp Available to ensure latest functionality and features are implemented, this build was using iApp Version 1.5.9

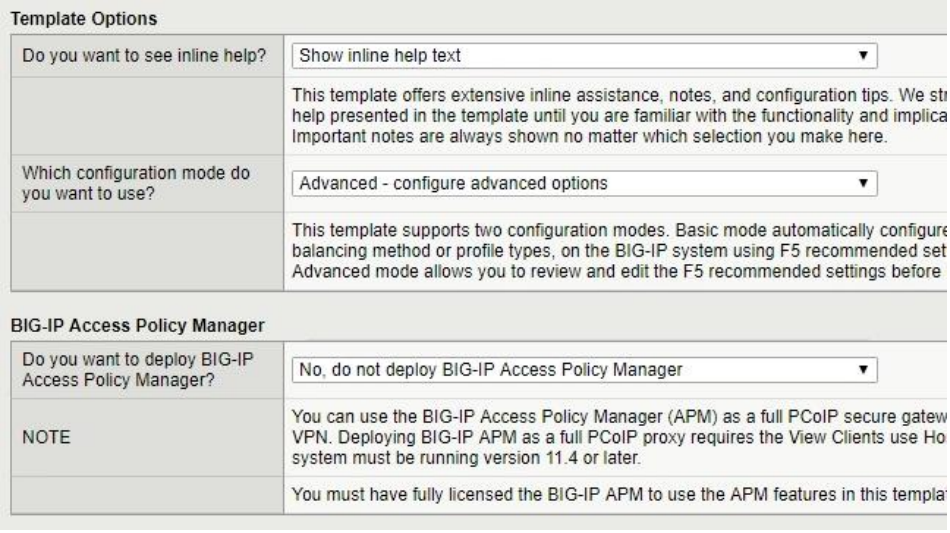
1. On the Main tab, click **iApps > Application Services > Create**.



2. In the Template Selection section of the template, complete the following.
   a. In the **Name** field, type a unique name.
   b. From the **Template** list, select the template **f5.vmware_view.v1.5.9** (or a newer version if available).



3. In the Template Options section, from the configuration mode question, select **Advanced – configure advanced** options.
4. In the BIG-IP Access Policy Manager section, select **No, do not deploy BIG-IP Access Policy Manager**.



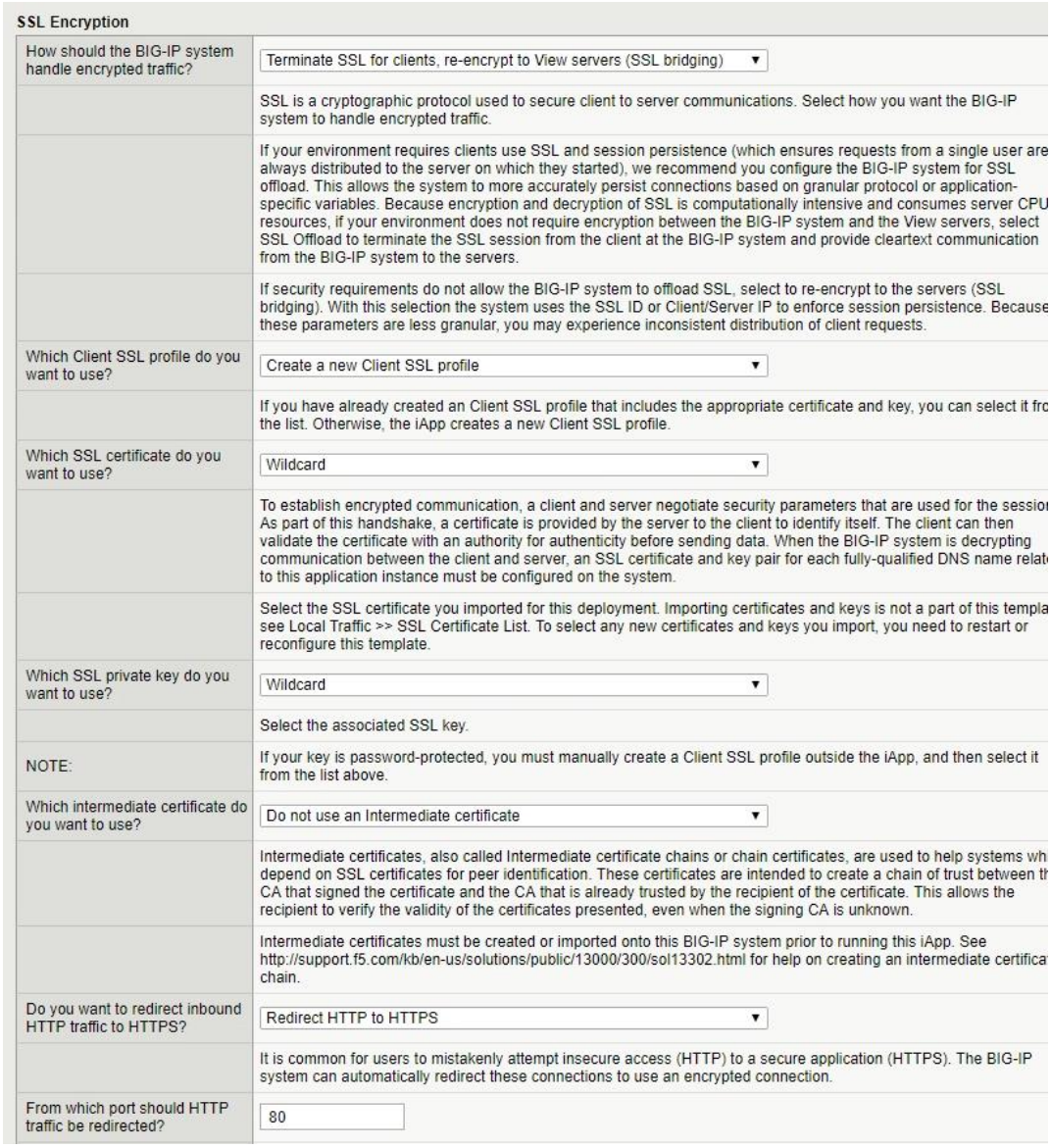
5. In the SSL Encryption section, complete the following.

a. From the *How should the BIG-IP system handle encrypted traffic?* question, select **Terminate SSL for clients, re-encrypt to View Servers (SSL Bridging)**.

b. From the *Which Client SSL profile do you want to use?* question, select **Create a new Client SSL profile**.

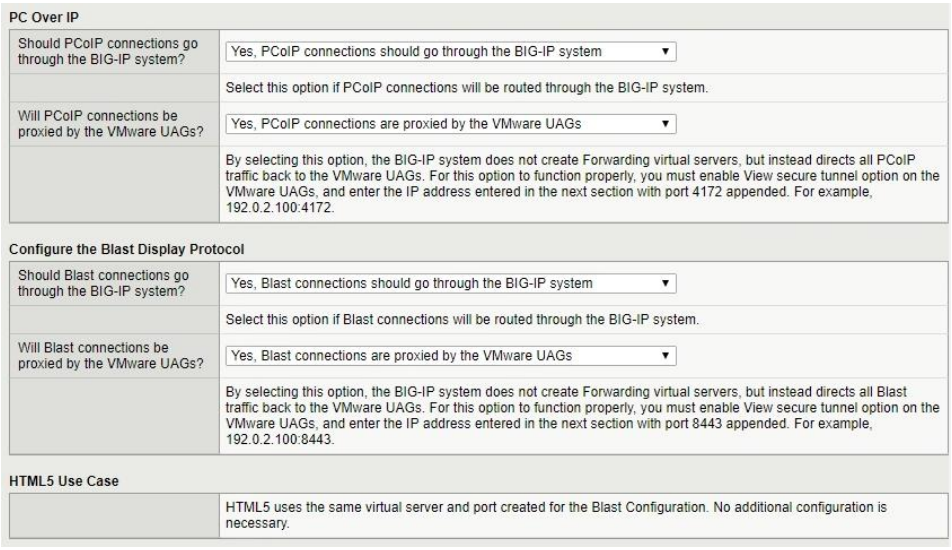
c. From the *Which SSL certificate do you want to use?* and *Which SSL private key do you want to use?* questions, select the SSL certificate and key you imported in Importing a Certificate into BIG-IP

d. (Optional) If using an Internal CA, we recommend you select an intermediate certificate.

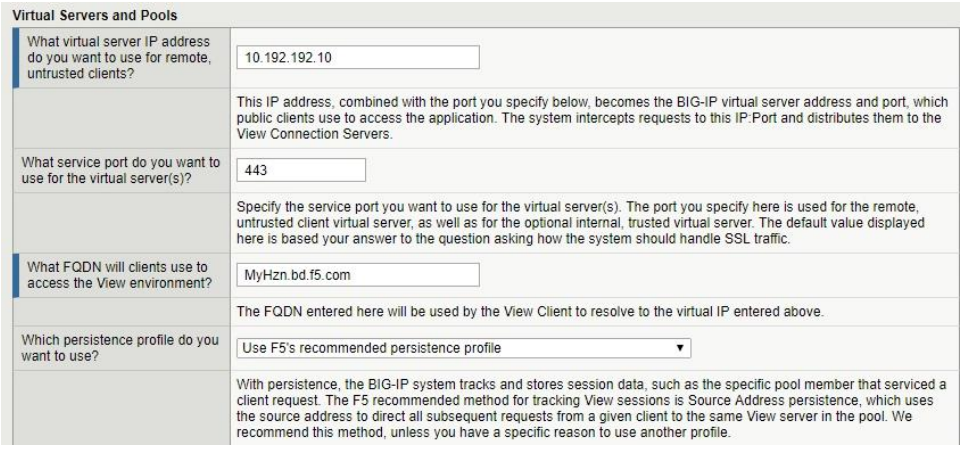


SSL Encryption	
How should the BIG-IP system handle encrypted traffic?	Terminate SSL for clients, re-encrypt to View servers (SSL bridging)
	SSL is a cryptographic protocol used to secure client to server communications. Select how you want the BIG-IP system to handle encrypted traffic.
	If your environment requires clients use SSL and session persistence (which ensures requests from a single user are always distributed to the server on which they started), we recommend you configure the BIG-IP system for SSL offload. This allows the system to more accurately persist connections based on granular protocol or application-specific variables. Because encryption and decryption of SSL is computationally intensive and consumes server CPU resources, if your environment does not require encryption between the BIG-IP system and the View servers, select SSL Offload to terminate the SSL session from the client at the BIG-IP system and provide cleartext communication from the BIG-IP system to the servers.
	If security requirements do not allow the BIG-IP system to offload SSL, select to re-encrypt to the servers (SSL bridging). With this selection the system uses the SSL ID or Client/Server IP to enforce session persistence. Because these parameters are less granular, you may experience inconsistent distribution of client requests.
Which Client SSL profile do you want to use?	Create a new Client SSL profile
	If you have already created an Client SSL profile that includes the appropriate certificate and key, you can select it fro the list. Otherwise, the iApp creates a new Client SSL profile.
Which SSL certificate do you want to use?	Wildcard
	To establish encrypted communication, a client and server negotiate security parameters that are used for the sessio As part of this handshake, a certificate is provided by the server to the client to identify itself. The client can then validate the certificate with an authority for authenticity before sending data. When the BIG-IP system is decrypting communication between the client and server, an SSL certificate and key pair for each fully-qualified DNS name relat to this application instance must be configured on the system.
	Select the SSL certificate you imported for this deployment. Importing certificates and keys is not a part of this templa see Local Traffic >> SSL Certificate List. To select any new certificates and keys you import, you need to restart or reconfigure this template.
Which SSL private key do you want to use?	Wildcard
	Select the associated SSL key.
NOTE:	If your key is password-protected, you must manually create a Client SSL profile outside the iApp, and then select it from the list above.
Which intermediate certificate do you want to use?	Do not use an Intermediate certificate
	Intermediate certificates, also called Intermediate certificate chains or chain certificates, are used to help systems wh depend on SSL certificates for peer identification. These certificates are intended to create a chain of trust between th CA that signed the certificate and the CA that is already trusted by the recipient of the certificate. This allows the recipient to verify the validity of the certificates presented, even when the signing CA is unknown.
	Intermediate certificates must be created or imported onto this BIG-IP system prior to running this iApp. See http://support.f5.com/kb/en-us/solutions/public/13000/300/sol13302.html for help on creating an intermediate certifica chain.
Do you want to redirect inbound HTTP traffic to HTTPS?	Redirect HTTP to HTTPS
	It is common for users to mistakenly attempt insecure access (HTTP) to a secure application (HTTPS). The BIG-IP system can automatically redirect these connections to use an encrypted connection.
From which port should HTTP traffic be redirected?	80

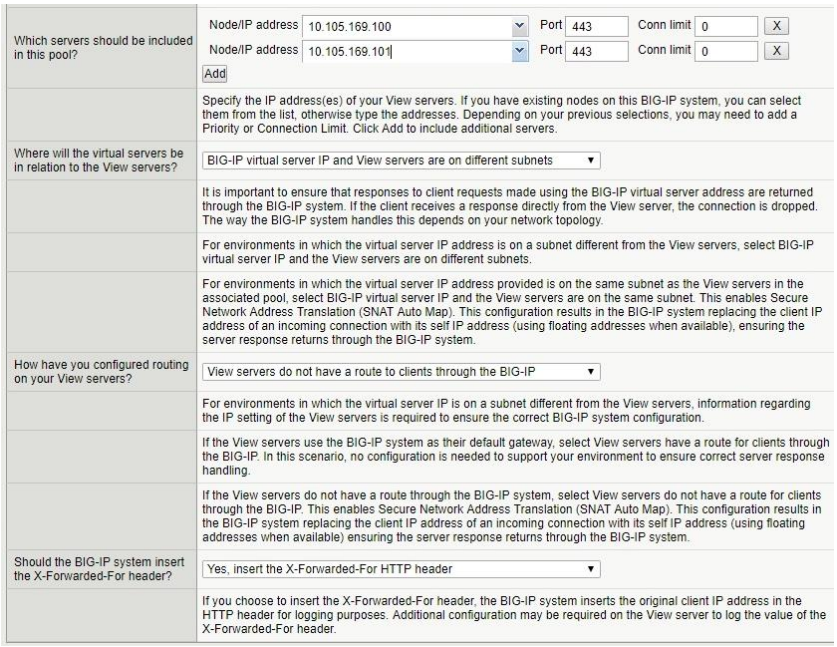
6. In the PC Over IP section, complete the following.
    a. From the *Should PCoIP connections go through the BIG-IP system?* question, select **Yes, PCoIP connection should go through the BIG-IP system**.
    b. From the *Will PCoIP connections, be proxied by the VMware UAGs?* question, select **Yes, PCoIP connections are proxied by the VMware UAGs**.
    c. From the *Should Blast connections go through the BIG-IP system?* question, select **Yes, Blast connection should go through the BIG-IP system**.
    d. From the *Will Blast connections be proxied by the VMware UAGs?* question, select **Yes, Blast connections are proxied by the VMware UAGs**.



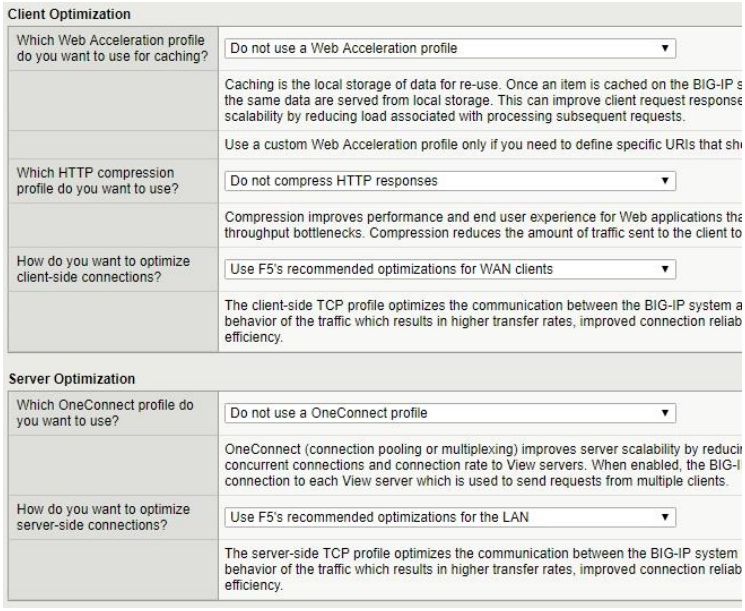
7. In the Virtual Servers and Pools section, complete the following.
    a. Type the IP address for the virtual server.
    b. Type the FQDN to which external clients will connect with the Horizon Client.
    c. If a longer persistence is required due to longer global timeouts it is recommended to create a persistence profile and modify the setting. If using a default configuration leave the default recommended persistence profile. (See VMware KB - https://kb.vmware.com/s/article/56636)



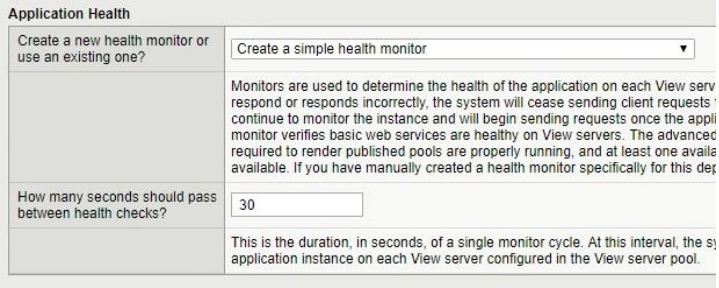
8. Virtual Servers and Pools configuration continued.
    a. In the *Which servers should be included in this* pool section, type the IP addresses of the nodes for the Unified Access Gateway Servers, and ensure that port 443 is automatically set (if it is set to port 80, then check previous step #3 and make sure **SSL Bridging** is selected and not **SSL Offload**). Click **Add** to include more servers.
    b. For the next two questions, select the options based on your environment.
    c. From the *Should the BIG-IP system insert the X-Forwarded-For header?* question, ensure **Yes, Insert the X-Forwarded-For HTTP header** is selected.



9. In the Client and Server Optimization sections, leave all settings at the defaults.

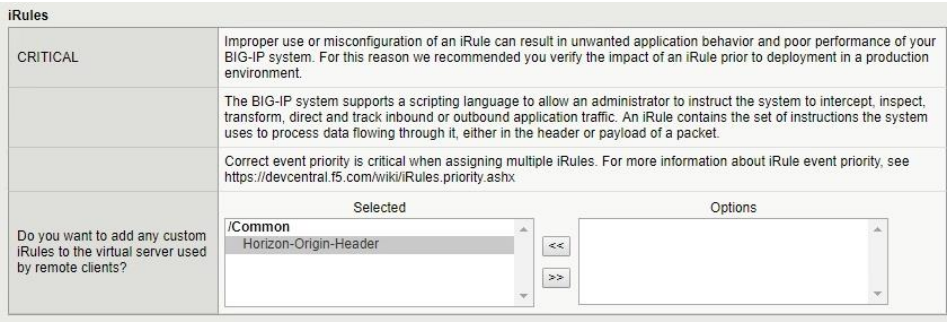


10. In the Application Health section, Select “Create a simple health monitor” as the Advanced monitor does NOT work with UAG Servers.

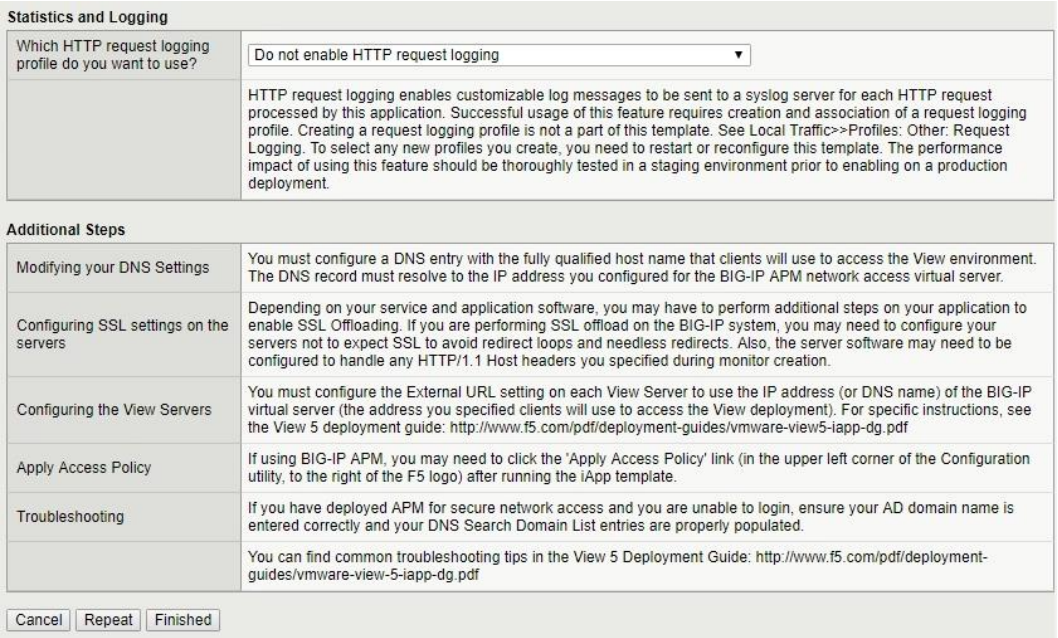


11. If you created the iRule in [iRule for the Horizon Origin Header,] from the Options list, select the iRule you created click the Add (<<) button to move it to the Selected list. Using the iRule removes the need to disable the origin header within the servers locked.properties.

    Note: If you used the VMware Origin Header method, skip this step.



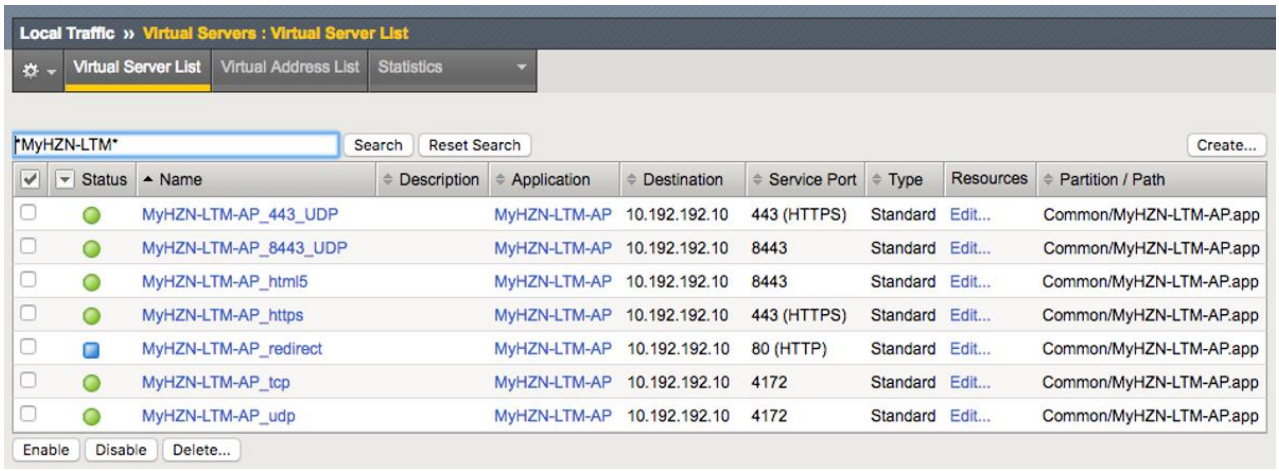
12. In the Statistics and Logging section, leave the defaults and then click the **Finished** button.



13. After clicking Finished, the summary screen appears. You should see all monitored items with a green Available icon if configured correctly.

Final Configuration

Once completed, you should the iApp (1.5.9) will create the below configuration for F5 LTM with VMware Horizon Unified Access Gateway (UAG) for PCoIP and Blast Extreme TCP/UDP with BEAT (Blast Extreme Adaptive Transport).



Manually Creating a Virtual Server for UAG's

This Section is for customers who wish to manually configure the Virtual Servers for integrating a VMware UAG with F5

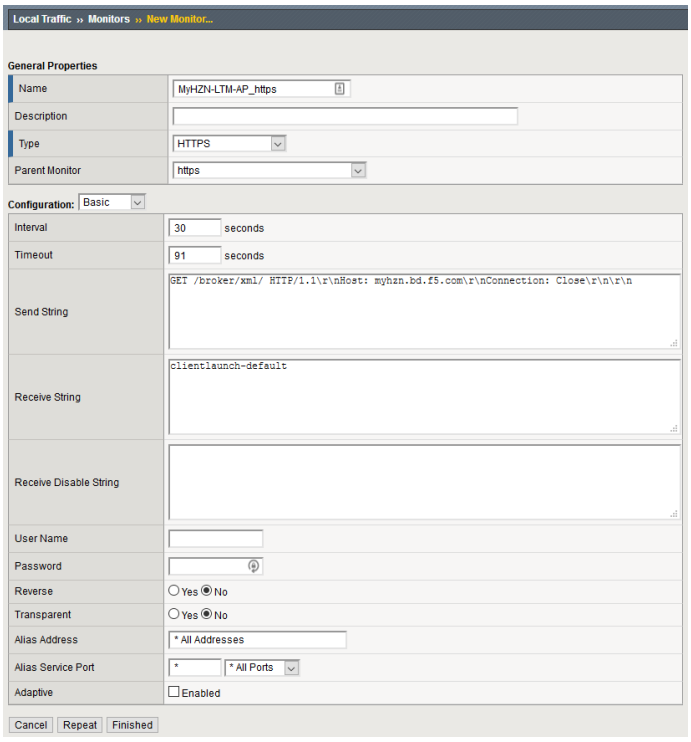
Note: If you previously created an iApp deployment with the information in previous sections you do NOT need to follow these steps.

Creating Monitors

As per VMware KB https://kb.vmware.com/s/article/56636 the method used for the HTTPS monitor is an alternate way to identify if the Horizon environment is running correctly. F5 has used this method for many years on many VMware View and VMware Horizon versions. It is **NOT recommended** to change the interval time to anything less than 30 seconds as this can cause instabilities in the Horizon Connection Servers.

HTTPS – Monitor

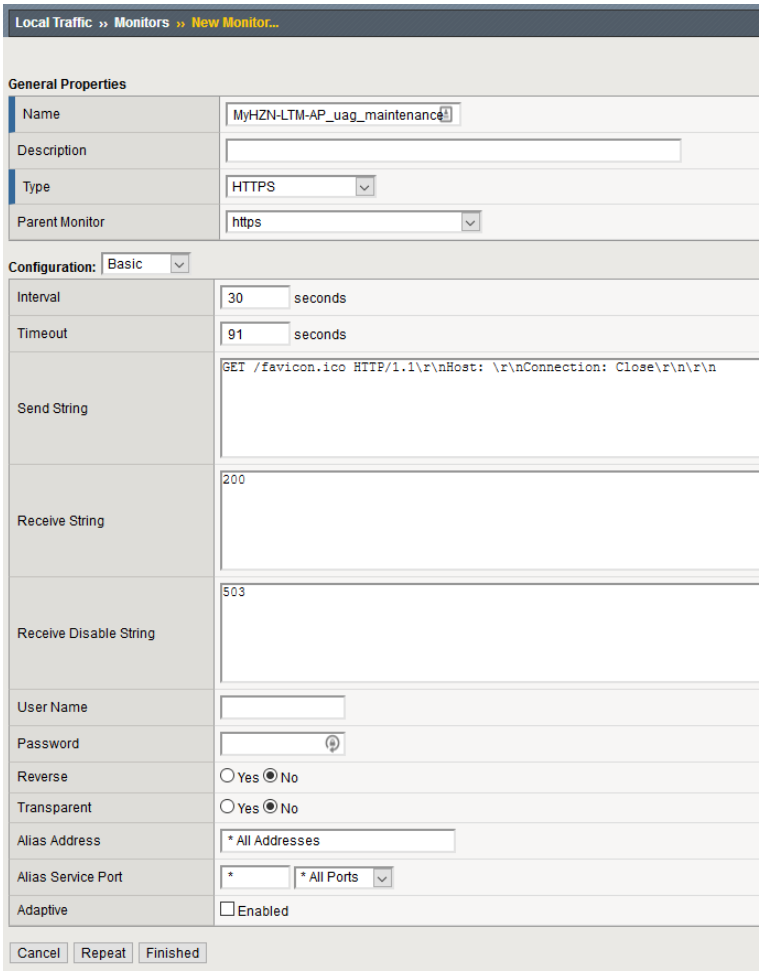
1. Create a simple HTTPS monitor using the following guidance.
    a. On the Main tab, click **Local Traffic > Monitors > Create**.
    b. In the **Name** field, type a unique name.
    c. From the **Type** list, select **HTTPS**.
    d. Ensure the Parent Monitor is **https**.
    e. In the **Interval** field, type **30**.
    f. In the **Timeout** field, type **91**.
    g. In the **Send String** field, type (or copy and paste) **{FQDN} is replaced by FQDN for VIP**:
    GET /broker/xml/ HTTP/1.1\r\nHost: {FQDN}\r\nConnection: Close\r\n\r\n
    h. In the **Receive String** field, type **clientlaunch-default**.
    i. Leave all other settings at the default and then click Finished.



UAG Maintenance - Monitor

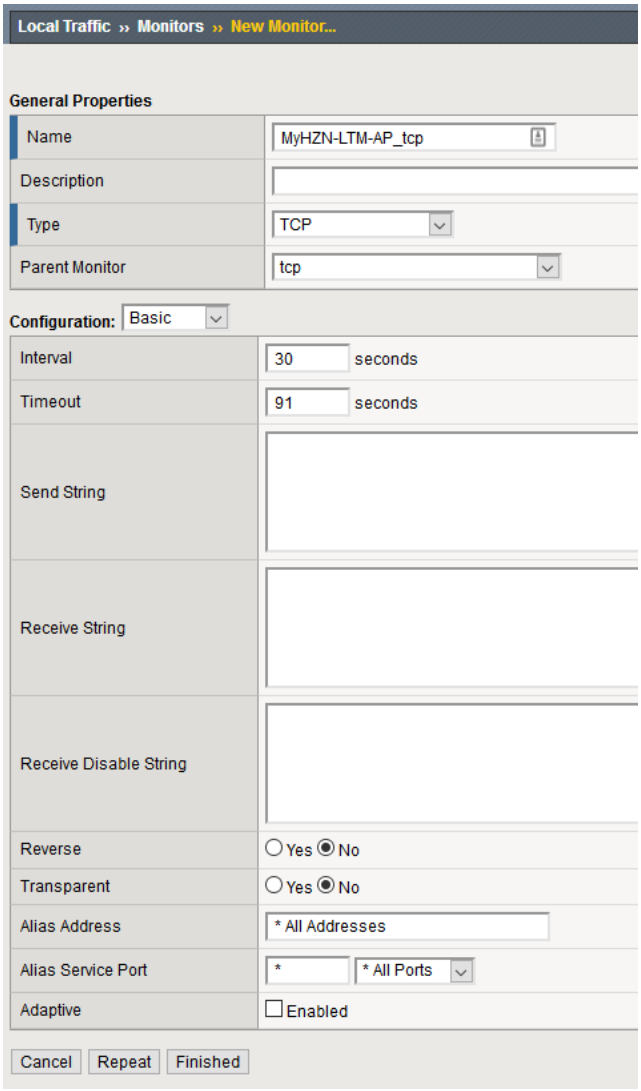
This monitor is used to identify when the Node is in Quiesce Mode (Maintenance). Depending on your version of VMware Horizon you could use VMware KB https://kb.vmware.com/s/article/56636 to use HEAD instead of GET. The Received Disable String on an F5 BIG-IP is an error 503.

1. Create a simple HTTPS monitor using the following guidance.
    a. On the Main tab, click **Local Traffic > Monitors > Create**.
    b. In the **Name** field, type a unique name (different from the first).
    c. From the **Type** list, select **HTTPS**.
    d. Ensure the Parent Monitor is **https**.
    e. In the **Interval** field, type **30**.
    f. In the **Timeout** field, type **91**.
    g. In the **Send String** field, type (or copy and paste):
    GET /favicon.ico HTTP/1.1\r\nHost: \r\nConnection: Close\r\n\r\n
    h. In the **Receive String** field, type **200**
    i. in the **Receive Disable String** field, type **503**
    j. Leave all other settings at the default and then click **Finished**.



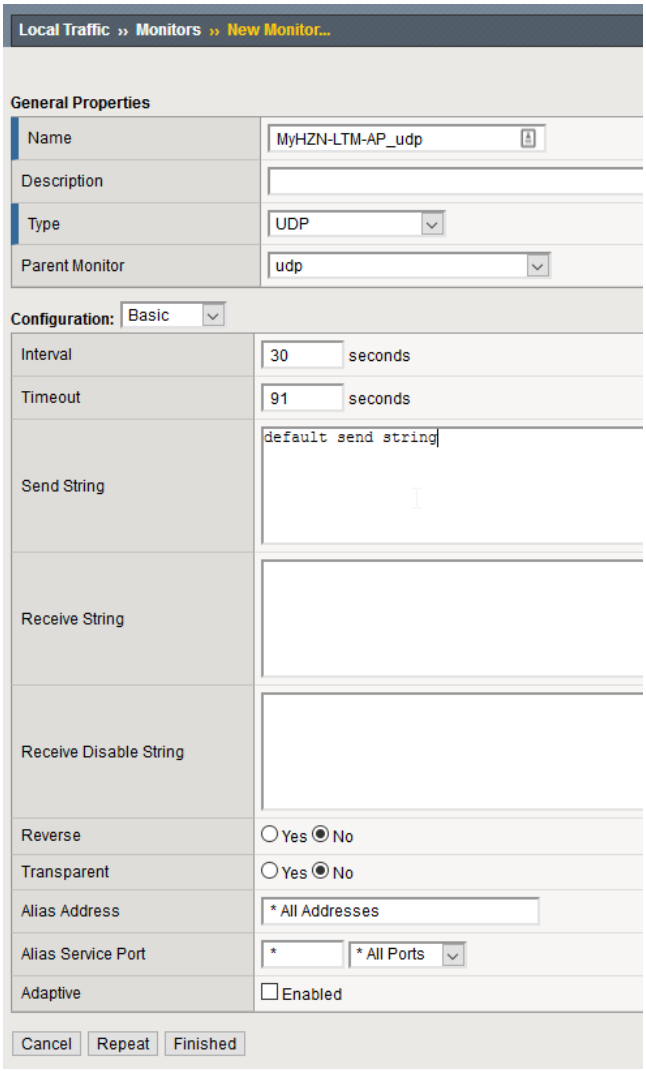
TCP (PCoIP/Blast) - Monitor

1. Create a simple monitor for TCP (PCoIP/Blast) using the following guidance.
    a. On the Main tab, click **Local Traffic > Monitors > Create**.
    b. In the **Name** field, type a unique name.
    c. From the **Type** list, select **TCP**.
    d. Ensure the Parent Monitor is **tcp**.
    e. In the **Interval** field, type **30**.
    f. In the **Timeout** field, type **91**.
    g. Leave all other settings at the default and then click **Finished**.



UDP (PCoIP/Blast) - Monitor

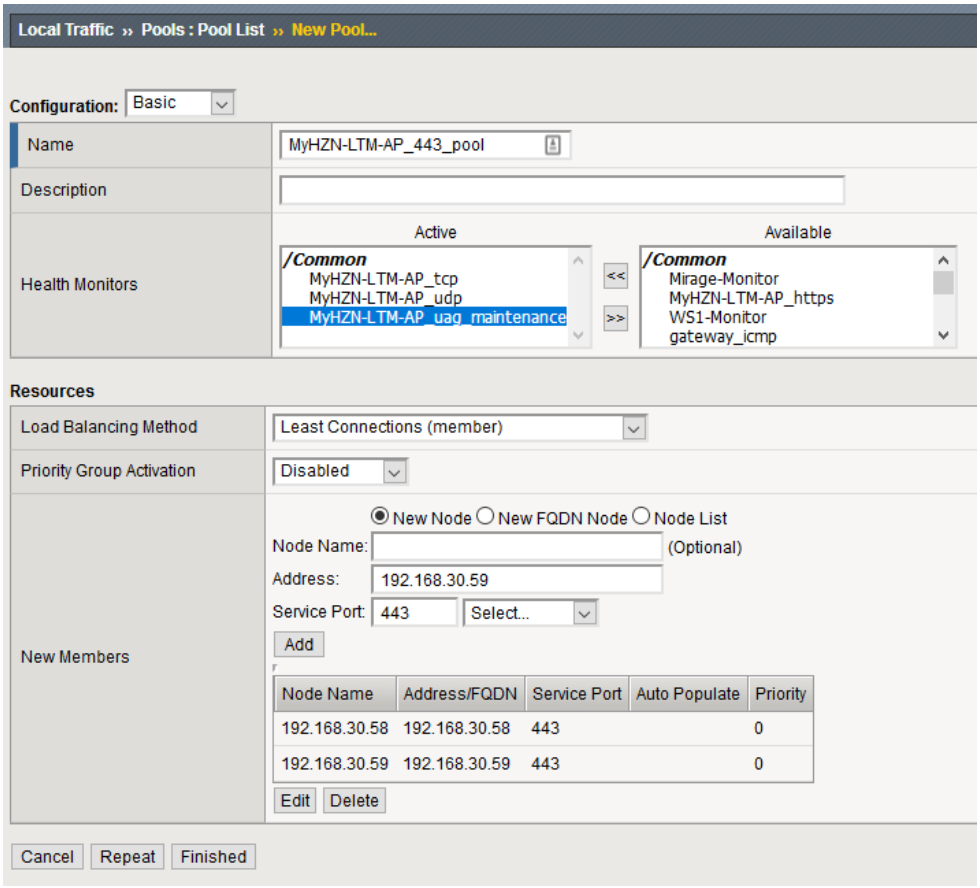
1. Create a simple monitor for UDP (PCoIP/Blast) using the following guidance.
    a. On the Main tab, click **Local Traffic > Monitors > Create**.
    b. In the **Name** field, type a unique name.
    c. From the **Type** list, select **UDP**.
    d. Ensure the Parent Monitor is **udp**.
    e. In the **Interval** field, type **30**.
    f. In the **Timeout** field, type **91**.
    g. In the **Send String** field, type (or copy and paste):
    default send string
    h. Leave all other settings at the default and then click **Finished**.



Creating Pools

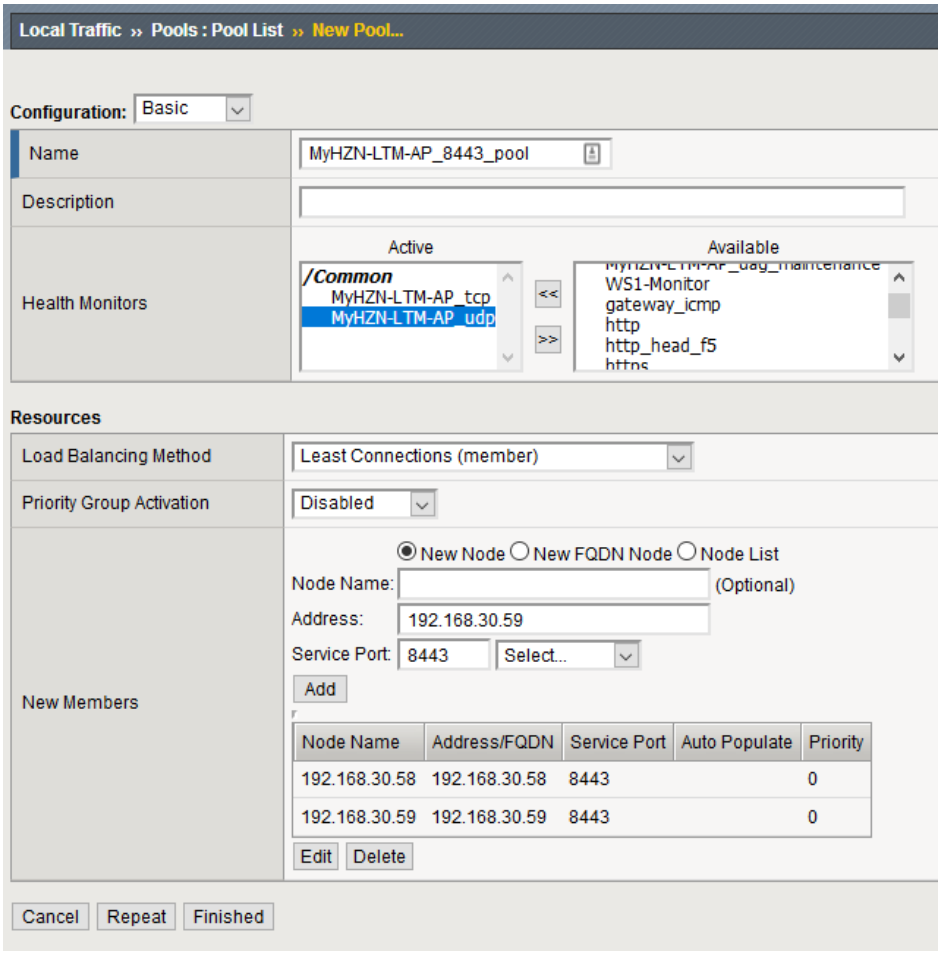
Port 443 - Pool

1. Create a pool of servers for Port 443, using the following guidance.
    a. On the Main tab, click **Local Traffic > Pools > Create**.
    b. In the **Name** field, type a unique name.
    c. In the **Health Monitors** area, select all of the monitors created previously (https, uag_maintenance) and then click the Add (<<) button to move them to Active.
    d. From the **Load Balancing Method** list, select **Least Connections (member)**.
    e. In the **New Members** area, complete the following.
        i. Click the **New Node** button.
        ii. (Optional) In the **Node Name** field, type a name for the node.
        iii. In the **Address** field, type the IP address of a Unified Access Gateway Server.
        iv. In the **Service Port** field, type the port of the Unified Access Gateway Server (443).
        v. Click the **Add** button.
        vi. Repeat Steps ii – v for additional Unified Access Gateway Servers.
    f. Click **Finished**.



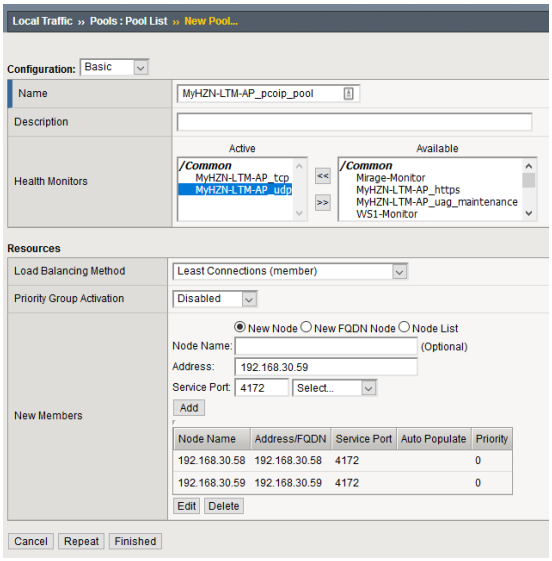
Port 8443 - Pool

1. Create a pool of servers for Port 8443 using the following guidance.
    a. On the Main tab, click **Local Traffic > Pools > Create**.
    b. In the **Name** field, type a unique name.
    c. In the **Health Monitors** area, select the TCP and UDP monitor you created previously and then click the Add (<<) button to move it to Active.
    d. From the **Load Balancing Method** list, select **Least Connections (member)**.
    e. In the New Members area, complete the following.
        i. Click the **New Node** button.
        ii. (Optional) In the **Node Name** field, type a name for the node.
        iii. In the **Address** field, type the IP address of a Unified Access Gateway Server.
        iv. In the **Service Port** field, type the port of the Unified Access Gateway Server (8443).
        v. Click the **Add** button.
        vi. Repeat Steps ii – v for additional Unified Access Gateway Servers.
    f. Click **Finished**.



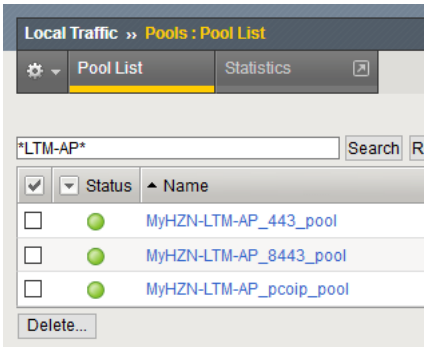
Port 4172 - Pool

1. Create a Pool of servers for Port 4172 using the following guidance.
    a. On the Main tab, click **Local Traffic > Pools > Create**.
    b. In the **Name** field, type a unique name.
    c. In the **Health Monitors** area, select the TCP and UDP monitor you created previously and then click the Add (<<) button to move it to Active.
    d. From the **Load Balancing Method** list, select **Least Connections (member)**.
    e. In the New Members area, complete the following.
        i. Click the **New Node** button.
        ii. (Optional) In the **Node Name** field, type a name for the node.
        iii. In the **Address** field, type the IP address of a Unified Access Gateway Server.
        iv. In the **Service Port** field, type the port of the Unified Access Gateway Server (4172).
        v. Click the **Add** button.
        vi. Repeat Steps ii – v for additional Unified Access Gateway Servers.
    f. Click **Finished**.



Validate Pools Online

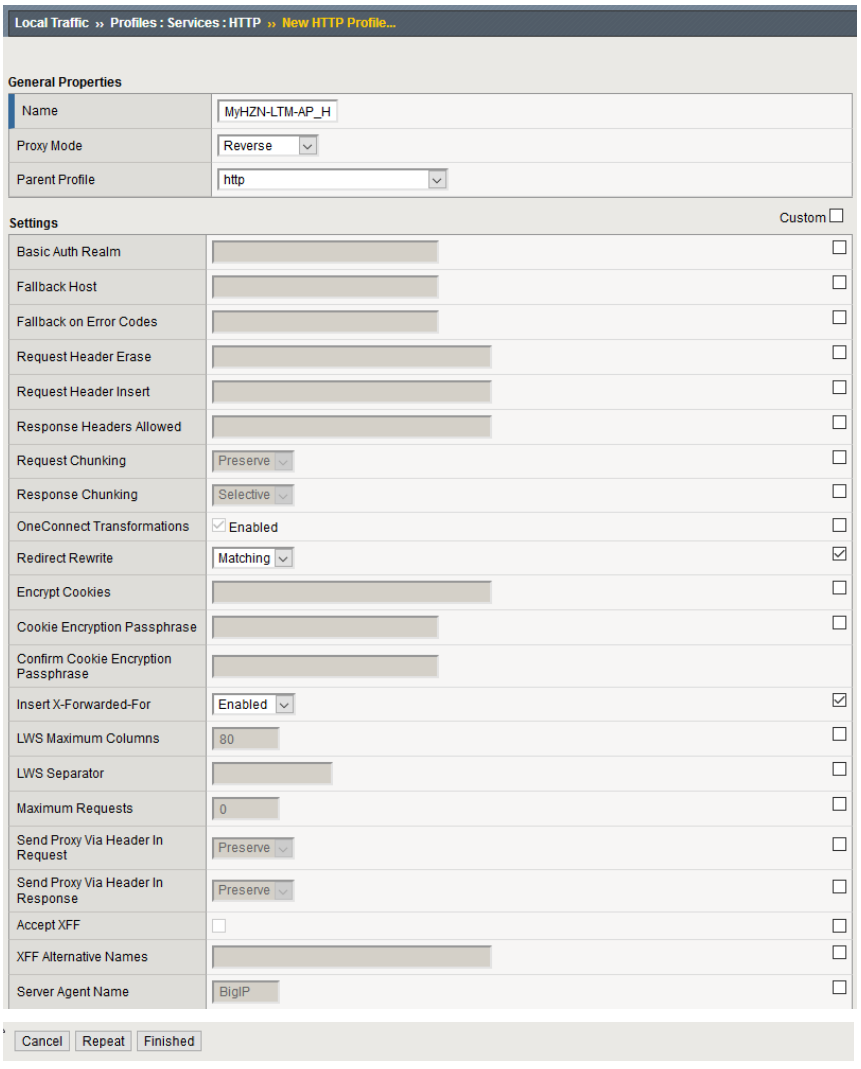
After a few minutes ensure all the statuses are green on the Pool Objects with the monitors to ensure that the Unified Access Gateway (UAG) Servers are online and functioning appropriately.



Creating Profiles

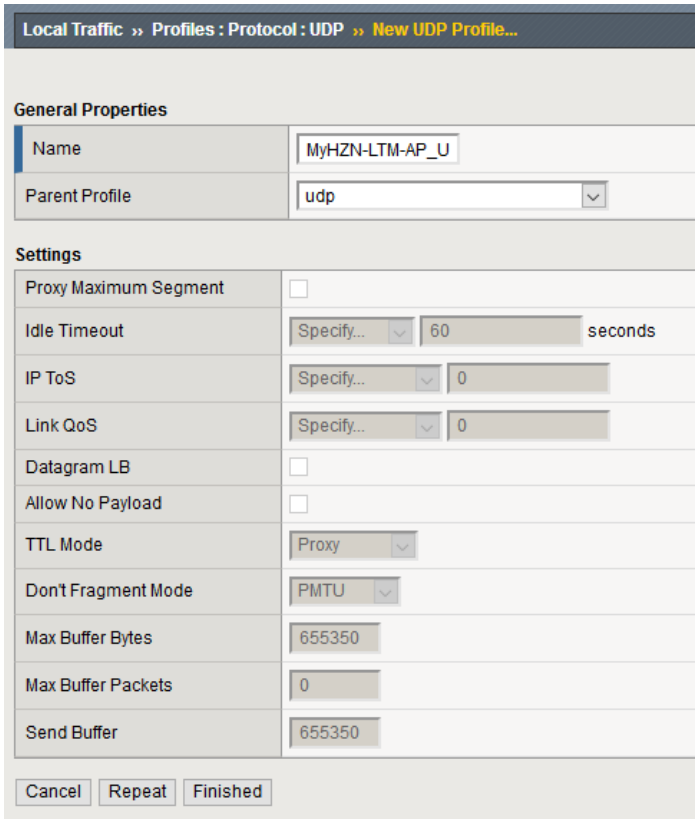
Creating a HTTP Profile

1. Create an HTTP profile using the following guidance.
    a. On the Main tab, click **Local Traffic > Profiles > Services > HTTP > Create**.
    b. In the **Name** field, type a unique name.
    c. From the **Parent Profile** list, ensure **http** is selected.
    d. From the **Redirect Rewrite** row, click the **Custom** checkbox on the right, and then select **Matching** from the list.
    e. From the **Insert X-Forwarded-For** row, click the **Custom** box and then select **Enabled**.
    f. Leave all other settings at the default and then click **Finished**.



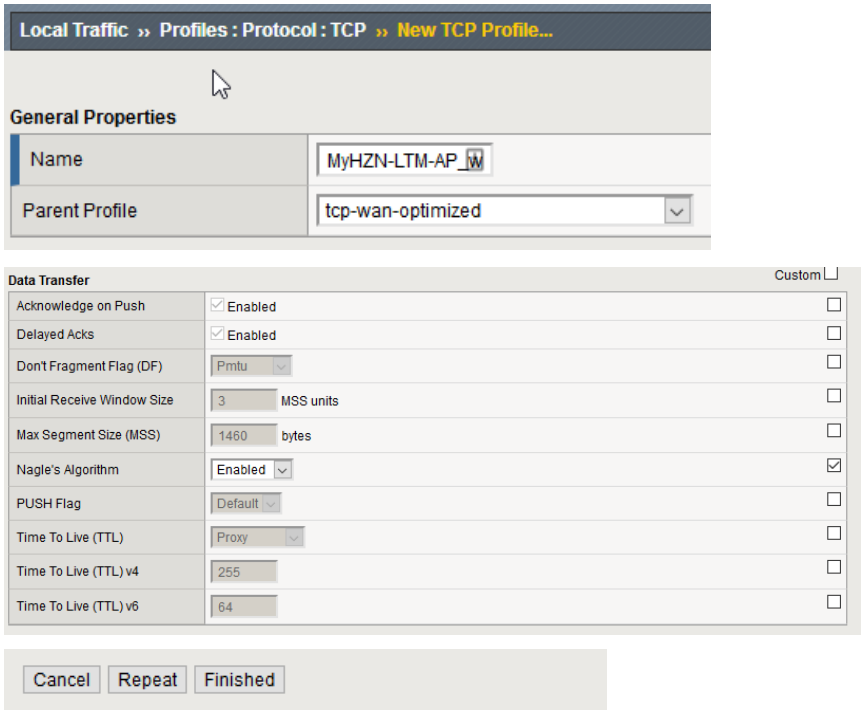
Creating a UDP Protocol Profile

1. Create an UDP profile using the following guidance.
    a. On the Main tab, click **Local Traffic > Profiles > Protocol > UDP > Create**.
    b. In the **Name** field, type a unique name.
    c. From the **Parent Profile** list, ensure **udp** is selected.
    d. Leave all other settings at the default and then click **Finished**.



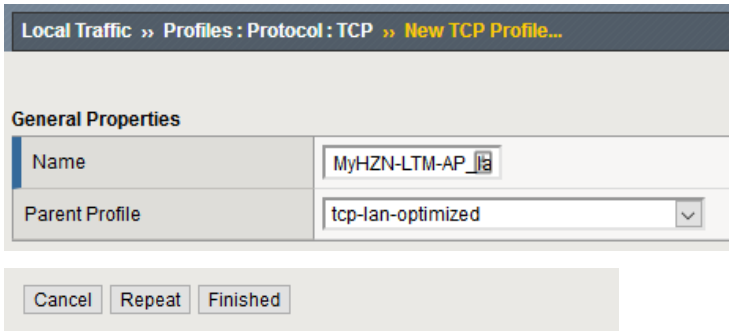
Creating a TCP-WAN-Optimized Profiles

1. Create a TCP profile using the following guidance.
    a. On the Main tab, click **Local Traffic > Profiles > Protocol > TCP > Create**.
    b. In the **Name** field, type a unique name.
    c. From the **Parent Profile** list, ensure **tcp-wan-optimized** is selected.
    d. In **Data Transfer** section in the **Nagle's Algorithm** row, click the **Custom** checkbox on the right, and then select **Enable** from the list.
    e. Leave all other settings at the default and then click **Finished**.



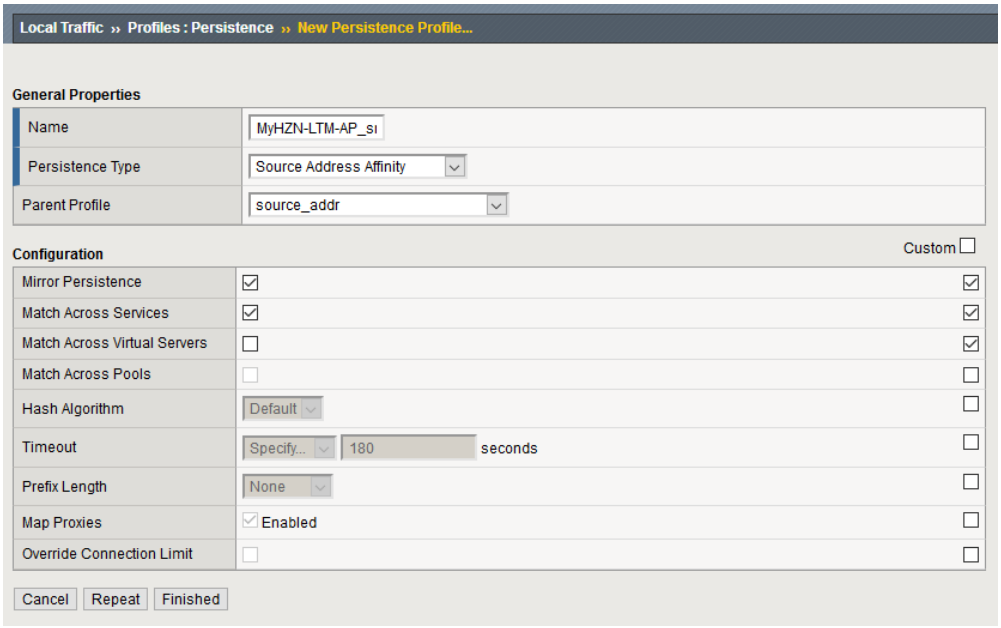
Creating a TCP-LAN-Optimized Profiles

1. Create a TCP profile using the following guidance.
    a. On the Main tab, click **Local Traffic > Profiles > Protocol > TCP > Create**.
    b. In the **Name** field, type a unique name.
    c. From the **Parent Profile** list, ensure **tcp-lan-optimized** is selected.
    d. Leave all other settings at the default and then click **Finished**.



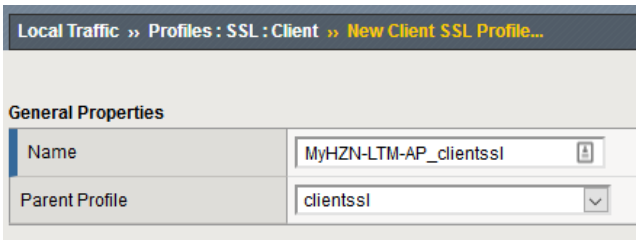
Creating a Persistence Profile

1. Creating a Persistence profile using the following guidance.
    a. On the Main tab, click **Local Traffic > Profiles > Persistence > Create**.
    b. In the **Name** field, type a unique name.
    c. From the **Persistence Type** list, select **Source Address Affinity**.
    d. From the **Parent Profile** list, ensure **source_addr** is selected.
    e. If you have deployed a redundant pair of BIG-IP systems only:
    From the **Mirror Persistence** row, click the **Custom** checkbox on the right, and then click the checkbox to enable persistence mirroring.
    f. From the **Match Across Services** row, click the **Custom** checkbox, and then click the checkbox to enable matching across services.
    g. From the **Match Across Virtual Servers** row, ensure the Match Across Virtual Servers box is UNCHECKED.
    h. (Optional) Timeout can be increased for environments who increase in Horizon the "Global Session Timeout" variable (when increased the heartbeats in Horizon are lengthened and its recommended to increase the Timeout variable to accommodate) – VMware KB https://kb.vmware.com/s/article/56636
    i. Click **Finished**.



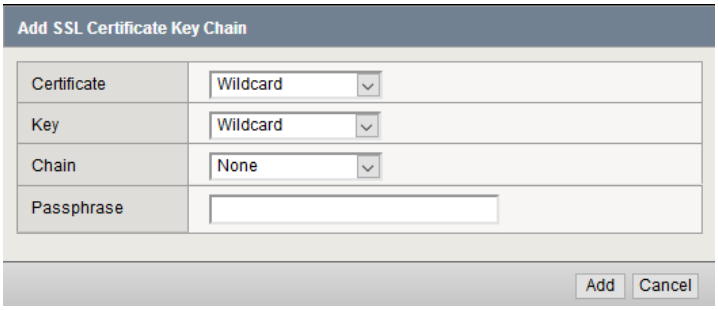
Creating a Client SSL Profile

1. Create a Client SSL profile using the following guidance.
    a. On the Main tab, click **Local Traffic > Profiles > SSL > Client > Create**.
    b. In the **Name** field, type a unique name.



    c. From the **Configuration** list, select **Advanced**
    d. From the **Certificate Key Chain** area, click the **Custom** checkbox and then click the **Add** button.

    e. In the Edit SSL Certificate to Key Chain box, complete the following.
        i. From the **Certificate** list, select the certificate you imported in Importing a Certificate into BIG-IP.
        ii. From the **Key** list, select the key you imported in Importing a Certificate into BIG-IP.
        iii. (Optional) If you imported a chain certificate, select the Intermediate/Root Chain you imported in Importing a Certificate into BIG-IP.
        iv. (Optional) If your key is highly encrypted, in the **Passphrase** box, type the passphrase.
        v. Click **ADD**.

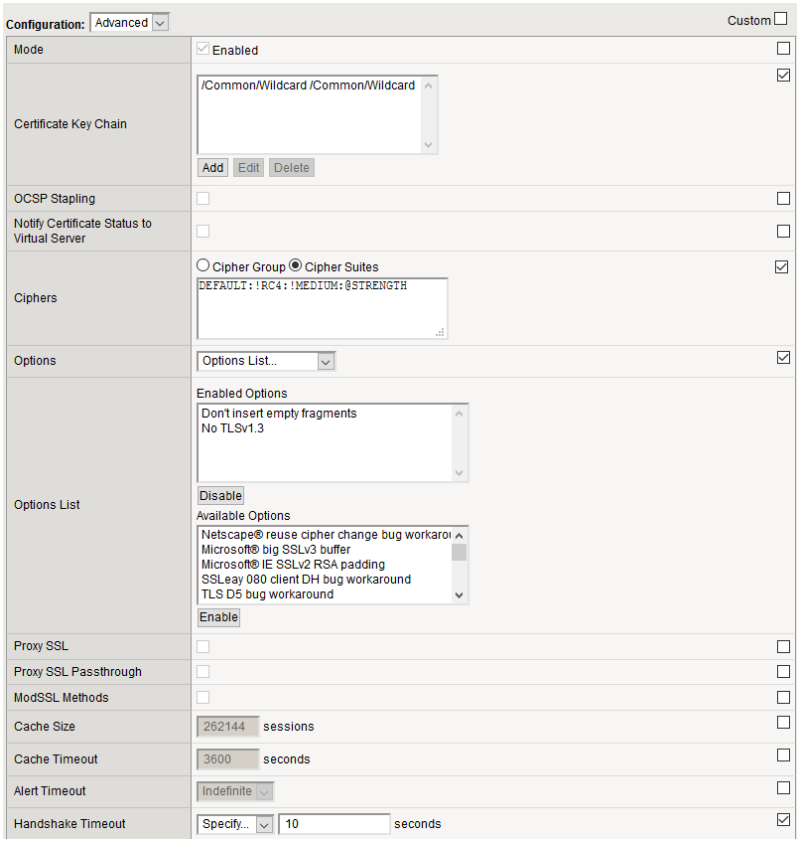


f. In the **Ciphers** area, click the **Custom** box, and then click the **Cipher String** button.

g. In the **Ciphers** field, type **DEFAULT:!RC4:!MEDIUM:@STRENGTH**

h. In the **Options** field, click the **Custom** box (leave defaults)

i. In the **Handshake Timeout** field, click the **Custom** box, and **specify 10 seconds**

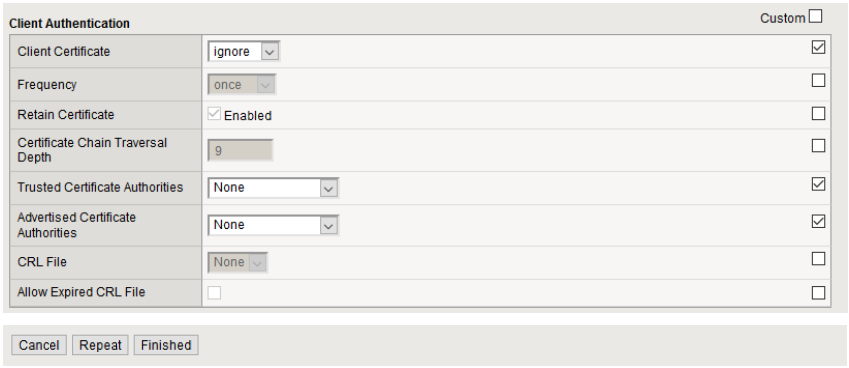


j. From the **Client Certificate** row, click the **Custom** checkbox and then select **Ignore** from the list.

k. From the **Trusted Certificate Authorities** row, click the **Custom** checkbox and then select **None** from the list.

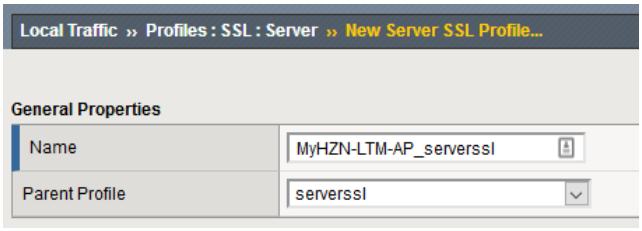
l. From the **Advertised Certificate Authorities** row, click the **Custom** checkbox and then select **None** from the list.

m. Scroll to the bottom and click **Finished**.

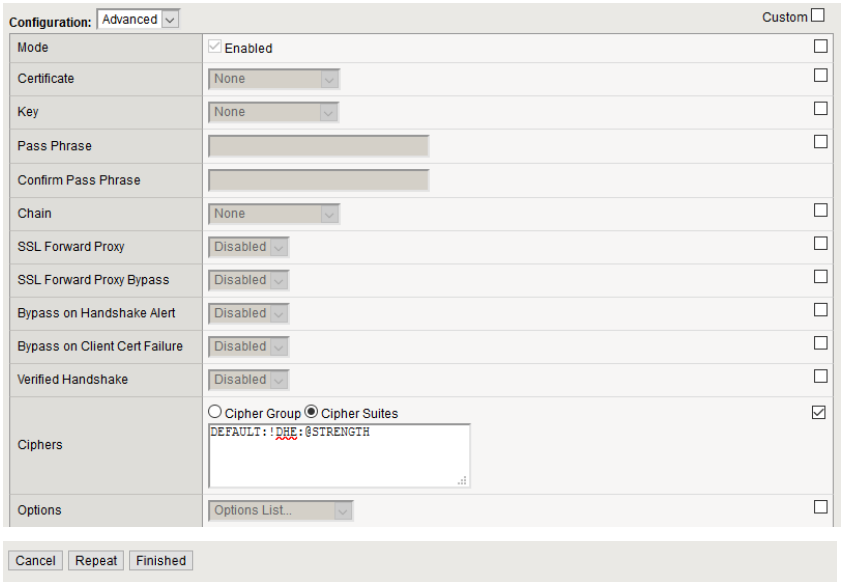


Creating a Server SSL Profile

1. Create a Server SSL profile using the following guidance.
    n. On the Main tab, click **Local Traffic > Profiles > SSL > Server > Create**.
    o. In the **Name** field, type a unique name.
    p. From the **Parent Profile** list, ensure **serverssl** is selected.



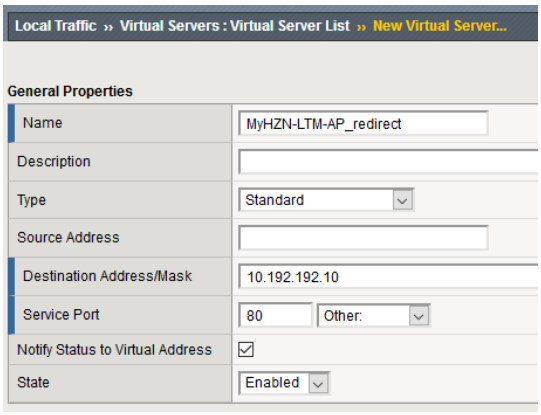
    q. From the **Configuration** list, select **Advanced**.
    r. In the **Ciphers** area, click the **Custom** box, and then click the **Cipher String** button.
    s. In the **Ciphers** field, type **DEFAULT:!DHE:@STRENGTH**
    t. Leave all other settings at the defaults and then click **Finished**.



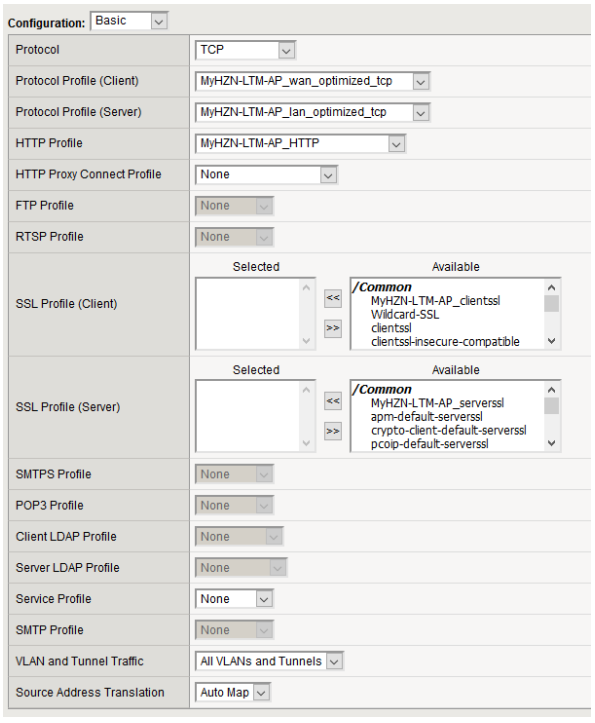
Creating Virtual Servers

HTTP Redirect - Virtual Server

1. Create an HTTP Redirect virtual server using the following guidance.
    a. On the Main tab, click **Local Traffic > Virtual Servers > Create**
    b. In the **Name** field, type a unique name.
    c. From the **Type** list, ensure **Standard** is selected.
    d. In the **Destination Address/Mask** field, type the IP Address for the virtual server.
    e. In the **Service Port** field, type **80** or select **HTTP** from the list.

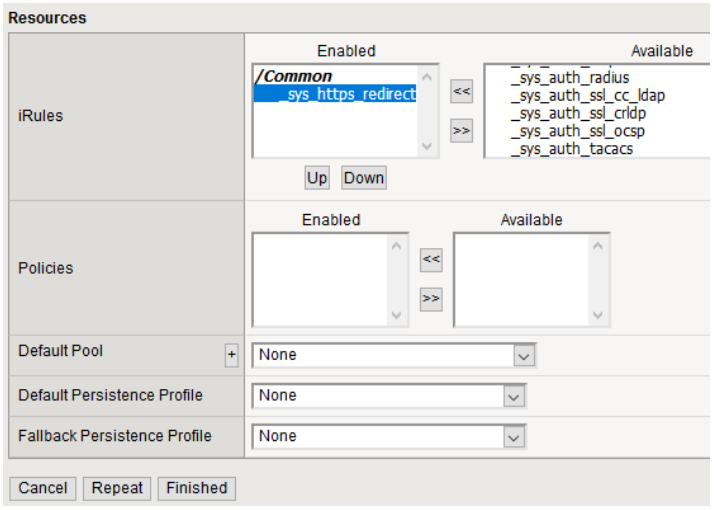


    f. From the **Protocol** list, select **TCP**.
    g. From the **Protocol Profile (Client)** list, select the TCP-WAN-Optimized profile previously created.
    h. From the **Protocol Profile (Server)** list, select the TCP-LAN-Optimized profile previously created.
    i. From the **HTTP Profile** list, select the HTTP profile previously created.
    j. From the **Source Address Translation** list, select **Auto Map**.



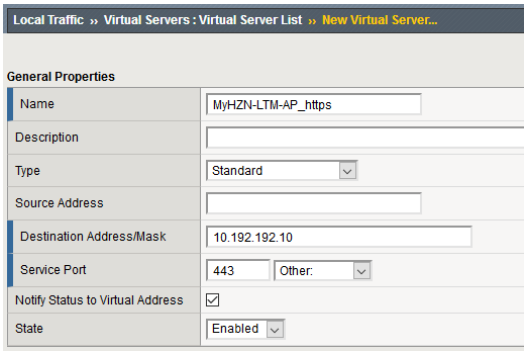
k. In the **iRules** area, from the **Available** list, select **_sys_https_redirect** and then click the Add (<<) button.

l. Leave all other settings at the defaults and then click **Finished**.

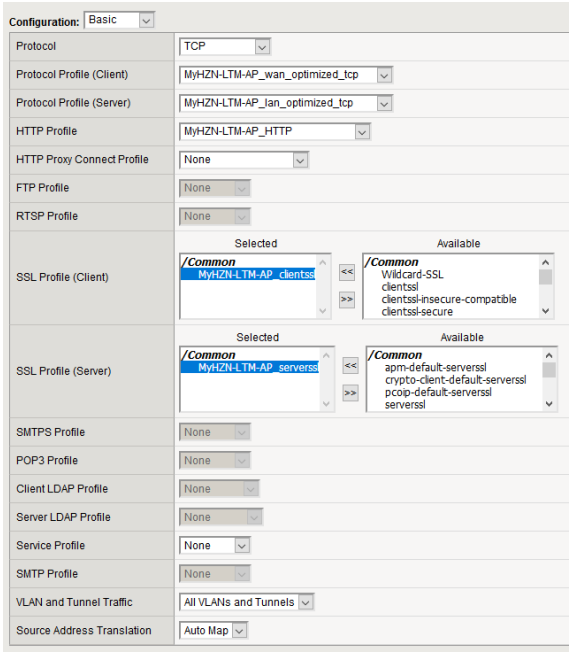


Port 443 TCP - Virtual Server

1. Create the main virtual server (Port 443 TCP) using the following guidance.
    a. On the Main tab, click **Local Traffic > Virtual Servers > Create**
    b. In the **Name** field, type a unique name.
    c. From the **Type** list, ensure **Standard** is selected.
    d. In the **Destination Address/Mask** field, type the IP Address for the virtual server.
    e. In the **Service Port** field, type **443** or select **HTTPS** from the list.



    f. From the **Protocol** list, select **TCP**.
    g. From the **Protocol Profile (Client)** list, select the **tcp-wan-optimized** profile you created previously.
    h. From the **Protocol Profile (Server)** list, select the **tcp-lan-optimized** profile you created previously.
    i. From the **HTTP Profile** list, select the **HTTP** profile you created previously.
    j. From the **SSL Profile (Client)** list, select the **clientssl** profile you created previously and click the Add (<<) button to move it to the Selected list.
    k. From the **SSL Profile (Server)** list, select the **serverssl** profile you created previously and click the Add (<<) button to move it to the Selected list.
    l. From the **Source Address Translation** list, select **Auto Map**.



Creating the main virtual server (continued)

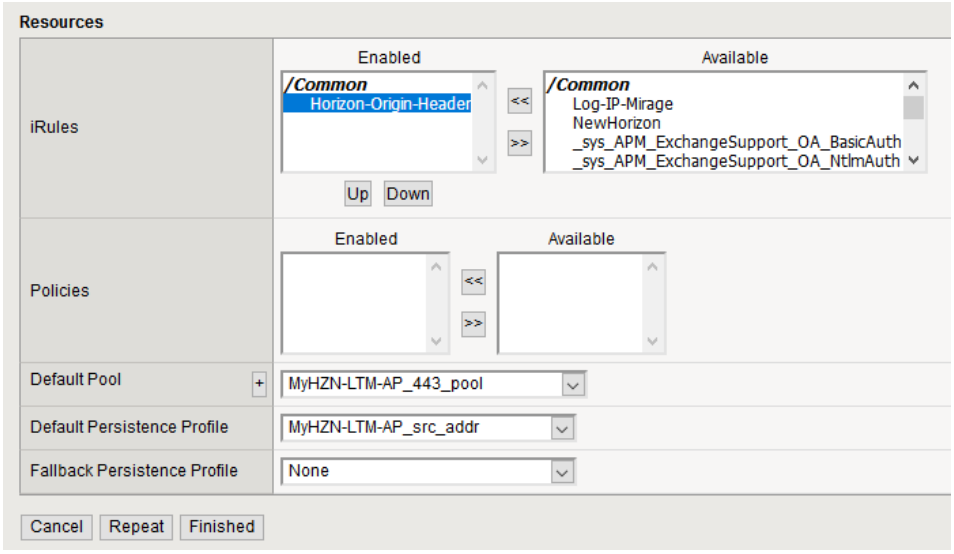
m. If you created the iRule for the Horizon Origin Header only: In the **iRules** area, select the iRule you created in iRule for the Horizon Origin Header and then click the Add (<<) button.

Note: If VMware Origin Header method was used skip this step.

n. From the **Default Pool** list, select the pool you created in Port 443 - Pool.

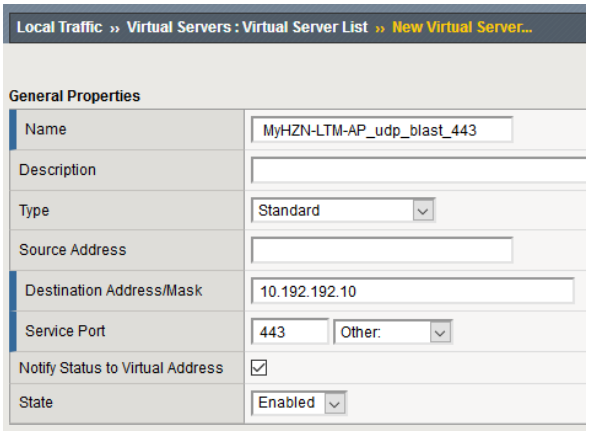
o. From the **Default Persistence Profile** list, select the profile you created previously.

p. Click **Finished**.

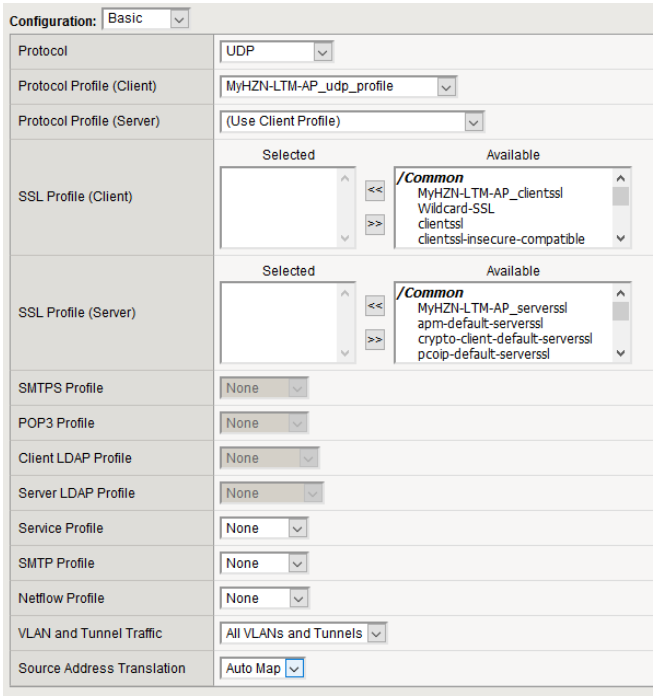


Port 443 UDP - Virtual Server

1. Create the main virtual server (Port 443 UDP) using the following guidance.
    a. On the Main tab, click **Local Traffic > Virtual Servers > Create**
    b. In the **Name** field, type a unique name.
    c. From the **Type** list, ensure **Standard** is selected.
    d. In the **Destination Address/Mask** field, type the IP Address for the virtual server.
    e. In the **Service Port** field, type **443** or select **HTTPS** from the list.



    f. From the **Protocol** list, select **UDP**.
    g. From the **Protocol Profile (Client)** list, select the **udp profile** you created previously.
    h. From the **Protocol Profile (Server)** list, select **(Use Client Profile).**
    i. From the **Source Address Translation** list, select **Auto Map**.

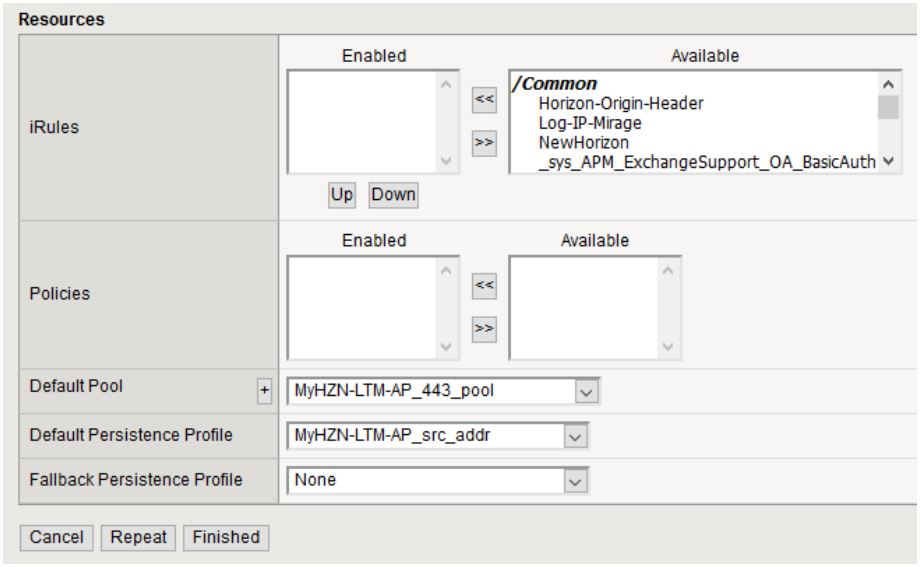


Creating the main virtual server (continued)

j. From the **Default Pool** list, select the pool you created in Port 443 - Pool.

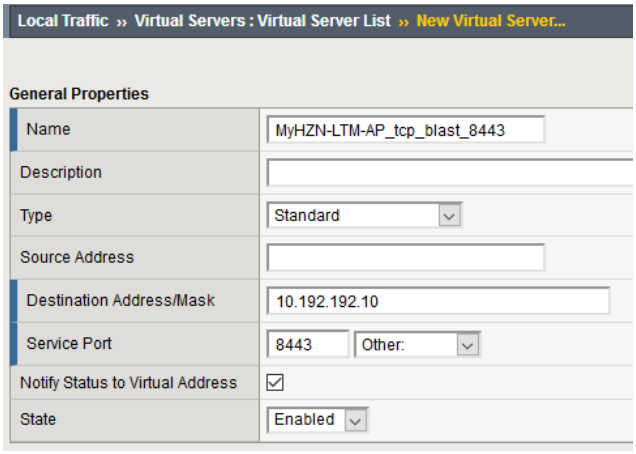
k. From the **Default Persistence Profile** list, select the profile you created previously.

l. Click **Finished**.

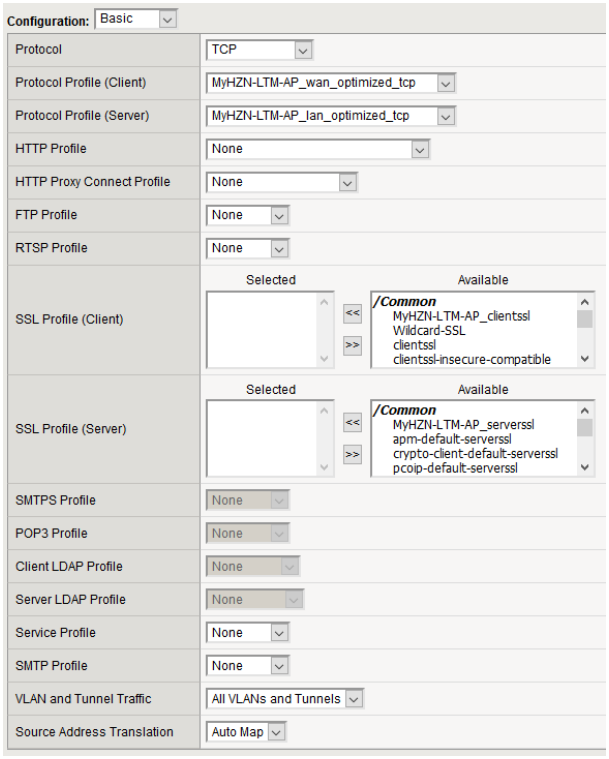


Port 8443 TCP - Virtual Server

1. Creating the main virtual server for Port 8443 TCP
    a. On the Main tab, click **Local Traffic > Virtual Servers > Create**
    b. In the **Name** field, type a unique name.
    c. From the **Type** list, ensure **Standard** is selected.
    d. In the **Destination Address/Mask** field, type the IP Address for the virtual server.
    e. In the **Service Port** field, type **8443**.



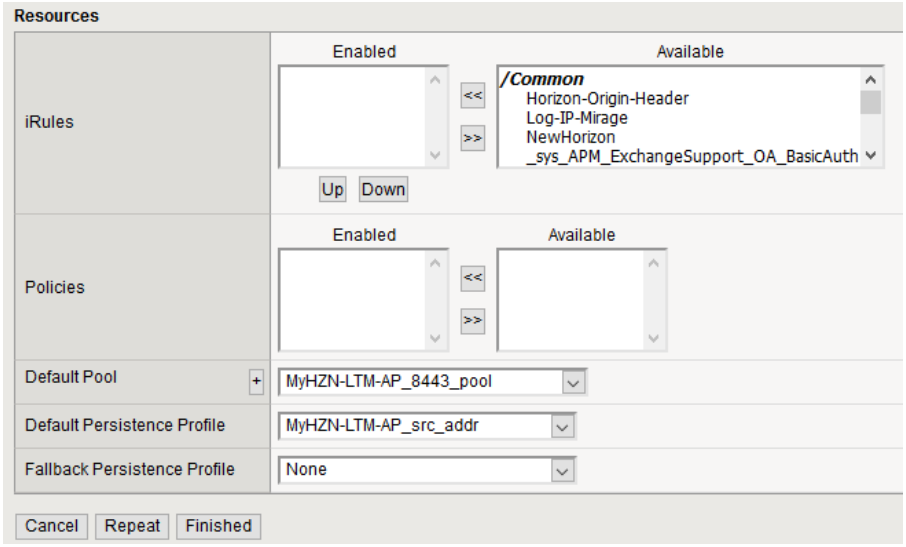
    f. From the **Protocol** list, select **TCP**.
    g. From the **Protocol Profile (Client)** list, select the **tcp-wan-optimized** profile you created previously.
    h. From the **Protocol Profile (Server)** list, select the **tcp-lan-optimized** profile you created previously.
    i. From the **Source Address Translation** list, select **Auto Map**.



j. From the **Default Pool** list, select the pool you created in Port 8443 - Pool.

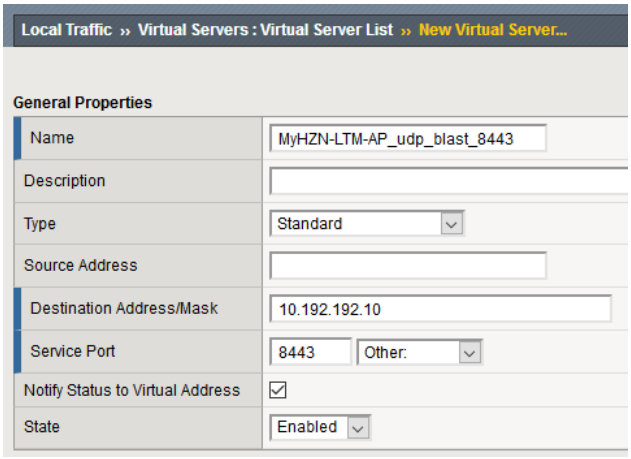
k. From the **Default Persistence Profile** list, select the profile you created in Creating a Persistence Profile.

l. Click **Finished**.

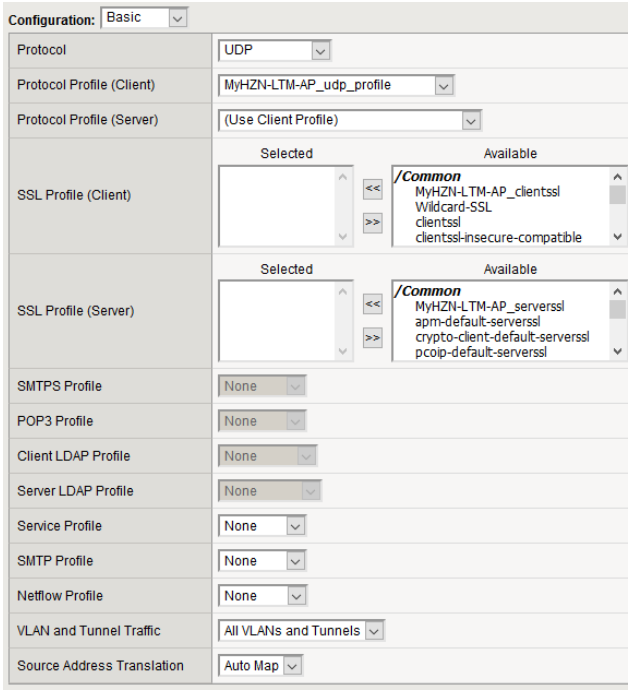


Port 8443 UDP - Virtual Server

1. Creating the main virtual server for Port 8443 UDP
    a. On the Main tab, click **Local Traffic > Virtual Servers > Create**
    b. In the **Name** field, type a unique name.
    c. From the **Type** list, ensure **Standard** is selected.
    d. In the **Destination Address/Mask** field, type the IP Address for the virtual server.
    e. In the **Service Port** field, type **8443**.



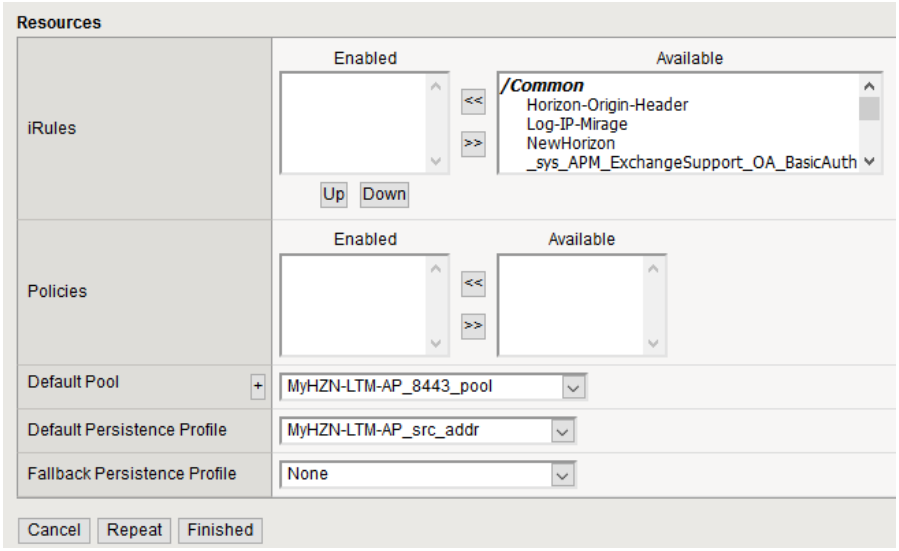
    f. From the **Protocol** list, select **UDP**.
    g. From the **Protocol Profile (Client)** list, select UDP profile you created previously.
    h. From the **Source Address Translation** list, select **Auto Map**.



i. From the **Default Pool** list, select the pool you created in Port 8443 - Pool.

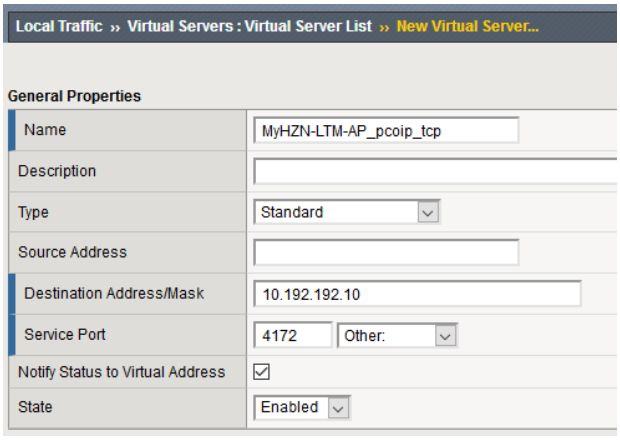
j. From the **Default Persistence Profile** list, select the profile you created in Creating a Persistence Profile.

k. Click **Finished**.

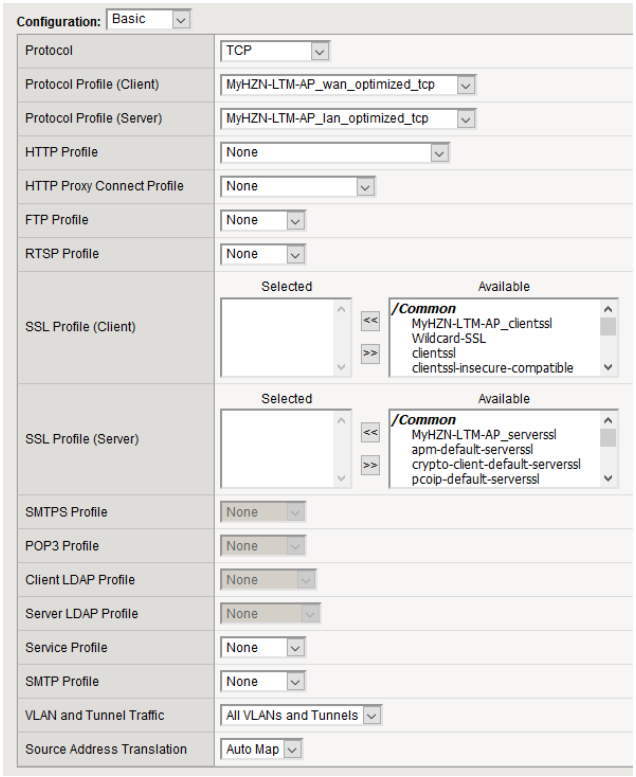


Port 4172 TCP - Virtual Server

1. Create the main virtual server (Port 4172 TCP) using the following guidance.
    a. On the Main tab, click **Local Traffic > Virtual Servers > Create**
    b. In the **Name** field, type a unique name.
    c. From the **Type** list, ensure **Standard** is selected.
    d. In the **Destination Address/Mask** field, type the IP Address for the virtual server.
    e. In the **Service Port** field, type **4172**.



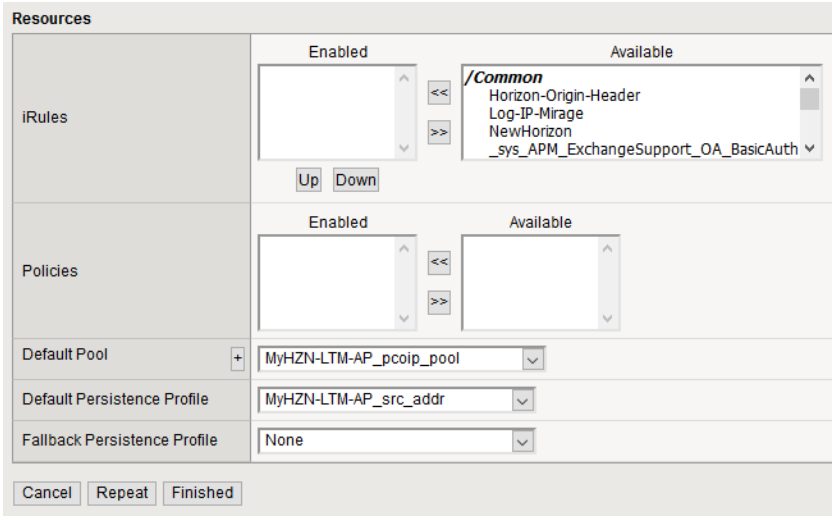
    f. From the **Protocol** list, select TCP profile you created previously.
    g. From the **Protocol Profile (Client)** list, select **tcp-wan-optimized**.
    h. From the **Protocol Profile (Server)** list, select **tcp-lan-optimized**.
    i. From the **Source Address Translation** list, select **Auto Map**.



j. From the **Default Pool** list, select the pool you created in Port 4172 - Pool.

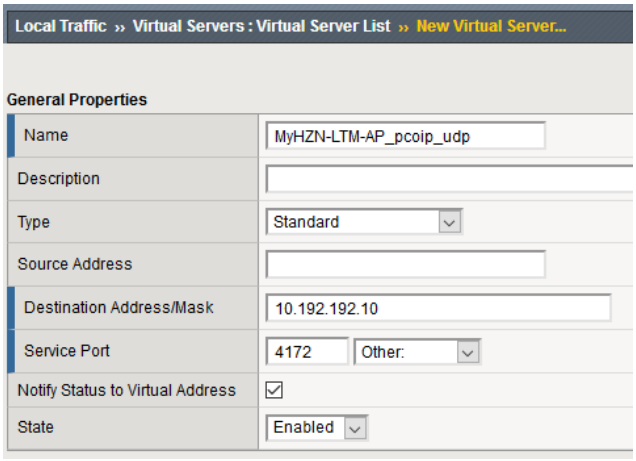
k. From the **Default Persistence Profile** list, select the profile you created in Creating a Persistence Profile.

l. Click **Finished**.

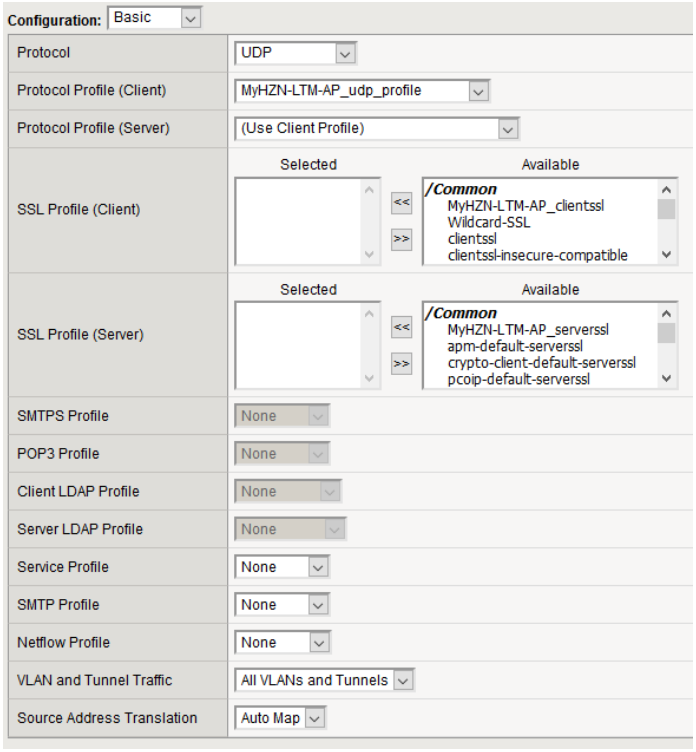


Port 4172 UDP - Virtual Server

1. Create the main virtual server (Port 4172 UDP) using the following guidance.
    a. On the Main tab, click **Local Traffic > Virtual Servers > Create**
    b. In the **Name** field, type a unique name.
    c. From the **Type** list, ensure **Standard** is selected.
    d. In the **Destination Address/Mask** field, type the IP Address for the virtual server.
    e. In the **Service Port** field, type **4172**.



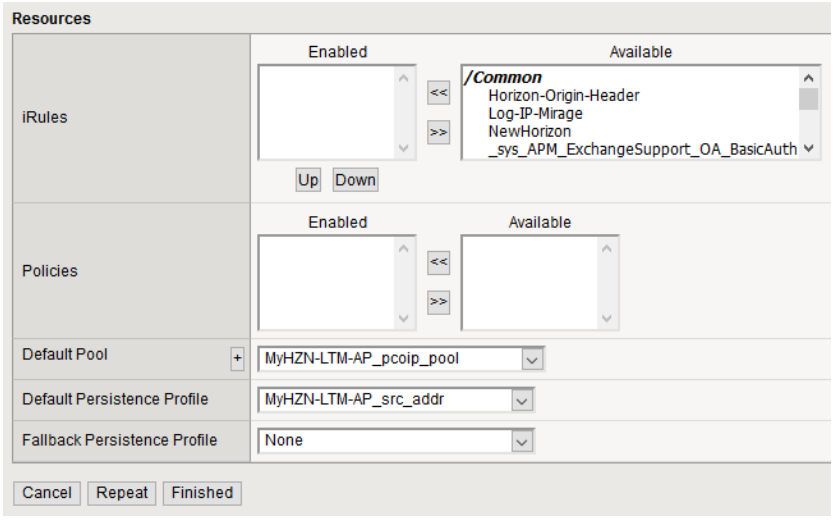
    f. From the **Protocol** list, select **UDP**.
    g. From the **Protocol Profile (Client)** list, select UDP profile you created previously.
    h. From the **Source Address Translation** list, select **Auto Map**.



i. From the **Default Pool** list, select the pool you created in PCoIP - Pool.

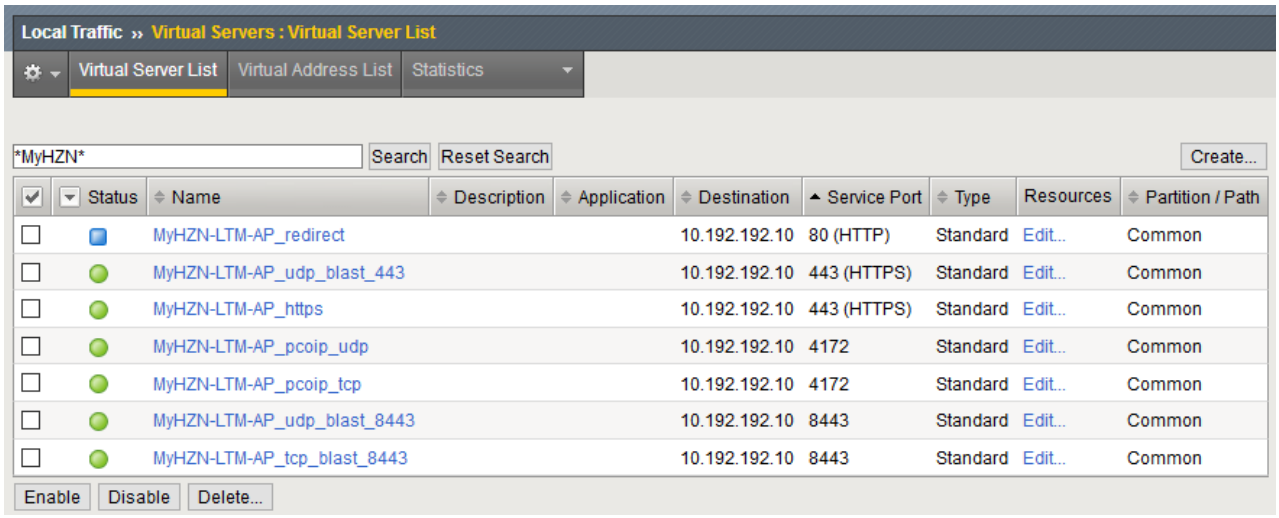
j. From the **Default Persistence Profile** list, select the profile you created in Creating a Persistence Profile.

k. Click **Finished**.



Final Configuration

Once completed you should see the full configuration for F5 LTM with VMware Horizon Unified Access Gateway (UAG) for PCoIP and Blast Extreme TCP/UDP with BEAT (Blast Extreme Adaptive Transport).

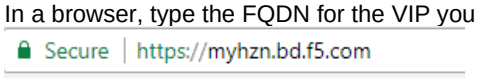


Testing the VMware Horizon Connection

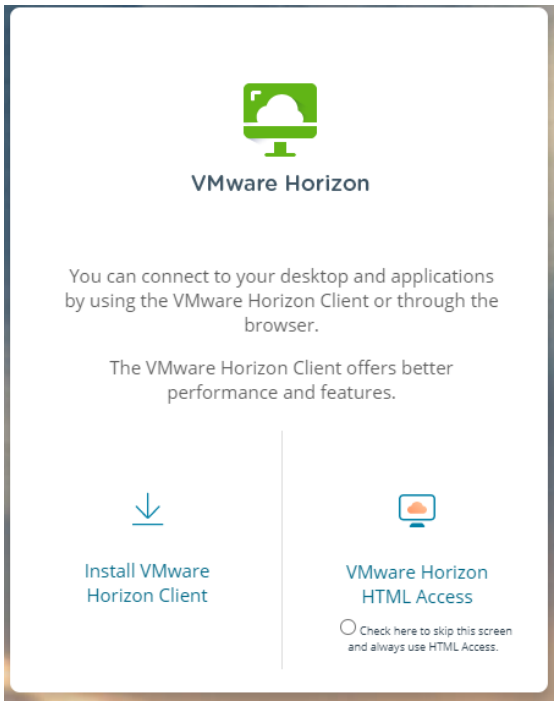
After setting up the Virtual IPs (VIPs) for the Unified Access Gateways, you can use the following methods validate that the External VIP is connecting and working properly. In this case, you are now using the new FQDN site name to connect to the Horizon Environment.

NOTE: This connection test should be done from an external computer on the Internet.

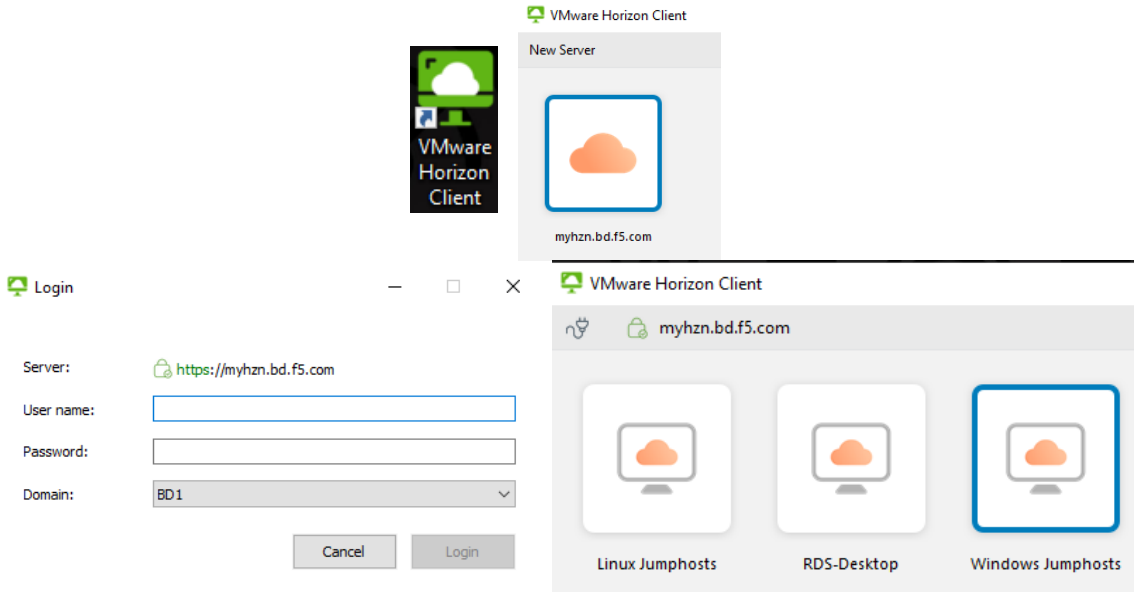
1. In a browser, type the FQDN for the VIP you previously created (for example, https://myhzn.bd.f5.com).

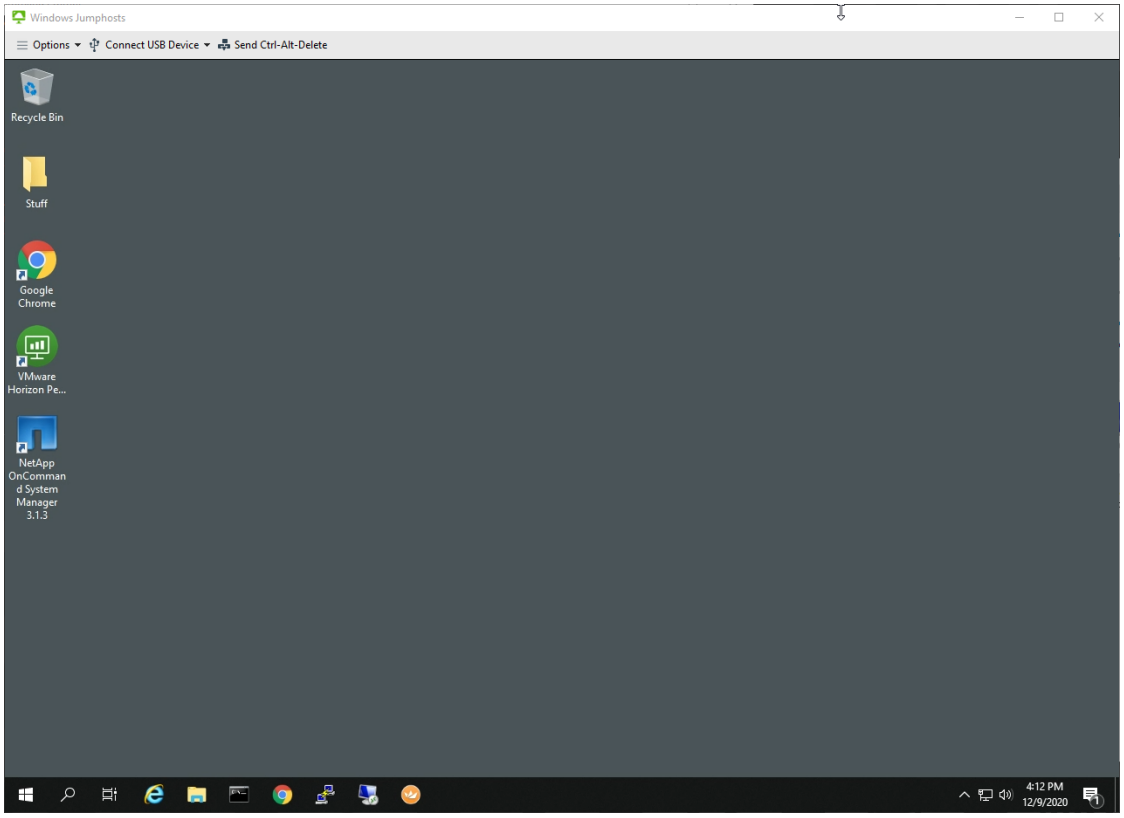
   You should see the VMware Horizon Client/HTML5 Page. This confirms that your servers are working through the newly created virtual server.

2. You can also test the VMware Horizon Client to ensure accessibility to the Horizon Environment. After logging in you should see the apps/desktops associated with the user that logged on.



Select a Pool to validate connectivity and ensure that you can access a desktop. Once the connection is validated the environment is correctly setup for LTM with the Horizon servers.



References

Load Balancing across VMware Unified Access Gateway Appliances (formerly known as Access Point) – Mark Benson & Vish Kalsi
https://communities.vmware.com/docs/DOC-32792