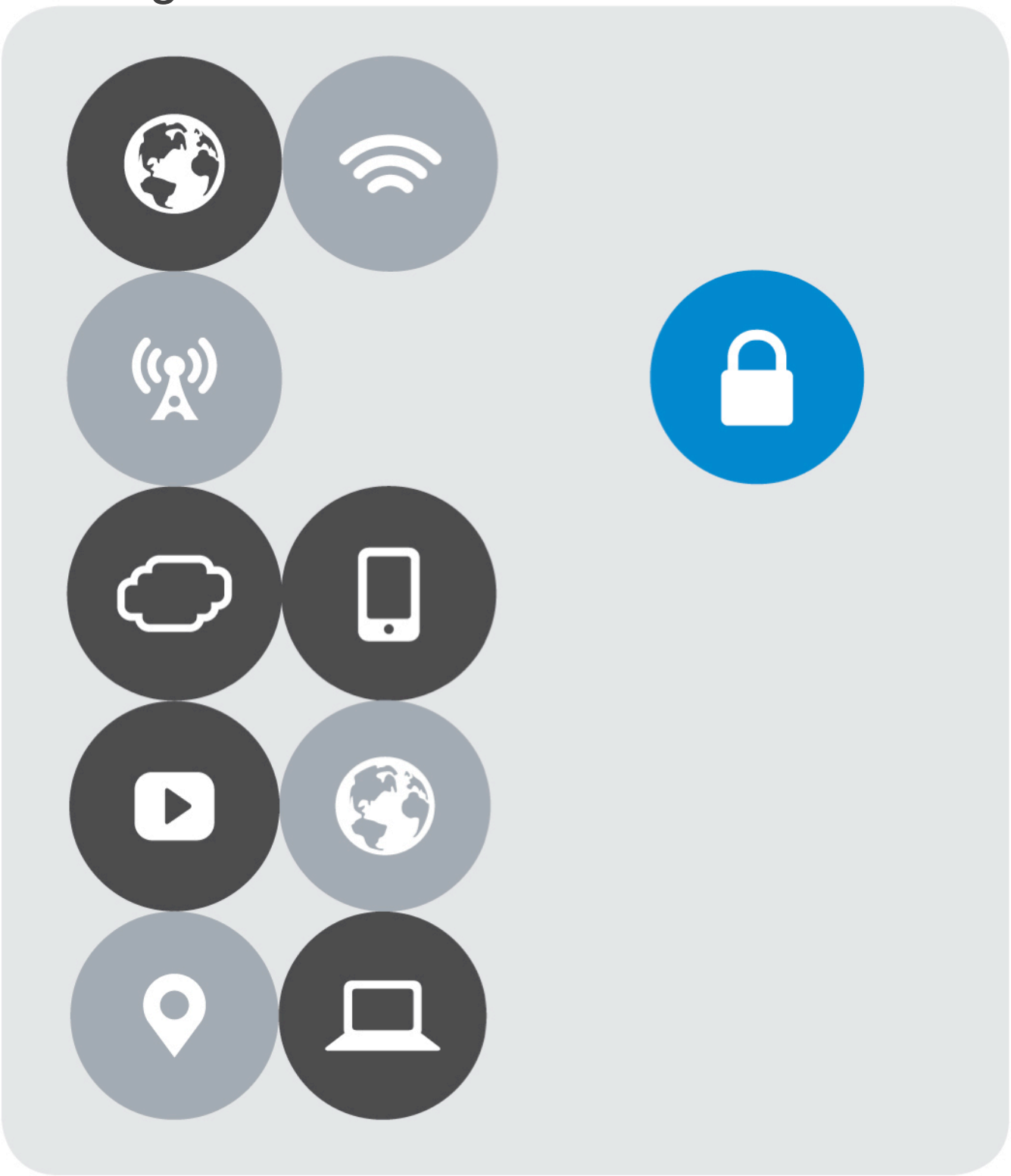
INTEGRATION GUIDE

Load Balancing VMware Identity Manager



Version History

Date	Version	Author	Description	Compatible Versions
May 2018	3.0	Matt Mabis	Updates for MobileSSO, and Changes to some of the configurations.	VMware Identity Manager 2.x, 3.x (1)
May 2017	2.0	Matt Mabis	Update for Monitor in 2.x Editions and New VMWare Delivery Methodology	VMware Identity Manager 2.4.x, 2.6.x, 2.7.x, 2.8.x (1)
Jan 2016	1.0	Justin Venezia	Initial Document with How-To Configure F5 LTM with VMware Workspace/VIDM	VMware Workspace 1.5, 1.8, VMware Identity Manager 2.4 up to 2.7.2 (1) (2)

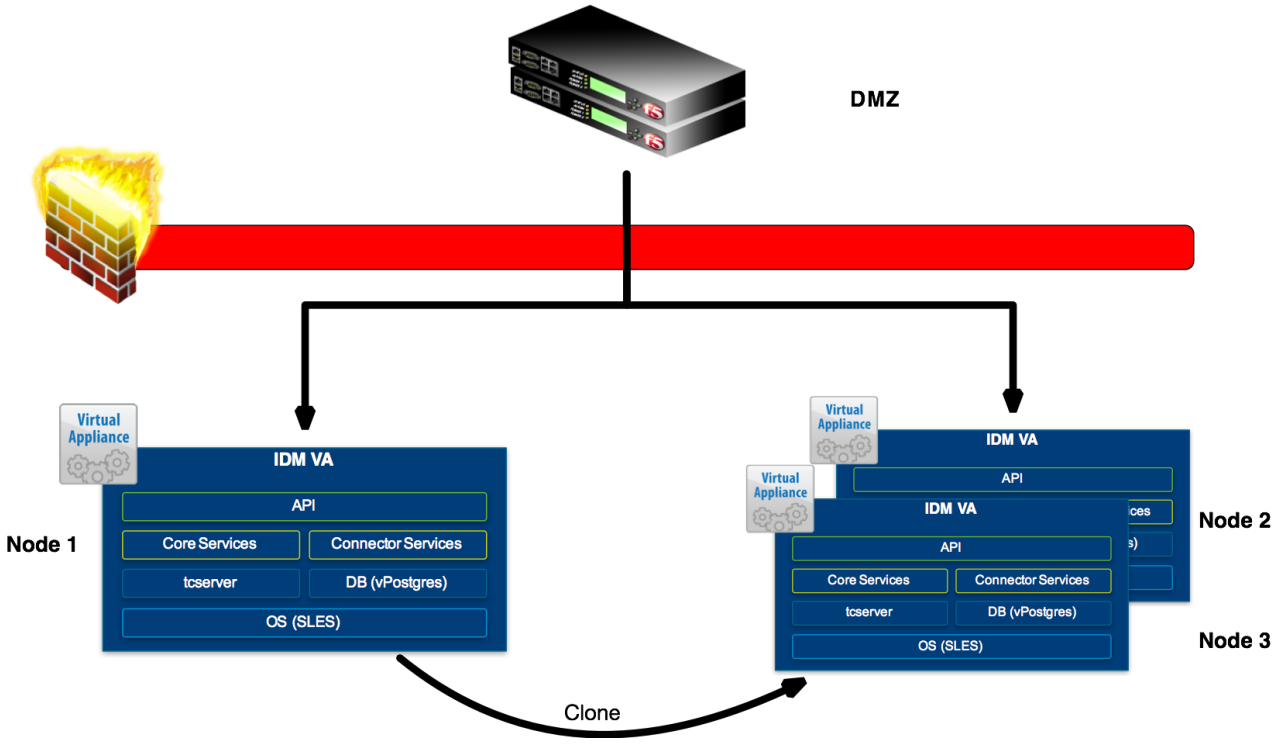
NOTES:

(1) The Version 1.0 Document only supports up to VMware Identity Manager 2.7.2 as there were changes in the 2.8.x Code that prevents the monitor originally suggested in the 1.0 document from working. Version 2.0 has changed the monitor to a more efficient and advanced monitor to determine if the VMware Identity Manager node is online/offline/maintenance. Because of these changes older 1.x Releases of VMware Workspace cannot use this monitor.

(2) The Version 1.0 Document refers to a different deployment, delivery methodology that was Changed in the 2.8.x releases of VMware Identity Manager. Version 2.0+ of the document is the current suggested path for Deployment by VMware.

Contents

Overview



VMware Identity Manager combines applications and desktops in a single, aggregated workspace. Employees can then access the desktops and applications regardless of where they are based. With fewer management points and flexible access, Identity Manager reduces the complexity of IT administration.

Identity Manager is delivered as a virtual appliance (VA) that is easy to deploy onsite and integrate with existing enterprise services. Organizations can centralize assets, devices, and applications and manage users and data securely behind the firewall. Users can share and collaborate with external partners and customers securely when policy allows.

This document provides step-by-step instructions for setting up the first Identity Manager virtual appliance (Node 1), for production implementations VMware recommends the deployment of two (2) additional nodes to have a total of three (3) nodes. Nodes 2 and 3 will be cloned from the first node after it has been configured and setup with the F5 to provide a fully load balanced configuration.

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.

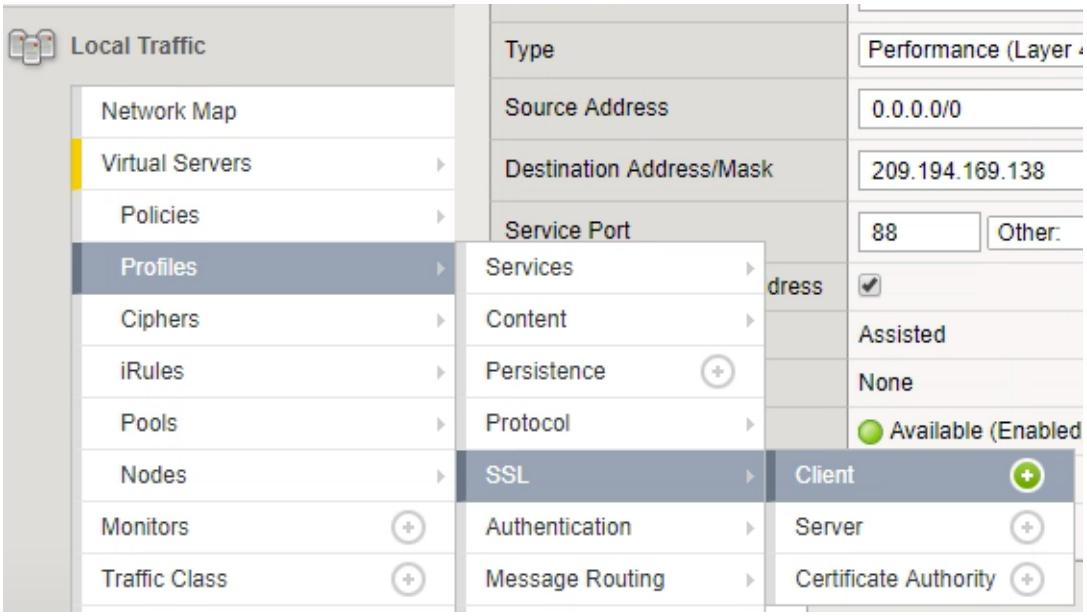
1. F5 recommends running this configuration using BIG-IP LTM version 12.x and 13.x.
2. Create/import an SSL Certificate that contains the load-balanced FQDN that will be used for Identity Manager Portal.
3. Upload the following to the BIG-IP system:
    - The SSL Certificate must be uploaded to the BIG-IP.
    - 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.
      NOTE: The Primary or Root CA for the FQDN Certificate will also be uploaded to the BIG- IP and are required to be loaded on each Identity Manager appliance.
4. Ensure the new FQDN for Identity Manager 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 Identity Manager appliances.
5. You must have deployed a single instance of VMware Identity Manager fully configured, including the database (VMware Recommends SQL in 3-Node Configuration).

NOTE: VMware recommends the use of Certificates which support Subject Alternate Names (SANs) defining each of the node FQDNs (public or internal) within the load balanced VIP FQDN. Wildcard certificates may be used, but due to wildcard certificate formats, SAN support is typically not available with wildcards from public CAs - and public CAs may complain about supplying an internal FQDN as a SAN value even if they do support SAN values. Additionally, some VMware Identity Manager features may not be usable with wildcard certificates when SAN support is not defined.

F5 BIG-IP Configurations

Create a Client SSL Profile

1. In the Local Traffic menus go to Profiles → SSL → Client → (+) plus icon to create a new SSL Client Profile



   a. Click **Local Traffic**.

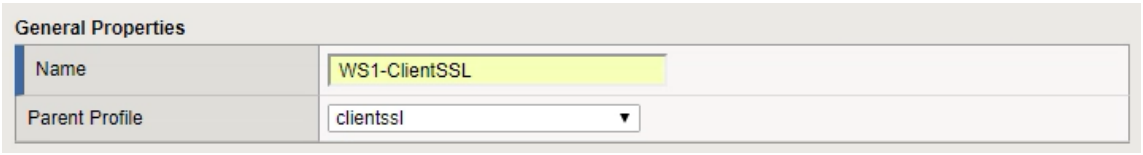
   b. Hover over **Profiles** to open the Profiles menu.

   c. Hover over **SSL**.

   d. Hover over **Client**.

   e. Click the Add button **(+)** to the right of Client to create a new SSL Client Profile.

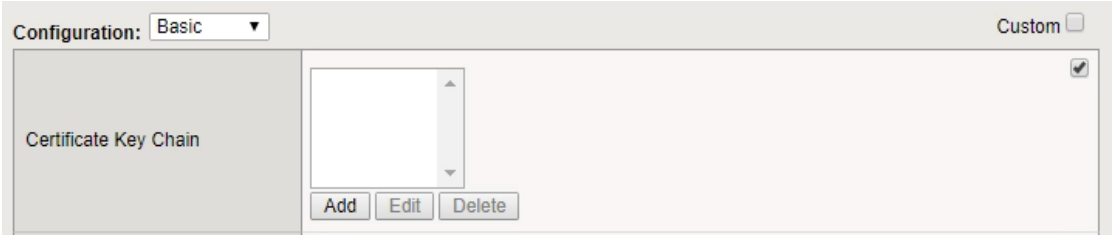
2. In the General Properties section



   a. **Name:** Enter a Unique Name

   b. **Parent Profile:** clientssl

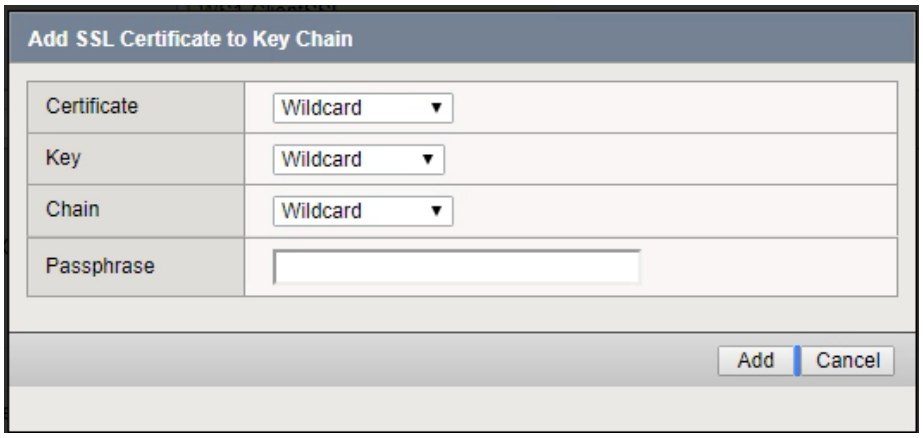
3. In the Configuration section



   a. In the Certificate Key Chain area, click the **Custom** check box.

   b. Click the **Add** button. The Add SSL Certificate to Key Chain dialog box opens.

4. In the “Add SSL Certificate to Key Chain” popup



   a. **Certificate:** Select the certificate with the FQDN that you uploaded to the BIG-IP as specified in the prerequisites.

   b. **Key:** Select the certificate key that corresponds with the certificate.

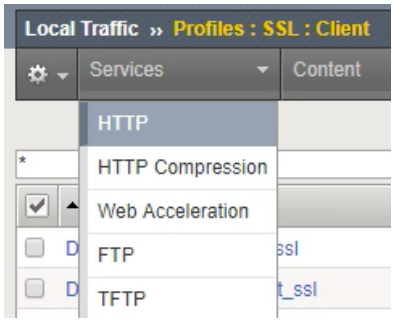
   c. **Chain:** Select the primary or root CA/certificate chain that corresponds with the certificate.

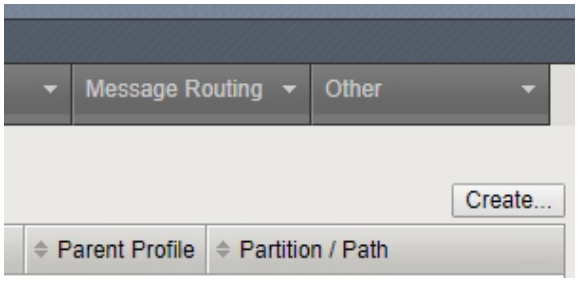
   d. Click the **Add** button to add the certificate key chain to the SSL profile.

   e. Click **Finished**.

Create a HTTP Profile

1. From the **Menu** bar, click **Services** (you may need to click **Local Traffic > Profiles** first)

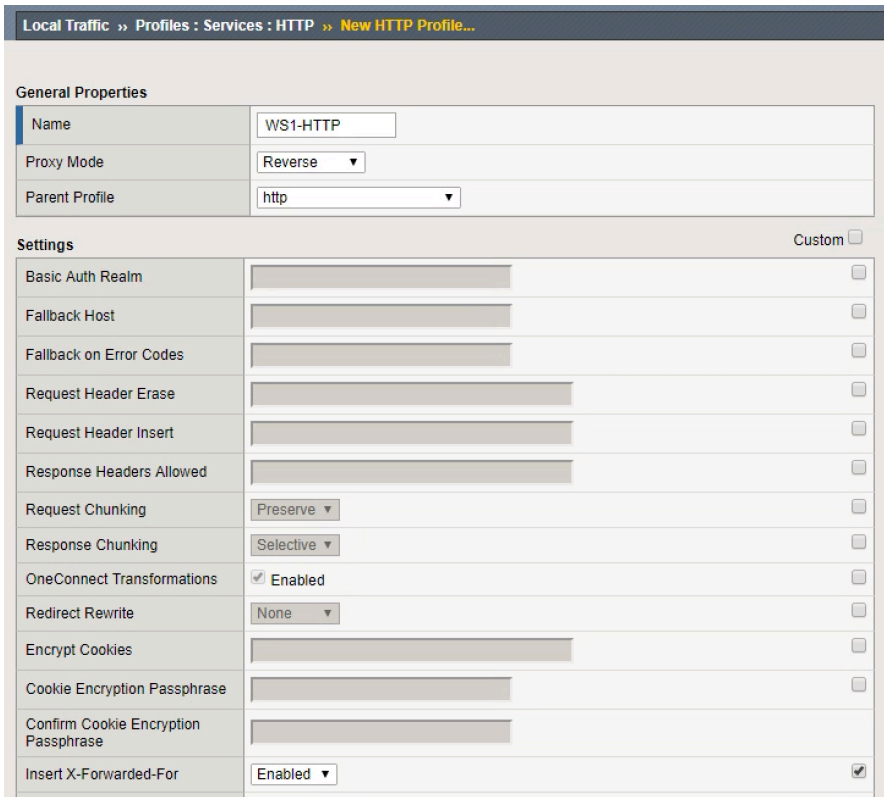




   a. Click **HTTP** from the pull-down list.

   b. Click the **Create** button in the upper right-hand corner of the HTTP Profiles table.

2. In the “New HTTP Profile…”



   a. **Name:** Provide a unique name for the instance

   b. **Insert X-Forwarded-For:** Click the **Custom** checkbox and change to **Enabled**

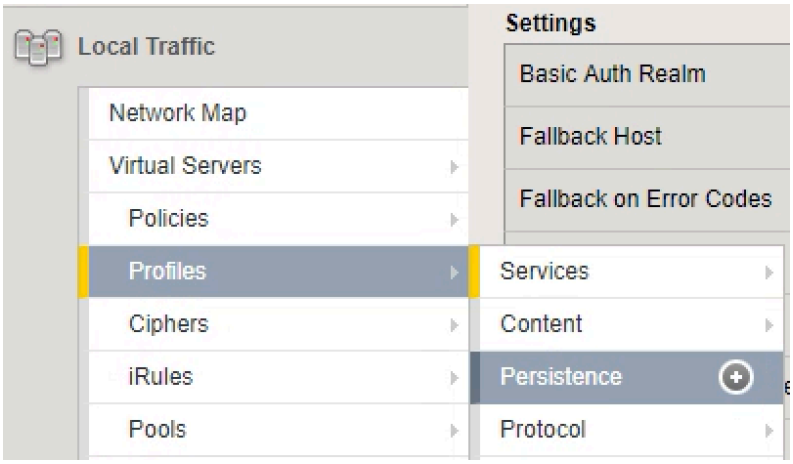
   c. Scroll to the bottom and click **Finished**

** **Important** ** You must enable X-Forwarded-For headers on your BIG-IP system. Identity Manager identifies the source IP address in the X-Forwarded-For headers. Identity Manager determines which authentication method to provide based on this IP address.

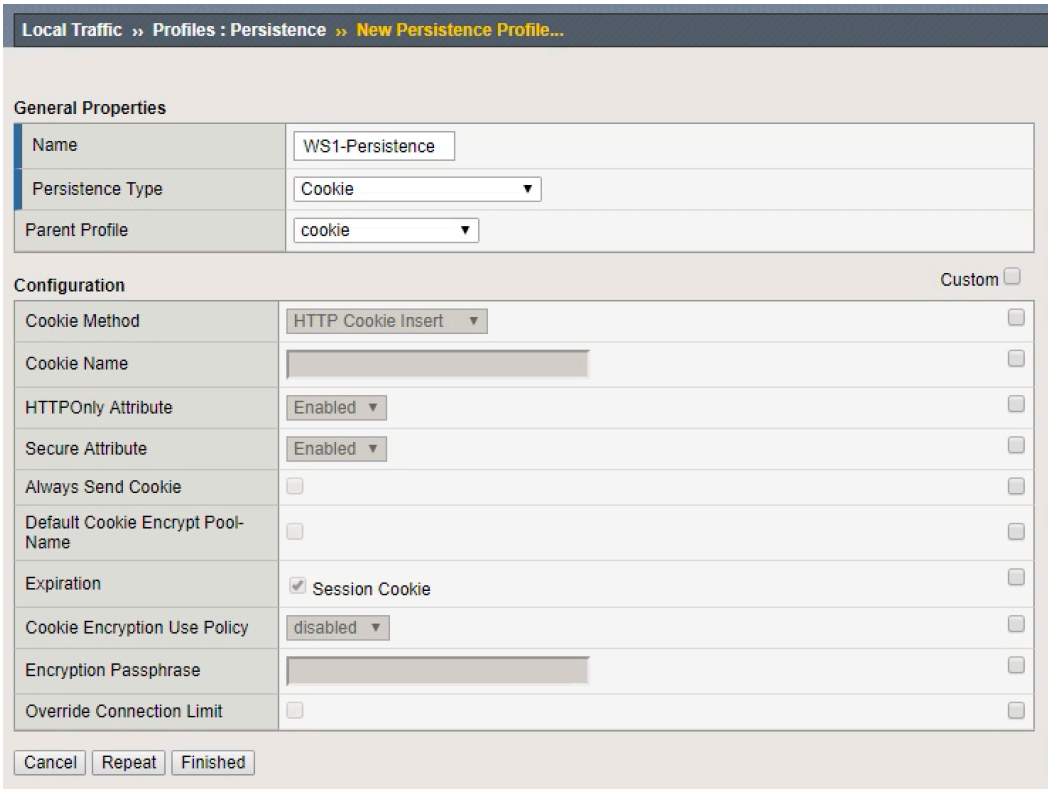
Create Persistence Profile (Non-MobileSSO)

Note: Build only 1 Persistence Profile this profile is specific for Non-MobileSSO users.

1. In the Local Traffic menus go to Profiles → Persistence → (+) plus icon to create a new Persistence Profile



2. In the "New Persistence Profile…"



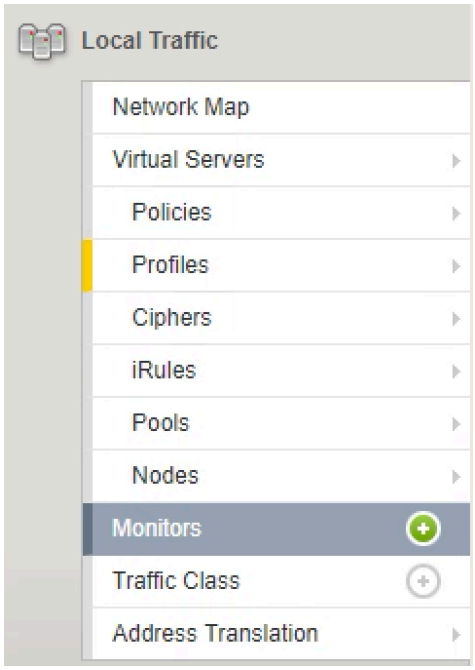
   a. **Name**: Provide a unique name.

   b. **Persistence Type:** select **Cookie**.

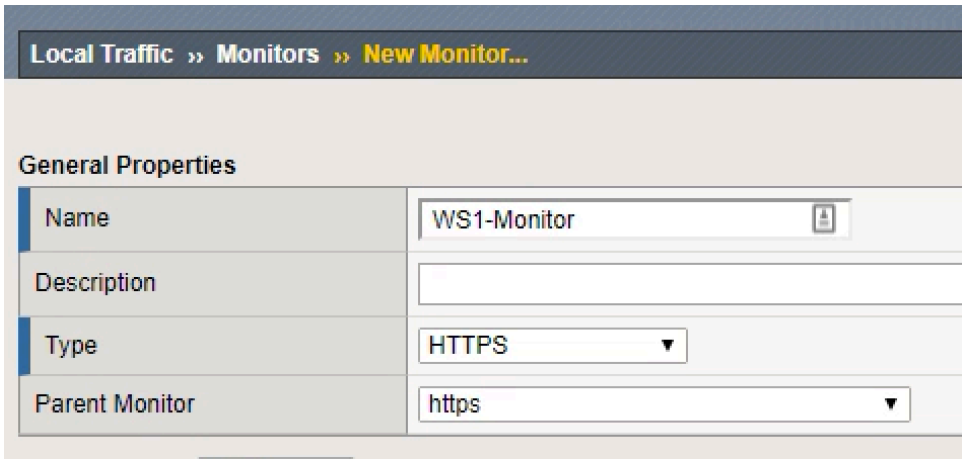
   c. Click **Finished**.

Create Monitor

1. In the Local Traffic menus go to Monitors → (+) plus icon to create a new Monitor



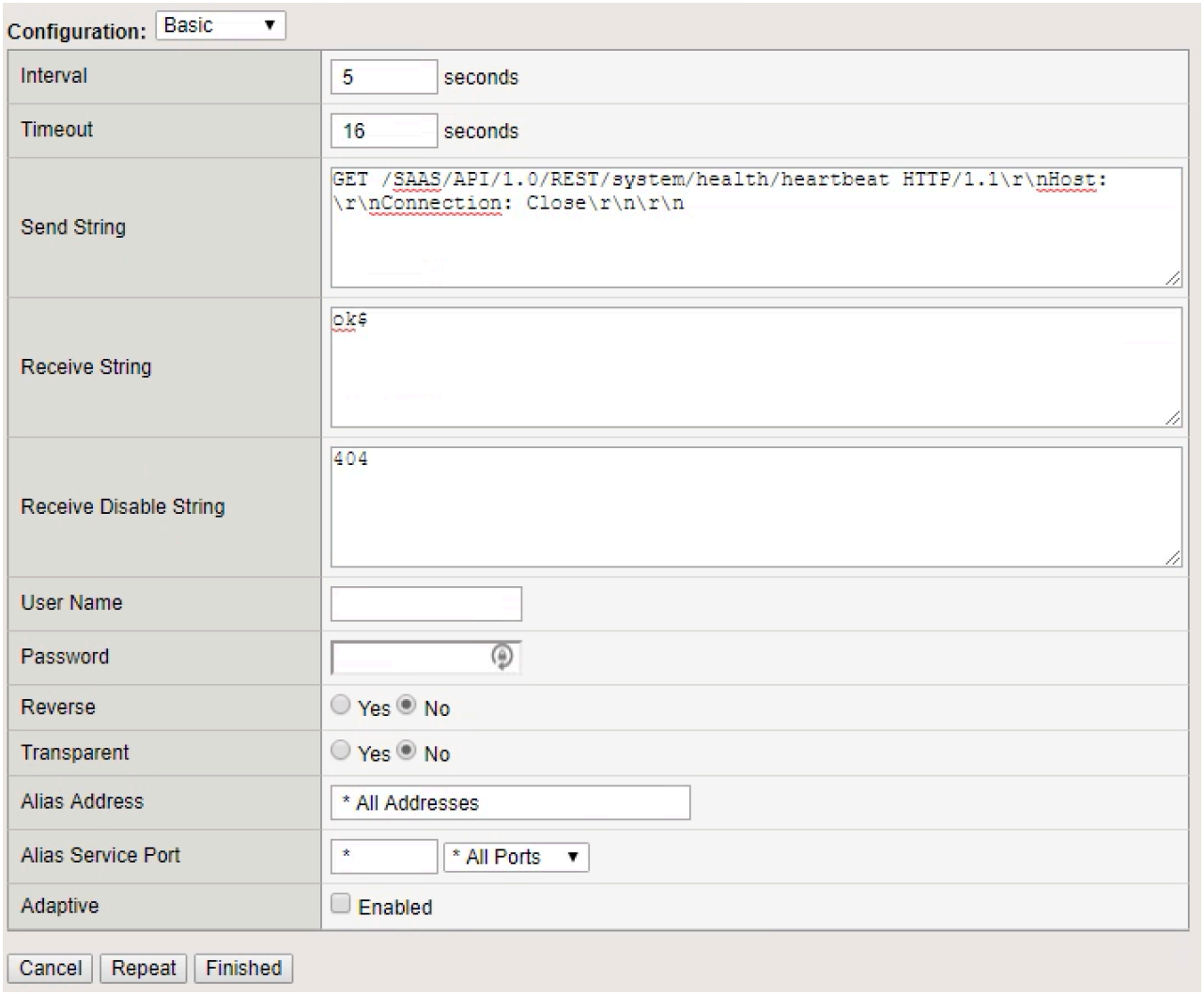
2. In the General Properties



   a. **Name:** Provide a Unique name

   b. **Type:** Select **HTTPS** from the pull-down menus

3. In the Configuration Section



   a. In the **Send String** field, type

      GET /SAAS/API/1.0/REST/system/health/heartbeat HTTP/1.1\r\nHost: \r\nConnection:Close\r\n\r\n

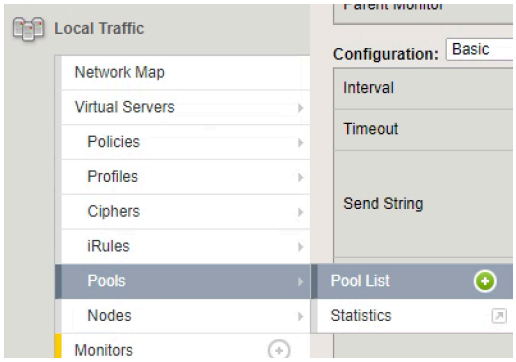
   b. In the **Receive String** field, type **ok$**

   c. In the **Receive Disable String** field, type **404**

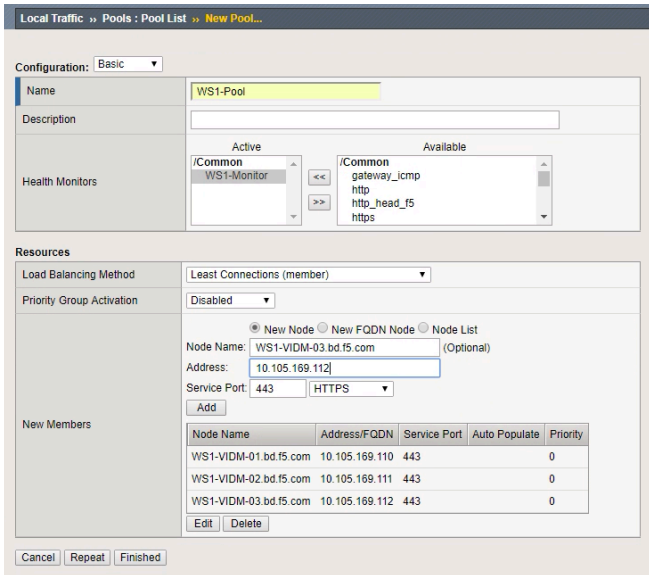
   d. Click **Finished**.

Create Identity Manager Pool

1. In the Local Traffic menus go to Pools → Pool List → (+) plus icon to create a new Pool



2. In the "New Pool…"



   a. **Name:** Provide a unique name.

   b. **Health Monitors:** use the Add (**<<**) button to move the monitor previously created to the **Active** list.

   c. **Load Balancing Method:** select **Least Connections (node)**.

   d. In the **New Members** area, complete the following for each Identity Manager node

      i. **Node Name:** (Optional) Provide the FQDN or Identifier of the Node.

      ii. **Address:** Provide the IP address of the First Identity Manager Node (Node 1).

      iii. **Service Port:** type **443** or select **HTTPS** from the list.

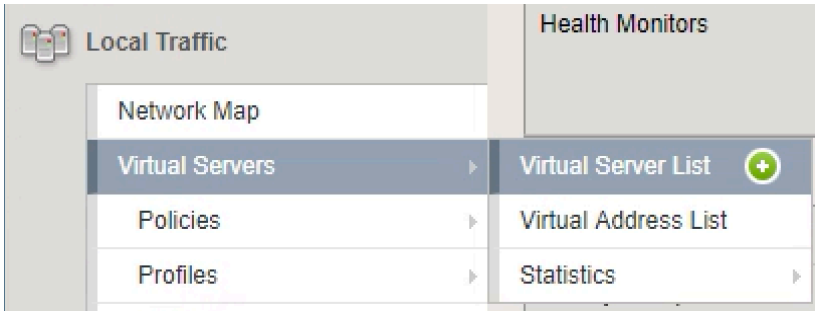
      iv. Click the **Add"** button.

      v. Repeat this step for each additional VMware Identity Manager node (Nodes 2 and 3 so when they are cloned they are available in the cluster).

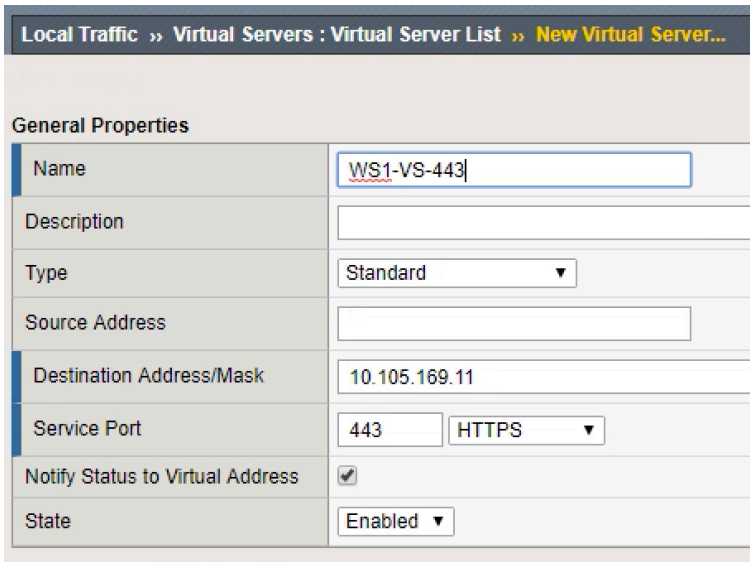
   e. Click the **Finished** button.

Create a Port 443 Virtual Server

1. In the Local Traffic menus go to Virtual Servers → Virtual Servers List → (+) plus icon to create a new Virtual Server



2. In the General Properties section.

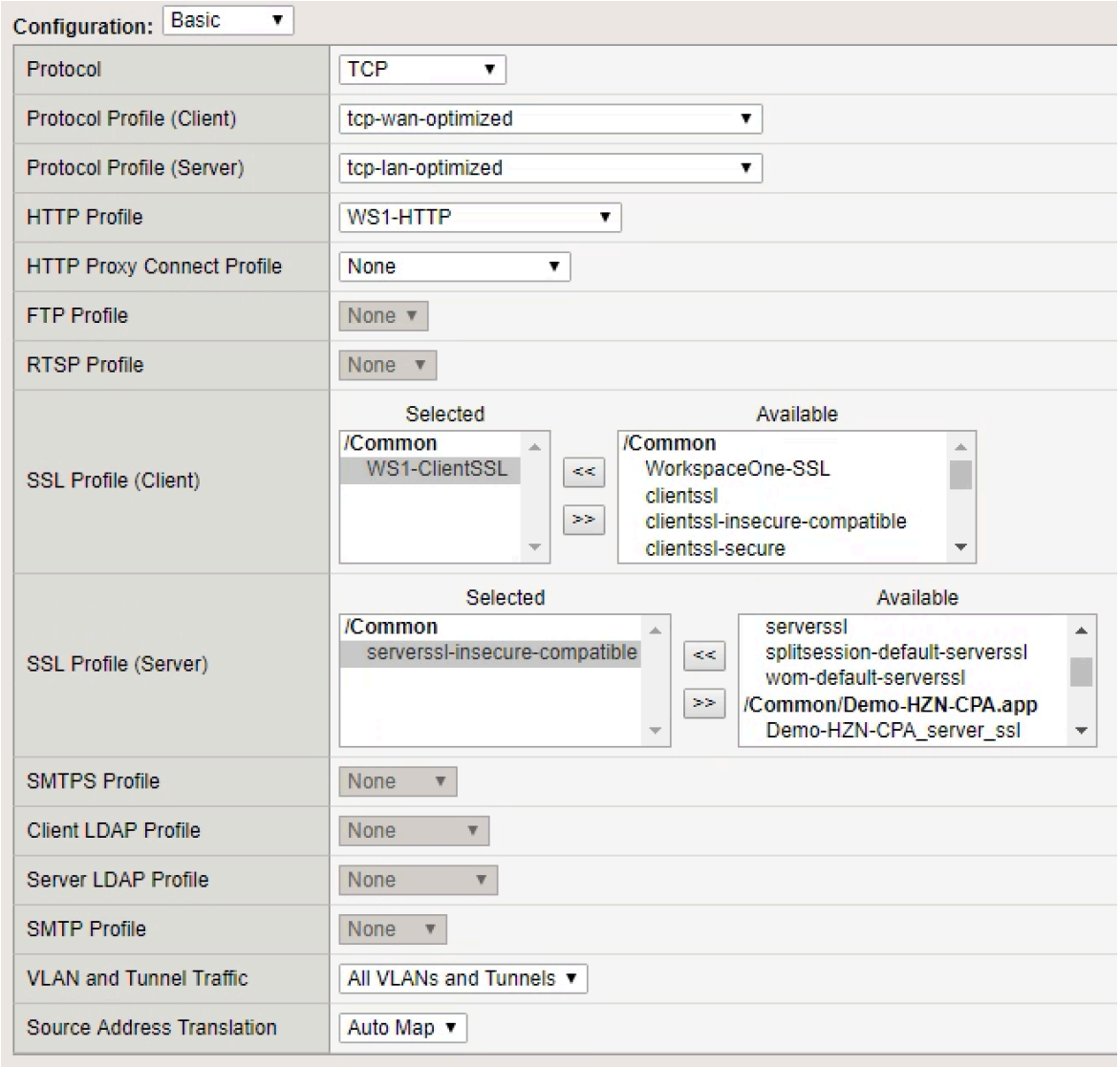


   a. **Name:** Provide a unique name.

   b. **Destination Address/Mask**: type the IP Address associated to the FQDN for the virtual server.

   c. **Service Port:** type 443 or select **HTTPS** from the list.

3. In the Configuration section.



a. **Protocol Profile (Client):** select **tcp-wan-optimized** from the pull-down menus.

b. **Protocol Profile (Server)**: select **tcp-lan-optimized** from the pull-down menus.

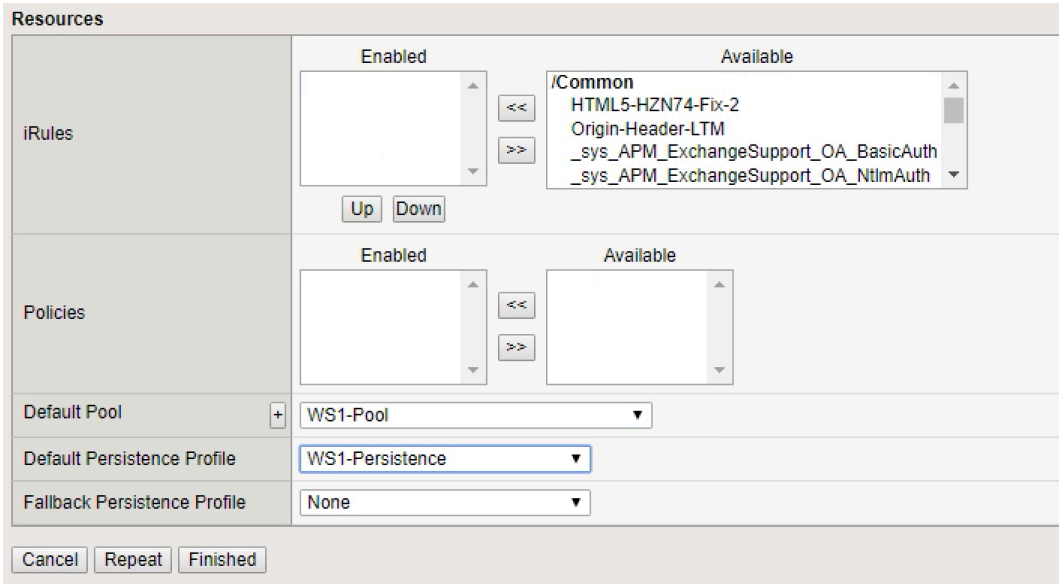
c. **HTTP Profile:** select the HTTP previously created.

d. **SSL Profile Client:** select the Client SSL profile previously created and click the “<<” button to move to selected.

e. **SSL Profile (Server):** select **serverssl-insecure-compatible** and click the “<<” button to move to selected.

f. **Source Address Translation:** select **Auto Map**.

4. Scroll down to the Resources section.



   a. **Default Pool:** select the pool previously created from the pull-down menus.

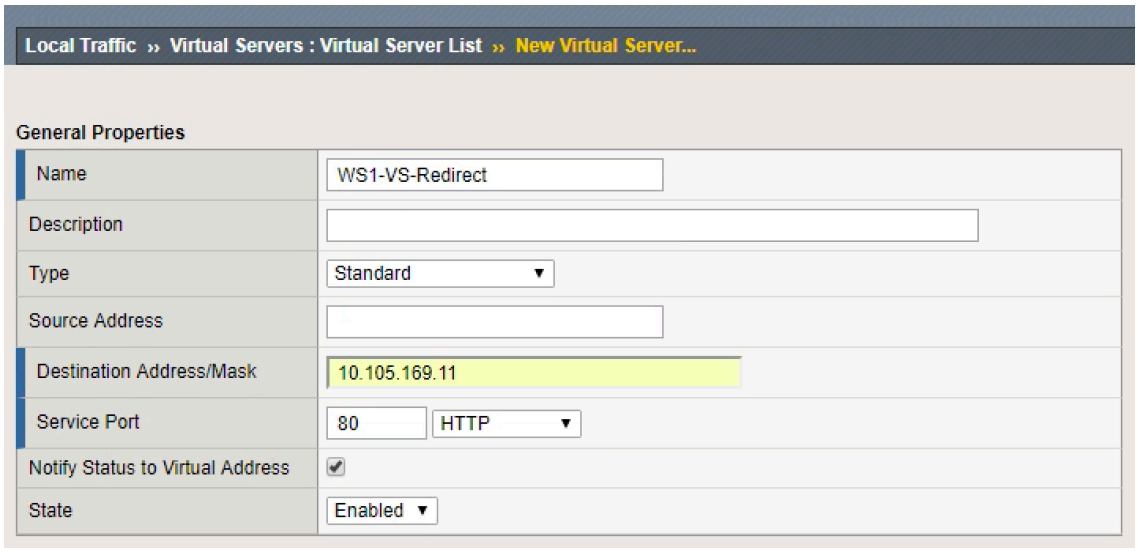
   b. **Default Persistence Profile:** select the persistence profile previously created from the pull-down menus.

   c. Click the **Finished** button.

Create a Port 80 Redirect Virtual Server (Optional)

1. In the Local Traffic menus go to Virtual Servers → Virtual Servers List → (+) plus icon to create a new Virtual Server

2.

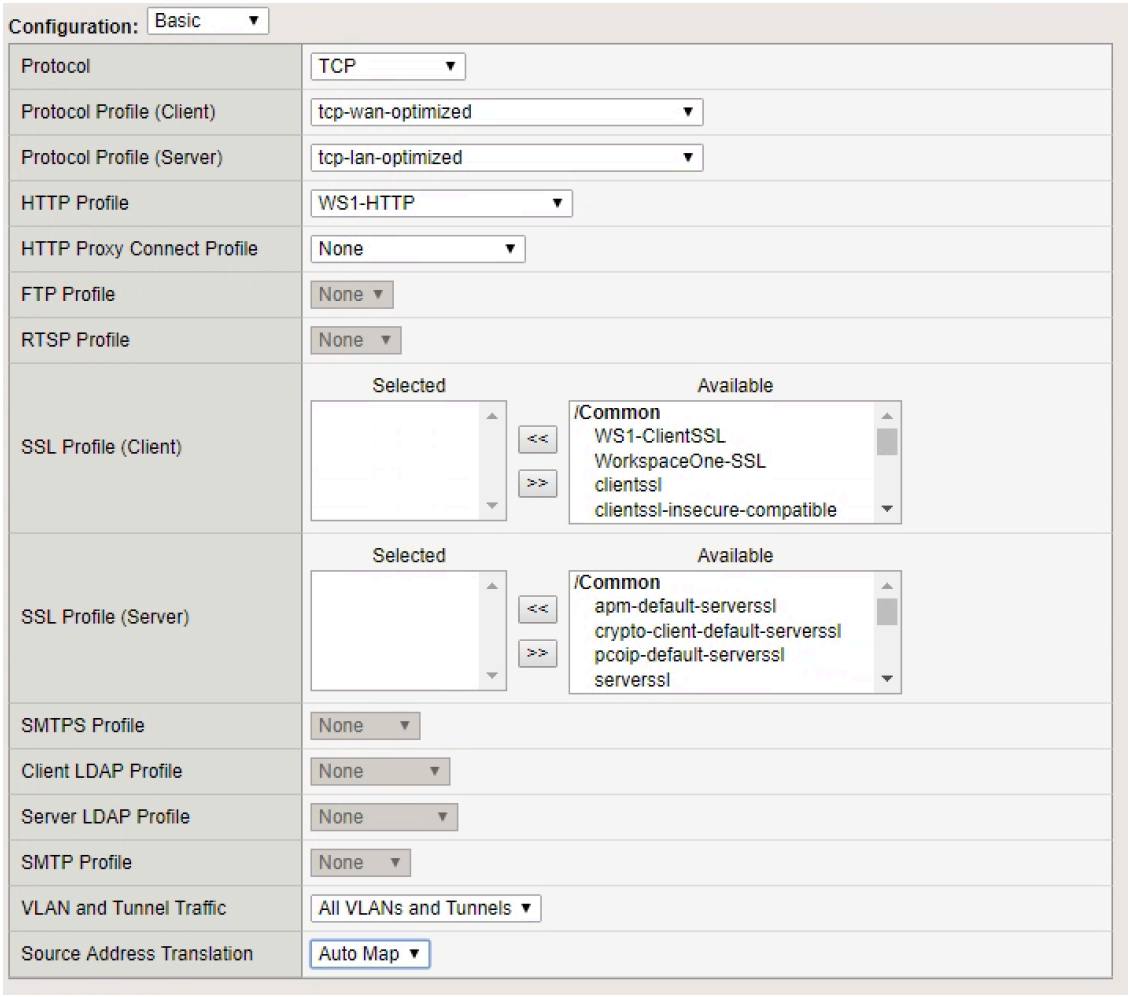


   a) **Name:** Provide a unique name.

   b) **Destination Address/Mask**: type the IP Address associated to the FQDN for the virtual server.

   c) **Service Port:** type 80 or select **HTTP** from the list.

3. In the Configuration section.



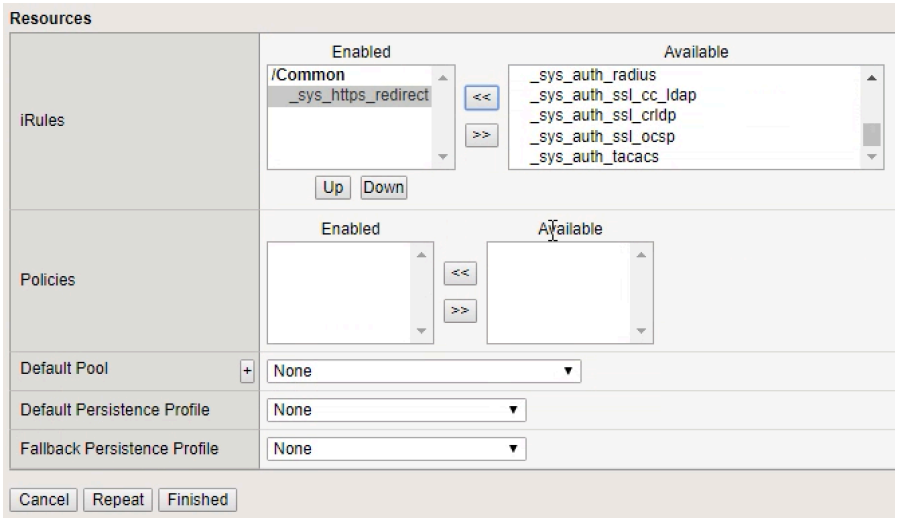
a) **Protocol Profile (Client):** select **tcp-wan-optimized.**

b) **Protocol Profile (Server):** select **tcp-lan-optimized.**

c) **HTTP Profile:** select the HTTP profile previously created above.

d) **Source Address Translation:** select **Auto Map**.

4. In the Resource section.



a) **iRules:** use the (**<<**) button to move the redirect iRule (**_sys_https_redirect**) to the **Active** list.

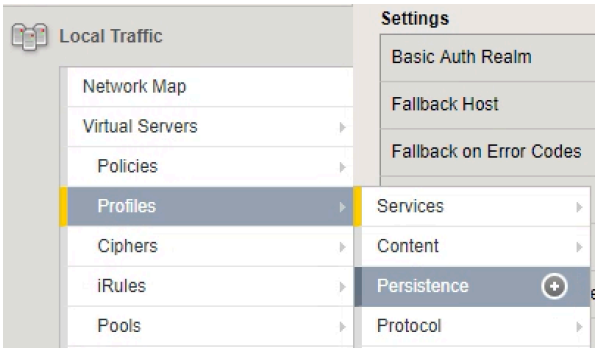
b) Click the **Finished** button.

MobileSSO F5 Configurations (Optional)

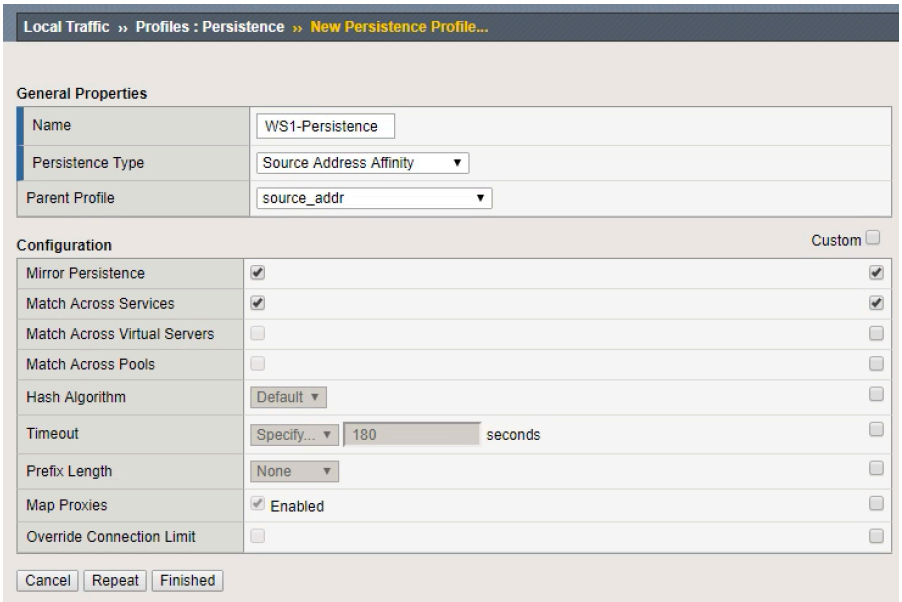
Create Persistence Profile

Note: Use the Persistence Profile mentioned in this section for both the 443 Virtual IP and the 88 Virtual IPs. If previous configuration was used change/replace Non-MobileSSO Persistence Profile with this one.

1. In the Local Traffic menus go to Profiles → Persistence → (+) plus icon to create a new Persistence Profile



2. In the "New Persistence Profile…"



   a. **Name**: Provide a unique name.

   b. **Persistence Type:** select **Source Address Affinity**.

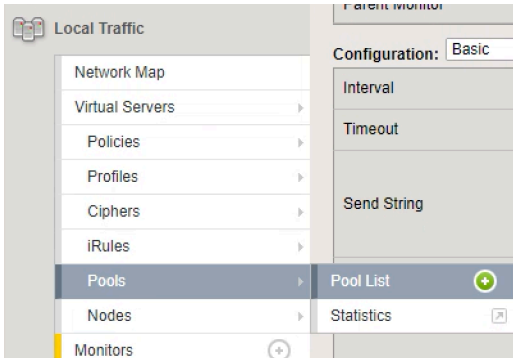
   c. Check the **Custom** checkbox and the **enable** Checkbox for **Mirror Persistence.**

   d. Check the **Custom** checkbox and the **enable** Checkbox for **Match Across Services.**

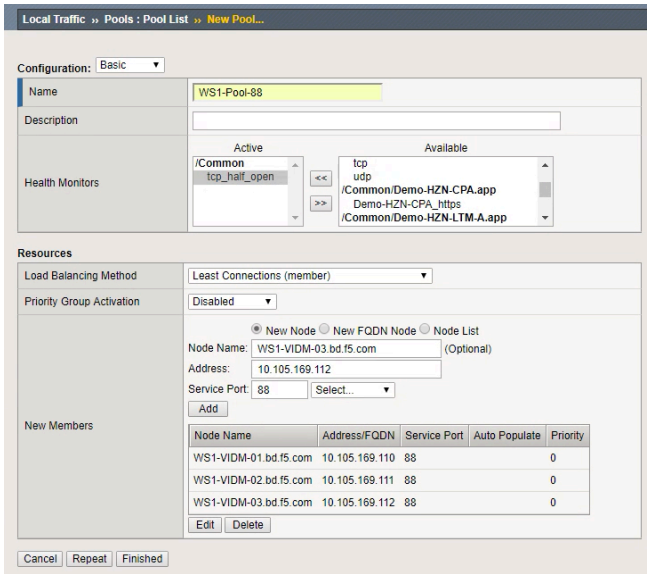
   e. Click **Finished**.

Create Pool

1. In the Local Traffic menus go to Pools → Pool List → (+) plus icon to create a new Pool



2. In the "New Pool…"



   a. **Name:** Provide a unique name.

   b. **Health Monitors:** use the Add (**<<**) button to move the **tcp_half_open** monitor to the **Active** list.

   c. **Load Balancing Method:** select **Least Connections (node)**.

   d. In the **New Members** area, complete the following for each Identity Manager node

      i. **Node Name:** (Optional) Provide the FQDN or Identifier of the Node.

      ii. **Address:** Provide the IP address of the First Identity Manager Node (Node 1).

      iii. **Service Port:** type **88**.

      iv. Click the **Add"** button.

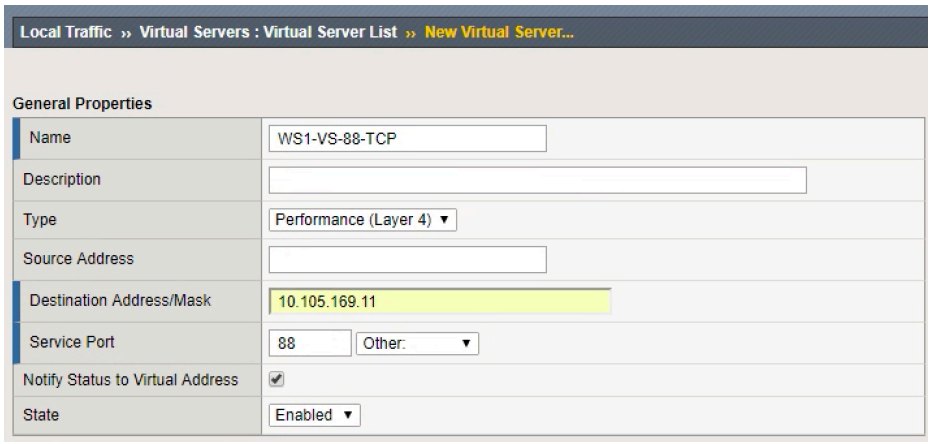
      v. Repeat this step for each additional VMware Identity Manager node (Nodes 2 and 3 so when they are cloned they are available in the cluster).

   e. Click the **Finished** button.

Create Port 88 TCP VIP

1. In the Local Traffic menus go to Virtual Servers → Virtual Servers List → (+) plus icon to create a new Virtual Server

2. In the General Properties section.

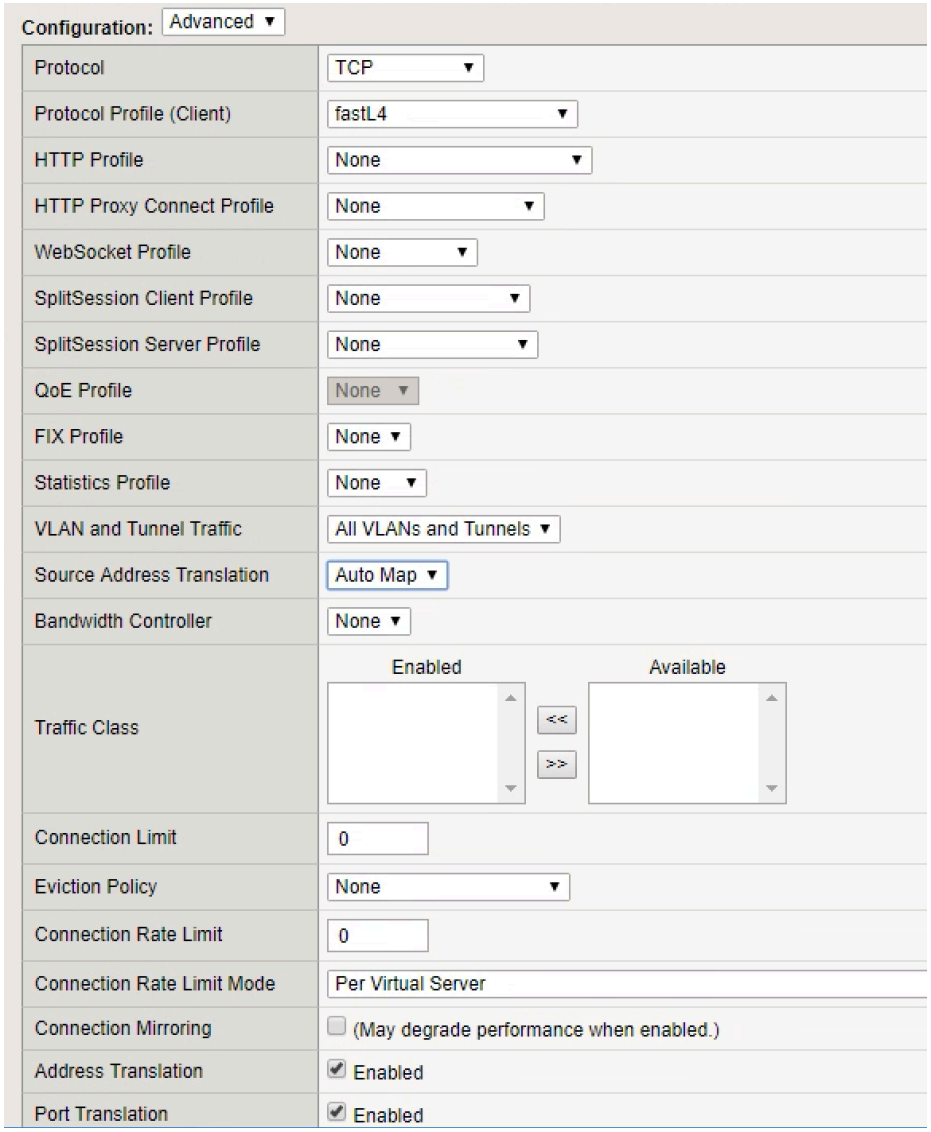


   a. **Name:** Provide a unique name.

   b. **Destination Address/Mask**: type the IP Address associated to the FQDN for the virtual server.

   c. **Service Port:** type **88**

3. In the Configuration section.



   a. Change the Configuration section from **Basic** to **Advanced**

   b. **Protocol:** select **TCP**.

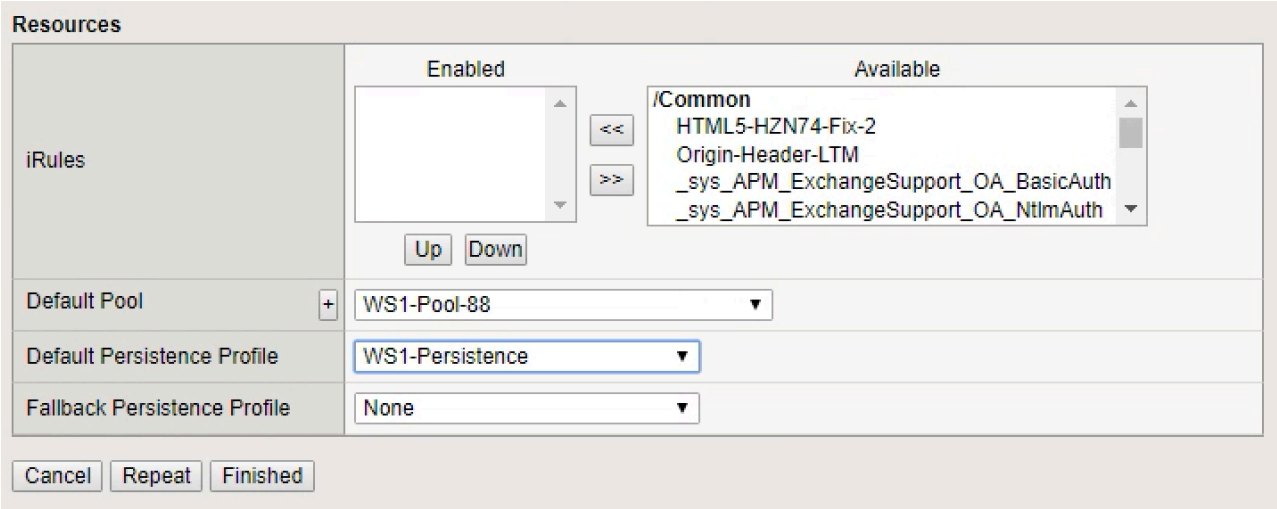
   c. **Protocol Profile (Client)**: select **FastL4** from the pull-down menus.

   d. **Source Address Translation:** select **Auto Map**.

   e. **Address Translation:** check the **Enabled** checkbox.

   f. **Port Translation:** check the **Enabled** checkbox.

4. Scroll down to the Resources section.



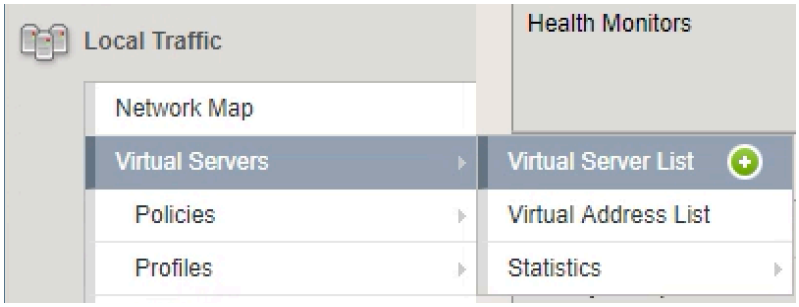
   a. **Default Pool:** select the pool for MobileSSO previously created from the pull-down menus.

   b. **Default Persistence Profile:** select the persistence profile for MobileSSO previously created from the pull-down menus.

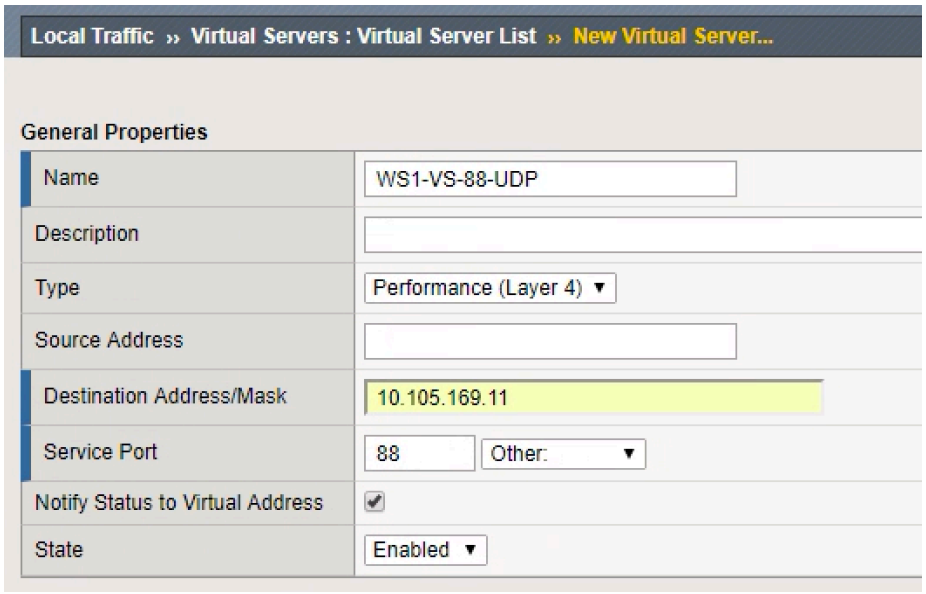
   c. Click the **Finished** button.

Create Port 88 UDP VIP

1. In the Local Traffic menus go to Virtual Servers → Virtual Servers List → (+) plus icon to create a new Virtual Server



2. In the General Properties section.

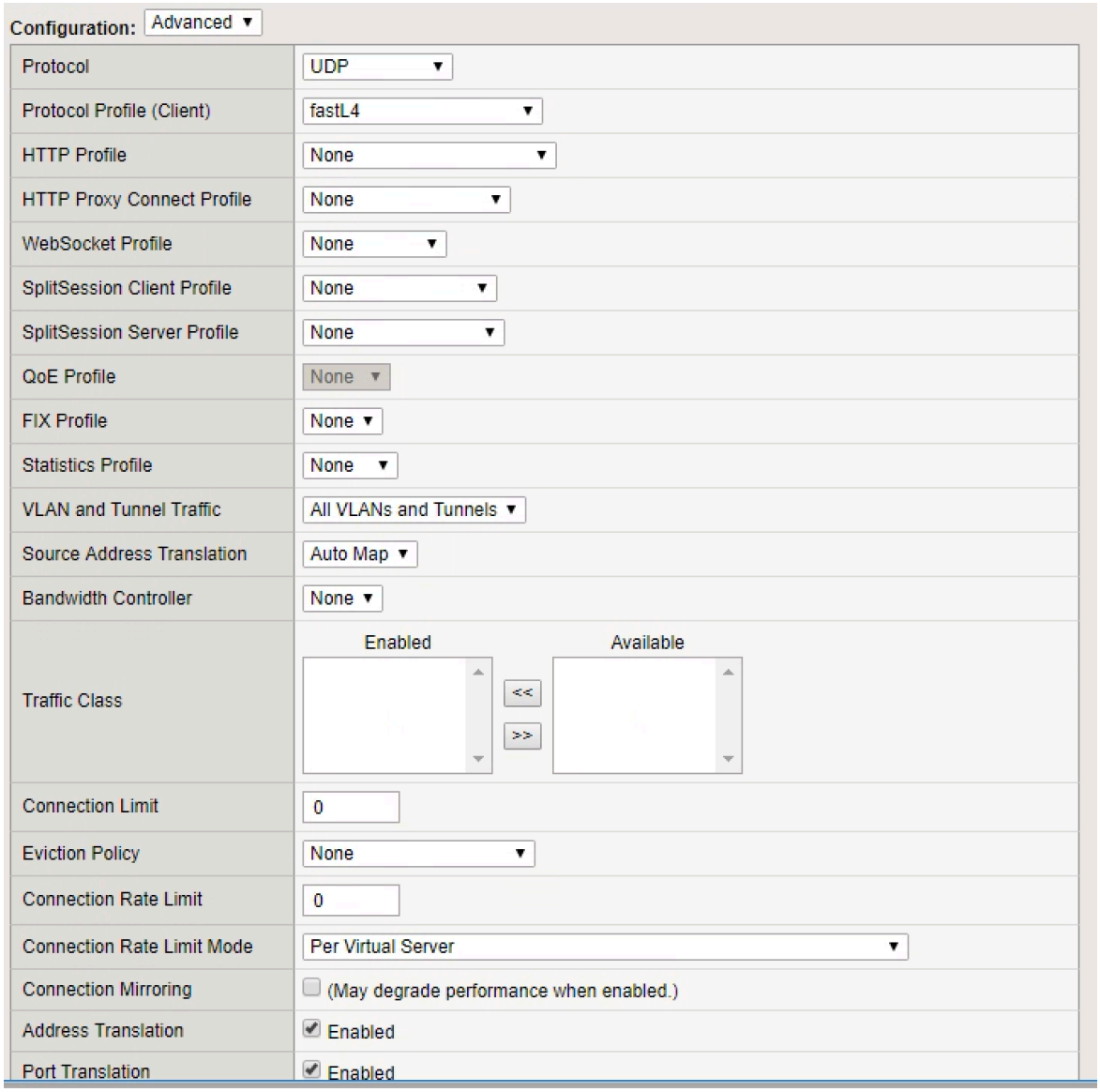


   a. **Name:** Provide a unique name.

   b. **Destination Address/Mask**: type the IP Address associated to the FQDN for the virtual server.

   c. **Service Port:** type **88**

3. In the Configuration section.



a. Change the Configuration section from **Basic** to **Advanced**

b. **Protocol:** select **UDP**.

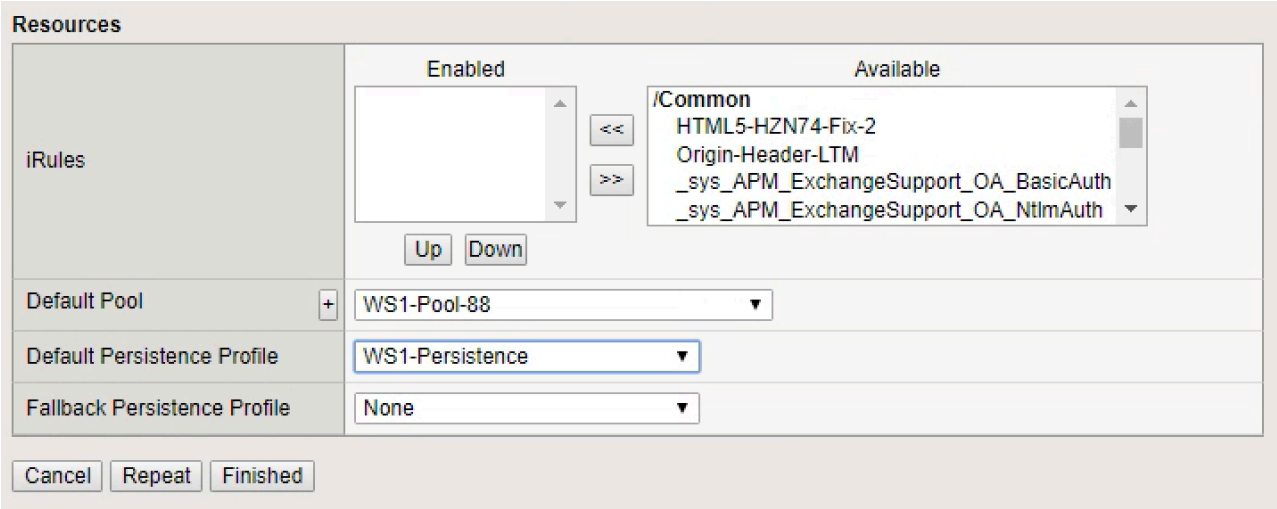
c. **Protocol Profile (Client)**: select **FastL4** from the pull-down menus.

d. **Source Address Translation:** select **Auto Map**.

e. **Address Translation:** check the **Enabled** checkbox.

f. **Port Translation:** check the **Enabled** checkbox.

4. Scroll down to the Resources section.



   a. **Default Pool:** select the pool for MobileSSO previously created from the pull-down menus.

   b. **Default Persistence Profile:** select the persistence profile for MobileSSO previously created from the pull-down menus.

   c. Click the **Finished** button.

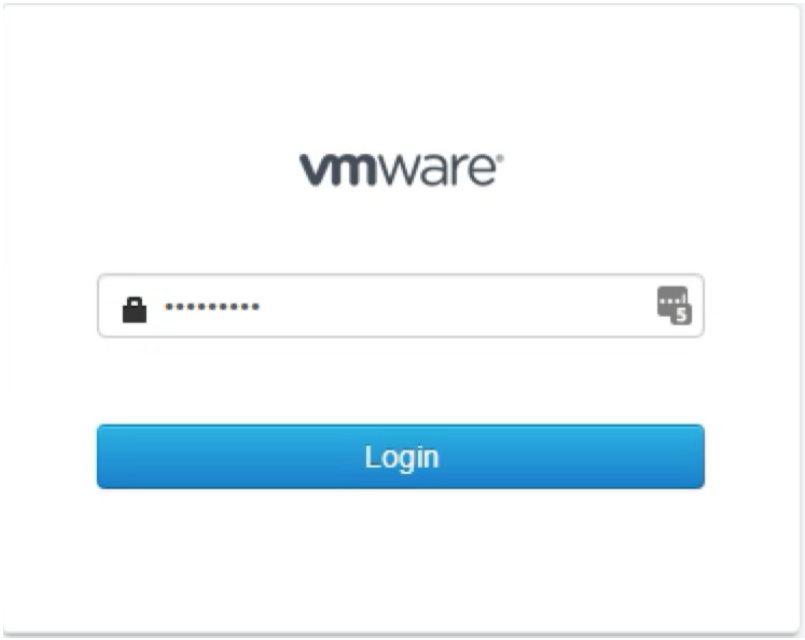
Configuring Root/Primary CA's on BIG-IP and Identity Manager

After configuring the F5 BIG-IP appliance to load balance the Identity Manager appliances, the next task is to upload the appliance's Primary or Root CA certificate to the BIG-IP.

Log onto the Identity Manager Node's Portal Appliance Configuration Page

1. In a browser, type the FQDN of the first Identity Manager appliance you are configuring (for example, https://ws1-vidm-01.bd.f5.com:8443/cfg/login).

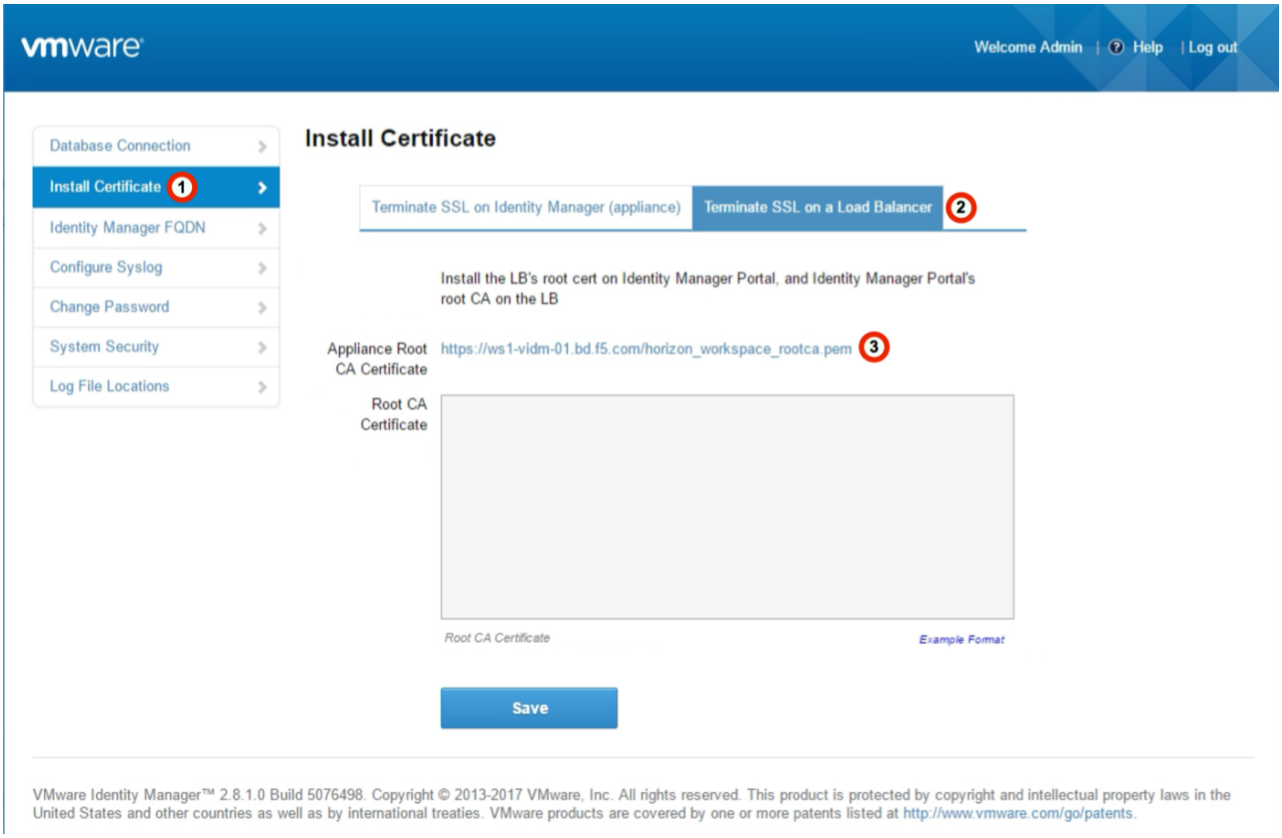
2. Login to the administrator interface with the password configured during the setup of the Identity Manager appliance.



Load the Identity Manager's Root CA on the BIG-IP

In this step, you copy and load the Identity Manager's Appliance Root CA to the BIG-IP. This example uses the appliance's self-signed Root CA generated during the installation. If you have replaced the original self-signed certificates with other certificates, you must ensure the Root CA for the replacement certificates used for Identity Manager are uploaded to the BIG-IP.

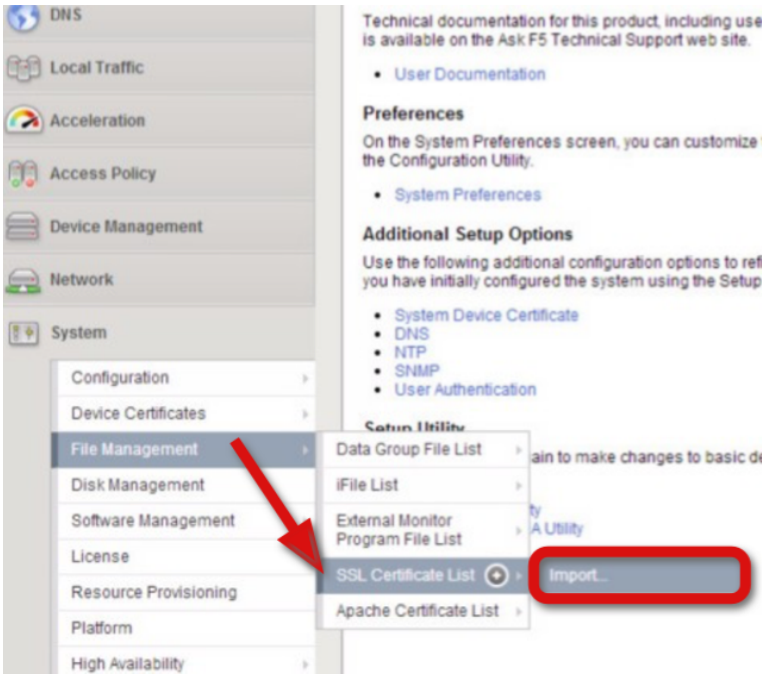
Even though there may be three (3) Identity Manager appliances deployed for a production scenario, you only need to import one (1) Appliance Root CA. When you clone the Identity Manager Appliance Node 1 for redundancy, the Appliance Root CA does not change.

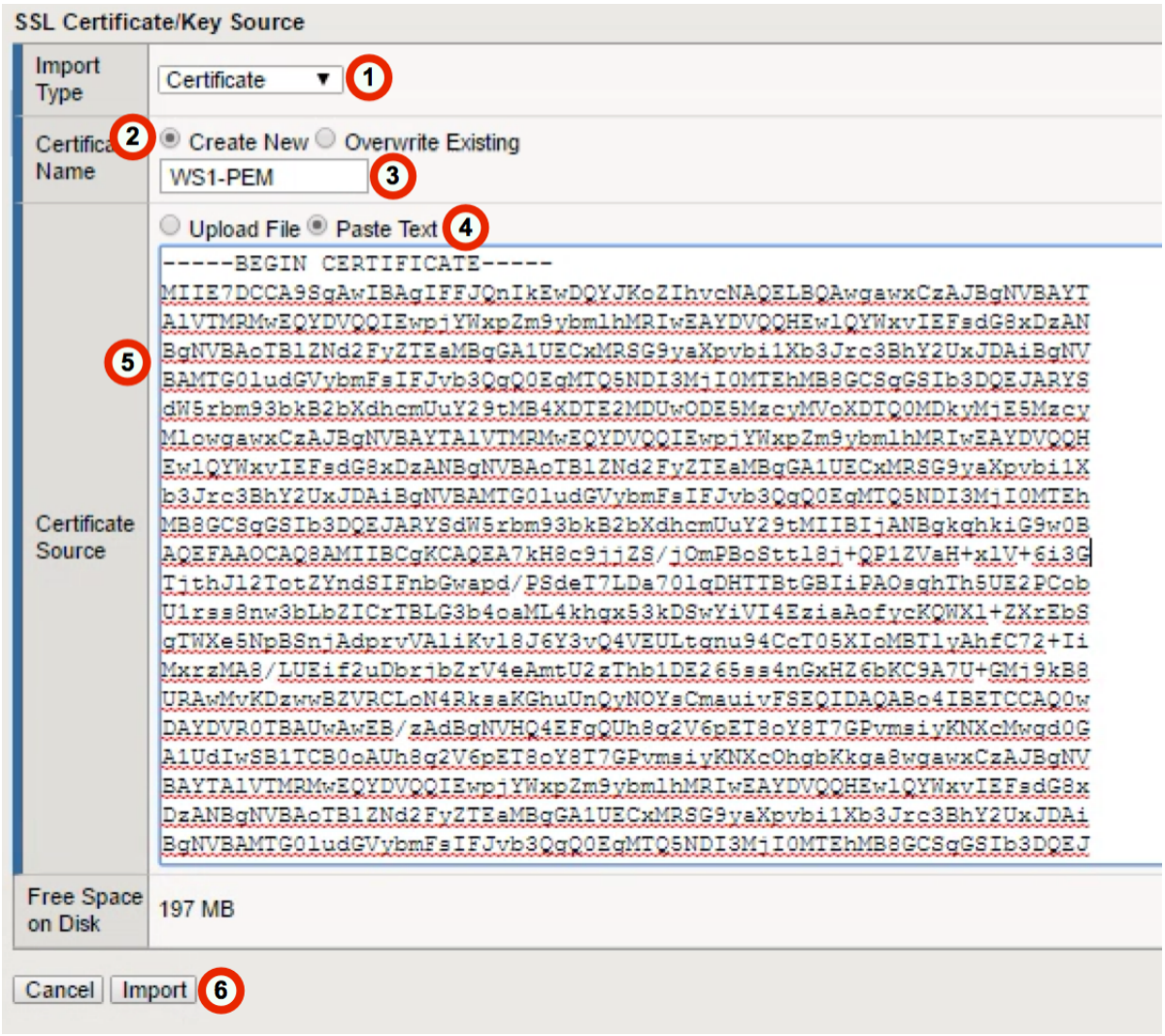


1. Click **Install Certificate** on the left side of the screen.
2. Click the **Terminate SSL on a Load Balancer** tab at the top right of the screen.
3. Click the link next to Appliance Root CA Certificate. A browser window opens with the Root CA's content.

4. Highlight the certificate and copy to your clipboard.

Go to the BIG-IP Configuration utility and click **System** > **File Management** > **SSL Certificate List** > **Import**.

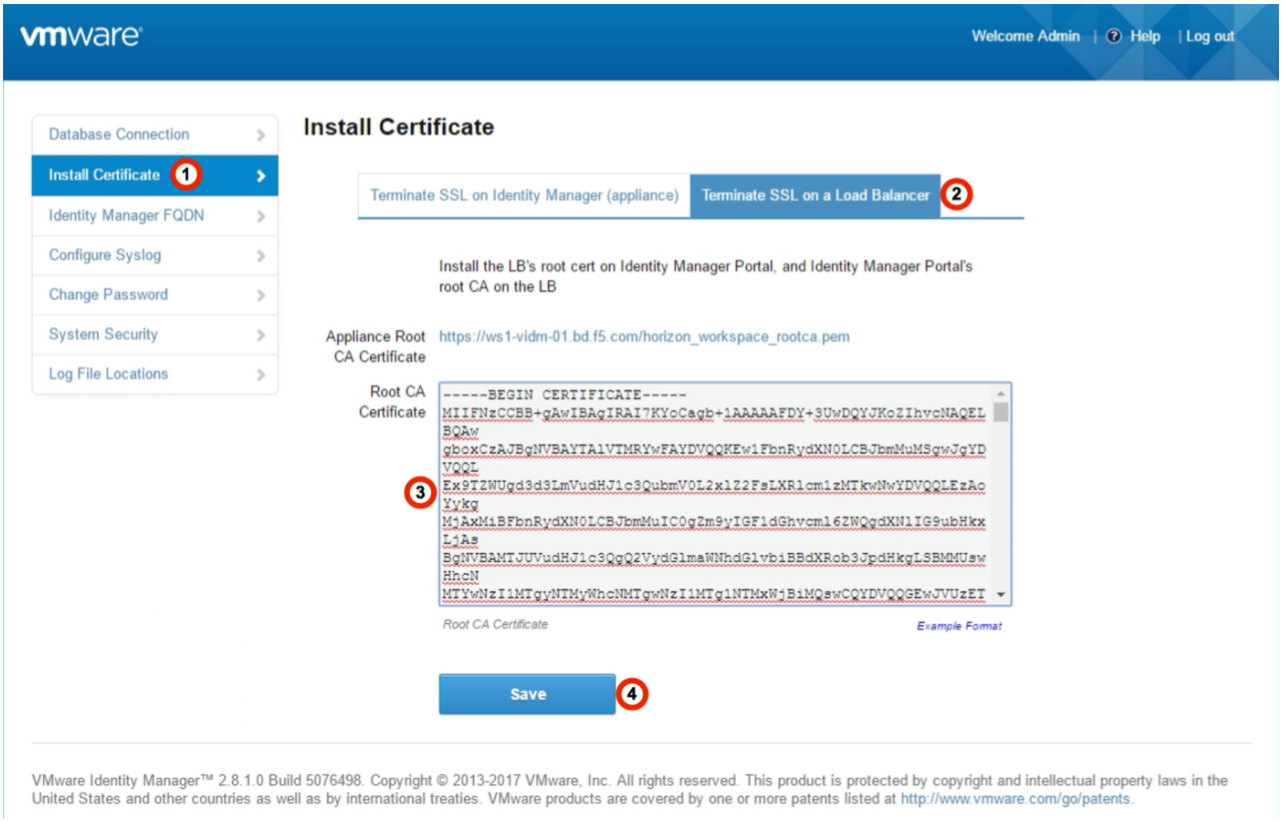




1. From the **Import Type** list, select **Certificate**.
2. In the **Certificate Name** row, click the **Create New** radio button.
3. In the **Certificate Name** row, in the **Name** field, type a unique name for the Identity Manager Certificate.
4. In the **Certificate Source** area, click the **Paste Text** radio button.
5. In the **Certificate Source** area, paste the Appliance Root CA (or the CA used for the appliance certificate).
6. Click **Import**.

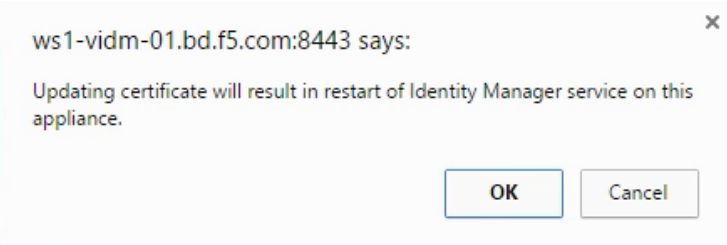
Load the FQDN Root/Primary CA Certificate into Identity Manager Node 1

Next, go to Identity Manager Appliance Node 1's appliance configuration interface.



From the appliance configuration page on Identity Manager Appliance Node 1:

1. Click **Install Certificate** from the menu on the left side of the screen.
2. Click the **Terminate SSL on a Load Balancer** tab at the top right of the screen.
3. Open the FQDN's Root/Primary Certificate in WordPad or other text editing utility. Copy and paste the contents of this certificate into the **Root CA Certificate** window.
   Note: The Root CA Certificate mentioned is the Root CA of the FQDN Certificate being used on the BIG-IP to load balance the VIDM Nodes. This is not the Device Certificate of the BIG-IP.
4. Click **Save**.
5. If prompted, click **OK** to continue.



6. The service will restart for the certificate to be successfully added to the Workspace/Identity Manager.

7. You will be returned to the VMware Workspace/Identity Manager Install Certificate screen once the process is complete.

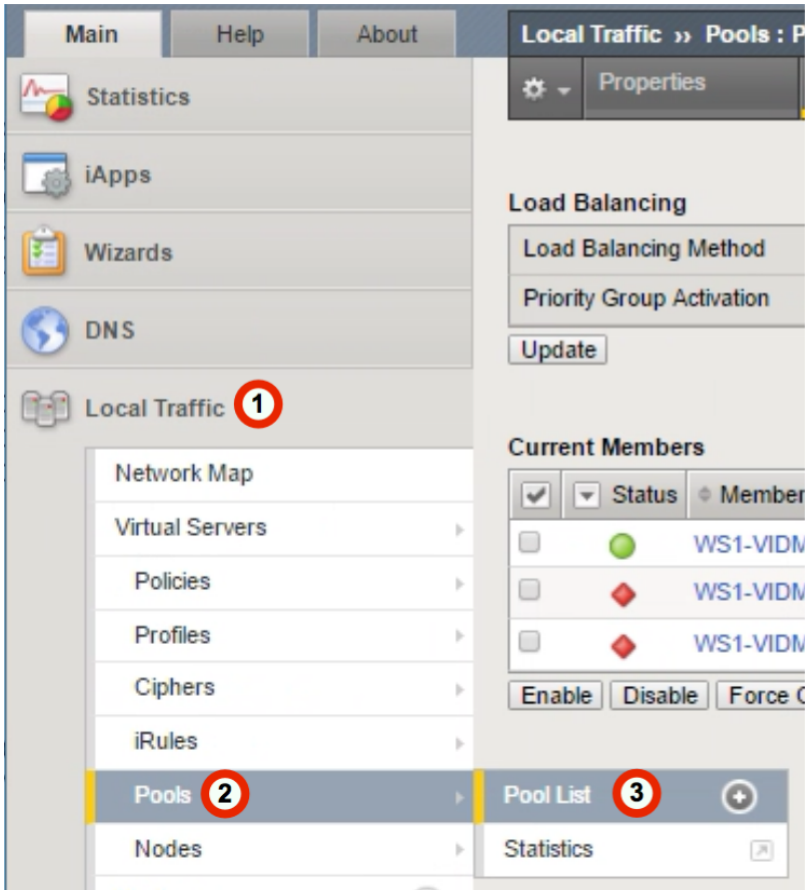
Configuring the FQDN for Identity Manager

After you have configured the appliance's root certificates on the F5 BIG-IP appliance, you must change the FQDN of node 1's appliance to point to the new load balanced FQDN.

Ensuring Node 1 is Online in the Pool

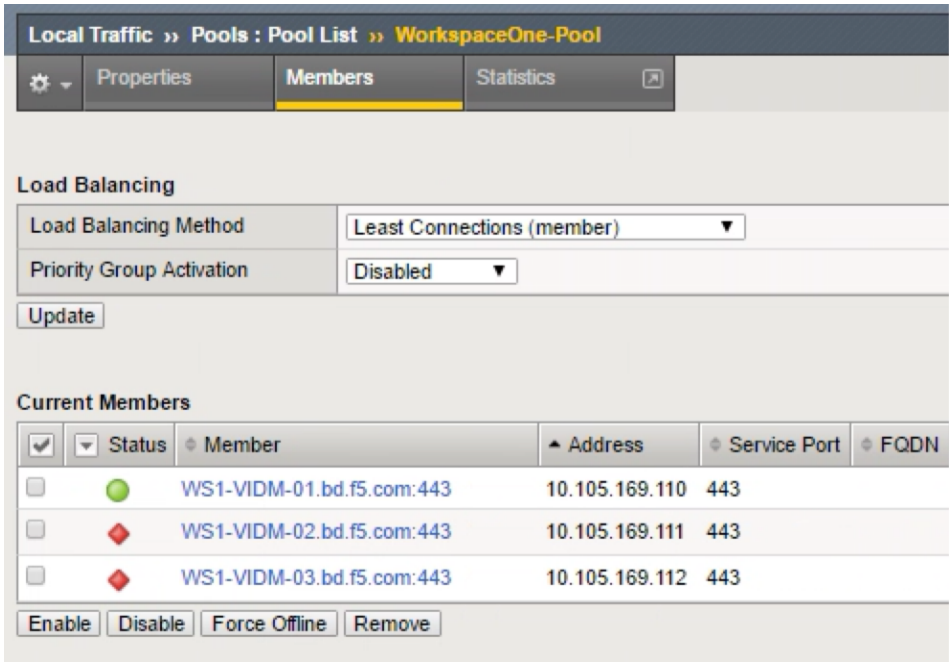
Before continuing, you must verify that Node 1 is Online in the pool of nodes. In this procedure, you check the BIG-IP to ensure that Node 1 is online. Nodes 2 and 3 (if added earlier) should be a part of the pool but marked as Offline (a red diamond icon).

1. Click **Local Traffic**.
2. Hover over **Pools**
3. Click **Pool List**.



4. Select the pool you created (**WorkspaceOne-Pool** in our example).
5. On the Menu bar, click **Members**.
6. In the Current Members area, you should see by the indicators that Node 1 (WS1-VIDM-01.bd.f5.com) has a green circle indicating it is online and available. Nodes 2 and 3 (WS1-VIDM-02.bd.f5.com and WS1-VIDM-03.bd.f5.com) have red triangles indicating that they are in an Offline State.

NOTE: This is expected behavior as nodes 2 and 3 should not have been cloned yet.

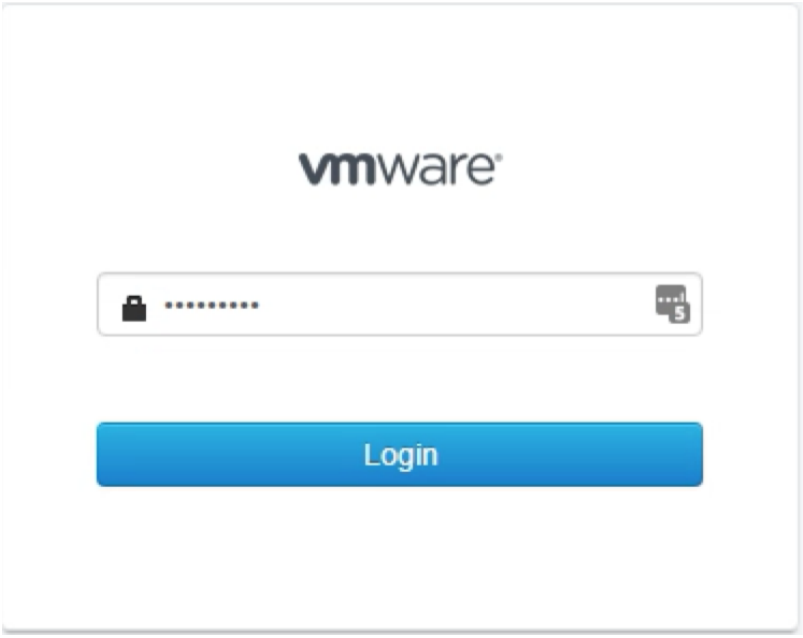


You are now ready to move onto update Node 1's Identity Manager appliance FQDN.

Log onto the Identity Manager Node's Portal Appliance Configuration Page

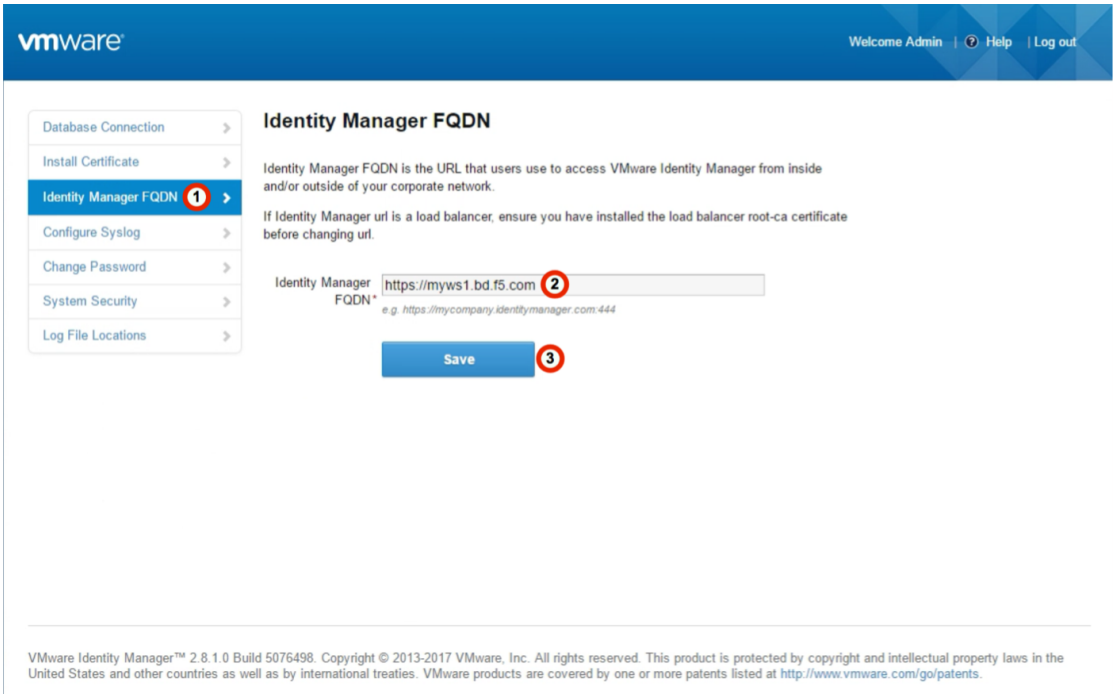
1. In a browser, type the FQDN of the first Identity Manager appliance you are configuring (for example, https://ws1-vidm-01.bd.f5.com:8443/cfg/login).

2. Login to the administrator interface with the password configured during the setup of the Identity Manager appliance.



Change Identity Manager Node 1's FQDN

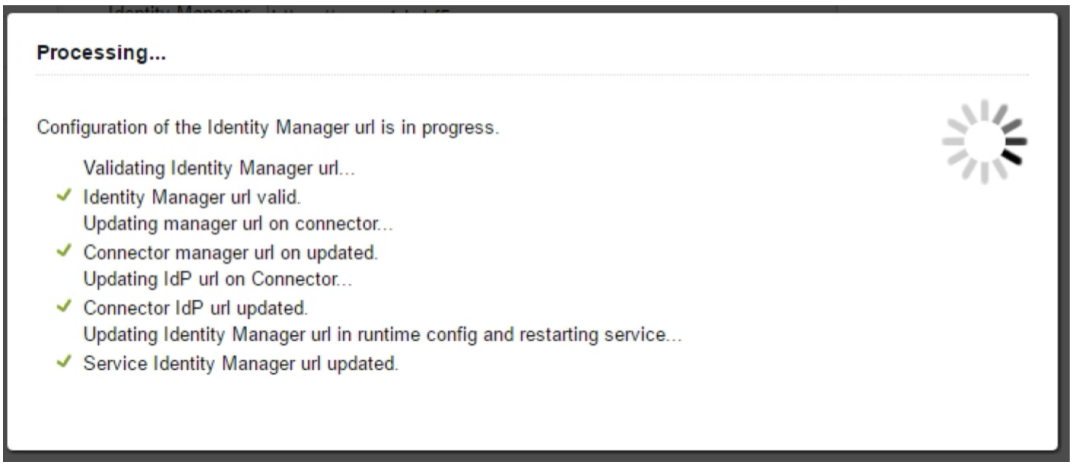
Once in the Workspace Portal/Identity Manager Appliance Configuration Page:



1. Select **Identity Manager FQDN** from the left-hand menu
2. Enter the Workspace Portal/Identity Manager FQDN: (i.e. https://myws1.bd.f5.com)
3. Click **Save**.

Confirming the FQDN Name change

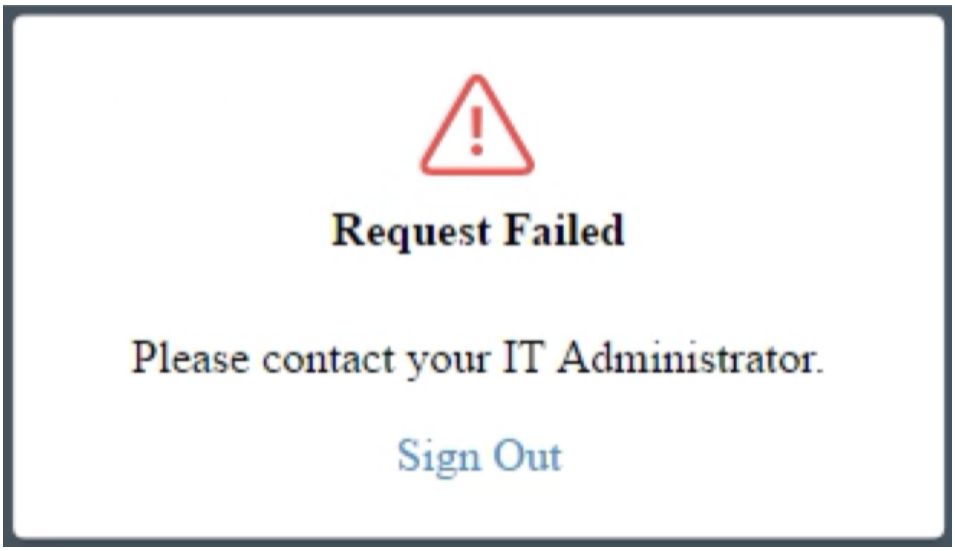
Once the FQDN update starts, you should be prompted with a screen that displays the progress.



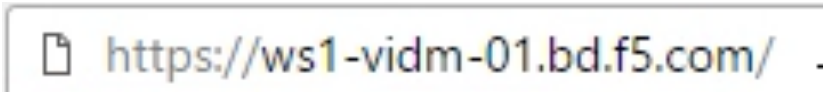
If you have completed every step successfully, you should see four (4) green checkmarks. If that is the case, please continue to the next step.

Enable End User Portal UI for Load Balanced Configurations

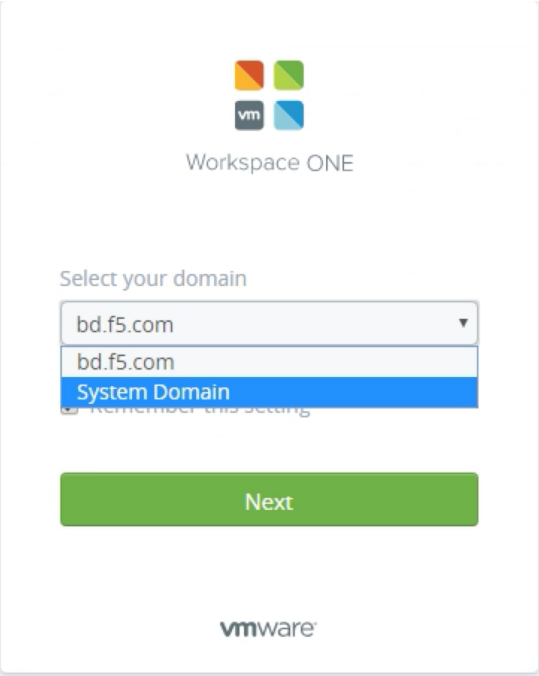
After you have changed the FQDN of the Node 1 appliance, you must enable the End User Portal UI. This is natively disabled when any load balancer is configured with Identity Manager and must be re-enabled or you receive a “Please contact your IT Administrator” error when logging in as a user.



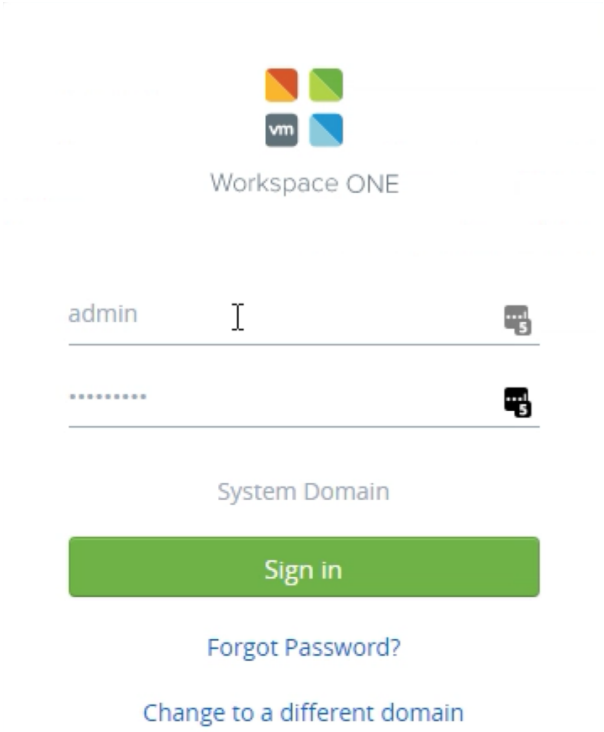
1. In a browser, type the FQDN of the first Identity Manager appliance you are configuring (for example, https://ws1-vidm-01.bd.f5.com)



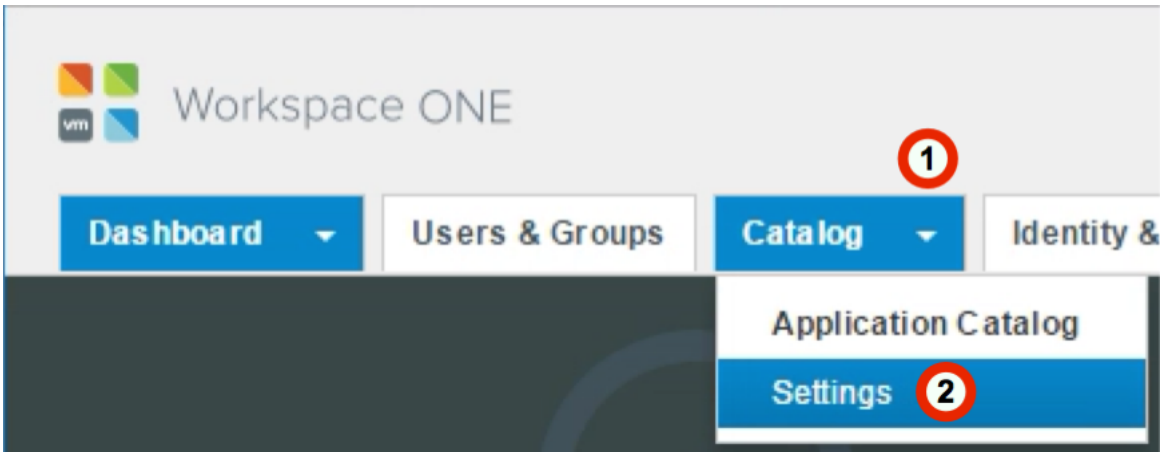
2. Clear the check from the **Remember this Setting** box, and then select **System Domain** from the list.
3. Click **Next**.



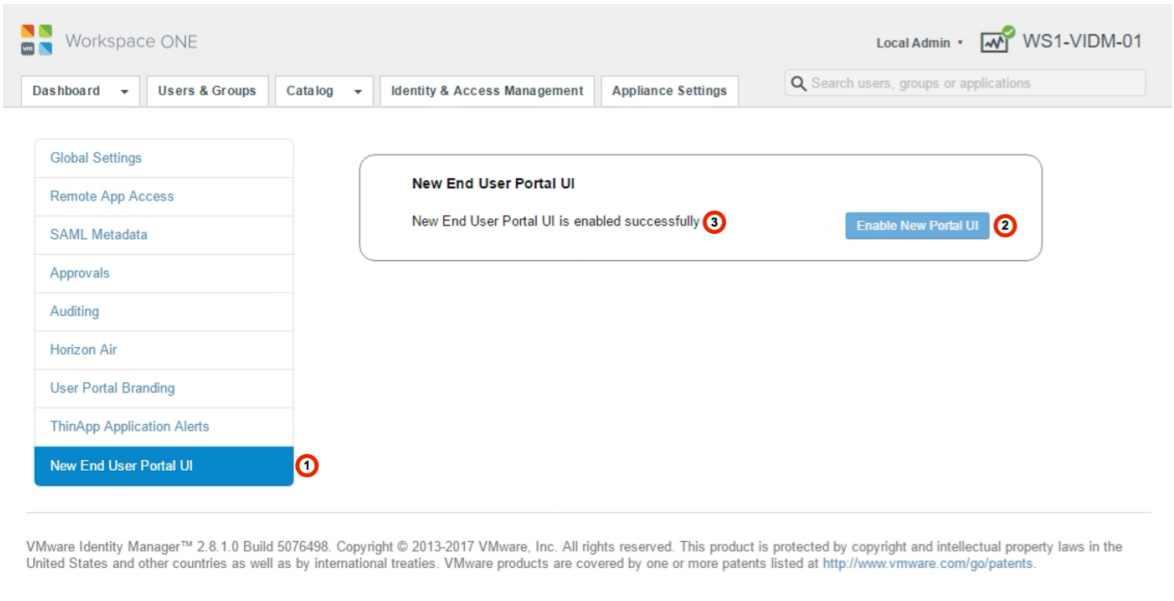
4. Login to the Workspace One Portal with the Local Admin Username and Password, ensure that **System Domain** is marked as the domain. If it is the incorrect domain select **Change to a different domain** and follow the previous steps.



5. Once Logged into the Admin Portal, from the **Catalog** menu (1) select **Settings** (2).



6. From the left menu, click **New End User Portal UI** (1) and then click **Enable New Portal UI** (2).
   This sends an update to the Identity Manager Portal and then **New End User UI is enabled successfully** (3) appears.


Workspace ONE
Local Admin
WS1-VIDM-01
Dashboard
Users & Groups
Catalog
Identity & Access Management
Appliance Settings
Search users, groups or applications
Global Settings
Remote App Access
SAML Metadata
Approvals
Auditing
Horizon Air
User Portal Branding
ThinApp Application Alerts
New End User Portal UI
1
New End User Portal UI
New End User Portal UI is enabled successfully
3
Enable New Portal UI
2
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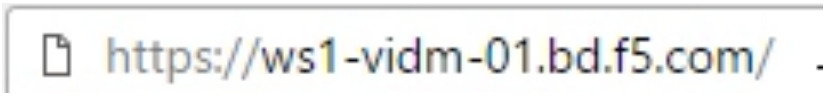
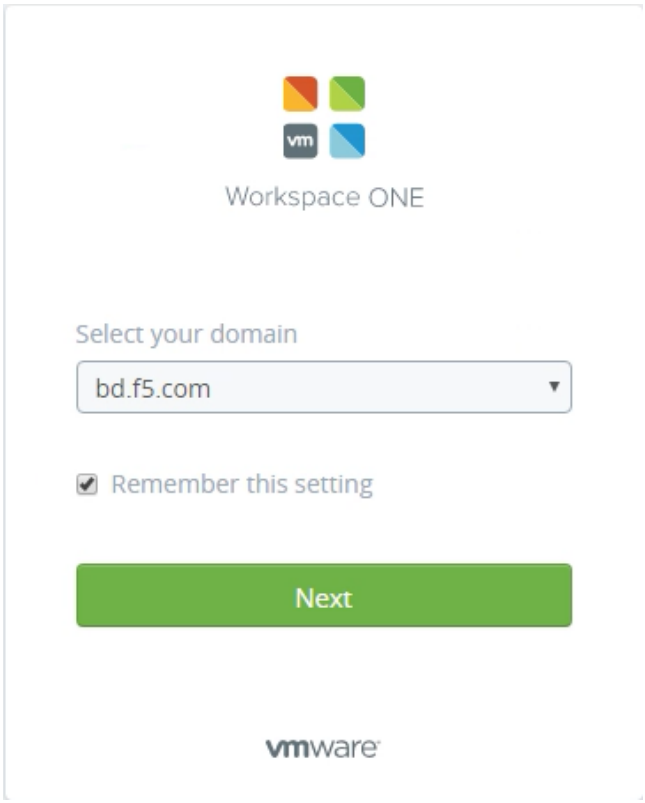
Logging into Identity Manager Portal

After Enabling the New UI, the next task is to login to the Identity Manager Portal as a user to ensure that everything is correct. In this case, you are now using the new FQDN site name to connect to the portal.

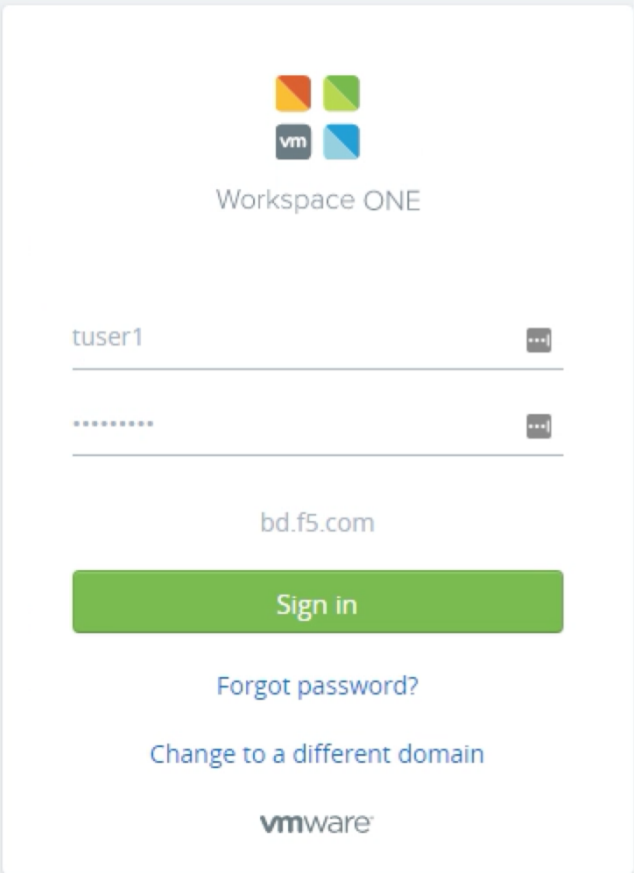
1. In a browser, type the FQDN of the first Identity Manager appliance you are configuring (for example, https://ws1-vidm-01.bd.f5.com).



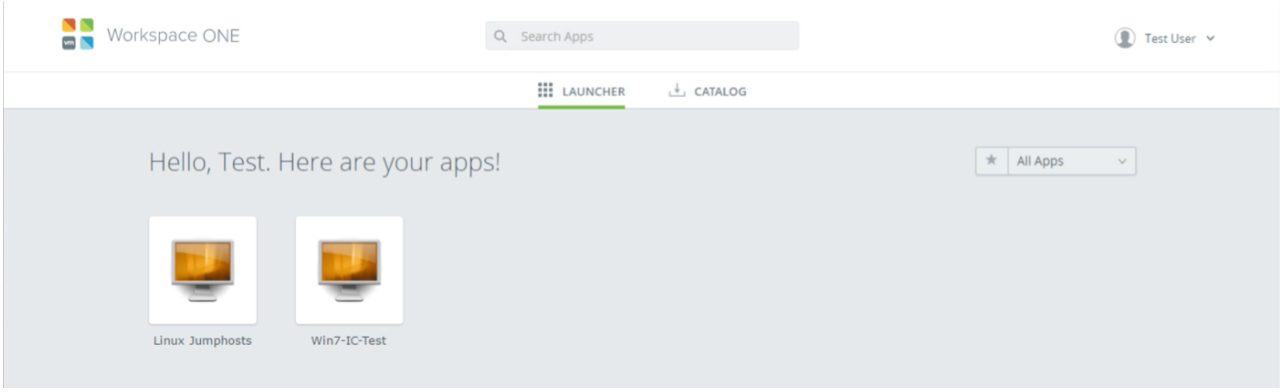
You should see the Workspace One Domain Selection Page. If you are taken directly to the Login page for System Domain or a domain where the user you wish to test is not selected appropriately, click the **Change to a different domain** button to get back to the domain selection page.



2. Login to the Workspace One Portal with the Local Admin Username and Password. Ensure the domain is **System Domain**. If it is not, click **Change to a different domain** and follow the previous steps.



3. After logging in you should see the apps/desktops associated with the user that logged on. If there are no applications or desktops, you should still be able to get to the WS1 Portal page with no apps in it.



Cloning Nodes 2 and 3

After you have successfully tested the node under the load balanced FQDN, you have completed the steps necessary to be able to clone to Nodes 2 and 3. F5 does not provide guidance on the cloning of the additional nodes, as this is a VMware Appliance and there are recommended paths from VMware to clone the additional nodes. The following links/documents that can help the continuation of the deployment.

- VMware Identity Manager Documentation (Continue from Step 3 “Clone the Virtual Appliance”)

  http://pubs.vmware.com/identity-manager-28/index.jsp#com.vmware.wsp-install_28/GUID-A29C51E5-6FF5-4F7F-8FC2-1A0F687F6DC5.html

- VMware EUC Customer Success Team, 3-Node Cluster (Page 16 – Creating IDM Node 2&3)

  https://communities.vmware.com/docs/DOC-33552