Hive Fabric Deployment Guide

December 17, 2021

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Using this guide

Welcome to Hive Fabric! Don't let the length of this document intimidate you. You can be up and running in no time! This includes screenshots for every step of the process. We aim to leave no question as to what option should be selected and how best to move forward.

The content and order of this document can be used as a step-by-step guide to complete the Hive Fabric installation and configuration, progressing all the way through creating and accessing published guests.

Important Information

Text highlighted in **bold** indicates a section of the UI where data entry or selection is required or where a keyword needs to be identified.

Brackets

Text separated by <brackets> indicates a value like an IP address.

Sections

Text highlighted with an underline identifies a document section label.

Key press

Text identified in bold and italicized in ***<brackets>*** indicate a keyboard key or sequence required.

Links

Links to our online support portal documentation are included in each section of the document, after the initial description of that section.

Highlighted Yellow

Important information or action items within screenshots are highlighted in yellow.

Hive Fabric Download

For those looking to evaluate Hive Fabric, the latest version can be downloaded using our Hive Fabric CE Registration form found on our website at https://www.hiveio.com/tryhivefabric/. For our current customers looking for the latest or a specific download version, please contact support@hiveio.com for the download link.

Hive Fabric Installation

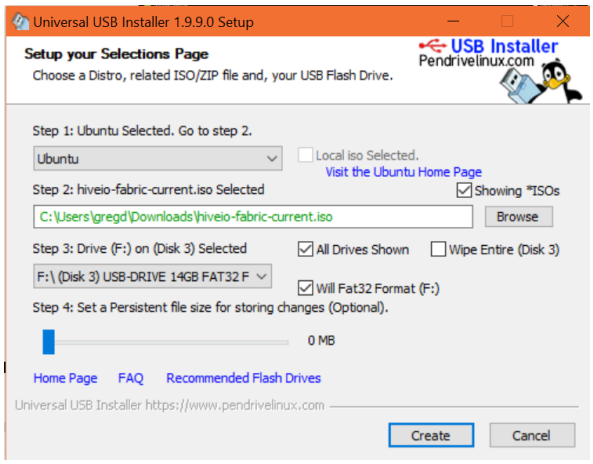
Bootable USB – Universal USB Installer

Note: If your hardware supports booting from a remote console (iDRAC, IPMI, iLO) mounted ISO file you can use this as an alternative method to boot the ISO. This has the added benefit of supporting the remote installation of a Hive Fabric host.

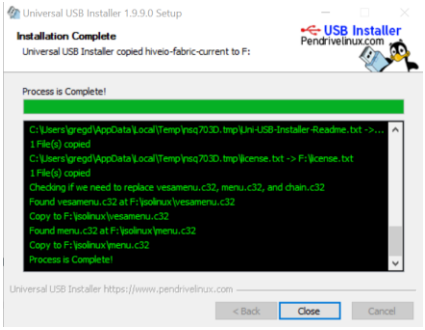
The guidance for the USB media creation is taken from the Universal USB Installer (UUI) 1.9.9.0, found at https://www.pendrivelinux.com/universal-usb-installer-easy-as-1-2-3/. We have received some unfavorable feedback on other common USB creators, so we recommend using UUI.

https://support.hiveio.com/portal/en/kb/articles/usb-boot-installation.

1. Launch the Universal-USB-Installer-1.9.9.0.exe.
2. Accept the licensing agreement.
3. Select the following settings for the USB installer.
    a. **Step 1**: **Ubuntu**
    b. **Step 2**: Path to ISO
    c. **Step 3**: Select the correct USB drive
        i. **All Drives Shown**
        ii. **Fat32 Format**
    d. **Step 4**: Leave at default
4. Thoroughly review the warning that pops up, select **Yes**.



5. Once complete, select **Close** to exit the installation.



Hive Fabric Installation

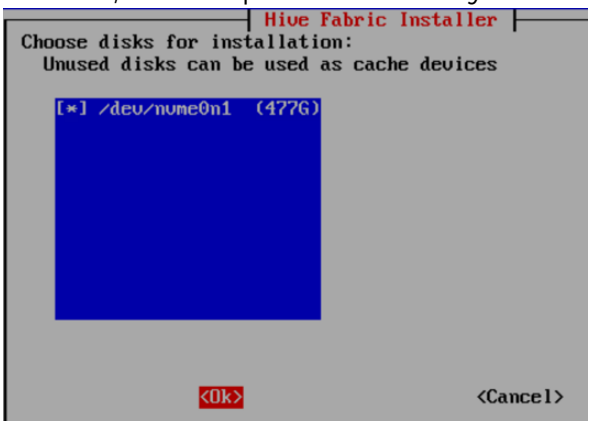
The process here begins after the successful boot of the Hive Fabric installation media (bootable USB, ISO, or PXE) using the Hive Fabric Console UI.

The console of Hive Fabric is navigated using your keyboard only. Use the tab or arrow keys to move between options in the interface, spacebar to select/deselect, and enter key to submit your responses.

https://support.hiveio.com/portal/en/kb/articles/hive-fabric-install

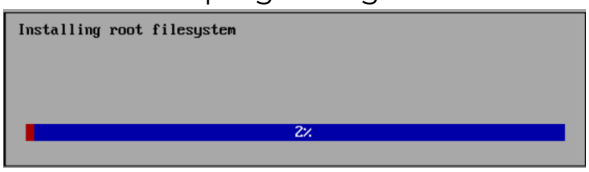
1. Press ***<Enter>*** enter to proceed past the welcome screen.

2. Select the disk for the Hive Fabric OS installation (If you choose multiple disks, the installer will guide you through how you want the RAID configured.) NOTE: When considering the RAID configuration, keep in mind that this is the OS disk, so data protection is key rather than speed.



3. Tab forward to **OK** and press ***<Enter>.***

4. Installation is progressing.



5. Press ***<Enter>*** to reboot the host.

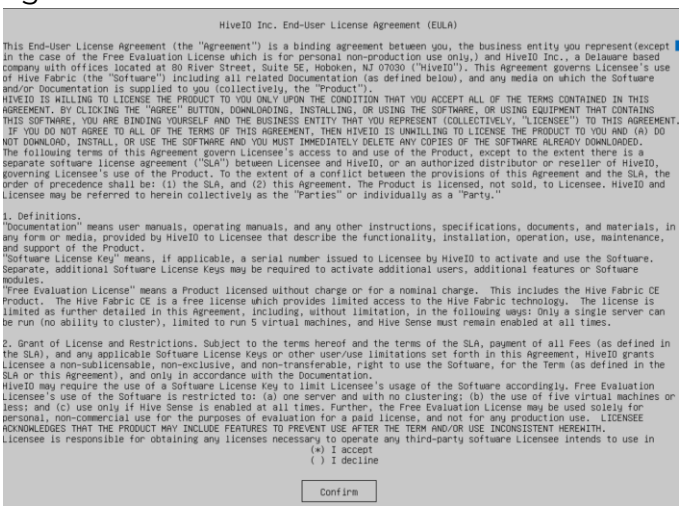
6. Make certain you remove the installation media (unmount ISO, remove USB) once the server is back to its BIOS boot screen.

Hive Fabric First Boot Wizard

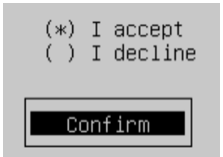
This portion of the installation guide is focused on the initial configuration using the **Admin Console UI**, also referred to as the First Boot Wizard (FBW). Once the initial installation is completed, this Admin Console UI provides basic networking and services functions.

https://support.hiveio.com/portal/en/kb/articles/first-boot-wizard

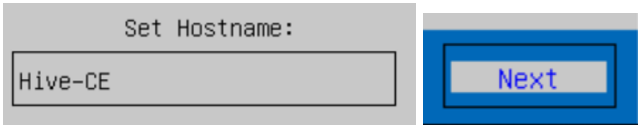
1. Use the keyboard ***<Arrow-Down>*** key to scroll through and read the licensing agreement.



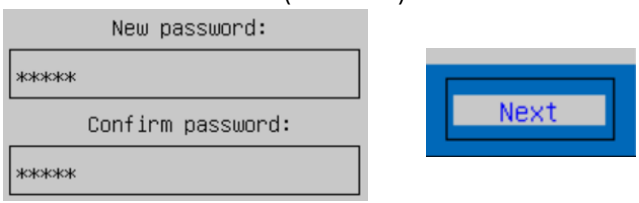
2. Once complete, ***<Tab>*** to the **Confirm** button and press ***<Enter>***.



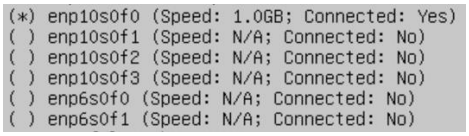
3. Enter an appropriate hostname (alpha-numeric characters and "-" are acceptable), ***<Tab>*** to the **Next** button, then press ***<Enter>***.



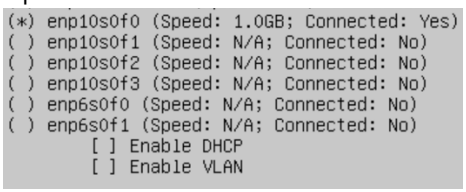
4. Enter a password to secure administrative access to the Hive Fabric CE host. This password will be used for the administrative web interface (admin) as well as SSH access (admin1). ***<Tab>*** to the **Next** button and press ***<Enter>***.



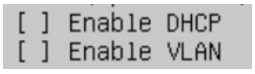
5. ***<Tab>*** to the appropriate network interface to be configured as Production (management) for the host, then press the ***<Spacebar>*** to select. This connection should indicate the connected network Speed and Connected state of Yes.



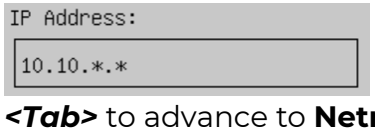
6. ***<Tab>*** to **Enable DHCP**. Use the ***<Spacebar>*** to clear this selection to use a static IP address. Otherwise ***<Tab>*** past this selection leaving the DHCP option.



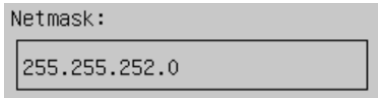
7. ***<Tab>*** to **Enable VLAN**. Use the ***<Spacebar>*** to select the option to use a VLAN for this network connection. Otherwise, ***<Tab>*** past this.



8. If DHCP was not selected in previous step:
   a. ***<Tab>*** to **IP Address** and enter an appropriate IP address (IP v4.)



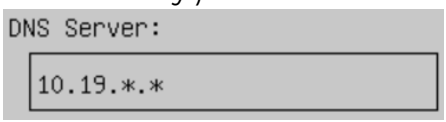
   b. ***<Tab>*** to advance to **Netmask** and enter an appropriate Netmask.



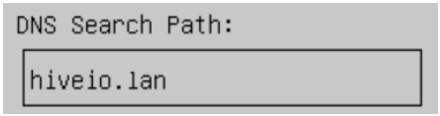
   c. ***<Tab>*** to advance to **Gateway** and enter the network Gateway IP address.

9. If VLAN was selected in previous steps, the VLAN option will show, enter the appropriate **VLAN** here. If VLAN was not a selection option, this will not show.

10. ***<Tab>*** to **DNS Server**, enter the IP address of a valid DNS server (appropriate Active Directory DNS required if you will be using Hive Fabric broker functionality.)

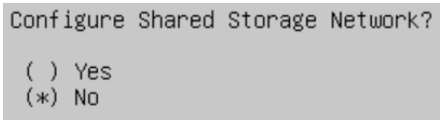


11. ***<Tab>*** to **DNS Search Path**. This is required if using a "domain.**local**" domain name. Otherwise, this is optional but preferred.



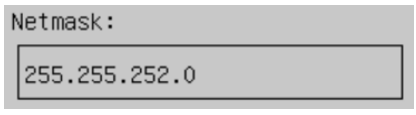
12. ***<Tab>***to advance to the **Next** button, press ***<Enter>***.

13. ***<Tab>*** to select Yes or No to "**Configure Shared Storage Network**."
NOTE: Storage networking is used to either separate storage traffic from VM and management or is required when planning hyperconverged storage. A **10GB minimum** network speed is required for creating hyperconverged storage.



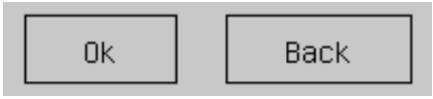
14. If you selected Yes to "Configure Shared Storage Network":
    a. ***<Tab>*** to **IP Address** and enter an appropriate IP address (IP v4). It is required to use a different IP address than entered in the Production IP Address.

    b. ***<Tab>*** to **Netmask** and enter an appropriate Netmask.

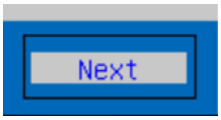


    c. ***<Tab>*** to **VLAN**. If required, enter the VLAN number here, otherwise leave this as "0".

d. ***<Tab>*** to **OK** button, press ***<Enter>***.

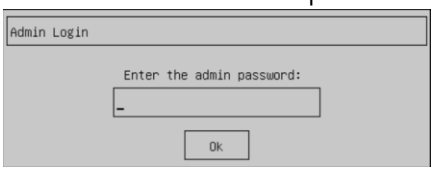


15. ***<Tab>*** to the **Next** button, press ***<Enter>***.



16. The First Boot Wizard is now complete, please wait while Hive services are configured.

17. If you opted to use DHCP for the IP address:
    a. When prompted with the Login prompt for the Admin Console UI, click in the "**Enter the admin password**" space and enter the password entered from the steps above.



    b. Once logged in, find the IP address assigned to the network labeled Production at the bottom left corner of the Admin Console UI.

    c. Proceed to the Administrative Web User Interface.
18. Once presented with an **Admin Login** prompt, the remainder of the setup is accomplished using the administrative web interface. Use your web browser to access the Production network interface configured above, followed by **":8443"**. For example: https://10.10.1.32:8443

19. Proceed to Administrative User Interface.

Administrative Web User Interface

Hive Fabric is fully managed by the web-based user interface (UI). This interface can be used for both administrative and read-only access, depending on the user rights assigned.

While basic configuration and service functions are available in the Admin Console UI, the Administrative Web User Interface can be used for all operations.

Applying your License

https://support.hiveio.com/portal/en/kb/articles/adding-a-license

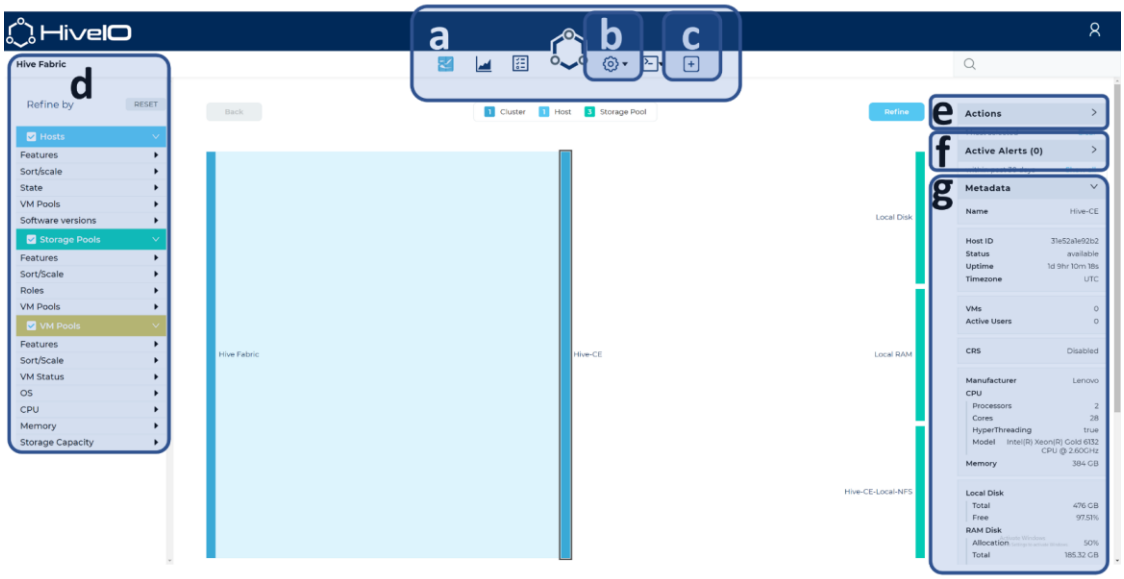
1. Using your web browser, access the UI using https://<IP address>:8443, where <IP Address> is the one entered in the First Boot Wizard (i.e., https://10.10.1.32:8443).
2. At this point, the install will have a self-signed certificate from HiveIO. If prompted with a certificate warning, use the browser specific steps to accept the risk of the unknown certificate and proceed to the user login.
3. On the initial login for a newly installed Hive Fabric system, the installation will be unlicensed. When prompted with **System is Unlicensed**, please copy the **ClusterID** and send it to:
    a. CE - send an email to ce_registration@hiveio.com for your CE License.
    b. Customers - send an email to your account team
4. Once received, please enter the license key into the text box and select **Upload License**.

Navigating the User Interface (UI)

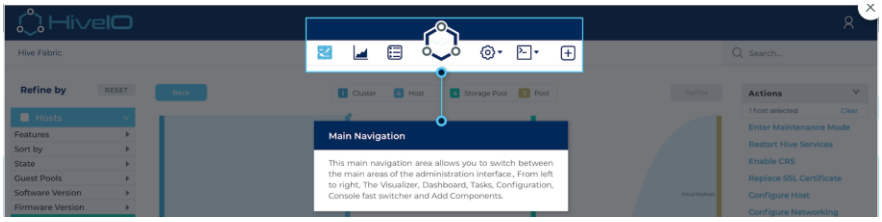
https://support.hiveio.com/portal/en/kb/articles/navigating-the-user-interface

1. Using your web browser, access the UI using https://<IP address>:8443, where <IP Address> is the one entered in the First Boot Wizard (i.e., https://10.10.1.32:8443).
2. At this point, the installation will have a self-signed certificate from HiveIO. If prompted with a certificate warning, use the browser specific steps to accept the risk of the unknown certificate and proceed to the user login.
3. At the login prompt, enter the default username “admin” and the password entered during the First Boot Wizard and click **Login**.

4. Upon initial login, please take the time to familiarize yourself with the UI layout, as shown in the help images.

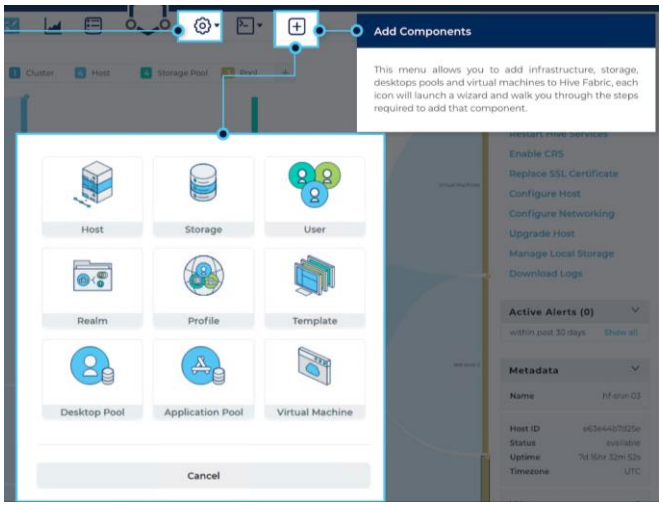


a. **Main Navigation** – This main navigation area allows you to switch between the primary areas of the administration interface. From left to right; The Visualizer, Dashboard, Tasks, Configuration, Console fast switcher, and Add Components (+).

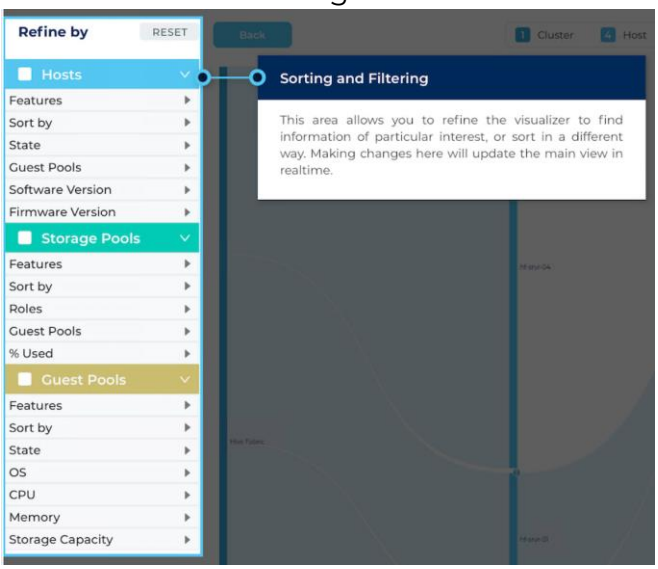


b. **System Configuration** - This menu holds system wide configuration items such as Users, Licensing, and Realms as well as Hive Fabric components that tend to be accessed less often such as Profiles and Templates.

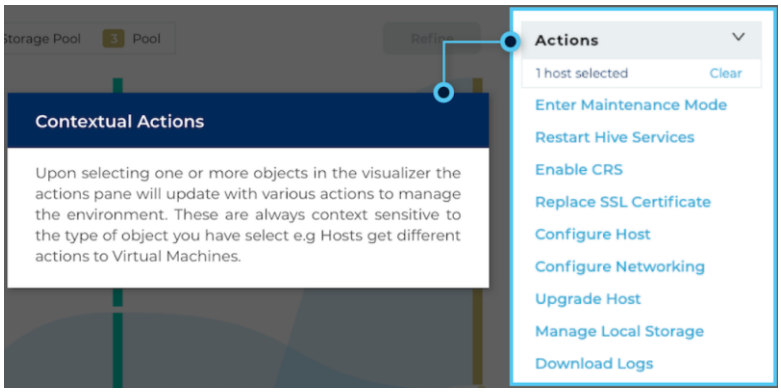
c. **Add Components** – This menu allows you to add infrastructure, storage, desktop pools, and virtual machines to Hive Fabric, each icon will launch a wizard and walk you through the steps required.



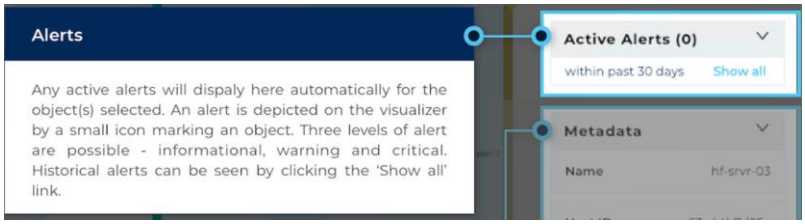
d. **Sorting and Filtering** - This area allows you to refine the visualizer to find information of particular interest, or sort in a different way. Making changes here will update the main view in real-time. Simply click **Reset** to return to the filtering defaults.



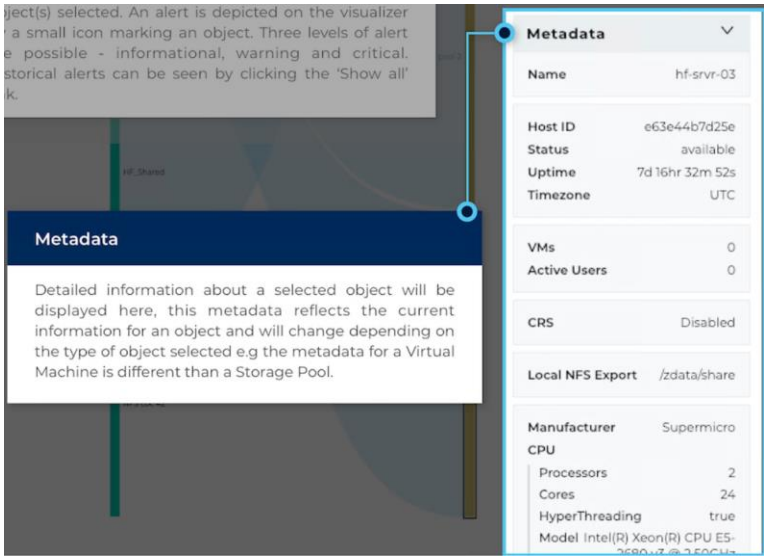
e. **Contextual Actions** - Upon selecting one or more objects in the visualizer, the actions pane will update with various actions to manage the environment. These are always context sensitive to the type of object you have selected (i.e., Hosts get different actions than Virtual Machines.)



f. **Alerts** - Any active alerts will display here automatically for the object(s) selected. Historical alerts can be seen by clicking the **Show all** link.



g. **Metadata** - Detailed information about a selected object will be displayed here, this metadata reflects the current information for an object and will change depending on the type of object selected.



Hive Fabric – Configuration

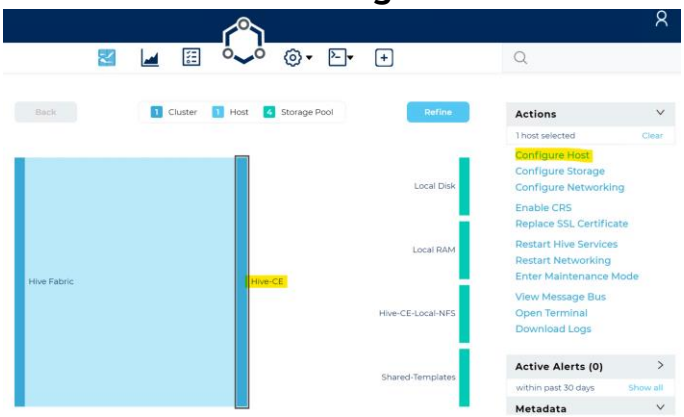
With its all-in-one integrated platform, configuring the features necessary to deploy and access remote resources has never been easier. This section of the guide will walk you through the bare minimum configuration options to get your remote access working.

Configure Host Settings

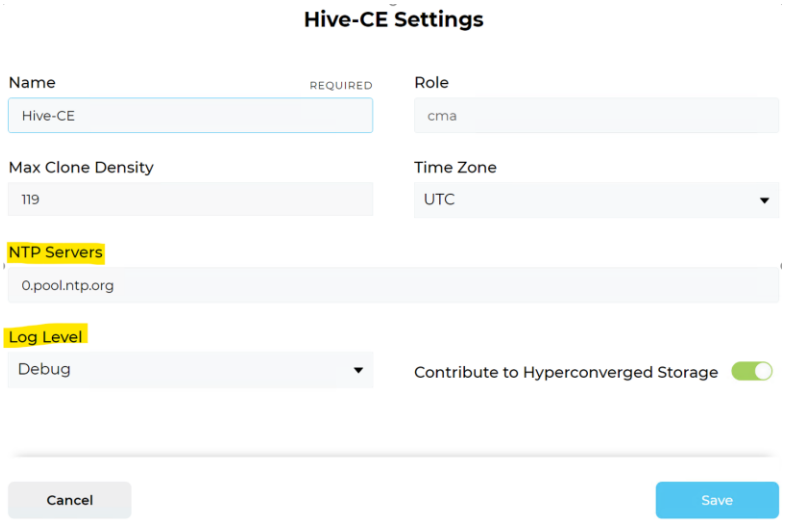
https://support.hiveio.com/portal/en/kb/articles/configure-host-options

On initial login to the administrative UI, it is best to set the Configure Host options first.

1. From the Visualizer, select the host (shown here as Hive-CE,) then from the Actions menu click **Configure Host**.



2. Enter the appropriate **NTP Server** address.
3. Select **Debug** as the logging level (this is considered best practice for new installations or POCs as this will provide detailed logging of where configurations may not be set properly.)



4. Click **Save**.

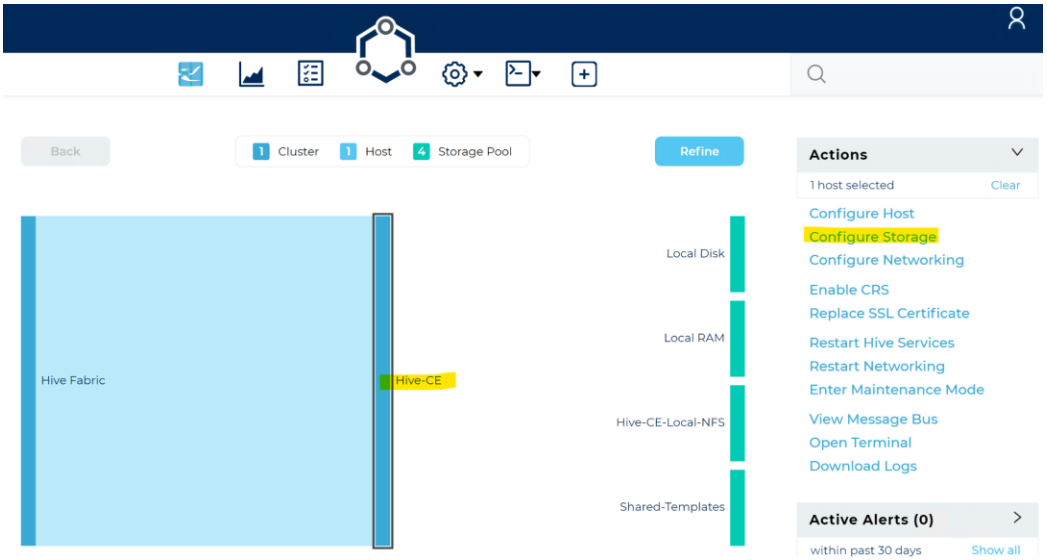
Configure Local Storage

https://support.hiveio.com/portal/en/kb/articles/sharing-local-disks

https://support.hiveio.com/portal/en/kb/articles/create-a-capacity-disk

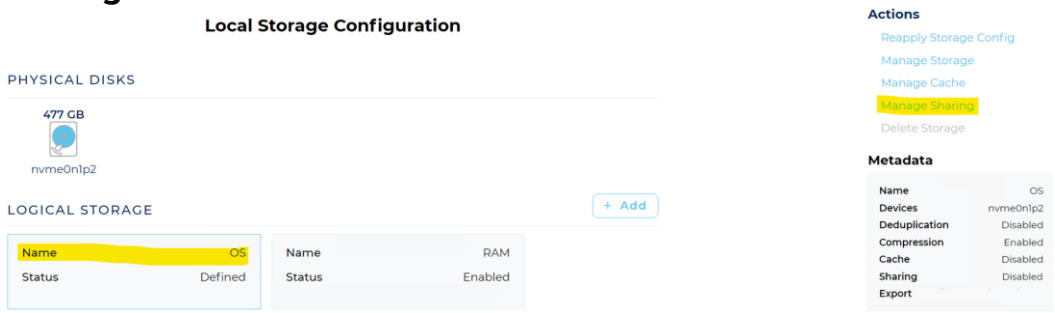
For Fabric CE evaluation, it is assumed that there is no NFS storage already existing so we will share out the local disk of the host for use as an NFS Storage Pool.

1. From the Visualizer, select the host (shown here as Hive-CE,) then from the Actions menu select **Configure Storage**.

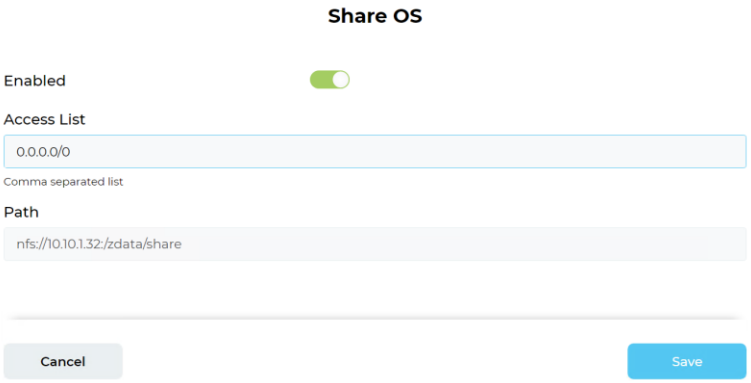


NOTE: Steps 2 and 3 below are independent and are intended as instructions for an "either/or" procedure, depending on the number of disks available in your system. Follow the instructions for either step 2 or step 3 below.

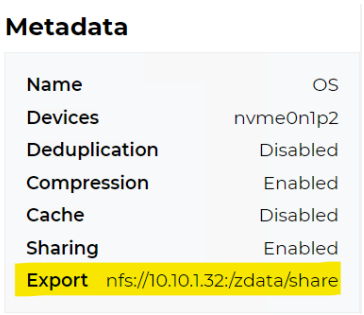
2. If there is only 1 disk in the system:
   a. Select the **OS** storage under the LOGICAL STORAGE and click **Manage Sharing** from the Actions menu.



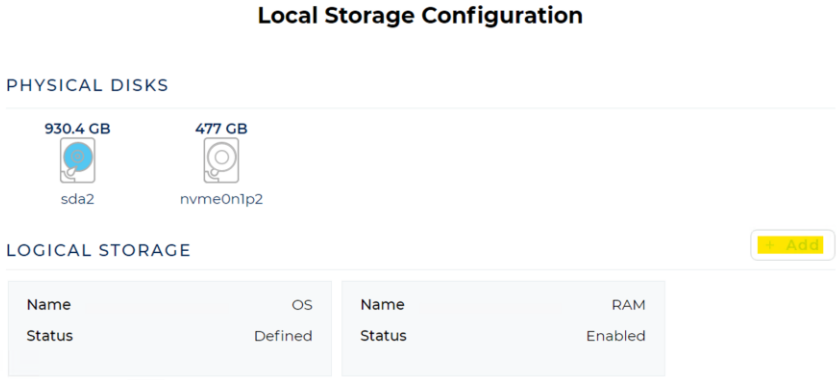
b. Toggle on the **Enabled** button and click **Save**.



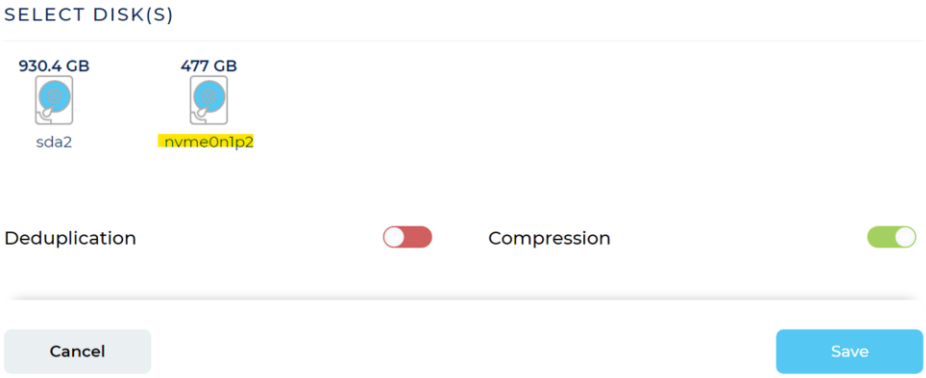
c. Once saved, note the updated Metadata (right side of UI) showing the **Export** path, you will need this when creating the Storage Pool.



3. If there is more than one disk in the system, you may use the additional disk for a **Capacity** storage target and share it as the NFS Storage Pool.
   a. Click the **+ Add** button.

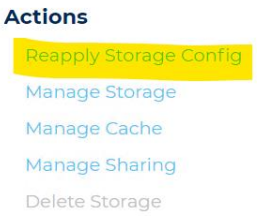


b. Locate the unused drive, click the drive, then click **Save**.

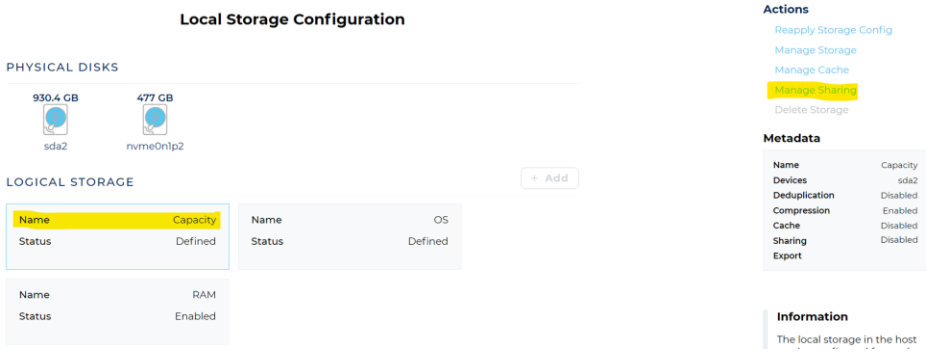


c. The status of the new Capacity disk should show **Pending**.

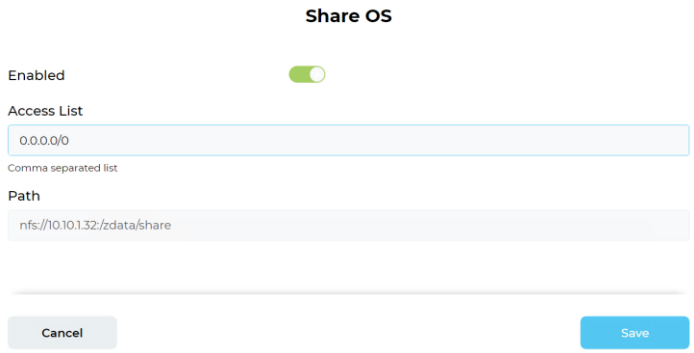
d. Click **Reapply Storage Config** from the Actions menu to set the new disk configuration.



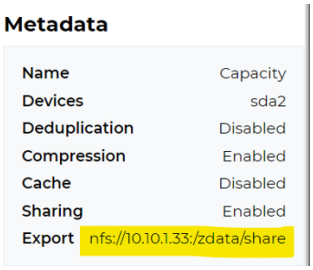
e. Select the **Capacity** disk under LOGICAL STORAGE and click **Manage Sharing** under the Actions menu.



f. Toggle on the **Enabled** button and click **Save**.



g. Once saved, note the updated Metadata showing the **Export** path (right side of UI), you will need this when creating the Storage Pool.



Create Storage Pool

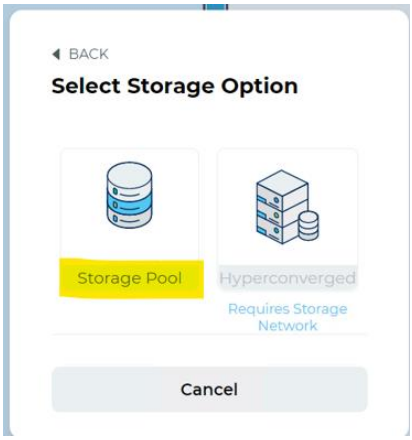
https://support.hiveio.com/portal/en/kb/articles/configure-storage-pool-nfs

It is required to add the shared Local Disk as a Storage Pool to assign roles to the storage for use in Hive Fabric.

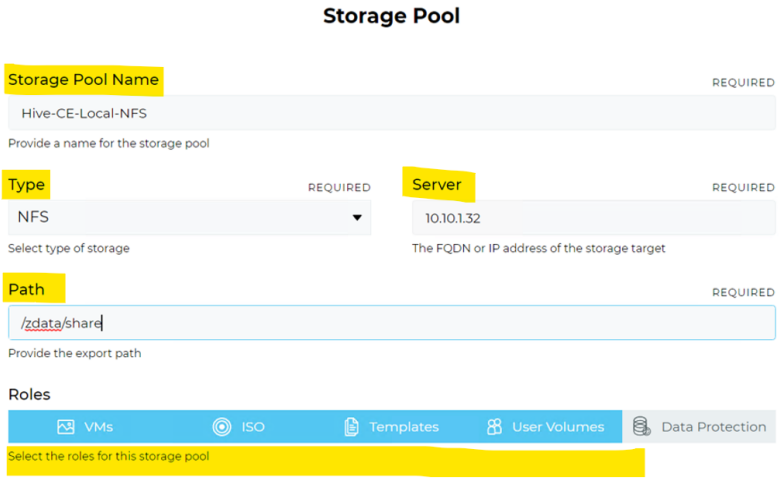
1. Click on the **+** button in Main Navigation to add additional resources.

2. Click **Storage**.

3. Click **Storage Pool**.



4. Fill in the appropriate details for the Storage Pool.
    a. **Storage Pool Name** – Any label, no spaces or special characters
    b. **Type** – Select **NFS**
    c. **Server** – IP address of the local host (for single host use, not recommended for production use.)
    d. **Path** – Export folder path from sharing the Local Disk
    e. **Roles** – Select/Deselect the roles intended for the Storage Pool.



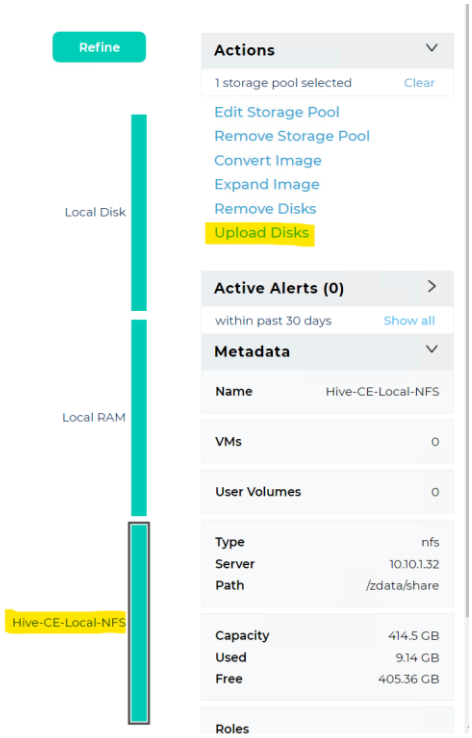
5. Click **Save**.

Upload ISO

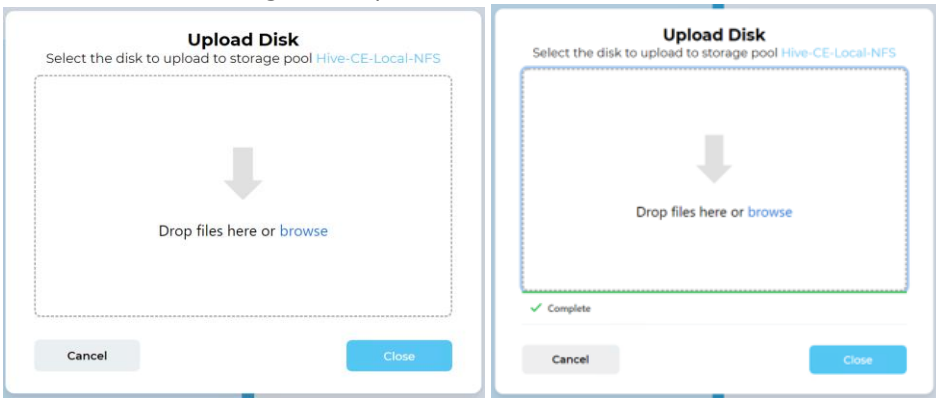
A CD-ROM ISO for installation of the intended operating system can be uploaded through the administrative UI. The ISO may be uploaded to a Storage Pool that supports the ISO role. For CE, it is typical to have one Storage Pool for VM, User Volume, Template, and ISO Roles.

https://support.hiveio.com/portal/en/kb/articles/uploading

1. From the Visualizer, select the **Storage Pool** where the ISO should be uploaded and click **Upload Disks** from the Action menu.



2. **Browse** for or drag-n-drop ISO file into the window.

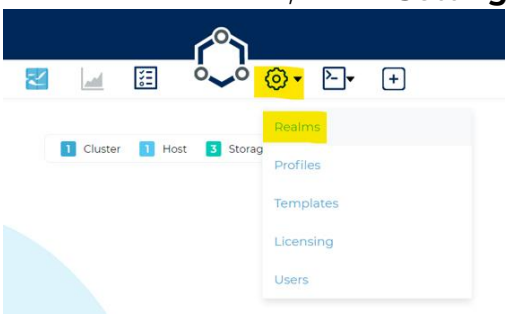


Configure Realm

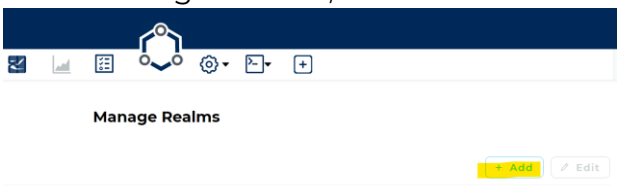
To use the Active Directory integration of assigning the UI roles or broker access to any of the published resources, you will need to create a Realm. A Realm is a domain mapping of your Active Directory.

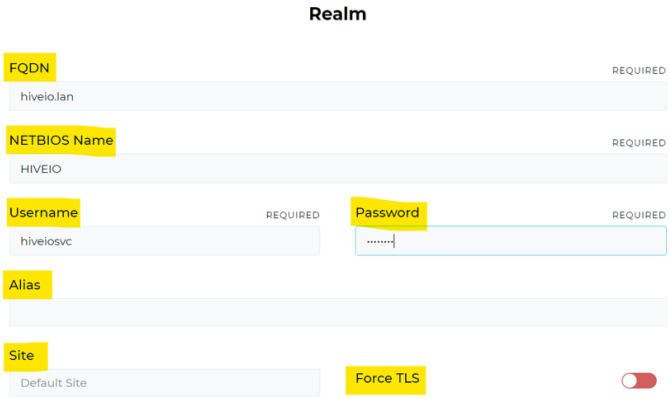
https://support.hiveio.com/portal/en/kb/articles/configure-realm

1. From the Visualizer, select **Settings** and then click **Realms**.



2. From Manage Realms, click on the **+ Add** button.



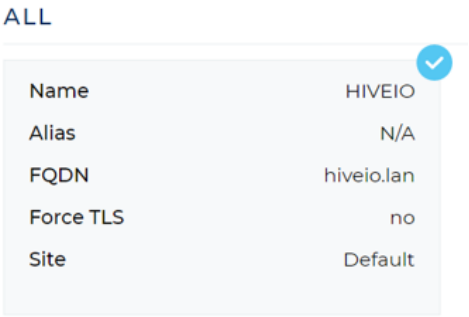


3. In the **Realm** form (above), enter the domain detail.
    a. **FQDN** – Fully qualified domain name (i.e., hiveio.lan)
    b. **NETBIOS Name** – NetBIOS name of the domain often matches the first part of the FQDN. If not, please reference the Microsoft Active Directory "**pre-Windows 2000"** name for your domain.
    c. **Username** – Domain user that has full rights over computer objects within the OU outlined in the Profile. Best practice, make it a Domain Administrator or use the Delegation of Rights on the appropriate OU.
    d. **Alias** (optional) – Used when the NETBIOS name is different from the UPN of the user base.

e. **Site** – If you have modified Active Directory Sites and Services with unique site names, enter it here. Otherwise leave it blank and it will use the **Default-First-Site-Name**.
f. **Force TLS** – Toggle this on if you are using Secure LDAP.

4. Click **Save**.

5. Once the Realm is verified, it will show with the top-right icon as indicated here.

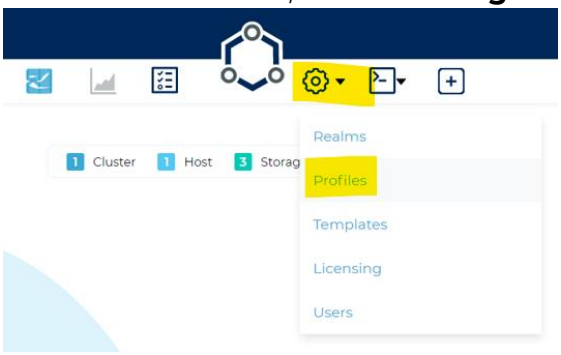


Configure Profile

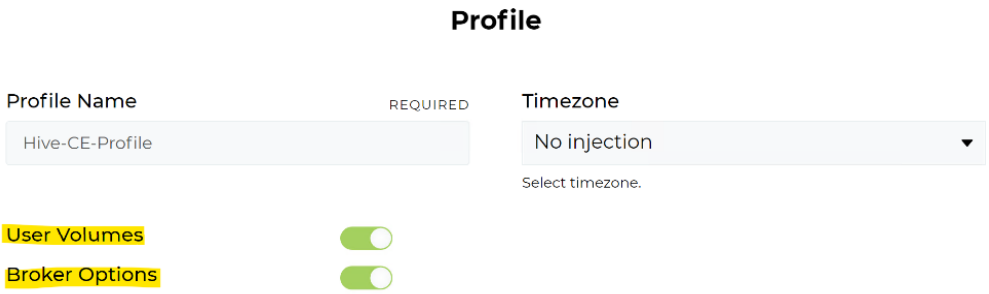
The Hive Fabric Profile outlines the details of the interaction with the VM Pool. The broker details, user profile storage, and Active Directory details are captured with the creation of each Profile.

https://support.hiveio.com/portal/en/kb/articles/configure-fabric-profile

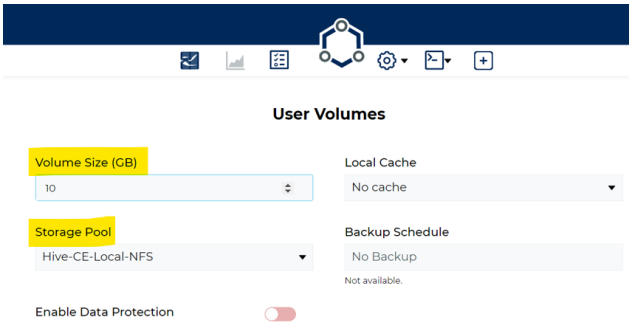
1. From the Visualizer, select **Settings** and click **Profiles**.



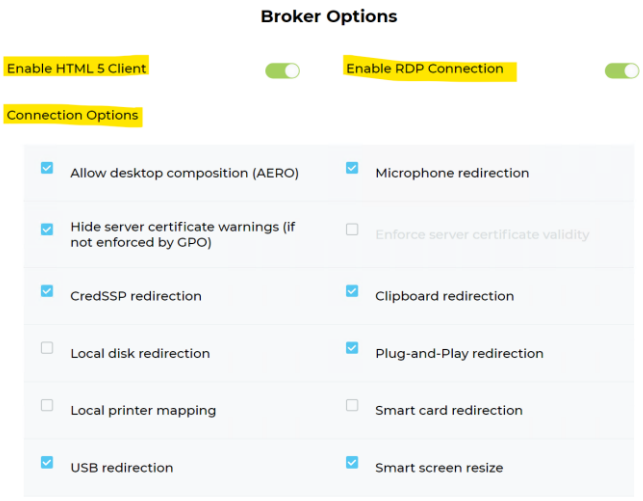
2. From Manage Profiles, click on **+ Add**.



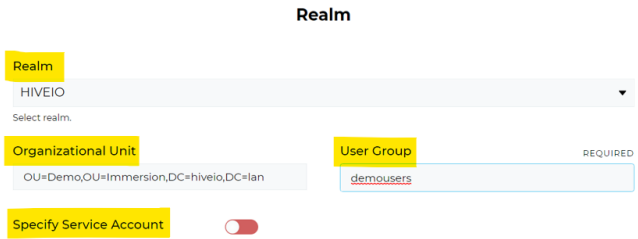
3. In the **Profile** form (above:)
    a. Provide a **Profile Name** with no spaces or special characters.
    b. Toggle on **User Volumes** (user profile disks.)
    c. Best Practice, leave the **Timezone** set to **No injection**, this allows Windows to manage this on the individual desktops, avoiding conflicts.
    d. Toggle on **Broker Options**.
    e. Click **Next**.



4. In the **User Volume** form (above:)
    a. Enter the size of the **User Volume** (user profile) disk.
    b. Select the **Storage Pool** appropriate for the UV placement. Best practice: It is best that this storage is on a fast disk as user profiles load from and get updated on this storage.
    c. Leave the remainder of the option at their defaults.
    d. Click **Next**.



5. In the **Broker Options** form (above:)
    a. Enable **HTML5 Client** if desired (covered in more detail later.)
    b. Enable **RDP** if desired (requires RDP client on local machine connecting to remote resource.)
    c. You may leave both options off or on as desired. **Off** will require the use of Hive Fabric installable client (covered in more detail later.) **On** will provide the user with the option of either HTML5 or RDP.
    d. Select **Connection Options** as desired (will not override Group Policies.)
    e. Click **Next**.



6. In the **Realm** form:
    a. Select **Realm** from the drop down. **No Realm** cannot be used to broker desktops and is typically only used in load testing or if you are going to use straight MSTSC.exe (RDP) from a client to the desktop.
    b. Enter the **Organization Unit** using the Distinguished Name (ou=Demo,dc=hiveio,dc=lan.)
    c. Enter the Active Directory **User Group** you wish to assign to this Profile, remembering that User Groups are assigned to a Profile and a Profile is associated with one or more VM Pools.
    d. If required, toggle on **Specify Service Account** if you wish to use a service account different than the one identified in the Realm.
    e. Click **Save**.

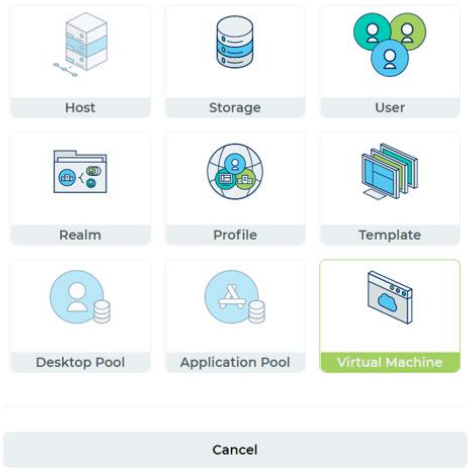
Create VM - Template

Creating a Hive Fabric VM or Template follows similar processes. To showcase each, the document begins with creating a VM and will then outline how to duplicate the VM disk for use as a Template.

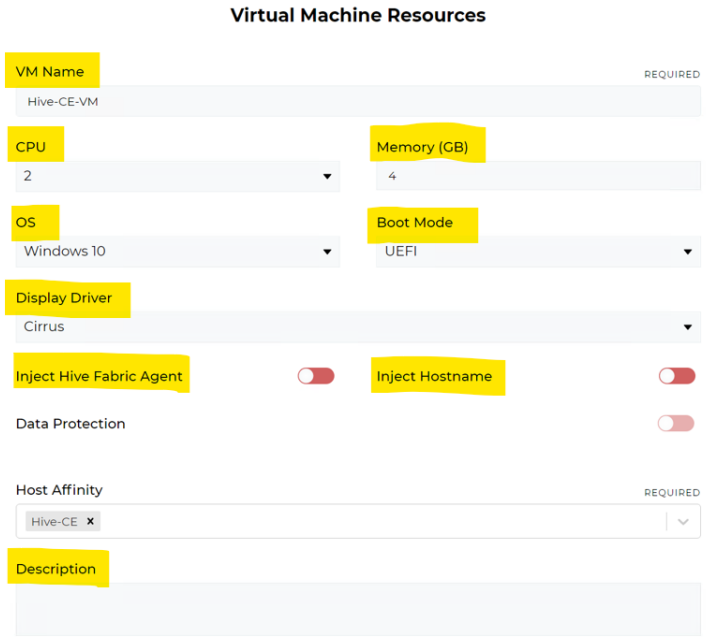
https://support.hiveio.com/portal/en/kb/articles/create-a-template

1. From the Main Navigation, click the **+** button to open the Resource Menu.

2. From the Resource Menu, select **Virtual Machine**.



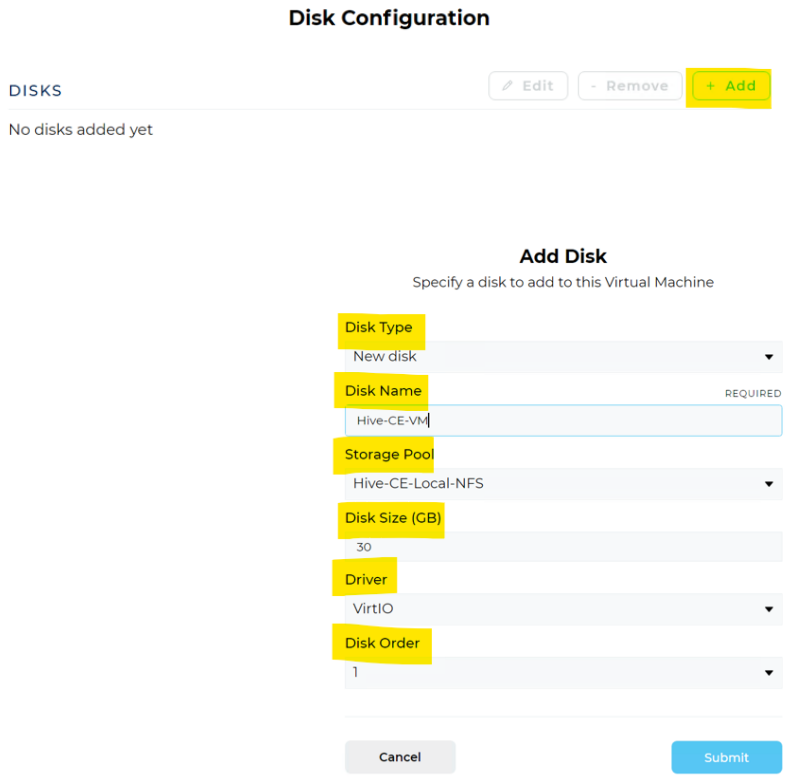
Virtual Machine Resources



3. Enter a **VM Name** without spaces or special characters (when selected, Hive Fabric uses this VM name to rename the computer within its OS.)
4. Select the number of **CPU**s.
5. Enter the amount of **Memory (GB)**.
6. Select the **OS** that most closely matches the OS being installed.
7. Select the proper **Boot Mode** (most of the industry is moving towards UEFI.)
8. Leave the default **Display Driver** as selected, the best option is already selected.
9. Turn off the selections for **Inject Hive Fabric Agent** and **Inject Hostname**. For this documentation and process, the VM will be duplicated for use as a Template for desktops and therefore should NOT have the agent automatically added or the computer account automatically inserted.
10. Enter a **Description** (typically includes build date, updates installed, and applications added)
11. Click **Next**.

Disk Configuration

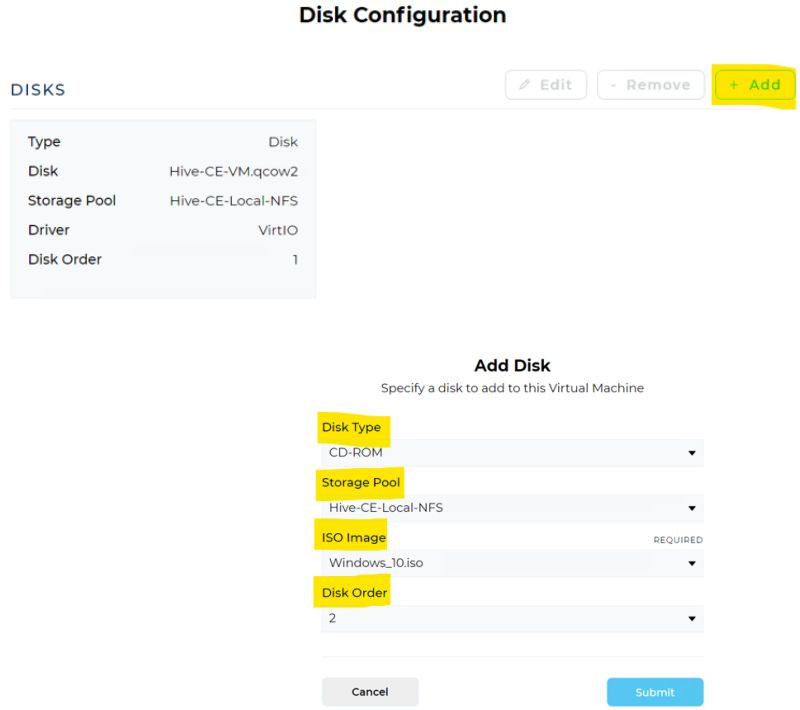
12. From the Disk Configuration form, click **+ Add**.



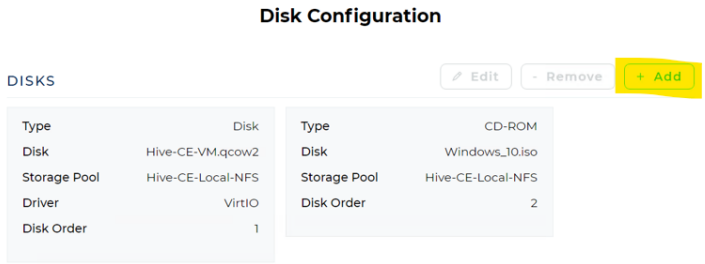
13. In **Add Disk** (above:)
    a. Select **New disk** in Disk Type.
    b. Enter a Disk Name (typically the same as the VM itself.)
    c. Select the Storage Pool to store the disk.

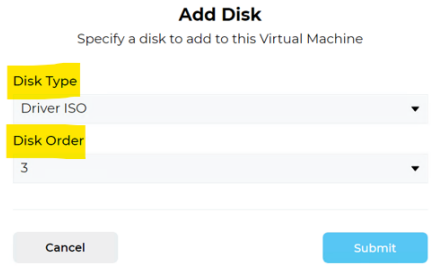
d. Enter the Disk Size (GB).
e. Select the VirtIO driver (typical for all Hive Fabric VMs.)
f. Leave Disk Order as default value (some instances may require you to set the bootable CD-ROM to Disk Order of 1.)
g. Click **Submit**.

14. Click **+ Add** to add the bootable OS CD-ROM.

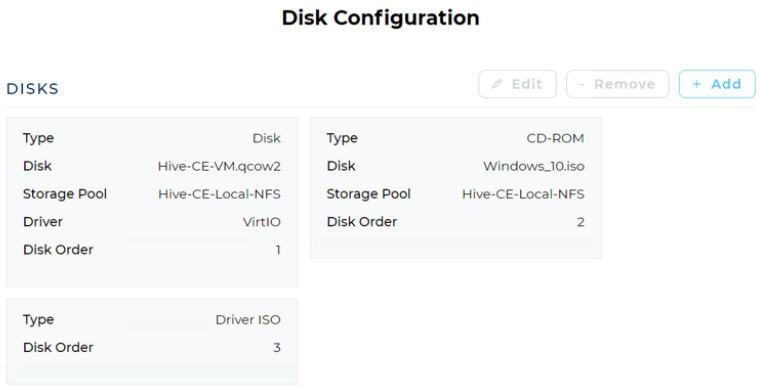


15. In **Add Disk** (above:)
    a. Select CD-ROM from Disk Type.
    b. Select the Storage Pool where the CD-ROM file is located.
    c. Select the ISO Image.
    d. Leave Disk Order as default value (some installations may require you to set the bootable CD-ROM to Disk Order of 1.)
    e. Click **Submit**.
16. Click **+ Add** to add the Driver ISO.



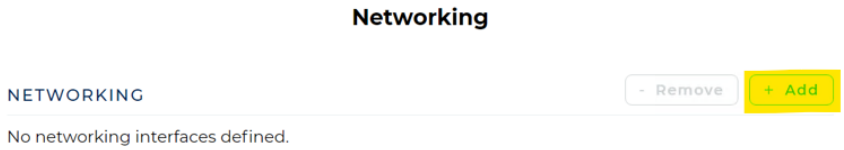


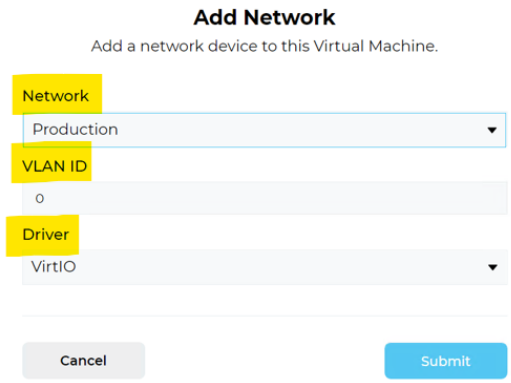
17. In **Add Disk** (above:)
    a. Select **Driver ISO** from Disk Type.
    b. Leave Disk Order as default value (some installations may require you to set the bootable CD-ROM to Disk Order of 1.)
    c. Click **Submit**.
18. Now, with the OS, CD-ROM, and Driver disks defined, click **Next**.



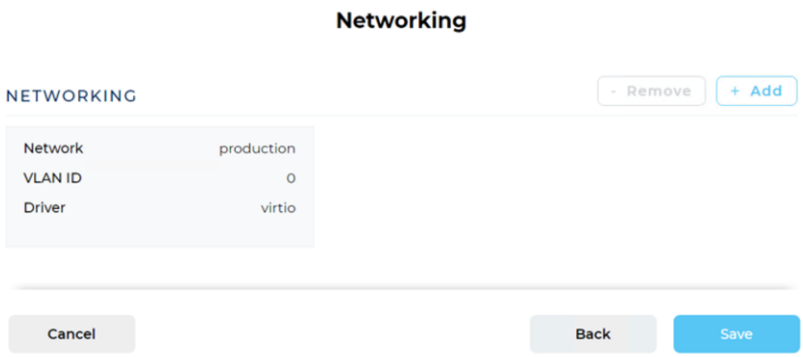
Network Configuration

19. In Networking, click **+ Add** to add a network interface.





20. In **Add Network** (above:)
    a. Select the Network to attach to this VM (Templates only allow one network to be attached.)
    b. Enter a VLAN ID if required (this configuration is typically made on the host network so all that is required here is to select the proper Network.)
    c. Leave the default selection of VirtIO for driver.
    d. Click **Submit**.
21. With Networking defined, click **Save.**



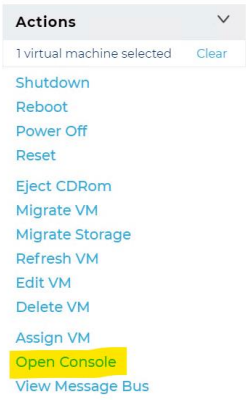
22. Proceed to Loading the OS.

Loading the OS

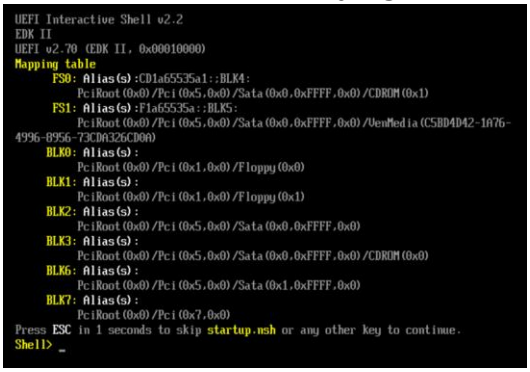
The process for loading the operating system is similar between creating a template or a VM, the difference lies in kicking off the process and whether or not the Hive Agent is injected at the time for build. For a VM, the process begins as soon as you click **Save** on the completion of the networking section above. For a Template, the process will begin with Authoring the template.

1. For a VM:
    a. To begin the OS installation of a VM, as soon as the VM boots, double click on the green tile or with the VM selected, click **Open Console** from

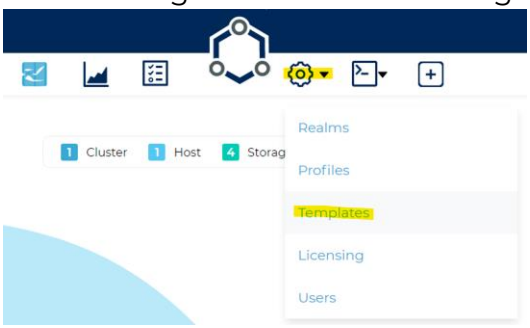
the Actions Menu.



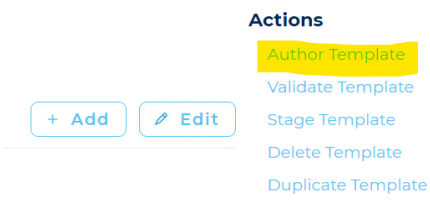
b. If the "boot from CD-ROM" has already passed, **Power Off** and then **Power On** the VM to try again.



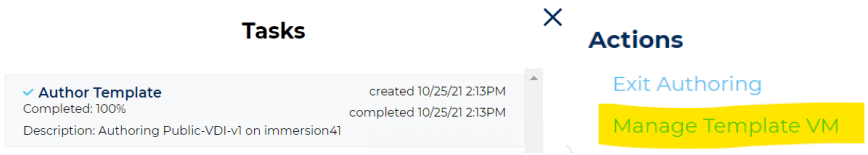
2. For a Template:
   a. Click Settings from the Main Navigation, then select Templates.



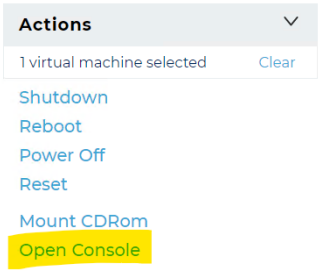
   b. With the target Template selected, click **Author Template** from the Actions menu.



c. Once in Authoring mode, click on **Manage Template VM** from the Actions menu.

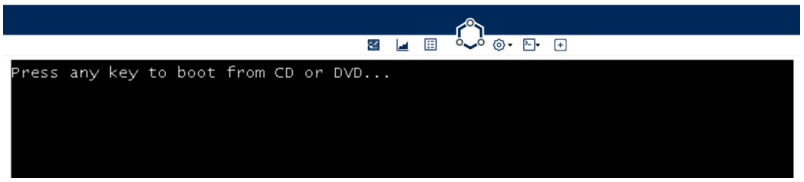


d. To begin the OS installation of a Template, as soon as it is in Authoring mode (booted,) double click on the purple tile or select **Open Console** from the Action Menu with the template selected.

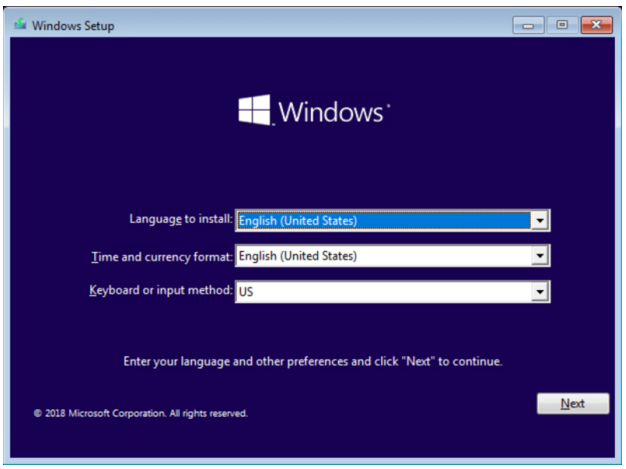


e. If the "boot from CD-ROM" has already passed, **Power Off** and then **Power On** the VM to try again.

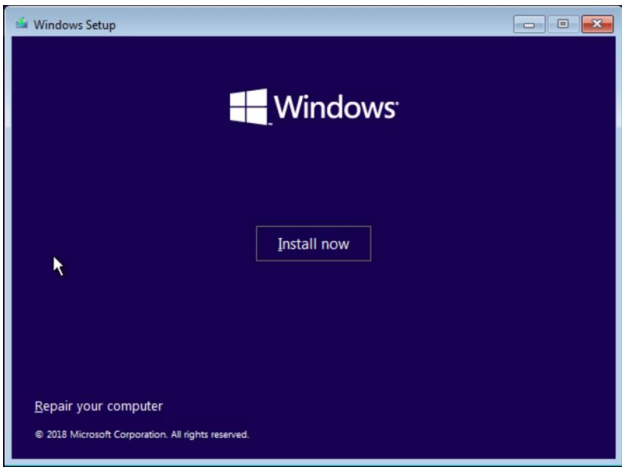
3. When prompted "Press any key to boot from CD or DVD," click in the desktop console and then hit the ***<Spacebar>***.



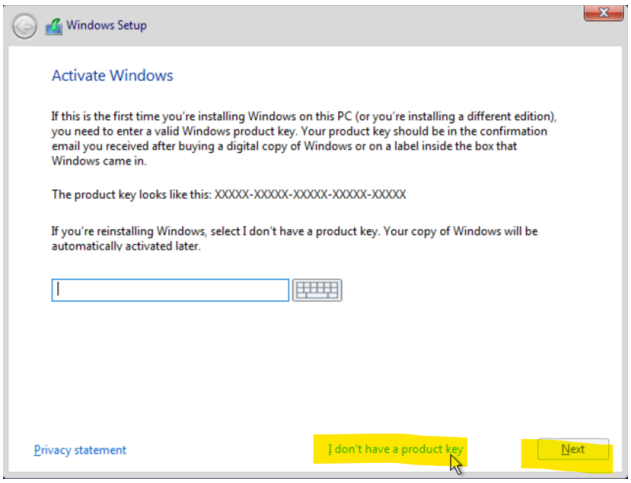
4. Click **Next** on the Windows installation screen.



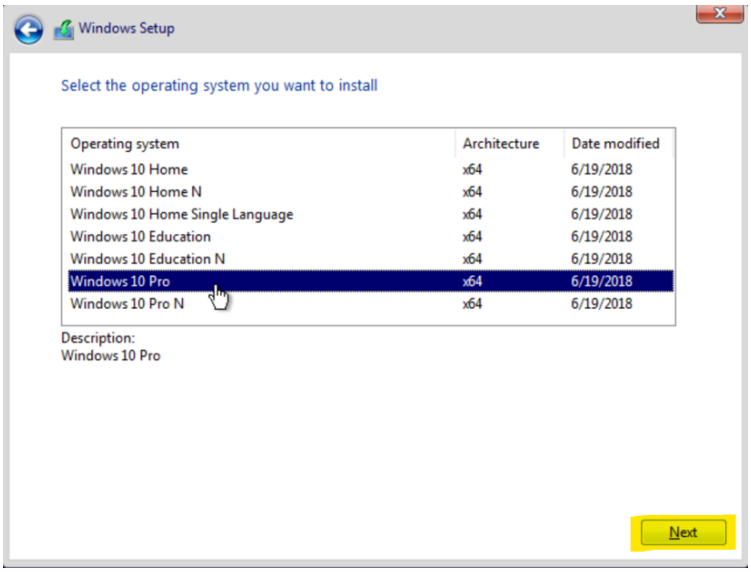
5. Click **Install Now**.



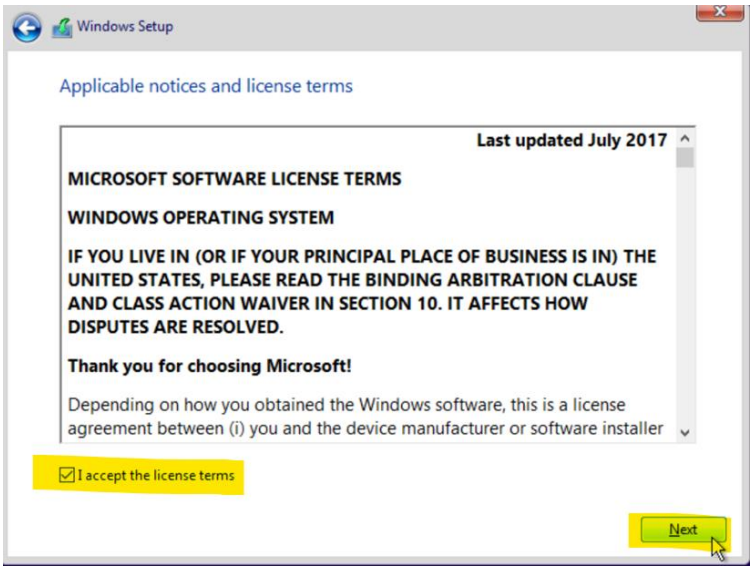
6. Provide the Key and click **Next** or select **I don't have a product key** and click **Next** to license at a later time.



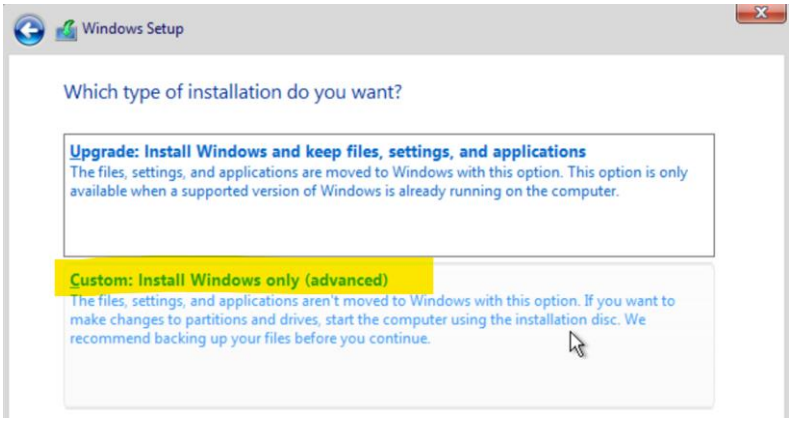
7. Select the Windows edition and then click **Next**.



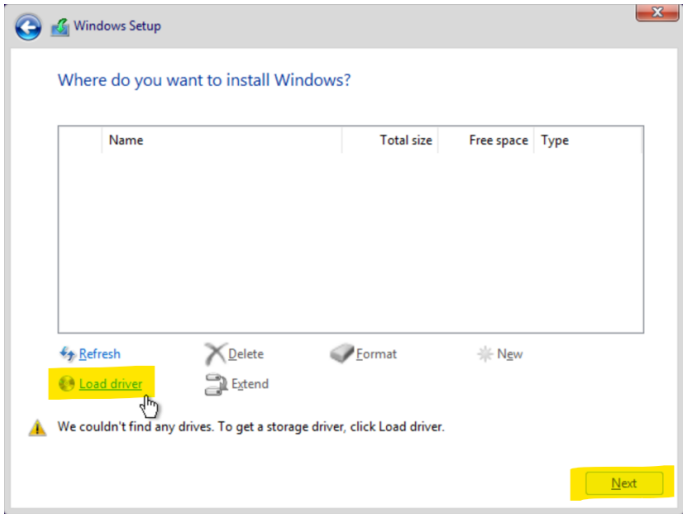
8. Read the license terms, if you agree, click I **accept the license terms** and then **Next**.



9. Click to select **Custom: Install Windows Only (advanced.)**

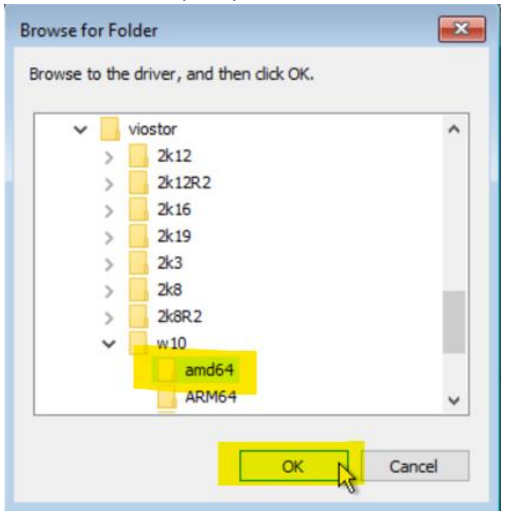


10. Install Hive Fabric drivers:
    a. Click on the **Load driver** then **Next**.

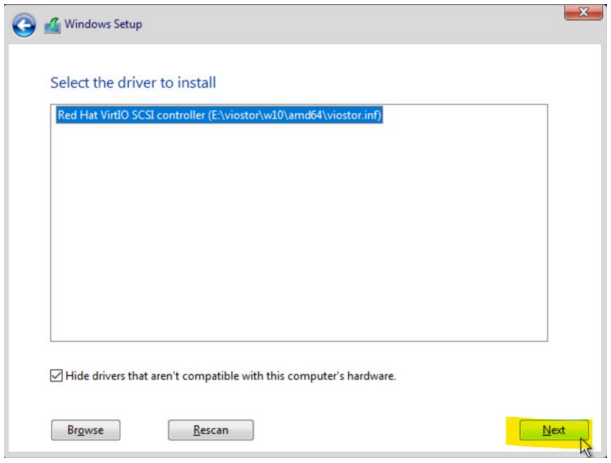


b. Click **Browse**.

c. Browse all the way to the driver folder (/viostor/w10/amd64), where "**w10**" is the proper OS for the installation.

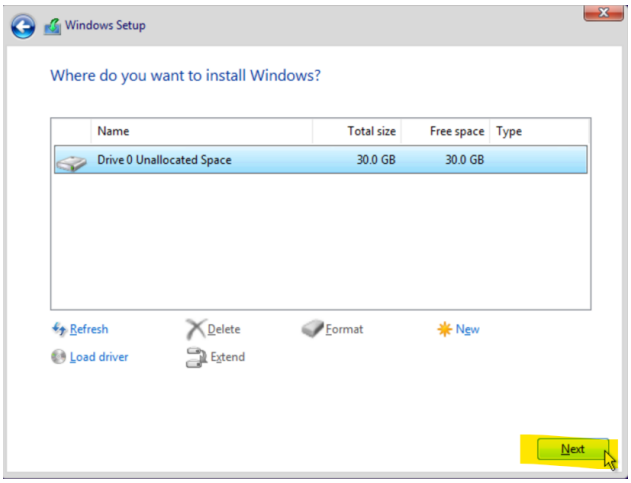


d. Click **Next**.

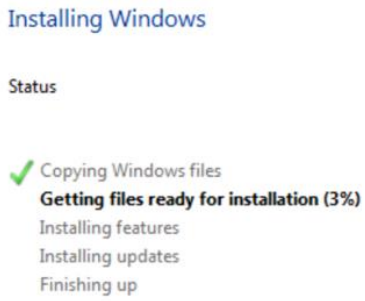


e. Repeat steps a-d in step 10 for the remaining drivers, where "**w10**" is the proper OS for the installation.
   i. /vioserial/w10/amd64
   ii. /NetKVM/w10/amd64
   iii. /Balloon/w10/amd64

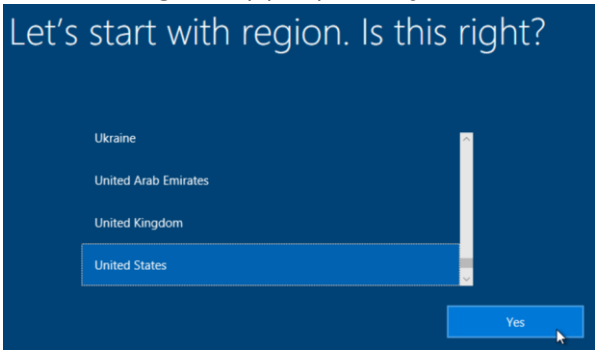
11. Once drivers are loaded, click **Next**.



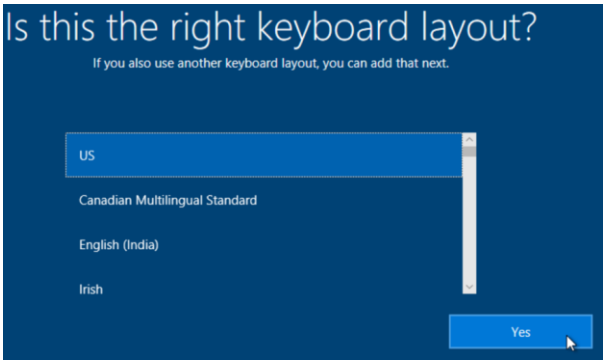
12. Allow the OS installation to complete (the installer may reboot the VM/Template multiple times during the installation.)



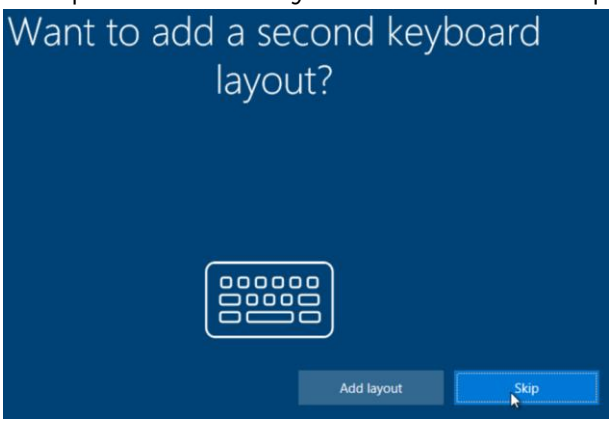
13. Set the Region appropriately, click **Yes**.



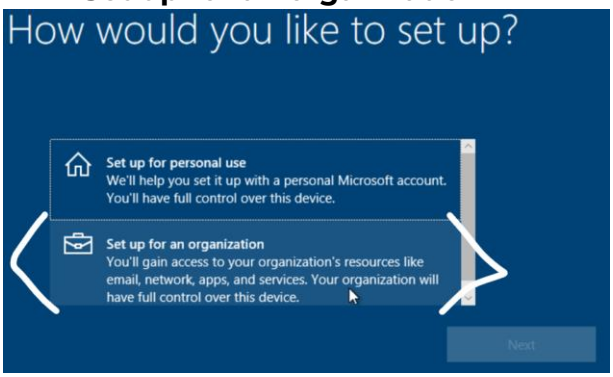
14. Set the proper Keyboard locale, click **Yes**.



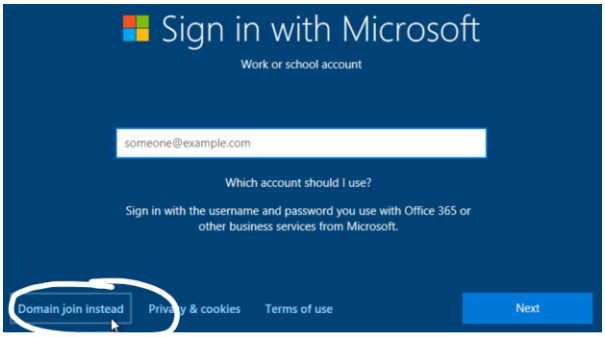
15. Setup additional Keyboard locales as required (skipped here.)



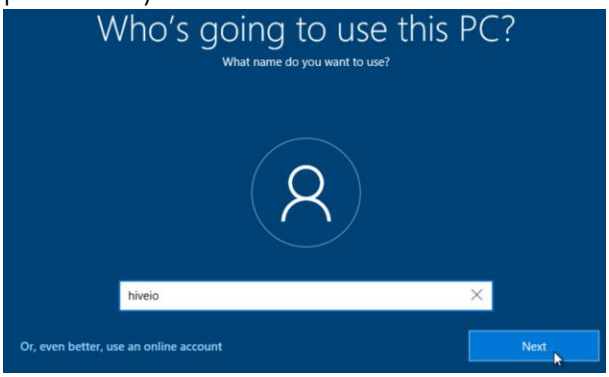
16. Click **Set up for an organization**.



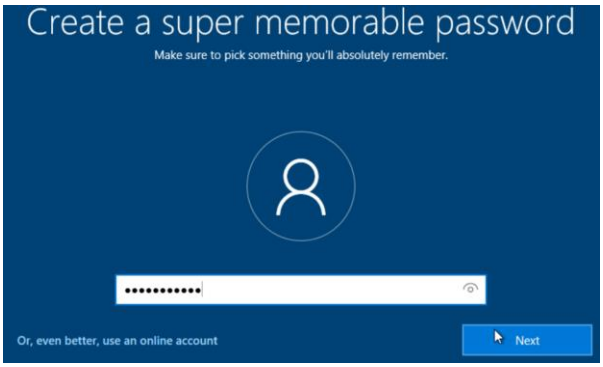
17. Click **Domain join instead**.



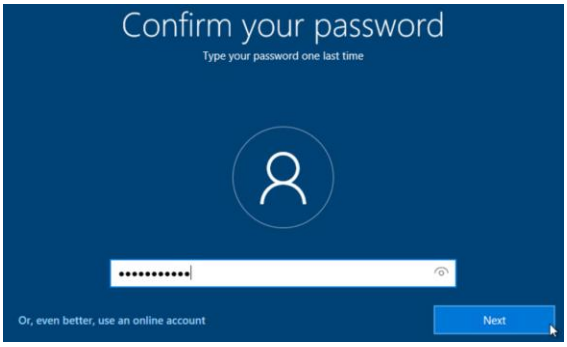
18. Enter the name for a new Local Administrator account, then click **Next** (the default Administrator account is disabled by Windows for best security practices.)



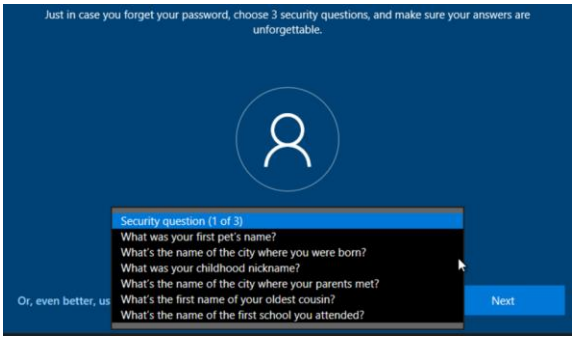
19. Enter a secure password as this account will have full administrative rights, then click **Next**.



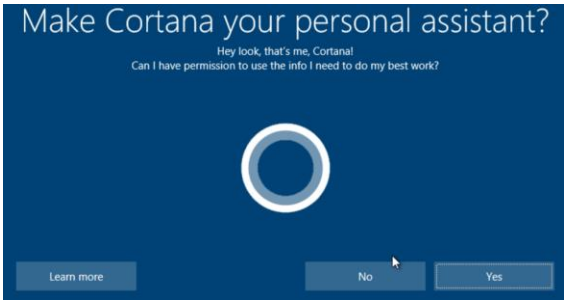
20. Confirm the password, then click **Next**.



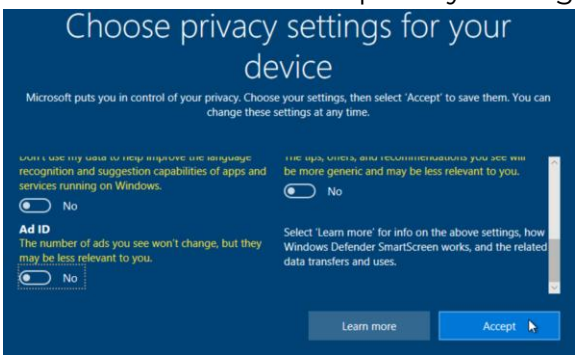
21. Select and answer all three Security questions in case you forget your password, then click **Next**.



22. It is best practice to select **No**, do not select Cortana to be your personal assistant.



23. Click to set **No** to all the privacy settings, then click **Accept**.



24. Now, the desktop build is complete.

25. Proceed to Basic Optimization for Desktops.

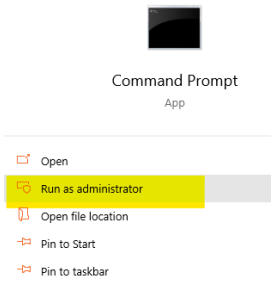
Basic Optimization for Desktops

There are a few basic optimizations recommended for Desktop operating systems in a virtual environment, mostly geared towards obtaining higher performance and saving resources.

https://www.hiveio.com/wp-content/uploads/2020/03/VDI-template-how-to.pdf

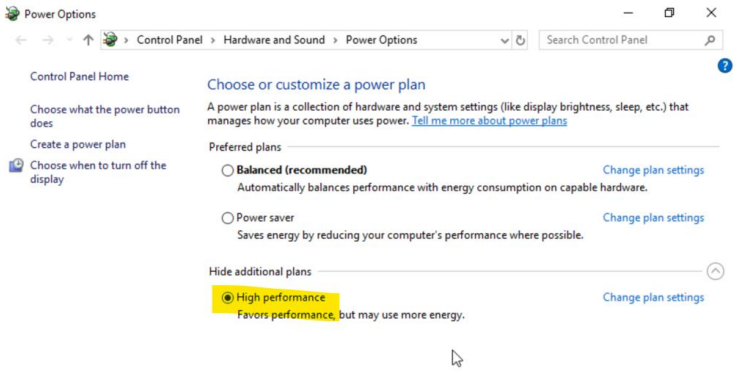
The optimizations outlined here are geared towards Windows 10, however the same concepts can be followed in other operating systems.

1. From the console of the VM or Template, disable hibernation.
   a. Open a command prompt, with elevated rights.

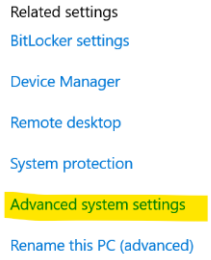


   b. Enter ***powercfg.exe /h off*** at the command prompt.

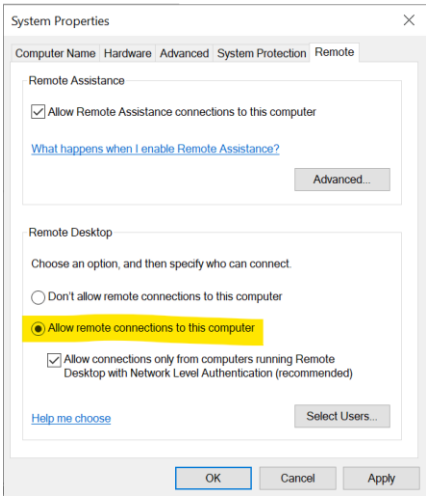
2. Set the power settings to high performance (this keeps the resources from throttling down or going to sleep.)
    a. Open the Control Panel, select **Power Options**.
    b. Select **High Performance** or another performance plan. The key is to avoid the Balanced or Power saver plans.



3. Enable Remote Desktop.
    a. Open the Control Panel, select **System Properties**.
    b. Locate and click **Advanced system settings**.

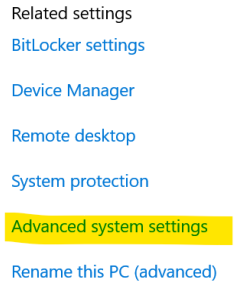


    c. Enable the **Allow remote connections to this computer** setting and click **OK**.

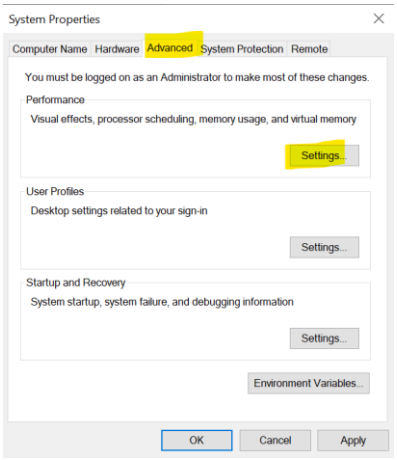


4. For Stateless (non-persistent) desktops, disable the Windows Paging File.
    a. Open the Control Panel, select **System Properties**.

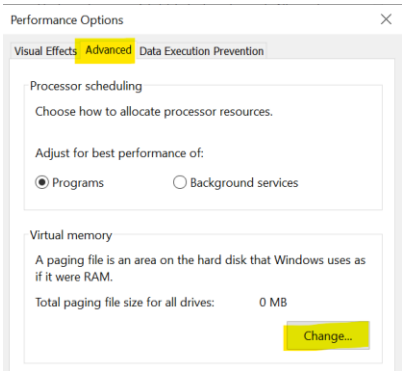
b. Locate and click **Advanced system settings**.



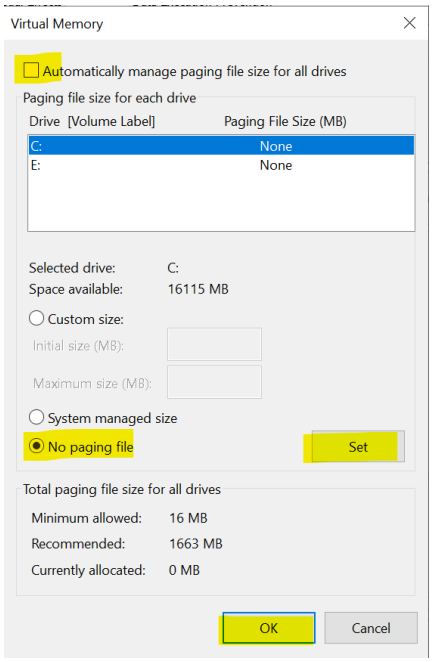
c. Select the **Advanced** tab and click **Settings** in the Performance section.



d. In Performance Options, select the **Advanced** tab and click **Change**.



e. For Virtual Memory, uncheck **Automatically manage paging file size for all drives**. Select **No paging file**. Click **Set** and accept the warning. Click **OK**.



f. Click **OK** on each of the open dialogue boxes.

5. Run all updates for the operating system (Windows Updates.)
6. If intending to keep the guest as a standalone VM:
    a. Add applications as desired.
    b. If you are planning to publish the VM in the broker for remote access:
        i. The Hive Agent must be installed
            1. Shutdown this VM
            2. Edit VM and **Enable** the setting for **Inject Hive Fabric Agent.**
            3. Select **Refresh VM** option from Actions menu.
        ii. Add the standalone guest to the Active Directory domain.
    c. If you want to publish this VM for remote access, please continue to Publish a VM.
7. To use this standalone guest as a Template:
    a. Add applications as desired
    b. Shutdown the OS after completing the OS updates.
    c. Please continue to Use VM Disk for Template

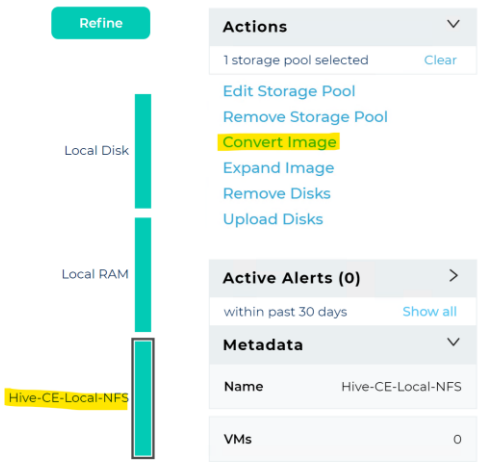
Use VM Disk for Template

An existing disk may be duplicated for use as a Template. For this documentation, a VM was built in the preceding steps and will now be duplicated for use as a Template.

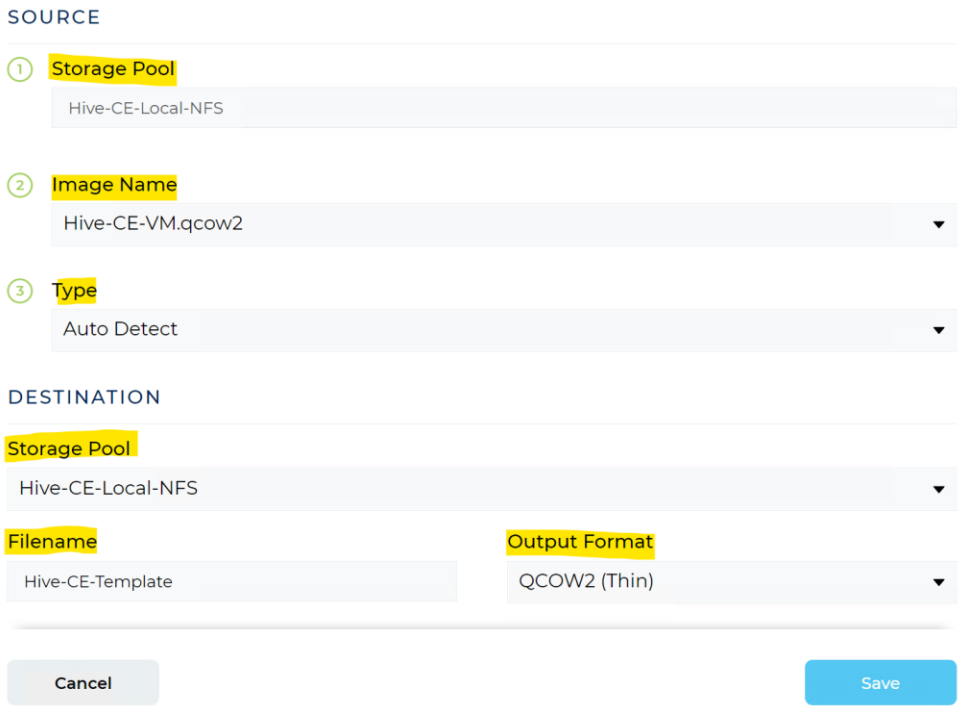
Convert Disk

https://support.hiveio.com/portal/en/kb/articles/converting-a-disk-image

1. From the Visualizer, select the **Storage Pool** where the target disk resides, then click **Convert Image** from the Actions menu.



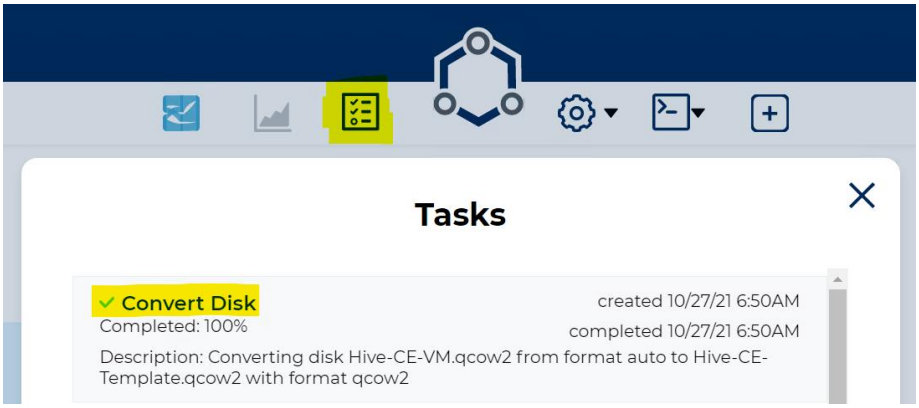
2. Convert the target disk (ensure the VM is not in use or powered on) for use as a template.



   a. The **Storage Pool** will automatically populate.
   b. Select the target disk from the **Image Name** drop down.
   c. Leave the **Type** as Auto Detect.
   d. Select the destination **Storage Pool** for the disk (likely be the same as the source for single host or CE installations.)
   e. Enter a **Filename** ensuring it is different from the Source filename.

f. Select **QCOW2 (Thin)** for the **Output Format**.
g. Click **Save**.

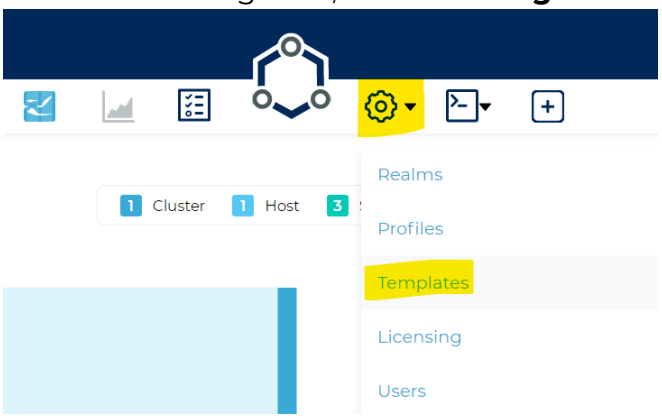
3. Once the **Convert Disk** task is completed, continue to Add Template from Existing Disk.



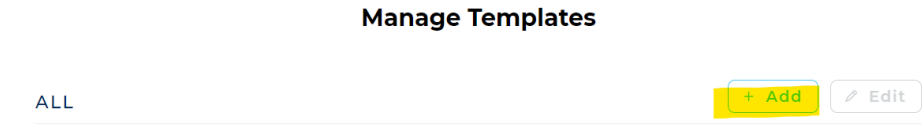
Add Template from Existing Disk

https://support.hiveio.com/portal/en/kb/articles/add-template

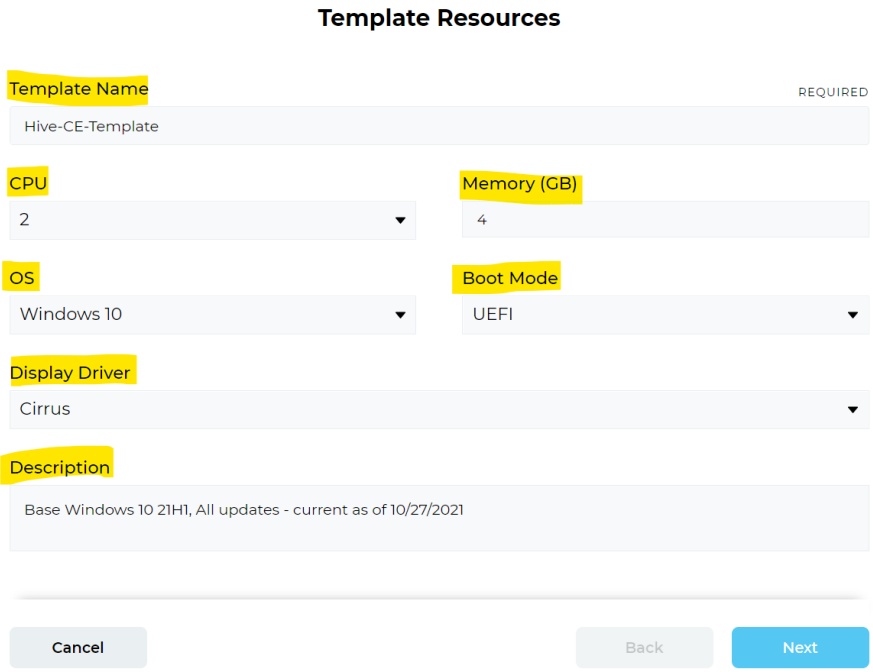
1. From Main Navigation, select **Settings** and click on **Templates**.



2. From **Manage Templates**, click on **+ Add** to create a new Template.



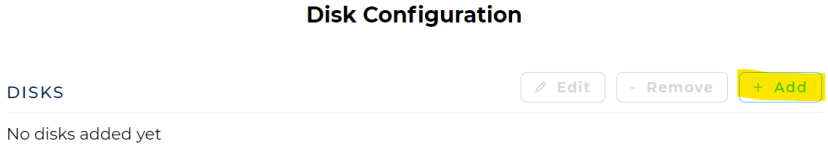
Template Resources

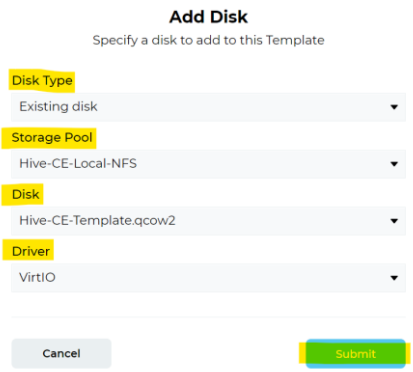


3. In **Template Resources** (above:)
    a. Enter a **VM Name** without spaces or special characters (when selected, Hive Fabric uses this VM name to rename the computer within its OS.)
    b. Select the number of **CPU**s.
    c. Enter the amount of **Memory (GB)**.
    d. Select the **OS** that most closely matches the OS being installed.
    e. Select the proper **Boot Mode** (most of the industry is moving towards UEFI.)
    f. Leave the default **Display Driver** as selected, the best option is already selected.
    g. Enter a **Description** (typically includes build date, updates installed, and applications added.)
    h. Click **Next**.

Disk Configuration

4. In **Disk Configuration**, click **+Add** to add the Disk(s) to a Template.

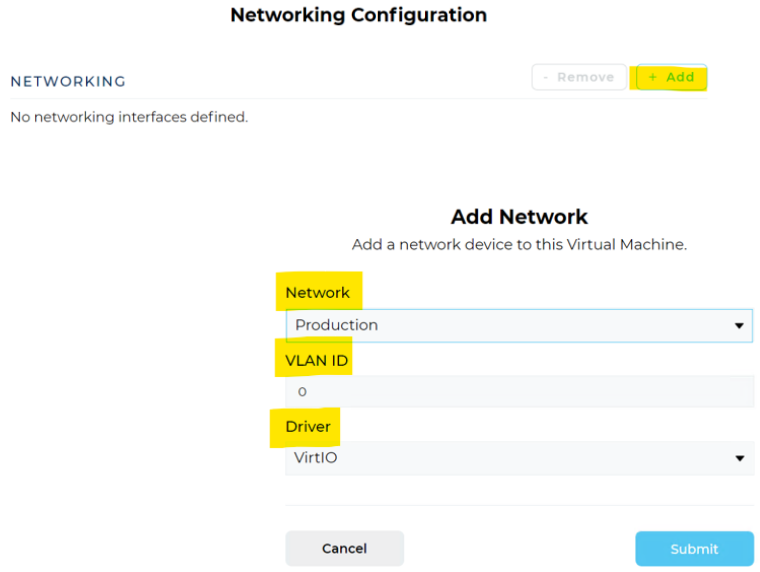




5. From **Add Disk** (above:)
    a. For this document, add an **Existing disk** (converted from the previous Create VM procedure.)
    b. Select the source **Storage Pool**.
    c. Select the disk file converted from the above Convert Disk procedure.
    d. Leave the default **VirtIO** driver setting.
    e. Click **Submit**.
    f. Click **Next**.

Networking Configuration

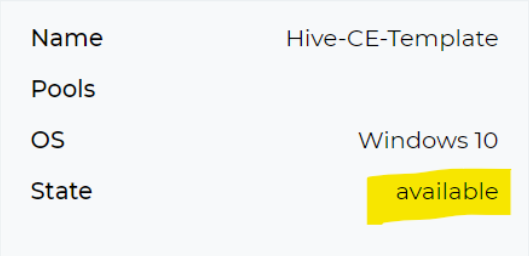
6. From Networking Configuration, click **+Add** to add a NIC to the Template. Templates have a limit of one network interface.



7. In **Add Network** (above:)

a. Select the Network to attach to this Template (templates only allow one network to be attached.)
b. Enter a VLAN ID if required (this configuration is typically made on the host network so all that is required here is to select the proper Network.)
c. Leave the default selection of VirtIO for driver.
d. Click **Submit**.

8. Click **Save**.
9. Make sure that the Template shows a state of **available**. If not, then you may need to author the template, and then shut it down cleanly from the Template console.



10. Proceed to Enable Remote Access.

Enable Remote Access

To provide remote access to desktops, VMs, and any other system that is RDP capable, Hive Fabric provides both broker (internal access, from the same network) and gateway (external access, from a separate network, i.e., Internet) services.

The Hive Fabric broker provides access to resources from within the same network, meaning that the end user's client will need to be able to connect directly to the resource.

https://support.hiveio.com/portal/en/kb/articles/configure-fabric-broker

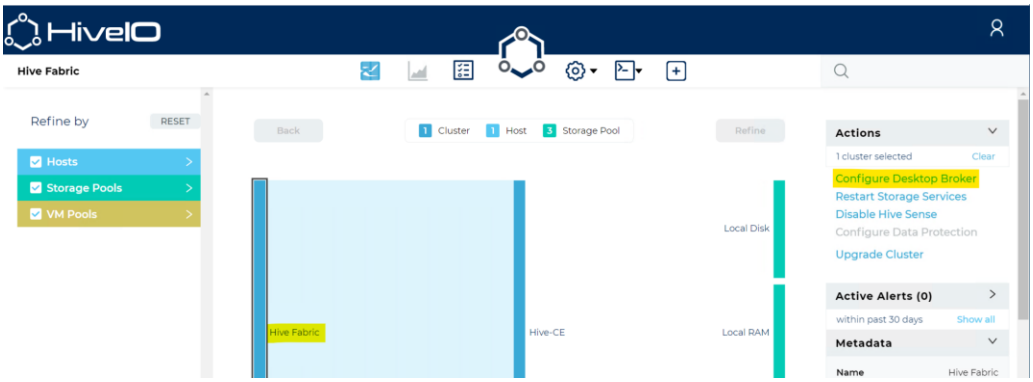
The Hive Fabric gateway provides access to resources from dissimilar networks where the gateway and organizational firewall perform the required routing.

https://support.hiveio.com/portal/en/kb/articles/configure-fabric-gateway

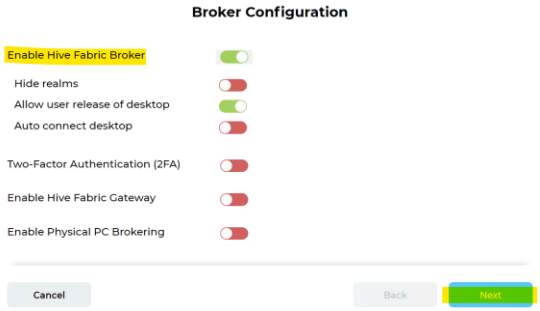
Configure Broker

Enabling the Hive Fabric Broker allows you to access any published resource (desktop pool, VM, any other RDP capable OS) from a client that resides internally (meaning that direct IP access from the client to the resource is required.)

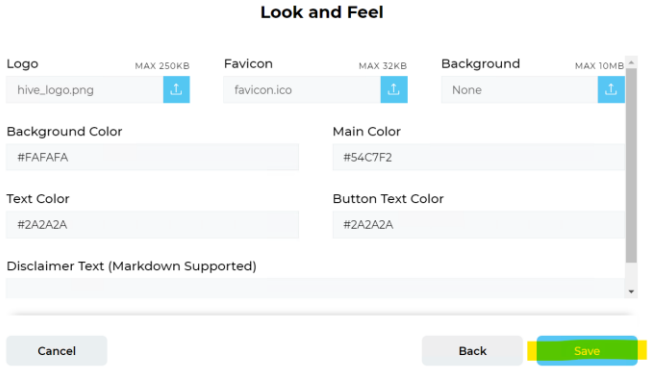
1. From the Visualizer, select the Hive Fabric cluster object and then click **Configure Desktop Broker** from the Actions menu.



2. Toggle on **Enable Hive Fabric Broker** and click **Next**.



3. Adjust the Look and Feel settings as desired and click **Save**.



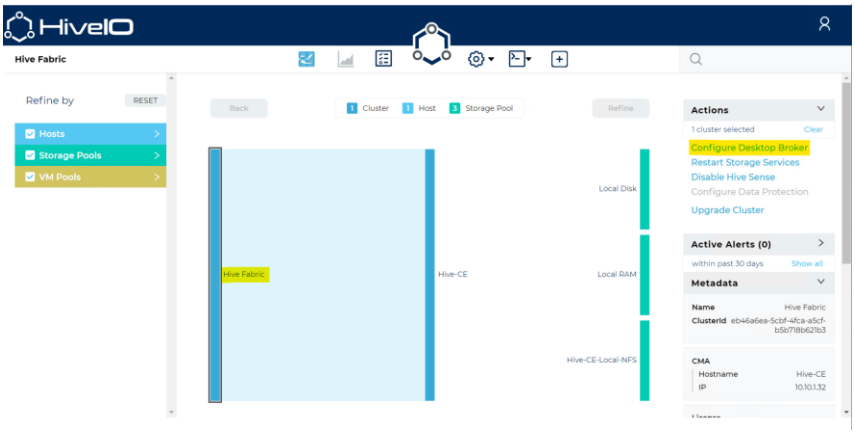
4. Continue to **Create Desktop Pool** or **Publish VM**.

Configure Gateway

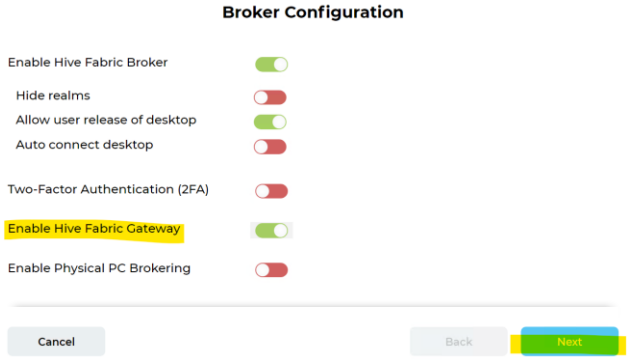
Enabling the Fabric Gateway allows you to access any published resource (desktop pool, VM, any other RDP capable OS) from networks outside of where the Fabric system resides.

https://support.hiveio.com/portal/en/kb/articles/configure-fabric-gateway

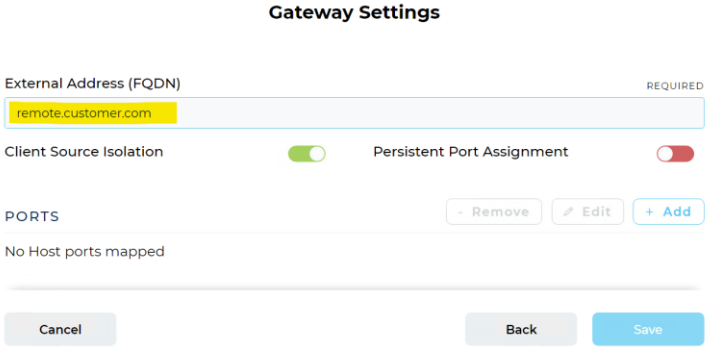
5. From the Visualizer, select the Hive Fabric cluster object and then click **Configure Desktop Broker** from the Actions menu.



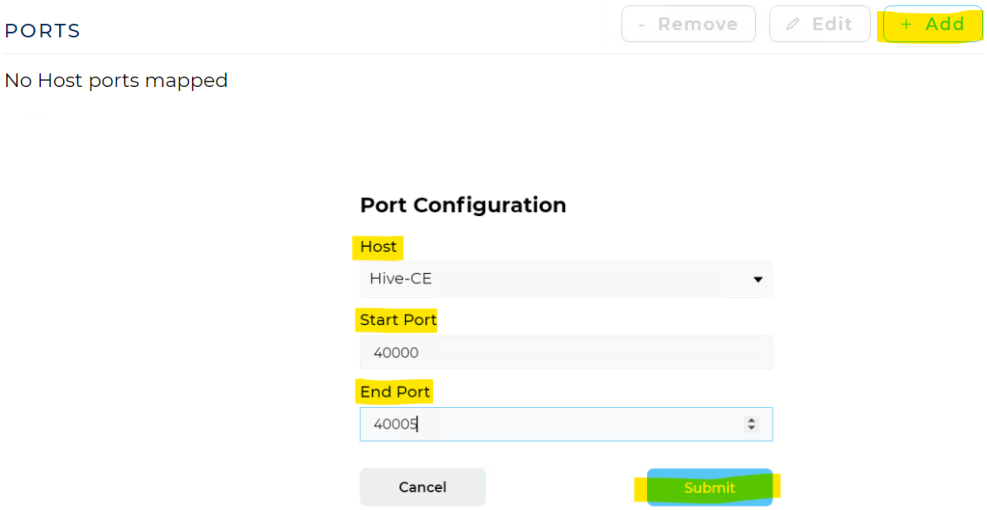
6. Toggle on **Enable Hive Fabric Gateway** and click **Next**.



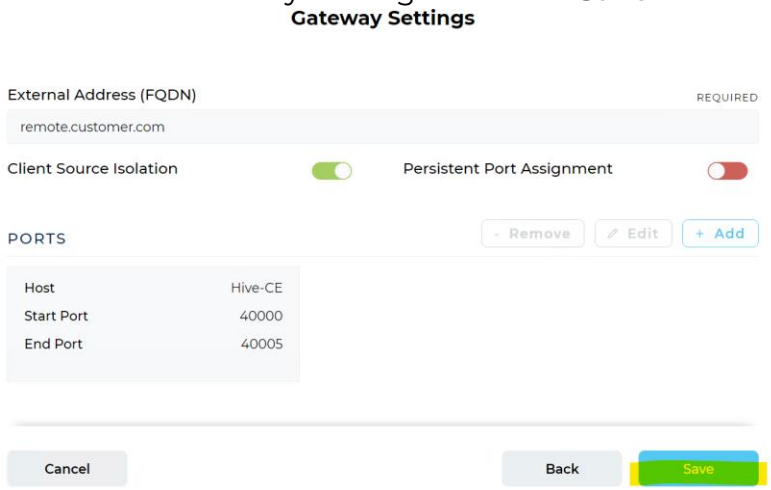
7. Click **Next** to advance to Gateway Settings.
8. Enter the DNS name for the network entrance. This is typically the internet facing DNS record for the external Firewall IP that will be configured to route remote access.
    a. Select **Client Source Isolation** to enforce gateway validation of the source IP for connection requests.
    b. Select **Persistent Port Assignment** to maintain the gateway port used by each client for remote access. This will allow RDP to auto-reconnect but will require a 1:1 port to VM allocation. Ensure there are enough ports identified below to support the VMs being brokered through the Gateway.



9. Click on **+ Add**.



10. Select the gateway host (can be a dedicated Fabric Gateway host or any cluster member that will serve the gateway role.)
11. Enter the Start and End Ports where the gateway will accept RDP requests for internal published resources.
    a. This is the range of firewall ports that the gateway will use for RDP traffic (high level port range of customers choosing.)
    b. This port range should match the values used in a port-forwarding rule to be created on the firewall, redirecting traffic bound for *remote.customer.com:<Start Port - End Port>* to the Gateway IP address on the same range of ports.
12. Click **Submit**.
13. Review the Gateway Settings and click **Save**.



As part of the Fabric Gateway configuration, you identified a range of ports where the gateway will receive RDP requests for the internal network resources. These ports are a sequential range of high-level ports of the customers choosing, where

the number of ports will support the maximum simultaneous user logins. This is the number of users logging in at the same approximate time frame, not to be confused with the number of users actively logged in to desktops. For example, if there is an expectation of a login storm of 50 users every 2-5 minutes, consider using a port range of approximately 60-70 ports. Once the user is successfully logged in, the default behavior is to release the user port assignment and close the port. The firewall should then be configured with the same range of ports in its port-forwarding rules (see sample values in table below.)

Publish VM for access

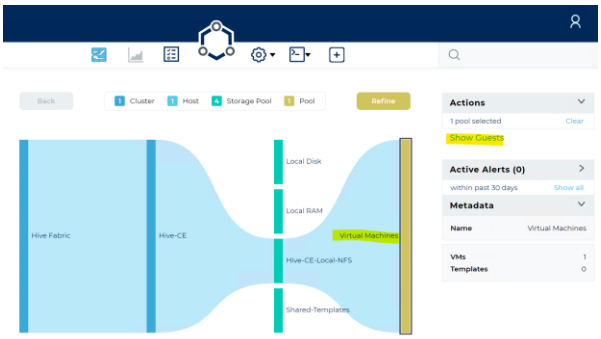
Using the integrated Hive Fabric broker or gateway, it is possible to provide remote access to desktops (using a desktop pool,) VMs (often referred to as standalone, meaning not managed by a pool,) and other resources that are Active Directory joined and support RDP connections (physical, virtual, or other vendor platforms.)

Standalone VMs

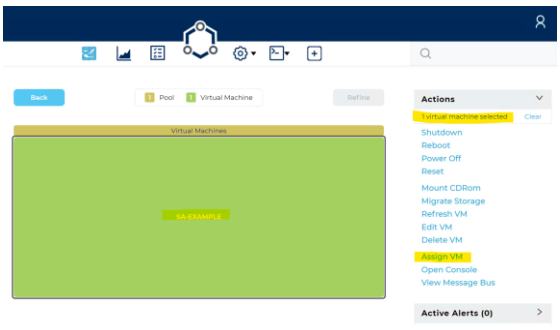
As a review, standalone VMs are simply those VMs that are not managed by a pool. These can refer to virtualized servers or other desktops that are deployed as full clones.

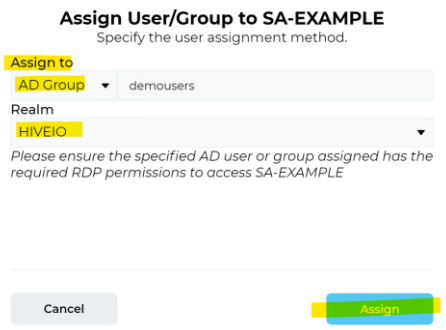
https://support.hiveio.com/portal/en/kb/articles/publish-standalone-guest-for-remote-access

1. From the Visualizer page select the Virtual Machines object, then either double-click or select **Show Guests** from the Actions menu.

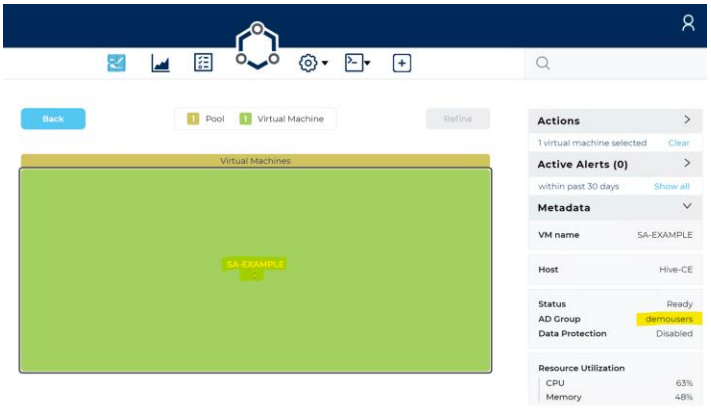


2. Select the VM (SA-Example shown here,) then click **Assign VM** from the Actions menu.

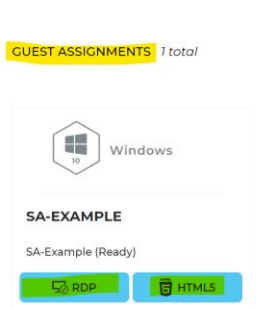




3. In **Assign User/Group** (above:)
    a. Select **User** or **AD Group**.
    b. Enter the CN (common name) of the user or group (i.e., username or User Group.)
    c. Select the **Realm** from the drop-down where the user or group is configured.
    d. Click **Assign**.
4. Once assigned, the VM will show a user icon on the VM tile as well as the assignment in metadata.



5. Once assigned, the user can login to the Gateway URL provided in the gateway configuration (https://remote.company.com) with their AD credentials.
6. Once logged in, any assignments will show as available Guest Assignments.



7. Select one of the connection options to login to the remote guest.

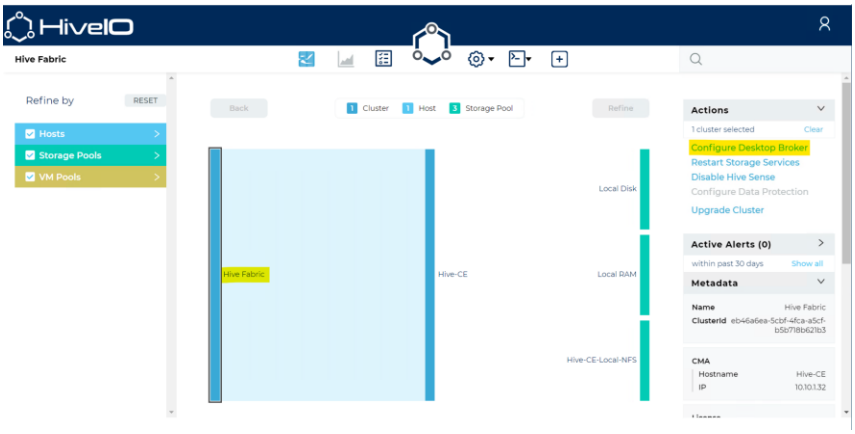
Physical Desktops

Any remote resource (physical, virtual, or other vendor) that is a member of the selected Realm (domain) and supports RDP connectivity can be configured as a Physical Desktop. Guests configured as Physical Desktops are accessible by the assigned users or groups by using the Fabric Broker or Gateway.

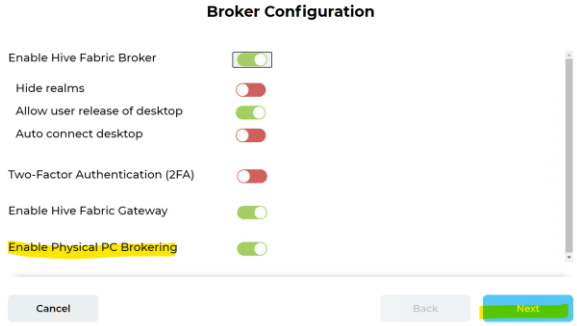
https://support.hiveio.com/portal/en/kb/articles/manage-physical-desktop-pool

Enable Remote Access

1. From the Visualizer, select the Hive Fabric cluster object and then click **Configure Desktop Broker** from the Actions menu.

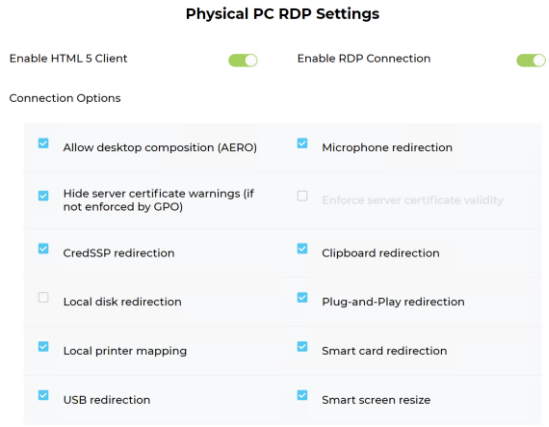


2. Toggle on **Enable Physical PC Brokering** and click **Next**.



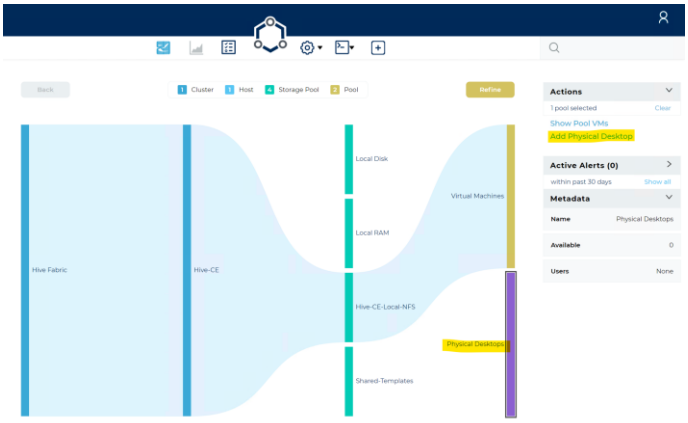
3. Click **Next** to advance to Physical PC RDP Settings.

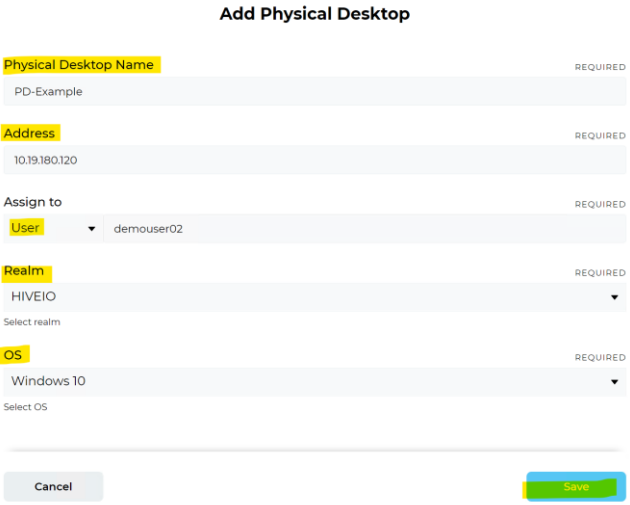
4. Set each of the desired options for RDP broker settings and click **Save**.



Publishing a Physical Desktop

5. From the Visualizer, select the **Physical Desktops** pool and then click **Add Physical Desktop** from the Actions menu.



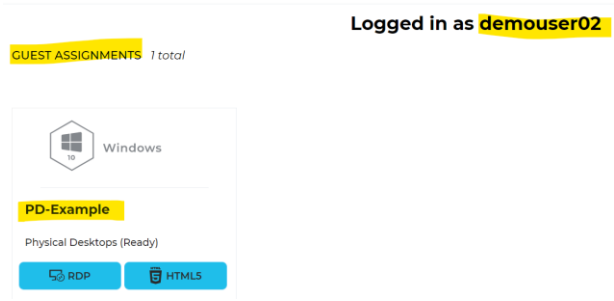


6. In **Add Physical Desktop**:

a. Enter the name for **Physical Desktop Name**. This name cannot match the name of any other guest on this Hive Fabric cluster.
b. Enter the desktop's **Address (**can be an IP or FQDN.)
c. **Assign to** either **User** or AD Group and enter the CN (common name) for the account.
d. Select the **Realm** from the drop-down list.
e. Select the **OS** for the guest.
f. Click **Save**.

Accessing Configured Resources

7. Once assigned, the user can login to the Gateway URL provided in the gateway configuration (https://remote.company.com) with their AD credentials.
8. Once logged in, any assignments will show as available Guest Assignments. Select one of the connection options to login to the remote guest.



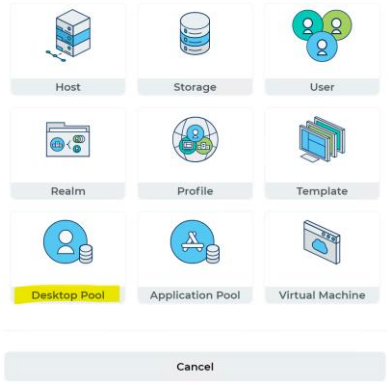
Desktop Pool

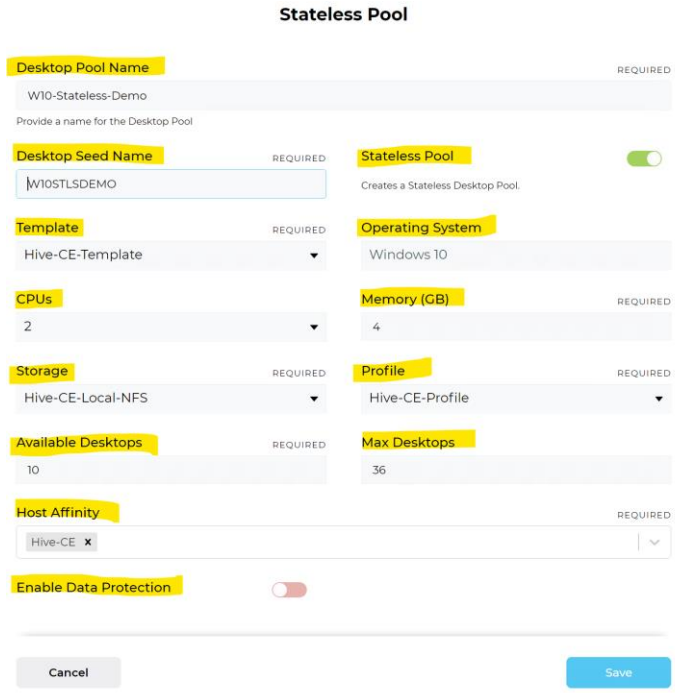
Desktop Pools are automatically published in the Hive Fabric broker and gateway, providing remote access to deployed desktops from internal or external sources. To deploy a Desktop Pool, you must have already configured the Fabric Realm, Profile, and Template.

https://support.hiveio.com/portal/en/kb/articles/create-desktop-pools

1. From the administrative UI, select the **+** from Main Navigation.

2. From the resource menu, click **Desktop Pool**.



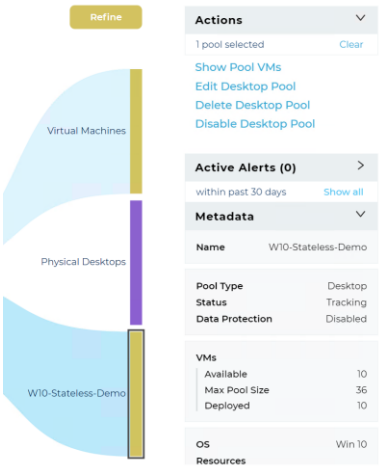


3. Complete the settings for the **Desktop Pool**.
    a. Enter the **Desktop Pool Name** (no special characters.)
    b. Enter the **Desktop Seed Name** (limited to 11 characters.)
    c. Leave the pool set to **Stateless Pool** or toggle to create a **Persistent Pool**.
    d. Select the **Template** from the drop down.
    e. The **Operating System** is inherited from the Template.
    f. Adjust the **CPUs** as required.
    g. Adjust the **Memory (GB)** as required.
    h. Select **Storage** target for Desktop Pool. Stateless can be deployed to any configured Storage Pool configured with the VMs role, whereas Persistent can be deployed to all but Local RAM.
    i. Select the **Profile** from the drop down.

j. Set the **Available Desktops** count (guests that will be in a Ready state,)
k. Set the **Maximum Desktops** count (high water mark for number desktops.)
l. Remove any hosts from **Host Affinity** that should NOT participate in the Desktop Pool (default is all hosts selected.)
m. If desired, toggle on **Enable Data Protection** to create a replication schedule of the target resource to a configured Storage Pool (requires a Storage Pool with the Data Protection role and Data Protection to be enabled on the cluster.)
NOTE: We recommend using the Data Protection feature to preserve offsite replicas of key components of your virtualized deployment.
n. Click **Save**.

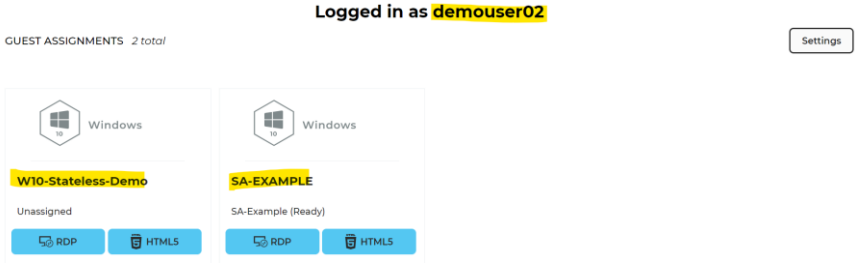
4. The new Desktop Pool will appear on the right side of Visualizer.

5. Double click the new Desktop Pool or select **Show Pool VMs** from the Action menu to view the build process.



6. Once the guests have joined the Active Directory domain and have been restarted, a status of Ready will be displayed either in the metadata or when you hover over the guest tile in the UI.

7. The new Desktop Pool will show as an available resource when the user (who belongs to the proper Active Directory group, as assigned in the Fabric Profile,) signs into the broker or gateway.



Resource Access

Using the Hive Fabric broker and/or gateway portal, users can access their published desktops, VMs, or other RDP capable resources. HiveIO also provides an installable Hive Fabric client for Windows and some Linux based thin clients.

Access Portal

The web portal address for accessing your desktops can include either the IP address or DNS name for the broker (any cluster host) or the DNS name for gateway access.

Broker access examples:
https://10.10.1.32/broker or https://immersion32.hiveio.lan/broker

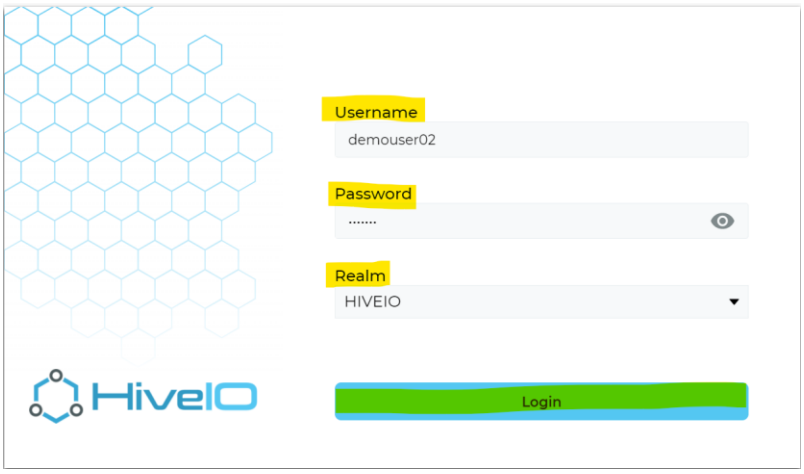
Gateway access examples:
https://remote.company.com, which works in conjunction with the organization's firewall and external DNS address.

Broker - Gateway RDP Access

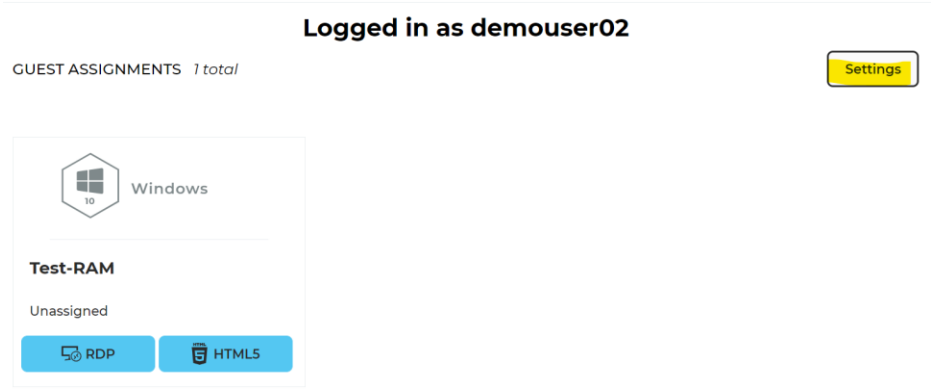
Broker access - https://support.hiveio.com/portal/en/kb/articles/end-user-broker-access

Gateway access - https://support.hiveio.com/portal/en/kb/articles/end-user-gateway-access

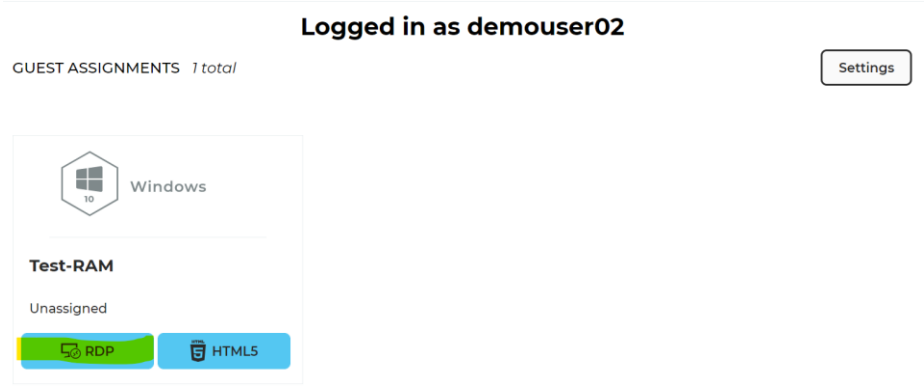
1. Open a web browser and enter the address for the Hive Broker or Gateway, without the port address for the administrative UI (**:8443**).
2. Enter your **Username**, **Password**, and select the appropriate **Realm** from the drop-down menu. Click **Login**.



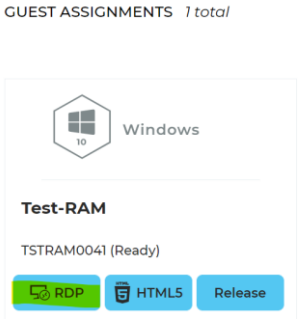
3. Click on **Settings** to set up your preferred display properties, default is multi-monitor/fullscreen.



4. Click on **RDP** to receive a resource assignment.



5. Once assigned, click on **RDP** again to download and launch the RDP file. This may be set to auto-launch in the Configure Desktop Broker settings (compatible with RDP only, not HTML,)

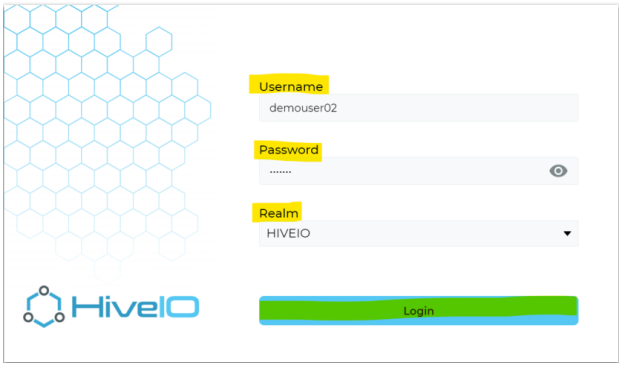


NOTE: HTML5 is an optional connection method that needs to be enabled in the Fabric Profile.

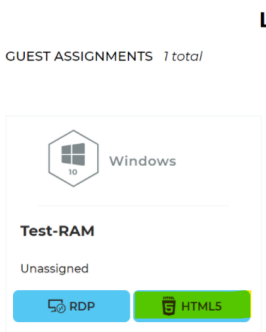
Broker - Gateway HTML5 Access

https://support.hiveio.com/portal/en/kb/articles/using-the-hive-fabric-html5-client

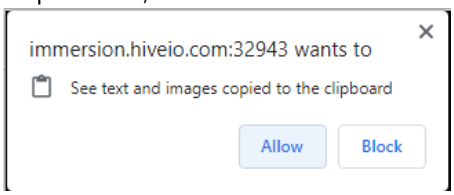
1. Open a web browser and enter the address for the Hive Broker or Gateway, without the port address for the administrative UI (**:8443**).
2. Enter your **Username**, **Password**, and select the appropriate **Realm** from the drop-down menu. Click **Login**.



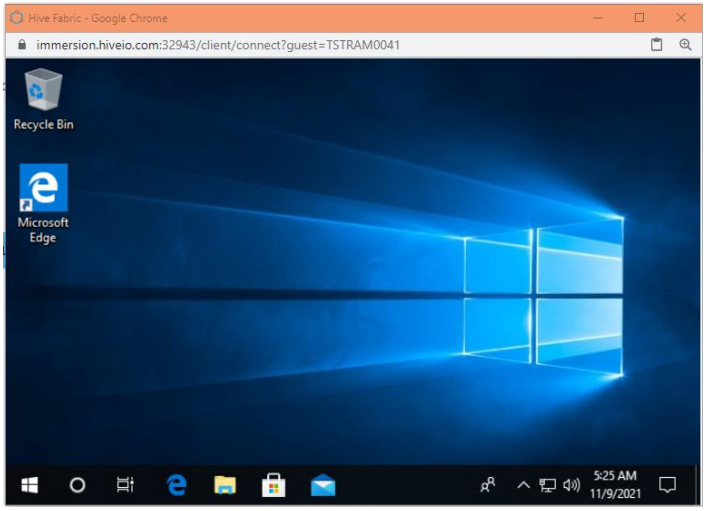
3. Select the option for **HTML5** to launch the desktop within a browser window. NOTE: The HTML5 access method does not currently support multiple monitors, video redirections (webcam,) or USB drive redirection.



4. When prompted to allow or block images and text to be copied to the clipboard, click **Allow**.



5. The remote resource is now accessible within the HTML5 client.



Hive Fabric Client Access

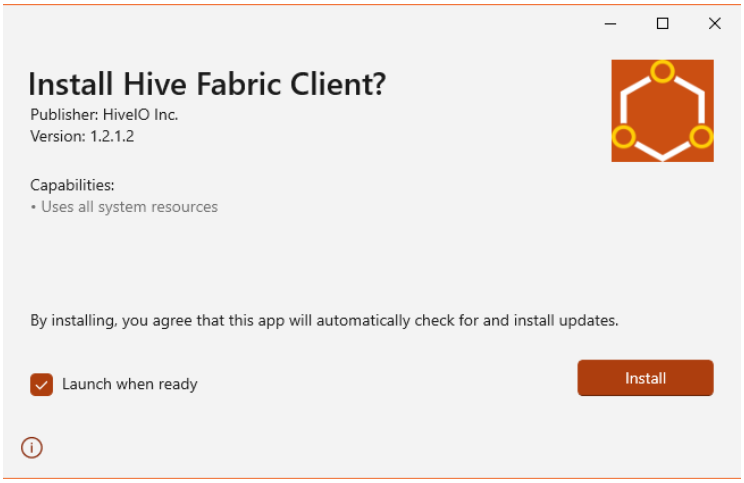
HiveIO provides an end user client for accessing configured Fabric Broker or Gateway services. This client is compatible with Windows 7 and newer versions of the Microsoft Windows operating system and can be custom installed on various models of Linux Thin Client platforms. The Hive Fabric Client uses direct communication with the Fabric REST API instead of relying on the user interaction with the Broker and RDP authentication prompts.

https://support.hiveio.com/portal/en/kb/articles/using-the-hive-client-desktop-client

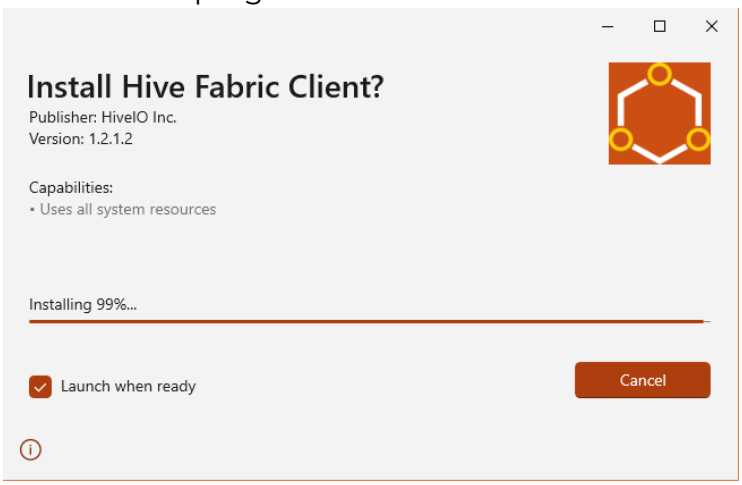
Installation

Once installed, the Hive Fabric Client is automatically maintained with current updates as they are released (requires internet access for updates). There is no need to update your client manually after initial installation.

1. Launch the provided executable to begin the installation.
2. Click **Install**.



3. Installer is in progress.



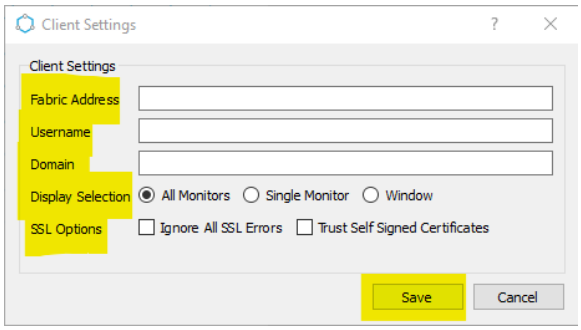
4. If set to "**Launch when ready**", continue to First Launch.

First Launch

1. Launch the Hive Fabric Client from the Start menu.
2. From the Client Settings, enter the following:
    a. **Fabric Address** (required) - IP address or URL for Hive Fabric Broker or Gateway (i.e., vdi.company.com).
    b. **Username** (optional) - This is the default username for the application, using the Common Name (CN) (i.e., demouser02). The application will prompt for this if not provided here.

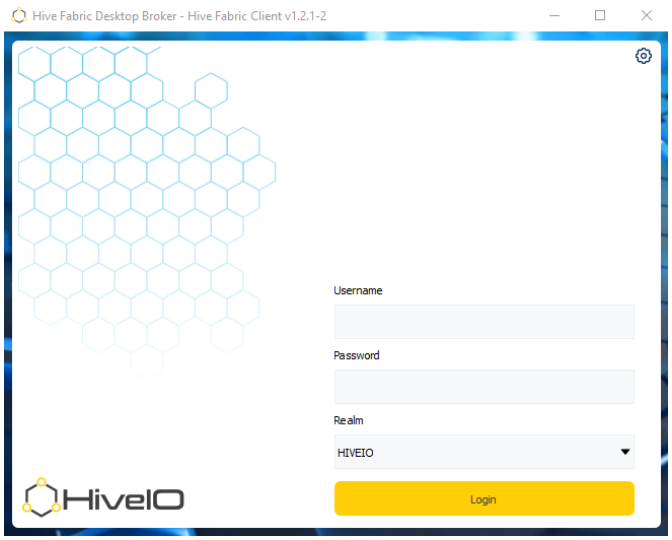
c. **Domain** (optional) - This is the default domain that is used for authentication. The application will prompt for this value if not provided here.
d. Display Section
    i. **All Monitors** - the remote session will use all available monitors
    ii. **Single Monitor** - the remote session will use the monitor where the application is located during login
    iii. **Window** - the remote session will be placed into a movable window that allows the user to move it between monitors
e. SSL Options
    i. **Ignore All SSL Errors** - follow organizational guidelines
    ii. **Trust Self Signed Certificates** - follow organizational guidelines

3. Click **Save**.

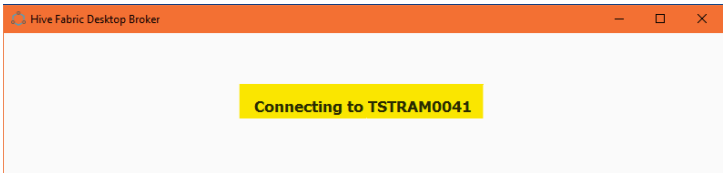


Client Use

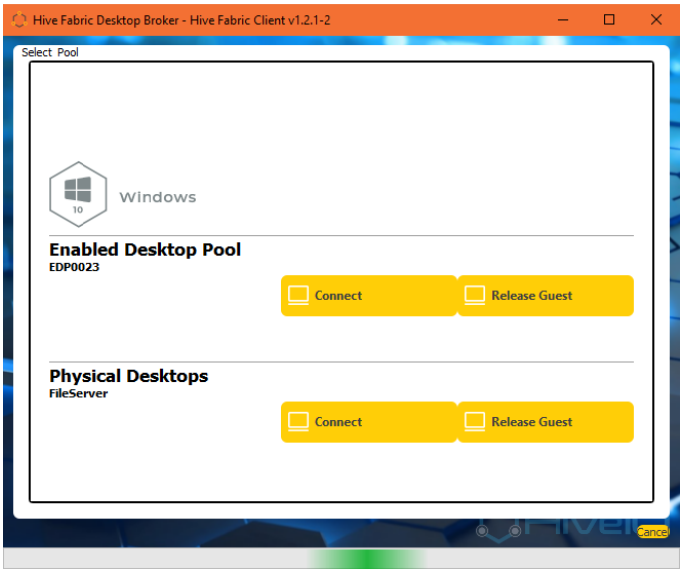
1. Launch the Hive Fabric Client.
2. Enter **Username**.
3. Enter **Password**.
4. Select **Realm**.
5. Click **Login**.



6. If a user has only one resource assigned, the Hive Fabric Client will automatically connect to that resource.



7. If a user has multiple resources allocated, the Hive Fabric Client will allow the user to choose from the published resources. Click **Connect** for the desired resource.



8. Once connected, the RDP bar is set to auto-hide.

9. On the user's client (laptop, thin client, desktop, etc.), the Hive Fabric Client connection shows as the HiveIO icon in the taskbar.

Additional Resources

For additional help, customers may use our online support portal at https://support.hiveio.com. Simply sign up and you will have access to our entire knowledge base, providing you with Release Notes for updates, additional features of Hive Fabric, and the ability to manage support tickets.

You can always email support@hiveio.com to quickly open a support ticket for any questions.

If you are stuck as to where to reach out, email us at info@hiveio.com and we will get someone in touch with you to assist.