# 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 <u>underline</u> 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 <u>https://www.hiveio.com/tryhivefabric/</u>. For our current customers looking for the latest or a specific download version, please contact <u>support@hiveio.com</u> for the download link.

# **Hive Fabric Installation**

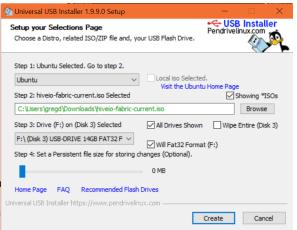
## **Bootable USB – Universal USB Installer**

**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 <u>https://www.pendrivelinux.com/universal-usb-installer-easy-as-</u><u>1-2-3/</u>. We have received some unfavorable feedback on other common USB creators, so we recommend using UUI.

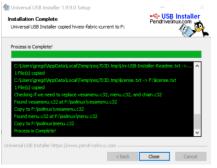
https://support.hiveio.com/portal/en/kb/articles/usb-boot-installation.

- 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.



 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.



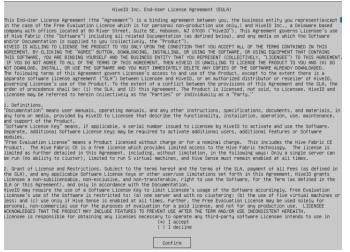
6. Make certain you remove the installation media (unmount ISO, remove USB) once the server is back to its BIOS boot screen.

#### **Hive Fabric First Boot Wizard**

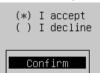
This portion of the installation guide is focused on the initial configuration using the **Admin Console UI**, also referred to as the First Boot Wizard (FBW). Once the initial installation is completed, this Admin Console UI provides basic networking and services functions.

#### 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>**.



 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).

New password:	
жжж	
Confirm password:	Next
жжжж	

 <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.

()	k)	enp10s0f0	(Speed:	1.0G	B; Connect	ed: Yes)
(	)	enp10s0f1	(Speed:	N/A;	Connected	: No)
(	)	enp10s0f2	(Speed:	N/A;	Connected	: No)
(	)	enp10s0f3	(Speed:	N/A;	Connected	: No)
(	)	enp6s0f0	(Speed:	N/A;	Connected:	No)
1			10			

- ( ) enp6sOf1 (Speed: N/A; Connected: No)
- <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.

(*	:)	enp10s0f0 (Speed: 1.0GB; Connected: Yes
(	)	enp10s0f1 (Speed: N/A; Connected: No)
(	)	enp10s0f2 (Speed: N/A; Connected: No)
(	)	enp10s0f3 (Speed: N/A; Connected: No)
Ċ	)	enp6s0f0 (Speed: N/A; Connected: No)
		enp6s0f1 (Speed: N/A; Connected: No)
		[] Enable DHCP
		[] Enable VLAN

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

[] Enable DHCP

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

10.10.\*.\*

b. *Tab* to advance to **Netmask** and enter an appropriate Netmask. Netmask:

255.255.252.0

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

6	Gateway:
	10.10.0.1



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.
 VLAN:

 <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.)

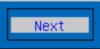
DNS	Server:
10	0.19.*.*

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

DNS Search Path:

hiveio.lan

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 **IOGB minimum** network speed is required for creating hyperconverged storage.

Configure Shared Storage Network?

( ) Yes (\*) No

- 14. If you selected Yes to "Configure Shared Storage Network":
  - <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.

ΙP	Address:
10	).10.*.*

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

ľ	Netmask:
	255.255.252.0

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

VLAN:

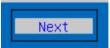
0



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.

Configuring hive fabric services

- 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.

Admin Login		
	Enter the admin password:	
	-	
	Ok	

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

https://10.10.1.32:8443 CPU Utilizati	on: 4.84%
---------------------------------------	-----------

- c. Proceed to the Administrative Web User Interface.
- 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



- 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., <u>https://10.10.1.32:8443</u>).
- 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.
- 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 <u>ce\_registration@hiveio.com</u> 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**.

	System is Unlicensed Please upload a valid license ClusteriD: eb46a6ea-5cbf-4fca-a5cf-b5b718b621b3
)HivelO	Upload License

## Navigating the User Interface (UI)

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

- 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., <u>https://10.10.1.32:8443</u>).
- 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**.

III n		
	Username	
	Password	Ø
	Realm	Forgot your password?
	local	
	_	Login
)HivelO		



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

©, Hive <b>lO</b>	a 🔺 b c	8
Refine by RESET		
■ Hosts     ∨       Features     >       Sortécale     >       State     >       VN Pools     >       Software versions     >       ■ Consign Pools     ∨       Features     >       Sort/Scale     >		Local Dak Active Alerts (0) > Metadata > Means Hee-CC Hearton Stations Uppine USC
Roles  VM Pools  VM Pools  VM Pools  VM Status  CPU  CPU  VM Status  VM Statu	How-C	Local RAM CRS CUSTON Local RAM CRS CRS CUSTON CRS CUSTON C
Memory + Storage Capacity +		HyerThreading to Model Intel(19) Accord 063 682 CPU (9 2.00CHz Memory 304 CB Hvie-CE-Local-NIFS Local Disk Total 470 CB Proc 97,570 RAM Disk Allocation Intel Action 500 Total 165.32 CB

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 (+).

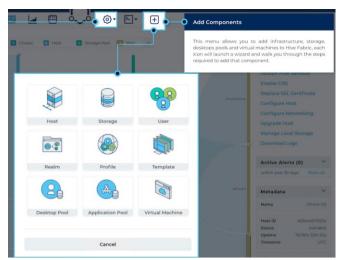


b. **System Configuration** - This menu holds system wide configuration items such as Users, Licensing, and Realms as well as Hive Fabric components that tend to be accessed less often such as Profiles and Templates.



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.



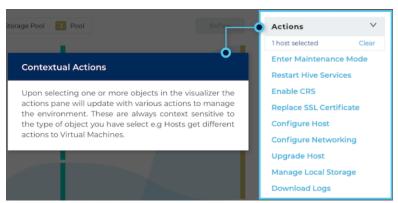


d. **Sorting and Filtering** - This area allows you to refine the visualizer to find information of particular interest, or sort in a different way. Making changes here will update the main view in real-time. Simply click **Reset** to return to the filtering defaults.

Refine by	RESET		1 Cluster 🖉 Ho
Hosts	· •	Sorting and Filtering	
Features			
Sort by		This area allows you to refine	
State		information of particular interest, or sort in a different way. Making changes here will update the main view in realtime.	
Guest Pools			
Software Version			
Firmware Version			
Storage Pools	~		
Features	•		Mark 64
Sort by			
Roles			
Guest Pools			
% Used			
Guest Pools	~		
Features			
Sort by			
State	•		
OS			
CPU	> 1		
Memory			
Storage Capacity			

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.)

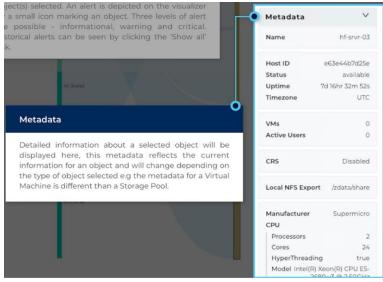




f. **Alerts** - Any active alerts will display here automatically for the object(s) selected. Historical alerts can be seen by clicking the **Show all** link.

Show all
1000000000
~
hf-srvr-03

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**

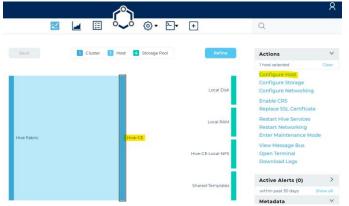
With its all-in-one integrated platform, configuring the features necessary to deploy and access remote resources has never been easier. This section of the guide will walk you through the bare minimum configuration options to get your remote access working.

## **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.)

Name	REQUIRED	Role
Hive-CE		cma
Max Clone Density		Time Zone
119		UTC
NTP Servers		
0.pool.ntp.org		
og Level		
Debug	•	Contribute to Hyperconverged Storage

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**.

		8
~	📕 🗄 🍫 🎯 - 🕞 🕂	Q
Back	I         Cluster         I         Host         4         Storage Pool         Refine	Actions V
	Local Disk	1 host selected     Clear       Configure Host     Configure Storage       Configure Networking     Enable CRS       Replace SSL Certificate     Restart Hive Services       Restart Networking     Enable CRS
Hive Fabric	Hive-CE	Enter Maintenance Mode View Message Bus Open Terminal Download Logs
	Shared-Templates	Active Alerts (0) > within past 30 days Show all

**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.

	Actions	
Local Storage Configuration	Reapply Storage C	Config
	Manage Storage	
PHYSICAL DISKS	Manage Cache	
477 GB	Manage Sharing	
	Delete Storage	
nvme0n1p2	letadata	
	Name	OS
	Devices	nvme0n1p2
	Deduplication	Disabled
Name DAM	Compression	Enabled
	Cache	Disabled
Status Defined Status Enabled	Sharing	Disabled
	Export	



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

Enabled	
Access List	
0.0.0/0	
Comma separated list	
Path	
nfs://10.10.1.32:/zdata/share	
Cancel	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.

Metadata				
OS				
nvme0n1p2				
Disabled				
Enabled				
Disabled				
Enabled				
<b>Export</b> nfs://10.10.1.32:/zdata/share				

- 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.

#### Local Storage Configuration

PHYSICAL DIS	KS			
930.4 GB	477 GB			
LOGICAL STOP	RAGE			+ Add
Name Status	OS Defined	Name Status	RAM Enabled	



b. Locate the unused drive, click the drive, then click **Save**. SELECT DISK(S)

OLLEOT DION	((0)		
930.4 GB	477 GB		
Deduplication		Compression	
Cancel			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.

Actions		
Reapply Storage Config		
Manage Storage		
Manage Cache		
Manage Sharing		
Delete Storage		

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

Local Storage Configuration				Actions Reapply Storage Config	
					Manage Storage
PHYSICAL DISKS	5				Manage Cache
930.4 GB	477 GB				Manage Sharing Delete Storage
sda2	nvme0n1p2				Metadata
OGICAL STORA	GE			+ Add	Name Capacity Devices sdaz Deduplication Disabled
Name	Capacity	Name	OS		Compression Enabled Cache Disabled
Status	Defined	Status	Defined		Sharing Disabled Export
Name	RAM				
Status	Enabled				Information
					The local storage in the host

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

Enabled 
Access List
O.O.O/O
Comma separated list
Path
nfs://10.10.1.32:/zdata/share
Save

Share OS



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

Metadata		
Name		Capacity
Devices	5	sda2
Deduplication Disabled		
Compression Enabled		
Cache Disabled		
Sharing Enabled		
Export	nfs://10.10.1.33:/zdata/share	

## **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.

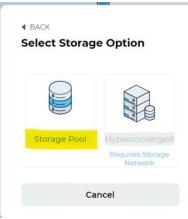
1. Click on the + button in Main Navigation to add additional resources.



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.

Storage Pool			
Storage Pool Name			REQUIRED
Hive-CE-Local-NFS			
Provide a name for the storage pool			
Туре	REQUIRED	Server	REQUIRED
NFS	•	10.10.1.32	
Select type of storage		The FQDN or IP address of the storag	e target
Path			REQUIRED
/ <u>zdata</u> /share			
Provide the export path			
Roles			
🖾 VMs 🔘 ISO			🔒 Data Protection
Select the roles for this 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.

Refine	Actions	~
	1 storage pool selec	ted Clear
	Edit Storage Poo	
	Remove Storage	
	Convert Image	
	Expand Image	
Local Disk	Remove Disks	
	Upload Disks	
	Active Alerts (	0) >
	within past 30 days	Show all
	Metadata	~
_	Name H	live-CE-Local-NFS
Local RAM	VMs	0
_	User Volumes	0
	Туре	nfs
	Server	10.10.1.32
	Path	/zdata/share
e-CE-Local-NFS	Capacity	414.5 GB
	Used	9.14 GB
	Free	405.36 GB
	Roles	

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

Upload Disk Select the disk to upload to storage pool Hive-CE-Local-NFS	Upload Select the disk to upload to sto	I Disk rage pool Hive-CE-Local-NFS
Drop files here or browse	Drop files her	e or browse
	✓ Complete	
Cancel	Cancel	Close



## **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.

⊴ 🔟 🗄 🍫 ⊚∙	▶▼ +			
Manage Realms				
		+ Add / E		
		Rea	Im	
	FQDN			REQUIRED
	hiveio.lan			
	NETBIOS Name			REQUIRED
	HIVEIO			
	Username	REQUIRED	Password	REQUIRED
	hiveiosvc			
	Alias			
	Site			
	Default Site		Force TLS	

- 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.

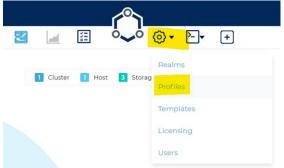
ALL	
Name	HIVEIO
Alias	N/A
FQDN	hiveio.lan
Force TLS	no
Site	Default

## **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.

Manage Profiles

+ Add



#### Profile

Profile Name	REQUIRED	Timezone	
Hive-CE-Profile		No injection	•
		Select timezone.	
User Volumes			
Broker Options			

- 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.

2		
	User \	/olumes
Volume Size (GB)		Local Cache
10	\$	No cache
Storage Pool		Backup Schedule
Hive-CE-Local-NFS	•	No Backup
		Not available.

- 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**.



#### **Broker Options**

Enable HTML 5 Client	Enable RDP Connection
<ul> <li>Allow desktop composition (AERO)</li> </ul>	<ul> <li>Microphone redirection</li> </ul>
<ul> <li>Hide server certificate warnings (if not enforced by GPO)</li> </ul>	
CredSSP redirection	Clipboard redirection
Local disk redirection	Plug-and-Play redirection
Local printer mapping	Smart card redirection
USB redirection	Smart screen resize

- 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.

Realm				
Realm				
HIVEIO		•		
Select realm.				
Organizational Unit	User Group	REQUIRED		
OU=Demo,OU=Immersion,DC=hiveio,DC=Ian	demousers			
Specify Service Account				

#### 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**

#### Virtual Machine Resources

VM Name			REQUIRED
Hive-CE-VM			
СРИ		Memory (GB)	
2	•	4	
os		Boot Mode	
Windows 10	-	ÜEFI	•
Display Driver			
Cirrus			•
Inject Hive Fabric Agent		Inject Hostname	
Data Protection			
Host Affinity			REQUIRED
Hive-CE X			
Description			



- 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.
- 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.

Dick Configuration

	Disk configuration	
DISKS	🖉 Edit	- Remove + Add
No disks added yet		
	Add Dis	
	Specify a disk to add to th	is Virtual Machine
	Disk Type	
	New disk	•
	Disk Name	REQUIRED
	Hive-CE-VM	
	Storage Pool Hive-CE-Local-NFS	_
	Disk Size (GB)	•
	30	
	Driver	
	VirtlO	•
	Disk Order	
	1	•
	Cancel	Submit

#### 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.

#### **Disk Configuration**

DISKS			- Remove	+
Type Disk Storage Pool Driver Disk Order	Disk Hive-CE-VM.qcow2 Hive-CE-Local-NFS VirtIO 1			
		Add   Specify a disk to add to Disk Type	 Machine	
		CD-ROM Storage Pool Hive-CE-Local-NFS ISO Image Windows_10.iso	▼ ▼ REQUIRED ▼	
		2 Cancel	- Submit	

- 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.

**Disk Configuration** 

ISKS			🖉 Edit 🔤 - F	Remove + Add
Туре	Disk	Туре	CD-ROM	
Disk	Hive-CE-VM.qcow2	Disk	Windows_10.iso	
Storage Pool	Hive-CE-Local-NFS	Storage Pool	Hive-CE-Local-NFS	
Driver	VirtIO	Disk Order	2	
Disk Order	1			



Add Disk			
Specify a disk to add to this Virtual Machine			
Disk Type			
Driver ISO	•		
Disk Order			
3	•		
Cancel	Submit		

- 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**.

**Disk Configuration** 

SKS			🖉 Edit 🗌 - Remove
Туре	Disk	Туре	CD-ROM
Disk	Hive-CE-VM.qcow2	Disk	Windows_10.iso
Storage Pool	Hive-CE-Local-NFS	Storage Pool	Hive-CE-Local-NFS
Driver	VirtIO	Disk Order	2
Disk Order	1		
Туре	Driver ISO		
Disk Order	3		

## **Network Configuration**

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

Networking

NETWORKING	- Remove	+ Add

No networking interfaces defined.



#### Add Network

Add a network device to this Virtual M	achine.
Network	
Production	•
VLAN ID	
0	
Driver	
VirtlO	•
Cancel	

#### 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.

TWORKING		- Remo	+ Add
Network	production		
VLAN ID	0		
Driver	virtio		
Cancel		Back	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.

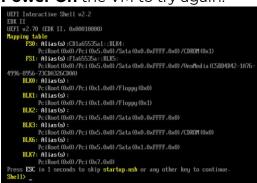
- 1. For a VM:
  - a. To begin the OS installation of a VM, as soon as the VM boots, double click on the green tile or with the VM selected, click **Open Console** from



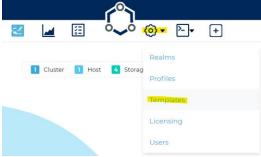
#### the Actions Menu.

Actions	~
1 virtual machine selected	Clear
Shutdown	
Reboot	
Power Off	
Reset	
Eject CDRom	
Migrate VM	
Migrate Storage	
Refresh VM	
Edit VM	
Delete VM	
Assign VM	
Open Console	
View Message Bus	

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.

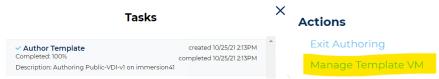


b. With the target Template selected, click **Author Template** from the Actions menu.

	Actions
	Author Template
	Validate Template
+ Add 🖉 Edit	Stage Template
	Delete Template
	Duplicate Template



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.

Actions	$\sim$
1 virtual machine selected	Clear
Shutdown	
Reboot	
Power Off	
Reset	
Mount CDRom	
Open Console	

- 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*.



🖌 Windows Setup	
Languag <u>e</u> to install: <mark>English (United States)</mark>	<b>_</b>
Time and currency format: English (United States)	•
Keyboard or input method: US	•
Enter your language and other preferences and click "Next" to continue	
© 2018 Microsoft Corporation. All rights reserved.	<u>N</u> ext



5. Click Install Now.

	Windows	
¥	Install now	
<u>R</u> epair your compute	r	

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.

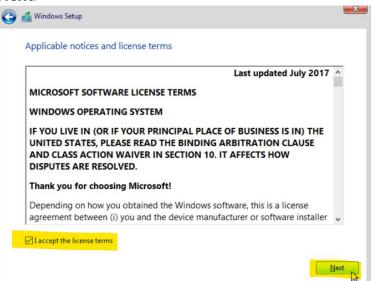
🕞 🔏 Windows Setup 📒	×
Activate Windows	
If this is the first time you're installing Windows on this PC (or you're installing a different edition), you need to enter a valid Windows product key. Your product key should be in the confirmation email you received after buying a digital copy of Windows or on a label inside the box that Windows came in.	
The product key looks like this: XXXXX-XXXXX-XXXXXX-XXXXXX-XXXXXX-XXXXXX	
If you're reinstalling Windows, select I don't have a product key. Your copy of Windows will be automatically activated later.	
Privacy statement I don't have a product key	

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

Operating system	Architecture	Date modified
Windows 10 Home	x64	6/19/2018
Windows 10 Home N	x64	6/19/2018
Windows 10 Home Single Language	x64	6/19/2018
Windows 10 Education	x64	6/19/2018
Windows 10 Education N	x64	6/19/2018
Windows 10 Pro	хб4	6/19/2018
Windows 10 Pro N	хб4	6/19/2018
escription: lindows 10 Pro		



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.)

Ipgrade: Install Windows and keep	files, settings, and applications
	oved to Windows with this option. This option is only ndows is already running on the computer.
allable when a supported version of Wil	ndows is already running on the computer.
unterna hastall Mündarus andra (adv	(here a)
	anced) moved to Windows with this option. If you want to art the computer using the installation disc. We

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

Name		Total size	Free space	Туре
• <u>p</u> <u>R</u> efresh	Delete	Eormat	- → N <u>e</u> w	



b. Click Browse.

d.



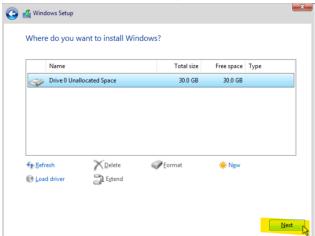
c. Browse all the way to the driver folder (/viostor/w10/amd64), where "**w10**" is the proper OS for the installation.

~	viostor	^
>	2k12	
>	2k12R2	
>	2k16	
>	2k19	
>	2k3	
>	2k8	
>	2k8R2	
~	w10	
	amd64	
	ARM64	~
< Ne	ок 💦	Cancel
Windows	ietup	
indows !	etup	

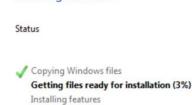
- e. Repeat steps a-d in step 10 for the remaining drivers, where "**w10**" is the proper OS for the installation.
  - i. /vioserial/w10/amd64
  - ii. /NetKVM/w10/amd64
  - iii. /Balloon/w10/amd64



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.) Installing Windows

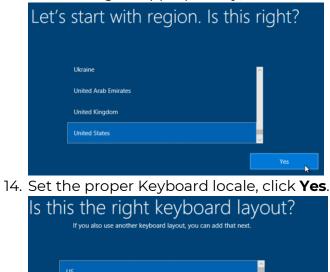


Canadian Multilingual Standard

English (India) Irish

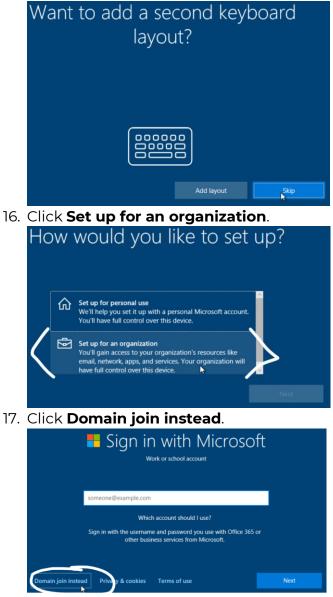
Installing updates Finishing up

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

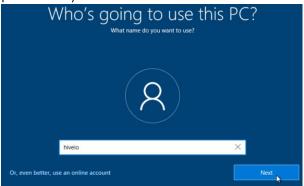




15. Setup additional Keyboard locales as required (skipped here.)

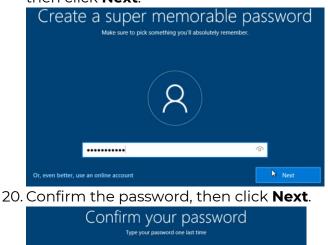


18. Enter the name for a new Local Administrator account, then click **Next** (the default Administrator account is disabled by Windows for best security practices.)





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





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.

	Command Prompt		
	App		
ď	Open		
	Run as administrator		
01	Open file location		
-12	Pin to Start		
-123	Pin to taskhar		

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.

1	ower Options		– 0 ×
÷	ightarrow 🛧 🗃 V Control Pan	el $ ightarrow$ Hardware and Sound $ ightarrow$ Power Options $ ightarrow$ $restricted v$	Search Control Panel
	Control Panel Home	Choose or customize a power plan	
	Choose what the power button does	A power plan is a collection of hardware and system settings (like dis manages how your computer uses power. <u>Tell me more about powe</u>	
	Create a power plan	Preferred plans	
0	Choose when to turn off the display	O Balanced (recommended) Automatically balances performance with energy consumptio	Change plan settings n on capable hardware.
		O Power saver	Change plan settings
		Saves energy by reducing your computer's performance where	e possible.
		Hide additional plans	@
		High performance	Change plan settings
		Favors performance, but may use more energy.	
		2	

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

Related settings
BitLocker settings
Device Manager
Remote desktop
System protection
Advanced system settings
Rename this PC (advanced)

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

Computer Name	Hardware	Advanced	System Protectio	n Remote	
computer reame	Tialdware	Auvancou	System rotecao	II Homoto	
Remote Assist	ance				
Allow Rem	ote Assista	nce connec	tions to this compu	ıter	
What happens	s when I en	able Remot	e Assistance?		
				Advanced	
Densels Densel					
Remote Deskt	ор				
Choose an op	tion, and th	en specify w	ho can connect.		
O Don't allow	remote co	nnections to	this computer		
	Tomoto co		uns computor		
Allow remo	te connect	ions to this o	omputer		
Allow co	onnections	only from co	mputers running F	Remote	
Deskto	p with Netw	ork Level Au	uthentication (reco	mmended)	
					_
Help me choo	Se			Select Users.	

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



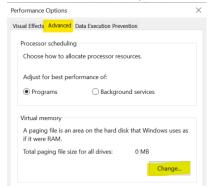
b.	Locate and click <b>Advanced system settings</b> .
	Related settings
	BitLocker settings
	Device Manager
	Remote desktop
	System protection
	Advanced system settings

Rename this PC (advanced)

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

System Properties
Computer Name Hardware Advanced System Protection Remote
You must be logged on as an Administrator to make most of these changes. Performance
Visual effects, processor scheduling, memory usage, and virtual memory           Settings.
User Profiles Desktop settings related to your sign-in Settings
Startup and Recovery System startup, system failure, and debugging information Settings
Environment Variables_ OK Cancel Apply

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**.



Paging file size for each		
Drive [Volume Label]	Paging File Size (MB)	
C: F:	None	
L.	None	
Selected drive:	C:	
Space available:	16115 MB	
O Custom size:		
Initial size (MB):		
Maximum size (MB):		
O System managed s	ize	
No paging file	Se	t
otal paging file size fo	r all drives	
Minimum allowed:	16 MB	
Recommended:	1663 MB	
Currently allocated:	O MP	

- 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 <u>Publish a VM</u>.
- 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 <u>Use VM Disk for Template</u>

# **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.

Refine	Actions		$\checkmark$
	1 storage pool se	lected	Clear
Local Disk	Edit Storage P Remove Stora Convert Image Expand Image Remove Disks Upload Disks	ge Pool e e	
Local RAM	Active Alerts	; (0)	>
	within past 30 da	ays	Show all
	Metadata		$\sim$
Hive-CE-Local-NFS	Name	Hive-CE-I	_ocal-NFS
	VMs		0

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

SOURCE		
1 Storage Pool		
Hive-CE-Local-NFS		
2 Image Name		
Hive-CE-VM.qcow2		•
③ Type		
Auto Detect		•
DESTINATION		
Storage Pool		
Hive-CE-Local-NFS		•
Filename	Output Format	
Hive-CE-Template	QCOW2 (Thin)	•
Cancel		Save

- 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.



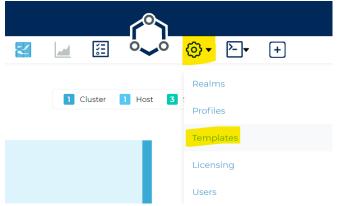
- f. Select QCOW2 (Thin) for the Output Format.
- g. Click Save.
- 3. Once the **Convert Disk** task is completed, continue to <u>Add Template from</u> <u>Existing Disk</u>.

2 🖬 🕅		@ <b>•</b>	>_▼	+	
	Tasks				×
✓ Convert Disk Completed: 100% Description: Converting disk Hiv Template.qcow2 with format qc		comple	ated 10/27/2 ated 10/27/2 auto to Hiv	21 6:50AM	

## 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. Manage Templates





### **Template Resources**

Template Name			REQUIRED
Hive-CE-Template			
CPU	Memory (GB	)	
2 •	4		
OS	Boot Mode		
Windows 10 🗸	UEFI		•
Display Driver			
Cirrus			•
Description			
Base Windows 10 21H1, All updates - current as of 10/2	7/2021		
Cancel		Back	Next

**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.

**Disk Configuration** 





Add Disk	
Specify a disk to add to this	Template
Disk Type	
Existing disk	•
Storage Pool	
Hive-CE-Local-NFS	•
Disk	
Hive-CE-Template.qcow2	•
Driver	
VirtlO	•
Cancel	Submit

- 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.

#### Networking Configuration

No networking interfaces defined.  Add Network Add a network device to this Virtual Machine.  Network Production VLAN ID 0 Driver VirtIO	NETWORKING		- Remove	+ Add
Add a network device to this Virtual Machine.          Network         Production         VLAN ID         0         Driver	No networking interfaces defined.			
Add a network device to this Virtual Machine.          Network         Production         VLAN ID         0         Driver				
Network       Production       VLAN ID       0       Driver		Add	Network	
Production · · · · · · · · · · · · · · · · · · ·		Add a network dev	ice to this Virtual Mac	hine.
VLAN ID o Driver		Network		
o Driver		Production		•
Driver				
		0		
VirtIO		Driver		
		VirtlO		•
			_	
Cancel Submit		Cancel		Submit

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.

Name	Hive-CE-Template
Pools	
OS	Windows 10
State	available

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.

live Fabric		$\sim$		° <b>~</b> ° ⊚• ⊵•	+	Q	
Refine by RES	Back		1 Cluster	1 Host 3 Storage Pool	Refine	Actions	~
Hosts	>					1 cluster selected	Clear
Storage Pools	>				Local Disk	Configure Desktop E Restart Storage Serv Disable Hive Sense Configure Data Prot	vices
						Upgrade Cluster	
						Active Alerts (0)	>
						within past 30 days	Show al
	Hive Fabric			Hive-CE	Local RAM	Metadata	
						Name	Hive Fab

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

Hide realms		
Allow user release of desktop		
Auto connect desktop		
wo-Factor Authentication (2FA)		
nable Hive Fabric Gateway		
nable Physical PC Brokering		

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

Logo	MAX 250KB	Favicon	MAX 32KB	Background	MAX 10MB *
hive_logo.png	<u>ل</u> ت.	favicon.ico	1	None	1
Background Colo	r		Main Color		
#FAFAFA			#54C7F2		_
Text Color			Button Text Co	blor	
#2A2A2A			#2A2A2A		_
Disclaimer Text (N	4arkdown Sup	oported)			
					*
Cancel				Back	Save

Look and Feel

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.

(), Hive <b>lO</b>					8
Hive Fabric	×	🔄 🗄 👡 🎯 - 🔄 (	+	Q	
Refine by RESET	Back	Cluster Host 3 Storage Pool	Refine	Actions	~
Yests     >       Storage Pools     >       YM Pools     >			Local Disk	1 cluster selected Configure Desktop B Restart Storage Servi Disable Hive Sense Configure Data Prote Upgrade Cluster	ices
	Hive Fabric	Hive-CE	Local RAM	Active Alerts (0) within past 30 days Metadata	> Show all
				Clusterid eb46a6ea-5cb	Hive Fabric of-4fca-a5cf- ib718b621b3
			Hive-CE-Local-NFS	CMA Hostname IP	Hive-CE 10.10.1.32

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

Enable Hive Fabric Broker		
Hide realms		
Allow user release of desktop		
Auto connect desktop		
Two-Factor Authentication (2FA)		
Enable Hive Fabric Cateway		
Enable Physical PC Brokering		

Broker Configuration

- 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.

External Address (FQDN)		REQUIRED
remote.customer.com		
Client Source Isolation	Persistent Port Assignment	
PORTS	- Remove 🖉 Edit	+ Add
No Host ports mapped		
Cancel	Back	Save

**Gateway Settings** 



9. Click on **+ Add**.

PORTS		- Remove 🖉 Edit	+ Add
No Host ports mapped			
	Port Configuration		
	Host		
	Hive-CE	-	
	Start Port		
	40000		
	End Port		
	40005	\$	
	Cancel	Submit	

- 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**. Gateway Settings

remote.customer.com	1		REQUIRED
Client Source Isolati	on	Persistent Port Assignment	
PORTS		- Remove	+ Add
Host	Hive-CE		
Start Port End Port	40000 40005		
Cancel		Back	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 portforwarding 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-forremote-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.





	In User/Group to SA-EXAMPLE pecify the user assignment method.
Assign to	
AD Group	demousers
Realm	
HIVEIO	•
	the specified AD user or group assigned has the permissions to access SA-EXAMPLE
Cancel	Assign

- 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.

				8
X	🖬 🗄 °~° @• Þ• 🕂		Q	
Back	1 Pool 1 Virtual Machine	Refine	Actions	>
			1 virtual machine selecte	d Clear
	Virtual Machines		Active Alerts (0)	>
			within past 30 days	Show all
			Metadata	~
			VM name	SA-EXAMPLE
			Host	Hive-CE
			Status	Ready
			AD Group	demousers
			Data Protection Resource Utilization	Disabled
			CPU CPU	63%

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

	Logged in as demouser02
GUEST ASSIGNMENTS 1 total	
Windows	
SA-EXAMPLE	
SA-Example (Ready)	

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.

°, Hive <b>l⊂</b>	)						8
Hive Fabric			🛃 📓 🏭	o <b>~</b> o ⊚• ⊵•	+	Q	
	<b>^</b>						
Refine by	RESET	Back	1 Cluster 1	Host 3 Storage Pool	Refine	Actions	~
✓ Hosts	>					1 cluster selected	Clear
VM Pools	>				Local Disk	Configure Desktop E Restart Storage Serv Disable Hive Sense Configure Data Prote Upgrade Cluster	vices
						Active Alerts (0)	>
		Hive Fabric		Hive-CE	Local RAM	within past 30 days	Show all
		Hive Fabric		HIVE-CE	LDCal RAM	Metadata	~
						Clusterid eb46a6ea-5cb	Hive Fabric bf-4fca-a5cf- 5b718b621b3
					Hive-CE-Local-NFS	CMA Hostname IP	Hive-CE 10.10.1.32
	w					Linence	

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

**Broker Configuration** 

Enable Hive Fabric Broker		1
Hide realms		
Allow user release of desktop		
Auto connect desktop		
Two-Factor Authentication (2FA)		
Enable Hive Fabric Gateway		
Enable Physical PC Brokering		
Cancel	Back	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**.

Physical PC RDP Settings



#### Publishing a Physical Desktop

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



#### Add Physical Desktop

Physical Desktop Na	ime		REQUIRED
PD-Example			
Address			REQUIRED
10.19.180.120			REQUIRED
Assign to			REQUIRED
User - der	mouser02		
Realm			REQUIRED
HIVEIO			•
Select realm			
OS			REQUIRED
Windows 10			•
Select OS			
Cancel		•	Save

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 (<u>https://remote.company.com</u>) 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.

CUEST ASSIGNMENTS 1 total				
Windows				
PD-Example				
Physical Desktops (Ready)				
S RDP				

Logged in as demouser02

#### 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**.

$\frown$					
in the second se	000	828			
Host	Storage	User			
Realm	Profile	Template			
2					
Desktop Pool	Application Pool	Virtual Machine			
	Cancel				
			Statele	ess Pool	
	Desktop F	Pool Name			REQUIRED
	W10-State	eless-Demo			
		ne for the Desktop Pool			
	Desktop	eed Name	REQUIRED	Stateless Pool	
	WIOSTLS		REQUIRED	Creates a Stateless Desktop Pool.	
	11100120	2110		creates a stateless Deartop Pool.	
	Template		REQUIRED	Operating System	
	Hive-CE-	Template	•	Windows 10	
	CPUs			Memory (GB)	REQUIRED
	2		•	4	
	-			Destile	
	Storage	Local-NFS	REQUIRED	Profile Hive-CE-Profile	REQUIRED
	The CE	Local-IVI 5		The-CE-Prome	·
	Available	Desktops	REQUIRED	Max Desktops	
	10			36	
	Host Affin	ity			REQUIRED
	Hive-CE	×			~
	Enable Da	ata Protection			
	Cance	91			Save

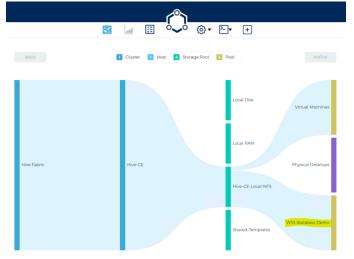
- 3. Complete the settings for the **Desktop Pool**.
  - a. Enter the **Desktop Pool Name** (no special characters.)
  - b. Enter the **Desktop Seed Name** (limited to 11 characters.)
  - c. Leave the pool set to Stateless Pool or toggle to create a Persistent Pool.
  - d. Select the **Template** from 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.



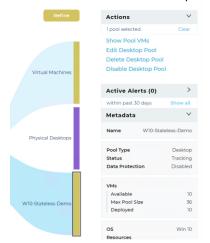
- j. Set the Available Desktops count (guests that will be in a Ready state,)
- k. Set the **Maximum Desktops** count (high water mark for number desktops.)
- I. Remove any hosts from **Host Affinity** that should NOT participate in the Desktop Pool (default is all hosts selected.)
- m. If desired, toggle 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.



Back	1 Pool 10 Virtual Machine Refine			Actions	>	
				l virtual machine selected	Clear	
	W10-Stateless-Demo			Active Alerts (0)	>	
				within past 30 days St	how all	
	0004			Metadata	$\sim$	
	Nam Stat CPU	us Ready	0008	VM name W10STLSDEN	MO0001	
		nory 23.97%		Host H Template Hive-CE-Te Pool W10-Stateless		
0002	0005		0005			Ready Disabled
		0009	0010	Resource Utilization CPU Memory	69% 23%	
0003	0006			OS Wind CPUs Memory	idows 10 2 4 GB	
				Storage Type Name WIOSTI SDEM	Disk	

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.

	Logged in as	s demouser02	
GUEST ASSIGNMENTS 2 total			Settings
Windows	Windows		
W10-Stateless-Demo	SA-EXAMPLE		
Unassigned	SA-Example (Ready)		
G∂ RDP			

## **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: <u>https://i0.10.1.32/broker</u> or <u>https://immersion32.hiveio.lan/broker</u>

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



### **Broker - Gateway RDP Access**

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

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

- 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**.

	Username	
	demouser02	
	Password	
		$\odot$
	Realm	
	HIVEIO	•
() Hivel□	Login	

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

#### Logged in as demouser02

Windows Test-RAM Unassigned	GUEST ASSIGNMENTS 1 total	Se
Unassigned		
	Test-RAM	
	Unassigned	
	G RDP 📴 HTML5	



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

	Logged in as demouser02	
GUEST ASSIGNMENTS 1 total		Settings
$\sim$		
Windows		
Test-RAM		
Unassigned		

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,)

GUEST ASSIGNMENTS 1 total

Windows					
Test-RAM					
TSTRAM0041 (Ready)					
<b>G</b> ⊗ RDP		Release			

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**.

TTTTTT	Username		
	demouser02		
	Password		
			0
	Realm		
	HIVEIO		-
	TIVEIO		•
(°), Hivel⊙		Login	
		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.

CUEST ASSIGNMENTS 1 total

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

immersion.hiveio.com	32943 wan	ts to ×				
See text and images copied to the clipboard						
	Allow	Block				

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

	ive Fabr		gle Chrom	e											×
	immer	sion.hi	/eio.com	32943/0	lient/co	nnect?gu	est=TST	RAM004	l.					Ċ	Ð
Recy	ycle Bin														
Mic	Crosoft dge										-16				
															_
Ŧ	(	С	Ħ	е	-	•				RA	^ ¶	⊋ 4»)	5:25 A 11/9/2		ב

## **Hive Fabric Client Access**

HivelO 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.

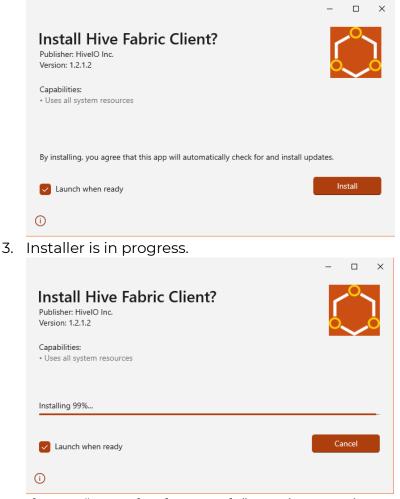
https://support.hiveio.com/portal/en/kb/articles/using-the-hive-client-desktop-client



### 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.



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 Settings		?	$\times$
Client Settings			
Fabric Address			
Username			
Domain			
Display Selection	) Window		
SSL Options Ignore All SSL Errors Trust Sel	f Signed Certifica	tes	
	Save	Cance	el

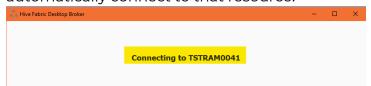
### Client Use

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

🗘 Hive Fabric Desktop Broker - Hive Fabric Client v1.2.1-2	-	$\times$	
			0
Us	sername		
Pa	ssword		
Re	alm		
н	IVEIO		•
()Hivel□	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.

O Hive Fabric Desktop Broker - Hive Fabric Client v1.2.1-2	– 🗆 ×	
Select Pool		
Windows Enabled Desktop Pool		
	Release Guest	
Physical Desktops FileServer		
	Release Guest	
Once connected, the RDP bar i	s set to auto-hide	<u>.</u>
H all immersion.hiveio.com	m _ X	
On the user's client (laptop, thir	n client, desktop,	etc.), the Hive Fabric Client

connection shows as the HivelO icon in the taskbar.



# **Additional Resources**

8.

9.

For additional help, customers may use our online support portal at <u>https://support.hiveio.com</u>. 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 <u>support@hiveio.com</u> to quickly open a support ticket for any questions.

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