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Pivotal HD Service for Pivotal CF

These pages describe how to install, configure and use Pivotal HD Service, version 1.2.1.

The documentation contains the following topics:

- [Overview of Pivotal HD Service](#)
- [Installing and Upgrading Pivotal HD Service for Pivotal CF](#)
- [Creating On-Demand Service Plans](#)
- [Using a Pivotal HD Data Service Instance](#)
- [Troubleshooting a Pivotal HD Service Instance](#)
- [Release Notes](#)

For more information on using Pivotal HD, see the [Pivotal HD Documentation](#) [↗](#).

For more information on using Pivotal CF, see the [Pivotal CF Documentation](#) [↗](#).

Overview

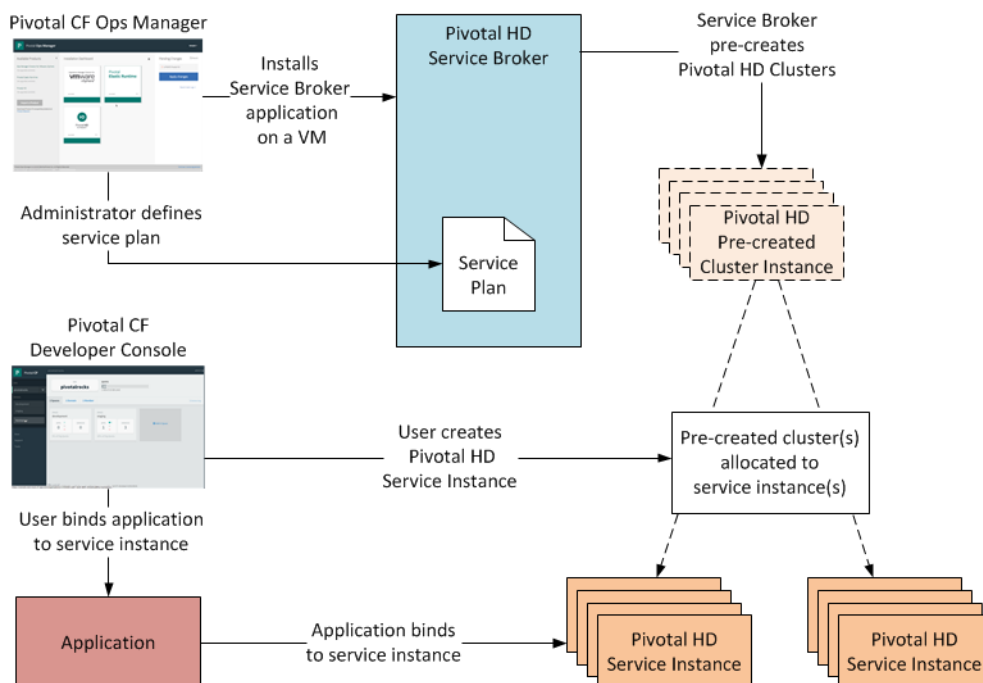
The Pivotal HD Service allows Pivotal CF users to create Pivotal HD clusters on-demand. A cluster is allocated each time a Pivotal CF user creates an instance of the Pivotal HD Service using the Pivotal CF Command Line Interface or Developer Web Console. Pivotal CF users can also create and bind user credentials for each component of the Pivotal HD cluster to any application they push to Pivotal Elastic Runtime.

A Pivotal CF Administrator initially imports the Pivotal HD Service into Pivotal CF Ops Manager, where they define the details of the service plan they wish to offer. The service plan is a blueprint that describes what each instance of a Pivotal HD cluster is comprised of. The definition consists of which Pivotal HD components to include, the number of slave nodes to deploy, and how much CPU, Ram and Disk to use for each virtual machine required for the included Pivotal HD components. The administrator also specifies the maximum number of instances of the service that can be created along with the number to pre-create for rapid allocation to Pivotal CF users. The Pivotal HD Service creates and starts the virtual machines of these pre-created clusters in advance, eliminating the need for Pivotal CF users to wait when creating an instance of the service."

The Pivotal HD Service includes several components from the Pivotal HD 1.1 software stack, including HDFS, YARN and MapReduce2. Additionally, the Pivotal HD Service includes HAWQ and PXF. Lastly, the Pivotal HD Service includes GemFire XD, which is currently available for beta testing purposes. For more details about the individual software components and their versions, please see the [Pivotal HD Enterprise 1.1.1 Release Notes](#).

Figure 1 shows the work flow for creating Pivotal HD clusters using Pivotal HD Service:

Figure 1. Pivotal HD Service Work Flow



Installing and Upgrading Pivotal HD Service for Pivotal CF

- [Prerequisites](#)
- [Installation Steps](#)
- [Upgrading from Version 1.2.0.0 to Version 1.2.1.0](#)
- [About vSphere Networking Configurations](#)

Note: Upgrading Pivotal HD Service from version 1.2.0.0 to version 1.2.1.0 requires that you first delete all Pivotal HD Service instances, resulting in loss of any data stored in those instances. See [Upgrading from Version 1.2.0.0 to Version 1.2.1.0](#).

Prerequisites

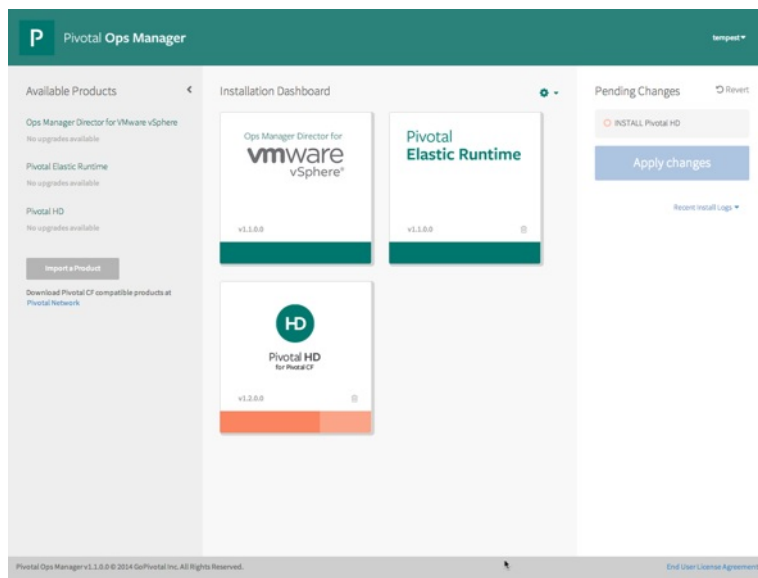
Installing Pivotal HD Service requires the following:

- An installed instance of Pivotal CF
- Pivotal Elastic Runtime installed in the Pivotal CF environment
- Web Browser
- Network access and credentials for the Pivotal Cloud Foundry Ops Manager application

Installation Steps

1. Download the Pivotal HD Service's software binary from [The Pivotal Network](#).
2. Use a Web browser to open the **Pivotal Ops Manager** application. (This application is part of your Pivotal CF installation.)

The **Pivotal CF Ops Manager Installation Dashboard** displays:



3. Click the **Import a Product** button.
The **Add Products** screen displays.
4. Click the **Choose File** button and navigate to the file you downloaded.
The file uploads to your Pivotal CF deployment.
5. Click the **Add** button.
Pivotal Ops Manager adds a new tile for Pivotal HD Service to the Installation Dashboard.
6. Click the **Pivotal HD for Pivotal CF** tile.
7. If it is not already selected, click **Network Settings**.
For additional information and examples about setting up vSphere networking, see [About vSphere Networking](#).

8. Configure the following network settings for the virtual machines in your Pivotal HD cluster instances:

Network Settings

PARAMETER	DESCRIPTION	VALUES
Network Name	The name of the network you want all Pivotal HD virtual machines to reside on. If the network is different than the network you configured in the Ops Manager vSphere settings, you must ensure connectivity between the two networks so that the service can monitor the Pivotal HD virtual machines properly.	
IP Address Subnet	<p>A valid subnet in which to deploy virtual machines.</p> <p>Choose IP addresses that do not overlap with those you assigned to Ops Manager to ensure that Pivotal HD virtual machines and Pivotal CF virtual machines are assigned unique IP addresses.</p> <p>Important: You must include a sufficient number of IP addresses for the number of cluster instances and slaves you define in the Service Plan. Calculate the required number as follows: $N * (S + 10)$ Where:</p> <ul style="list-style-type: none"> ◦ N is the maximum number of Pivotal HD Instances (as defined in the Service Plan) ◦ S is the number of PHD slaves per cluster (as defined in the Service Plan) 	<p>Enter the subnet using CIDR notation. For example: <code>10.10.10.10/16</code>.</p>
Excluded IP Address Range	List any IP addresses you wish to reserve. These addresses will not be used by the Pivotal HD Service to create virtual machines.	<p>Separate multiple ranges with commas. For example:</p> <pre>10.10.10.2-10.10.10.10, 10.10.10.200-10.10.10.254</pre>
DNS Servers	One or more IP Addresses of the Domain Name Servers. .	
Default Gateway IP Address	IP address of the default gateway.	Separate the IP addresses with a comma.

Note: If you make changes to these network configurations, the changes only affect creation of *new* service instances. Any pre-created services instances are destroyed and re-created using the new configurations. Existing service instances are not changed.

9. Click **Save**.

10. Select **On-demand Service Plans** if you want to change the configuration of the on-demand Service Plan. The default Service Plan defines a Pivotal HD cluster that includes HDFS, YARN/MapReduce, HAWQ, and GemFire XD. You can use the default Service Plan as-is, or you can modify the Service Plan for your requirements. See [Creating Service Plans](#).

11. (Optional) Click **Resource Sizes** to view the configured hardware resource sizes for the following resources:

- PHD-Broker
- Route Registrar
- Broker Registrar

- PHD Cleanup Tool
- Compilation (temporary VMs that Ops Manager uses when creating other VMs)

12. Click **Save**.

13. Click the **Installation Dashboard** link.

The **Installation Dashboard** screen displays.

14. Click the **Apply Changes** button.

Ops Manager creates a virtual machine to run the service broker and begins the installation. A progress meter displays the progress of the installation.

When the installation is complete, the Pivotal HD Service Broker deploys the configured number of pre-created instances of Pivotal HD. Information about these deployments are accessible from the BOSH Command Line Interface and not from the Operations Manager user interface. Once the Pivotal HD clusters are deployed, the Pivotal HD Service broker automatically registers the service in the Elastic Runtime marketplace. Once the Service is registered, Pivotal CF users can create instances and gain access to their own Pivotal HD cluster on-demand. To create cluster instances, see [Using Pivotal HD Service](#).

Note: The **Lifecycle Errands** tab allows you to configure whether the PHD Data Service broker is registered with the Cloud Controller and appears in the Services Marketplace. Pivotal recommends that you leave this box checked.

Upgrading from Version 1.2.0.0 to Version 1.2.1.0

To upgrade from version 1.2.0.0 to version 1.2.1.0, you must delete all Pivotal HD cluster instances created by the broker, delete the Pivotal HD Data Services broker, and then you install version 1.2.1.0.

Important: All data and application bindings are deleted when you perform this upgrade procedure.

To upgrade your Pivotal HD Data Service broker from version 1.2.0.0 to version 1.2.1.0:

1. Open the **Pivotal CF Ops Manager** application in a Web browser.

The **Installation Dashboard** displays.

2. Click the Trash icon in the Pivotal HD Data Service tile.

3. Click **Apply Changes**.

Pivotal Ops Manager begins to delete the Pivotal HD Service. When Ops Manager indicates that the changes have been applied, the Pivotal HD Data Service service broker is deleted and its tile no longer appears in the dashboard.

4. Run the following commands from a location where you have the cf client installed. You can download the cf client from: <https://github.com/cloudfoundry/cli#Downloads> [↗](#):

```
cf purge-service-offering p-hd
cf delete-service-broker phd-broker
```

5. Follow the instructions at [Advanced Troubleshooting with the BOSH CLI](#) [↗](#) to access the BOSH Director from the Ops Manager VM.

6. Log in to the BOSH Director.

7. Run the following command:

```
bosh delete release phd-broker
```

8. Run the following command to list all deployments:

```
bosh deployments
```

This command displays a list of deployments similar to the following:

```
+-----+-----+-----+
| Name           | Release(s)           | Stemcell(s)           |
+-----+-----+-----+
| cf-5f2b8491a89b0598c95c | cf/169               | bosh-vsphere-esxi-ubuntu/2366 | | |
| |               | push-console-release/6 | |               |
| |               | runtime-verification-errands/1 | |               |
+-----+-----+-----+
| phd-1           | phd/354              | bosh-vsphere-esxi-centos/1868 |
+-----+-----+-----+
| phd-2           | phd/354              | bosh-vsphere-esxi-centos/1868 |
+-----+-----+-----+
| p-hd-cbfff6614fcdffae83292 | phd-broker/350       | bosh-vsphere-esxi-centos/1868 |
+-----+-----+-----+
```

- Note the rows that begin with “phd-” and are followed by a number. These rows represent deployments of Pivotal HD cluster instances. For each of these deployments, run the following command:

```
bosh delete deployment phd-<#> --force
```

For example:

```
bosh delete deployment phd-1
```

- Run the following command:

```
bosh delete release phd
```

After completing the above steps, the Pivotal HD Service and all Pivotal HD instances are removed from your Pivotal CF deployment.

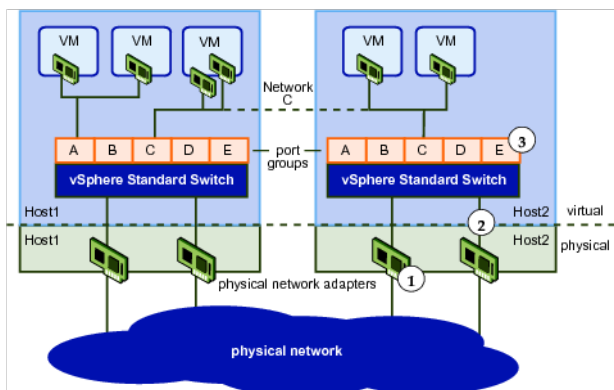
- Download and install the Pivotal HD Data Service version 1.2.1.0 software using Pivotal CF Ops Manager. See [Installation Steps](#).

About vSphere Networking Configurations

This section describes vSphere configurations that you define on the **Network Settings** page.

When configuring the Pivotal HD Service, you define which vSphere network you want the Pivotal Service Broker to use when deploying the virtual machines that comprise each Pivotal HD cluster. This network can either be the same or different as the one you have configured Pivotal CF Operations Manager to use when deploying Pivotal CF.

Consider the following vSphere network diagram:



If Operations Manager has been configured to deploy Pivotal CF and any imported Services to network A in the picture above, you can configure the Pivotal HD Service to also deploy Pivotal HD clusters to network A. If you choose to use the same network as Pivotal CF, it is likely you will use IP addresses from a single IP subnet across all deployments. Should you choose to use IP addresses from the same subnet, you must ensure that Operations Manager and the Pivotal HD Service do not attempt to use the same IP addresses in their deployments.

To achieve this, you must exclude the IP range you want the Pivotal HD deployments to use in the Ops Manager vSphere network settings and you must exclude the IP range you want Ops Manager deployments to use in the Pivotal HD Service's network settings.

Here is an example of how you might do that if you were deploying everything to the IP subnet 10.0.0.0/16. In this example, we are reserving the first 512 IP Addresses for Operations Manager and the next 512 IP addresses for the Pivotal HD Service.

vSphere Network Settings Tab:

- Network Name: `vSphereNetwork_A`
- IP Address Subnet: `10.0.0.0/16`
- Excluded IP Address Range: `10.0.2.1-10.0.3.254` (IP addresses s you want the Pivotal HD Service to use in Pivotal HD deployments)
- DNS Servers: `8.8.8.8`
- Default Gateway IP Address: `10.0.0.1`

Pivotal HD Service Network Settings Tab:

- Network Name: `vSphereNetwork_A`
- IP Address Subnet: `10.0.0.0/16`

- Excluded IP Address Range: `10.0.0.1-10.0.2.0` (IPs you want Operations Mgr to use in PCF deployments)
- DNS Servers: `8.8.8.8`
- Default Gateway IP Address: `10.0.0.1`

Alternatively, if you configure Ops Manager to deploy Pivotal CF to Network A and the Pivotal HD Service to deploy PHD clusters to Network C. The only requirement in this case is that the two networks be able to route traffic to each other.

Creating Pivotal HD On-Demand Service Plans

Overview

A Pivotal CF Administrator can define the details of the Pivotal HD service plan they wish to offer to their Pivotal CF users. An on-demand service plan is a blueprint that describes the components and configuration of each instance of a Pivotal HD cluster. The Pivotal HD Service includes default values for the service plan, which can be changed by the Pivotal CF Administrator.

- [Creating an On-Demand Service Plan](#)
- [Modifying an On-Demand Service Plan](#)

Creating an On-Demand Service Plan

To create an On-Demand Service Plan:

1. Use a Web browser to open the **Pivotal Ops Manager** application. (This application is part of your Pivotal Cloud Foundry installation.)
2. Click the **Pivotal HD for Pivotal CF** tile.
3. Click **On-demand Service Plans**.
The **On-demand Service Plans** screen displays.
4. Configure the following display options for your Pivotal HD cluster plans. This information displays in the Pivotal CF Console and Command-line Interface.

Informational Display

PARAMETER	DESCRIPTION
Service Plan Name	Name of the Service Plan. You use this name when creating Pivotal HD service instances.
Service Plan Feature Bullet 1	These fields are used by the Pivotal CF Administrator to describe the details of the service plan to Pivotal CF users. The values in these fields display to users in the Marketplace section of the Pivotal CF Developer Console.
Service Plan Feature Bullet 2	
Service Plan Feature Bullet 3	

5. Enter the following values regarding the cost of Pivotal HD clusters. These fields are for display only. The values in these fields display to users in the Cloud Foundry CLI and in the Marketplace section of the Pivotal CF Developer Console.

Cost Information

PARAMETER	DESCRIPTION	VALUES
Amount	Cost in US dollars to create a Pivotal HD cluster instance from this Service Plan	US dollars
Unit of Measurement	Unit of measurement used for billing, for example: Monthly, or weekly.	Text

6. The Pivotal CF Administrator should ensure that the Pivotal HD Service does not oversubscribe the underlying vSphere resources. Enter the following values for the cluster defined in your service plan:

Cluster Instances

PARAMETER	DESCRIPTION	VALUES
-----------	-------------	--------

PARAMETER	DESCRIPTION	VALUES
Maximum Number of Instances	Maximum number of Pivotal HD instances that users can create from this Service Plan.	<ul style="list-style-type: none"> Minimum: 1 This field must not be left blank.
Number of Pre-Created Instances	<p>Pivotal HD Service creates a reserved pool of Service Plan Instances to allocate to Pivotal CF Users. When an Service Plan Instance is allocated in Pivotal CF Elastic Runtime, the service back-fills the pool.</p> <p>The Service never pre-creates more instances than the configured Maximum Number of Instances.</p>	<ul style="list-style-type: none"> Minimum: 1 Maximum: Maximum Number of Instances Created (configuration value, see above) This field must not be left blank.

7. Fill in the remaining fields to define the configuration of the Pivotal HD clusters that will be created by this Service Plan.

For more information about Pivotal HD and its components, see the [Pivotal HD Documentation](#).

Pivotal HD Cluster Configuration

PARAMETER	DESCRIPTION	VALUES
Service Plan Components:	Select the HD components you want included in this Service Plan. HDFS is always included by default in a Service Plan. To create a Service Plan that only offers a Hadoop service, select only the YARN/MapReduce2 option.	<ul style="list-style-type: none"> Yarn/MapReduce2 HAWQ GemFire XD
Number of PHD Slaves	Each instance of a PHD Slave virtual machine runs all applicable slave processes for the PHD components that are included in the Service Plan. If only Yarn/MapReduce2 is selected above, then the slave runs only that NodeManager process. If HAWQ is also selected, the HAWQ Segment Server process is included. Note that the HDFS DataNode process always runs on these slaves.	<ul style="list-style-type: none"> Minimum: 1 Default: 1
PHD Slave CPU		<ul style="list-style-type: none"> Minimum: 1 Maximum: 64 Default: 2
PHD Slave RAM in MB		<ul style="list-style-type: none"> Minimum: 8192 Maximum: 1048576 Default: 8192
PHD Slave Persistent Disk in MB		<ul style="list-style-type: none"> Minimum: 12288 Maximum: 65011712 Default: 12288
NameNode CPU	The NameNode runs on its own dedicated virtual machine.	<ul style="list-style-type: none"> Minimum: 1 Maximum: 64 Default: 1 This field must contain a power of 2.
NameNode RAM in MB		<ul style="list-style-type: none"> Minimum: 2048 Maximum: 1048576 Default: 2048

PARAMETER	DESCRIPTION	VALUES
NameNode Persistent Disk in MB		<ul style="list-style-type: none"> Minimum: 8192 Maximum: 1048576 Default: 8192
ResourceManager CPU	The ResourceManager runs on its own dedicated virtual machine.	<ul style="list-style-type: none"> Minimum: 1 Maximum: 64 Default: 1 <p>This field must contain a power of 2</p>
ResourceManager RAM in MB		<ul style="list-style-type: none"> Minimum: 2048 Maximum: 1048576 Default: 2048
ResourceManager Ephemeral Disk in MB		<ul style="list-style-type: none"> Minimum: 5120 Maximum: 1048576 Default: 5120
HAWQ Master CPU	The HAWQ Master runs on its own dedicated virtual machine. If you do not specify HAWQ as part of this cluster, these fields are ignored.	<ul style="list-style-type: none"> Minimum: 1 Maximum: 64 Default: 1 <p>This field must contain a power of 2</p>
HAWQ Master RAM in MB		<ul style="list-style-type: none"> Minimum: 2048 Maximum: 1048576 Default: 1
HAWQ Master Persistent Disk in MB		<ul style="list-style-type: none"> Minimum: 4096 Maximum: 1048576 Default: 4096
Gemfire XD Locator CPU	The Gemfire XD Locator runs on its own dedicated virtual machine. If you do not specify GemFire XD as part of this cluster, these fields are ignored.	<ul style="list-style-type: none"> Minimum: 1 Maximum: 64 Default: 1 <p>This field must contain a power of 2</p>
Gemfire XD Locator RAM in MB		<ul style="list-style-type: none"> Minimum: 1024 Maximum: 1048576 Default: 1024
Gemfire XD Locator Persistent Disk in MB		<ul style="list-style-type: none"> Minimum: 3072 Maximum: 1048576 Default: 3072

8. Click the **Save** button.

9. (Optional) Click

Modifying an On-Demand Service Plan

Note: Modifications to the default On-Demand service plan settings only apply to any new *new* service instances that users create. If you modify the service plan, any pre-created service instances are destroyed and new, pre-allocated instances are created with the new configurations. Existing service instances are not modified.

To modify an On-Demand Service Plan:

1. Use a Web browser to open the **Pivotal Ops Manager** application. (This application is part of your Pivotal Cloud

Foundry installation.)

2. Click the **Pivotal HD for Pivotal CF** tile.
3. Click **On-demand Service Plans**.
The **On-demand Service Plans** screen displays.
4. Change any of the fields that define the service plan.
5. Click the **Save** button.

Using a Pivotal HD Data Service Instance

After the Pivotal CF Administrator deploys the Pivotal HD Service, Pivotal CF Users can create instances of the service, resulting in a pre-deployed Pivotal HD cluster that is allocated for their use. Pivotal CF Users can subsequently bind applications that were pushed from Elastic Runtime to a Pivotal HD Service Instance in order to create and embed user credentials and API endpoints.

- [Creating Pivotal HD Cluster Instances](#)
- [Deleting Pivotal HD Cluster Instances](#)
- [Binding Applications to Pivotal HD Cluster Instances](#)
- [Unbinding Applications from Pivotal HD Cluster Instances](#)

Creating and Using Pivotal HD Service Instances

You use either the Pivotal CF Developer Console or the Pivotal CF command line interface to create Pivotal HD Service Instances.

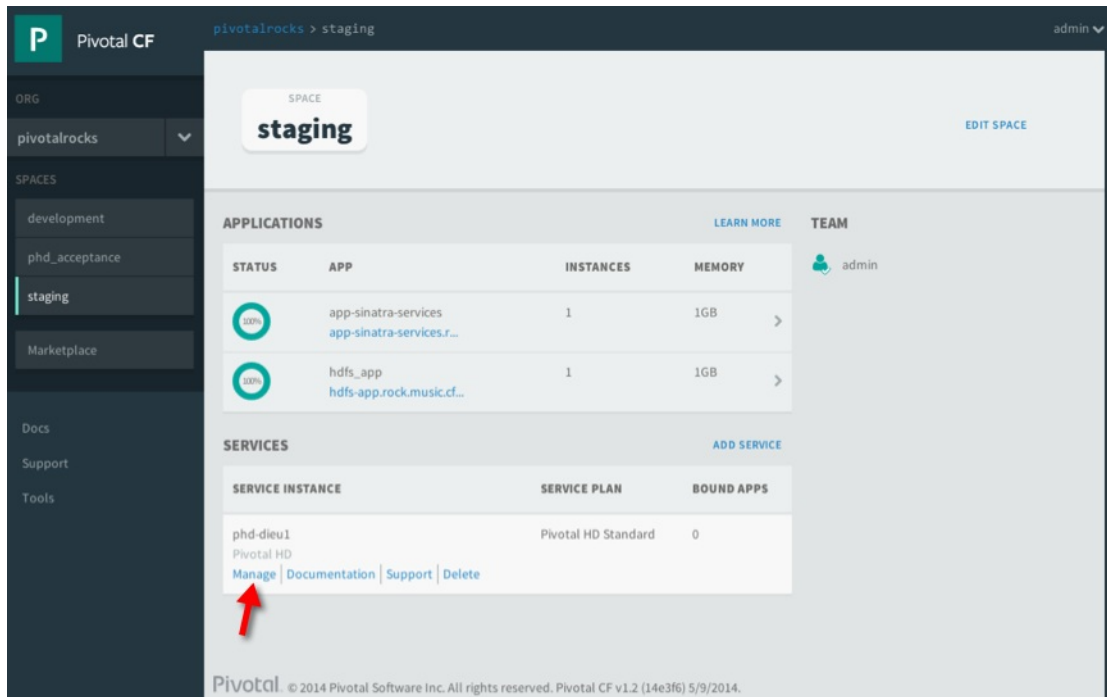
Pivotal CF Developer Console

To create an instance of a Pivotal HD Service Plan using the Pivotal CF Developer Console:

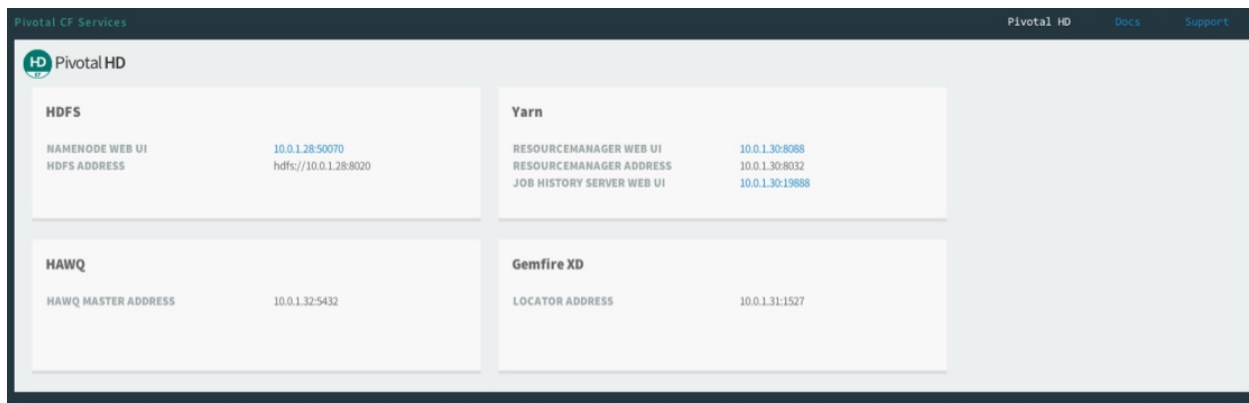
1. Log in to the **Pivotal CF Developer Console**.
2. Select your Org from the drop-down list on the left.
3. Select **Marketplace** from the left navigation menu.
The **Services Marketplace** displays.
4. Select **Pivotal HD**.
The **Pivotal HD Service** page displays.
5. Click **Create a Service**.
The **Add a new Service Instance** page displays.
6. Enter a name for this PHD service instance.
7. Select a space from the **Add to Space** drop-down list.
8. (Optional) Select an application from the **Bind to App** drop-down list. The drop-down list displays available applications previously configured for this Org and Space. If you do not want to bind an application, select **[do not bind]**.
9. Click **Add**.

A Pivotal HD Service Instance is created, resulting in allocation of an on-demand Pivotal HD Cluster. The service instance displays in the list of services for the current space:

Pivotal CF Developer Console



Click **Manage** to view the **Service Instance Dashboard** for the service:



You can click the links to access the Web interface for a component.

For more information about the the Pivotal CF Developer Console, see [Getting Started with the Developer Console](#).

Pivotal CF Command Line

To create a Pivotal HD cluster instance:

1. Install the Pivotal CF Command Line Interface. For more information on the Pivotal CF Command Line Interface, see [Installing the Pivotal CF CLI](#).
2. Log in to Pivotal CF using the Pivotal CF CLI. See [Getting Started with cf v6](#).
3. Run the following commands:


```
$ cf login [-a API_URL] [-u USERNAME] [-p PASSWORD] [-o ORG] [-s SPACE] (This command takes care of logging in, and also targets the correct org and space simultaneously. If you are already logged in, you can run the following command to target an org and space: $ cf target -o <organization> -s <space name>.)
```

```
$ cf marketplace (This command displays the name of the service plan.)
```

```
$ cf create-service p-hd [Service Plan Name] [Service Instance Name] (This command creates the service instance.)
```

```
$ cf services (This command displays the service instance.)
```

Where:

- `[Service Plan name]` is the name of the Service Plan you see when you view the Pivotal HD Service in the Elastic Runtime marketplace. Note that the Service Plan name is defined by the Pivotal CF Administrator. For more

information on Service Plan definition, see [Creating a Service Plan](#).

- `[Service Instance Name]` is a descriptive name of the instance you wish to use for this particular instance of the Service.

For example:

```
$ cf login -a https://api.rock.music.cf-app.com -u admin -p 961fdc9cd6a85031f7eb -o pivotal -s staging
API endpoint: https://api.rock.music.cf-app.com
Authenticating...
OK

Targeted org pivotal

Targeted space staging

API endpoint: https://api.rock.music.cf-app.com (API version: 2.2.0)
User:      admin
Org:       pivotal
Space:     staging
$ cf marketplace
Getting services from marketplace in org pivotal / space staging as admin...
OK

service  plans  description
p-hd      Standard  Pivotal HD is the industry's most full-featured Hadoop distribution.
$ cf create-service p-hd Standard myPHDInstance
Creating service myPHDInstance in org pivotal / space staging as admin...
OK
$ cf services
Getting services in org pivotal / space staging as admin...
OK

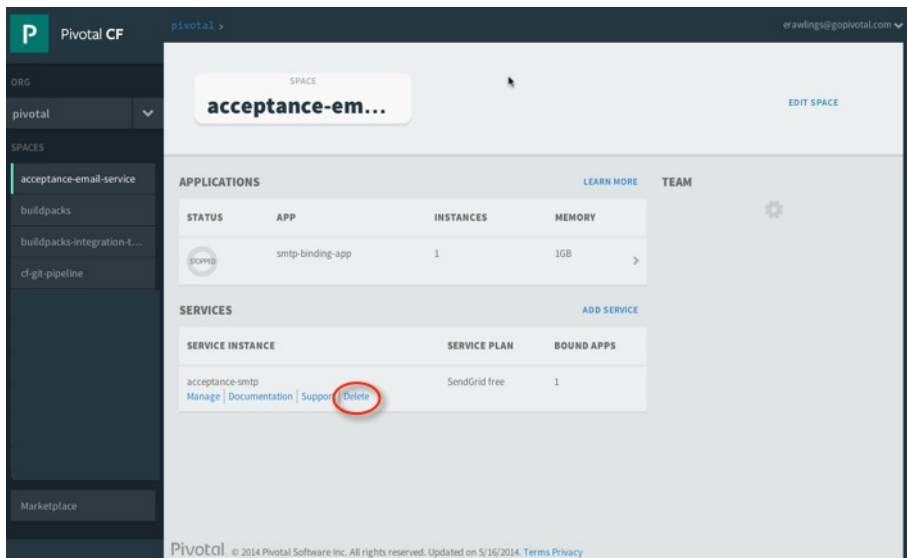
name          service  plan      bound apps
myPHDInstance  p-hd     Standard  app-sinatra-services
```

Deleting Pivotal HD Service Instances

You can delete a Pivotal HD Service Instance when it is no longer needed. Doing so will permanently delete the allocated Pivotal HD Cluster and any data will be lost.

Pivotal CF Developer Console

1. Log in to the **Pivotal CF Developer Console**.
2. Select your Org from the drop-down list on the left.
3. Select the space where your Pivotal HD cluster instance is deployed from the left navigation menu.
A list of applications and services instances displays.
4. Locate the row under **Services** that contains the service instance you want to delete and click **Delete**.
A confirmation dialog box displays.



Pivotal CF Command Line

1. Log in to Pivotal CF using the Pivotal CF CLI. See [Getting Started with cf v6](#).
2. Run the following commands:


```
$ cf login [-a API_URL] [-u USERNAME] [-p PASSWORD] [-o ORG] [-s SPACE] (This command takes care of logging in, and also targets the correct org and space simultaneously. If you are already logged in, you can run the following command to target an org and space: $ cf target -o <organization> -s <space name> .)
$ cf services (This command displays a list of service instances.)
$ cf delete-service [Service Instance Name]
```

Where [Service Instance Name] is the name of the instance you are deleting.

For example:

```
[root@rock ~]# cf login -a https://api.rock.music.cf-app.com -u admin -p 961fdc9cd6a85031f7eb -o pivotal -s staging
API endpoint: https://api.rock.music.cf-app.com
Authenticating...
OK

Targeted org pivotal

Targeted space staging

API endpoint: https://api.rock.music.cf-app.com (API version: 2.2.0)
User:      admin
Org:       pivotal
Space:     staging
[root@rock ~]# cf services
Getting services in org pivotal / space staging as admin...
OK

name          service  plan      bound apps
myPHDInstance  p-hd     Standard  app-sinatra-services

[root@rock ~]# cf delete-service myPHDInstance

Are you sure you want to delete the service myPHDInstance ? y
Deleting service myPHDInstance in org pivotal / space staging as admin...
OK
```

Binding an Application to a Pivotal HD Cluster Instance

When a Pivotal CF User binds an application to a Pivotal HD Service Instance, user account credentials are automatically created in each software component of the allocated Pivotal HD cluster. Both Credentials and API end-points are returned and included in the `VCAP_SERVICES` environment variable of the bound application.

For more information about binding, see the following topic in the Pivotal CF documentation: [Bind a Service](#).

Viewing Binding Meta Data and Environment Variables

You can view the binding variables using the Pivotal CF Developers Console.

To view the binding variables from the **Pivotal CF Developer Console**:

1. Log in to the **Pivotal CF Developer Console**.
2. Select your Org from the drop-down list on the left.
3. Select the space where your Pivotal HD cluster instance is deployed from the left navigation menu.
A list of applications and services instances displays.
4. Locate your Pivotal HD instance in the list of Bound Services and click **Credentials**.
A dialog box displays the credentials for the components of the Pivotal HD instance. For example:

PHD5 CREDENTIALS

hadoop_username	u25e292246de1402
hdfs	{:configuration=>{: "fs.defaultFS"=>"hdfs://10.0.1.1:8020/"}}
yarn	{:configuration=>{: "yarn.resourcemanager.address"=>"10.0.1.1:8020/"}}
hawq	{:uri=>"jdbc:postgresql://10.0.1.19:5432/defaultdb;"}
gemfirexd	{:uri=>"jdbc:gemfirexd://10.0.1.20:1527/user=u;"}

OK

You may need to copy the contents of each field and paste them into a text editor to view them.

Binding an Application using the Pivotal CF Developer Console

1. Log in to the **Developer Console**.
2. Select your Pivotal HD Cluster service.
3. Select the space where the application you want to bind is deployed.
A list of deployed applications and services displays.
4. Locate the row containing the application and click the > link.
A page displays that show the bound services and instances for this application.
5. Click **Bind**
A list of a available services displays.
6. Click the **Bind** button for the service you want to bind to this application.

Binding an Application using the Pivotal CF Command Line

1. Log in to Pivotal CF using the Pivotal CF CLI. See [Getting Started with cf v6](#).
2. Run the following commands:


```
$ cf login [-a API_URL] [-u USERNAME] [-p PASSWORD] [-o ORG] [-s SPACE] (This command takes care of logging in, and also targets the correct org and space simultaneously. If you are already logged in, you can run the following command to target an org and space: $ cf target -o <organization> -s <space name>.)
```

```
$ cf services (This command displays a list of service instances.)
```

```
$ cf bind-service <application> <service instance name>
```

For example:

```
[root@rock ~]# cf login -a https://api.rock.music.cf-app.com -u admin -p 961fdc9cd6a85031f7eb -o pivotal -s staging
API endpoint: https://api.rock.music.cf-app.com
Authenticating...
OK

Targeted org pivotal

Targeted space staging

API endpoint: https://api.rock.music.cf-app.com (API version: 2.2.0)
User:      admin
Org:       pivotal
Space:     staging
[root@rock ~]# cf services
Getting services in org pivotal / space staging as admin...
OK

name           service  plan      bound apps
myPHDInstance  p-hd     Standard  app-sinatra-services

[root@rock ~]# cf bind-service app-sinatra-services myPHDInstance
Binding service myPHDInstance to app app-sinatra-services in org pivotal / space staging as admin...
OK
TIP: Use 'cf push' to ensure your env variable changes take effect
```

Unbinding an Application from a Pivotal HD cluster instance

You can unbind a bound application from a Pivotal HD cluster instance using either the Pivotal CF Developer Console or the Pivotal CF command line.

Pivotal CF Developer Console

1. Log in to the **Developer Console**.
2. Select your Pivotal HD Cluster service.
3. Select space where the application you want to bind is deployed.
A list of deployed applications and services displays.
4. Locate the row containing the application and click the > link.
A page displays that show the bound services and instances for this application.
5. Locate the bound service instance you want to unbind and click **Unbind**.
A confirmation dialog box displays.

Pivotal CF Command Line

1. Log in to Pivotal CF using the Pivotal CF CLI. See [Getting Started with cf v6](#).
2. Run the following commands:


```
$ cf login [-a API_URL] [-u USERNAME] [-p PASSWORD] [-o ORG] [-s SPACE] (This command takes care of logging in, and also targets the correct org and space simultaneously. If you are already logged in, you can run the following command to target an org and space: $ cf target -o <organization> -s <space name> .)
$ cf services (This command displays a list of service instances.)
$ cf unbind-service <application> <service instance name>
```

Troubleshooting a Pivotal HD Service Instance

This section discusses tools and procedures you can use to diagnose problems with a Pivotal HD cluster instance.

If you need to access a virtual machine in your Pivotal HD cluster or if you need to access the virtual machine that runs Pivotal HD Service, you can use Pivotal CF Ops Manager to display the necessary credentials and URLs. Ops Manager also displays the status of each virtual machine and enables you to download its log files.

- [Locating credentials and URLs of virtual machines in a cluster](#)
- [Accessing the log files of the PHD-Broker virtual machine](#)
- [Using BOSH Director to Examine a PHD Deployment](#)
- [Accessing Pivotal HD Cluster Instance virtual machines using SSH](#)
- [Deleting the Pivotal HD Service Broker from Cloud Foundry](#)

Locating the credentials and URL of the Pivotal HD Service broker

1. Use a Web browser to open the **Pivotal CF Ops Manager** application.
2. Click the **Pivotal HD** tile.
3. Click the **Credentials** tab.
The credentials for the PHD-Broker virtual machine display.
4. Click the **Status** tab.
The IP address of the PHD-Broker virtual machine displays.

Accessing the log files of the PHD-Broker virtual machine

1. Locate the credentials and URL of the PHD-Broker virtual machine as described [above](#).
2. Using this URL and credentials, log in to the PHD-Broker virtual machine using ssh:

```
# ssh vcap@10.0.0.51
vcap@10.0.0.51's password:
Last login: Wed May 7 15:13:04 2014 from 10.0.0.1
[vcap@21c20803-7459-46dc-a0f7-36c70c956db4 ~]
```

3. There are two relevant log files you may want to access:
 - `/var/vcap/sys/log/phd-broker/broker.out` - these are the logs from the PHD-Broker that contain entries about starting the broker, deploying PHD instances, and binding to applications.
 - `/var/vcap/sys/log/phd-broker/phd-broker.stdout.log` - these are the logs from the general shell commands, including bosh deployments. These log files include more detailed output from specific commands and can be useful when trying to debug a specific issue where there was a failure reported in one of the other logs.

Using BOSH Director to Examine a PHD Deployment

You can use the BOSH command-line tools to log in to the BOSH Director to run diagnostic commands that examine a Pivotal CF installation, including your Pivotal HD cluster instances. The BOSH Director runs on the virtual machine that Ops Manager deploys on the first install of the Ops Manager Director for VMware vSphere.

1. Follow the instructions in the [Advanced Troubleshooting with the BOSH CLI](#) [↗](#) to access the BOSH Director from the Ops Manager VM.
2. Log in to the BOSH Director.
3. Run one of the following commands:
 - `bosh deployments`
Displays a list of deployments. For example:

```
$ bosh deployments
```

Name	Release(s)	Stemcell(s)
cf-5f2b8491a89b0598c95c	cf/169 push-console-release/6 runtime-verification-errands/1	bosh-vsphere-esxi-ubuntu/2366
phd-1	phd/282	bosh-vsphere-esxi-centos/1868
phd-2	phd/282	bosh-vsphere-esxi-centos/1868
phd-3	phd/282	bosh-vsphere-esxi-centos/1868
phd-broker-037b5a195ed32bdf4e61	phd-broker/277	bosh-vsphere-esxi-centos/1868

Deployments total: 5

- bosh vms**

Displays a list of virtual machines in the environment for all deployments. To limit the list to a specific deployment, enter its name as the first argument. For example:

```
$ bosh vms phd-3
Deployment 'phd-3'
```

Director task 151

Task 151 done

Job/index	State	Resource Pool	IPs
gfxd-locator/0	running	gfxd-locator	10.0.1.29
namenode/0	running	namenode	10.0.1.27
phd-slave/0	running	worker	10.0.1.30
resourceananager/0	running	resourceananager	10.0.1.28

VMs total: 4

You can also add the `--detail` flag to include the names of each virtual machine. For example:

```
[root@rock ~]# bosh vms phd-3 --detail
Deployment 'phd-3'
```

Director task 152

Task 152 done

Job/index	State	Resource Pool	IPs	CID	Agent ID
gfxd-locator/0	running	gfxd-locator	10.0.1.29	vm-e7cacaec-8190-4841-81fb-ae7ca4784ea1	4718b1bf-1af7-4fd
namenode/0	running	namenode	10.0.1.27	vm-8eac5c1a-de57-414d-a109-c1117eb58cad	5c45c684-46ac-4f7
phd-slave/0	running	worker	10.0.1.30	vm-889afcd8-02ac-42bf-b848-992716a34cec	75a00ccd-cad8-45d
resourceananager/0	running	resourceananager	10.0.1.28	vm-a64bc3fa-fdd0-40c0-8311-fe854b72ff16	3551bb58-e2e1-4bc

VMs total: 4

- cf services**

Displays a list of Cloud Foundry services, including any instances of Pivotal HD Service. For example:

```
$ cf services
Getting services in org pivotalrocks / space staging as admin...
OK

nameservice  plan  bound apps
phd-clus1    p-hd  Standard  app-sinatra-services
```

- `cf service-brokers`

Displays a list of Cloud Foundry service brokers. For example:

```
$ cf service-brokers
Getting service brokers as admin...

name url
phd-broker http://10.0.0.51:8080
```

- `cf delete-service-broker`

Deletes a Cloud Foundry service broker.

- `bosh delete deployment`

Deletes a BOSH deployment.

- `bosh releases`

Displays a list of available releases.

Accessing Pivotal HD Cluster Instance virtual machines using SSH

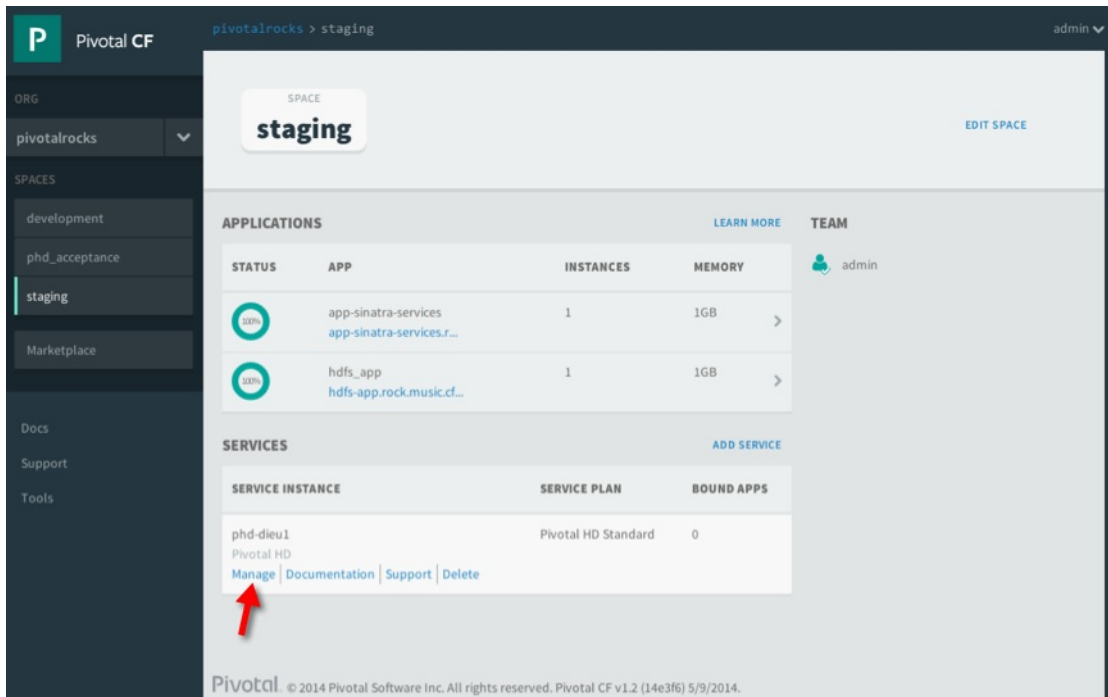
Although it is not usually necessary to access machines within a Pivotal HD cluster directly, there may be troubleshooting situations where you need to access a cluster machine using SSH. To access these machines, you need to locate the Pivotal HD Service Instance ID for the cluster and then use that information to get a list of cluster IP addresses you can use for ssh access.

Pivotal HD Service creates these Service Instance IDs when it pre-creates cluster instances. When a user creates a cluster instance using Pivotal HD Service, the user creates a service instance name for the cluster. Internally, Pivotal HD Service maps this user-defined name to the cluster instance ID.

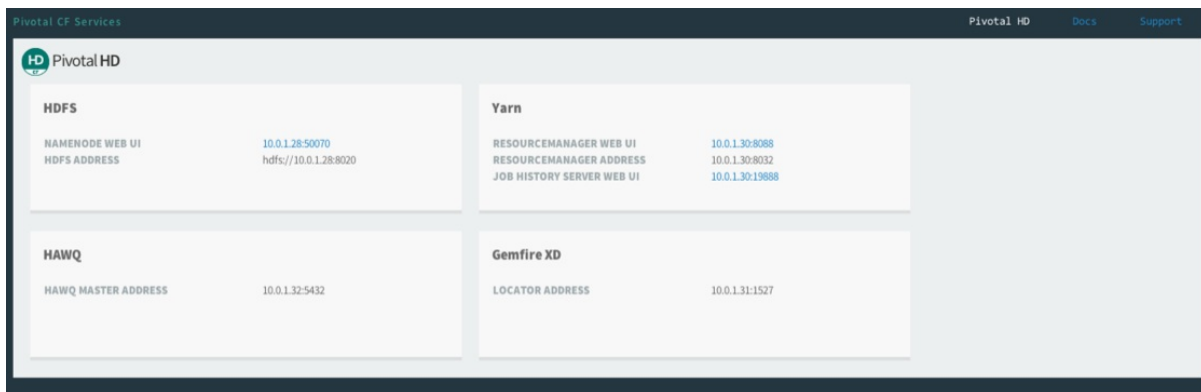
To determine which Virtual Machines are associated with a specific Service Instance, you can use the Dev Console, or use the Pivotal CF CLI.

To determine which Virtual Machines are associated with a specific Service Instance, using the Pivotal CF Dev Console:

1. Log in to the **Pivotal CF Developer Console**.
2. Select your Org from the drop-down list on the left.
3. Select your Space from the list of spaces on the left.
A list of applications and service instances displays.
4. In the row that contains the Pivotal HD service instance you want to access, click **Manage**.



The Service Instance Dashboard displays:



5. Click the links to access the Web interface for the component.

To determine which Virtual Machines are associated with a specific Service Instance, using the Pivotal CF CLI:

To take the following steps to look up the mapping:

1. Log into the Pivotal CF command line instance that manages your Pivotal CF deployment.
2. From the Pivotal CF command line, make sure you are targeting the space where the Service Instance you are interested in resides:

```
[root@rock ~]# cf target
API endpoint: https://api.rock.music.cf-app.com (API version: 2.2.0)
User: admin
Org: pivotalrocks
Space: staging
```

If necessary, select a space using the following command: `$ cf target -s <space name>`

3. From the Pivotal CF CLI, confirm the Service Instance Name you are interested in:

```
root@rock ~]# cf services
Getting services in org pivotalrocks / space staging as admin...
OK

nameservice  plan    bound apps
instance1    p-hd   Standard

instance2    p-hd   Standard    app-sinatra-services
```

- From the Pivotal CF CLI, run the following command to look up the Cloud Controller ID for the Service Name you are interested in. The Cloud Controller ID is contained in a JSON-formatted output. To find the ID, locate the name of your service in the output and then locate the `guid` field within that data structure. The value of this field contains the Cloud Controller ID. For example, in the following output, the Cloud Controller ID for the service that is named `instance2` is highlighted in red:

```
[root@rock ~]# CF_TRACE=true cf s

VERSION:
6.0.2-0bba99f

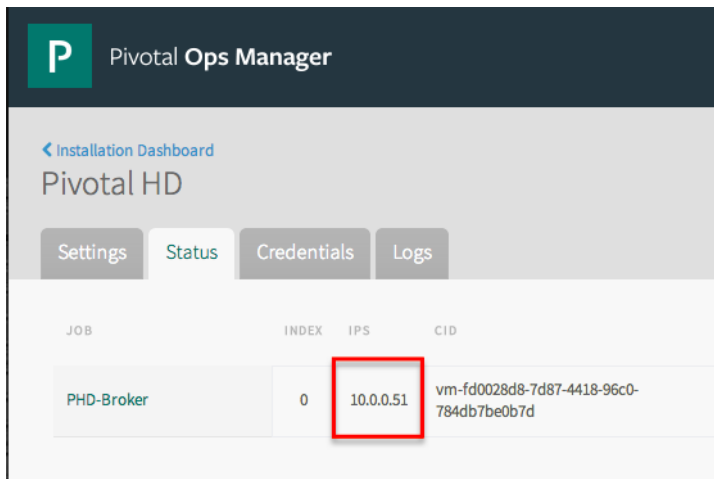
Getting services in org pivotalrocks / space staging as admin...

REQUEST: [2014-05-07T21:07:15+02:00]
GET /v2/spaces/5482fff0-42cb-4392-945d-8d83713abaf0/summary HTTP/1.1
Host: api.rock.music.cf-app.com
Accept: application/json
Authorization: [PRIVATE DATA HIDDEN]
Content-Type: application/json
User-Agent: go-cli 6.0.2-0bba99f / linux

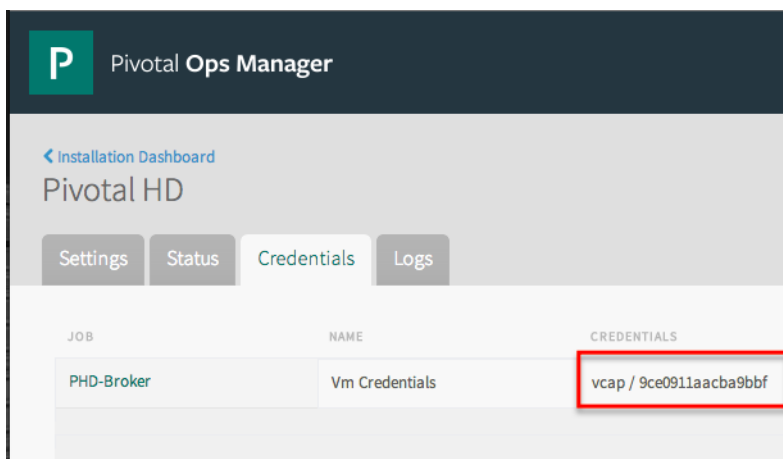
RESPONSE: [2014-05-07T21:07:15+02:00]
HTTP/1.1 200 OK
Content-Length: 1535
Content-Type: application/json; charset=utf-8
Date: Wed, 07 May 2014 19:08:15 GMT
Server: nginx
X-Content-Type-Options: nosniff
X-Vcap-Request-Id: 1f201b6b1881d2957ec572f17eb63b4e::00245095-8317-4547-9c93-a8bc34cd7314

{"guid":"5482fff0-42cb-4392-945d-8d83713abaf0","name":"staging","apps":[{"guid":"f23e0d52-13be-434e-b579-ce2a1bad8d79","routes":[{"guid":"78161142-f97c-460d-b03e-1f7a748406cc","host":"app-sinatra-services","domain":{"guid":"58b2649a-a127-4b3d-8f3e-1a2b3c4d5e6f"},"servicecount":1,"servicenames":["phd-dieu1"],"runninginstances":1,"name":"app-sinatra-services","production":false,"spaceguid":"5482fff0-42cb-4392-945d-8d83713abaf0","stackguid":"f7ad92d1-c34f-4f37-8c25-a671514d73bd","buildpack":null,"detectedbuildpack":"Ruby/Rack","environmentjson":{"memory":1024,"instances":1,"diskquota":1024,"state":"STARTED","version":"5ccc11f4-c9f6-4fa2-aac1-f14e227571f8","command":"bundle exec ruby main.rb"},"services":[{"guid":"4914bc7d-da6a-4023-8427-822f17a320fb","name":"phd5","boundappcount":0,"dashboardurl":null,"serviceplan":{"guid":"51eeae7e-4a29-424e-b636-424d1aaa92f1","name":"Standard","service":{"guid":"aeefe9cf-a789-4697-bebd-bafa47ae63a4","label":"p-hd","provider":null,"version":null}},"name":"Standard","service":{"guid":"5719c2a0-69f2-4ca2-b46a-0f6058fa54af","name":"instance2","boundappcount":1,"dashboardurl":null,"service_plan":{"name":"Standard","service":{"guid":"aeefe9cf-a789-4697-bebd-bafa47ae63a4","label":"p-hd","provider":null,"version":null}}}
```

- Log in to the Pivotal CF Ops Manager application.
- Select Pivotal HD.
- Click the **Status** tab and note the IP address for the Pivotal HD Service Broker.



- Click the **Credentials** tab and note the username and password for the PHD-Broker



- Using these IP address and credentials, log in to the Pivotal HD Service Broker using ssh:

```
[root@rock ~]# ssh vcap@10.0.0.51
vcap@10.0.0.51's password:
Last login: Wed May 7 15:13:04 2014 from 10.0.0.1
[vcap@21c20803-7459-46dc-a0f7-36c70c956db4 ~]$
```

- Access the SQLite Database where the Service Broker stores its mappings:

```
[vcap@21c20803-7459-46dc-a0f7-36c70c956db4 ~]$ cd /var/vcap/store/phdbroker/
[vcap@21c20803-7459-46dc-a0f7-36c70c956db4 phdbroker]$ sqlite3 database.sqlite3
SQLite version 3.6.20
Enter ".help" for instructions
Enter SQL statements terminated with a ";"
sqlite> .schema
CREATE TABLE "ipaddresses" ("id" integer not null primary key autoincrement, "ip" text, "serviceinstanceid" integer, "state" text);
CREATE TABLE "serviceinstances" ("id" integer not null primary key autoincrement, "cloudcontrollerid" text, "state" text);
sqlite> select * from serviceinstances;
1|5719c2a0-69f2-4ca2-b46a-0f6058fa54af|ALLOCATED
2|4914bc7d-da6a-4023-8427-822f17a320fb|ALLOCATED
3|AVAILABLE
sqlite>
```

- Locate the row where the Cloud Controller ID matches the Cloud Controller ID you retrieved earlier. Note the numbers that begin each row. These numbers are the internal Service Instance IDs.
- Follow the instructions in the [Cloud Foundry documentation](#) to access the BOSH Director from the Ops Manager VM.
- Lookup the VMs associated with the Pivotal HD cluster instance that was mapped to the Service Instance ID using the following command:


```
[root@rock ~]# bundle exec bosh vms phd-<Instance ID>
```

For example:

```
root@rock ~]# bundle exec bosh vms phd-1
```

```
Deployment `phd-1`
```

```
Director task 257
```

```
Task 257 done
```

```
+-----+-----+-----+-----+
| Job/index      | State | Resource Pool | IPs      |
+-----+-----+-----+-----+
| gfxd-locator/0 | running | gfxd-locator  | 10.0.1.9 |
| hawq-master/0  | running | hawq-master   | 10.0.1.8 |
| namenode/0     | running | namenode      | 10.0.1.6 |
| phd-slave/0    | running | worker        | 10.0.1.10|
| resourcemanager/0 | running | resourcemanager | 10.0.1.7 |
+-----+-----+-----+-----+
```

14. Note the IP address of the machine you want to access and use it to ssh to the virtual machine.

Deleting the Pivotal HD Service Broker from Cloud Foundry

1. Open the **Pivotal CF Ops Manager** application in a Web browser.
The Installation Dashboard displays.
2. Click the **Trash** icon in the Pivotal HD Data Service tile.
3. Click **Apply Changes**.
The Pivotal HD Data Service broker is deleted.

Note: If the PHD Data Service broker is in the process of deploying a pre-allocated Pivotal HD Cluster, when you click the Trash icon, the deletion will fail. Try the deletion at another time.

Release Notes for Pivotal HD Service v 1.2.1.0

Release Notes

For a list of changes to Pivotal HD Service for Pivotal CF, see [Pivotal HD for Pivotal CF v1.2.1.0 Release Notes](#).

Known Issues

For a list of known issues with Pivotal HD Service for Pivotal CF, see [Pivotal HD for Pivotal CF v1.2.1.0 Known Issues](#).