

# Hortonworks DataFlow

Installing HDF Services on a New HDP Cluster

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## Hortonworks DataFlow: Installing HDF Services on a New HDP Cluster

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# 1. Installing Ambari

Perform the following tasks to install Ambari.

1. [Getting Ready for an Ambari Installation \[1\]](#)
2. [Download the Ambari Repository \[5\]](#)
3. [Install the Ambari Server \[10\]](#)
4. [Set Up the Ambari Server \[16\]](#)
5. [Start the Ambari Server \[18\]](#)

## 1.1. Getting Ready for an Ambari Installation

This section describes the information and materials you should get ready to install a cluster using Ambari. Ambari provides an end-to-end management and monitoring solution for your cluster. Using the Ambari Web UI and REST APIs, you can deploy, operate, manage configuration changes, and monitor services for all nodes in your cluster from a central point.

### 1.1.1. Reviewing System Requirements

Your first task in installing Ambari is to review the Hortonworks DataFlow (HDF) support matrices for system requirements, supported operating systems, component interoperability, and similar information.

- [HDF Support Matrices](#)

### 1.1.2. Set Up Password-less SSH

#### About This Task

To have Ambari Server automatically install Ambari Agents on all your cluster hosts, you must set up password-less SSH connections between the Ambari Server host and all other hosts in the cluster. The Ambari Server host uses SSH public key authentication to remotely access and install the Ambari Agent.



#### Note

You can choose to manually install an Ambari Agent on each cluster host. In this case, you do not need to generate and distribute SSH keys.

#### Steps

1. Generate public and private SSH keys on the Ambari Server host.

```
ssh-keygen
```

2. Copy the SSH Public Key (id\_rsa.pub) to the root account on your target hosts.

```
.ssh/id_rsa
```

```
.ssh/id_rsa.pub
```

3. Add the SSH Public Key to the `authorized_keys` file on your target hosts.

```
cat id_rsa.pub >> authorized_keys
```

4. Depending on your version of SSH, you may need to set permissions on the `.ssh` directory (to 700) and the `authorized_keys` file in that directory (to 600) on the target hosts.

```
chmod 700 ~/.ssh
```

```
chmod 600 ~/.ssh/authorized_keys
```

5. From the Ambari Server, make sure you can connect to each host in the cluster using SSH, without having to enter a password.

```
ssh root@<remote.target.host>
```

where `<remote.target.host>` has the value of each host name in your cluster.

6. If the following warning message displays during your first connection: Are you sure you want to continue connecting (yes/no)? Enter **Yes**.

7. Retain a copy of the SSH Private Key on the machine from which you will run the web-based Ambari Install Wizard.



### Note

It is possible to use a non-root SSH account, if that account can execute `sudo` without entering a password.

## 1.1.3. Set Up Service User Accounts

Each service requires a service user account. The Ambari Cluster Install wizard creates new and preserves any existing service user accounts, and uses these accounts when configuring Hadoop services. Service user account creation applies to service user accounts on the local operating system and to LDAP/AD accounts.

## 1.1.4. Enable NTP on the Cluster and on the Browser Host

The clocks of all the nodes in your cluster and the machine that runs the browser through which you access the Ambari Web interface must be able to synchronize with each other.

To install the NTP service and ensure it's started on boot, run the following commands on each host:

**RHEL/CentOS/Oracle 6**

```
yum install -y ntp
chkconfig ntpd on
```

**RHEL/CentOS/Oracle 7**

```
yum install -y ntp
systemctl enable ntpd
```

**SLES**

```
zypper install ntp
```

	<pre>chkconfig ntp on</pre>
<b>Ubuntu</b>	<pre>apt-get install ntp update-rc.d ntp defaults</pre>
<b>Debian</b>	<pre>apt-get install ntp update-rc.d ntp defaults</pre>

## 1.1.5. Check DNS and NSCD

All hosts in your system must be configured for both forward and reverse DNS.

If you are unable to configure DNS in this way, you should edit the `/etc/hosts` file on every host in your cluster to contain the IP address and Fully Qualified Domain Name of each of your hosts. The following instructions are provided as an overview and cover a basic network setup for generic Linux hosts. Different versions and flavors of Linux might require slightly different commands and procedures. Please refer to the documentation for the operating system(s) deployed in your environment.

Hadoop relies heavily on DNS, and as such performs many DNS lookups during normal operation. To reduce the load on your DNS infrastructure, it's highly recommended to use the Name Service Caching Daemon (NSCD) on cluster nodes running Linux. This daemon will cache host, user, and group lookups and provide better resolution performance, and reduced load on DNS infrastructure.

### 1.1.5.1. Edit the Host File

1. Using a text editor, open the hosts file on every host in your cluster. For example:

```
vi /etc/hosts
```

2. Add a line for each host in your cluster. The line should consist of the IP address and the FQDN. For example:

```
1.2.3.4 <fully.qualified.domain.name>
```



#### Important

Do **not** remove the following two lines from your hosts file. Removing or editing the following lines may cause various programs that require network functionality to fail.

```
127.0.0.1 localhost.localdomain localhost
```

```
:::1 localhost6.localdomain6 localhost6
```

### 1.1.5.2. Set the Hostname

1. Confirm that the hostname is set by running the following command:

```
hostname -f
```

This should return the `<fully.qualified.domain.name>` you just set.

2. Use the "hostname" command to set the hostname on each host in your cluster. For example:

```
hostname <fully.qualified.domain.name>
```

### 1.1.5.3. Edit the Network Configuration File

1. Using a text editor, open the network configuration file on every host and set the desired network configuration for each host. For example:

```
vi /etc/sysconfig/network
```

2. Modify the HOSTNAME property to set the fully qualified domain name.

```
NETWORKING=yes
```

```
HOSTNAME=<fully.qualified.domain.name>
```

### 1.1.6. Configuring iptables

For Ambari to communicate during setup with the hosts it deploys to and manages, certain ports must be open and available. The easiest way to do this is to temporarily disable iptables, as follows:

#### RHEL/CentOS/Oracle Linux 6

```
chkconfig iptables off  
/etc/init.d/iptables stop
```

#### RHEL/CentOS/Oracle Linux 7

```
systemctl disable firewalld  
service firewalld stop
```

#### SLES

```
rcSuSEfirewall2 stop  
chkconfig SuSEfirewall2_setup off
```

#### Ubuntu

```
sudo ufw disable  
sudo iptables -X  
sudo iptables -t nat -F  
sudo iptables -t nat -X  
sudo iptables -t mangle -F  
sudo iptables -t mangle -X  
sudo iptables -P INPUT ACCEPT  
sudo iptables -P FORWARD ACCEPT  
sudo iptables -P OUTPUT ACCEPT
```

#### Debian

```
sudo iptables -X  
sudo iptables -t nat -F  
sudo iptables -t nat -X  
sudo iptables -t mangle -F  
sudo iptables -t mangle -X  
sudo iptables -P INPUT ACCEPT  
sudo iptables -P FORWARD ACCEPT  
sudo iptables -P OUTPUT ACCEPT
```

You can restart iptables after setup is complete. If the security protocols in your environment prevent disabling iptables, you can proceed with iptables enabled, if all required ports are open and available.

Ambari checks whether iptables is running during the Ambari Server setup process. If iptables is running, a warning displays, reminding you to check that required ports are open and available. The Host Confirm step in the Cluster Install Wizard also issues a warning for each host that has iptables running.



## 1.1.7. Disable SELinux and PackageKit and check the umask Value

1. You must disable SELinux for the Ambari setup to function. On each host in your cluster, enter:

```
setenforce 0
```



### Note

To permanently disable SELinux set SELINUX=disabled in `/etc/selinux/config`. This ensures that SELinux does not turn itself on after you reboot the machine.

2. On an installation host running RHEL/CentOS with PackageKit installed, open `/etc/yum/pluginconf.d/refresh-packagekit.conf` using a text editor. Make the following change:

```
enabled=0
```



### Note

PackageKit is not enabled by default on Debian, SLES, or Ubuntu systems. Unless you have specifically enabled PackageKit, you may skip this step for a Debian, SLES, or Ubuntu installation host.

3. UMASK (User Mask or User file creation MASK) sets the default permissions or base permissions granted when a new file or folder is created on a Linux machine. Most Linux distros set 022 as the default umask value. A umask value of 022 grants read, write, execute permissions of 755 for new files or folders. A umask value of 027 grants read, write, execute permissions of 750 for new files or folders.

Ambari, HDP, and HDF support umask values of 022 (0022 is functionally equivalent), 027 (0027 is functionally equivalent). These values must be set on all hosts.

### UMASK Examples:

Setting the umask for your current login session:

```
umask 0022
```

Checking your current umask:

```
umask 0022
```

Permanently changing the umask for all interactive users:

```
echo umask 0022 >> /etc/profile
```

## 1.2. Download the Ambari Repository

Follow the instructions in the section for the operating system that runs your installation host.

Use a command line editor to perform each instruction.

## 1.2.1. RHEL/CentOS/Oracle Linux 6

On a server host that has Internet access, use a command line editor to perform the following:

### Steps

1. Log in to your host as `root`.
2. Download the Ambari repository file to a directory on your installation host.

```
wget -nv http://public-repo-1.hortonworks.com/ambari/centos6/2.x/updates/2.6.0.0/ambari.repo -O /etc/yum.repos.d/ambari.repo
```



### Important

Do not modify the `ambari.repo` file name. This file is expected to be available on the Ambari Server host during Agent registration.

3. Confirm that the repository is configured by checking the repo list.

```
yum repolist
```

You should see values similar to the following for Ambari repositories in the list.

repo id	repo name	status
ambari-2.6.0.0-1094	ambari Version - ambari-2.6.0.0-1094	12
base	CentOS-6 - Base	6,696
extras	CentOS-6 - Extras	64
updates	CentOS-6 - Updates	974
repolist: 7,746		

Version values vary, depending on the installation.



### Note

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the `postgresql-server` packages.

### Next Step

- [Install the Ambari Server \[10\]](#)
- [Set Up the Ambari Server \[16\]](#)

## 1.2.2. RHEL/CentOS/Oracle Linux 7

On a server host that has Internet access, use a command line editor to perform the following

### Steps

1. Log in to your host as `root`.
2. Download the Ambari repository file to a directory on your installation host.

```
wget -nv http://public-repo-1.hortonworks.com/ambari/centos7/2.x/updates/2.6.0.0/ambari.repo -O /etc/yum.repos.d/ambari.repo
```



### Important

Do not modify the `ambari.repo` file name. This file is expected to be available on the Ambari Server host during Agent registration.

3. Confirm that the repository is configured by checking the repo list.

```
yum repolist
```

You should see values similar to the following for Ambari repositories in the list.

```
repo id                repo name
status
ambari-2.5.0.0-1094    ambari Version - ambari-2.6.0.0-1094
12
epel/x86_64            Extra Packages for Enterprise Linux 7 - x86_64
11,387
ol7_UEKR4/x86_64      Latest Unbreakable Enterprise Kernel Release 4
for Oracle Linux 7Server (x86_64) 295
ol7_latest/x86_64     Oracle Linux 7Server Latest (x86_64)
18,642
puppetlabs-deps/x86_64 Puppet Labs Dependencies El 7 - x86_64
17
puppetlabs-products/x86_64 Puppet Labs Products El 7 - x86_64
225
repolist: 30,578
```

Version values vary, depending on the installation.



### Note

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the `postgresql-server` packages.

### Next Step

- [Install the Ambari Server \[10\]](#)

- [Set Up the Ambari Server \[16\]](#)

### 1.2.3. SLES 12

On a server host that has Internet access, use a command line editor to perform the following:

#### Steps

1. Log in to your host as `root`.
2. Download the Ambari repository file to a directory on your installation host.

```
wget -nv http://public-repo-1.hortonworks.com/ambari/sles12/2.x/updates/2.6.0.0/ambari.repo -O /etc/zypper/repos.d/ambari.repo
```



#### Important

Do not modify the `ambari.repo` file name. This file is expected to be available on the Ambari Server host during Agent registration.

3. Confirm the downloaded repository is configured by checking the repo list.

```
zypper repos
```

You should see the Ambari repositories in the list.

#	Alias	Name	Enabled	Refresh
1	ambari-2.6.0.0-1094	ambari Version - ambari-2.6.0.0-1094	No	Yes
2	http-demeter.uni-regensburg.de-c997c8f9	SUSE-Linux-Enterprise-Software -Development-Kit-12-SP1 12.1.1-1.57	Yes	Yes
3	opensuse	OpenSuse	Yes	Yes

Version values vary, depending on the installation.



#### Note

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the `postgresql-server` packages.

#### Next Step

- [Install the Ambari Server \[10\]](#)

- [Set Up the Ambari Server \[16\]](#)

## 1.2.4. SLES 11

On a server host that has Internet access, use a command line editor to perform the following

### Steps

1. Log in to your host as `root`.
2. Download the Ambari repository file to a directory on your installation host.

```
wget -nv http://public-repo-1.hortonworks.com/ambari/suse11/2.x/updates/2.6.0.0/ambari.repo -O /etc/zypp/repos.d/ambari.repo
```



### Important

Do not modify the `ambari.repo` file name. This file is expected to be available on the Ambari Server host during Agent registration.

3. Confirm the downloaded repository is configured by checking the repo list.

```
zypper repos
```

You should see the Ambari repositories in the list.

#	Alias	Name	Enabled	Refresh
1	ambari-2.5.0.0-1094	ambari Version - ambari-2.5.0.0-1094	No	Yes
2	http-demeter.uni-regensburg.de-c997c8f9	SUSE-Linux-Enterprise-Software -Development-Kit-11-SP3 12.1.1-1.57	Yes	Yes
3	opensuse	OpenSuse	Yes	Yes

Version values vary, depending on the installation.



### Note

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the postgresql-server packages.

### Next Step

- [Install the Ambari Server \[10\]](#)
- [Set Up the Ambari Server \[16\]](#)

## 1.2.5. Debian 7

On a server host that has Internet access, use a command line editor to perform the following:

### Steps

1. Log in to your host as `root`.
2. Download the Ambari repository file to a directory on your installation host.

```
wget -O /etc/apt/sources.list.d/ambari.list http://public-repo-1.hortonworks.com/ambari/debian7/2.x/updates/2.6.0.0/ambari.list
```

```
apt-key adv --recv-keys --keyserver keyserver.ubuntu.com B9733A7A07513CAD
```

```
apt-get update
```



### Important

Do not modify the `ambari.list` file name. This file is expected to be available on the Ambari Server host during Agent registration.

3. Confirm that Ambari packages downloaded successfully by checking the package name list.

```
apt-cache showpkg ambari-server
```

```
apt-cache showpkg ambari-agent
```

```
apt-cache showpkg ambari-metrics-assembly
```

You should see the Ambari packages in the list.



### Note

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the `postgresql-server` packages.

### Next Step

- [Install the Ambari Server \[10\]](#)
- [Set Up the Ambari Server \[16\]](#)

## 1.3. Install the Ambari Server

Follow the instructions in the section for the operating system that runs your installation host.

- [RHEL/CentOS/Oracle Linux 6 \[11\]](#)
- [RHEL/CentOS/Oracle Linux 7 \[12\]](#)
- [SLES 12 \[13\]](#)
- [SLES 11 \[14\]](#)
- [Ubuntu 14 \[15\]](#)
- [Debian 7 \[15\]](#)

Use a command line editor to perform each instruction.

### 1.3.1. RHEL/CentOS/Oracle Linux 6

On a server host that has Internet access, use a command line editor to perform the following:

#### Steps

1. Install the Ambari bits. This also installs the default PostgreSQL Ambari database.

```
yum install ambari-server
```

2. Enter **y** when prompted to confirm transaction and dependency checks.

A successful installation displays output similar to the following:

```
Installing : postgresql-libs-8.4.20-6.el6.x86_64           1/4
Installing : postgresql-8.4.20-6.el6.x86_64              2/4
Installing : postgresql-server-8.4.20-6.el6.x86_64       3/4
Installing : ambari-server-2.6.0.0-1050.x86_64           4/4
Verifying  : ambari-server-2.6.0.0-1050.x86_64           1/4
Verifying  : postgresql-8.4.20-6.el6.x86_64              2/4
Verifying  : postgresql-server-8.4.20-6.el6.x86_64       3/4
Verifying  : postgresql-libs-8.4.20-6.el6.x86_64         4/4

Installed:
  ambari-server.x86_64 0:2.6.0.0-1050

Dependency Installed:
  postgresql.x86_64 0:8.4.20-6.el6
  postgresql-libs.x86_64 0:8.4.20-6.el6
  postgresql-server.x86_64 0:8.4.20-6.el6
Complete!
```



#### Note

Accept the warning about trusting the Hortonworks GPG Key. That key will be automatically downloaded and used to validate packages from Hortonworks. You will see the following message:

```
Importing GPG key 0x07513CAD: Userid: "Jenkins (HDP
Builds) <jenkin@hortonworks.com>" From : http://
s3.amazonaws.com/dev.hortonworks.com/ambari/centos6/RPM-
GPG-KEY/RPM-GPG-KEY-Jenkins
```



## Note

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the postgresql-server packages.

### Next Step

[Set Up the Ambari Server \[16\]](#)

## 1.3.2. RHEL/CentOS/Oracle Linux 7

On a server host that has Internet access, use a command line editor to perform the following

### Steps

1. Install the Ambari bits. This also installs the default PostgreSQL Ambari database.

```
yum install ambari-server
```

2. Enter **y** when prompted to confirm transaction and dependency checks.

A successful installation displays output similar to the following:

```
Installing : postgresql-libs-9.2.18-1.el7.x86_64      1/4
Installing : postgresql-9.2.18-1.el7.x86_64         2/4
Installing : postgresql-server-9.2.18-1.el7.x86_64  3/4
Installing : ambari-server-2.6.0.0-1050.x86_64      4/4
Verifying  : ambari-server-2.6.0.0-1050.x86_64     1/4
Verifying  : postgresql-9.2.18-1.el7.x86_64       2/4
Verifying  : postgresql-server-9.2.18-1.el7.x86_64 3/4
Verifying  : postgresql-libs-9.2.18-1.el7.x86_64  4/4
```

```
Installed:
  ambari-server.x86_64 0:2.6.0.0-1050
```

```
Dependency Installed:
  postgresql.x86_64 0:9.2.18-1.el7
  postgresql-libs.x86_64 0:9.2.18-1.el7
  postgresql-server.x86_64 0:9.2.18-1.el7
Complete!
```



## Note

Accept the warning about trusting the Hortonworks GPG Key. That key will be automatically downloaded and used to validate packages from Hortonworks. You will see the following message:

```
Importing GPG key 0x07513CAD: Userid: "Jenkins (HDP Builds) <jenkin@hortonworks.com>" From : http://
```



```
s3.amazonaws.com/dev.hortonworks.com/ambari/centos6/RPM-
GPG-KEY/RPM-GPG-KEY-Jenkins
```



## Note

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the postgresql-server packages.

### Next Step

[Set Up the Ambari Server \[16\]](#)

## 1.3.3. SLES 12

On a server host that has Internet access, use a command line editor to perform the following:

### Steps

1. Install the Ambari bits. This also installs the default PostgreSQL Ambari database.

```
zypper install ambari-server
```

2. Enter **y** when prompted to confirm transaction and dependency checks.

A successful installation displays output similar to the following:

```
Retrieving package postgresql-libs-8.3.5-1.12.x86_64 (1/4), 172.0 KiB (571.
0 KiB unpacked)
Retrieving: postgresql-libs-8.3.5-1.12.x86_64.rpm [done (47.3 KiB/s)]
Installing: postgresql-libs-8.3.5-1.12 [done]
Retrieving package postgresql-8.3.5-1.12.x86_64 (2/4), 1.0 MiB (4.2 MiB
unpacked)
Retrieving: postgresql-8.3.5-1.12.x86_64.rpm [done (148.8 KiB/s)]
Installing: postgresql-8.3.5-1.12 [done]
Retrieving package postgresql-server-8.3.5-1.12.x86_64 (3/4), 3.0 MiB (12.6
MiB unpacked)
Retrieving: postgresql-server-8.3.5-1.12.x86_64.rpm [done (452.5 KiB/s)]
Installing: postgresql-server-8.3.5-1.12 [done]
Updating etc/sysconfig/postgresql...
Retrieving package ambari-server-2.6.0.0-135.noarch (4/4), 99.0 MiB (126.3
MiB unpacked)
Retrieving: ambari-server-2.6.0.0-135.noarch.rpm [done (3.0 MiB/s)]
Installing: ambari-server-2.6.0.0-135 [done]
ambari-server 0:off 1:off 2:off 3:on 4:off 5:on 6:off
```



## Note

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the postgresql-server packages.

### Next Step

[Set Up the Ambari Server \[16\]](#)

## 1.3.4. SLES 11

On a server host that has Internet access, use a command line editor to perform the following

### Steps

1. Install the Ambari bits. This also installs the default PostgreSQL Ambari database.

```
zypper install ambari-server
```

2. Enter `y` when prompted to to confirm transaction and dependency checks.

A successful installation displays output similar to the following:

```
Retrieving package postgresql-libs-8.3.5-1.12.x86_64 (1/4), 172.0 KiB (571.0 KiB unpacked)
Retrieving: postgresql-libs-8.3.5-1.12.x86_64.rpm [done (47.3 KiB/s)]
Installing: postgresql-libs-8.3.5-1.12 [done]
Retrieving package postgresql-8.3.5-1.12.x86_64 (2/4), 1.0 MiB (4.2 MiB unpacked)
Retrieving: postgresql-8.3.5-1.12.x86_64.rpm [done (148.8 KiB/s)]
Installing: postgresql-8.3.5-1.12 [done]
Retrieving package postgresql-server-8.3.5-1.12.x86_64 (3/4), 3.0 MiB (12.6 MiB unpacked)
Retrieving: postgresql-server-8.3.5-1.12.x86_64.rpm [done (452.5 KiB/s)]
Installing: postgresql-server-8.3.5-1.12 [done]
Updating etc/sysconfig/postgresql...
Retrieving package ambari-server-2.6.0.0-135.noarch (4/4), 99.0 MiB (126.3 MiB unpacked)
Retrieving: ambari-server-2.6.0.0-135.noarch.rpm [done (3.0 MiB/s)]
Installing: ambari-server-2.6.0.0-135 [done]
ambari-server 0:off 1:off 2:off 3:on 4:off 5:on 6:off
```



### Note

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the postgresql-server packages.

**Next Step**[Set Up the Ambari Server \[16\]](#)

## 1.3.5. Ubuntu 14

On a server host that has Internet access, use a command line editor to perform the following:

**Steps**

1. Install the Ambari bits. This also installs the default PostgreSQL Ambari database.

```
apt-get install ambari-server
```

**Note**

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the postgresql-server packages.

**Next Step**[Set Up the Ambari Server \[16\]](#)

## 1.3.6. Debian 7

On a server host that has Internet access, use a command line editor to perform the following:

**Steps**

1. Install the Ambari bits. This also installs the default PostgreSQL Ambari database.

```
apt-get install ambari-server
```

**Note**

When deploying a cluster having limited or no Internet access, you should provide access to the bits using an alternative method.

Ambari Server by default uses an embedded PostgreSQL database. When you install the Ambari Server, the PostgreSQL packages and dependencies must be available for install. These packages are typically available as part of your Operating System repositories. Please confirm you have the appropriate repositories available for the postgresql-server packages.

**Next Step**

[Set Up the Ambari Server \[16\]](#)

## 1.4. Set Up the Ambari Server

Before starting the Ambari Server, you **must** set up the Ambari Server. Setup configures Ambari to talk to the Ambari database, installs the JDK and allows you to customize the user account the Ambari Server daemon will run as. The

```
ambari-server setup
```

command manages the setup process. Run the following command on the Ambari server host to start the setup process. You may also append Setup Options to the command.

```
ambari-server setup
```

Respond to the setup prompt:

1. If you have *not* temporarily disabled SELinux, you may get a warning. Accept the default (**y**), and continue.
2. By default, Ambari Server runs under `root`. Accept the default (**n**) at the `Customize user account for ambari-server daemon` prompt, to proceed as `root`. If you want to create a different user to run the Ambari Server, or to assign a previously created user, select **y** at the `Customize user account for ambari-server daemon` prompt, then provide a user name.
3. If you have not temporarily disabled `iptables` you may get a warning. Enter **y** to continue.
4. Select a JDK version to download. Enter 1 to download Oracle JDK 1.8. Alternatively, you can choose to enter a Custom JDK. If you choose Custom JDK, you must manually install the JDK on all hosts and specify the Java Home path.



### Note

JDK support depends entirely on your choice of Stack versions. By default, Ambari Server setup downloads and installs Oracle JDK 1.8 and the accompanying Java Cryptography Extension (JCE) Policy Files.

5. Accept the Oracle JDK license when prompted. You must accept this license to download the necessary JDK from Oracle. The JDK is installed during the deploy phase.
6. Select **n** at `Enter advanced database configuration` to use the default, embedded PostgreSQL database for Ambari. The default PostgreSQL database name is `ambari`. The default user name and password are `ambari/bigdata`. Otherwise, to use an existing PostgreSQL, MySQL/MariaDB or Oracle database with Ambari, select **y**.
  - If you are using an existing PostgreSQL, MySQL/MariaDB, or Oracle database instance, use one of the following prompts:



### Important

You must prepare a non-default database instance, before running setup and entering advanced database configuration.



## Important

Using the **Microsoft SQL Server** or **SQL Anywhere** database options are not supported.

- To use an existing Oracle instance, and select your own database name, user name, and password for that database, enter 2.

Select the database you want to use and provide any information requested at the prompts, including host name, port, Service Name or SID, user name, and password.

- To use an existing MySQL/MariaDB database, and select your own database name, user name, and password for that database, enter 3.

Select the database you want to use and provide any information requested at the prompts, including host name, port, database name, user name, and password.

- To use an existing PostgreSQL database, and select your own database name, user name, and password for that database, enter 4.

Select the database you want to use and provide any information requested at the prompts, including host name, port, database name, user name, and password.

7. At `Proceed with configuring remote database connection properties [y/n]` choose `y`.

8. Setup completes.



## Note

If your host accesses the Internet through a proxy server, you must configure Ambari Server to use this proxy server.

## 1.4.1. Setup Options

The following options are frequently used for Ambari Server setup.

**-j (or -java-home)** Specifies the JAVA\_HOME path to use on the Ambari Server and all hosts in the cluster. By default when you do not specify this option, Ambari Server setup downloads the Oracle JDK 1.8 binary and accompanying Java Cryptography Extension (JCE) Policy Files to `/var/lib/ambari-server/resources`. Ambari Server then installs the JDK to `/usr/jdk64`.

Use this option when you plan to use a JDK other than the default Oracle JDK 1.8. If you are using an alternate JDK, you must manually install the JDK on all hosts and specify the Java Home path during Ambari Server setup. If you plan to use Kerberos, you must also install the JCE on all hosts.

This path must be valid on all hosts. For example:

```
ambari-server setup -j /usr/java/default
```

<b>-jdbc-driver</b>	Should be the path to the JDBC driver JAR file. Use this option to specify the location of the JDBC driver JAR and to make that JAR available to Ambari Server for distribution to cluster hosts during configuration. Use this option with the <code>-jdbc-db</code> option to specify the database type.
<b>-jdbc-db</b>	Specifies the database type. Valid values are: [postgres   mysql   oracle] Use this option with the <code>-jdbc-driver</code> option to specify the location of the JDBC driver JAR file.
<b>-s (or -silent)</b>	Setup runs silently. Accepts all the default prompt values, such as: <ul style="list-style-type: none"><li>• User account "root" for the ambari-server</li><li>• Oracle 1.8 JDK (which is installed at /usr/jdk64). This can be overridden by adding the <code>-j</code> option and specifying an existing JDK path.</li><li>• Embedded PostgreSQL for Ambari DB (with database name "ambari")</li></ul> <div data-bbox="672 957 747 1029"></div> <div data-bbox="802 945 979 984"><b>Important</b></div> <div data-bbox="799 1012 1382 1146">By choosing the silent setup option and by not overriding the JDK selection, Oracle JDK will be installed and you will be agreeing to the Oracle Binary Code License agreement.</div> <div data-bbox="799 1176 1399 1239">Do not use this option if you do not agree to the license terms.</div> <p>If you want to run the Ambari Server as non-root, you must run setup in interactive mode. When prompted to customize the ambari-server user account, provide the account information.</p>
<b>-v (or -verbose)</b>	Prints verbose info and warning messages to the console during Setup.
<b>-g (or -debug)</b>	Prints debug info to the console during Setup.

## 1.5. Start the Ambari Server

- Run the following command on the Ambari Server host:

```
ambari-server start
```

- To check the Ambari Server processes:

```
ambari-server status
```

- To stop the Ambari Server:

```
ambari-server stop
```



### Note

If you plan to use an existing database instance for Hive or for Oozie, you must prepare to use a non-default database **before** installing your Hadoop cluster.

On Ambari Server start, Ambari runs a database consistency check looking for issues. If any issues are found, Ambari Server **start will abort** and display the following message: `DB configs consistency check failed`. Ambari writes more details about database consistency check results to the `/var/log/ambari-server/ambari-server-check-database.log` file.

You can force Ambari Server to start by skipping this check with the following option:

```
ambari-server start --skip-database-check
```

If you have database issues, by choosing to skip this check, **do not make any changes to your cluster topology or perform a cluster upgrade until you correct the database consistency issues**. Please contact Hortonworks Support and provide the `ambari-server-check-database.log` output for assistance.

## 2. Installing Databases

Schema Registry, SAM, Druid, and Superset require a relational data store to store metadata. You can use either MySQL, Postgres, or Oracle for this. This chapter describes how to install either MySQL, Postgres, and Oracle and how create a databases for SAM and Registry. If you are installing on an existing HDP cluster by using Superset, you can skip the installation instructions, because MySQL was installed with Druid. In this case, configure the databases.



### Note

You should install either Postgres or MySQL; both are not necessary. It is recommended that you use MySQL.



### Warning

If you are installing Postgres, you must install Postgres 9.5 or later for SAM and Schema Registry. Ambari does not install Postgres 9.5, so you must perform a manual Postgres installation.

### Installing and Configuring MySQL

- [Installing MySQL \[20\]](#)
- [Configuring SAM and Schema Registry Metadata Stores in MySQL \[21\]](#)
- [Configuring Druid and Superset Metadata Stores in MySQL \[22\]](#)

### Installing and Configuring Postgres

- [Install Postgres \[22\]](#)
- [Configure Postgres to Allow Remote Connections \[23\]](#)
- [Configure SAM and Schema Registry Metadata Stores in Postgres \[24\]](#)
- [Configure Druid and Superset Metadata Stores in Postgres \[24\]](#)

### Using an Oracle Database

- [Specifying an Oracle Database to use with SAM and Schema Registry](#)

## 2.1. Installing MySQL

### About This Task

You can install MySQL 5.5 or later.

### Before You Begin

On the Ambari host, install the JDBC driver for MySQL, and then add it to Ambari:



```
yum install mysql-connector-java* \  
sudo ambari-server setup --jdbc-db=mysql \  
--jdbc-driver=/usr/share/java/mysql-connector-java.jar
```

### Steps

1. Log in to the node on which you want to install the MySQL metastore to use for SAM, Schema Registry, and Druid.
2. Install MySQL and the MySQL community server, and start the MySQL service:

```
yum localinstall \  
https://dev.mysql.com/get/mysql57-community-release-el7-8.noarch.rpm  
  
yum install mysql-community-server  
  
systemctl start mysqld.service
```

3. Obtain a randomly generated MySQL root password:

```
grep 'A temporary password is generated for root@localhost' \  
/var/log/mysqld.log |tail -1
```

4. Reset the MySQL root password. Enter the following command, followed by the password you obtained in the previous step. MySQL will ask you to change the password.

```
/usr/bin/mysql_secure_installation
```

## 2.2. Configuring SAM and Schema Registry Metadata Stores in MySQL

### Steps

1. Launch the MySQL monitor:

```
mysql -u root -p
```

2. Create the database for the Registry and SAM metastore:

```
create database registry;  
create database streamline;
```

3. Create Schema Registry and SAM user accounts, replacing the last string with your password:

```
CREATE USER 'registry'@'%' IDENTIFIED BY 'R12$%34qw';  
CREATE USER 'streamline'@'%' IDENTIFIED BY 'R12$%34qw';
```

4. Assign privileges to the user account:

```
GRANT ALL PRIVILEGES ON registry.* TO 'registry'@'%' WITH GRANT OPTION ;  
GRANT ALL PRIVILEGES ON streamline.* TO 'streamline'@'%' WITH GRANT OPTION ;
```

5. Commit the operation:

```
commit;
```

## 2.3. Configuring Druid and Superset Metadata Stores in MySQL

### About This Task

Druid and Superset require a relational data store to store metadata. To use MySQL for this, install MySQL and create a database for the Druid metastore.

### Steps

1. Launch the MySQL monitor:

```
mysql -u root -p
```

2. Create the database for the Druid and Superset metastore:

```
CREATE DATABASE druid DEFAULT CHARACTER SET utf8;  
CREATE DATABASE superset DEFAULT CHARACTER SET utf8;
```

3. Create druid and superset user accounts, replacing the last string with your password:

```
CREATE USER 'druid'@'%' IDENTIFIED BY '9oNio)ex1ndL';  
CREATE USER 'superset'@'%' IDENTIFIED BY '9oNio)ex1ndL';
```

4. Assign privileges to the druid account:

```
GRANT ALL PRIVILEGES ON *.* TO 'druid'@'%' WITH GRANT OPTION;  
GRANT ALL PRIVILEGES ON *.* TO 'superset'@'%' WITH GRANT OPTION;
```

5. Commit the operation:

```
commit;
```

## 2.4. Install Postgres

### Before You Begin

If you have already installed a MySQL database, you may skip these steps.



### Warning

You must install Postgres 9.5 or later for SAM and Schema Registry. Ambari does not install Postgres 9.5, so you must perform a manual Postgres installation.

### Steps

1. Install RPM according to the requirements of your operating system:

```
yum install https://yum.postgresql.org/9.6/redhat/rhel-7-x86_64/pgdg-redhat96-9.6-3.noarch.rpm
```

2. Install 9.5+ Postgres database:

```
yum install postgresql96-server postgresql96-contrib postgresql96
```

### 3. Initialize the database:

- For CentOS 7, use the following syntax:

```
/usr/pgsql-9.6/bin/postgresql96-setup initdb
```

- For CentOS 6, use the following syntax:

```
sudo service postgresql initdb
```

### 4. Start Postgres.

For example, if you are using CentOS 7, use the following syntax:

```
systemctl enable postgresql-9.6.service  
systemctl start postgresql-9.6.service
```

### 5. Verify that you can log in:

```
sudo su postgres  
psql
```

## 2.5. Configure Postgres to Allow Remote Connections

### About This Task

It is critical that you configure Postgres to allow remote connections before you deploy a cluster. If you do not perform these steps in advance of installing your cluster, the installation fails.

### Steps

1. Open `/var/lib/pgsql/9.6/data/pg_hba.conf` and update to the following

```
# "local" is for Unix domain socket connections only  
local all all trust  
  
# IPv4 local connections:  
host all all 0.0.0.0/0 trust  
  
# IPv6 local connections:  
host all all ::/0 trust
```

2. Open `/var/lib/pgsql/9.6/data/postgresql.conf` and update to the following:

```
listen_addresses = '*'
```

3. Restart Postgres:

4. 

```
systemctl stop postgresql-9.6.service  
systemctl start postgresql-9.6.service
```

## 2.6. Configure SAM and Schema Registry Metadata Stores in Postgres

### About This Task

If you have already installed MySQL and configured SAM and Schema Registry metadata stores using MySQL, you do not need to configure additional metadata stores in Postgres.

### Steps

1. Log in to Postgres:

```
sudo su postgres
psql
```

2. Create a database called `registry` with the password `registry`:

```
create database registry;
CREATE USER registry WITH PASSWORD 'registry';
GRANT ALL PRIVILEGES ON DATABASE "registry" to registry;
```

3. Create a database called `streamline` with the password `streamline`:

```
create database streamline;
CREATE USER streamline WITH PASSWORD 'streamline';
GRANT ALL PRIVILEGES ON DATABASE "streamline" to streamline;
```

## 2.7. Configure Druid and Superset Metadata Stores in Postgres

### About This Task

Druid and Superset require a relational data store to store metadata. To use Postgres for this, install Postgres and create a database for the Druid metastore. If you have already created a data store using MySQL, you do not need to configure additional metadata stores in Postgres.

### Steps

1. Log in to Postgres:

```
sudo su postgres
psql
```

2. Create a database, user, and password, each called `druid`, and assign database privileges to the user `druid`:

```
create database druid;
CREATE USER druid WITH PASSWORD 'druid';
GRANT ALL PRIVILEGES ON DATABASE "druid" to druid;
```

3. Create a database, user, and password, each called `superset`, and assign database privileges to the user `superset`:

```
create database superset;  
CREATE USER superset WITH PASSWORD 'superset';  
GRANT ALL PRIVILEGES ON DATABASE "superset" to superset;
```

## 2.8. Specifying an Oracle Database to Use with SAM and Schema Registry

### About This Task

You may use an Oracle database with SAM and Schema Registry. Oracle databases 12c and 11g Release 2 are supported

### Prerequisites

You have an Oracle database installed and configured.

### Steps

1. Register the Oracle JDBC driver jar.

```
sudo ambari-server setup --jdbc-db=oracle --jdbc-driver=/usr/share/java/  
ojdbc.jar
```

2. From the SAM and Schema Registry configuration screen, select Oracle as the database type and provide the necessary Oracle Server JDBC credentials and connection string.

## 2.9. Switching to an Oracle Database After Installation

### About This Task

If you want to use an Oracle database with SAM or Schema Registry after you have performed your initial HDF installation or upgrade, you can switch to an Oracle database. Oracle databases 12c and 11g Release 2 are supported

### Prerequisites

You have an Oracle database installed and configured.

### Steps

1. Log into Ambari Server and shut down SAM or Schema Registry.
2. From the configuration screen, select Oracle as the database type and provide Oracle credentials, the JDBC connection string and click **Save**.
3. From the command line where Ambari Server is running, register the Oracle JDBC driver jar:

```
sudo ambari-server setup --jdbc-db=oracle --jdbc-driver=/usr/share/java/  
ojdbc.jar
```

4. From the host where SAM or Schema Registry are installed, copy the JDBC jar to the following location, depending on which component you are updating.

```
cp ojdbc6.jar /usr/hdf/current/registry/bootstrap/lib/.
cp ojdbc6.jar /usr/hdf/current/streamline/bootstrap/lib/.
```

5. From the host where SAM or Schema Registry are installed, run the following command to create the required schemas for SAM or Schema Registry.

```
export JAVA_HOME=/usr/jdk64/jdk1.8.0_112 ; source /usr/hdf/current/
streamline/conf/streamline-env.sh ; /usr/hdf/current/streamline/bootstrap/
bootstrap-storage.sh create

export JAVA_HOME=/usr/jdk64/jdk1.8.0_112 ; source /usr/hdf/current/registry/
conf/registry-env.sh ; /usr/hdf/current/registry/bootstrap/bootstrap-
storage.sh create
```



### Note

You only this command run once, from a single host, to prepare the database.

6. Confirm that new tables are created in the Oracle database.
7. From Ambari, restart SAM or Schema Registry.
8. If you are specifying an Oracle database for SAM, run the following command after you have restarted SAM.

```
export JAVA_HOME=/usr/jdk64/jdk1.8.0_112 ; source /usr/hdf/current/
streamline/conf/streamline-env.sh ; /usr/hdf/current/streamline/bootstrap/
bootstrap.sh
```

9. Confirm that Sam or Schema Registry are available and turn off maintenance mode.

## 3. Deploying an HDP Cluster Using Ambari

To install and configure an HDP cluster for use with HDF's stream analytics capabilities, perform the following steps.

1. [Installing an HDP Cluster \[27\]](#)
2. [Customizing Druid Services \[28\]](#)
3. [Configure Superset \[28\]](#)
4. [Deploy the Cluster Services \[29\]](#)
5. [Access the Stream Insight Superset UI \[30\]](#)

### 3.1. Installing an HDP Cluster

#### About This Task

Before you install an HDF cluster that includes SAM, you must have an existing HDP cluster with Druid installed.

#### Steps

1. Log in to the Apache Ambari UI and start the **Cluster Installation** wizard.

The default Ambari user name and password are `admin` and `admin`.

2. In the **Select Version** page of the wizard, remove all base URLs that do not apply to your operating system.

Change the HDP Base URL to the URL appropriate for your operating system, provided in the [HDF Release Notes](#).

3. In the **Choose Services** page, select which of the following services you need to run an HDF cluster with full SAM capabilities. You may further customize as required by your use case and operational objectives.
  - HDFS
  - YARN + MapReduce2
  - ZooKeeper
  - Ambari Infra
  - Ambari Metrics
  - SmartSense
  - Druid

4. On the **Assign Masters** screen, distribute master services using the deployment diagram available in the *Deployment Index*.
5. On the **Assign Slaves and Clients** screen, distribute slave services using the deployment image as a guide.

#### More Information

[Ambari Installation for HDP](#)

## 3.2. Customizing Druid Services

### About This Task

After creating a databases for the Druid and Superset store, configure the Druid and Superset services to use the database store.

### Steps

1. On the **Customize Services** page of the Cluster Installation wizard, navigate to the **META DATA STORAGE CONFIG** section of the Druid tab:
  - a. Select a database for the Metadata Storage type for both Druid and Superset.
  - b. Add user `druid` and the password you created for Druid. Add user `superset` and the password you created for superset.
  - c. Set Metadata Storage host name to the fully qualified domain name (FQDN) of the node running your database server.
  - d. Set the Metadata Storage port. The default ports are:
    - MySQL – 3306
    - Postgres – 5432
  - e. Set Database hostname to the FQDN of the node running your database server.
2. Set the **SECRET\_KEY** value to encrypt sensitive properties.



### Note

You can find additional configuration information about HDP services in the [Ambari Installation for HDP](#).

## 3.3. Configure Superset

### About This Task

Configure Superset, the data exploration and visualization UI platform.

### Steps



1. Provide values for required fields.



### Note

The password is used to log into the SuperSet UI. You should NOT use special characters in the password due to a bug.

2. To use the Superset visualization that integrates with MapBox, perform the following steps:

- a. Create an account at [MapBox](#).
- b. In MapBox, create a token for API access, but leave all the defaults for token creation.  
You are given a token API key.
- c. Enter that token API key in MAPBOX\_API\_KEY field in section **Advanced druid-superset**:

## 3.4. Deploy the Cluster Services

Complete the **Cluster Install** wizard and deploy all the services. If the Druid services do not start, verify that the Druid metadata storage settings are correct. After correcting, click **Start All** (not Restart).

After successfully starting Druid services, you should see something like the following:

The screenshot shows the Ambari Stream Insight interface. The top navigation bar includes 'Ambari streaminsight', '0 ops', '1 alert', 'Dashboard', 'Services', 'Hosts', 'Alerts', 'Admin', and a user profile for 'admin'. The left sidebar lists services: HDFS, YARN, MapReduce2, ZooKeeper, Ambari Infra, Ambari Metrics, SmartSense (with a red alert icon), and Druid (selected). The main content area shows the 'Summary' tab for the Druid service. It lists components and their status:
 

- Druid Broker: Started, No alerts
- Druid Coordinator: Started, No alerts
- Druid Overlord: Started, No alerts
- Druid Router: Started, No alerts
- Superset: Started, No alerts
- Druid Historicals: 4/5 Druid Historicals Live
- Druid MiddleManagers: 5/5 Druid MiddleManagers Live

## 3.5. Access the Stream Insight Superset UI

### About This Task

As part of the install, Superset is configured with the Druid cluster that was installed as part of Ambari. To verify installation and access the UI.

### Steps

1. Select the Druid Service in Ambari and under the Quick Links menu, choose **Superset** to navigate to the Stream Insight UI.

The default user account is `admin`; the password is what you configured for the Superset service.

2. Click **Sources > Druid Clusters**.

3. You should see a Druid cluster already configured:

The screenshot shows the Superset UI. The top navigation bar includes 'Superset', 'Security', 'Manage', 'Sources', 'Slices', 'Dashboards', and 'SQL Lab'. The main content area shows a table titled 'List Druid Cluster'. The table has a search bar, a '+ Actions' button, and a 'Record Count: 1' indicator. The table contains one row with the following data:
 

Cluster	Metadata Last Refreshed
druid-ambari	2017-02-16 14:21:46

4. After a Druid cluster is set up, you can import all of the data sources or cubes associated with that cluster by clicking **Sources > Refresh Druid Metadata**.

If you have a streaming application that pushes data into data sources, the refresh operation imports all data sources within the Druid cluster:



### Important

Whenever you add new data sources to Druid, perform the **Refresh Druid Metadata** action.

Superset Security Manage Sources Slices Dashboards SQL Lab

List Druid Datasource

Search

Actions Record Count: 4

	Data Source	Cluster	Changed By	Changed On	Time Offset
	Alerts-High-Speed-Cube	Streaming Analytics Manager - Stream Insight	<a href="/superset/profile/admin/">George Veticaden</a>	2017-02-08 05:38:49.791384	0
	Alerts-High-Speed-Cube-V2	Streaming Analytics Manager - Stream Insight	<a href="/superset/profile/admin/">George Veticaden</a>	2017-02-07 15:50:59.807995	0
	driver-violations-cube	Streaming Analytics Manager - Stream Insight	<a href="/superset/profile/admin/">George Veticaden</a>	2017-02-08 05:38:50.170646	0
	driver-violations-cube-2	Streaming Analytics Manager - Stream Insight	<a href="/superset/profile/admin/">George Veticaden</a>	2017-02-07 17:29:22.544088	0

## 4. Installing the HDF Management Pack

### About This Task

A management pack (mpack) bundles service definitions, stack definitions, and stack add-on service definitions so they do not need to be included with the Ambari core functionality and can be updated in between major releases.

### Steps

1. Download the Hortonworks HDF management pack. You can find the download location for your operating system in the *HDF Release Notes*.
2. Copy the bundle to `/tmp` on the node where you installed Ambari.
3. Install the management pack:

```
ambari-server install-mpack \  
--mpack=/tmp/hdf-ambari-mpack-<version>.tar.gz \  
--verbose
```

4. Restart the Ambari server:

```
ambari-server restart
```

### More Information

[HDF Release Notes](#)

## 5. Update the HDF Base URL

### About This Task

Adding the base URL tells Ambari where to look for the HDF repository. This step is necessary when you are using an existing Ambari instance, already managing an HDP cluster, to install and manage an HDF cluster.

### Steps

1. From the Ambari menu, click the **admin** drop-down in the top right of your Ambari Dashboard view. Then select **Manage Ambari**.
2. From the **Clusters** view on the left, click **Versions**, and then click the **HDP version** link.
3. Configure the HDF Base URL to the base URL appropriate for your operating system. Find the HDF Base URLs in the [HDF Release Notes](#).
4. Click **Save**.

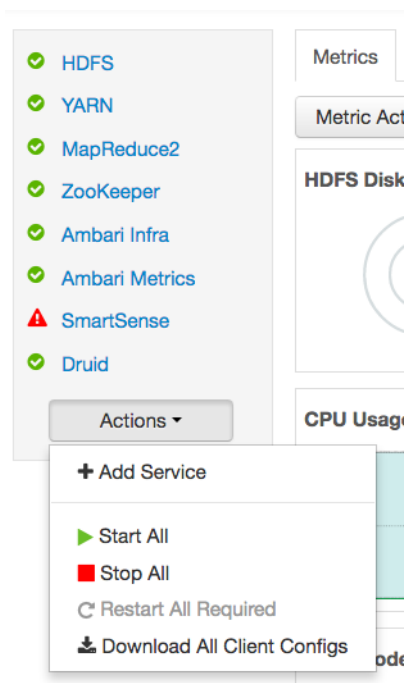
## 6. Add HDF Services to an HDP Cluster

### About This Task

You can use the HDF management pack and Ambari to add HDF services to an HDP cluster.

### Steps

1. If you are installing HDF services on an existing HDP Cluster, on the Ambari home page, click the button **Actions** and select **+ Add Service**.



2. Chose HDF services select the HDF Services needed (NiFi, Storm, Kafka, Streaming Analytics Manager, and Schema Registry)
3. On the Assign Masters screen, distribute master services using the preceding deployment diagram of the Stream Processing cluster.
4. On the Assign Slaves and Clients screen, distribute slave services using the deployment diagram of the Stream Processing cluster.

## 7. Configure HDF Components

You can customize your Hortonworks DataFlow (HDF) component configurations either during or after installation. During installation, you customize HDF component configurations in the **Customize Services** page of the installation wizard. After installation, you can navigate to Services > Configs in the Ambari dashboard.

- [Configure Schema Registry \[35\]](#)
- [Configure SAM \[36\]](#)
- [Configure NiFi \[37\]](#)
- [Configure Kafka \[37\]](#)
- [Configure Storm \[38\]](#)
- [Deploy the Cluster Services \[38\]](#)
- [Access the UI for Deployed Services \[39\]](#)

### 7.1. Configure Schema Registry

#### About This Task

The main Schema Registry configuration task you have is to establish a connection between Schema Registry and the database you want to use as the metadata store.

#### Steps

1. In the **Customize Services** step, navigate to the **REGISTRY CONFIG** section of the **Registry** tab.
2. Select **Jar Storage Type** and then the storage type that you want to use.  
  
If you plan to enable HA for Schema Registry on this cluster, you must select **HDFS**.
3. If you selected **HDFS** as the **Jar Storage Type**, configure **Jar Storage HDFS URL**. This specifies the HDFS location where you want the jars to be stored. For example, `hdfs://<<NN_HOST:8020>>/hdfs/registry`.
4. Configure **jar.storage** to the directory in which you want to store `.jar` files for serializers and deserializers.
5. Configure the **REGISTRY STORAGE** configurations based on the database you created to use as the Schema Registry metadata store.
6. Ensure that the registry storage connector URL has the fully qualified name of the host on which the database was installed and the connector url and default port for the database selected.

#### Example

```
MYSQL example:
```

```
jdbc:mysql://FQDN_MYSQL:3306/registry
```

```
Postgres Example:
```

```
jdbc:postgresql://FQDN_POSTGRES:5432/registry
```

### More Information

[Installing Databases \[20\]](#)

## 7.2. Configure SAM

### About This Task

When you configure Hortonworks Streaming Analytics Manager (SAM), you must provide information about the metadata store database, configure a connection with Schema Registry, and establish the URL for the Druid Supersets.

### Steps

1. In the **Customize Services** step, navigate to the **STREAMLINE CONFIG** section of the **Streaming Analytics Manager** tab.
2. Select **Jar Storage Type**. If you plan to enable HA for SAM on this cluster, you must select **HDFS**.
3. If you selected **HDFS** as the **Jar Storage Type**, configure **Jar Storage HDFS URL**. This specifies the HDFS location where you want the jars to be stored. For example, `hdfs://<NN_HOST:8020:/hdfs/registry`.
4. Configure **jar.storage** to the directory on which you want to store `.jar` files for custom processors.
5. Set the **streamline.dashboard.url** to the Superset URL which you can access using **Quick Links** for Druid.
6. Configure **registry.url** to the REST API Endpoint URL for the Registry.

The format should be `http://$FQDN_REGISTRY_HOST:$REGISTRY_PORT/api/v1`, where

- `$FQDN_REGISTRY_HOST` specifies the host on which you are running Schema Registry and
- `$REGISTRY_PORT` specifies the Schema Registry port number, as in the following example:

```
http://FQDN_REGISTRY_HOST:7788/api/v1
```

You can find the Schema Registry port in the **REGISTRY\_CONFIG** section of the **Registry** tab.



7. Configure the **STREAMLINE STORAGE** configurations based on the database you created to use as a SAM metadata store.
8. Ensure that the registry storage connector URL has the fully qualified name of the host on which the database was installed and the connector url and default port for the database selected.

### Example

MYSQL example:

```
jdbc:mysql://FQDN_MYSQL:3306/streamline
```

Postgres Example:

```
jdbc:postgresql://FQDN_POSTGRES:5432/streamline
```

### More Information

[Installing Databases \[20\]](#)

## 7.3. Configure NiFi

### About This Task

You use the **NiFi** tab in the **Customize Services** step to configure Apache NiFi. Generally, you can accept the defaults during initial installation. However, there are some settings that you must set before proceeding.

### Steps

1. From **Advanced-nifi-ambari-config**, specify the **Encrypt Configuration Master Key Passwords**.

This password is used when you generate the master key for sensitive properties encryption in the NiFi properties file when it is written to disk. It must contain at least 12 characters.

2. From **Advanced-nifi-ambari-config**, provide the **Sensitive property values encryption password**.

This is the password used when you encrypt any sensitive property values that are configured in processors. For enhanced security, it should contain at least 10 characters.

## 7.4. Configure Kafka

### About This Task

You can configure Apache Kafka from the **Kafka** tab in the **Customize Services** step.

### Steps

1. For your initial installation, accept the default values set by Apache Ambari.
2. If Ambari prompts you with Some configurations need your attention before you can proceed, review the list of properties and provide the required information.
3. Review the *Apache Kafka Component Guide* for information about configuring Apache Storm to meet your operational objectives.

#### More Information

[Configuring Kafka for Production Environments](#)

## 7.5. Configure Storm

#### About This Task

You can configure Storm from the **Storm** tab in the **Customize Services** step.

#### Steps

1. For your initial installation, accept the default values set by Ambari.
2. If Ambari prompts you with:  
  
Some configurations need your attention before you can proceed.  
  
Review the list of properties and provide the required information.
3. Review the *Apache Storm Component Guide* for information about configuring storm to meet your operational objectives.

#### More Information

[Configuring Storm for Production Environments](#)

## 7.6. Deploy the Cluster Services

After you finish the wizard and deploy the cluster, some services might fail to start. If this is the case, you can start those services individually by launching them from the Ambari dashboard Services pane.

#### Steps

1. From Ambari's left-hand **Services** pane, click the service you want.
2. From the **Quick Links** drop-down, select the UI option.
3. Find links for the SAM UI under **Streaming Analytics Manager** and for the Schema Registry UI under **Registry**.

#### Result

The UI for your HDF service opens in a new window.

## 7.7. Access the UI for Deployed Services

### About This Task

Once you have deployed your Ambari-managed cluster, you can launch the UI for any of the services from Ambari.

### Steps

1. From Ambari's left-hand **Services** pane, click the service you want.
2. From the **Quick Links** drop-down, select the UI option.
3. Find links for the SAM UI under **Streaming Analytics Manager** and for the Schema Registry UI under **Registry**.

### Result

The UI for your HDF service opens in a new window.

## 8. Configuring Schema Registry and SAM for High Availability

### About This Task

You can configure Schema Registry and SAM for high availability.

### Steps for Configuring SAM for HA

1. Install two or more instances of SAM on unique nodes.
2. From the **Services** pane, select **Streaming Analytics Manager** and click the **Configs** tab.
3. In the **Jar Storage Type** drop down, select **HDFS**.

### Steps for Configuring Schema Registry for HA

1. Install two or more instances of Schema Registry on unique nodes.
2. From the **Services** pane, select **Schema Registry** and click the **Configs** tab.
3. In the **Jar Storage Type** drop down, select **HDFS**.

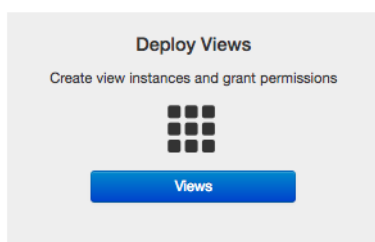
## 9. Install the Storm Ambari View

### About This Task

The Storm Ambari view provides you a number of different troubleshooting and debugging tools.

### Steps

1. From the **admin** drop-down, select **Manage Ambari**.
2. Click the **Views** button.



3. From the list of available Views, expand **Storm\_Monitoring** and click **+ Create Instance**.



4. Configure the Storm Ambari View.

Views / Create Instance

View **Storm\_Monitoring**

Version

**Details**

Instance Name\*

Display Name\*

Description\*

Visible

**Settings**

Storm Hostname\*

Storm Port\*

SSL Enabled\*

- a. **Instance Name** and **Display Name** may not have an spaces.
- b. The **Storm Hostname** refers to the host where the Storm UI Server is deployed.
- c. The Storm port is the Storm UI port server (keep it as default 8744 if you have not changed it).
- d. Click **Save**.

## Result

After saving it, you should see a menu item for the Storm Ambari View.

Ambari streamanal... Services

Dashboard Services Hosts Alerts Admin admin

**EXECUTOR** 0

**TASKS** 0

**SUPERVISOR** 100%

**SLOTS** 0%

**Topology Listing**

Topology Name	Status	Uptime
No topology found!		

**Supervisor Summary**

Host	Slots	CPU	Memory	Uptime
172.26.246.18	0%	0%	0%	1h 41m 33s
vett-hdf-sam8.field.hortonworks.com	0%	0%	0%	1h 41m 33s
vett-hdf-sam9.field.hortonworks.com	0%	0%	0%	1h 41m 24s

**Nimbus Summary**

Host:Port	Status	Uptime
vett-hdf-sam1.field.hortonworks.com:6627	Leader	1h 42m 13s

**Nimbus Configuration**

Ambari Storm UI 0.7.9.006.197

## 10. Using a Local Repository

Local repositories are frequently used in enterprise clusters that have limited outbound internet access. In these scenarios, having packages available locally provides more governance, and better installation performance. These repositories are used heavily during installation for package distribution, as well as post-install for routine cluster operations such as service start/restart operations. The following section describes the steps required to setup and use a local repository:

- Obtain Public Repositories from the [HDF Release Notes](#)
- Set up a local repository having:
  - [Setting Up a Local Repository with No Internet Access \[44\]](#)
  - [Setting up a Local Repository With Temporary Internet Access \[46\]](#)
- [Preparing The Ambari Repository Configuration File \[48\]](#)

### 10.1. Setting Up a Local Repository

Based on your Internet access, choose one of the following options:

- No Internet Access

This option involves downloading the repository tarball, moving the tarball to the selected mirror server in your cluster, and extracting to create the repository.

- Temporary Internet Access

This option involves using your temporary Internet access to sync (using reposync) the software packages to your selected mirror server and creating the repository.

Both options proceed in a similar, straightforward way. Setting up for each option presents some key differences, as described in the following sections:

- [Getting Started Setting Up a Local Repository \[43\]](#)
- [Setting Up a Local Repository with No Internet Access \[44\]](#)
- [Setting up a Local Repository With Temporary Internet Access \[46\]](#)

### 10.2. Getting Started Setting Up a Local Repository

Before setting up your local repository, complete the following:

#### Prerequisites

- Select an existing server in, or accessible to the cluster, that runs a supported operating system.

- Enable network access from all hosts in your cluster to the mirror server.
- Ensure the mirror server has a package manager installed such as yum (RHEL / CentOS / Oracle Linux), zypper (SLES), or apt-get (Debian/Ubuntu).
- **Optional:** If your repository has temporary Internet access, and you are using RHEL/CentOS/Oracle Linux as your OS, install yum utilities:

```
yum install yum-utils createrepo
```

To begin setting up your local repository:

### Steps

1. Create an HTTP server.
  - a. On the mirror server, install an HTTP server (such as Apache httpd) using the instructions provided on the Apache community website.
  - b. Activate this web server.
  - c. Ensure that any firewall settings allow inbound HTTP access from your cluster nodes to your mirror server.



### Note

If you are using Amazon EC2, make sure that SELinux is disabled.

2. On your mirror server, create a directory for your web server.

- For example, from a shell window, type:

**For RHEL/CentOS/Oracle Linux:** `mkdir -p /var/www/html/`

**For SLES:** `mkdir -p /srv/www/htdocs/rpms`

**For Debian/Ubuntu:** `mkdir -p /var/www/html/`

- If you are using a symlink, enable the `followsymlinks` on your web server.

### Next Steps

After you have completed the steps in this section, move on to specific set up for your repository internet access type.

### More Information

[httpd.apache.org/download.cgi](http://httpd.apache.org/download.cgi)

## 10.2.1. Setting Up a Local Repository with No Internet Access

### Prerequisites

Complete the [Getting Started Setting up a Local Repository](#) procedure.



## Steps

1. Obtain the tarball for the repository you would like to create.
2. Copy the repository tarballs to the web server directory and untar the archive.
  - a. Browse to the web server directory you created.

**For RHEL/CentOS/Oracle Linux:** `cd /var/www/html/`

**For SLES:** `cd /srv/www/htdocs/rpms`

**For Debian/Ubuntu:** `cd /var/www/html/`

- b. Untar the repository tarballs to the following locations: where `<web.server>`, `<web.server.directory>`, `<OS>`, `<version>`, and `<latest.version>` represent the name, home directory, operating system type, version, and most recent release version, respectively.

### Untar Locations for a Local Repository - No Internet Access

<b>Ambari Repository</b>	Untar under <code>&lt;web.server.directory&gt;</code>
HDF Stack Repositories	Create a directory and untar it under <code>&lt;web.server.directory&gt;/hdf</code>
<b>HDP Stack Repositories</b>	Create directory and untar under <code>&lt;web.server.directory&gt;/hdp</code>

3. Confirm you can browse to the newly created local repositories.

### URLs for a Local Repository - No Internet Access

<b>Ambari Base URL</b>	<code>http://&lt;web.server&gt;/Ambari-2.6.0.0/&lt;OS&gt;</code>
HDF Base URL	<code>http://&lt;web.server&gt;/hdf/HDF/&lt;OS&gt;/3.x/updates/&lt;latest.version&gt;</code>
<b>HDP Base URL</b>	<code>http://&lt;web.server&gt;/hdp/HDP/&lt;OS&gt;/2.x/updates/&lt;latest.version&gt;</code>
<b>HDP-UTILS Base URL</b>	<code>http://&lt;web.server&gt;/hdp/HDP-UTILS-&lt;version&gt;/repos/&lt;OS&gt;</code>

Where:

- `<web.server>` – The FQDN of the web server host
- `<version>` – The Hortonworks stack version number
- `<OS>` – centos6, centos7, sles11, sles12, ubuntu14, ubuntu16, or debian7



### Important

Be sure to record these Base URLs. You will need them when installing Ambari and the cluster.

4. Optional: If you have multiple repositories configured in your environment, deploy the following plug-in on all the nodes in your cluster.

a. Install the plug-in.

**For RHEL and CentOS 7:** `yum install yum-plugin-priorities`

**For RHEL and CentOS 6:** `yum install yum-plugin-priorities`

b. Edit the `/etc/yum/pluginconf.d/priorities.conf` file to add the following:

```
[main]
enabled=1
gpgcheck=0
```

## 10.2.2. Setting up a Local Repository With Temporary Internet Access

### Prerequisites

Complete the [Getting Started Setting up a Local Repository](#) procedure.

### Steps

- Put the repository configuration files for Ambari and the Stack in place on the host.
- Confirm availability of the repositories.

**For RHEL/CentOS/Oracle Linux:** `yum repolist`

**For SLES:** `zypper repos`

**For Debian/Ubuntu:** `dpkg-list`

3. Synchronize the repository contents to your mirror server.

- Browse to the web server directory:

**For RHEL/CentOS/Oracle Linux:** `cd /var/www/html`

**For SLES:** `cd /srv/www/htdocs/rpms`

**For Debian/Ubuntu:** `cd /var/www/html`

- For Ambari, create `ambari` directory and `reposync`.

```
mkdir -p ambari/<OS>
```

```
cd ambari/<OS>
```

```
reposync -r Updates-Ambari-2.6.0.0
```

where `<OS>` is `centos6`, `centos7`, `sles11`, `sles12`, `ubuntu14`, `ubuntu16`, or `debian7`.

- For HDP Stack Repositories, create `hdp` directory and `reposync`.

```
mkdir -p hdp/<OS>
cd hdp/<OS>
reposync -r HDP-<latest.version>
reposync -r HDP-UTILS-<version>
```

- For HDF Stack Repositories, create an hdf directory and reposync.

```
mkdir -p hdf/<OS>
cd hdf/<OS>
reposync -r HDF-<latest.version>
```

#### 4. Generate the repository metadata.

##### For Ambari:

```
createrepo <web.server.directory>/ambari/
<OS>/Updates-Ambari-2.6.0.0
```

##### For HDP Stack Repositories:

```
createrepo <web.server.directory>/hdp/<OS>/
HDP-<latest.version>
```

```
createrepo <web.server.directory>/hdp/<OS>/
HDP-UTILS-<version>
```

##### For HDF Stack Repositories:

```
createrepo <web.server.directory>/hdf/<OS>/
HDF-<latest.version>
```

#### 5. Confirm that you can browse to the newly created repository.

##### URLs for the New Repository

**Ambari Base URL**      <http://<web.server>/ambari/<OS>/Updates-Ambari-2.6.0.0>

**HDF Base URL**      <http://<web.server>/hdf/<OS>/HDF-<latest.version>>

**HDP Base URL**      <http://<web.server>/hdp/<OS>/HDP-<latest.version>>

**HDP-UTILS Base URL**      <http://<web.server>/hdp/<OS>/HDP-UTILS-<version>>

Where:

- <web.server> – The FQDN of the web server host
- <version> – The Hortonworks stack version number
- <OS> – centos6, centos7, sles11, sles12, ubuntu14, ubuntu16, or debian7



### Important

Be sure to record these Base URLs. You will need them when installing Ambari and the Cluster.

#### 6. Optional. If you have multiple repositories configured in your environment, deploy the following plug-in on all the nodes in your cluster.

- a. Install the plug-in.

**For RHEL and CentOS 7:** `yum install yum-plugin-priorities`

**For RHEL and CentOS 6:** `yum install yum-plugin-priorities`

- b. Edit the `/etc/yum/pluginconf.d/priorities.conf` file to add the following:

```
[main]
```

```
enabled=1
```

```
gpgcheck=0
```

## 10.3. Preparing The Ambari Repository Configuration File

### Steps

1. Download the `ambari.repo` file from the public repository.

```
http://public-repo-1.hortonworks.com/ambari/<OS>/2.x/updates/2.6.0.0/ambari.repo
```

where `<OS>` is `centos6`, `centos7`, `sles11`, `sles12`, `ubuntu14`, `ubuntu16`, or `debian7`.

2. Edit the `ambari.repo` file and replace the Ambari Base URL `baseurl` obtained when setting up your local repository.



### Note

You can disable the GPG check by setting `gpgcheck=0`. Alternatively, you can keep the check enabled but replace the `gpgkey` with the URL to the GPG-KEY in your local repository.

```
[Updates-Ambari-2.6.0.0]
```

```
name=Ambari-2.6.0.0-Updates
```

```
baseurl=INSERT-BASE-URL
```

```
gpgcheck=1
```

```
gpgkey=http://public-repo-1.hortonworks.com/ambari/centos6/RPM-GPG-KEY/RPM-GPG-KEY-Jenkins
```

```
enabled=1
```

```
priority=1
```

### Base URL for a Local Repository

**Built with Repository Tarball (No Internet Access)** `http://<web.server>/Ambari-2.6.0.0/<OS>`

**Built with Repository File**      <http://<web.server>/ambari/<OS>/Updates-Ambari-2.6.0.0>  
(Temporary Internet Access)

where <web.server> = FQDN of the web server host, and <OS> is centos6, centos7, sles11, sles12, ubuntu12, ubuntu14, or debian7.

3. Place the `ambari.repo` file on the machine you plan to use for the Ambari Server.

**For RHEL/CentOS/Oracle Linux:**      `/etc/yum/repos.d/ambari.repo`

**For SLES:**      `/etc/zypp/repos.d/ambari.repo`


**For Debian/Ubuntu:**      `/etc/apt/sources.list.d/ambari.list`

4. Edit the `/etc/yum/pluginconf.d/priorities.conf` file to add the following:

```
[main]
enabled=1
gpgcheck=0
```

# 11. Navigating the HDF Library

To navigate the Hortonworks DataFlow (HDF) documentation library, begin by deciding your current goal.

If you want to...	See this document...
Install or upgrade an HDF cluster using Apache Ambari	<ul style="list-style-type: none"> <li>• <a href="#">Release Notes</a></li> <li>• <a href="#">Support Matrices</a></li> <li>• <a href="#">Planning Your Deployment</a></li> <li>• <a href="#">Ambari Upgrade</a></li> </ul>
Manually install or upgrade HDF components   <b>Note</b> This option is not available for Streaming Analytics Manager or Schema Registry.	<ul style="list-style-type: none"> <li>• <a href="#">Command Line Installation</a></li> <li>• <a href="#">MiNiFi Java Agent Quick Start</a></li> <li>• <a href="#">Manual Upgrade</a></li> </ul>
Get started with HDF	<ul style="list-style-type: none"> <li>• <a href="#">Getting Started with Apache NFi</a></li> <li>• <a href="#">Getting Started with Stream Analytics</a></li> </ul>
Use and administer HDF Flow Management capabilities	<ul style="list-style-type: none"> <li>• <a href="#">Apache NiFi User Guide</a></li> <li>• <a href="#">Apache NiFi Administration Guide</a></li> <li>• <a href="#">Apache NiFi Developer Guide</a></li> <li>• <a href="#">Apache NiFi Expression Language Guide</a></li> <li>• <a href="#">MiNiFi Java Agent Administration Guide</a></li> </ul>
Use and administer HDF Stream Analytics capabilities	<ul style="list-style-type: none"> <li>• <a href="#">Streaming Analytics Manager User Guide</a></li> <li>• <a href="#">Schema Registry User Guide</a></li> <li>• <a href="#">Apache Storm Component Guide</a></li> <li>• <a href="#">Apache Kafka Component Guide</a></li> </ul>