



# TRIFACTA

## Databases Guide

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# Install Databases

The Trifacta® platform uses multiple SQL databases to manage platform metadata. This section describes how to install and initialize these databases.

## DB Installation Pre-requisites

- You must install a supported database distribution. For more information on the supported database versions, see *System Requirements*.
  - You must also acquire the database dependencies associated with the operating system distribution where the database is to be installed. Please see the database vendor for more information.
- Please verify that the ports used by the database are opened on the Trifacta node.
  - For more information on default ports, see *System Ports*.
  - If you need to use different ports, additional configuration is required. More instructions are provided later.
- Installation and configuration of the database cannot be completed until the Trifacta software has been installed. You should install the software on the Trifacta node first.
- If you are installing the databases on an instance of Amazon RDS, additional setup is required first. See *Install Databases on Amazon RDS*.
- Other pre-requisites specific to the database distribution may be listed in the appropriate section below.

**If you are concerned about durability and disaster recovery of your Trifacta metadata, your enterprise backup procedures should include the Trifacta databases. See *Backup and Recovery*.**

### Topics:

- *Install Databases for PostgreSQL*
- *Install Databases for MySQL*
- *Install Databases on Amazon RDS*
- *Configure the Databases*
- *Create Databases and Users*
- *Upgrade Databases for PostgreSQL*
- *Upgrade Databases for MySQL*
- *Database Reference*
  - *Change Database Passwords for MySQL*
  - *Change Database Passwords for PostgreSQL*
  - *Change Database Port*

## Install Databases for PostgreSQL

### Contents:

- *Pre-requisites*
  - *Select Configuration File*
  - *Database Install*
  - *Acquire Port Information*
- 

The Trifacta® platform requires access to the following databases.

- **Main database:** storage of users and metadata about your datasets, including completed jobs.

- **Jobs database:** storage of job tracking information. Jobs are purged upon completion or job timeout. Failed jobs are purged periodically.
- **Configuration Service database:** storage of parameter settings at the workspace level.
- **Artifact Storage Service database:** storage for feature usage data such value mappings for the standardization feature.
- 

The scheduling feature is enabled by default. If it's enabled, the following databases are also required:

- **Scheduling database:** Storage of schedules, including datasets to execute
- **Time-based Trigger database:** Storage of triggering information.
- For more information, see *Configure Automator*.

This section describes how to install the database server, after which you can create and initialize the databases and their users.

## Pre-requisites

- The installing user must have write permissions to the directory from which the commands are executed.
- The installing user must have sudo privileges.

## Select Configuration File

By default, the Trifacta platform assumes that you are installing the databases in a PostgreSQL instance. This configuration file is stored here:

```
/opt/trifacta/conf/trifacta-conf.json
```

## Database Install

**NOTE:** The following distributions and commands are for PostgreSQL 9.6.

| O/S Distribution | URL   | Package Name        |
|------------------|---|---------------------|
| CentOS 6         | <a href="https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-6-x86_64/pgdg-centos96-9.6-3.noarch.rpm">https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-6-x86_64/pgdg-centos96-9.6-3.noarch.rpm</a> | postgresql96-server |
| CentOS 7         | <a href="https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-7-x86_64/pgdg-centos96-9.6-3.noarch.rpm">https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-7-x86_64/pgdg-centos96-9.6-3.noarch.rpm</a> | postgresql96-server |
| RHEL 6           | <a href="https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-6-x86_64/pgdg-centos96-9.6-3.noarch.rpm">https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-6-x86_64/pgdg-centos96-9.6-3.noarch.rpm</a> | postgresql96-server |
| RHEL 7           | <a href="https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-7-x86_64/pgdg-centos96-9.6-3.noarch.rpm">https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-7-x86_64/pgdg-centos96-9.6-3.noarch.rpm</a> | postgresql96-server |

**For CentOS 6.x:**

```
wget https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-6-  
x86_64/pgdg-centos96-9.6-3.noarch.rpm  
sudo yum -y install pgdg-centos96-9.6-3.noarch.rpm  
sudo yum -y install postgresql96-server
```

#### For CentOS 7.x:

```
wget https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-7-  
x86_64/pgdg-centos96-9.6-3.noarch.rpm  
sudo yum -y install pgdg-centos96-9.6-3.noarch.rpm  
sudo yum -y install postgresql96-server
```

#### For Red Hat Enterprise Linux 6.x:

```
wget https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-6-  
x86_64/pgdg-redhat96-9.6-3.noarch.rpm  
sudo yum -y install pgdg-redhat96-9.6-3.noarch.rpm  
sudo yum -y install postgresql96-server
```

#### For Red Hat Enterprise Linux 7.x:

```
wget https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-7-  
x86_64/pgdg-redhat96-9.6-3.noarch.rpm  
sudo yum -y install pgdg-redhat96-9.6-3.noarch.rpm  
sudo yum -y install postgresql96-server
```

#### For Ubuntu 14.04:

Add the repository's archive key to your apt-key keyring:

```
wget --quiet -O - https://www.postgresql.org/media/keys/ACCC4CF8.asc |  
sudo apt-key add -
```

Create a file named `/etc/apt/sources.list.d/pgdg.list`, containing the following:

```
deb http://apt.postgresql.org/pub/repos/apt/ trusty-pgdg main  
deb-src http://apt.postgresql.org/pub/repos/apt/ trusty-pgdg main
```

Run the following command:

```
sudo apt-get update
sudo apt-get install -y postgresql-9.6
```

### For Ubuntu 16.04:

Add the repository's archive key to your apt-key keyring:

```
wget --quiet -O - https://www.postgresql.org/media/keys/ACCC4CF8.asc |
sudo apt-key add -
```

Create a file named `/etc/apt/sources.list.d/pgdg.list`, containing the following:

```
deb http://apt.postgresql.org/pub/repos/apt/ xenial-pgdg main
```

Run the following command:

```
sudo apt-get update
sudo apt-get install -y postgresql-9.6
```

## Acquire Port Information

After you have completed the installation, you must acquire the port information for each database from the following locations on the Trifacta node. These port numbers need to be applied inside the Trifacta platform.

**NOTE:** By default, PostgreSQL and the platform use port 5432 for communication. If that port is not available at install/upgrade time, the next available port is used, which is typically 5433. This change may occur if a previous version of PostgreSQL is on the same server. When a non-default port number is used, the platform must be configured to use it. For more information, see *Change Database Port*.

### CentOS/RHEL (PostgreSQL 9.6):

```
/var/lib/pgsql/9.6/data/postgresql.conf
```

### Ubuntu (PostgreSQL 9.6) :

```
/etc/postgresql/9.6/main/postgresql.conf
```

## Install Databases for MySQL

## Contents:

- *Pre-requisites*
    - *Acquire MySQL Java driver*
  - *Select Configuration File*
  - *Database Install*
  - *Acquire Port Information*
  - *Update MySQL Password Policy*
- 

The Trifacta® platform requires access to the following databases.

- **Main database:** storage of users and metadata about your datasets, including completed jobs.
- **Jobs database:** storage of job tracking information. Jobs are purged upon completion or job timeout. Failed jobs are purged periodically.
- **Configuration Service database:** storage of parameter settings at the workspace level.
- **Artifact Storage Service database:** storage for feature usage data such value mappings for the standardization feature.
- 

The scheduling feature is enabled by default. If it's enabled, the following databases are also required:

- **Scheduling database:** Storage of schedules, including datasets to execute
- **Time-based Trigger database:** Storage of triggering information.
- For more information, see *Configure Automator*.

This section describes how to install the database server, after which you can create and initialize the databases and their users.

## Pre-requisites

- The installing user must have write permissions to the directory from which the commands are executed.
- The installing user must have sudo privileges.

## Acquire MySQL Java driver

The MySQL Java driver is not packaged with the Trifacta installer. If you are installing the Trifacta databases into MySQL, please acquire the following driver files.

### File 1:

```
mysql-connector-java-6.0.6.jar
```

This file can be downloaded from the following locations:

- <https://dev.mysql.com/downloads/connector/j/>
- <https://mvnrepository.com/artifact/mysql/mysql-connector-java/6.0.6>

This file needs to be installed in the following locations on the Trifacta node:



```
/opt/trifacta/services/artifact-storage-service/build/install/artifact-  
storage-service/lib/mysql-connector-java-6.0.6.jar  
/opt/trifacta/services/configuration-service/build/install/configuration-  
service/lib/mysql-connector-java-6.0.6.jar  
/opt/trifacta/services/batch-job-runner/build/install/batch-job-runner  
/lib/mysql-connector-java-6.0.6.jar  
/opt/trifacta/services/scheduling-service/server/build/install  
/scheduling-service/lib/mysql-connector-java-6.0.6.jar  
/opt/trifacta/services/time-based-trigger-service/server/build/install  
/time-based-trigger-service/lib/mysql-connector-java-6.0.6.jar
```

## File 2:

```
mysql-connector-java-5.1.37.jar
```

This file can be downloaded from here:

- <https://mvnrepository.com/artifact/mysql/mysql-connector-java/5.1.37>

This file needs to be installed in the following location:

```
/opt/trifacta/services/secure-token-service/server/build/install/secure-  
token-service/lib/mysql-connector-java-5.1.37.jar
```

## Select Configuration File

If you are installing the database in a MySQL instance, a separate base configuration has been provided. This configuration file is stored in the following location:

```
/opt/trifacta/conf/trifacta-conf.json.MYSQL_DB
```

To use MySQL, you should back up the default configuration file and then copy the MySQL version in its place:

**If you have already applied configuration changes to `trifacta-conf.json` through the above file or the Admin Settings page, these changes are lost when the following steps are performed. You must manually migrate those changes over or apply the MySQL changes manually.**

```
cp /opt/trifacta/conf/trifacta-conf.json /opt/trifacta/conf/trifacta-  
conf.json.POSTGRES_DB  
cp /opt/trifacta/conf/trifacta-conf.json.MYSQL_DB /opt/trifacta/conf  
/trifacta-conf.json
```

## Database Install

**NOTE:** The following distributions and commands are for MySQL Community Server 5.7.

| O/S Distribution | URL   | Package Name           |
|------------------|---|------------------------|
| CentOS 6         | <a href="https://dev.mysql.com/get/mysql80-community-release-el6-1.noarch.rpm">https://dev.mysql.com/get/mysql80-community-release-el6-1.noarch.rpm</a> | mysql-community-server |
| CentOS 7         | <a href="https://dev.mysql.com/get/mysql80-community-release-el7-1.noarch.rpm">https://dev.mysql.com/get/mysql80-community-release-el7-1.noarch.rpm</a> | mysql-community-server |
| RHEL 6           | <a href="https://dev.mysql.com/get/mysql80-community-release-el6-1.noarch.rpm">https://dev.mysql.com/get/mysql80-community-release-el6-1.noarch.rpm</a> | mysql-community-server |
| RHEL 7           | <a href="https://dev.mysql.com/get/mysql80-community-release-el7-1.noarch.rpm">https://dev.mysql.com/get/mysql80-community-release-el7-1.noarch.rpm</a> | mysql-community-server |
| Ubuntu 14.04     | <a href="https://dev.mysql.com/get/mysql-apt-config_0.8.10-1_all.deb">https://dev.mysql.com/get/mysql-apt-config_0.8.10-1_all.deb</a>                   |                        |
| Ubuntu 16.04     | <a href="https://dev.mysql.com/get/mysql-apt-config_0.8.10-1_all.deb">https://dev.mysql.com/get/mysql-apt-config_0.8.10-1_all.deb</a>                   |                        |

### For CentOS 6.x:

```
# Install MySql Repo List
sudo wget https://dev.mysql.com/get/mysql80-community-release-el6-1.noarch.rpm
sudo rpm -Uvh mysql80-community-release-el6-1.noarch.rpm
# Check list of available Mysql Repos; by default 8.0 is enabled, but we want 5.7
yum repolist all | grep mysql
# Disable 8.0 and enable 5.7
sudo yum-config-manager --disable mysql80-community
sudo yum-config-manager --enable mysql57-community
# Verify repo state
yum repolist all | grep mysql
# Install Mysql Server
sudo yum install mysql-community-server
# Start mysql server
sudo service mysqld start
# Verify status
sudo service mysqld status
```

### For CentOS 7.x:

```
# Install MySQL Repo List
sudo wget https://dev.mysql.com/get/mysql80-community-release-el7-1.
noarch.rpm
sudo rpm -Uvh mysql80-community-release-el7-1.noarch.rpm
# Check list of available MySQL Repos; by default 8.0 is enabled, but we
want 5.7
yum repolist all | grep mysql
# Disable 8.0 and enable 5.7
sudo yum-config-manager --disable mysql80-community
sudo yum-config-manager --enable mysql57-community
# Verify repo state
yum repolist all | grep mysql
# Install MySQL Server
sudo yum install mysql-community-server
# Start MySQL server
sudo systemctl start mysqld.service
# Verify status
sudo systemctl status mysqld.service
```

**For Red Hat Enterprise Linux 6.x:** See CentOS 6 above.

**For Red Hat Enterprise Linux 7.x:** See CentOS 7 above.

**For Ubuntu 14.04:**

```
# Install and configure repo config package
wget https://dev.mysql.com/get/mysql-apt-config_0.8.10-1_all.deb
sudo debconf-set-selections <<< "mysql-apt-config mysql-apt-config
/select-server select mysql-5.7"
sudo DEBIAN_FRONTEND=noninteractive dpkg -i mysql-apt-config_0.8.10-
1_all.deb
sudo apt-get update
# Set Installer configs Admin password and install MySQL Server package
sudo debconf-set-selections <<< "mysql-community-server mysql-community-
server/root-pass password <MYSQL_ADMIN_PASSWORD>"
sudo debconf-set-selections <<< "mysql-community-server mysql-community-
server/re-root-pass password <MYSQL_ADMIN_PASSWORD>"
sudo DEBIAN_FRONTEND=noninteractive apt-get install mysql-community-
server
sudo service mysql start
```

**For Ubuntu 16.04:**

```
# Install and configure repo config package
sudo apt-get update && sudo apt-get install lsb-release
wget https://dev.mysql.com/get/mysql-apt-config_0.8.10-1_all.deb
sudo debconf-set-selections <<< "mysql-apt-config mysql-apt-config
/select-server select mysql-5.7"
sudo DEBIAN_FRONTEND=noninteractive dpkg -i mysql-apt-config_0.8.10-
1_all.deb
sudo apt-get update
# Set Installer configs Admin password and install MySQL Server package
sudo debconf-set-selections <<< "mysql-community-server mysql-community-
server/root-pass password <MYSQL_ADMIN_PASSWORD>"
sudo debconf-set-selections <<< "mysql-community-server mysql-community-
server/re-root-pass password <MYSQL_ADMIN_PASSWORD>"
sudo DEBIAN_FRONTEND=noninteractive apt-get install mysql-community-
server
sudo service mysql start
```

## Acquire Port Information

After you have completed the installation, you must acquire the port information for each database from the following locations on the Trifacta node. These port numbers need to be applied inside the Trifacta platform.

### CentOS/RHEL (MySQL 5.7):

The default port is 3306. See *System Ports*.

**Ubuntu (MySQL 5.7) :** Not supported.

## Update MySQL Password Policy

**NOTE:** This section only applies to CentOS and RHEL platforms only where MySQL is the installed database.

By default, MySQL enforces a stricter password policy on database passwords. If you prefer to set your own passwords outside of this policy, you must lower the password policy. Please complete the following steps:

```
# Get temporary root password from mysql log
sudo grep 'temporary password' /var/log/mysqld.log
# Connect to server as root
mysql -uroot -p
# Update password
ALTER USER 'root'@'localhost' IDENTIFIED BY '<my_new_password>';
# Unless you plan to update all the User passwords to be meet MySQL
Security requirements, you should set the password policy to low
SET GLOBAL validate_password_policy=LOW;
```

## Install Databases on Amazon RDS

## Contents:

- *Limitations*
  - *Pre-requisites*
  - *Initialize RDS instance*
  - *Configure the Trifacta platform for RDS*
  - *Initialize the databases*
  - *Configure non-default connections*
    - *Trifacta database*
    - *Jobs database*
    - *Scheduling service database*
    - *Time-based trigger service database*
    - *Configuration service database*
    - *Artifact storage service database*
    - *Database Parameter Reference*
  - *Logging*
- 

As needed, the Trifacta® databases can be installed as PostgreSQL DBs on Amazon RDS. Amazon Relational Database Service (Amazon RDS) makes it easy to set up, operate, and scale a relational database in the cloud.

## Limitations

- MySQL is not supported for installation on Amazon RDS.
- SSL connectivity is not supported.

## Pre-requisites

**NOTE:** You can use the suggested defaults below for sizing your RDS instance. If you have questions or concerns about sizing recommendations, please contact *Trifacta Support*.

- Admin access to an Amazon RDS account

## Initialize RDS instance

### Steps:

1. In your RDS dashboard, click **Launch a DB instance**.

**NOTE:** The RDS instance must be launched in the same Amazon region as the Trifacta node.

2. For Select Engine: Select **PostgreSQL**.
3. For Production?: Choose **Yes** if you are deploying the database for a production instance of the Trifacta platform. Otherwise, select **No**.
4. DB Engine: `postgres`
5. For the DB details, see below:

**NOTE:** Except as noted below, properties should be specified according to your enterprise requirements.

### 1. Instance Specifications:

1. License Model: `postgresql-license`
  2. DB Engine Version: For more information on the supported versions of PostgreSQL, see *System Requirements*.
  3. Allocated Storage: at least 10 GB
6. For Advanced Settings, please apply the following settings:

#### 1. Network and Security:

1. VPC security group must allow for access from the Trifacta platform.

#### 2. Database Options:

1. Database Name: `trifacta`
2. Database Port: `5432`

1. The port number can be changed as needed. See *System Ports*.

7. Populate other properties according to your enterprise requirements.
8. To complete the set up click **Launch DB Instance**.
9. When the RDS DB instance is up and running, please collect the following information, which is used later:
  1. Public DNS
  2. Port Number
  3. Admin username
  4. Admin password

## Configure the Trifacta platform for RDS

Please complete the following steps to integrate the Trifacta platform with the DB instance you just created.

### Steps:

1. In the RDS console, you must find the Public DNS endpoint for the RDS instance you created:
  1. Under Instances, expand the name of the instance you created.
  2. The DNS endpoint should be listed under the name in the Endpoint section.
2. Set the host for each database to the Public DNS endpoint for the RDS instance:

| Database                          | Property  |
|-----------------------------------|---|
| Main database                     | <code>webapp.database.host</code>                     |
| Jobs database                     | <code>batch-job-runner.database.host</code>           |
| Scheduling database               | <code>scheduling-service.database.host</code>         |
| Time-based Trigger database       | <code>time-based-trigger-service.database.host</code> |
| Configuration Service database    | <code>configuration-service.database.host</code>      |
| Artifact Storage Service database | <code>artifact-storage-service.database.host</code>   |

3. To set custom database names, usernames, and passwords:

1. Edit `/opt/trifacta/conf/trifacta-conf.json`.
2. For each database below, you can review the database name, username, and password.

| Database | Property |
|----------|----------|
|----------|----------|

|                                   |  |
|-----------------------------------|--|
| Main database                     | webapp.database.name                         |
|                                   | webapp.database.username                     |
|                                   | webapp.database.password                     |
| Jobs database                     | batch-job-runner.database.name               |
|                                   | batch-job-runner.database.username           |
|                                   | batch-job-runner.database.password           |
| Scheduling database               | scheduling-service.database.name             |
|                                   | scheduling-service.database.username         |
|                                   | scheduling-service.database.password         |
| Time-Based Trigger database       | time-based-trigger-service.database.name     |
|                                   | time-based-trigger-service.database.username |
|                                   | time-based-trigger-service.database.password |
| Configuration Service database    | configuration-service.database.name          |
|                                   | configuration-service.database.username      |
|                                   | configuration-service.database.password      |
| Artifact Storage Service database | artifact-storage-service.database.name       |
|                                   | artifact-storage-service.database.username   |
|                                   | artifact-storage-service.database.password   |

3. Make changes in the file as needed and save.

## Initialize the databases

Use the following steps to initialize the databases required by the platform.

### Pre-requisites:

- The installing user must have write permissions to the directory from which the commands are executed.
- The installing user must have sudo privileges.

### Steps:

1. Switch to the Postgres user. Launch psql.

```
sudo su - postgres
```

**NOTE:** Unless the port number for postgres has been modified, it should be listening at the default value: 5432.

2. Launch psql using the following command, applying the admin password when prompted:

```
psql --host=${RDS_HOST_NAME} --port=${RDS_PORT} --
username=${RDS_ADMIN_USERNAME} --password=${RDS_ADMIN_PASSWORD}
```

where:

| Parameter | Description                            |
|-----------|--|
| host      | Public DNS value for the RDS instance  |
| port      | Port number value for the RDS instance |
| username  | Admin username for the RDS instance    |
| password  | Password for admin username            |

3. Execute the following commands using the `postgres` user.

**NOTE:** The values in platform configuration must match the values that you use below. Below are the default values.

1. For Trifacta database:

```
CREATE ROLE trifacta LOGIN ENCRYPTED PASSWORD '<pwd_trifacta>';  
CREATE DATABASE trifacta WITH OWNER trifacta;
```

2. For Jobs database:

```
CREATE ROLE trifactaactiviti WITH LOGIN ENCRYPTED PASSWORD  
'<pwd_trifactaactiviti>';  
CREATE DATABASE "trifacta-activiti" WITH OWNER  
trifactaactiviti;
```

3. For Scheduling database:

```
CREATE ROLE trifactaschedulingservice LOGIN ENCRYPTED PASSWORD  
'<pwd_trifactaschedulingservice>';  
CREATE DATABASE trifactaschedulingservice WITH OWNER  
trifactaschedulingservice;
```

For more information on scheduling, see *Configure Automator*.

4. For Time-based Trigger database:



```
CREATE ROLE trifactatimebasedtriggerservice LOGIN ENCRYPTED
PASSWORD '<pwd_trifactatimebasedtriggerservice>';
CREATE DATABASE trifactatimebasedtriggerservice WITH OWNER
trifactatimebasedtriggerservice;
```

For more information on scheduling, see *Configure Automator*.

5. For Configuration Service database:

```
CREATE ROLE trifactaconfigurationservice LOGIN ENCRYPTED
PASSWORD '<pwd_trifactaconfigurationservice>';
CREATE DATABASE trifactaconfigurationservice WITH OWNER
trifactaconfigurationservice;
```

6. For Artifact Storage Service database:

```
CREATE ROLE trifactaartifactstorageservice LOGIN ENCRYPTED
PASSWORD '<pwd_trifactaartifactstorageservice>';
CREATE DATABASE trifactaartifactstorageservice WITH OWNER
trifactaartifactstorageservice;
```

7. Exit:

```
\q
exit
```

## Configure non-default connections

If you have used non-default values for the username, password, host, or port value for either database, you must update platform configuration.

You can apply this change through the *Admin Settings Page* (recommended) or `trifacta-conf.json`. For more information, see *Platform Configuration Methods*.

**NOTE:** Do not modify the other properties in these sections unless necessary.

## Trifacta database

```
"webapp.database.username": "trifacta",
"webapp.database.logging": false,
"webapp.database.name": "trifacta",
"webapp.database.host": "localhost",
"webapp.database.password": "<pwd_trifactaDB>",
"webapp.database.type": "postgresql",
"webapp.database.port": 5432,
"webapp.database.pool.maxIdleTimeInMillis": 30000,
"webapp.database.pool.maxConnections": 10,
```

The following parameters apply to the Trifacta database only:

| Parameter                | Description  |
|--------------------------|--|
| logging                  | Set this value to true to enable logging on the Trifacta database.                                     |
| pool.maxIdleTimeInMillis | Specifies the maximum permitted idle time for a database connection before it is automatically closed. |
| pool.maxConnections      | Defines the maximum permitted database connections for the Trifacta database.                          |

Additional parameters are described below.

## Jobs database

Modify the batch-job-runner.database settings:

```
"batch-job-runner.database.username": "trifactaactiviti",
"batch-job-runner.database.name": "trifacta-activiti",
"batch-job-runner.database.driver": "org.postgresql.Driver",
"batch-job-runner.database.host": "localhost",
"batch-job-runner.database.password": "<pwd_trifactaactivitiDB>",
"batch-job-runner.database.port": 5432,
```

## Scheduling service database

```
"scheduling-service.database.type": "POSTGRESQL",
"scheduling-service.database.host": "localhost",
"scheduling-service.database.port": "5432",
"scheduling-service.database.name": "trifactascheduling-service",
"scheduling-service.database.username": "trifactascheduling-service",
"scheduling-service.database.password": "<pwd_scheduling-serviceDB>"
```

## Time-based trigger service database

```
"time-based-trigger-service.database.type": "POSTGRESQL",  
"time-based-trigger-service.database.host": "localhost",  
"time-based-trigger-service.database.port": "5432",  
"time-based-trigger-service.database.name":  
"trifactatimebasedtriggerservice",  
"time-based-trigger-service.database.username":  
"trifactatimebasedtriggerservice",  
"time-based-trigger-service.database.password": "<pwd_triggerserviceDB>"
```

## Configuration service database

```
"configuration-service.database.type": "POSTGRESQL",  
"configuration-service.database.host": "localhost",  
"configuration-service.database.port": "5432",  
"configuration-service.database.name": "trifactaconfigurationservice",  
"configuration-service.database.username":  
"trifactaconfigurationservice",  
"configuration-service.database.password": "<pwd_configurationserviceDB>"
```

## Artifact storage service database

```
"artifact-storage-service.database.type": "POSTGRESQL",  
"artifact-storage-service.database.host": "localhost",  
"artifact-storage-service.database.port": "5432",  
"artifact-storage-service.database.name":  
"trifactaartifactstorageservice",  
"artifact-storage-service.database.username":  
"trifactaartifactstorageservice",  
"artifact-storage-service.database.password":  
"<pwd_trifactaartifactstorageserviceDB>"
```

## Database Parameter Reference

The following generalized parameters apply to one or more of the databases.

| Parameter | Description  |
|-----------|--|
| host      | Host of the database. Default value is localhost, meaning the database is hosted on the Trifacta node. |
| port      | Port number for the database. Default value is 5432 for all databases.                                 |

|                  |  |
|------------------|--|
| name             | Name of the database. This value should match what was used during installation. |
| user or username | The username to use to connect to the database.                                  |
| password         | Password to use to connect to the database.                                      |
| type             | This value should be set to POSTGRESQL. Do not modify.                           |
| driver           | Name of the database. Do not modify.   |

Save your changes and restart the platform.

## Logging

1. To review database logs in RDS, locate the Instance details page in the RDS console.
2. Click **Recent Events and Logs**.
3. If your account has the appropriate permissions, all Trifacta database logs are available here.

## Configure the Databases

### Contents:

- *Initialize*
  - *PostgreSQL*
  - *MySQL*
  - *Set custom database parameters*
- *Next Steps*

## Initialize

Use the following steps to initialize the databases of the Trifacta® platform.

**NOTE:** These steps assume that the Trifacta node is the host of these databases. Please modify the following steps if you are connecting to databases on other nodes.

### Pre-requisites:

- The initializing user must have write permissions to the directory from which the commands are executed.
- The initializing user must have sudo privileges.

### PostgreSQL

**NOTE:** The following steps are for configuring PostgreSQL 9.6.

1.

#### For CentOS 7.x:

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

2. For CentOS 6.x, RHEL 6.x:

```
sudo service postgresql-9.6 initdb
```

3. For RHEL 7.x:

```
sudo /usr/pgsqr-9.6/bin/postgresql96-setup initdb
```

4. For Ubuntu 14.04 / 16.04:

```
pg_createcluster -d /var/lib/postgresql/9.6/main 9.6 main
```

**Verify datastyle value**

**NOTE:** This configuration step only applies if the Trifacta databases are installed on a PostgreSQL instance that was not created as part of a Trifacta Wrangler Enterprise installation.

Please verify the datestyle setting for your PostgreSQL instance.

**Steps:**

1. Execute the following in PostgreSQL:

```
trifacta=# show datestyle;  
DateStyle  
-----  
ISO, MDY  
(1 row)
```

2. If the first value is not ISO, please edit the following file (PostgreSQL 9.6):
  1. **RHEL/CentOS:** /var/lib/pgsqr/9.6/data/postgresql.conf
  2. **Ubuntu:** /etc/postgresql/9.6/main/postgresql.conf
3. Set the datestyle property to the following:

```
datestyle = 'ISO,MDY';
```

4. Save the file. Restart the Trifacta platform.

**MySQL**

No additional steps are required to initialize the databases in MySQL.

**Set custom database parameters**

Use the following steps to set custom database names, usernames, and passwords in the Trifacta platform:

1. Edit `/opt/trifacta/conf/trifacta-conf.json`.
2. For each database below, you can review the database name, username, and password.

| Database                    | Property                                      | Notes   |
|-----------------------------|---|---|
| Main database               | webapp.database.name                          |   |
|                             | webapp.database.username                      |   |
|                             | webapp.database.password                      | You should change the default password. This change must also be applied on the database server. See <i>Change Database Passwords for PostgreSQL</i> . See <i>Change Database Passwords for MySQL</i> . |
|                             | webapp.database.type                          | Change this value only if you are installing the databases in a non-PostgreSQL environment.   |
| Jobs database               | batch-job-runner.database.name                |   |
|                             | batch-job-runner.database.username            |   |
|                             | batch-job-runner.database.password            | You should change the default password. This change must also be applied on the database server. See <i>Change Database Passwords for PostgreSQL</i> . See <i>Change Database Passwords for MySQL</i> . |
|                             | batch-job-runner.database.type                | Change this value only if you are installing the databases in a non-PostgreSQL environment.   |
| Scheduling database         | scheduling-service.database.name              |   |
|                             | scheduling-service.database.username          |   |
|                             | scheduling-service.database.password          | You should change the default password. This change must also be applied on the database server. See <i>Change Database Passwords for PostgreSQL</i> . See <i>Change Database Passwords for MySQL</i> . |
|                             | scheduling-service.database.type              | Change this value only if you are installing the databases in a non-PostgreSQL environment.<br><br><b>NOTE:</b> H2 database type is used for internal testing. It is not a supported database.          |
| Time-Based Trigger database | time-based-trigger-service.database.name      |   |
|                             | time-based-trigger-service.database.user name |   |

|                                   |  |   |
|-----------------------------------|--|---|
|                                   | time-based-trigger-service.database.password | You should change the default password. This change must also be applied on the database server. See <i>Change Database Passwords for PostgreSQL</i> . See <i>Change Database Passwords for MySQL</i> . |
|                                   | time-based-trigger-service.database.type     | Change this value only if you are installing the databases in a non-PostgreSQL environment.<br><br><b>NOTE:</b> H2 database type is used for internal testing. It is not a supported database.          |
| Configuration Service database    | configuration-service.database.name          |   |
|                                   | configuration-service.database.username      |   |
|                                   | configuration-service.database.password      | You should change the default password. This change must also be applied on the database server. See <i>Change Database Passwords for PostgreSQL</i> . See <i>Change Database Passwords for MySQL</i> . |
|                                   | configuration-service.database.type          | Change this value only if you are installing the databases in a non-PostgreSQL environment.<br><br><b>NOTE:</b> H2 database type is used for internal testing. It is not a supported database.          |
| Artifact Storage Service database | artifact-storage-service.database.name       |   |
|                                   | artifact-storage-service.database.username   |   |
|                                   | artifact-storage-service.database.password   | You should change the default password. This change must also be applied on the database server. See <i>Change Database Passwords for PostgreSQL</i> . See <i>Change Database Passwords for MySQL</i> . |
|                                   | artifact-storage-service.database.type       | Change this value only if you are installing the databases in a non-PostgreSQL environment.<br><br><b>NOTE:</b> H2 database type is used for internal testing. It is not a supported database.          |

3. Make changes in the file as needed and save.

## Apply customizations on upgrade

If you have customized database properties, you must apply the edits from the new sample file to the existing configuration file after you have upgrade the Trifacta platform.

If you are using all defaults, you can just overwrite the existing file with the new version's sample file.

### PostgreSQL:

1. Locate the sample Postgres configuration file:

```
/opt/trifacta/bin/setup-utils/db/pg_hba.conf.SAMPLE
```

2. If you are upgrading and have customizations in your existing version, you must apply the edits in the above to the following file. Otherwise, overwrite the following file with the above one based on your operating system:
  1. CentOS/RHEL dir: `/var/lib/pgsql/9.6/data/pg_hba.conf`
  2. Ubuntu dir: `/etc/postgresql/9.6/main/pg_hba.conf`
3. From the `SAMPLE` file, copy the following declarations and paste them into the production `pg_hba.conf` file **above any other declarations**:

**NOTE:** You can substitute different database usernames and groups for the ones listed below (`trifacta` and `trifacta`). These values may be needed for other configuration.

1. Trifacta database:

```
local  trifacta
trifacta
host   trifacta      trifacta      127.0.0.1
/32   md5
host   trifacta      trifacta      ::1
/128          md5
```

2. Jobs database:

```
local  trifacta-activiti
trifactaactiviti
host   trifacta-activiti      trifactaactiviti
127.0.0.1/32          md5
host   trifacta-activiti      trifactaactiviti      ::1
/128          md5
```

3. Scheduling database:



```

local   trifactaschedulingservice
trifactaschedulingservice                               md5
host    trifactaschedulingservice
trifactaschedulingservice                               127.0.0.1/32      md5
host    trifactaschedulingservice
trifactaschedulingservice                               :::1/128         md5

```

For more information on scheduling, see *Configure Automator*.

#### 4. Time-based Trigger database:

```

local   trifactatimebasedtriggerservice
trifactatimebasedtriggerservice
md5
host    trifactatimebasedtriggerservice
trifactatimebasedtriggerservice                       127.0.0.1/32
md5
host    trifactatimebasedtriggerservice
trifactatimebasedtriggerservice                       :::1/128
md5

```

For more information on scheduling, see *Configure Automator*.

#### 5. Configuration Service database:

```

local   trifactaconfigurationservice
trifactaconfigurationservice                           md5
host    trifactaconfigurationservice
trifactaconfigurationservice                           127.0.0.1/32      md5
host    trifactaconfigurationservice
trifactaconfigurationservice                           :::1/128          md5

```

#### 6. Artifact Storage Service database:

```

local   trifactaartifactstorageservice
trifactaartifactstorageservice
md5
host    trifactaartifactstorageservice
trifactaartifactstorageservice                       127.0.0.1/32
md5
host    trifactaartifactstorageservice
trifactaartifactstorageservice                       :::1/128
md5

```

#### 7. Save the file.

#### 4. Restart the databases:

1. If you have also restarted the operating system, please execute the following first, followed by the O/S-specific commands:

**NOTE:** This command is valid only if the Postgres DB is also hosted in the Trifacta node.

```
chkconfig postgresql-9.6 on
```

2. CentOS/RHEL:

```
sudo service postgresql-9.6 start
```

3. Ubuntu:

```
sudo service postgresql start
```

## MySQL:

Upgrading MySQL versions is not supported in this release.

## Next Steps

1. If the configuration files indicate that the databases are listening on a port other than the default, this port number must be applied within the Trifacta platform configuration. For more information, see *Change Database Port*.
2. If you are using non-default usernames and passwords, they must be applied within the Trifacta platform configuration. For more information, see *Change Database Passwords for PostgreSQL*.
3. When you have completed the above configuration, you can create the databases and their roles (users) and perform additional configuration. See *Create Databases and Users*.

## Create Databases and Users

### Contents:

- *Create DBs and Users*
    - *PostgreSQL*
    - *MySQL*
  - *Backup*
  - *Configure Non-Default Database Connections*
    - *Trifacta database*
    - *Jobs database*
    - *Scheduling service database*
    - *Time-based trigger service database*
    - *Configuration Service database*
    - *Artifact Storage Service database*
    - *Database Parameter Reference*
-

## Create DBs and Users

### PostgreSQL

Run the following script, which builds the four databases and specifies the appropriate roles (users) for each database, based on the parameters you have specified in `trifacta-conf.json` and in the `pg_hba.conf`:

**NOTE:** This script must be run as the root user or via sudo superuser.

```
/opt/trifacta/bin/setup-utils/db/trifacta-create-postgres-roles-dbs.sh
```

### MySQL

Run the following script, which builds the four databases and specifies the appropriate roles (users) for each database, based on the parameters you have specified in `trifacta-conf.json`:

**NOTE:** This script must be run as the root user or via sudo superuser.

```
/opt/trifacta/bin/setup-utils/db/trifacta-create-mysql-users-dbs.sh -u  
<MySQL_admin_username> -w <MySQL_admin_password>
```

where:

- `-u` = MySQL admin username, which is usually `root`.
- `-w` = MySQL admin password

### Backup

For more information on backup recommendations and commands, see *Backup and Recovery*.

### Configure Non-Default Database Connections

If you have used non-default values for the username, password, host, or port value for either database, you must update platform configuration. You can apply this change through the *Admin Settings Page* (recommended) or `trifacta-conf.json`. For more information, see *Platform Configuration Methods*.

**NOTE:** The default database server is PostgreSQL. If you have installed databases on a different server, updates are required below.

**NOTE:** Do not modify the other properties in these sections unless necessary.

## Trifacta database

```
"webapp.database.username": "trifacta",
"webapp.database.logging": false,
"webapp.database.name": "trifacta",
"webapp.database.host": "localhost",
"webapp.database.password": "<pwd_trifactaDB>",
"webapp.database.type": "postgresql",
"webapp.database.port": 5432,
"webapp.database.pool.maxIdleTimeInMillis": 30000,
"webapp.database.pool.maxConnections": 10,
```

The following parameters apply to the Trifacta database only:

| Parameter                | Description  |
|--------------------------|--|
| logging                  | Set this value to true to enable logging on the Trifacta database.                                     |
| pool.maxIdleTimeInMillis | Specifies the maximum permitted idle time for a database connection before it is automatically closed. |
| pool.maxConnections      | Defines the maximum permitted database connections for the Trifacta database.                          |

Additional parameters are described below.

## Jobs database

Modify the batch-job-runner.database settings:

```
"batch-job-runner.database.username": "trifactaactiviti",
"batch-job-runner.database.name": "trifacta-activiti",
"batch-job-runner.database.type": "postgresql",
"batch-job-runner.database.driver": "org.postgresql.Driver",
"batch-job-runner.database.host": "localhost",
"batch-job-runner.database.password": "<pwd_trifactaactivitiDB>",
"batch-job-runner.database.port": 5432,
```

## Jobs database thread pool size

You can modify the following settings to specify minimum and maximum permitted thread pools for the Jobs database:

```
"batch-job-runner.database.minPoolSize": 3,
"batch-job-runner.database.initialPoolSize": 3,
"batch-job-runner.database.maxPoolSize": 50,
```

| Parameter Name                        | Description   |
|---------------------------------------|---|
| batch-job-runner.database.minPoolSize | Integer representing the minimum size of the database connection pool |

|   |   |
|---|---|
| batch-job-runner.database.initialPoolSize | Integer representing the initial size of the database connection pool |
| batch-job-runner.database.maxPoolSize     | Integer representing the maximum size of the database connection pool |

### Scheduling service database

```
"scheduling-service.database.type": "POSTGRESQL",
"scheduling-service.database.host": "localhost",
"scheduling-service.database.port": "5432",
"scheduling-service.database.name": "trifactascheduling-service",
"scheduling-service.database.username": "trifactascheduling-service",
"scheduling-service.database.password": "<pwd_scheduling-serviceDB>"
```

### Time-based trigger service database

```
"time-based-trigger-service.database.type": "POSTGRESQL",
"time-based-trigger-service.database.host": "localhost",
"time-based-trigger-service.database.port": "5432",
"time-based-trigger-service.database.name":
"trifactatimebasedtriggerservice",
"time-based-trigger-service.database.username":
"trifactatimebasedtriggerservice",
"time-based-trigger-service.database.password": "<pwd_triggerserviceDB>"
```

### Configuration Service database

```
"configuration-service.database.type": "POSTGRESQL",
"configuration-service.database.host": "localhost",
"configuration-service.database.port": "5432",
"configuration-service.database.name": "trifactaconfiguration-service",
"configuration-service.database.username":
"trifactaconfiguration-service",
"configuration-service.database.password":
"<pwd_trifactaconfiguration-serviceDB>"
```

## Artifact Storage Service database

```
"artifact-storage-service.database.type": "POSTGRESQL",  
"artifact-storage-service.database.host": "localhost",  
"artifact-storage-service.database.port": "5432",  
"artifact-storage-service.database.name":  
"trifactaartifactstorageservice",  
"artifact-storage-service.database.username":  
"trifactaartifactstorageservice",  
"artifact-storage-service.database.password":  
"<pwd_trifactaartifactstorageserviceDB>"
```

## Database Parameter Reference

The following generalized parameters apply to one or more of the databases.

| Parameter        | Description   |
|------------------|---|
| host             | Host of the database. Default value is <code>localhost</code> , meaning the database is hosted on the Trifacta node.  |
| port             | Port number for the database. Default value is <code>5432</code> for all databases, assuming that they are PostgreSQL.<br><br>Modify this value accordingly if you have installed the databases onto a different type of database server. See <i>System Ports</i> . |
| name             | Name of the database. This value should match what was used during installation.  |
| user or username | The username to use to connect to the database.   |
| password         | Password to use to connect to the database.   |
| type             | The default database type is <code>POSTGRESQL</code> .<br><br>Modify this value accordingly if you have installed the databases onto a different type of database server.   |
| driver           | Name of the database. Do not modify.  |

Save your changes and restart the platform.

## Upgrade Databases for PostgreSQL

### Contents:

- *Pre-requisites*
- *Backup*
- *Acquire Distribution and Port Information*
- *Database Upgrade Process*
  - *Before You Begin*
  - *Using non-default ports*
  - *Upgrade for CentOS/RHEL*
  - *Upgrade for Ubuntu 14.04 (Trusty)*

- *Upgrade for Ubuntu 16.04 (Xenial)*
  - *Transfer Settings*
  - *Verify and Cleanup*
- 

This section describes how to upgrade in-use instances of the Trifacta® databases for a working deployment of the Trifacta platform.

- When you upgrade to a new release of the platform, the underlying databases and their structures are automatically migrated to the new format. However, the database releases are not touched.

In this example, Postgres 9.3 is upgraded to Postgres 9.6.

## Pre-requisites

- The installing user must have write permissions to the directory from which the commands are executed.
- The installing user must have sudo privileges.
- Verify that you know the host and port number for each database.

## Backup

Before you begin, please verify that you have a valid backup of each Trifacta database. See *Backup and Recovery*.

## Acquire Distribution and Port Information

Before you begin, you must:

- Acquire the port information for the current database. Typically, this value is 5432.

**NOTE:** By default, PostgreSQL and the platform use port 5432 for communication. If that port is not available at install/upgrade time, the next available port is used, which is typically 5433. This change may occur if a previous version of PostgreSQL is on the same server. When a non-default port number is used, the platform must be configured to use it. For more information, see *Change Database Port*.

- Acquire the latest distribution for the database software.

For more information, see *Install Databases for PostgreSQL*.

## Database Upgrade Process

This procedure describes the process for upgrading the PostgreSQL version in use by the Trifacta databases. This procedure assumes the following:

- Source version: PostgreSQL 9.3
- Upgrade version: PostgreSQL 9.6
- All current databases are co-located with the software on the Trifacta node.
- Some downtime of the databases during the upgrade process is ok.

## Before You Begin

- If you haven't already, please back up each database and all PostgreSQL configuration files. See *Backup and Recovery*.

- Login to the node where the databases are hosted.

## Using non-default ports

The default port for these commands is port 5432.

If you are using a non-standard port for either the pre- or post-upgrade versions of PostgreSQL, you can use the following parameters with the `pg_upgrade` command:

| Parameter   | Description  |
|---|--|
| <code>--old-port=&lt;pre-upgrade_port&gt;</code>  | The port number of the pre-upgrade instance of PostgreSQL          |
| <code>--new-port=&lt;post-upgrade_port&gt;</code> | The port number to use for the post-upgrade instance of PostgreSQL |

For more information, see <https://www.postgresql.org/docs/9.6/pgupgrade.html>.

## Upgrade for CentOS/RHEL

1. Install the Postgres repo for yum. Below, PostgreSQL 9.6 is installed.
  1. For CentOS 6.x:

```
wget https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-6-x86_64/pgdg-centos96-9.6-3.noarch.rpm
sudo yum -y install pgdg-centos96-9.6-3.noarch.rpm
```

2. For CentOS 7.x:

```
wget https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-7-x86_64/pgdg-centos96-9.6-3.noarch.rpm
sudo yum -y install pgdg-centos96-9.6-3.noarch.rpm
```

3. For Red Hat Enterprise Linux 6.x:

```
wget https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-6-x86_64/pgdg-centos96-9.6-3.noarch.rpm
sudo yum -y install pgdg-redhat96-9.6-3.noarch.rpm
```

4. For Red Hat Enterprise Linux 7.x:

```
wget https://download.postgresql.org/pub/repos/yum/9.6/redhat/rhel-7-x86_64/pgdg-centos96-9.6-3.noarch.rpm
sudo yum -y install pgdg-redhat96-9.6-3.noarch.rpm
```

2. Install the upgraded version. Below, PostgreSQL 9.6 is installed.



```
sudo yum install postgresql96.x86_64 postgresql96-server.x86_64
postgresql96-contrib.x86_64 -y
```

3. Create a new data directory for the new database version:

1. For CentOS 7.x:

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

2. For CentOS 6.x, RHEL 6.x:

```
sudo service postgresql-9.6 initdb
```

3. For RHEL 7.x:

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

4. Use the following commands to verify that the upgrade is possible:

```
su postgres
cd ~
/usr/pgsql-9.6/bin/pg_upgrade --old-bindir=/usr/pgsql-9.3/bin/ --
new-bindir=/usr/pgsql-9.6/bin/ --old-datadir=/var/lib/pgsql/9.3
/data/ --new-datadir=/var/lib/pgsql/9.6/data/ --check
```

If all is well, you should see a Clusters are compatible message.

5. Stop the old version of the database service as the root user:

1. CentOS/RHEL:

```
sudo service postgresql-9.3 stop
```

6. Run the upgrade as the postgres user:

1. CentOS/RHEL:

```
su postgres
/usr/pgsql-9.6/bin/pg_upgrade --old-bindir=/usr/pgsql-9.3/bin/
--new-bindir=/usr/pgsql-9.6/bin/ --old-datadir=/var/lib/pgsql
/9.3/data/ --new-datadir=/var/lib/pgsql/9.6/data/
```

## Upgrade for Ubuntu 14.04 (Trusty)

### Steps:

1. Stop the platform:

```
service trifacta stop
```

2. Install the upgraded version. Below, PostgreSQL 9.6 is installed.

```
sudo apt-get install postgresql-9.6 postgresql-server-dev-9.6  
postgresql-contrib-9.6 -y
```

3. Stop PostgreSQL:

```
sudo systemctl stop postgresql  
service stop postgresql  
service postgresql stop
```

4. Upgrade the PostgreSQL 9.3 version to PostgreSQL 9.6, using the newly installed version:

**NOTE:** Below, some values are too long for a single line. Single lines that overflow to additional lines are marked with a \. The backslash should not be included if the line is used as input.

```
sudo su - postgres -c '/usr/lib/postgresql/9.6/bin/pg_upgrade \  
-b /usr/lib/postgresql/9.3/bin -B /usr/lib/postgresql/9.6/bin \  
-d /var/lib/postgresql/9.3/main/ -D /var/lib/postgresql/9.6/main/ \  
-O "-c config_file=/etc/postgresql/9.6/main/postgresql.conf" \  
-o "-c config_file=/etc/postgresql/9.3/main/postgresql.conf"'
```

5. Remove the old version of PostgreSQL (9.3):

```
sudo apt-get remove postgresql-9.3 -y
```

6. Restart PostgreSQL and the platform:

```
service postgresql start  
service trifacta start
```

## Upgrade for Ubuntu 16.04 (Xenial)

### Steps:

1. Stop the platform:

```
service trifacta stop
```

2. Install the upgraded version. Below, PostgreSQL 9.6 is installed.

```
sudo apt-get install postgresql-9.6 postgresql-server-dev-9.6  
postgresql-contrib-9.6 -y
```

3. Stop PostgreSQL:

```
sudo systemctl stop postgresql  
service stop postgresql  
service postgresql stop
```

4. Upgrade the PostgreSQL 9.3 version to PostgreSQL 9.6, using the newly installed version:

**NOTE:** Below, some values are too long for a single line. Single lines that overflow to additional lines are marked with a \. The backslash should not be included if the line is used as input.

```
sudo su - postgres -c '/usr/lib/postgresql/9.6/bin/pg_upgrade \  
-b /usr/lib/postgresql/9.3/bin -B /usr/lib/postgresql/9.6/bin \  
-d /var/lib/postgresql/9.3/main/ -D /var/lib/postgresql/9.6/main/ \  
-O "-c config_file=/etc/postgresql/9.6/main/postgresql.conf" \  
-o "-c config_file=/etc/postgresql/9.3/main/postgresql.conf" '
```

5. Remove the old version of PostgreSQL (9.3):

```
sudo apt-get remove postgresql-9.3 -y
```

6. Restart PostgreSQL and the platform:

```
service postgresql start  
service trifacta start
```

## Transfer Settings

For all operating systems, you must transfer the settings from your old version of PostgreSQL to the new one.

1. Update the port number and any other settings in the platform configuration. To apply this configuration change, login as an administrator to the Trifacta node. Then, edit `trifacta-conf.json`. Some of these settings may not be available through the *Admin Settings Page*. For more information, see *Platform Configuration Methods*.

1. Replace all instances of the PostgreSQL port number for the earlier version and replace with the desired port number for the upgrade version.

**NOTE:** By default, PostgreSQL and the platform use port 5432 for communication. If that port is not available at install/upgrade time, the next available port is used, which is typically 5433. This change may occur if a previous version of PostgreSQL is on the same server. When a non-default port number is used, the platform must be configured to use it. For more information, see *Change Database Port*.

2. Make the above changes and save the file.
2. Transfer settings from the configuration files for your old database version to the new one. Please review the old and new versions of these files:

**NOTE:** It is risky to perform a straight copy of these configuration files. Settings may change. New ones may be introduced. Setting values specific to the installation may be overwritten in a copy. Please retain a backup of both versions of each file before migrating settings.

| Path to PostgreSQL 9.3 file                          | Path to PostgreSQL 9.6 file                          |
|--|--|
| <code>/var/lib/pgsql/9.3/data/pg_hba.conf</code>     | <code>/var/lib/pgsql/9.6/data/pg_hba.conf</code>     |
| <code>/var/lib/pgsql/9.3/data/postgresql.conf</code> | <code>/var/lib/pgsql/9.6/data/postgresql.conf</code> |

3. Start the service:
  1. CentOS/RHEL:

```
sudo service postgresql-9.6 start
```

2. Ubuntu:

```
sudo service postgresql start
```

3. When the service restarts, you can check the cluster status using the following script:

```
./analyze_new_cluster.sh
```

4. After you have completed the database installation, you must review the port number of the newly installed database, which may have changed between versions of the database software. That new port number must be applied through the Trifacta software. For more information, see *Change Database Port*.
5. Verify datestyle setting.

**NOTE:** If the PostgreSQL instance used by the Trifacta platform was not created as part of the Trifacta installation, please verify that the PostgreSQL datestyle value begins with ISO. For more information, see *Configure the Databases*.

6. If all is well, restart the platform. See *Start and Stop the Platform*.

## Verify and Cleanup

1. Verify operations on all four database:
  1. Login to the application. See *Login*.
  2. Load a dataset from Flow View. See *Flow View Page*.
  3. Run a job. See *Run Job Page*.
  4. Schedule a job and execute it. See *Add Schedule Dialog*.
2. If all of the above tests pass, you can use the following script to delete the old PostgreSQL version and its data directory:

```
./delete_old_cluster.sh
```

3. Restart the Trifacta platform. See *Start and Stop the Platform*.

## Upgrade Databases for MySQL

Upgrading the databases for MySQL is not supported in this release. Please start with a clean install of the databases on MySQL.

## Database Reference

After installation, the following database topics may apply to your environment.

### Topics:

- *Change Database Passwords for MySQL*
- *Change Database Passwords for PostgreSQL*
- *Change Database Port*

## Change Database Passwords for MySQL

**You should change the passwords for the Trifacta® databases immediately after installing the software.**

Please complete the following steps to change the passwords for the Trifacta platform users of the Trifacta databases.

### Change in Database Server

1. If you have not done so already, switch to the MySQL user and launch:

```
sudo su - mysql  
mysql
```

2. For each database, change the default password. Default usernames are listed for each database. Please modify the command if you are using different roles and insert a more secure password for <new\_pwd>:

**NOTE:** In MySQL, the dash is a forbidden character in usernames. Please use underscores instead.

```
ALTER USER 'trifacta'@'localhost' IDENTIFIED BY '<new_pwd>';
ALTER USER 'trifacta-activiti'@'localhost' IDENTIFIED BY
'<new_pwd>';
ALTER USER 'trifactatimebasedtriggerservice'@'localhost' IDENTIFIED
BY '<new_pwd>';
ALTER USER 'trifactaschedulingservice'@'localhost' IDENTIFIED BY
'<new_pwd>';
ALTER USER 'trifactaconfigurationservice'@'localhost' IDENTIFIED BY
'<new_pwd>';
```

3. Exit:

```
\q
exit
```

## Change in Trifacta configuration

1. Below are the username and password properties for each database. You can apply this change through the *Admin Settings Page* (recommended) or `trifacta-conf.json`. For more information, see *Platform Configuration Methods*. Please review and update as needed:

### 1. Trifacta database:

```
"webapp.database.username" = "<user>",
"webapp.database.password" = "<pwd>",
```

### 2. Jobs database:

```
"batch-job-runner.database.username" = "<user>",
"batch-job-runner.database.password" = "<pwd>",
```

### 3. Scheduling database:

```
"scheduling-service.database.user" = "<user>",
"scheduling-service.password.password" = "<pwd>",
```

### 4. Time-based trigger database:

```
"time-based-trigger-service.database.user" = "<user>",
"time-based-trigger-service.database.password" = "<pwd>",
```

## 5. Configuration Service database:

```
"configuration-service.database.user" = "<user>",  
"configuration-service.database.password" = "<pwd>",
```

## 6. Artifact Storage Service database:

```
"artifact-storage-service.database.user" = "<user>",  
"artifact-storage-service.database.password" = "<pwd>",
```

2. Save your changes and restart the platform.

## Change Database Passwords for PostgreSQL

**You should change the passwords for the Trifacta® databases immediately after installing the software.**

Please complete the following steps to change the passwords for the Trifacta platform users of the Trifacta databases.

### Change in Database Server

1. If you have not done so already, switch to the Postgres user and launch psql:

```
sudo su - postgres  
psql
```

2. For each database, change the default password. Default usernames are listed for each database. Please modify the command if you are using different roles and insert a more secure password for <new\_pwd>:

```
ALTER ROLE trifacta WITH PASSWORD '<new_pwd>';  
ALTER ROLE trifacta-activiti WITH PASSWORD '<new_pwd>';  
ALTER ROLE trifactatimebasedtriggerservice with PASSWORD  
'<new_pwd>';  
ALTER ROLE trifactaschedulingservice with PASSWORD '<new_pwd>';  
ALTER ROLE trifactaconfigurationservice with PASSWORD '<new_pwd>';  
ALTER ROLE trifactaartifactstoragenservice with PASSWORD  
'<new_pwd>';
```

3. Exit psql:

```
\q  
exit
```

### Change in Trifacta configuration

1. Below are the username and password properties for each database. You can apply this change through the *Admin Settings Page* (recommended) or `trifacta-conf.json`. For more information, see *Platform Configuration Methods*. Please review and update as needed:

1. **Trifacta database:**

```
"webapp.database.username" = "<user>",  
"webapp.database.password" = "<pwd>",
```

2. **Jobs database:**

```
"batch-job-runner.database.username" = "<user>",  
"batch-job-runner.database.password" = "<pwd>",
```

3. **Scheduling database:**

```
"scheduling-service.database.user" = "<user>",  
"scheduling-service.password.password" = "<pwd>",
```

4. **Time-based trigger database:**

```
"time-based-trigger-service.database.user" = "<user>",  
"time-based-trigger-service.database.password" = "<pwd>",
```

5. **Configuration Service database:**

```
"configuration-service.database.user" = "<user>",  
"configuration-service.database.password" = "<pwd>",
```

6. **Artifact Storage Service database:**

```
"artifact-storage-service.database.user" = "<user>",  
"artifact-storage-service.database.password" = "<pwd>",
```

2. Save your changes and restart the platform.

## Change Database Port

If needed, you can change the default port used by the database instance for the Trifacta® platform. Please complete the following commands to avoid conflicts between versions.



**If you are changing the port within the database, those changes must be applied through your database system by an administrator. To limit downtime, port number changes should be done at the same time in the platform and the database. For more information, please see the documentation included with your database product.**

**NOTE:** By default, PostgreSQL and the platform use port 5432 for communication. If that port is not available at install/upgrade time, the next available port is used, which is typically 5433. This change may occur if a previous version of PostgreSQL is on the same server. When a non-default port number is used, the platform must be configured to use it. For more information, see *Change Database Port*.

**NOTE:** By default, the ports for all databases are set to the default database port for PostgreSQL. For more information on the default database ports, see *System Ports*.

### Steps:

1. Stop the Trifacta services. For more information, see *Start and Stop the Platform*.
2. Stop the database server.
3. Change the port number in the database administration console. For more information, see the product documentation provided with your database distribution.
4. Start the database server. Verify that it is listening on the new port number.
5. Restart the platform.
6. Login to the application.
7. You can apply this change through the *Admin Settings Page* (recommended) or `trifacta-conf.json`. For more information, see *Platform Configuration Methods*. Locate the following properties and modify as needed. The default PostgreSQL port numbers are listed below:
  1. Trifacta database:

```
"webapp.database.port" = 5432;
```

#### 2. Jobs database:

```
"batch-job-runner.database.port" = 5432;
```

#### 3. Scheduling database:

```
"scheduling-service.database.port" = 5432;
```

#### 4. Time-based trigger database:

```
"time-based-trigger-service.database.port" = 5432;
```

#### 5. Configuration service database:

```
"configuration-service.database.port" = 5432;
```

**6. Artifact storage service database:**

```
"artifact-storage-service.database.port" = 5432;
```

8. Save your changes and restart the platform.
9. Verify that you can login and run a simple job. See *Verify Operations*.



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