Ahsay Backup

Ahsay Online Backup Manager v7

MySQL Database Backup and Restore for Windows

Ahsay Systems Corporation Limited

5 April 2017

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Revision History

Date	Descriptions	Type of modification
28 Jul 2016	First Draft	New
3 Feb 2017	Added instructions and screen shots for Encryption key handling in Ch. 5	New
5 Apr 2017	Added Encryption Type option in Ch. 5 Creating a MySQL Database Backup Set section	New

Table of Contents

1 System Requirements

Refer to the following KB article for the list of supported operating systems & application versions:

FAQ: Ahsay Software Compatibility List (SCL) for version 7.3 or above (5001)
https://forum.ahsay.com/viewtopic.php?f=169&t=13492

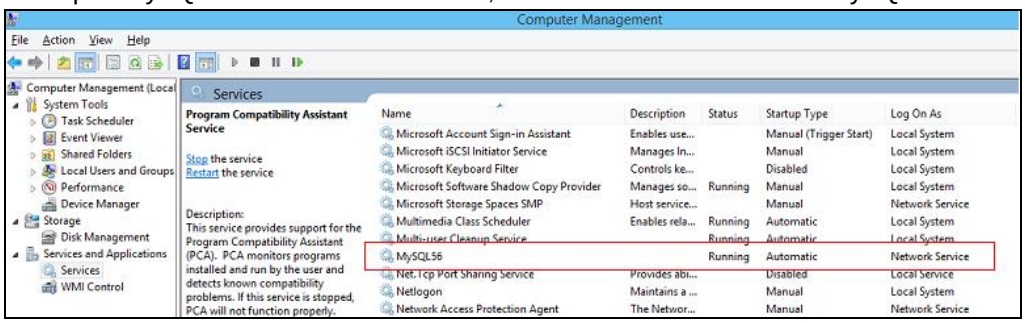
2 Requirements and Recommendations

Please ensure that the following requirements and conditions are met on the MySQL database server.

1. AhsayOBM is installed on the MySQL database server.

2. The MySQL database instance is online.

   Example: MySQL v5.6.x on Windows 8.1, the default service name is MySQL56



3. Check the listening port of the MySQL database instance (default is 3306) using the command **netstat –b -a**.

```
C:\>netstat -b -a

Active Connections

Proto  Local Address          Foreign Address        State
TCP    0.0.0.0:135            w81x-5-66:0            LISTENING
  RpcSs
 [svchost.exe]
TCP    0.0.0.0:445            w81x-5-66:0            LISTENING
 Can not obtain ownership information
TCP    0.0.0.0:3306           w81x-5-66:0            LISTENING
 [mysqld.exe]
TCP    0.0.0.0:3389           w81x-5-66:0            LISTENING
  CryptSvc
 [svchost.exe]
TCP    0.0.0.0:49152          w81x-5-66:0            LISTENING
 [wininit.exe]
TCP    0.0.0.0:49153          w81x-5-66:0            LISTENING
  EventLog
 [svchost.exe]
TCP    0.0.0.0:49154          w81x-5-66:0            LISTENING
  Schedule
 [svchost.exe]
TCP    0.0.0.0:49155          w81x-5-66:0            LISTENING
 [spoolsv.exe]
TCP    0.0.0.0:49156          w81x-5-66:0            LISTENING
 [lsass.exe]
TCP    0.0.0.0:49157          w81x-5-66:0            LISTENING
```

4. The mysqldump utility is installed on the MySQL database server.

   Example: the default location for the mysqldump utitlity for MySQL v5.6.x is located in the following folder **C:\Program Files\MySQL\MySQL Server 5.6\bin**

5. The mysqldump utility is the same version as the MySQL database.

   To check the mysqldump version use the **mysqldump –version** command.

```
C:\Program Files\MySQL\MySQL Server 5.6\bin>mysqldump --
version
mysqldump  Ver 10.13 Distrib 5.6.31, for Win64 (x86_64)

C:\Program Files\MySQL\MySQL Server 5.6\bin>
```

   MySQL database version:

```
mysql> select version();
+------------+
| version()  |
+------------+
| 5.6.31-log |
+------------+
1 row in set (0.00 sec)

mysql>
```

6. A MySQL database user account with the following privileges must be setup for the backup operation.

```
mysql> GRANT ALL PRIVILEGES ON *.* TO "username"@"localhost"
IDENTIFIED BY "password";
mysql> GRANT ALL PRIVILEGES ON *.* TO
"username"@"localhost.localdomain" IDENTIFIED BY "password";
mysql> FLUSH PRIVILEGES;
```

7. Verify that 'localhost' on the MySQL database server is resolvable and 'localhost' is allowed to access the MySQL database instance on the MySQL service listening port (default 3306).

```
c:\>ping localhost

Pinging WIN-TU41RC45MK0 [10.3.1.8] with 32 bytes of data:
Reply from 10.3.1.8: bytes=32 time<1ms TTL=128
Reply from 10.3.1.8: bytes=32 time<1ms TTL=128
Reply from 10.3.1.8: bytes=32 time<1ms TTL=128
Reply from 10.3.1.8: bytes=32 time<1ms TTL=128

Ping statistics for 10.3.1.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

c:\>
```

```
# telnet localhost 3306
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
J
5.6.31vB#'8%/kQ3K\n6``Aemysql_native_password
```

Note: *The telnet utility is not installed by default on some Windows versions.*

8. Exclude the 'information_schema' and ‘performance_schema’ databases are MySQL virtual system databases, which contains information about the user databases on the MySQL instance. They are read-only and cannot be backed up.

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| classicmodels      |
| mysql              |
| performance_schema |
| sakila             |                    |
| world              |
+--------------------+
6 rows in set (0.00 sec)

mysql>
```

9. The databases selected for backup will be temporarily spooled to a temporary directory before being uploaded to the backup server or destination storage.

   Ensure that the temporary directory configured for the MySQL database backup has sufficient disk space for the backup operation, the free space on the temporary directory drive should be at least 130% of the database size. As the temporary directory is also used for storing index files and any incremental or differential delta files generated during the backup job before they are uploaded to the backup destination.

   Please bear in mind the size of the databases may grow over time and you may need to review the temporary directory free space requirements on a regular basis.

3 Limitations

1. Backup and restore must be to the same MySQL database version.

2. When restoring MySQL databases to an alternate location only one database can be selected and restored at any one time.

3. Cannot restore the MySQL database nodes to original or alternate location.

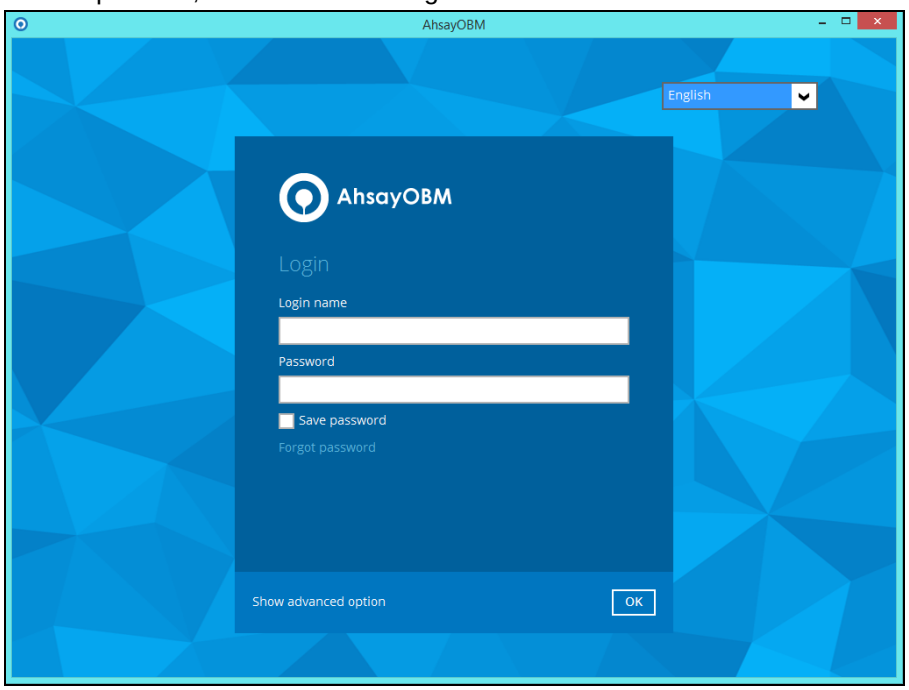
4. Restoring databases to another machine can only be done using the **Restore raw file** option.

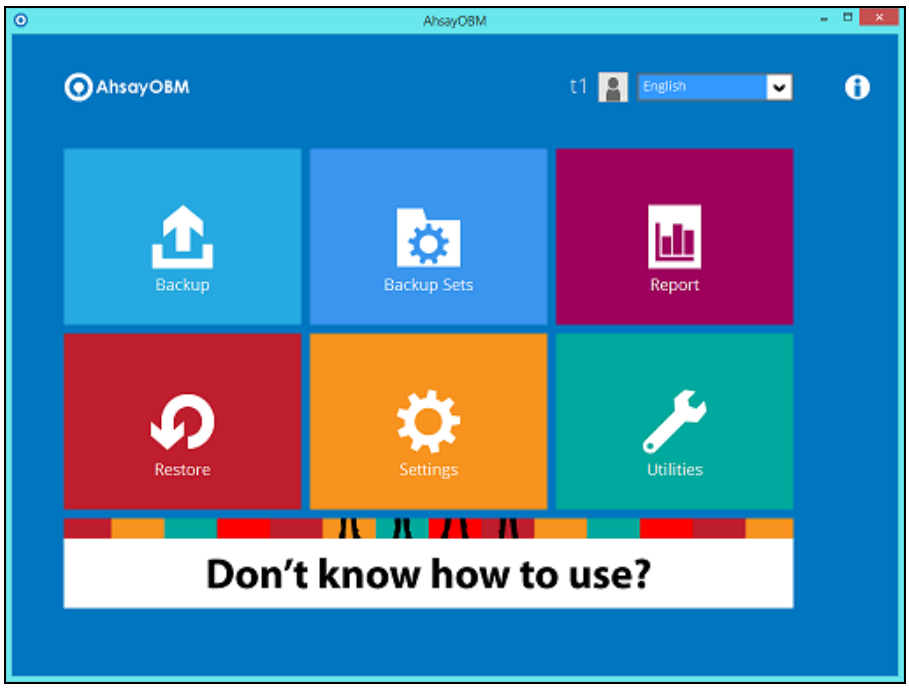
4 Starting AhsayOBM

4.1 Login to AhsayOBM

1. A shortcut icon of AhsayOBM should have been created on your Windows desktop after installation. Double click the icon to launch the application.

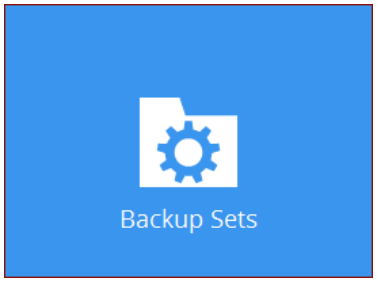
2. Enter the login name and password of your AhsayOBM account provided by your backup service provider, then click **OK** to login.





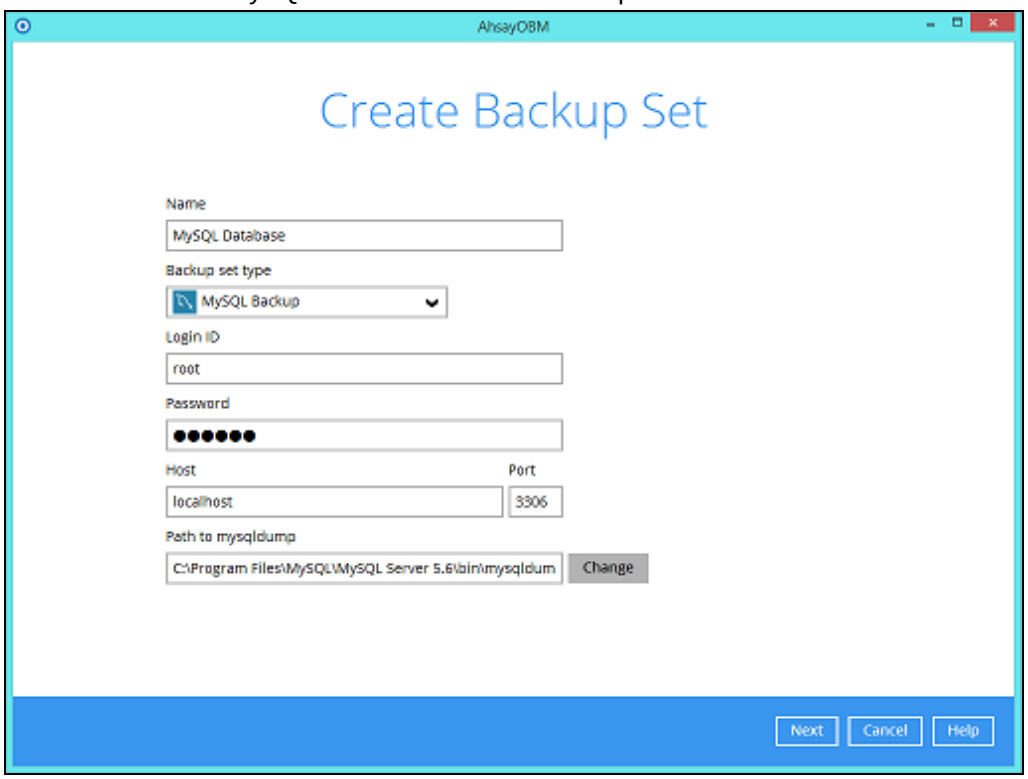
5 Creating a MySQL Database Backup Set

1. Click the Backup Sets icon on the main interface of AhsayOBM.

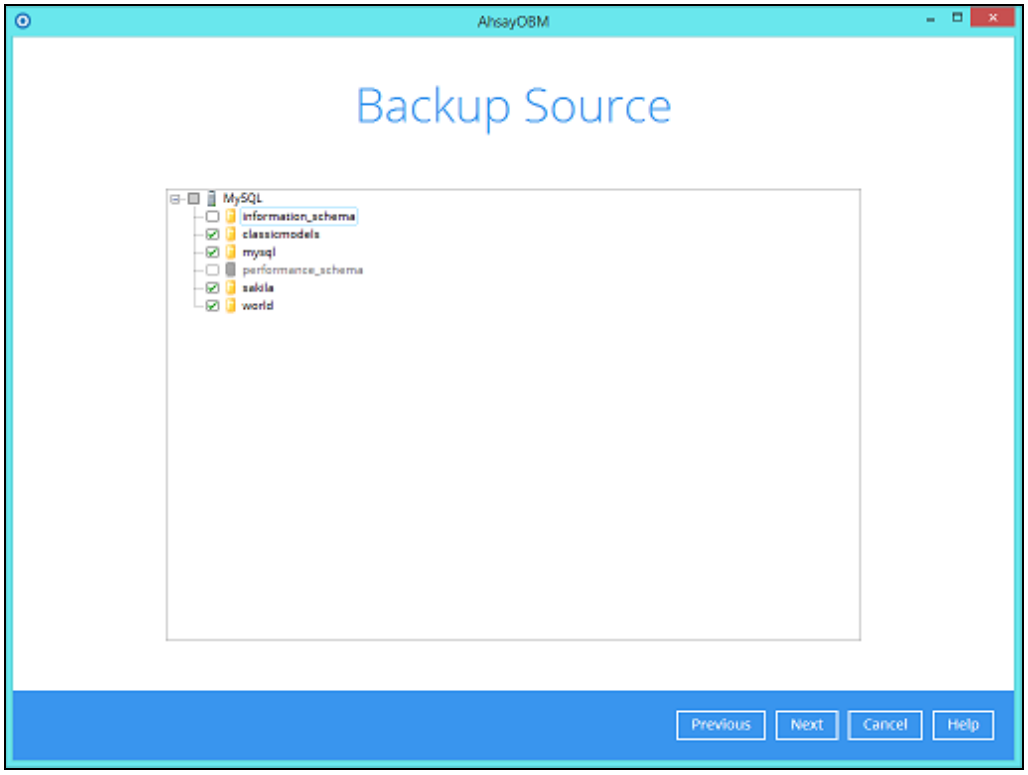


2. Create a new backup set by clicking the "**+**" icon or **Add** button to created new backup set.

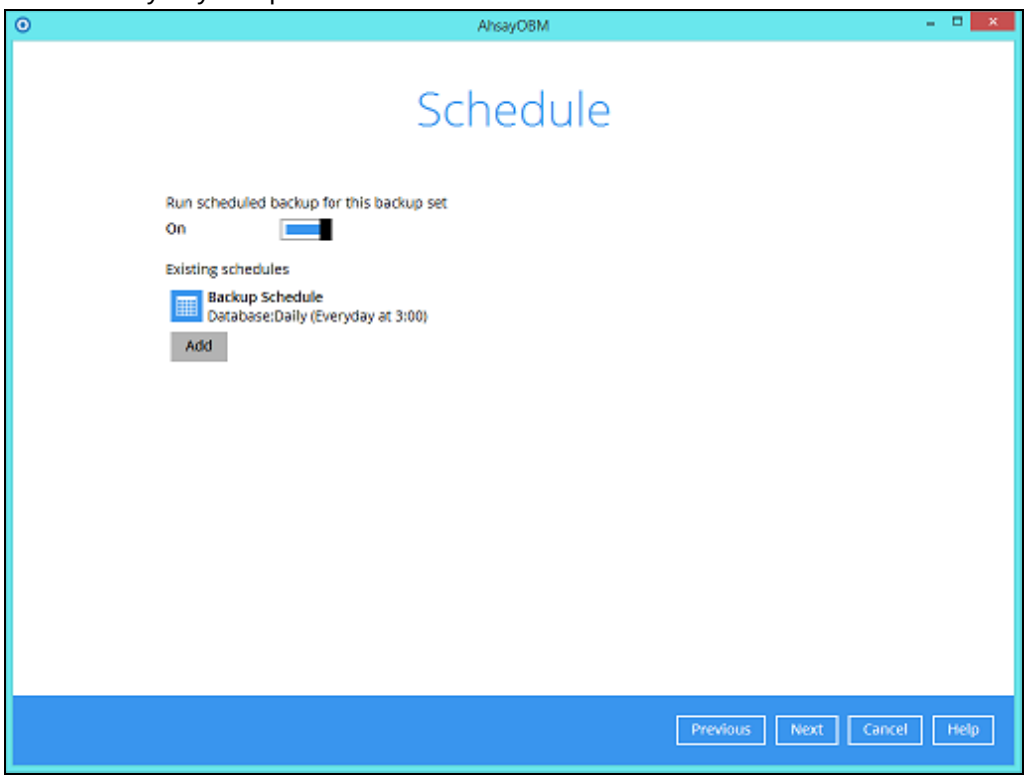
3. Select the **Backup set type** and name your new backup set and enter the login information for the MySQL server then click **Next** to proceed.



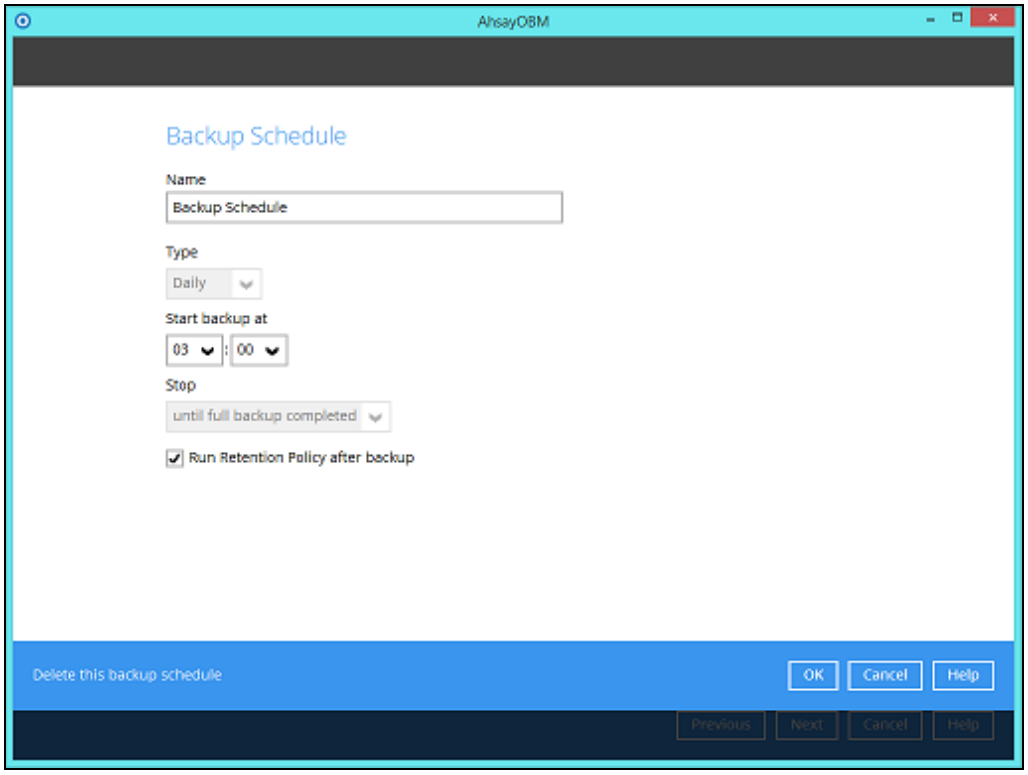
4. In the Backup Source menu, select the MySQL databases you would like to backup. Click **Next** to proceed.



5. In the Schedule menu, you can configure a backup schedule for backup job to run automatically at your specified time interval.

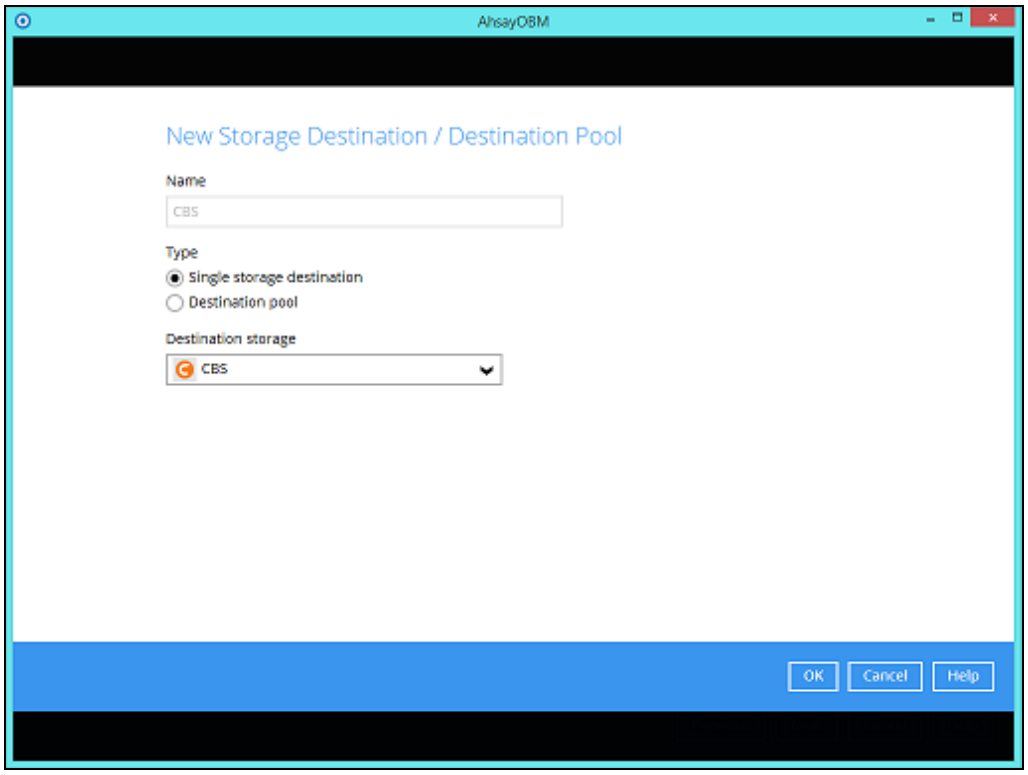


Click **Add** to add a new schedule or double click on the existing schedule to change the values. Click **Next** to proceed when you are done setting.

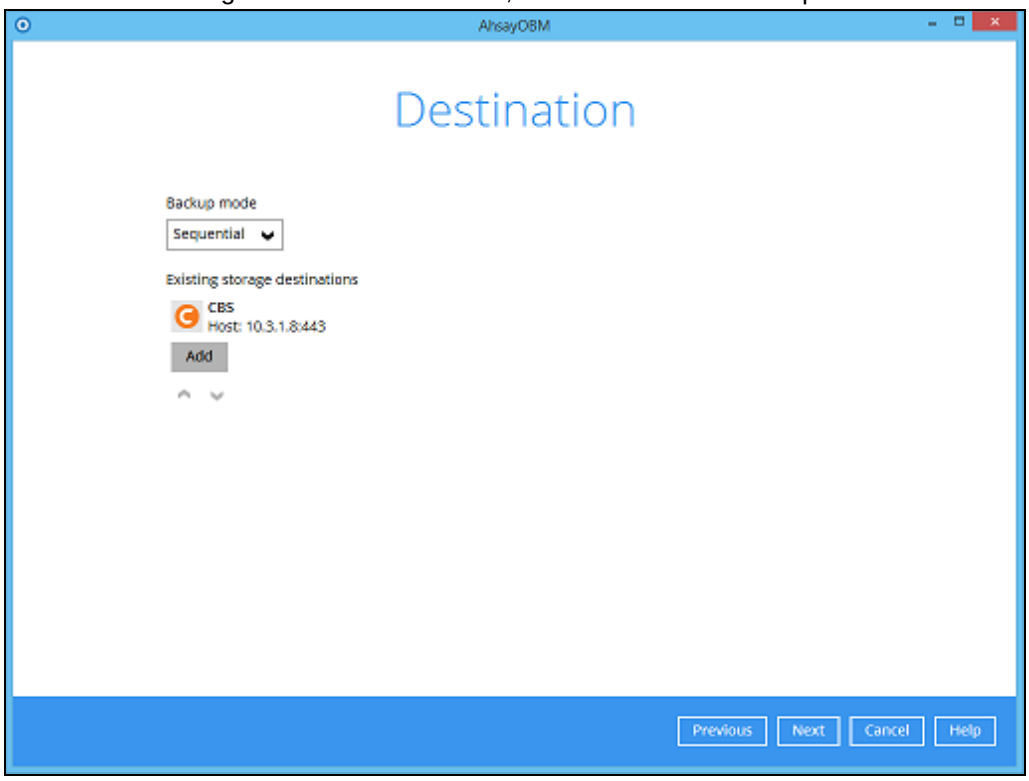


Note: *The default backup schedule is daily backup at 03:00 with the backup job will run until completion and the retention policy job will be run immediately after the backup job*.

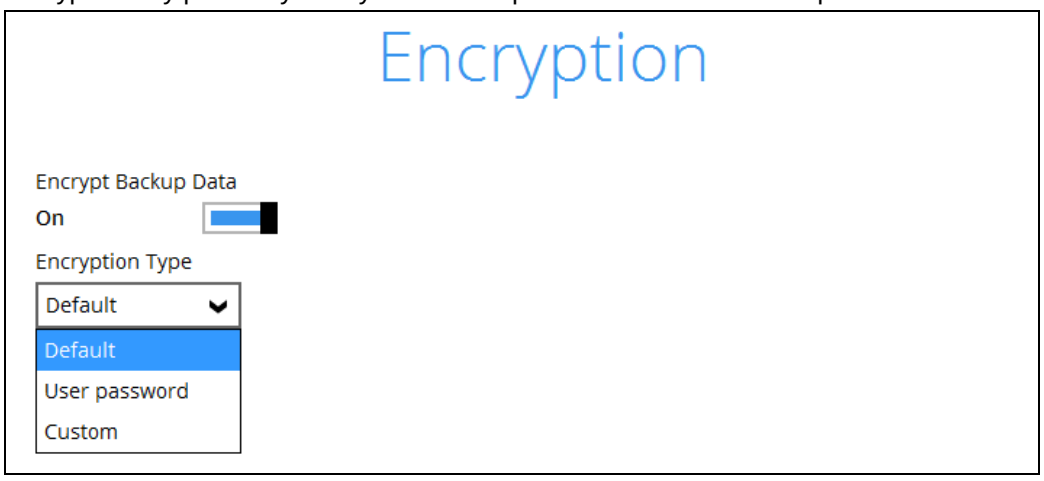
6. Select the backup storage destination. Click on **OK** to proceed.
Example: CBS server



7. To add extra storage destination click **Add**, otherwise Click **Next** to proceed.



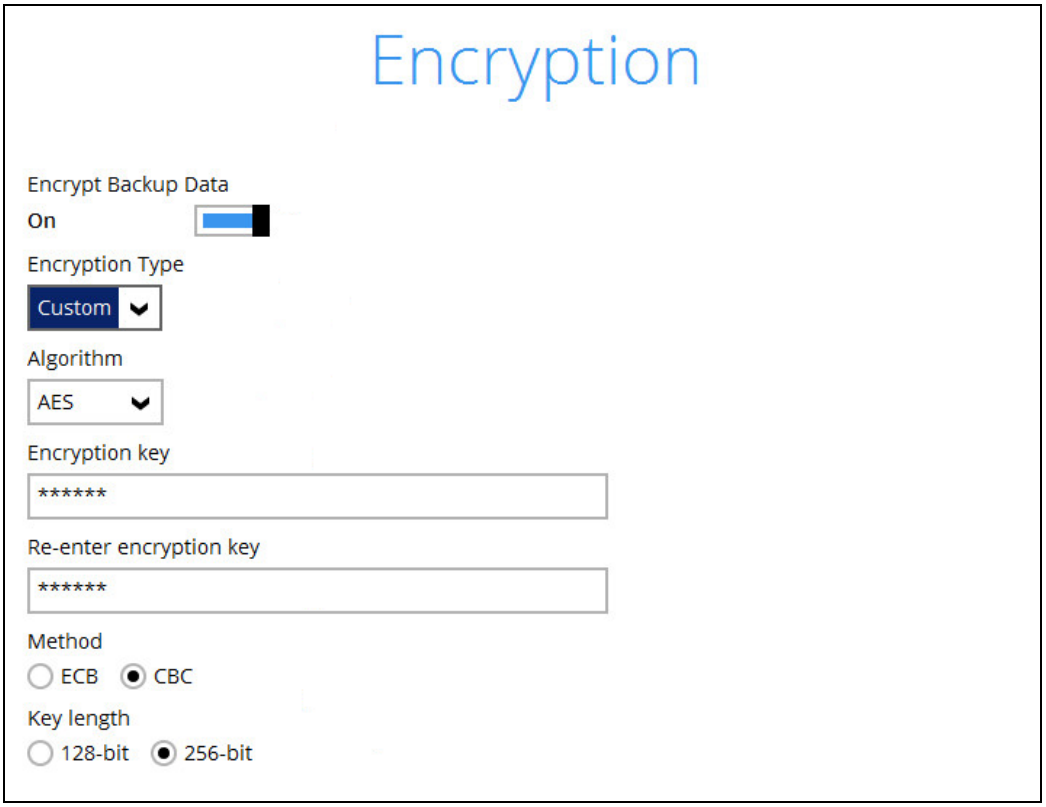
8. In the Encryption window, the default **Encrypt Backup Data** option is enabled with an encryption key preset by the system which provides the most secure protection.



You can choose from one of the following three Encryption Type options:

- **Default** – an encryption key with 44 alpha numeric characters will be randomly generated by the system
- **User password** – the encryption key will be the same as the login password of your AhsayOBM at the time when this backup set is created. Please be reminded that if you change the AhsayOBM login password later, the encryption keys of the backup sets previously created with this encryption type will remain unchanged.

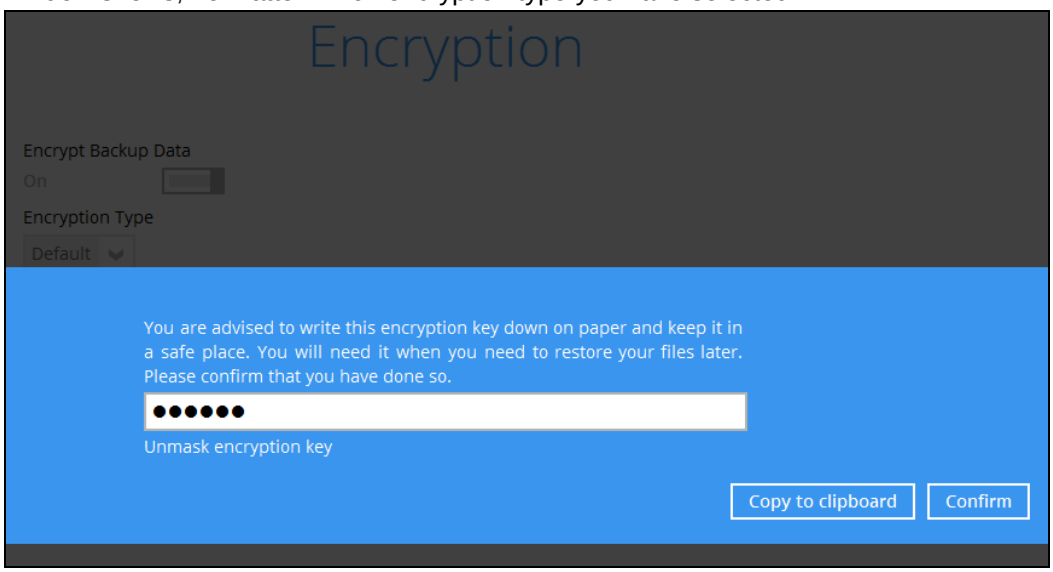
- **Custom** – you can customize your encryption key, where you can set your own algorithm, encryption key, method and key length.



Note: *For best practice on managing your encryption key, refer to the following KB article.* *https://forum.ahsay.com/viewtopic.php?f=169&t=14090*

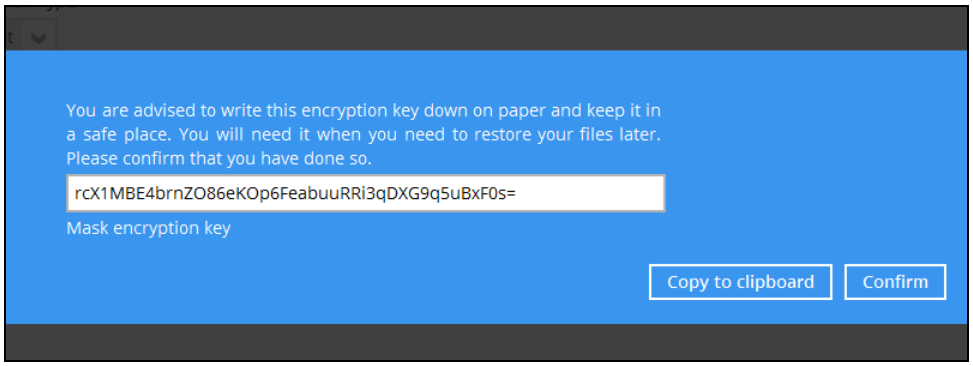
Click **Next** when you are done setting.

9. If you have enabled the Encryption Key feature in the previous step, the following pop-up window shows, no matter which encryption type you have selected.



The pop-up window has the following three options to choose from:

- **Unmask encryption key** – The encryption key is masked by default. Click this option to show the encryption key.

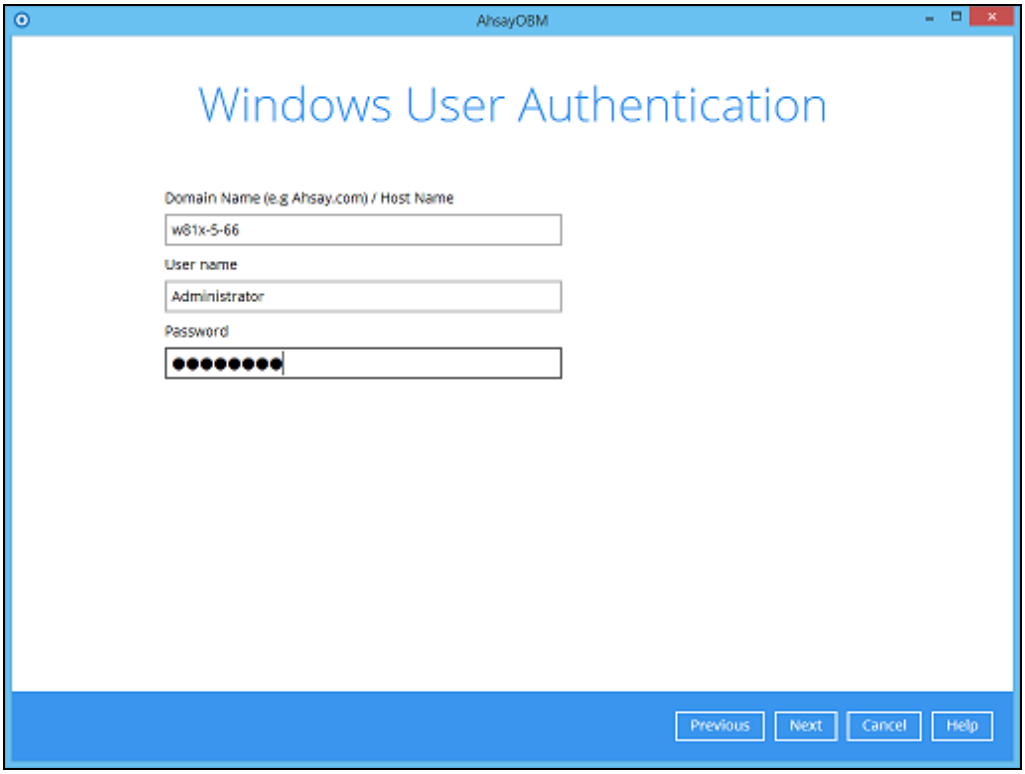


- **Copy to clipboard** – Click to copy the encryption key, then you can paste it in another location of your choice.

- **Confirm** – Click to exit this pop-up window and proceed to the next step.

10. Windows User Authentication

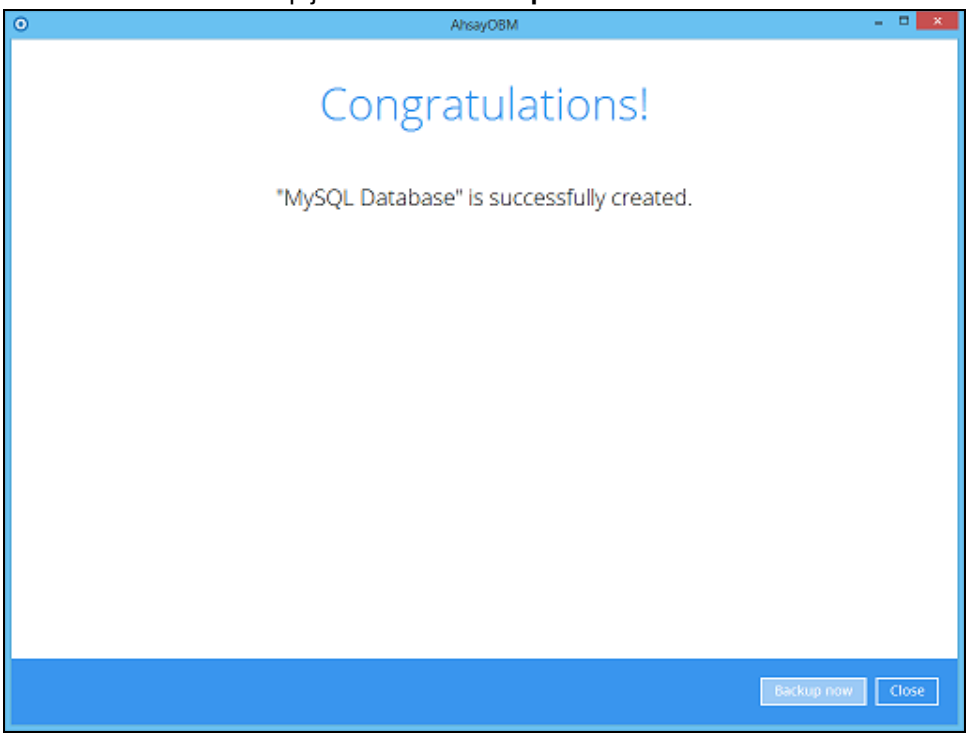
Enter the Windows login credentials used by AhsayOBM to authenticate the scheduled or continuous backup job and click on **Next** to proceed.



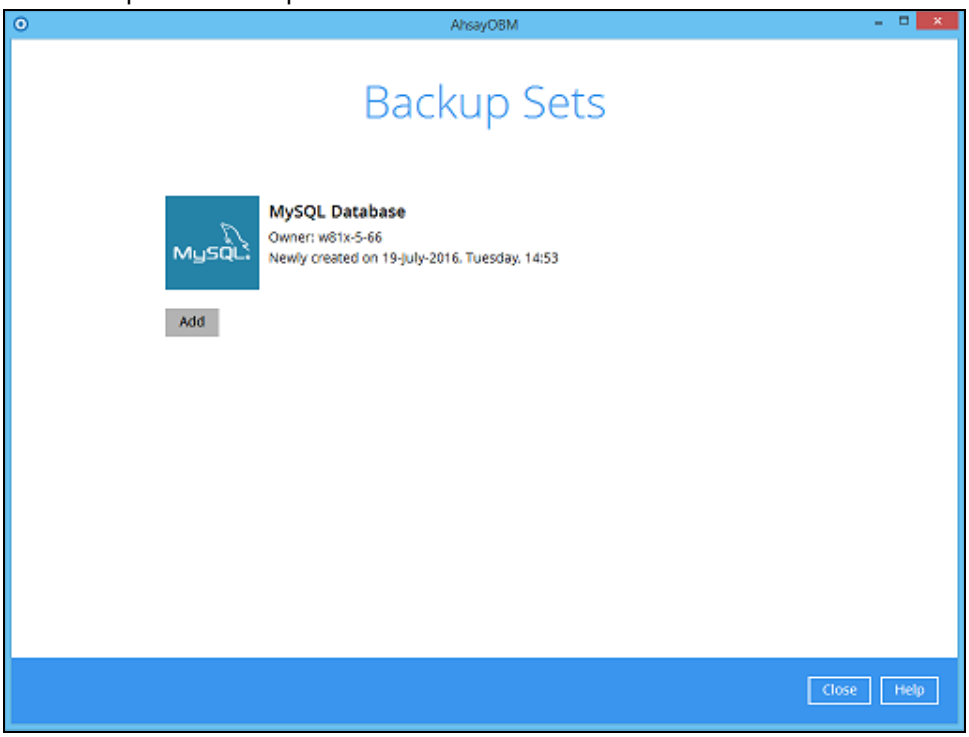
Note: *If the backup schedule is turned off for the backup set the Windows User Authentication screen will be automatically skipped. The Windows User Authentication login credentials can be added or updated post backup set creation.*

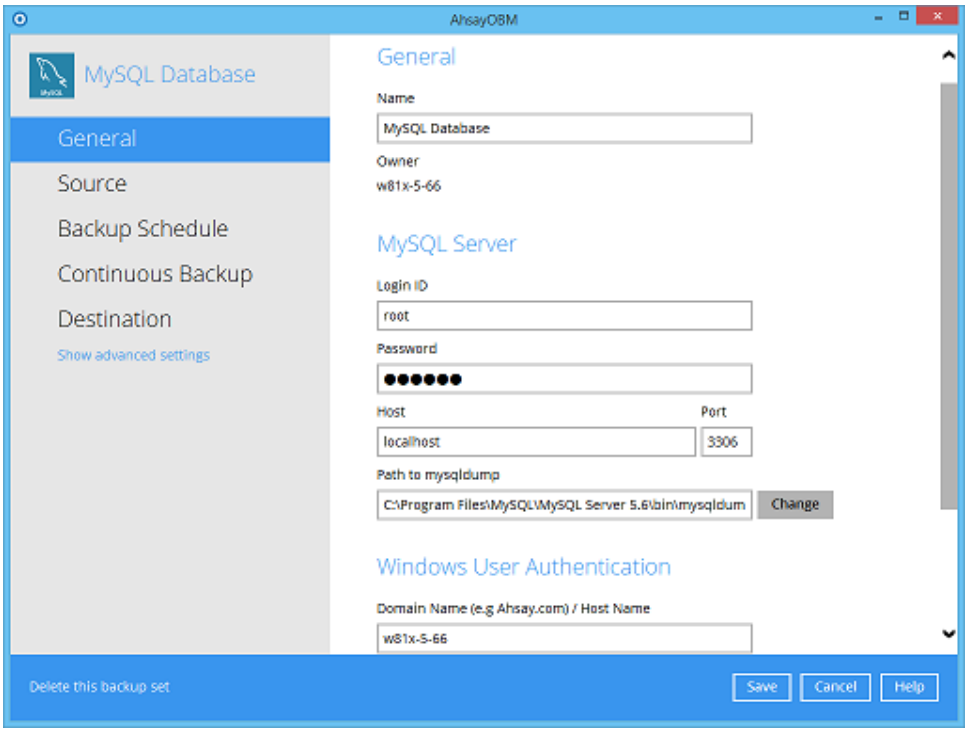
11. Backup set created.

i. To start a manual backup job click on **Backup now.**



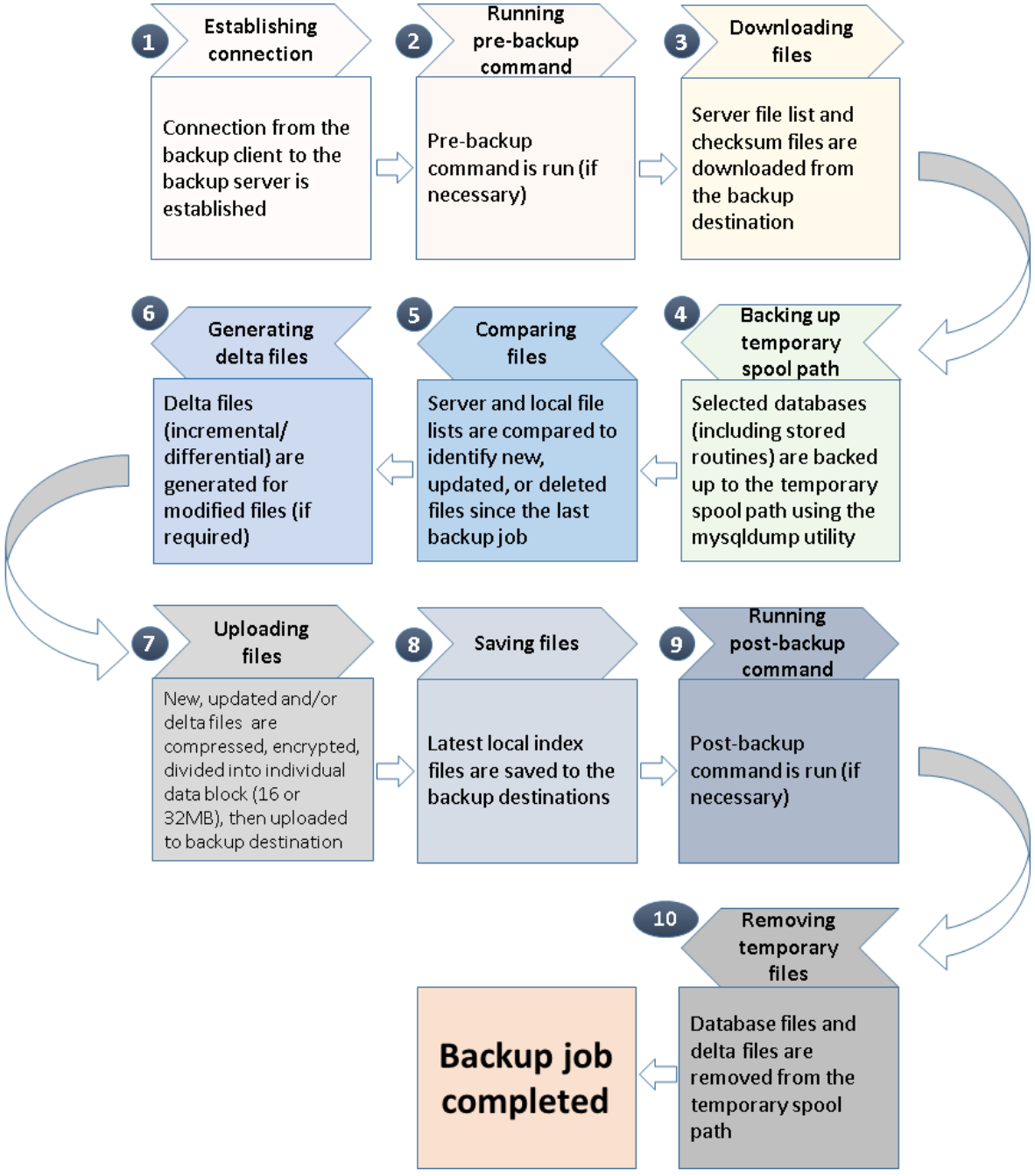
ii. To verify the backup set settings click on Close and then click on the MySQL backup set to complete the setup.




AhsayOBM
MySQL Database
General
Source
Backup Schedule
Continuous Backup
Destination
Show advanced settings
General
Name
MySQL Database
Owner
w81x-5-66
MySQL Server
Login ID
root
Password
Host
Port
localhost
3306
Path to mysqldump
C:\Program Files\MySQL\MySQL Server 5.6\bin\mysqldum
Change
Windows User Authentication
Domain Name (e.g Ahsay.com) / Host Name
w81x-5-66
Delete this backup set
Save
Cancel
Help

6 Overview on the Backup Process

The following steps are performed during a MySQL database backup job:



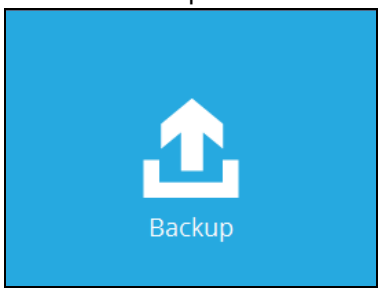
7 Running Backup Jobs

7.1 Login to AhsayOBM

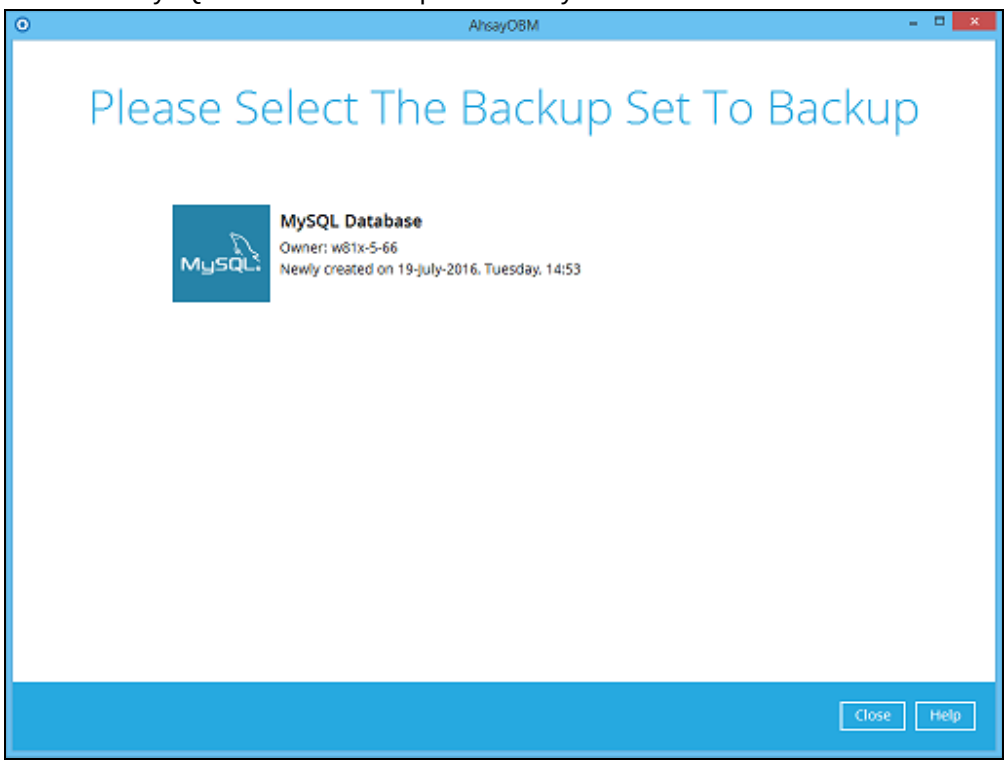
Login to the AhsayOBM application according to the instructions in Chapter 3.1

7.2 Start a Manual Backup

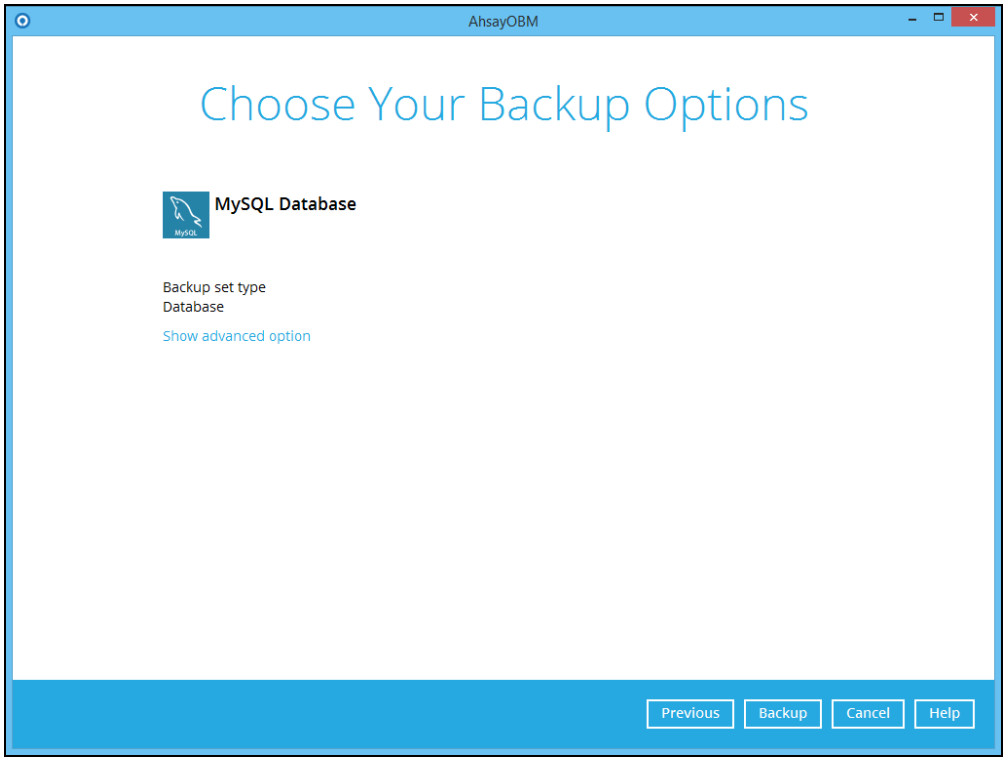
1. Click the Backup icon on the main interface of AhsayOBM.



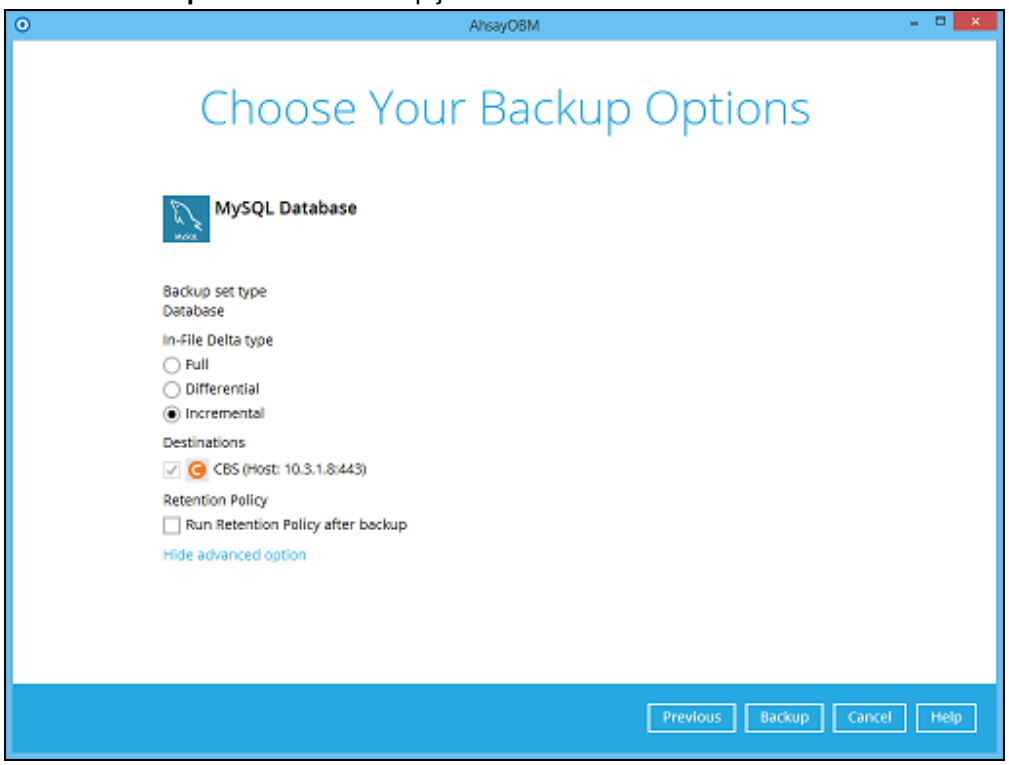
2. Select the MySQL Database backup set which you would like to start a manual backup.



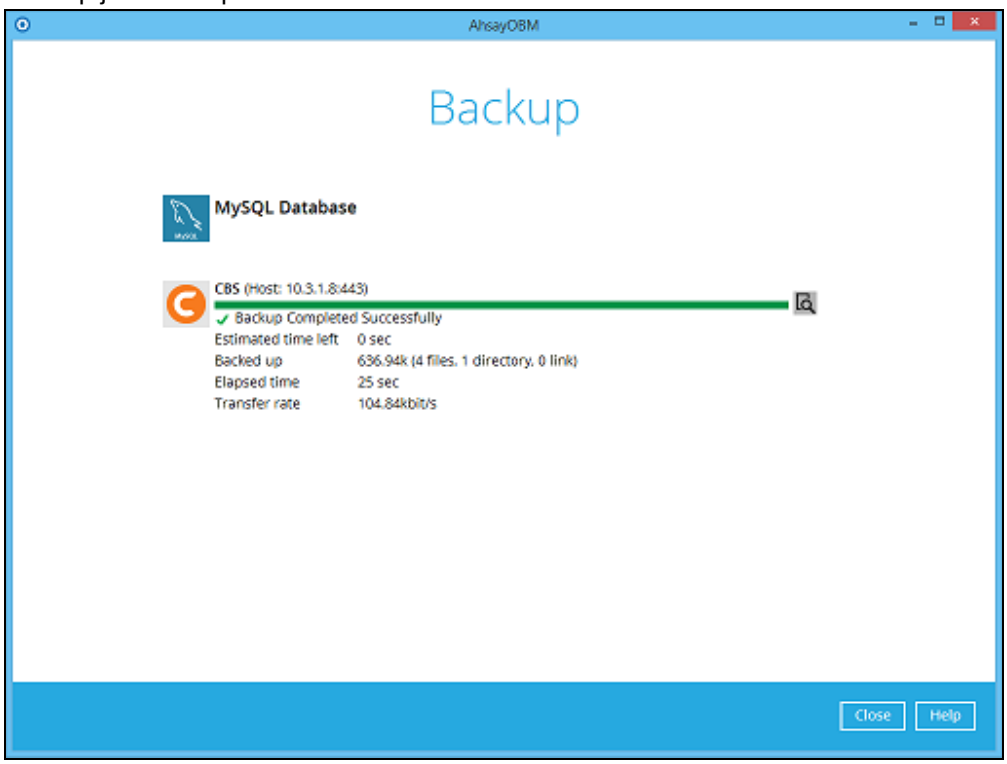
3. If you would like to modify the In-File Delta type, Destinations, or Run Retention Policy Settings, click on **Show advanced option**.



4. Click on **Backup** to start the backup job.

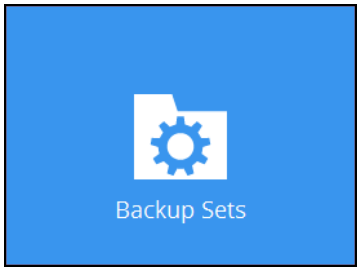


5. Backup job is completed.

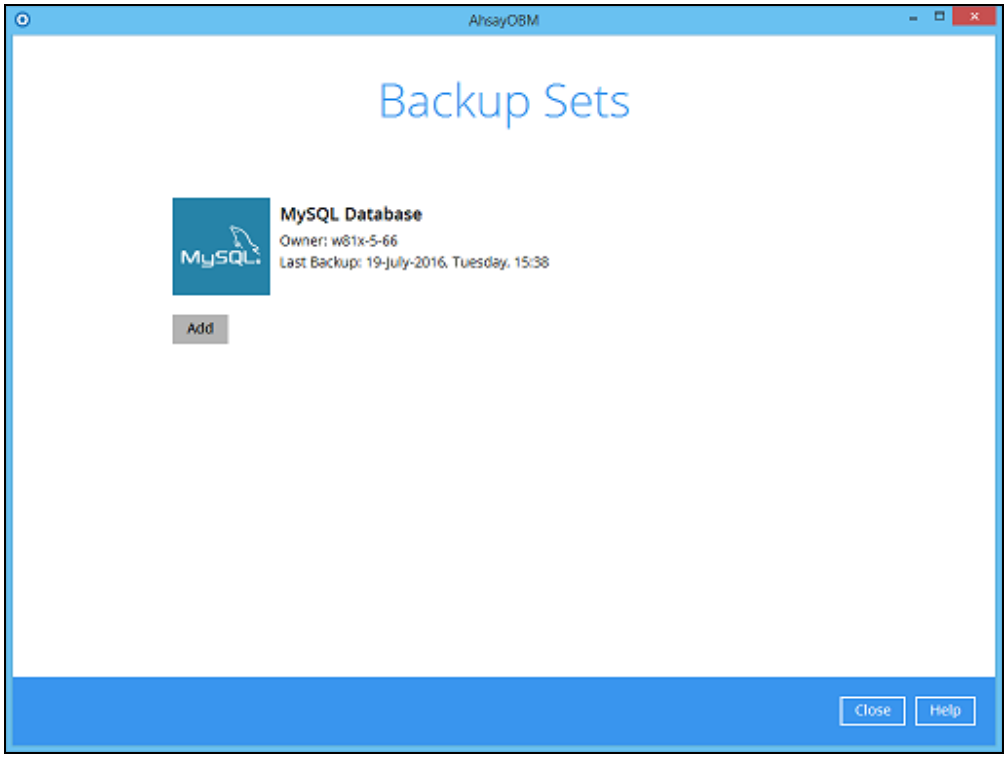


7.3 Configure Backup Schedule for Automated Backup

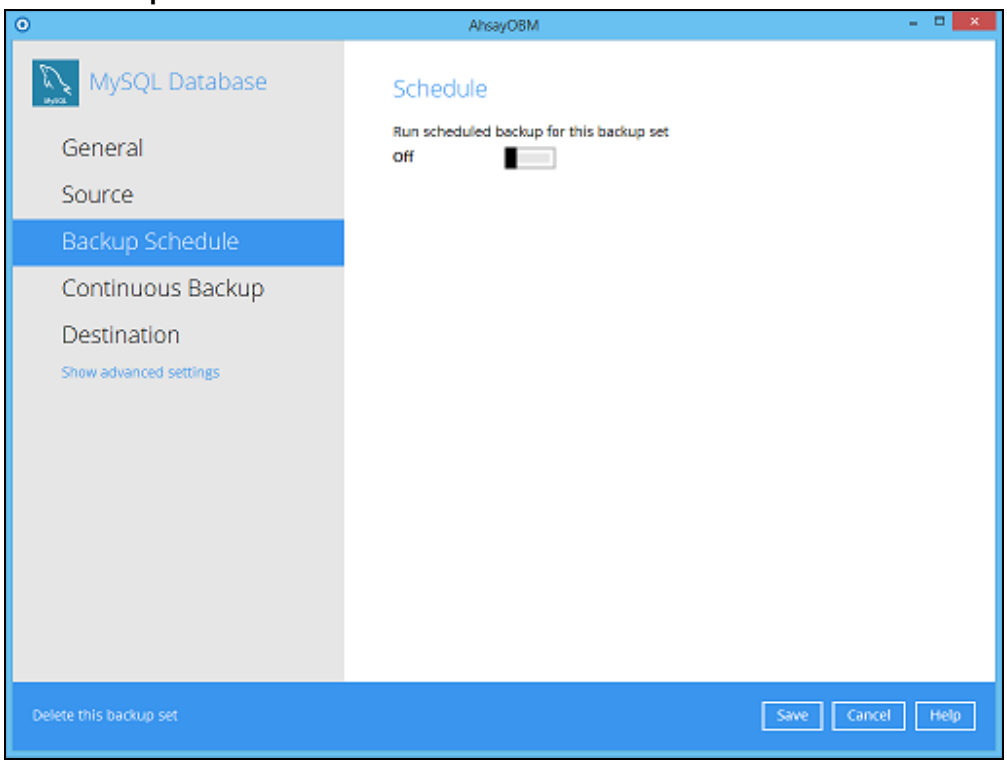
1. Click on the **Backup Sets** icon on the AhsayOBM main interface.



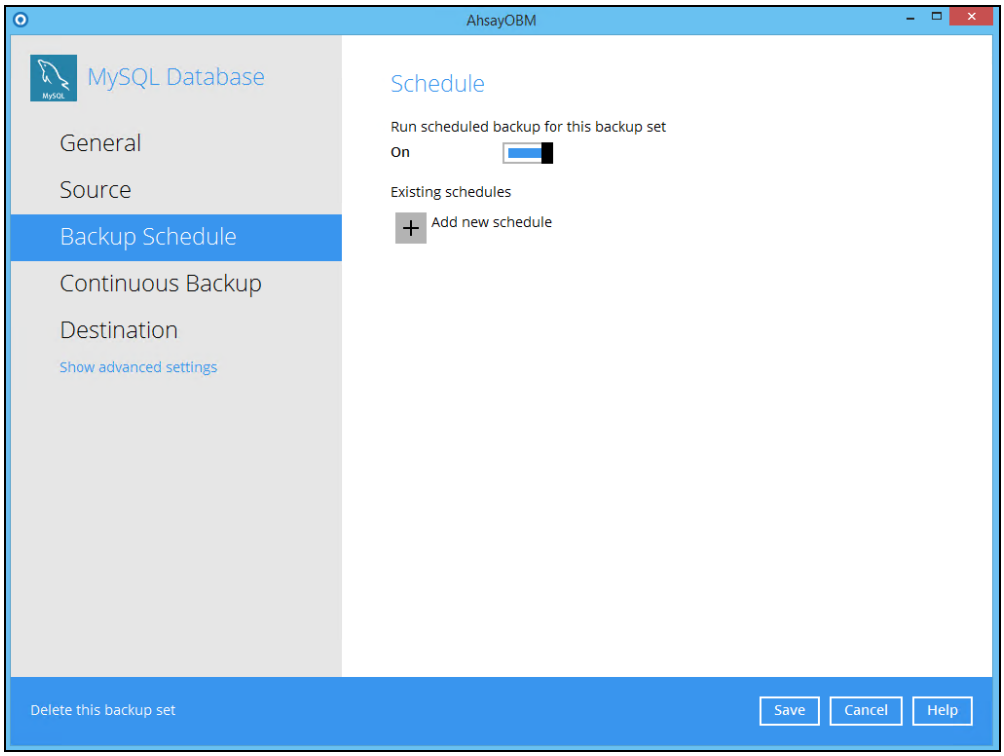
2. Select the backup set that you would like to create a backup schedule for.



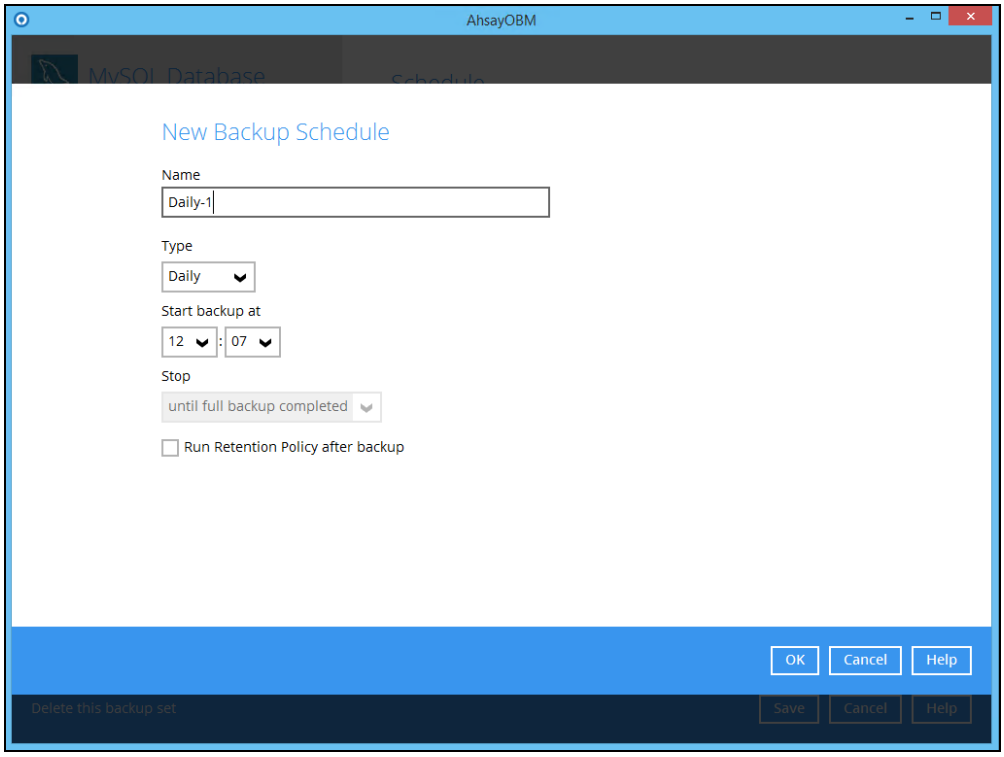
3. Click **Backup Schedule**.



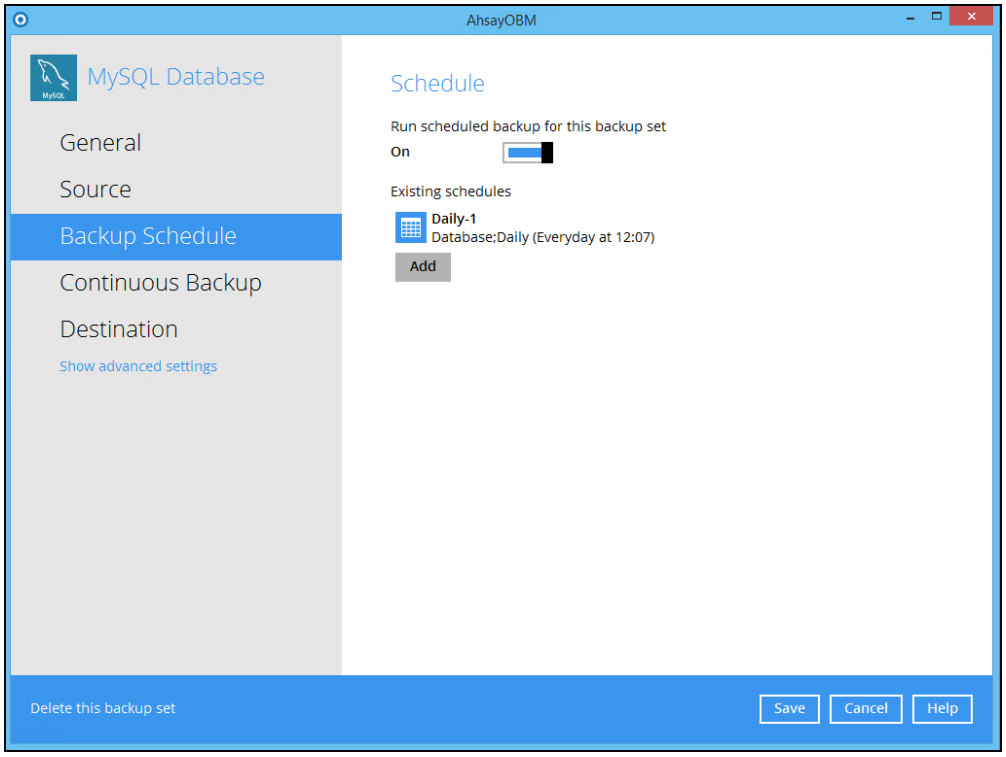
4. Turn on the backup schedule by switching the "**Run scheduled backup for this backup set**" feature to **On**, then click the **+** icon next to **Add new schedule**.



5. Configure the backup schedule settings on this page, then click **OK** when you are done with the settings.



6. Click **Save** to confirm the settings and exit the **Backup Schedule** menu.



8 Restoring Data

The restore options available:

i. **Original location** – AhsayOBM will restore the database(s) from the backup destination and apply them to the original production MySQL instance.

ii. **Alternate location** – AhsayOBM will restore the database(s) from the backup destination and apply them to the either the original MySQL instance or another MySQL instance on the production machine. This option can also be used to clone a database by changing the database name.

iii. **Restore raw file** – AhsayOBM will restore the database *.sql files to a location on the local machine. Which then can be copied to another MySQL server on another machine for recovery.

8.1 Login to AhsayOBM

Login to the AhsayOBM application according to the instructions in Chapter 3.1 Login to AhsayOBM

8.2 Automatic MySQL Database Restore

Restore files from your backup destination and automatically apply them to the MySQL database server in the original location.

1. Login to MySQL Server using MySQL Command Line Client and verify the database instance is running.

```
Enter password: ******
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 5.6.31-log MySQL Community Server (GPL)

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and/or its
affiliates. Other names may be trademarks of their
respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the
current input statement.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
+--------------------+
3 rows in set (0.00 sec)

mysql>
```
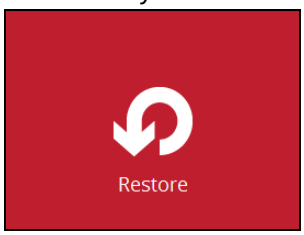
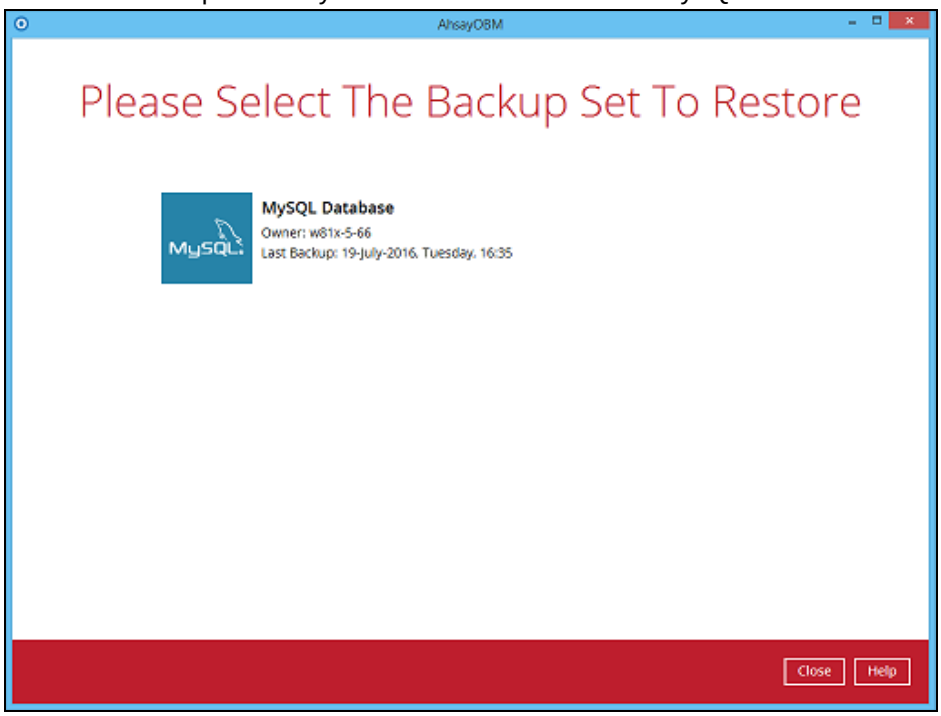
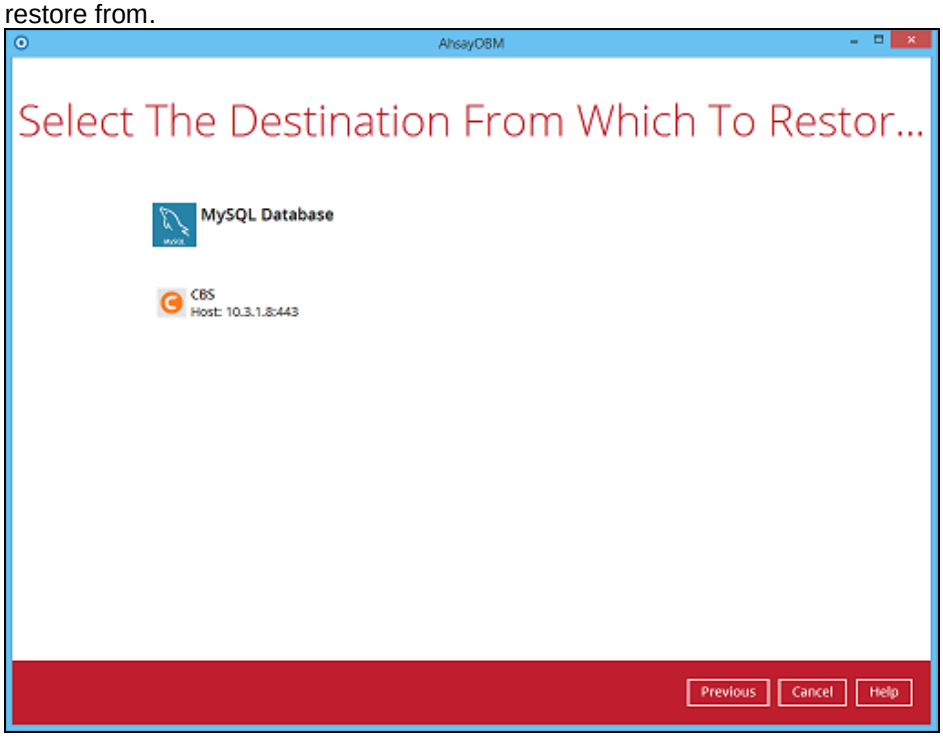

2. In the AhsayOBM main interface, click the **Restore** icon.



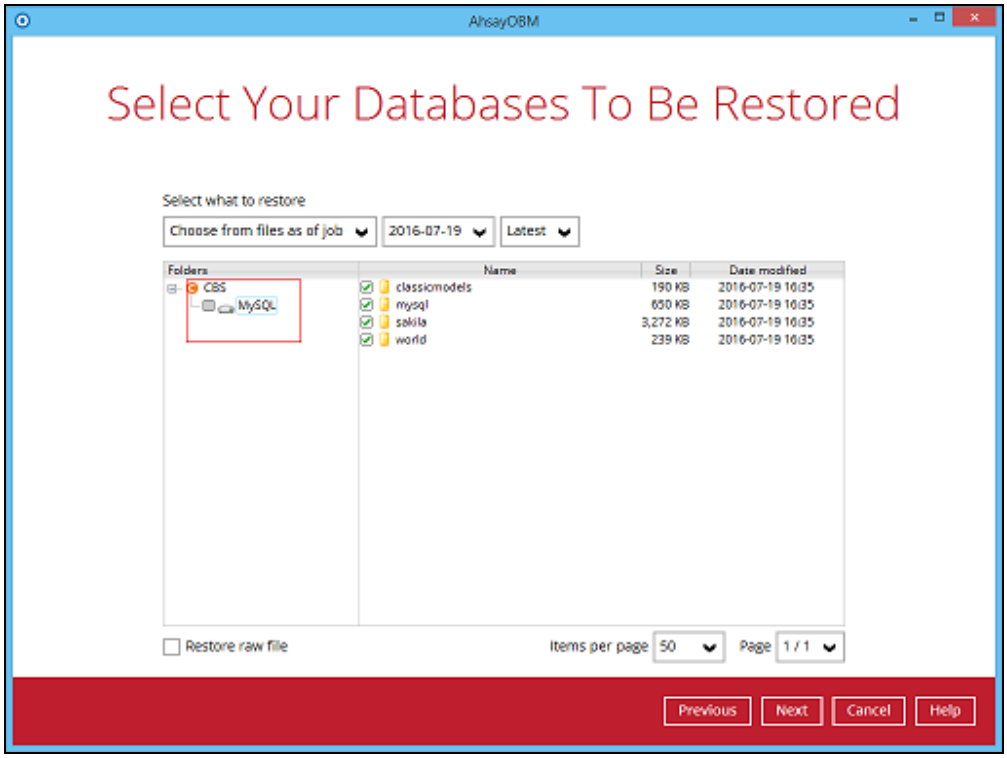
3. Select the backup set that you would like to restore the MySQL Database from.



4. Select the storage destination that contains the MySQL databases that you would like to restore from.

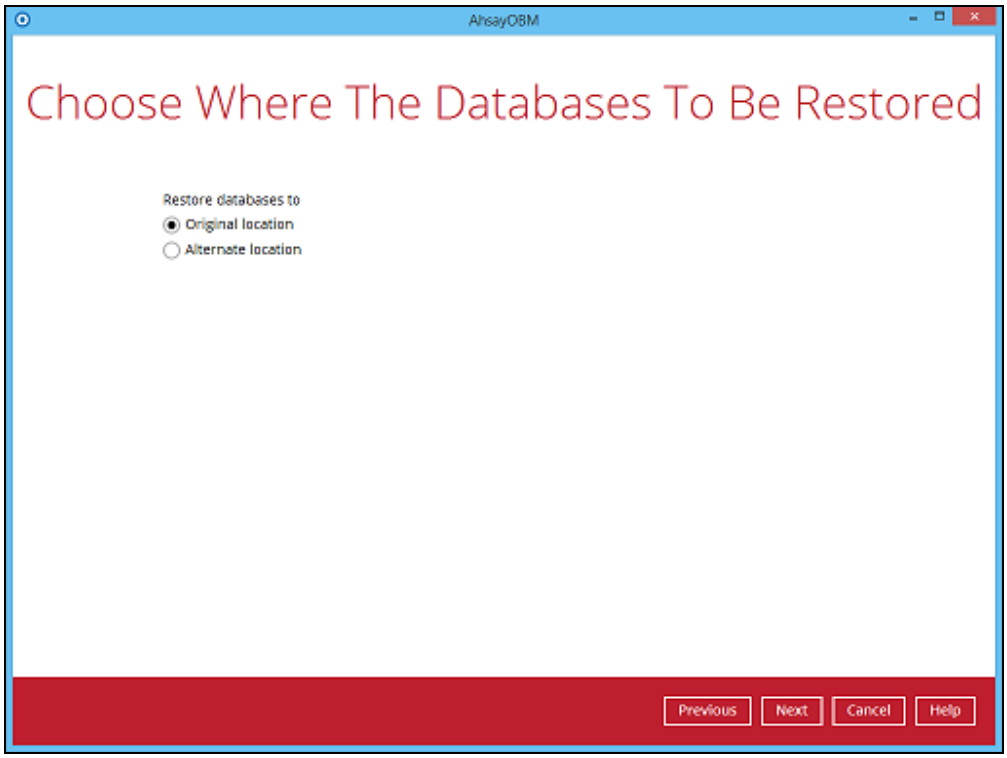


5. Select to restore the MySQL node from a specific backup job then select the files or folders that you would like to restore. Click **Next** to proceed.

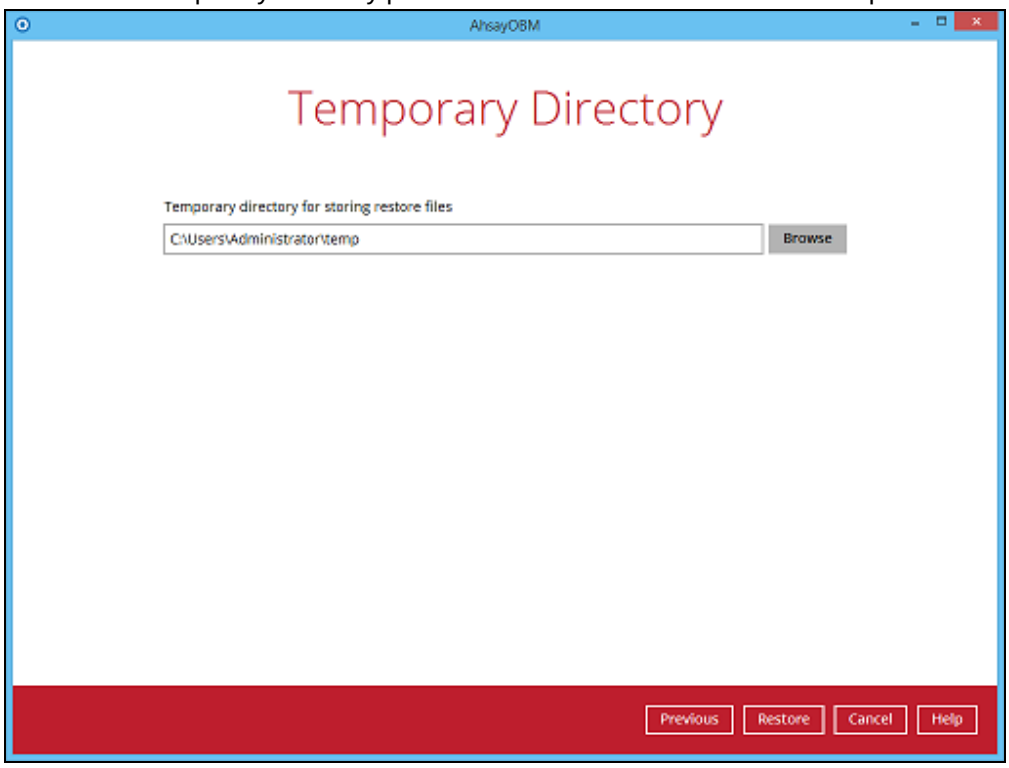


Note: *To restore to either original or alternate location please unselect the MySQL data node and only select the databases only.*

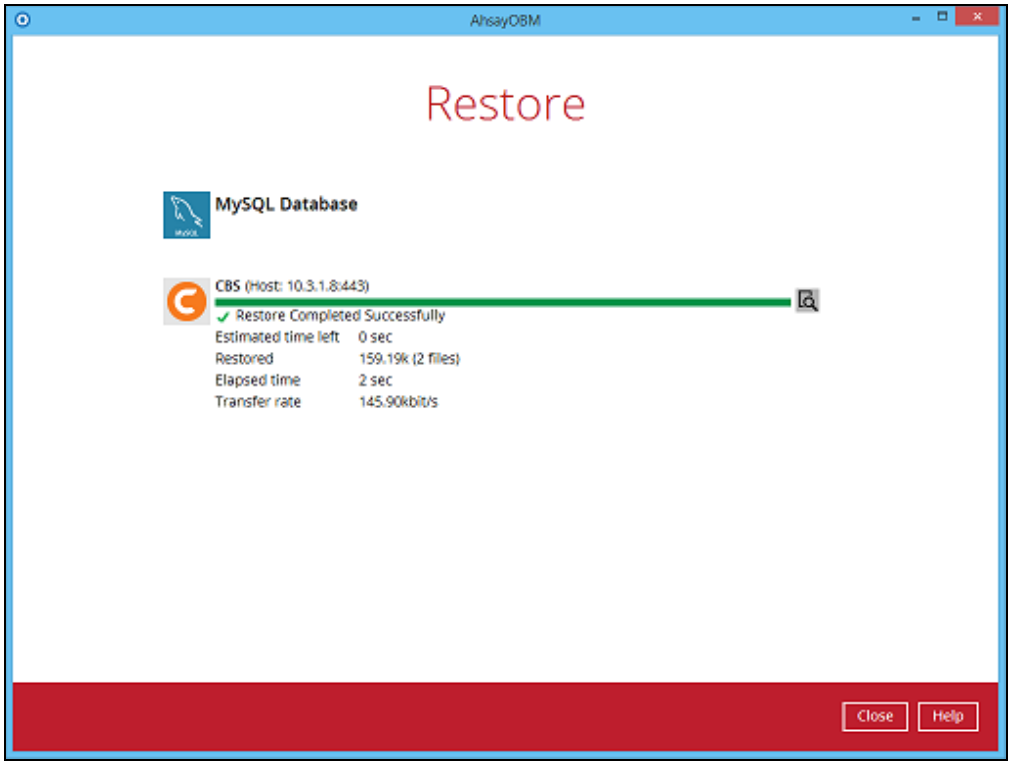
6. Select to restore the MySQL Databases to the Original location and click **Next** to proceed.



7. Confirm the temporary directory path is correct and then click **Restore** to proceed.



8. After the MySQL database(s) has been restored.



9. Using MySQL Command Line Client you can list the restored databases and tables.

Example: Listing the tables in the database using **show tables**

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| classicmodels      |          |
| mysql              |
| performance_schema |
| sakila             |
| world              |
+--------------------+
6 rows in set (0.06 sec)
mysql> show tables in world;
+-----------------+
| Tables_in_world |
+-----------------+
| city            |
| country         |
| countrylanguage |
| departments     |
| dept_emp        |
| dept_manager    |
| employees       |
| salaries        |
| titles          |
+-----------------+
9 rows in set (0.00 sec)
mysql> show tables in classicmodels;
+----------------------------+
| Tables_in_classicmodels    |
+----------------------------+
| actor                      |
| actor_info                 |
| address                    |
| category                   |
| city                       |
| country                    |
| countrylanguage            |
| customer                   |
| customer_list              |
| customers                  |
| departments                |
| dept_emp                   |
| dept_manager               |
| employees                  |
| film                       |
| film_actor                 |
| film_category              |
| film_list                  |
| film_text                  |
| inventory                  |
| language                   |
| nicer_but_slower_film_list |
| offices                    |
| orderdetails               |
| orders                     |
| payment                    |
| payments                   |
```

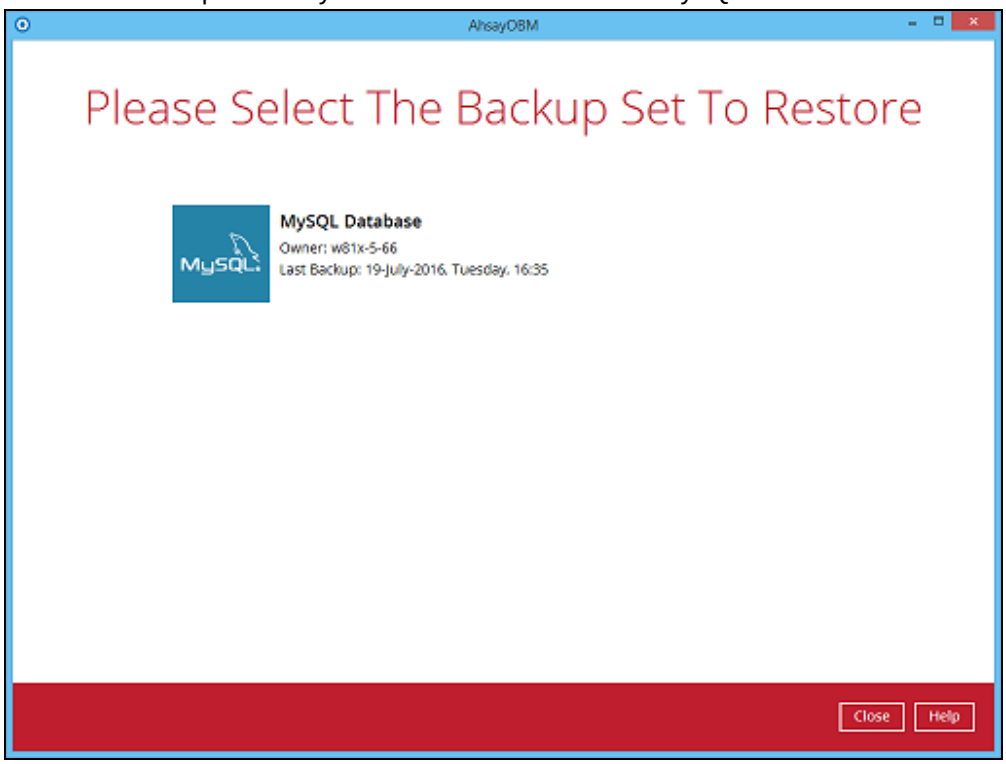
```
| productlines                |
| products                    |
| rental                      |
| salaries                    |
| sales_by_film_category      |
| sales_by_store              |
| staff                       |
| staff_list                  |
| store                       |
| titles                      |
+-----------------------------+
37 rows in set (0.00 sec)
```

8.3 Manual MySQL Database Restore

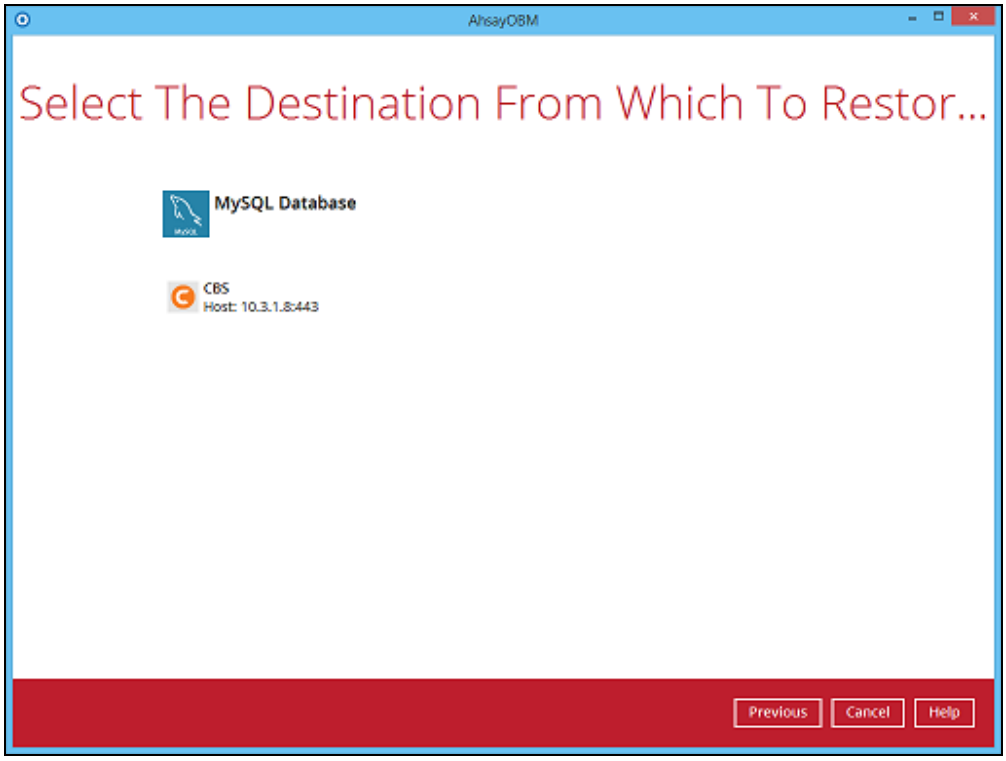
To restore the MySQL databases from your storage destination to a location on disk and manually recover the databases.

1. In the AhsayOBM main interface, click the **Restore** icon.

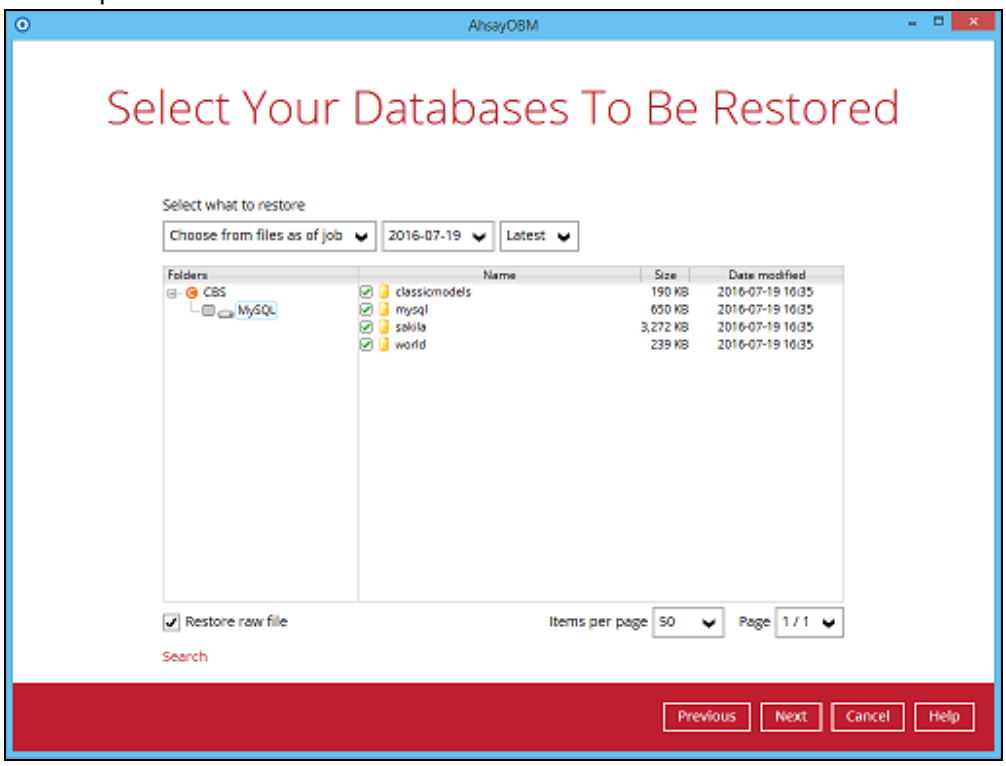
2. Select the backup set that you would like to restore the MySQL Database from.



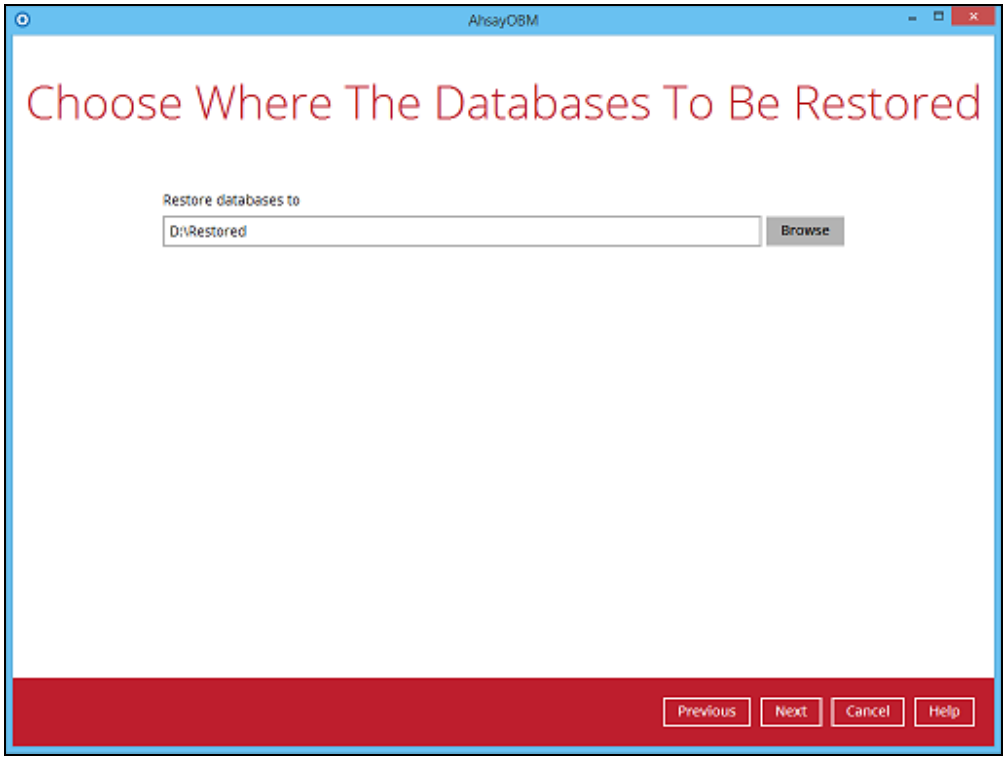
3. Select the storage destination that contains the MySQL databases that you would like to restore from.



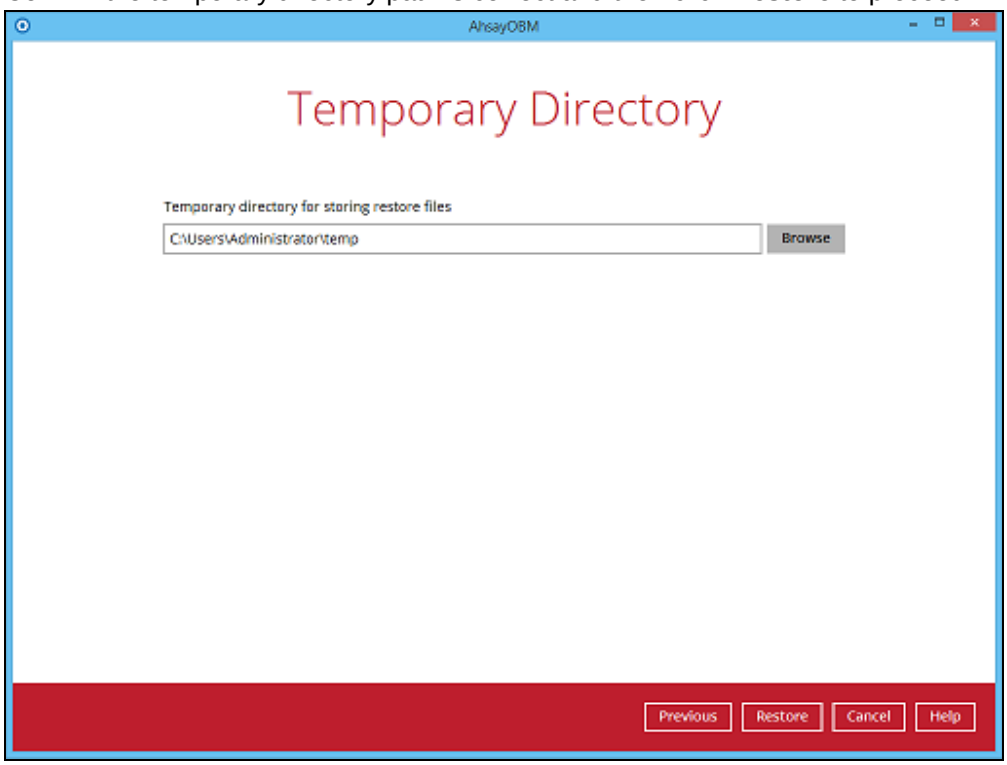
4. Select to restore the MySQL database(s) from a specific backup job then select the files or folders that you would like to restore and select the **Restore raw file** option. Click **Next** to proceed.



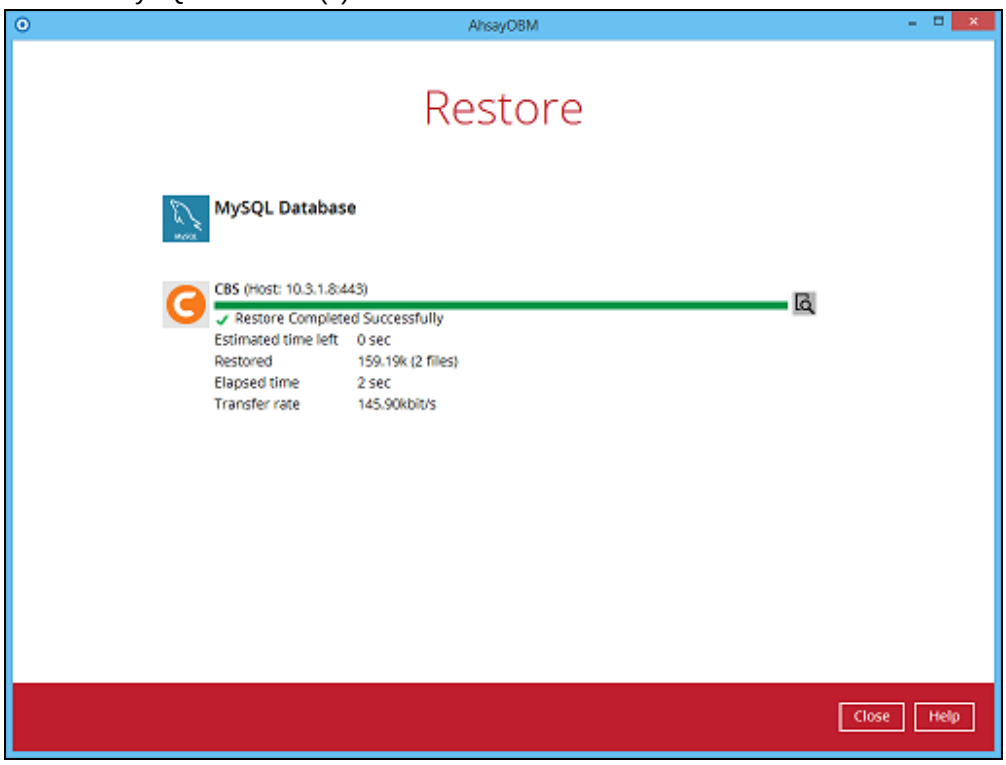
5. Select the location on the local machine you wish to restore the MySQL database files to. Click **Next** to proceed.



6. Confirm the temporary directory path is correct and then click **Restore** to proceed.

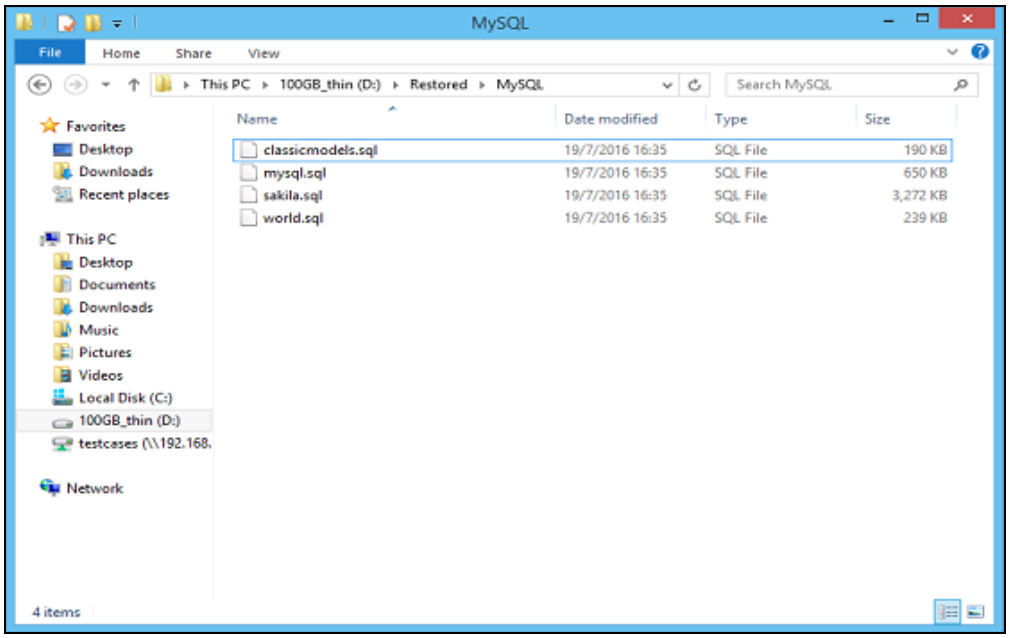


7. After the MySQL database(s) has been restored.



8. Check the location on the local machine to verify the MySQL database files have been restored.

Example: Using Windows File Explorer



8.3.1 Recovering MySQL Databases

1. Login to MySQL Server using MySQL Command Line Client and verify the database instance is running.

```
Enter password: ******
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 5.6.31-log MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their
respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the
current input statement.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
+--------------------+
3 rows in set (0.00 sec)

mysql>
```

2. Create the database names that need to be recovered.

3. Example: classicmodels, sakila, and world.

```
mysql> create database classicmodels;
Query OK, 1 row affected (0.02 sec)

mysql> create database sakila;
Query OK, 1 row affected (0.00 sec)

mysql> create database world;
Query OK, 1 row affected (0.00 sec)
```

4. Recover Databases

   Repeat the following steps for all databases you wish to restore.

```
mysql> use classicmodels;
mysql> source d:\restored\MySQL\classicmodels.sql
Query OK, 0 rows affected (0.01 sec)

Query OK, 7 rows affected (0.00 sec)
Records: 7  Duplicates: 0  Warnings: 0

Query OK, 110 rows affected (0.00 sec)
Records: 110  Duplicates: 0  Warnings: 0

Query OK, 122 rows affected (0.00 sec)
```

```
Records: 122  Duplicates: 0  Warnings: 0

mysql> use sakila;
mysql> source /restored/MySQL/sakila.sql
Query OK, 0 rows affected (0.01 sec)

Query OK, 148 rows affected (1.9 sec)
Records: 148  Duplicates: 0  Warnings: 0

mysql> use world;
mysql> source /restored/MySQL/world.sql

Query OK, 0 rows affected (0.00 sec)

Query OK, 4079 rows affected (0.03 sec)
Records: 4079  Duplicates: 0  Warnings: 0

Query OK, 0 rows affected (0.01 sec)
```

5. Check the database status

Example: Listing the tables in the database using **show tables**

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| classicmodels      |
| mysql              |
| performance_schema |
| sakila             |
| world              |
+--------------------+
7 rows in set (0.06 sec)


mysql> show tables in world;
+-----------------+
| Tables_in_world |
+-----------------+
| city            |
| country         |
| countrylanguage |
| departments     |
| dept_emp        |
| dept_manager    |
| employees       |
| salaries        |
| titles          |
+-----------------+
9 rows in set (0.00 sec)

mysql> show tables in classicmodels;
+---------------------------+
| Tables_in_classicmodels   |
+---------------------------+
| actor                     |
| actor_info                |
| address                   |
| category                  |
| city                      |
```

```
| country                      |
| countrylanguage              |
| customer                     |
| customer_list                |
| customers                    |
| departments                  |
| dept_emp                     |
| dept_manager                 |
| employees                    |
| film                         |
| film_actor                   |
| film_category                |
| film_list                    |
| film_text                    |
| inventory                    |
| language                     |
| nicer_but_slower_film_list   |
| offices                      |
| orderdetails                 |
| orders                       |
| payment                      |
| payments                     |
| productlines                 |
| products                     |
| rental                       |
| salaries                     |
| sales_by_film_category       |
| sales_by_store               |
| staff                        |
| staff_list                   |
| store                        |
| titles                       |
+------------------------------+
37 rows in set (0.00 sec)
```

8.4 Automatic MySQL Database Restore (Alternative Location)

1. Login to MySQL Server using MySQL Command Line Client and verify the database instance is running.

```
Enter password: ******
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 5.6.31-log MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their
respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the
current input statement.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
+--------------------+
3 rows in set (0.00 sec)

mysql>
```
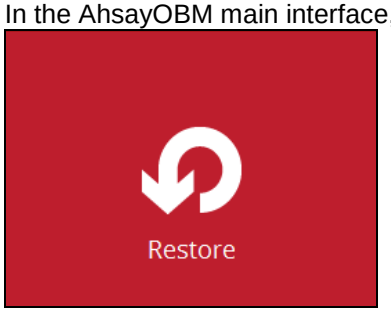
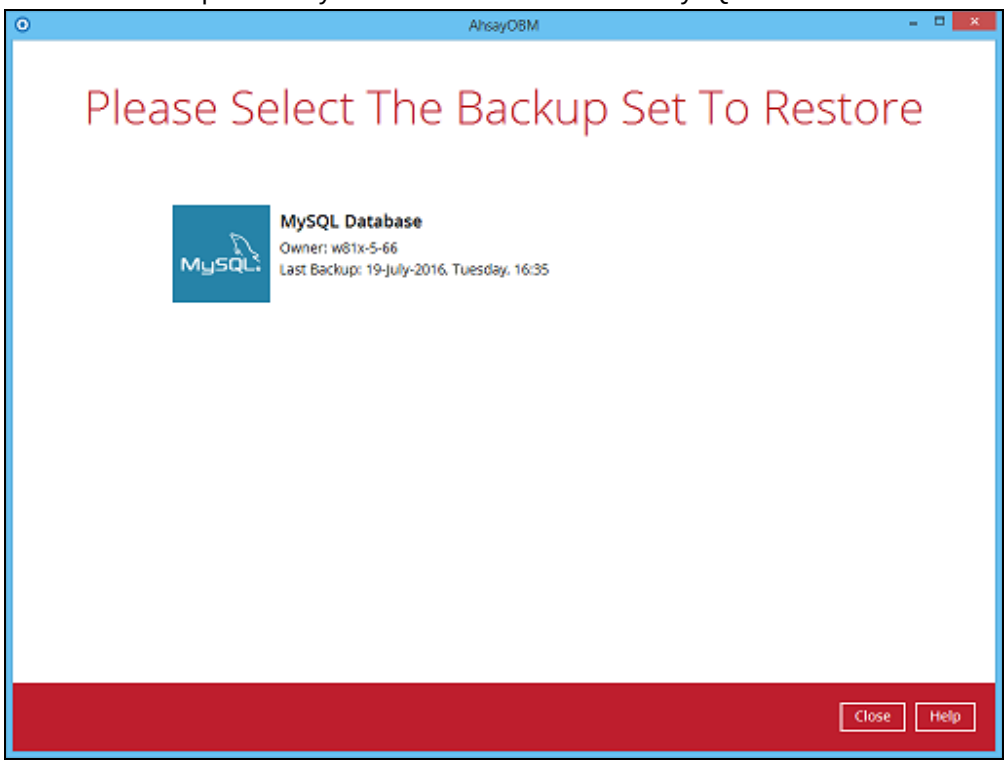
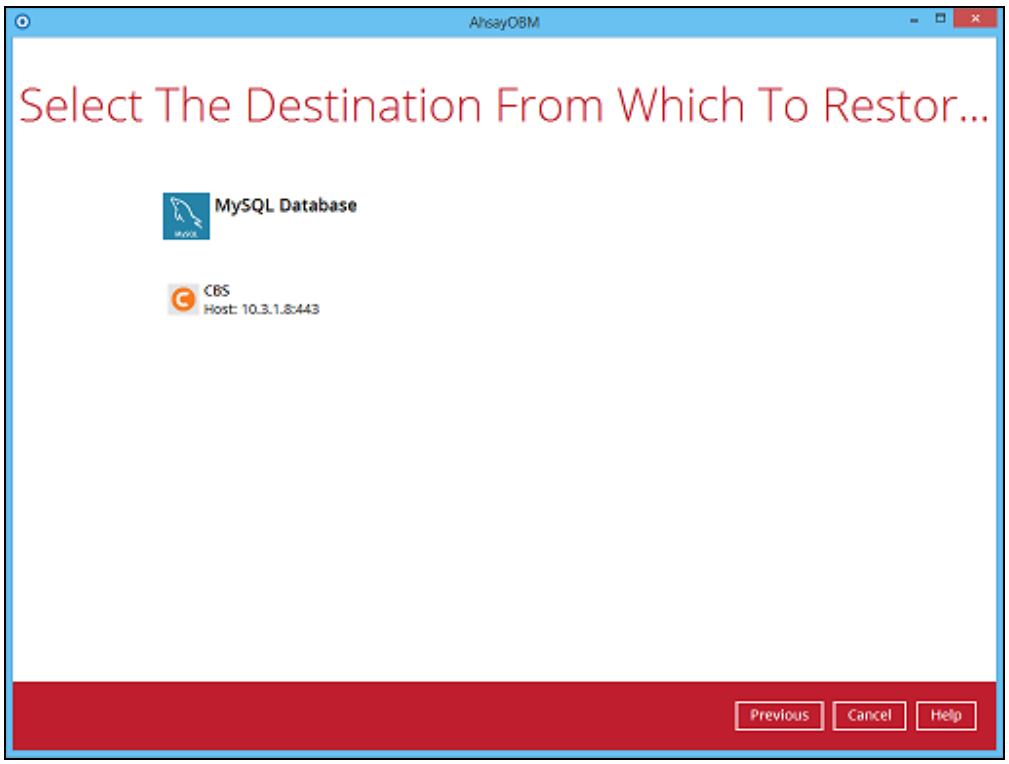

2. In the AhsayOBM main interface, click the **Restore** icon.



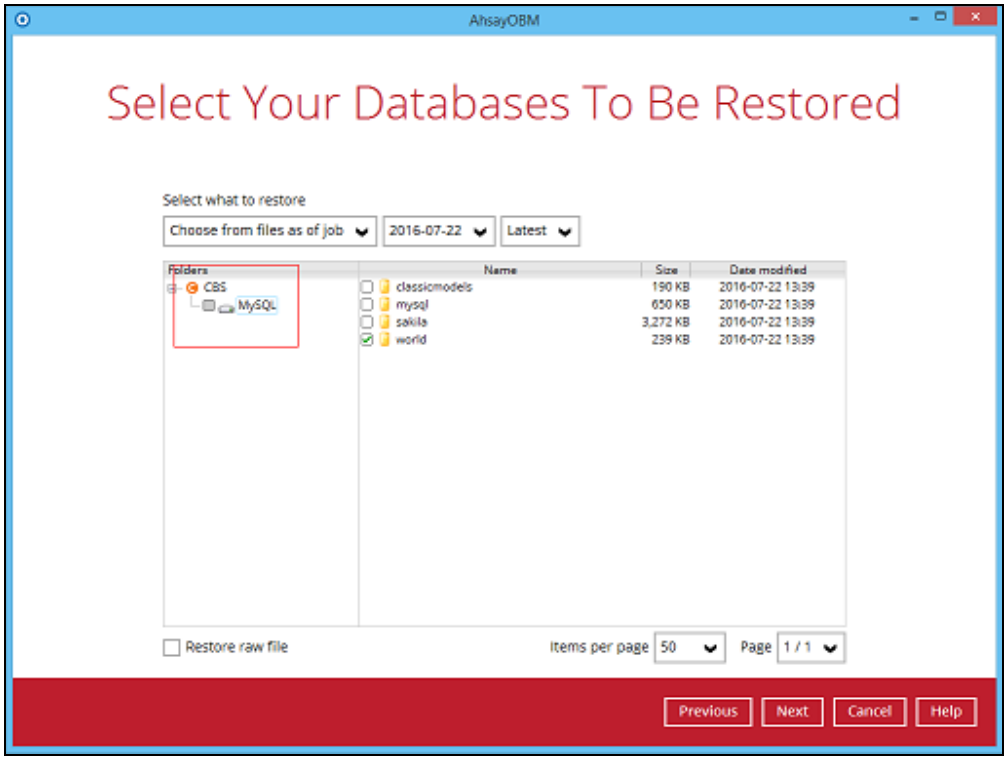
3. Select the backup set that you would like to restore the MySQL Database from.



4. Select the storage destination that contains the MySQL databases that you would like to restore from.

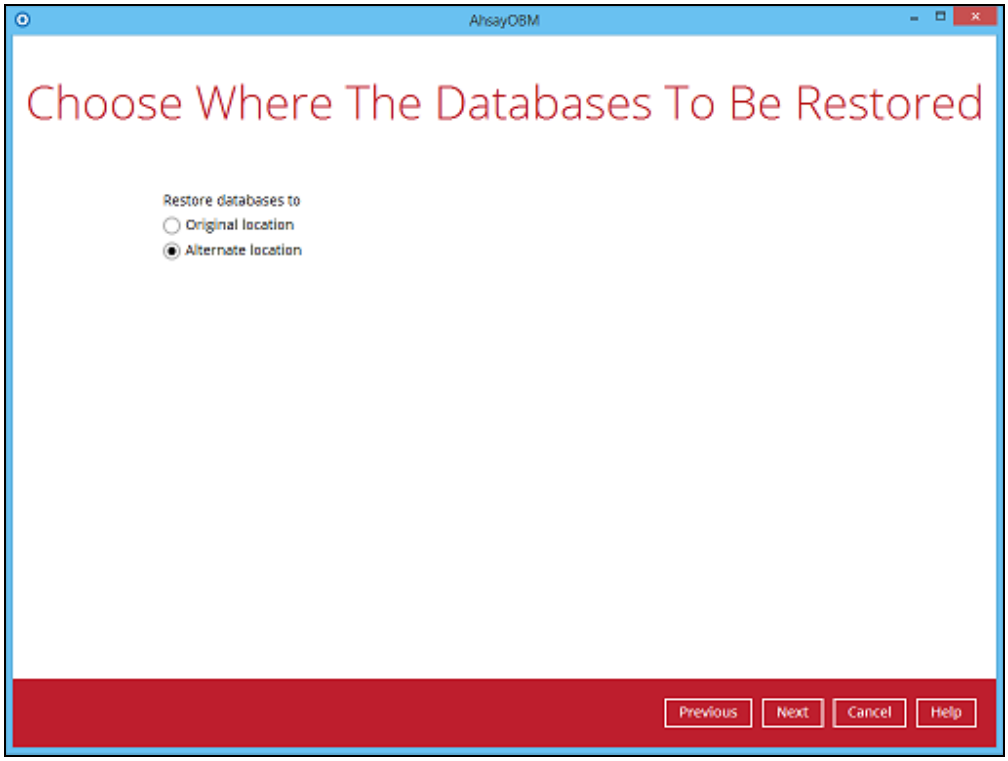


5. Select to restore the MySQL node from a specific backup job then select the files or folders that you would like to restore. Click **Next** to proceed.



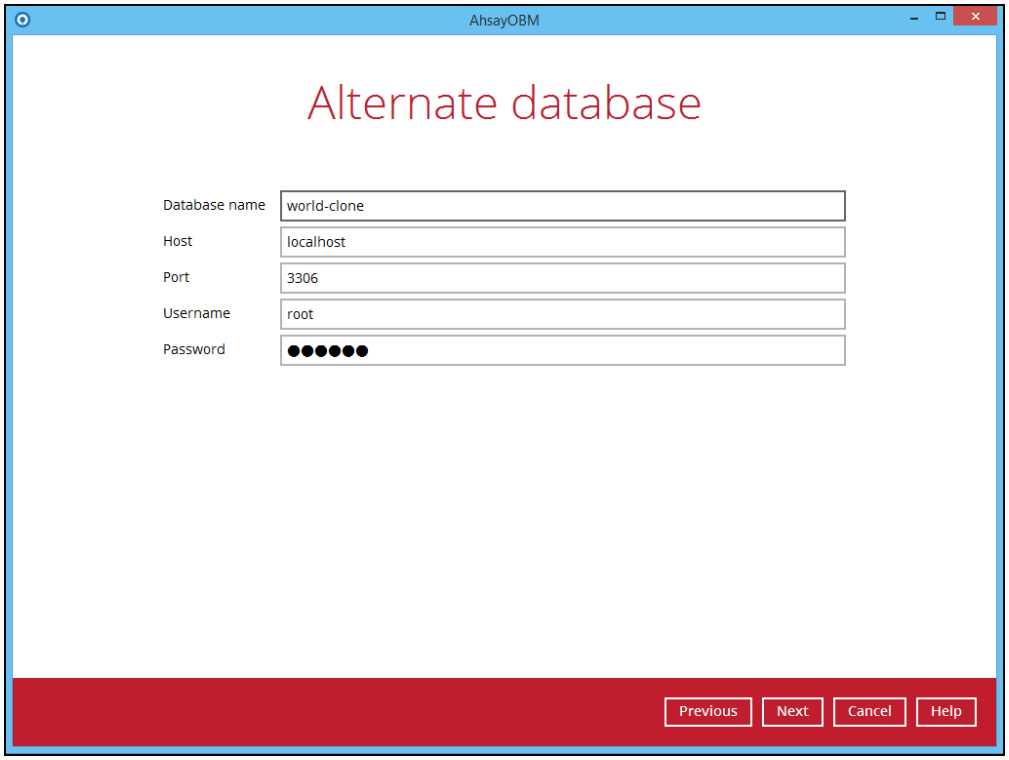
Note: *To restore to either original or alternate location please unselect the MySQL data node and only select the databases only.*

6. Select to restore the MySQL Databases to the alternate location and click **Next** to proceed.

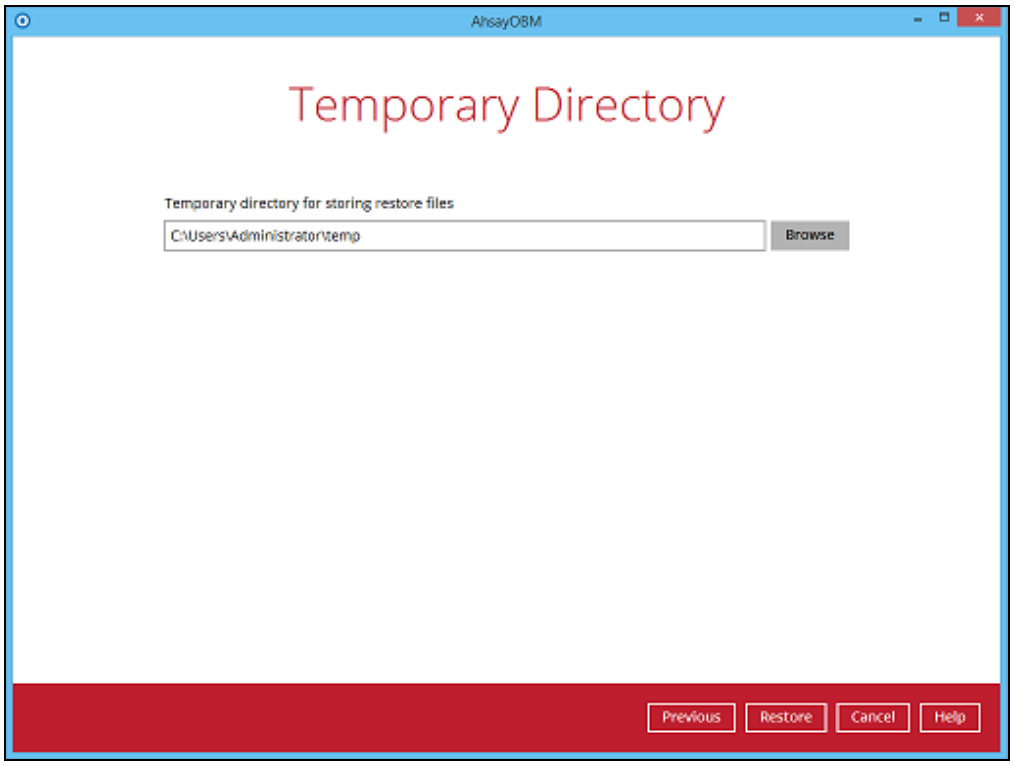


7. Confirm the MySQL database details such as Database name, Host, Port, Username, and Password.

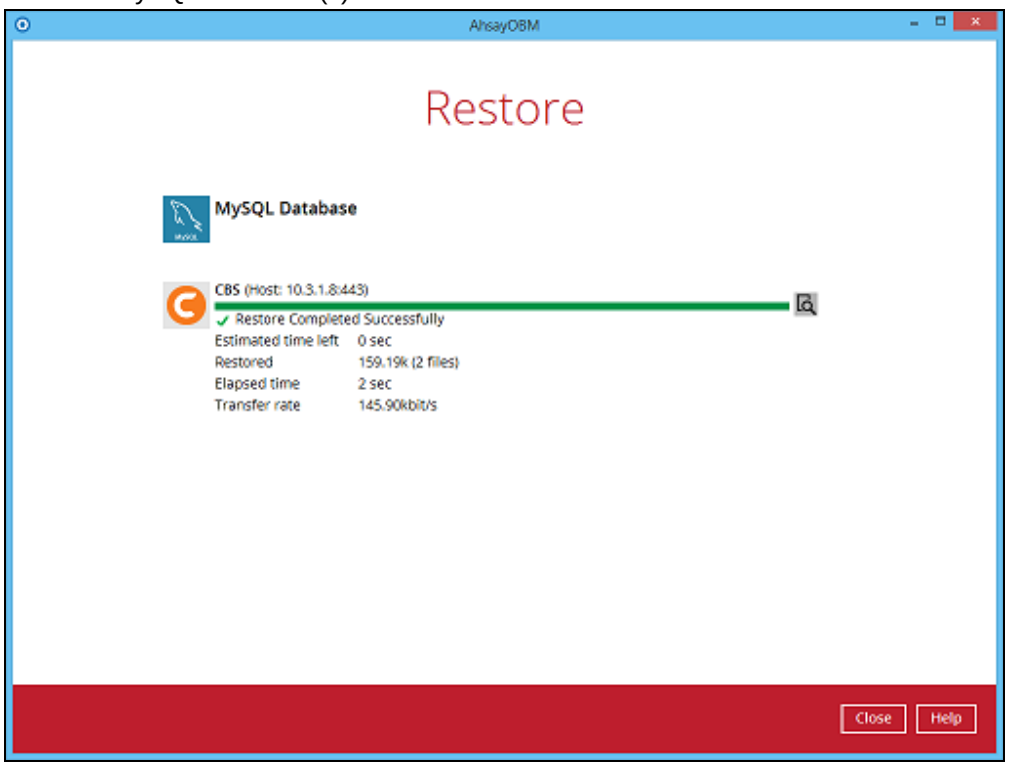
   Example: To restore and clone a copy of the **world** database on the original server with new name **world-clone**.



8. Confirm the temporary directory path is correct and then click **Restore** to proceed.



9. After the MySQL database(s) has been restored.



10. Using MySQL Command Line Client you can list the restored databases and tables.

Example: Listing the tables in the restore cloned database using **show tables**

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| classicmodels      |          |
| mysql              |
| performance_schema |
| sakila             |
| world              |
| world-clone        |
+--------------------+
6 rows in set (0.06 sec)

mysql> show tables in `world-clone`;
+------------------------+
| Tables_in_world-clone |
+------------------------+
| city                   |
| country                |
| countrylanguage        |
+------------------------+
3 rows in set (0.00 sec)

mysql>
```