Ahsay Backup

Ahsay Online Backup Manager v9

MySQL Database Backup and Restore for Windows

Ahsay Systems Corporation Limited

27 January 2023

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Revision History

Date	Descriptions	Type of modification
11 February 2022	▪ Ch. 5.2 – added migrate data	9.1.0.0
27 January 2023	▪ Ch. 6 – updated restore instructions	9.5.2.0

Table of Contents

1 Overview

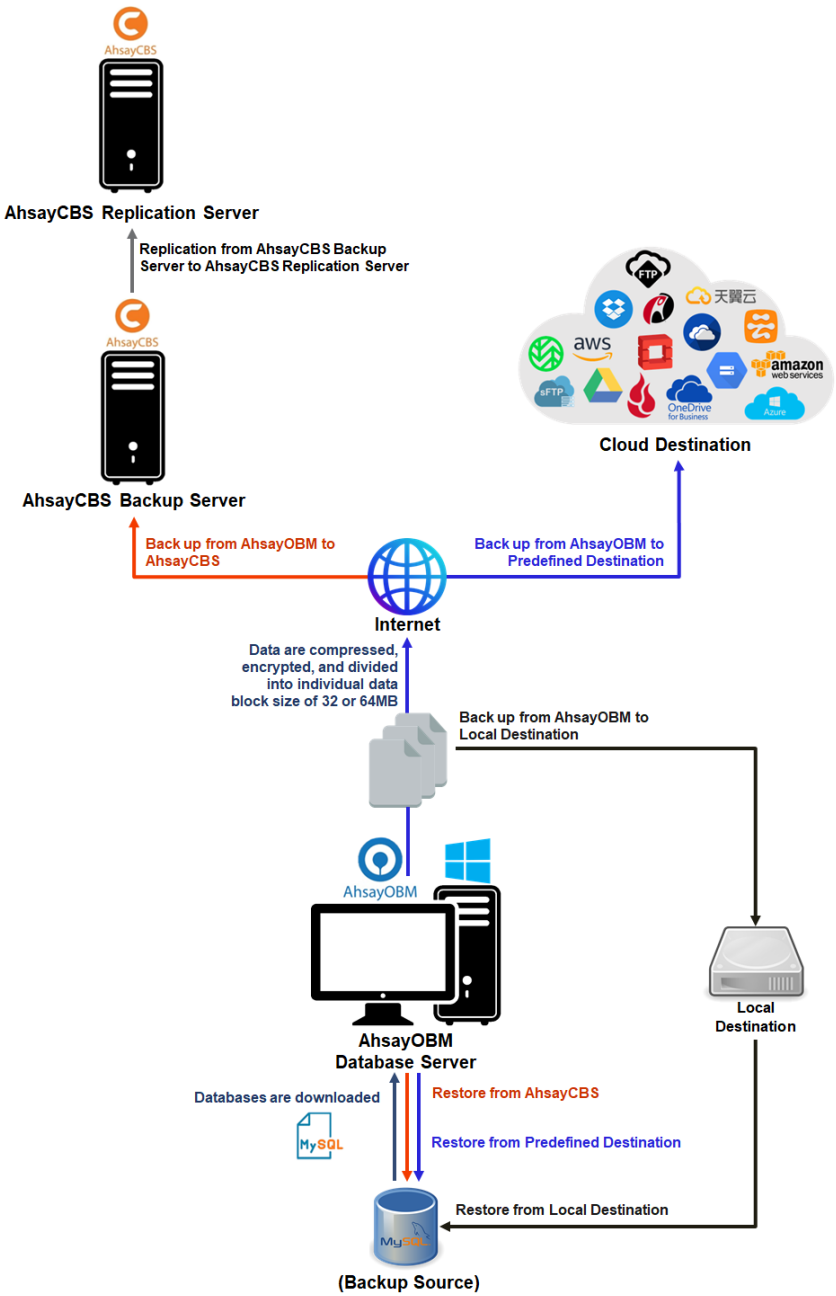
1.1 What is this software?

Ahsay brings you specialized client backup software, namely AhsayOBM, to provide a set of tools to protect your MySQL Database Server.

1.2 System Architecture?

Below is the system architecture diagram illustrating the major elements involved in the backup process among the MySQL Database Server, AhsayOBM and AhsayCBS.

In this user guide, we will focus on the software installation, as well as the end-to-end backup and restore process AhsayOBM (Agent-based).



2 Preparing for Backup and Restore

2.1 Hardware Requirement

To achieve the optimal performance when AhsayOBM is running on your machine, refer to the following article for the list of hardware requirements.

FAQ: Ahsay Hardware Requirement List (HRL) for version 9.1 or above

2.2 Software Requirement

Make sure the operating system where you have the MySQL Database Server installed is compatible with the AhsayOBM. Refer to the following article for the list of compatible operating systems and application versions.

FAQ: Ahsay Software Compatibility List (SCL) for version 9.1 or above

2.3 Antivirus Exclusion

To optimize performance of AhsayOBM on Windows, and to avoid conflict with your antivirus software, refer to the following Wiki article the list of processes and directory paths that should be added to all antivirus software white-list / exclusion list:

FAQ: Suggestion on antivirus exclusions to improve performance of Ahsay software on Windows

2.4 AhsayOBM Installation

Make sure that the latest version of AhsayOBM is installed on your computer with Internet access for connection to your MySQL Database Server.

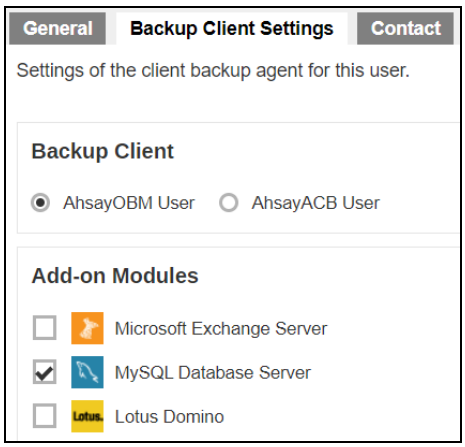
User should also stay up-to-date when newer version of AhsayOBM is released. To get our latest product and company news through email, please subscribe to our mailing list.

https://www.ahsay.com/jsp/en/home/subscribe_mail_list.jsp

2.5 Add-on Module Requirement

Make sure the MySQL Database Server feature has been enabled as an add-on module in your AhsayOBM user account.

Please contact your backup service provider for more details.



2.5.1 Backup Quota Requirement

Make sure that your AhsayOBM user account has sufficient quota assigned to accommodate the storage of MySQL Database Server backup set and retention policy.

Please contact your backup service provider for more details.

2.5.2 Java Heap Size

The default Java heap size setting on AhsayOBM is 2048MB. It is highly recommended to increase the Java heap size setting to be at least 4096MB to improve backup and restore performance. The actual heap size is dependent on amount of free memory available on your MySQL Database Server.

2.5.3 Network Drive

The login accounts for network drives must have read and write access permission to ensure that backup and restore would be successful.

2.6 MySQL Database Server Requirements

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

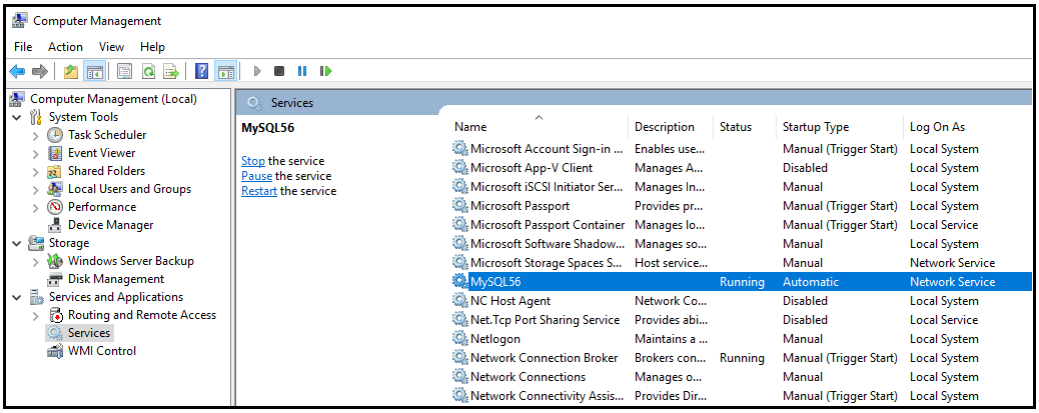
2.6.1 MySQL Version

AhsayOBM is installed on the MySQL database server.

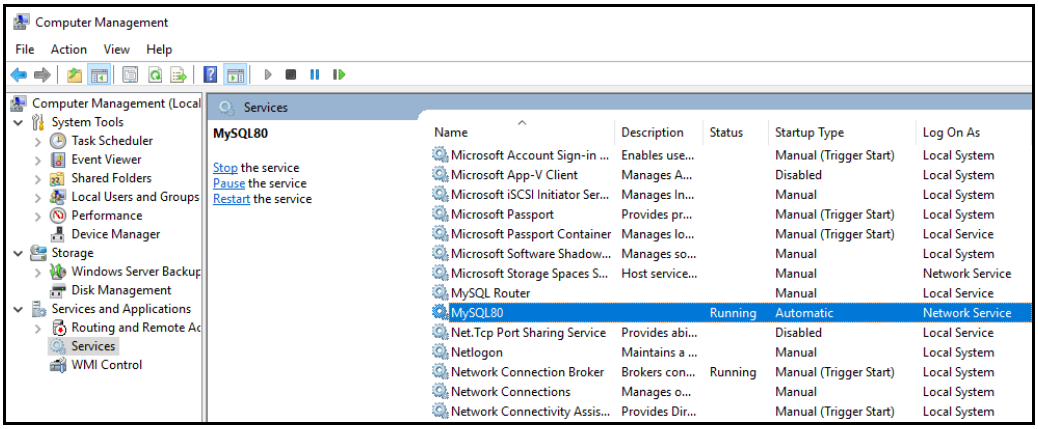
2.6.2 MySQL Database Status

The MySQL database instance is online.

Example: MySQL v5.6 on Windows Server 2016 (64-bit), the default service name is MySQL56.



Example: MySQL v8 on Windows Server 2016, the default service name is MySQL80.



2.6.3 TCP/IP Port

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            w2k16-std:0            LISTENING
  RpcSs
 [svchost.exe]
  TCP    0.0.0.0:445            w2k16-std:0            LISTENING
 Can not obtain ownership information
  TCP    0.0.0.0:2179           w2k16-std:0            LISTENING
 [vmms.exe]
  TCP    0.0.0.0:3306           w2k16-std:0            LISTENING
 [mysqld.exe]
  TCP    0.0.0.0:3389           w2k16-std:0            LISTENING
  TermService
 [svchost.exe]
  TCP    0.0.0.0:5985           w2k16-std:0            LISTENING
 Can not obtain ownership information
  TCP    0.0.0.0:47001          w2k16-std:0            LISTENING
 Can not obtain ownership information
  TCP    0.0.0.0:49664          w2k16-std:0            LISTENING
 Can not obtain ownership information
  TCP    0.0.0.0:49665          w2k16-std:0            LISTENING
 [lsass.exe]
  TCP    0.0.0.0:49666          w2k16-std:0            LISTENING
  EventLog
 [svchost.exe]
  TCP    0.0.0.0:49667          w2k16-std:0            LISTENING
 [spoolsv.exe]
  TCP    0.0.0.0:49668          w2k16-std:0            LISTENING
  SessionEnv
 [svchost.exe]
  TCP    0.0.0.0:49669          w2k16-std:0            LISTENING
  PolicyAgent
```

2.6.4 Mysqldump Utility

The mysqldump utility is installed on the MySQL database server.

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

2.6.5 Mysqldump Utility Version

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

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

Example: MySQL v5.6

```
C:\Program Files\MySQL\MySQL Server 5.6\bin>mysqldump --version
mysqldump  Ver 10.13 Distrib 5.6.41, for Win64 (x86_64)

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

Example: MySQL v8.0

```
C:\Program Files\MySQL\MySQL Server 8.0\bin>mysqldump --version
mysqldump  Ver 8.0.12 for Win64 on x86_64 (MySQL Community Server
- GPL)

C:\Program Files\MySQL\MySQL Server 8.0\bin>
```

MySQL database version:

Example: MySQL v5.6

```
mysql> select version();
+------------+
| version()  |
+------------+
| 5.6.41-log |
+------------+
1 row in set (0.00 sec)

mysql>
```

Example: MySQL v8.0

```
mysql> select version();
+-----------+
| version() |
+-----------+
| 8.0.12    |
+-----------+
1 row in set (0.00 sec)
mysql>
```

2.6.6 User Account Privileges

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

Example: MySQL v5.6

```
mysql> GRANT ALL PRIVILEGES ON *.* TO "username"@"localhost"
IDENTIFIED BY "password";
Query OK, 0 rows affected (0.00 sec)

mysql> GRANT ALL PRIVILEGES ON *.* TO
"username"@"localhost.localdomain" IDENTIFIED BY "password";
Query OK, 0 rows affected (0.00 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)

mysql>
```

For MySQL 8 the use of GRANT to define account authentication characteristic is deprecated. For more information please refer to the MySQL 8.0 Reference Manual. As an alternative, you must first create the user and set the authentication characteristic by using CREATE USER before setting the privileges of the user using GRANT.

Example: MySQL v8.0

```
mysql> CREATE USER 'root'@'localhost.localdomain' IDENTIFIED BY
'Abcd123$%';
Query OK, 0 rows affected (0.32 sec)

mysql> GRANT ALL PRIVILEGES ON *.* TO 'root'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql> GRANT ALL PRIVILEGES ON *.* TO 'root'@'localhost.localdomain';
Query OK, 0 rows affected (0.12 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)
```

2.6.7 Localhost

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 10.90.10.40 with 32 bytes of data:
Reply from 10.90.10.40: bytes=32 time<1ms TTL=64
Reply from 10.90.10.40: bytes=32 time<1ms TTL=64
Reply from 10.90.10.40: bytes=32 time<1ms TTL=64
Reply from 10.90.10.40: bytes=32 time<1ms TTL=64

Ping statistics for 10.90.10.40:
    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.

2.6.8 MySQL Virtual System Databases

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 |
| mysql              |
| performance_schema |
| sakila             |
| test               |
| world              |
+--------------------+
6 rows in set (0.00 sec)
```

2.6.9 Temporary Directory

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 150% 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.

To calculate for the size of your databases run the command below.

```
+--------------------+-----------+
| Database           | Size (MB) |
+--------------------+-----------+
| information_schema |      0.01 |
| mysql              |      0.90 |
| performance_schema |      0.00 |
| sakila             |      6.44 |
| world              |      0.77 |
+--------------------+-----------+
5 rows in set (0.53 sec)
```

2.7 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.

2.8 Best Practices and Recommendations

- **Temporary Directory**

  To ensure an optimal backup/restoration performance, it is highly recommended to set the temporary directory folder to a location with sufficient free disk space. It must be on another location other than Drive C: (e.g. Drive E:).

- **Periodic Backup Schedule**

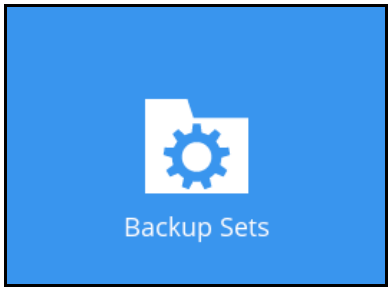
  The periodic backup schedule should be reviewed regularly to ensure that the interval is sufficient to handle the data volume on the machine. Over time, data usage pattern may change on a production server, i.e. the number of new files created, the number of files which are updated/deleted, and new users may be added etc.

  Consider the following key points to efficiently handle backup sets with periodic backup schedule.

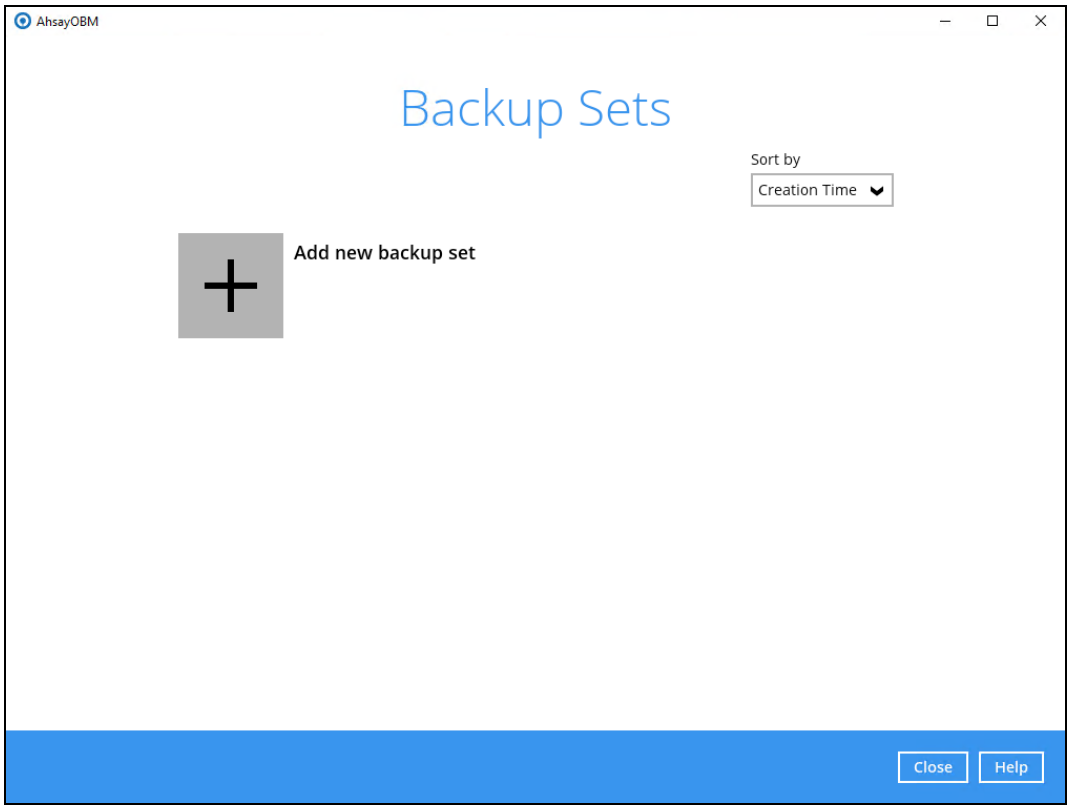
  - Hardware – to achieve optimal performance, compatible hardware requirements is a must. Ensure you have the backup machine's appropriate hardware specifications to accommodate frequency of backups,
    - so that the data is always backed up within the periodic backup interval
    - so that the backup frequency does not affect the performance of the production server
  - Network – make sure to have enough network bandwidth to accommodate the volume of data within the backup interval.
  - Retention Policy - also make sure to consider the retention policy settings and retention area storage management which can grow because of the changes in the backup data for each backup job.

3 Creating a MySQL Database Backup Set

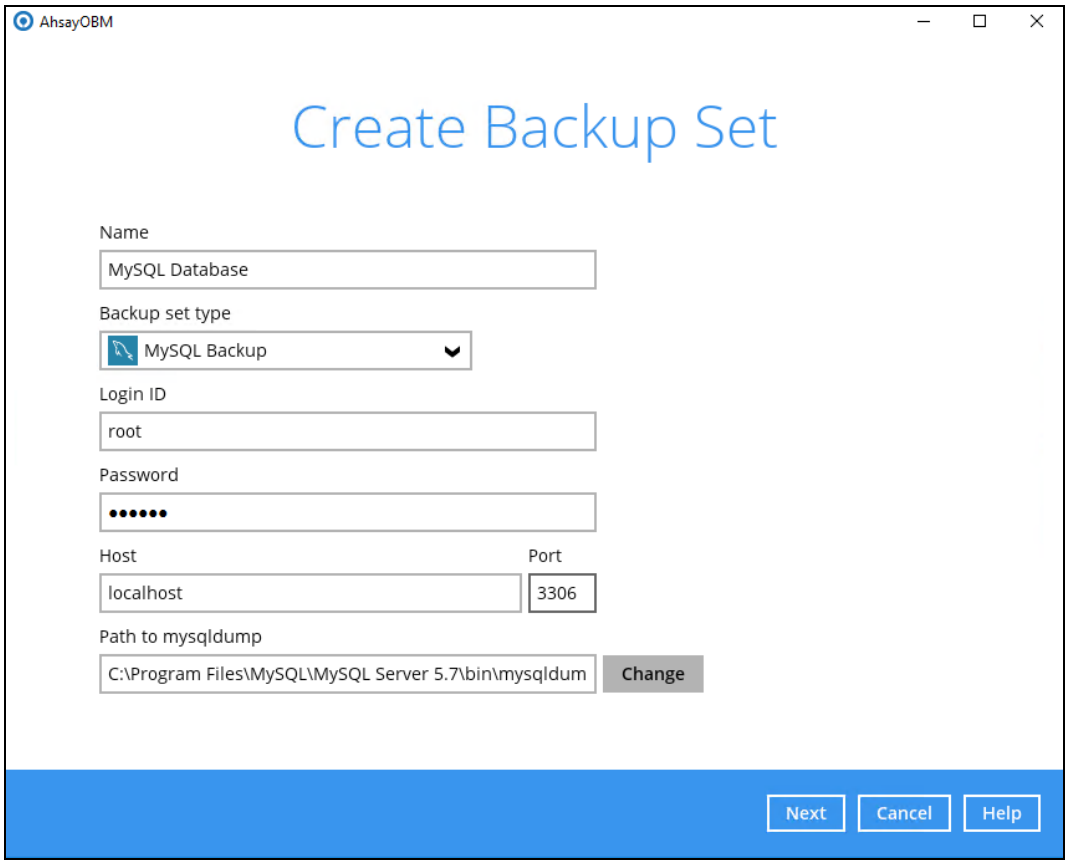
1. Click the Backup Sets icon on the main interface of AhsayOBM.



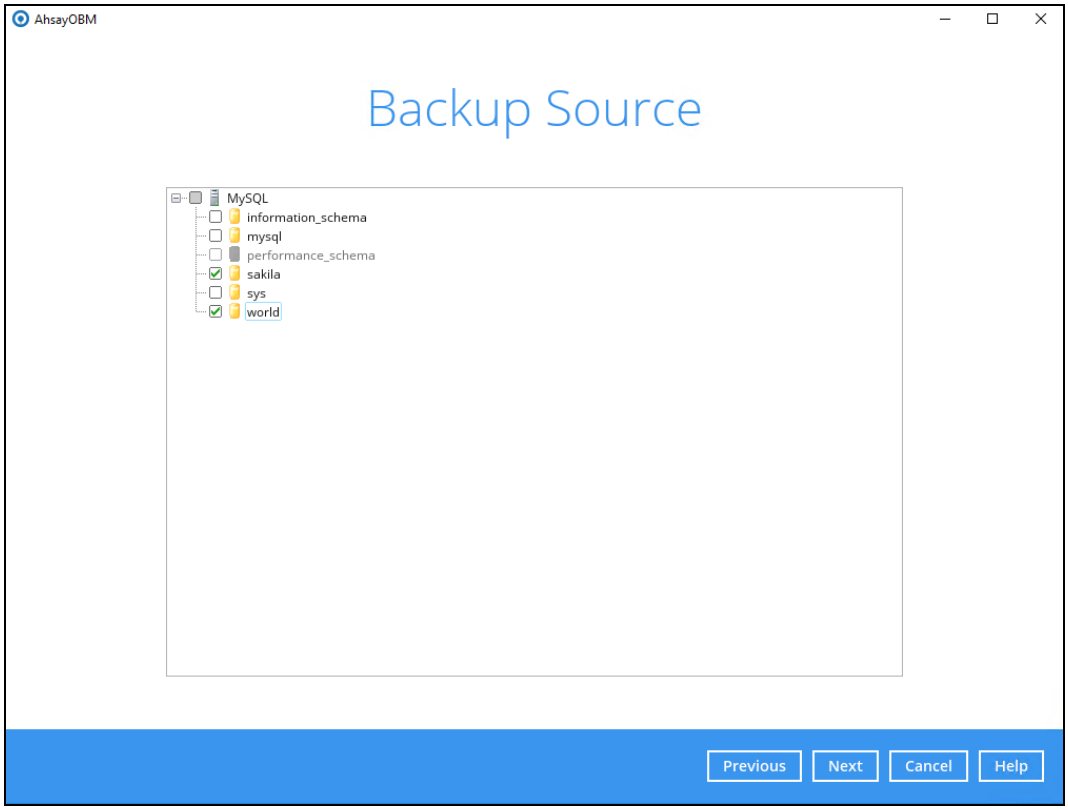
2. Create a new backup set by clicking the **Add** button to created new backup set.



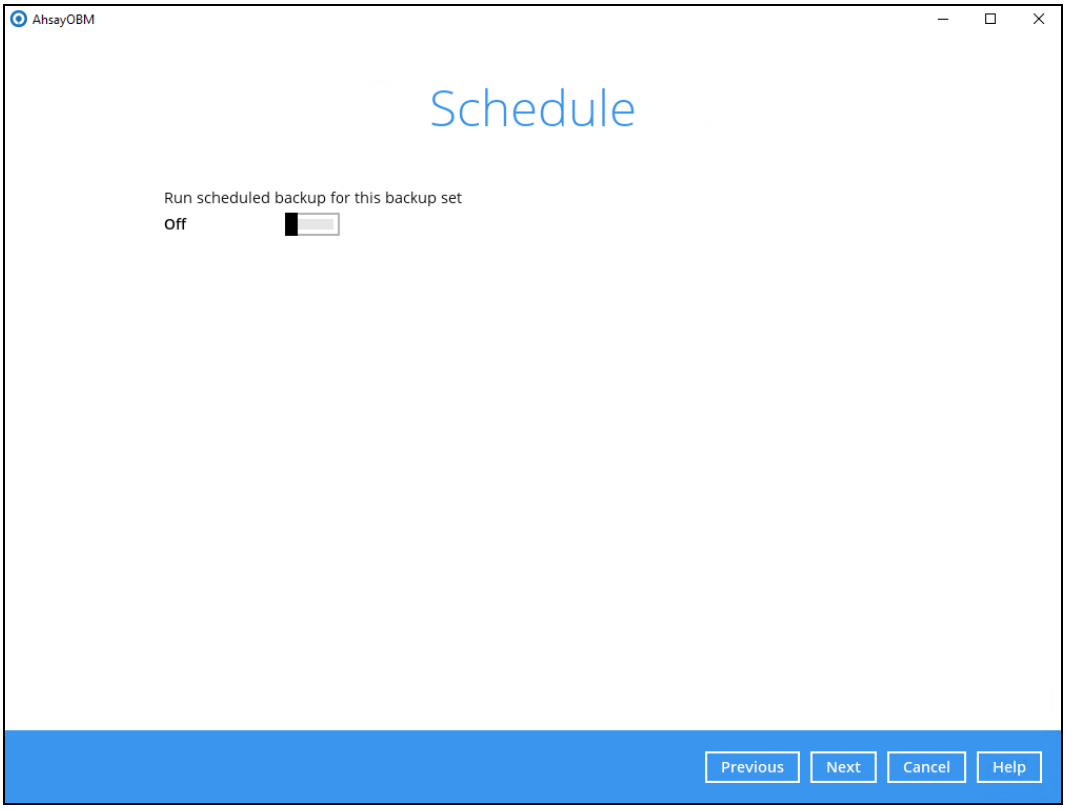
3. Select the **Backup set type** and name your new backup set and enter the login information for the MySQL server then click **Next** to proceed.



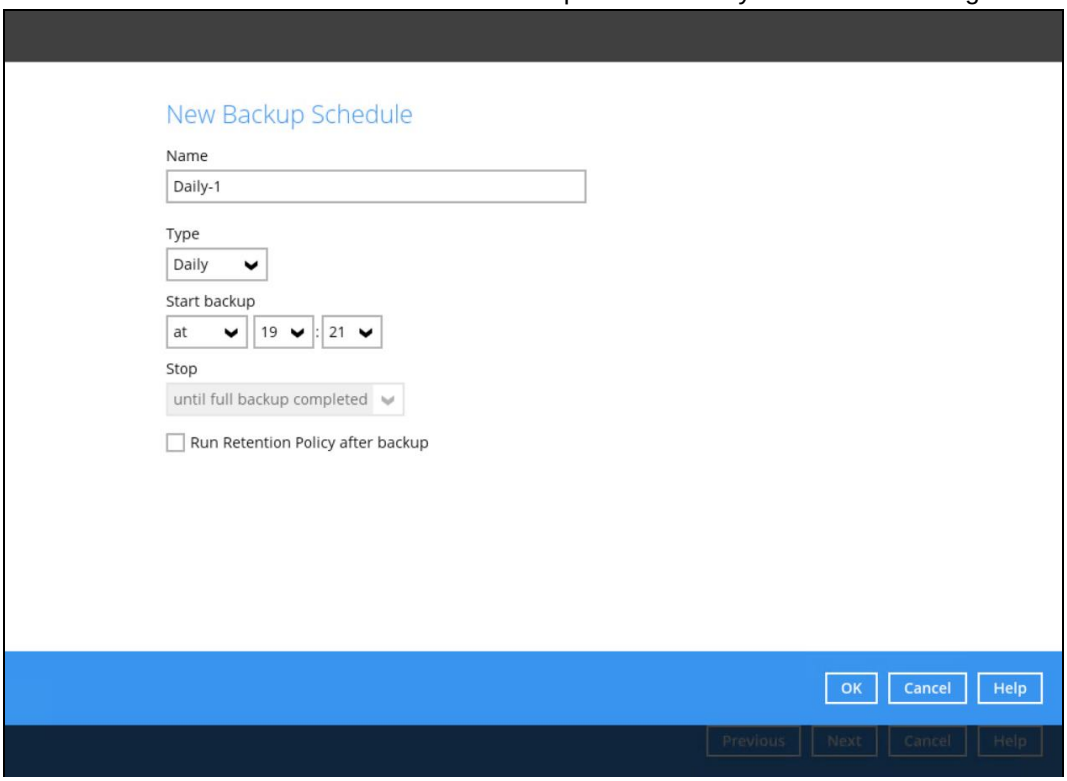
4. In the Backup Source menu, select the MySQL databases you would like to backup. Click **Next** to proceed.



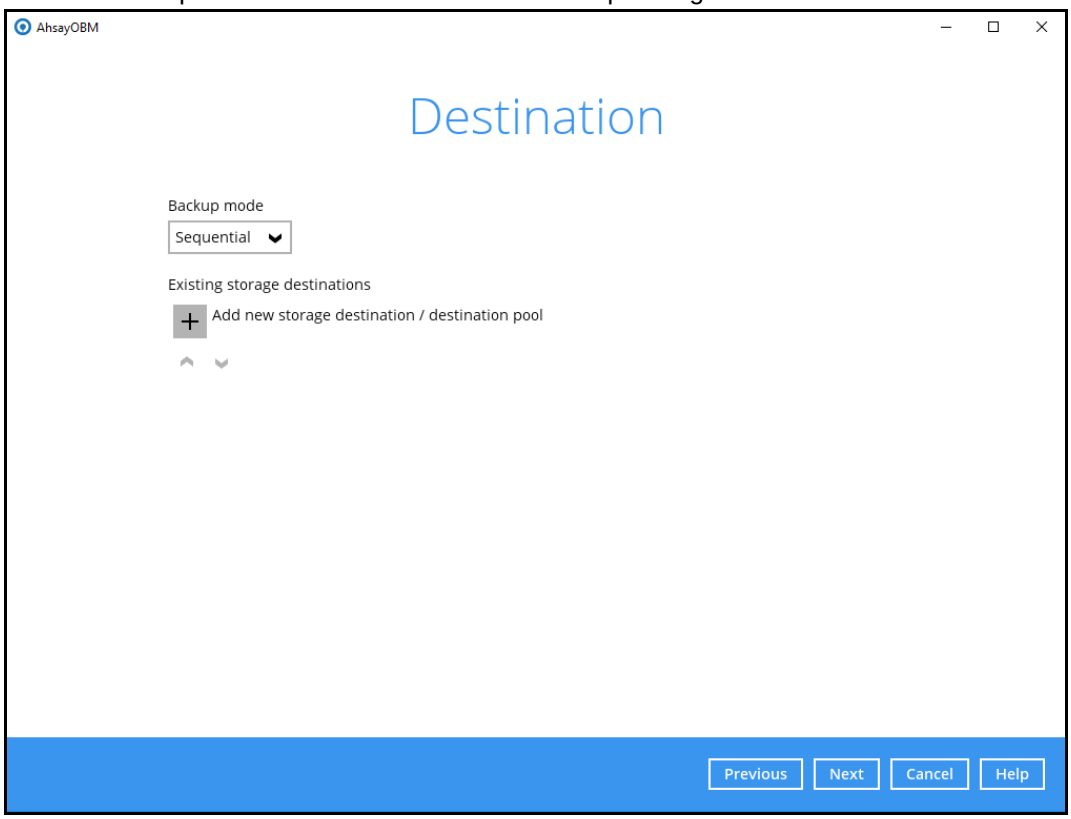
5. In the Schedule menu, you can configure a backup schedule for backup job to run automatically at your specified time interval.



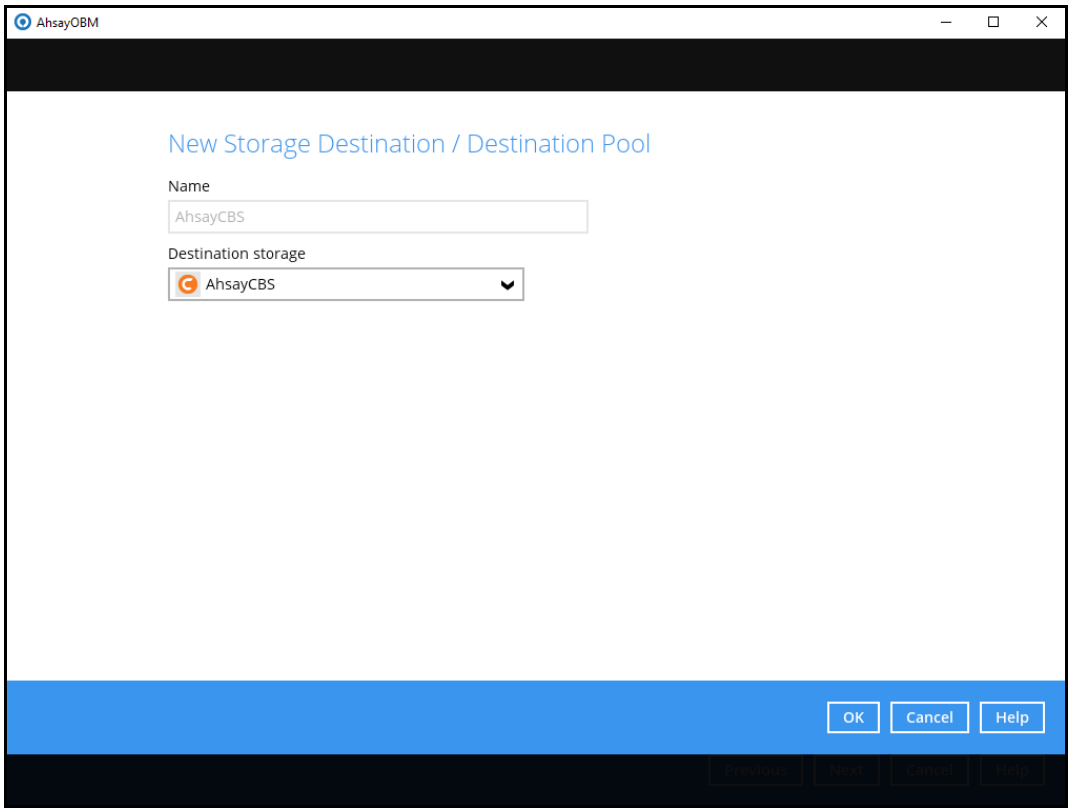
Click + to add a new schedule. Click **Next** to proceed when you are done setting.



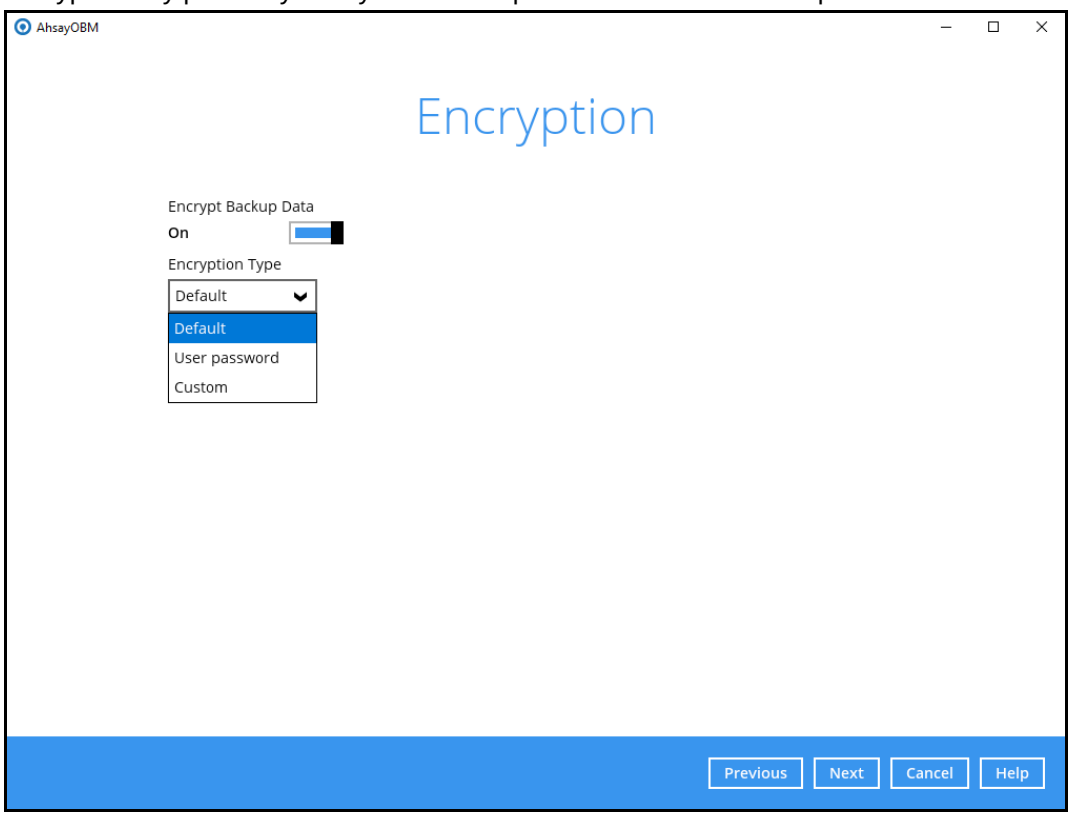
6. Select a backup mode and click + to add a backup storage destination.



7. Select the backup storage destination. Click **OK** then **Next** to proceed.
Example: AhsayCBS server

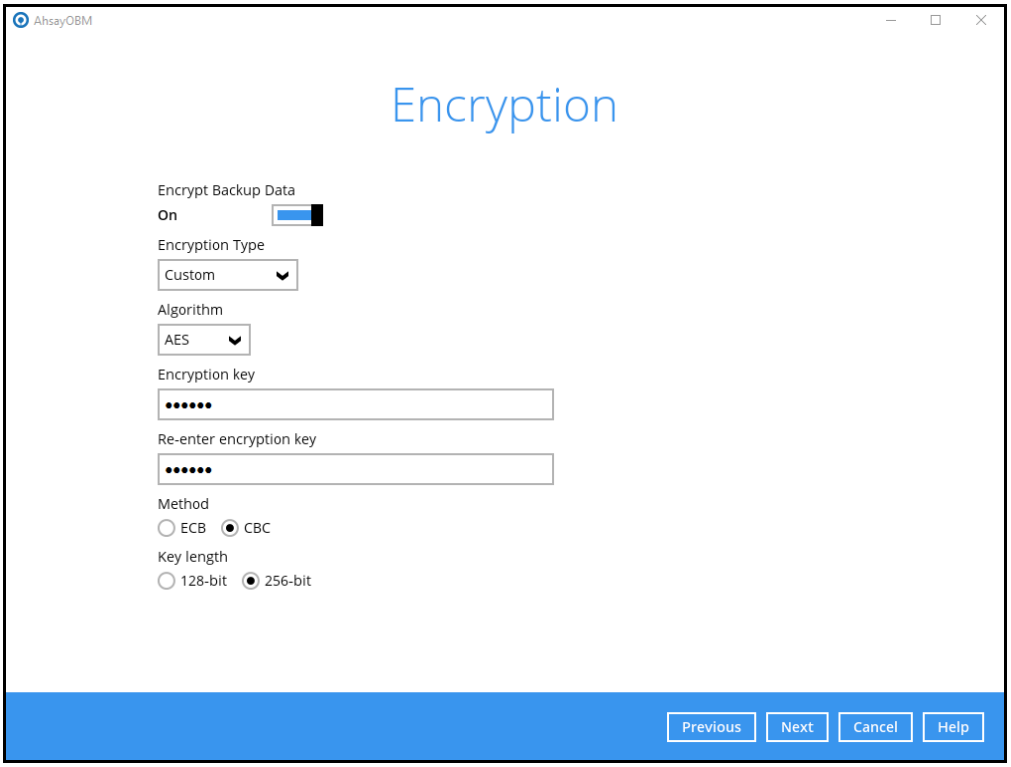


8. In the Encryption window, the default **Encrypt Backup Data** option is enabled with an encryption key preset by the system which provides the most secure protection.



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.

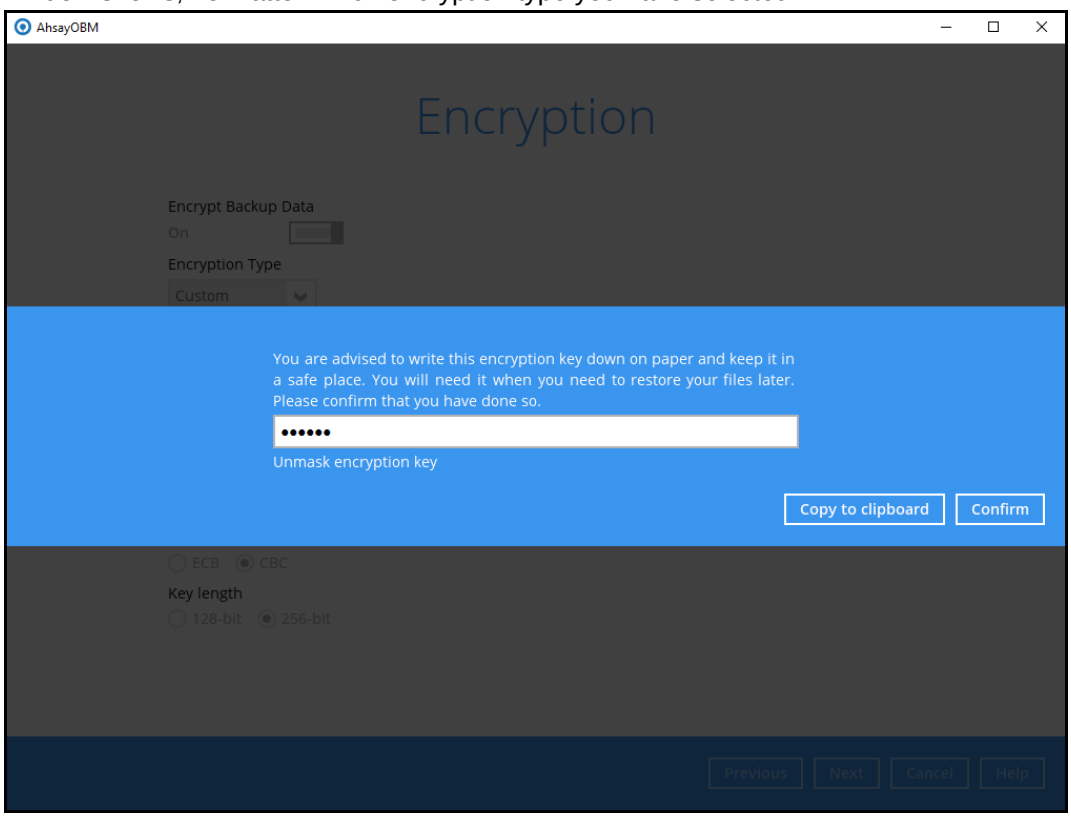


NOTE

For best practice on managing your encryption key, refer to the following article. [FAQ: Best practices for managing encryption key on AhsayOBM or AhsayACB?](#).

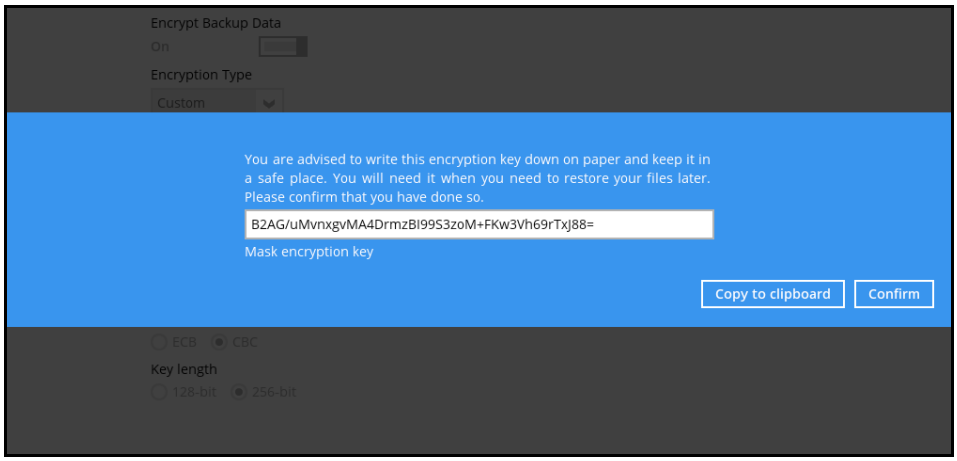
Click **Next** when you are done setting.

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:

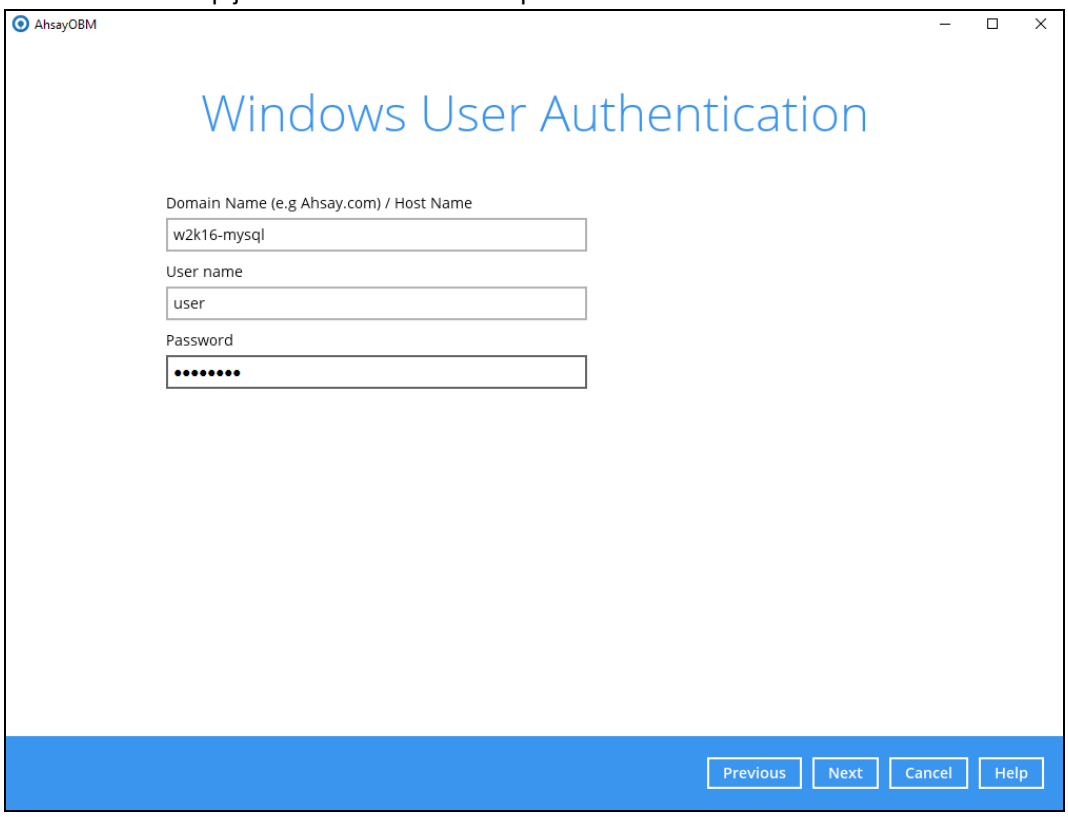
- **Unmask encryption key** – The encryption key is masked by default. Click this option to show the encryption key.



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

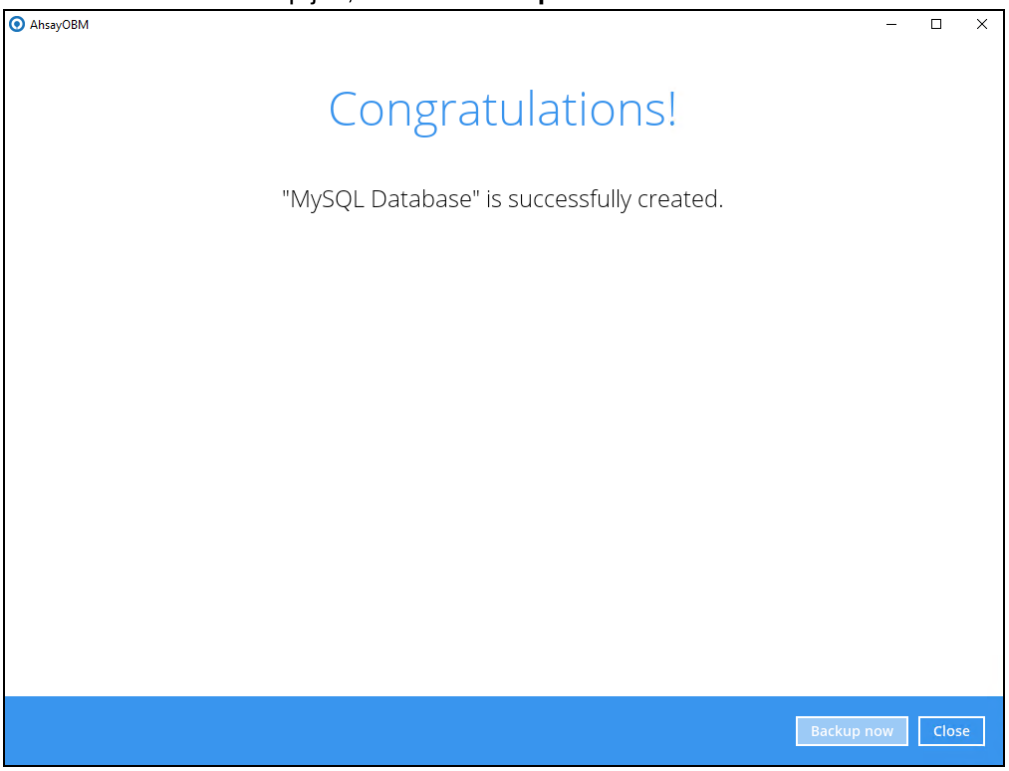


NOTE

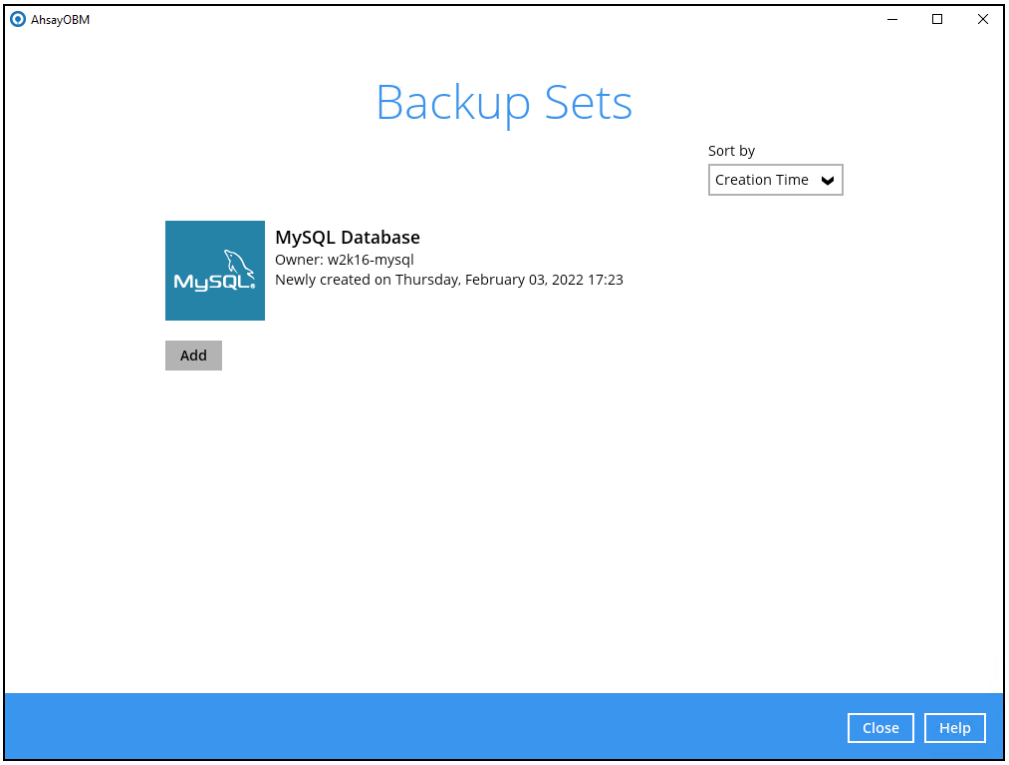
If the backup schedule is turned off for the backup set the Windows User Authentication screen will be automatically skipped. The Windows User Authentication login credentials can be added or updated post backup set creation.

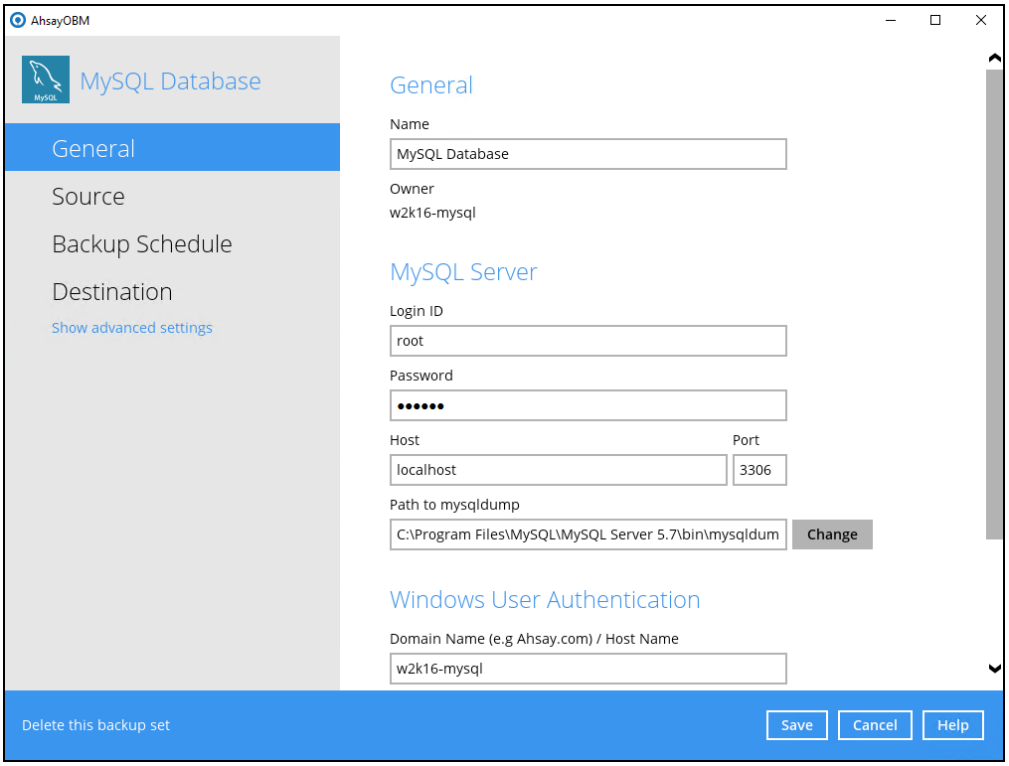
11. Backup set created.

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



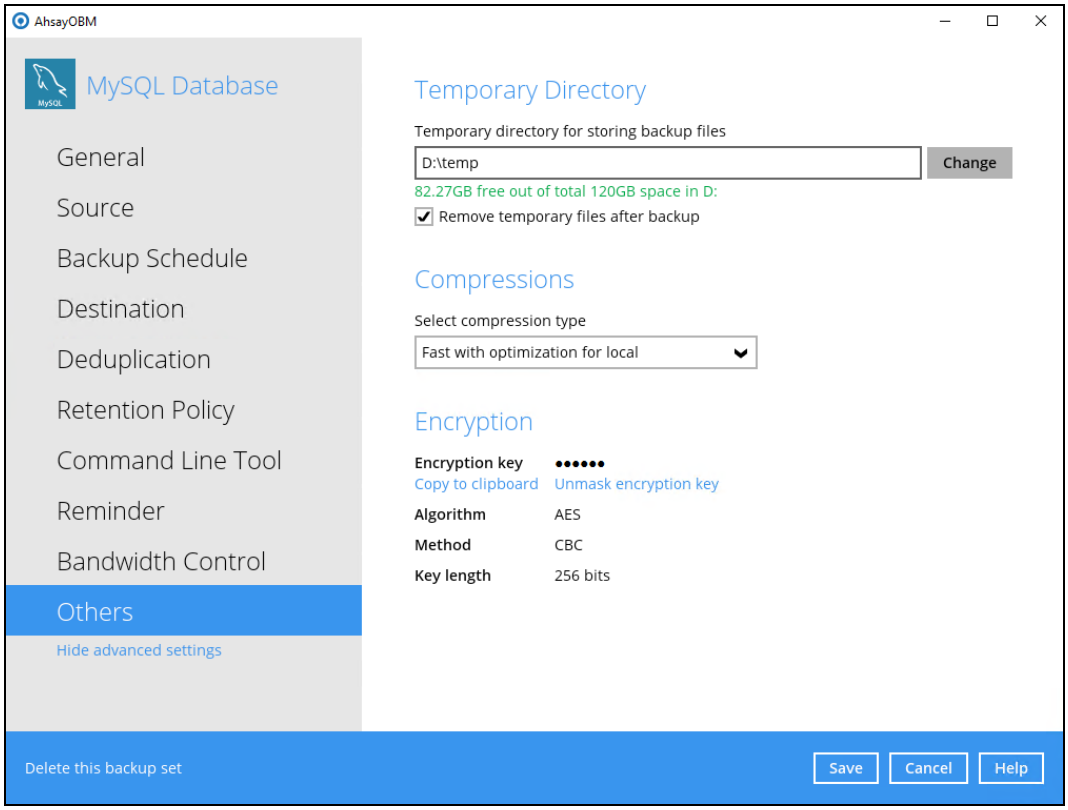
ii. To verify the backup set settings, click on **Close** and then click on the MySQL backup set to complete the setup.





12. It is highly recommended to change the Temporary Directory. Select another location with sufficient free disk space other than Dive C\Users\Administrator\temp.

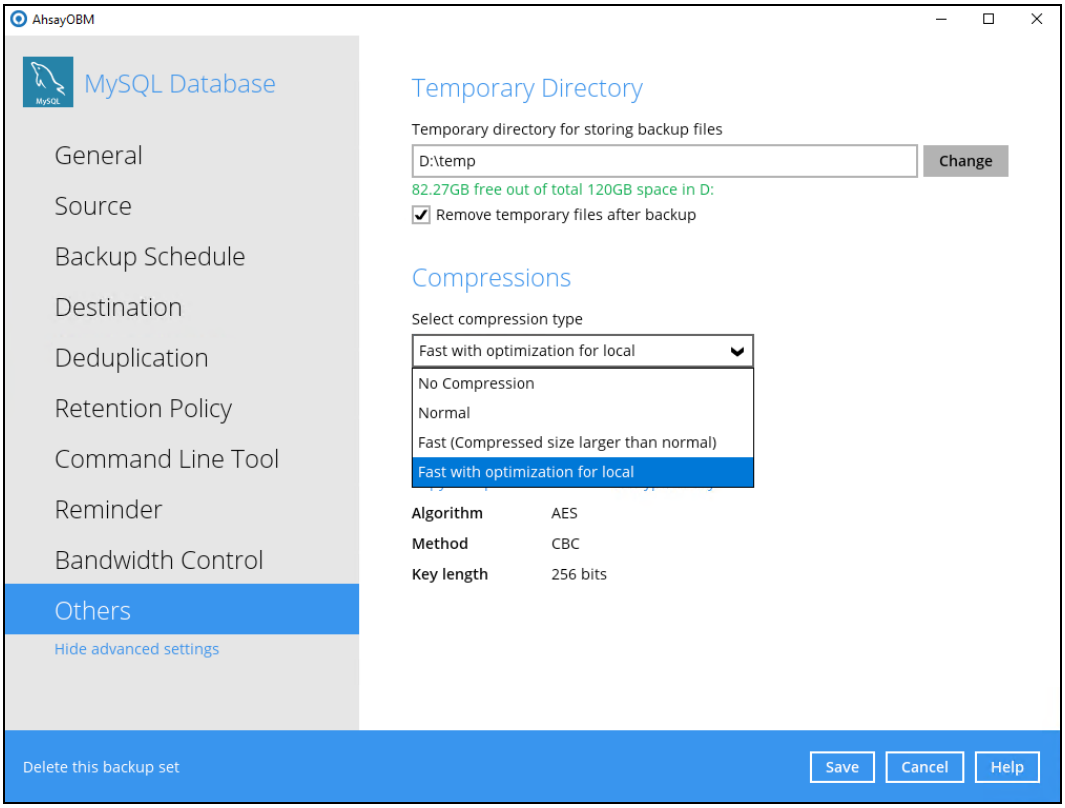
    Go to **Others** > **Temporary Directory**. Click **Change** to browse for another location.



13. Optional: Select your preferred **Compression** type. By default, the compression is Fast with optimization for local.

    Go to Others > Compressions. Select from the following list:

    - No Compression
    - Normal
    - Fast (Compressed size larger than normal)
    - Fast with optimization for local



4 Overview on the Backup Process

The following steps are performed during a MySQL Database backup job. For an overview of the detailed process for Steps **3**, **5**, **11**, and **13**, please refer to Chapter 12 of the AhsayOBM v9 Quick Start Guide for Windows.

- Periodic Data Integrity Check (PDIC) Process **(Step 3)**
- Backup Set Index Handling Process
  - Start Backup Job **(Step 5)**
  - Completed Backup Job **(Step 13)**
- Data Validation Check Process **(Step 11)**

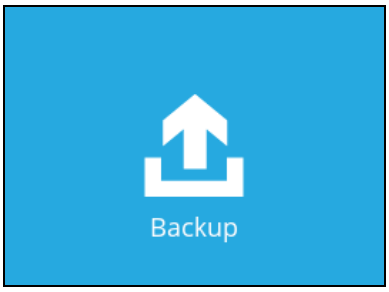
5 Running Backup Jobs

5.1 Login to AhsayOBM

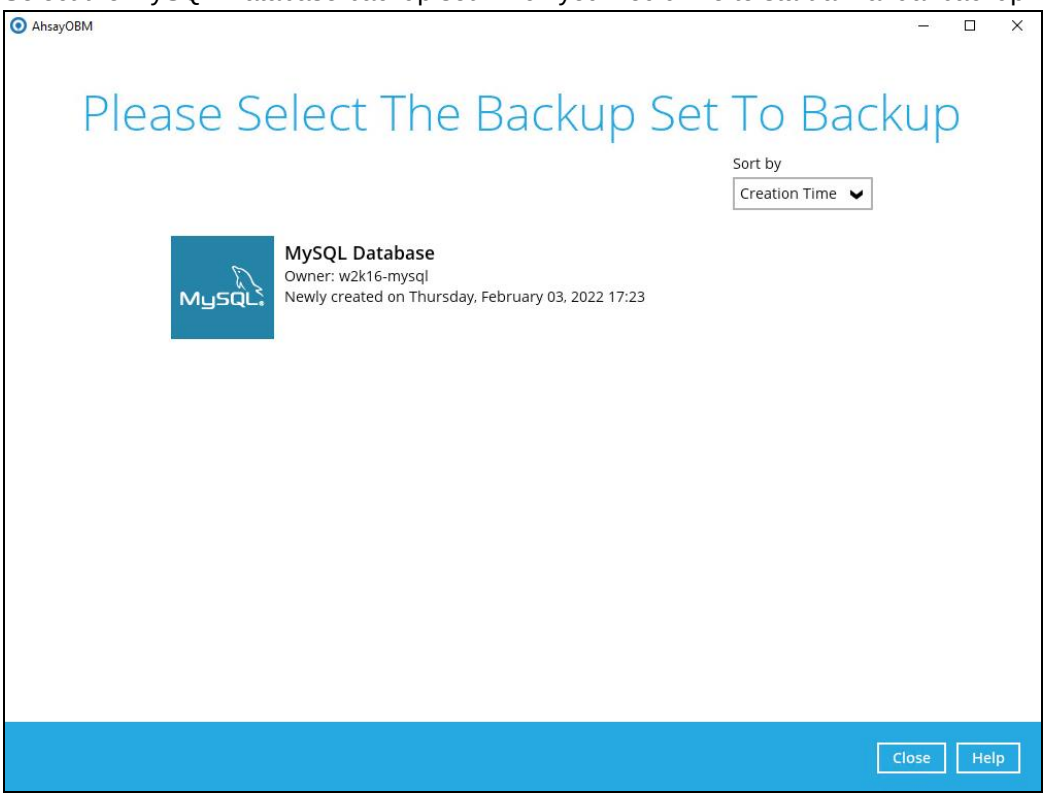
For instructions on how to do this refer to Chapter 8 of AhsayOBM v9 Quick Start Guide for Windows.

5.2 Start a Manual Backup

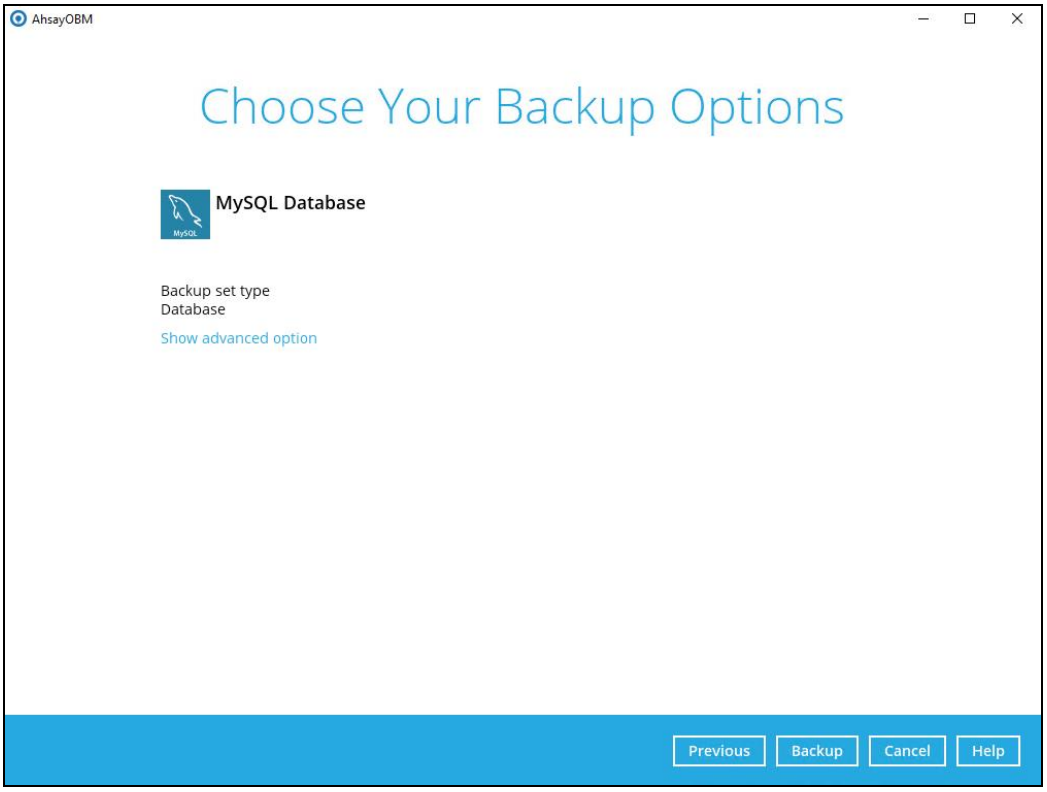
1. Click the Backup icon on the main interface of AhsayOBM.



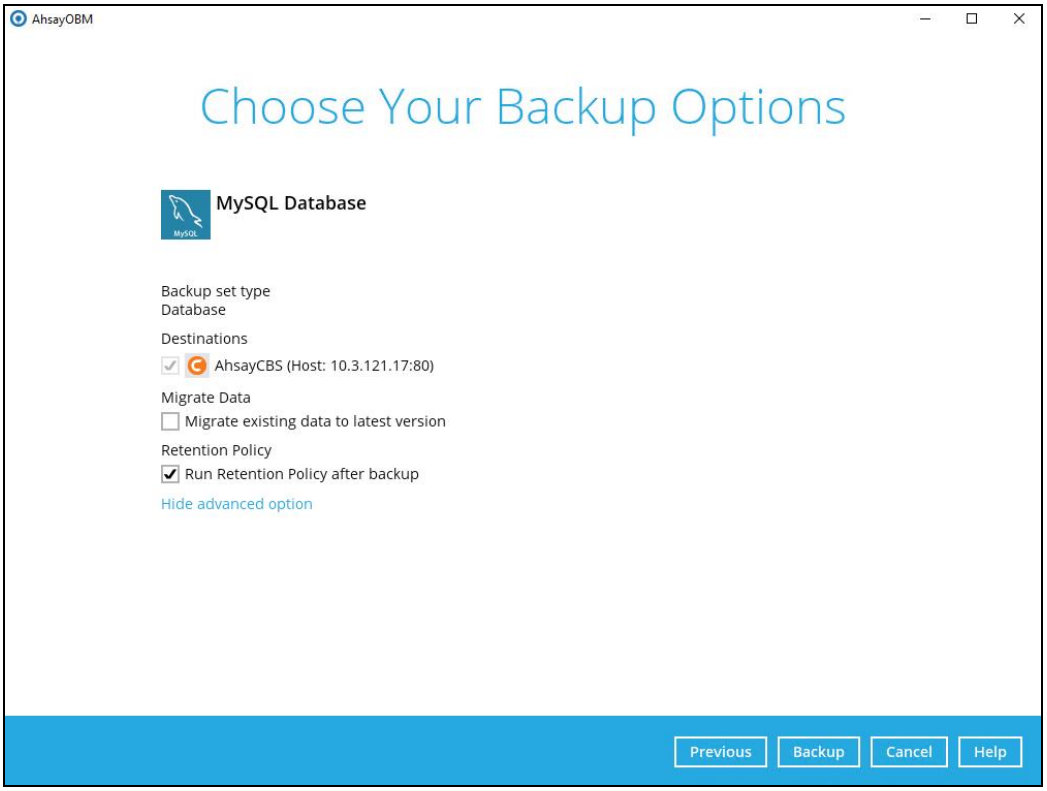
2. Select the MySQL Database backup set which you would like to start a manual backup.



3. If you would like to modify the Destinations, Migrate Data or Run Retention Policy settings, click on **Show advanced option**.



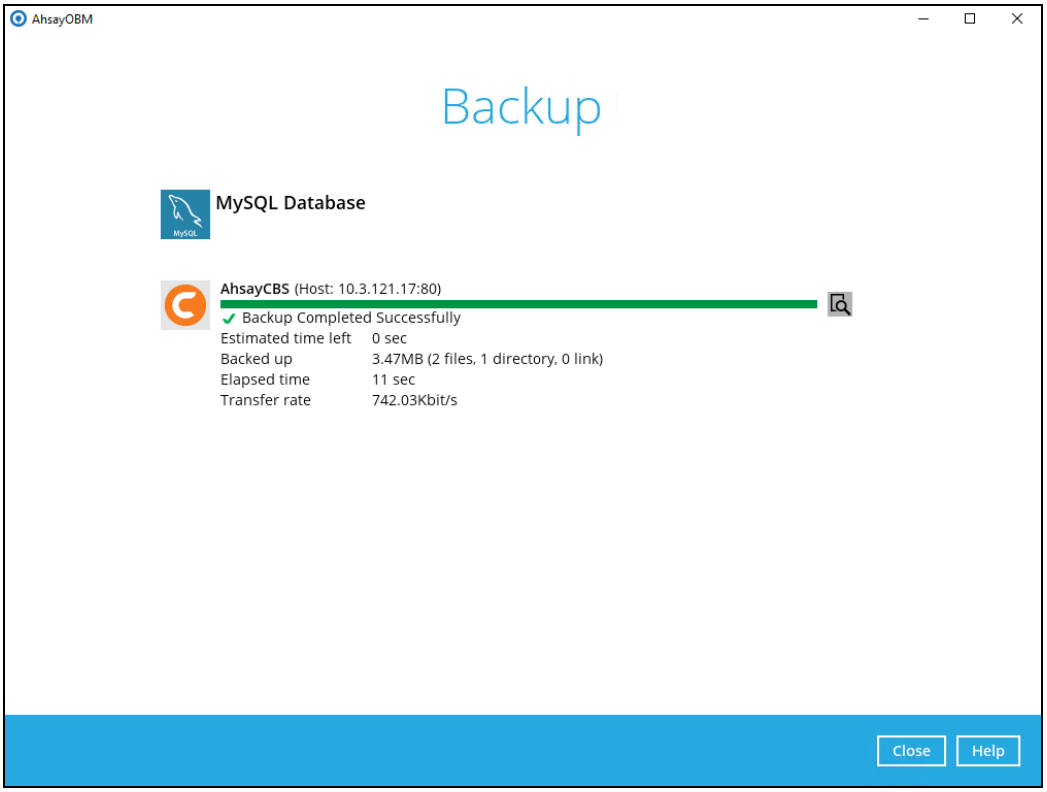
4. When advanced options are shown, it is recommended that you tick the checkbox next to **Run Retention Policy after backup** in the Retention Policy section at the bottom. This will help you save hard disk quota in the long run.



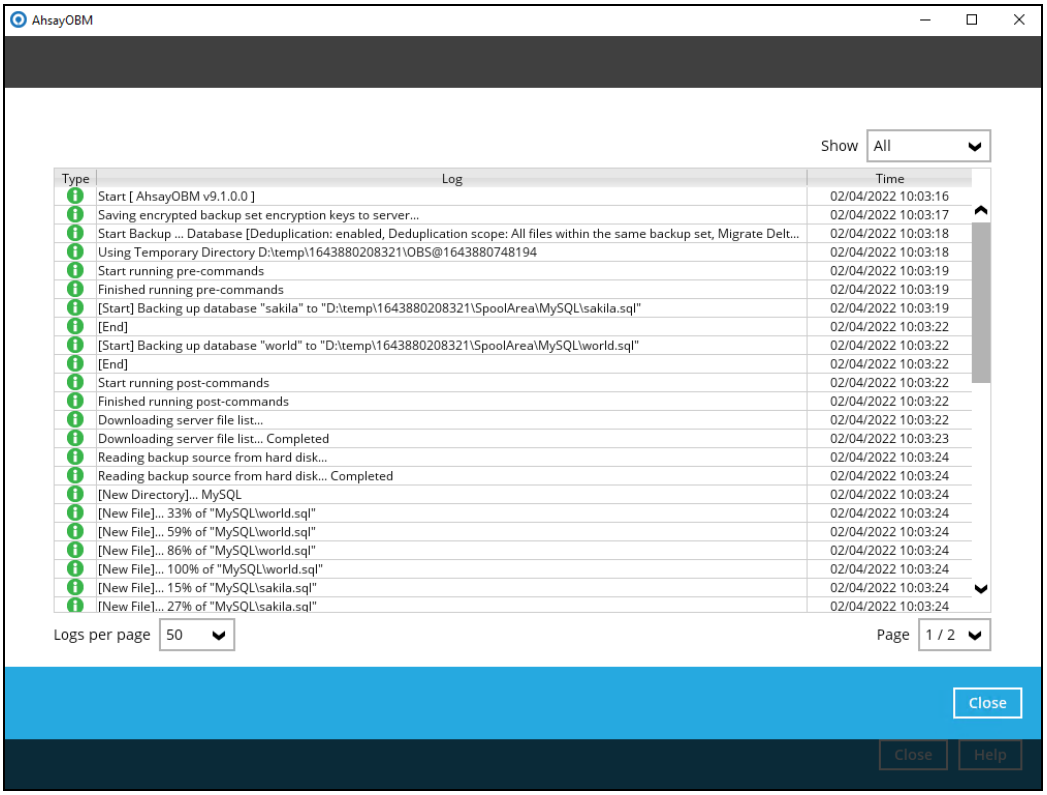
NOTE

The Migrate Data option will only be displayed if Deduplication is enabled for the backup set. When the Migrate Data option is enabled, the existing data will be migrated to the latest version during a backup job. Backup job(s) for backup sets with Migrate Data enabled may take longer to finish. For more information about this feature, refer to AhsayCBS v9 New Features Datasheet.

5. Click on **Backup** to start the backup job. Once finished, "Backup Completed Successfully" will be displayed.

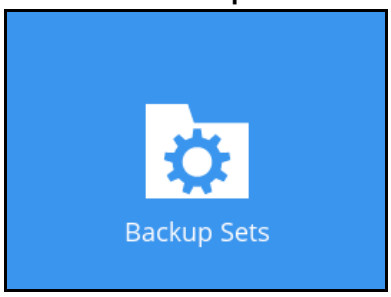


To check the log of your backup, click this icon . It will show you the log of your backup with corresponding date and time.

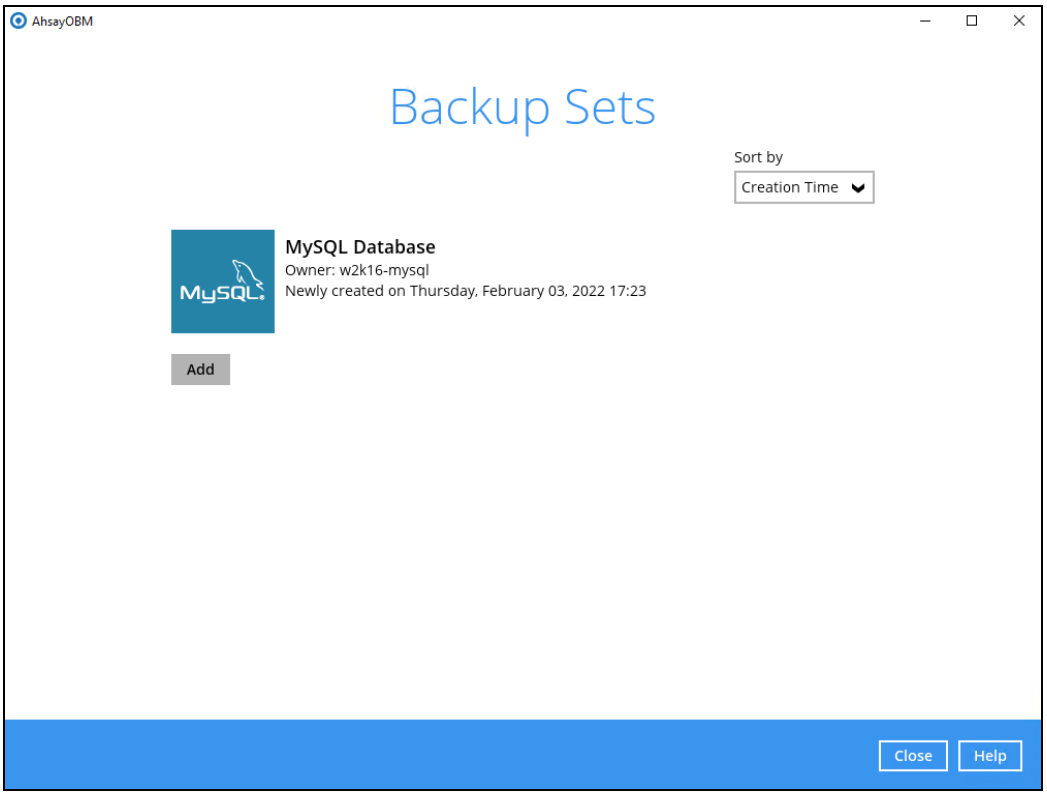


5.3 Configure Backup Schedule for Automated Backup

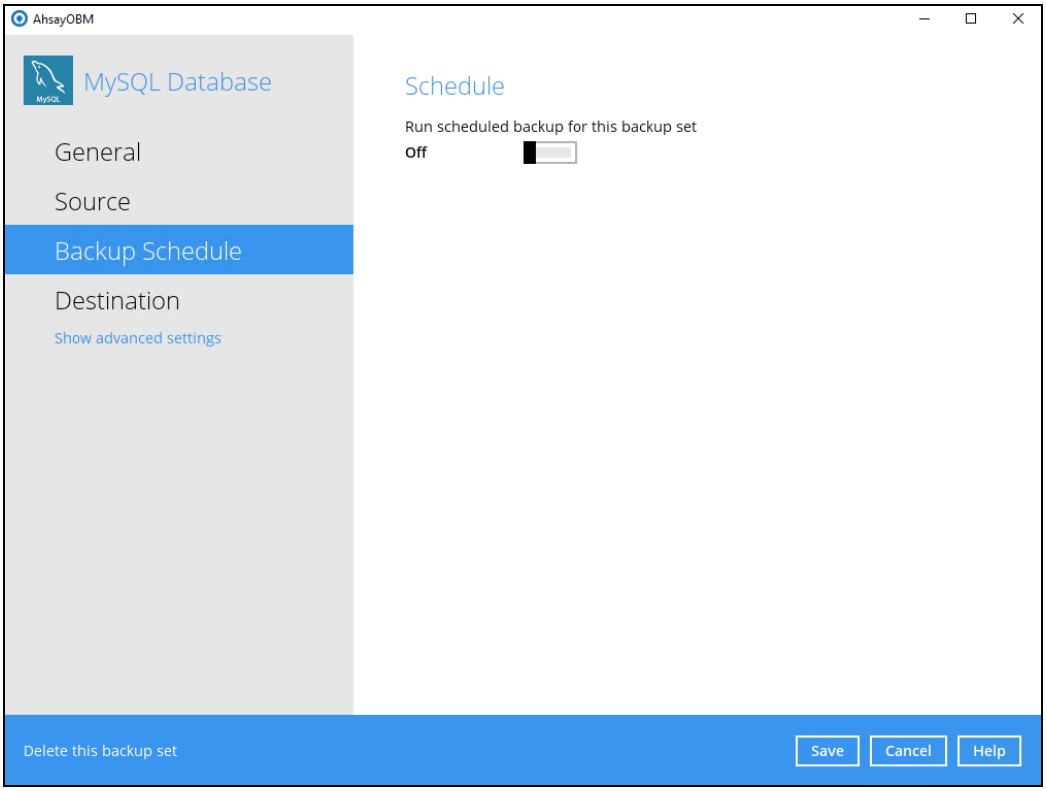
1. Click on the **Backup Sets** icon on the AhsayOBM main interface.



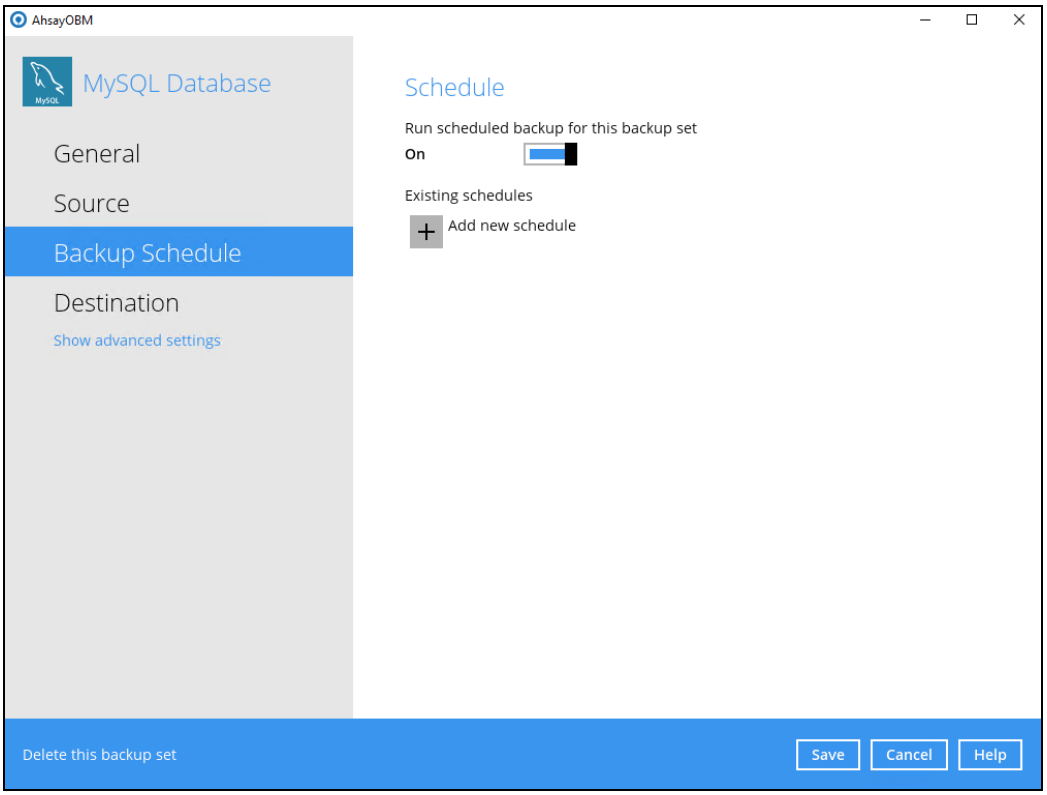
2. Select the backup set that you would like to create a backup schedule for.



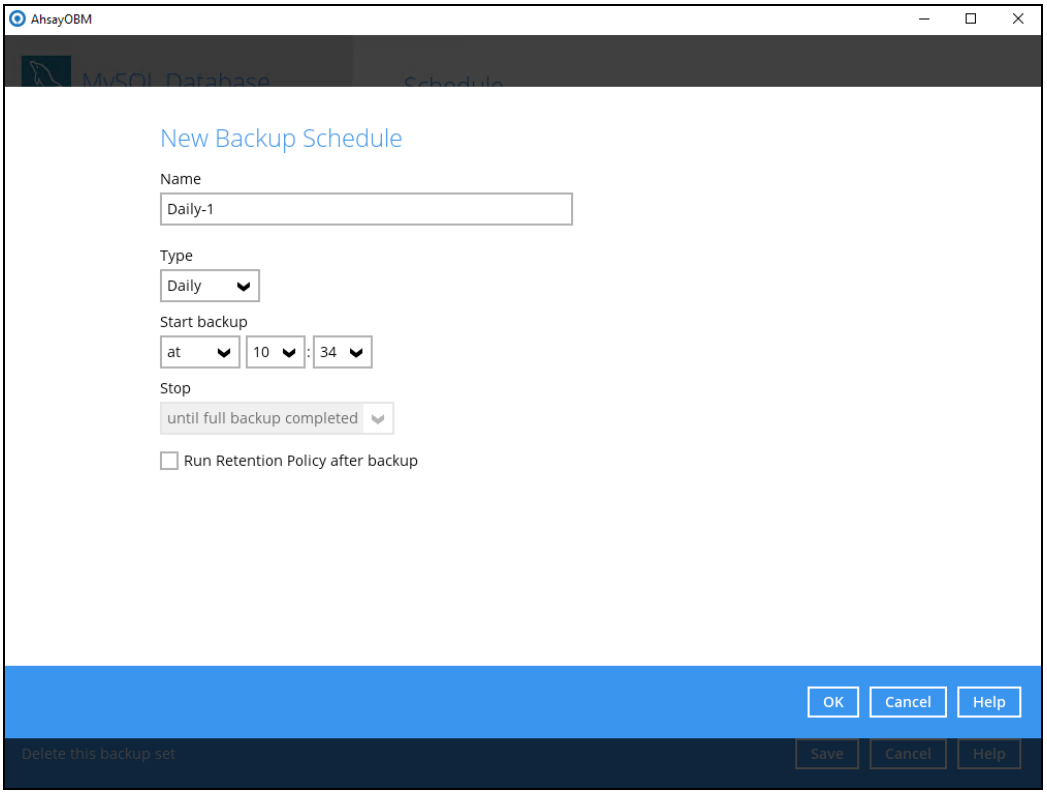
3. Click **Backup Schedule**.



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**.

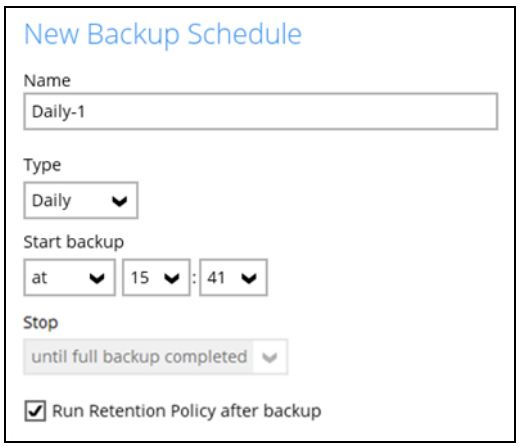


5. The New Backup Schedule window will appear.

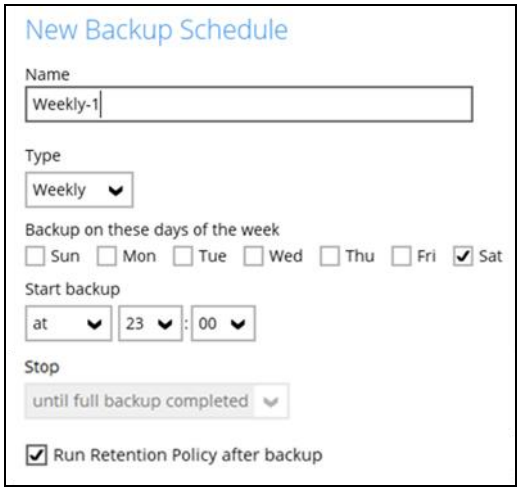


In the New Backup Schedule window, configure the following backup schedule settings.

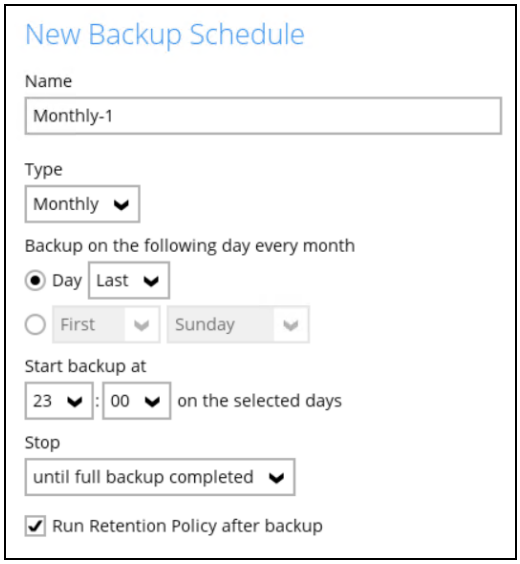
- **Name** – the name of the backup schedule.
- **Type** – the type of backup schedule. There are four (4) different types of backup schedule: Daily, Weekly, Monthly and Custom.
  - **Daily** – the time of the day or interval in minutes/hours when the backup job will run.



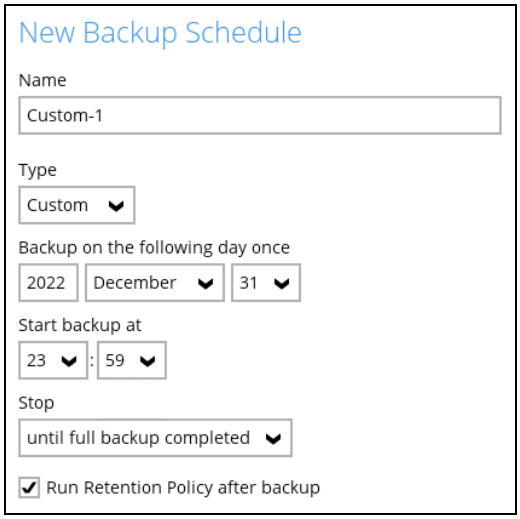
- **Weekly** – the day of the week and the time of the day or interval in minutes/hours when the backup job will run.



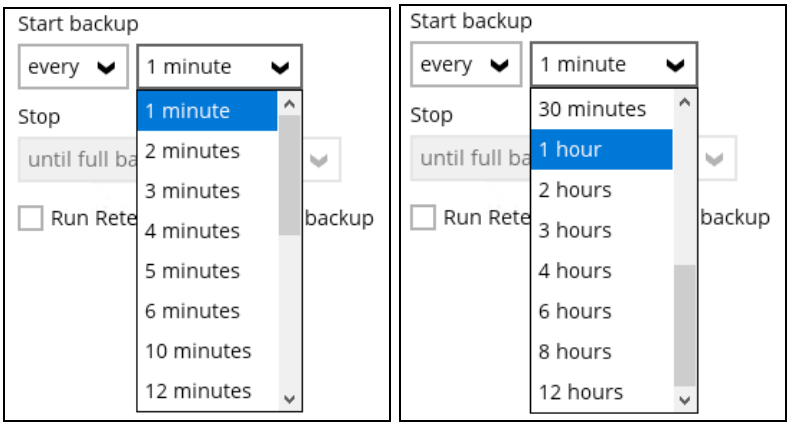
- **Monthly -** the day of the month and the time of that day when the backup job will run.



- **Custom** – a specific date and time when the backup job will run.



- **Start backup** – the start time of the backup job.
  - **at** – this option will start a backup job at a specific time.
  - **every** – this option will start a backup job in intervals of minutes or hours.



Here is an example of a backup set that has a periodic and normal backup schedule.

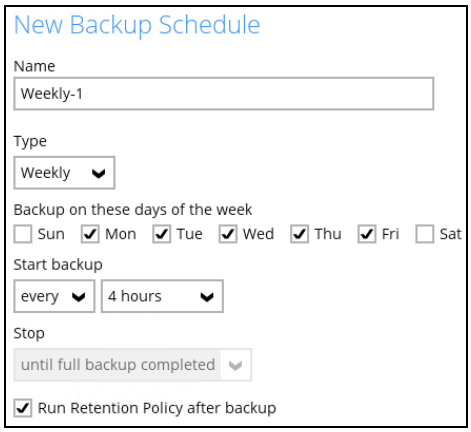


Figure 1.1

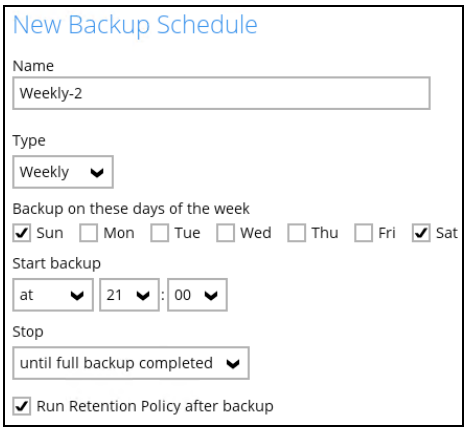


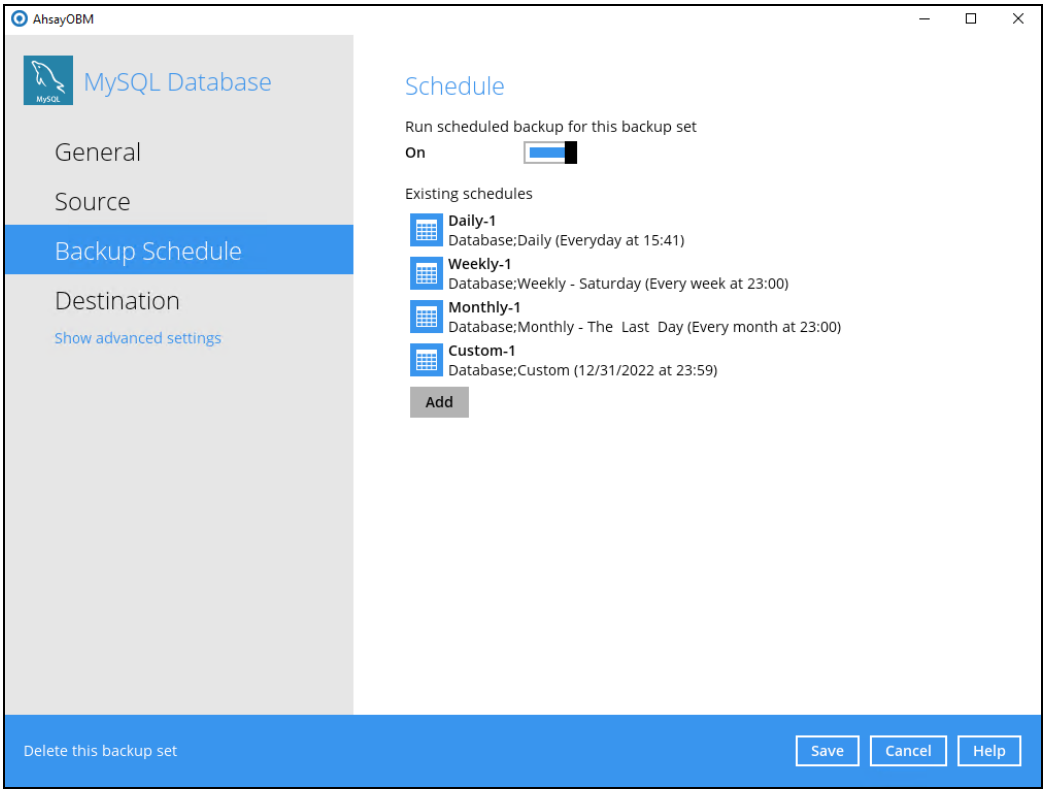
Figure 1.2

Figure 1.1 – Periodic backup schedule runs every 4 hours from Monday – Friday during business hours

Figure 1.2 – Normal backup schedule runs at 21:00 or 9:00 PM on Saturday and Sunday on weekend non-business hours

- **Stop** – the stop time of the backup job. This only applies to schedules with start backup "at" and is not supported for periodic backup schedule (start backup "every")
  - **until full backup completed** – this option will stop a backup job once it is complete. This is the configured stop time of the backup job by default.
  - **after (defined no. of hrs.)** – this option will stop a backup job after a certain number of hours regardless of whether the backup job has completed or not. This can range from 1 to 24 hrs.
- **Run Retention Policy after backup** – if enabled, the AhsayOBM will run a retention policy job to remove files from the backup destination(s) which have exceeded the retention policy after performing a backup job. To save hard disk quote in the long run, it is recommended to enable this option.

As an example, the four types of backup schedules may look like the following:



6. Click **Save** to confirm your settings once done.

6 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.

6.1 Login to AhsayOBM

For instructions on how to do this refer to Chapter 8 of AhsayOBM v9 Quick Start Guide for Windows.

6.2 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 36
Server version: 5.7.17-log MySQL Community Server (GPL)

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reserved.

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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 |
| sakila             |
| sys                |
| world              |
+--------------------+
6 rows in set (0.00 sec)

mysql>
```
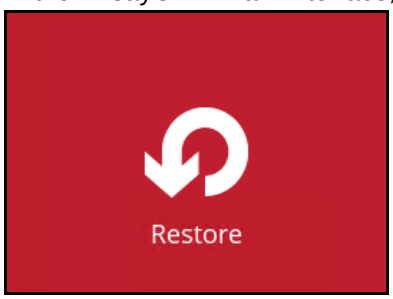
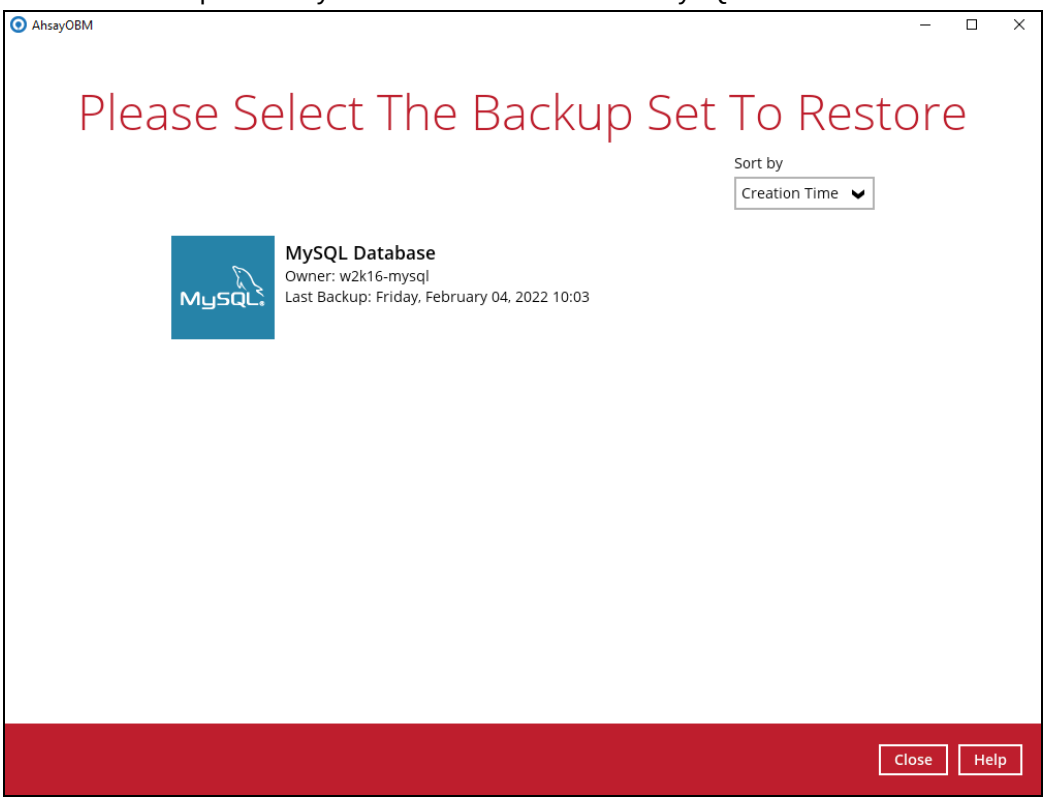
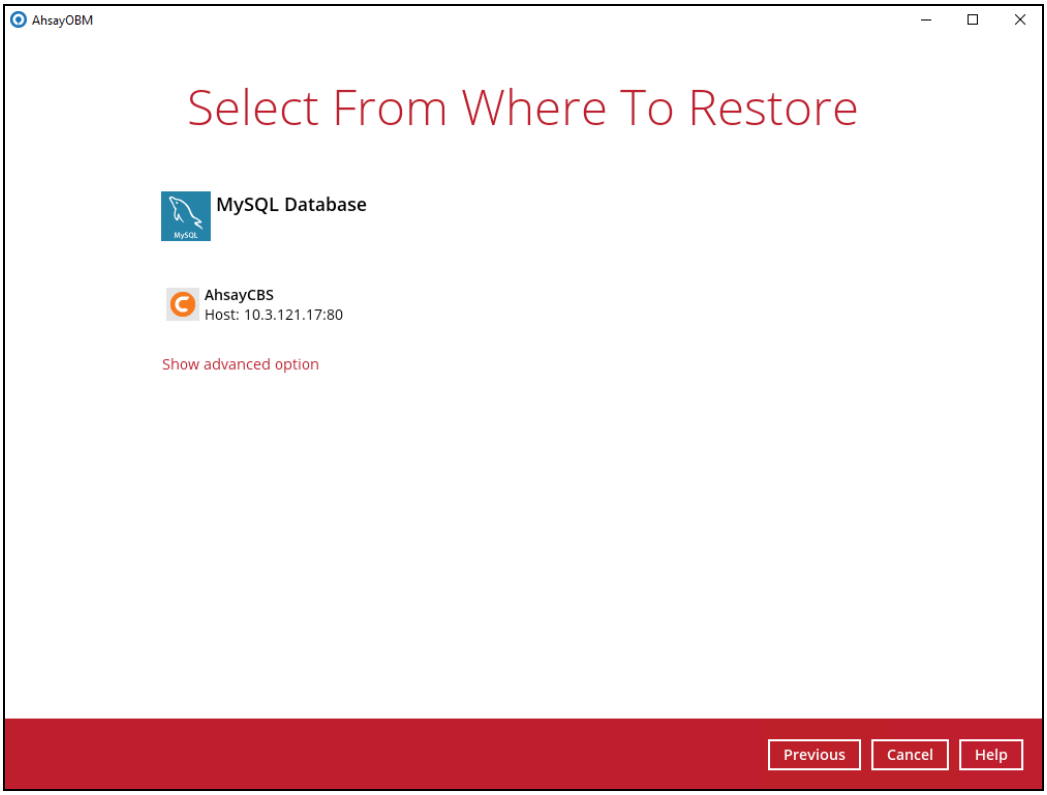

2. In the AhsayOBM main interface, click the **Restore** icon.



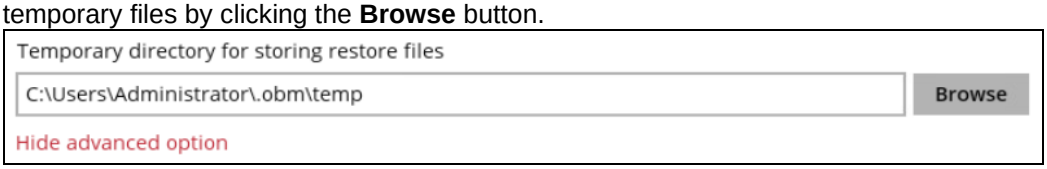
3. Select the backup set that you would like to restore the MySQL Database from.



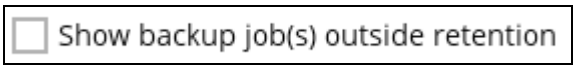
4. Select the storage destination that contains the MySQL databases that you would like to restore from.



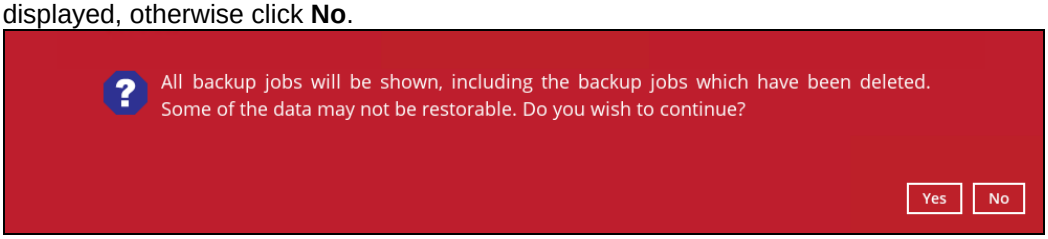
You may configure the **Temporary directory for storing restore files** by clicking **Show advanced option**. This will allow you to select the directory that will be used to store temporary files by clicking the **Browse** button.



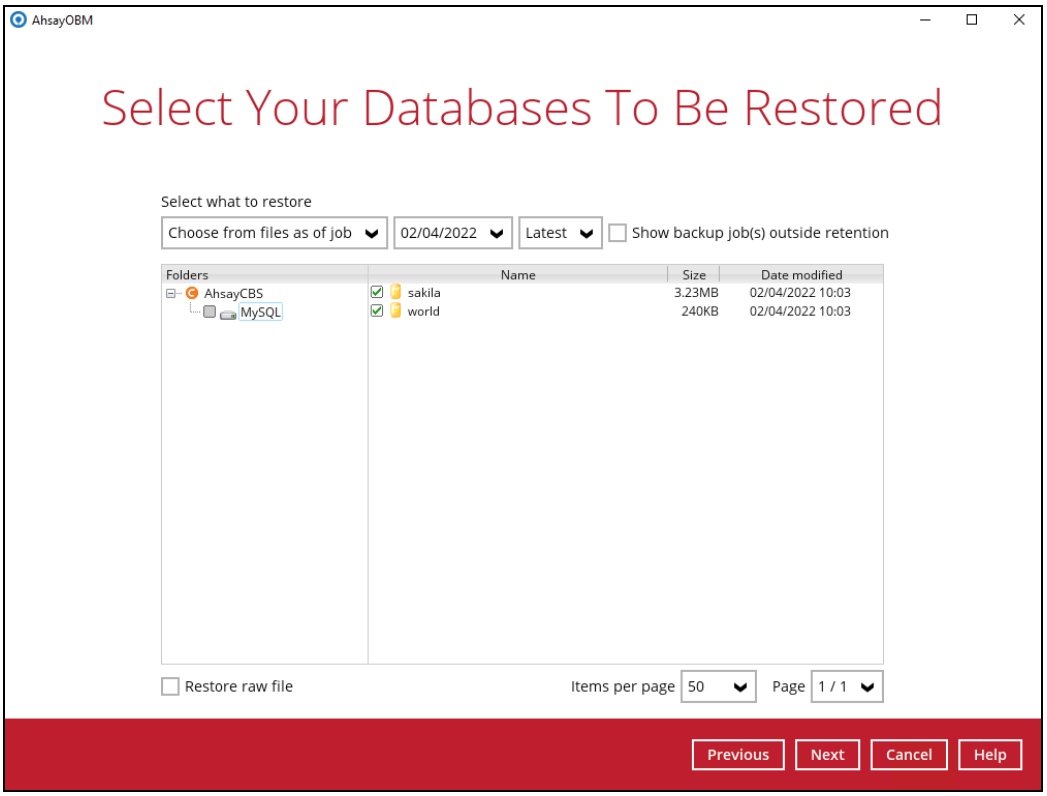
5. Tick **Show backup job(s) outside retention** if you want all backup jobs to be displayed, even the deleted ones.



Once ticked, this message will be displayed. Click **Yes** if you want all backup jobs to be displayed, otherwise click **No**.



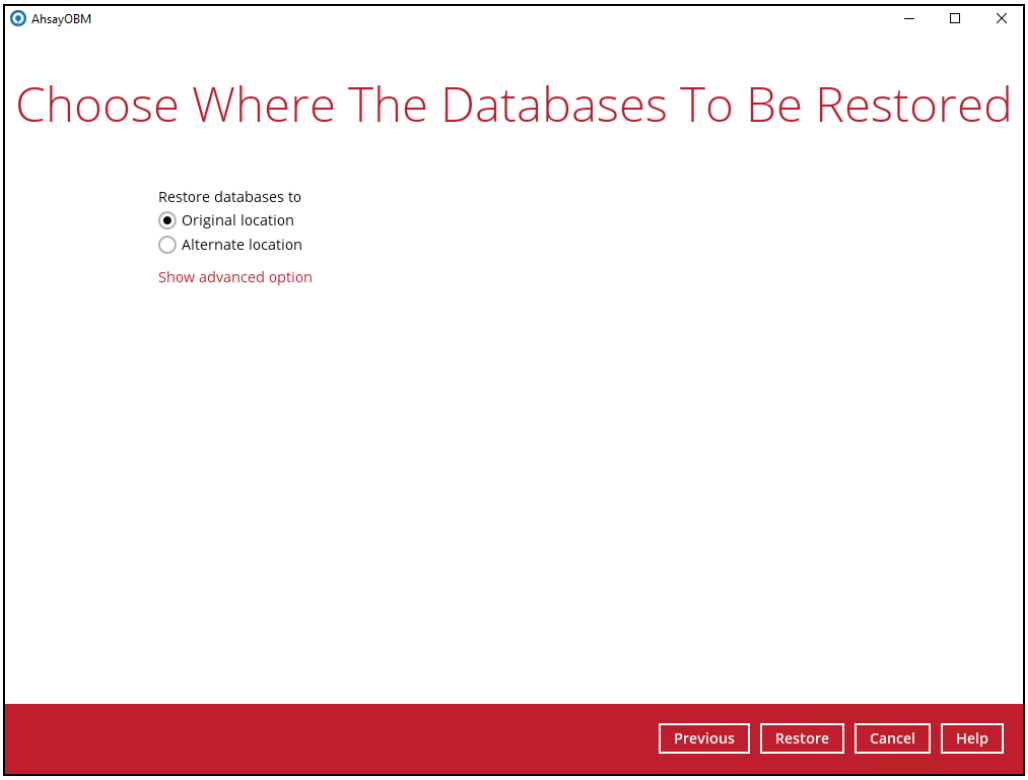
6. Select to restore the MySQL node from a specific backup job then select the files or folders that you would like to restore. Click **Next** to proceed.



NOTE

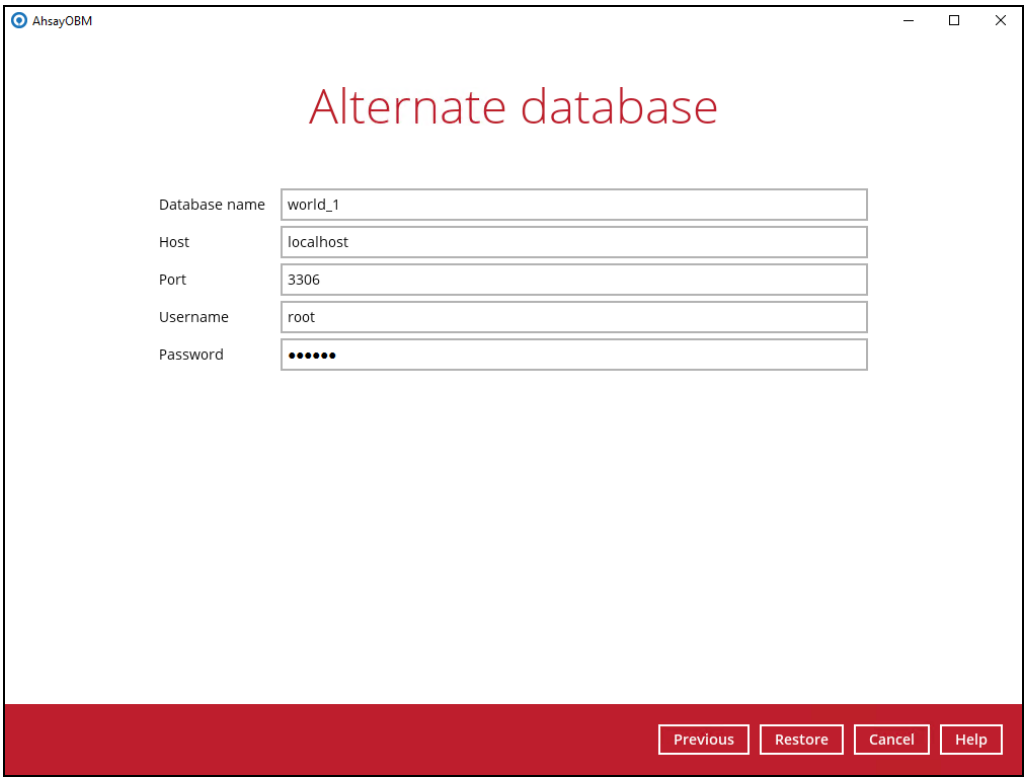
To restore to either original or alternate location please unselect the MySQL data node and select the databases only.

7. Select to restore the MySQL Databases to the Original or Alternate location and click **Restore** to proceed.

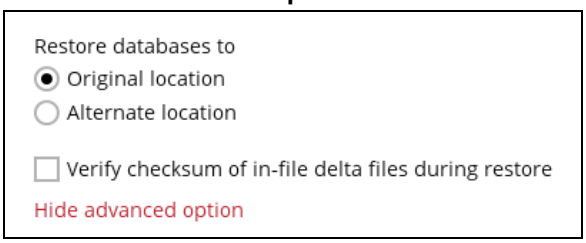


If Alternate location is selected, confirm the **Database name**, **Host**, **Port**, **Username** and **Password** then click **Next**.

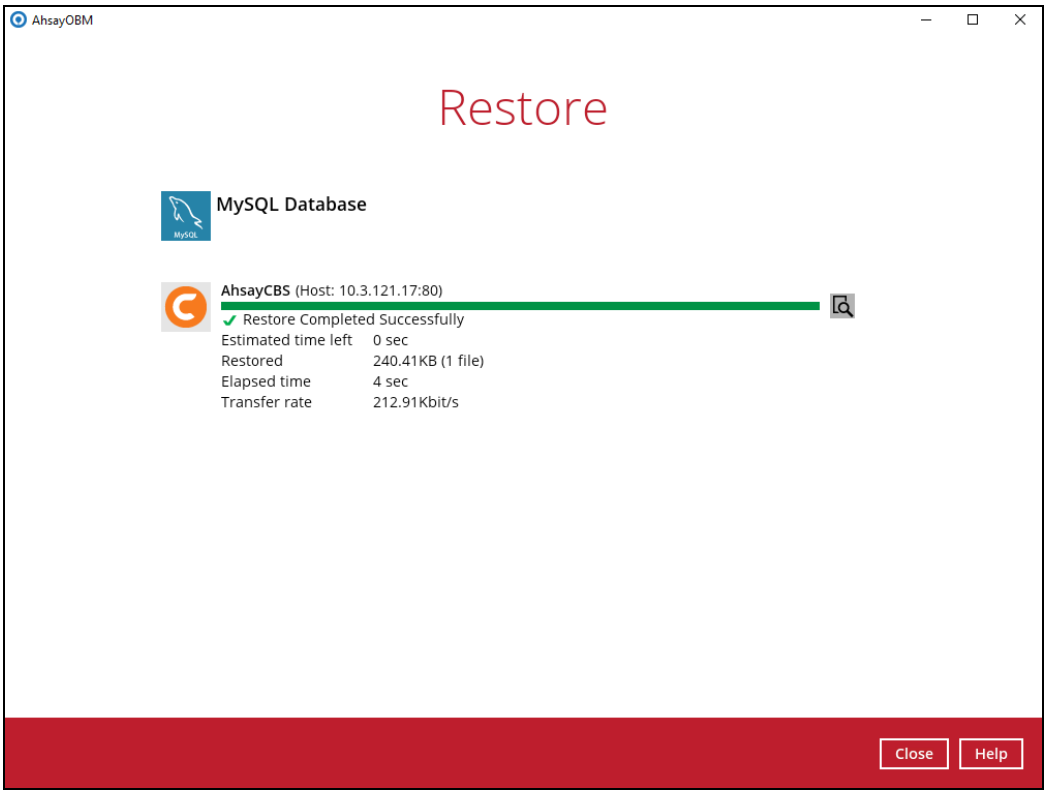
Example: To restore and clone a copy of the **world** database on the original server with new name **world_1**



If you would like to modify the "Verify checksum of in-file delta files during restore" setting, click **Show advanced option**.



8. Once restoration is finished, “Restore Completed Successfully” will be displayed.



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 |
| mysql              |
| performance_schema |
| sakila             |
| sys                |
| world              |
+--------------------+
6 rows in set (0.00 sec)

mysql> show tables in sakila;
+----------------------------+
| Tables_in_sakila           |
+----------------------------+
| actor                      |
| actor_info                 |
| address                    |
| category                   |
| city                       |
| country                    |
| customer                   |
| customer_list              |
| film                       |
| film_actor                 |
| film_category              |
| film_list                  |
| film_text                  |
| inventory                  |
| language                   |
```

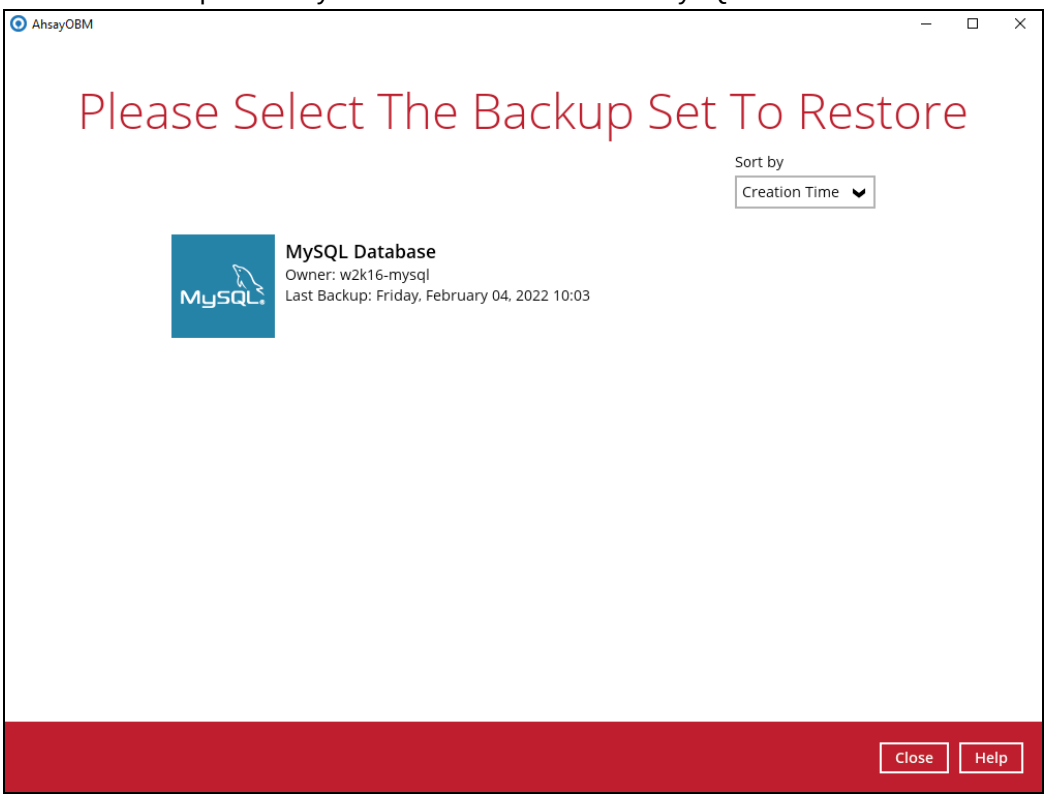
```
| nicer_but_slower_film_list |
| payment                    |
| rental                     |
| sales_by_film_category     |
| sales_by_store             |
| staff                      |
| staff_list                 |
| store                      |
+----------------------------+
23 rows in set (0.00 sec)

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

mysql>
```

6.3 Manual MySQL Database Restore

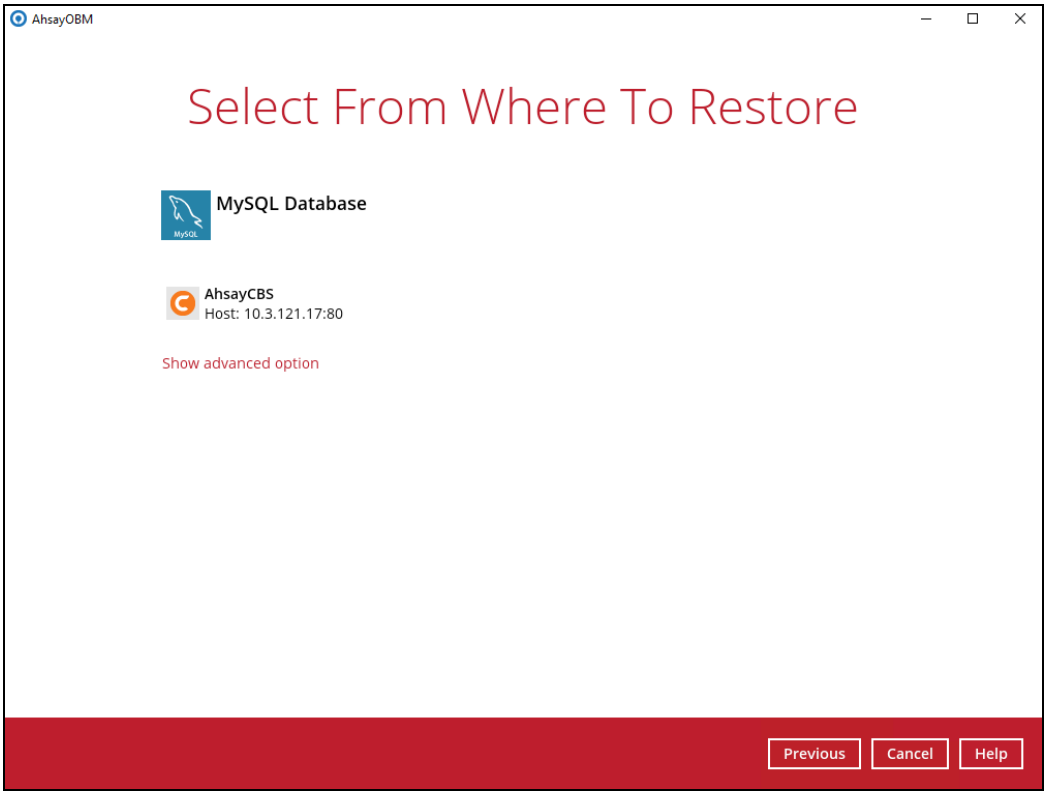
To restore the MySQL databases from your storage destination to a location on disk and manually recover the databases.

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

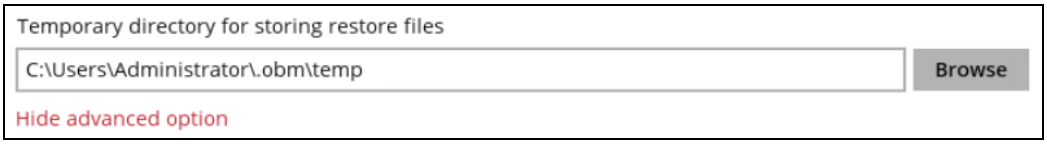
2. Select the backup set that you would like to restore the MySQL Database from.



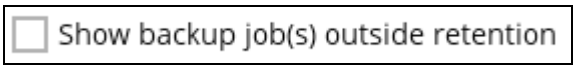
3. Select the storage destination that contains the MySQL databases that you would like to restore from.



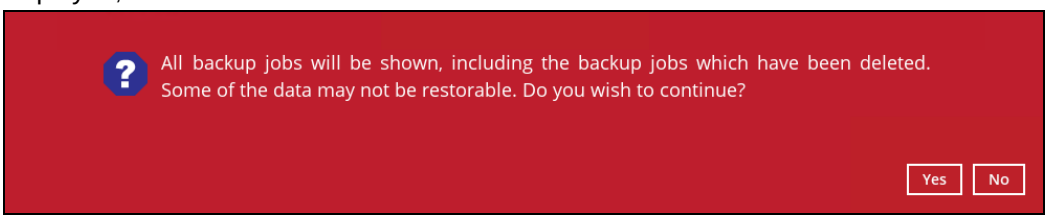
You may configure the **Temporary directory for storing restore files** by clicking **Show advanced option**. This will allow you to select the directory that will be used to store temporary files by clicking the **Browse** button.



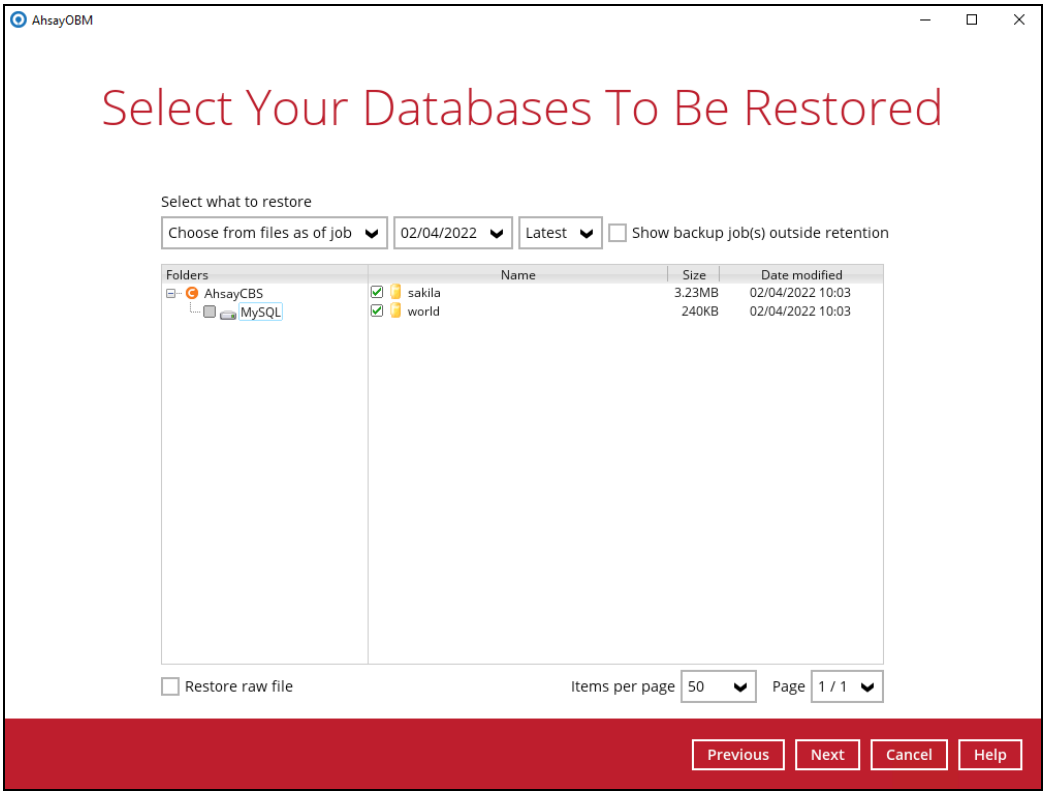
4. Tick **Show backup job(s) outside retention** if you want all backup jobs to be displayed, even the deleted ones.



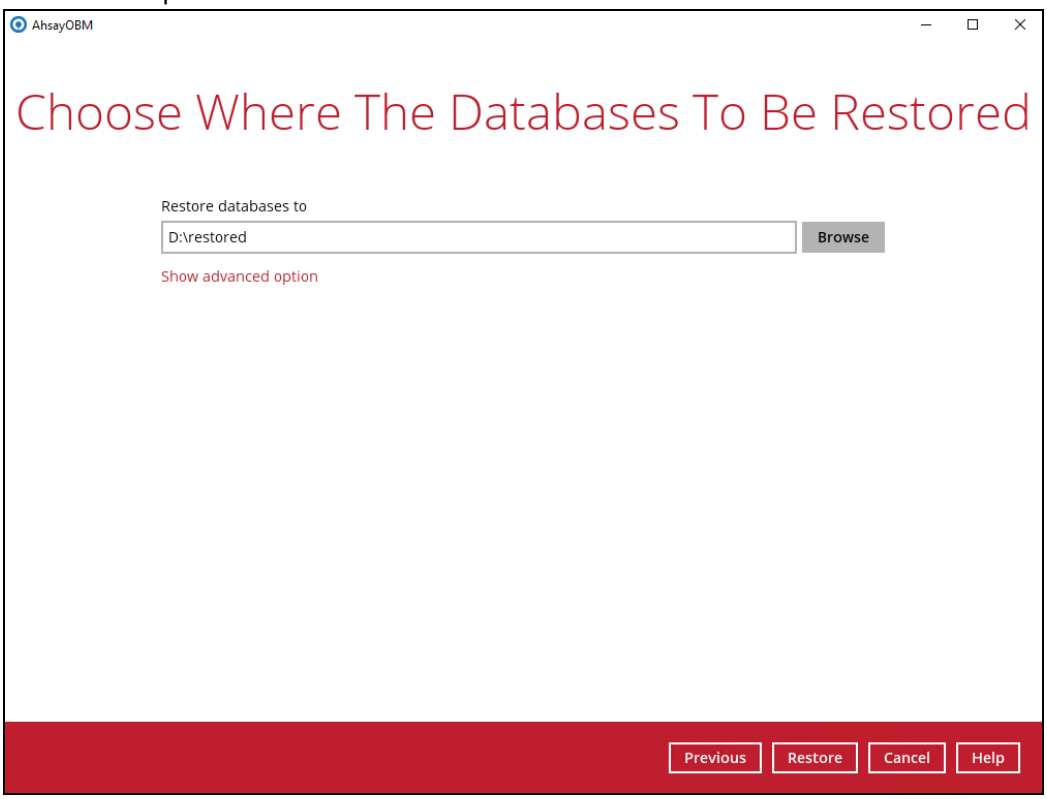
Once ticked, this message will be displayed. Click **Yes** if you want all backup jobs to be displayed, otherwise click **No**.



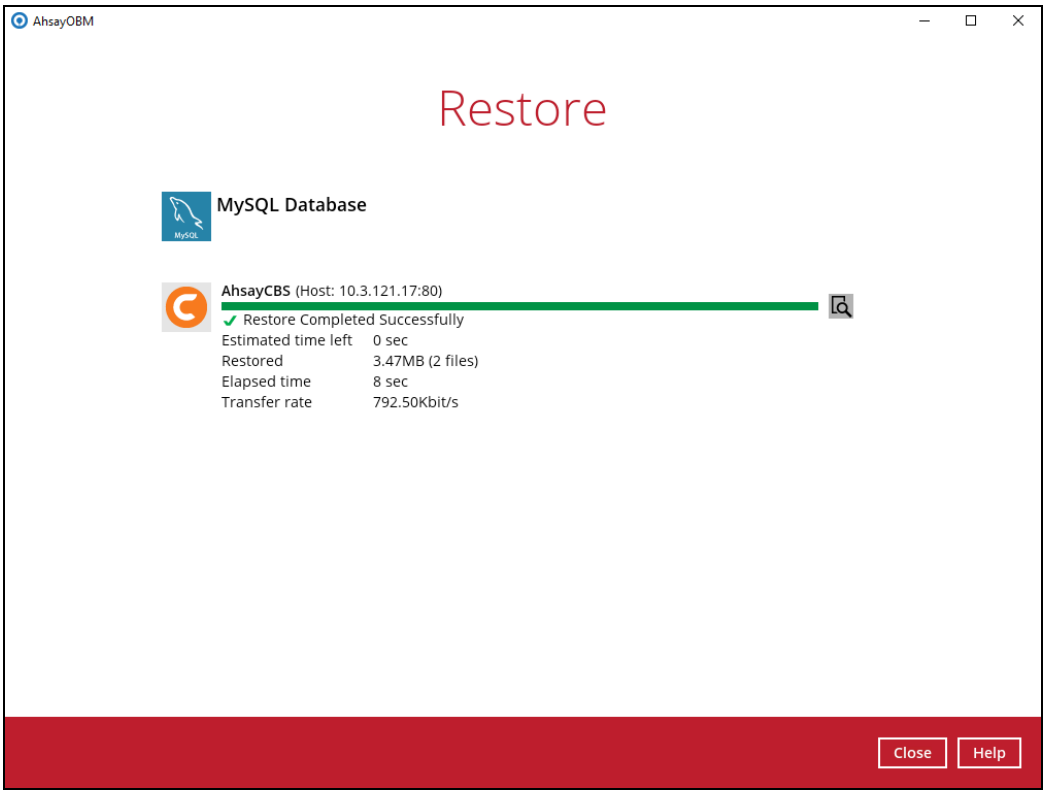
5. Select to restore the MySQL database(s) from a specific backup job then select the files or folders that you would like to restore and select the **Restore raw file** option. Click **Next** to proceed.



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

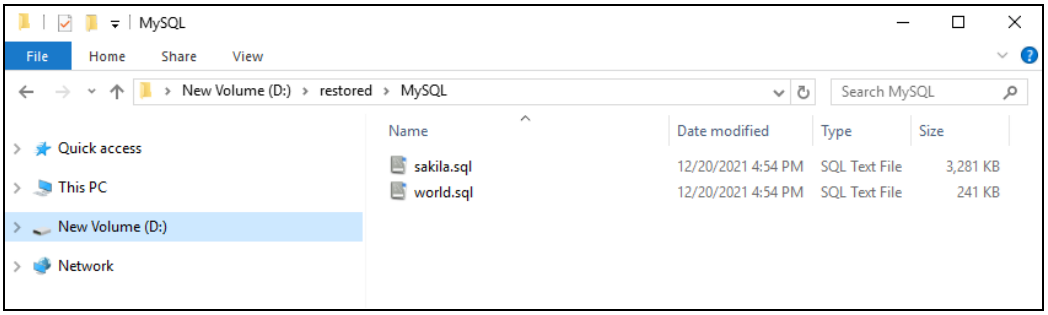


7. After the MySQL database(s) has been restored.



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

Example: Using Windows File Explorer



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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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 |
| sys                |
+--------------------+
4 rows in set (0.00 sec)

mysql>
```

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

   Example: sakila, and world

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

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

3. Recover Databases

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

```
mysql> use sakila;
mysql> source D:\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 D:\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)
```

4. 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              |
+--------------------+
6 rows in set (0.00 sec)


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

mysql> show tables in sakila;
+----------------------------+
| Tables_in_sakila           |
+----------------------------+
| actor                      |
| actor_info                 |
| address                    |
| category                   |
| city                       |
| country                    |
| customer                   |
| customer_list              |
| film                       |
| film_actor                 |
| film_category              |
| film_list                  |
| film_text                  |
| inventory                  |
| language                   |
| nicer_but_slower_film_list |
| payment                    |
| rental                     |
| sales_by_film_category     |
| sales_by_store             |
| staff                      |
| staff_list                 |
| store                      |
+----------------------------+
23 rows in set (0.00 sec)
```

7 Contact Ahsay

7.1 Technical Assistance

To contact Ahsay support representatives for technical assistance, visit the Partner Portal:
https://www.ahsay.com/partners/

Also use the Ahsay Wikipedia for resource such as Hardware Compatibility List, Software Compatibility List, and other product information:
https://wiki.ahsay.com/

7.2 Documentation

Documentations for all Ahsay products are available at:
https://www.ahsay.com/jsp/en/downloads/ahsay-downloads_documentation_guides.jsp

You can send us suggestions for improvements or report on issues in the documentation by contacting us at:
https://www.ahsay.com/partners/

Please specify the specific document title as well as the change required/suggestion when contacting us.