

# **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

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# 1 Overview

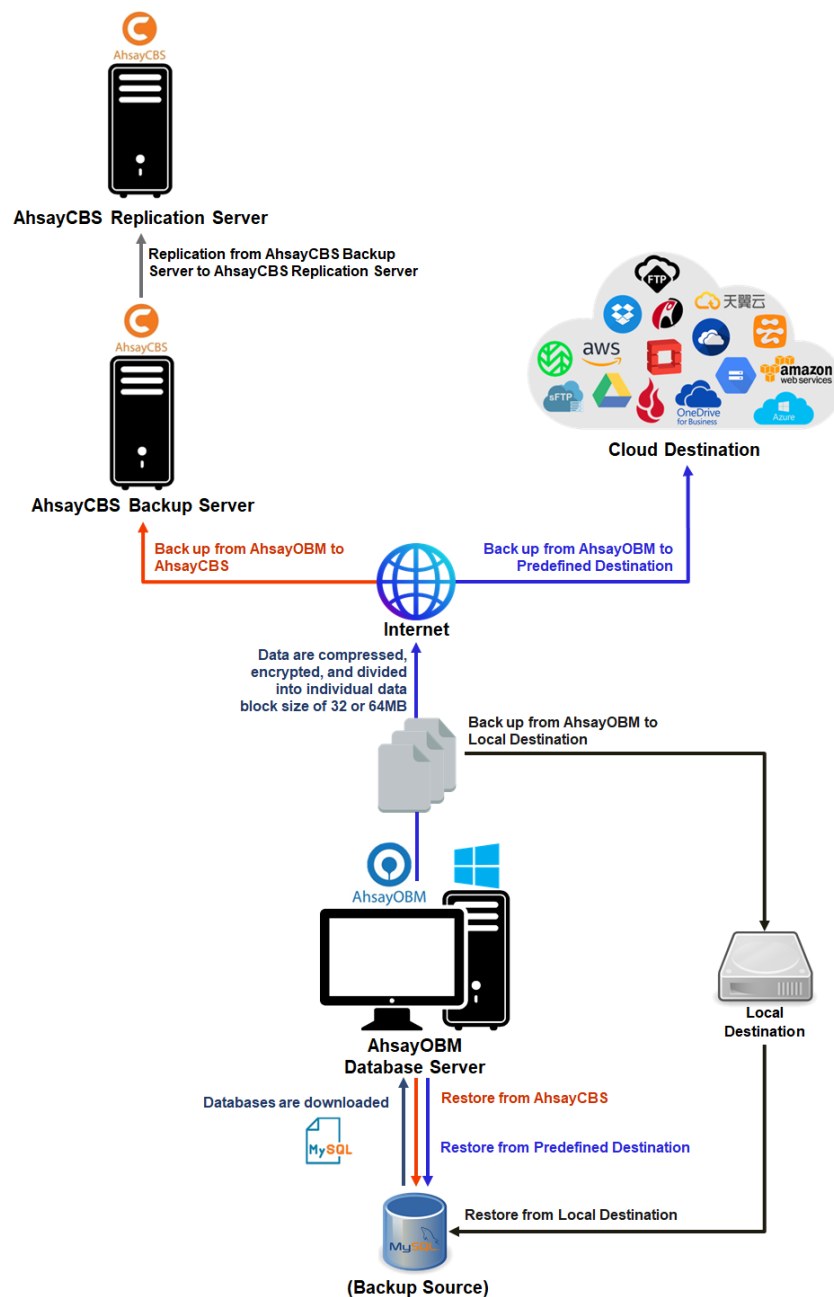
## 1.1 What is this software?

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.

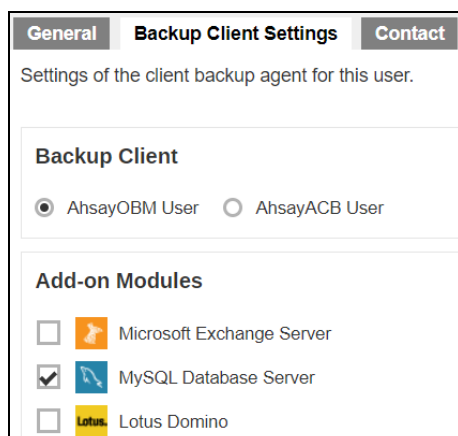
User should also stay up-to-date when newer version of AhsayOBM is released. To get our latest product and company news through email, please subscribe to our mailing list.




[https://www.ahsay.com/jsp/en/home/subscribe\\_mail\\_list.jsp](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.



General	Backup Client Settings	Contact
Settings of the client backup agent for this user.		
<b>Backup Client</b>		
<input checked="" type="radio"/> AhsayOBM User <input type="radio"/> AhsayACB User		
<b>Add-on Modules</b>		
<input type="checkbox"/>  Microsoft Exchange Server		
<input checked="" type="checkbox"/>  MySQL Database Server		
<input type="checkbox"/>  Lotus Domino		

### 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.

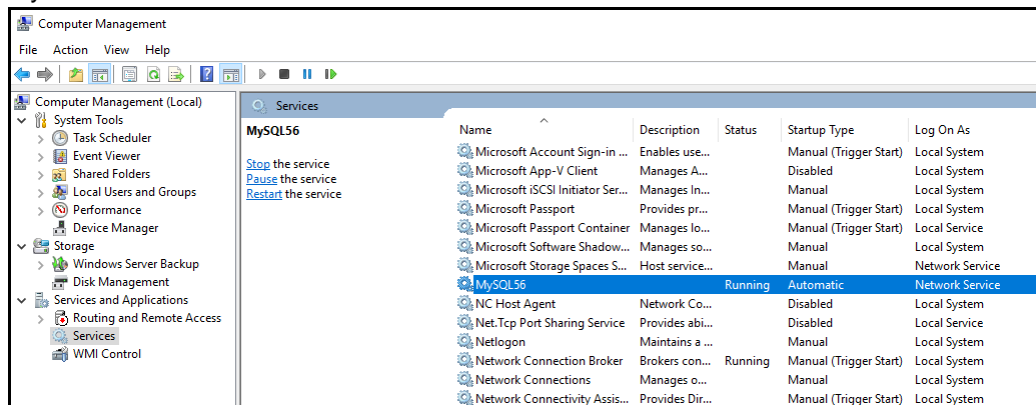
### 2.6.1 MySQL Version

AhsayOBM is installed on the MySQL database server.

### 2.6.2 MySQL Database Status

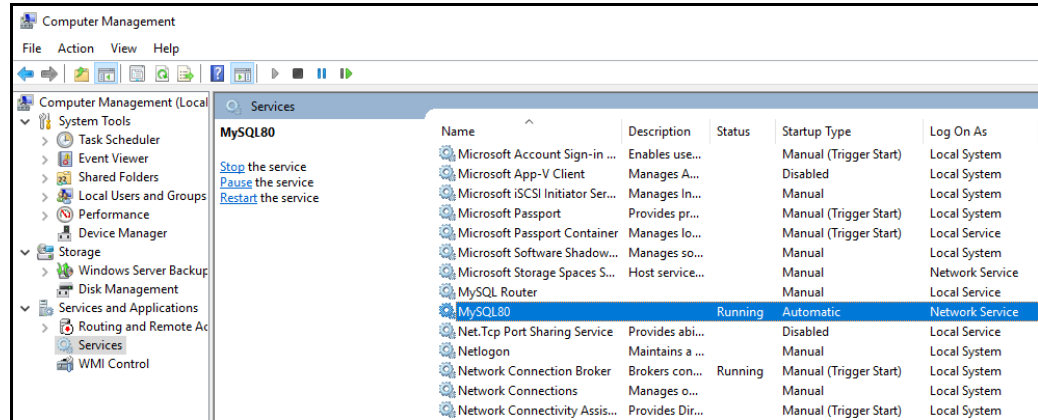
The MySQL database instance is online.

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



Name	Description	Status	Startup Type	Log On As
MySQL56		Running	Automatic	Network Service
Microsoft Account Sign-in Assistant	Enables use...	Manual (Trigger Start)		Local System
Microsoft App-V Client	Manages A...	Disabled		Local System
Microsoft iSCSI Initiator Service	Manages In...	Manual		Local System
Microsoft Passport	Provides pr...	Manual (Trigger Start)		Local System
Microsoft Passport Container	Manages lo...	Manual (Trigger Start)		Local Service
Microsoft Software Shadow Copy Provider	Manages so...	Manual		Local System
Microsoft Storage Spaces Service	Host service...	Manual		Network Service
NC Host Agent	Network Co...	Disabled		Local System
Net.Tcp Port Sharing Service	Provides abi...	Disabled		Local Service
Netlogon	Maintains a ...	Manual		Local System
Network Connection Broker	Brokers con...	Running	Manual (Trigger Start)	Local System
Network Connections	Manages o...	Manual		Local System
Network Connectivity Assistant	Provides Dir...	Manual (Trigger Start)		Local System

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` `Amysql_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.

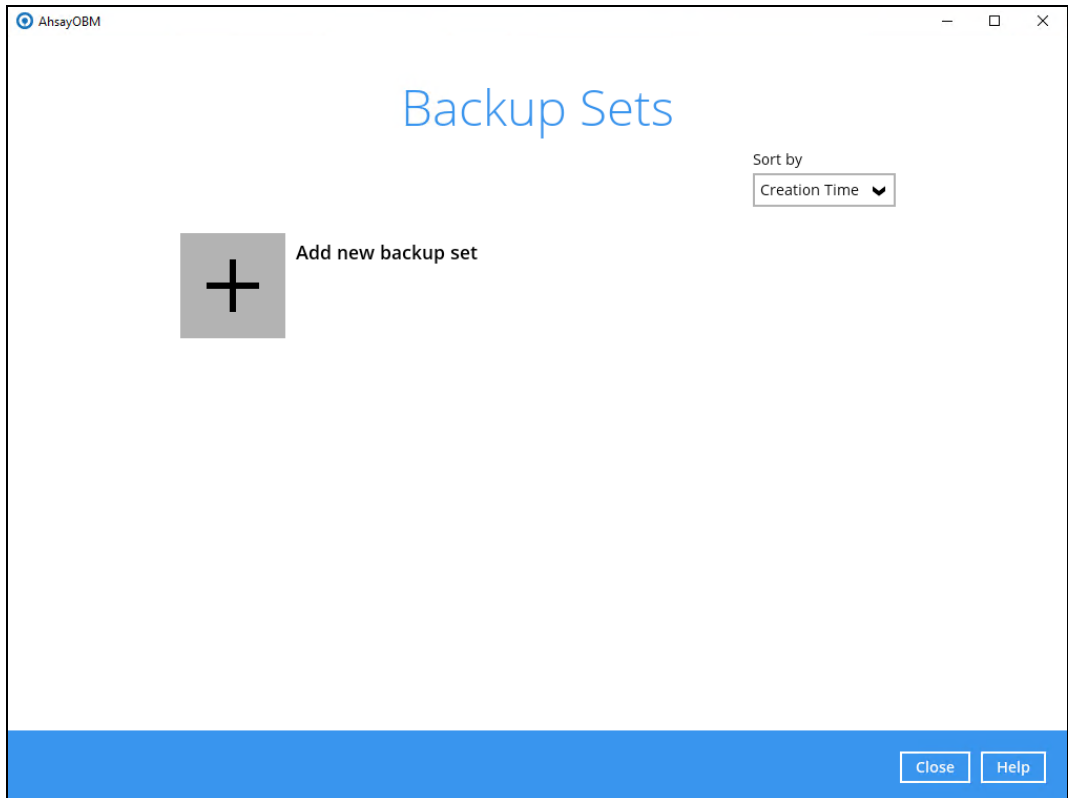
- Hardware – to achieve optimal performance, compatible hardware requirements is a must. Ensure you have the backup machine's appropriate hardware specifications to accommodate frequency of backups,
  - so that the data is always backed up within the periodic backup interval
  - so that the backup frequency 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.

AhsayOBM

## Create Backup Set

Name  
MySQL Database

Backup set type  
MySQL Backup

Login ID  
root

Password  
.....

Host  
localhost

Port  
3306

Path to mysqldump  
C:\Program Files\MySQL\MySQL Server 5.7\bin\mysqldum Change

Next Cancel Help

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

AhsayOBM

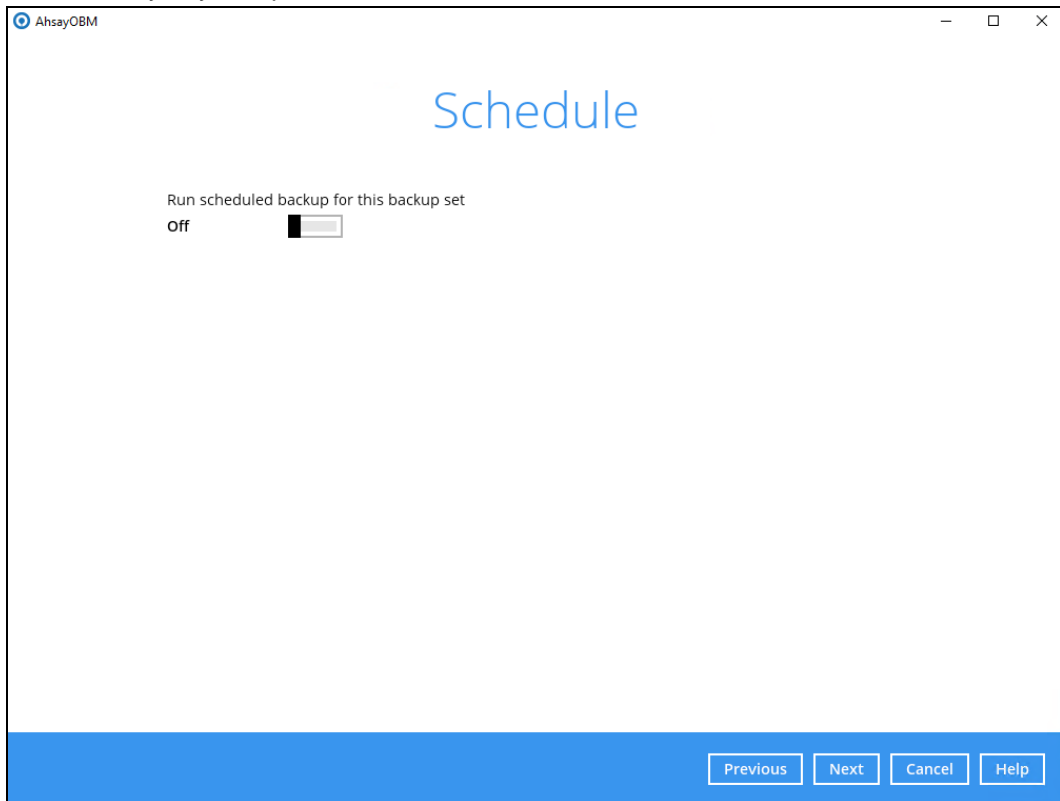
## Backup Source

MySQL

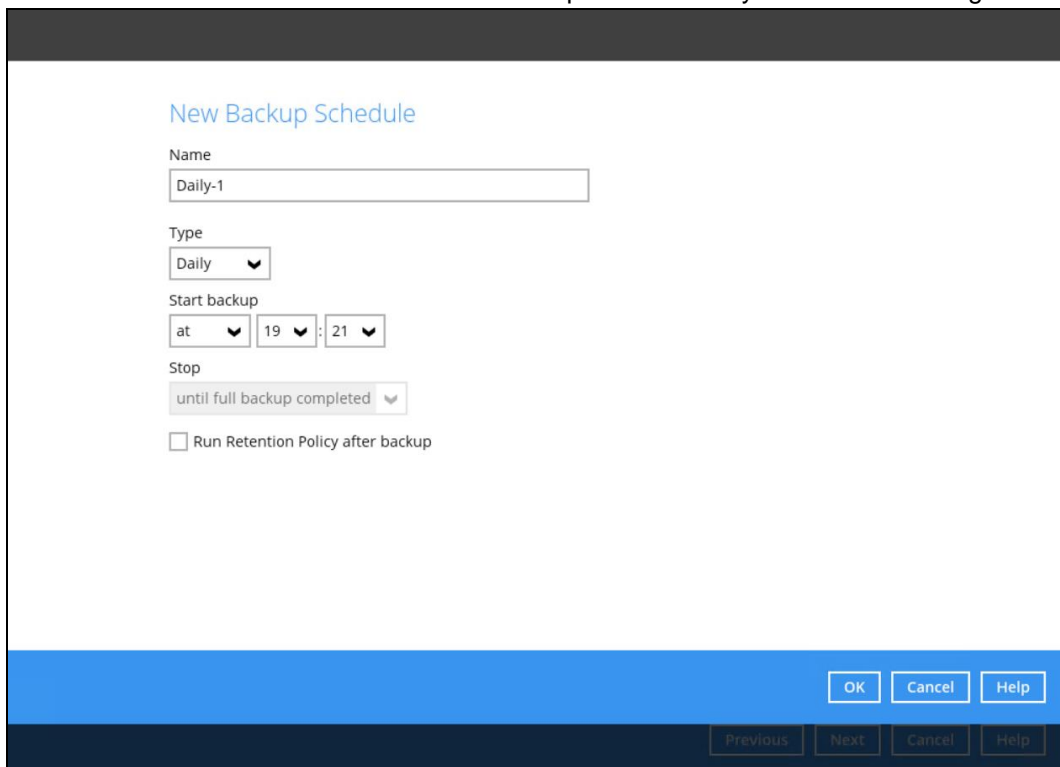
- information\_schema
- mysql
- performance\_schema
- ☒ sakila
- ☒ sys
- ☒ world

Previous Next Cancel Help

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.

AhsayOBM

## Destination

Backup mode  
Sequential ▼

Existing storage destinations  
+ Add new storage destination / destination pool  
^ v

Previous Next Cancel Help

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

AhsayOBM

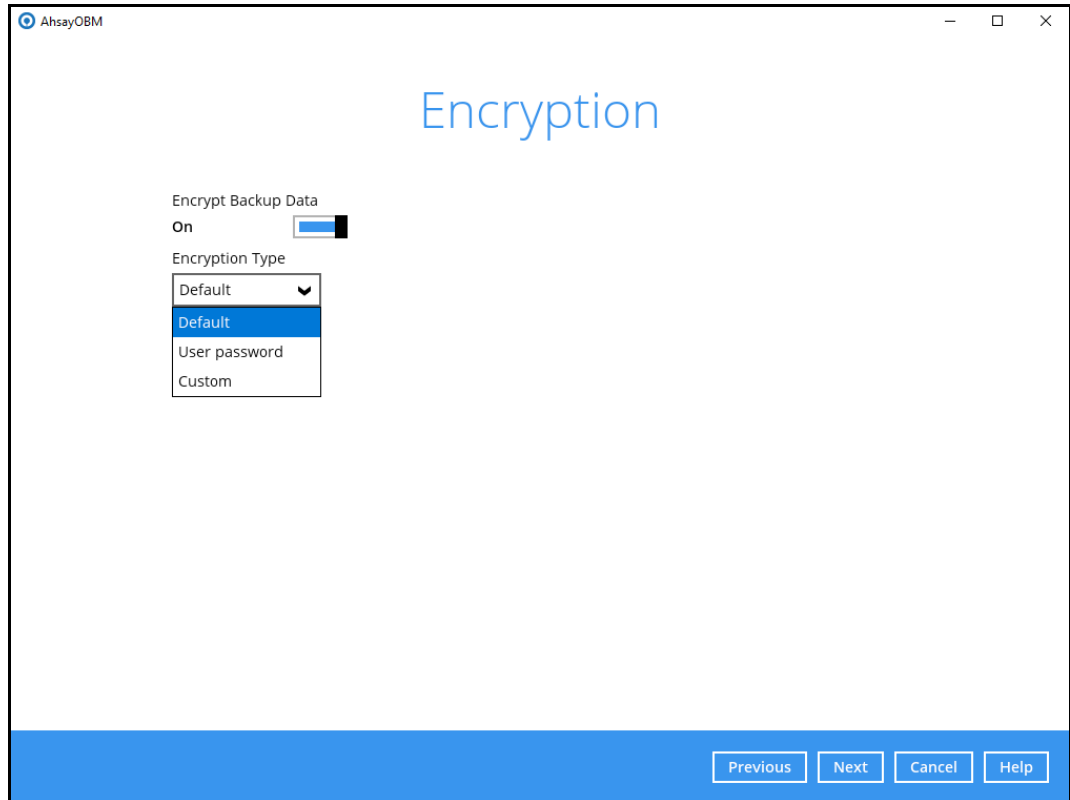
## New Storage Destination / Destination Pool

Name  
AhsayCBS

Destination storage  
AhsayCBS ▼

OK Cancel Help

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

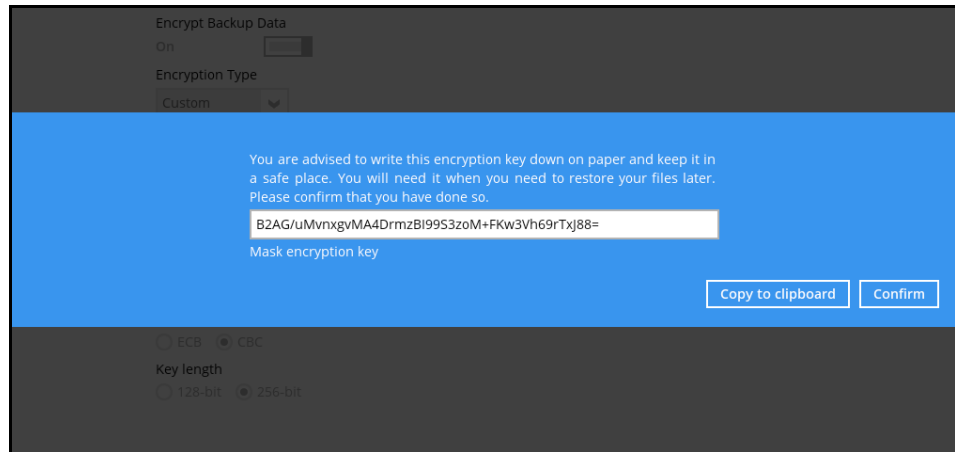
For best practice on managing your encryption key, refer to the following article. [FAQ: Best practices for managing encryption key on AhsayOBM or AhsayACB?](#)

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:

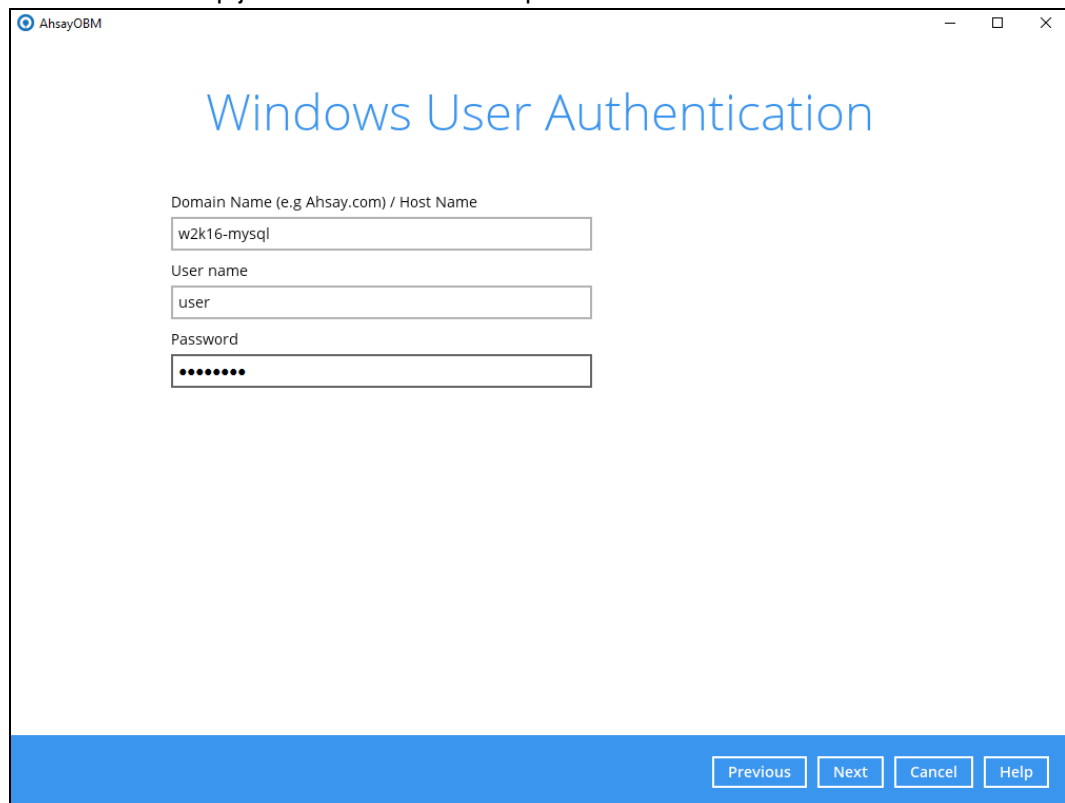
- **Unmask encryption key** – The encryption key is masked by default. Click this option to show the encryption key.



The dialog box has a dark grey header with 'Encrypt Backup Data' and a toggle switch set to 'On'. Below it, 'Encryption Type' is set to 'Custom'. The main area is blue and contains the text: 'You are advised to write this encryption key down on paper and keep it in a safe place. You will need it when you need to restore your files later. Please confirm that you have done so.' Below this text is a text box containing the masked key 'B2AG/uMvnxgvMA4DrnzBI9953zoM+FKw3Vh69rTxj88=' and the label 'Mask encryption key'. At the bottom right are 'Copy to clipboard' and 'Confirm' buttons. The footer is dark grey with radio buttons for 'ECB' and 'CBC' (selected), and 'Key length' with radio buttons for '128-bit' and '256-bit' (selected).

- **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.



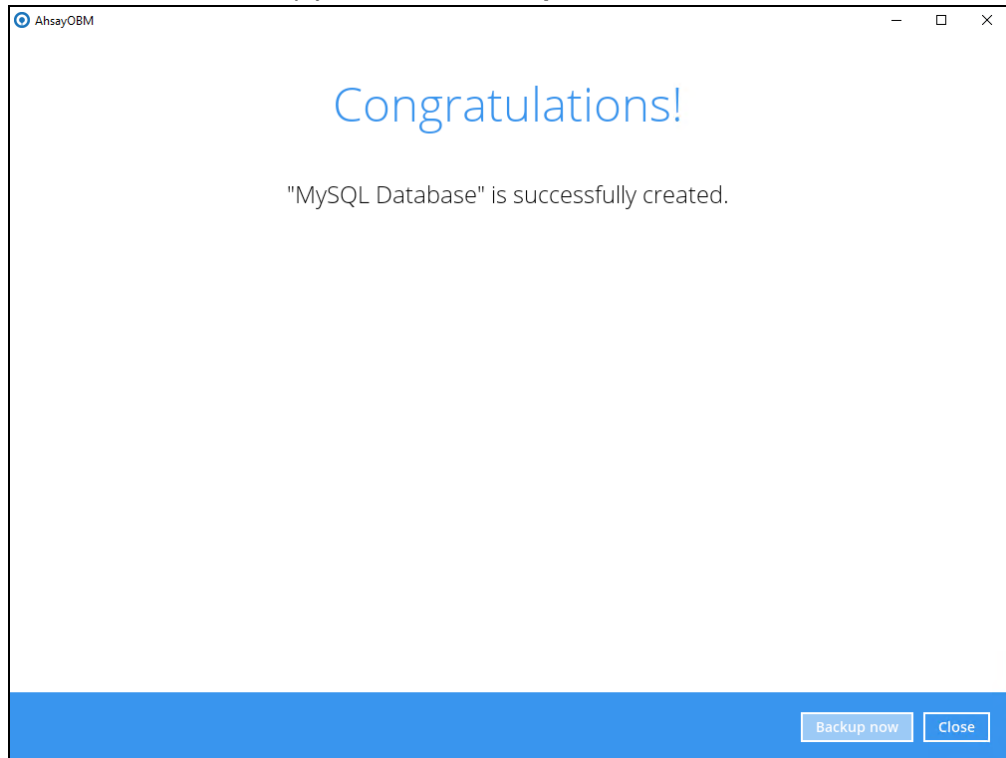
The dialog box is titled 'AhsayOBM' and 'Windows User Authentication'. It contains three input fields: 'Domain Name (e.g Ahsay.com) / Host Name' with the value 'w2k16-mysql', 'User name' with the value 'user', and 'Password' with masked characters. At the bottom right are 'Previous', 'Next', 'Cancel', and 'Help' buttons.

#### NOTE

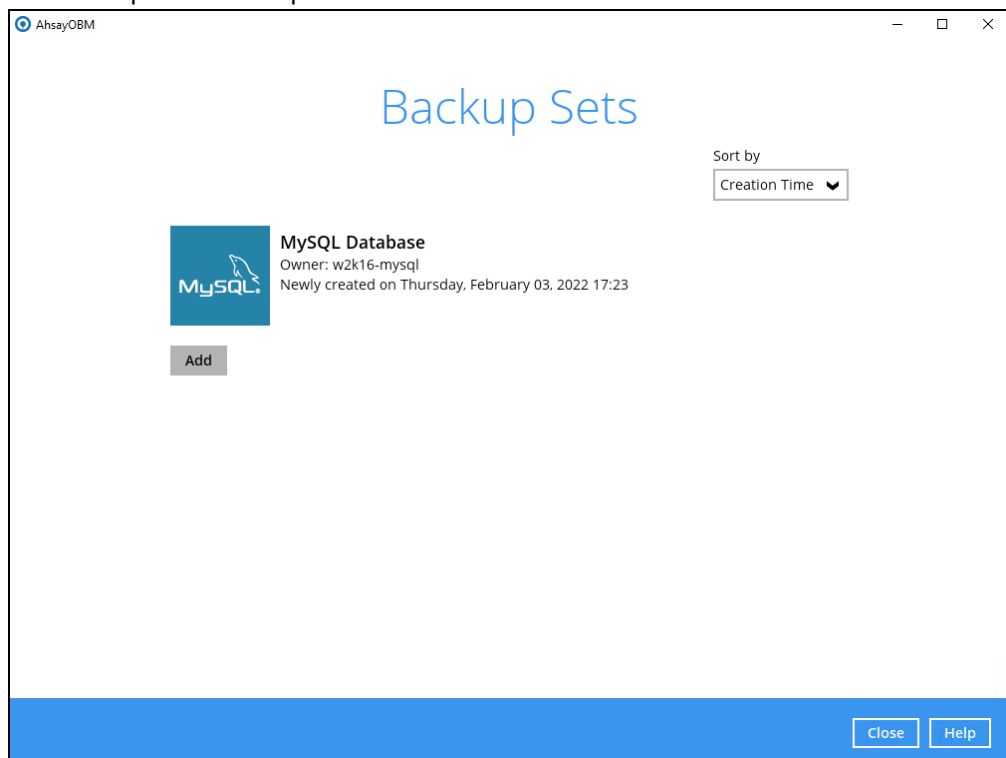
If the backup schedule is turned off for the backup set the Windows User Authentication screen will be automatically skipped. The Windows User Authentication login credentials can be added or updated post backup set creation.

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**

Name: MySQL Database

Owner: w2k16-mysql

**MySQL Server**

Login ID: root

Password: [masked]

Host: localhost Port: 3306

Path to mysqldump: C:\Program Files\MySQL\MySQL Server 5.7\bin\mysqldump **Change**

**Windows User Authentication**

Domain Name (e.g Ahsay.com) / Host Name: w2k16-mysql

Buttons: Delete this backup set, Save, Cancel, Help

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

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

**AhsayOBM MySQL Database**

**Others**

**Temporary Directory**

Temporary directory for storing backup files: D:\temp **Change**

82.27GB free out of total 120GB space in D:

☒ Remove temporary files after backup

**Compressions**

Select compression type: Fast with optimization for local

**Encryption**

Encryption key: [masked]  
[Copy to clipboard](#) [Unmask encryption key](#)

Algorithm: AES

Method: CBC

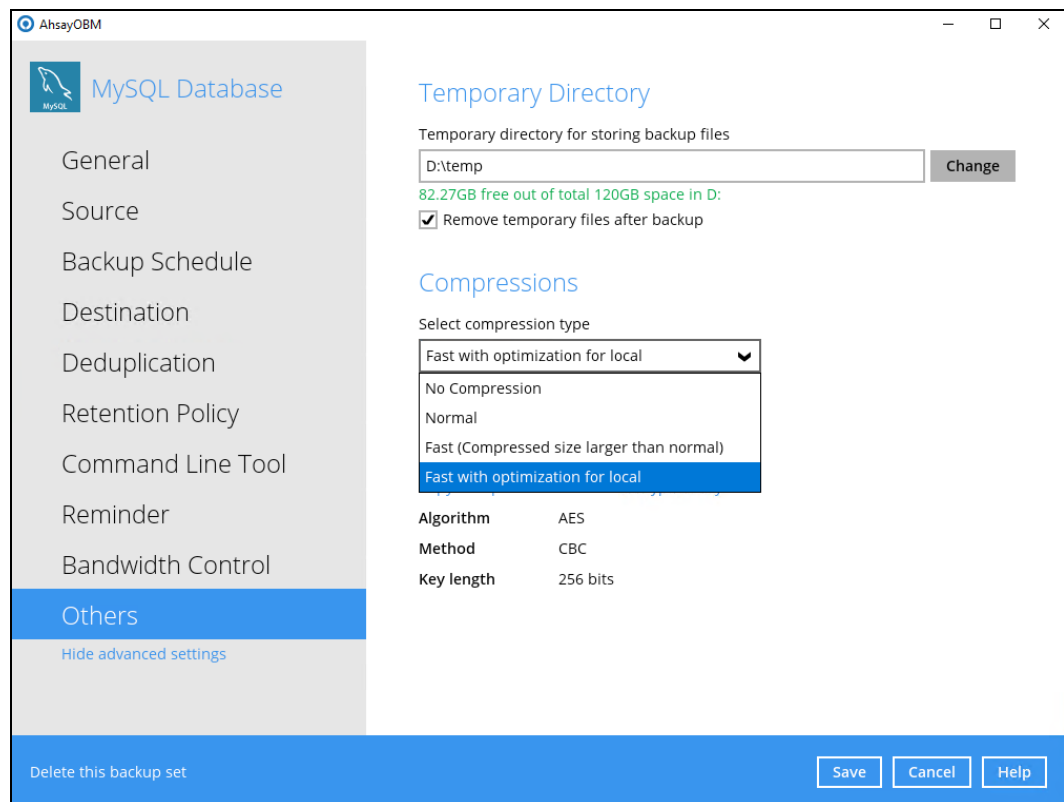
Key length: 256 bits

Buttons: Delete this backup set, Save, Cancel, Help

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:

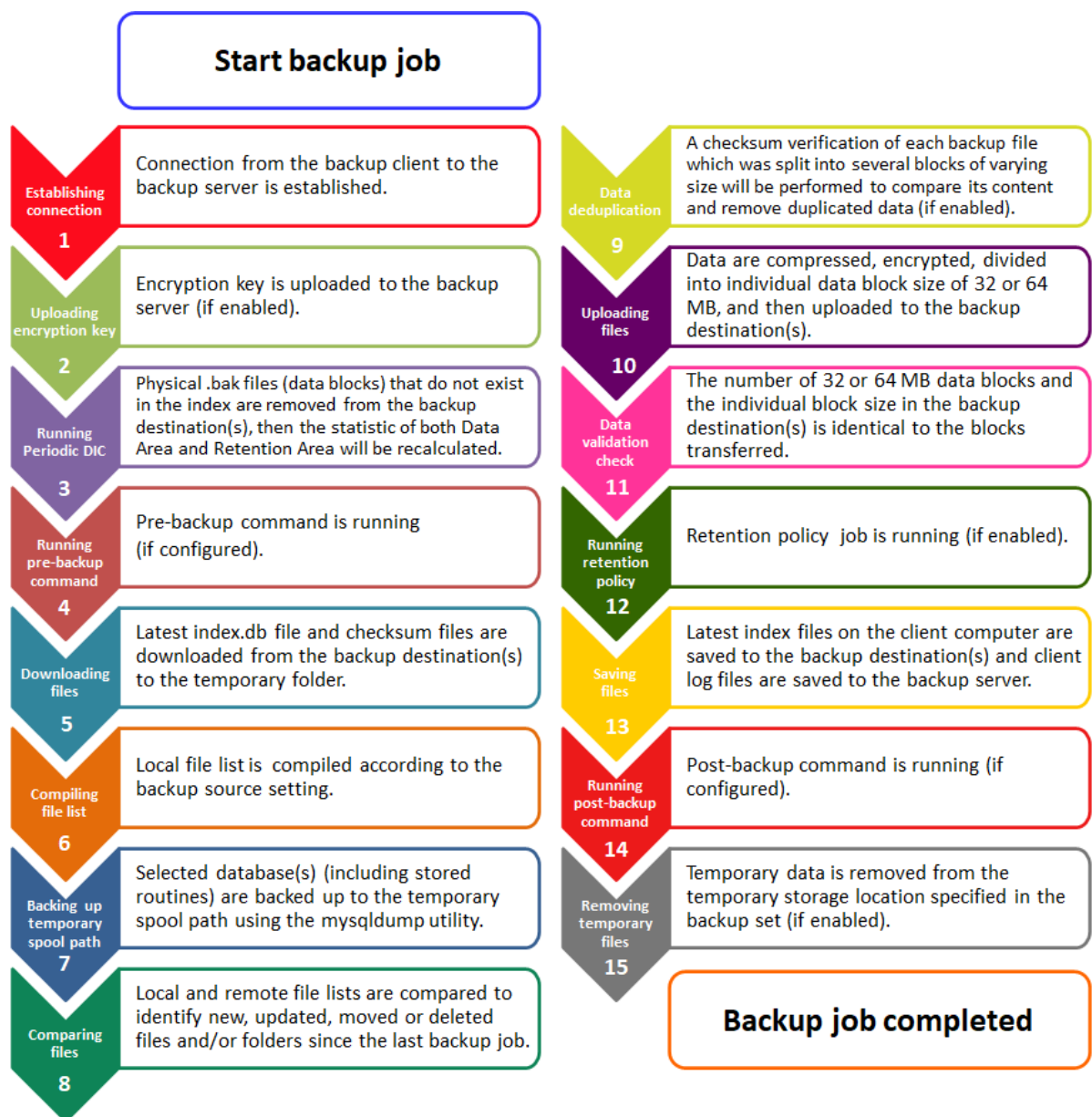
- No Compression
- Normal
- Fast (Compressed size larger than normal)
- Fast with optimization for local



## 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

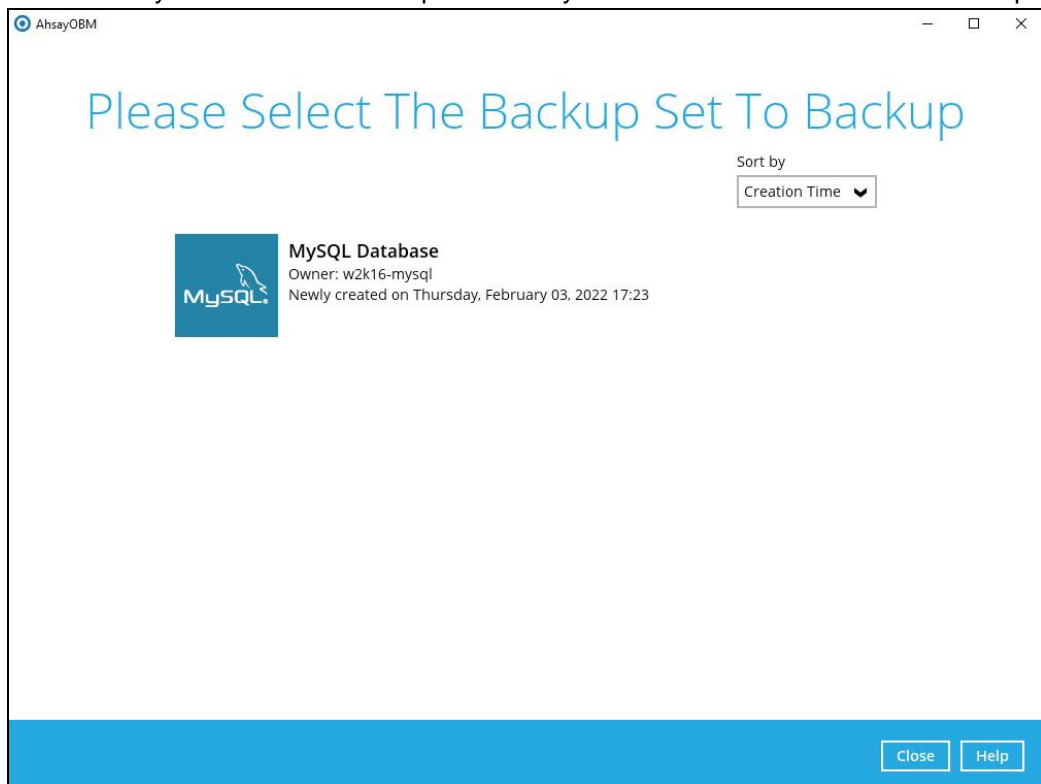
For instructions on how to do this refer to Chapter 8 of [AhsayOBM v9 Quick Start Guide for Windows](#).

### 5.2 Start a Manual Backup

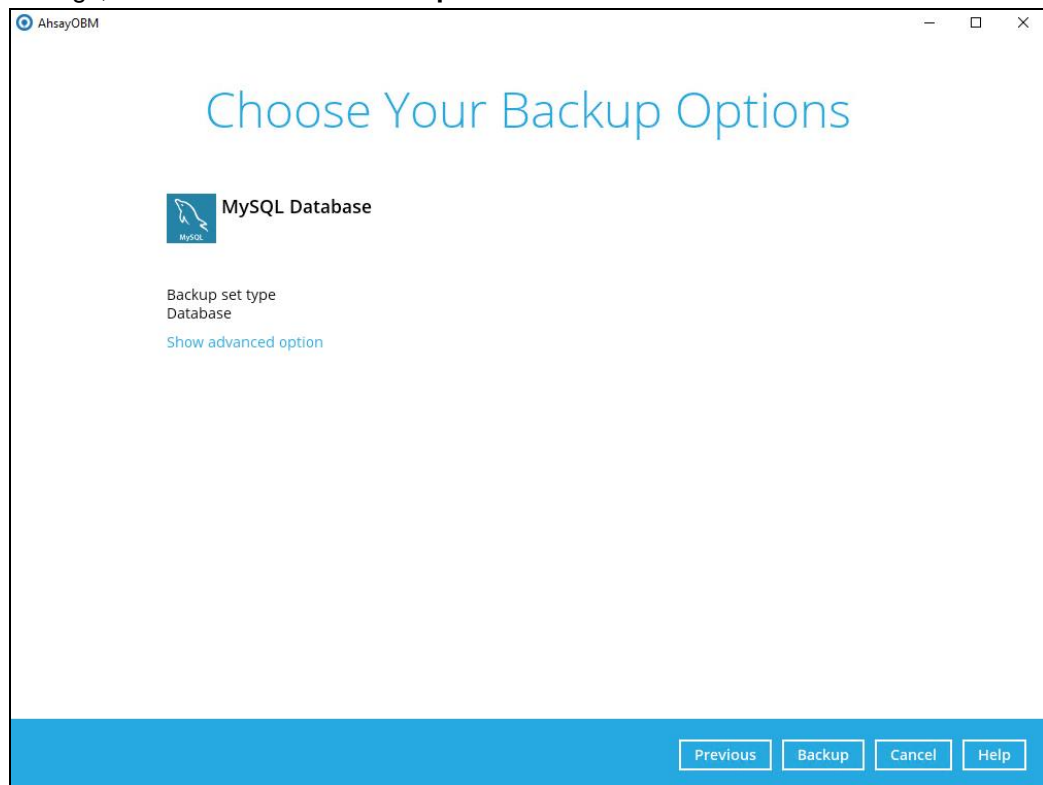
1. Click the Backup icon on the main interface of AhsayOBM.



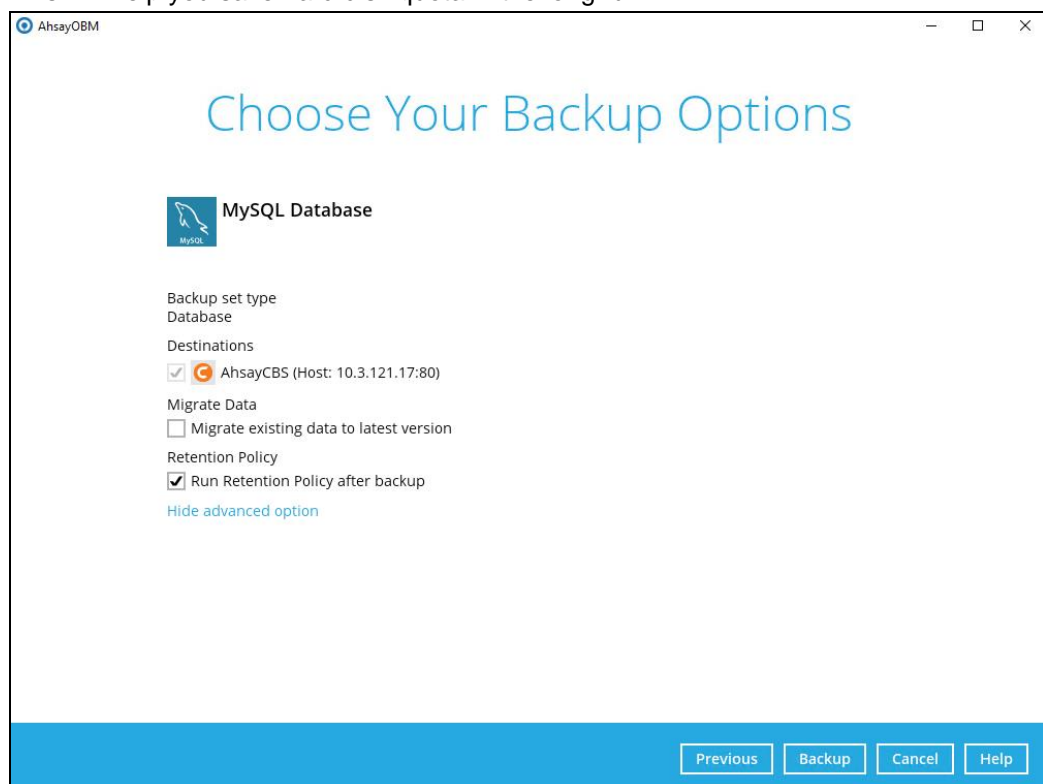
2. Select the MySQL Database backup set which you would like to start a manual backup.



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



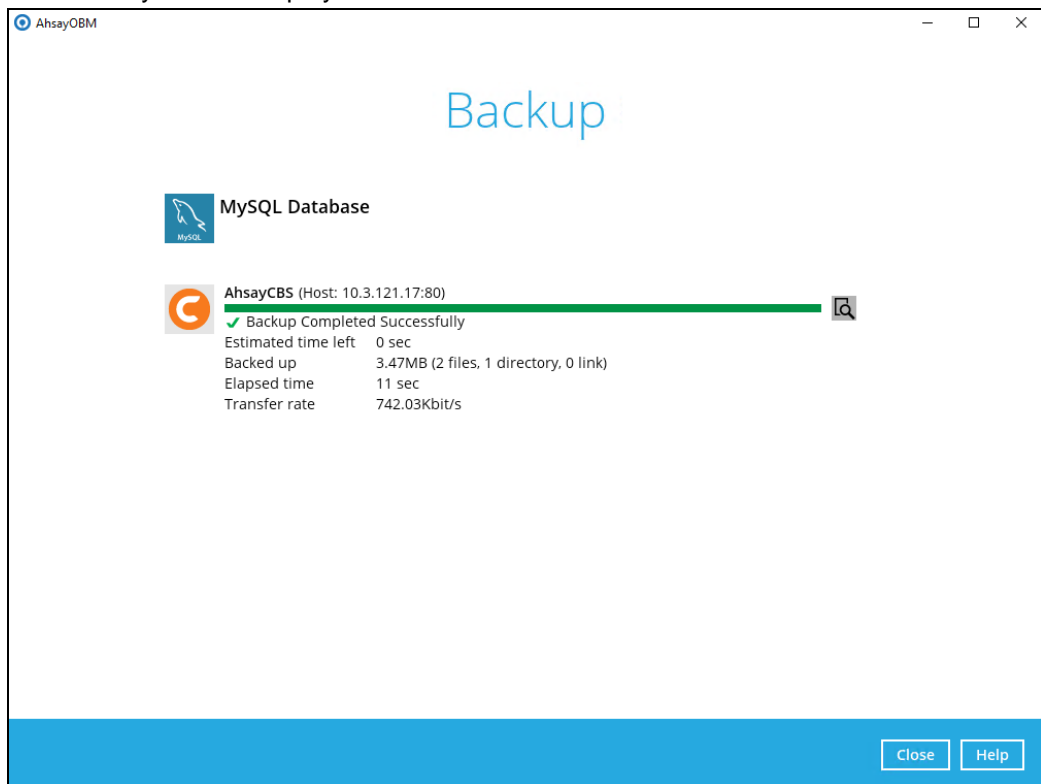
4. When advanced options are shown, it is recommended that you tick the checkbox next to **Run Retention Policy after backup** in the Retention Policy section at the bottom. This will help you save hard disk quota in the long run.




#### 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.

AhsayOBM

Show All

Type	Log	Time
i	Start [ AhsayOBM v9.1.0.0 ]	02/04/2022 10:03:16
i	Saving encrypted backup set encryption keys to server...	02/04/2022 10:03:17
i	Start Backup ... Database [Deduplication: enabled, Deduplication scope: All files within the same backup set, Migrate Delt...	02/04/2022 10:03:18
i	Using Temporary Directory D:\temp\1643880208321\OB5@1643880748194	02/04/2022 10:03:18
i	Start running pre-commands	02/04/2022 10:03:19
i	Finished running pre-commands	02/04/2022 10:03:19
i	[Start] Backing up database "sakila" to "D:\temp\1643880208321\SpoolArea\MySQL\sakila.sql"	02/04/2022 10:03:19
i	[End]	02/04/2022 10:03:22
i	[Start] Backing up database "world" to "D:\temp\1643880208321\SpoolArea\MySQL\world.sql"	02/04/2022 10:03:22
i	[End]	02/04/2022 10:03:22
i	Start running post-commands	02/04/2022 10:03:22
i	Finished running post-commands	02/04/2022 10:03:22
i	Downloading server file list...	02/04/2022 10:03:22
i	Downloading server file list... Completed	02/04/2022 10:03:23
i	Reading backup source from hard disk...	02/04/2022 10:03:24
i	Reading backup source from hard disk... Completed	02/04/2022 10:03:24
i	[New Directory]... MySQL	02/04/2022 10:03:24
i	[New File]... 33% of "MySQL\world.sql"	02/04/2022 10:03:24
i	[New File]... 59% of "MySQL\world.sql"	02/04/2022 10:03:24
i	[New File]... 86% of "MySQL\world.sql"	02/04/2022 10:03:24
i	[New File]... 100% of "MySQL\world.sql"	02/04/2022 10:03:24
i	[New File]... 15% of "MySQL\sakila.sql"	02/04/2022 10:03:24
i	[New File]... 27% of "MySQL\sakila.sql"	02/04/2022 10:03:24

Logs per page 50

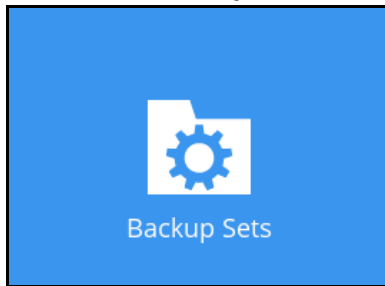
Page 1 / 2

Close

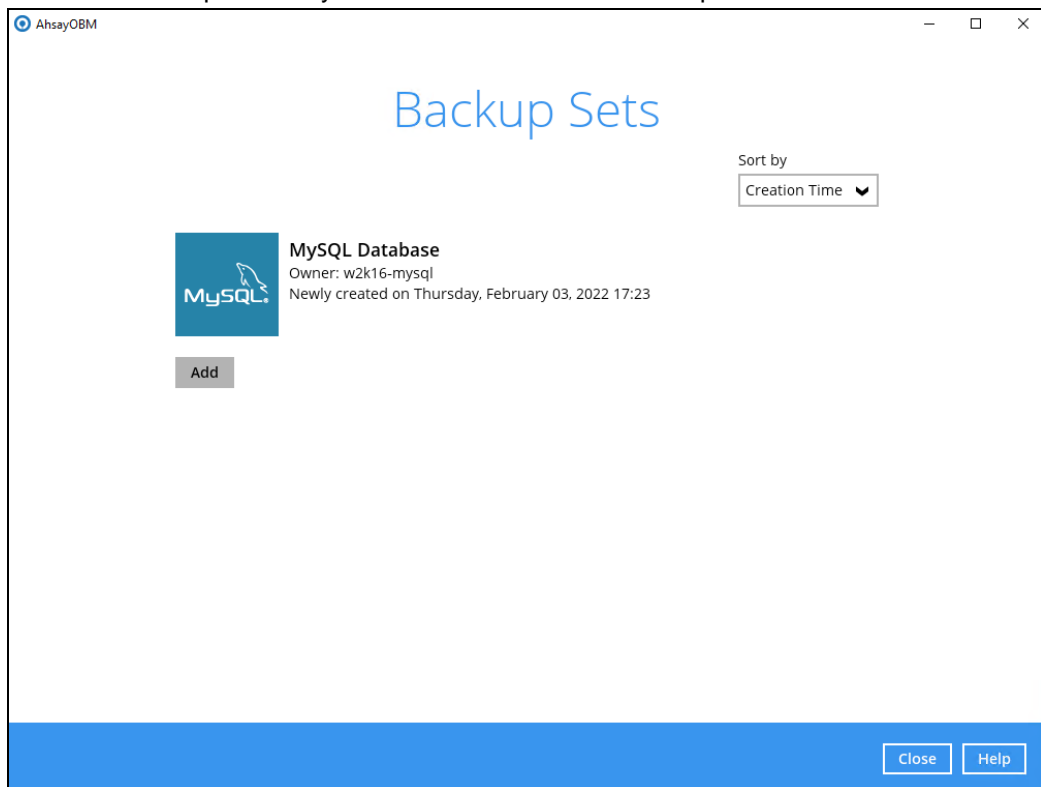
Close Help

## 5.3 Configure Backup Schedule for Automated Backup

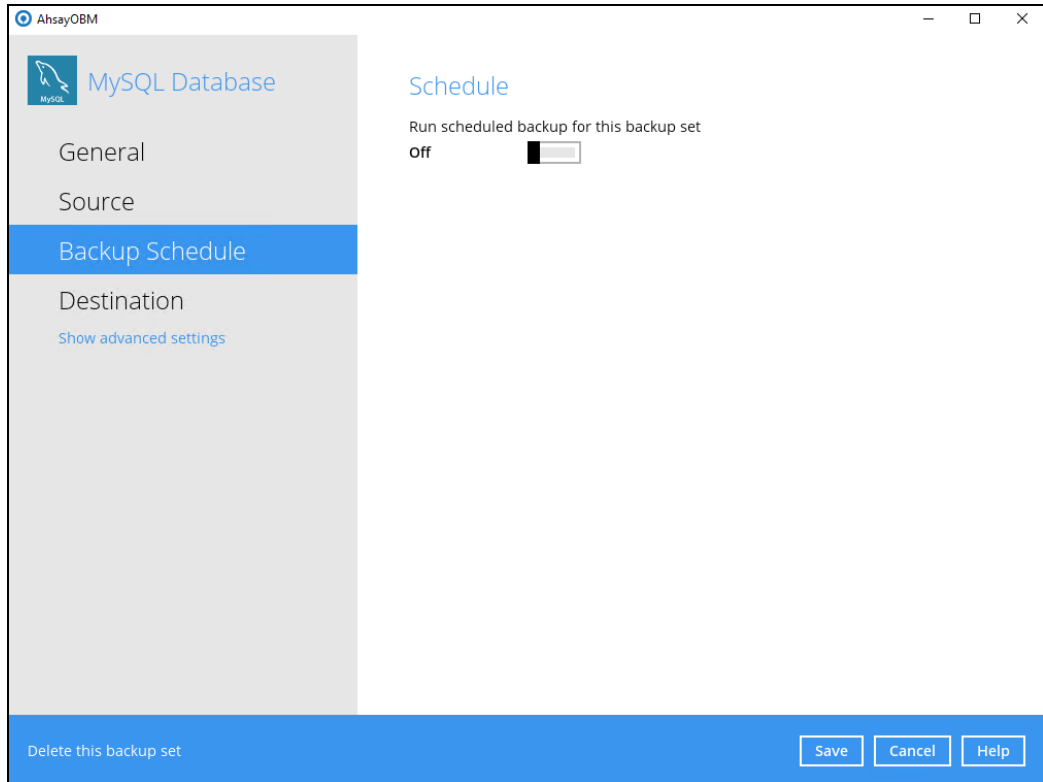
1. Click on the **Backup Sets** icon on the AhsayOBM main interface.



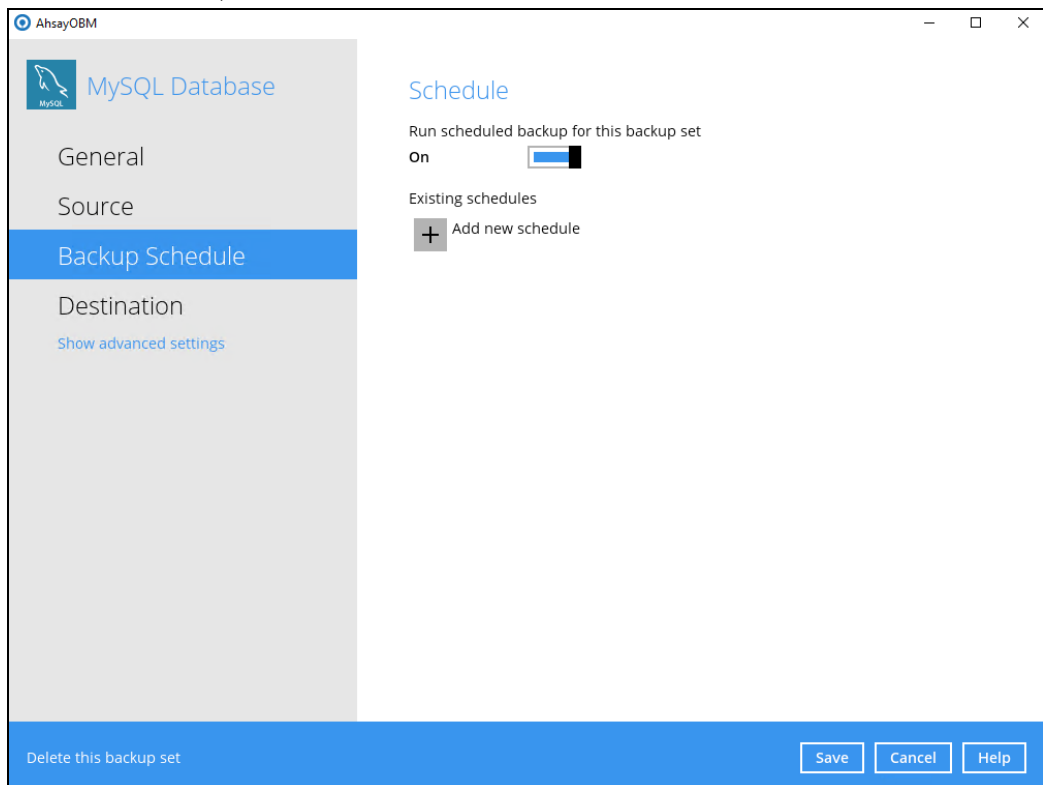
2. Select the backup set that you would like to create a backup schedule for.



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.

AhsayOBM

### New Backup Schedule

Name  
Daily-1

Type  
Daily

Start backup  
at 10 : 34

Stop  
until full backup completed

☐ Run Retention Policy after backup

OK Cancel Help

Delete this backup set Save Cancel Help

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.

### New Backup Schedule

Name  
Daily-1

Type  
Daily

Start backup  
at 15 : 41

Stop  
until full backup completed

☒ Run Retention Policy after backup

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

**New Backup Schedule**

Name  
Weekly-1

Type  
Weekly

Backup on these days of the week  
☐ Sun ☐ Mon ☐ Tue ☐ Wed ☐ Thu ☐ Fri ☒ Sat

Start backup  
 at 23 : 00

Stop  
 until full backup completed

☒ Run Retention Policy after backup

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

**New Backup Schedule**

Name  
Monthly-1

Type  
Monthly

Backup on the following day every month  
☒ Day Last  
☐ First Sunday

Start backup at  
 23 : 00 on the selected days

Stop  
 until full backup completed

☒ Run Retention Policy after backup

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

**New Backup Schedule**

Name  
Custom-1

Type  
Custom

Backup on the following day once  
 2022 December 31

Start backup at  
 23 : 59

Stop  
 until full backup completed

☒ Run Retention Policy after backup

- **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**

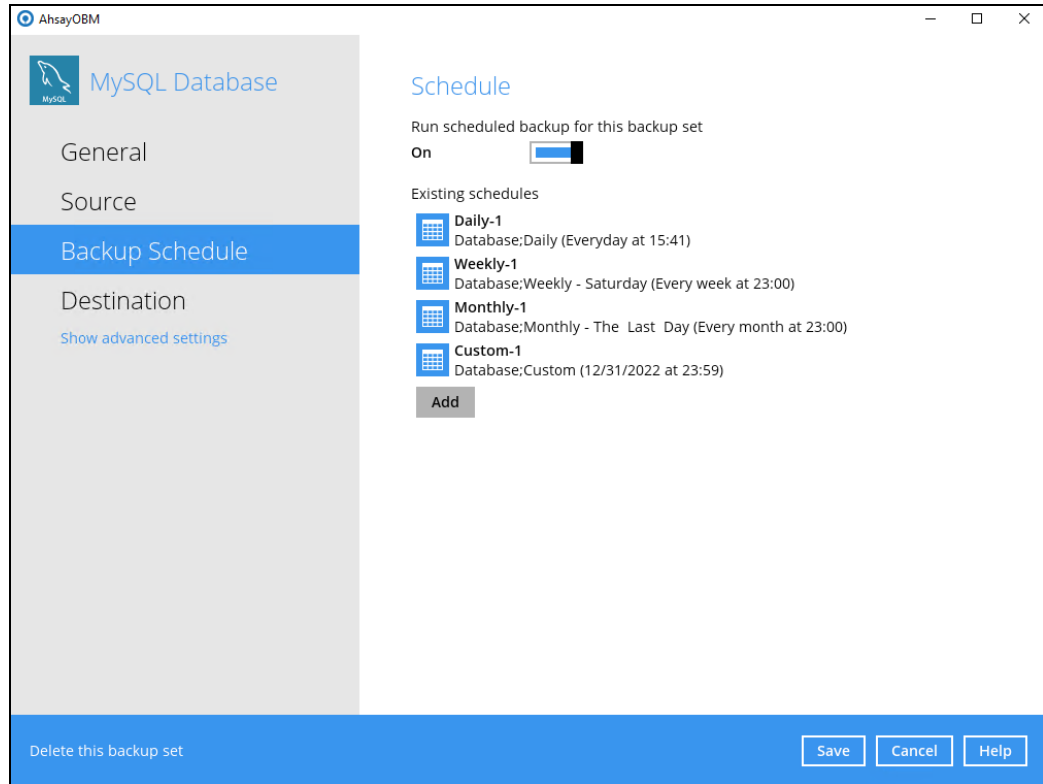
**Figure 1.2**

**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 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)

Copyright (c) 2000, 2016, Oracle and/or its affiliates. All rights reserved.

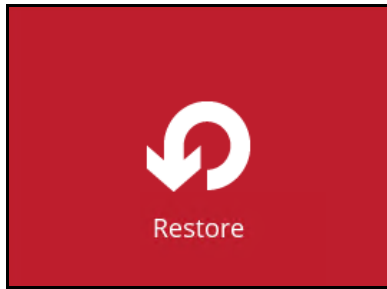
Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

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

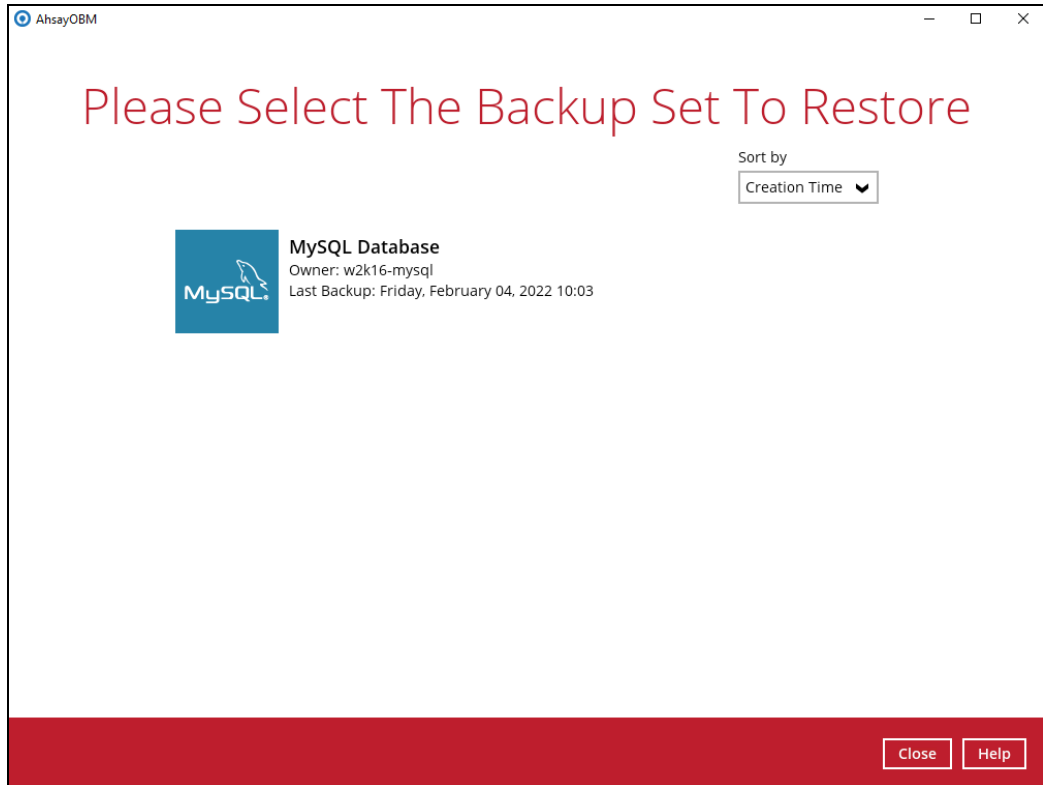
mysql> show databases;
+-----+
| Database          |
+-----+
| information_schema |
| mysql              |
| performance_schema |
| sakila              |
| sys                |
| world              |
+-----+
6 rows in set (0.00 sec)

mysql>
```

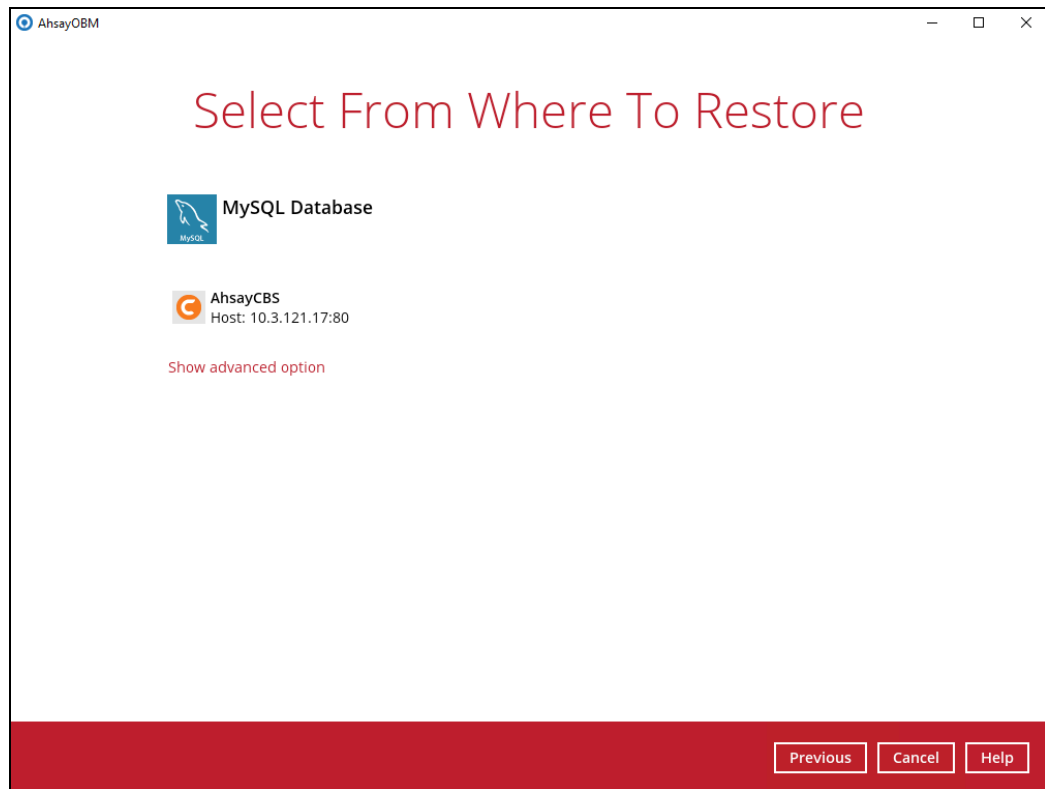
2. In the AhsayOBM main interface, click the **Restore** icon.



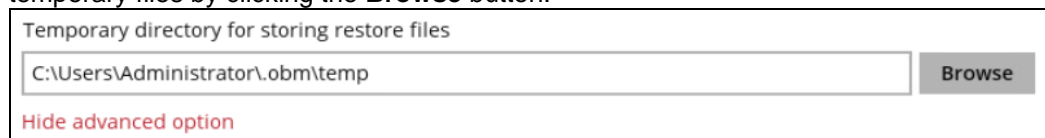
3. Select the backup set that you would like to restore the MySQL Database from.



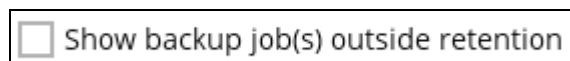
4. Select the storage destination that contains the MySQL databases that you would like to restore from.



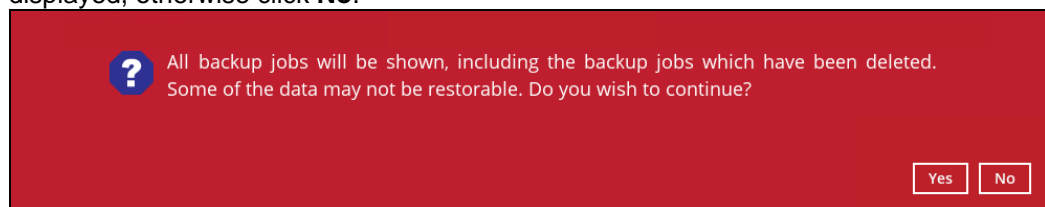
You may configure the **Temporary directory for storing restore files** by clicking **Show advanced option**. This will allow you to select the directory that will be used to store temporary files by clicking the **Browse** button.



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.

The screenshot shows the 'Select Your Databases To Be Restored' window. At the top, it says 'Select what to restore'. Below this are three dropdown menus: 'Choose from files as of job' (set to '02/04/2022'), 'Latest' (set to 'Latest'), and a checkbox 'Show backup job(s) outside retention' which is unchecked. Below these is a table with columns 'Name', 'Size', and 'Date modified'. The table lists two folders: 'sakila' (3.23MB, 02/04/2022 10:03) and 'world' (240KB, 02/04/2022 10:03). Both folders are checked. To the left of the table is a tree view showing 'AhsayCBS' and 'MySQL'. Below the table is a checkbox 'Restore raw file' which is unchecked. At the bottom right, there are buttons for 'Previous', 'Next', 'Cancel', and 'Help'.

Name	Size	Date modified
✓ sakila	3.23MB	02/04/2022 10:03
✓ world	240KB	02/04/2022 10:03

#### NOTE

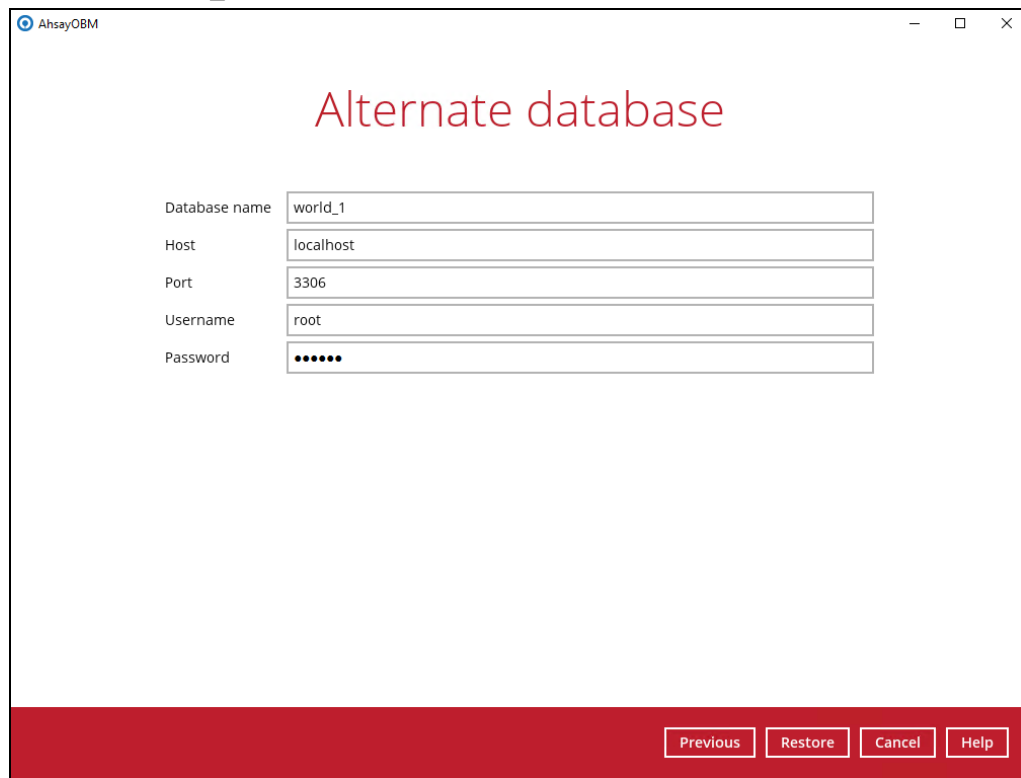
To restore to either original or alternate location please unselect the MySQL data node and select the databases only.

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

The screenshot shows the 'Choose Where The Databases To Be Restored' window. It has a section 'Restore databases to' with two radio buttons: 'Original location' (selected) and 'Alternate location'. Below this is a link 'Show advanced option'. At the bottom right, there are buttons for 'Previous', 'Restore', 'Cancel', and 'Help'.

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**



AhsayOBM

## Alternate database

Database name: world\_1

Host: localhost

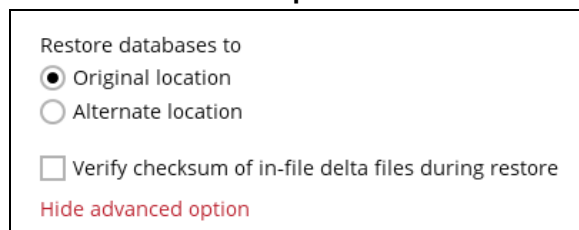
Port: 3306

Username: root

Password: .....

Previous Restore Cancel Help

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



Restore databases to

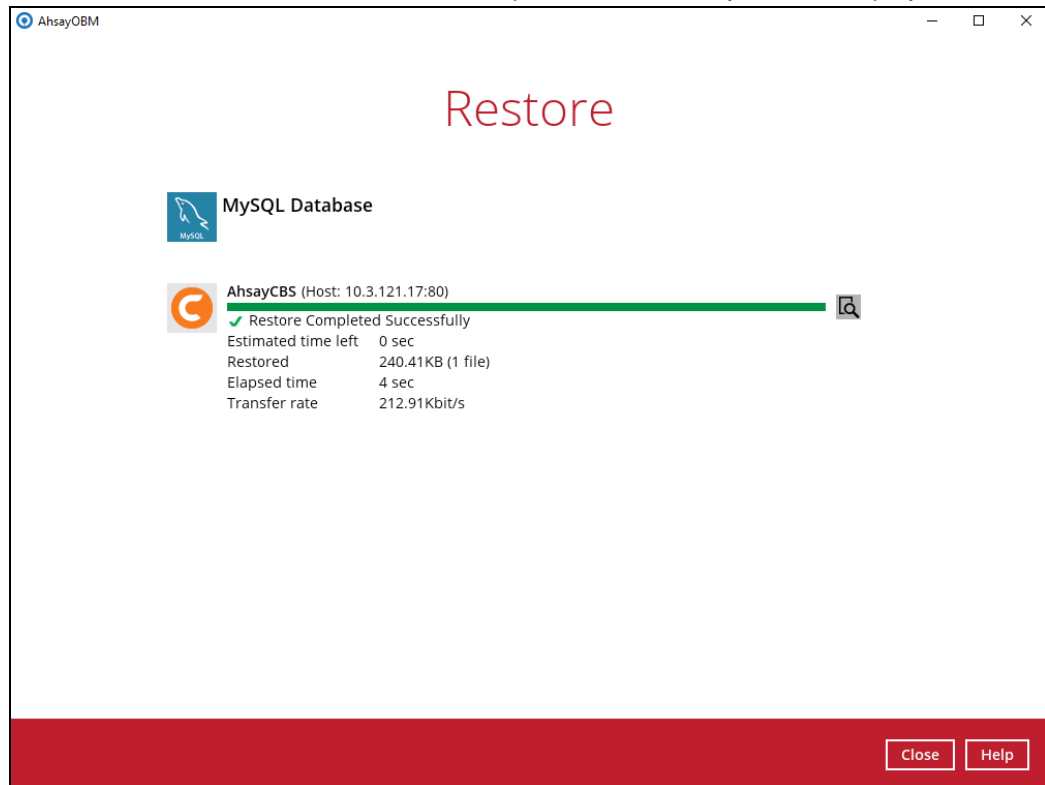
☒ Original location

☐ Alternate location

☐ Verify checksum of in-file delta files during restore

[Hide 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)

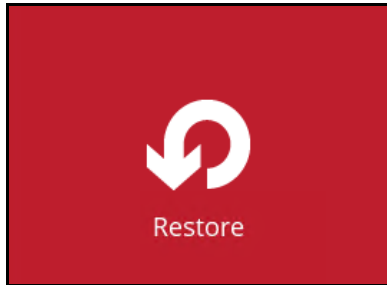
mysql>

```

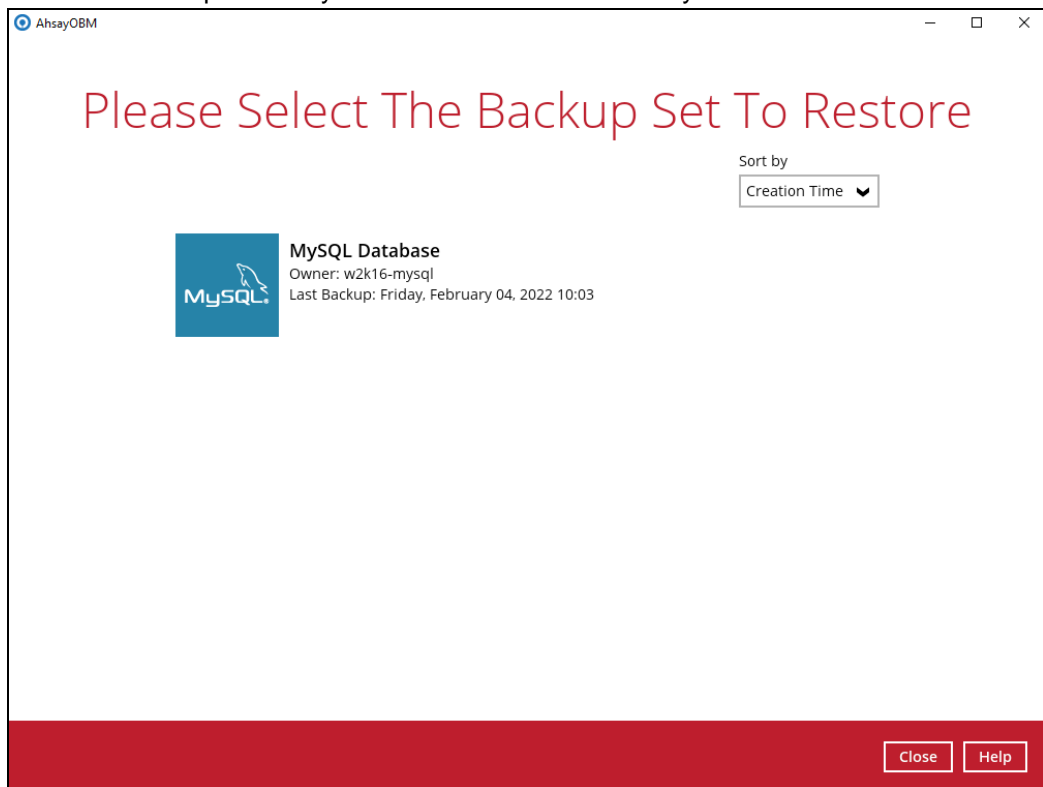
## 6.3 Manual MySQL Database Restore

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

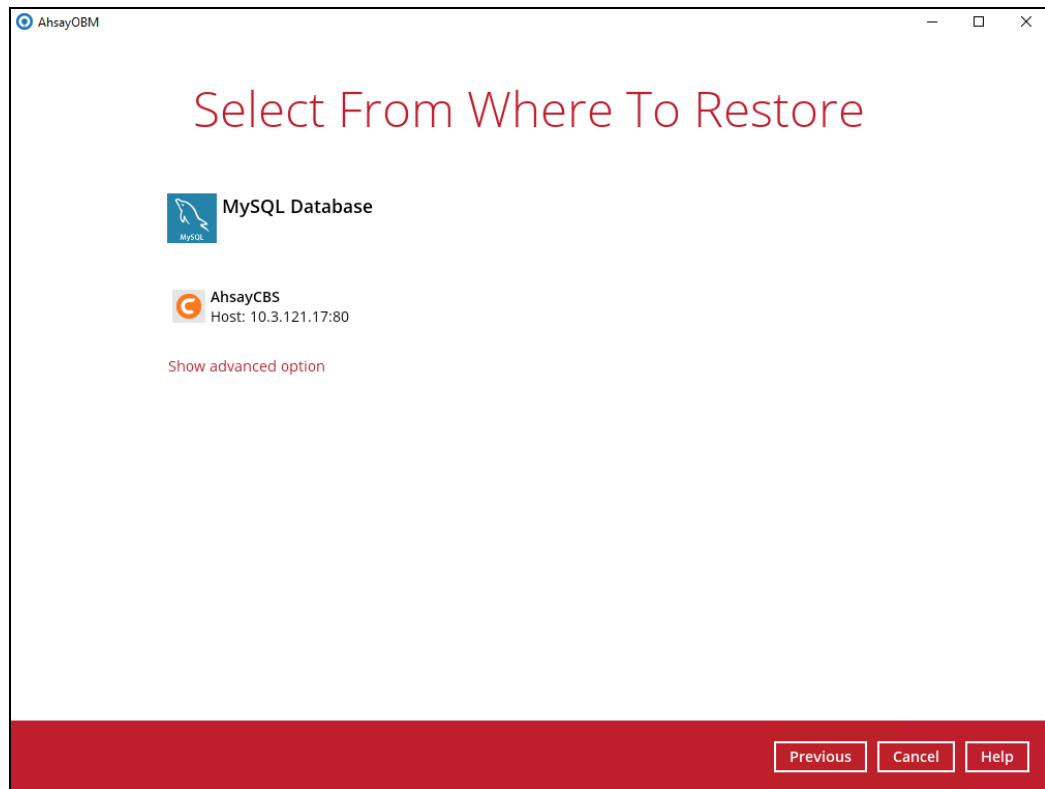
1. In the AhsayOBM main interface, click the **Restore** icon.



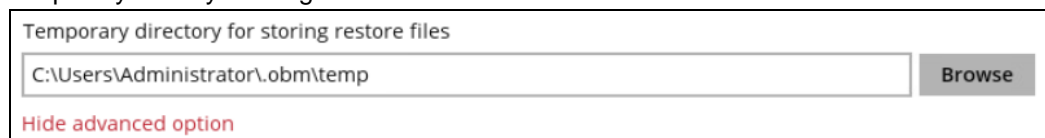
2. Select the backup set that you would like to restore the MySQL Database from.



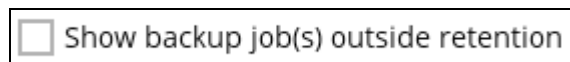
3. Select the storage destination that contains the MySQL databases that you would like to restore from.



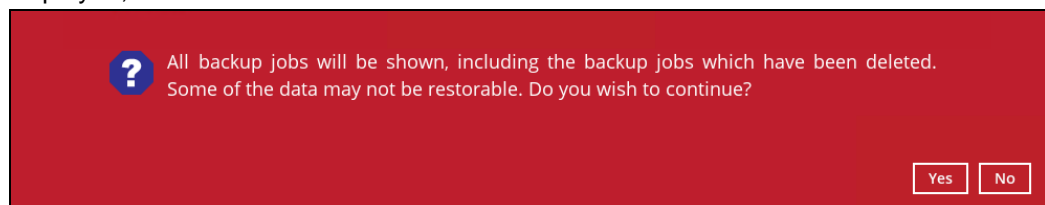
You may configure the **Temporary directory for storing restore files** by clicking **Show advanced option**. This will allow you to select the directory that will be used to store temporary files by clicking the **Browse** button.



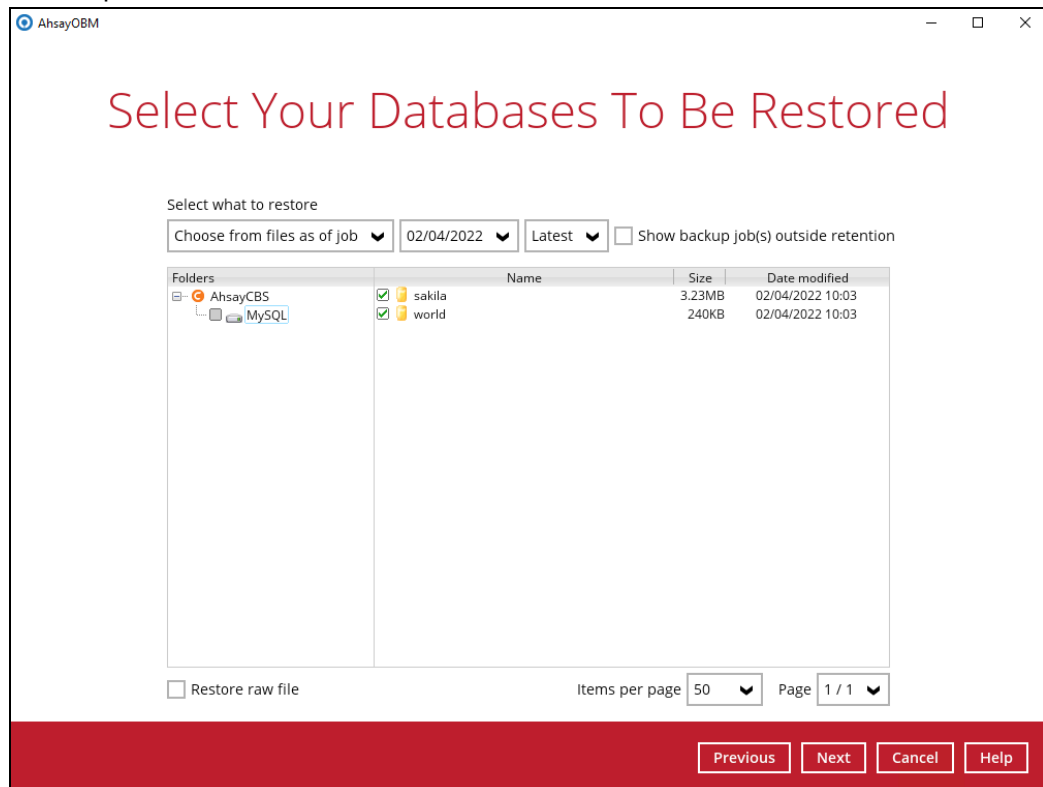
4. Tick **Show backup job(s) outside retention** if you want all backup jobs to be displayed, even the deleted ones.



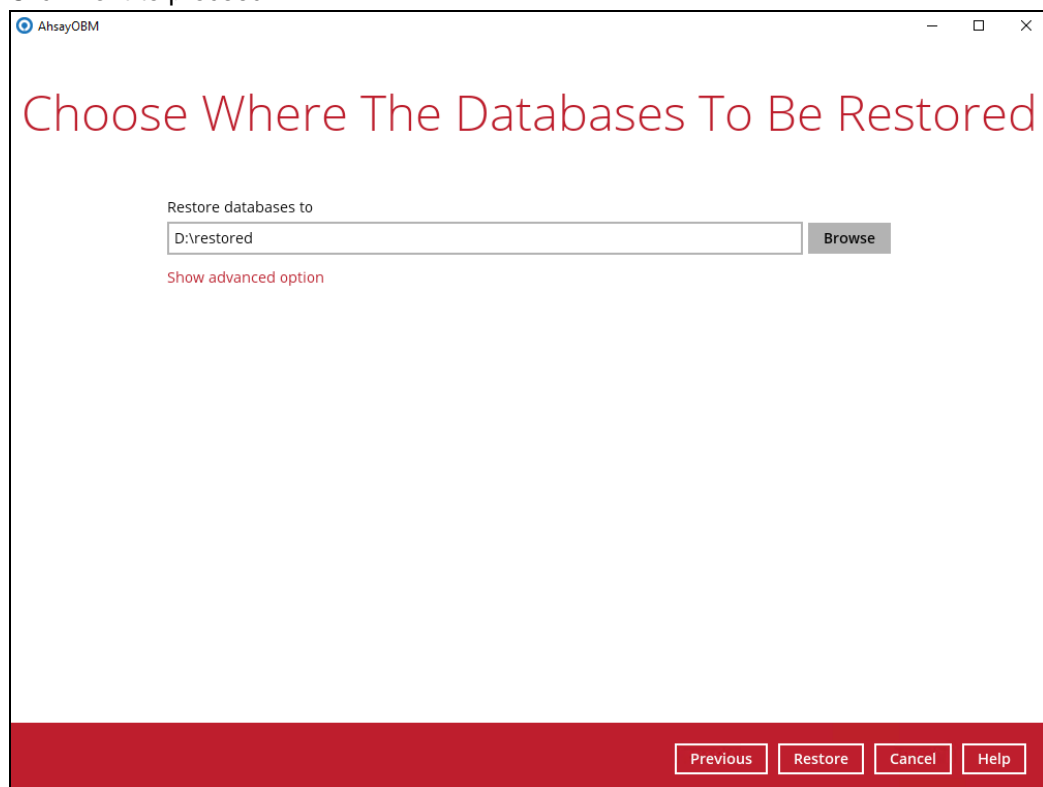
Once ticked, this message will be displayed. Click **Yes** if you want all backup jobs to be displayed, otherwise click **No**.



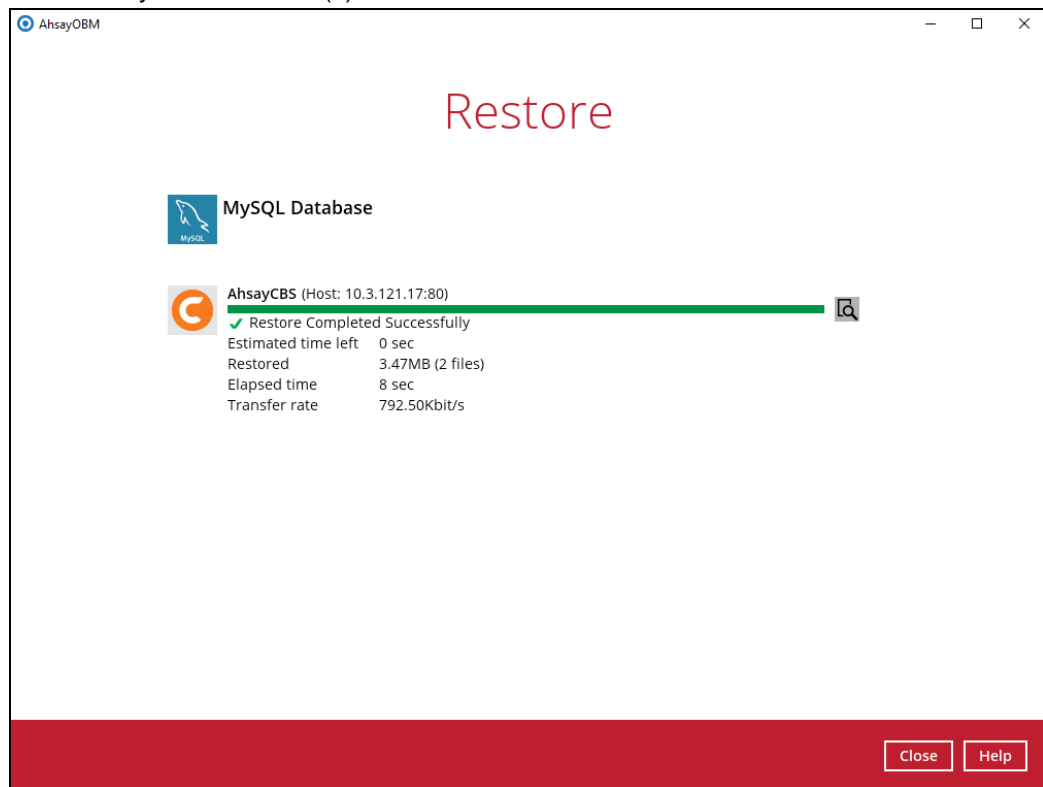
5. Select to restore the MySQL database(s) from a specific backup job then select the files or folders that you would like to restore and select the **Restore raw file** option. Click **Next** to proceed.



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

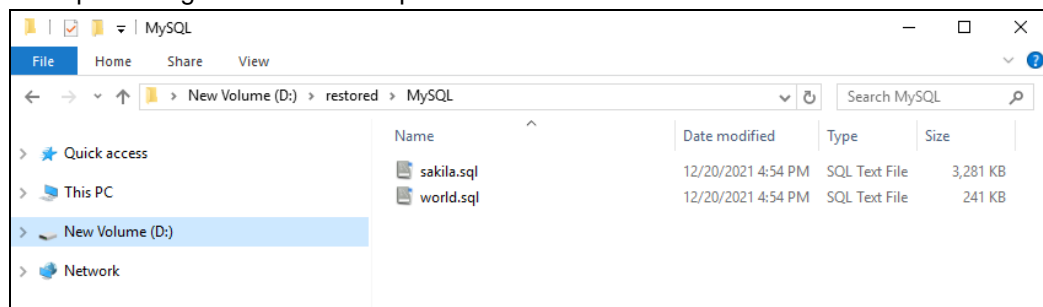


7. After the MySQL database(s) has been restored.



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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rights reserved.

Oracle is a registered trademark of Oracle Corporation 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 |
| 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](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.