Ahsay Online Backup Manager v8

Oracle Database Backup and Restore Guide for Windows

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Revision History

Date	Descriptions	Type of modification
25 January 2021	Added Ch. 1.3; Modified the requirements in Ch. 2; Added steps in logging in to AhsayOBM in Ch. 5; Added optional settings (i.e., archived log deletion and compression type) in Ch. 6; Modified the overview on the backup process in Ch. 7	New / Modifications
18 February 2021	Added examples for Oracle 18c and added screenshot for restore in Ch. 9.3	Modifications
12 March 2021	Added Appendix A and B	New / Modifications
7 April 2021	Updated Ch. 7; Added sub-chapters for the detailed process diagrams in Ch. 7.3, 7.4, 7.4.1, 7.4.2 and 7.5	New / Modifications
11 October 2021	Updated login instructions in Ch. 5; Added supported Windows Server version in Ch. 2.8.1	New / Modifications

Table of Contents

1 Overview

1.1 What is this software?

Ahsay brings you specialized client backup software, namely AhsayOBM, to provide a comprehensive backup solution for your Oracle Database Server. The Oracle Database Server module of AhsayOBM provides you with a set of tools to protect your Oracle Server with both full database and archived log backups while your database is online.

1.2 System Architecture

Below is the system architecture diagram illustrating the major elements involved in the backup process among the Oracle 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 using AhsayOBM as a client backup software.
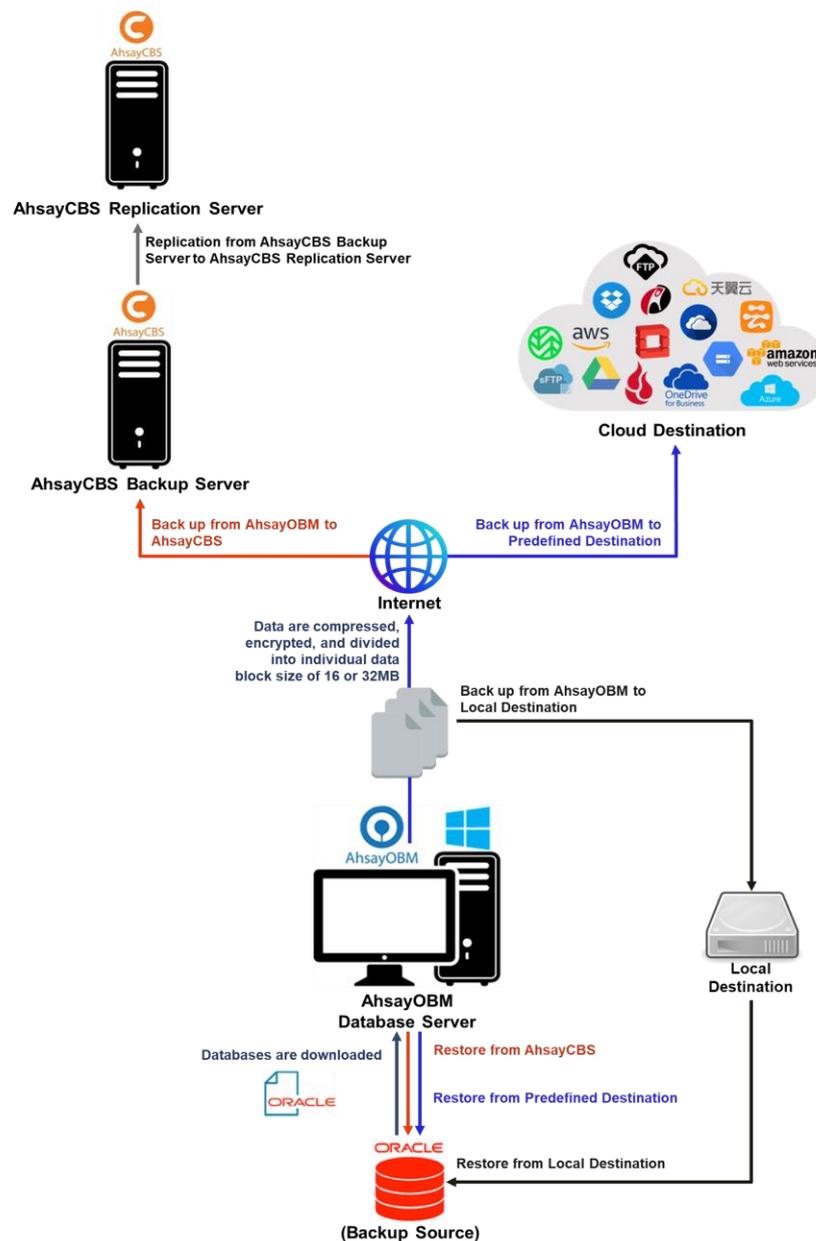
1.3 Oracle Database Backup Mode

Ahsay Oracle database and archived log backups use a spooling method to make a consistent snapshot of the database for backup.

For each database backup job, AhsayOBM will trigger Oracle to spool or make a copy of the following files to the temporary folder:

- Database files (.DBF)
- Archived Log files
- Control files (.CTL)
- Init.ora file
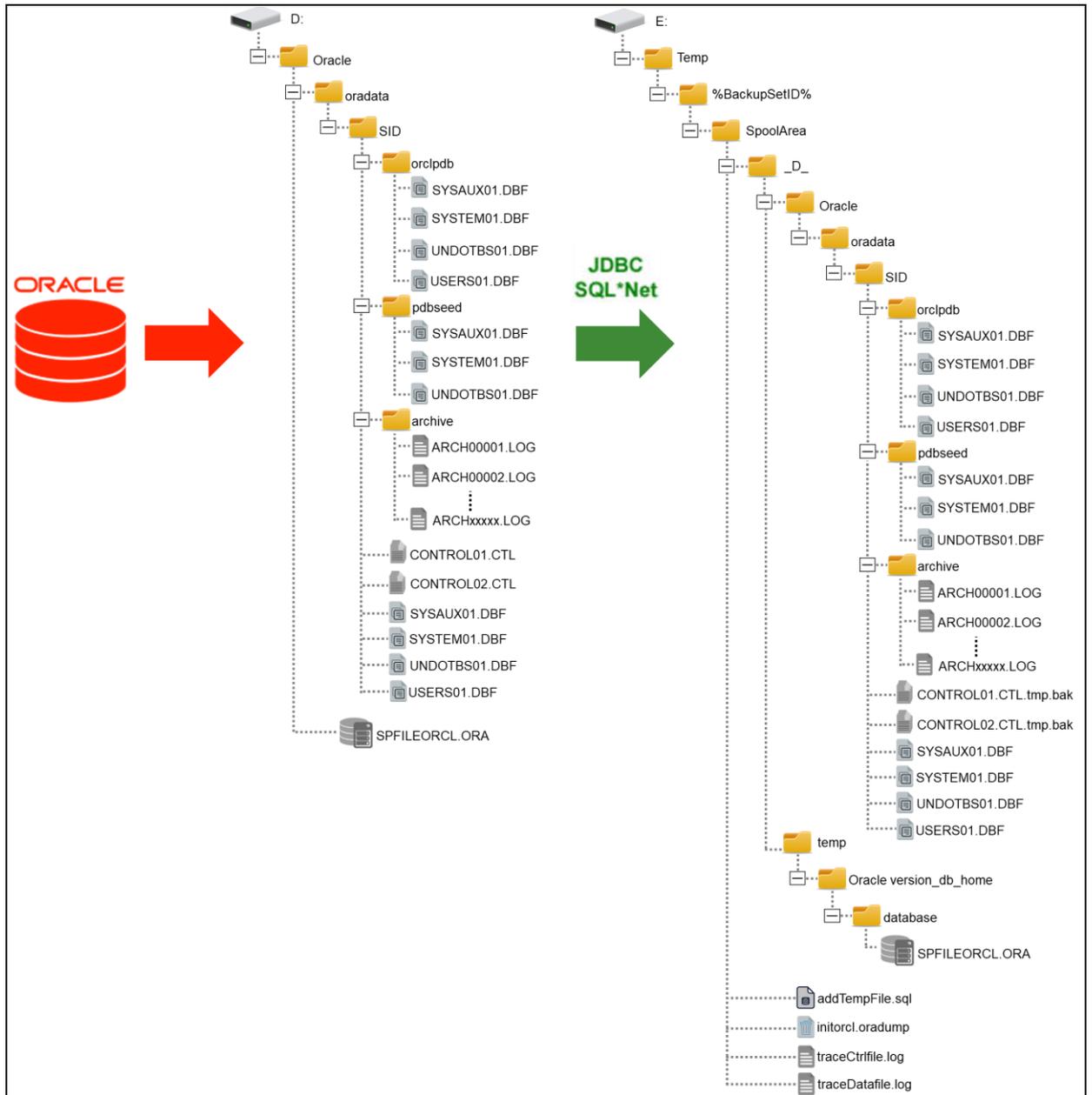
2 Requirements

2.1 Hardware Requirement

Refer to the following article for the list of hardware requirements for AhsayOBM:
[FAQ: Ahsay Hardware Requirement List (HRL) for version 8.1 or above](#)

2.2 Software Requirement

Refer to the following article for the list of supported operating systems and application versions:
[FAQ: Ahsay Software Compatibility List (SCL) for version 8.1 or above](#)

2.3 AhsayOBM Installation

Make sure the latest version of AhsayOBM is installed directly on the machine where the Oracle database server is hosted.

> **NOTE**
> Backup and restore of Oracle database(s) running on a remote machine is not supported.

2.4 AhsayOBM Add-On Module Configuration

Make sure the Oracle Database Server add-on module is enabled on your AhsayOBM user account.

Please contact your backup service provider for more details.
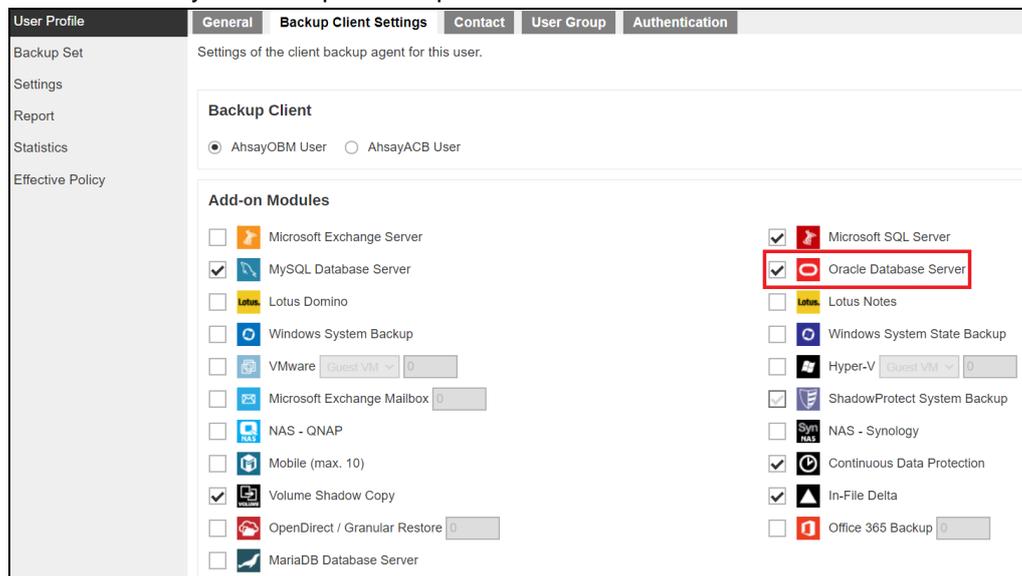
2.5 Backup Quota Requirement

Make sure that your AhsayOBM user account has enough storage quota assigned to accommodate the storage of Oracle database server backup set and retention policy.

2.6 Java Heap Size

The default Java heap size setting on AhsayOBM is 2048MB. For Oracle database backup, 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 the amount of free memory available on your Oracle server.

For details on how to modify the Java heap size setting of AhsayOBM/AhsayACB, refer to the following article:

2.7 Temporary Directory Folder

The Temporary directory folder is used by AhsayOBM during a backup job as the storage of:

- The spooled Oracle database(s) and archived log files

- Any incremental or differential delta files generated

It is strongly recommended that the temporary directory folder is located on a local drive with enough free disk space to be used by the spooled databases and archived log files. The temporary folder should **not** be located on the Windows System C:\ drive or Oracle Home drive.

NOTE

The calculation of disk space required on the drive where the temporary folder is located is as follows:

(Total Database Size * Delta Ratio) * number of backup destinations = **Minimum Free Space Required**

Example:

If the default Delta ratio is 50% for in-file delta, and if the total Oracle database size is 1TB and there is only one backup destination, the minimum free space needed on the drive where the temporary directory folder is located = 1.5TB:

1TB = Total Oracle database size

500GB = Total maximum size of incremental or differential delta files generated

To obtain the size of the data files on the Oracle database instance, use the Oracle RMAN REPORT SCHEMA feature and sum up the total "List of Permanent Datafiles" by running the following command.

NOTE: The values shown are just examples and might be different on your Oracle instance.

```
C:\Users\Administrator>set ORACLE_SID=orcl

C:\Users\Administrator>rman target /

Recovery Manager: Release 19.0.0.0.0 - Production on Thu Oct 29 18:29:44 2020
Version 19.3.0.0.0

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connected to target database: ORCL (DBID=1562659286)


RMAN> report schema;

using target database control file instead of recovery catalog
Report of database schema for database with db_unique_name ORCL

List of Permanent Datafiles
===========================
File Size(MB) Tablespace        RB segs  Datafile Name
---- ------- -----------       -------- ----------------
1    910     SYSTEM            YES      D:\ORACLE\ORADATA\ORCL\SYSTEM01.DBF
3    920     SYSAUX            NO       D:\ORACLE\ORADATA\ORCL\SYSAUX01.DBF
4    60      UNDOTBS1          YES      D:\ORACLE\ORADATA\ORCL\UNDOTBS01.DBF
5    260     PDB$SEED:SYSTEM   NO       D:\ORACLE\ORADATA\ORCL\PDBSEED\SYSTEM01.DBF
6    280     PDB$SEED:SYSAUX   NO       D:\ORACLE\ORADATA\ORCL\PDBSEED\SYSAUX01.DBF
7    5       USERS             NO       D:\ORACLE\ORADATA\ORCL\USERS01.DBF
8    100     PDB$SEED:UNDOTBS1 NO       D:\ORACLE\ORADATA\ORCL\PDBSEED\UNDOTBS01.DBF
9    260     ORCLPDB:SYSTEM    NO       D:\ORACLE\ORADATA\ORCL\ORCLPDB\SYSTEM01.DBF
10   300     ORCLPDB:SYSAUX    NO       D:\ORACLE\ORADATA\ORCL\ORCLPDB\SYSAUX01.DBF
```

```
11    100        ORCLPDB:UNDOTBS1    NO        D:\ORACLE\ORADATA\ORCL\ORCLPDB\UNDOTBS01.DBF
12    5          ORCLPDB:USERS       NO        D:\ORACLE\ORADATA\ORCL\ORCLPDB\USERS01.DBF

List of Temporary Files
=======================
File Size(MB) Tablespace    Maxsize(MB) Tempfile Name
---- -------- -----------   ----------- -------------------
1    32       TEMP          32767       D:\ORACLE\ORADATA\ORCL\TEMP01.DBF
2    36       PDB$SEED:TEMP 32767       D:\ORACLE\ORADATA\ORCL\PDBSEED\TEMP012020-03-
12_18-17-27-260-PM.DBF
3    128      ORCLPDB:TEMP  32767       D:\ORACLE\ORADATA\ORCL\ORCLPDB\TEMP01.DBF


RMAN>
```

2.8 Windows Requirements

Ensure that the following Windows requirements and conditions are met.

2.8.1 Supported Windows Server Version

Oracle 19c (from v8.5.0.63 or above)

The backup of Oracle 19c is supported on the following Windows Server version:

Windows Server 2022 *	**Windows Server 2016**
Windows Server 2019	**Windows Server 2012 R2**

* Supported on AhsayOBM v8.5.4.80 or above

Oracle 18c (from v8.5.0.77 or above)

The backup of Oracle 18c is supported on the following Windows Server version:

Windows Server 2016	**Windows Server 2012**
Windows Server 2012 R2	

Oracle 12c

The backup of Oracle 12c is supported on the following Windows Server version:

Windows Server 2012 R2	**Windows Server 2008 R2**
Windows Server 2012	**Windows Server 2008**

2.8.2 Windows User Account Permission

The Windows user account must be a member of the following security groups:

- Administrator
- ORA_DBA
- ORA_OraDB19Home1_SYSBACKUP
- ORA_OraDB19Home1_SYSDG
- ORA_OraDB19Home1_SYSKM

To verify, click the start menu and search for "**Computer Management**". Open the application. Locate the Oracle security groups through *Computer Management (Local)>System Tools>Locals Users and Groups>Users*. Right-click the Administrator and select **Properties**.
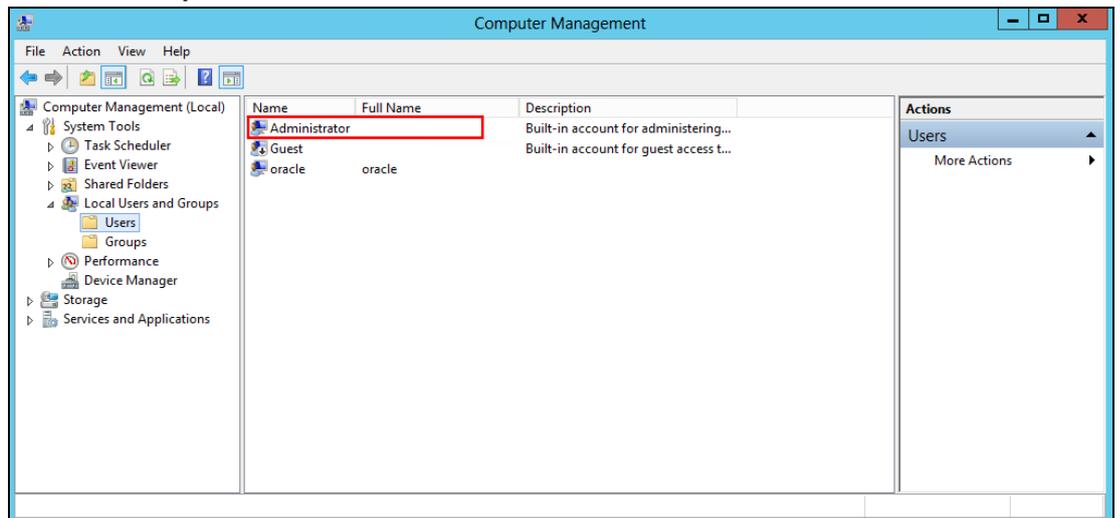
Click the **Member Of** tab to see the list of Oracle security groups.
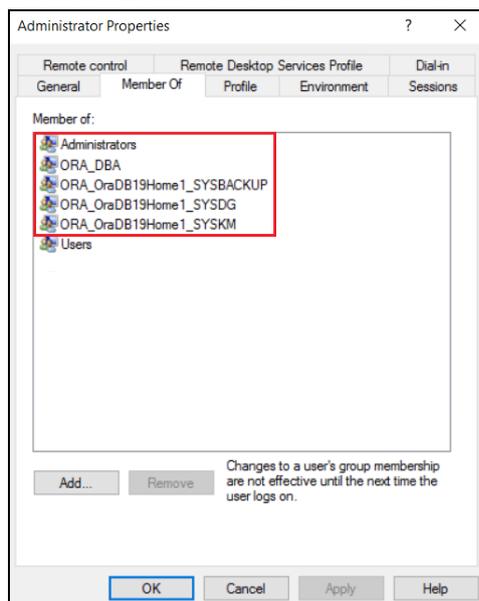
2.8.3 Oracle Database-related Windows Services

Ensure that all Oracle database-related services are started:

- OracleJobSchedulerSID
- OracleOraDB19Home1MTSRecoveryService
- OracleOraDB19Home1TNSListener
- OracleRemExecServiceV2
- OracleServiceSID

To verify, click the start menu and search for "**Services**". Look for the Oracle database-related services. Their statuses should be "Running".
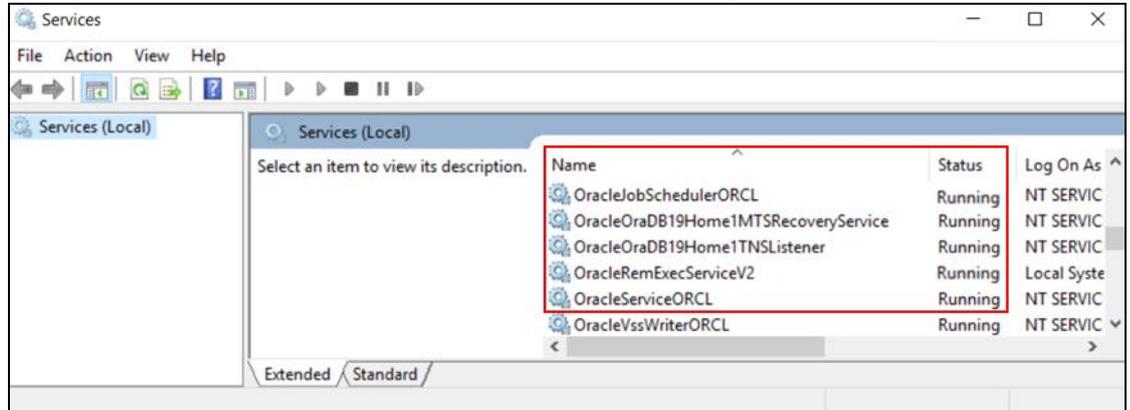
2.9 Oracle Backup Requirements

Ensure that the following requirements and conditions on the Oracle database server are met.

NOTE: Please consult the Oracle database administrator before making any changes.

2.9.1 Oracle Tools

Although the following tools are usually installed by default on all Oracle database installations, ensure that the following tools are installed on the Oracle database server, and they are functioning correctly.

- **RMAN (Recovery manager)** - is required by AhsayOBM for both full database and archive log backups.

  To verify if RMAN is installed on the Oracle database server and is working properly, run the following command.

  Example of RMAN running in Oracle 19c

```
C:\Users\Administrator>set ORACLE_SID=orcl

C:\Users\Administrator>rman target /

Recovery Manager: Release 19.0.0.0.0 - Production on Thu
Nov 12 09:36:48 2020
Version 19.3.0.0.0

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All rights reserved.

connected to target database: ORCL (DBID=1562659286)

RMAN>
```

- **SQL*Plus** – is required by AhsayOBM during Oracle Backup Set creation, backup and restore.

  To verify if SQL*Plus is installed on the Oracle database server and is working properly, run the following command *sqlplus / as sysdba*.

  Example of SQL*Plus running in Oracle 19c

```
C:\Users\Administrator>sqlplus / as sysdba


SQL*Plus: Release 19.0.0.0.0 - Production on Thu Nov 12
09:41:15 2020
Version 19.3.0.0.0


Copyright (c) 1982, 2019, Oracle.  All rights reserved.


Connected to:


Oracle Database 19c Enterprise Edition Release 19.0.0.0.0
- Production
Version 19.3.0.0.0


SQL>
```

2.9.2   Oracle Internal Process Checking

For the Oracle instance to run smoothly, ensure that the following internal processes are working well:

- **PMON** (Process Monitor)
- **PSP0** (Process Spawner Process)
- **MMAN** (Memory Manager Process)
- **DBW0** (Database Writer)
- **ARC0** (Archive Process (or thread on Windows))
- **LGWR** (Log Writer)
- **CKPT** (Checkpoint process (thread on Windows) that runs by default on Windows)
- **SMON** (System Monitor)
- **RECO** (Distributed Recovery Background Process)

To check this, click the start menu and search for "**cmd**". Open the command prompt as administrator.

Run the SQLPlus to connect to the Oracle database server. Once connected, use the following SQL query to verify if the internal processes are running.

```
C:\Users\Administrator>sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Wed Oct 14
14:07:32 2020

Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle.  All rights reserved.

Connected to:

Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
```

```
Version 19.3.0.0.0

SQL> select name, description from v$bgprocess where PADDR <>
'00';

NAME    DESCRIPTION

-----   ----------------------------------------------------------

PMON    process cleanup

CLMN    process cleanup

PSP0    process spawner 0

VKTM    Virtual Keeper of TiMe process

GEN0    generic0

MMAN    Memory Manager

W007    space management slave pool

GEN1    generic1

DIAG    diagnosibility process

DBRM    DataBase Resource Manager

VKRM    Virtual sKeduler for Resource Manager


NAME    DESCRIPTION

-----   ----------------------------------------------------------

SVCB    services background monitor

PMAN    process manager

DIA0    diagnosibility process 0

DBW0    db writer process 0

LGWR    Redo etc.

CKPT    checkpoint

SMON    System Monitor Process

LG00    Log Writer Slave

SMCO    Space Manager Process

LG01    Log Writer Slave

RECO    distributed recovery


NAME    DESCRIPTION

-----   ----------------------------------------------------------

W000    space management slave pool

LREG    Listener Registration

W001    space management slave pool
```

```
PXMN  PX Monitor
FENC  IOServer fence monitor
P000  Parallel query slave
MMON  Manageability Monitor Process
MMNL  Manageability Monitor Process 2
D000  Dispatchers
S000  Shared servers
TMON  Transport Monitor

NAME   DESCRIPTION

----- -------------------------------------------------------
P001  Parallel query slave
M003  MMON slave class 1
P002  Parallel query slave
TT00  Redo Transport
ARC0  Archival Process 0
TT01  Redo Transport
ARC1  Archival Process 1
ARC2  Archival Process 2
ARC3  Archival Process 3
TT02  Redo Transport
W002  space management slave pool

NAME   DESCRIPTION

----- -------------------------------------------------------
W003  space management slave pool
AQPC  AQ Process Coord
W004  space management slave pool
P003  Parallel query slave
P004  Parallel query slave
P005  Parallel query slave
P006  Parallel query slave
P007  Parallel query slave
M005  MMON slave class 1
QM02  QMON MS
W005  space management slave pool

NAME   DESCRIPTION
```

```
----- ----------------------------------------------------

M001  MMON slave class 1

Q003  QMON MS

M000  MMON slave class 1

CJQ0  Job Queue Coordinator

M002  MMON slave class 1

W006  space management slave pool

Q00L  QMON MS

62 rows selected.

SQL>
```

2.9.3 Supported Oracle Database Server Version

AhsayOBM supports the following versions of Oracle database server:

- **Oracle 19c**
- **Oracle 18c**
- **Oracle 12c**

To verify if the Oracle database server version is supported by AhsayOBM, use the following SQL query.

Oracle 19c

```
C:\Users\Administrator>sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Thu Nov 12
12:04:25 2020

Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle.  All rights reserved.

Connected to:

Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production

Version 19.3.0.0.0

SQL>
```

Oracle 18c

```
C:\Users\Administrator>sqlplus / as sysdba

SQL*Plus: Release 18.0.0.0.0 - Production on Mon Jan 4 11:06:36
2021

Version 18.3.0.0.0
```

```
Copyright (c) 1982, 2018, Oracle.  All rights reserved.

Connected to:

Oracle Database 18c Enterprise Edition Release 18.0.0.0.0 -
Production

Version 18.3.0.0.0

SQL>
```

Oracle 12c

```
C:\Users\Administrator>sqlplus / as sysdba

SQL*Plus: Release 12.1.0.1.0 - Production on Mon May 26
15:33:44 2019

Version 12.1.0.1.0

Copyright (c) 1982, 2013, Oracle.  All rights reserved.
Connected to:

Oracle Database 12c Enterprise Edition Release 12.1.0.1.0 -
Production

Version 12.1.0.1.0

SQL>
```

2.9.4   System Identifier (SID)

Make sure the System Identifier (SID) is correct by using the following SQL query.

```
SQL> select instance from v$thread;

INSTANCE
---------------------------------------------------------------
orcl

SQL>
```

NOTE: The instance shown is just an example. The SID may be different on your Oracle instance.

Another way to verify the SID is by checking the **init.ora** file. Go to the **D:\oracle\admin\orcl\pfile** directory and open the **init.ora** file using a text editor (e.g. Notepad++).

```
############################################
# Database Identification
############################################
db_name="orcl"
```

2.9.5 Oracle_Home Path

Oracle 19c

The Oracle_Home path can be obtained by using the following SQL query. The Oracle_Home path for Oracle 19c is "**D:\app\oracle\19.0.0\dbhome_1**".

```
SQL> SELECT file_spec FROM DBA_LIBRARIES WHERE library_name =
     'DBMS_SUMADV_LIB';

FILE_SPEC
---------------------------------------------------------------

D:\app\oracle\19.0.0\dbhome_1\bin\oraqsmashr.dll

SQL>
```

NOTE: The directory path shown is just an example. The Oracle_Home path may be different on your Oracle instance.

Another way to verify the Oracle_Home path is by checking the **init.ora** file. Go to the **D:\oracle\admin\orcl\pfile** directory and open the **init.ora** file using a text editor (e.g. Notepad++).

```
###########################################
# File Configuration
###########################################
control_files=("D:\app\oracle\oradata\ORCL\control01.ctl",
"D:\app\oracle\oradata\ORCL\control02.ctl")
 ###########################################
```

Oracle 18c

The Oracle_Home path can be obtained by using the following SQL query. The Oracle_Home path for Oracle 18c is "**D:\app\oracle\18.0.0\dbhome_1**".

```
SQL> SELECT file_spec FROM DBA_LIBRARIES WHERE library_name =
     'DBMS_SUMADV_LIB';

FILE_SPEC
---------------------------------------------------------------

D:\app\oracle\18.0.0\dbhome_1\bin\oraqsmashr.dll

SQL>
```

NOTE: The directory path shown is just an example. The Oracle_Home path may be different on your Oracle instance.

Another way to verify the Oracle_Home path is by checking the **init.ora** file. Go to the **D:\oracle\admin\orcl\pfile** directory and open the **init.ora** file using a text editor (e.g., Notepad++).

```
###########################################
# File Configuration
###########################################
control_files=("D:\app\oracle\oradata\orcl18c\control01.ctl",
"D:\app\oracle\oradata\orcl18c\control02.ctl")
 ###########################################
```

Oracle 12c

The Oracle_Home path can be obtained by using the following SQL query. The Oracle_Home path for Oracle 12c is "**D:\app\oracle\product\12.1.0\dbhome_1**".

```
SQL> SELECT file_spec FROM DBA_LIBRARIES WHERE library_name =
     'DBMS_SUMADV_LIB';


FILE_SPEC
--------------------------------------------------------------

D:\app\oracle\product\12.1.0\dbhome_1\bin\oraqsmashr.dll

SQL>
```

NOTE: The directory shown is just an example. The Oracle_Home path may be different on your Oracle instance.

Another way to verify the Oracle_Home path is by checking the **init.ora** file. Go to the **D:\oracle\admin\orcl\pfile** directory and open the **init.ora** file using a text editor (e.g., Notepad++).

```
#########################################
# File Configuration
#########################################
control_files=("D:\app\oracle\oradata\orcl12c\control01.ctl",
"D:\app\oracle\recovery_area\orcl12c\control02.ctl")
db_recovery_file_dest="D:\app\oracle\recovery_area"
db_recovery_file_dest_size=6930m
```

WARNING

If any of the following scenario is encountered, please contact the Oracle database administrator for further assistance:

1. The value of the Oracle_Home path in **init.ora** file does not match the value obtained from the SQL query.

2. The SQL query returns an empty or null value.

Example of an SQL query return with a null value of the Oracle_Home path

```
SQL> SELECT file_spec FROM DBA_LIBRARIES WHERE library_name =
     'DBMS_SUMADV_LIB';

no rows selected

SQL>
```

2.9.6   Database Status

Ensure that the status of Oracle instance is "Open". To check, use the following query.

```
SQL> select instance_name, status from v$instance;

INSTANCE_NAME    STATUS
--------------   ----------------------------------------------
orcl             OPEN

SQL>
```

2.9.7 Archived Log Mode

Ensure that the database instance is in Archived Log mode. To check, use the following command.

```
SQL> archive log list;


Database log mode                    Archive Mode
Automatic archival                   Enabled
Archive destination                  USE_DB_RECOVERY_FILE_DEST
Oldest online log sequence           101
Next log sequence to archive         103
Current log sequence                 103


SQL>
```

NOTE: The values shown are just examples and might be different on your Oracle instance.

2.9.8 Java Installation

Java must be installed on the Oracle Database. To check if Java is installed, use the following SQL query. The status of the **JServer JAVA Virtual Machine** and **Oracle Database Java Packages** should be "VALID".

```
SQL> select comp_name, status from dba_registry;


COMP_NAME                            STATUS
-------------                        ------------


Oracle Database Catalog Views        VALID

Oracle Database Packages and Types   VALID

Oracle Real Application Clusters     OPTION OFF


COMP_NAME                            STATUS
-------------                        ------------


JServer JAVA Virtual Machine         VALID

Oracle XDK                           VALID

Oracle Database Java Packages        VALID


COMP_NAME                            STATUS
-------------                        ------------


OLAP Analytic Workspace              VALID

Oracle XML Database                  VALID

Oracle Workspace Manager             VALID


COMP_NAME                            STATUS
-------------                        ------------


Oracle Text                          VALID
```

```
Oracle Multimedia                           VALID

Spatial                                     VALID


COMP_NAME                                   STATUS
--------------                              ------------

Oracle OLAP API                             VALID

Oracle Label Security                       VALID

Oracle Database Vault                       VALID

15 rows selected.

SQL>
```

<table>
<tr><td align="center">WARNING</td></tr>
<tr><td>If the status of the JServer JAVA Virtual Machine and/or the Oracle Database Java Packages is INVALID, please contact the Oracle database administrator for further assistance.</td></tr>
</table>

2.9.9 JAVASYSPRIV Permission for Oracle System Account

The Oracle **system** account is used by AhsayOBM to connect to the Oracle database server to authenticate the backup and restore process. The following permission must be assigned to the system account. Use the following SQL query to assign.

```
SQL> select * from DBA_ROLE_PRIVS where
upper(grantee)='SYSTEM';

GRANTEE       GRANTED_ROLE          ADM DEL DEF COM INH
-------       ----------            --- --- --- --- ---
SYSTEM        DBA                   NO    YES NO

SYSTEM        JAVASYSPRIV           NO    YES NO


GRANTEE       GRANTED_ROLE          ADM DEL DEF COM INH
-------       ----------            --- --- --- --- ---
SYSTEM        DBA                   NO    YES  NO

SYSTEM        AQ_ADMINISTRATOR_ROLE YES  NO  YES   NO

SQL>
```

If not, grant javasyspriv to the system account by using the following SQL query.

```
SQL> grant javasyspriv to system;

Grant succeeded.

SQL>
```

2.9.10 SYSDBA Privileges for Oracle System Account

To check if the system account has **sysdba** privileges, use the following SQL query.

```
SQL> select * from v$pwfile_users where sysdba='TRUE';

USERNAME SYSDB SYSOP SYSAS SYSBA SYSDG SYSKM ACCOUNT_STATUS
-------- ----- ----- ----- ----- ----- ----- --------------
SYST     TRUE  FALSE FALSE OPEN


SQL>
```

If not, grant **sysdba** to the system account using the following SQL query.

Oracle 19c and Oracle 18c

```
SQL> grant sysdba to system container=ALL;

Grant succeeded.

SQL>
```

Oracle 12c

```
SQL> grant sysdba to system;

Grant succeeded.

SQL>
```

2.9.11 TNS Listener Service

TNS listener service must be started to allow connections to the Oracle database server. To check if the TNS listener service is running, use the *lsnrctl status* command.

If the TNS listener service is not started, use the *lsnrctl start* command to start the service.

Example: A running TNS Listener service on Oracle 19c.

```
C:\Users\Administrator>lsnrctl status

LSNRCTL for 64-bit Windows: Version 19.0.0.0.0 - Production on
 14-OCT-2020 16:45:29

Copyright (c) 1991, 2019, Oracle.  All rights reserved.

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=ora19c-
 w2k16)(PORT=1521)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for 64-bit Windows: Version
 19.0.0.0.0 - Production
Start Date                14-OCT-2020 11:11:04
Uptime                    0 days 5 hr. 34 min. 27 sec
Trace Level               off
Security                  ON: Local OS Authentication
```

```
SNMP                        OFF
Listener Parameter File
  D:\oracle\19.3.0\dbhome\network\admin\listener.ora
Listener Log File         D:\oracle\diag\tnslsnr\ora19c-
  w2k16\listener\alert\log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=ora19c-
  w2k16)(PORT=1521)))

  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\\.\pipe\EXTPROC
  1521ipc)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=ora19c-
  w2k16)(PORT=5500))(Security=(my_wallet_directory=D:\ORACLE\adm
  in\orcl\xdb_wallet))(Presentation=HTTP)(Session=RAW))
Services Summary...
Service "52448234712340b69f274bcc790ecfe0" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
  service...
Service "9400891b61bb4c4c8b3997957ffa8c8e" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
  service...
Service "CLRExtProc" has 1 instance(s).
  Instance "CLRExtProc", status UNKNOWN, has 1 handler(s) for
  this service...
Service "orcl" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
  service...
Service "orclXDB" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
  service...
Service "orclpdb" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
  service...
The command completed successfully

C:\Users\Administrator>
```

NOTE: The values shown are just examples and might be different on your Oracle instance.

2.9.12 Localhost is Resolvable

Verify if the localhost IP 127.0.0.1 on the Oracle database server is resolvable using the command **ping 127.0.0.1** as this will be the IP address that AhsayOBM will use to connect to the Oracle instance.

```
C:\Users\Administrator>ping 127.0.0.1

Pinging 127.0.0.1 with 32 bytes of data:
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 127.0.0.1:
```

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


C:\Users\Administrator>
```

2.9.13 Oracle Port Number

The default Oracle port number is **1521**. To check, use the **netstat** and **tnsping** commands to verify the actual port number.

NETSTAT

```
C:\Users\Administrator>netstat –a|more


Active Connections


Proto    Local Address          Foreign Address         State
TCP      0.0.0.0:135            ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:445            ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:1521           ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:2179           ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:3389           ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:5500           ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:5985           ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:47001          ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:49664          ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:49665          ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:49666          ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:49667          ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:49668          ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:49669          ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:49670          ora19c-w2k16:0          LISTENING
TCP      0.0.0.0:49697          ora19c-w2k16:0          LISTENING
TCP      10.16.10.123:139       ora19c-w2k16:0          LISTENING
TCP      10.16.10.123:2030      ora19c-w2k16:0          LISTENING
TCP      10.16.10.123:3389      192.168.12.1:56719      ESTABLISHED
TCP      10.16.10.123:49671     40.90.189.152:https     ESTABLISHED
TCP      10.16.10.123:49690     40.90.189.152:https     ESTABLISHED
TCP      10.16.10.123:51761     ti-in-f95:https         ESTABLISHED
TCP      127.0.0.1:1521         ora19c-w2k16:51740      ESTABLISHED
TCP      127.0.0.1:51740        ora19c-w2k16:1521       ESTABLISHED
TCP      172.16.10.123:139      ora19c-w2k16:0          LISTENING
-- More  --
```

NOTE: The values shown are just examples and might be different on your Oracle instance.

TNSPING

```
C:\Users\Administrator>tnsping 127.0.0.1


TNS Ping Utility for 64-bit Windows: Version 19.0.0.0.0 –
Production on 14-OCT-2020 16:54:27


Copyright (c) 1997, 2019, Oracle.  All rights reserved.
```

```
Used parameter files:

D:\oracle\19.3.0\dbhome\network\admin\sqlnet.ora

Used EZCONNECT adapter to resolve the alias

Attempting to contact
(DESCRIPTION=(CONNECT_DATA=(SERVICE_NAME=))(ADDRESS=(PROTOCOL=t
cp)(HOST=127.0.0.1)(PORT=1521)))

OK (10 msec)

C:\Users\Administrator>
```

3 Best Practices and Recommendations

1. To enable a full Oracle database instance recovery, all databases including **SYSAUX**, **SYSTEM**, **UNDOTBS1**, **USERS** and related application databases except for "TEMP" must be selected in the backup source when creating the backup set. Otherwise, without a backup of these databases, a full Oracle database instance recovery will NOT be possible.

2. Full database backup or incremental / differential database backups should be scheduled when system activity is low to achieve the best possible performance and to minimize the impact on the database server performance (for example: scheduled to run on weekends).

3. For **Archived Log backups**, the backup frequency should be dependent on the number of transactions or activity on the database. Databases with more transaction should run archived log backup more frequently (for example: instead of a daily backup, it should be run multiple times a day).

4. To provide **maximum data protection** and **flexible restore options**, it is recommended to configure:

    - At least one offsite or cloud destination
    - At least one local destination for fast recovery

5. Perform **test restores** periodically to ensure that your backup is set up and data are backed up properly.

    Performing recovery tests can also help identify potential issues or gaps in your recovery plan. It is important that you do not try to make the test easier, as the objective of a successful test is not to demonstrate that everything is flawless. There might be flaws identified in the plan throughout the test and it is important to identify those flaws.

6. The **Restore Raw File** option is for advanced Oracle database administrators and should only be used if you have in-depth knowledge and understanding of Oracle database engine, Oracle database schema, knowledge of the database server and network infrastructure. Therefore, it is not recommended to use this restore option as there is need to utilize additional Oracle techniques and scripts to facilitate a manual database restore.

    Please refer to the following articles of Oracle Database Backup and Recovery User's Guide for details:

    Oracle 19c
    https://docs.oracle.com/en/database/oracle/oracle-database/19/bradv/index.html

    Oracle 18c
    https://docs.oracle.com/en/database/oracle/oracle-database/18/bradv/index.html

    Oracle 12c
    https://docs.oracle.com/database/121/BRADV/title.htm

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

4 Limitations

1. AhsayOBM does not support Oracle Express Edition or Oracle XE.

2. Backup and restore of Oracle database(s) running on a remote machine is not supported.

3. AhsayOBM Oracle database module only supports backup and/or restore of standalone Oracle installations. The following advanced Oracle database setups are not supported:

   - Clusterware or RAC (Real Application Clusters)
   - ASM (Automatic Storage Management)
   - Data Guard etc.

4. An AhsayOBM Oracle database backup set supports the backup and restore of one Oracle instance. For Oracle database server's setup with multiple instances, a separate backup set is required for each instance.

5. To recover a full Oracle database instance, the following items must be selected in the backup source:

   - Oracle Database Server must be selected.

   - All databases including **SYSAUX**, **SYSTEM**, **UNDOTBS1**, **USERS** and related application databases except for "TEMP" must be selected in the backup source when creating the backup set. Otherwise, without a backup of these databases, a full Oracle database instance recovery will NOT be possible.
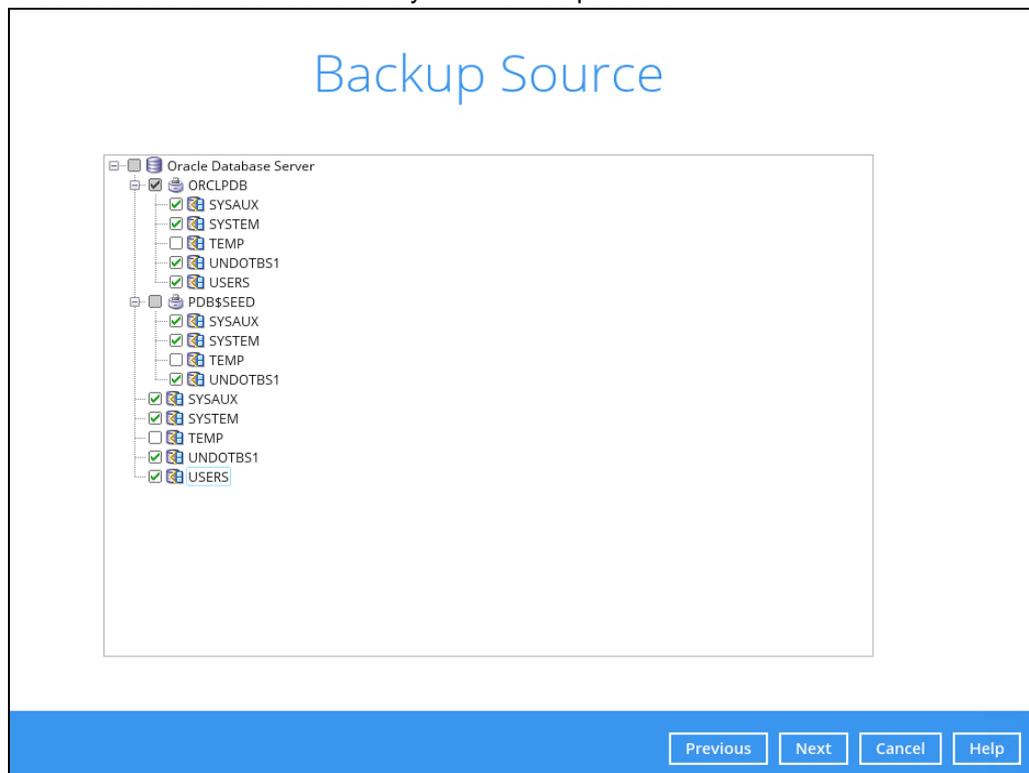
NOTE: Even if the "TEMP" is selected in the backup source, this database will be skipped during a backup job.

5 Logging in to AhsayOBM

Starting with AhsayOBM v8.5.0.0, there are several login scenarios depending on the setting of the account you are using. The different scenarios will be discussed below:

- ◉ [Login without 2FA](#)
- ◉ [Login with 2FA using authenticator app](#)
- ◉ [Login with 2FA using Twilio](#)

5.1 Login to AhsayOBM without 2FA

1. Log in to the AhsayOBM application user interface. Double-click the AhsayOBM desktop icon to launch the application.

2. Enter the **Login name** and **Password** of your AhsayOBM account, then click **OK** to log in.

3. After successful login, the following screen will appear.

5.2 Login to AhsayOBM with 2FA using authenticator app

1. Log in to the AhsayOBM application user interface. Double-click the AhsayOBM desktop icon to launch the application.

2. Enter the **Login name** and **Password** of your AhsayOBM account, then click **OK** to log in.

3. One of the two authentication methods will be displayed to continue with the login:

- [Push Notification and TOTP when using Ahsay Mobile app](#)

- [TOTP only](#)

  ➢ If **Ahsay Mobile app** was configured to use Push Notification and TOTP, then there are two 2FA modes that can be used:

    • Push Notification (default)

      Push notification is the default 2FA mode. Accept the login request on Ahsay Mobile to complete the login.
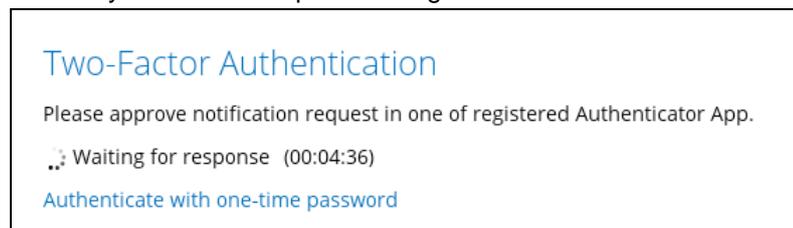
Example of the login request sent to the Ahsay Mobile app.
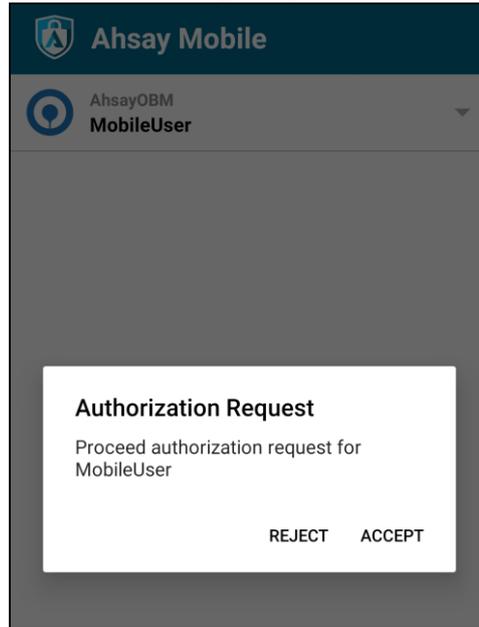
- TOTP

  However, if push notification is not working or you prefer to use one-time passcode, click the Authenticate with one-time password link, then input the one-time passcode generated by Ahsay Mobile to complete the login.
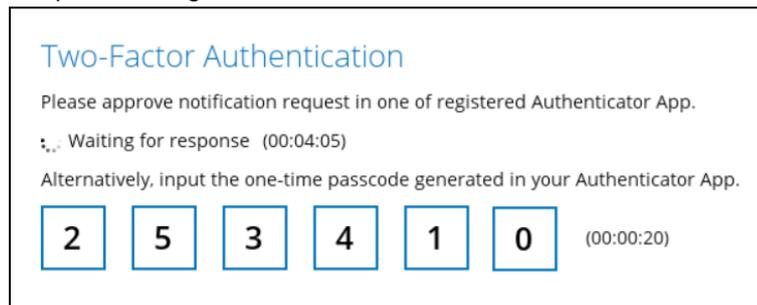
  Example of the one-time passcode generated in the Ahsay Mobile app.
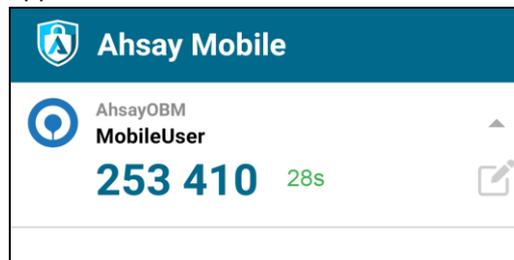
➢ TOTP only

Enter the one-time passcode generated by the authenticator app to complete the login.

Two-Factor Authentication

Enter one-time passcode generated from authenticator app

| 5 | 9 | 4 | 6 | 2 | 1 | (00:00:21) |
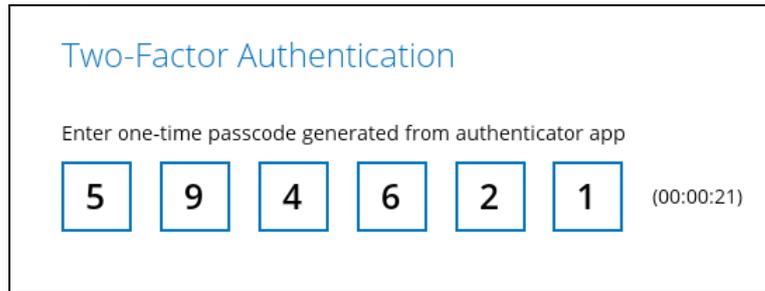
Example of the one-time passcode generated in the third-party authenticator app Microsoft Authenticator.

AhsayOBM
MobileUser

One-time passwords enabled
You can use the one-time password codes generated by this app to verify your sign-ins

One-time password code
29 **594 621**

4. After successful login, the following screen will appear.

AhsayOBM   MobileUser   English

Backup   Backup Sets   Report

Restore   Settings   Utilities
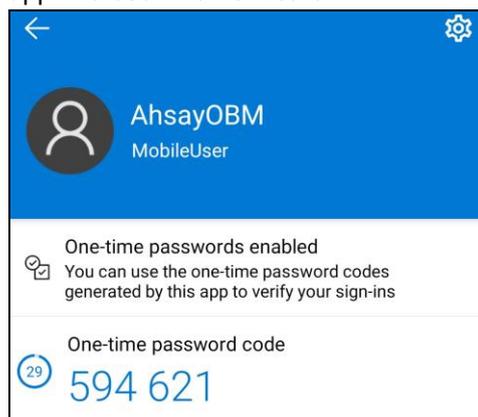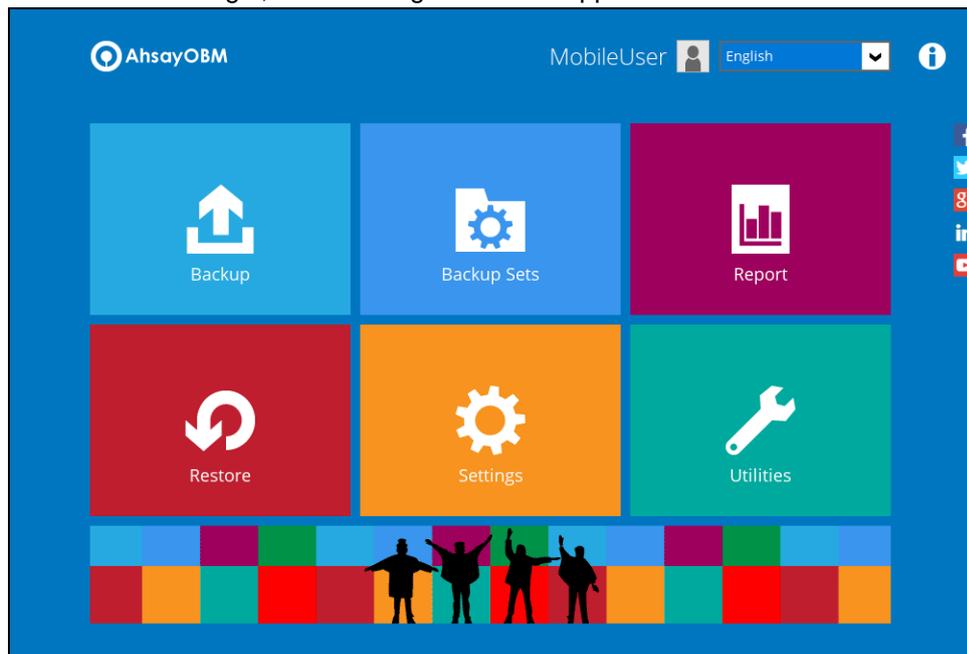
NOTE

If you have trouble logging in using the authenticator app, please refer to Chapter 9 of the AhsayOBM Quick Start Guide for Windows for more information.

5.3 Login to AhsayOBM with 2FA using Twilio

1. Log in to the AhsayOBM application user interface. Double-click the AhsayOBM desktop icon to launch the application.

2. Enter the **Login name** and **Password** of your AhsayOBM account, then click **OK** to log in.

3. Select your phone number.

4. Enter the passcode and click **Verify** to login.

5. After successful login, the following screen will appear.

6 Creating an Oracle Database Backup Set

1. Click the Backup Sets icon on the AhsayOBM main interface.
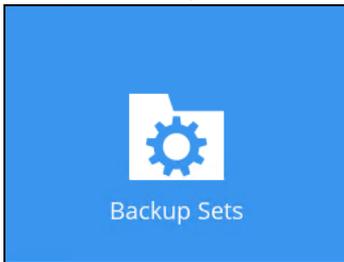
2. Create a new backup set by clicking the **Add** button.

3. In the Create Backup Set window, select Oracle Database Server Backup as the Backup set type. Configure the following settings:

   - **Name** - the name of the backup set.

   - **Backup set type** – the type of the backup set (i.e. Oracle Database Server Backup).

   - **Login ID** – the login ID of the Oracle server. The default login ID is "*system*".

   - **Password** – the password of the login account.

   - **Host** – this value is not user configurable.

   - **Port** – the port where the connections to the Oracle server is made. The default port is "*1521*".

   - **SID** – the Oracle System Identifier. For more details, please refer to Ch. 2.9.4.

   Once all the fields are configured, click **Next** to proceed.

4. In the Backup Source menu, select the Oracle database(s) you would like to back up. Click **Next** to proceed.
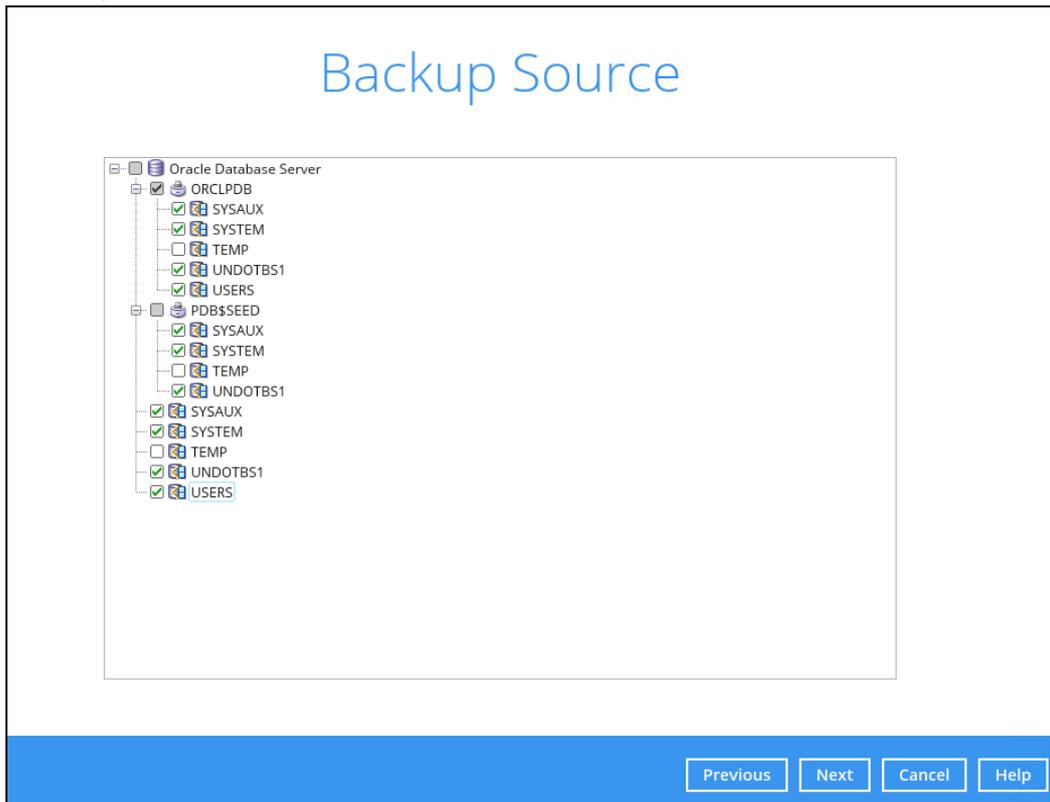
NOTE: All databases including **SYSAUX**, **SYSTEM**, **UNDOTBS1**, **USERS** and related application databases except for "TEMP" must be selected in the backup source when creating the backup set. Otherwise, without a backup of these databases, a full Oracle database instance recovery will NOT be possible.

Even if the "TEMP" is selected in the backup source, this database will be skipped during a backup job.

5. A backup schedule for a backup job to run automatically at your specified time interval can be configured. The backup schedule is enabled by default.
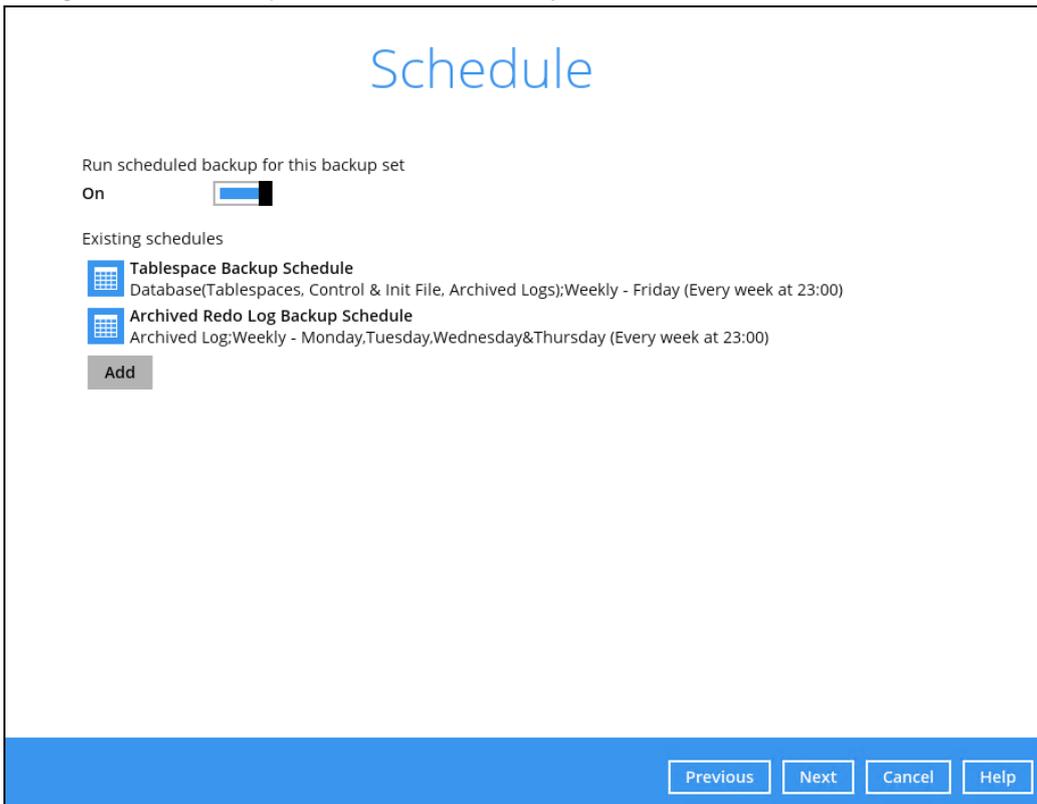
There are two types of backup schedule:

- **Tablespace Backup Schedule**

- **Archived Redo Log Backup Schedule**

Tablespace Backup Schedule – This type of backup scheduler will automatically run weekly every Friday at 23:00.
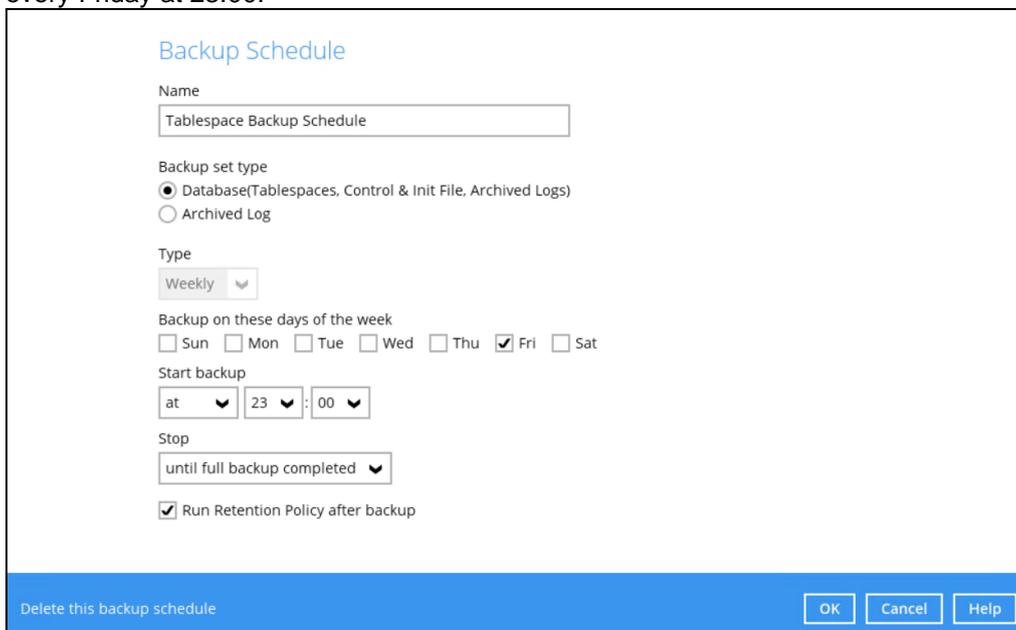
Archived Redo Log Backup Schedule – This type of backup scheduler will automatically run weekly every Monday, Tuesday, Wednesday and Thursday at 23:00.

To change the backup schedule settings of an existing schedule, double-click the schedule to be modified. Otherwise, click **Next** to proceed.

6. In the **Destination** window, select a backup mode then click the ➕ button to add a backup storage destination.

In the **New Storage Destination / Destination Pool** window, select the destination storage. Then, click **OK** to confirm your selection.

New Storage Destination / Destination Pool

Name

AhsayCBS

Destination storage

⊙ AhsayCBS ⌄
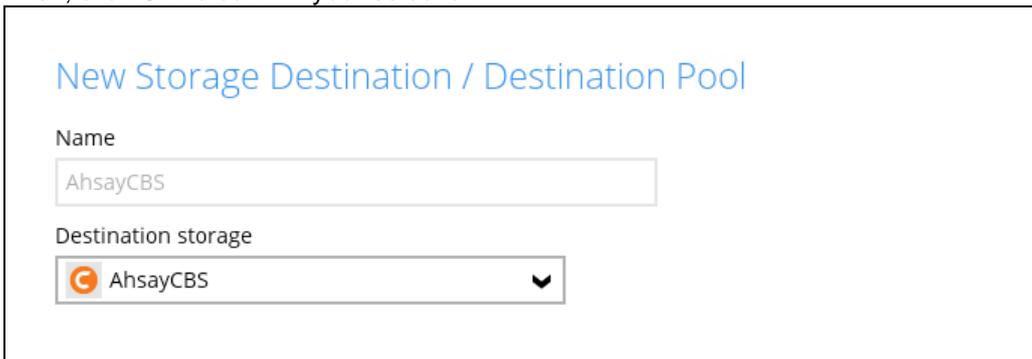
If **Local / Mapped Drive / Network Drive / Removable Drive** is selected, you need to specify the path by clicking **Change** to select the path or you can manually enter it. Once a network address is entered, **This share requires access credentials** check box will be enabled. Check the box beside it if access credentials are required to connect to the destination storage then enter the User name and Password. Otherwise, leave it unchecked. Click **Test** to check the connection.

New Storage Destination / Destination Pool

Name

Local-1

Destination storage

▣ Local / Mapped Drive / Network Drive / Removable Drive ⌄

Path (Input local / network address or click [Change])

\\ORA19C-W2K16\▆▆▆▆▆▆▆▆   **Change**

✔ This share requires access credentials

User name (e.g. domain\username)

Administrator

Password

••••••••
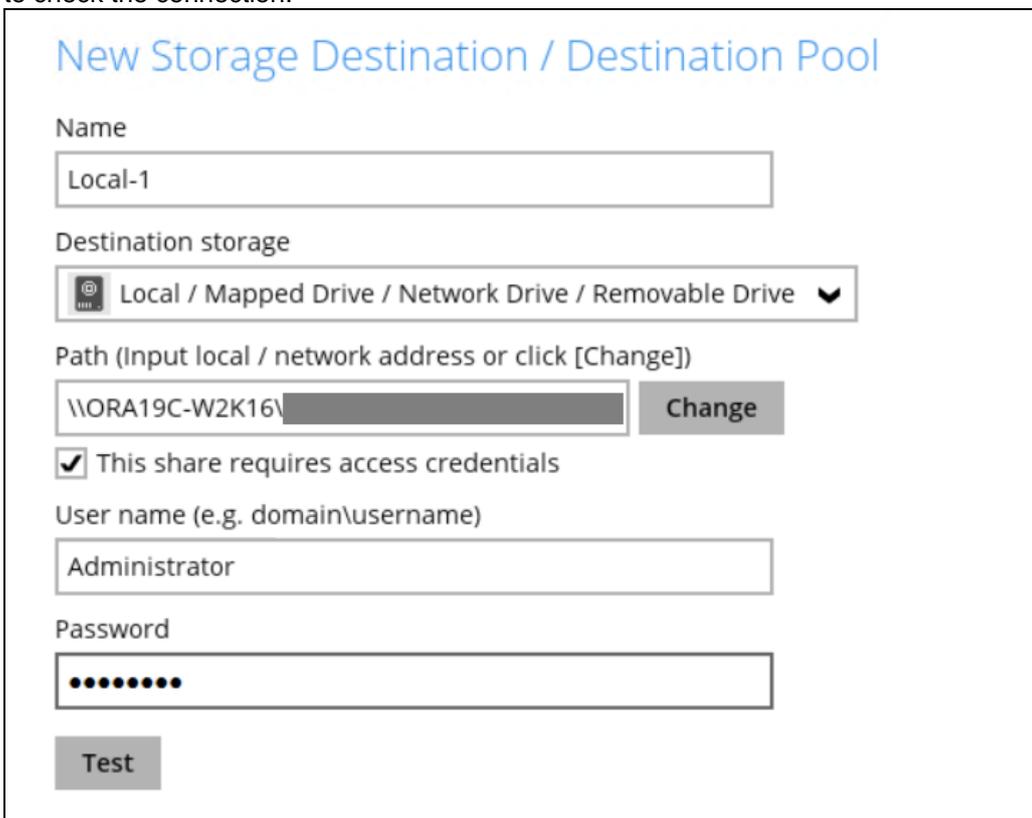
Test

When the **Test completed successfully** message is shown, click **OK** to proceed.

7. In the **Destination** window, your selected storage destination will be shown. Click **Next** to proceed.

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

   There are three (3) types of Encryption to choose from:

   - **Default** – an encryption key with forty-four (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** – the encryption key can be customized where the user can select the Algorithm, Method and Key length, and then input an Encryption key.

Click **Next** once done with the Encryption settings.

9. If the Encryption feature is enabled in the previous step, the following window will pop-up whichever encryption type is selected.

This pop-up window has three (3) options to choose from:

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

- **Copy to clipboard** – Select this option to copy the encryption key. Once copied, you can paste it to a text editor (e.g., Notepad) and save to a location.

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

10. After completing all the configuration settings, the Oracle database server backup set will be created.
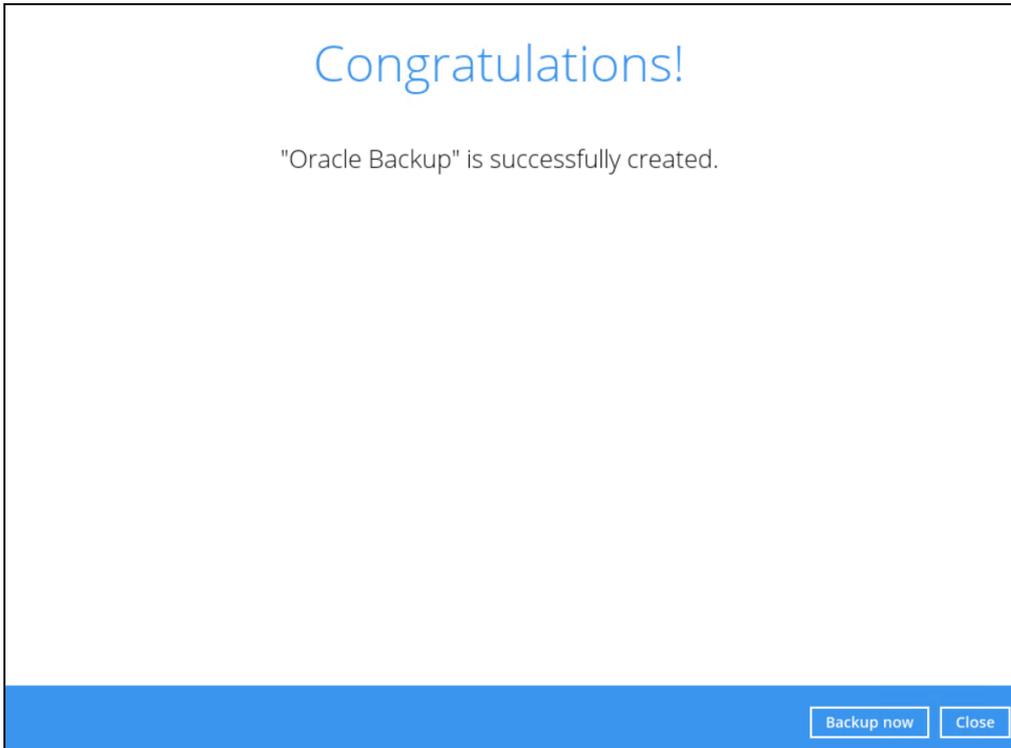
11. According to <u>Best Practices and Recommendations</u>, it is highly recommended to set the temporary directory to another location other than Drive C: (e.g., Drive E:). To do this, click the **Backup Sets** icon on the AhsayOBM main interface, then select a backup set. Click **Show advanced settings** link. Go to Others > Temporary Directory and click the **Change** button to browse for another location.
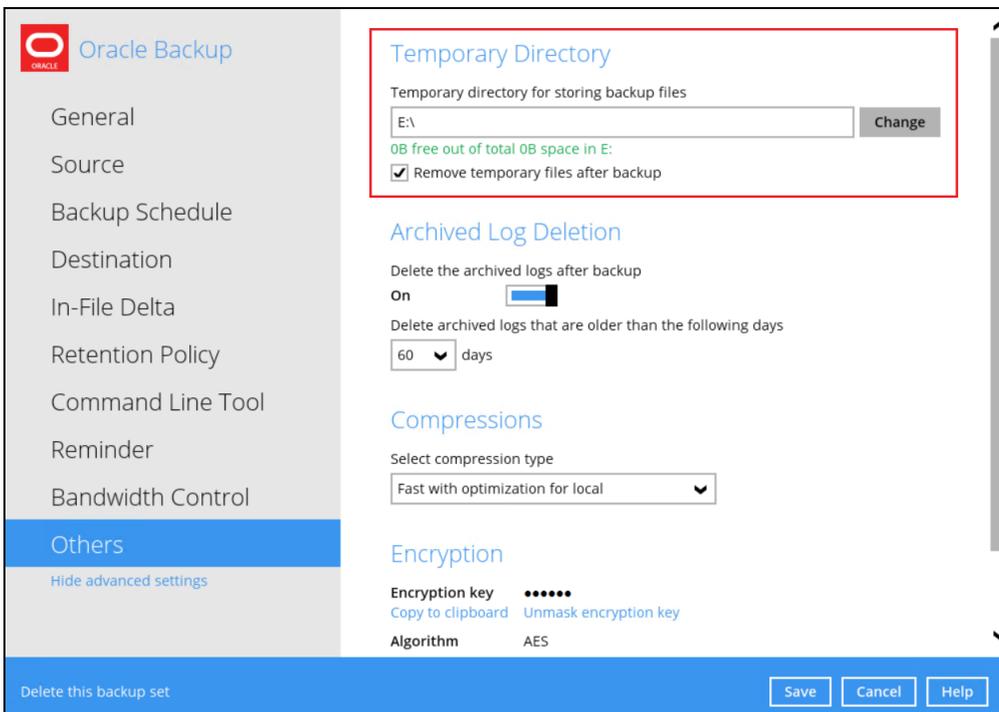
Tick the "Remove temporary files after backup" option.

12. Optional: **Archived Log Deletion**

The deletion of the archived logs is enabled by default and archived logs more than 60 days are deleted from the Oracle database instance. This process is done after every databases and archived log backup job.

For example, if the Oracle database instance generates a lot of archived log files, you may want to reduce the number of days before they are deleted.
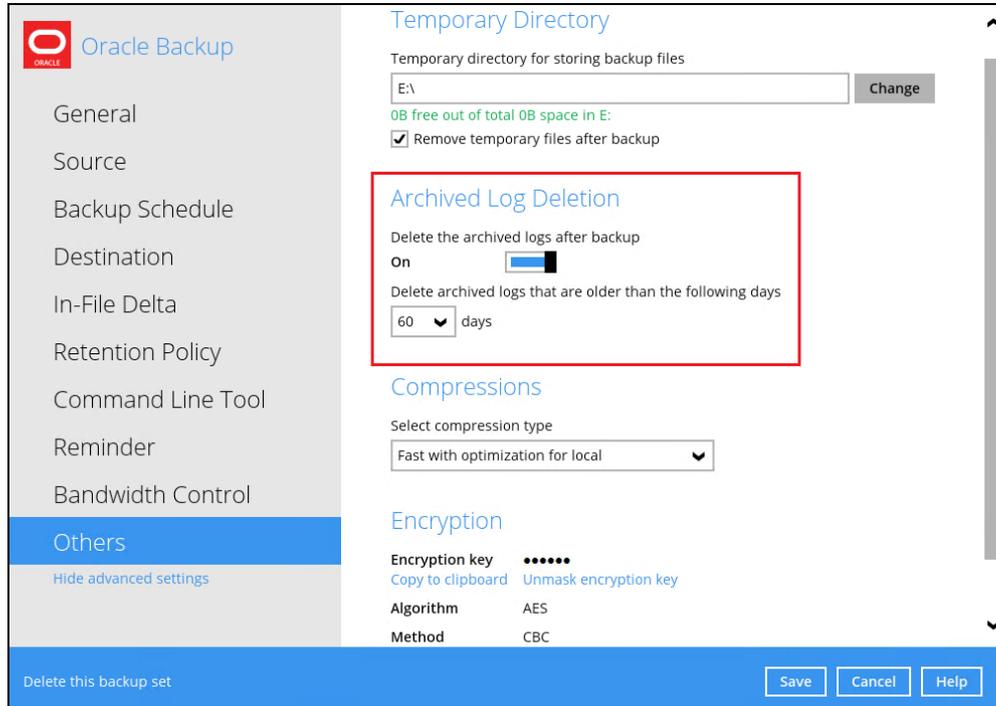
13. Optional: Select your preferred **Compression** type. The compression type is set to **Fast with optimization for local** by default. To change the compression type, go to Others > Compressions.
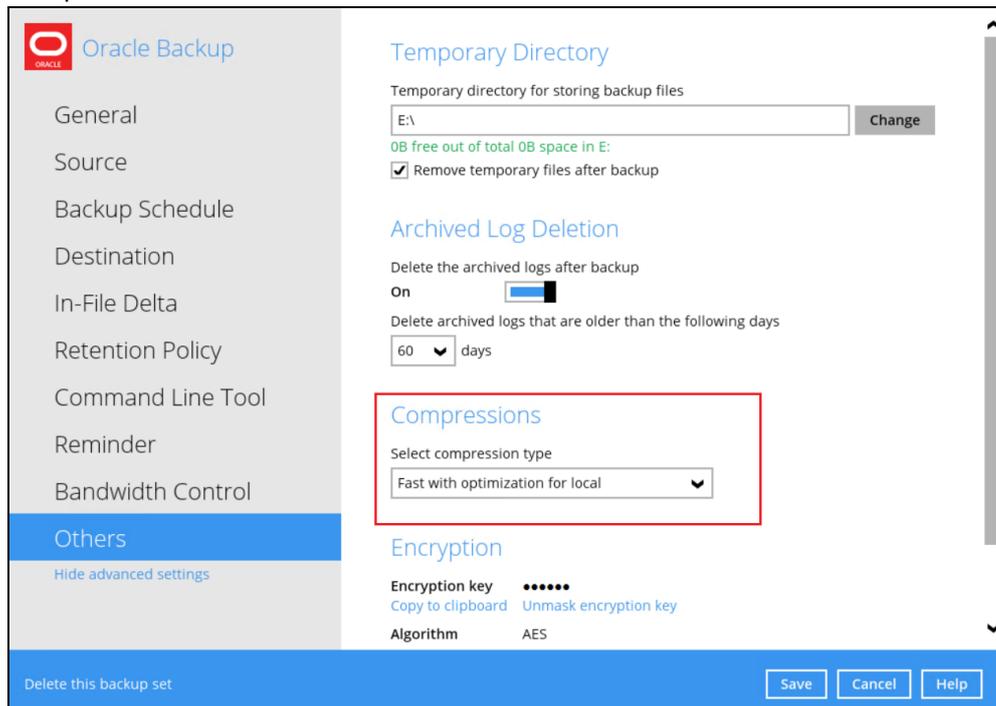
Select from the following:

- No Compression

- Normal

- Fast (Compressed size larger than normal)

- Fast with optimization for local
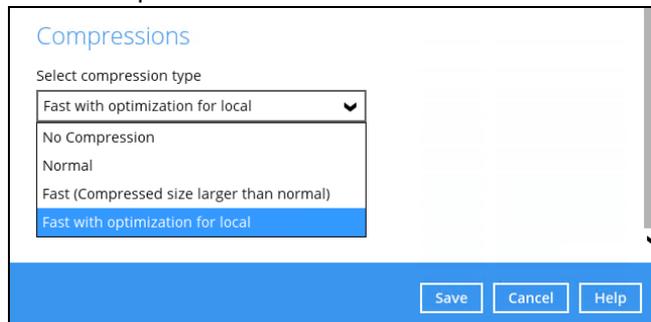
14. Click **Save** to apply the changes.

7 Overview on the Backup Process

The following steps are performed during an Oracle Server backup job in Database and Archived Log backup modes.

7.1 Database Backup

For an overview of the detailed process for Steps **3**, **5**, **11**, and **14**, please refer to the following chapters.

- ● Periodic Data Integrity Check (PDIC) Process **(Step 3)**
- ● Backup Set Index Handling Process
  - Start Backup Job **(Step 5)**
  - Completed Backup Job **(Step 14)**
- ● Data Validation Check Process **(Step 11)**

Start backup job

Step	Title	Description
1	Establishing connection	Connection from the backup client to the backup server is established.
2	Uploading encryption key	Encryption key is uploaded to the backup server (if enabled).
3	Running Periodic DIC	Physical .bak files (data blocks) that do not exist in the index are removed from the backup destination(s), then the statistics of both data area and retention area will be recalculated.
4	Running pre-backup command	Pre-backup command is running (if configured).
5	Downloading files	Latest index.db file and checksum files are downloaded from the backup destination(s) to the temporary folder.
6	Compiling file list	Local file list is compiled according to the backup source setting.
7	Spooling Oracle databases	AhsayOBM issues request to spool database files (.DBF), archived log files, control files (.CTL) and init.ora file from the Oracle server to the temporary folder.
8	Comparing files	Local and remote file lists are compared to identify new, updated, moved, or deleted files and/or folders since the last backup job.
9	Generating delta files	In-file delta files are generated for Oracle Databases (if required when in-file delta is enabled).
10	Uploading files	Data are compressed, encrypted, divided into individual data block size of 16 or 32 MB, and then uploaded to the backup destination(s).
11	Data validation check	The number of 16 or 32 MB data blocks, and the individual block size in the backup destination(s) is identical to the blocks transferred.
12	Running retention policy	Retention policy job is running (if enabled).
13	Removing archived log files	Recovery Manager (RMAN) will remove archived log files from Oracle which are older than xx day(s).
14	Saving files	Latest index files on the client computer are saved to the backup destination(s), and client log files are saved to the backup server.
15	Running post-backup command	Post-backup command is running (if configured).
16	Removing temporary files	Temporary data is removed from the storage location specified in the backup set (if enabled).

Backup job completed

7.2 Archived Log Backup

For an overview of the detailed process for Steps **3**, **5**, **11**, and **14**, please refer to the following chapters.

- Periodic Data Integrity Check (PDIC) Process **(Step 3)**
- Backup Set Index Handling Process
  - Start Backup Job **(Step 5)**
  - Completed Backup Job **(Step 14)**
- Data Validation Check Process **(Step 11)**

Start backup job

1 — Establishing connection
Connection from the backup client to the backup server is established.

2 — Uploading encryption key
Encryption key is uploaded to the backup server (if enabled).

3 — Running Periodic DIC
Physical .bak files (data blocks) that do not exist in the index are removed from the backup destination(s), then the statistics of both data area and retention area will be recalculated.

4 — Running pre-backup command
Pre-backup command is running (if configured).

5 — Downloading files
Latest index.db file and checksum files are downloaded from the backup destination(s) to the temporary folder.

6 — Compiling file list
Local file list is compiled according to the backup source setting.

7 — Spooling archived log files
AhsayOBM issues request to spool log files from the Oracle server to the temporary folder.

8 — Comparing files
Local and remote file lists are compared to identify changes to the archived log files added since the last backup job.

9 — Generating delta files
In-file delta files are generated for Oracle server (if required when in-file delta is enabled).

10 — Uploading files
Data are compressed, encrypted, divided into individual data block size of 16 or 32 MB, and then uploaded to the backup destination(s).

11 — Data validation check
The number of 16 or 32 MB data blocks, and the individual block size in the backup destination(s) is identical to the blocks transferred.

12 — Running retention policy
Retention policy job is running (if enabled).

13 — Removing archived log files
Recovery Manager (RMAN) will remove archived log files from Oracle which are older than xx day(s).

14 — Saving files
Latest archived log files on the client computer are saved to the backup destination(s).

15 — Running post-backup command
Post-backup command is running (if configured).

16 — Removing temporary files
Temporary data is removed from the storage location specified in the backup set (if enabled).

Backup job completed

7.3 Periodic Data Integrity Check (PDIC) Process

For AhsayOBM v8.3.6.0 (or above), the PDIC will run on the first backup job that falls on the corresponding day of the week from **Monday to Friday**.

To minimize the impact of the potential load of large number of PDIC jobs running at the same time on the AhsayCBS server, the schedule of a PDIC job for each backup set is automatically determined by the result of the following formula:

> ***PDIC schedule = %BackupSetID% modulo 5***
> or
> ***%BackupSetID% mod 5***

The calculated **result** will map to the corresponding day of the week (i.e., from Monday to Friday).

0	Monday
1	Tuesday
2	Wednesday
3	Thursday
4	Friday

NOTE: The PDIC schedule cannot be changed.

Example:

Backup set ID: 1594627447932

*Calculation: 1594627447932 mod 5 = **2***

2	Wednesday

In this example:

- the PDIC will run on the first backup job that falls on Wednesday; or
- if there is no active backup job(s) running from Monday to Friday, then the PDIC will run on the next available backup job.

NOTE

Although according to the PDIC formula for determining the schedule is ***%BackupSetID% mod 5***, this schedule only applies if the previous PDIC job was actually run more than 7 days prior.

Under certain conditions, the PDIC may not run strictly according to this formula. For example:

1. If AhsayOBM was upgraded to v8.5 (or above) from an older version v6, v7, or pre-8.3.6.0 version. In this case, the PDIC job will run on the first backup job after upgrade.

2. If backup jobs for a backup set are not run on a regular daily backup schedule (for example: on a weekly or monthly schedule), then the PDIC job will run if it detects that the previous PDIC job was run more than 7 days ago.

---

a Check the index files in the backup destination(s) to determine if they were more than 90 days old.

→ If **YES**, proceed to (y)

→ If **NO**, proceed to (b)

b Check the outdated entries in the index files for files and/or folders if they physically exist in the backup destination(s).

→ If **YES**, proceed to (c)

→ If **NO**, proceed to (z)

c Storage Statistics for Data area and Retention area usage will be recalculated.

d Periodic Data Integrity check is completed.

e Index files with no issues will be uploaded to the current backup destination(s).

f The backup job process will continue.

y Index files which are more than 90 days old will be removed from the backup destination(s).

z Outdated entries in the index files for files and/folders which do not physically exist in backup destination(s) will be removed.

7.4 Backup Set Index Handling Process

To minimize the possibility of index related issues affecting backups, each time index files are downloaded from and uploaded to backup destination(s); the file size, last modified date, and checksum is verified to ensure index file integrity.

7.4.1 Start Backup Job

7.4.2 Completed Backup Job

a Index file from AhsayOBM is uploaded to AhsayCBS, Cloud Destination, FTP or SFTP.

b Verify Check checksum of index.db file.
→ If checksum is correct, proceed to c
→ If NOT, proceed to x

c Check modified date.
→ If latest modified date is correct, proceed to d
→ If NOT, proceed to x

d Check index file size.
→ If index file size is correct, proceed to e
→ If NOT, proceed to x

e Index file is uploaded correctly to AhsayCBS or Cloud Destination.

x Index file will be reuploaded. Proceed to a

7.5 Data Validation Check Process

As an additional measure to ensure that all files transferred to the backup destination(s) are received and saved correctly, both the number of 16 or 32 MB data block files and the size of each block file are checked again after the files are transferred.
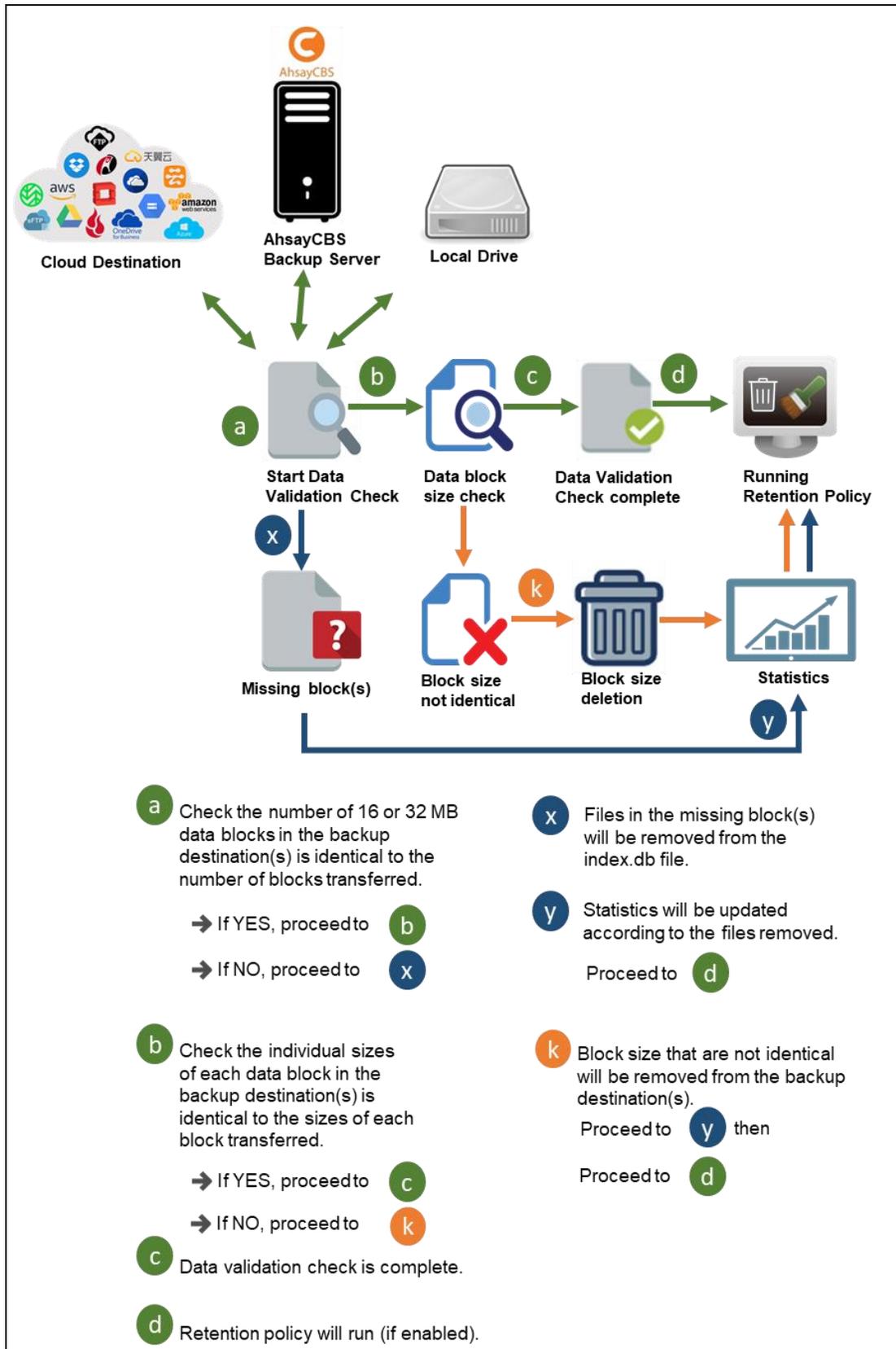
8 Running Backup Jobs

8.1 Login to AhsayOBM

Log in to AhsayOBM according to the instructions in Ch. 5.1 Login to AhsayOBM.

8.2 Start a Manual Backup

1. Click the **Backup** icon on the AhsayOBM main interface.
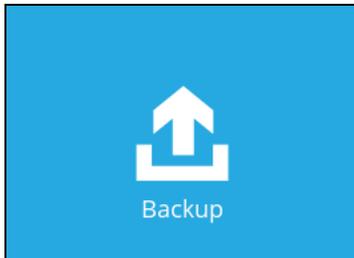
2. Select the Oracle database backup set which you would like to start a manual backup on.
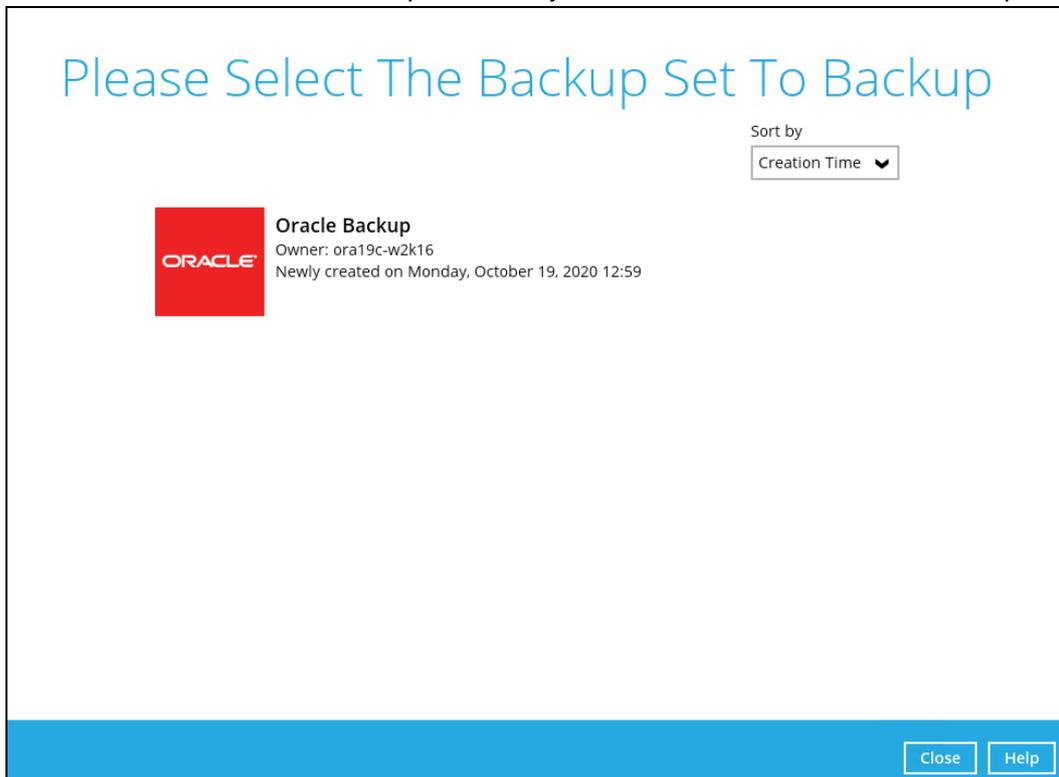
3. There are two (2) types of backup mode in an Oracle database backup set:

   - **Database** – this type of backup includes Tablespaces, Control and Init File, and Archived Log Files. To see the steps during a database backup job, please refer to Ch. 7.1 Overview on the Database Backup Process.

   - **Archived Log** – this type of backup is for archived log files. To see the steps during an archived log backup job, please refer to Ch. 7.2 Overview on the Archived Log Backup Process.
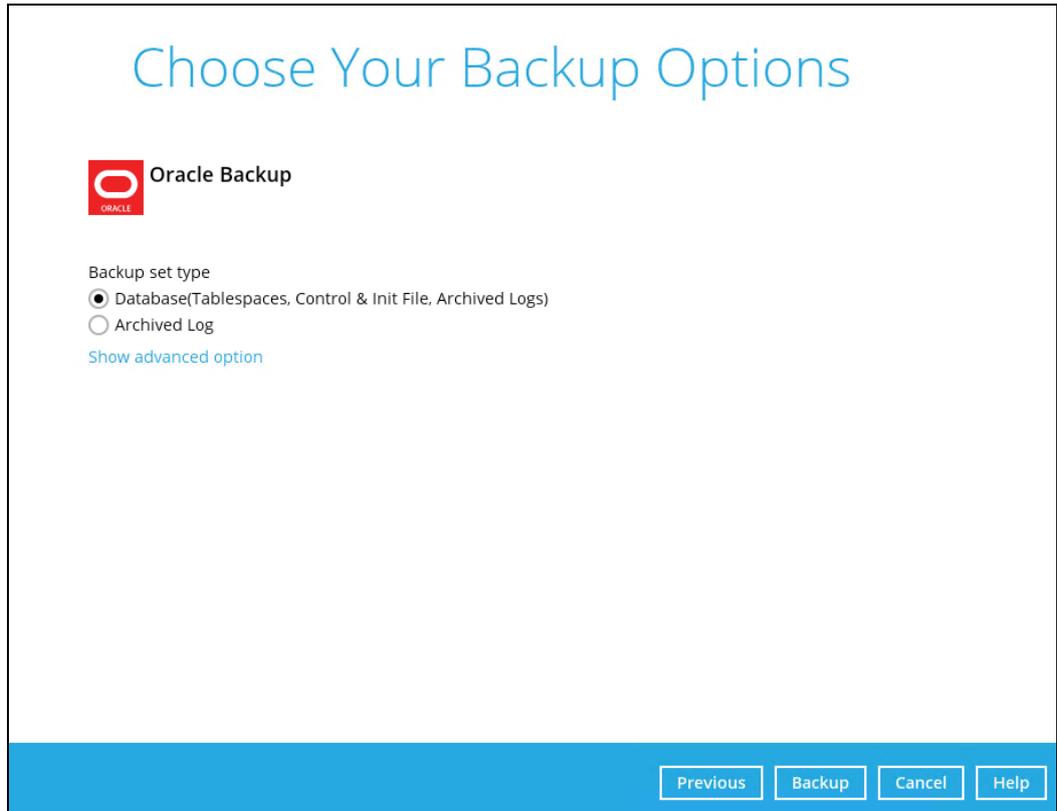
To modify the In-File Delta type, Destinations, or Run Retention Policy Settings before running a backup, click the **show advanced option** link.
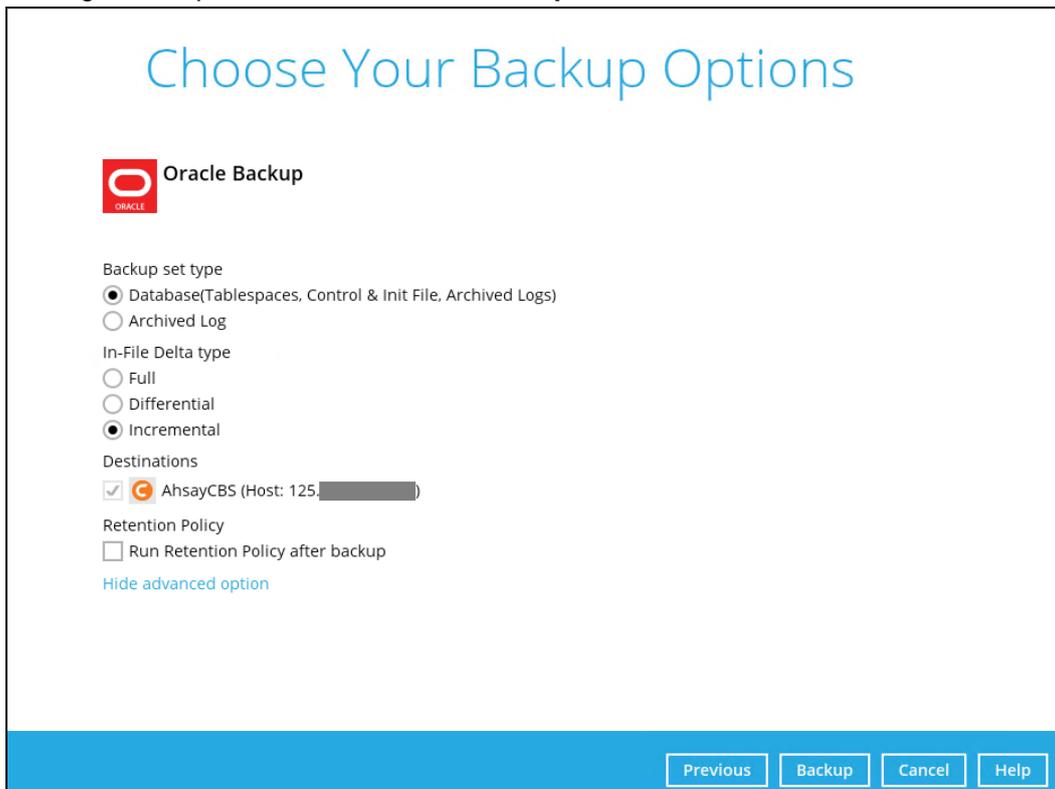
4. Click **Backup** to start the backup job.
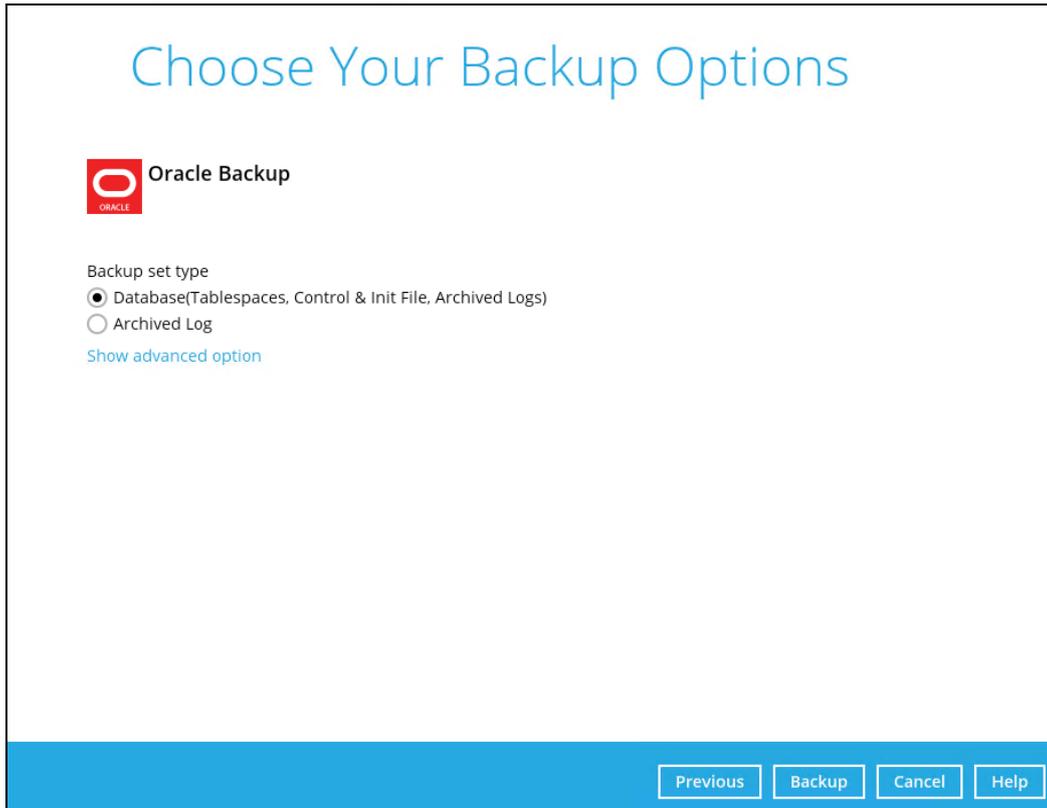
5. Backup job is completed successfully.
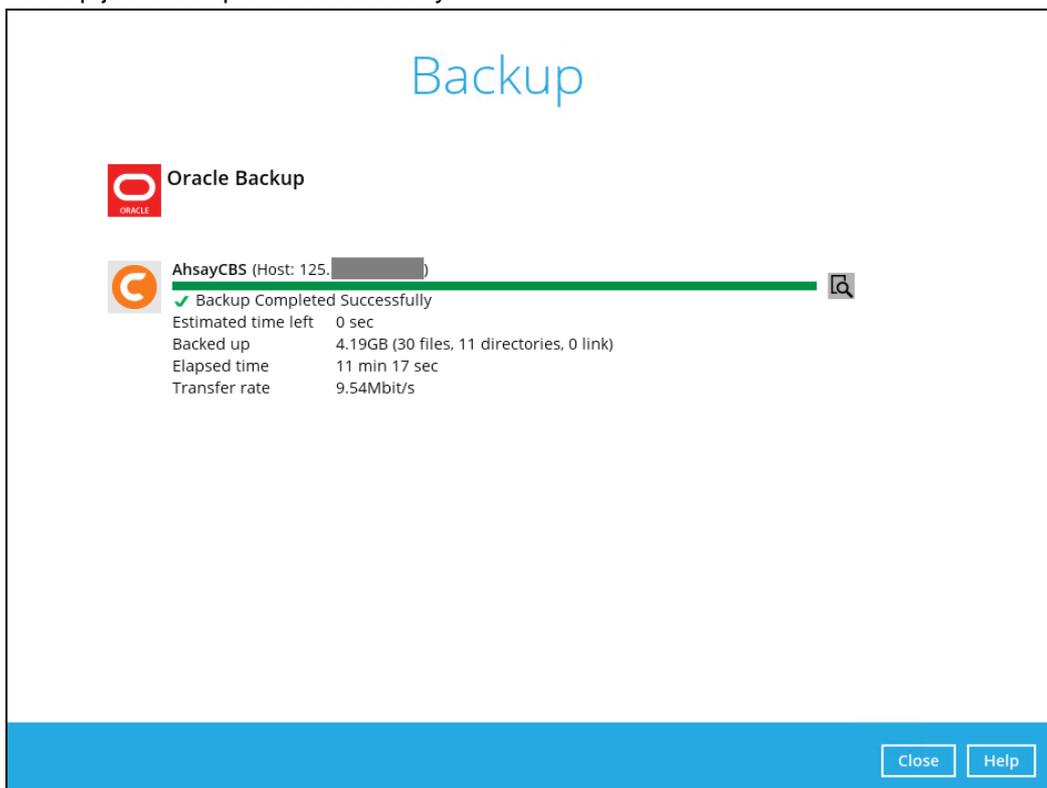
8.3 Configure Backup Schedule for Automated Backup

1. Click the **Backup Sets** icon on the AhsayOBM main interface.
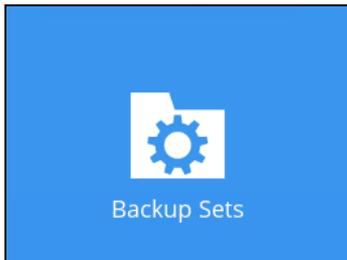
2. Select the backup set that you would like to create a backup schedule for.
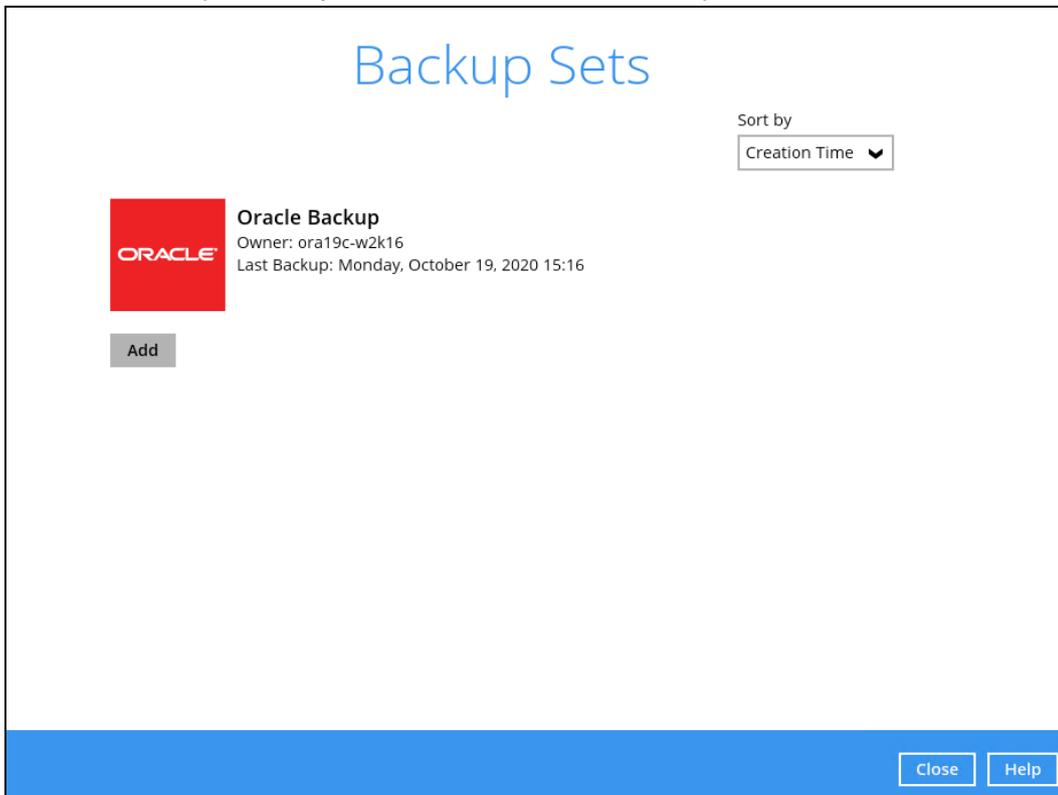
3. Go to the **Backup Schedule** tab.
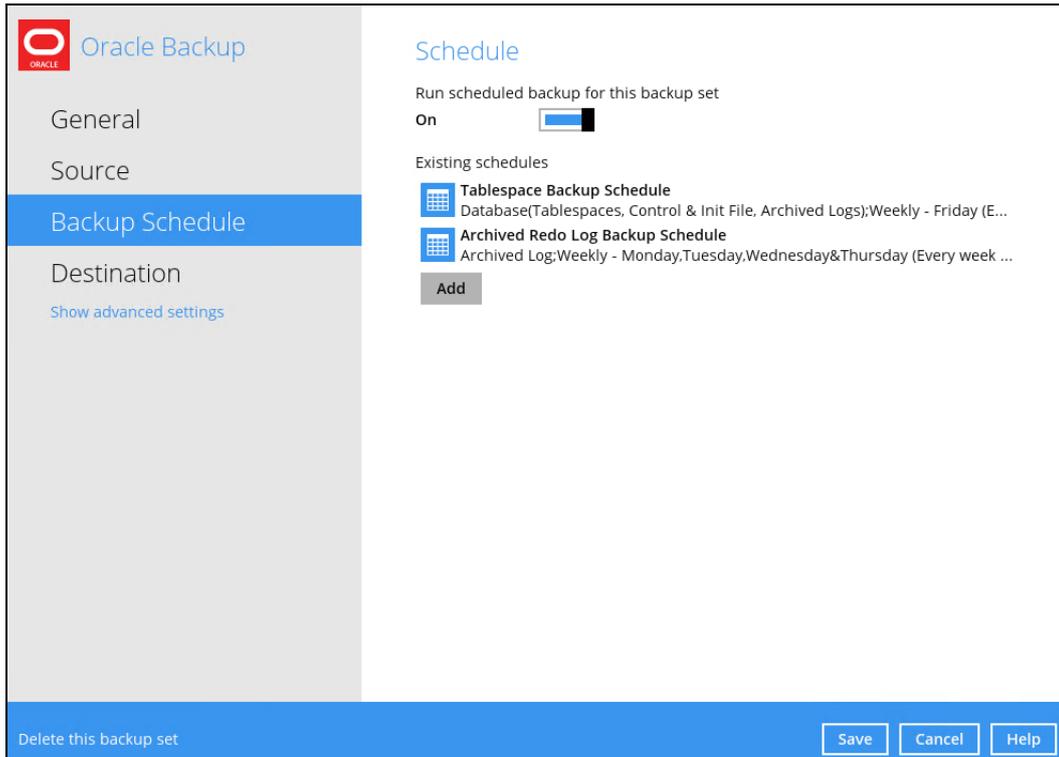
4. To modify an existing schedule, click the backup schedule to be modified. Or click the **Add** button to add a new one.

5. In the **New Backup Schedule** window, configure the following settings:
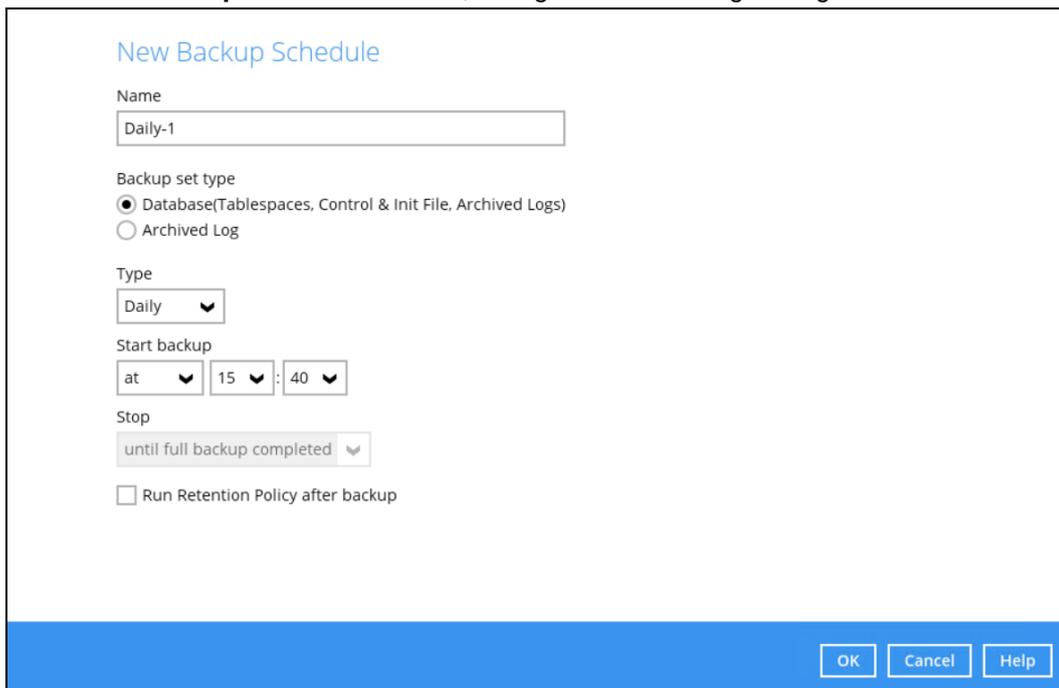
- **Name** – the name of the backup schedule

- **Backup set type** – the type of backup mode (i.e. Database and Archived Log)

- **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 which the backup job will run

New Backup Schedule

Name

Monthly-1

Backup set type
- ⦿ Database(Tablespaces, Control & Init File, Archived Logs)
- ◯ Archived Log

Type

Monthly ▾

Backup on the following day every month
- ⦿ Day 1 ▾
- ◯ First ▾ Sunday ▾

Start backup at

15 ▾ : 40 ▾ on the selected days

Stop

until full backup completed ▾

☑ Run Retention Policy after backup

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

New Backup Schedule

Name

Custom-1

Backup set type
- ⦿ Database(Tablespaces, Control & Init File, Archived Logs)
- ◯ Archived Log

Type

Custom ▾

Backup on the following day once

2020 December ▾ 12 ▾

Start backup at

15 ▾ : 40 ▾

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 <u>at a specific time</u>

  - **every** – this option will start a backup job <u>in intervals of minutes or hours</u>
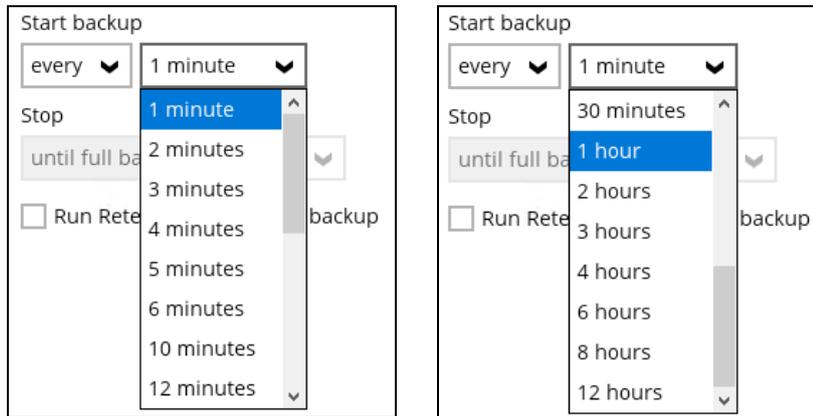
Here is an example of a backup set that has a periodic and normal backup schedule.

<p align="center">*Figure 1.1*   *Figure 1.2*</p>

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

Figure 1.2 – Normal backup schedule runs at 21:00 or 9:00 PM every Sunday during non-business hours for Database backup

- **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.

    The number of hours must be enough to complete a backup of all files in the backup set. For small files in a backup, if the number of hours is not enough to back up all files,

then the outstanding files will be backed up in the next backup job. However, if the backup set contains large files, this may result in partially backed up files.

For example, if a backup has 100GB file size which will take approximately 15 hours to complete on your environment, but you set the "stop" after 10 hours, the file will be partially backed up and cannot be restored. The next backup will upload the files from scratch again.

The partially backed up data will have to be removed by running the data integrity check.

As a general rule, it is recommended to review this setting regularly as the data size on the backup machine may grow over time.

- **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

6. Before closing the Backup Schedule menu, click the **Save** button to apply the backup schedule settings.

9 Restoring Backup for Oracle Database Server

9.1 Restoring Data

There are three (3) restore options to choose from:

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

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

- **Restore raw file** – AhsayOBM will restore the Oracle database files to a location on the local machine, which then can be copied to another Oracle server on another machine for recovery.

  The **Restore Raw File** option is for advanced Oracle database administrators and should only be used if you have in-depth knowledge and understanding of Oracle database engine, Oracle database schema, knowledge of the database server and network infrastructure. Therefore, it is not recommended to use this restore option as there is need to utilize additional Oracle techniques and scripts to facilitate a manual database restore.

  Please refer to the following articles of Oracle Database Backup and Recovery User's Guide for details:

  Oracle 19c
  https://docs.oracle.com/en/database/oracle/oracle-database/19/bradv/index.html

  Oracle 18c
  https://docs.oracle.com/en/database/oracle/oracle-database/18/bradv/index.html

  Oracle 12c
  https://docs.oracle.com/database/121/BRADV/title.htm

9.2 Restore to Original Location

This feature is used to restore files from your backup destination and automatically apply them to the Oracle database server in the original location.

1. TNS listener service must be started to allow connections to the Oracle database server for the restore process. To check if the TNS listener service is running, use the *lsnrctl status* command. If the TNS listener service is not started, use the *lsnrctl start* command to start the service.

   Example: A running TNS Listener service on Oracle 19c.

```
C:\Users\Administrator>lsnrctl status

LSNRCTL for 64-bit Windows: Version 19.0.0.0.0 - Production on
 14-OCT-2020 16:45:29

Copyright (c) 1991, 2019, Oracle.  All rights reserved.

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=ora19c-
 w2k16)(PORT=1521)))
```

```
STATUS of the LISTENER
------------------------
Alias                    LISTENER
Version                  TNSLSNR for 64-bit Windows: Version
 19.0.0.0.0 - Production
Start Date               14-OCT-2020 11:11:04
Uptime                   0 days 5 hr. 34 min. 27 sec
Trace Level              off
Security                 ON: Local OS Authentication
SNMP                     OFF
Listener Parameter File
 D:\oracle\19.3.0\dbhome\network\admin\listener.ora
Listener Log File        D:\oracle\diag\tnslsnr\ora19c-
 w2k16\listener\alert\log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=ora19c-
 w2k16)(PORT=1521)))

  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\\.\pipe\EXTPROC
 1521ipc)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=ora19c-
 w2k16)(PORT=5500))(Security=(my_wallet_directory=D:\ORACLE\adm
 in\orcl\xdb_wallet))(Presentation=HTTP)(Session=RAW))
Services Summary...
Service "52448234712340b69f274bcc790ecfe0" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
 service...
Service "9400891b61bb4c4c8b3997957ffa8c8e" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
 service...
Service "CLRExtProc" has 1 instance(s).
  Instance "CLRExtProc", status UNKNOWN, has 1 handler(s) for
 this service...
Service "orcl" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
 service...
Service "orclXDB" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
 service...
Service "orclpdb" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
 service...
The command completed successfully

C:\Users\Administrator>
```

NOTE: The values shown are just examples and might be different on your Oracle instance.

2. Run the `sqlplus / as sysdba` command to verify if the Oracle service is active.

The following is just an example after an Oracle instance failure due to corrupted data and/or configuration files. It might be different on your Oracle instance.

```
C:\Users\Administrator>sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Thu Nov 12 10:31:33
2020

Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle.  All rights reserved.

Connected to an idle instance.
```

3. On the AhsayOBM main interface, click the **Restore** icon.

4. Select the backup set that you would like to restore the Oracle database from.

5. Select the destination storage that contains the Oracle database(s) that you would like to restore from.

6. Select the database(s) that you would like to restore. You can also choose to restore backed up database from a specific backup job using the **Select what to restore** drop-down menu. Click **Next** to proceed.
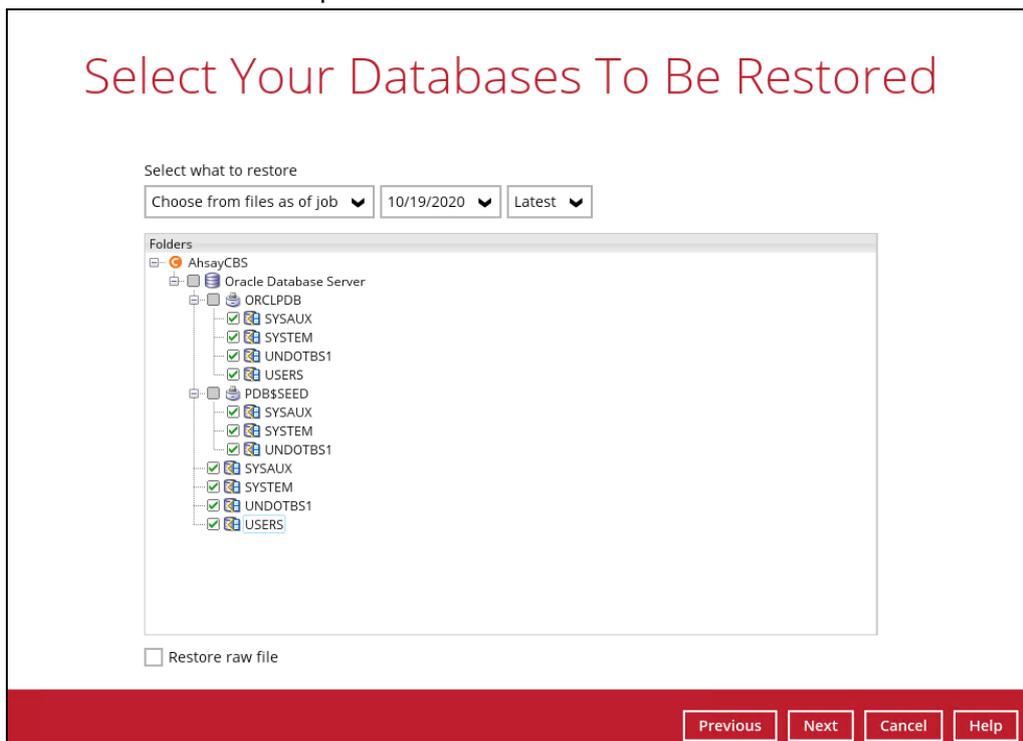
7. Choose **Original location** as where the database(s) will be restored.

Choose Where The Databases To Be Restored

Restore databases to
- ⦿ Original location
- ◯ Alternate location

Show advanced option

Previous | Next | Cancel | Help

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

Choose Where The Databases To Be Restored

Restore databases to
- ⦿ Original location
- ◯ Alternate location

☐ Verify checksum of in-file delta files during restore

Hide advanced option

8. Make sure that the temporary directory path is correct. To change its location, click **Browse** then click **OK** to select. Click **Restore** to start the restore process.

Temporary Directory

Temporary directory for storing restore files

| E:\temp | Browse |

Previous | Restore | Cancel | Help

9. When this pop-up message is displayed, click **Yes** to continue.

Restore

Oracle Backup

AhsayCBS (Host: 125.5.184.164:80)

? Database is required to shutdown. Continue?

☐ Apply to all   Yes | No

Cancel | Help
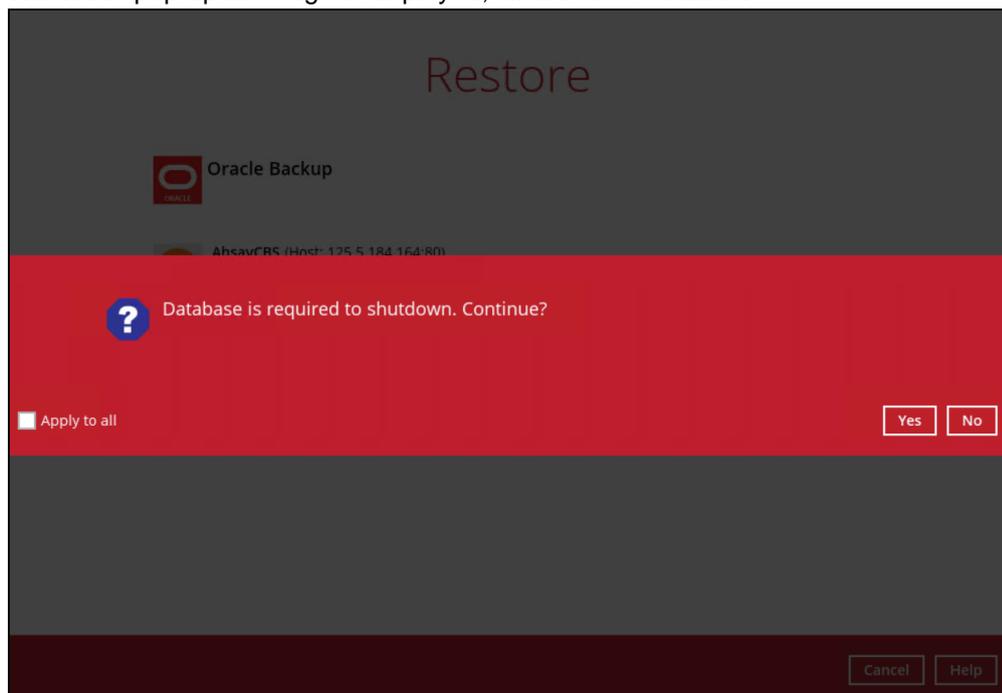
10. Restore job has completed successfully.
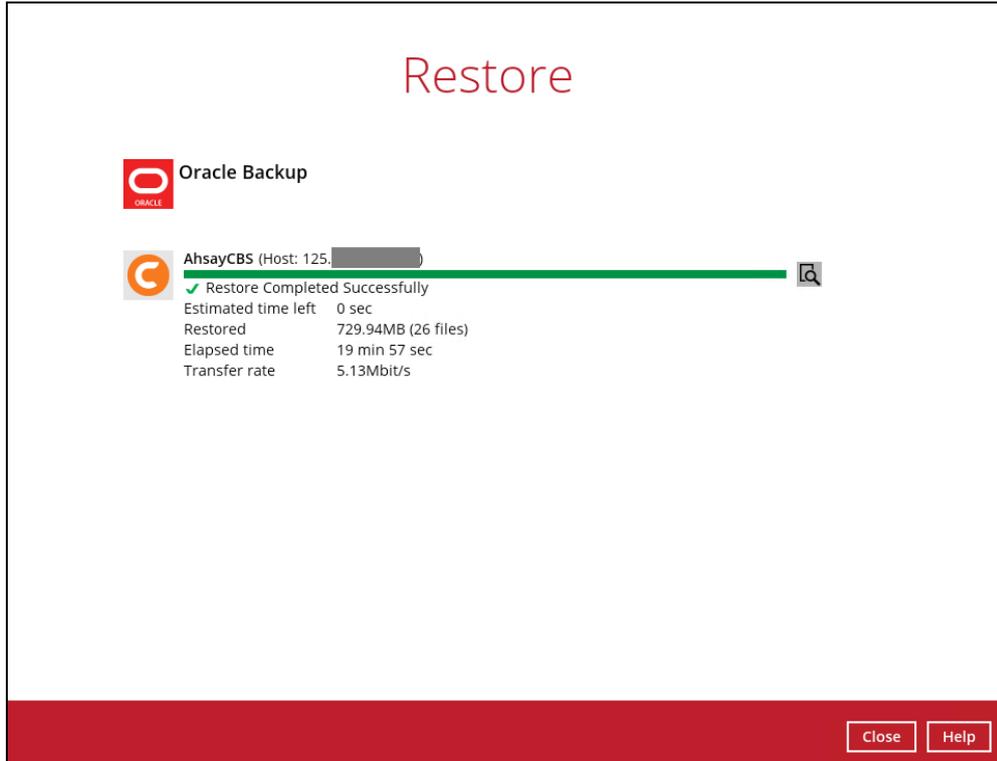
11. After the restore job is completed, verify if the Oracle database instance has been restored using the following SQL query to verify if the instance is online.

```
C:\Users\Administrator>sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Wed Oct 14 14:07:32
2020

Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle.  All rights reserved.

Connected to:

Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production

Version 19.3.0.0.0

SQL> select instance from v$thread;

INSTANCE

--------------------------------------------------------------

orcl

SQL>
```

9.3 Restore to Alternate Location

1. TNS listener service must be started to allow connections to the Oracle database server for the restore process. To check if the TNS listener service is running, use the *lsnrctl status* command. If the TNS listener service is not started, use the *lsnrctl start* command to start the service.

Example: A running TNS Listener service on Oracle 19c.

```
C:\Users\Administrator>lsnrctl status

LSNRCTL for 64-bit Windows: Version 19.0.0.0.0 - Production on
 14-OCT-2020 16:45:29

Copyright (c) 1991, 2019, Oracle.  All rights reserved.

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=ora19c-
 w2k16)(PORT=1521)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for 64-bit Windows: Version
 19.0.0.0.0 - Production
Start Date                14-OCT-2020 11:11:04
Uptime                    0 days 5 hr. 34 min. 27 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File
 D:\oracle\19.3.0\dbhome\network\admin\listener.ora
Listener Log File         D:\oracle\diag\tnslsnr\ora19c-
 w2k16\listener\alert\log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=ora19c-
 w2k16)(PORT=1521)))

 (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\\.\pipe\EXTPROC
 1521ipc)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=ora19c-
 w2k16)(PORT=5500))(Security=(my_wallet_directory=D:\ORACLE\adm
 in\orcl\xdb_wallet))(Presentation=HTTP)(Session=RAW))
Services Summary...
Service "52448234712340b69f274bcc790ecfe0" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
 service...
Service "9400891b61bb4c4c8b3997957ffa8c8e" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
 service...
Service "CLRExtProc" has 1 instance(s).
  Instance "CLRExtProc", status UNKNOWN, has 1 handler(s) for
 this service...
Service "orcl" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this
 service...
Service "orclXDB" has 1 instance(s).
```

```
    Instance "orcl", status READY, has 1 handler(s) for this
  service...
Service "orclpdb" has 1 instance(s).
    Instance "orcl", status READY, has 1 handler(s) for this
  service...
The command completed successfully


C:\Users\Administrator>
```

NOTE: The values shown are just examples and might be different on your Oracle instance.

2. Run the *sqlplus / as sysdba* command to verify if the Oracle service is active.

   The following is just an example after an Oracle instance failure due to corrupted data and/or configuration files. It might be different on your Oracle instance.

```
C:\Users\Administrator>sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Thu Nov 12
10:31:33 2020

Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle.  All rights reserved.

Connected to an idle instance.
```

3. Create the top level folder for the Alternate Location of the database instance that will be restored. For example, *D:\orcl1*
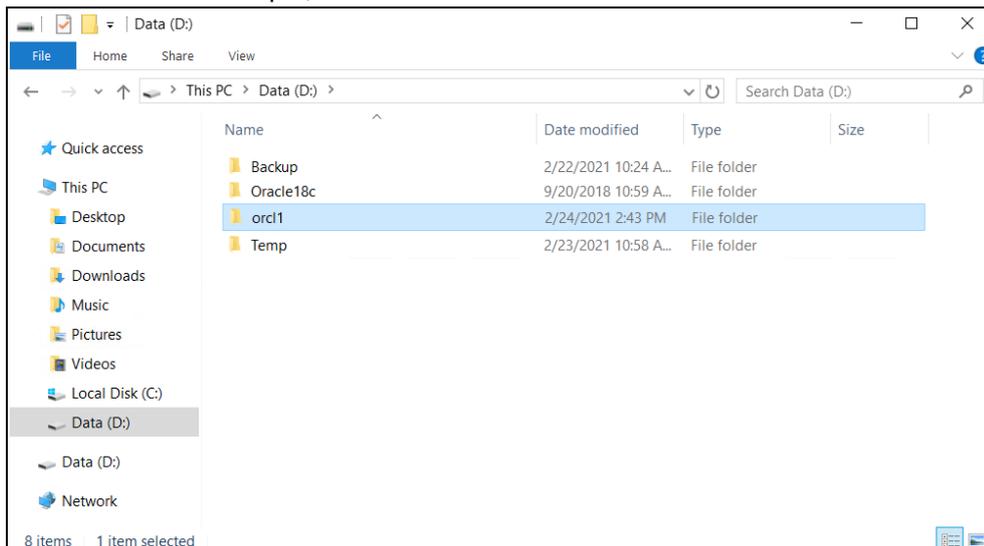
4. Assign correct permissions to the created folder. To assign, right-click on the folder then select **Properties**.
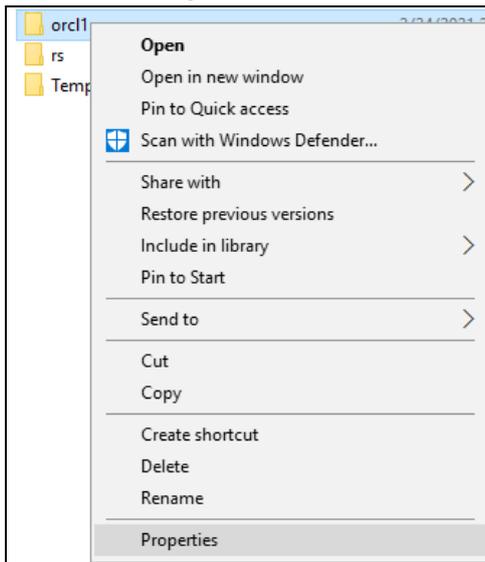

Go to the **Security** tab then click **Edit**.
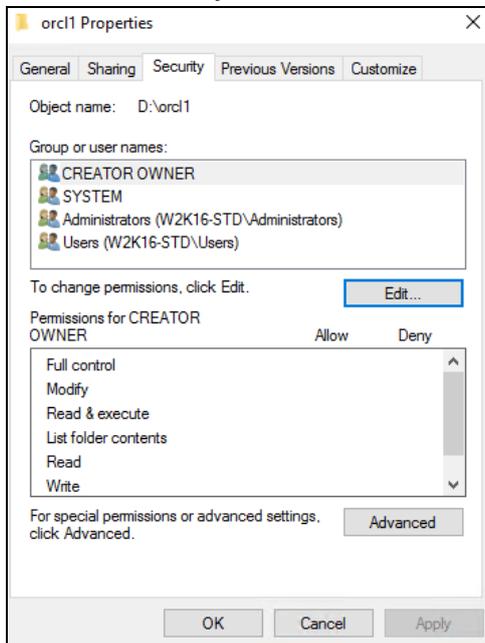
Click the **Add** button then add the the **oracle** user account to the folder with **Full control**.
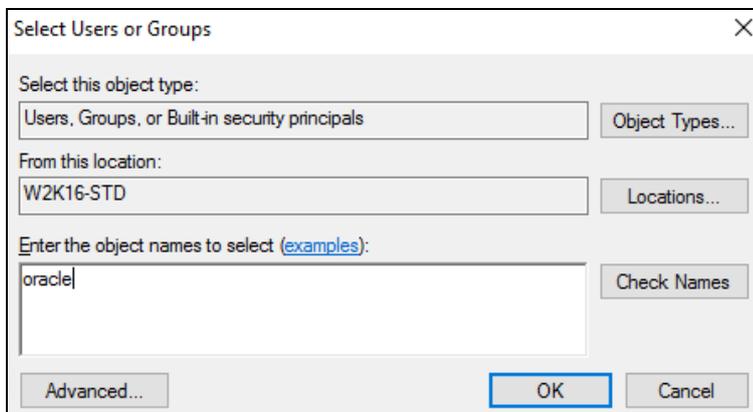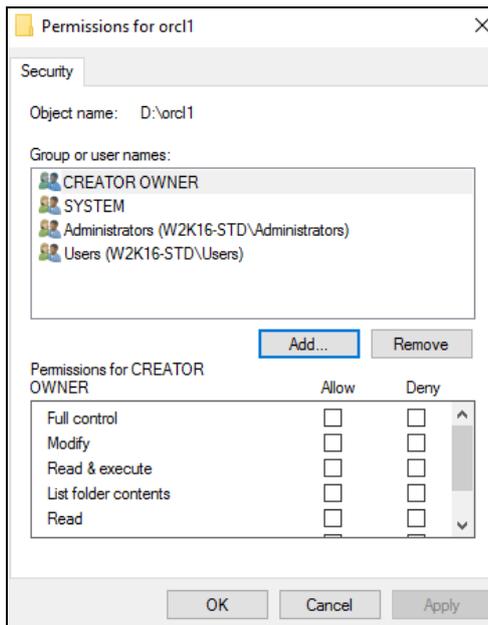
Click **Apply** then click **OK** to save changes.

NOTE: Please refer to Appendix B for more details.

5. On the AhsayOBM main interface, click the **Restore** icon.

6. Select the backup set that you would like to restore the Oracle database from.

Please Select The Backup Set To Restore

Sort by
Creation Time ▾

Oracle Backup
Owner: ora19c-w2k16
Last Backup: Monday, October 19, 2020 15:16

Close   Help

7. Select the destination storage that contains the Oracle database(s) that you would like to restore from.

Select From Where To Restore

Oracle Backup

AhsayCBS
Host: 125.

Previous   Cancel   Help

8. Select the database(s) that you would like to restore, then click **Next** to proceed.

## Select Your Databases To Be Restored

Select what to restore

Choose from files as of job ▼   10/19/2020 ▼   Latest ▼

Folders
- AhsayCBS
  - Oracle Database Server
    - ☑ ORCLPDB
      - ☑ SYSAUX
      - ☑ SYSTEM
      - ☑ UNDOTBS1
      - ☑ USERS
    - ☑ PDB$SEED
    - ☑ SYSAUX
    - ☑ SYSTEM
    - ☑ UNDOTBS1
    - ☑ USERS

☐ Restore raw file

Previous   Next   Cancel   Help

9. Choose **Alternate location** as where the database(s) will be restored.

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

10. Configure the following settings in the **Alternate database** screen:

- **Oracle Home** – where the Oracle_Home path is located. This is already set to the location of the Oracle_Home by default.

- **Host** – this value is set to 127.0.0.1.

- **Port** – the new port number of the alternate Oracle database instance.

- **SID** – the new SID for the alternate Oracle database instance.

  NOTE: If a restore will be performed to an alternate location, it is required to change the Oracle SID and port number.

- **Password** – the password for the system user account in the new database.

Alternate database

Oracle Home

D:\temp\WINDOWS.X64_193000_db_home   [Browse]

Host   Port
127.0.0.1   1522

Database Identification

A database is referenced by at least one Oracle instance which is uniquely identified from any other instance on this computer by an Oracle System Identifier (SID)

SID
orcl1

Database Credentials

For security reasons, you must specify passwords for the SYSTEM user account in the new database

Password
••••••

Confirm password
••••••

[Previous] [Next] [Cancel] [Help]

NOTE

As the password validation is performed during the start of the actual restore process after the hostname, port number, SID, and all the database file locations are confirmed, ensure that you have entered the correct password in the Database Credentials.

If a mistake in entering the correct password is made, this will result to a failed restore process and will require to go back at the beginning to start all the configuration settings again. Please refer to Appendix A for more details.

Once configured, click **Next** to proceed.

11. Once the Oracle database instance has been modified, it will reflect on the original **Database File Locations** automatically. Click **Next** to proceed.

Recovery Locations

Flash Recovery Area

This is used as the default for all disk based backup and recovery operations, and is also required for automatic disk based backup using Enterprise Manager. Oracle recommends that the database files and recovery files be located on physically different disks for data protection and performance.

```
D:\orcl1\oradata\flash_recovery_area          [ Browse ]
```

[Previous] [Next] [Cancel] [Help]

12. Make sure that the temporary directory path is correct. To change its location, click **Browse** then click **OK** to select. Click **Restore** to start the restore process.

Temporary Directory

Temporary directory for storing restore files

```
E:\temp          [ Browse ]
```

[Previous] [Restore] [Cancel] [Help]
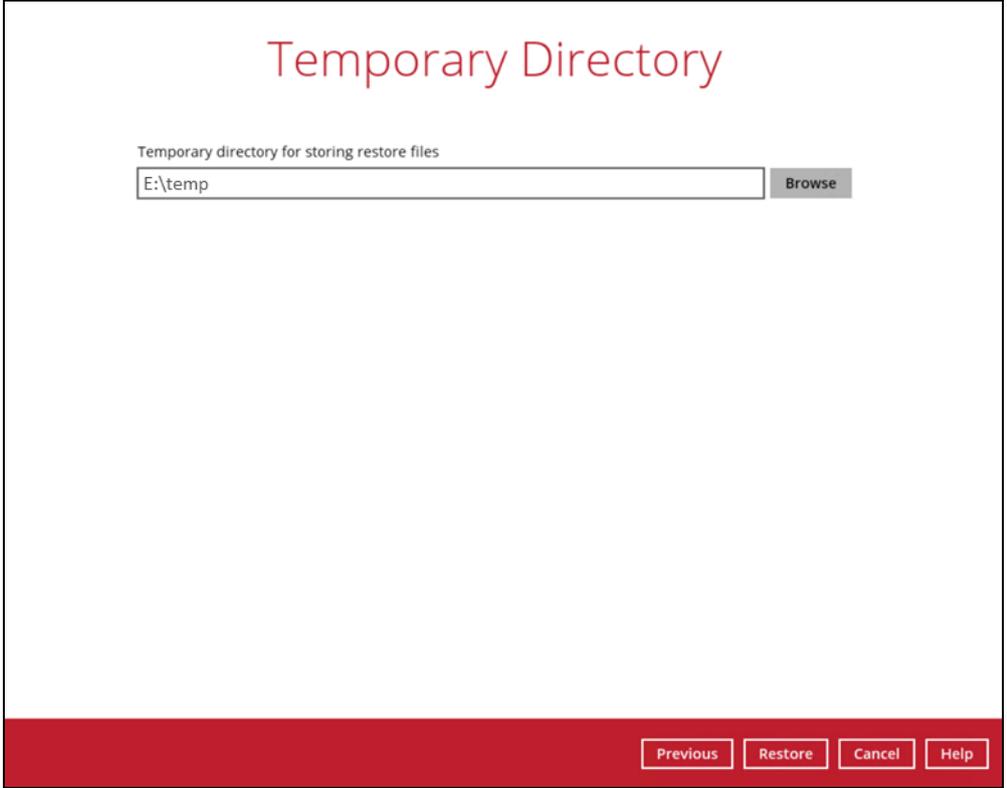
13. When this pop-up message appeared, enter the Windows user account password then click **OK** to continue with the restore process.
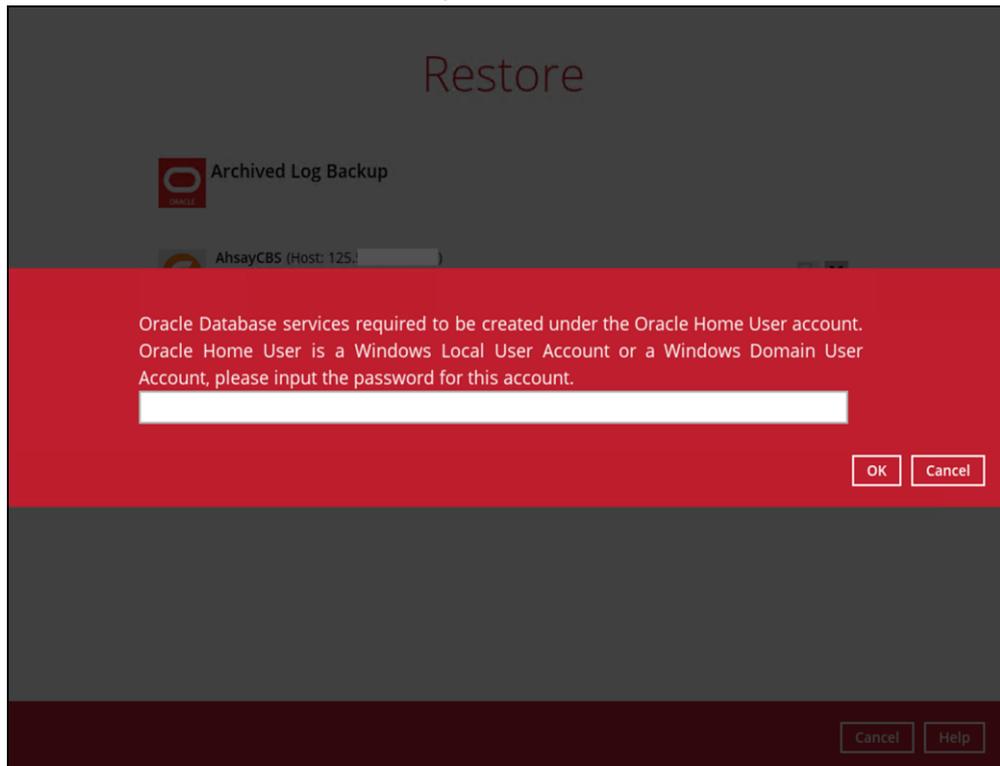
14. Restore job has completed successfully.
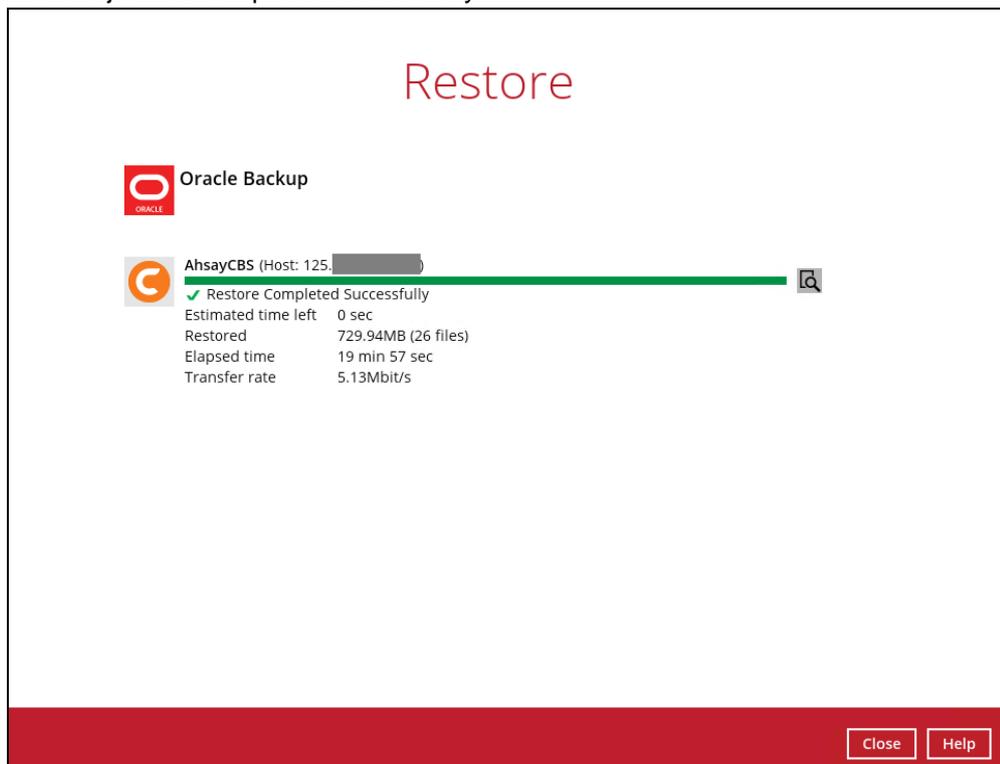
15. After the restore job is completed, verify if the Oracle database instance has been restored using the following SQL query to verify if the instance is online.

```
C:\Users\Administrator>sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Wed Oct 14 14:07:32
2020

Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle.  All rights reserved.

Connected to:

Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production

Version 19.3.0.0.0

SQL> select instance from v$thread;

INSTANCE

-------------------------------------------------------------

orcl1

SQL>
```

9.4 Restore Raw File

This feature is used to restore the Oracle database(s) from your storage destination to a location on disk and manually recover the databases.

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


2. Select the backup set that you would like to restore the Oracle database from.
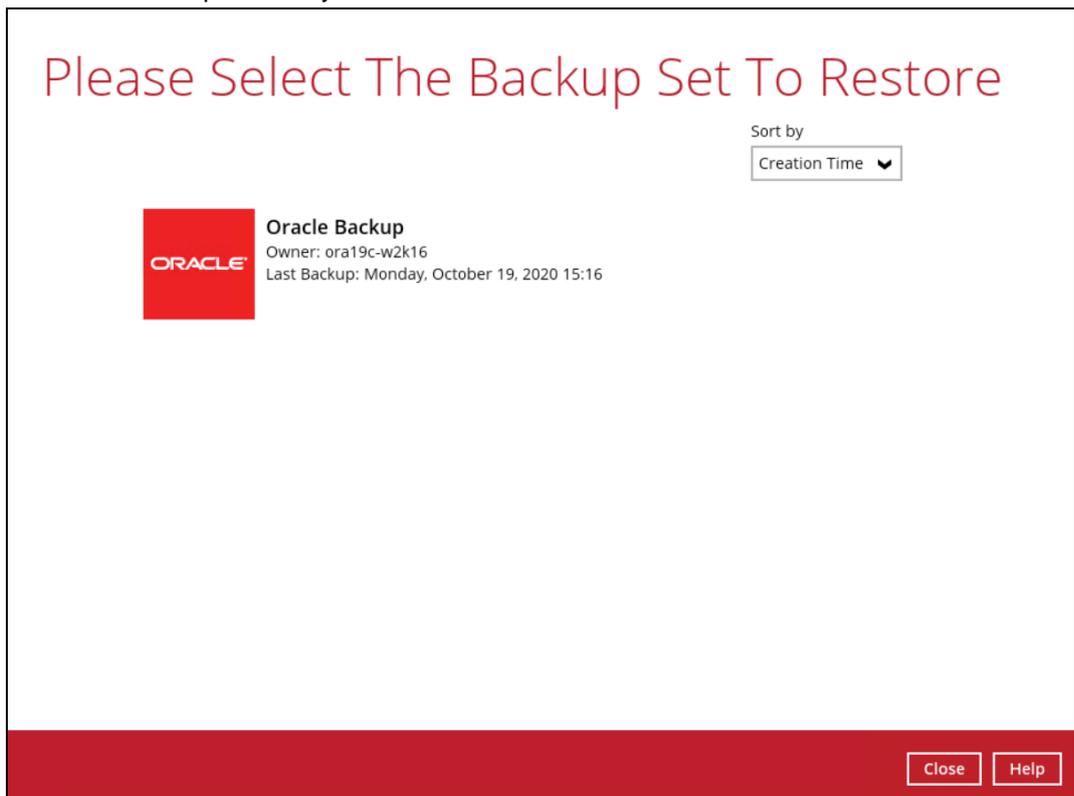
3. Select the destination storage that contains the Oracle database(s) that you would like to restore from.

Select From Where To Restore

Oracle Backup

AhsayCBS
Host: 125.

Previous   Cancel   Help
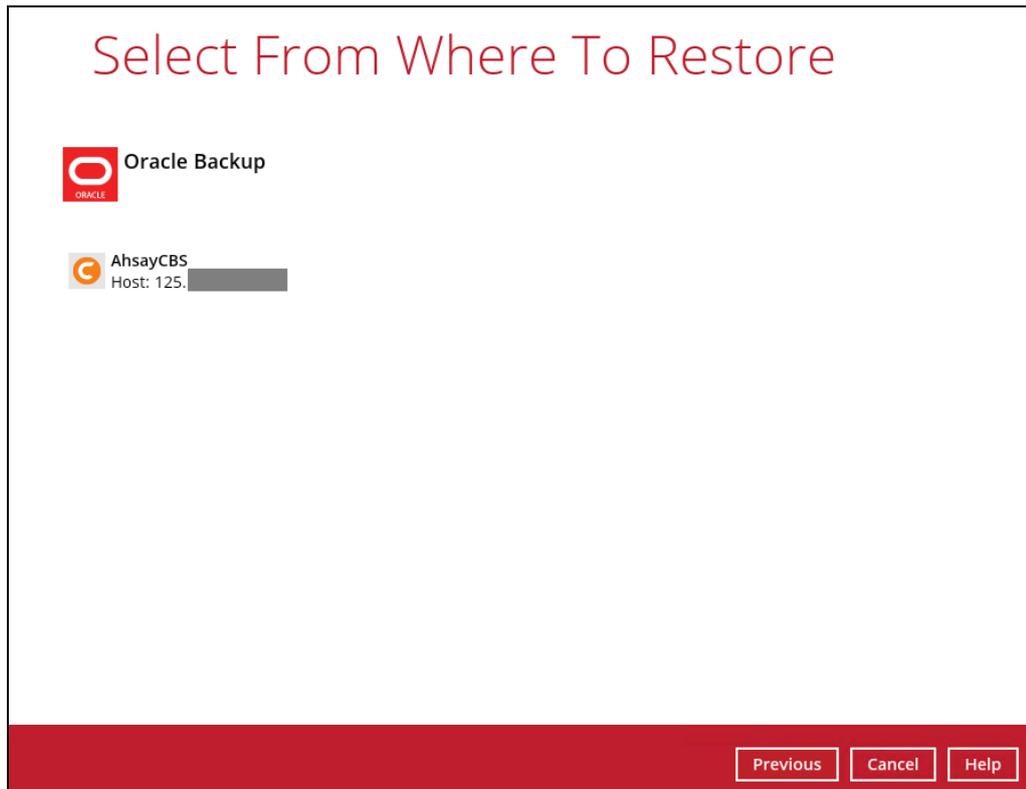
4. Click the **Restore raw file** option then select the Oracle database(s) to be restored. Click **Next** to proceed.

Select Your Databases To Be Restored

Select what to restore

Choose from files as of job ▼   11/12/2020 ▼   Latest ▼

Folders	Name	Size	Date modified
⊟ AhsayCBS	☑ SYSAUX01.DBF	300MB	11/12/2020 10:38
⊟☑ Oracle Database Serv	☑ SYSTEM01.DBF	260MB	11/12/2020 10:38
⊟☑ _D_	☑ UNDOTBS01.DBF	100MB	11/12/2020 10:38
⊟☑ oracle	☑ USERS01.DBF	5MB	11/12/2020 10:39
⊟☑ oradata			
⊟☑ ORCL			
⊞☑ orclp			
⊞☑ pdbs			

☑ Restore raw file   Items per page 50 ▼   Page 1 / 1 ▼

Search

Previous   Next   Cancel   Help

5. Click **Browse** to select the location on the local machine where you wish to restore the Oracle database(s) to. Click **Next** to proceed.

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

6. Make sure that the temporary directory path is correct. To change its location, click **Browse** then click **OK** to select. Click **Restore** to start the restore process.

7. Restore job has completed successfully.

8. After the restore job is completed, verify if the Oracle database(s) have been restored. Go to the designated path on the local machine where you restored the Oracle database files to.

Example: using Windows File Explorer
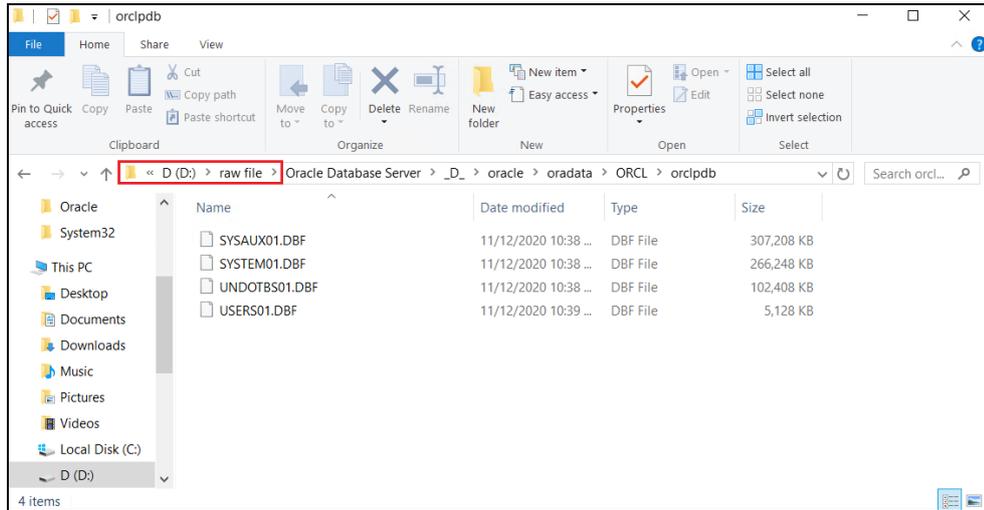
9. Recovering RAW Oracle databases

To recover RAW databases, please refer to the following articles of Oracle Database Backup and Recovery User's Guide for details:

Oracle 19c
https://docs.oracle.com/en/database/oracle/oracle-database/19/bradv/index.html

Oracle 18c
https://docs.oracle.com/en/database/oracle/oracle-database/18/bradv/index.html

Oracle 12c
https://docs.oracle.com/database/121/BRADV/title.htm

10 Contacting Ahsay

10.1 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/

10.2 Documentation

Documentations for all Ahsay products are available at:
https://www.ahsay.com/jsp/en/home/index.jsp?pageContentKey=ahsay_downloads_documentation_guides

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.

Appendix

Appendix A   Example of Restore Log with Error Due to Incorrect Password Entered

The following log highlighted in red is an example of a common restore error message that may be shown during Restore to Alternate location if an incorrect password is detected during the password validation at the start of the actual restore process.

```
[2021/02/23 09:52:49] [cbs] info,"Start restore database from \"orcl18c\"
to \"orcl123\"",0,0,0,1613960327406,0,0
[2021/02/23 09:52:51] [info] Create win service
[2021/02/23 09:52:51] [cbs] info,Create win
service,0,0,0,1613960327406,0,0
[2021/02/23 09:54:03] [erro] Enter password for Oracle service user: DIM-
00097: User name or password is invalid.
[2021/02/23 09:54:03] [cbs] erro,Enter password for Oracle service user:
DIM-00097: User name or password is invalid.,0,0,0,1613960327406,0,0
[2021/02/23 09:54:03] [info] Remove win service
[2021/02/23 09:54:03] [cbs] info,Remove win
service,0,0,0,1613960327406,0,0
[2021/02/23 09:54:04] [erro] [hV] Restore database fail., Reason = "New
Oracle service fail"
[2021/02/23 09:54:04] [cbs] erro,"[hV] Restore database fail., Reason =
\"New Oracle service fail\"",0,0,0,1613960327406,0,0
[2021/02/23 09:54:04] [erro] Restore completed with error(s)
[2021/02/23 09:54:04] [cbs]
end,RESTORE_STOP_SUCCESS_WITH_ERROR,0,0,0,1613960327406,0,0
```

# Appendix B   Example of Restore Log for Alternate Location with Incorrect Permission Setup

The following log highlighted in red is an example of a common restore error message that may be shown during Restore to Alternate Location if the oracle user is not added to the access permission for the alternate location folder with **Full control**.

This example is for Oracle 18c even if AhsayOBM is running using administrator account.

Incorrect Permission Setup	Correct Permission Setup
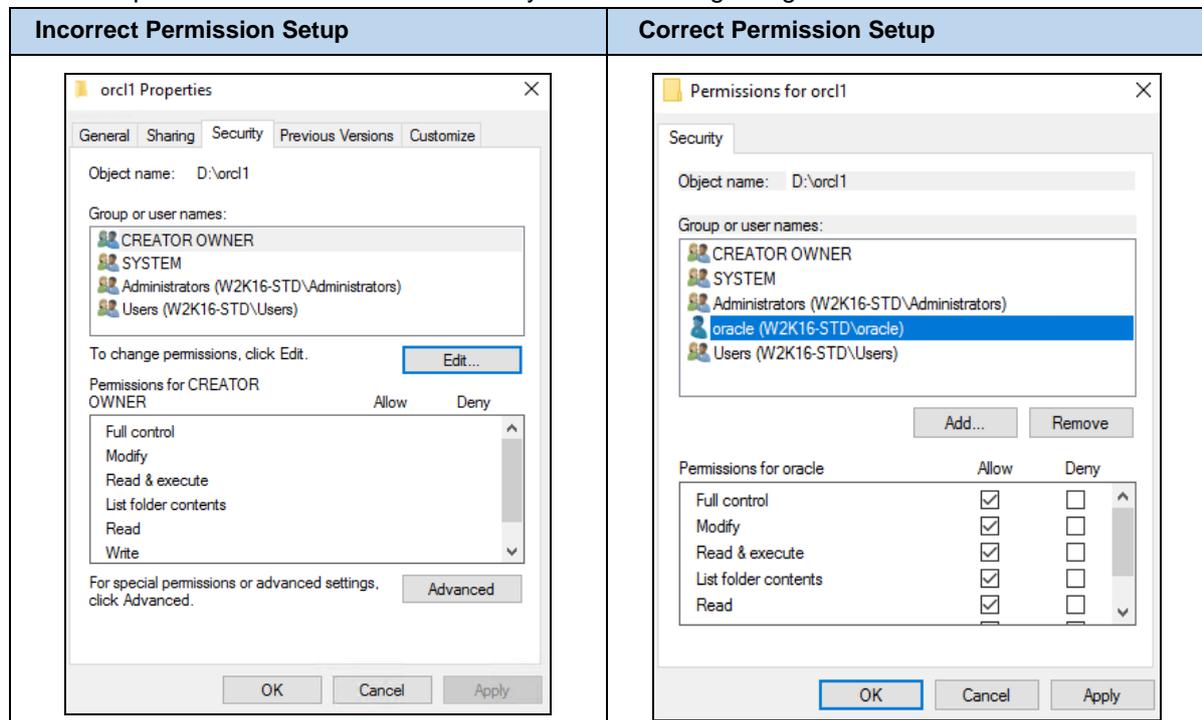
Restore Log

```
[2021/02/22 14:12:11] [erro] SQL*Plus: Release 18.0.0.0.0 – Production
on Mon Feb 22 14:12:07 2021
[2021/02/22 14:12:11] [cbs] erro,SQL*Plus: Release 18.0.0.0.0 –
Production on Mon Feb 22 14:12:07 2021,0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] Version 18.3.0.0.0
[2021/02/22 14:12:11] [cbs] erro,Version
18.3.0.0.0,0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] Copyright (c) 1982, 2018, Oracle.  All
rights reserved.
[2021/02/22 14:12:11] [cbs] erro,"Copyright (c) 1982, 2018, Oracle.  All
rights reserved.",0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] Connected to:
[2021/02/22 14:12:11] [cbs] erro,Connected to:,0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] Oracle Database 18c Enterprise Edition
Release 18.0.0.0.0 – Production
[2021/02/22 14:12:11] [cbs] erro,Oracle Database 18c Enterprise Edition
Release 18.0.0.0.0 – Production,0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] Version 18.3.0.0.0
[2021/02/22 14:12:11] [cbs] erro,Version
18.3.0.0.0,0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] ORA-00283: recovery session canceled due to
errors
```

```
[2021/02/22 14:12:11] [cbs] erro,ORA-00283: recovery session canceled
due to errors,0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] ORA-17528: A read-only file or a file
opened read-only cannot be written to:
[2021/02/22 14:12:11] [cbs] erro,ORA-17528: A read-only file or a file
opened read-only cannot be written to:,0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] D:\RS\ORADATA\ORCL123\SYSTEM01.DBF.
[2021/02/22 14:12:11] [cbs]
erro,D:\RS\ORADATA\ORCL123\SYSTEM01.DBF.,0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] SP2-0042: unknown command "auto" - rest of
line ignored.
[2021/02/22 14:12:11] [cbs] erro,"SP2-0042: unknown command \"auto\" -
rest of line ignored.",0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] Disconnected from Oracle Database 18c
Enterprise Edition Release 18.0.0.0.0 - Production
[2021/02/22 14:12:11] [cbs] erro,Disconnected from Oracle Database 18c
Enterprise Edition Release 18.0.0.0.0 -
Production,0,0,0,1613960327406,0,0
[2021/02/22 14:12:11] [erro] Version 18.3.0.0.0
[2021/02/22 14:12:11] [cbs] erro,Version
18.3.0.0.0,0,0,0,1613960327406,0,0
[2021/02/22 14:12:19] [info] Remove win service
[2021/02/22 14:12:19] [cbs] info,Remove win
service,0,0,0,1613960327406,0,0
[2021/02/22 14:12:30] [erro] [hV] Restore database fail., Reason =
"Recover database fail"
[2021/02/22 14:12:30] [cbs] erro,"[hV] Restore database fail., Reason =
\"Recover database fail\"",0,0,0,1613960327406,0,0
[2021/02/22 14:12:31] [erro] Restore completed with error(s)
[2021/02/22 14:12:31] [cbs]
end,RESTORE_STOP_SUCCESS_WITH_ERROR,0,0,0,1613960327406,0,0
```