

Enterprise Option for SAP HANA Guide

Arcserve® Backup

19.0

arcserve®

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Arcserve Product References

This document references the following Arcserve products:

- Arcserve® Backup
- Arcserve® Unified Data Protection
- Arcserve® Unified Data Protection Agent for Windows
- Arcserve® Unified Data Protection Agent for Linux
- Arcserve® Replication and High Availability

Arcserve Backup Documentation

Arcserve Backup documentation contains specific guides and release notes for all major releases and service packs. Click links below to access documentation.

- [Arcserve Backup 19.0 Release Notes](#)
- [Arcserve Backup 19.0 Bookshelf](#)

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- You can open a support ticket. By opening a support ticket online, you can expect a callback from one of our experts in the product area you are inquiring about.
- You can access other helpful resources appropriate for your Arcserve product.

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Chapter 1: Introduction

Arcserve Backup is a comprehensive storage solution for applications, databases, distributed servers, and file systems. Arcserve Backup provides backup and restore capabilities for databases, business-critical applications, and network clients. In addition, Arcserve Backup helps administrators simplify running backup and restore jobs using graphical user interface (GUI), parallel streaming, and advanced device management.

Among the options Arcserve Backup offers the Enterprise Option for SAP HANA. The Enterprise Option for SAP HANA lets you back up SAP HANA data to storage devices and recover SAP HANA data from storage devices.

Note: Arcserve Backup Enterprise Option for SAP HANA supports all the editions of SAP HANA.

This section contains the following topics:

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How the Enterprise Option Protects SAP HANA

The Enterprise Option for SAP HANA lets you backup and restore online SAP HANA databases. The option handles all communications between Arcserve Backup and the SAP HANA database server while data is being backed up and restored. This communication includes preparing, retrieving, and processing the data sent back and forth across the network.

The Enterprise Option for SAP HANA lets you process jobs efficiently, without interrupting operations, and assists in performing the following functions:

Action	Function
Backup	When a backup request is made, the Enterprise Option for SAP HANA contacts the database, retrieves the necessary data, and sends it to Arcserve Backup, where the objects are backed up to storage devices.
Recovery	Arcserve Backup retrieves the objects that you want to restore from the storage devices and passes them to the Enterprise Option for SAP HANA. The Enterprise Option for SAP HANA then writes this data to the database, completing the recovery process.

The Enterprise Option for SAP HANA lets you manage your SAP HANA environment by performing the following action:

- Manage remote backups
- Backup complete databases
- Recover a complete database
- Backup to a wide array of storage devices

Supported Functionality

The Enterprise Option for SAP HANA provides the following functionalities that enhance performance:

- **The backup option integration module:** Provides the infrastructure for the Enterprise Option for SAP HANA. The backup option integration module serves as the interface that communicates information between Arcserve Backup and SAP HANA.
- **Enhanced destination options:** Lets you specify different destination tapes for each day of the week in single stream mode or specify media pools. Using the enhanced destination options, you can better organize your backup tapes.
- **Support for Multi-Host SAP HANA backup:** Multi-Host SAP HANA backups are supported in Arcserve Backup R17.5.

Chapter 2: Installing and Configuring the Enterprise Option for SAP HANA

This section contains the following topics:

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Prerequisites to Install the SAP HANA Agent

Before installing the Enterprise Option for SAP HANA, complete the following tasks:

- Verify that your system meets the minimum hardware and software requirements needed to the Enterprise Option for SAP HANA. For a list of requirements, refer [Arcserve Backup Release Notes](#).
- Verify that the Arcserve Backup server component is installed in your system.
- Verify that you have super user privileges.
- Verify that the SAP HANA server component is installed on the computer where you will install the Enterprise Option for SAP HANA.
- You need to install the relevant compat (32-bit) (libstdc++33-32bit.*) package to proceed with the smooth installation of the agent.

Important: If you see the following error do not proceed with the installation:

```
The components you selected require this library file: libstdc++.so.5.  
Typically, Linux comes with this library file. It is located in the /usr/lib  
path. Before you rerun the installation, install the following package:  
  
compat-libstdc++ (32-bit)
```

Install the Enterprise Option for SAP HANA on Database Servers

You must install the Enterprise Option for SAP HANA on all database servers that you want Arcserve Backup to manage.

Install the Enterprise Option for SAP HANA and Client agent for Linux on SAP HANA server.

Refer [Client Agents Guide](#) for Unix and Linux installation instructions.

```
sh-3.2# cd /opt/Arcserve/ABhanaagt/
sh-3.2# ls
backint  ca_backup  ca_restore  cas_decr  cas_encr  ckyorn  data  hanaagentd  hanasetup  logs  nls  pfilesetup
sh-3.2# ./hanasetup

Please enter Backup Agent Home directory (default: /opt/Arcserve/ABhanaagt):
Please enter Oracle SID used for SAP (default: HDB):
Please enter SAP home directory (default: /usr/sap):

Configuring Arcserve Backup Enterprise Option for SAP HANA...

You can create or modify the backup utility parameter file
using the 'pfilesetup' script located in the /opt/Arcserve/ABhanaagt directory.

Would you like to run the pfilesetup script now (recommended) (y/n): y

Please enter the complete path of the backup utility parameter file (default: /opt/Arcserve/ABhanaagt/initHDB.utl):
Please enter the Arcserve Backup server host name (currently: undefined): WINDOWSServer
```

Configure the Enterprise Option for SAP HANA

After you install the ABhana and the ABhanabaim packages on your system, you need to run the configuration script to configure the Enterprise Option for SAP HANA. However, before you configure the Enterprise Option for SAP HANA, verify that the following information is available:

- The SAP HANA SID
- The path to the SAP home directory
- The path for the Enterprise Option for SAP HANA home directory

Now, you can start configuring the Enterprise Option for SAP HANA.

Configure SAP Using the Configuration Script

The SAP HANA configuration setup script lets you configure the Enterprise Option for SAP HANA on SAP HANA servers.

Follow these steps:

1. Enter the following command in the Enterprise Option for SAP HANA home directory:
`./hanasetup`
2. To provide a directory, perform one of the following options:
 - To select the default home directory for the Enterprise Option for SAP HANA, press Enter. The default directory is:
`/opt/Arcserve/ABhanaagt`
 - To enter a directory other than the default, enter the directory path and press Enter.
3. To enter the SAP HANA SID, perform one of the following options:
 - To select the default, press Enter. The default ID is:
`HDB`
 - To enter an SID other than the default, type the alternate SID and press Enter.
4. To enter the SAP home directory, perform one of the following options:
 - To select the default directory press Enter. The default directory is:
`/usr/sap`
 - To enter a directory other than the default, type the directory path and press Enter.
5. The script confirms if you want to run the pfilesetup script now.

Note: You can run pfilesetup later if you want to create different utility parameter files. If you want to run the pfilesetup script later, type n.

Perform one of the following options:

- **Type y**

The configuration script (hanasetup) calls the utility parameter file setup script (pfilesetup). The pfilesetup script configures the utility parameter file needed by ABhanabaim.

The following is an example of the entries in pfilesetup:

HOST =<server where Arcserve Backup is installed>
USERNAME=<name of a user who has access to the SAP/HANA files on the client node>
PASSWORD=<password of that user>
DESTGROUP=<Arcserve Backup device group>
DESTTAPE=<tape name>
MEDIAPPOOL=<media pool name>

- **Type n**

The setup is complete.

```
sh-3.2# pwd
/opt/Arcserve/ABhanaagt
sh-3.2# ./hanasetup

Please enter Backup Agent Home directory (default: /opt/Arcserve/ABhanaagt):
Please enter Oracle SID used for SAP (default: HDB):
Please enter SAP home directory (default: /usr/sap):

Configuring Arcserve Backup Enterprise Option for SAP HANA...

You can create or modify the backup utility parameter file
using the 'pfilesetup' script located in the /opt/Arcserve/ABhanaagt directory.

Would you like to run the pfilesetup script now (recommended) (y/n): y

Please enter the complete path of the backup utility parameter file (default: /opt/Arcserve/ABhanaagt/initHDB.utl):
Please enter the Arcserve Backup server host name (currently: undefined): Arcserve_Server_Name
Please enter the ORIGINAL server host name. If you want to restore data from another node to this one. (currently: undefined):
Please enter the destination tape group (optional, enter 'n' to disable current setting) (currently: undefined):
Please enter the destination tape (optional, enter 'n' to disable current setting) (currently: undefined):
Please enter the destination media pool (optional, enter 'n' to disable current setting) (currently: undefined):
Please enter the source tape group for restore (optional, enter 'n' to disable current setting) (currently: undefined):

You must enter the username and the password of the user who
owns the SAP Hana files on the client node.

Please enter the username (currently: undefined): hdbadm
Please enter the password :
Please re-type the password to confirm :

Do you want to enter LOG OPTIONS? (y/n): n

Do you want to eject tapes after backups? (currently: n) (y/n): █
```

Note: The next step is to edit the backup and restore configuration profiles.

Configuration Files

You can edit the following configuration files if you intend to edit any parameters at a later point of time or run the `pfilesetup` command to edit the configuration files:

- **util_par_file(initSID.utl):** Lets you customize the backup option integration module parameter file that controls the backup process. The default location of this configuration file is as follows:

`$CASAP_HOME(/opt/Arcserve/ABhanaagt)`

Note: Optionally, you can rename `util_par_file` and save the file at a specific location when you run `pfilesetup`.

Edit util_par_file to Define Environment Variables

By editing util_par_file, you define the environment variables for the backup option integration module. To set the values for the parameters in this file, run hanasetup or pfilesetup.

When the Enterprise Option for SAP HANA performs a SAP HANA backup job, the backup option integration module creates a backup job and sends to the Arcserve Backup server for execution. The job is submitted using the backup parameters that you set in util_par_file. In util_par_file you can perform the following options:

- Designate tapes that you want to use
- Define backup group properties
- Define media pool properties

Required Options

You must set the following parameters in util_par_file:

HOST=<Arcserve Backup Server Name >

USERNAME=<name of a user who has access to the SAP HANA files on the client node>

PASSWORD= <password of that user>

Additional Options

You can set the following optional parameters to customize options for tapes, group names, and media pools:

Options:

ORIGINALHOST=< Original Hostname of the Backup when restoring one hosts data to another host >.

Log Options:

SNMP=< True/False >

TNG=< True/False >

EMAIL=< john.smith@ca.com >

PRINTER=< lp >

Destination Options:

EJECT=< True/False >

DETTAPE=< Tape Name >

DETTGROUP=< Device Group Name >

MEDIAPOOL= < Media Pool Name >

TAPEMETHOD=< Append / Owritesameblank / Owritesameblankany >

SPANTAPEMETHOD=< Owritesameblank / Owritesameblankany >

TAPETIMEOUT=< minutes >

SPANTAPETIMEOUT=< minutes >

Description of Additional Options:

- **SNMP:** Lets you send alert information through SNMP.
- **TNG:** Lets you send alert information through TNG.
- **EMAIL:** Lets you send alert information through EMAIL.
- **PRINTER:** Lets you send alert information to a printer.

Note: Configure the SNMP, TNG, EMAIL, and PRINTER options using the Arcserve Backup Alert Manager before you configure the parameters in the util_par_file configuration file. For more information, see the [Administration Guide](#).

- **EJECT:** Lets you eject tapes after backups are complete.
- **DESTTAPE:** Lets you specify tape names that you use for backups.

Note: Arcserve Backup ignores this option when you specify the MEDIAPOOL option.

- **DESTGROUP:** Lets you specify the tape group to use for backups.

Note: Arcserve Backup ignores this option when you specify the MEDIAPOOL option.

- **MEDIAPOOL:** Lets you specify the media pool to use for the backup.

- **TAPEMETHOD:** Lets you specify the overwrite method to use on the first tape during the backup. You can specify one of the following values:

- Append
- Owritesameblank
- Owritesameblankany

- **SPANTAPEMETHOD:** Lets you specify the tape spanning method to use on additional tapes during the backup. You can specify one of the following values:

- Owritesameblank
- Owritesameblankany

- **TAPETIMEOUT:** Lets you specify a timeout value for the first tape.
- **SPANTAPETIMEOUT:** Lets you specify a timeout value for additional tapes.

Schedule Options

You can set the following schedule options, that enable you to use a different tape, media pool, or both, following a seven-day cycle:

DAYOFWEEK =< True / False >

Without Multistreaming

DESTTAPESUN=< Tape Name to use on Sunday >

DESTTAPEMON=< Tape Name to use on Monday >

DESTTAPETUE=< Tape Name to use on Tuesday >

DESTTAPEWED=< Tape Name to use on Wednesday >

DETTAPETHU=< Tape Name to use on Thursday >

DETTAPEFRI=< Tape Name to use on Friday >

DETTAPESAT=< Tape Name to use on Saturday >

If you do not specify a tape for the current day when you set the schedule options, the tape specified in the DETTAPE is used as the default.

Considerations:

- Tape names cannot exceed 24 characters.
- To comment out a line, enter # at the beginning of a line. This method applies to all options.

Configure the Enterprise Option for SAP HANA in Multi-host environment

Arcserve Backup r17.5 SP1 supports SAP HANA Multi-host environment and you need to install the agent on all the hosts.

Follow these steps:

1. Run `./hanasetup` and `./pfile setup` when prompted on the master host.

For more information, see [Configure SAP Using the Configuration Script](#).

2. Edit the `init<SID>.utl` file and enter the following command after the password parameter:

```
HANA_DOMAIN_NAME=HOST1 HOST2 HOST3 HOSTN
```

Note: HOST1 HOST2 HOST3 HOSTN are the host names of your HANA host machines.

```
PASSWORD=CAcrypt:6190c8e99c401905fba0f23c9b3df6db  
HANA_DOMAIN_NAME=saphana hanasap
```

3. On the remaining hosts, run `./hanasetup` and do not run the `./pfile setup`.
4. Copy the `init<SID>.utl` file from the Master Host to the remaining hosts.

Add User Equivalence to the SAP DBA User

Before you can use the Enterprise Option for SAP HANA, add the HDBADM user as an Arcserve Backup user. This provides necessary permission and enables the backup option integration module to send jobs to the Arcserve Backup server. You must establish the authentication equivalence settings with proper privileges.

Note: Within Arcserve Backup, the unique key is hostname.username. You cannot use the User Profile Manager.

Follow these steps:

1. As a prerequisite, verify that the Arcserve Backup server is running.
2. Open the command line on the Arcserve Backup server and set the user equivalence using the following syntax:

```
ca_auth [-cahost <BackupServer hostname>] -equiv add <HDBADMUser> <SAPAgent  
hostname> <ABBackupUser> [<ABUsername> <ABpassword>]
```

Example:

```
$>ca_auth -cahost BackupSever -equiv add hdbadm hanaserver caroot caroot""
```

This command authorizes HDBADM user, hdbadm, on the hanaserver machine, to use the Arcserve Backup user name, caroot, on the Arcserve Backup Server host.

Note:In this example, caroot has no password, so "" is used.

For more information about setting user equivalence, see the [Command Line Reference Guide](#).

Note: For multi-host environment, you need to add equivalence for all the SAP HANA installed hosts.

Uninstall the Enterprise Option for SAP HANA from UNIX and Linux Systems

Arcserve Backup contains an uninstallation script that lets you uninstall the Enterprise Option for SAP HANA.

Follow these steps:

1. From the command prompt, access the Arcserve Backup Common Agent directory using the following command:

```
# cd /opt/Arcserve/ABcmagt
```

2. Execute the following command:

```
# ./uninstall
```

3. Follow the on-screen instructions to complete the uninstallation process.

Note: Optionally, you can use the package management tool provided with your operating system to uninstall the Enterprise Option for SAP HANA.

Use the rpm tool from the command line prompt and execute the following command:

```
rpm -e ABhana
```

Chapter 3: Using SAP HANA Studio

SAP HANA backup and recovery are performed using SAP HANA Studio. This chapter provides information on how to perform backup and recovery of SAP HANA database.

SAP HANA Studio is the most common tool used to backup and recover HANA databases. Using SAP HANA Studio, administrators can monitor activities such as starting and stopping the services, monitor the system, configure system settings, and manage users and authorizations. SAP HANA Studio is a client environment that is used to access the SAP HANA database located in the same environment or at a remote location.

This section contains the following topics:

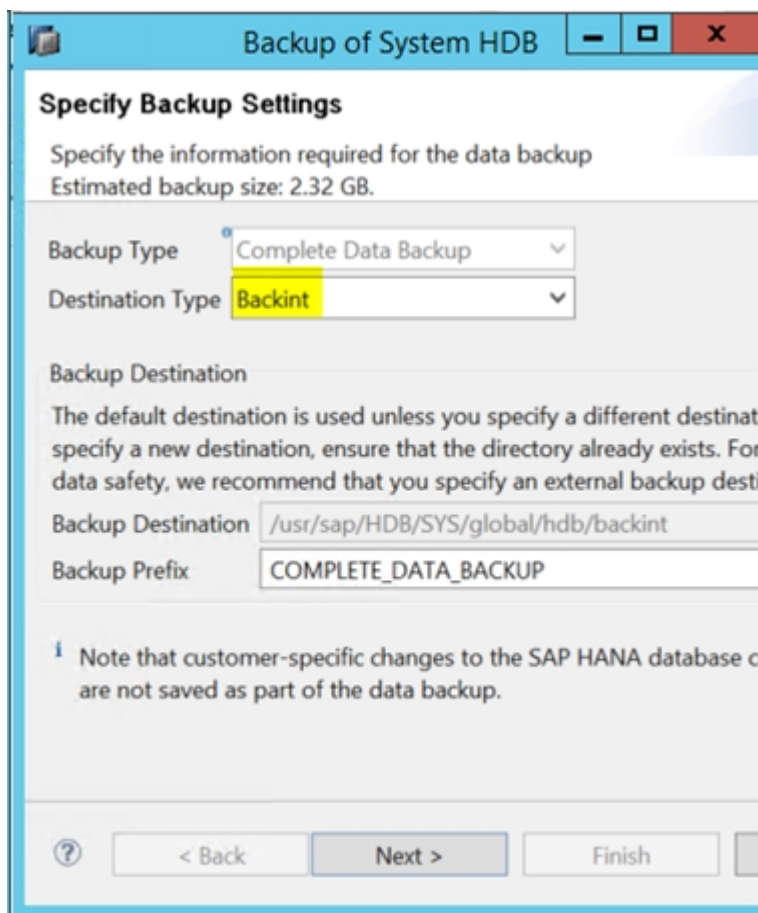
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How to Perform Database Backup

You can perform the SAP HANA database backup when the database is online using BACKINT. SAP HANA provides BACKINT interface to the thirdparty vendors to implement backup\recovery to external storage devices.

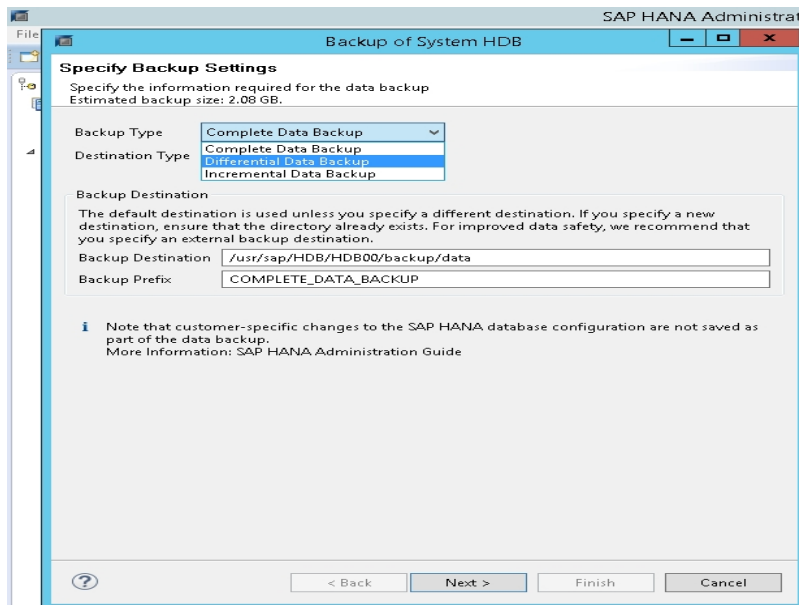
Once you configure SAP HANA agent, backup server and destination tapes details are stored in Parameter file. Backint refers to the parameter file and submits backup to that backup server as per the configurations.

When you submit the backup from SAP HANA studio, mention the destination type as backint while submitting the backup job.



You can select any one the following backup types from the Backup Type drop-down list:

- Complete Backup
- Differential Data Backup
- Incremental Data Backup



Type of Backup	Description
Complete	Complete Backup includes the backup of all the data structures that are required to recover the database.
Incremental	Incremental backup stores the data that is modified after the last data backup or last delta backup (incremental or differential).
Differential	Differential backup stores all the data modified after the last full data backup.

How to Configure Log Backups

Consider the following steps while configuring the log backups:

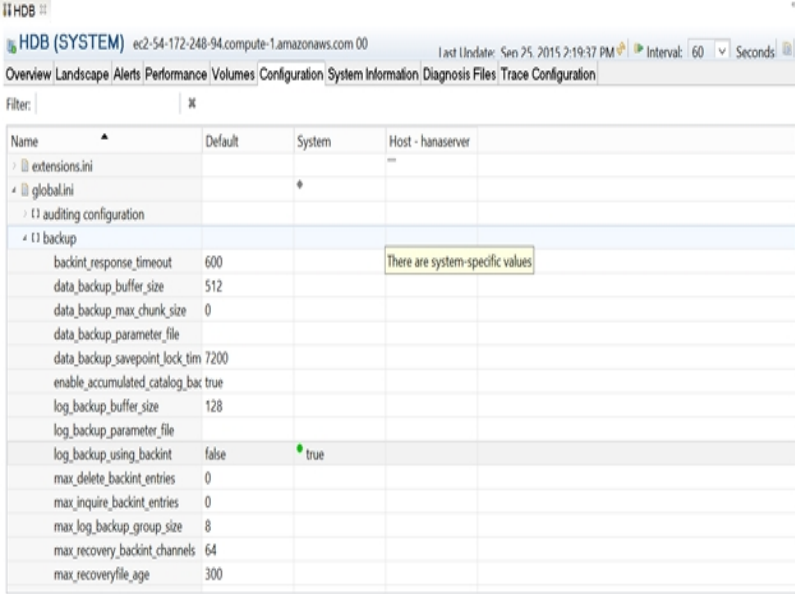
- Always considers the default settings for log backups.
- Destination type is either a file or Backint whichever is configured under instance configuration.
- Destination location and backup interval is considered from the configuration.
- Log backups are carried out automatically unless disabled.

To perform log backups automatically to backint, you need to configure the log backups from SAP HANA Studio or from Global.ini file. The backups are written to the file if **Enable Automatic Log Backup** option is enabled. By default, the **Enable Automatic Log Backup** option is enabled by SAP HANA.

You can configure log backups to backint from SAP HANA Studio:

Follow these steps:

1. Launch **SAP HANA Studio**.
2. Double click on the Instance Name.
3. Navigate to **Instance, Configuration, Global.ini , []backup**
4. Change the system value of **log_backup_using_backint** from **false** to **true**.



The screenshot shows the SAP HANA Studio Configuration view for the 'global.ini' file. The 'backup' section is expanded, and the 'log_backup_using_backint' parameter is highlighted. The 'Default' value is 'false' and the 'System' value is 'true'. A tooltip indicates 'There are system-specific values'.

Name	Default	System	Host - hanaserver
extensions.ini			
global.ini			
auditing configuration			
backup			
backint_response_timeout	600		
data_backup_buffer_size	512		
data_backup_max_chunk_size	0		
data_backup_parameter_file			
data_backup_savepoint_lock_tim	7200		
enable_accumulated_catalog_bac	true		
log_backup_buffer_size	128		
log_backup_parameter_file			
log_backup_using_backint	false	true	
max_delete_backint_entries	0		
max_inquire_backint_entries	0		
max_log_backup_group_size	8		
max_recovery_backint_channels	64		
max_recoveryfile_age	300		

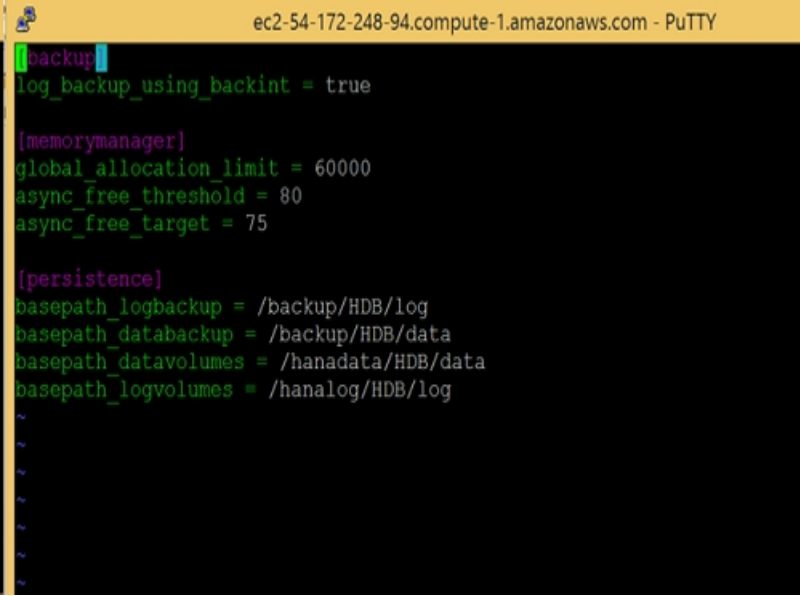
Note: Once you modify the value of **log_backup_using_backint**, the impact is immediate.

You can configure log backups to backint from global.ini file:

Follow these steps:

1. Edit **global.ini** file from `/usr/sap/HDB/global/hdb/custom/config`.
2. Add the following line under `[backup]` section:

```
log_backup_using_backint = true
```



```
ec2-54-172-248-94.compute-1.amazonaws.com - PuTTY
[backup]
log_backup_using_backint = true

[memorymanager]
global_allocation_limit = 60000
async_free_threshold = 80
async_free_target = 75

[persistence]
basepath_logbackup = /backup/HDB/log
basepath_databackup = /backup/HDB/data
basepath_datavolumes = /hanadata/HDB/data
basepath_logvolumes = /hanalog/HDB/log
~
~
~
~
~
```

Note: If you do not see the `[backup]` section, create a section and then add the code.

Database Recovery in SAP HANA Studio

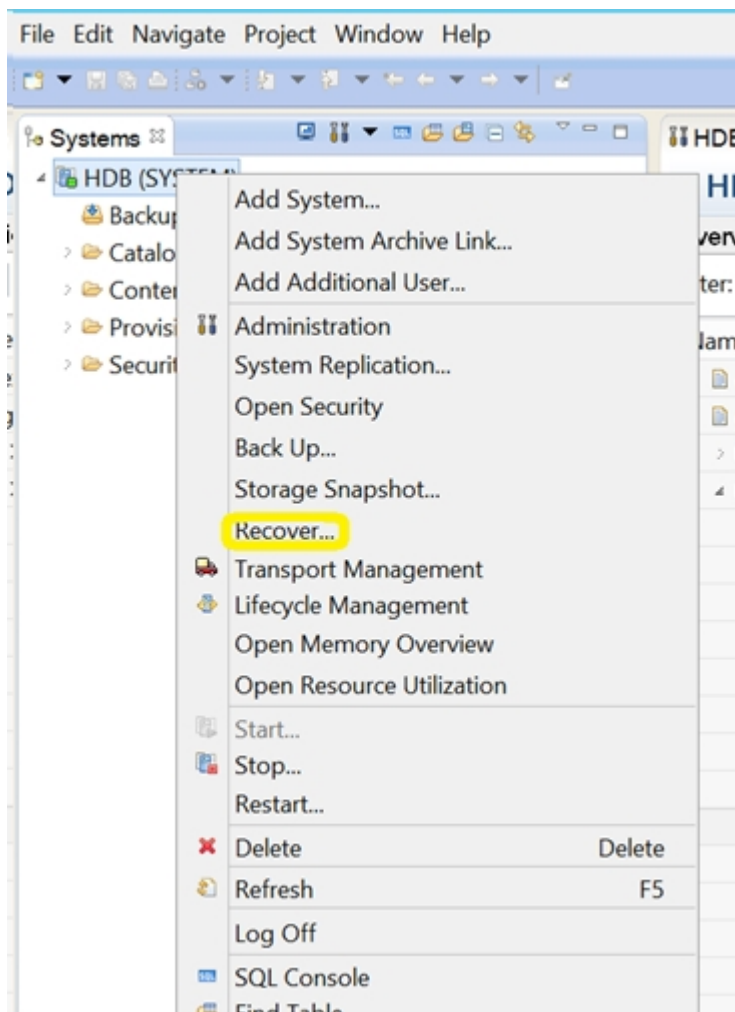
SAP HANA database has the capability to restore data in case of data loss. This section contains the following topics:

You can perform database recovery from SAP HANA Studio.

Important! Recovery to Alternate Server is currently not available.

Follow these steps:

1. Right click on the instance and choose **Recover** from the context menu of the database.



2. Enter the credentials of the SAP HANA operating system user **<SID>adm**.

Note: To perform a recovery, the SAP HANA database will shut down.

Supported Recovery Methods

The following methods are supported by SAP HANA for recovery of system:

- Recover the database to its most recent state.

To recover a database to its most recent state, recovery uses:

- The latest specified data backup
- Subsequent log backups
- Entries that are still available in the log area (if they were not destroyed by the failure)

- Recover the database to the following point in time:

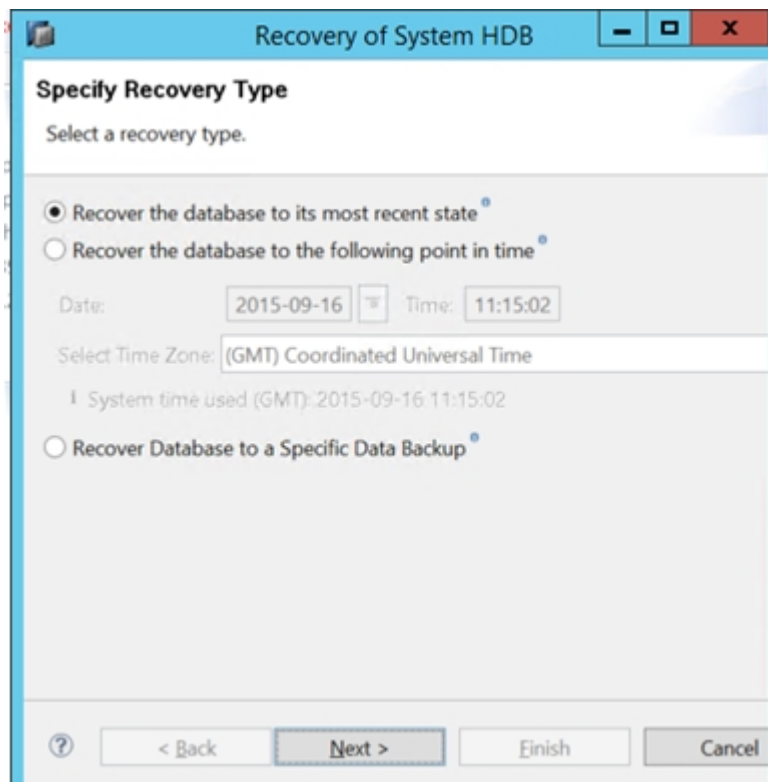
To recover a database to the following point in time, recovery uses:

- Data backup based on the specified time
- Subsequent log backups
- Entries that are still available in the log area (if they was not destroyed by the failure)

- Recover Database to a Specific Data Backup.

To Recover Database to a specific Data Backup, recovery uses:

- Specified data backup, but no log backups.
- Entries that are still available in the log area (if they were not destroyed by the failure).



How to Monitor the Jobs

Backup and restore jobs that you submit from SAP HANA Studio are monitored from Arcserve Backup Job Status Manager. You can view all the backup-related logs in the Activity Log and the logs following path displays the logs related to Agent:

/opt/Arcserve/ABhanaagt/logs

How to Use Backup Catalogs

You can view all the logs related to backup jobs at SAP HANA Studio Backup Catalog. Double click on **Backup** under the **Systems** view to see the **Backup Catalog**.

The screenshot displays the 'Backup Catalog' window in SAP HANA Studio. It is divided into two main sections: 'Backup Catalog' on the left and 'Backup Details' on the right.

Backup Catalog Section:

- A checkbox labeled 'Show Log Backups' is checked.
- A table lists backup jobs with columns: 'Sta...', 'Started', 'Duration', 'Size', 'Backup Type', and 'Destination Type'.

Sta...	Started	Duration	Size	Backup Type	Destination Type
●	Sep 11, 2015...	00h 00...	0 B	Data Backup	File
■	Sep 11, 2015...	00h 02...	2.23 ...	Data Backup	Backint
■	Sep 11, 2015...	00h 00...	2.23 ...	Data Backup	File
■	Sep 10, 2015...	00h 02...	2.23 ...	Data Backup	Backint
■	Sep 10, 2015...	00h 02...	2.23 ...	Data Backup	Backint
■	Sep 10, 2015...	00h 00...	2.23 ...	Data Backup	File
●	Sep 10, 2015...	00h 00...	0 B	Data Backup	Backint
■	Sep 10, 2015...	00h 02...	2.22 ...	Data Backup	Backint
■	Sep 10, 2015...	00h 02...	2.22 ...	Data Backup	Backint
●	Sep 10, 2015...	00h 00...	0 B	Data Backup	Backint
■	Sep 10, 2015...	00h 02...	2.22 ...	Data Backup	Backint
●	Sep 10, 2015...	00h 00...	0 B	Data Backup	Backint
■	Sep 10, 2015...	00h 00...	0 B	Data Backup	Backint
■	Sep 9, 2015 ...	00h 00...	2.22 ...	Data Backup	File
■	Sep 9, 2015 ...	00h 02...	2.22 ...	Data Backup	Backint
■	Sep 9, 2015 ...	00h 03...	2.22 ...	Data Backup	Backint
■	Sep 9, 2015 ...	00h 02...	2.22 ...	Data Backup	Backint

Backup Details Section:

- ID: 1441956323881
- Status: Successful
- Backup Type: Data Backup
- Destination Type: Backint
- Started: Sep 11, 2015 7:25:23 AM (UTC)
- Finished: Sep 11, 2015 7:27:29 AM (UTC)
- Duration: 00h 02m 05s
- Size: 2.23 GB
- Throughput: 18.23 MB/s
- Comment: (empty field)
- Additional Information: <ok>
- Location: /usr/sap/HDB/SYS/global/hdb/backint/

At the bottom of the 'Backup Details' section, there is a table showing backup components:

Host	Service	Size	Name	Source	EBID
hanaserver	xsengine	65.84...	FULL_dat...	volume	S_2...
hanaserver	nameser...	66.98...	FULL_dat...	volume	S_2...
hanaserver	indexserv...	1.84 ...	FULL_dat...	volume	S_2...

Chapter 3: Using SAP HANA Cockpit

SAP HANA Cockpit provides a single point of access to a wide range of tools used for administration and detailed monitoring of multiple, individual and tenant SAP HANA databases, and also integrates the SQL development capabilities for administrators. SAP HANA Cockpit is a web-based HTML5 user interface that you can access through a browser, that runs on SAP HANA extended application services, advanced model (XS advanced). You can use the cockpit to monitor and manage systems that run SAP HANA 2.0 or SAP HANA 1.0 SPS 12.

This section contains the following topics:

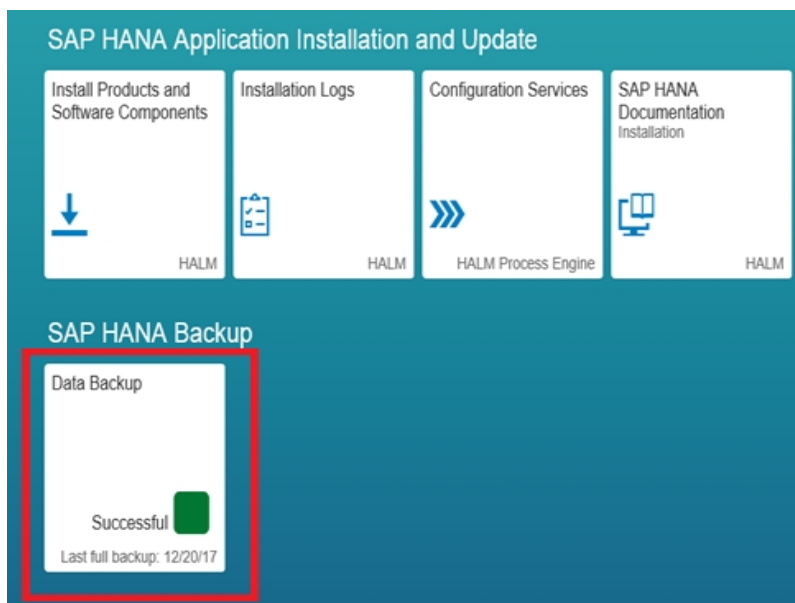
How to Create Data Backups and Delta Backups for SAP HANA 1.0 SPS 12	35
How to Create Data Backups and Delta Backups for SAP HANA 2.0 and later	39
How to Schedule Database Backups for SAP HANA 1.0 SPS 12	40
How to Schedule Database Backups for SAP HANA 2.0 or later	44

How to Create Data Backups and Delta Backups for SAP HANA 1.0 SPS 12

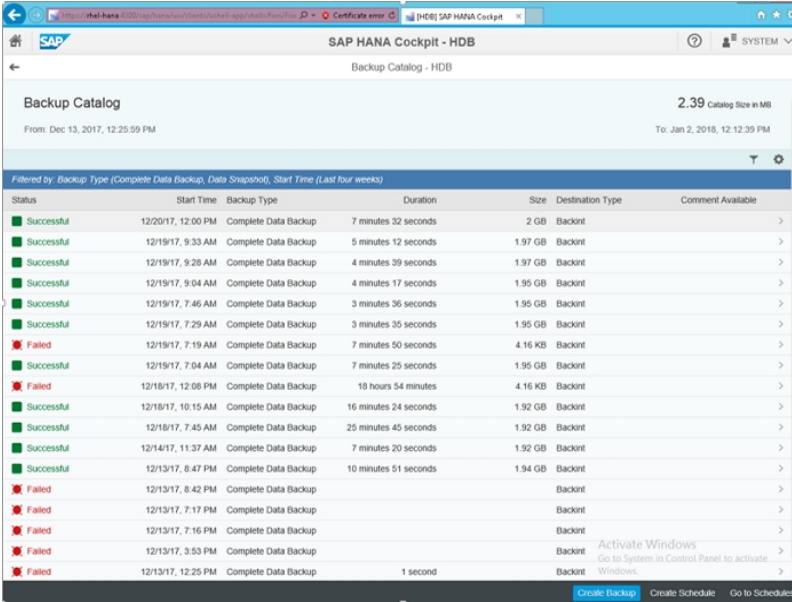
SAP HANA Cockpit lets you create complete data backups and delta backups (differential backups and incremental backups) for SAP HANA single-container systems. Using SAP HANA multi-tenant database containers, you can use SAP HANA Cockpit to back up the system database. **Note:** You can backup each tenant database directly if you are logged on.

Follow these steps:

1. Open the SAP HANA Cockpit URL and select **Data Backup** option.



The backup catalog information overview is displayed.



Backup Catalog - HDB

2.39 Catalog Size in MB

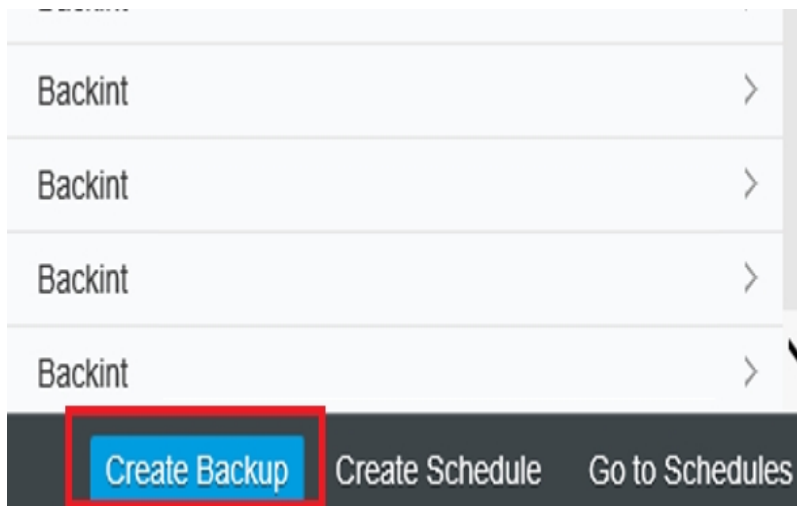
From: Dec 13, 2017, 12:25:59 PM To: Jan 2, 2018, 12:12:39 PM

Filtered by: Backup Type (Complete Data Backup, Data Snapshot), Start Time (Last four weeks)

Status	Start Time	Backup Type	Duration	Size	Destination Type	Comment Available
Successful	12/20/17, 12:00 PM	Complete Data Backup	7 minutes 32 seconds	2 GB	Backint	>
Successful	12/19/17, 9:33 AM	Complete Data Backup	5 minutes 12 seconds	1.97 GB	Backint	>
Successful	12/19/17, 9:28 AM	Complete Data Backup	4 minutes 39 seconds	1.97 GB	Backint	>
Successful	12/19/17, 9:04 AM	Complete Data Backup	4 minutes 17 seconds	1.95 GB	Backint	>
Successful	12/19/17, 7:46 AM	Complete Data Backup	3 minutes 36 seconds	1.95 GB	Backint	>
Successful	12/19/17, 7:29 AM	Complete Data Backup	3 minutes 35 seconds	1.95 GB	Backint	>
Failed	12/19/17, 7:19 AM	Complete Data Backup	7 minutes 50 seconds	4.16 KB	Backint	>
Successful	12/19/17, 7:04 AM	Complete Data Backup	7 minutes 25 seconds	1.95 GB	Backint	>
Failed	12/18/17, 12:08 PM	Complete Data Backup	18 hours 54 minutes	4.16 KB	Backint	>
Successful	12/18/17, 10:15 AM	Complete Data Backup	16 minutes 24 seconds	1.92 GB	Backint	>
Successful	12/18/17, 7:45 AM	Complete Data Backup	25 minutes 45 seconds	1.92 GB	Backint	>
Successful	12/14/17, 11:37 AM	Complete Data Backup	7 minutes 20 seconds	1.92 GB	Backint	>
Successful	12/13/17, 8:47 PM	Complete Data Backup	10 minutes 51 seconds	1.94 GB	Backint	>
Failed	12/13/17, 8:42 PM	Complete Data Backup			Backint	>
Failed	12/13/17, 7:17 PM	Complete Data Backup			Backint	>
Failed	12/13/17, 7:16 PM	Complete Data Backup			Backint	>
Failed	12/13/17, 3:53 PM	Complete Data Backup			Backint	>
Failed	12/13/17, 12:25 PM	Complete Data Backup	1 second		Backint	>

Create Backup Create Schedule Go to Schedules

2. Click **Create Backup** option.



3. Select the **Backup Type** as desired and **Destination Type** as Backint.

Specify Backup Settings

Estimated Backup Size: 2.17 GB

*Backup Type: Complete Incremental Differential

*Destination Type: File Backint

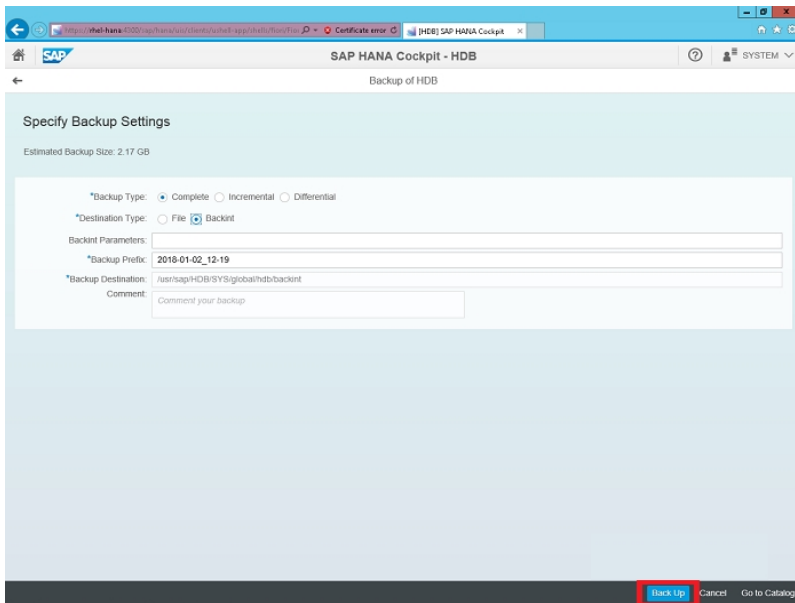
Backint Parameters:

*Backup Prefix: 2018-01-02_12-19

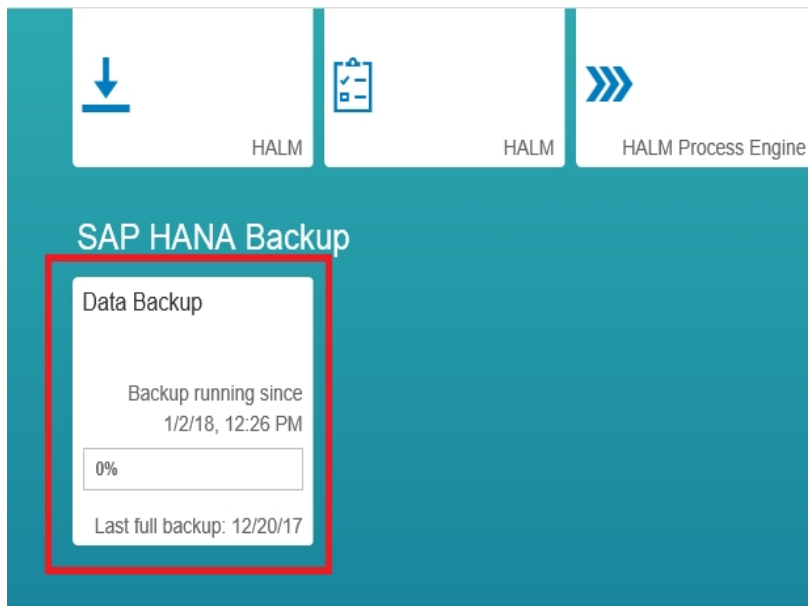
*Backup Destination: /usr/sap/HDB/SYS/global/hdb/backint

Comment: *Comment your backup*

4. Click **Back Up** to initiate the backup.



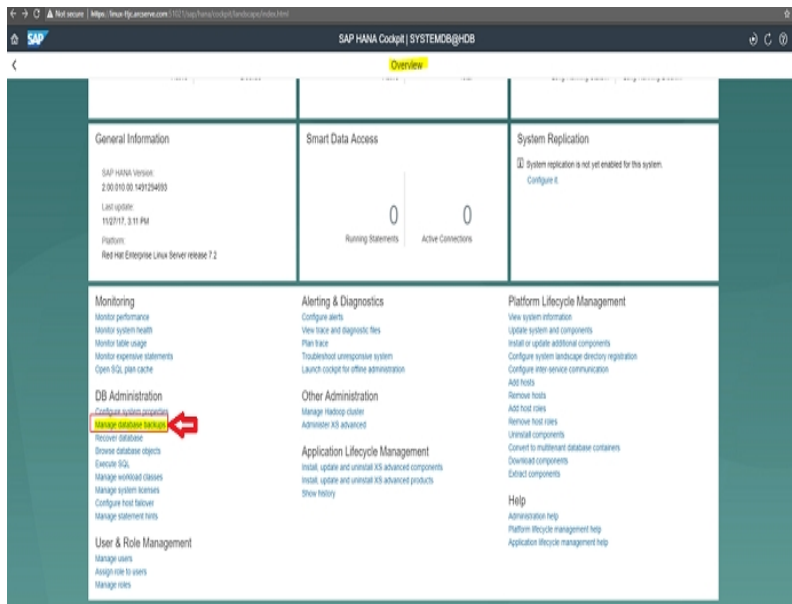
You can view the backup progress in the backup tab.



How to Create Data Backups and Delta Backups for SAP HANA 2.0 and later

Follow these steps:

1. Open the system overview of the SAP HANA database and select **Manage Database Backups**.



2. Select the **Create Backup** option.
3. Select **Backup Type** as desired and **Destination Type** as Backint.
4. Click **Back Up** to initiate the backup.

How to Schedule Database Backups for SAP HANA 1.0 SPS 12

You can schedule complete data backups or delta backups to run at specific intervals.

Note: SAP HANA does not support scheduled backup from SAP HANA Studio. To create schedules, we need to log into SAP HANA Cockpit.

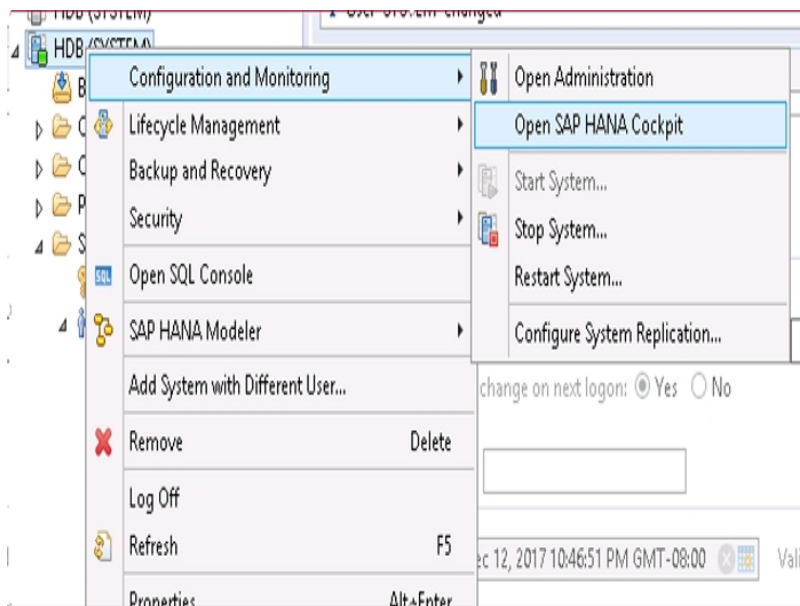
Prerequisites:

- You need to have access to `sap.hana.backup.roles::Scheduler` in order to schedule backups and modify backup schedules.
- You need to have a user assigned and active XS Job Scheduler for scheduling the backups.

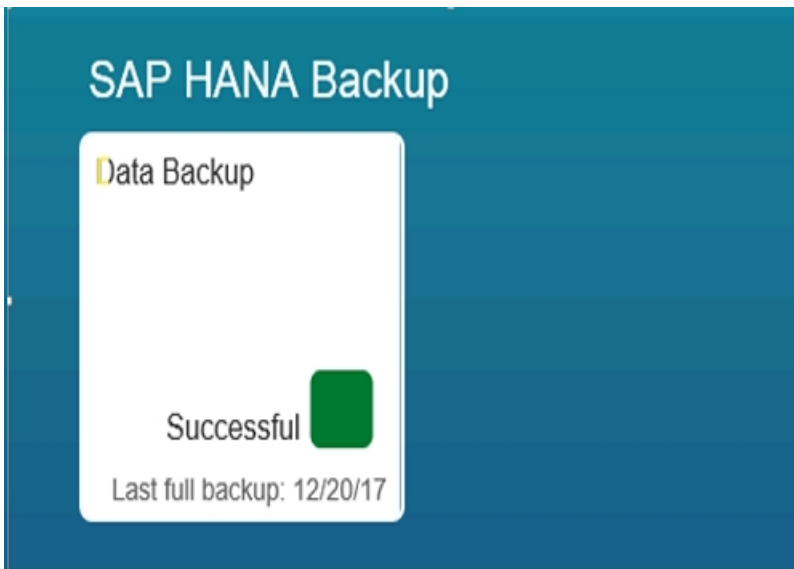
Note: All times specified are in UTC.

Follow these steps:

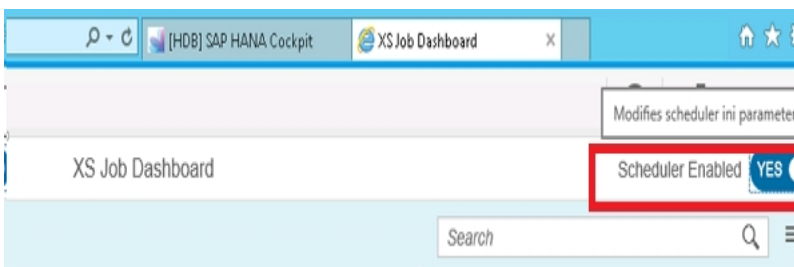
1. On the backup system, select **Configuration and Monitoring**, and click **Open SAP HANA Cockpit**.



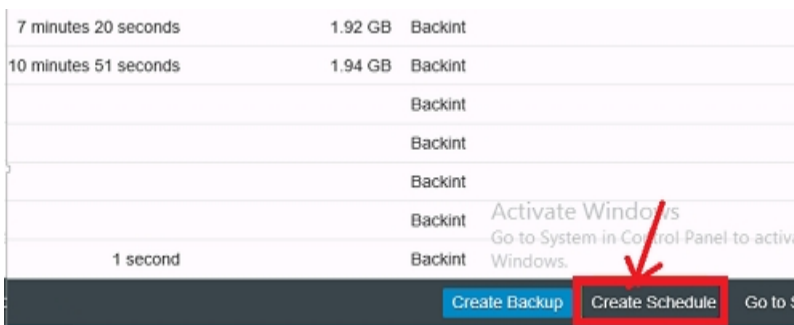
2. Log into SAP HANA Cockpit.
3. From SAP HANA Cockpit, click the SAP HANA Backup tab.
The backup catalog is displayed.



Note: Make sure that scheduler is enabled.



4. From the backup catalog window, click **Create Schedule** tab.



5. In Schedule Settings window, under Backup Settings, select Destination Type as Backint.

Schedule Settings

Backup Settings

*Backup Type: Complete
 Incremental
 Differential

*Destination Type: File
 Backint

Backint Parameters:

*Backup Prefix: {date_time}

*Backup Destination: usr/sap/HDB/SYS/global/hdb/backint

6. Provide Backup schedule settings and click **Save**.

Backup Schedule Settings

Schedule Name

*Unique Schedule Name:

Start of Schedule

Start on: Dec 21, 2017 11:45 (UTC)

Next Backup: (UTC)

Recurrence

Weekly

Week starts on Sunday

Every 1 week(s) on:

Monday Tuesday Wednesday Thursday

Friday Saturday Sunday

Activate Windows
Go to System in Control Panel to activate Windows.

Save

You have scheduled the database backups for SAP HANA 1.0 SPS 12 successfully.

How to Perform Database Recovery

Using SAP HANA Cockpit, you can recover an SAP HANA database to its most recent state or to a specific point of time. SAP HANA supports database recovery from cockpit if the version of SAP HANA is 2.0 or later.

Important! You cannot recover the SAP HANA system if the system has one or more tenant databases.

Prerequisite: Before you start the recovery, select the recovery database, and click **Stop System** to shut down the SAP HANA database.

Note: You need to register the SAP control credentials for <sid>adm in the resource directory application to perform system shut down.

Important! Recovery to Alternate Server is currently not available.

select the **Backint location only** option for the **location of most recent backup catalog** field in the recovery process.

For more information, view [link](#).

How to Schedule Database Backups for SAP HANA 2.0 or later

Using SAP HANA Cockpit, you can schedule complete data backups or delta backups to run at specific intervals.

Prerequisites:

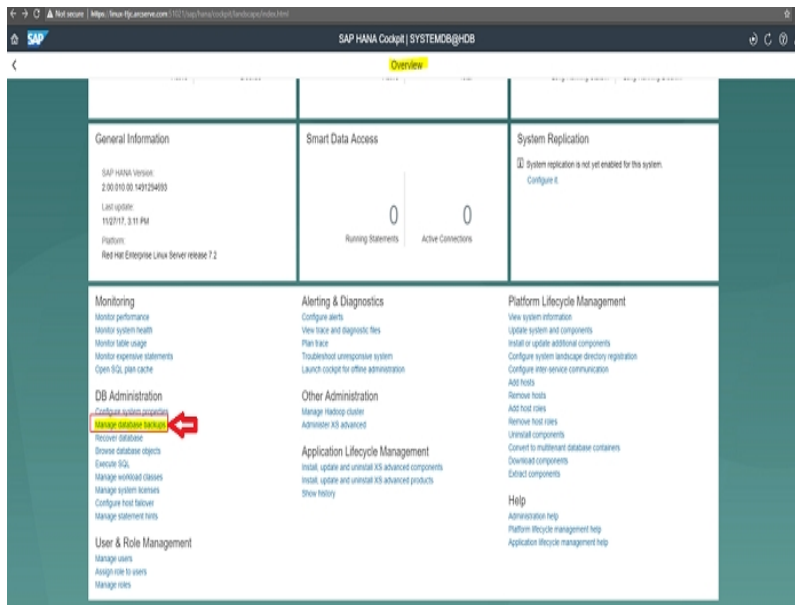
- The system privilege for BACKUP ADMIN and read authorization for the following tables:
 - ♦ SYS_XS.JOB_SCHEDULES
 - ♦ SYS_XS.JOBS
- You need to enable the XS Advanced Job Scheduler for the system database and each tenant database.
 - ♦ For the system database, enable scheduler in the *nameserver.ini* file.
 - ♦ For each tenant database, enable scheduler for the system database and also in the *xsengine.ini* file.
 - ♦ Enable the XS Advanced Job Scheduler as below.
 - For system database:

```
ALTER SYSTEM ALTER configuration('nameserver.ini','SYSTEM')
SET('scheduler','enabled')='true' WITH reconfigure;
```
 - For each tenant database:

```
ALTER SYSTEM ALTER configuration('XSengine.ini','SYSTEM')SET
('scheduler','enabled')='true' WITH reconfigure;
```

Follow these steps:

1. From SAP HANA Cockpit, open the system overview of the SAP HANA system and select **Manage Database Backups**.



2. Click **Create Schedule** to create a new backup schedule.
3. Select **Backup Type** as desired and **Destination Type** as Backint.
4. Specify the backup schedule settings such as *Schedule Name*, *Start of Schedule*, and *Recurrence*.
Note: You cannot modify an existing schedule. To modify a schedule, you need to delete and create a new schedule.
5. Click Save to schedule the database backup.

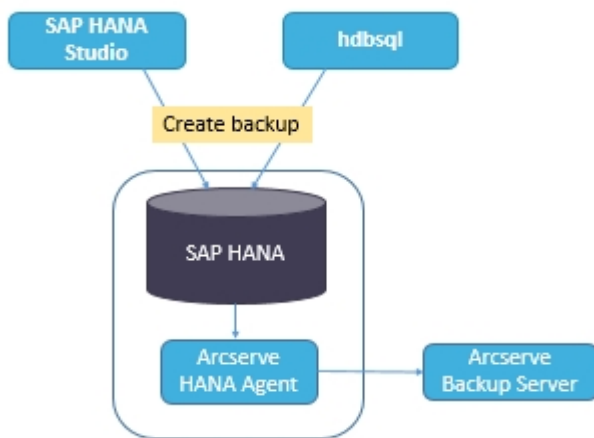
Chapter 4: Using Command Line

Backup operations are initiated from the SAP HANA command line as per the requirements. Arcserve Backup Agent for SAP HANA is fully integrated with hdbsql command line interface.

You can perform a backup using hdbsql command.

Connect to SAP HANA Admin user and run the following commands:

- For Full backup:
`hdbsql -i 00 -u SYSTEM -p Password "backup data using backint ('Full_Backup')"`
- For Incremental backup
`hdbsql -i 00 -u system -p Arcserve@2020 "backup data INCREMENTAL using backint('incremental')"`
- For Differential backup:
`hdbsql -i 00 -u system -p Arcserve@2020 "backup DATA DIFFERENTIAL using backint('diff')"`



Note: You can submit the recoveries only from SAP HANA Studio or SAP HANA Cockpit.

This section contains the following topics:

How to Monitor the Jobs

Backup and restore jobs that you submit from hdbsql command line interface are monitored from Arcserve Backup Job Status Manager. You can view all the backup-related logs in the Activity Log and the following path displays the logs related to Agent:

/opt/Arcserve/ABhanaagt/logs

How to Use Backup Catalogs

You can view all the logs related to backup jobs at SAP HANA Studio Backup Catalog. Double click on **Backup** under the **Systems** view to see the **Backup Catalog**.

The screenshot displays the SAP HANA Studio Backup Catalog interface. It is divided into two main sections: 'Backup Catalog' and 'Backup Details'.

Backup Catalog: This section contains a table with columns for 'Sta...', 'Started', 'Duration', 'Size', 'Backup Type', and 'Destination Type'. A checkbox labeled 'Show Log Backups' is checked. The table lists multiple backup jobs, with the most recent one (Sep 11, 2015, 00h 02m, 2.23 GB, Data Backup, Backint) selected.

Backup Details: This section provides information for the selected backup job. It includes fields for ID (1441956323881), Status (Successful), Backup Type (Data Backup), Destination Type (Backint), Started (Sep 11, 2015 7:25:23 AM (UTC)), Finished (Sep 11, 2015 7:27:29 AM (UTC)), Duration (00h 02m 05s), Size (2.23 GB), and Throughput (18.23 MB/s). There are also fields for Comment, Additional Information, and Location.

At the bottom of the 'Backup Details' section, there is a table listing backup components:

Host	Service	Size	Name	Source	EBID
hanaserver	xsengine	65.84...	FULL_dat...	volume	S_2...
hanaserver	nameser...	66.98...	FULL_dat...	volume	S_2...
hanaserver	indexserv...	1.84...	FULL_dat...	volume	S_2...

Chapter 5: Limitations

Following are the limitations while using SAP HANA Agent:

- SAP HANA database does not support data mover.
- Multistreaming is not supported.
- Agent backward compatibility and upgrades are not supported.
- SNMP, TNG, EMAIL, PRINTER, EJECT, SPANTAPEMETHOD, TAPETIMEOUT, and SPANTAPETIMEOUT configuration parameters does not work in Arcserve Backup r17.5 SP1.

Chapter 6: Troubleshooting the Enterprise Option for SAP HANA

Following are the troubleshooting options when you experience specific errors that are listed below:

- When backup fails to submit with an error in `/opt/Arcserve/ABhanaagt/logs/ca_backup.log` as "failed to authenticate with Primary server",

Solution:

Verify whether the equivalence is provided for SAP HANA Admin from the Arcserve Server. If yes, comment the below line in `etc/hosts` file of the Agent machine as:

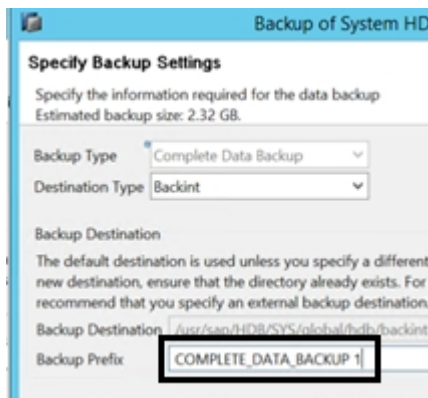
```
#127.0.0.2 hanaserver.site hanaserver
```

- If you see a similar type of error as shown below in the SAP HANA Studio, the space in the **Backup Prefix** is the reason.

```
backup could not be completed: [110512] Backint reported 'BACKINT did not return result for [/usr/sap/HDB/SYS/global/hdb/backint/Full db_databackup_0_1]' in file '/var/tmp/hdbbackint_HDB.wdyiE3' SQLSTATE: HY000
```

Solution:

When **Backup Prefix** has a space, Agent terminates the job but the job gets submitted to Arcserve Backup server and continues to be in "Active State" until you cancel the job manually on Arcserve server.



Note: SAP HANA does not support empty spaces in **Backup Prefix**.

Remove the space for backup to complete successfully.

Backup of System HD

Specify Backup Settings

Specify the information required for the data backup
Estimated backup size: 2.32 GB.

Backup Type

Destination Type

Backup Destination

The default destination is used unless you specify a different new destination, ensure that the directory already exists. For i recommend that you specify an external backup destination.

Backup Destination

Backup Prefix

Debugging

You can use debug methods to troubleshoot problems of the SAP HANA agent.

Follow these steps:

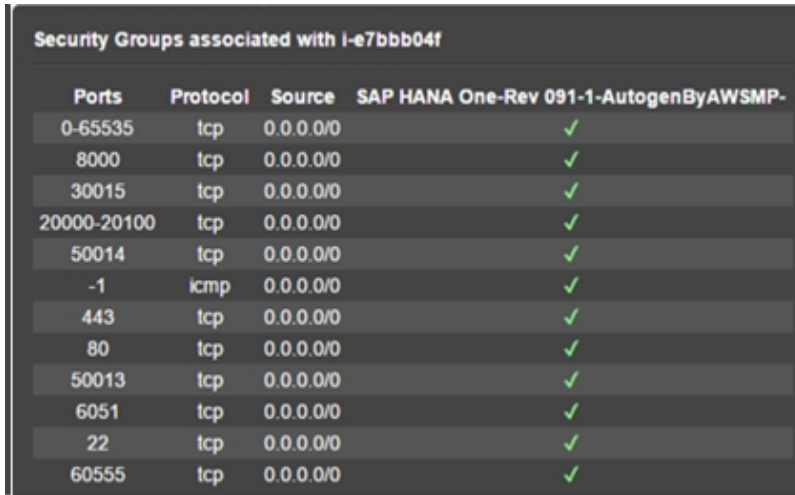
1. Edit `/opt/Arcserve/ABhanaagt/env_backint.sh`
2. Add `"export ASSAP_DEBUG=1"`

Note: If not set, the default debug log file is `/opt/Arcserve/ABhanaagt/logs/backint.trc`

Configuration Requirements for Amazon EC2 Instances

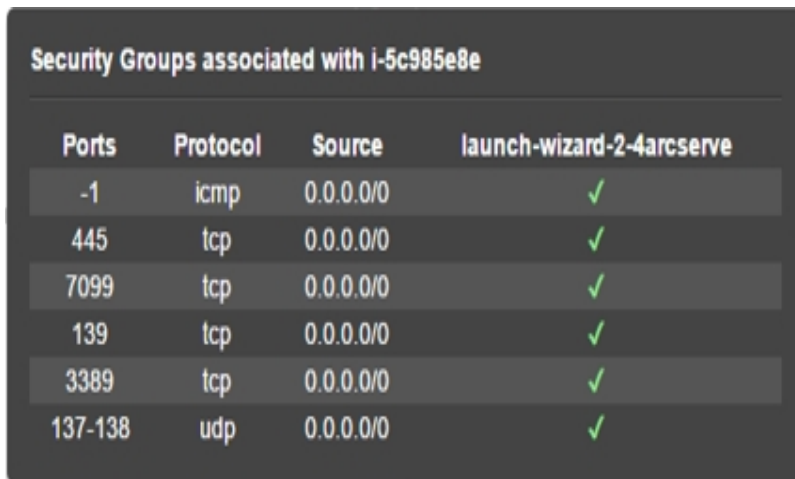
Set the following security rules for Windows and Linux instances if you are using SAP HANA One on Amazon EC2 instances:

- SAP HANA instance:



Ports	Protocol	Source	SAP HANA One-Rev 091-1-AutogenByAWSMP-
0-65535	tcp	0.0.0.0/0	✓
8000	tcp	0.0.0.0/0	✓
30015	tcp	0.0.0.0/0	✓
20000-20100	tcp	0.0.0.0/0	✓
50014	tcp	0.0.0.0/0	✓
-1	icmp	0.0.0.0/0	✓
443	tcp	0.0.0.0/0	✓
80	tcp	0.0.0.0/0	✓
50013	tcp	0.0.0.0/0	✓
6051	tcp	0.0.0.0/0	✓
22	tcp	0.0.0.0/0	✓
60555	tcp	0.0.0.0/0	✓

- Windows Instance (Arcserve Backup):



Ports	Protocol	Source	launch-wizard-2-4arcserve
-1	icmp	0.0.0.0/0	✓
445	tcp	0.0.0.0/0	✓
7099	tcp	0.0.0.0/0	✓
139	tcp	0.0.0.0/0	✓
3389	tcp	0.0.0.0/0	✓
137-138	udp	0.0.0.0/0	✓