HANA

What does HANA stand for?

High-performance Analytic Appliance

SAP HANA defined

SAP HANA (**High-performance Analytic Appliance**) is a multi-model database that stores data in its memory instead of keeping it on a disk. This results in data processing that is magnitudes faster than that of disk-based data systems, allowing for advanced, real-time analytics.

An In-Memory database means all the data from source system is stored in a RAM memory. In a conventional Database system, all data is stored in hard disk. SAP HANA In-Memory Database wastes no time in loading the data from hard disk to RAM. It provides faster access of data to multicore CPUs for information processing and analysis.

Features of In-Memory Database

The main features of SAP HANA in-memory database are −

- SAP HANA is Hybrid In-memory database.
- It combines row based, column based and Object-oriented base technology.
- It uses parallel processing with multicore CPU Architecture.
- Conventional Database reads memory data in 5 milliseconds. SAP HANA In-Memory database reads data in 5 nanoseconds.

It means, memory reads in HANA database are 1 million times faster than a conventional database hard disk memory reads.

Row Store Vs Column Store

Overview of Row Data Storage and Column Data Storage:

Relational databases typically use row-based data storage. However, Column-based storage is more suitable for many business applications. SAP HANA supports both row-based and column-based storage, and is particularly optimized for column-based storage.

As shown in the figure below, a database table is conceptually a two-dimensional structure composed of cells arranged in rows and columns.

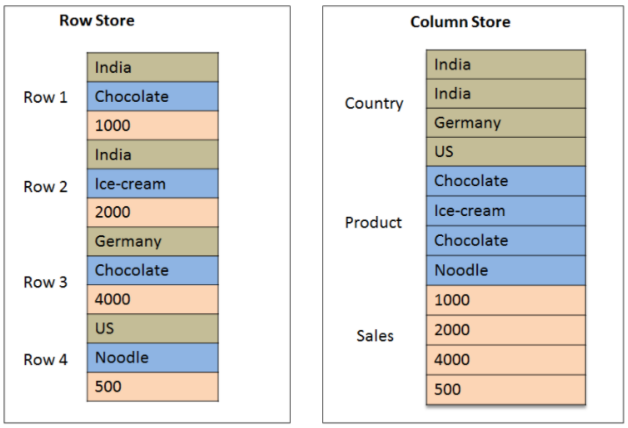
Because computer memory is structured linearly, there are two options for the sequences of cell values stored in contiguous memory locations:

Row Storage – It stores table records in a sequence of rows.

Column Storage – It stores table records in a sequence of columns i.e. the entries of a column is stored in contiguous memory locations.

Table

	Country	Product	Sales
Row 1	India	Chocolate	1000
Row 2	India	Ice-cream	2000
Row 3	Germany	Chocolate	4000
Row 4	US	Noodle	500



Traditional databases store data simply in rows. The HANA in-memory database stores data in both rows and columns. It is this combination of both storage approaches that produces the speed, flexibility, and performance of the HANA database.

Advantages of column-based tables:

Faster Data Access:

Only affected columns have to be read during the selection process of a query. Any of the columns can serve as an index.

Better Compression:

Columnar data storage allows highly efficient compression because most of the columns contain only few distinct values (compared to number of rows).

Better parallel Processing:

In a column store, data is already vertically partitioned. This means that operations on different columns can easily be processed in parallel. If multiple columns need to be searched or aggregated, each of these operations can be assigned to a different processor core.

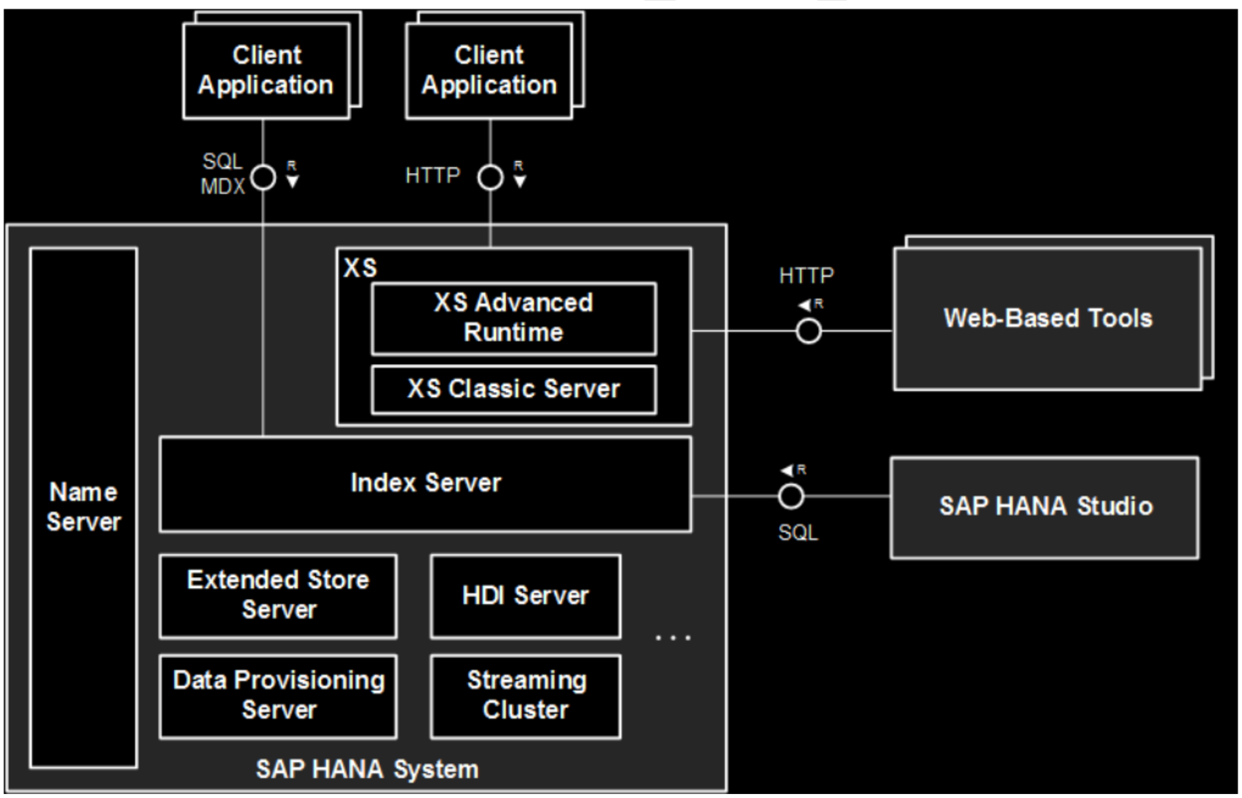
Advantages and disadvantages of row-based tables:

Row based tables have advantages in the following circumstances:

- The application needs to only process a single record at one time (many selects and/or updates of single records).
- The application typically needs to access a complete record (or row).
- Neither aggregations nor fast searching are required.
- The table has a small number of rows (e. g. configuration tables, system tables).

Row based tables have disadvantages in case of analytic applications where aggregation is used, and faster search & processing are required. In row-based tables all data in a row has to be read even though the requirement may be there to access data from a few columns.

HANA Architecture:



SAP HANA is a unique database management technology manifesting in-memory database storage system. SAP HANA is a technology which is a combination of both hardware and software, created specifically for the functioning of the in-memory database management system.

The architecture of SAP HANA has several components working together. The main component of the entire SAP HANA architecture is the Index server which stores and processes all the data. All the other components or engines such as

- Name server
- Relational database engine
- OLAP engine, etc.,

are linked to the index server and work with it.

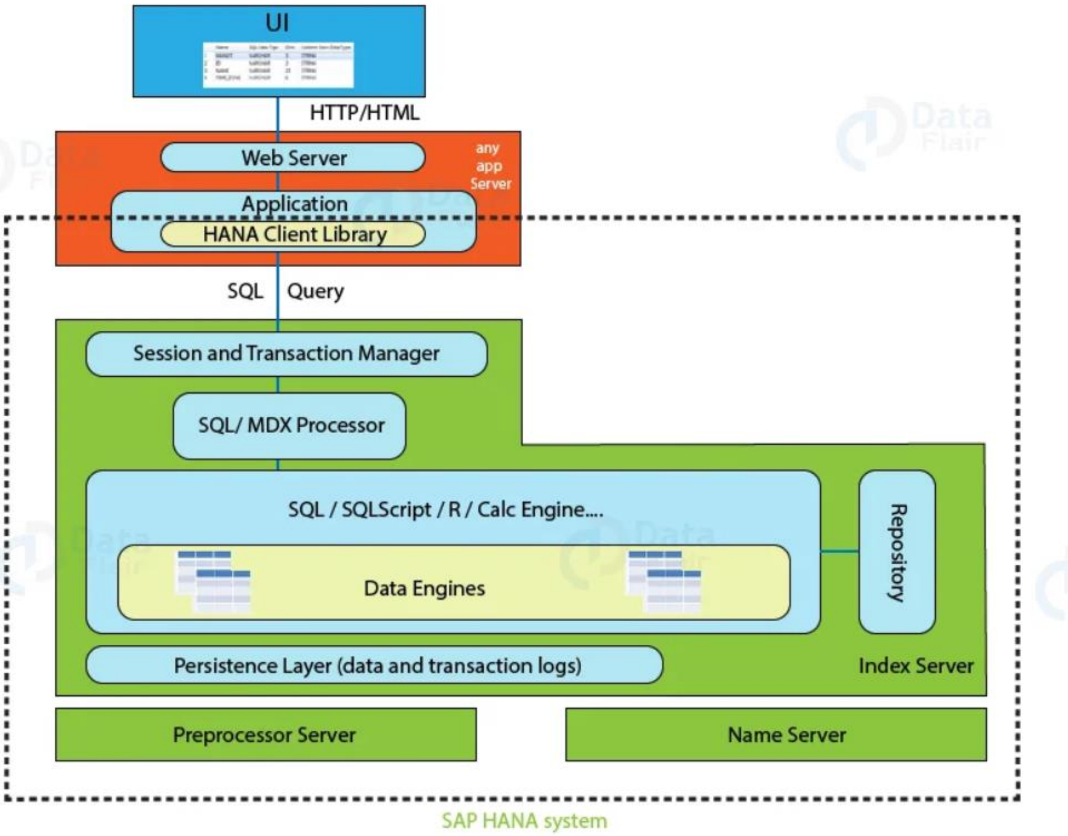
1. When a user is working on SAP HANA, it is interacting with the client application. A session between the client application and the data source (which is SAP HANA in-memory database) is established which connects the two. **The Session and Transaction Manager** handle the session initiation and management.

2. Once, the client is connected with the database, queries and data are launched in languages such as **SQL** and SQLScript. *SQLScript is the scripting language of SAP HANA Database*. SAP HANA also supports applications and programs developed in the **R language**.

3. Query statements sent by the user processes in the Index Server and a response sends back to the user accordingly. The queries then translate into a readable model and execute by the calculation engine.

   Along with the services in the index server, other servers like pre-processor server, name server, graph engine, text engine, statistics server, persistence layer also play important roles in SAP HANA functioning.

   Each component in SAP HANA architecture has a unique role to play and a service to provide that contributes to the functioning of SAP HANA. Let us discuss each component of SAP HANA architecture in detail that makes SAP HANA technology one of the best in business analysis.



Above Diagram shows the HANA Architecture along with the components presents inside an INDEX server.

1. Index Server

The Index Server is the main server of SAP HANA architecture which has the data storage (having the actual data) and processing engine. Queries in different languages like SQL and MDX receives in the index server and process by different components and servers within it.

Relational Data Engine – This engine determines the mechanism of in-memory data storage. The incoming data is either stored in rows or columns. It also manages the relations of data tables between each other.

Connection and Session Manager – This component checks the user/client authentication and creates a session for an authenticated user. Once a session generates, this component keeps a check of parameters like auto-commit, state of the current transaction, isolation level, etc. Thus, the session generated, and the connection established between the client and the SAP HANA database is managed and monitored by this component.

Authorization Management – It checks the user privileges and grants users the permission to access those particular services and use resources of SAP HANA.

Planning Engine – It generates SQL processing plans. The engine generates a plan specific to each request sent to the database. The planning engine creates plans and manages request execution and filters applied during that. It optimizes performance by planning parallel aggregation processes.

Calc Engine – This engine creates object specific calculation models and applies it on data to obtain user desired results. Calc engine also maintains the accuracy of data.

Persistence Layer – The persistence layer maintains the durability and atomicity of the database transaction occurring in and out of it. This server saves the current committed state of transactions and loads the data into the disk every time the system restarts to ensure data durability and security at times of system failure. It also maintains transaction logs of committed or completely undone states.

2. Name Server

The name server in SAP HANA architecture maintains the information on the topology or landscape of the SAP HANA system environment. It contains information on the name and location of the components.

This server monitors and manages the topology of all the distributed servers or nodes. It fastens the processing time by decreasing the re-indexing process as it keeps the information on what type of data stores on which server.

3. Pre-processor Server

The pre-processor server in SAP HANA architecture is a text analyzing server which processes textual data. The service provided by this component is used during text search. Whenever a request initiates, this server processes textual data and provides it to the user.

4. Statistical Server

This server checks the performance and health of the overall components of SAP HANA architecture. It collects, stores, and analyses the data related to allocation, consumption, and state of system resources. This stored data is for analyzing the system's performance later.

5. XS Engine

XS Engine in SAP HANA architecture facilitates communication between the external applications (Java and HTML based) and SAP HANA system via HTTP/HTTPS in a web browser.

The XS Engine converts the system's state from the persistence model stored in the database into the consumption model for clients.

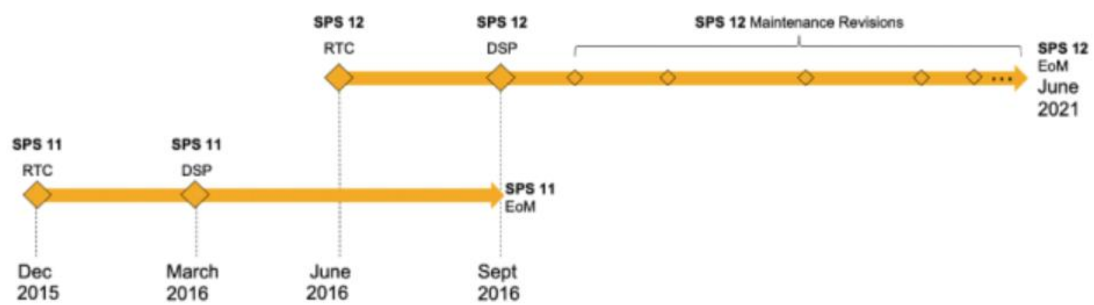
- Simply XS engine is used to develop and execute the Web based application in HANA.

SAP HANA Database Versions

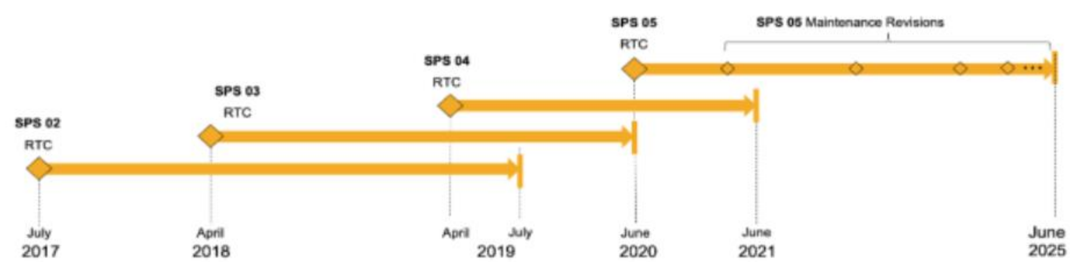
S/4HANA operates on the HANA (High performance Analytic Appliance) database.

- For reference the two versions referred to are HANA DB 1.00.122 (HANA 1.0 SP12 Rev 122) and HANA DB 2.00.052.0 (HANA 2.0 SPS05 Rev 52).
- The HANA 1.0 database will reach end-of-maintenance in June 2021.
- SAP will provide Maintenance Revisions for SAP HANA 2.0 SPS05 for a period of five years after RTC. These Revisions after SPS05 are not scheduled but delivered on demand. Bug fixes and security patches are released for every Support Package Stack (SPS) for two years after RTC.
- SAP will introduce new capabilities once a year, every time a new SAP HANA Support Package Stack (SPS) is released. An overview can be found in SAP HANA 2.0 Revision Strategy.

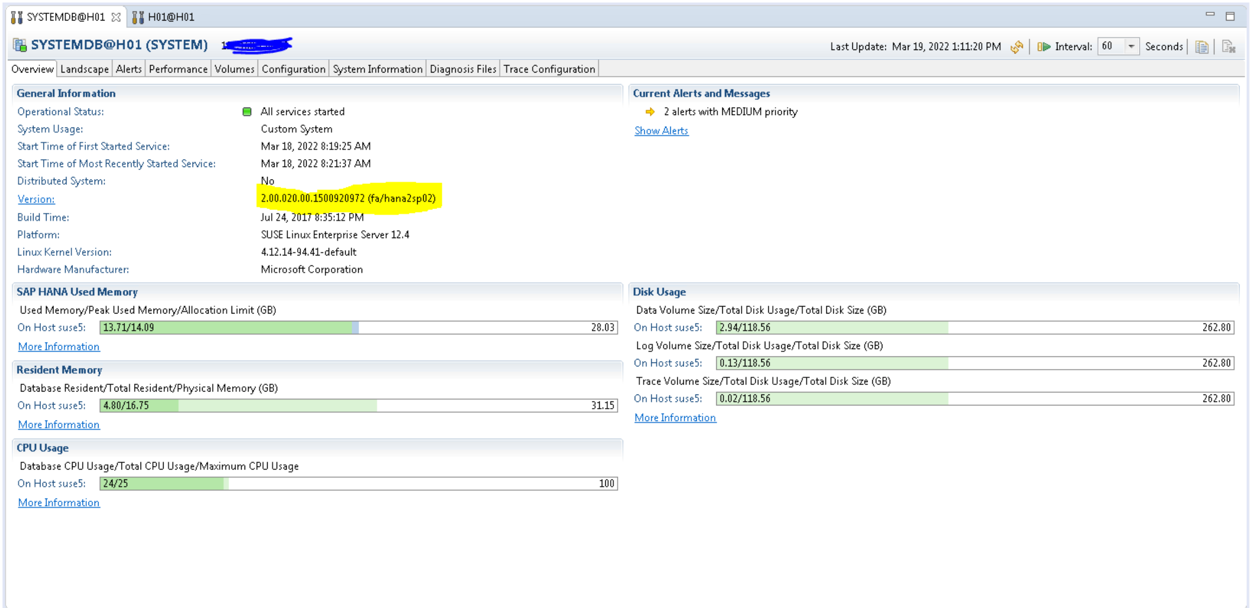
SAP HANA 1.0



SAP HANA 2.0



HANA Version in HANA Studio level:



At OS level:

```
h01adm@[redacted]/hana/shared/H01/HDB00/[redacted]5> HDB version
HDB version info:
  version:             2.00.020.00.1500920972
  branch:              fa/hana2sp02
  git hash:            7f63b0aa11dca2ea54d450aa302319302c2eeaca
  git merge time:      2017-07-24 20:29:32
  weekstone:           0000.00.0
  compile date:        2017-07-24 20:35:12
  compile host:        ld4551
  compile type:        rel

h01adm@[redacted]5:/hana/shared/H01/HDB[redacted]5>
```

Difference between HANA database 1.0 and 2.0

> SAP HANA 2.0 enhance security. Now redo logs and database backup encryption option is available in HANA 2.0

>SAP HANA 1.0 is come out with XSC (extended application service Classic), and SAP HANA 2.0 come out XSA (extend application service Advanced). So, improve application development in XSA.

> Enhance Administration tool SAP HANA Cockpit 2.0 introduce in SAP HANA 2.0

> SAP HANA 2.0 Multitenant Database Container while SAP HANA 1.0 is single DB system.

> SNAPSHOT Fallback

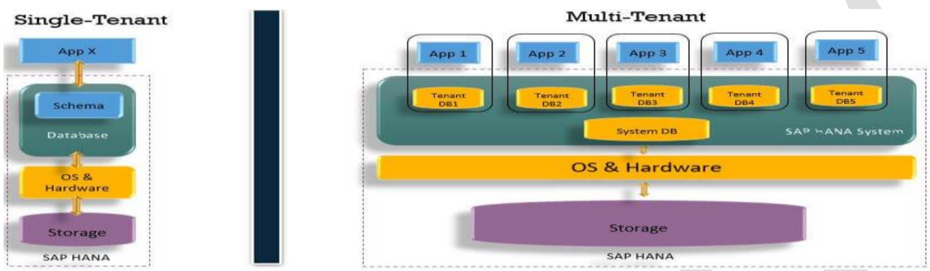
This feature is available in SAP HANA 2.0 SP3. Create a snapshot before any major changes in the database. if something goes wrong then you recover database with this snapshot.

Snapshot fallback only work with tenant database.

> New Featured in SAP HANA SYSTEM Replication

1. HSR with Active/Active read enable. (Secondary data is available for read only query and use for reporting purpose)
2. Multi target System Replication (enable use to have multiple secondary system instead of a single on. This makes it possible to replicate both inside and outside the datacenter simultaneously.

Single Tenant Vs Multi-Tenant:



Single-Container Versus Multiple-Container System

By Default SAP HANA 2.0 database system is install as a multiple-container system where as SAP HANA 1.0 database system is install as a single container database system.
A single-container system consists of one database that is managed by the SAP HANA database management system.
An SAP HANA system installed in multiple-container mode can contain more than one multitenant database container.

A multiple-container system has one system database, used for central system administration, and many multitenant database containers (including zero), also known as tenant databases. An SAP HANA system installed in multiple-container mode is identified by a single system ID (SID).

In a Multidatabase container (MDC) system, only name server run in system database. The name server contains landscape information about the system, including which tenant databases exist. It also provides indexserver functionality for the system database.

Below are the bullets points on MDC:

> Starting SAP HANA 1.0 SPS 09 (Revision 90), SAP HANA supports multitenant database containers in a single SAP HANA system.

> Starting SAP HANA 2.0 SPS 01 (Revision 10), multitenant database containers will become the default

> After HANA 2.0 SPS 01 installation is completed, only SYSTEMDB is created. Tenant DB's can be created from the SYSTEMDB using SQL

> nameserver and other non-persistent services are available only on SYSTEMDB.

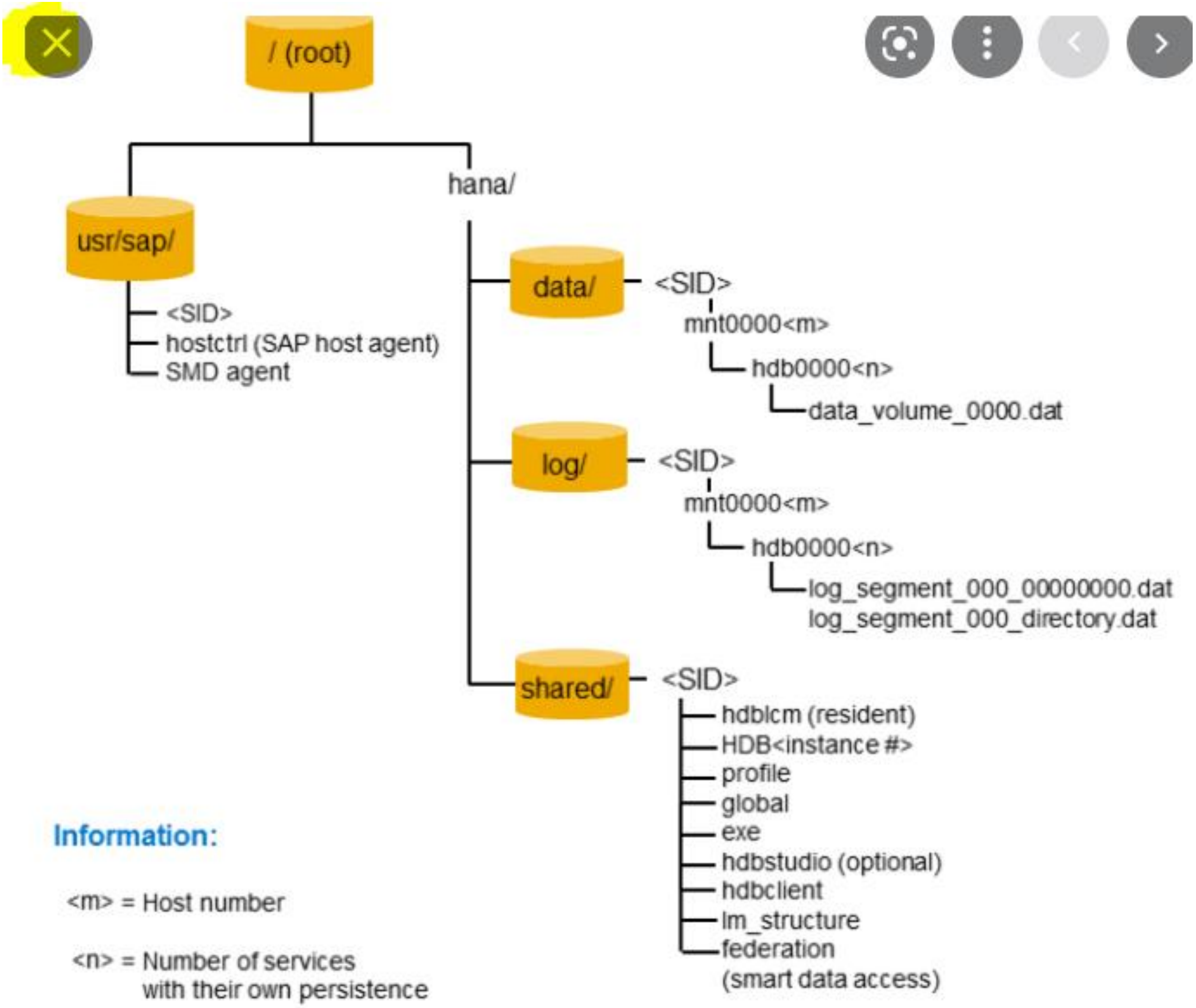
> Indexserver and other persistent services are available only on tenant databases

> In a multi-container database we connect to System DB happens through Nameserver which is act as SQL port.

> When SystemDB is down all tenant databases are also down.

> by default with each instance you could have a maximum of 20 tenant databases.

HANA File system structure:



Trace files path:

/hana/shared/H01/HDB00/suse5/trace === HANA trace files

/hana/shared/H01/HDB00/suse5/trace/DB_H01 == Tenant DB Trace files

HANA T-Shirt based Sizing:

SAP T-shirt Size	XS	S and S+	M and M+	L
Compressed data in memory	64 GB	128 GB	256 GB	512 GB
Server Main Memory	128 GB	256 GB	512 GB	1 TB
CPUs	2	2	4	8
SAS/SSD for Data Volume	1 TB	1 TB	2 TB	4 TB

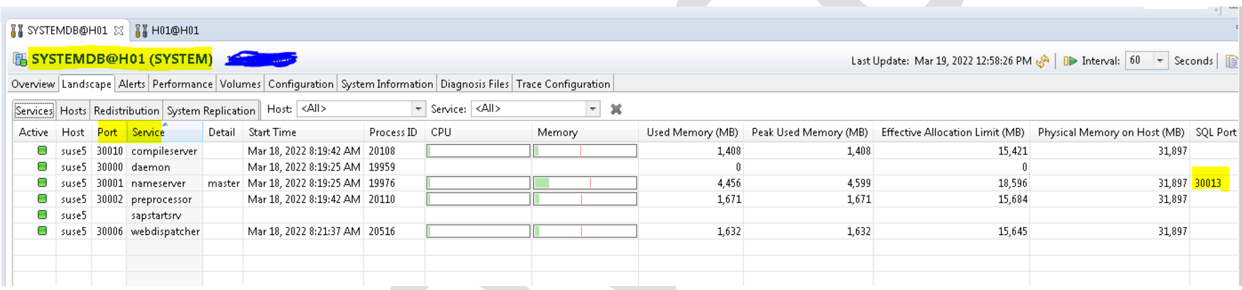
Additional T-shirt Sizes for SAP Business Suite powered by SAP HANA

SAP T-shirt Size	L	XL	XXL
Compressed data in memory	512 GB	1 TB	2 TB
Server Main Memory	1 GB	2 TB	4 TB
CPUs	4	8	8

792 × 309

HANA services and Port numbers:

SYSTEM DB Service's and port numbers:



Active	Host	Port	Service	Detail	Start Time	Process ID	CPU	Memory	Used Memory (MB)	Peak Used Memory (MB)	Effective Allocation Limit (MB)	Physical Memory on Host (MB)	SQL Port
	suse5	30010	compileserver		Mar 18, 2022 8:19:42 AM	20108			1,408	1,408	15,421	31,897	
	suse5	30000	daemon		Mar 18, 2022 8:19:25 AM	19959			0		0		
	suse5	30001	nameserver	master	Mar 18, 2022 8:19:25 AM	19976			4,456	4,599	18,596	31,897	30013
	suse5	30002	preprocessor		Mar 18, 2022 8:19:42 AM	20110			1,671	1,671	15,684	31,897	
	suse5		sapstartsrv										
	suse5	30006	webdispatcher		Mar 18, 2022 8:21:37 AM	20516			1,632	1,632	15,645	31,897	

Service Port number $$= instance number in our case its 00

Daemon: 3$$00

Name server:3<$$>01 and SQL port is 3$$13

Preprocessor: 3$$02

Compile server: 3$$10

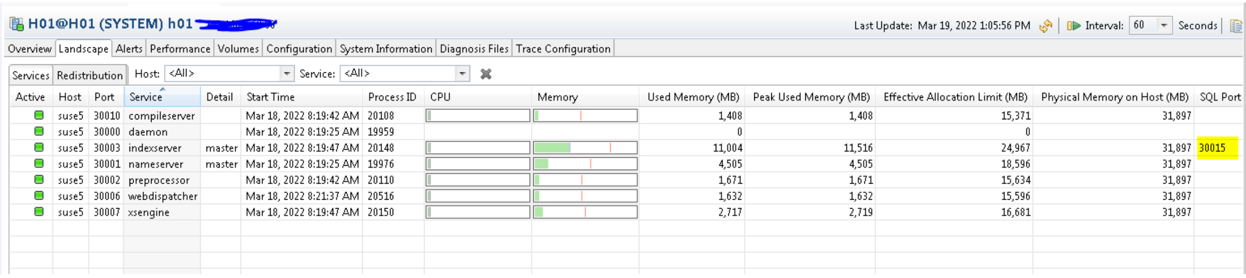
Web dispatcher: 3$$06

Tenant DB(H01):

Main service in Tenant DB is Index server

Index server:3$$03 sql port is 3$$15

XS engine: 3$$07



H01@H01 (SYSTEM) h01[redacted]   Last Update: Mar 19, 2022 1:05:56 PM   Interval: 60 Seconds

Overview | Landscape | Alerts | Performance | Volumes | Configuration | System Information | Diagnosis Files | Trace Configuration

Services | Redistribution   Host: <All>   Service: <All>

Active	Host	Port	Service	Detail	Start Time	Process ID	CPU	Memory	Used Memory (MB)	Peak Used Memory (MB)	Effective Allocation Limit (MB)	Physical Memory on Host (MB)	SQL Port
	suse5	30010	compileserver		Mar 18, 2022 8:19:42 AM	20108			1,408	1,408	15,371	31,897	
	suse5	30000	daemon		Mar 18, 2022 8:19:25 AM	19959			0		0		
	suse5	30003	indexserver	master	Mar 18, 2022 8:19:47 AM	20148			11,004	11,516	24,967	31,897	30015
	suse5	30001	nameserver	master	Mar 18, 2022 8:19:25 AM	19976			4,505	4,505	18,596	31,897	
	suse5	30002	preprocessor		Mar 18, 2022 8:19:42 AM	20110			1,671	1,671	15,634	31,897	
	suse5	30006	webdispatcher		Mar 18, 2022 8:21:37 AM	20516			1,632	1,632	15,596	31,897	
	suse5	30007	xsengine		Mar 18, 2022 8:19:47 AM	20150			2,717	2,719	16,681	31,897	

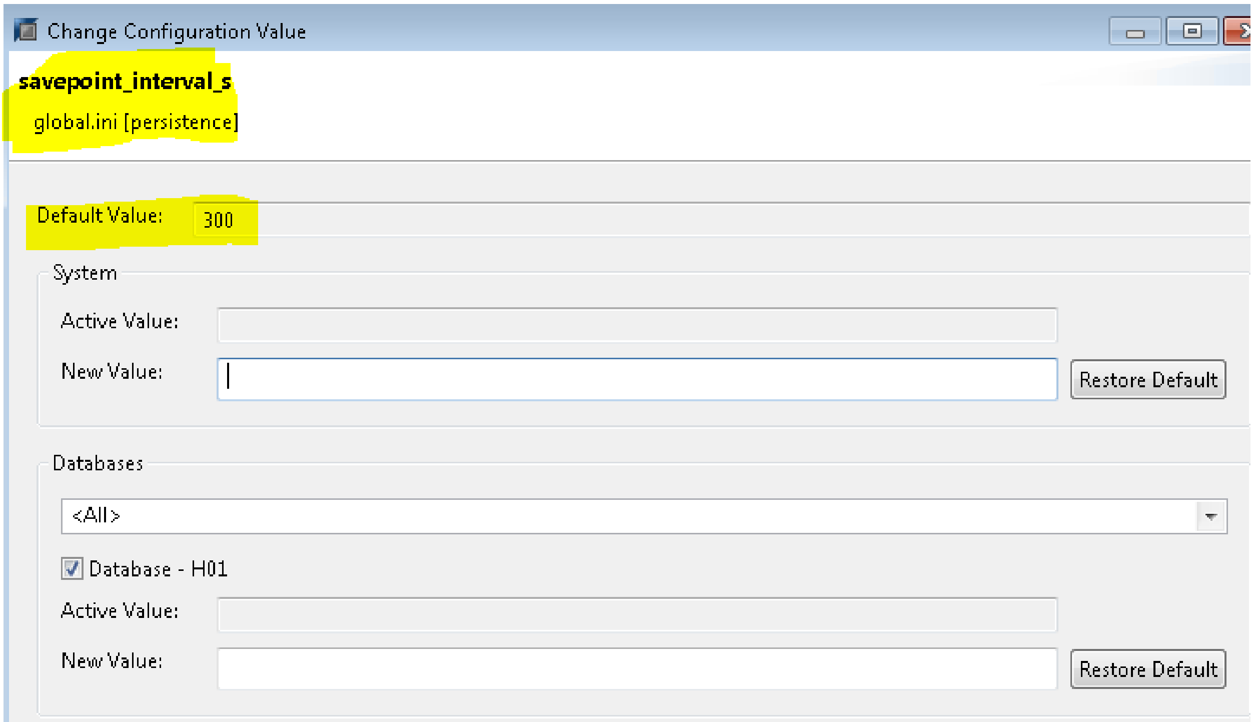
Persistence

Persistent Data Storage in the SAP HANA Database

Persistent storage media are required for ongoing save operations for data and redo log files. To protect data from the risk of memory failure SAP HANA persists in-memory data to storage media and flushes all changed data from memory to the data volumes. This operation takes place based on savepoints which occur by default every 5 minutes.

Data and Log Volumes To ensure that the database can always be restored to its most recent committed state, changes to data in the database are periodically copied to disk, logs containing data changes and certain transaction events are also saved regularly to disk. Data and logs of a system are stored in volumes. SAP HANA persists in-memory data by using save points. Each SAP HANA service has its own separate savepoints. During a savepoint operation, the SAP HANA database flushes all changed data from memory to the data volumes. The data belonging to a savepoint represents a consistent state of the data on disk and remains so until the next savepoint operation has completed. Redo log entries are written to the log volumes for all changes to persistent data. In the event of a database restart (for example, after a crash), the data from the last completed savepoint can be read from the data volumes, and the redo log entries written to the log volumes since the last savepoint can be replayed.

The frequency at which savepoints are defined can be configured in the persistence section of the global.ini file (every 5 minutes by default). Savepoints are also triggered automatically by a number of other operations such as data backup, and database shutdown and restart. **You can trigger a savepoint manually by executing the following statement ALTER SYSTEM SAVEPOINT**. You must always ensure that there is enough space on the disk to save data and logs. Otherwise, a disk-full event will occur, and the database will stop working.



Log Volumes:

```
h01adm@SUSE5:/hana/log/H01/mnt00001> ls -lrt
total 12
drwxr-x--x 2 h01adm sapsys 4096 Mar 15 13:59 hdb00002.00003
drwxr-x--- 2 h01adm sapsys 4096 Mar 15 16:36 hdb00001
drwxr-x--x 2 h01adm sapsys 4096 Mar 15 16:36 hdb00003.00003
h01adm@SUSE5:/hana/log/H01/mnt00001> pwd
/hana/log/H01/mnt00001
h01adm@SUSE5:/hana/log/H01/mnt00001>
```

Data Volumes:

```
h01adm@SUSE5:/hana/data/H01/mnt00001> ll
total 16
drwxr-x--- 2 h01adm sapsys 4096 Mar 15 13:56 hdb00001
drwxr-x--x 2 h01adm sapsys 4096 Mar 15 13:58 hdb00002.00003
drwxr-x--x 2 h01adm sapsys 4096 Mar 15 13:58 hdb00003.00003
-rw-r--r-- 1 h01adm sapsys   16 Mar 18 14:10 nameserver.lck
h01adm@SUSE5:/hana/data/H01/mnt00001> pwd
/hana/data/H01/mnt00001
h01adm@SUSE5:/hana/data/H01/mnt00001>
```

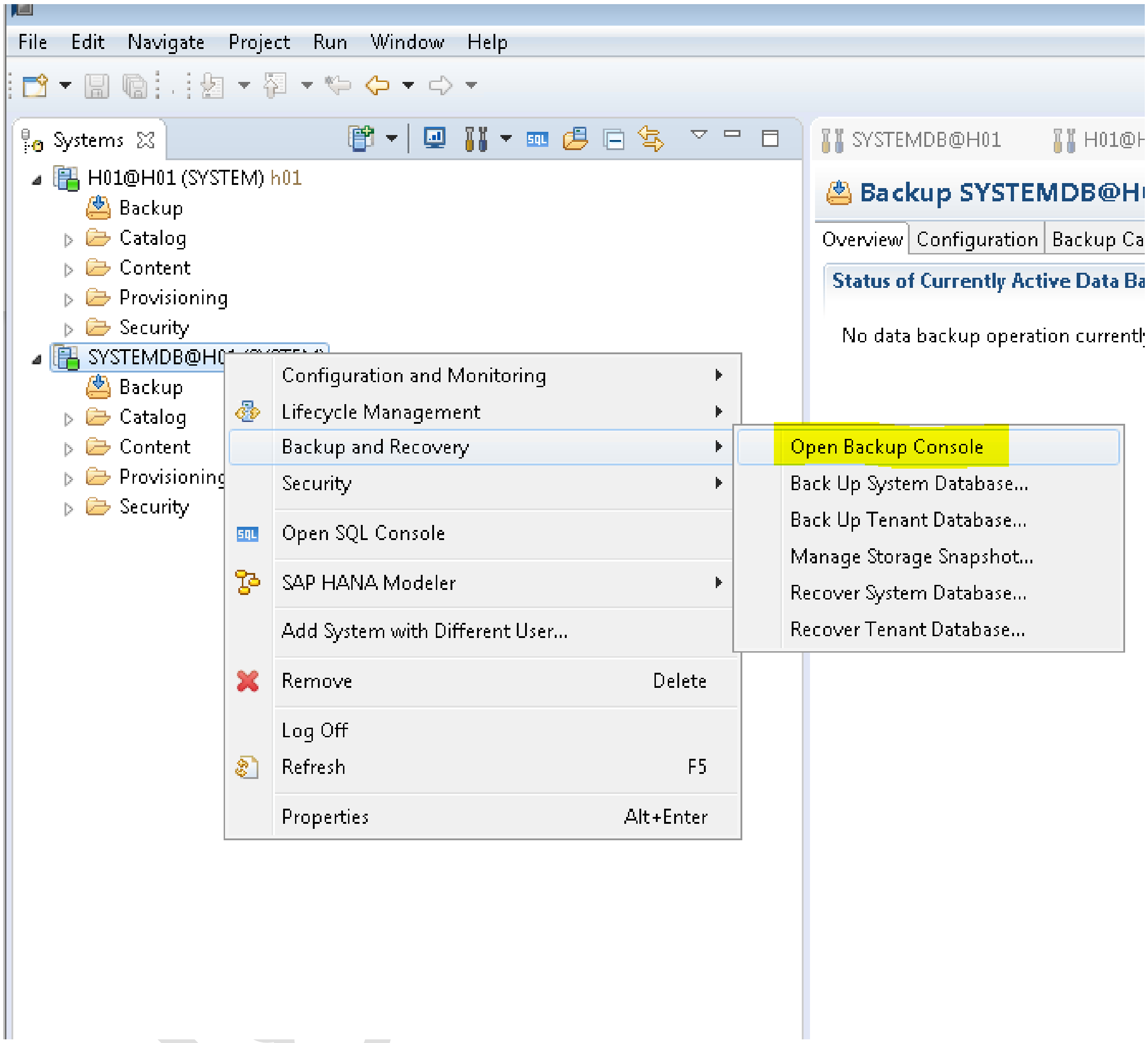
Hdb00001 → Name server file

Hdb00002.00003 →index server

Hdb00003.00003 → XS Engine

HANA BACKUPs:

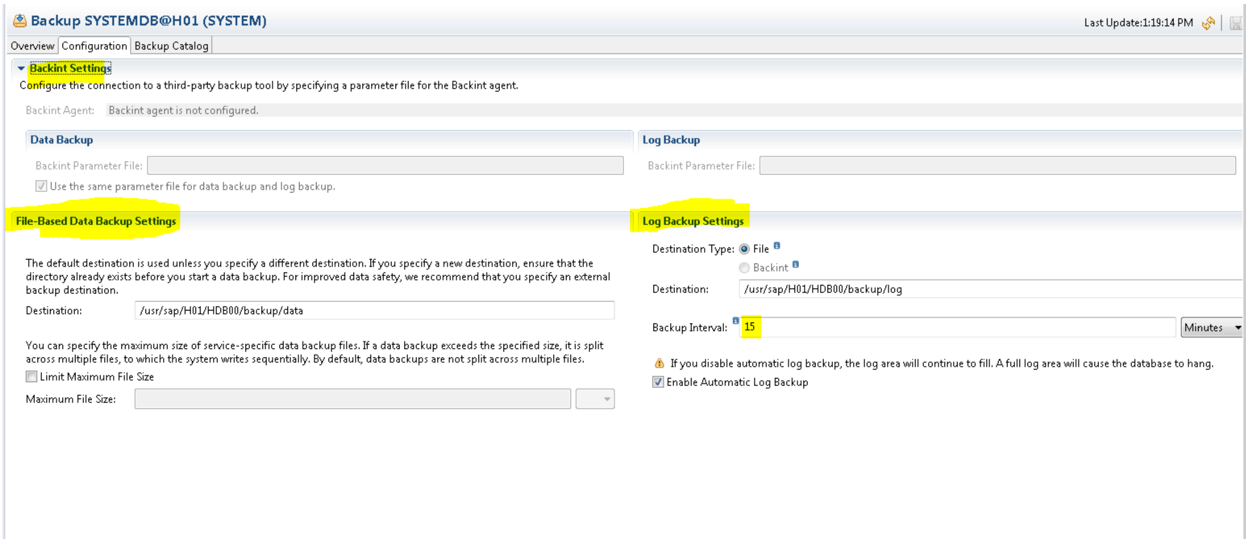
Follow the below path to open the backup console



In the backup console we can the last successful backup, status of currently active backup

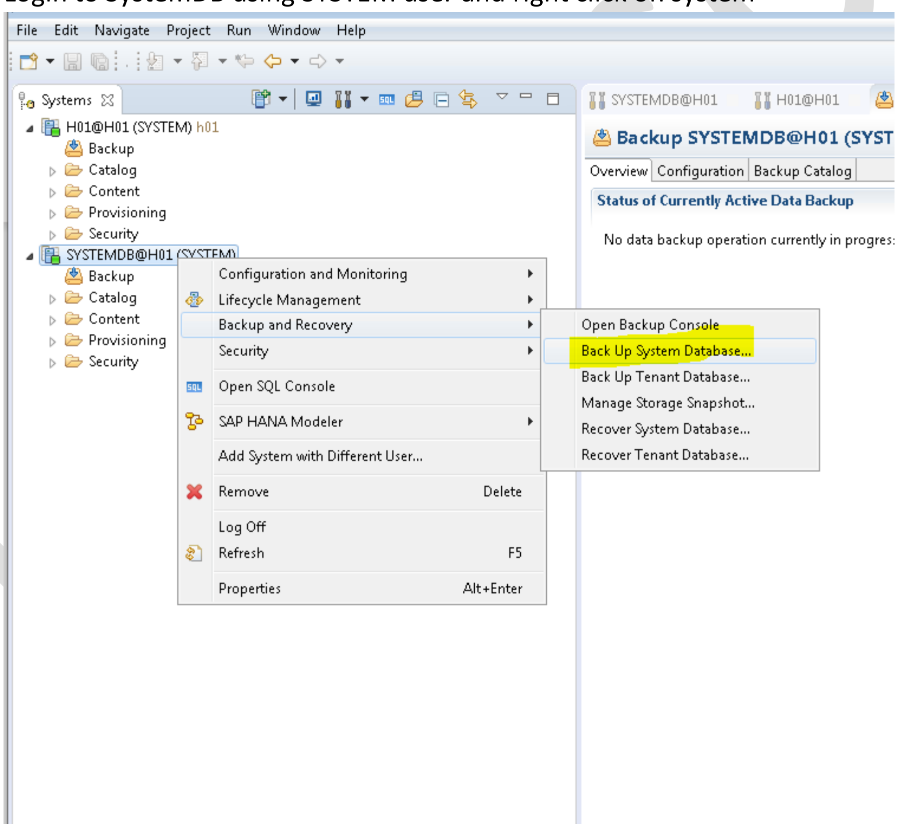
We can configure backinit settings and File based data and log backup settings

>By default, log backup interval is 15 min



How to backup system DB

1. Login to SystemDB using SYSTEM user and right click on system



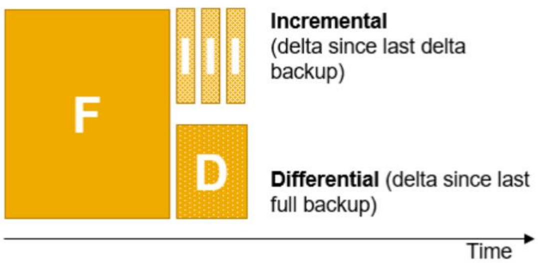
➢ There will be 3 types of Backups in HANA
1.complete DB backup
2.Differential backup
3.incremental backup

Complete DB backup: it takes entire DB backup, we can call this one as full backup.

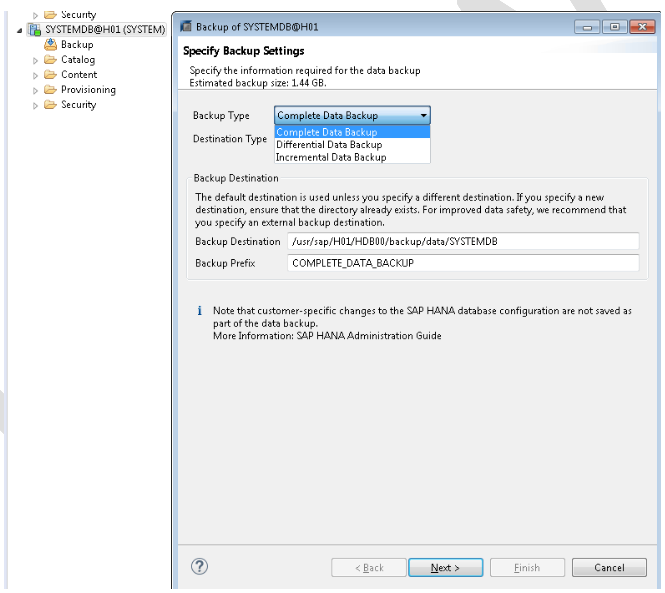
Differiential backup:**Differential backups** captures the delta data since the last full backup, rather than from the last delta data.

A differential backup **backs up only the files that changed since the last full back**. For example, suppose you do a full backup on Sunday. On Monday you back up only the files that changed since Sunday, on Tuesday you back up only the files that changed since Sunday, and so on until the next full backup.

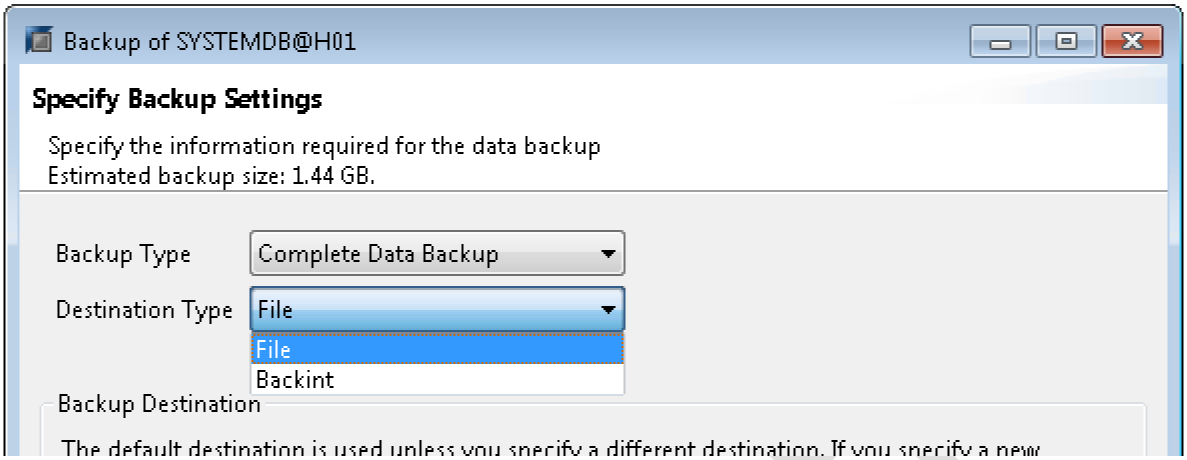
incremental backup:**Incremental backups** only captures the data since the last **delta** backup, not the since the full Backups



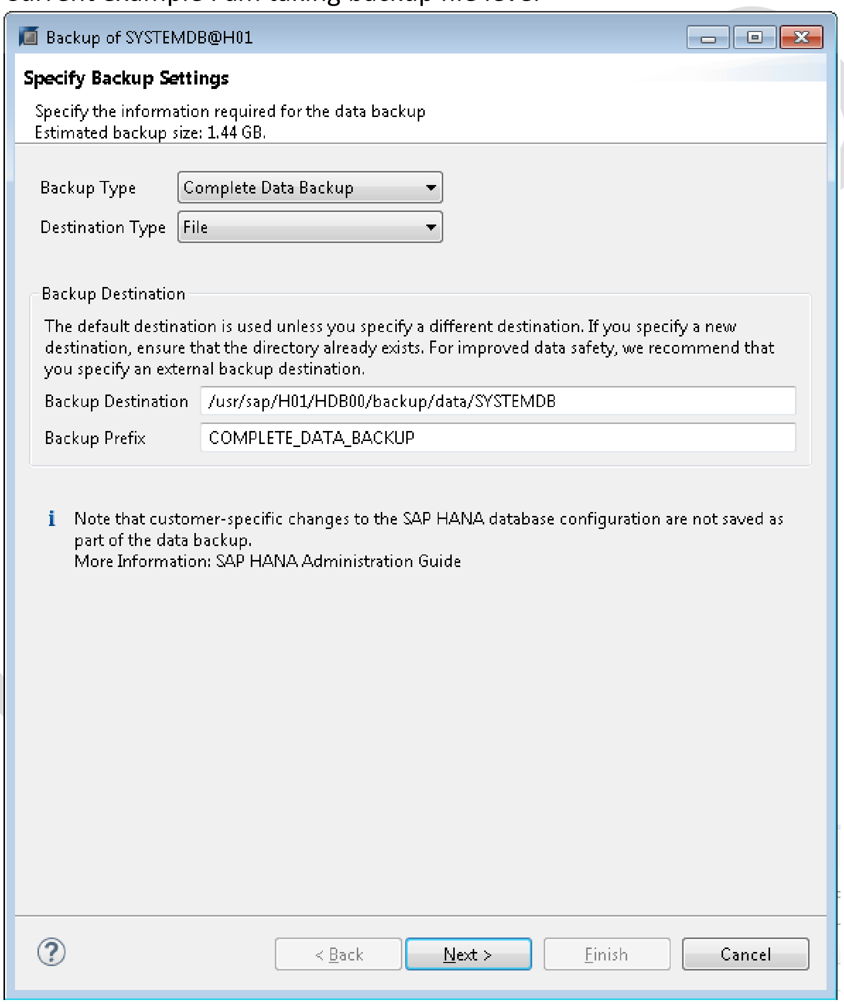
In this example I am taking complete Data backup:



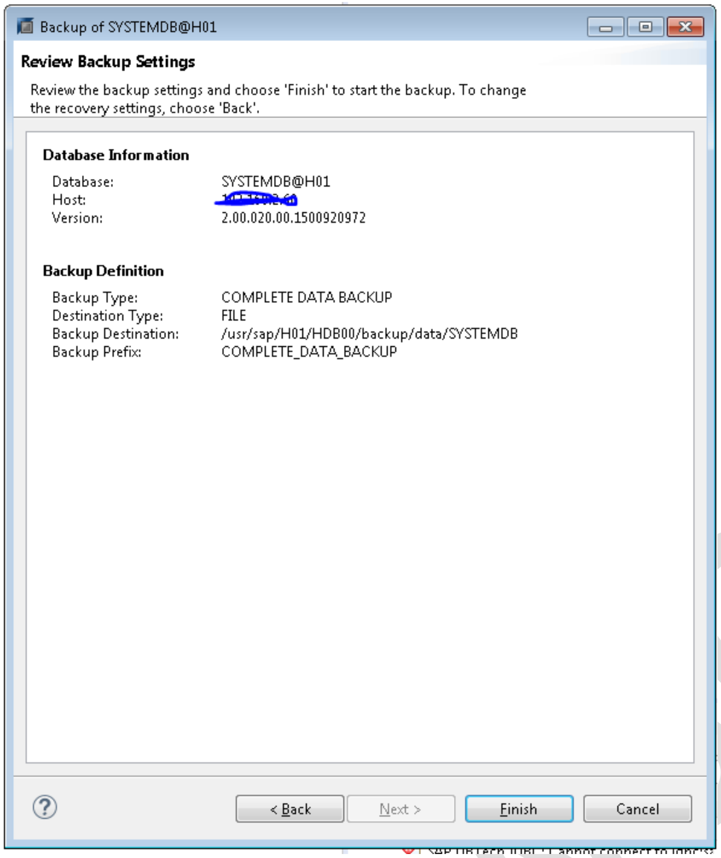
In hana We can take backup (Destination type)at file level and using 3rd party tool like Backinit



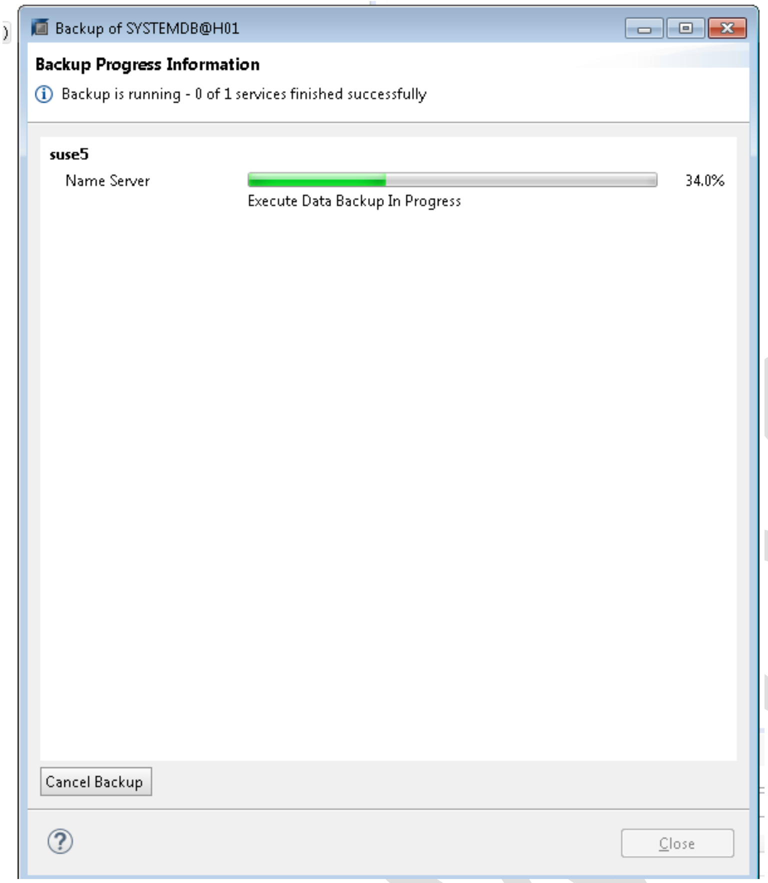
Current example I am taking backup file level



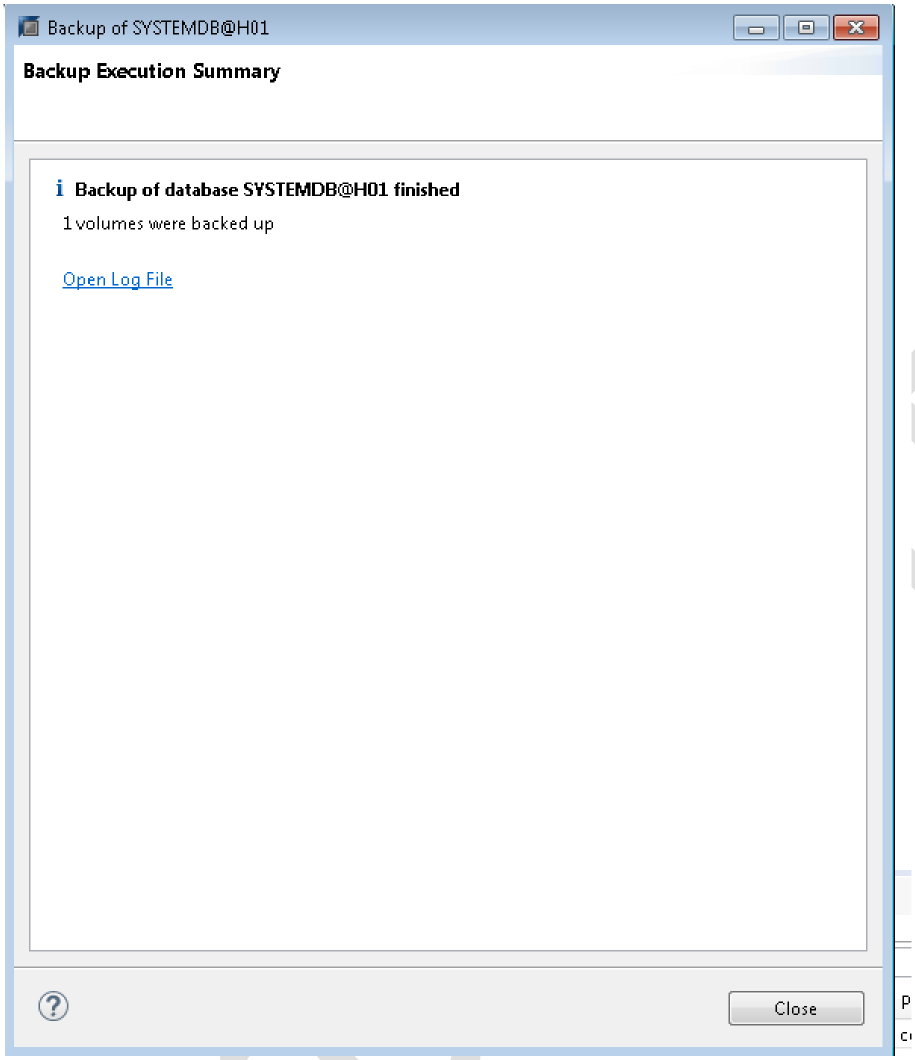
Click on next



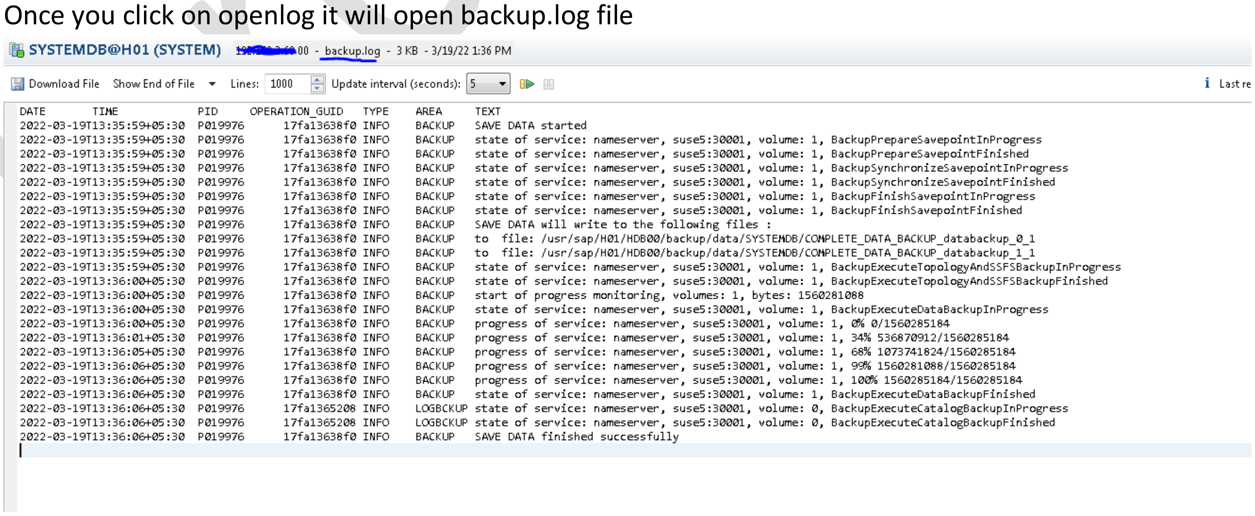
Click on finish



Currently I am taking backup of System DB so in System DB we have Name server service
So, while taking backup we can see name server is backup



Once you click on openlog it will open backup.log file

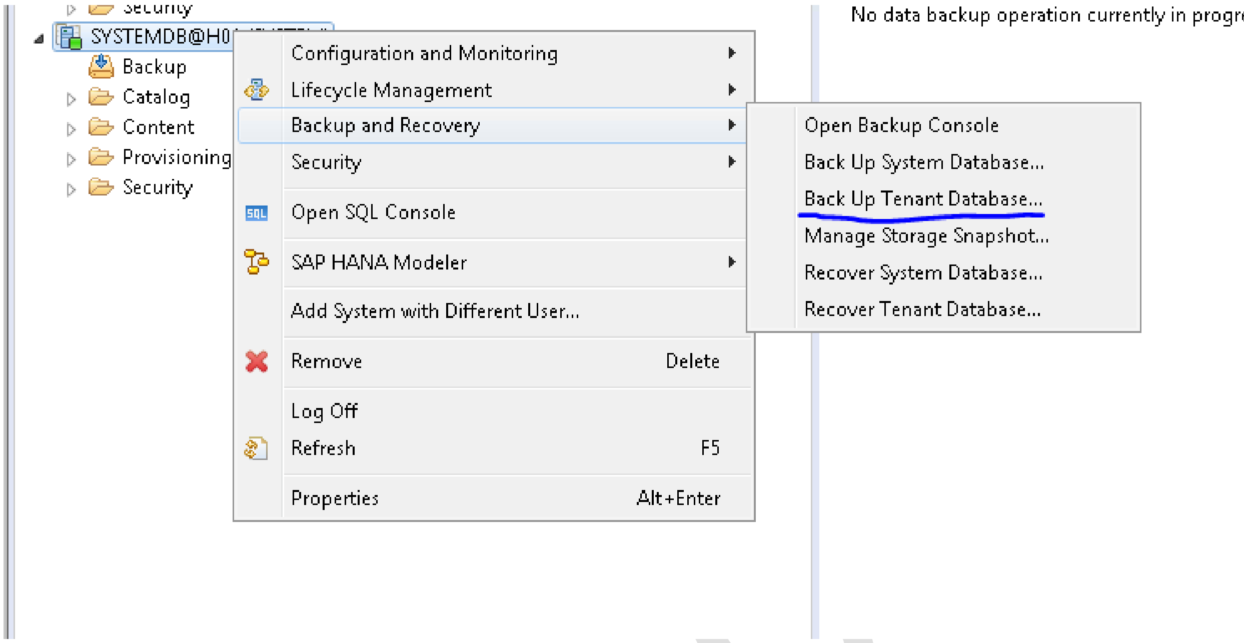


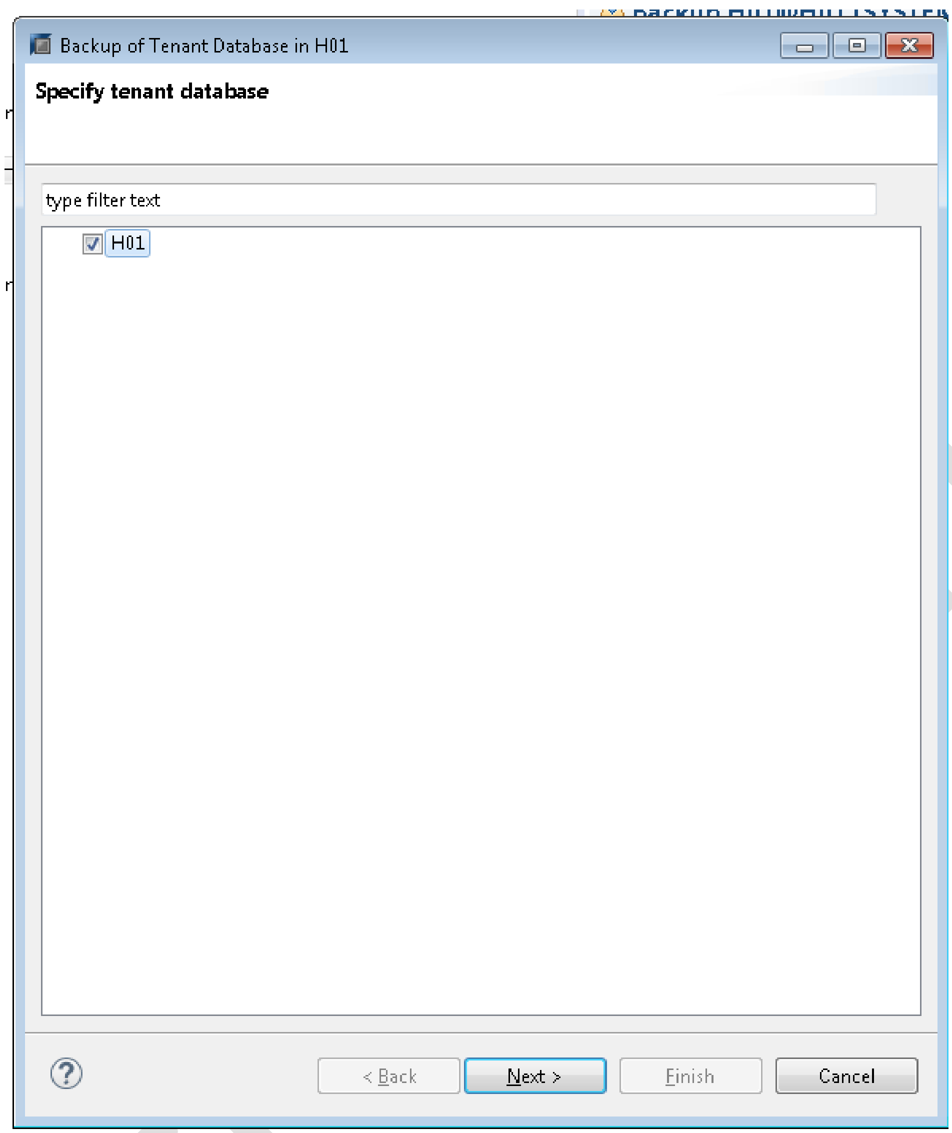
SYSTEMDB@H01 (SYSTEM) [redacted]00 - backup.log - 3 KB - 3/19/22 1:36 PM

Download File   Show End of File   Lines: 1000   Update interval (seconds): 5   Last re

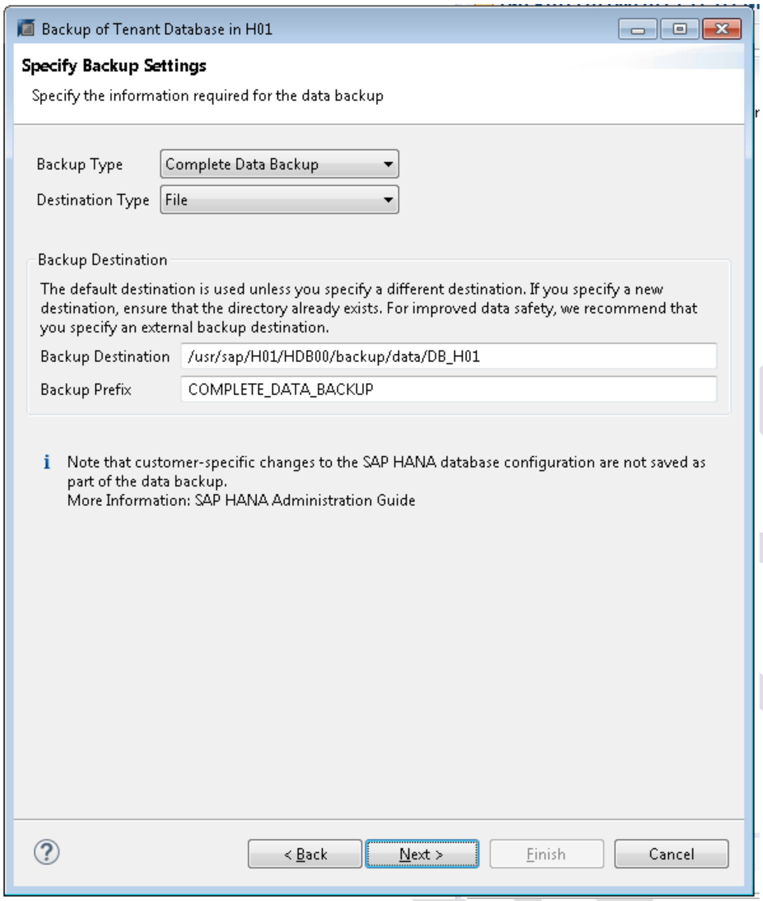
```
DATE       TIME             PID      OPERATION_GUID  TYPE  AREA     TEXT
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   SAVE DATA started
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   state of service: nameserver, suse5:30001, volume: 1, BackupPrepareSavepointInProgress
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   state of service: nameserver, suse5:30001, volume: 1, BackupPrepareSavepointFinished
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   state of service: nameserver, suse5:30001, volume: 1, BackupSynchronizeSavepointInProgress
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   state of service: nameserver, suse5:30001, volume: 1, BackupSynchronizeSavepointFinished
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   state of service: nameserver, suse5:30001, volume: 1, BackupFinishSavepointInProgress
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   state of service: nameserver, suse5:30001, volume: 1, BackupFinishSavepointFinished
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   SAVE DATA will write to the following files :
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   to  file: /usr/sap/H01/HDB00/backup/data/SYSTEMDB/COMPLETE_DATA_BACKUP_databackup_0_1
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   to  file: /usr/sap/H01/HDB00/backup/data/SYSTEMDB/COMPLETE_DATA_BACKUP_databackup_1_1
2022-03-19T13:35:59+05:30  P019976      17fa13638f0 INFO  BACKUP   state of service: nameserver, suse5:30001, volume: 1, BackupExecuteTopologyAndSSFSBackupInProgress
2022-03-19T13:36:00+05:30  P019976      17fa13638f0 INFO  BACKUP   state of service: nameserver, suse5:30001, volume: 1, BackupExecuteTopologyAndSSFSBackupFinished
2022-03-19T13:36:00+05:30  P019976      17fa13638f0 INFO  BACKUP   start of progress monitoring, volumes: 1, bytes: 1560281088
2022-03-19T13:36:00+05:30  P019976      17fa13638f0 INFO  BACKUP   state of service: nameserver, suse5:30001, volume: 1, BackupExecuteDataBackupInProgress
2022-03-19T13:36:00+05:30  P019976      17fa13638f0 INFO  BACKUP   progress of service: nameserver, suse5:30001, volume: 1, 0% 0/1560285184
2022-03-19T13:36:01+05:30  P019976      17fa13638f0 INFO  BACKUP   progress of service: nameserver, suse5:30001, volume: 1, 34% 536870912/1560285184
2022-03-19T13:36:05+05:30  P019976      17fa13638f0 INFO  BACKUP   progress of service: nameserver, suse5:30001, volume: 1, 68% 1073741824/1560285184
2022-03-19T13:36:06+05:30  P019976      17fa13638f0 INFO  BACKUP   progress of service: nameserver, suse5:30001, volume: 1, 99% 1560281088/1560285184
2022-03-19T13:36:06+05:30  P019976      17fa13638f0 INFO  BACKUP   progress of service: nameserver, suse5:30001, volume: 1, 100% 1560285184/1560285184
2022-03-19T13:36:06+05:30  P019976      17fa13638f0 INFO  BACKUP   state of service: nameserver, suse5:30001, volume: 1, BackupExecuteDataBackupFinished
2022-03-19T13:36:06+05:30  P019976      17fa1365208 INFO  LOGBCKUP state of service: nameserver, suse5:30001, volume: 0, BackupExecuteCatalogBackupInProgress
2022-03-19T13:36:06+05:30  P019976      17fa1365208 INFO  LOGBCKUP state of service: nameserver, suse5:30001, volume: 0, BackupExecuteCatalogBackupFinished
2022-03-19T13:36:06+05:30  P019976      17fa13638f0 INFO  BACKUP   SAVE DATA finished successfully
```

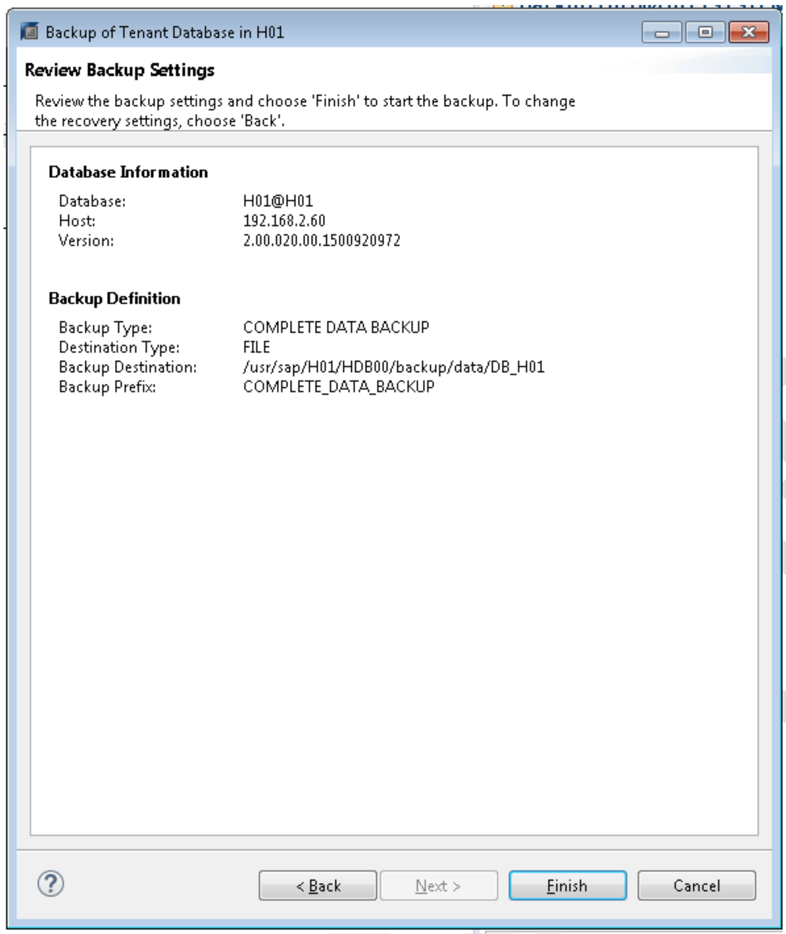
How to backup Tenant DB:


No data backup operation currently in progre
SYSTEMDB@H0
Backup
Catalog
Content
Provisioning
Security
Configuration and Monitoring
Lifecycle Management
Backup and Recovery
Security
Open SQL Console
SAP HANA Modeler
Add System with Different User...
Remove Delete
Log Off
Refresh F5
Properties Alt+Enter
Open Backup Console
Back Up System Database...
Back Up Tenant Database...
Manage Storage Snapshot...
Recover System Database...
Recover Tenant Database...

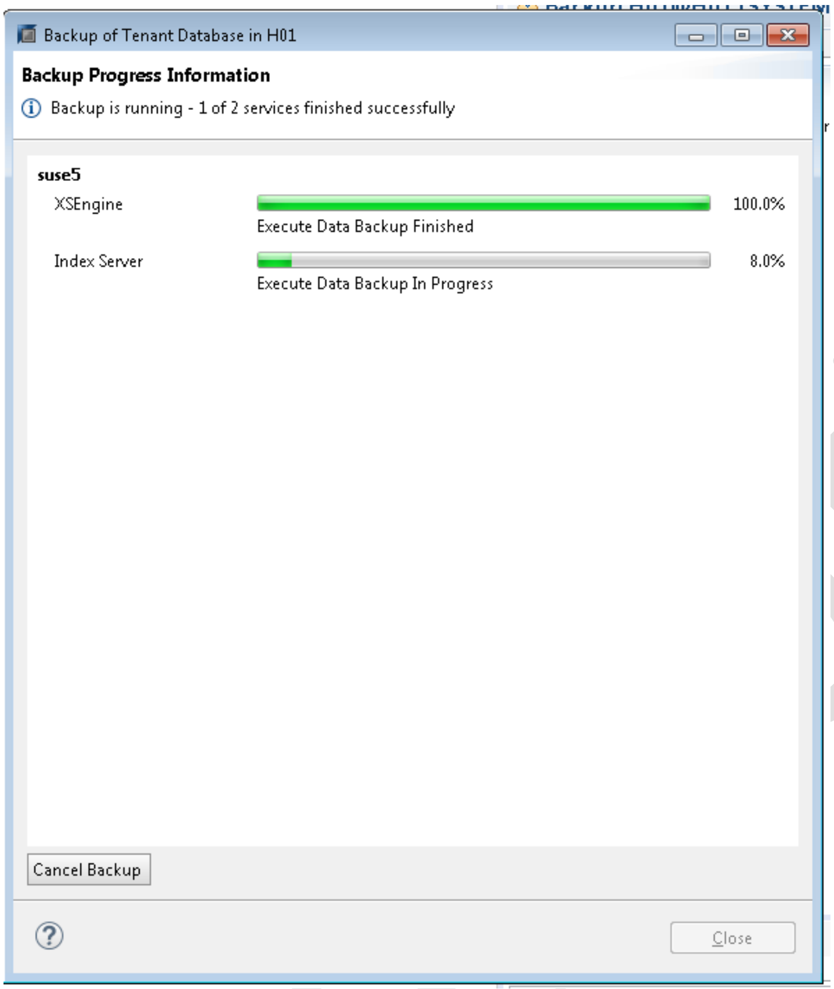


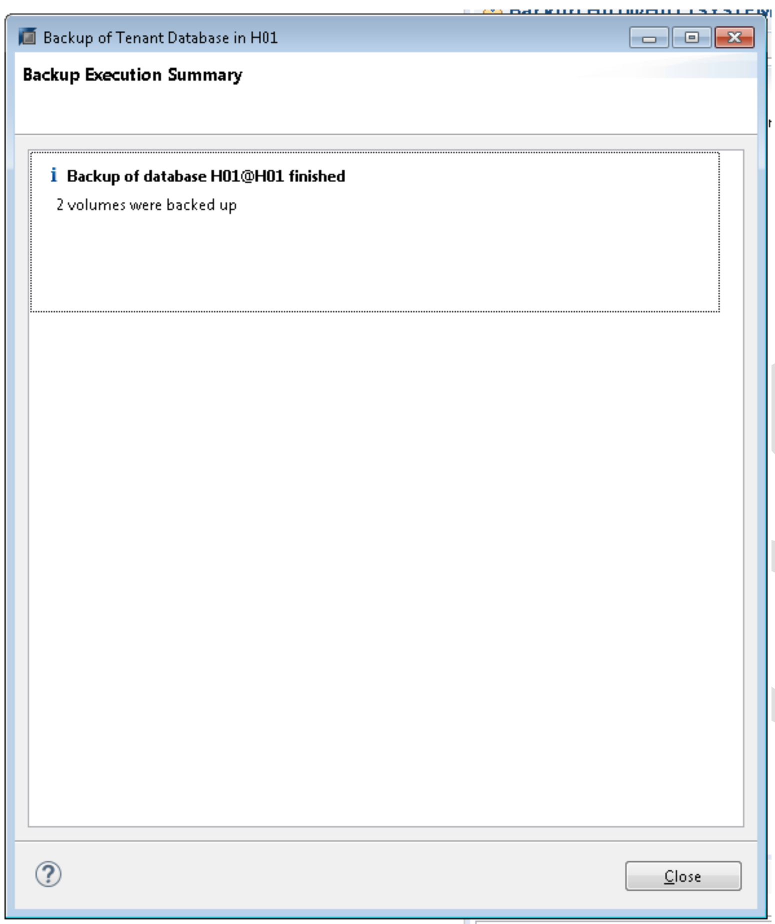
Select Tenant DB which you want to do backup and then click on next:


Backup of Tenant Database in H01
Specify Backup Settings
Specify the information required for the data backup
Backup Type
Complete Data Backup
Destination Type
File
Backup Destination
The default destination is used unless you specify a different destination. If you specify a new destination, ensure that the directory already exists. For improved data safety, we recommend that you specify an external backup destination.
Backup Destination
/usr/sap/H01/HDB00/backup/data/DB_H01
Backup Prefix
COMPLETE_DATA_BACKUP
Note that customer-specific changes to the SAP HANA database configuration are not saved as part of the data backup.
More Information: SAP HANA Administration Guide
< Back
Next >
Finish
Cancel



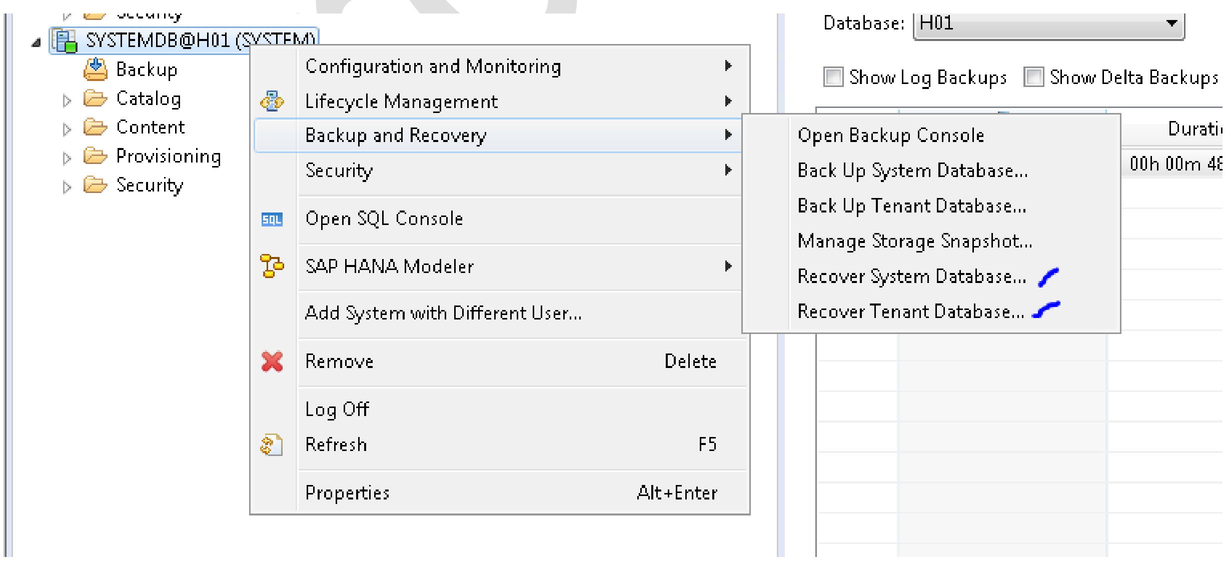
Click on finish


Backup of Tenant Database in H01
Backup Progress Information
Backup is running - 1 of 2 services finished successfully
suse5
XSEngine
100.0%
Execute Data Backup Finished
Index Server
8.0%
Execute Data Backup In Progress
Cancel Backup
Close

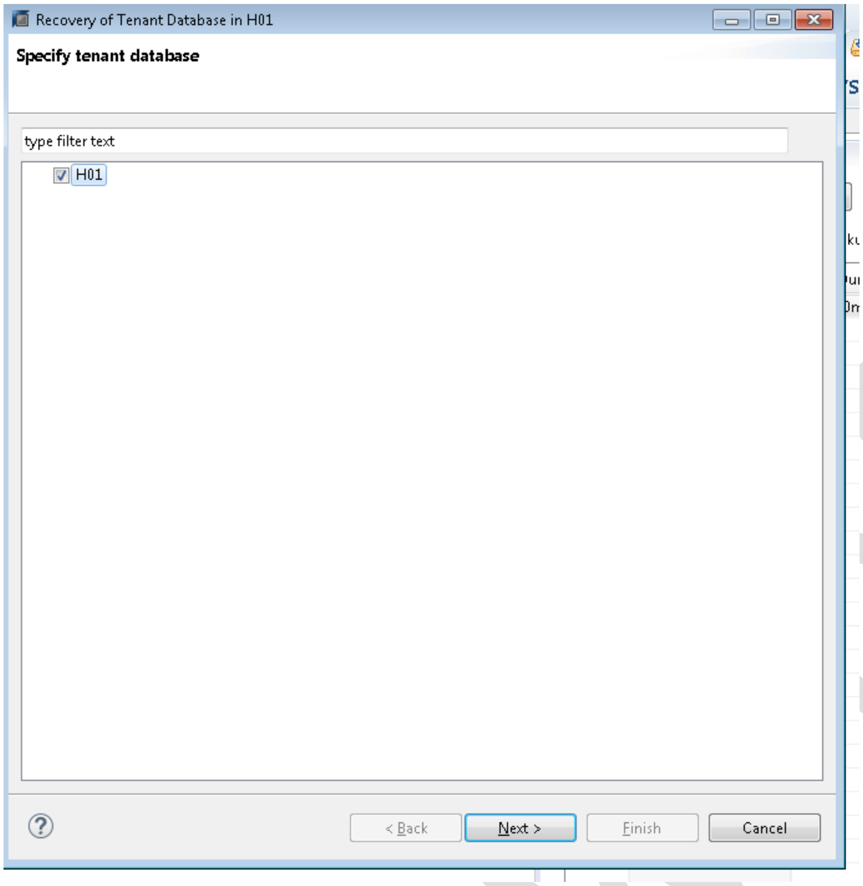


How to restore DB:

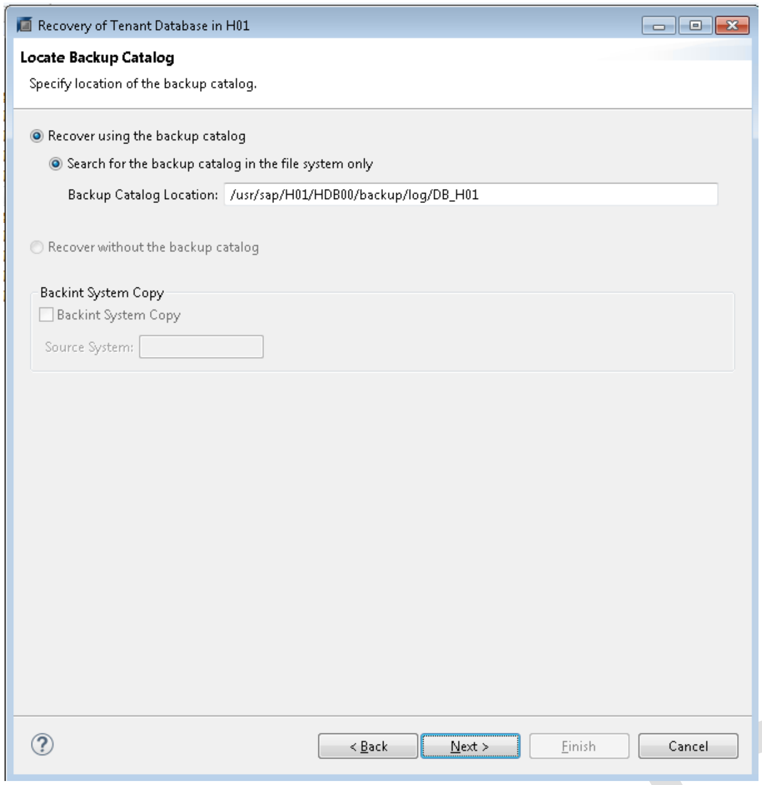
Select which DB you want to restore.



In this I have selected Tenant DB



Select the DB and click on next



Select the location where the backup is present and then click on next after that restore will happen and then completes.