MANUAL RECOVERY GUIDE FOR SAP HANA ON AZURE FROM STORAGE SNAPSHOT

Abstract

How to guide for recovering SAP HANA on Azure Large Instance from a snapshot taken with Microsoft's snapshot tools.

Microsoft

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Version

This document is for the SAP HANA on Azure Large Instances using the Microsoft snapshot tools **version 3.4 or later**.

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Overview

This document provides guidance on using SAP HANA Studio to recover SAP HANA on Azure large Instances. This guide has step-by-step screenshots to follow to understand the three primary methods of recovering SAP HANA using HANA Studio from a snapshot taken using the Microsoft provided snapshot tools.

The screenshots in this document are from SAP HANA Studio session accessing a SAP HANA 2.0 system.

Disclaimer: *This guide and the associated screenshots are taken from an SAP HANA v2.0 system recovery as set up in the Microsoft HANA Large Instances test environment. Anyone following this guide is responsible for ensuring the recovery process works in their own environment as expected.*

Assumptions

The administrator following this guide has experience with SAP HANA and HANA Studio because not all details are provided as screenshots to follow (e.g. logging in to HANA Studio, etc.).

The administrator is familiar with SAP HANA backup processes, including the Backup Catalog and Storage Snapshots.

The administrator has the appropriate permissions at a Linux shell to copy files as the <sid>adm user into the SAP HANA Data Area.

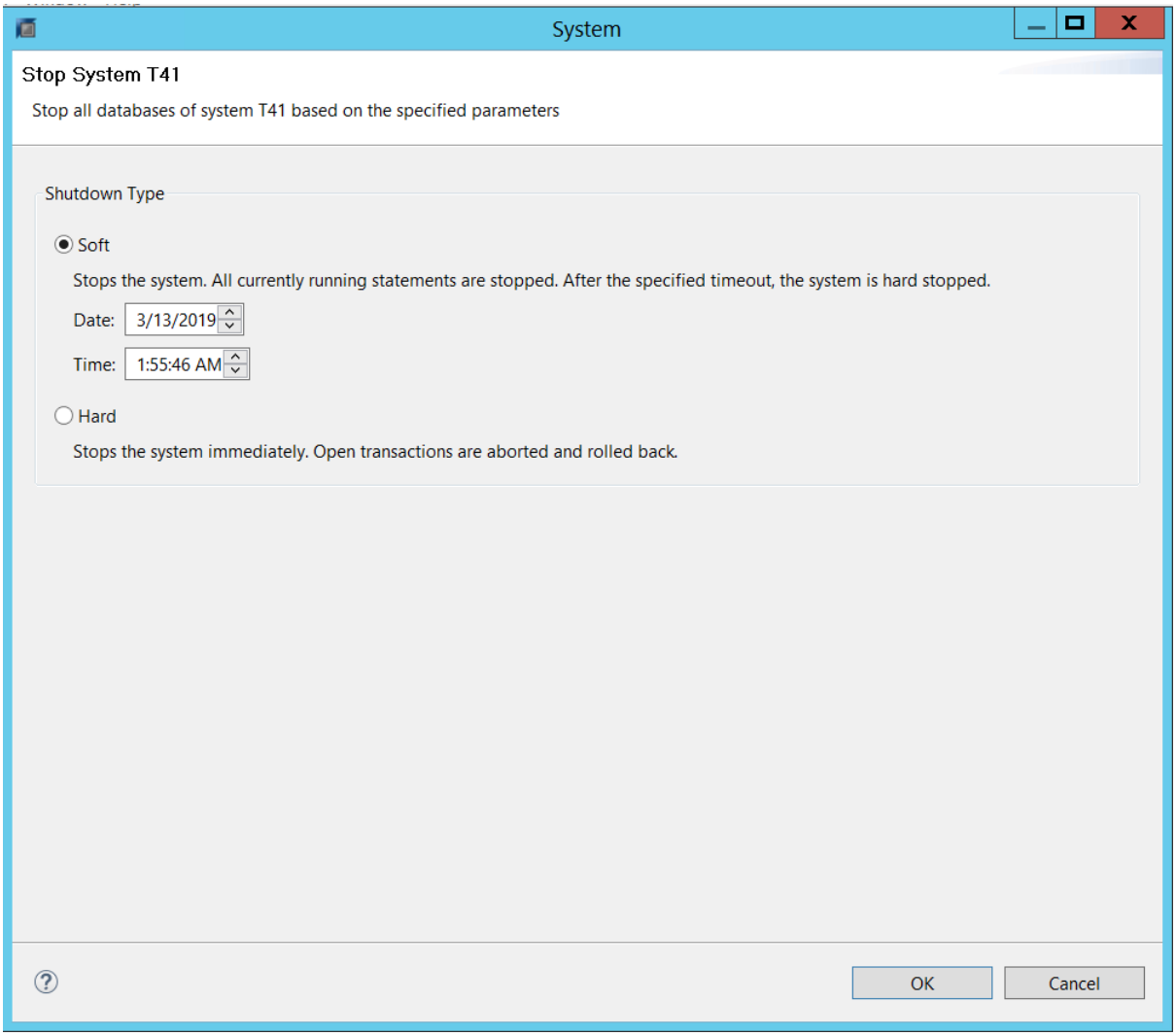
Terms and Definitions

Terms used in this documentation:

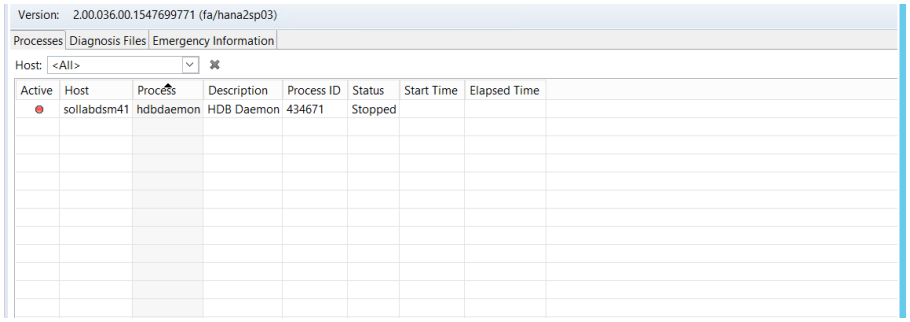
- **SID**: A System Identifier for SAP HANA installation, typically 3 characters long. In this example the SID is “T41”.
- **HLI**: SAP HANA on Azure Large Instance Unit.

Recover the database to its most recent state

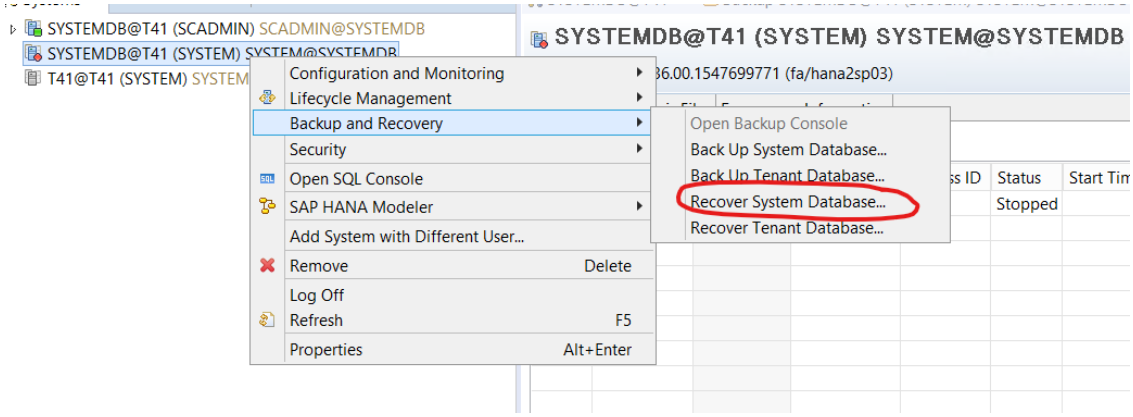
1. First step is to stop the database



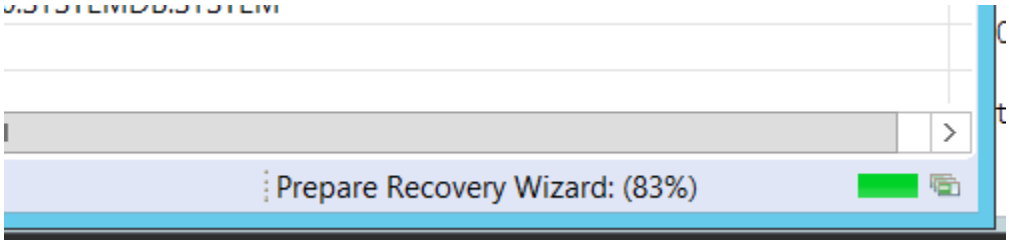
When this is finished, the Processes tab should display as follows:



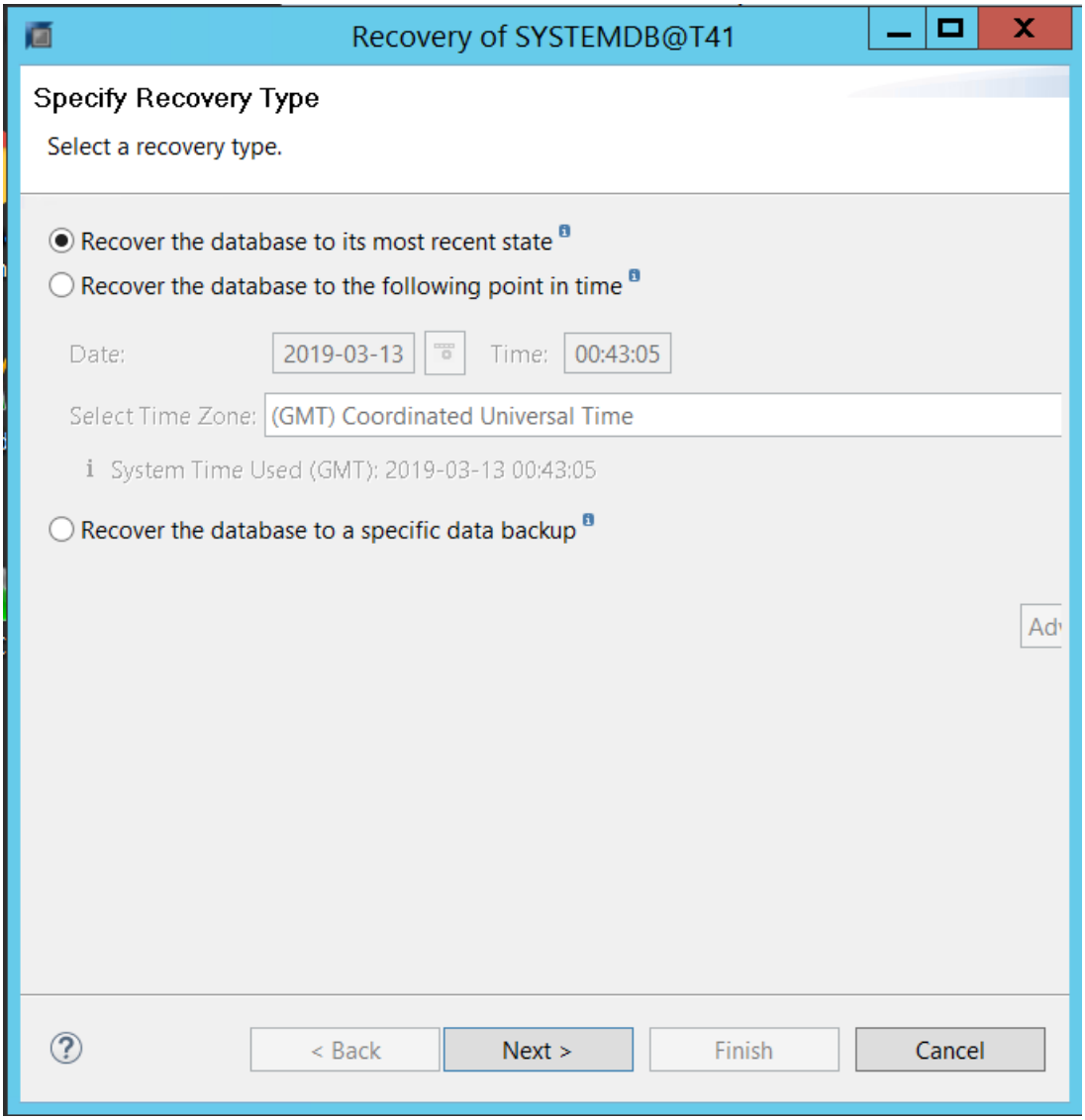
2. Start the recovery process from the menu.



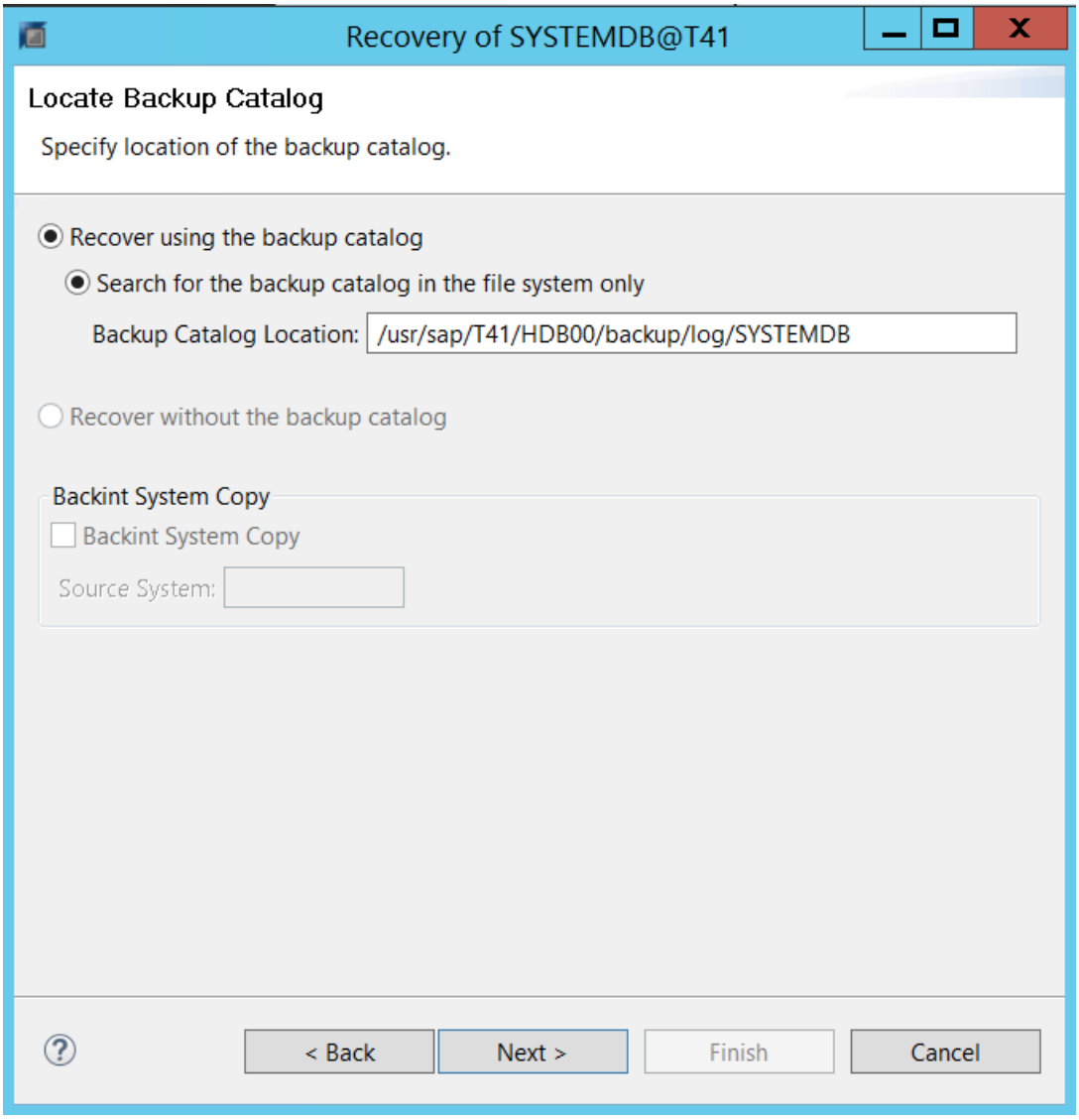
Note, the recovery wizard can take several seconds to launch (see the following status)



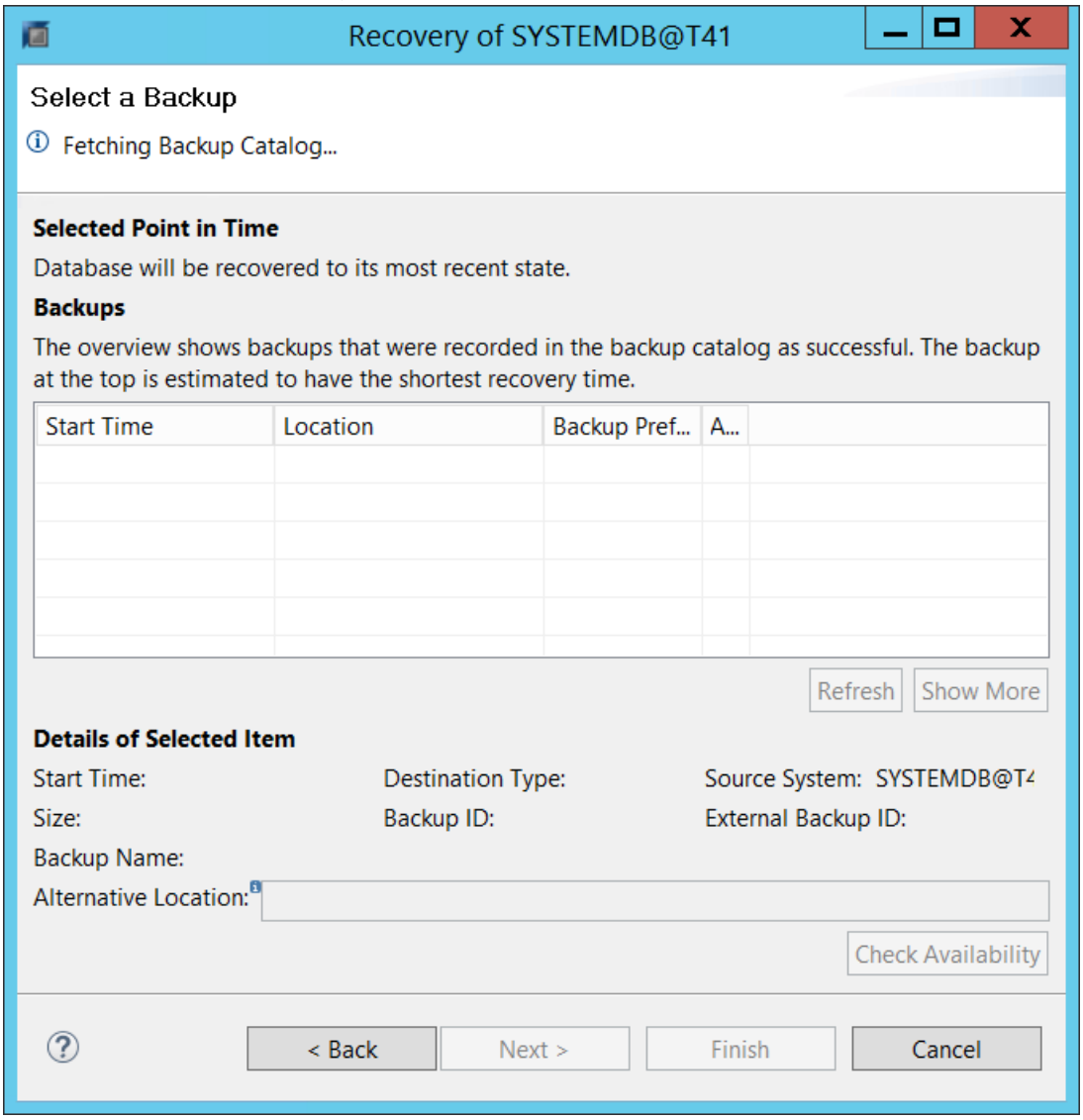
3. Choose the recovery type, in this case “Recover the database to its most recent state”



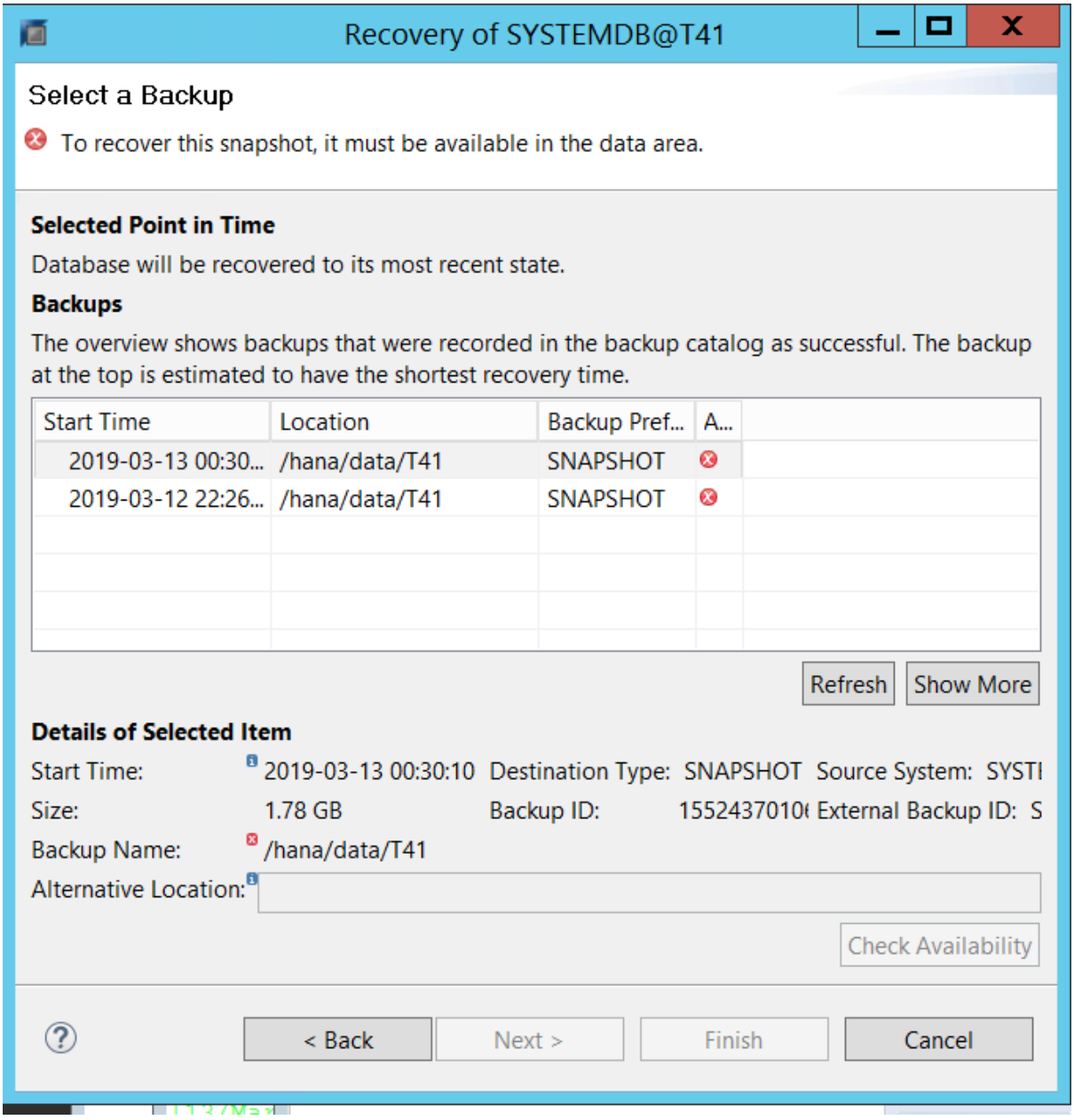
4. Choose the location of the backup catalog, which is needed for recovery.



5. The backup catalog will be fetched to display the appropriate backup to recover from (this can take a minute or two to load)



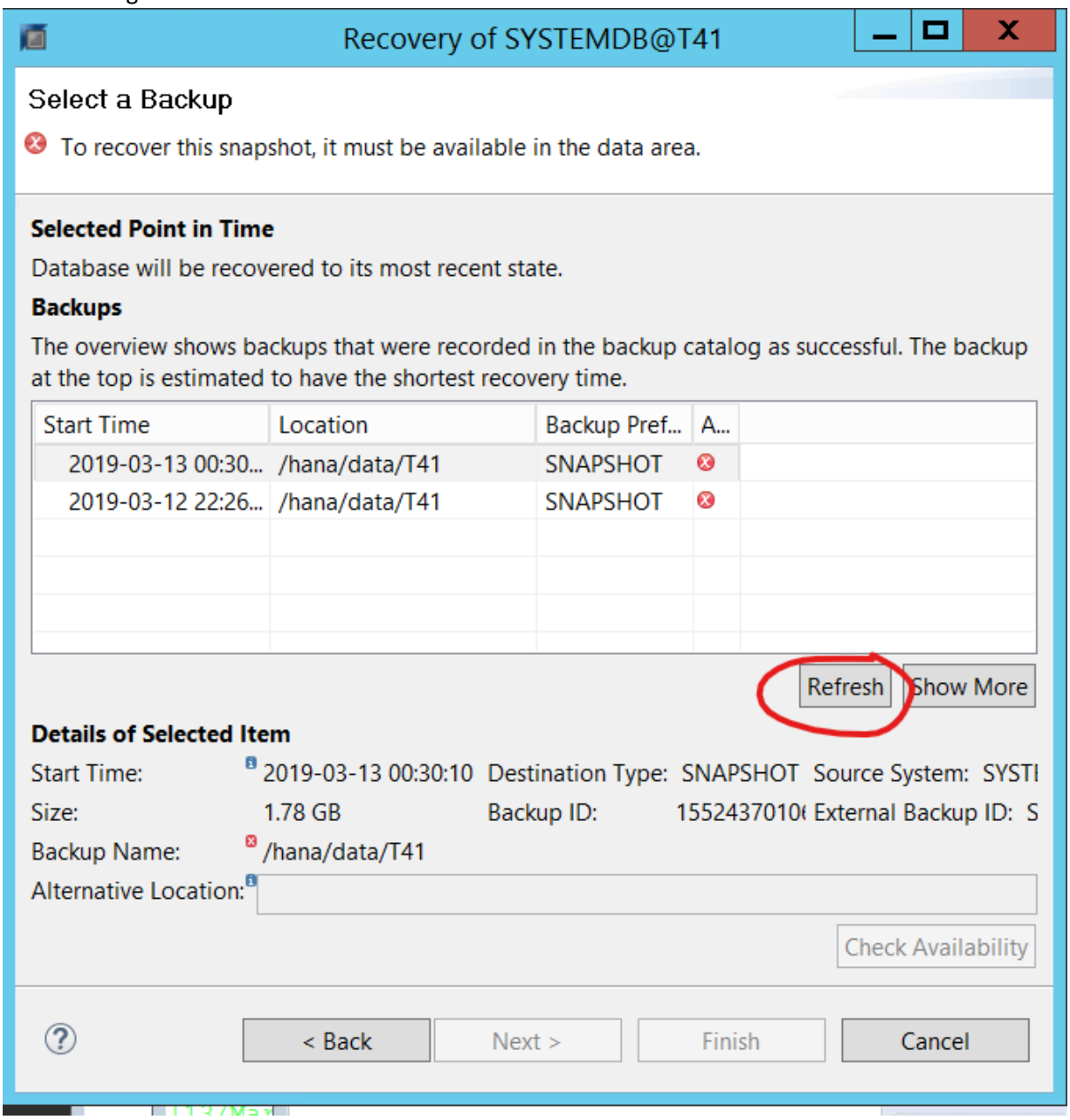
6. The first time the backup catalog is refreshed, its likely no suitable snapshot will be found to restore from. This is because the administrator will need to copy/restore the files from the snapshot into the data area.



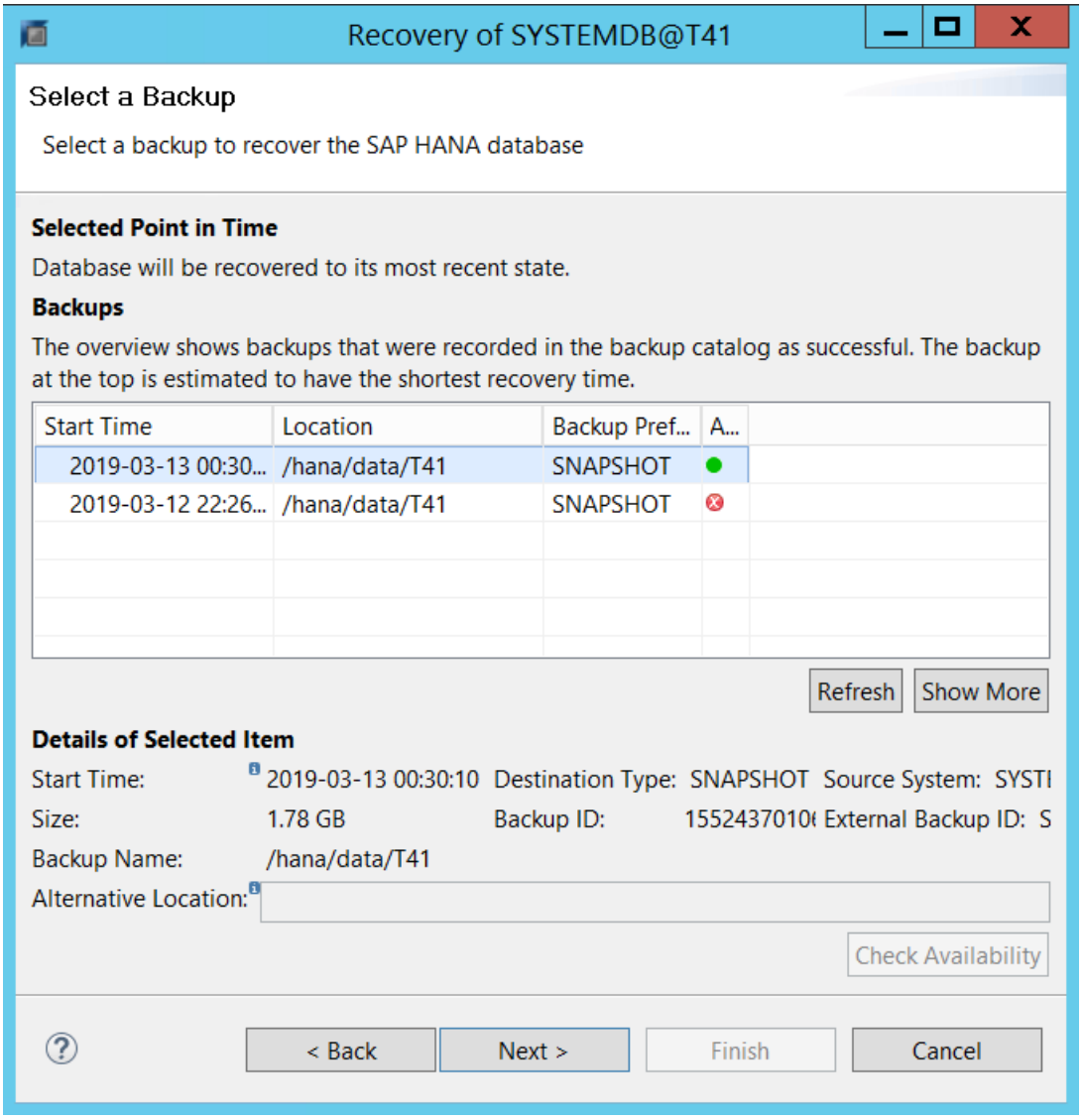
7. In this example, the files are copied from the "hidden" location in the filesystem

```
# su – t41adm

> cp -pr /hana/data/T41/mnt00001/.snapshot/daily_db_bkup.2019-03-13_0030.0/* \
/hana/data/T41/mnt00001/.
```

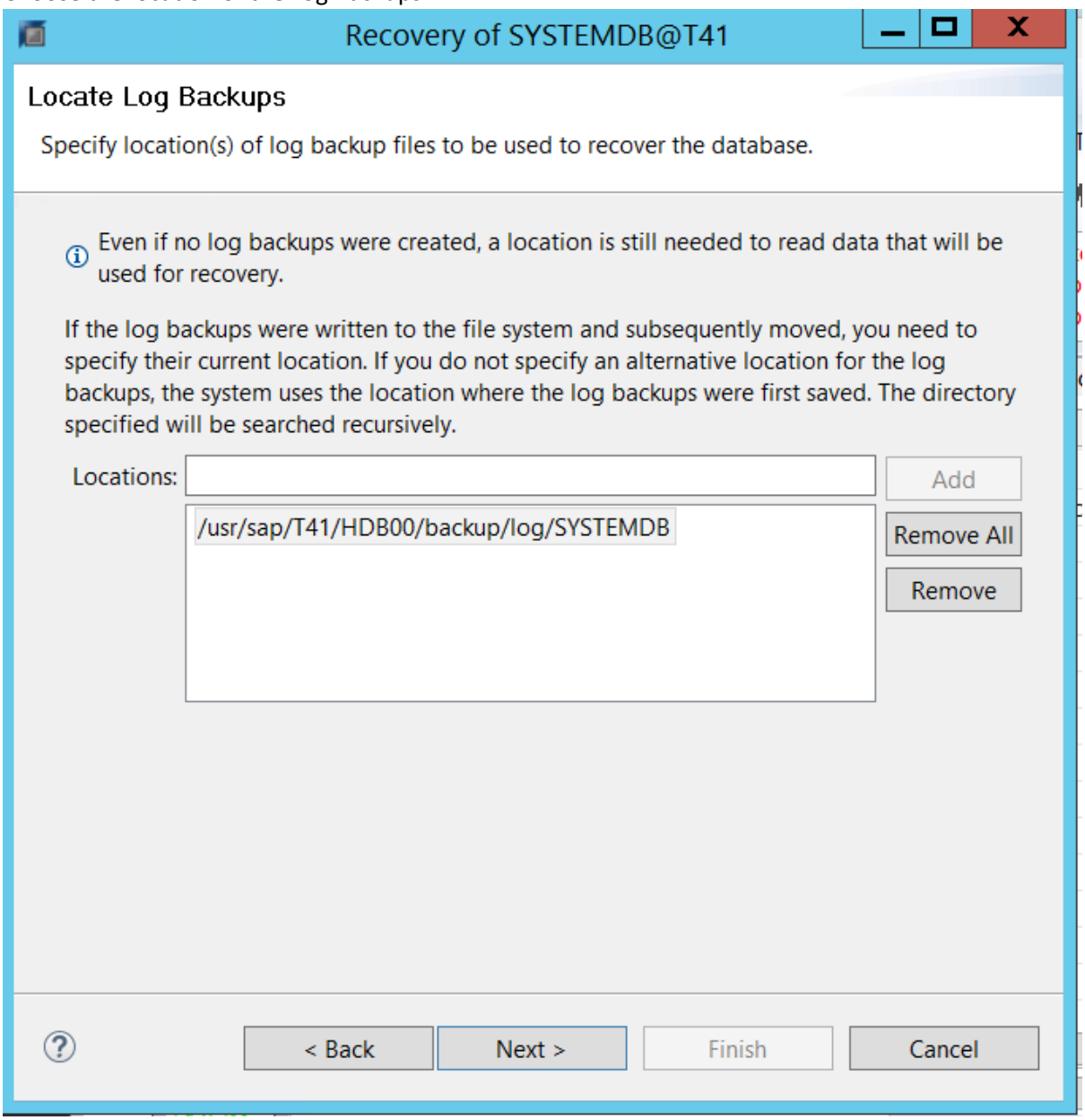
8. When the copy is complete, refresh the view of the backup catalog to ensure the snapshot we are restoring from is listed.



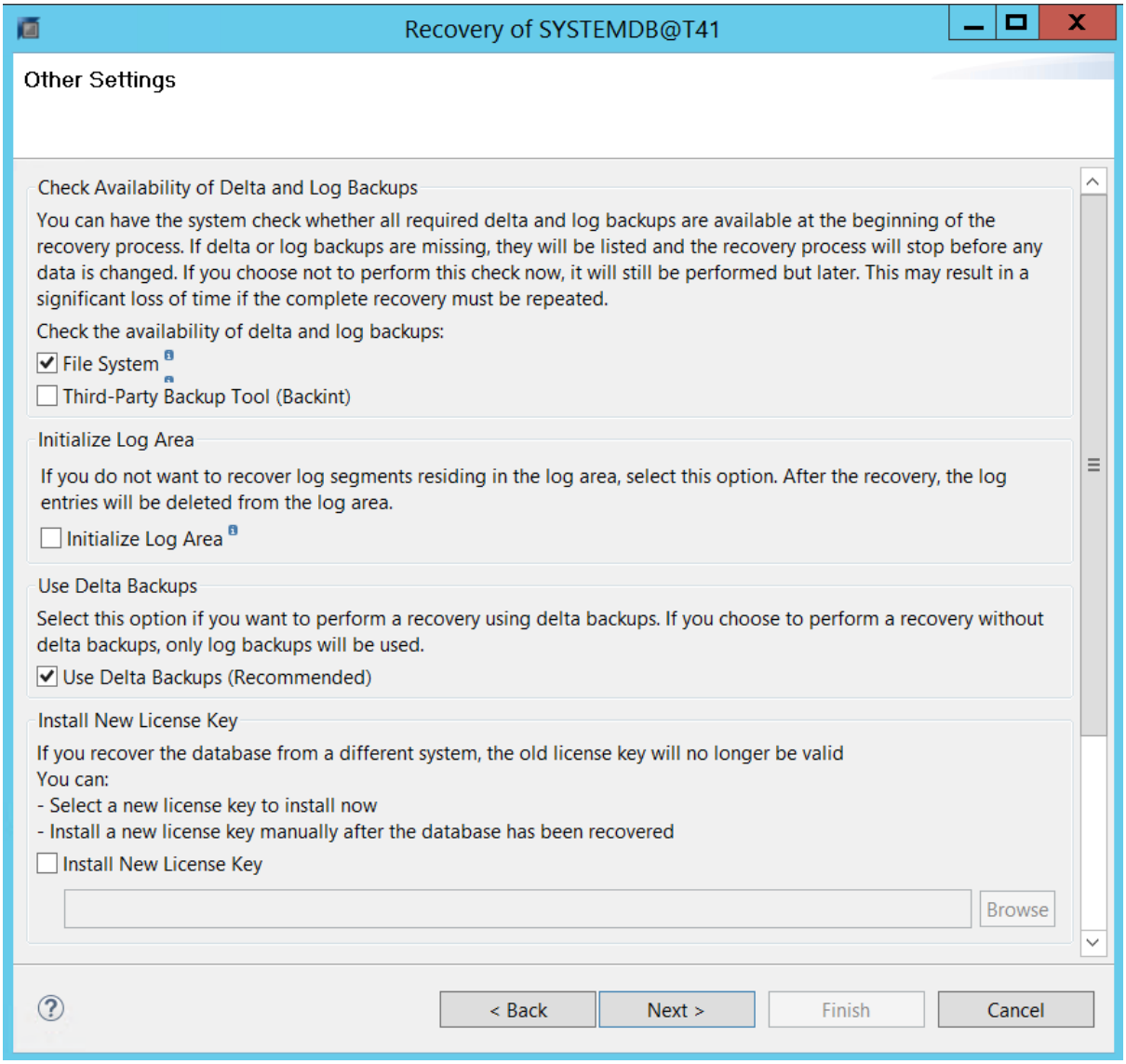
9. Now select the available SNAPSHOT shown in green to recover from.



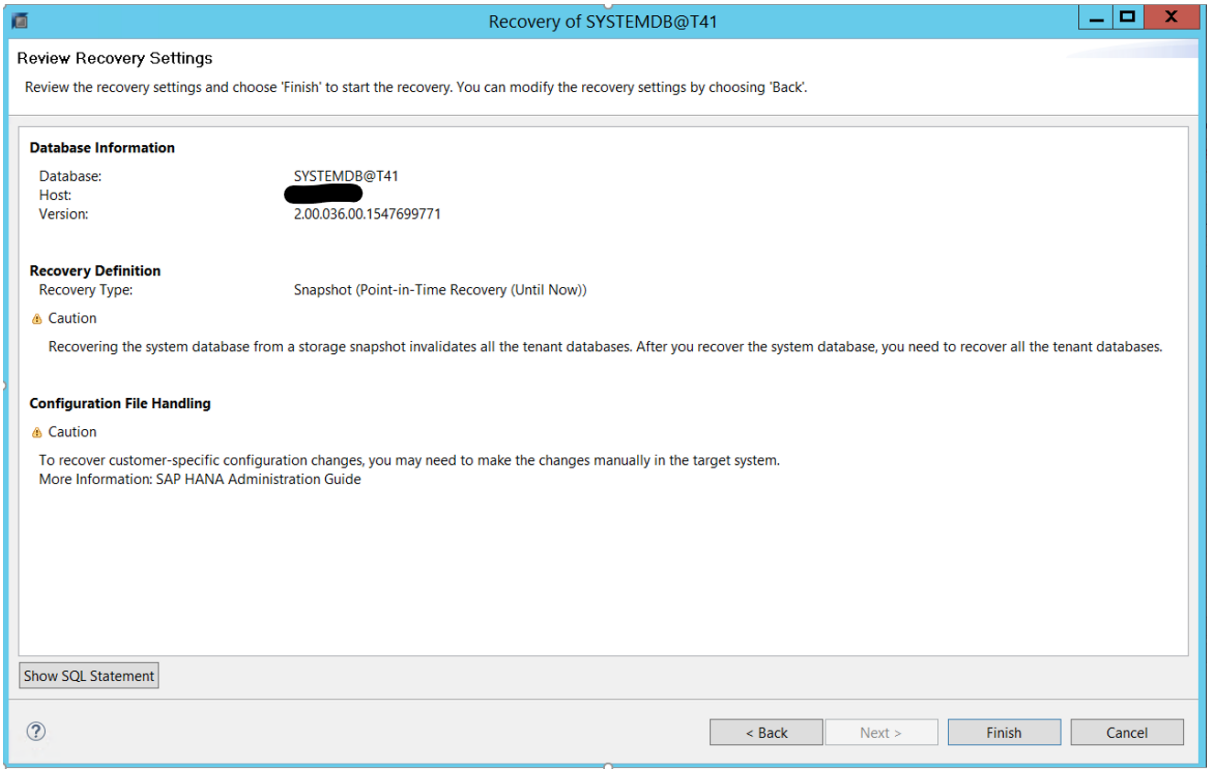
10. Choose the location of the Log Backups.



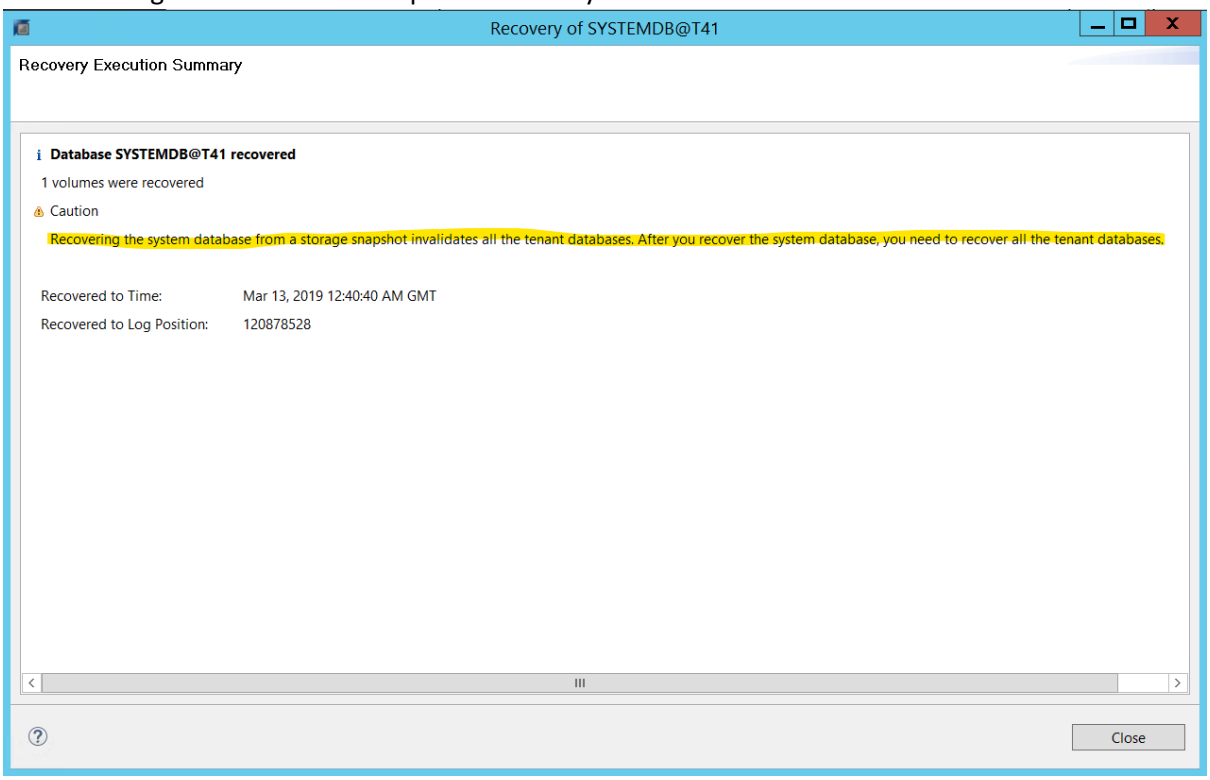
11. Check any appropriate “Other Settings”, the following screen is the defaults



12. On the summary page, review any final details and press Finish to restore the system database.

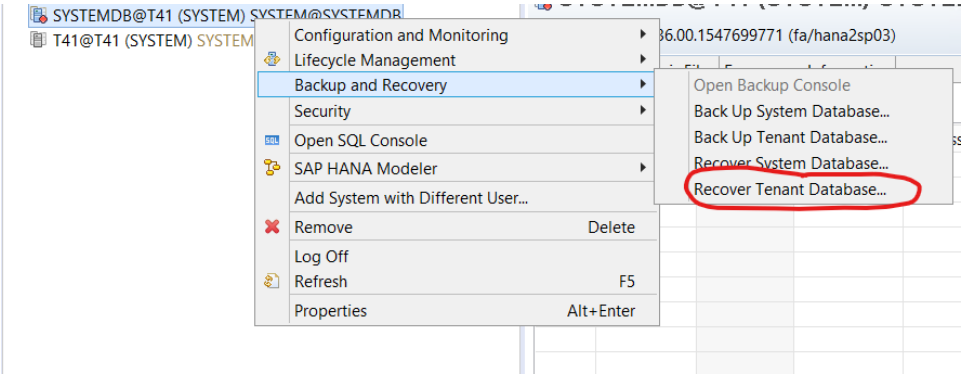


13. When the recovery has finished a Recovery Execution Summary provides details of the recovery. The following screen shows a completed recovery of the SYSTEMDB.

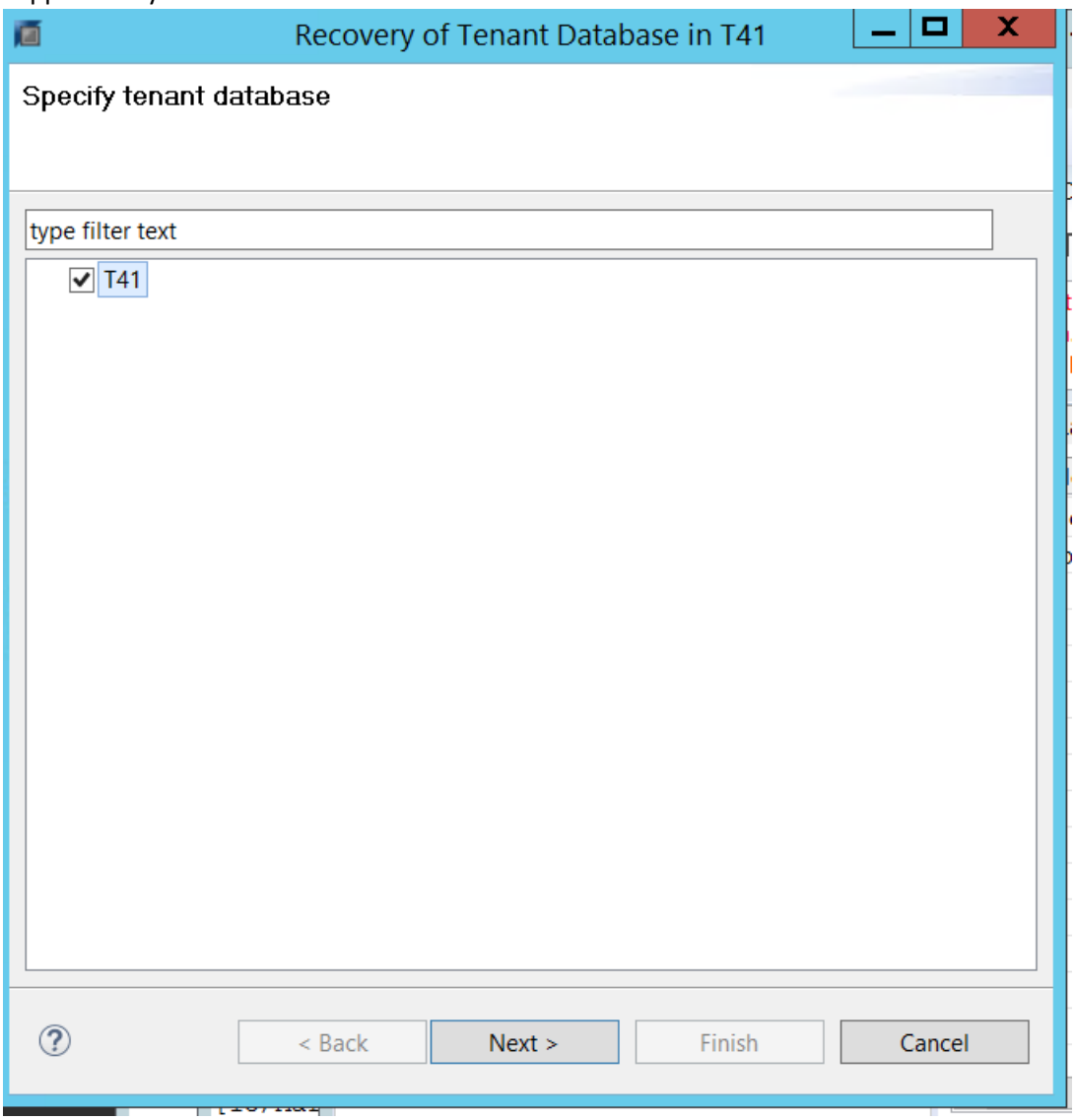


! The message stating a recovery from a storage snapshot invalidates all the tenant databases. Tenant databases now need to be recovered.

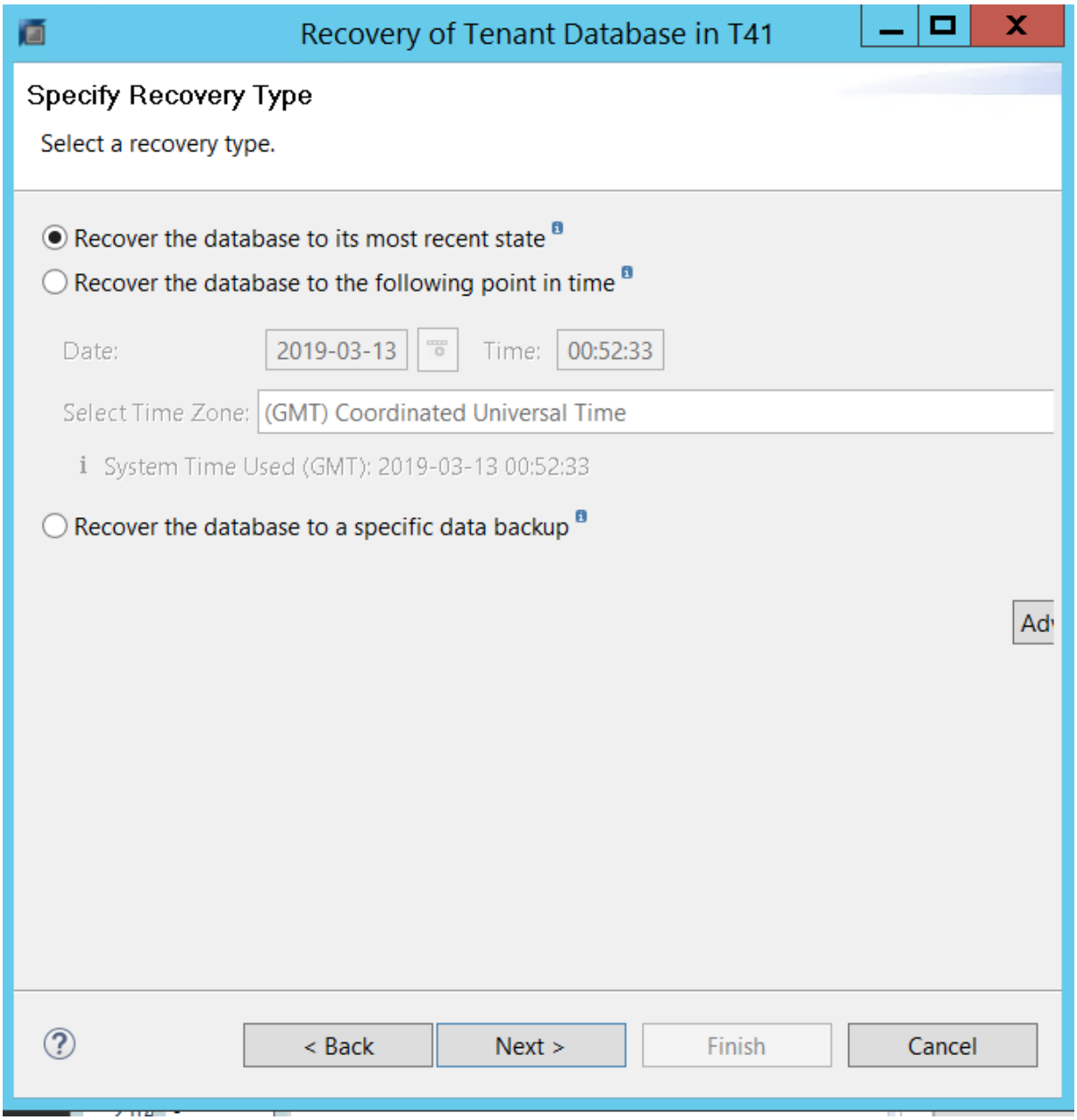
14. Start the recovery of the Tenant database



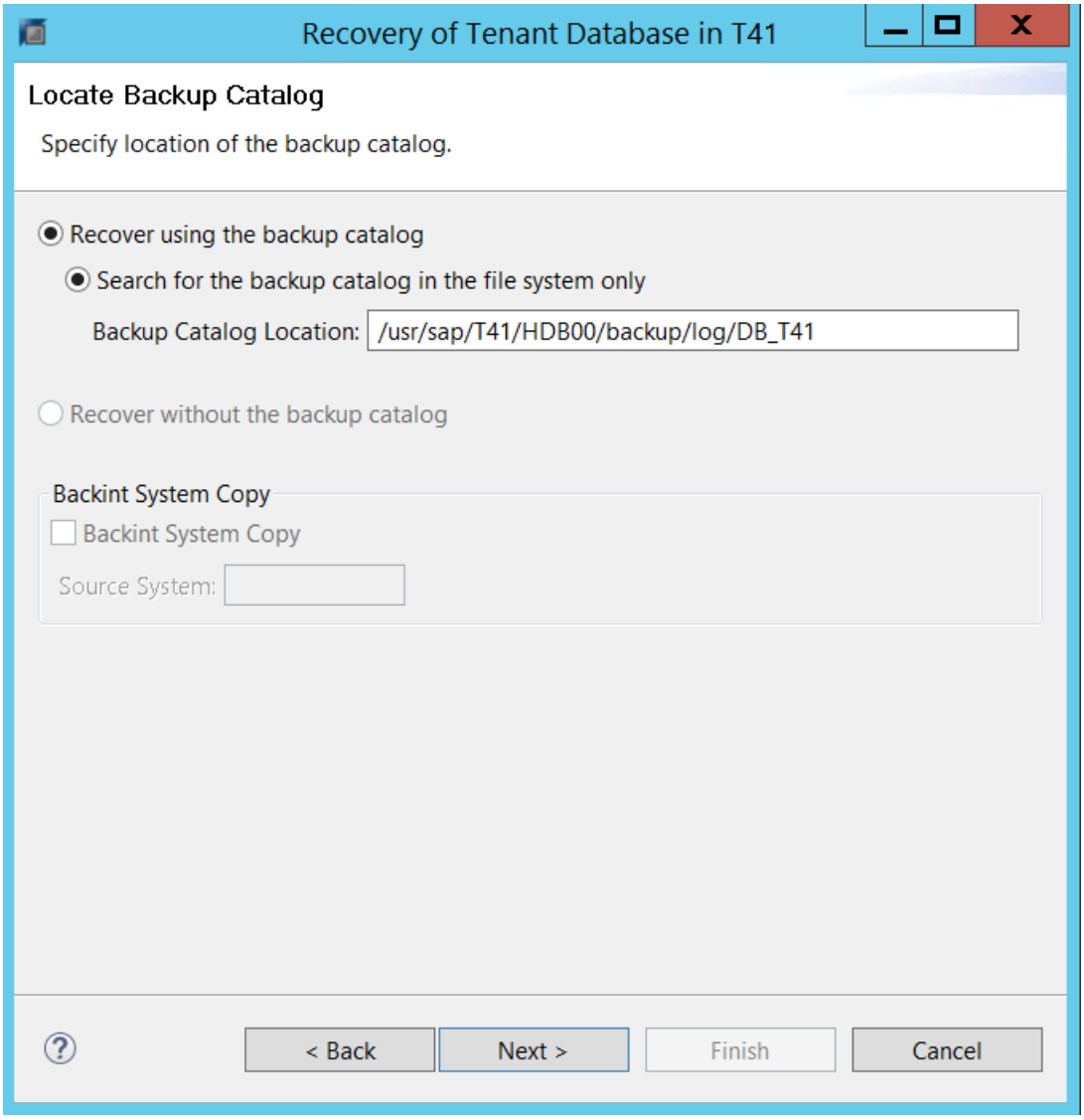
15. Choose the Tenant to recover from. At the time of writing, only a single tenant database is supported by SAP to recover from.



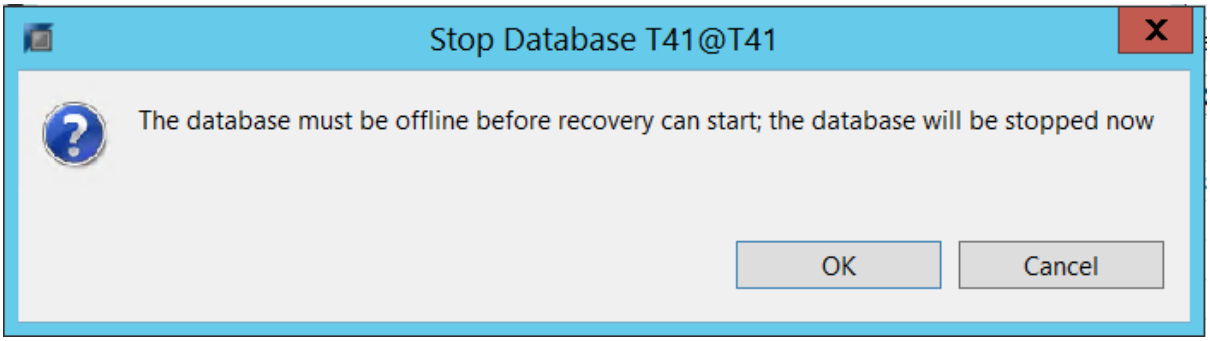
16. Choose to recover the tenant database to its most recent state (same as for the system database).



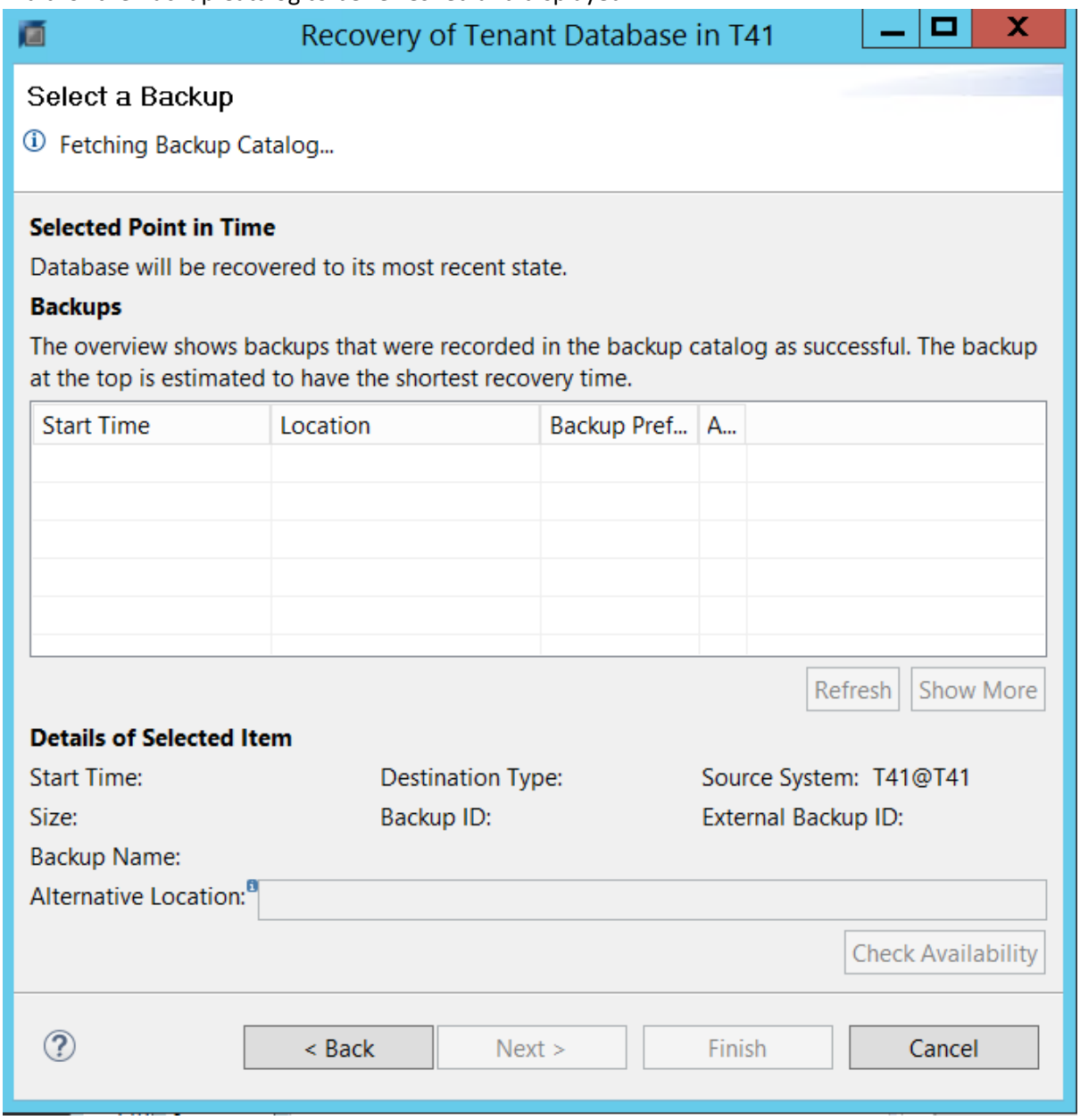
17. Provide the location of the Backup Catalog (same as for the system database)



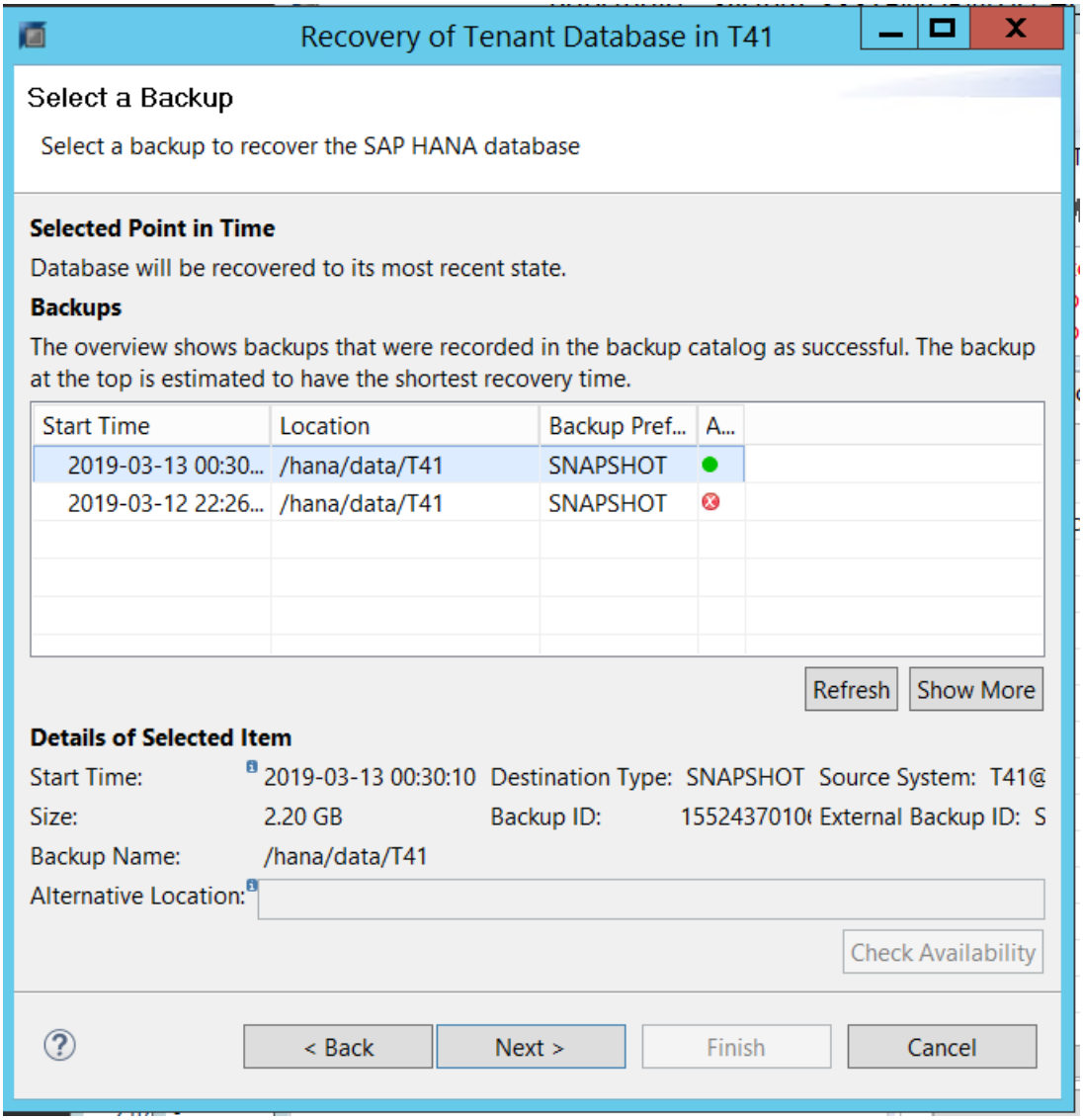
18. Allow the tenant database to be stopped for recovery.



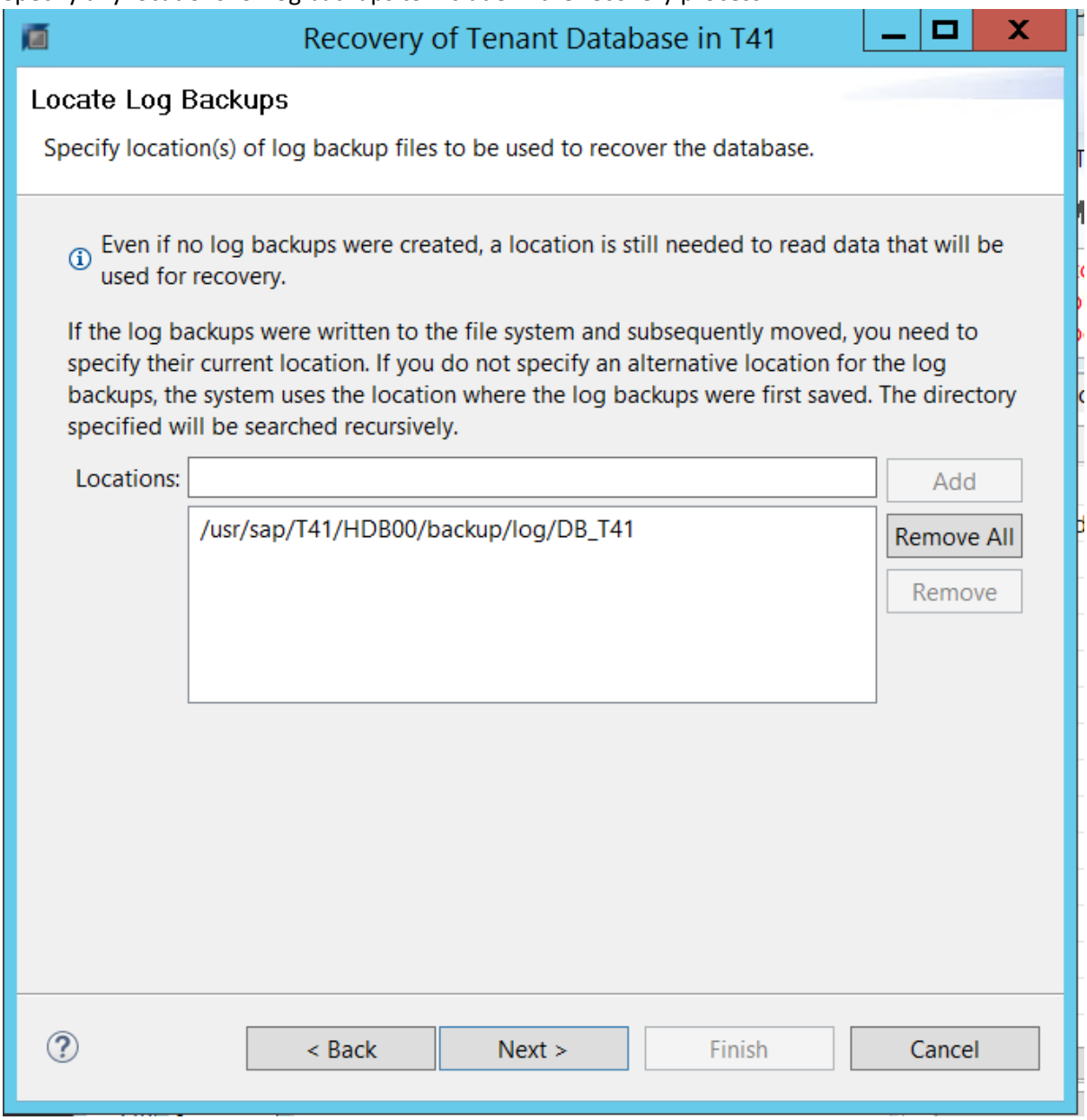
19. Wait for the Backup Catalog to be refreshed and displayed



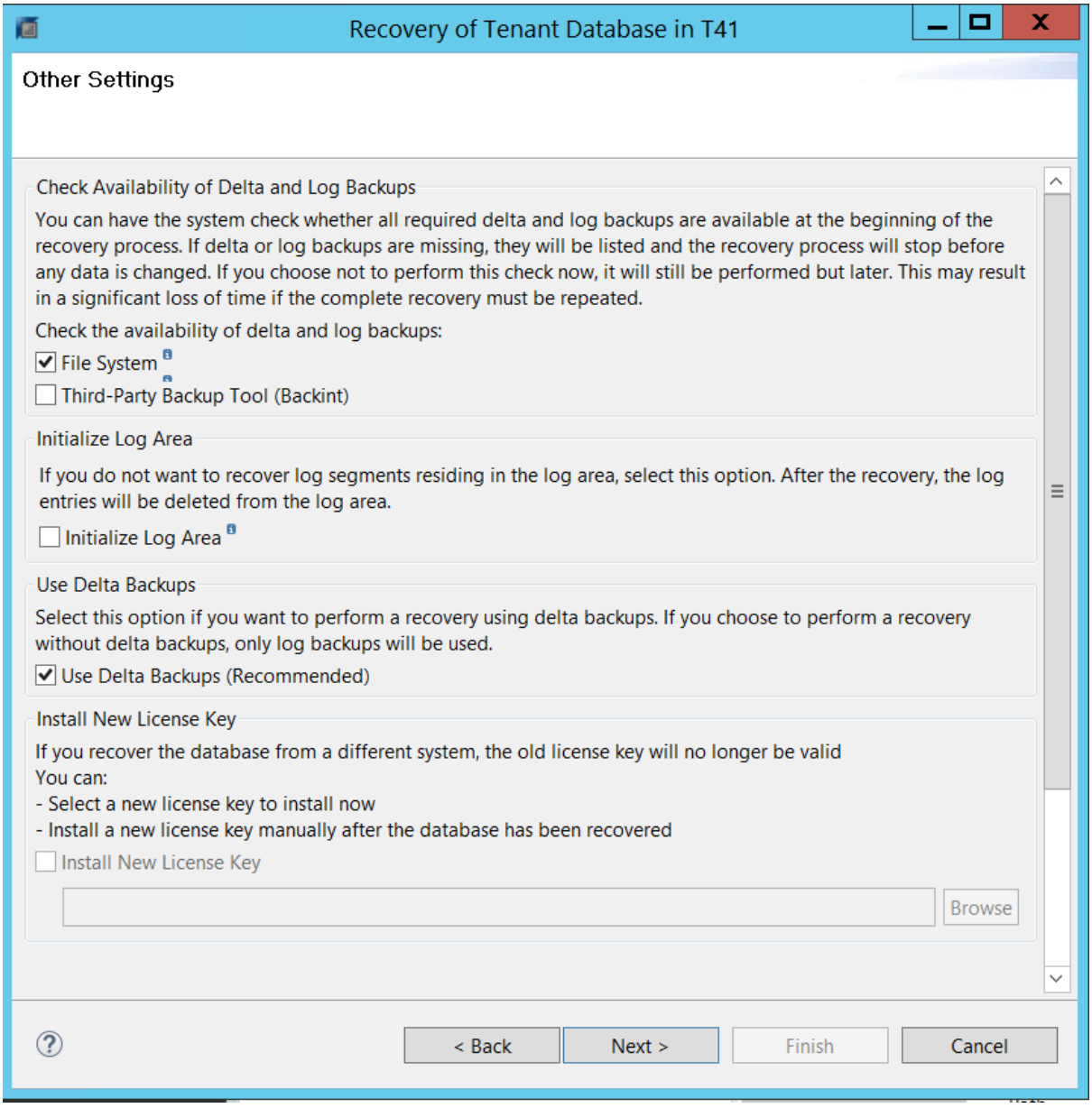
20. When recovering the tenant database there should already be a valid snapshot to recover from (unlike the system database where we needed to restore the snapshot files into the data area and refresh the view). Select this snapshot and click next.



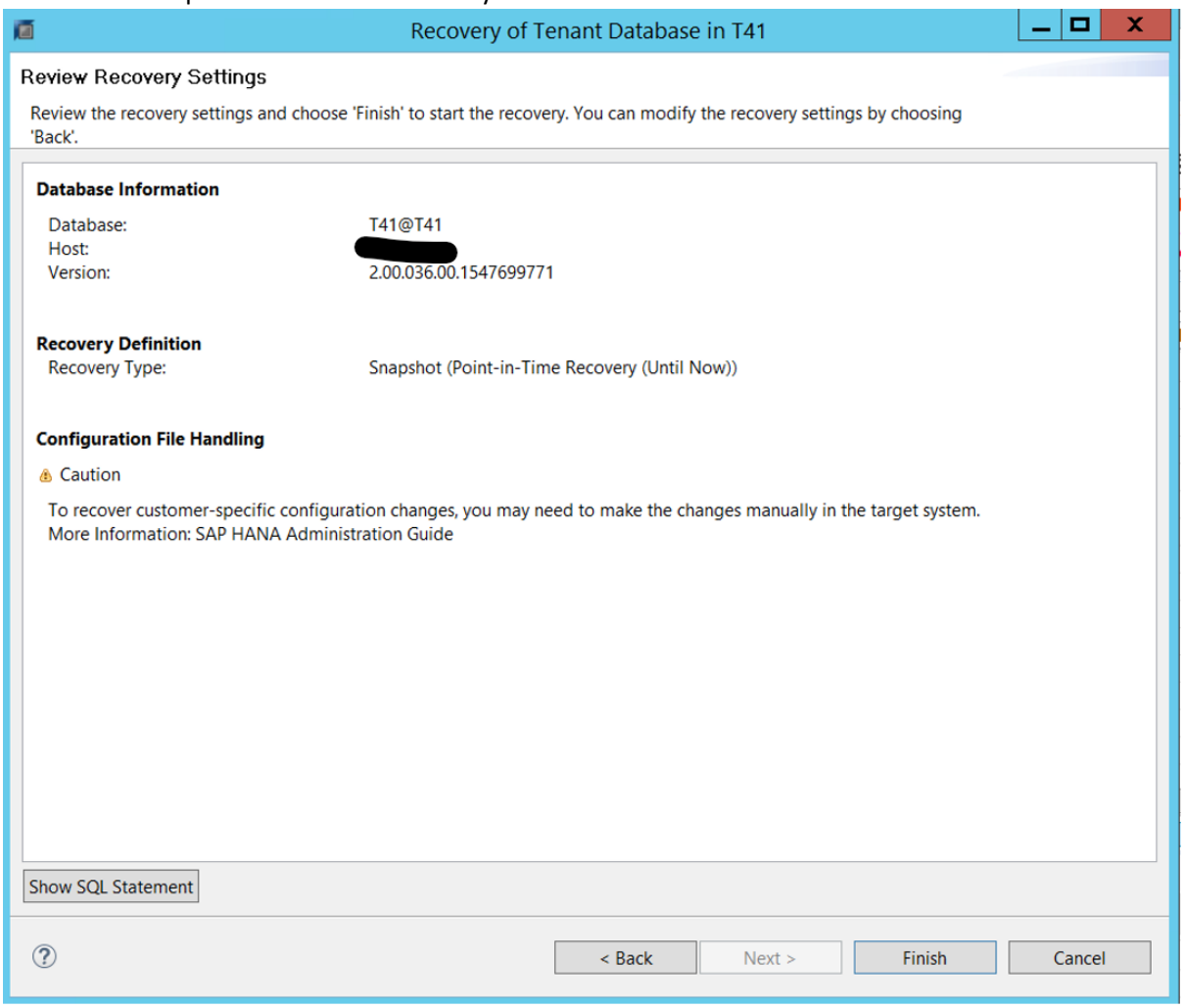
21. Specify any locations for log backups to include in the recovery process.



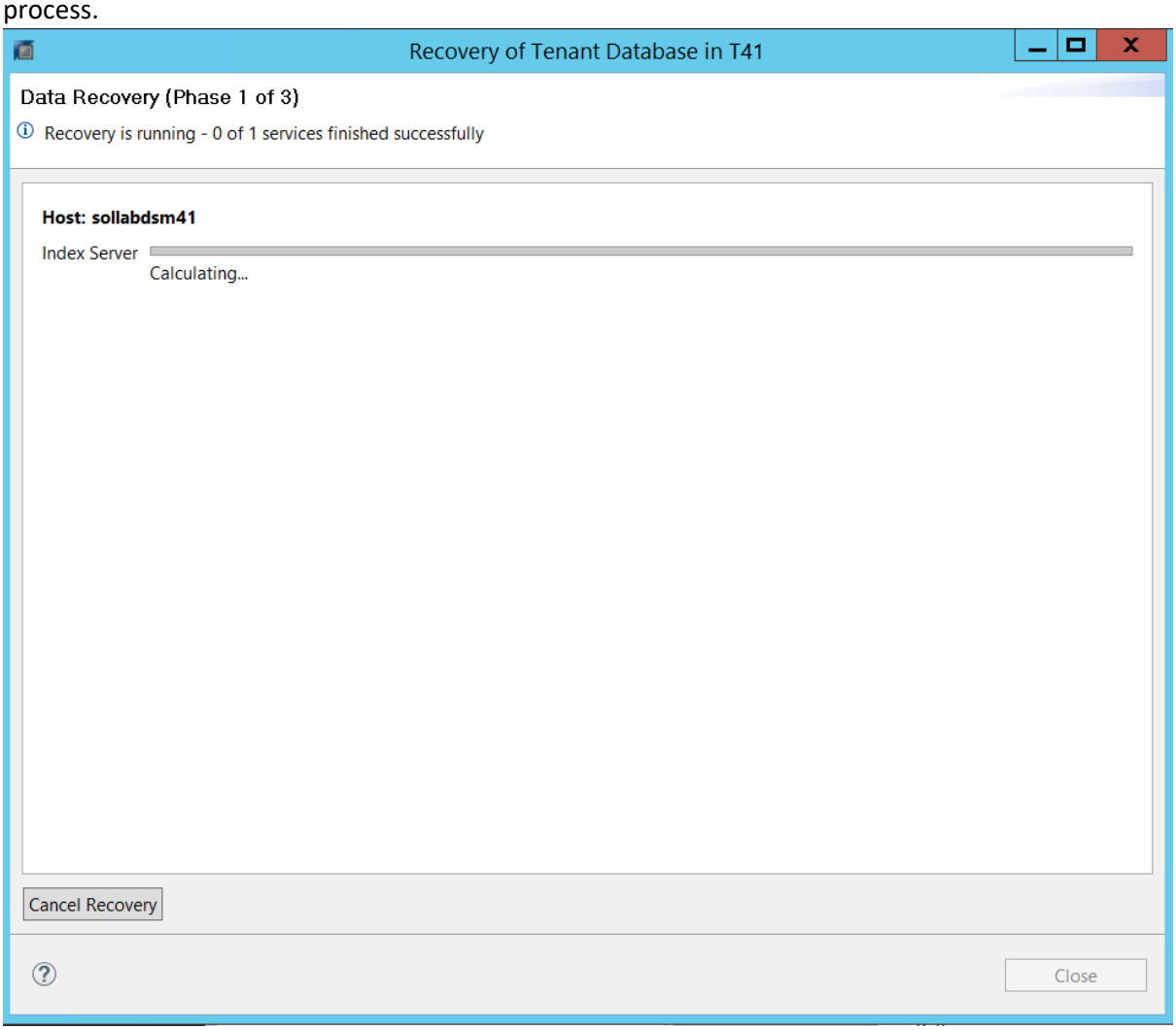
22. Check any appropriate “Other Settings”, the following screen is the defaults



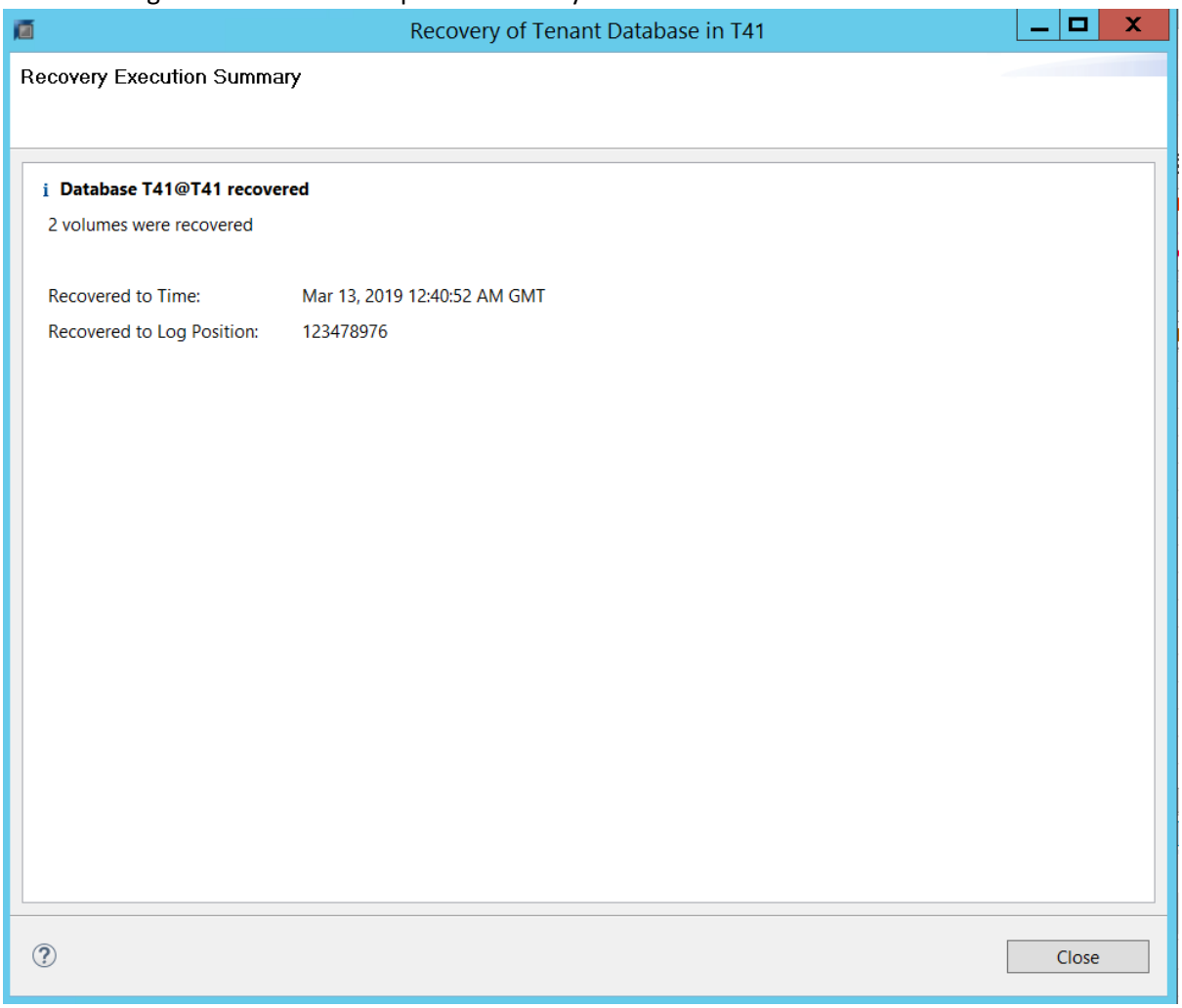
23. On the summary page, review any final details and press Finish to restore the tenant database. Select Finish to proceed with the recovery.



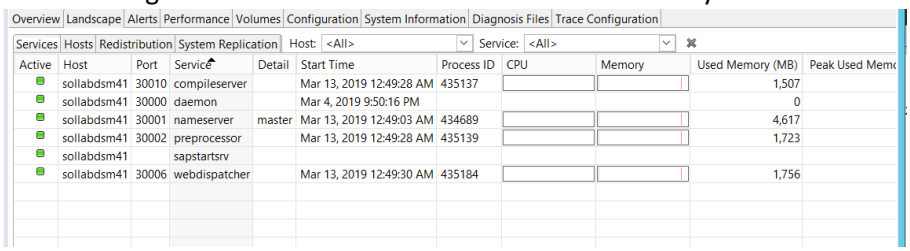
24. The recovery process can take a few minutes, depending on database size and log files to process.



25. When the recovery has finished a Recovery Execution Summary provides details of the recovery. The following screen shows a completed recovery of the TENANT DB.



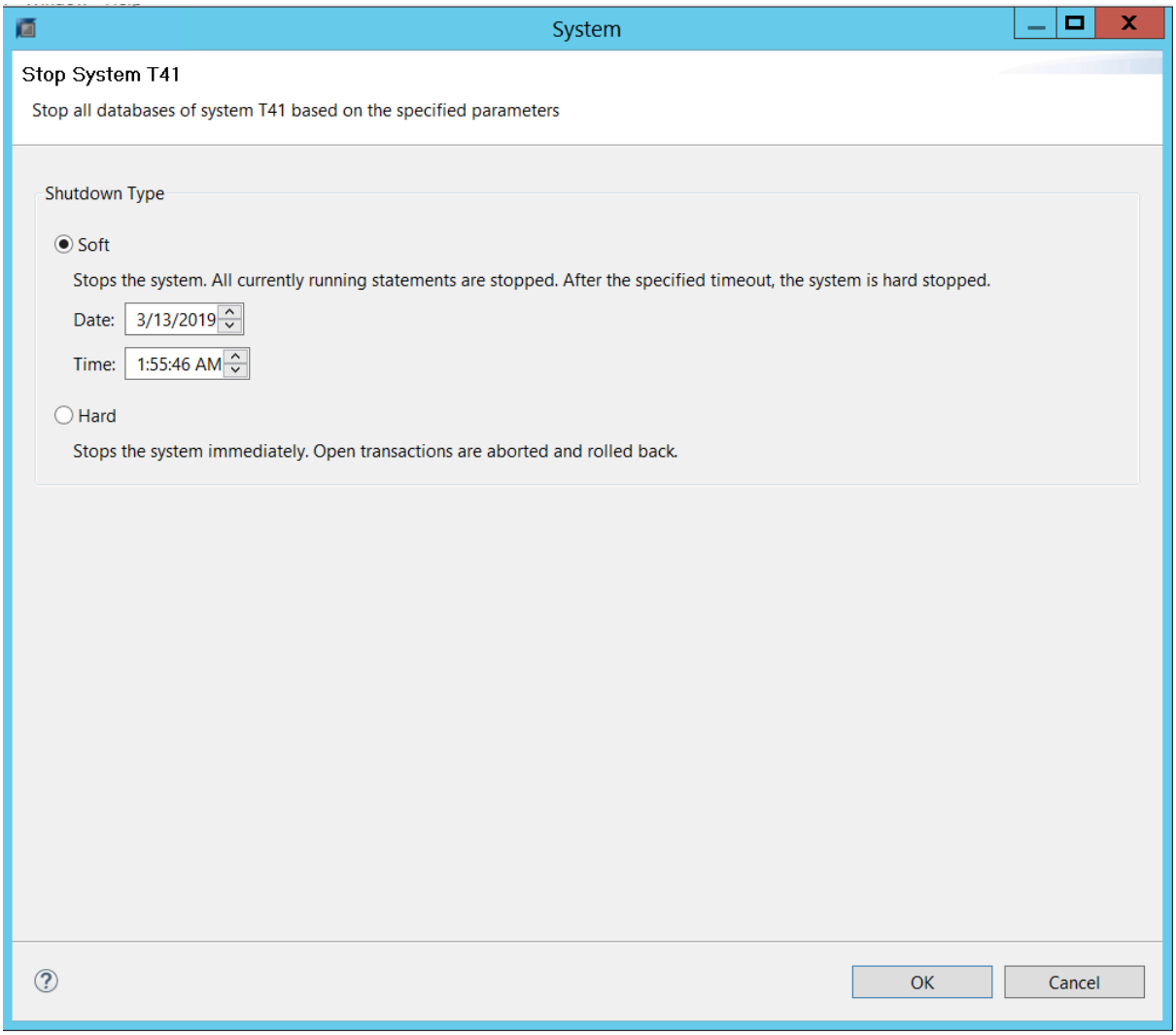
26. The following screenshot shows the database after recovery with all services running.



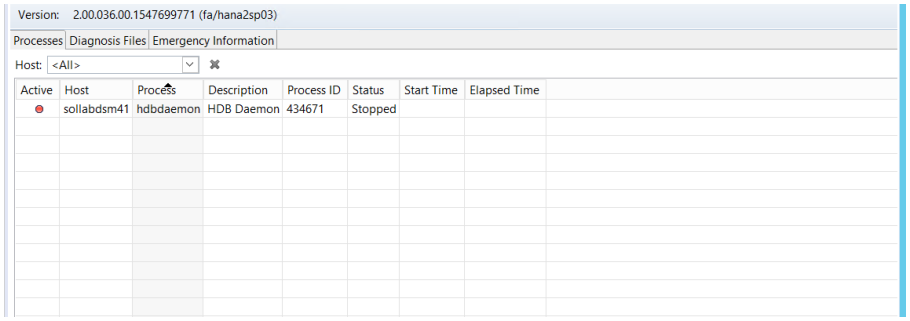
Recover the database to the following point in time

This process allows recovery of the database to a specific point in time, perhaps just prior to an invalid transaction.

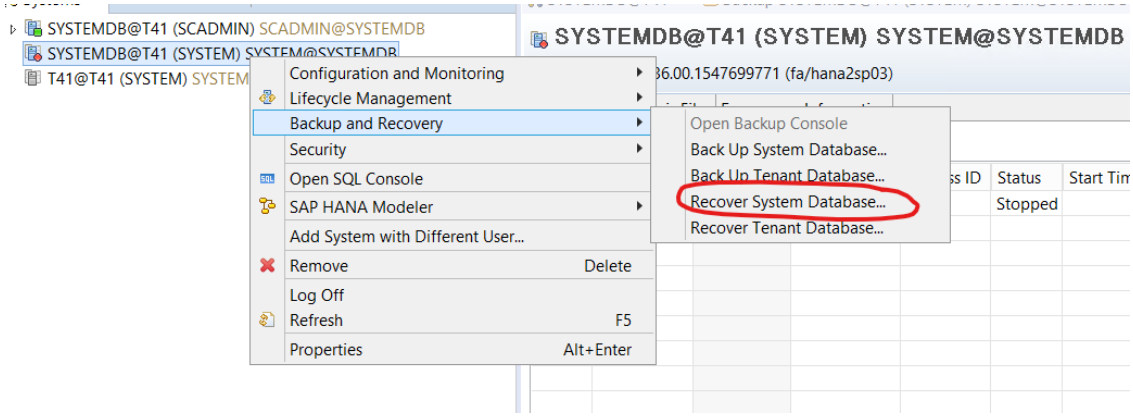
1. First step is to stop the database



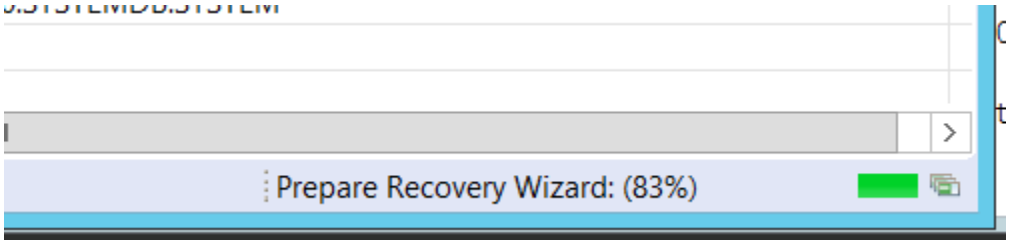
When this is finished, the Processes tab should display as follows:



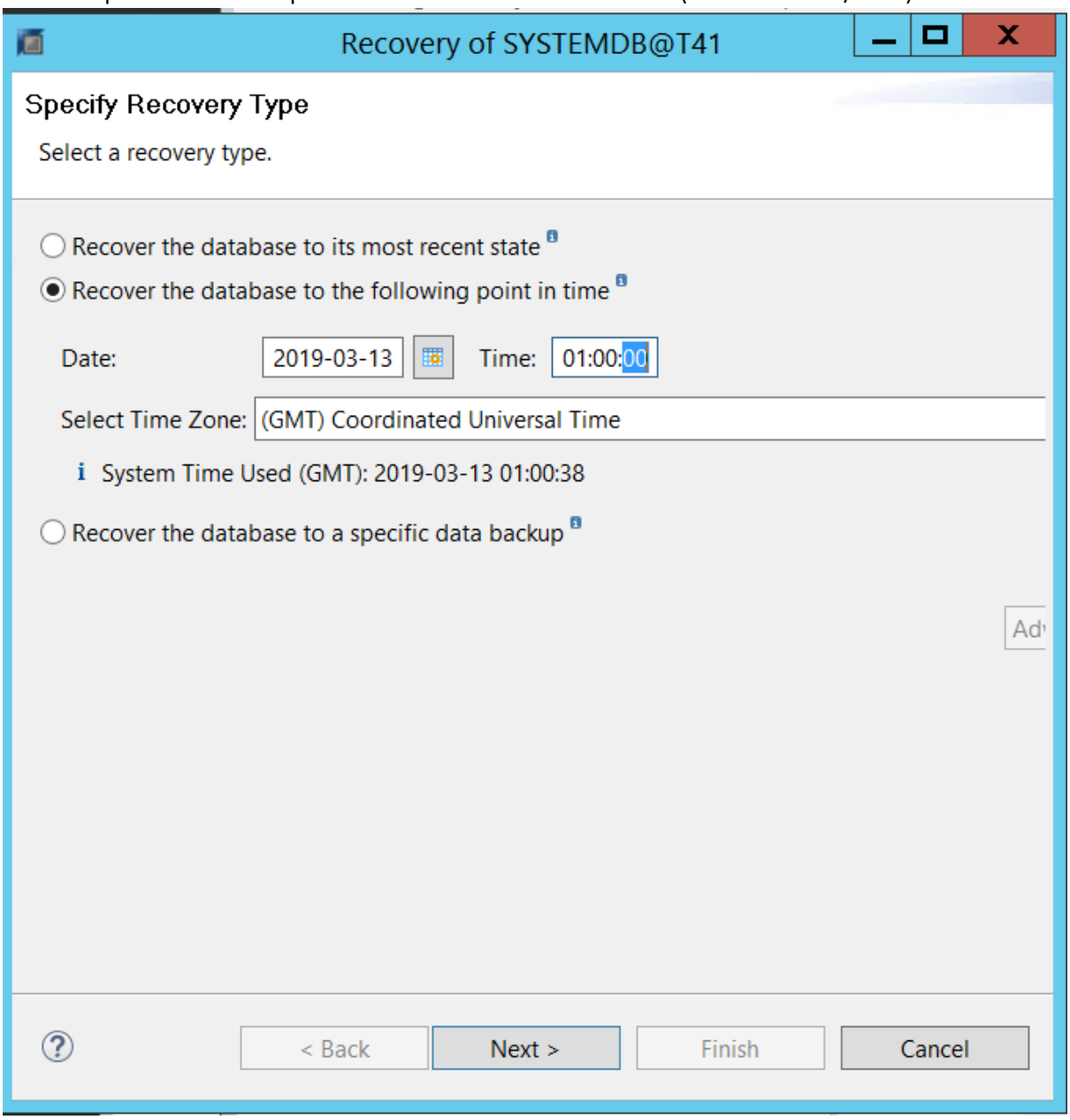
2. Start the recovery process from the menu.



Note, the recovery wizard can take several seconds to launch (see the following status)

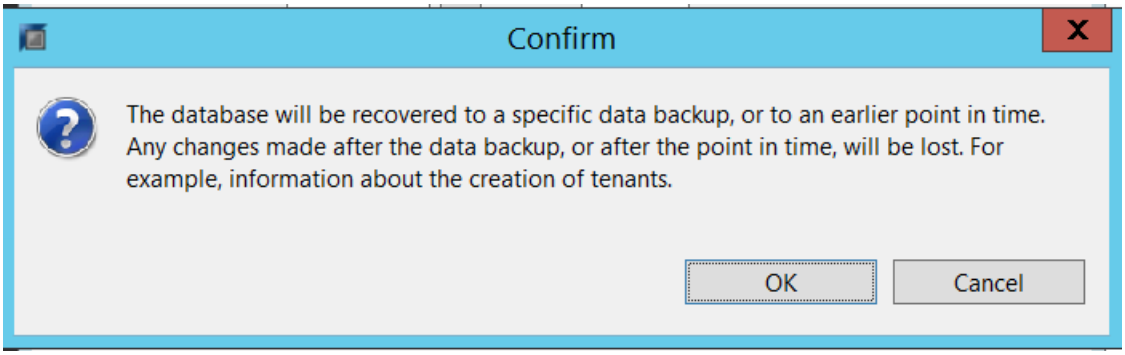


3. Choose the recovery type, in this case “Recover the database to the following point in time”, in this example the time stamp chosen is 13-March-2019 01:00:00 (in 24 hour UTC/GMT)

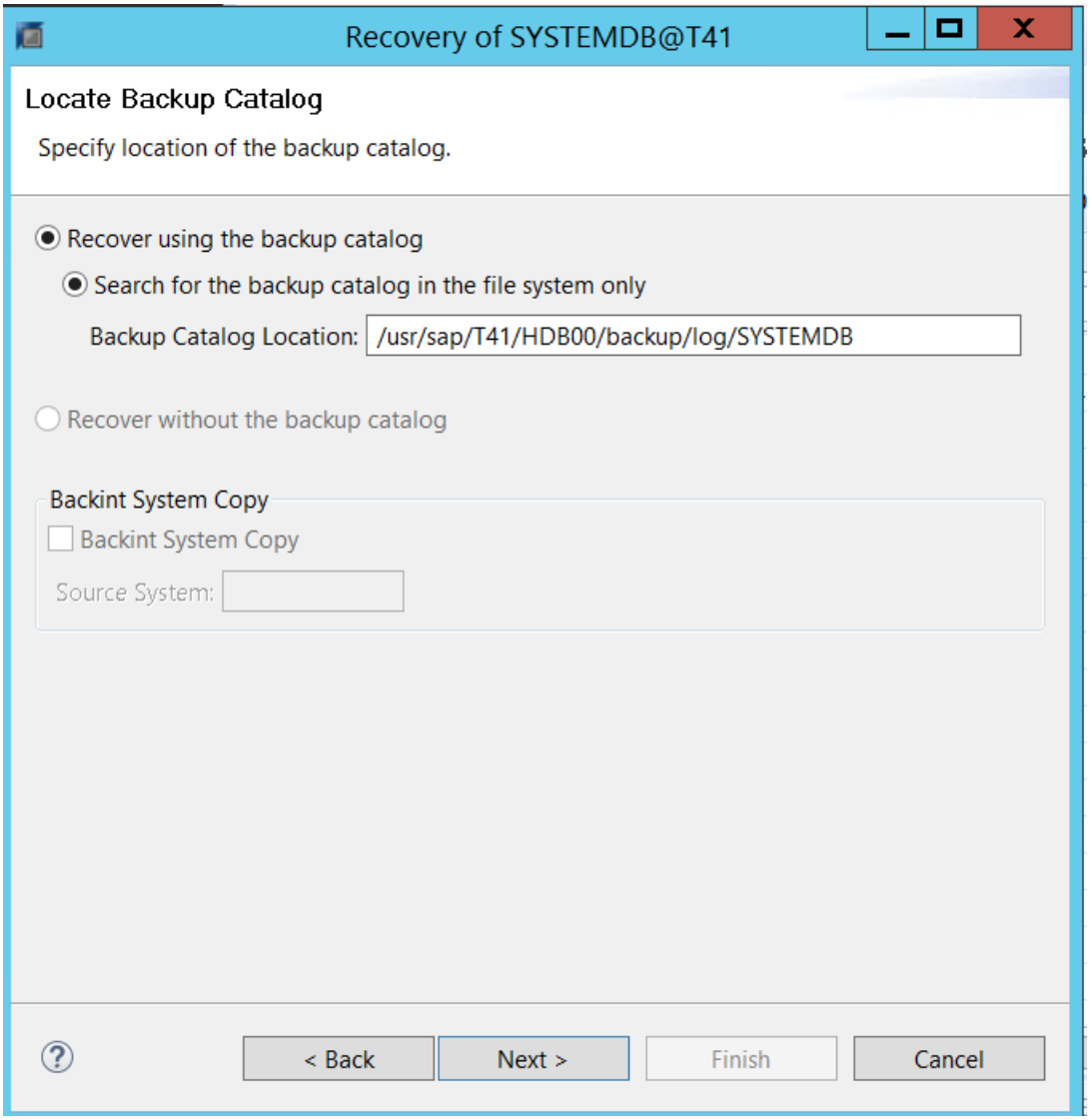


! It is important to note the time used is based on UTC/GMT.

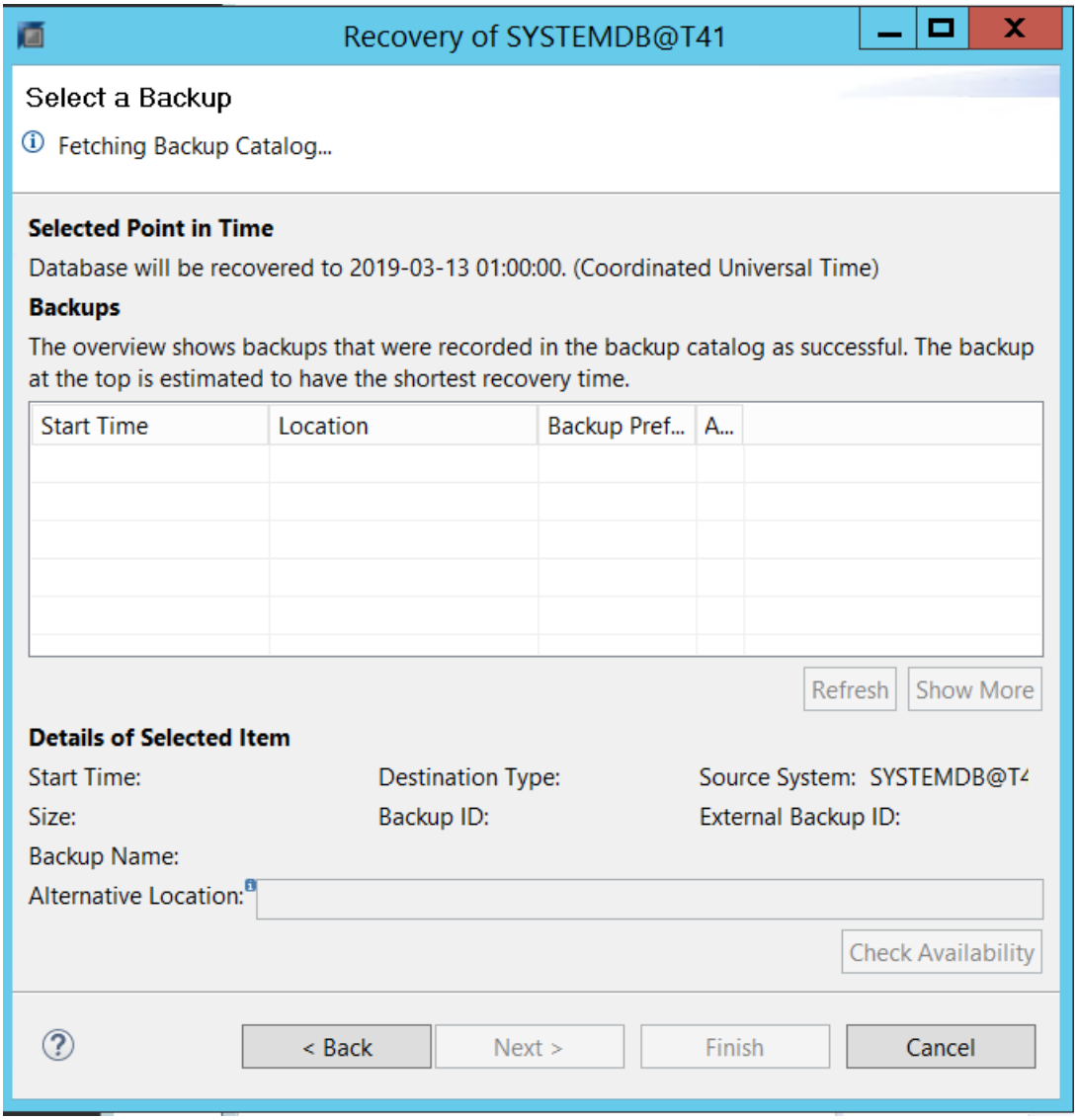
4. Confirm the recovery to continue, noting the potential for lost data.



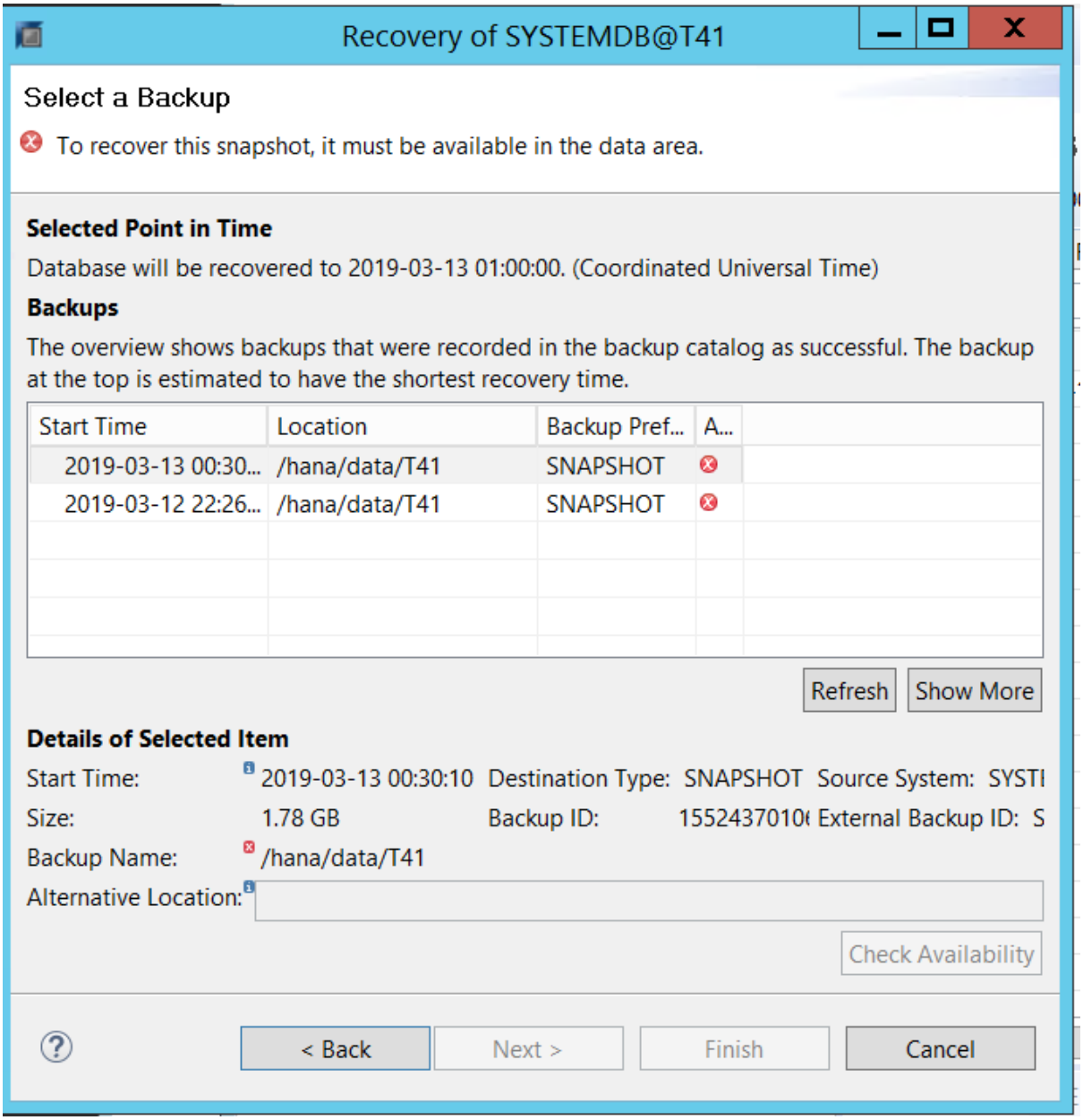
5. Choose the location of the backup catalog, which is needed for recovery.



6. The backup catalog will be fetched to display the appropriate backup to recover from (this can take a minute or two to load)



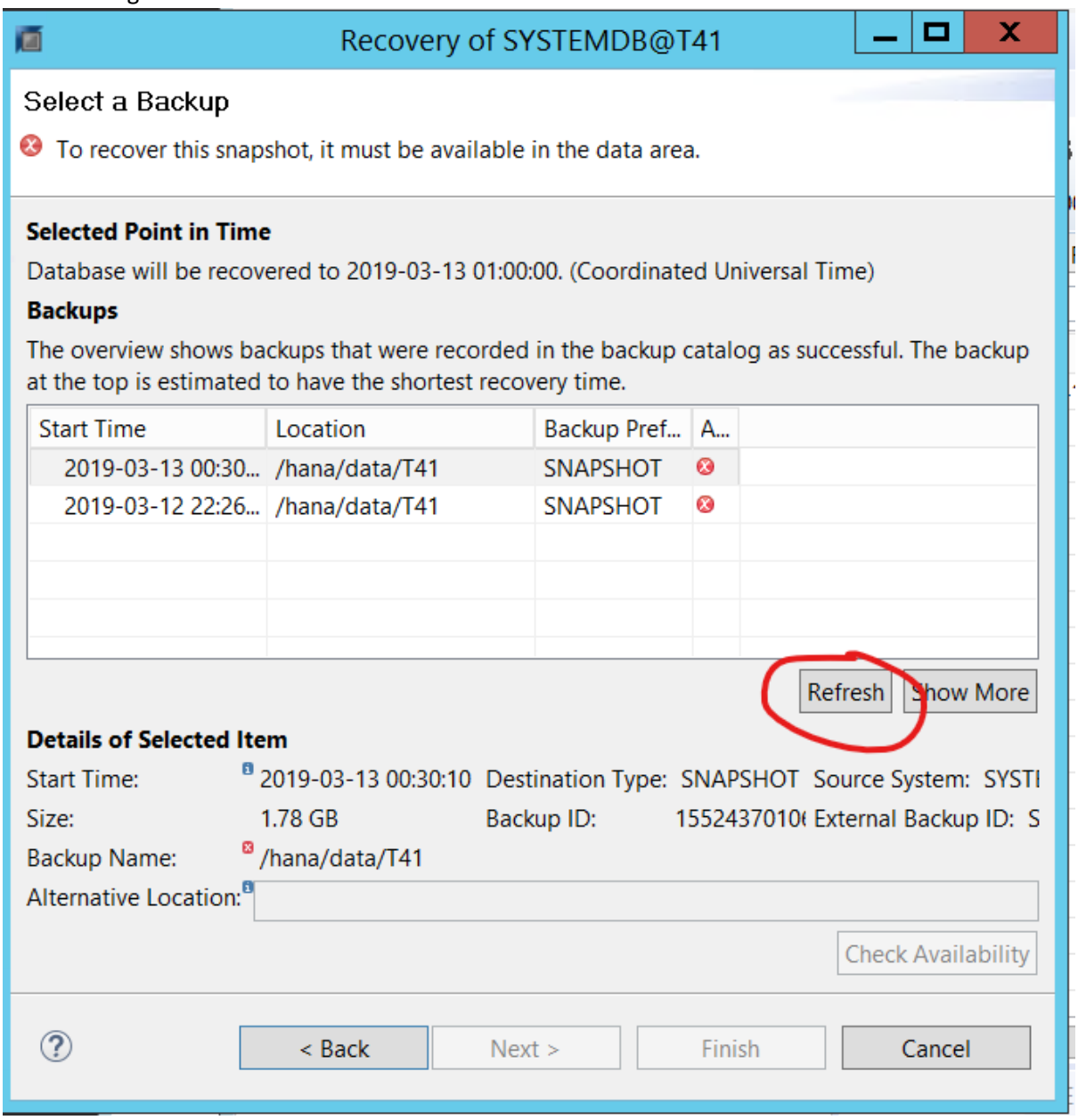
7. The first time the backup catalog is refreshed, its likely no suitable snapshot will be found to restore from. This is because the administrator will need to copy/restore the files from the snapshot into the data area.



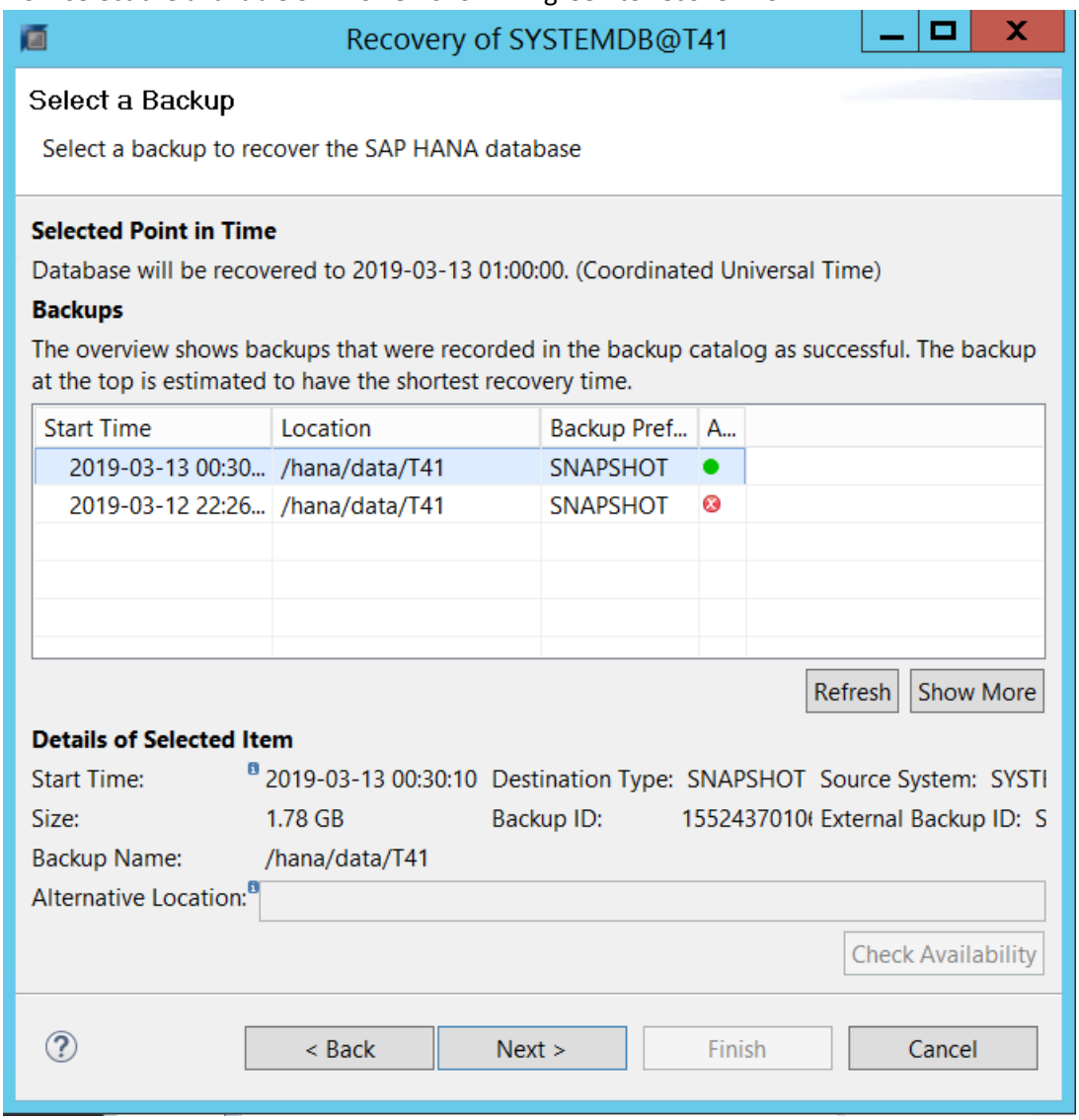
8. In this example, the files can be copied from the "hidden" location in the filesystem

```
# su – t41adm
> cp -pr /hana/data/T41/mnt00001/.snapshot/daily_db_bkup.2019-03-13_0030.0/* \
/hana/data/T41/mnt00001/.
```

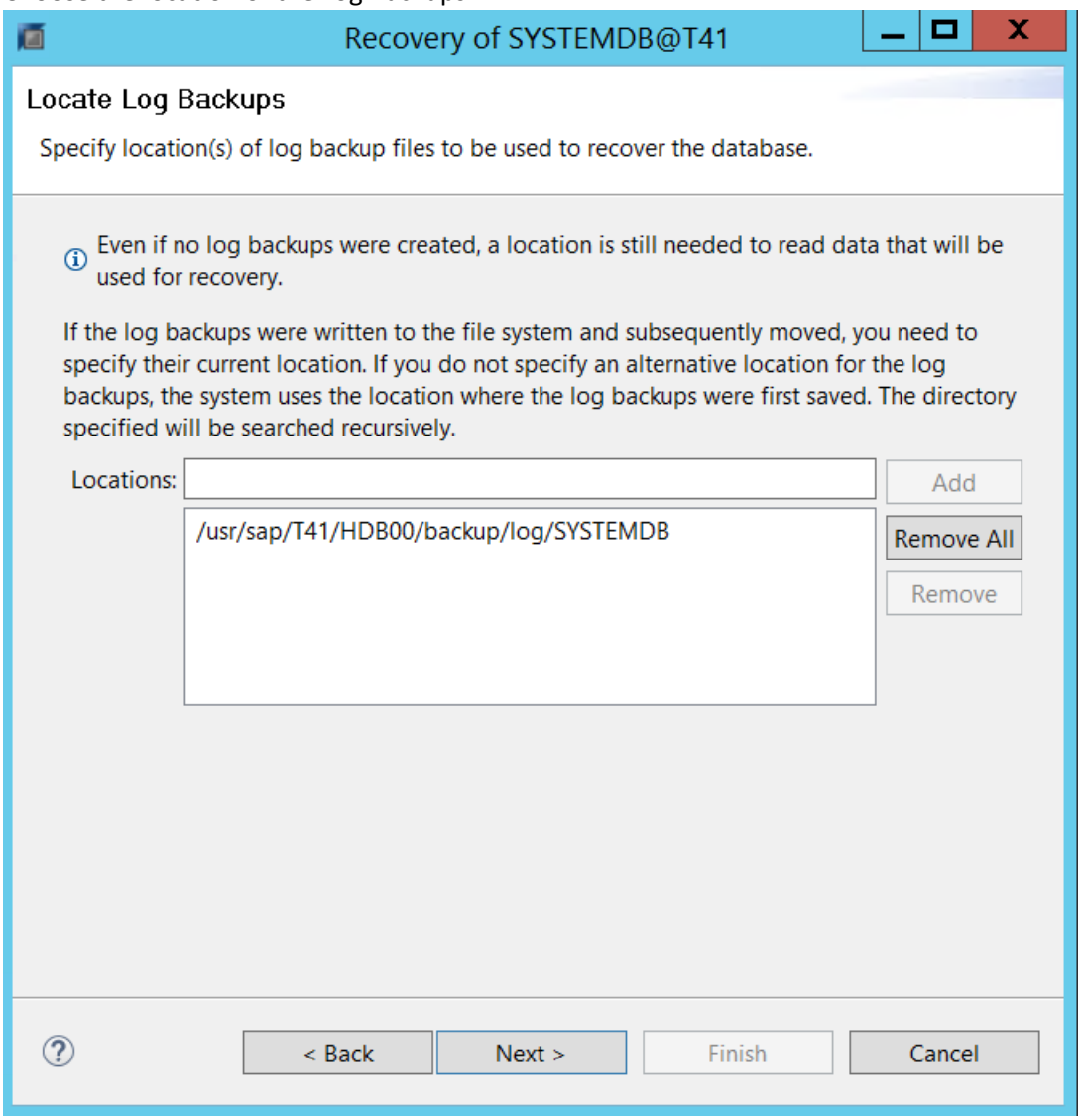
9. When the copy is complete, refresh the view of the backup catalog to ensure the snapshot we are restoring from is listed.



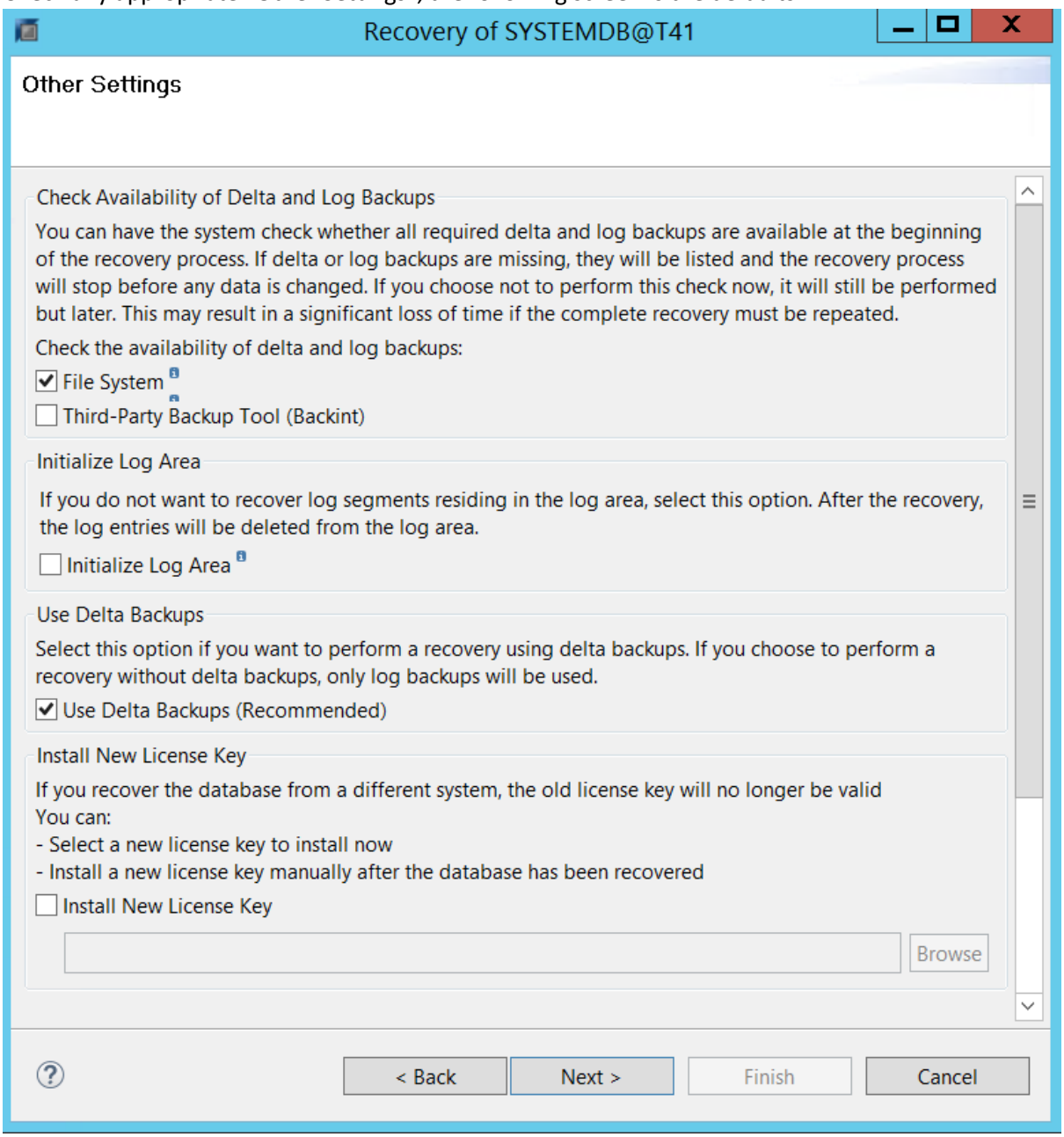
10. Now select the available SNAPSHOT shown in green to recover from.



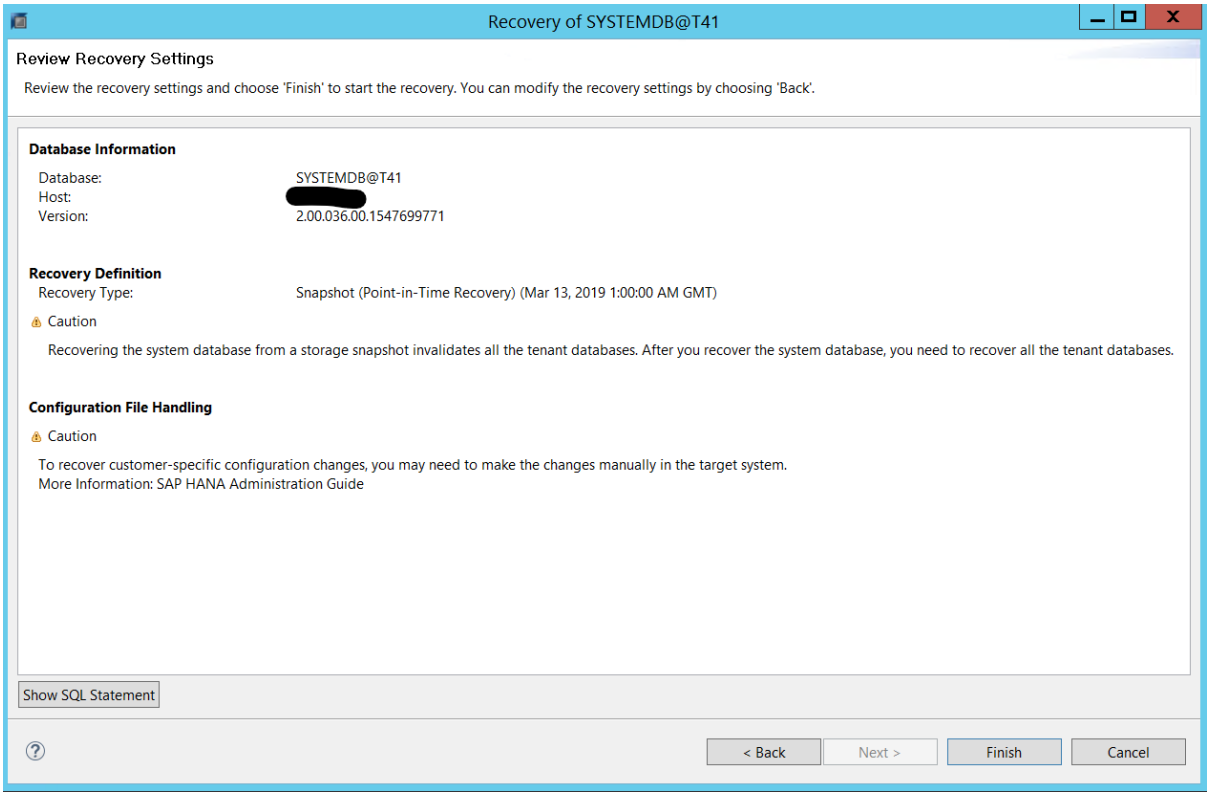
11. Choose the location of the Log Backups.

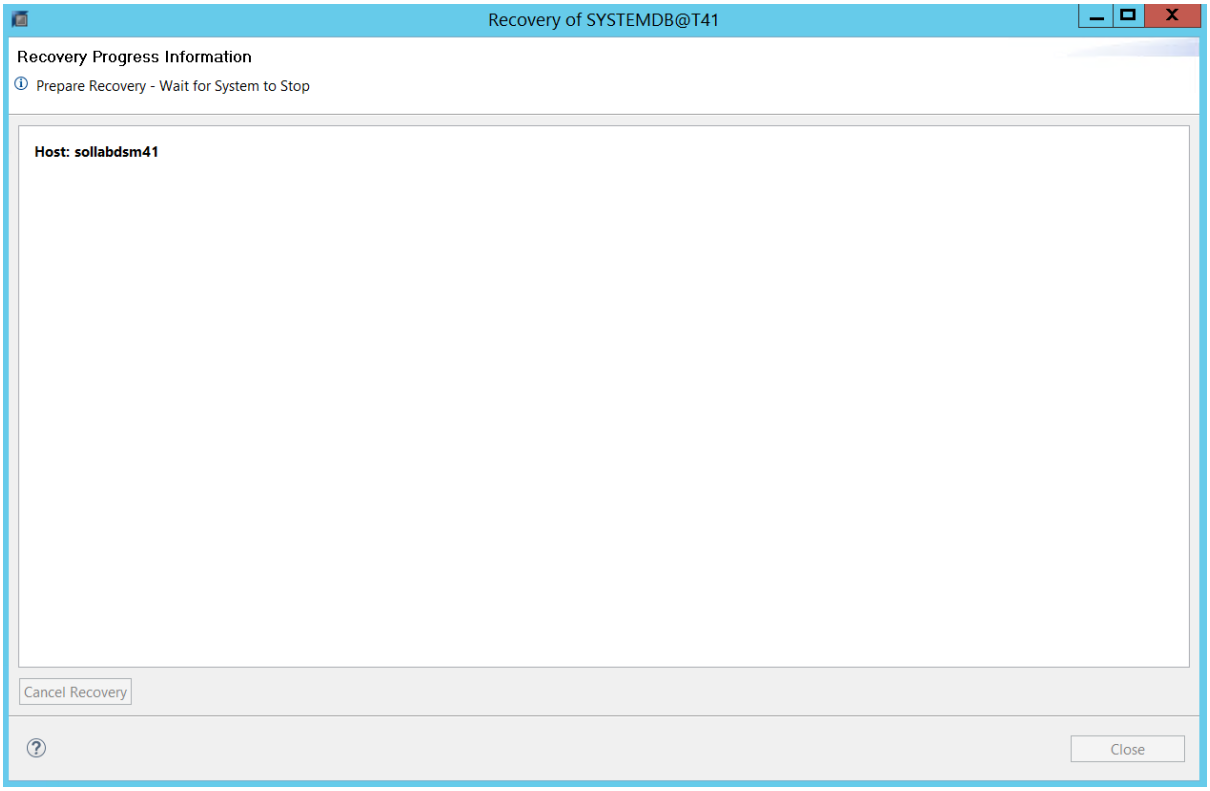


12. Check any appropriate “Other Settings”, the following screen is the defaults

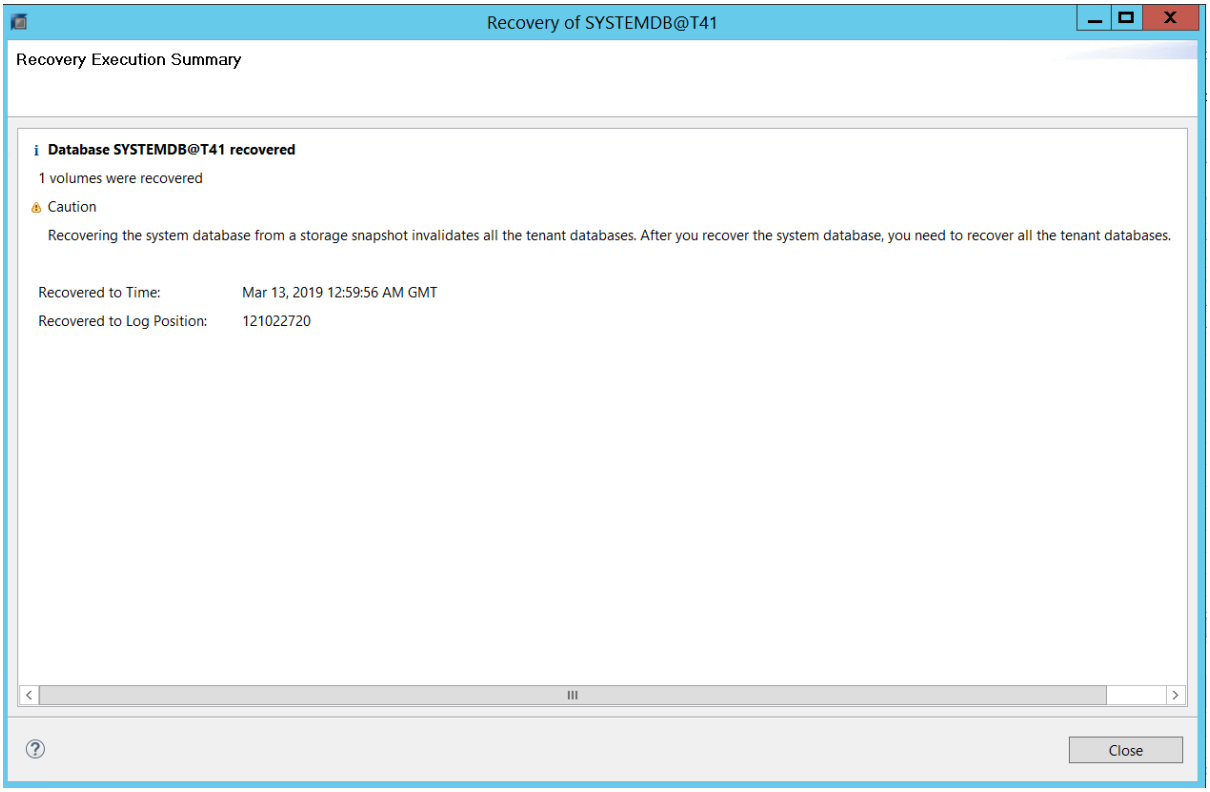


13. On the summary page, review any final details and press Finish to restore the system database.



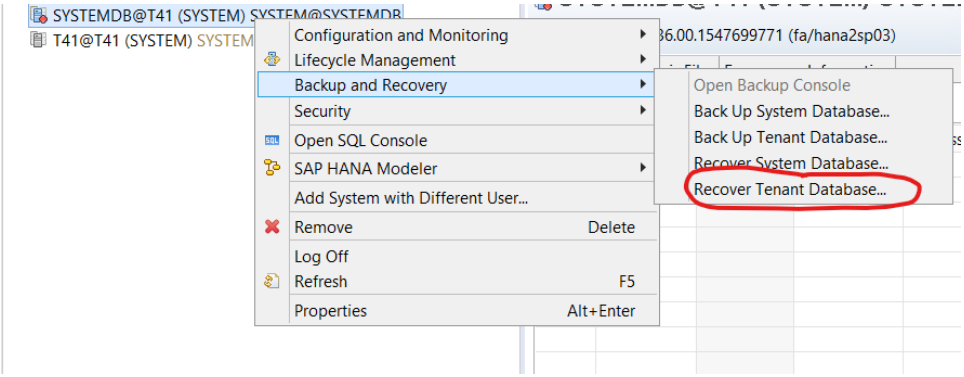


14. When the recovery has finished a Recovery Execution Summary provides details of the recovery. The following screen shows a completed recovery of the SYSTEMDB.

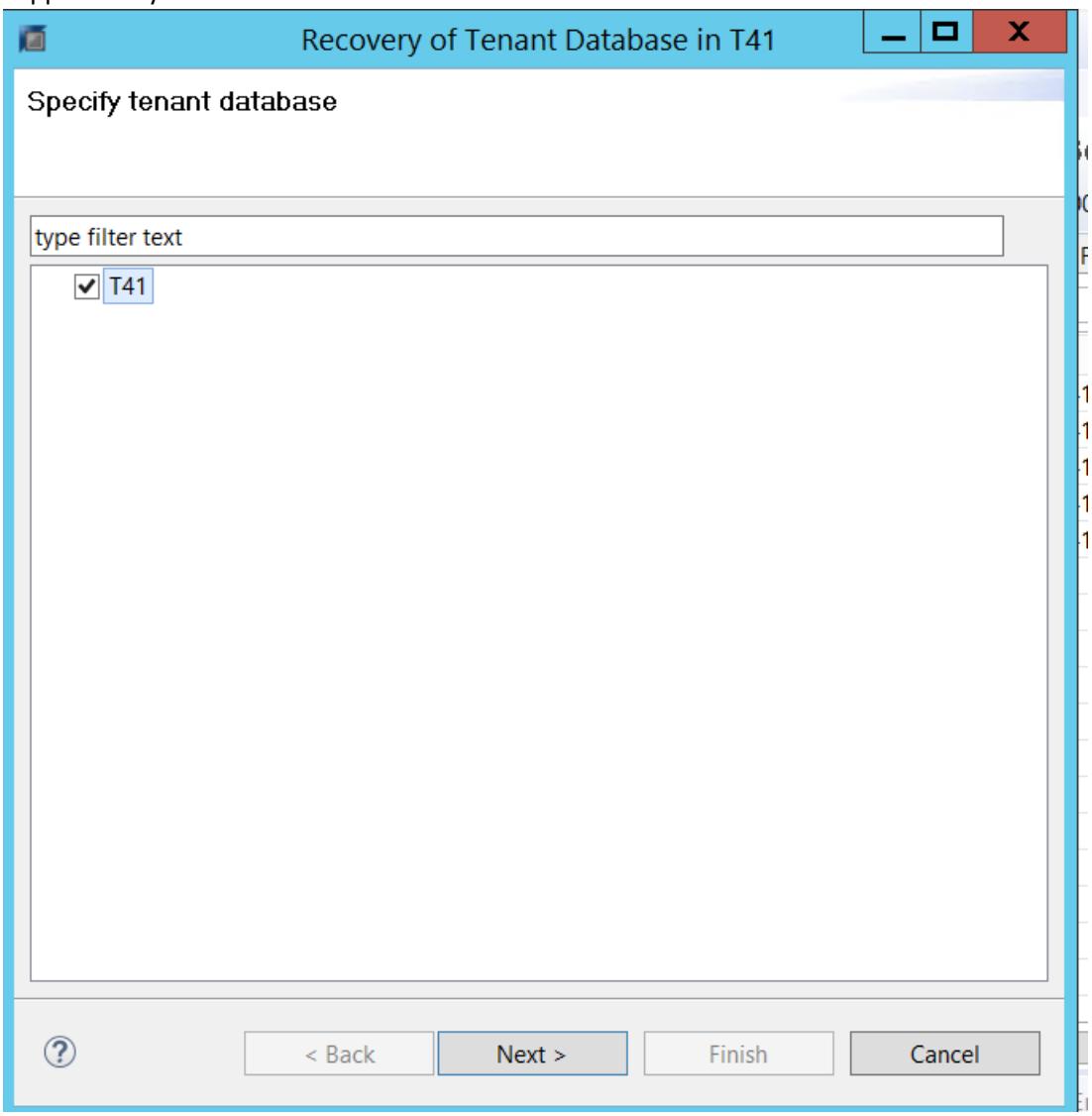


! The message stating a recovery from a storage snapshot invalidates all the tenant databases. Tenant databases now need to be recovered.

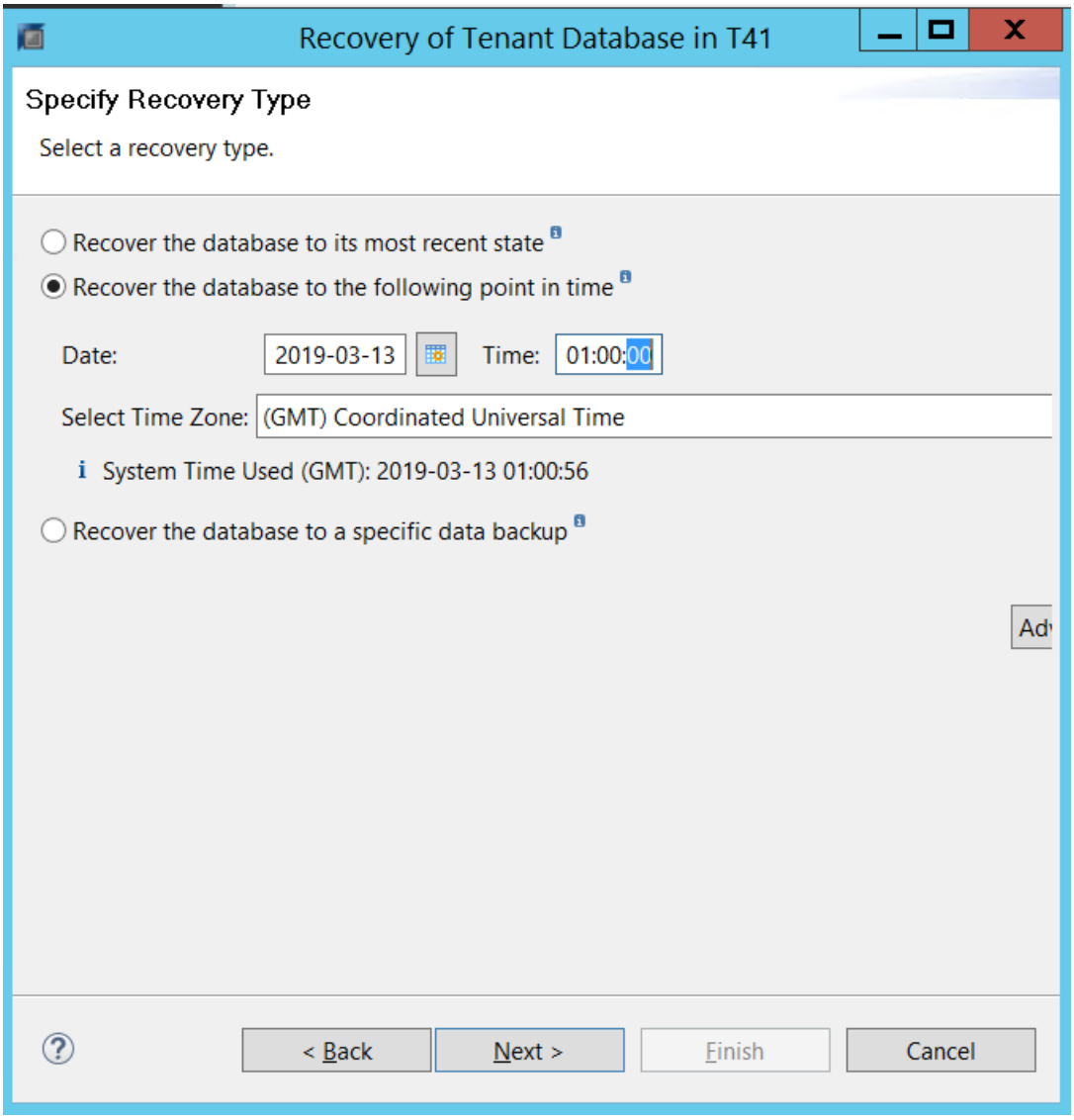
15. Start the recovery of the Tenant database



16. Choose the Tenant to recover from. At the time of writing, only a single tenant database is supported by SAP to recover from.

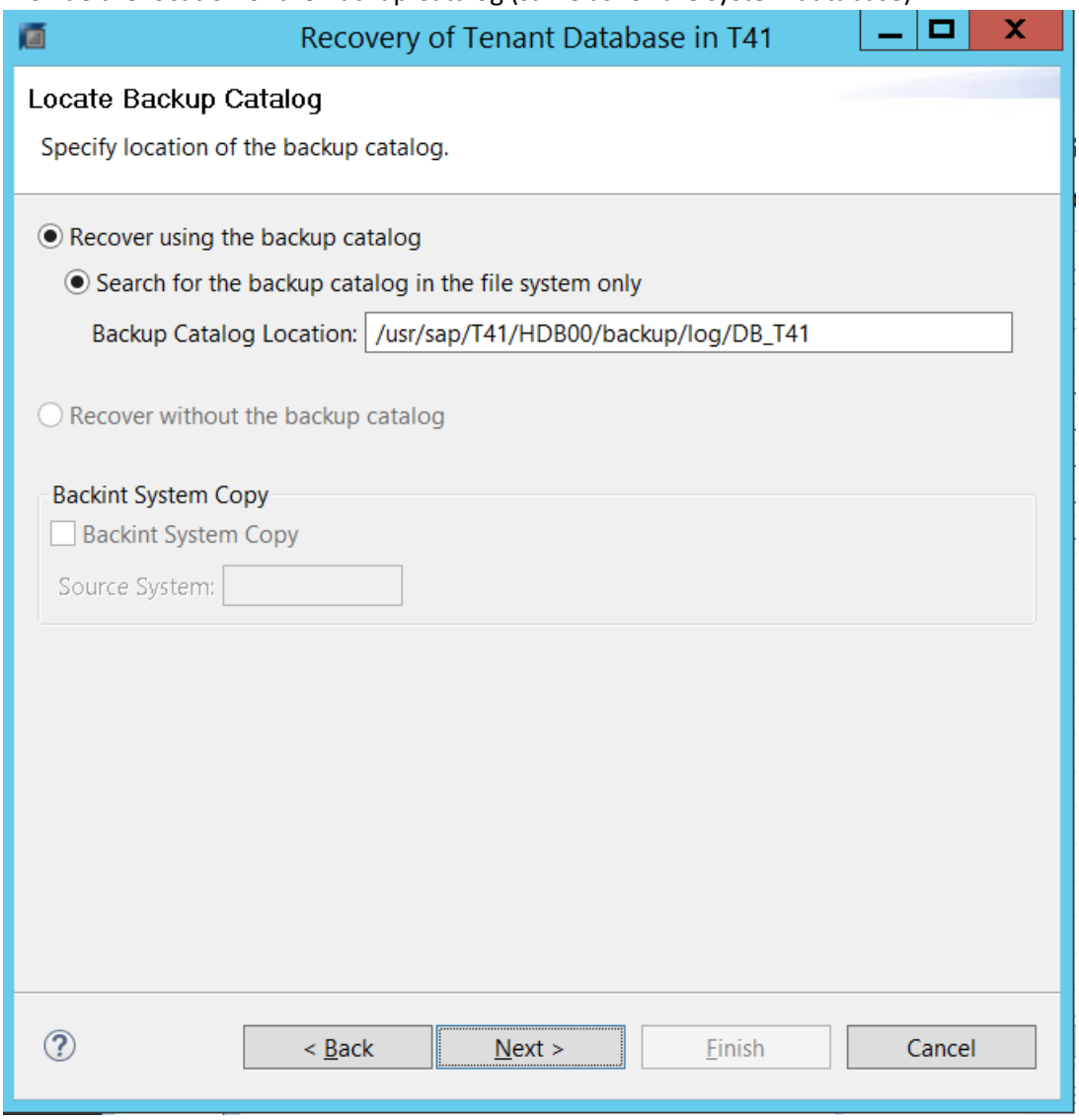


17. Choose to recover the tenant database to the following point in time (same as for the system database).

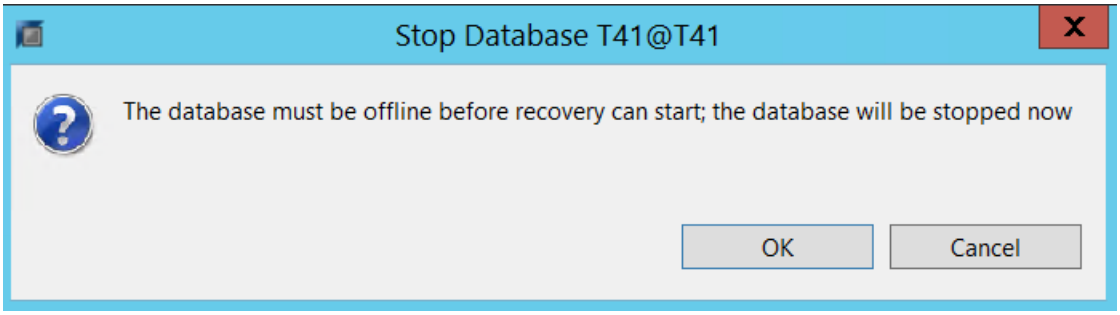


! The time used is based on UTC/GMT.

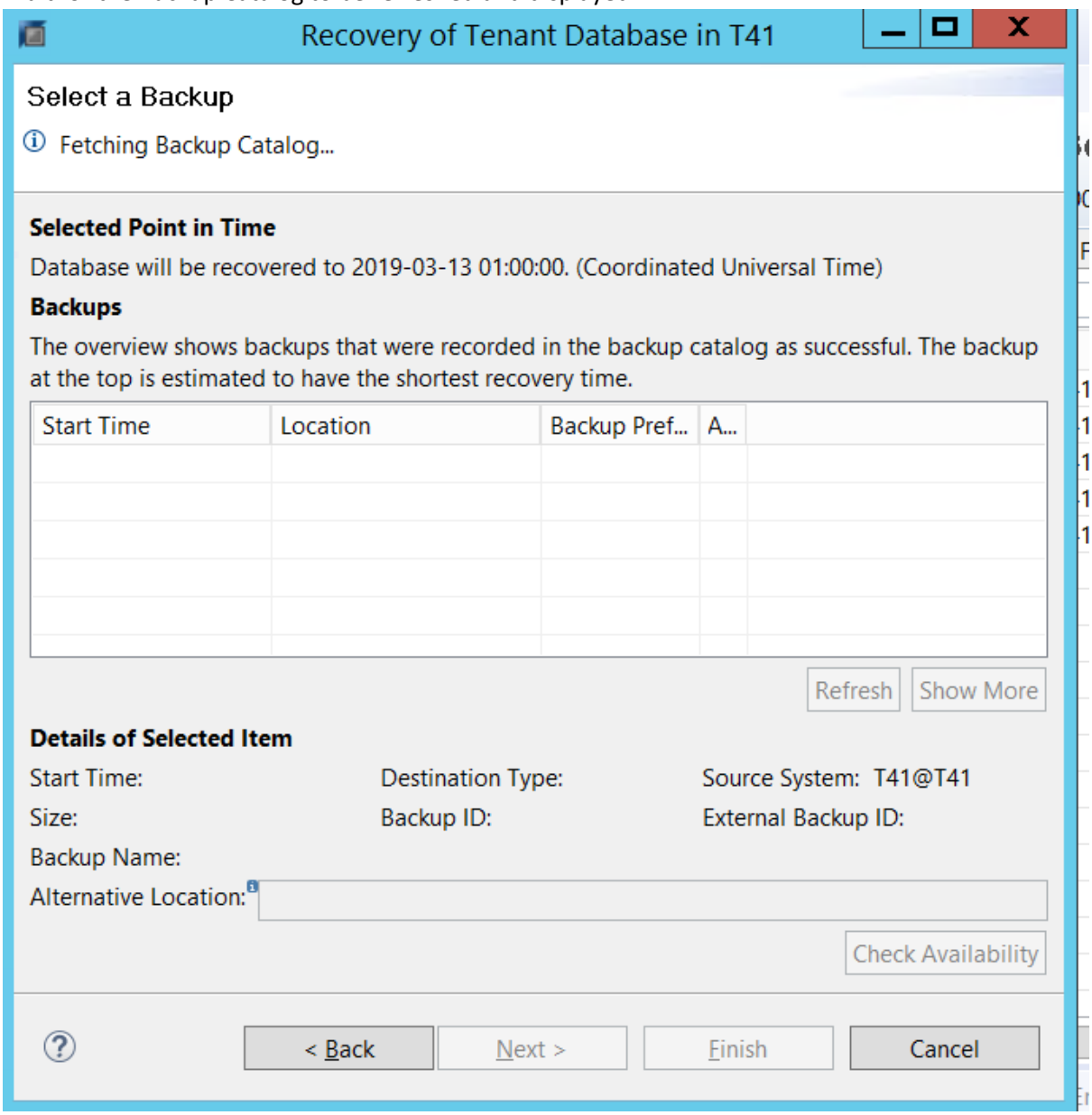
18. Provide the location of the Backup Catalog (same as for the system database)



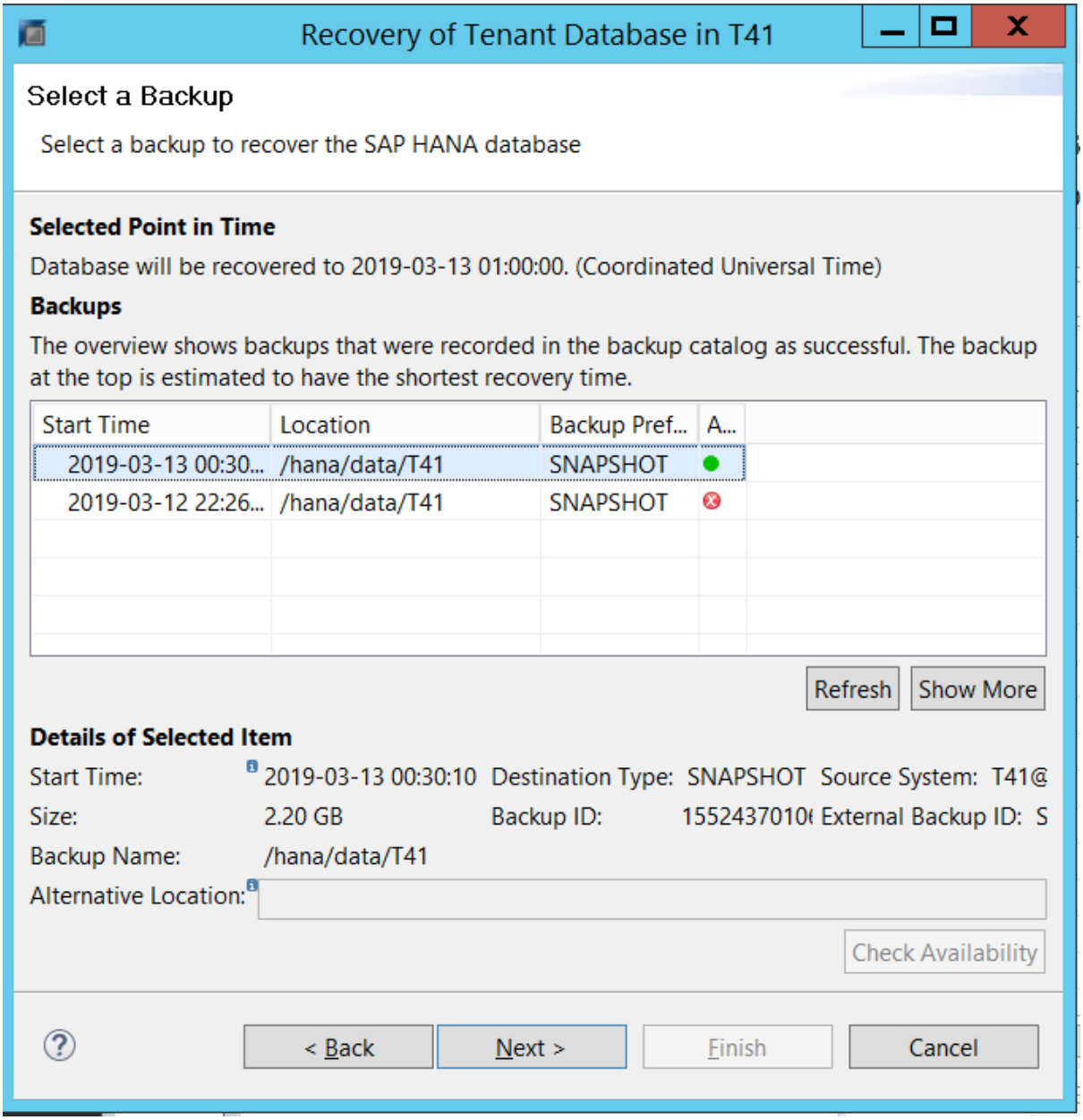
19. Allow the tenant database to be stopped for recovery.



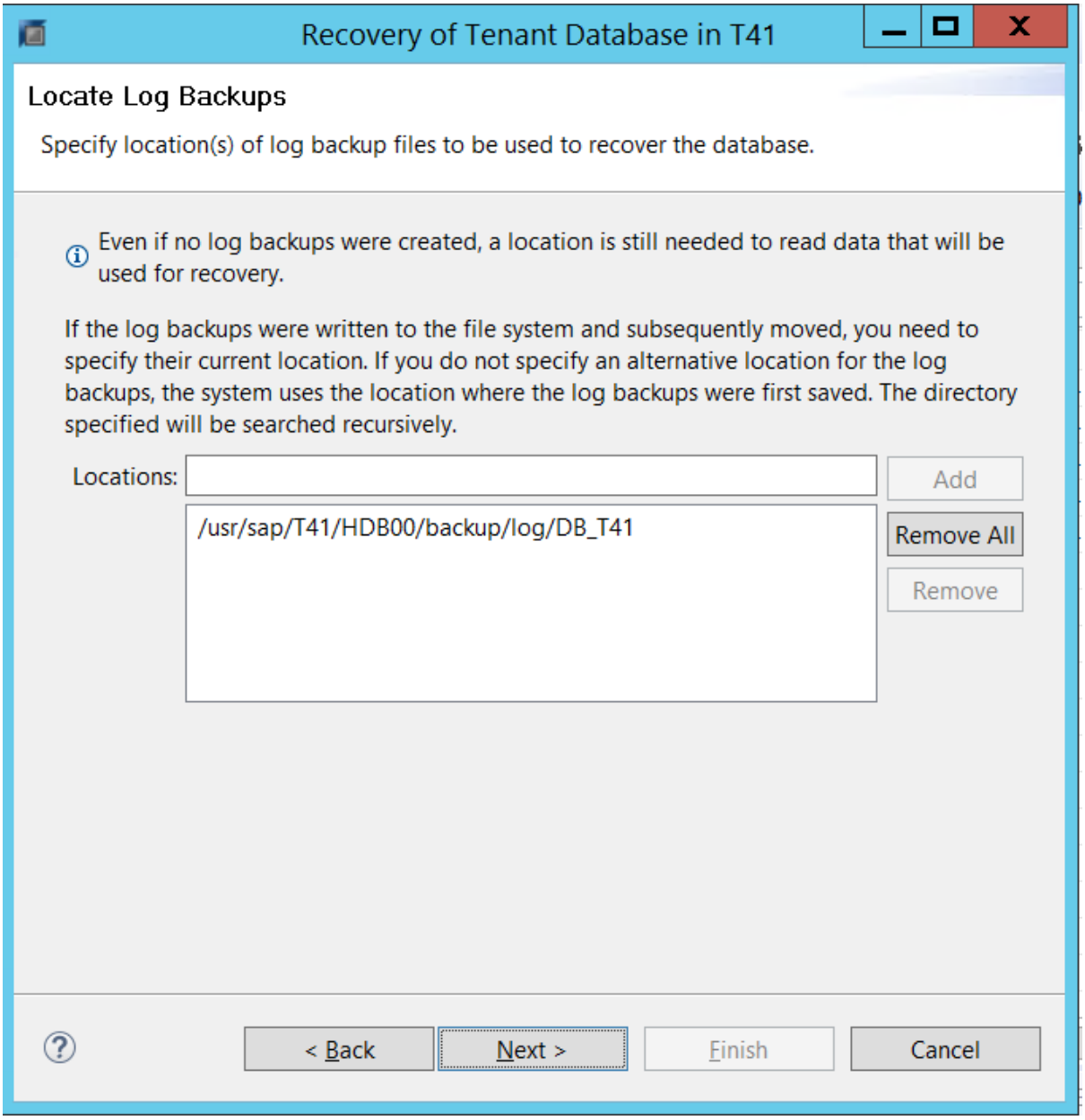
20. Wait for the Backup Catalog to be refreshed and displayed



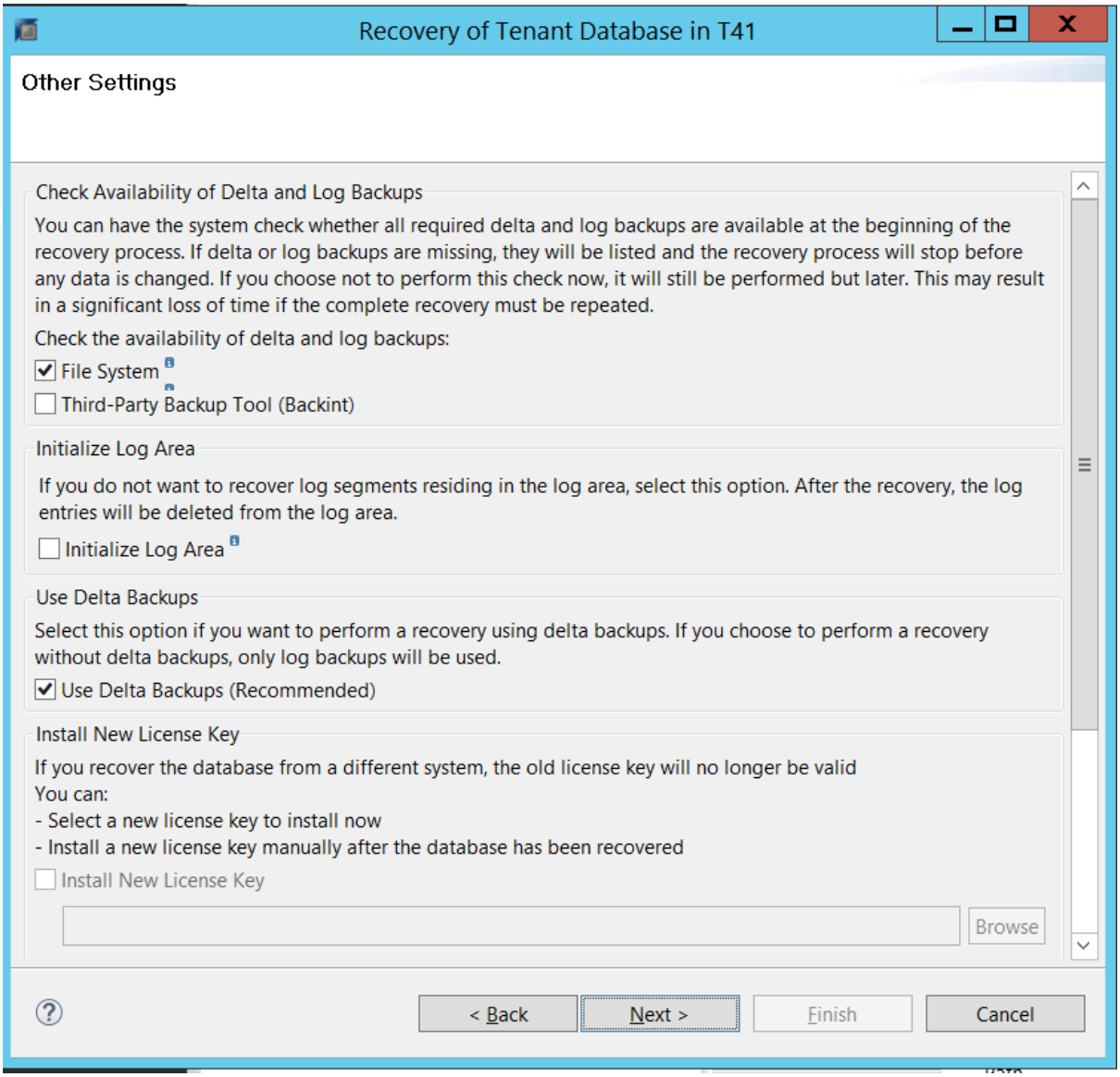
21. When recovering the tenant database there should already be a valid snapshot to recover from (unlike the system database where we needed to restore the snapshot files into the data area and refresh the view). Select this snapshot and click next.



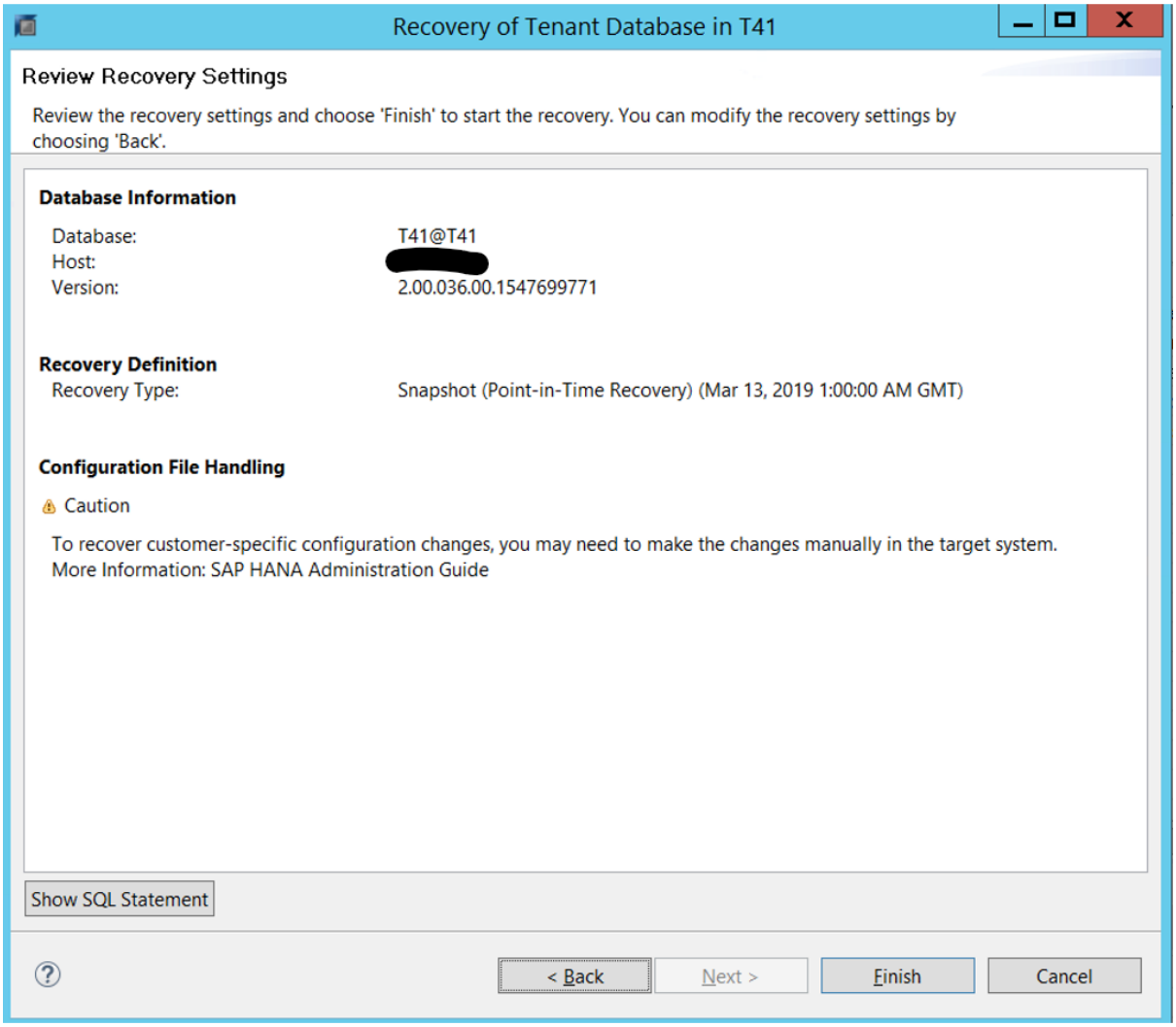
22. Specify any locations for log backups to include in the recovery process.



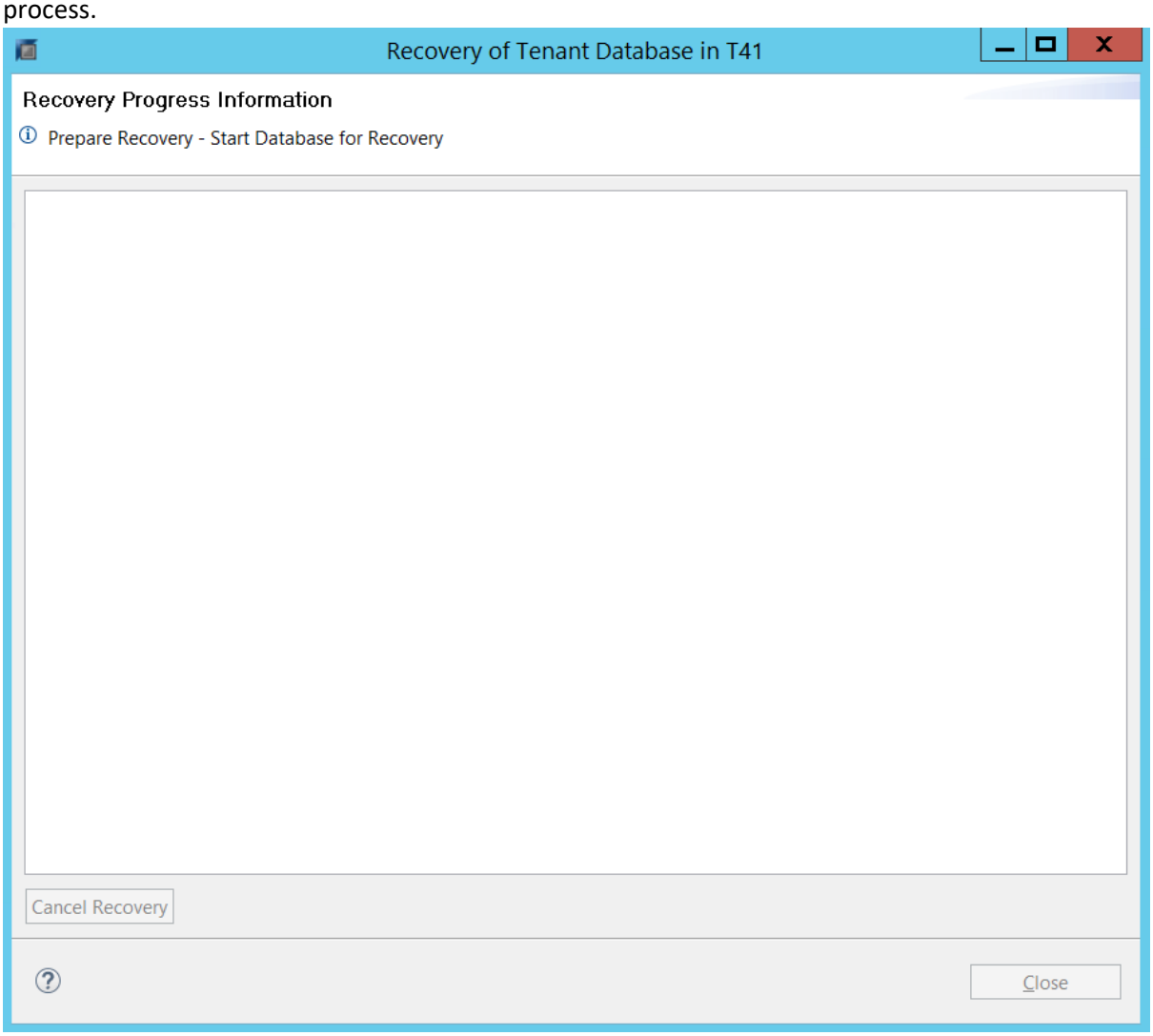
23. Check any appropriate “Other Settings”, the following screen is the defaults.



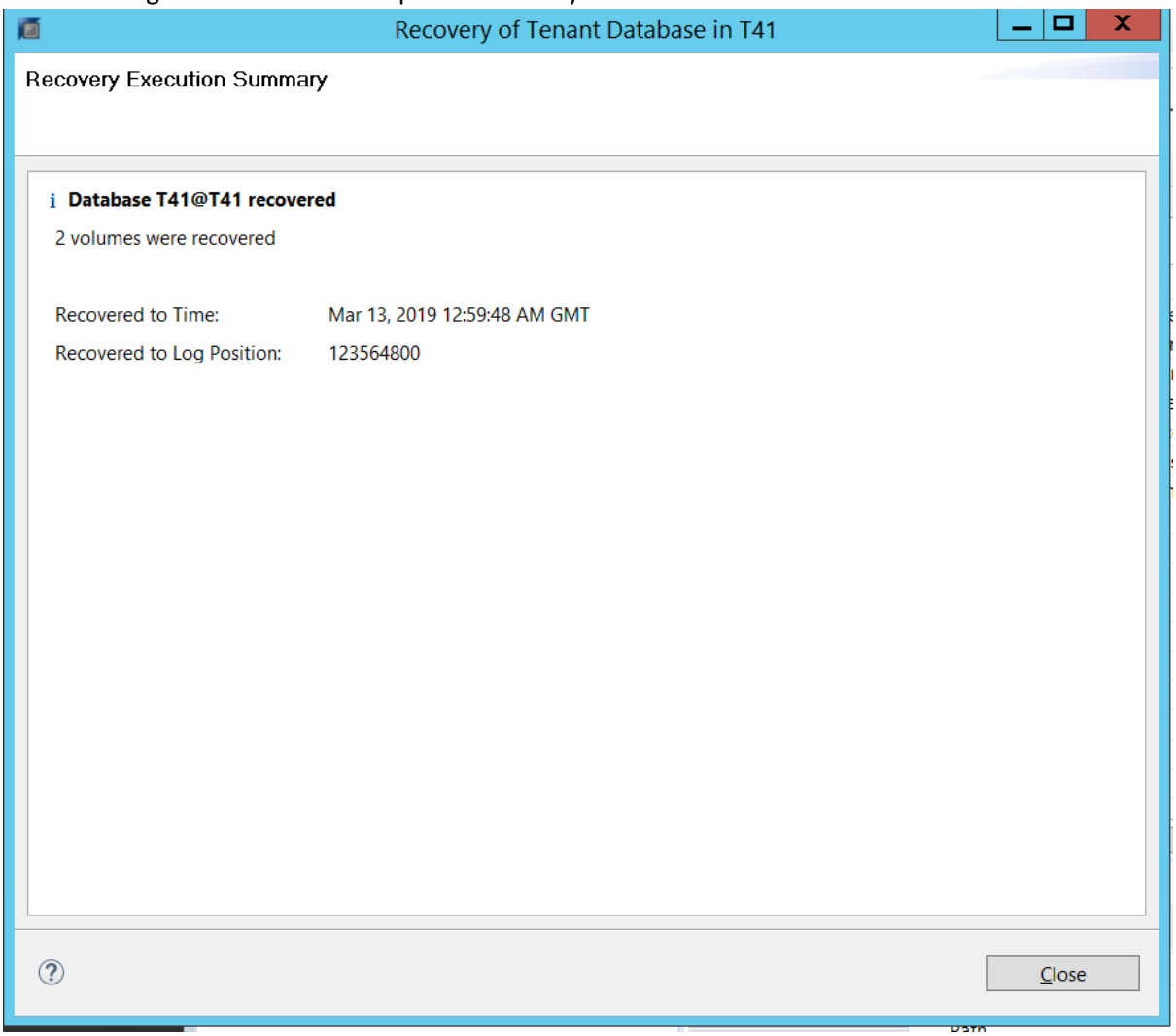
24. On the summary page, review any final details and press Finish to restore the tenant database. Select Finish to proceed with the recovery.



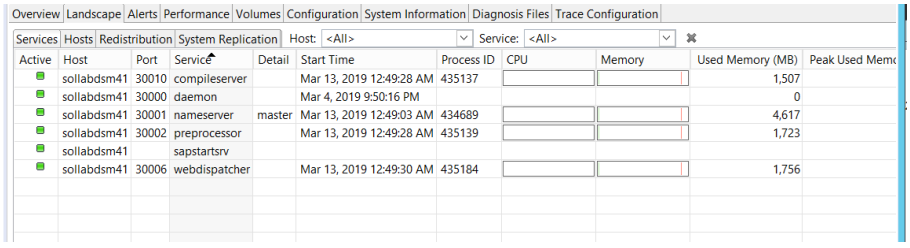
25. The recovery process can take a few minutes, depending on database size and log files to process.



26. When the recovery has finished a Recovery Execution Summary provides details of the recovery. The following screen shows a completed recovery of the TENANT DB.



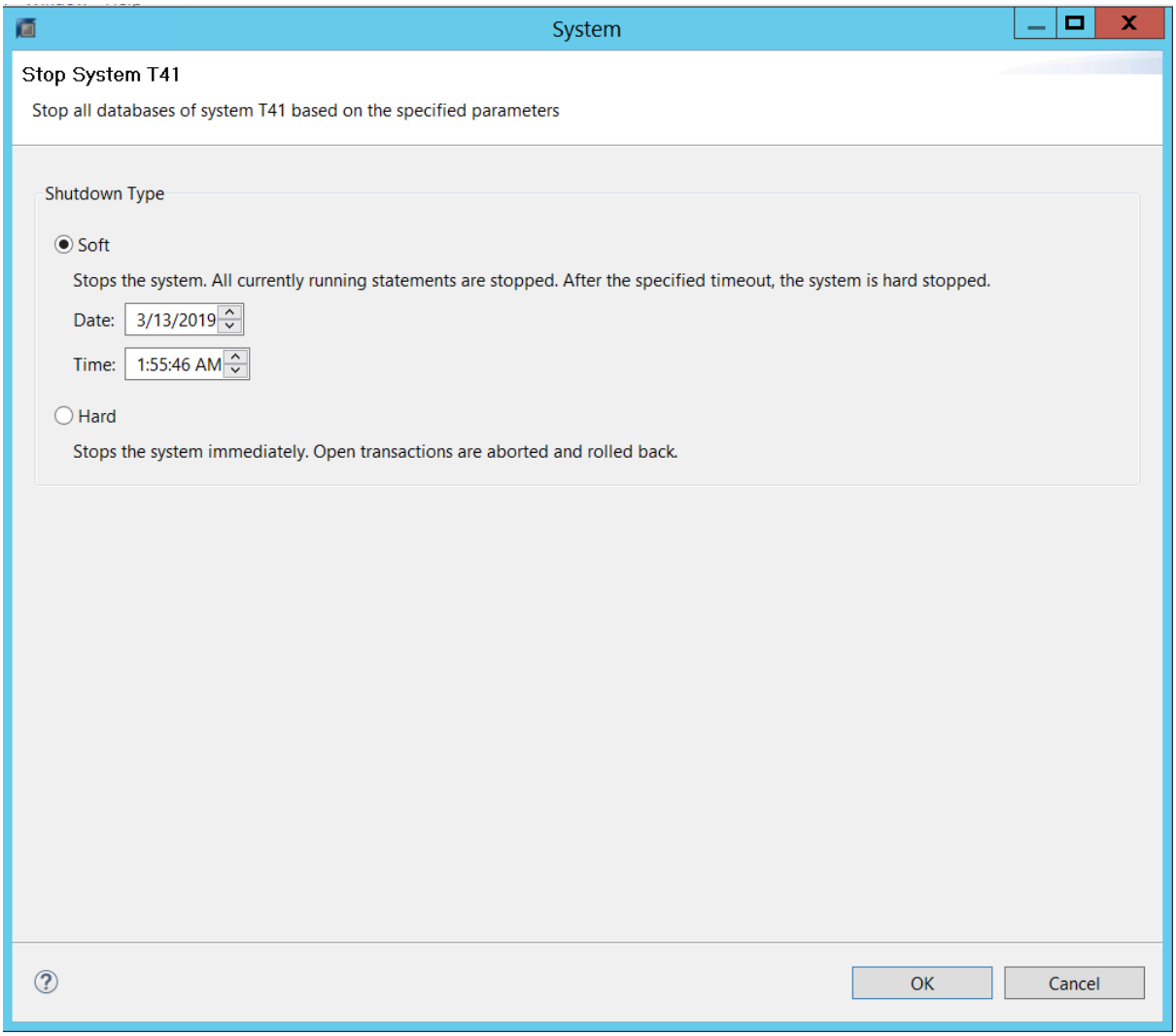
27. The following screenshot shows the database after recovery with all services running.



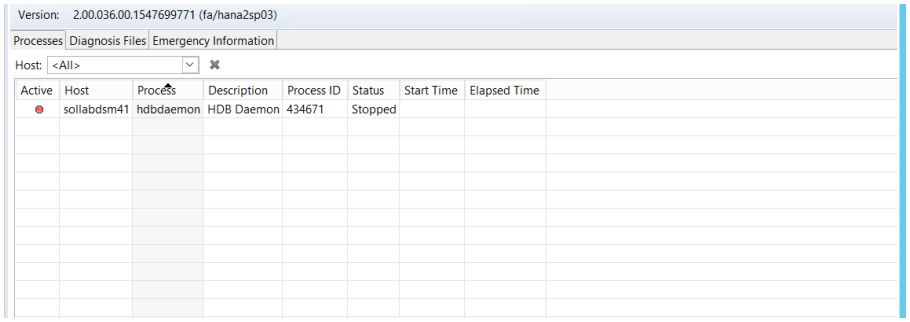
Recover the database to a specific data (snapshot) backup

This process recovers the database to a specific snapshot only (i.e. no log replay).

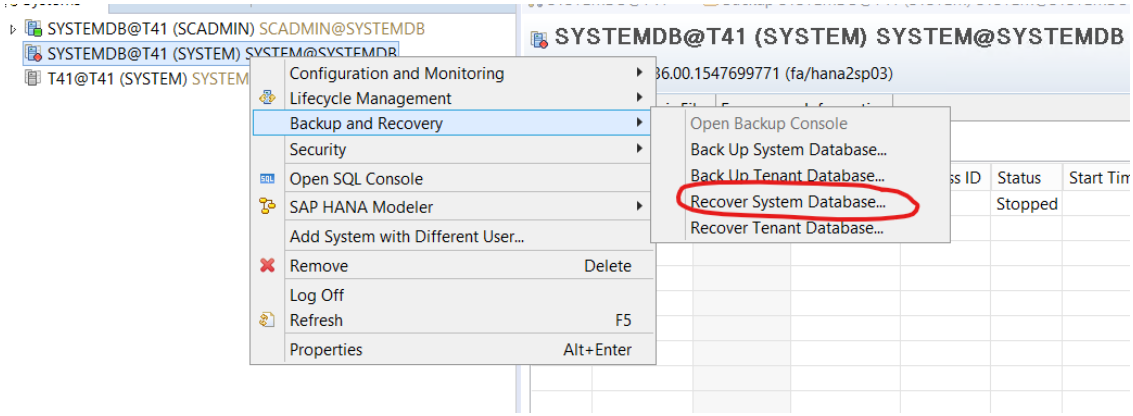
1. First step is to stop the database



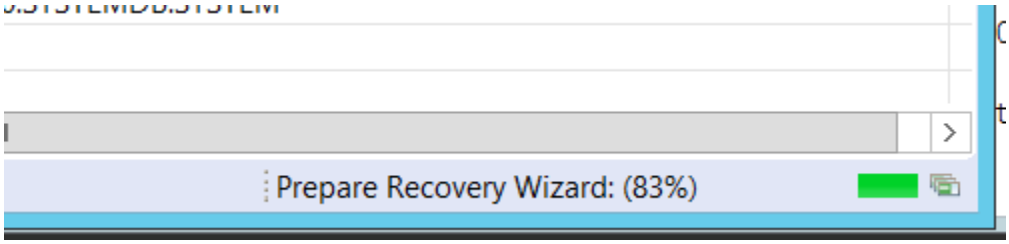
When this is finished, the Processes tab should display as follows:



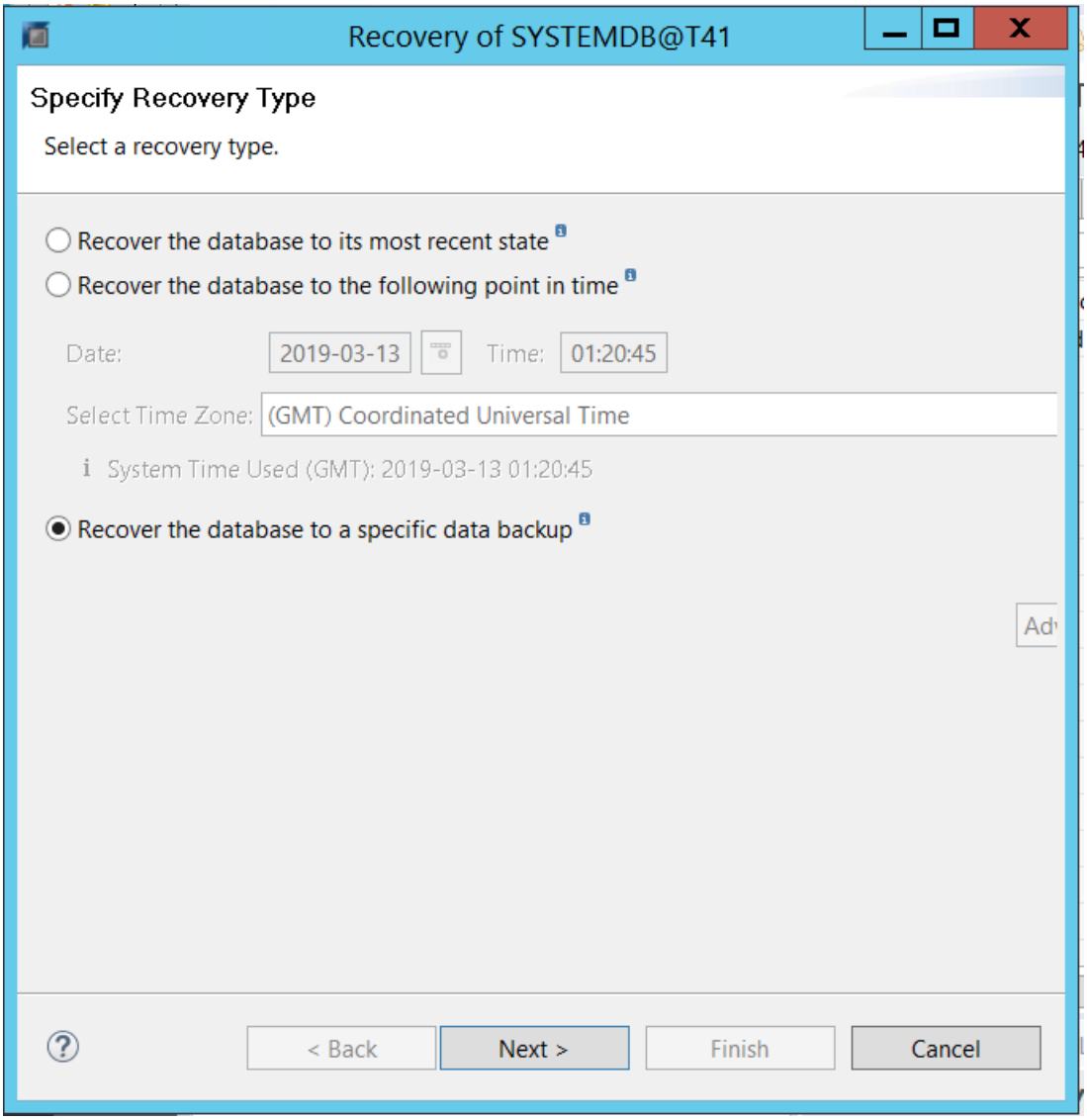
2. Start the recovery process from the menu.



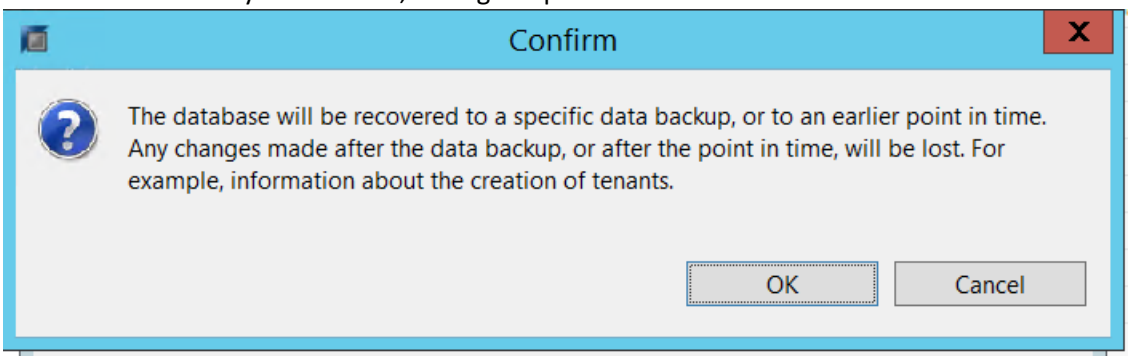
Note, the recovery wizard can take several seconds to launch (see the following status)



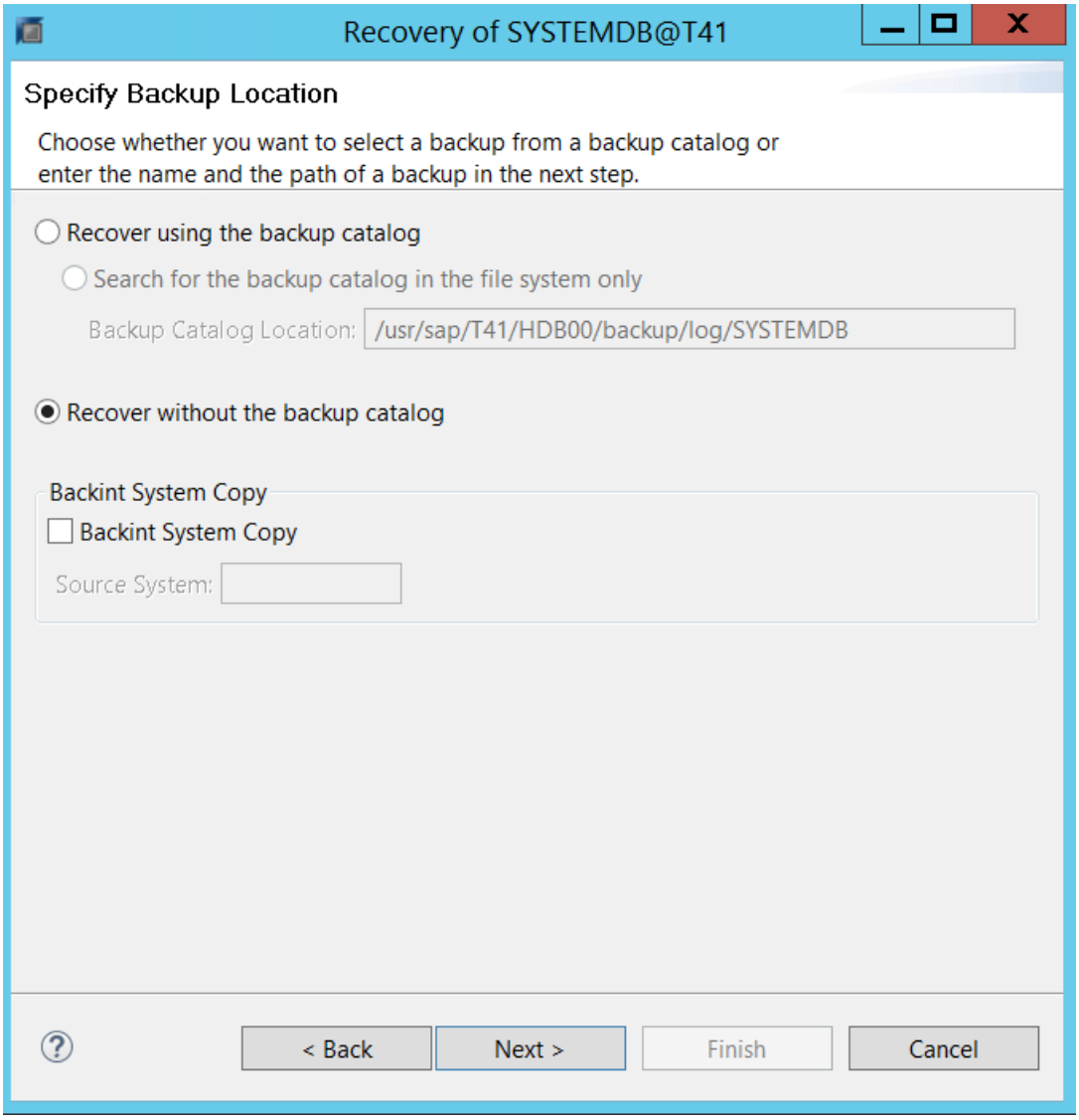
3. Choose the recovery type, in this case “Recover the database to a specific data backup”.



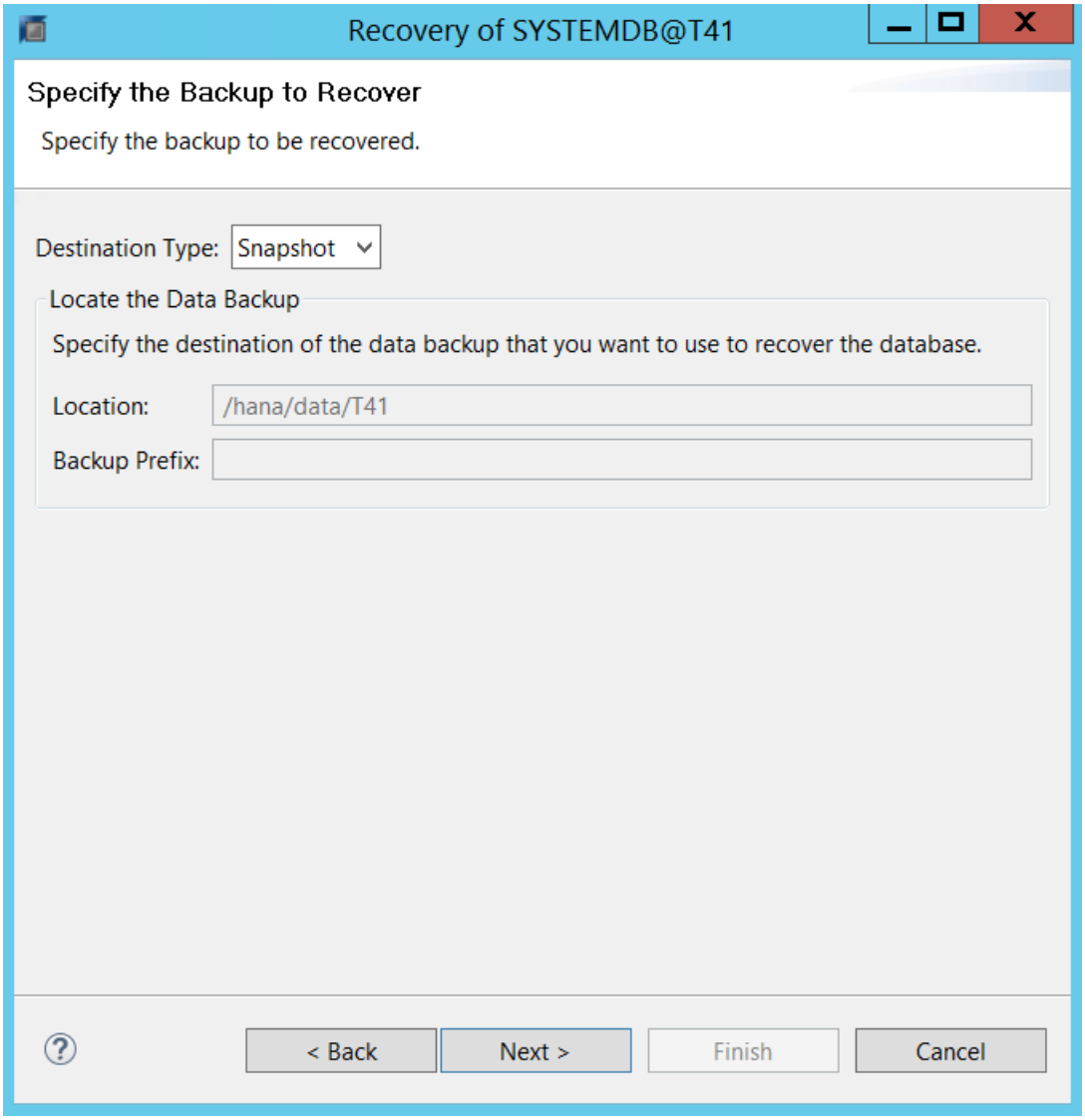
4. Confirm the recovery to continue, noting the potential for lost data.



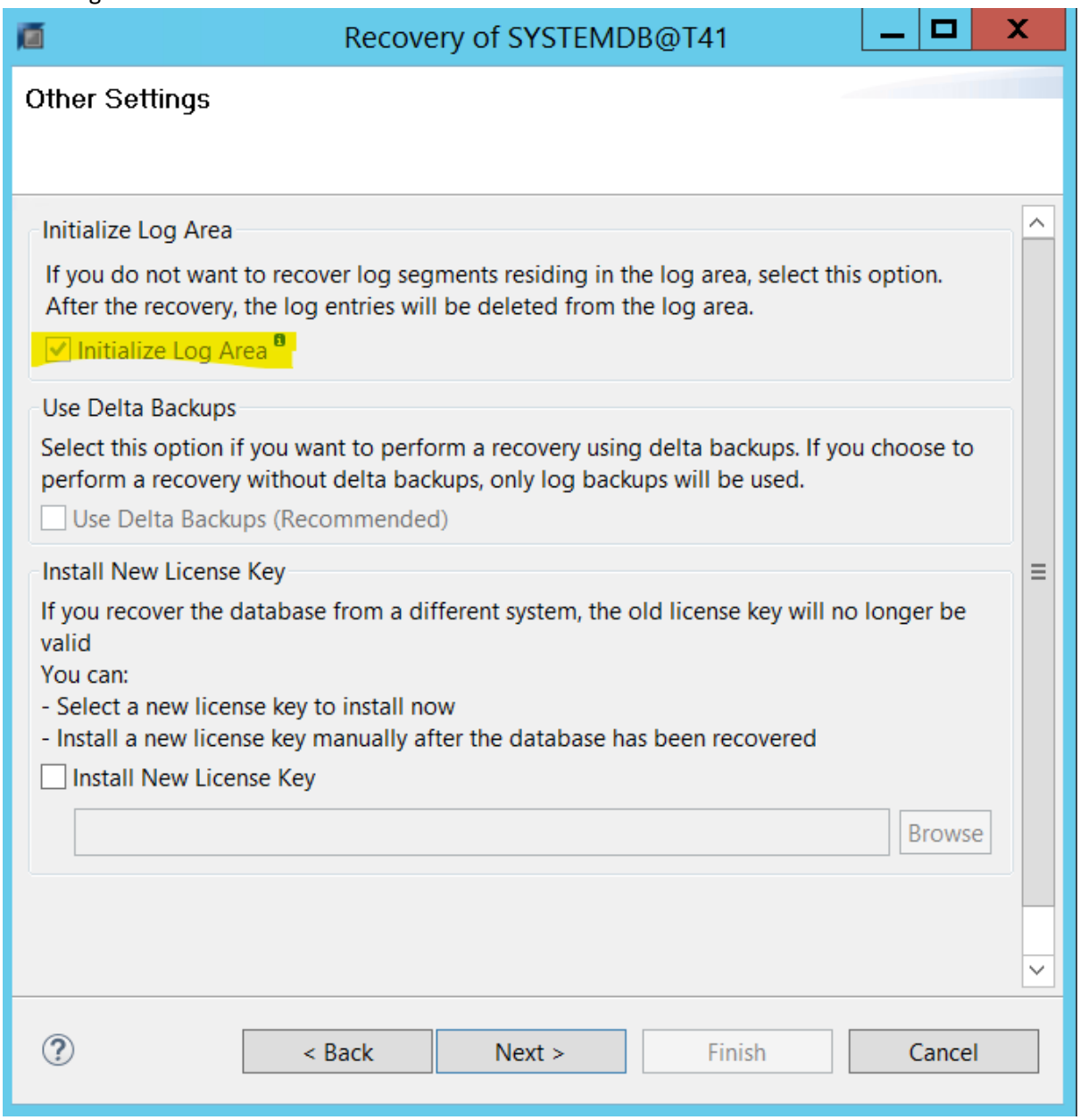
5. As there will be no log replay, continue to “Recover without the backup catalog”.



6. Specify the Backup to Recover, Destination Type = Snapshot.



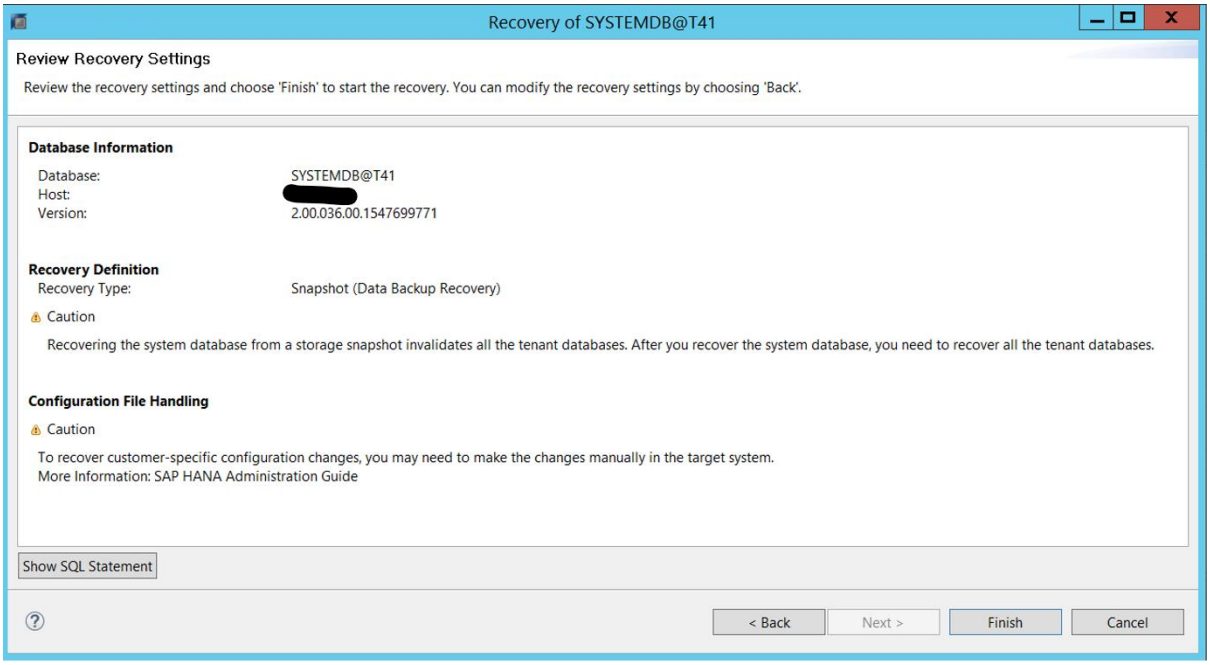
7. Note this restore method will Initialize Log Area. Check any appropriate “Other Settings”, the following screen is the defaults

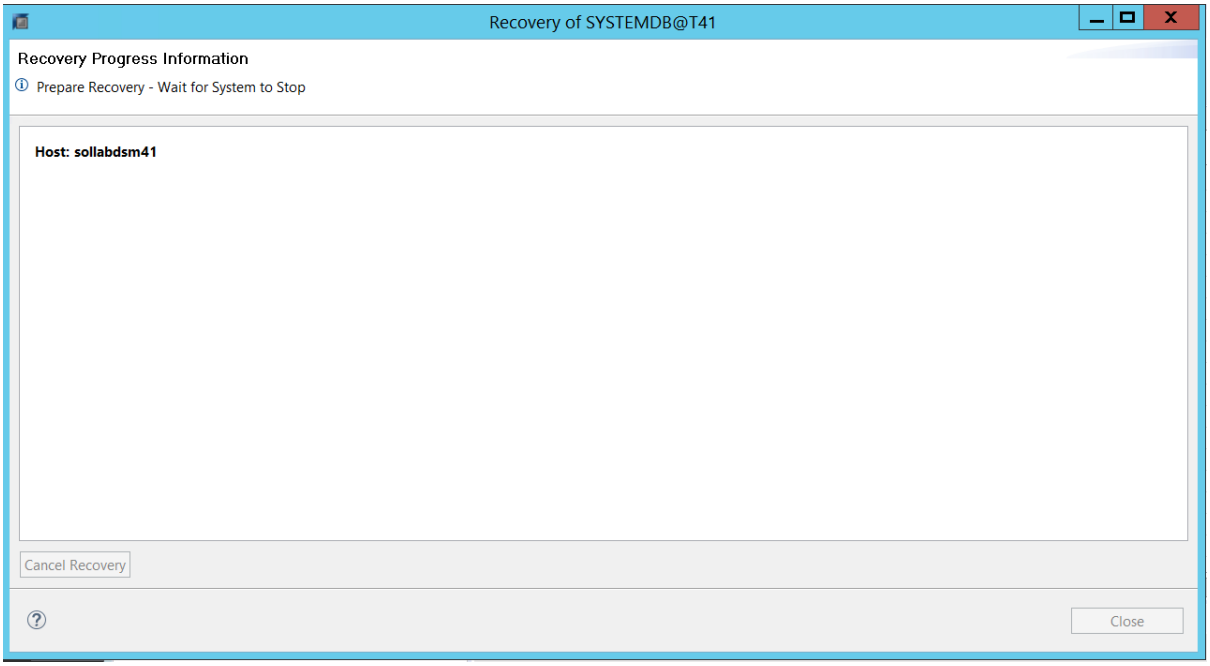


8. Restore the snapshot files to the data area. In this example, the files can be copied from the “hidden” location in the filesystem

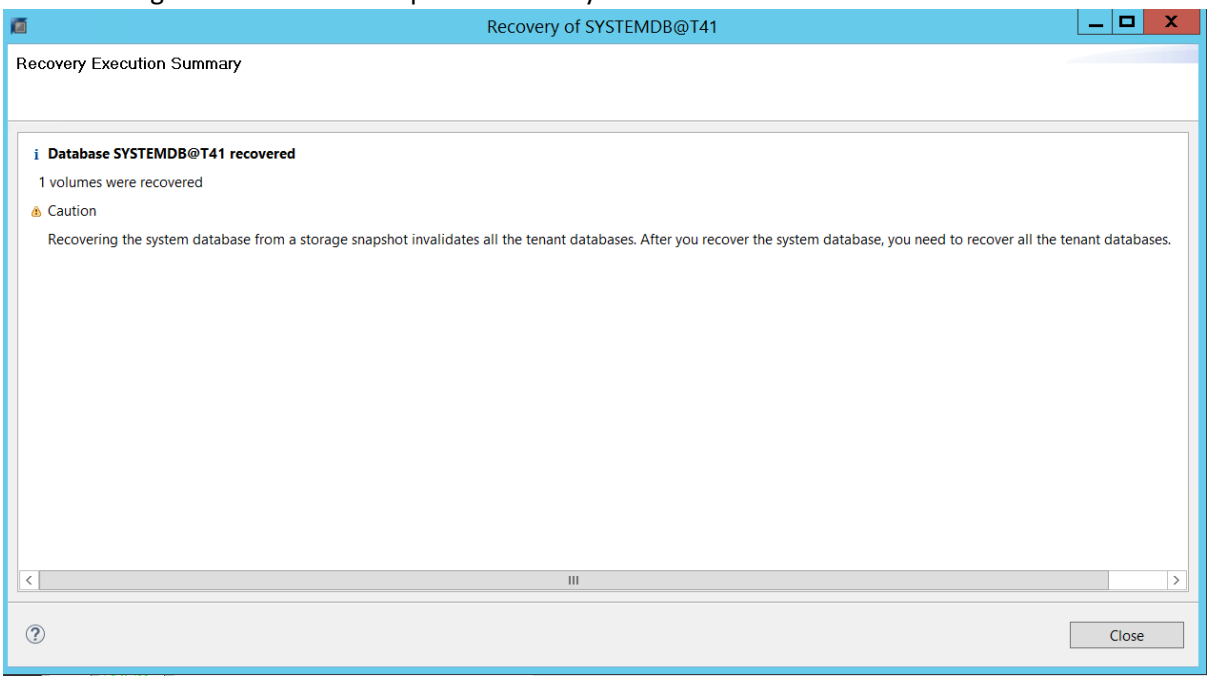
```
# su – t41adm

> cp -pr /hana/data/T41/mnt00001/.snapshot/daily_db_bkup.2019-03-13_0030.0/* \
/hana/data/T41/mnt00001/.
```

9. On the summary page, review any final details. Make sure you have copied/restored the snapshot files to the data area, if the copy has completed then press Finish to restore the system database.



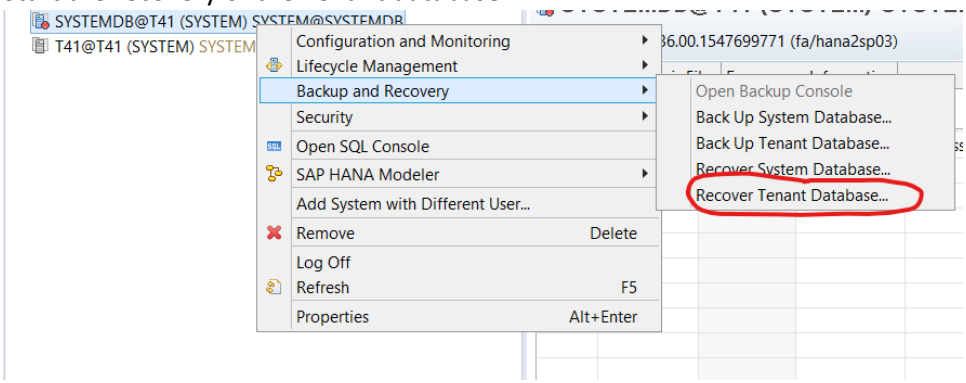


10. When the recovery has finished a Recovery Execution Summary provides details of the recovery. The following screen shows a completed recovery of the SYSTEMDB.

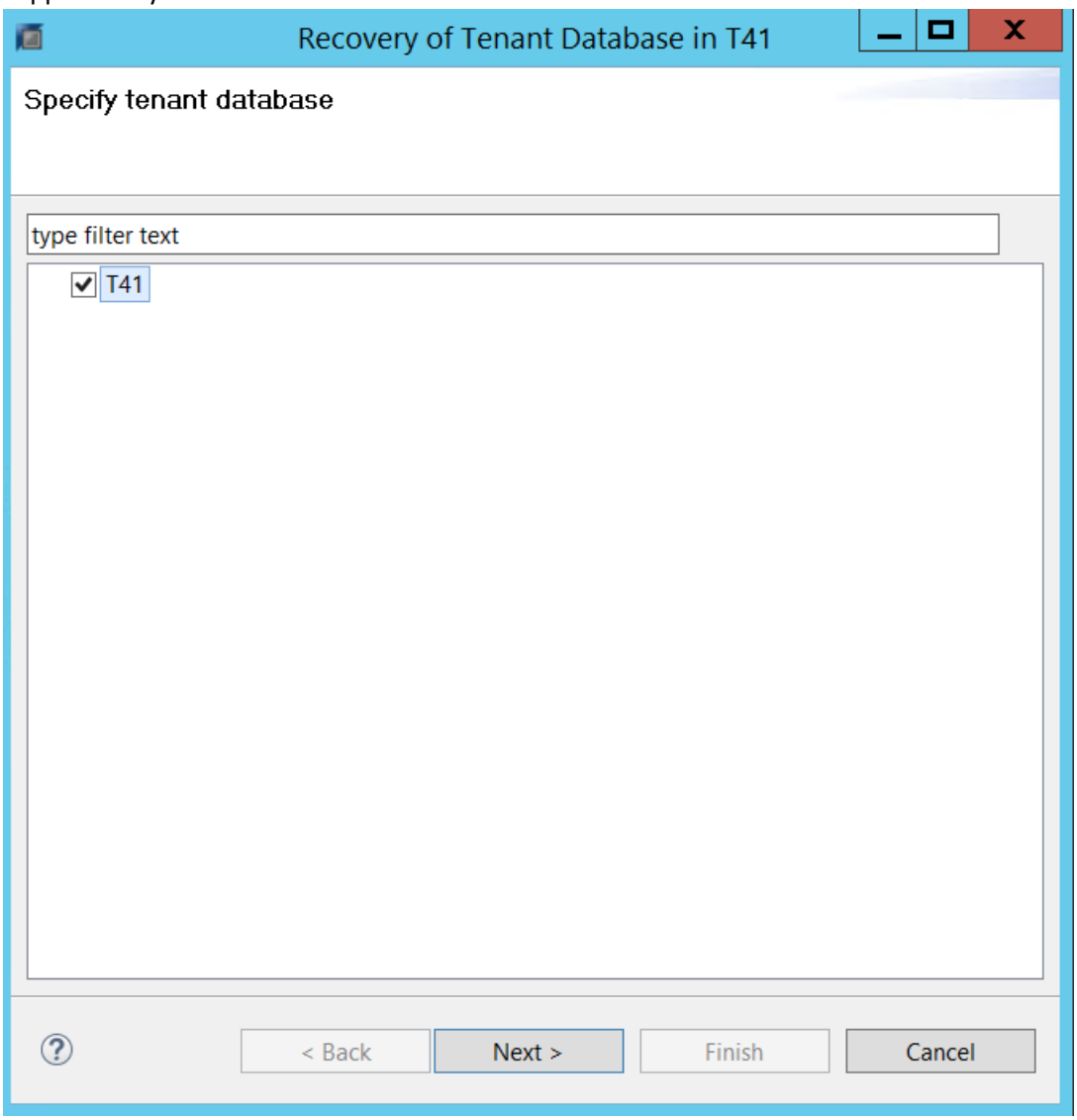


! The message stating a recovery from a storage snapshot invalidates all the tenant databases. Tenant databases now need to be recovered.

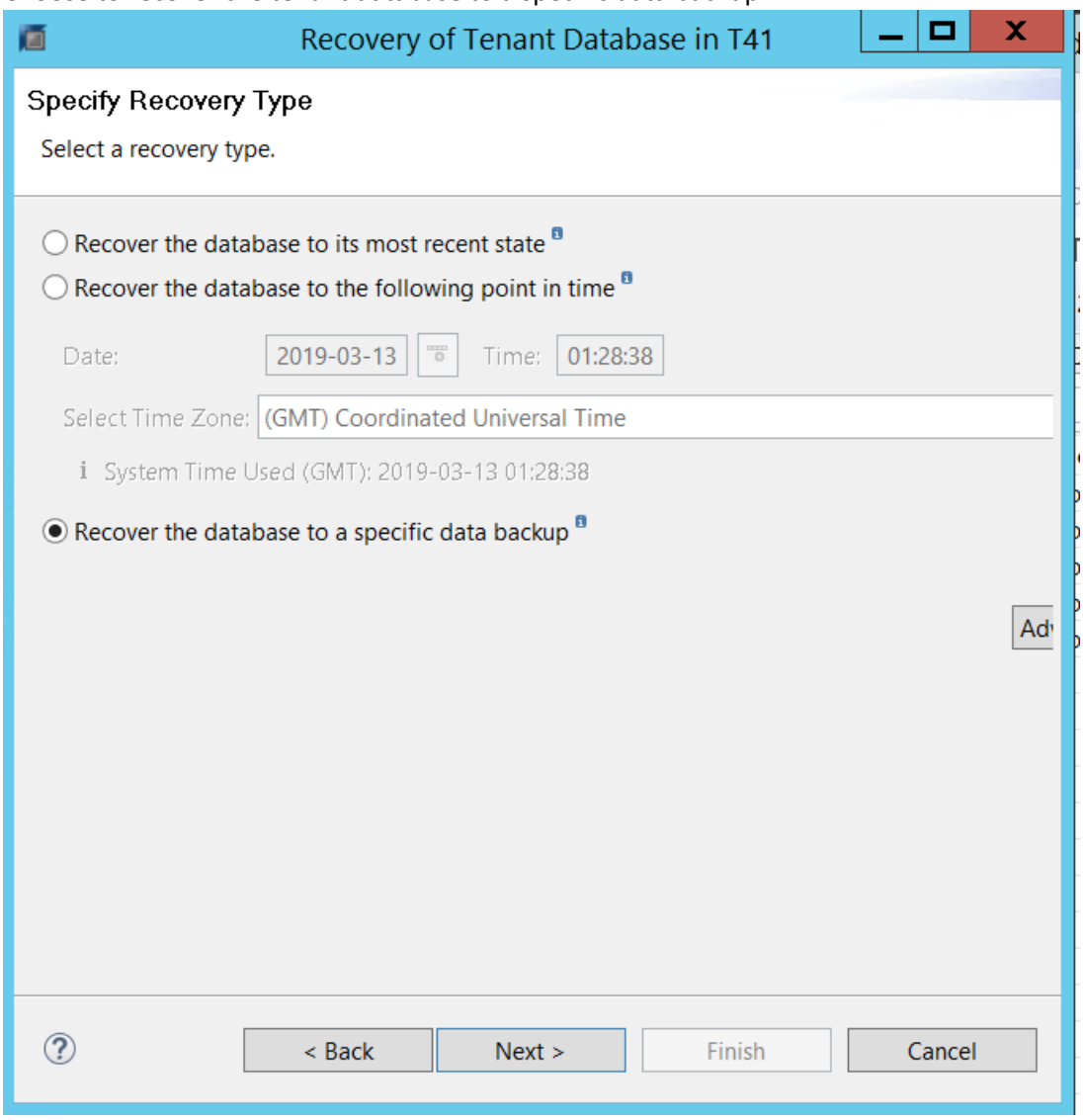
11. Start the recovery of the Tenant database



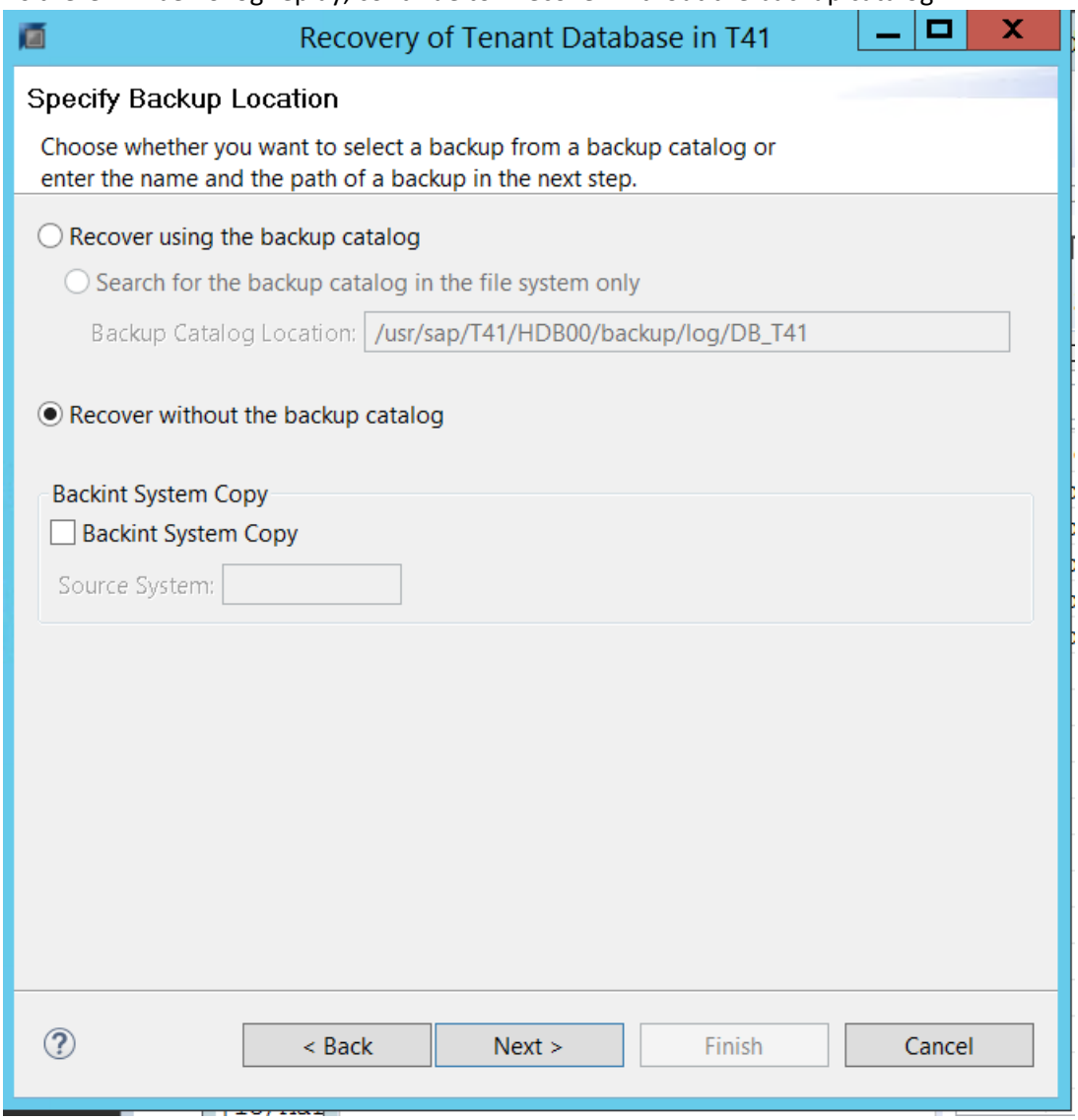
12. Choose the Tenant to recover from. At the time of writing, only a single tenant database is supported by SAP to recover from.



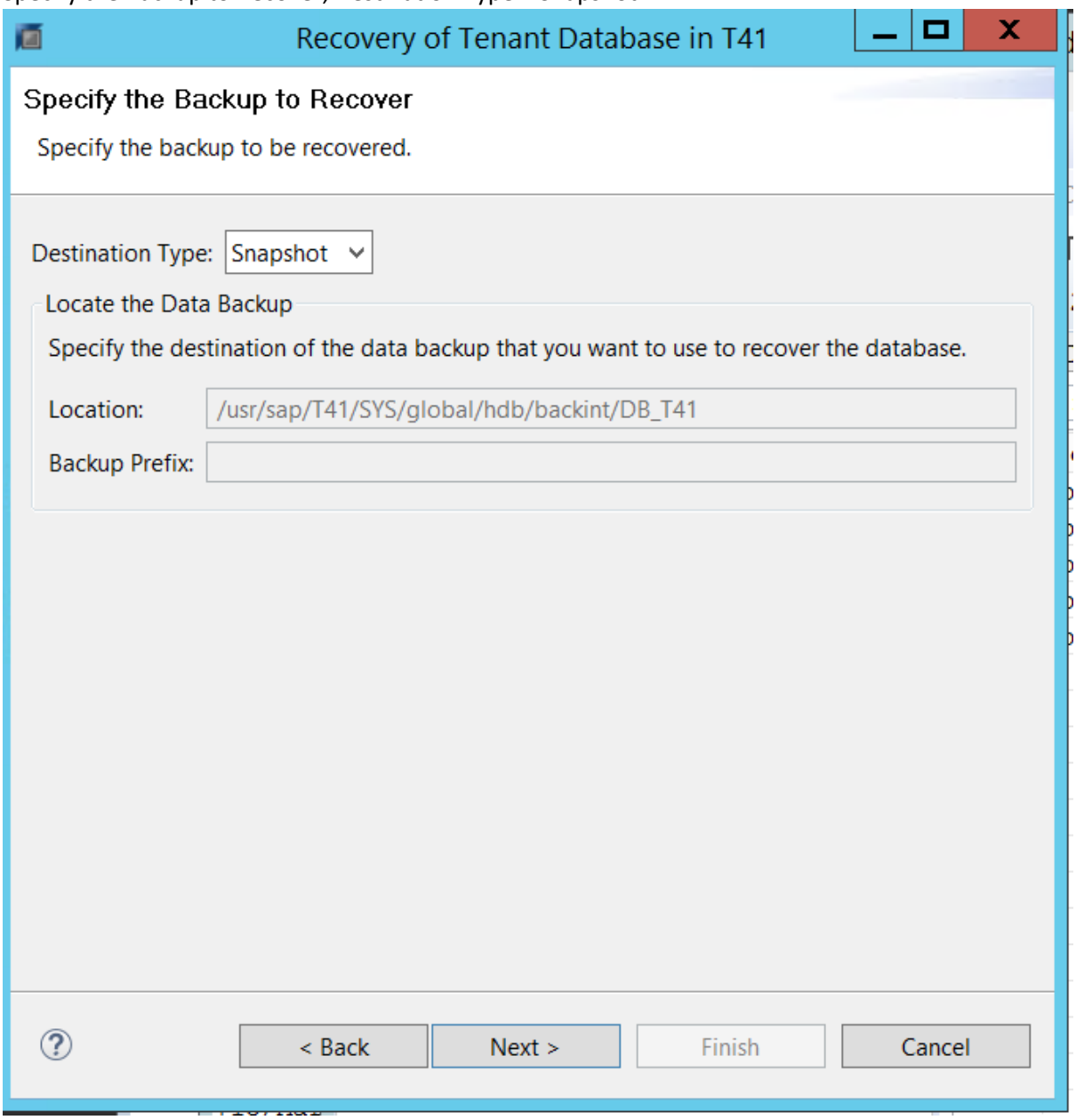
13. Choose to recover the tenant database to a specific data backup.



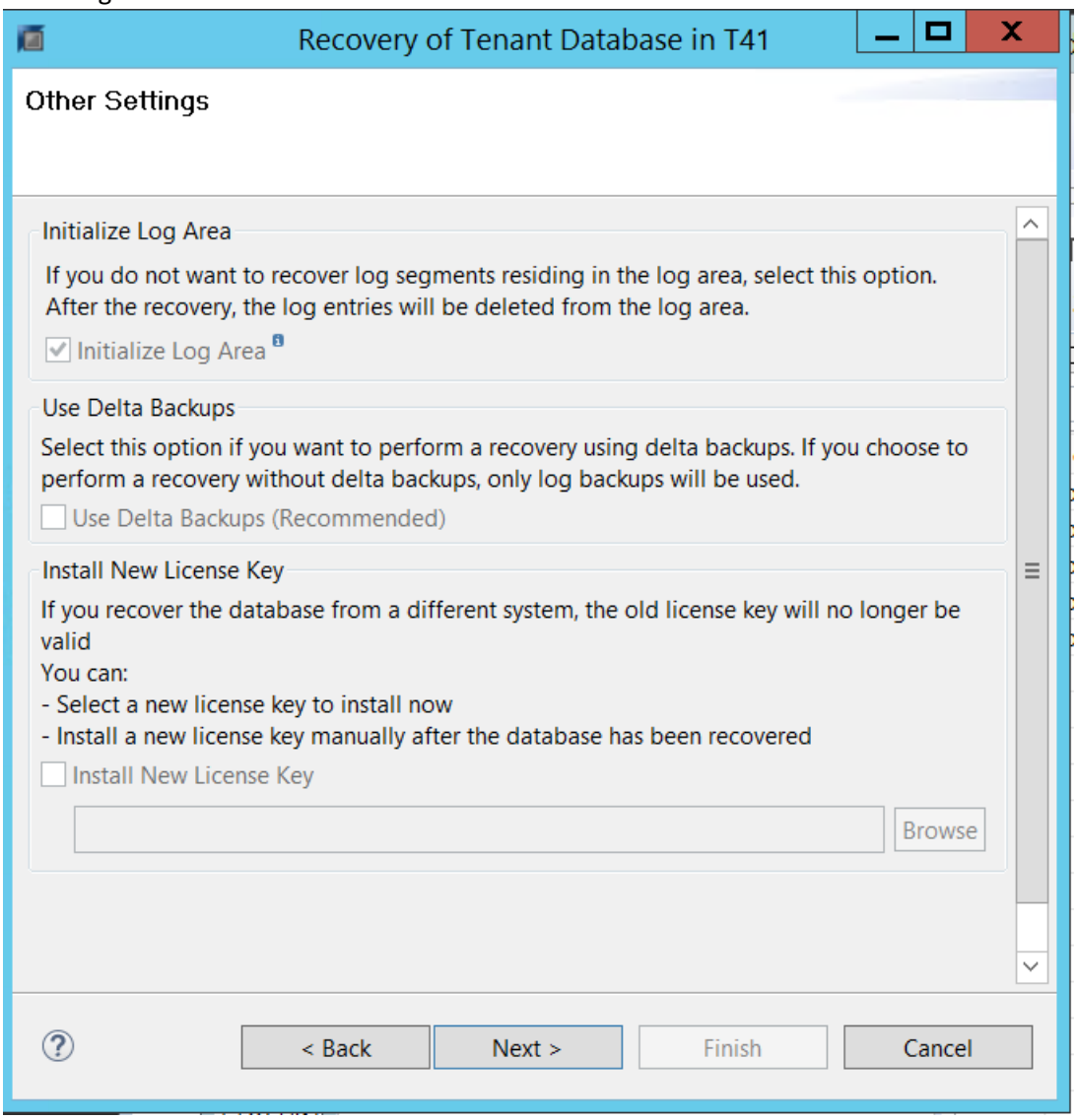
14. As there will be no log replay, continue to “Recover without the backup catalog”.



15. Specify the Backup to Recover, Destination Type = Snapshot.

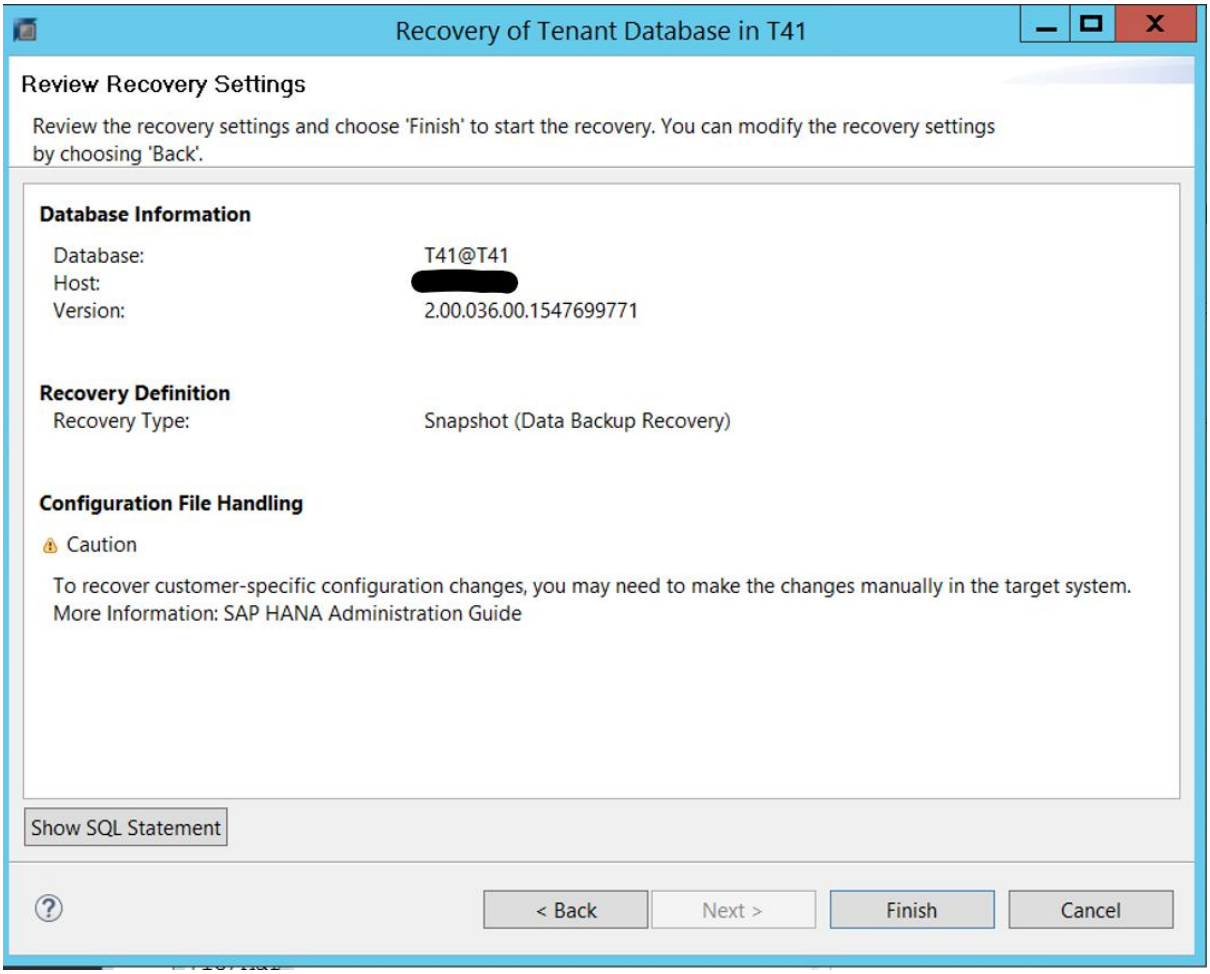


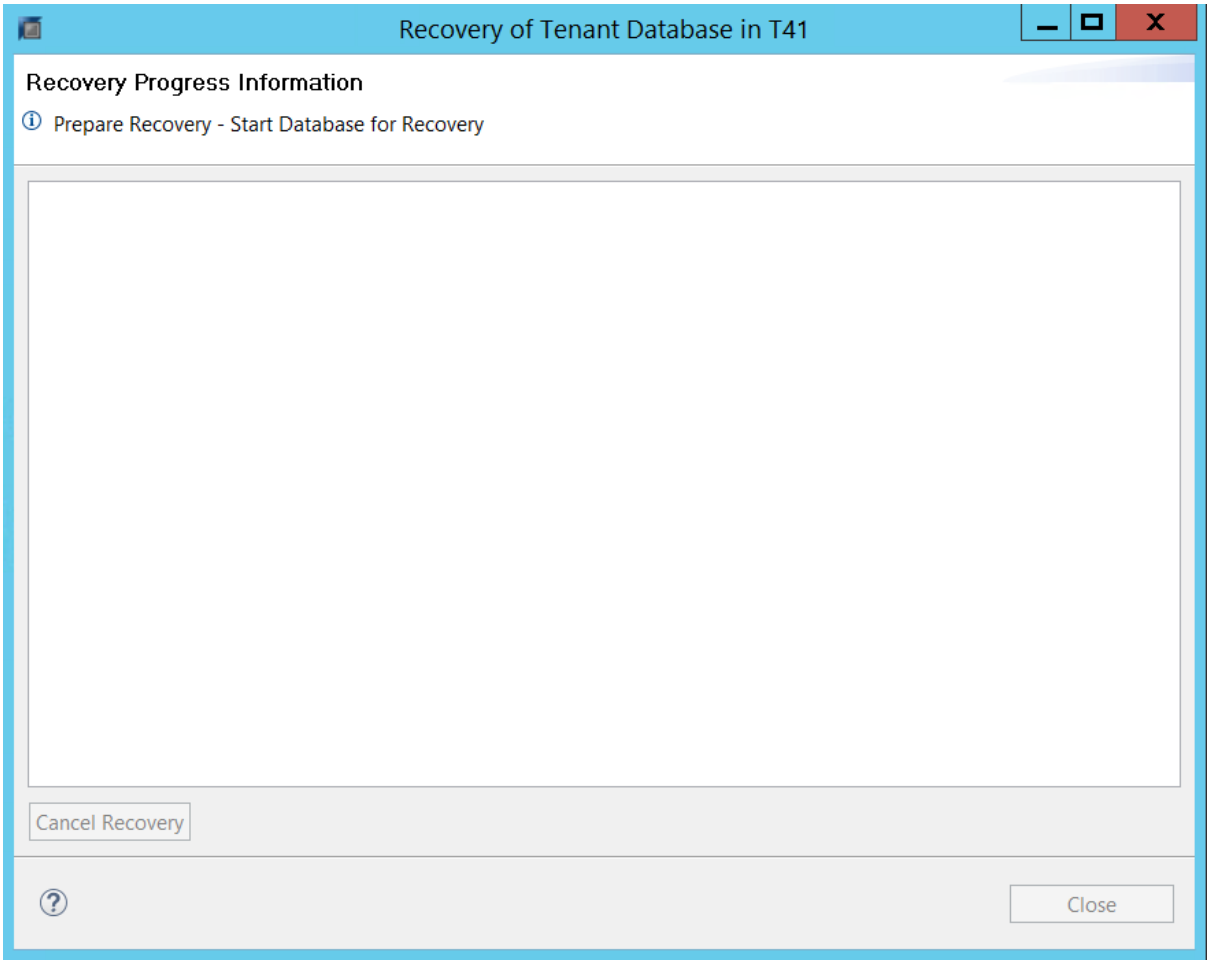
16. Note this restore method will Initialize Log Area. Check any appropriate “Other Settings”, the following screen is the defaults



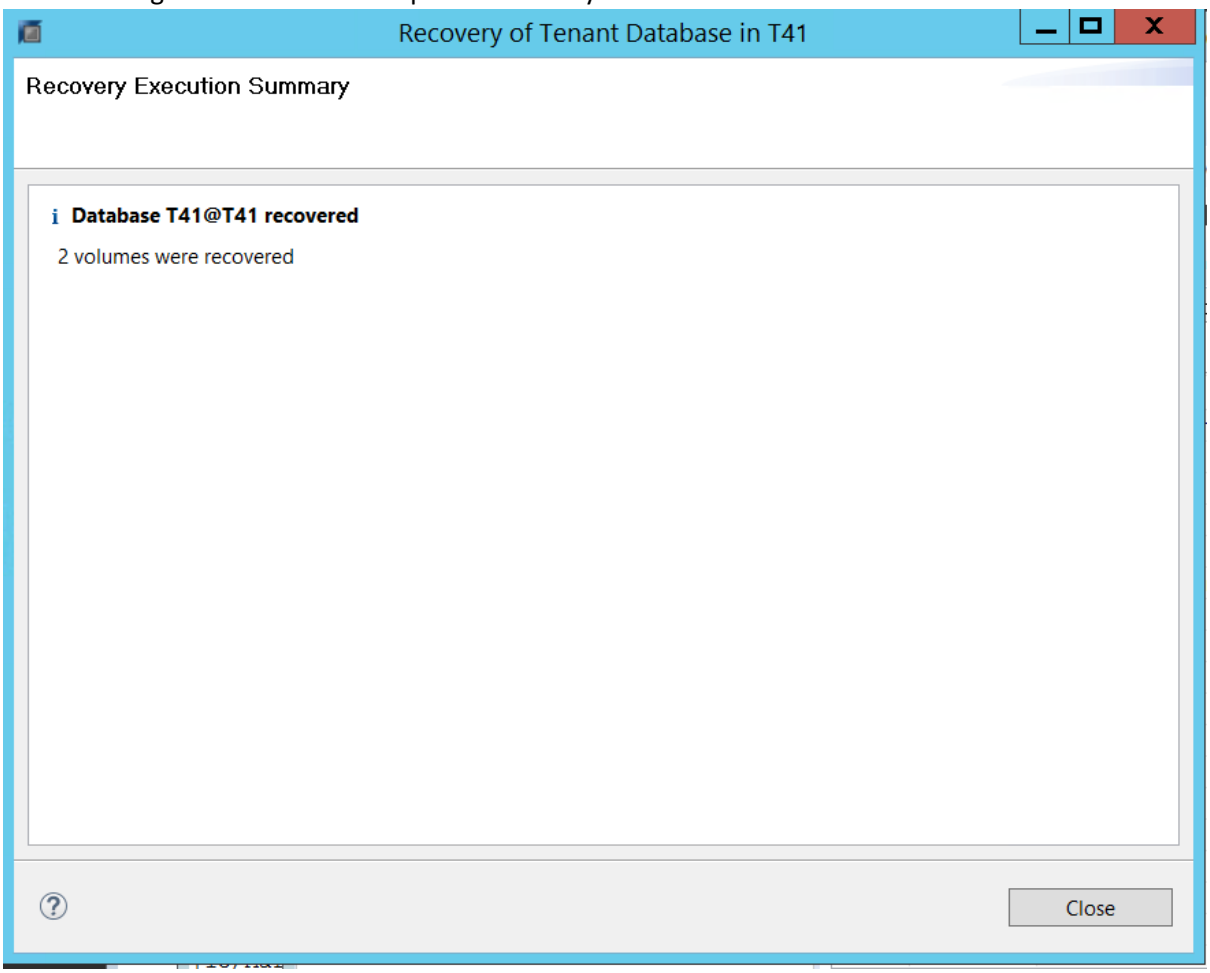
17. There is no need to restore the snapshot files to the data area as this was done when recovering the system database.

18. On the summary page, review any final details and press Finish to restore the system database.




Recovery of Tenant Database in T41
Recovery Progress Information
Prepare Recovery - Start Database for Recovery
Cancel Recovery
Close

19. When the recovery has finished a Recovery Execution Summary provides details of the recovery. The following screen shows a completed recovery of the tenant database.



20. The following screenshot shows the database after recovery with all services running.