Setup a new Process Historian with an existing Historian Storage Database

SIMATIC Process Historian 2013/2014

https://support.industry.siemens.com/cs/ww/en/view/66579062

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Table of contents

1 Task

The Process Historian (PH) machine is because of some reason broken. The server hardware must be exchanged and new installed. The already existing database should be used for the new installation. Therefore a full database backup is needed which can be restored to a Process Historian after exchanging the machine.

2 Solution

This document offers a guideline for the following Scenarios.

1. New installation of PH software on the existing hardware
2. PH hardware exchange due to hardware defect

During PH is offline the process data will be buffered on the OS servers in the Store and Forward cache. After PH is running properly again these data will be recovered to Process Historian. Since the data will be buffered on C drive of the OS servers make sure that there is enough free disk space available. If free disk space is less than 5 GB or less than 10% of the C drive disk space no more data will be written into the Store and Forward Cache. To avoid data loss make sure that the OS archives contain all data from the time while PH is offline. If the data are still in the OS archives they can be recovered to the Process Historian.

Prerequisite

- The computer name doesn't change.

Additional reasons to create a full data backup of the Process Historian database

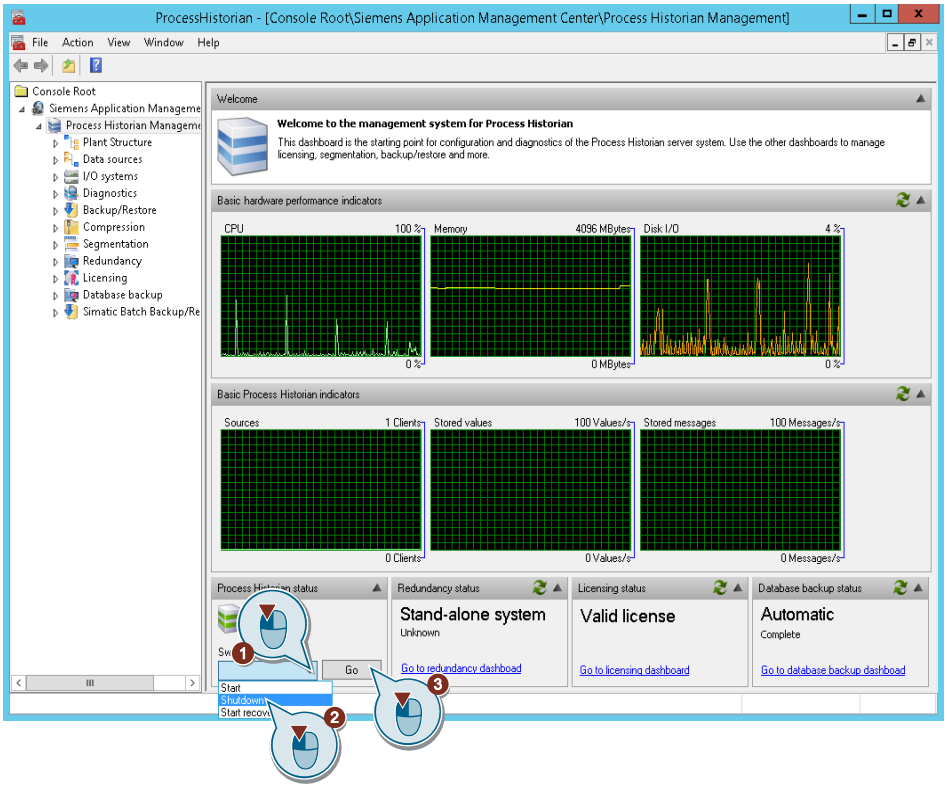
- All "runtime" database segments, which are visible inside of the "Segmentation" menu of the PH Management Console, must be backed up with a full database backup.
- Segment backups created with help of the PH Management Console dashboard "Backup and Restore" can only be restored into the same PH database they were created from. It is not possible to restore a PH segment backup into an empty PH database.

3 Backing up and restoring a PH Database

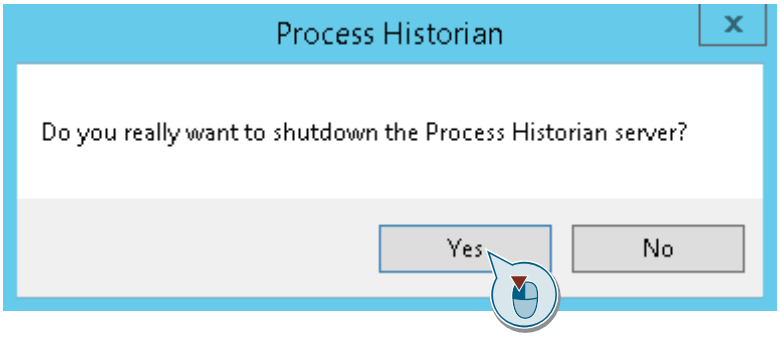
3.1 Creating a Full PH Database Backup

The following instruction describes step by step how to create a full PH database backup.

1. Deactivate the PH with help of the PH Management Console. Use the drop down menu and choose "Shutdown" and click on the "Go" button.

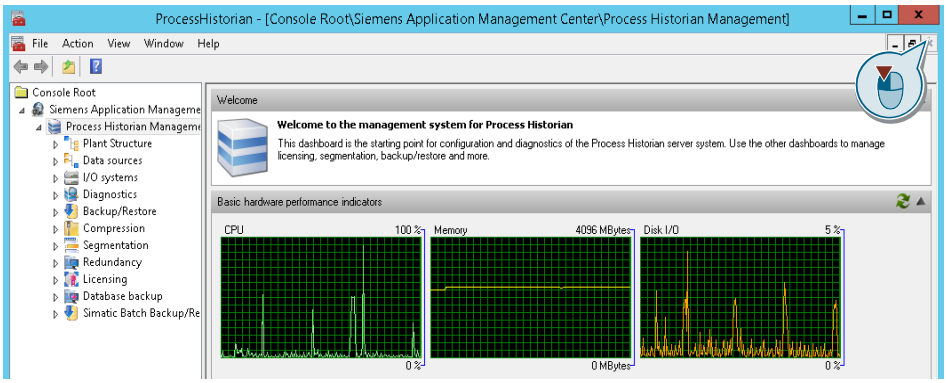


2. Click "Yes".

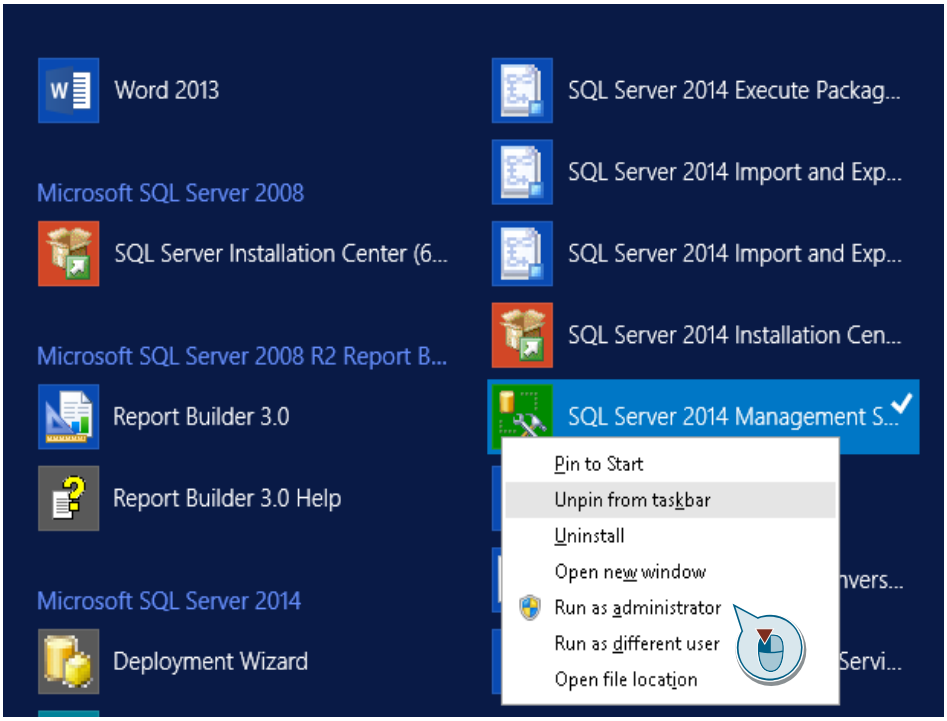


3. Wait until the PH is in state idle.

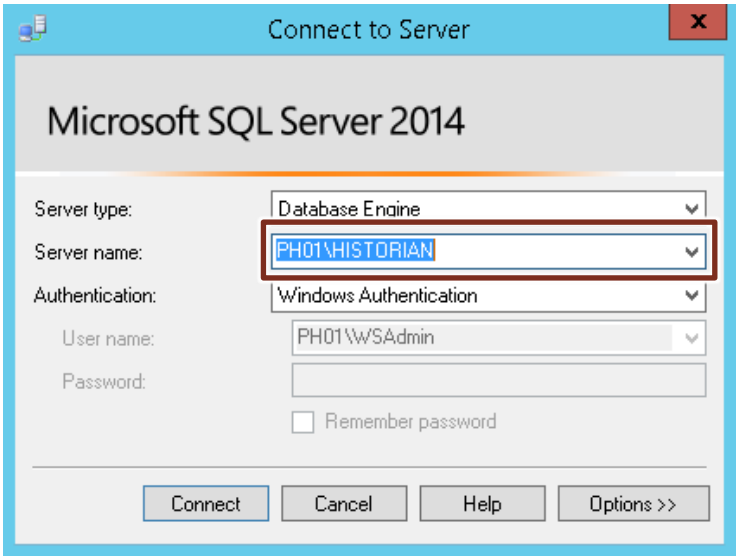
4. Close the Process Historian Management Console.



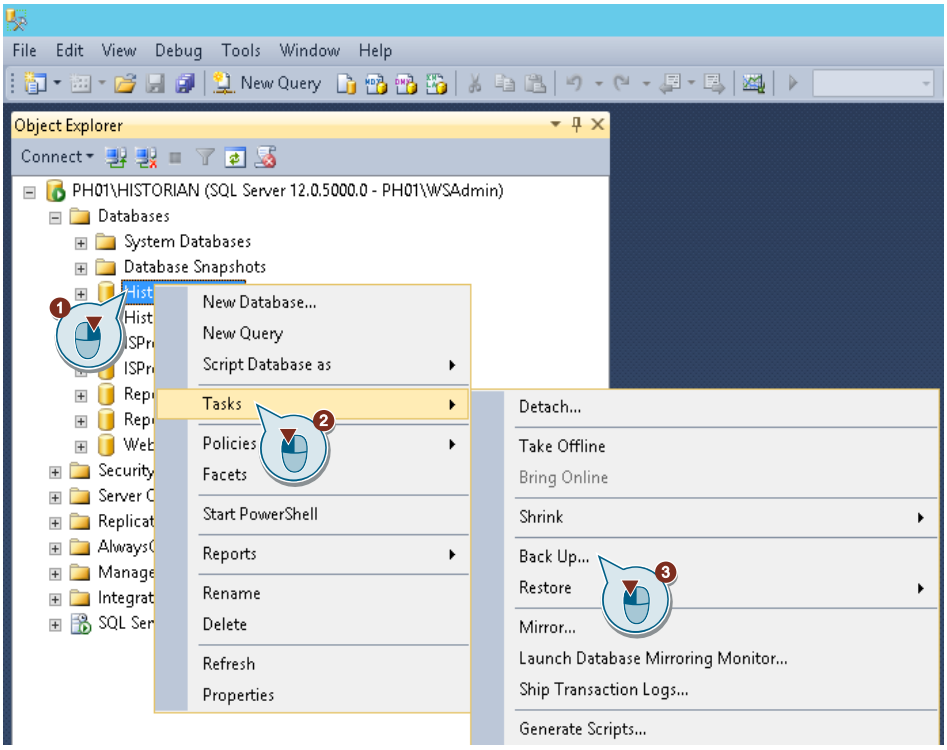
5. Run the SQL Server Management Studio as administrator.



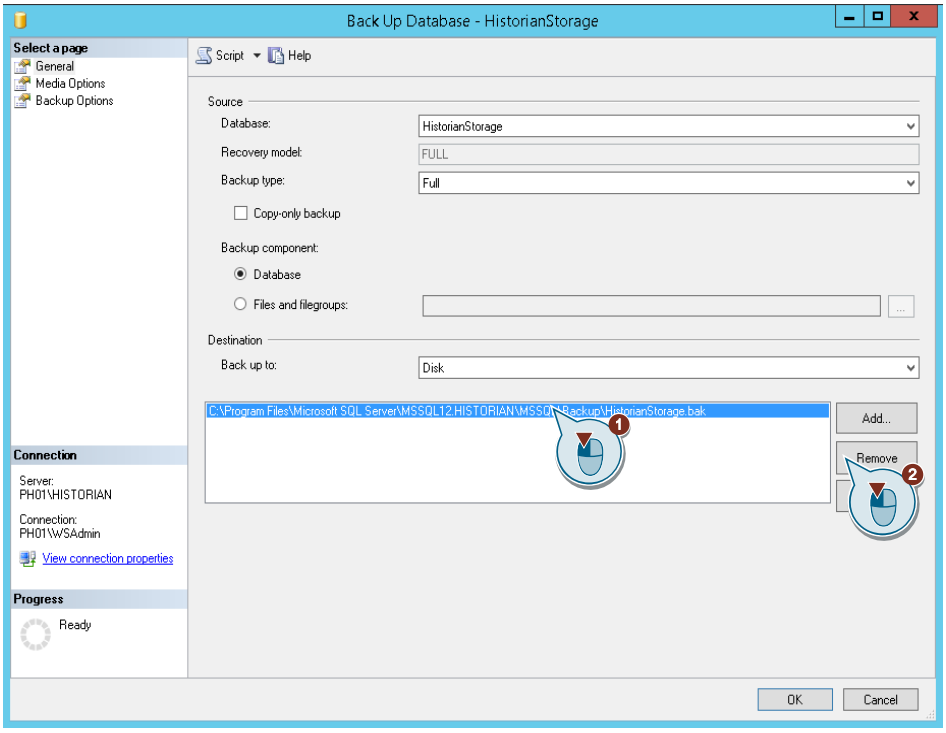
6. Connect to the Process Historian SQL Server. The server name is "<PH computer name>\HISTORIAN".



7. Expand the folder "Databases" > perform a right mouse click on the database "HistorianStorage" > click on the menu "Tasks" > click on the function "Back Up…".

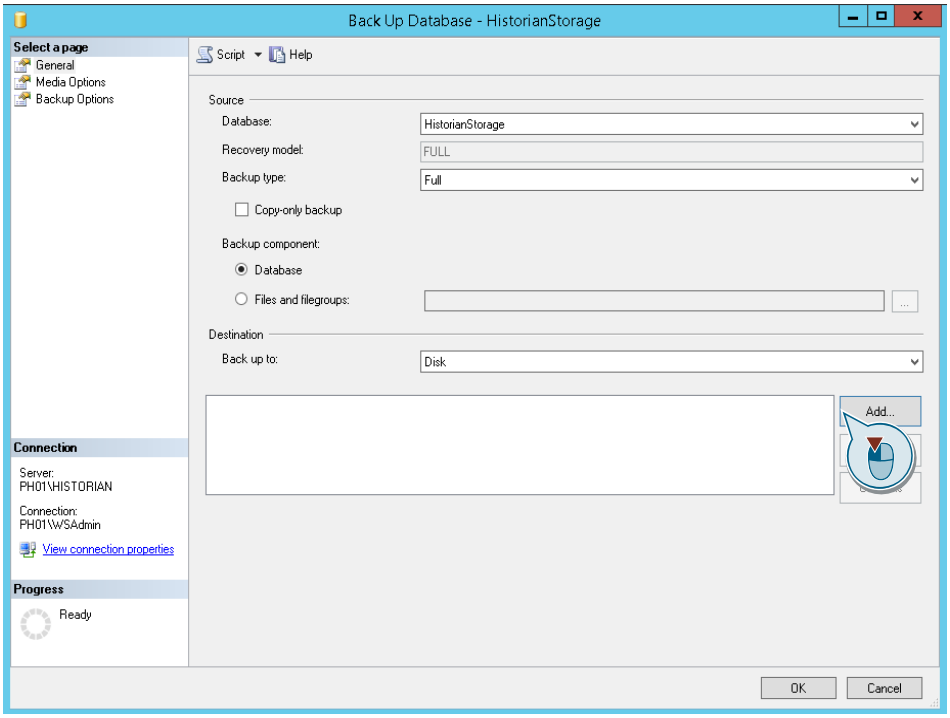


8. Remove all default destinations by selecting and clicking the button "Remove".

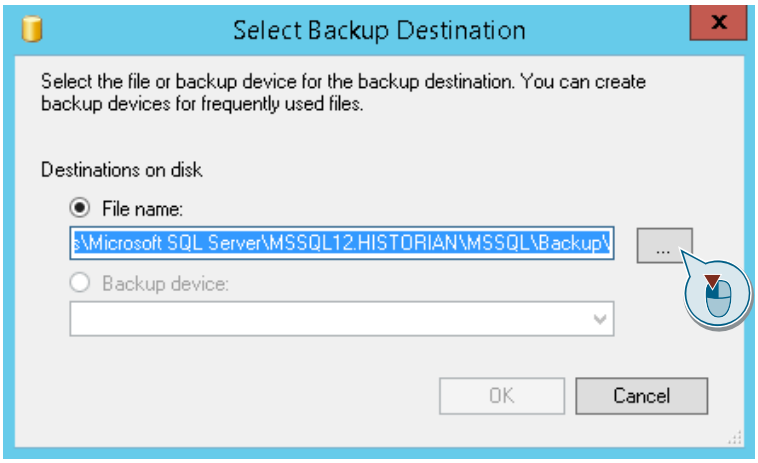


NOTICE	If there is a "NUL" destination, it is essential to remove it and define a proper backup destination. If the destination path is "NUL" the SQL Server will create a corrupt backup file. If you create a corrupt backup file and delete the existing Process Historian Database, you will lose all historical data.

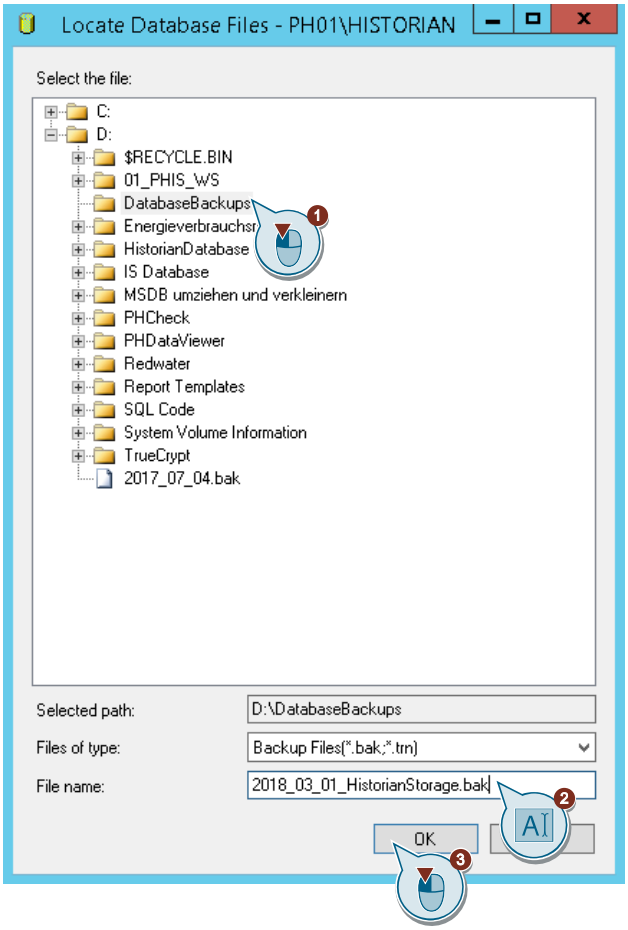
9. Click the "Add" button.



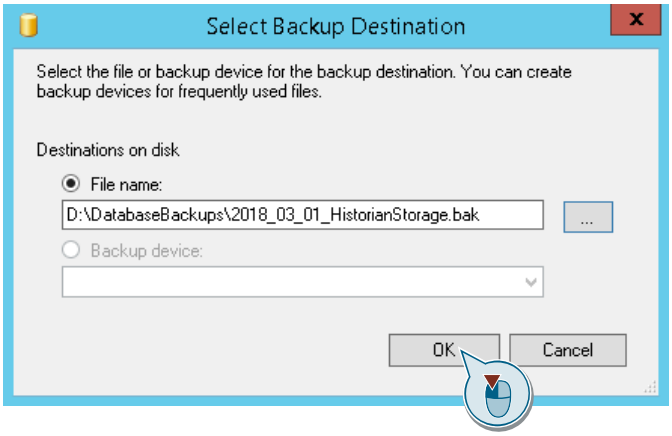
10. Click the "…" button, to define a backup destination.



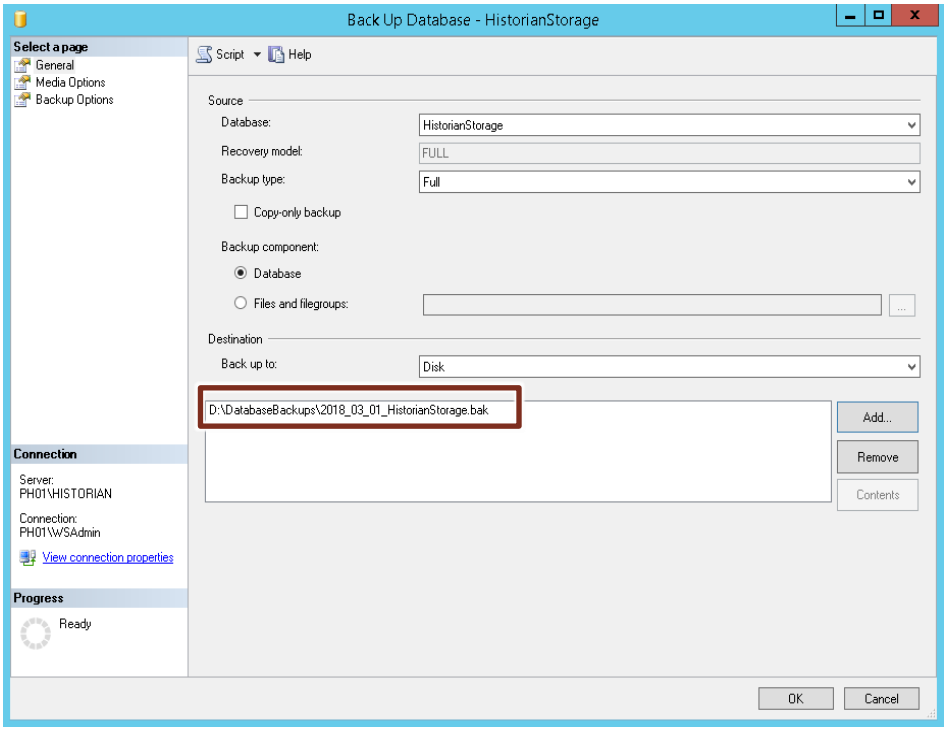
11. Define the backup destination and the backup file name and click the "OK" button.
    It is advisable to define a file name that includes the date of the backup creation.



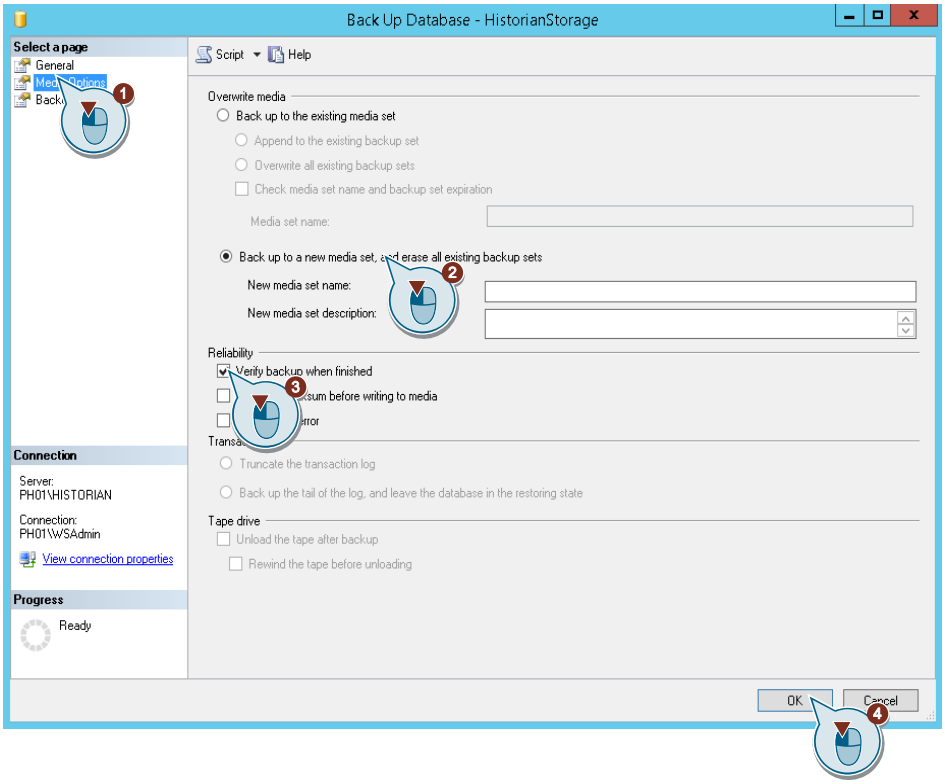
12. Click the "OK" button.



Result:

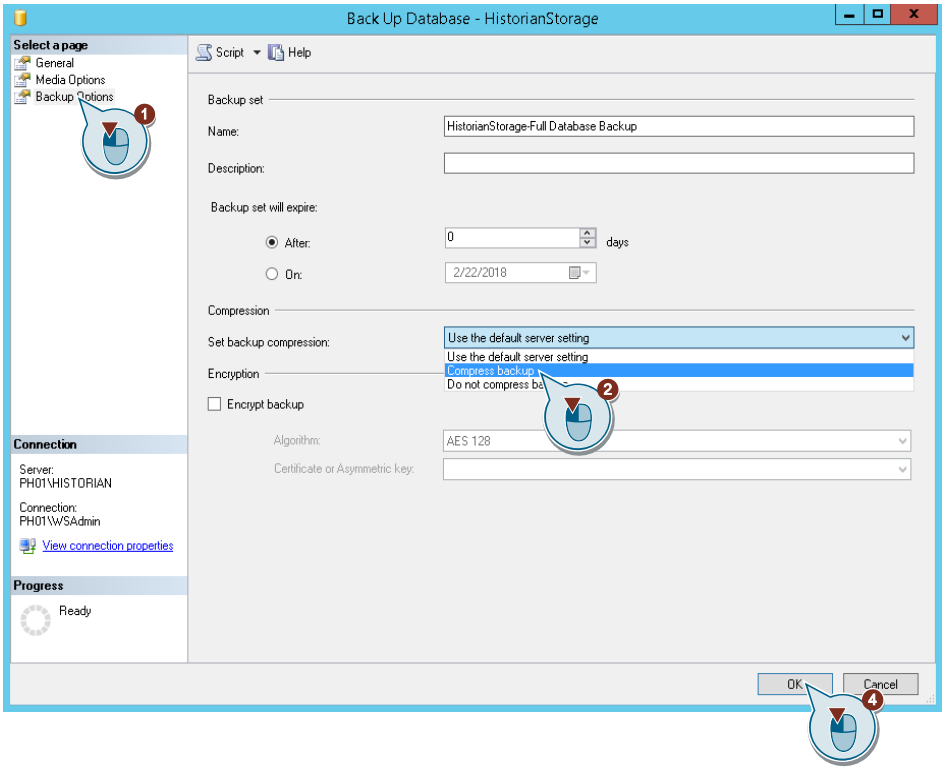


13. Choose the "Media Options" tab and check the radio button "Backup to new media set, and erase all existing backup sets". Choose the checkbox "Verify backup when finished".

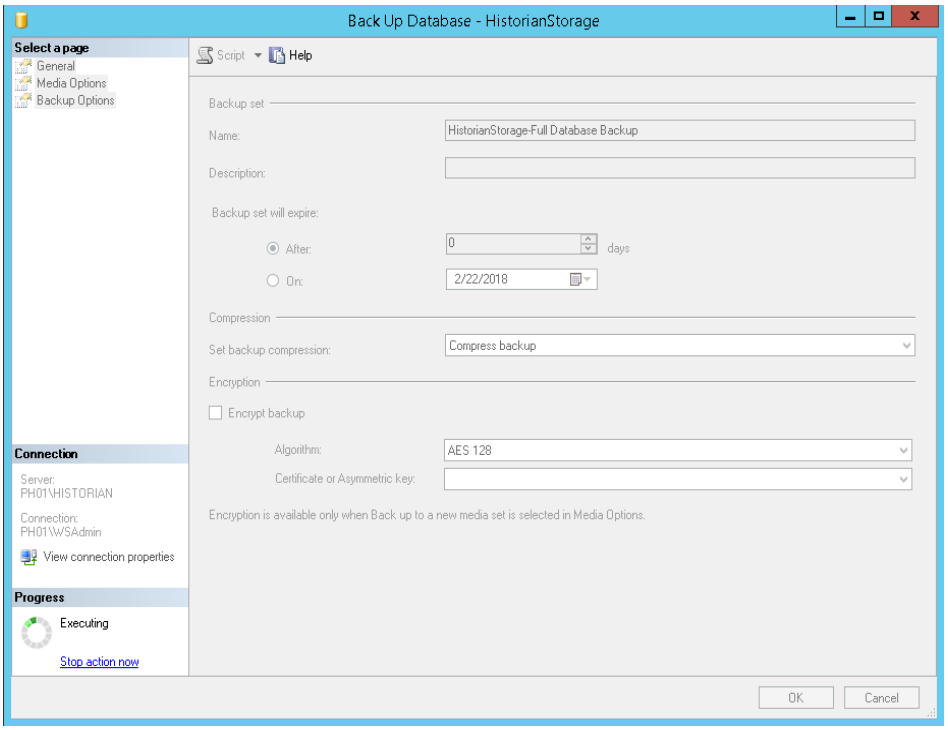


NOTE It is recommended verifying the backup with help of the radio button "Verify backup when finished". The backup creation takes more time if you verify the backup, especially for big databases.

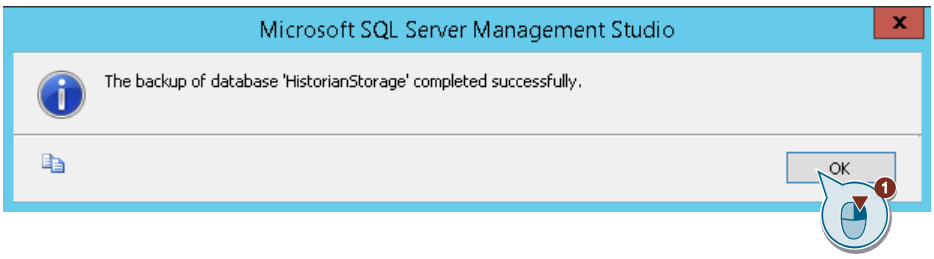
14. Choose the "Backup Options" tab and select "Compress backup". This will reduce the size of the database backup file.



Result: The backup is being created



15. Click on the "OK" button.

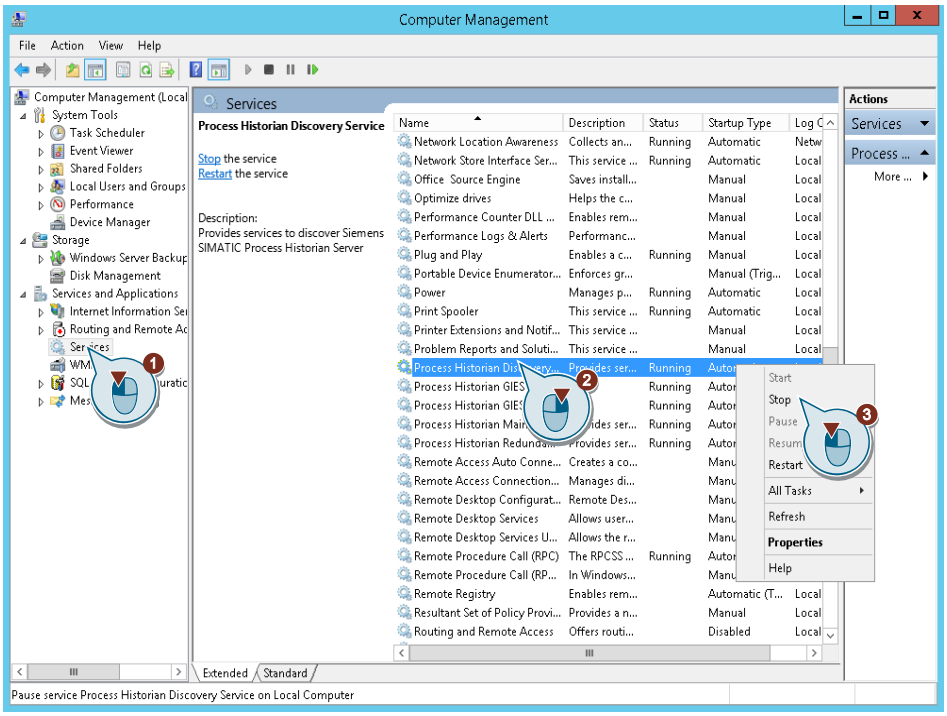


NOTE A file of a full database backup can be big, if the database is big! Creating a big backup file can take a long time.

NOTE There are different reasons why a full database backup could fail, for instance active database connections. If a full database backup on a running PH fails, the PH Services must be stopped before creating a full database backup.

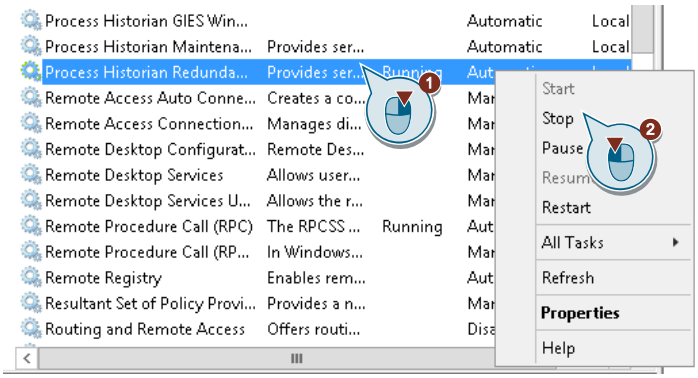
The following instruction shows the steps which have to be executed if a full backup fails:

1. Open the "Computer Management" on the PH server. Go to "Services" and stop the "Process Historian Discovery Service".



2. Click "Yes" to also stop the other PH services.

3. Stop the "Process Historian Redundancy Service".



4. Close the "Computer Management" and start the backup creation again.

3.2 Process Historian installation

Before restoring the existing PH database you need to install the new Process Historian.

In the FAQ "Installation, Operation and Maintenance of Process Historian/Information Server in a PCS 7 Environment" you can find a description how to install a Process Historian.

In case the PH database should be distributed to several disks due to a hardware exchange, a description for that can be found in the same FAQ.

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In order to restore a database to a new installed Process Historian you need to take care about the following:

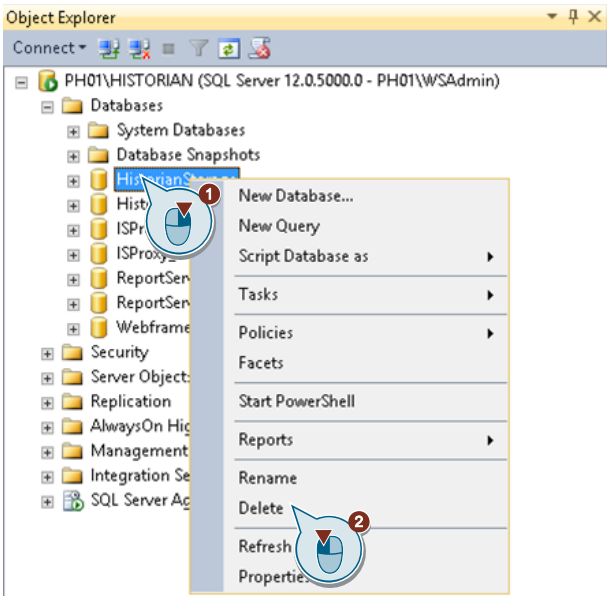
1. If possible use the same computer name for the new Process Historian
2. Install the new Process Historian with the same user name and password than the old one.
3. At the end of the installation you need to create a new PH database with help of the DatabaseInstallationWizard.

NOTE The DatabaseInstallationWizard creates for instance user settings for the SQL server. Therefore it is necessary to run the DatabaseInstallationWizard before restoring the existing HistorianStorage database.

3.3 Deleting the empty "HistorianStorage" database

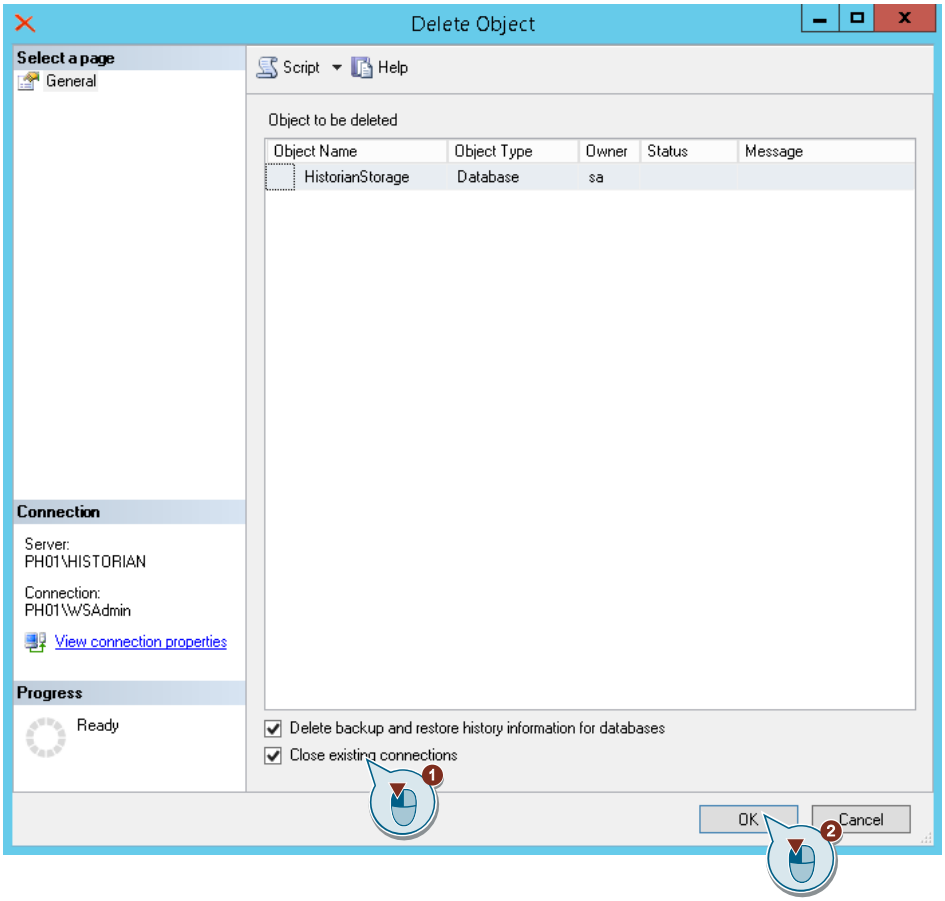
Before restoring the existing PH database, delete the new created PH database "HistorianStorage":

1. Shutdown the PH with help of the PH Management Console.
2. Stop the PH Services
3. Open the SQL Server Management Studio.
4. Connect to the SQL server "HISTORIAN".
5. Perform a right mouse click on the "HistorianStorage" database.
6. Click on "Delete" in the context menu.



NOTE If you delete a database, all data are deleted.

7. Check the option "Close existing connections" and click on "OK".



Result: The new created empty "HistorianStorage" database is being deleted.

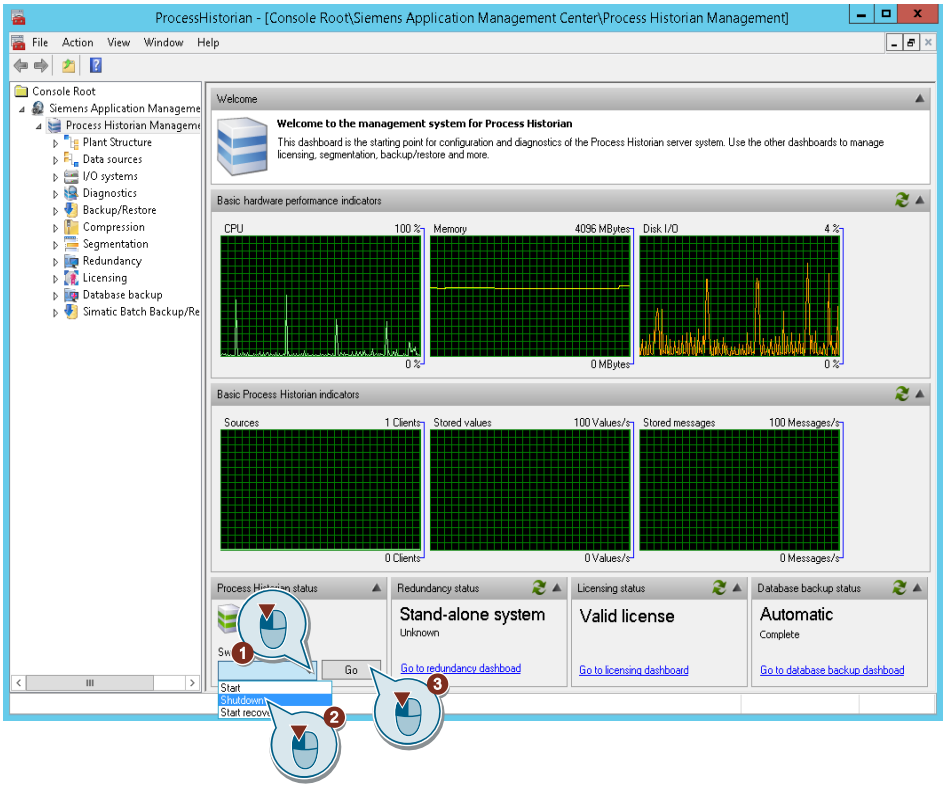
3.4 Restore Historian Storage Database

To restore a Process Historian Storage Database following prerequisites must be fulfilled:

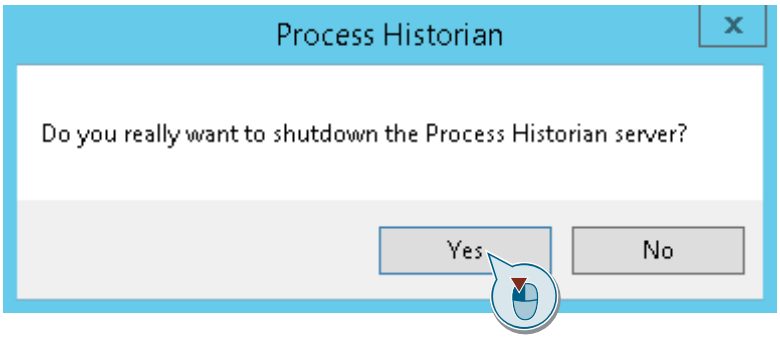
- The Process Historian must be deactivated with help of the PH Management Console.
- The PH services must be stopped like described above.
- An existing Historian Storage database must be detached if there is one attached or deleted.
- There is enough disc space available to store also the existing Historian Storage database.
- External PH segments must be set offline before the restore. They can be set online afterwards again

The following instruction describes step by step how to restore a Historian Storage Database.

1. Check if a full database backup file is available.
2. Deactivate the PH with help of the PH Management Console. Use the drop down menu and choose "shutdown" and click on the "Go" button.

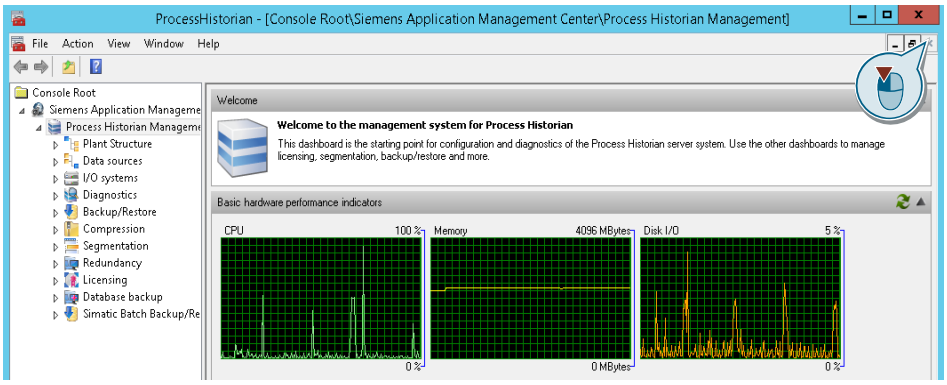


3. Click "Yes".

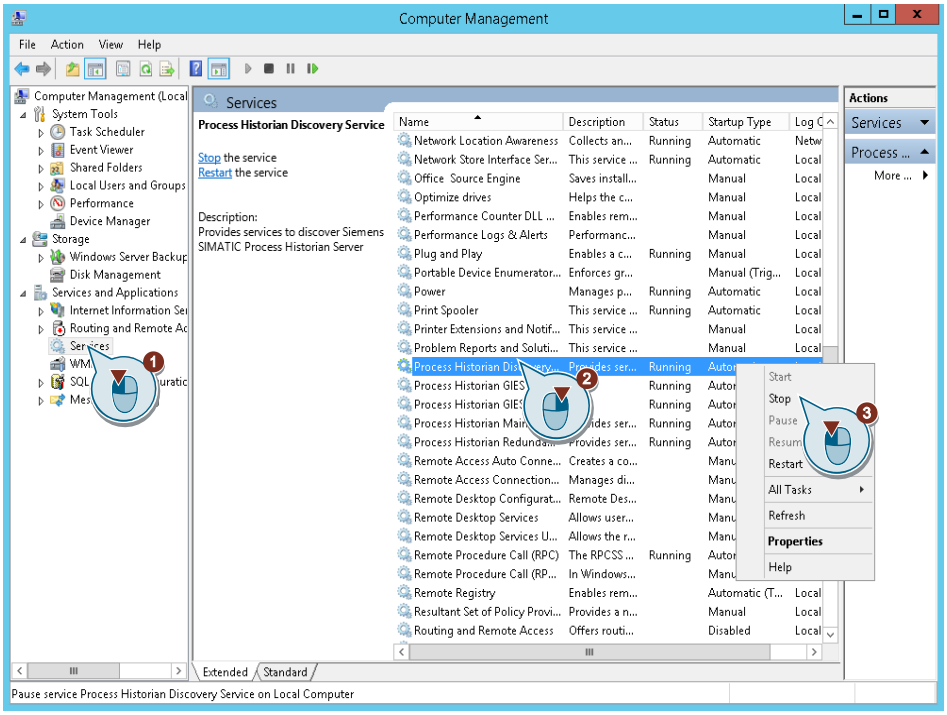


4. Wait until the PH is in state idle.

5. Close the Process Historian Management Console.

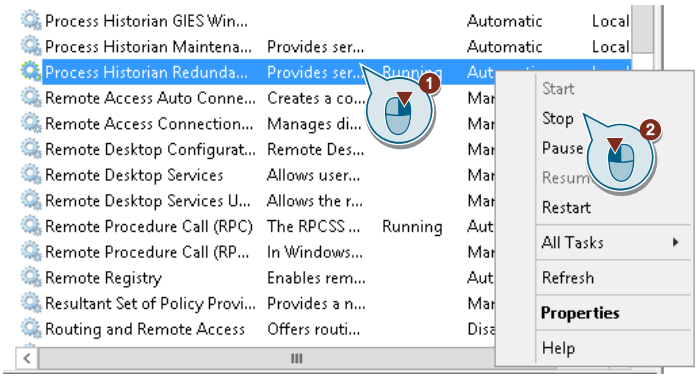


6. Open the "Computer Management" on the PH server. Go to "Services" and stop the "Process Historian Discovery Service".

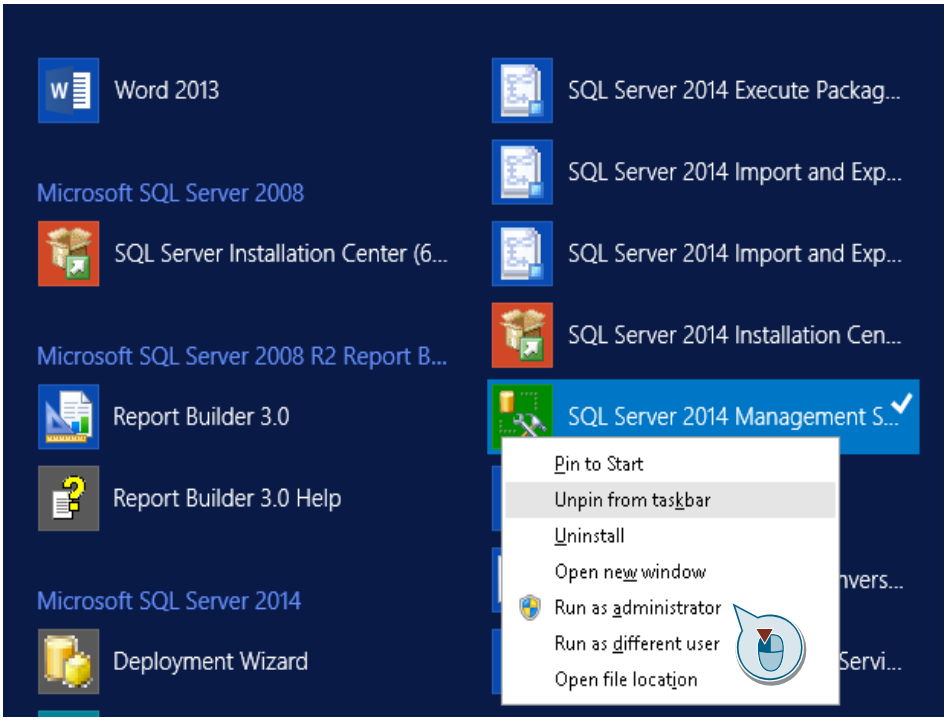


7. Click "Yes" to also stop the other PH services.

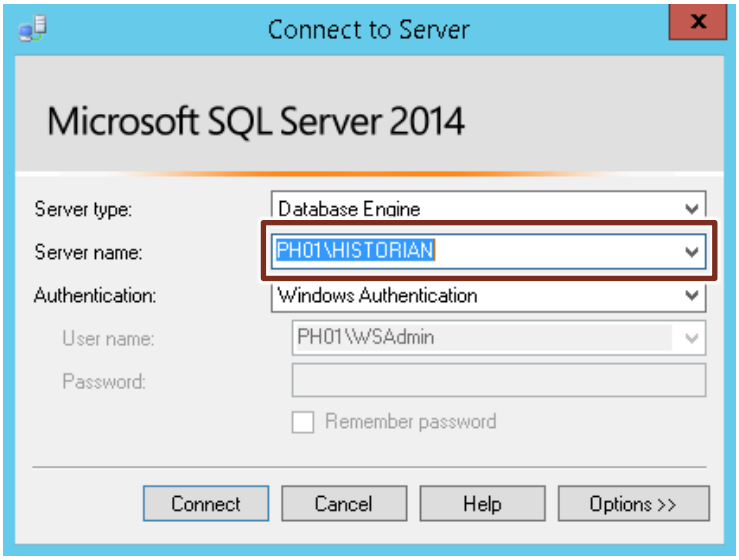
8. Stop the "Process Historian Redundancy Service".



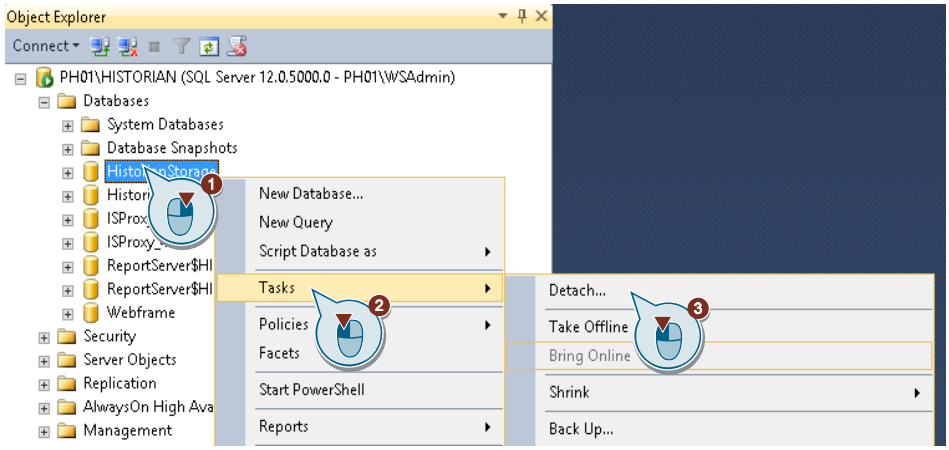
9. Run the SQL Server Management Studio as administrator.



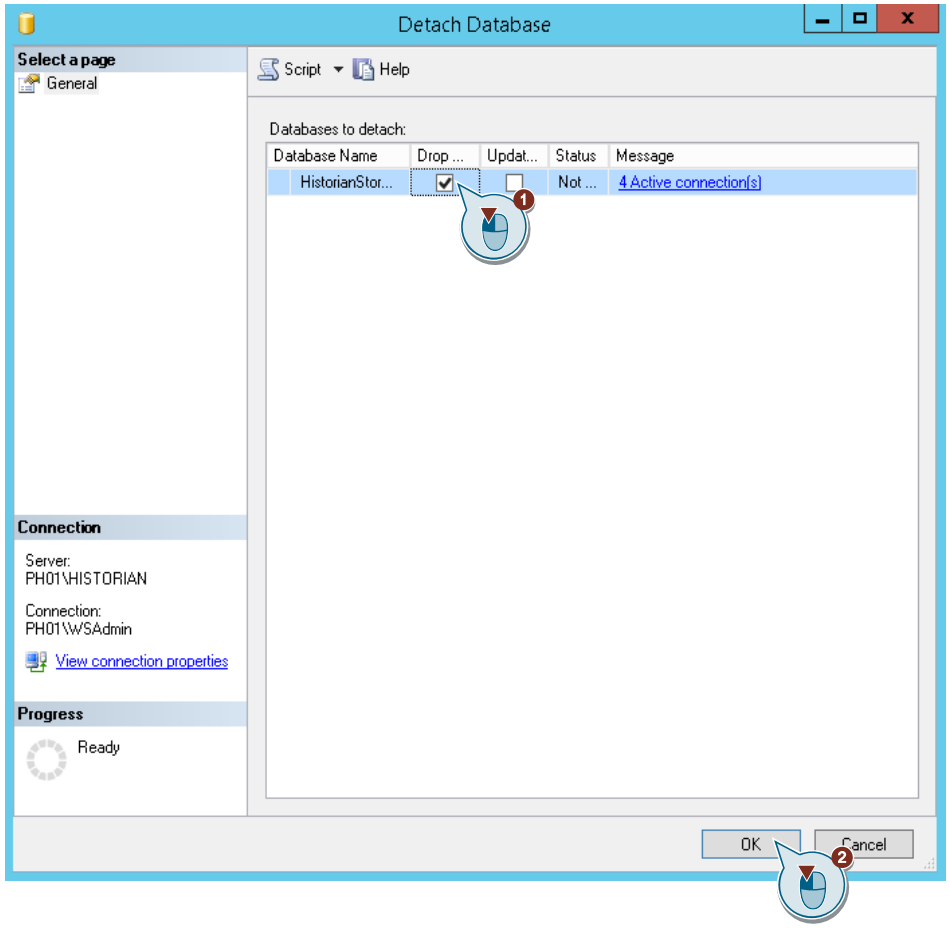
10. Connect to the Process Historian SQL Server. The server name is "<PH computer name>\HISTORIAN".



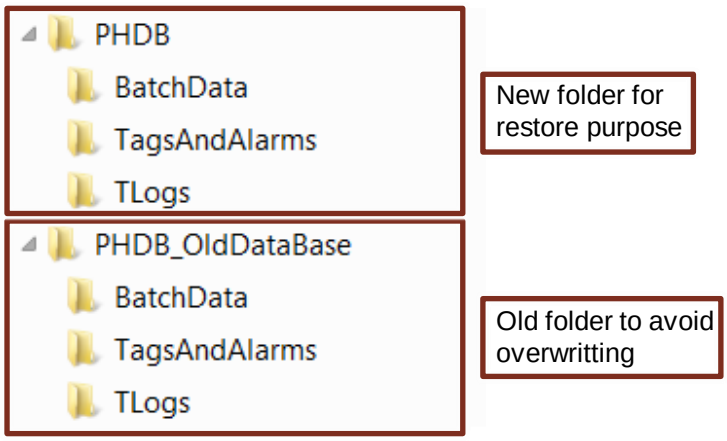
11. Expand the folder "Databases" > execute a right mouse click on the database "Historian Storage"> click on the menu "Tasks" > choose "Detach…". In case there is no "HistorianStorage" Database present because it was deleted before, you can skip this step.



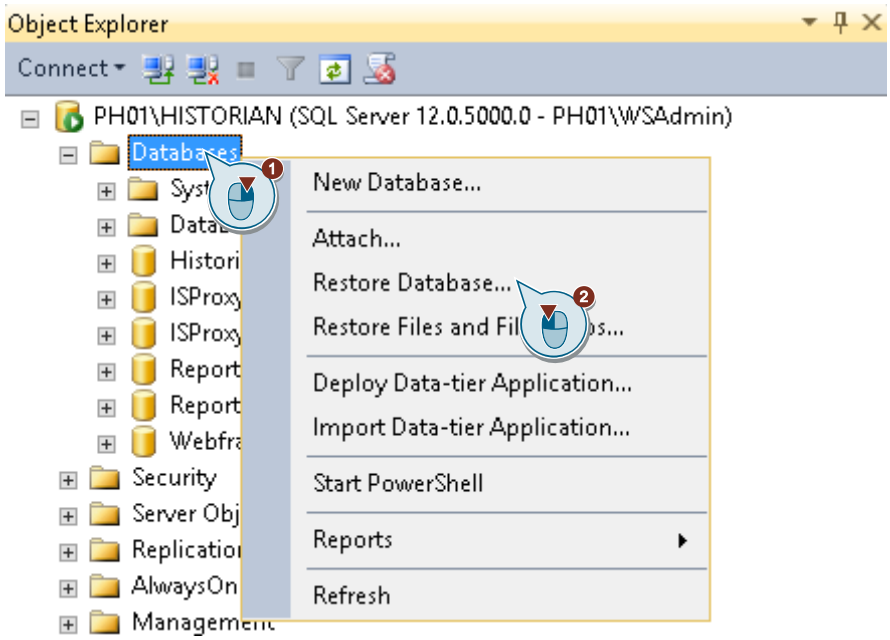
12. Choose the option "Drop Connections" and click on "OK". Wait until the database is detached.



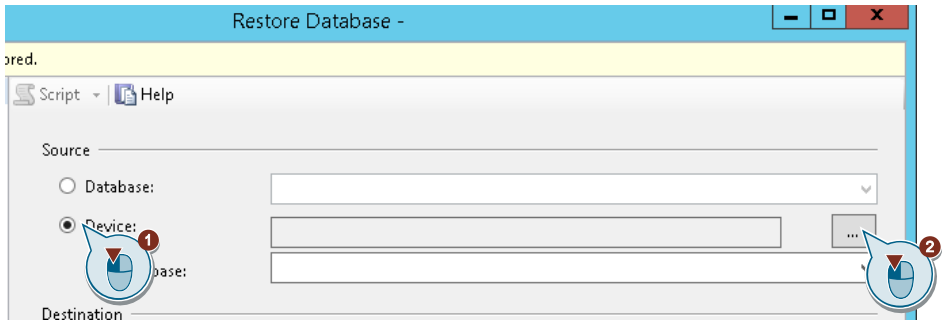
13. Rename the original storage location for the existing Historian Storage database with help of the Microsoft Explorer, to avoid overwriting. Create a new, empty folder structure with the original naming for restore purpose.



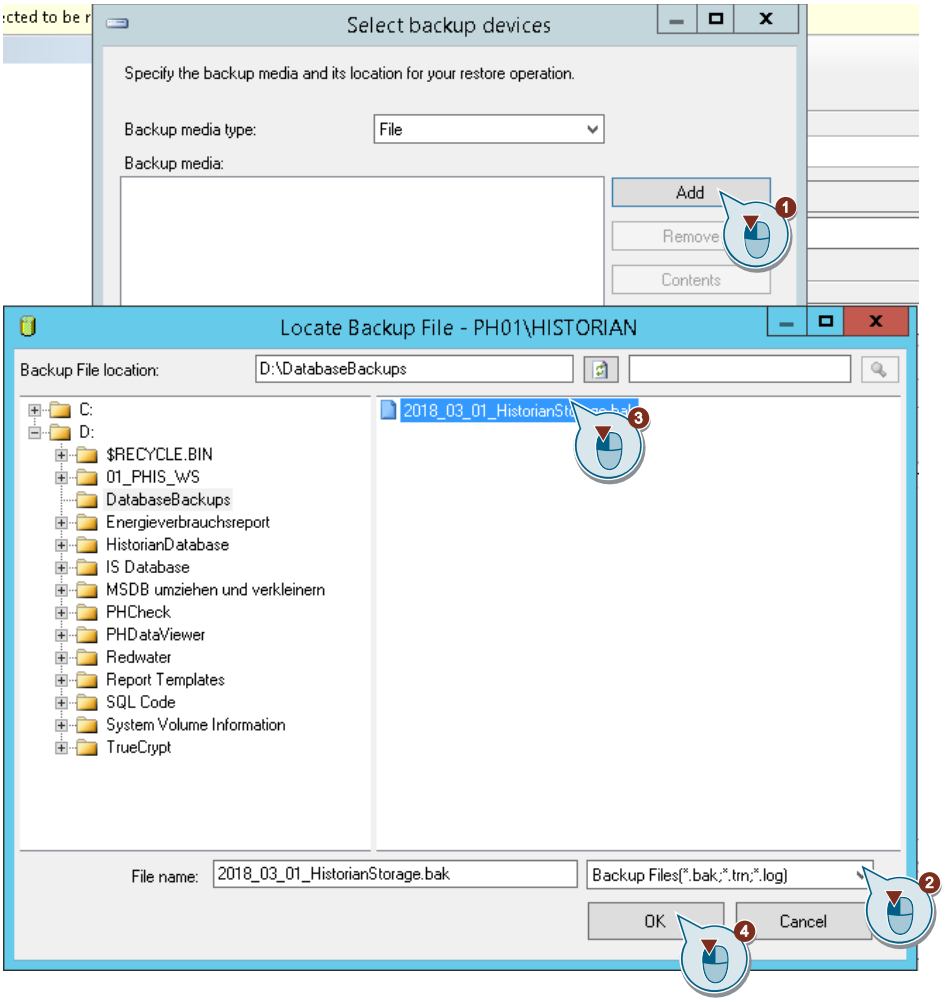
14. Use the SQL Server Management Studio and execute a right mouse click on the "Database" folder. Click on "Restore Database…" function.



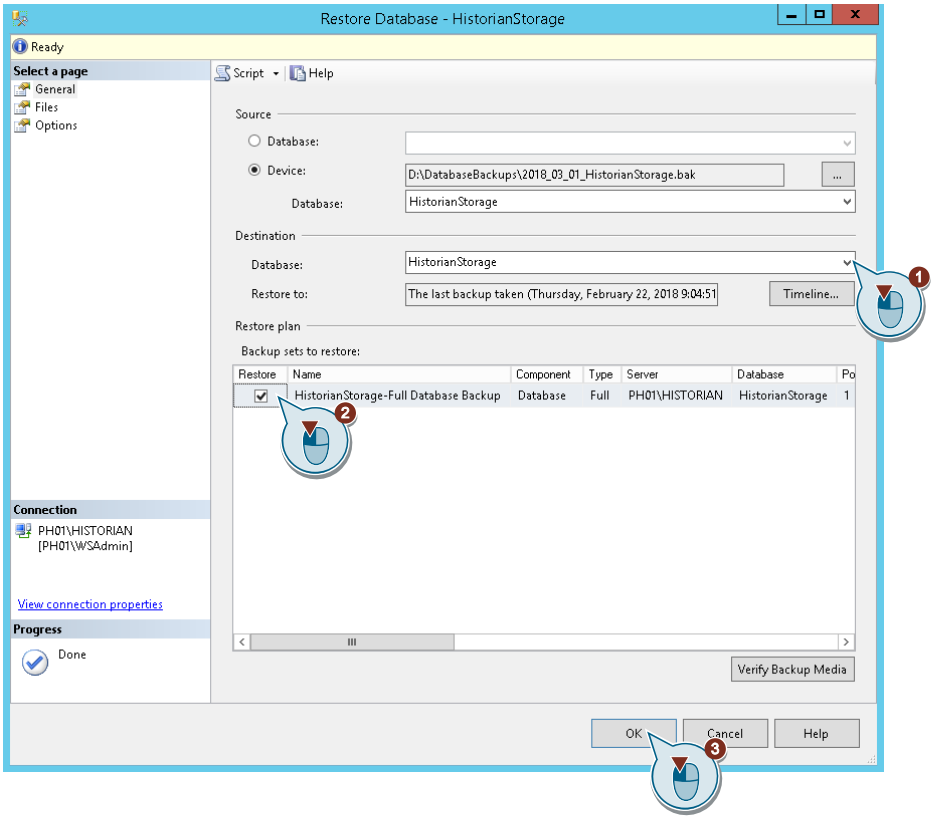
15. Choose the radio button "Device" and click on the "…" button to choose a backup file.



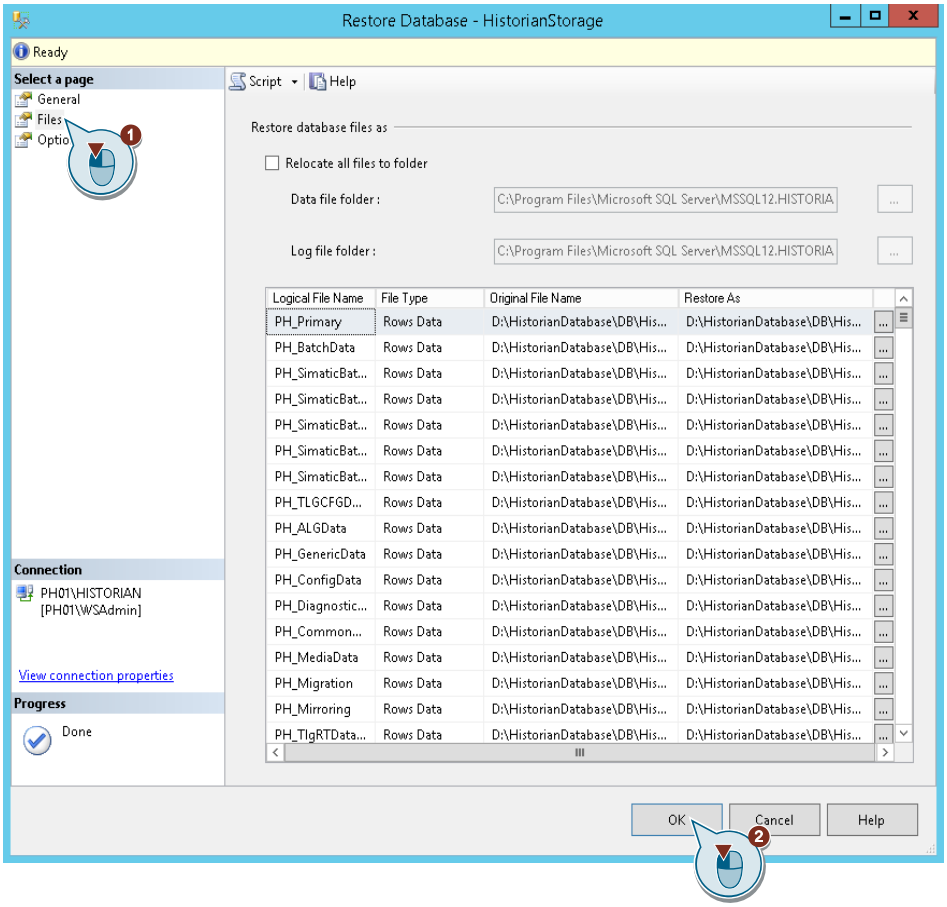
16. Click on the "Add" button and select the database backup file. If there is no backup file displayed change file type to "All Files(*)".



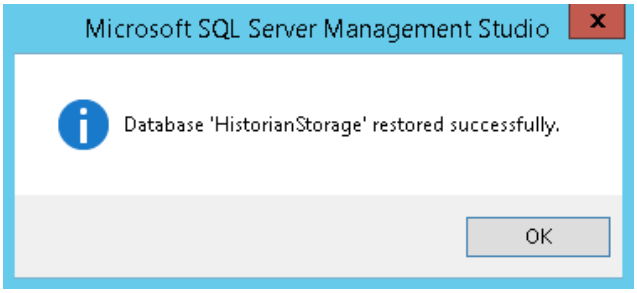
17. Choose in the drop down menu Database = "HistorianStorage" and select the backup set to restore via checkbox "Restore".



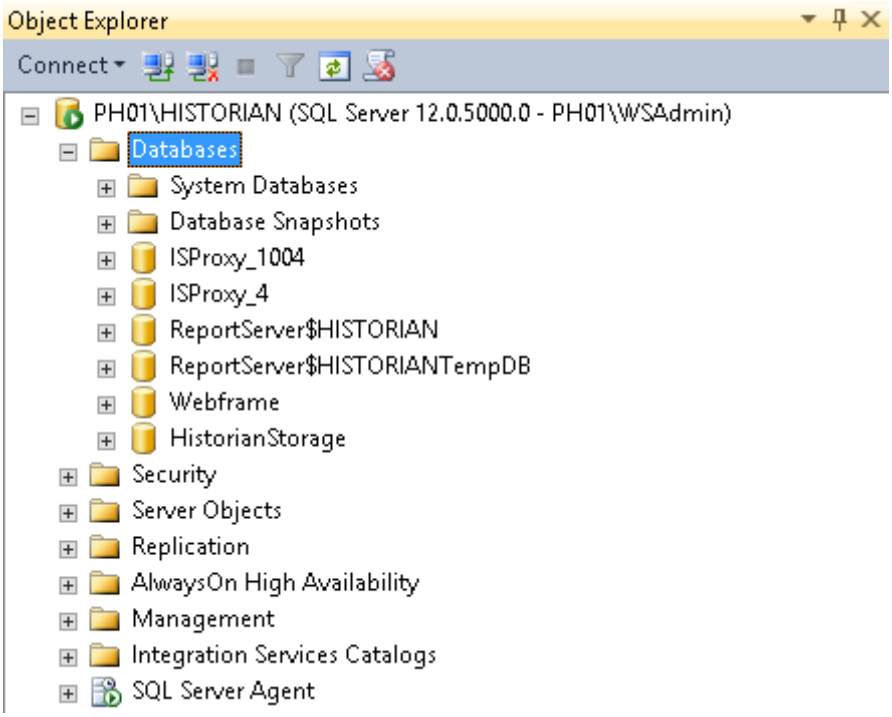
18. Choose the tab "Files". Here it is shown where the original database files will be restored to. In case the original folders are not present, the according files will be restored to the installation path of the SQL Server on drive C per default. Check if all database files will be restored to the same folder as the where before. Click "OK".



19. The restore function is being executed. Wait until the restore process has finished. Click on the "OK" button.



Result: The Historian Storage database has been successfully restored.



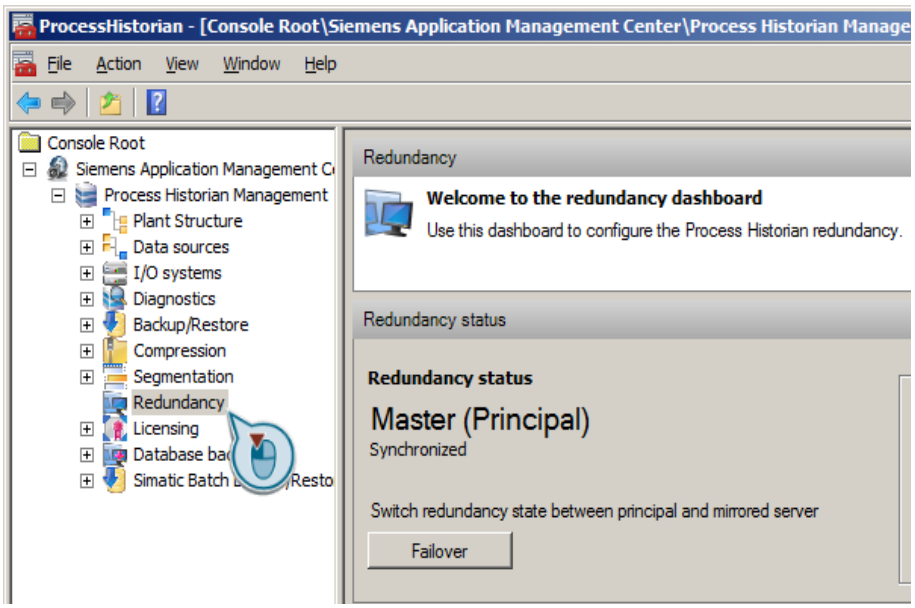
20. Reboot the PH System. The PH will automatically change into state "Active". If necessary, PH segment backups can now be set online again.

4 Backing up and restoring a Process Historian database in redundant operation

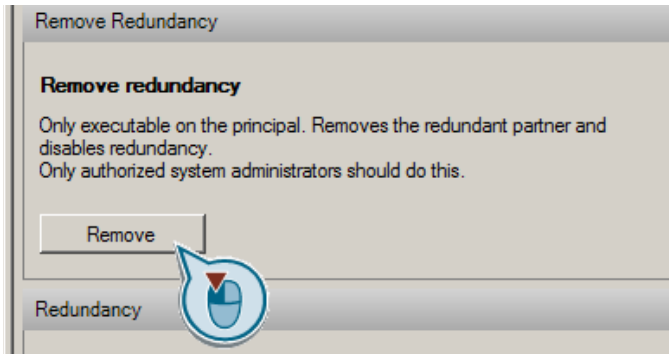
4.1 Disconnecting the redundancy

The following instruction describes step by step how to disconnect the redundancy of the Process Historian.

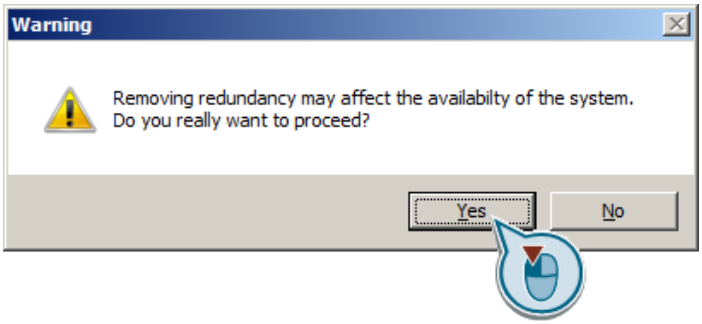
1. Open the Process Historian Management Console.
2. Select the "Redundancy" dashboard.



3. Click the "Remove" button.



4. Confirm the warning message by clicking the "Yes" button.



4.2 Creating a Full PH Database Backup

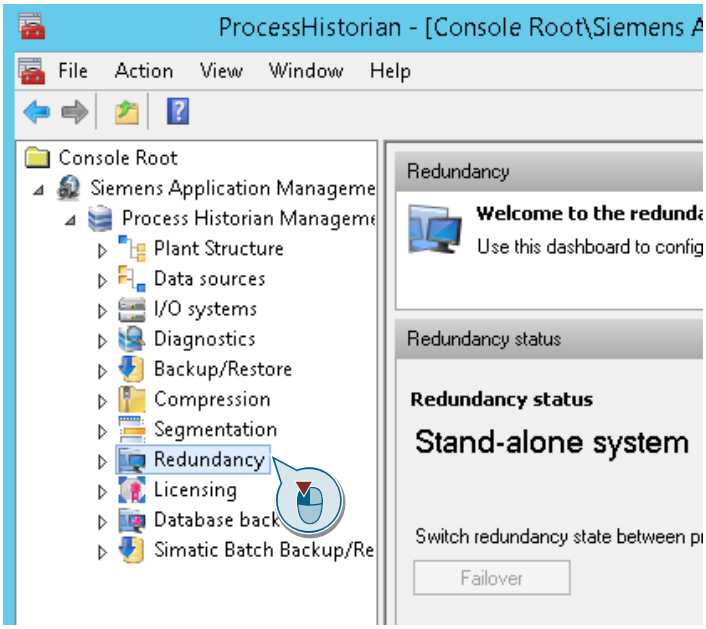
The backup is created in the same way as on a non-redundant Process Historian.

Follow the instructions in Section 3.1 of this document.

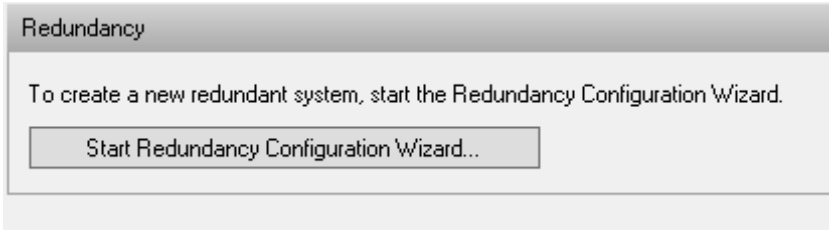
4.3 Re-establishing redundancy

After creating the backup, redundancy can be re-established. The following instruction describes step by step how to re-establishing the redundancy of the Process Historian.

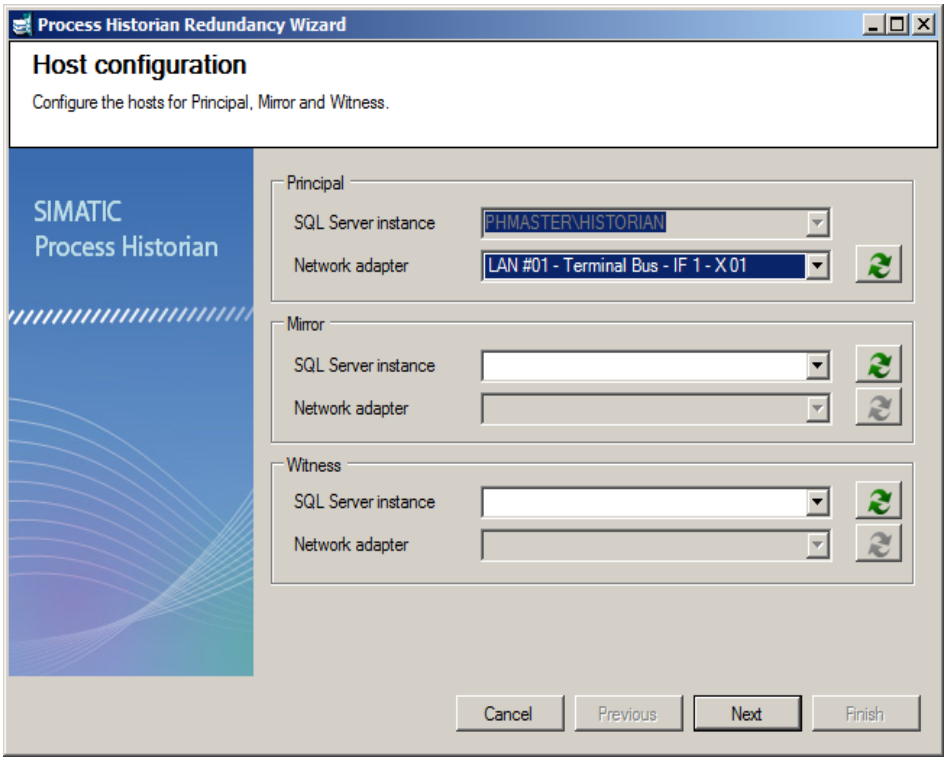
1. Open the Process Historian Management Console.
2. Switch to the "Redundancy" dashboard.



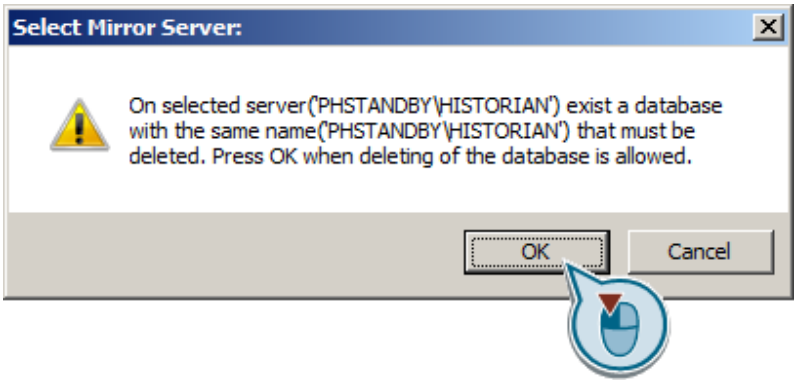
3. Click the "Start Redundancy Configuration Wizard" button.



Result: The Process Historian Redundancy Wizard opens

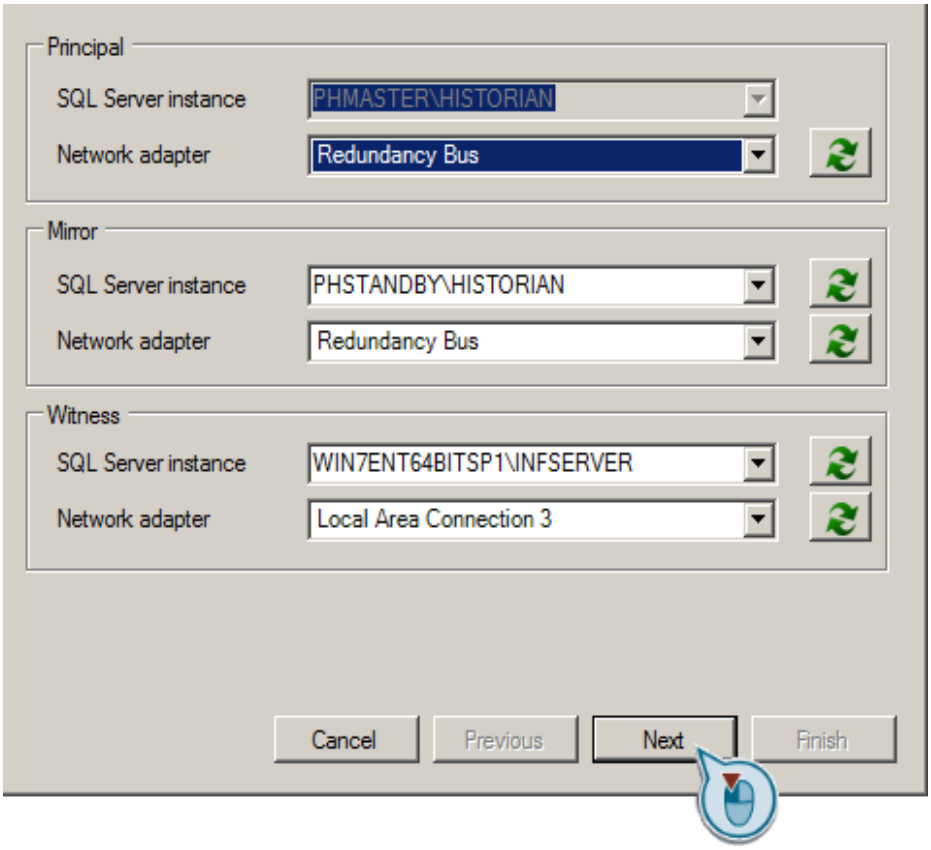


4. Choose the right network adapter for the redundancy bus (principal and mirror).
5. Select the SQL Server instance for the mirror.
6. Confirm the warning message that says that the current database on the mirror will be deleted by clicking the "Yes" button.



7. Select the SQL Server instance and network adapter (Terminal bus) for the Witness.

8. Click the "Next" button.



9. After the Process Historian Redundancy Wizard has ended the process, the mirror is again in state "Suspended".

4.4 Restoring a database in a redundant Process Historian

The following table describes how to restore a Database in redundant Process Historian.

1. Remove the redundancy as described in Section 4.1.
2. Restore the database as described in Section 3.4.
3. Re-establish the redundancy as described in Section 4.3.

5 Appendix

5.1 Service and support

Industry Online Support

Do you have any questions or need assistance?

Siemens Industry Online Support offers round the clock access to our entire service and support know-how and portfolio.

The Industry Online Support is the central address for information about our products, solutions and services.

Product information, manuals, downloads, FAQs, application examples and videos – all information is accessible with just a few mouse clicks:
https://support.industry.siemens.com

Technical Support

The Technical Support of Siemens Industry provides you fast and competent support regarding all technical queries with numerous tailor-made offers – ranging from basic support to individual support contracts. Please send queries to Technical Support via Web form:
www.siemens.com/industry/supportrequest

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For more information on our offered trainings and courses, as well as their locations and dates, refer to our web page:
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Service offer

Our range of services includes the following:

- Plant data services
- Spare parts services
- Repair services
- On-site and maintenance services
- Retrofitting and modernization services
- Service programs and contracts

You can find detailed information on our range of services in the service catalog web page:
https://support.industry.siemens.com/cs/sc

Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" app. The app is available for Apple iOS, Android and Windows Phone:
https://support.industry.siemens.com/cs/ww/en/sc/2067

5.2 Links and literature

No.	Topic
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Download page of this entry https://support.industry.siemens.com/cs/ww/en/view/66579062
\3\	Creating Report Templates for the Information Server on the Process Historian Database in the PCS 7 Environment https://support.industry.siemens.com/cs/ww/en/view/64906050

5.3 Change documentation

Version	Date	Modifications
V1.0	01/2014	First version
V2.0	08/2016	Update to PH 2013/2014
V2.1	11/2016	Update pictures to new design and SQL Server 2014
V2.2	11/2016	Add instruction for backing up and restoring a PH Database in redundant operation
V2.3	04/2018	Update pictures to new design and Windows Server 2016