

APPLIES TO:

SAP HANA Replication(Disaster Recovery).

SUMMARY:

This article explains how to SAP HANA Replication(Disaster Recovery).

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COMPANY:

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CREATED ON:

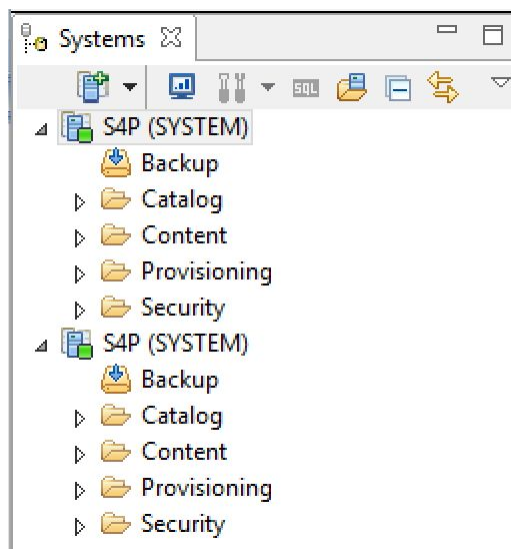
19th October 2016.



Prerequisites:

The primary and secondary systems are installed and configured.

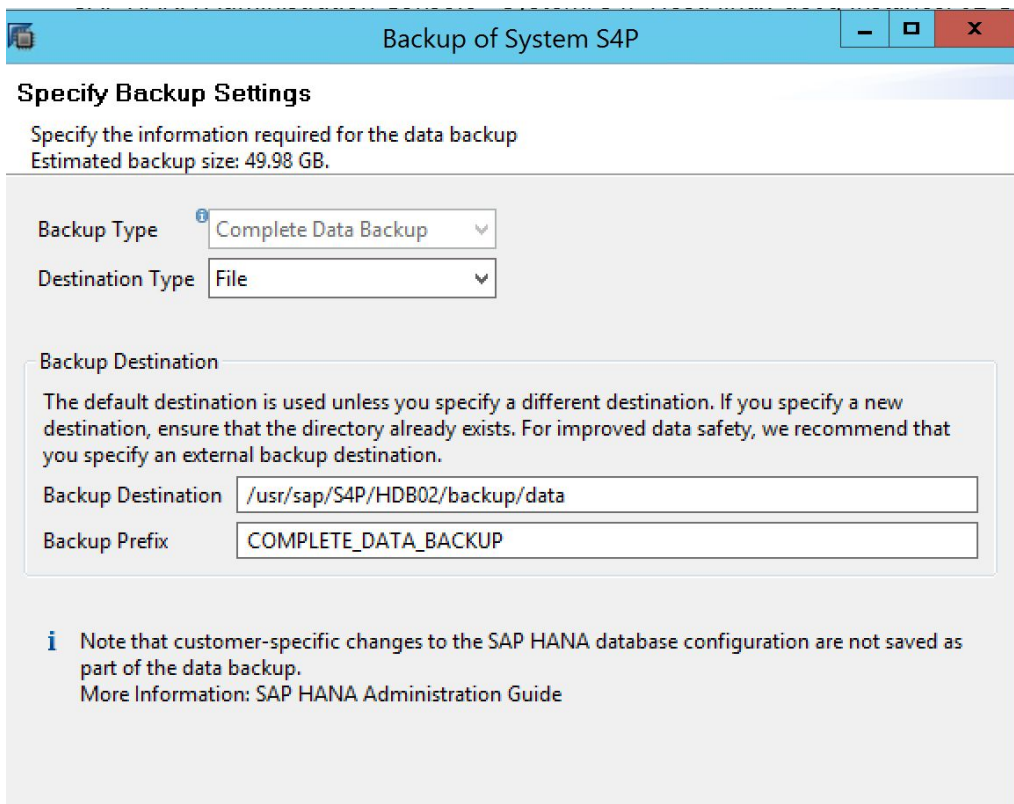
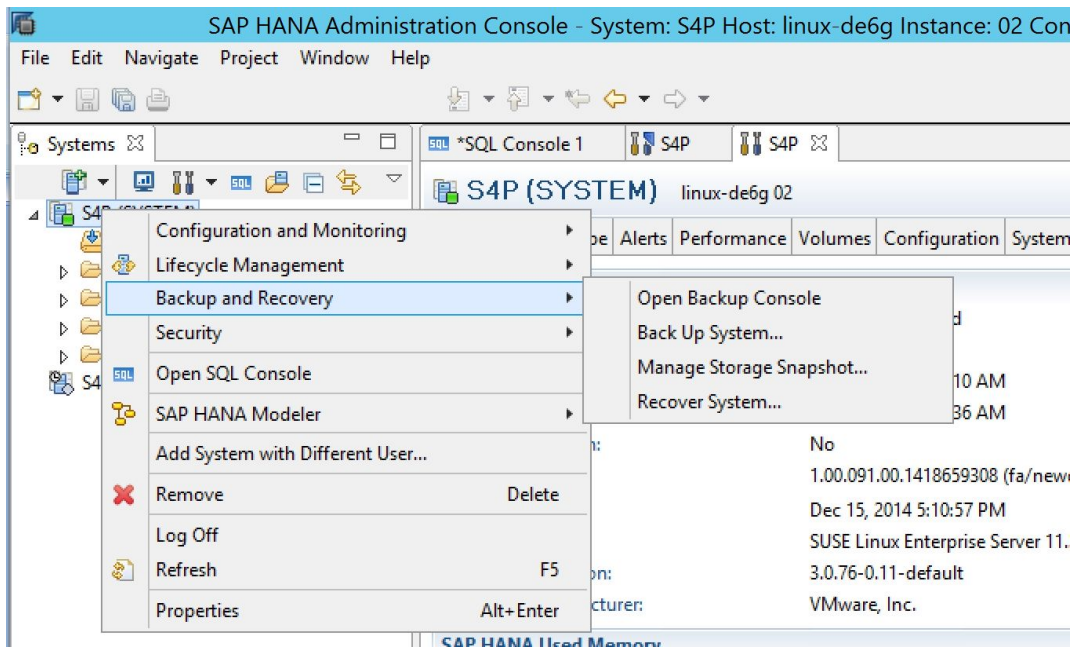
- The HANA software version running on the secondary system has to be equal or newer to the version on the primary.
- The secondary system must have the same SAP system ID, <SID> and instance number as the primary system. The primary replicates all relevant license information to the secondary. An additional SAP HANA license is not required.
- Any changes made to the ini file configuration parameters on one system should be manually duplicated on the other system.
- The required ports must be available. The same <instance number> is used for primary and secondary systems. The <instance number>+1 must be free on both systems, because this port range is required for system replication communications.
- An initial backup must be performed on the primary before system replication can be activated.

**Setup:**

System replication can be configured with HANA studio or with the command line on the console.

The first step is to enable system replication on the two identical systems. Using HANA Studio

Create a backup of the primary system by right-clicking on the primary system (later named as siteA), navigating to Backup and Recovery, and selecting Back Up system.



Review Backup Settings

Review the backup settings and choose 'Finish' to start the backup. You can modify the backup settings by choosing 'Back'.

System Information

System:	S4P
Host:	linux-de6g
Version:	1.00.091.00.1418659308

Backup Definition

Backup Type:	COMPLETE DATA BACKUP
Destination Type:	FILE
Backup Destination:	/usr/sap/S4P/HDB02/backup/data
Backup Prefix:	COMPLETE_DATA_BACKUP

Next, system replication needs to be enabled on the primary system. Right-click on the primary system, navigate to Configuration and Monitoring, and then Configure System Replication. Choose Enable System Replication.

Configure System Replication for System S4P

Select the configuration action you want to perform.

Actions:

- ☒ Enable system replication
Enable system replication on the primary system or tier 2 secondary system (source system).
- ☐ Register secondary system
Action not possible. The system must be stopped before it can be registered.
- ☐ Unregister Secondary System
Action not possible. The system is not registered as a secondary system of a source system.
- ☐ Perform takeover
Action not possible. System replication is not configured.

Configure System Replication for System S4P


Enable system replication on the system.

Primary System Logical Name:

Primary System Information (S4P):

Host: linux-de6g

Instance Number: 02

 Last Complete Data Backup: 2016-09-25 12:08:57

Issue the Stop System command on the Secondary System by right-clicking on the Secondary System, navigating to Configuration and Monitoring, and then to Stop System.

Stop System S4P

Stop all instances of system S4P based on the specified parameters

Shutdown Type

☒ Soft

Gracefully stops the system once all running transactions are completed or when the following date and time are reached

Date:

Time:

☐ Hard

Stops the system immediately. Open transactions are aborted and rolled back.

If the system does not shut down within the following stop wait timeout, shutdown is forced.

Stop Wait Timeout: Seconds

Now register the secondary by right-clicking on Secondary System, navigating to Configuration and Monitoring, and then to Configure System Replication. Select Register Secondary System

Configure System Replication for System S4P

Select the configuration action you want to perform.

Actions:

- ☐ Enable system replication
Action not possible. The system must be running before system replication can be enabled.
- ☒ Register secondary system
Register the system as the secondary system of the primary system or tier 2 secondary system (source system).
- ☐ Unregister Secondary System
Action not possible. The system is not registered as a secondary system of a source system.
- ☐ Perform takeover
Action not possible. System replication is not configured.

Configure System Replication

Configure System Replication for System S4P

Register the system as the secondary system of the primary system or tier 2 secondary system (source system).

Secondary System Logical Name:

Replication Mode:

Source System Information (S4P):

Host:

Instance Number:

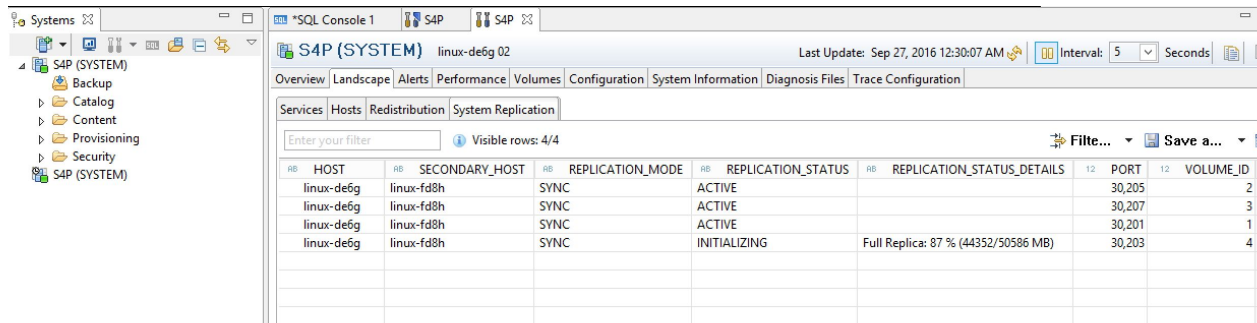
☒ Initiate full data shipping

☒ Start the secondary system after registration

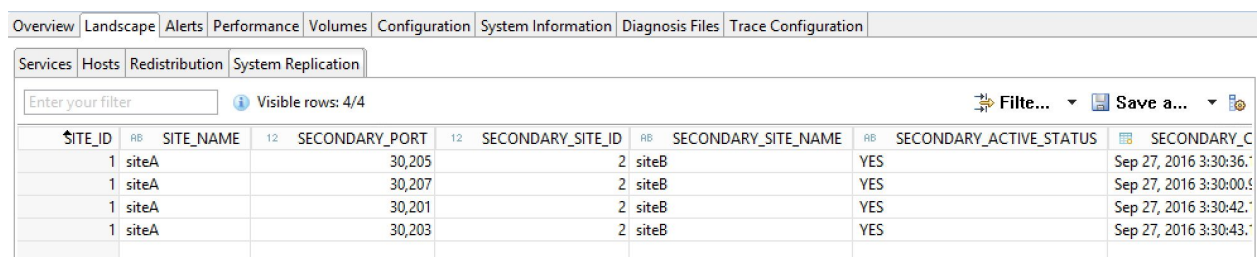
The replication process will automatically start when the secondary system starts.

Monitoring of Replication status:

double click on <SID> on HANA STUDIO goto ->landscape->system replication.



RB	HOST	RB	SECONDARY_HOST	RB	REPLICATION_MODE	RB	REPLICATION_STATUS	RB	REPLICATION_STATUS_DETAILS	12	PORT	12	VOLUME_ID
	linux-de6g		linux-fd8h		SYNC		ACTIVE				30,205		2
	linux-de6g		linux-fd8h		SYNC		ACTIVE				30,207		3
	linux-de6g		linux-fd8h		SYNC		ACTIVE				30,201		1
	linux-de6g		linux-fd8h		SYNC		INITIALIZING		Full Replica: 87 % (44352/50586 MB)		30,203		4



SITE_ID	RB	SITE_NAME	12	SECONDARY_PORT	12	SECONDARY_SITE_ID	RB	SECONDARY_SITE_NAME	RB	SECONDARY_ACTIVE_STATUS	12	SECONDARY_C
1		siteA		30,205		2		siteB		YES		Sep 27, 2016 3:30:36.
1		siteA		30,207		2		siteB		YES		Sep 27, 2016 3:30:00.
1		siteA		30,201		2		siteB		YES		Sep 27, 2016 3:30:42.
1		siteA		30,203		2		siteB		YES		Sep 27, 2016 3:30:43.

Failover :Manual

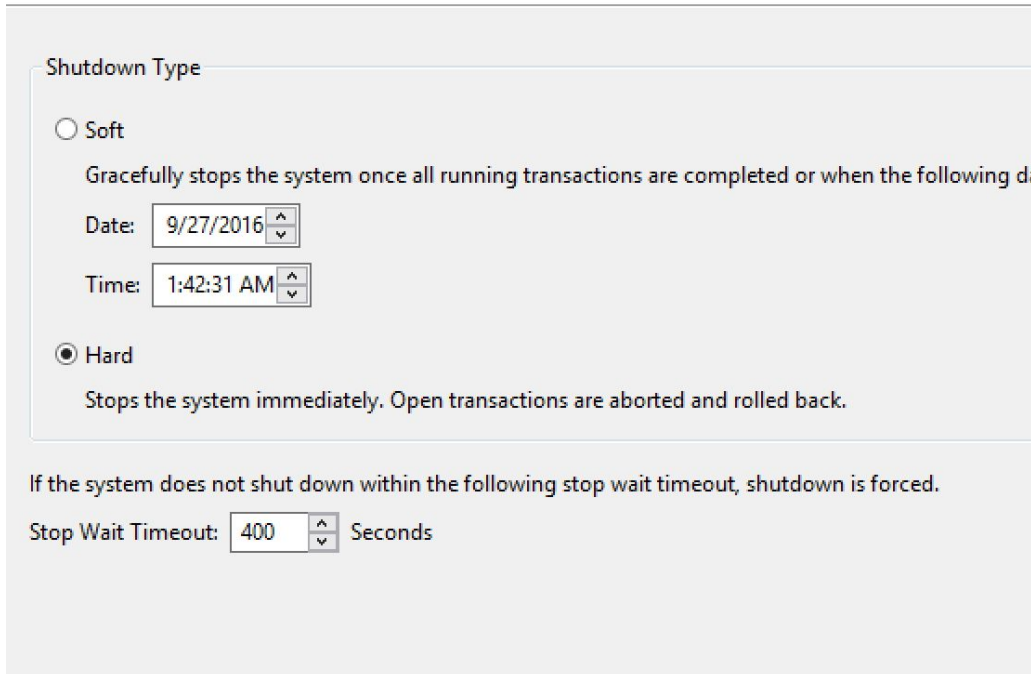
To perform an SAP HANA takeover manually, the secondary needs to be told to perform the takeover and the network environment needs to be configured to support that change.

1. Ensure primary system is stopped.
2. Unbind virtual IP address (IP redirection) or change DNS entry.
3. Right-click on siteB (secondary system), navigate to Configuration and Monitoring, and Configure System Replication.
4. Select Perform Takeover.
5. Bind virtual IP addresses.
6. Ensure backups are running on siteB (new primary), if desired.

Issue the Stop System command on the Primary System by right-clicking on the Primary System, navigating to Configuration and Monitoring, and then to Stop System.

Stop System S4P

Stop all instances of system S4P based on the specified parameters



The screenshot shows a configuration window for stopping the system. It has a title bar and a main content area. The content area is divided into two sections. The first section is titled "Shutdown Type" and contains two radio button options: "Soft" and "Hard". The "Soft" option is currently selected. Below the "Soft" option, there is a description: "Gracefully stops the system once all running transactions are completed or when the following date and time are reached." Below this description, there are two input fields: "Date:" with a value of "9/27/2016" and "Time:" with a value of "1:42:31 AM". The "Hard" option is also visible, with a description: "Stops the system immediately. Open transactions are aborted and rolled back." The second section of the window contains a note: "If the system does not shut down within the following stop wait timeout, shutdown is forced." Below this note, there is a "Stop Wait Timeout:" label followed by a spin box containing the value "400" and the unit "Seconds".

Shutdown Type

☐ Soft

Gracefully stops the system once all running transactions are completed or when the following date and time are reached.

Date: 9/27/2016

Time: 1:42:31 AM

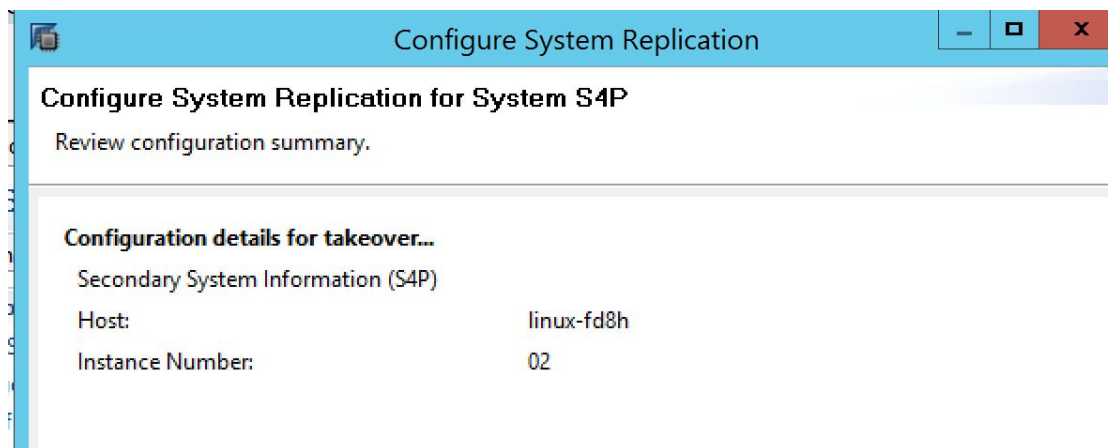
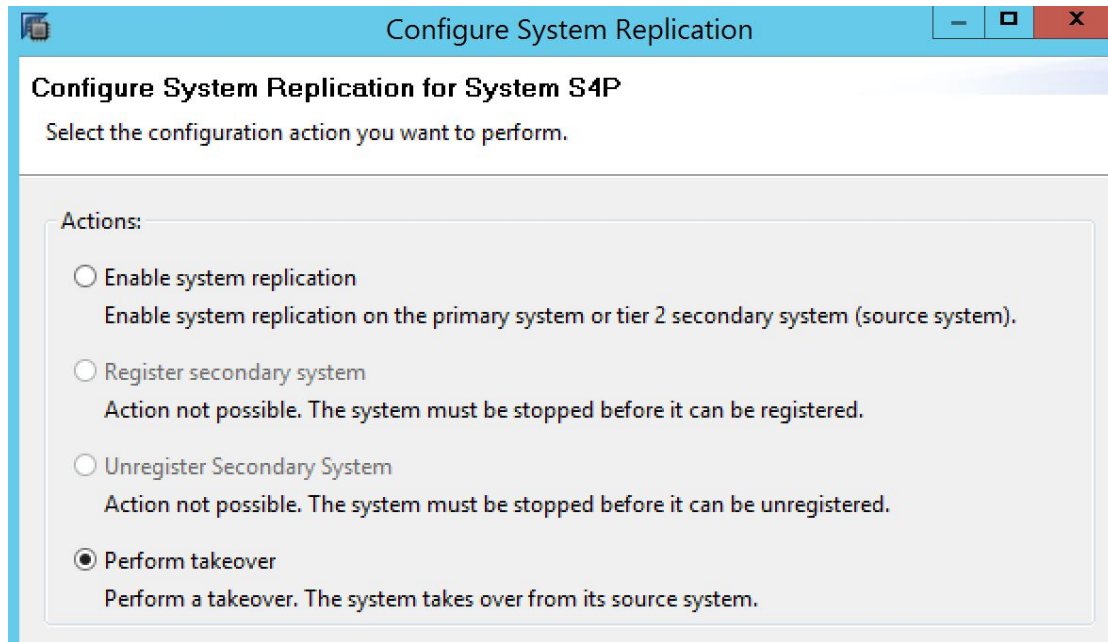
☒ Hard

Stops the system immediately. Open transactions are aborted and rolled back.

If the system does not shut down within the following stop wait timeout, shutdown is forced.

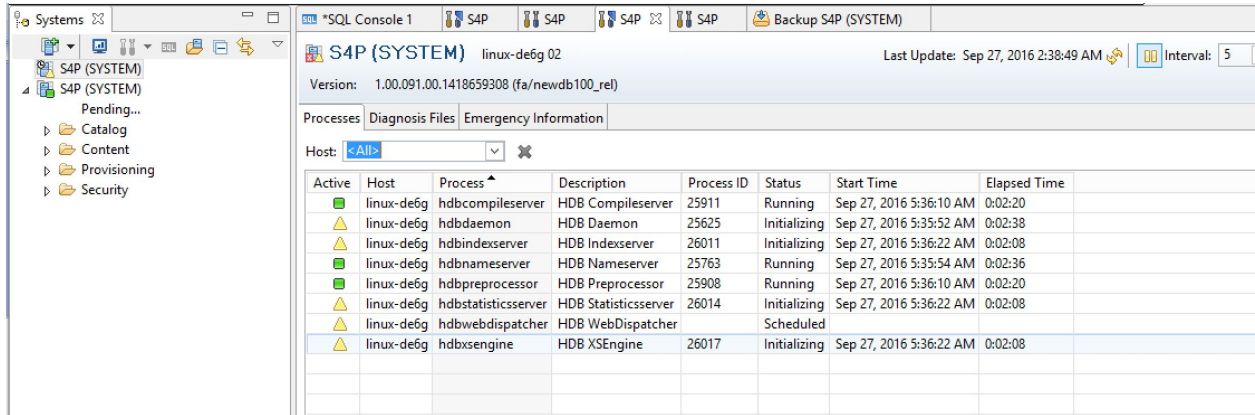
Stop Wait Timeout: 400 Seconds

by right-clicking on the Secondary System, navigating to Configuration and Monitoring, and then select Perform takeover System.



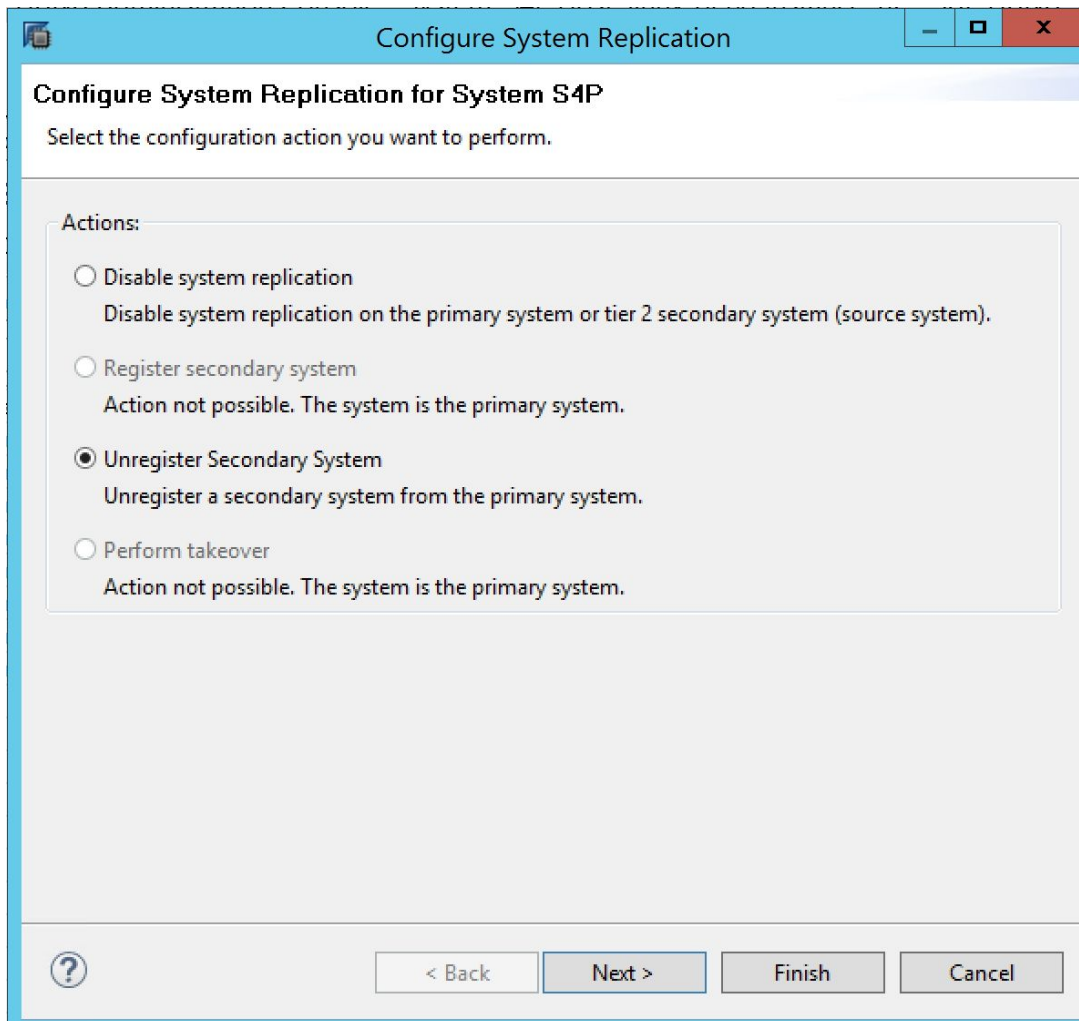
To unregister original secondary node (siteB) and disable system replication on the original primary (siteA):

1. If siteA is not started, Right-click on the system, navigate to Configuration and Monitoring, and then Start System.



Active	Host	Process	Description	Process ID	Status	Start Time	Elapsed Time
	linux-de6g	hdbcompileserv	HDB Compileserv	25911	Running	Sep 27, 2016 5:36:10 AM	0:02:20
	linux-de6g	hdbdaemon	HDB Daemon	25625	Initializing	Sep 27, 2016 5:35:52 AM	0:02:38
	linux-de6g	hdbindexserv	HDB Indexserv	26011	Initializing	Sep 27, 2016 5:36:22 AM	0:02:08
	linux-de6g	hdbnameserv	HDB Nameserv	25763	Running	Sep 27, 2016 5:35:54 AM	0:02:36
	linux-de6g	hdbpreprocessor	HDB Preprocessor	25908	Running	Sep 27, 2016 5:36:10 AM	0:02:20
	linux-de6g	hdbstatisticsserv	HDB Statisticsserv	26014	Initializing	Sep 27, 2016 5:36:22 AM	0:02:08
	linux-de6g	hdbwebdispatcher	HDB WebDispatcher		Scheduled		
	linux-de6g	hdbxsengine	HDB XSEngine	26017	Initializing	Sep 27, 2016 5:36:22 AM	0:02:08

2. Right-click on the original primary (siteA), navigate to Configuration and Monitoring, and then Configure System Replication. Select Unregister Secondary System, select siteB, and follow prompts.



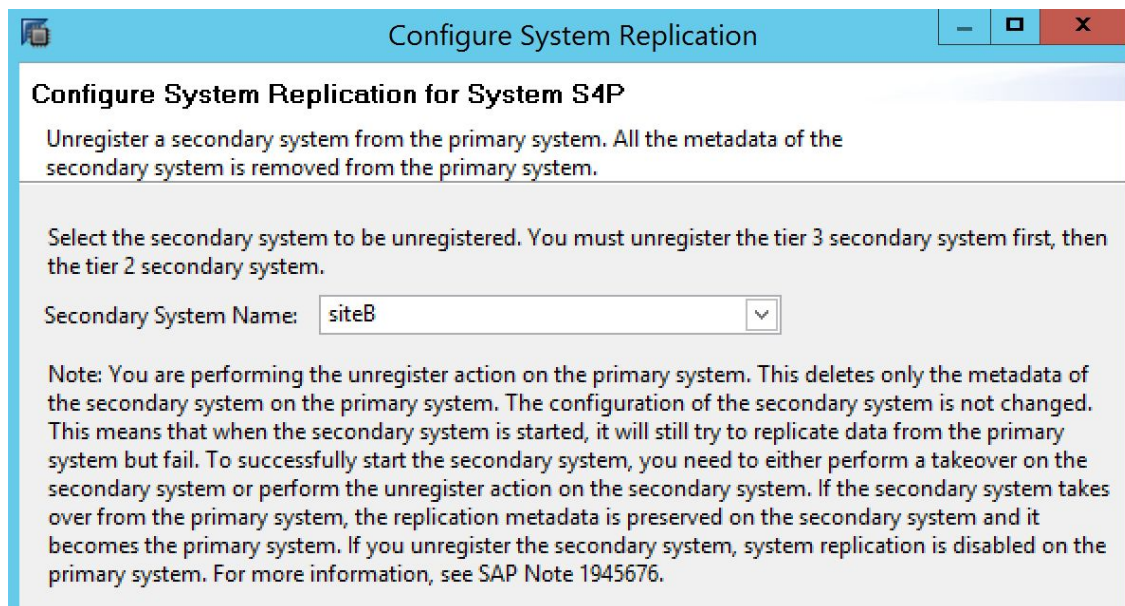
Configure System Replication for System S4P

Select the configuration action you want to perform.

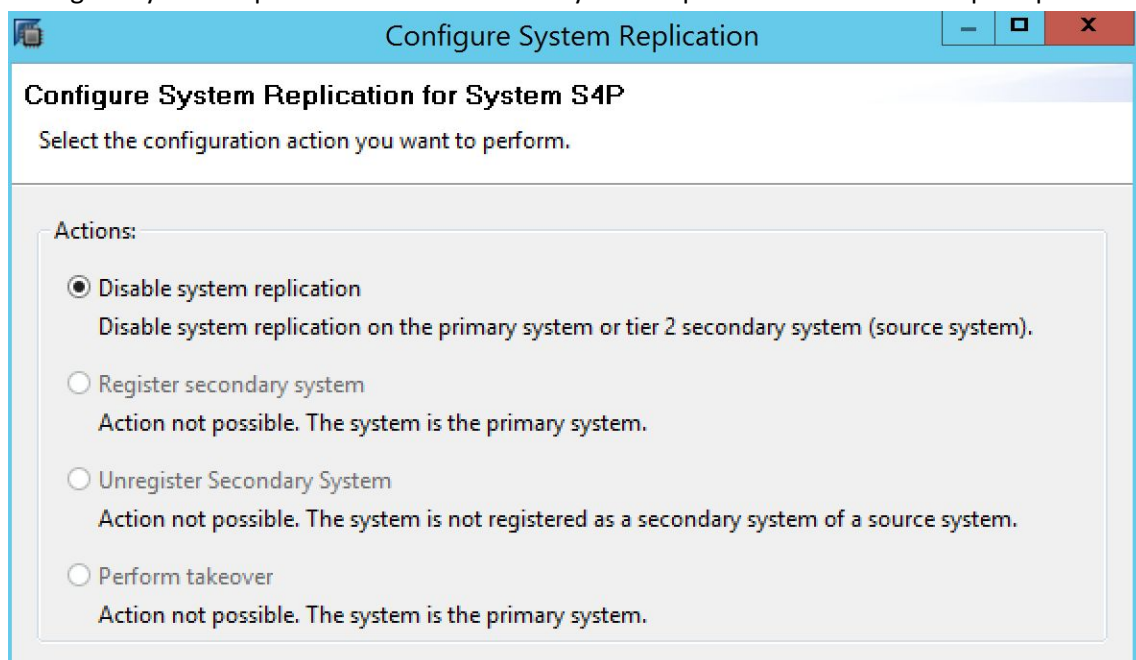
Actions:

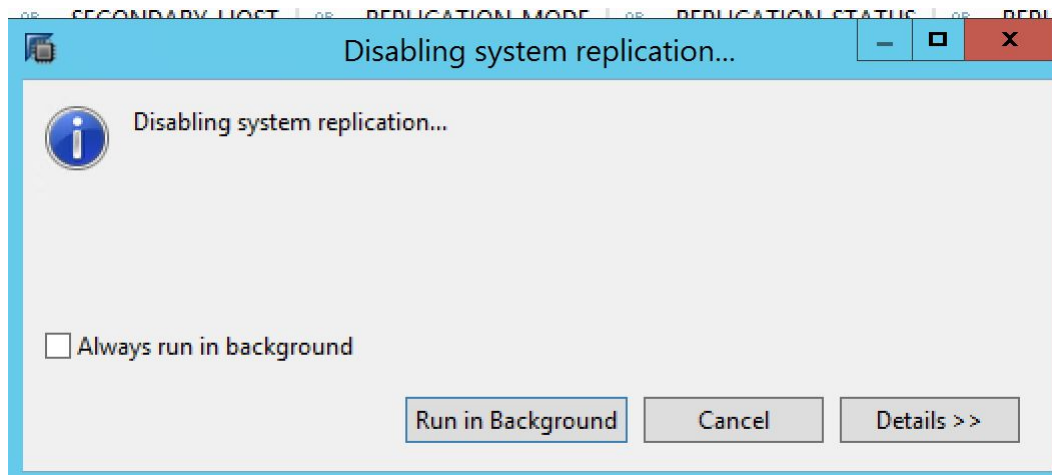
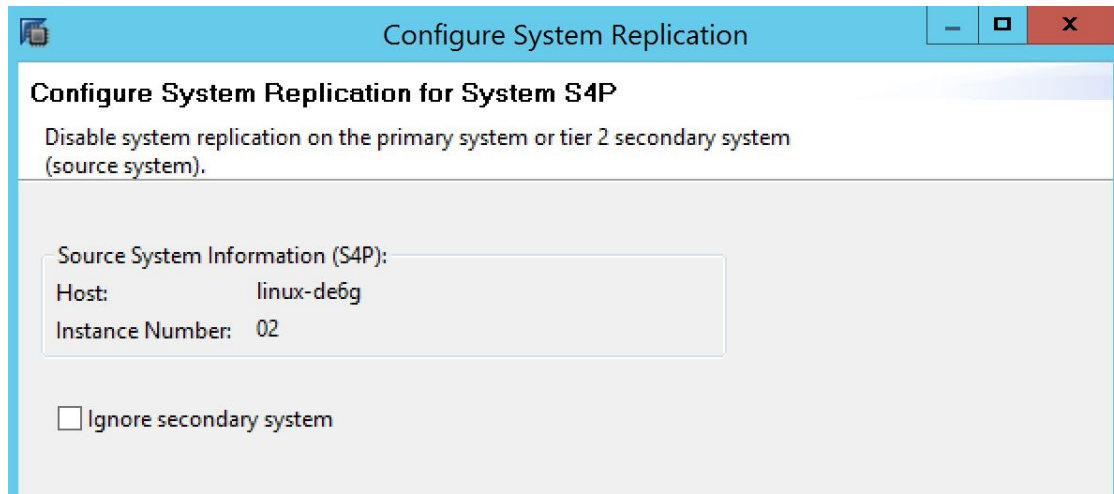
- ☐ Disable system replication
Disable system replication on the primary system or tier 2 secondary system (source system).
- ☐ Register secondary system
Action not possible. The system is the primary system.
- ☒ Unregister Secondary System
Unregister a secondary system from the primary system.
- ☐ Perform takeover
Action not possible. The system is the primary system.

Buttons: ? < Back Next > Finish Cancel



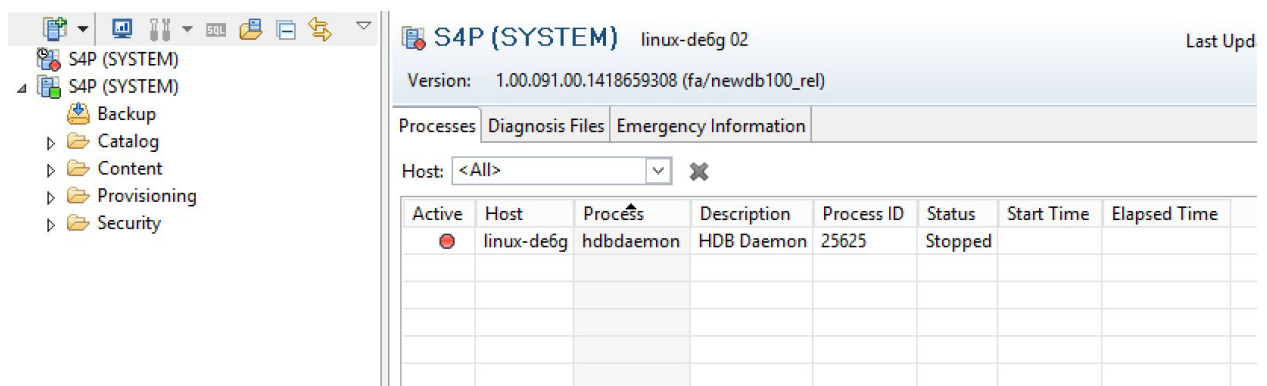
3. Right-click on the original primary (siteA), navigate to Configuration and Monitoring, and then Configure System Replication. Choose Disable System Replication and follow the prompts.



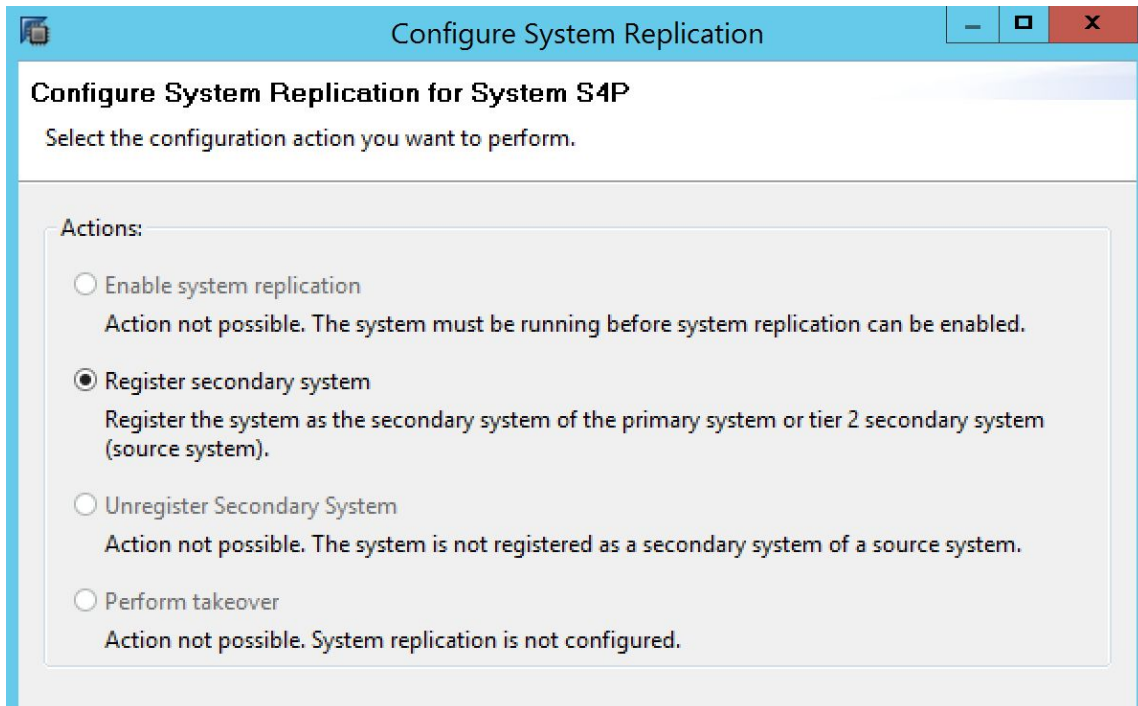


Assign original primary as secondary:

4. Stop siteA, Right-click on it, navigate to Configuration and Monitoring, and then Stop System.



5. Right-click on siteA, navigate to Configuration and Monitoring, and then Configure System Replication. Select Register Secondary System and configure replication as synchronous.



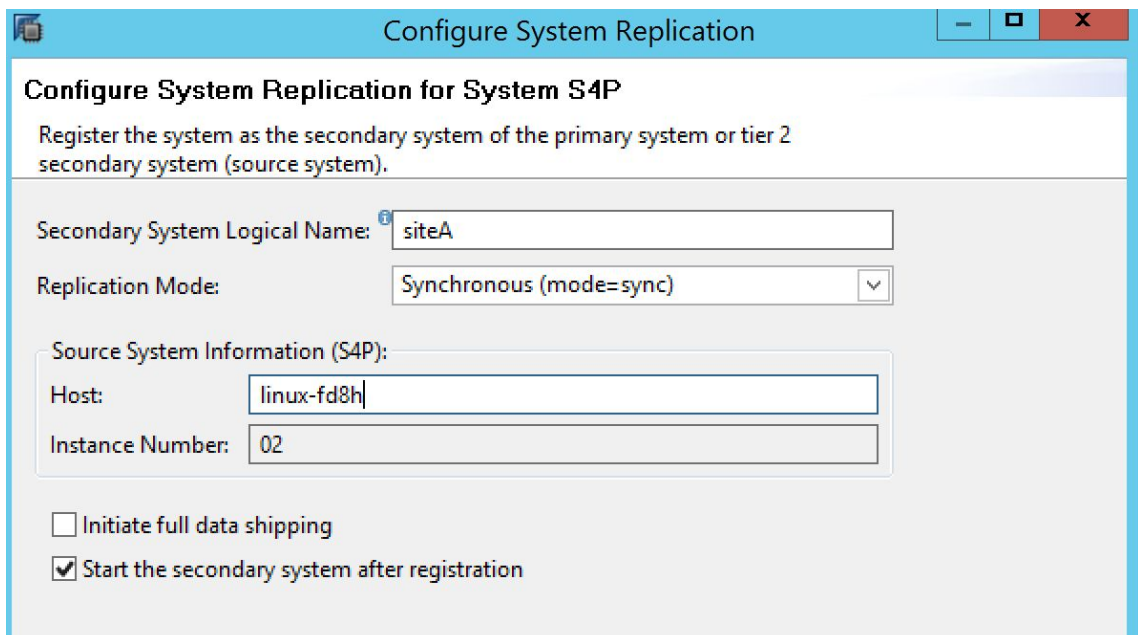
Configure System Replication

Configure System Replication for System S4P

Select the configuration action you want to perform.

Actions:

- ☐ Enable system replication
Action not possible. The system must be running before system replication can be enabled.
- ☒ Register secondary system
Register the system as the secondary system of the primary system or tier 2 secondary system (source system).
- ☐ Unregister Secondary System
Action not possible. The system is not registered as a secondary system of a source system.
- ☐ Perform takeover
Action not possible. System replication is not configured.



Configure System Replication

Configure System Replication for System S4P

Register the system as the secondary system of the primary system or tier 2 secondary system (source system).

Secondary System Logical Name:

Replication Mode:

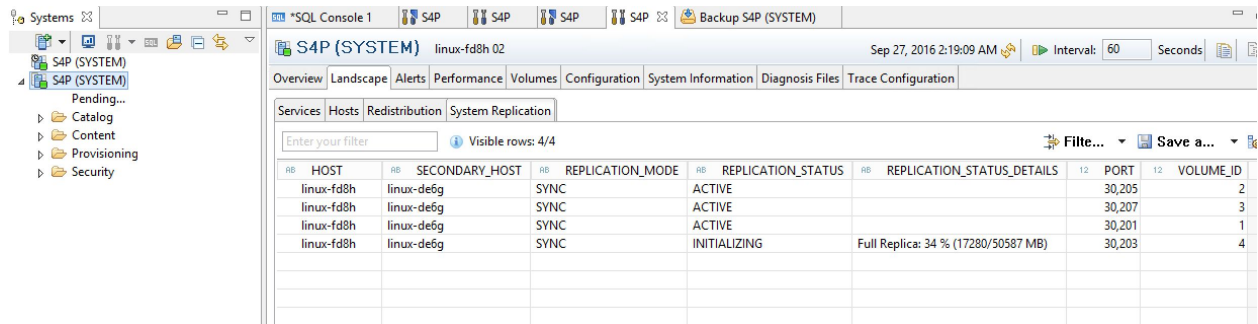
Source System Information (S4P):

Host:

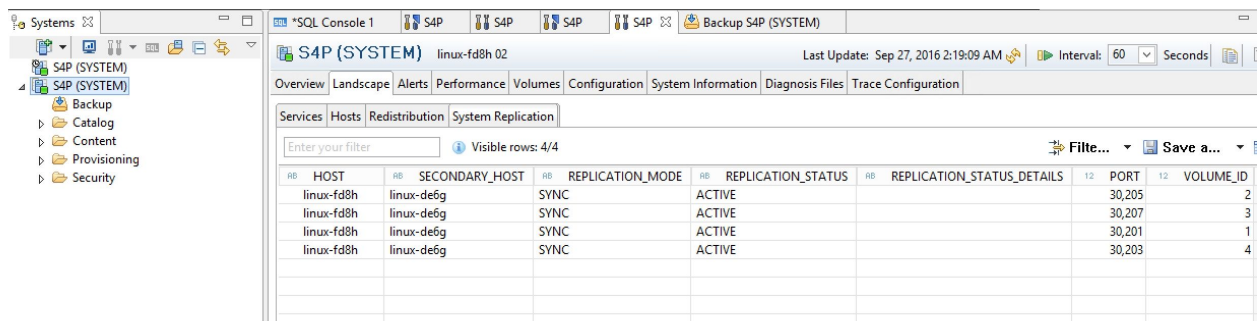
Instance Number:

☐ Initiate full data shipping

☒ Start the secondary system after registration



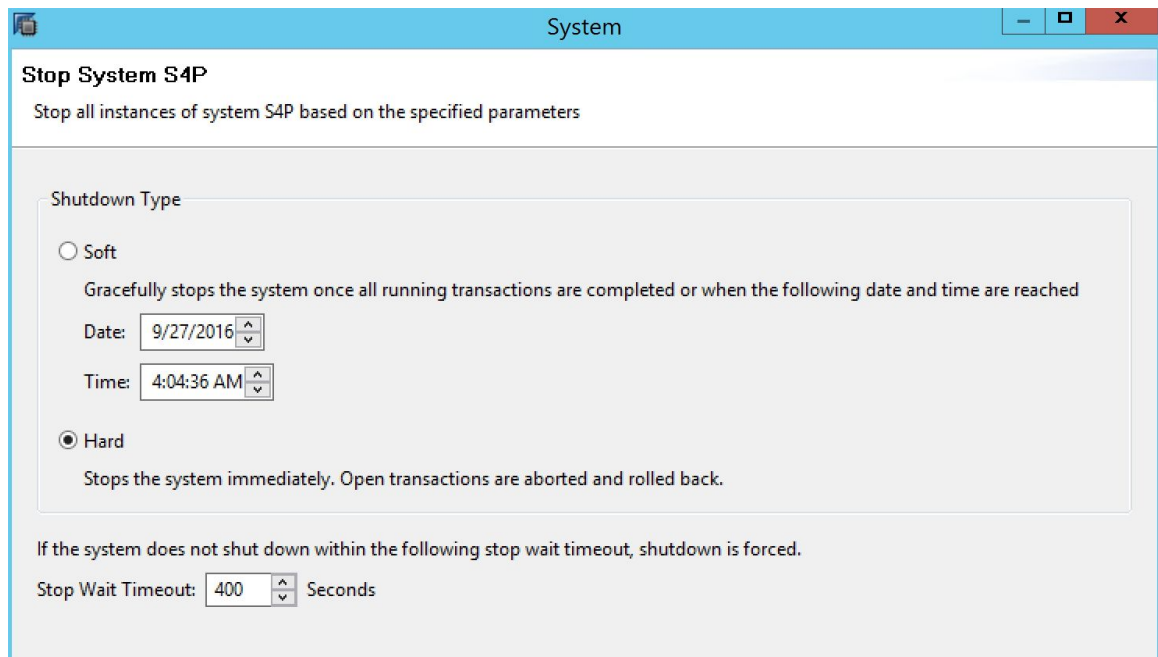
HOST	SECONDARY_HOST	REPLICATION_MODE	REPLICATION_STATUS	REPLICATION_STATUS_DETAILS	PORT	VOLUME_ID
linux-fd8h	linux-de6g	SYNC	ACTIVE		30,205	2
linux-fd8h	linux-de6g	SYNC	ACTIVE		30,207	3
linux-fd8h	linux-de6g	SYNC	ACTIVE		30,201	1
linux-fd8h	linux-de6g	SYNC	INITIALIZING	Full Replica: 34 % (17280/50587 MB)	30,203	4



HOST	SECONDARY_HOST	REPLICATION_MODE	REPLICATION_STATUS	REPLICATION_STATUS_DETAILS	PORT	VOLUME_ID
linux-fd8h	linux-de6g	SYNC	ACTIVE		30,205	2
linux-fd8h	linux-de6g	SYNC	ACTIVE		30,207	3
linux-fd8h	linux-de6g	SYNC	ACTIVE		30,201	1
linux-fd8h	linux-de6g	SYNC	ACTIVE		30,203	4

Now placing the systems as they where before fail over

Down the secondary system (original secondary)



Stop System S4P

Stop all instances of system S4P based on the specified parameters

Shutdown Type

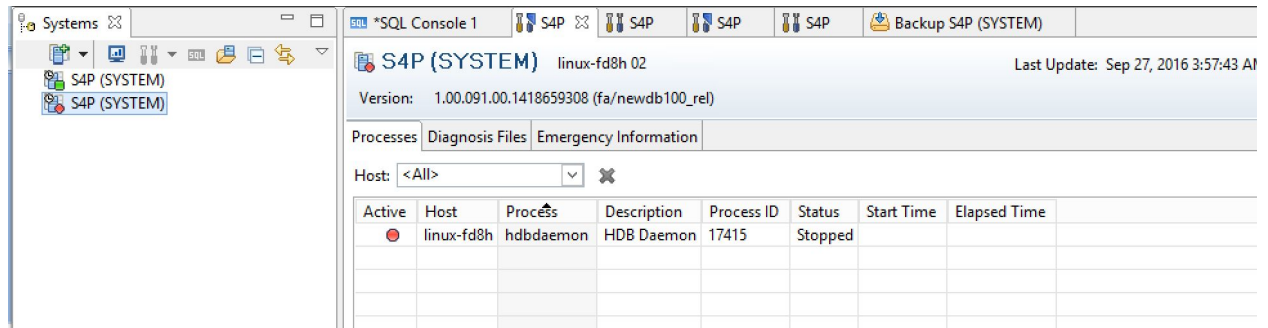
☐ Soft
Gracefully stops the system once all running transactions are completed or when the following date and time are reached

Date: 9/27/2016
Time: 4:04:36 AM

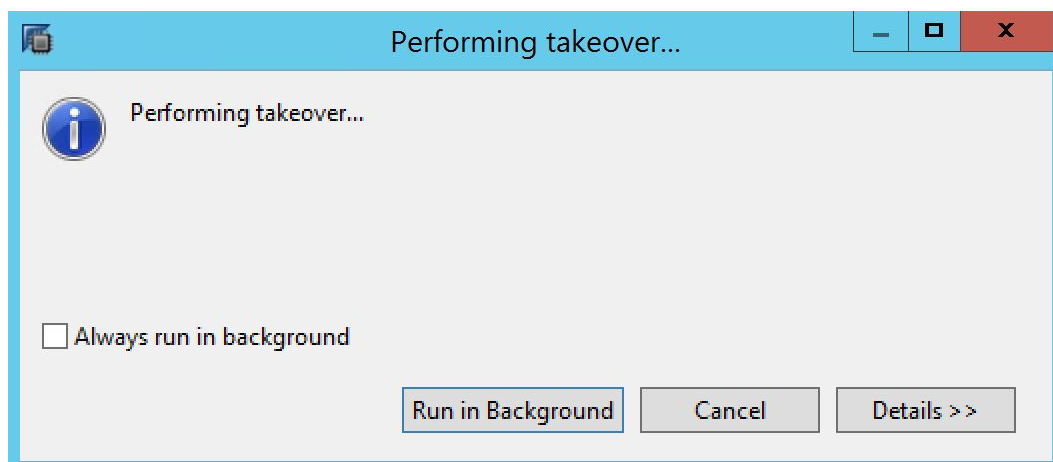
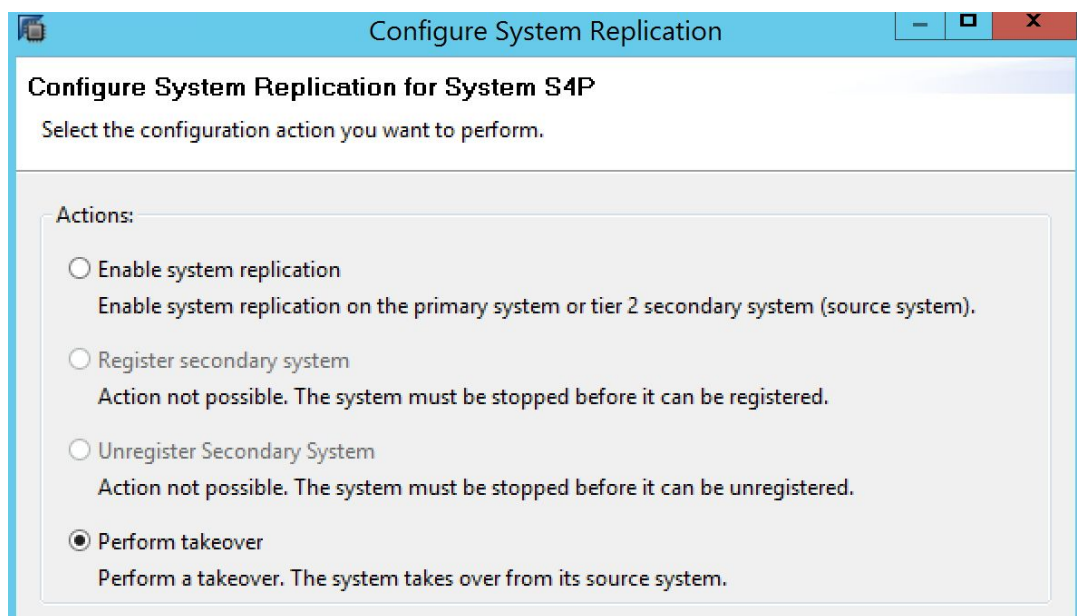
☒ Hard
Stops the system immediately. Open transactions are aborted and rolled back.

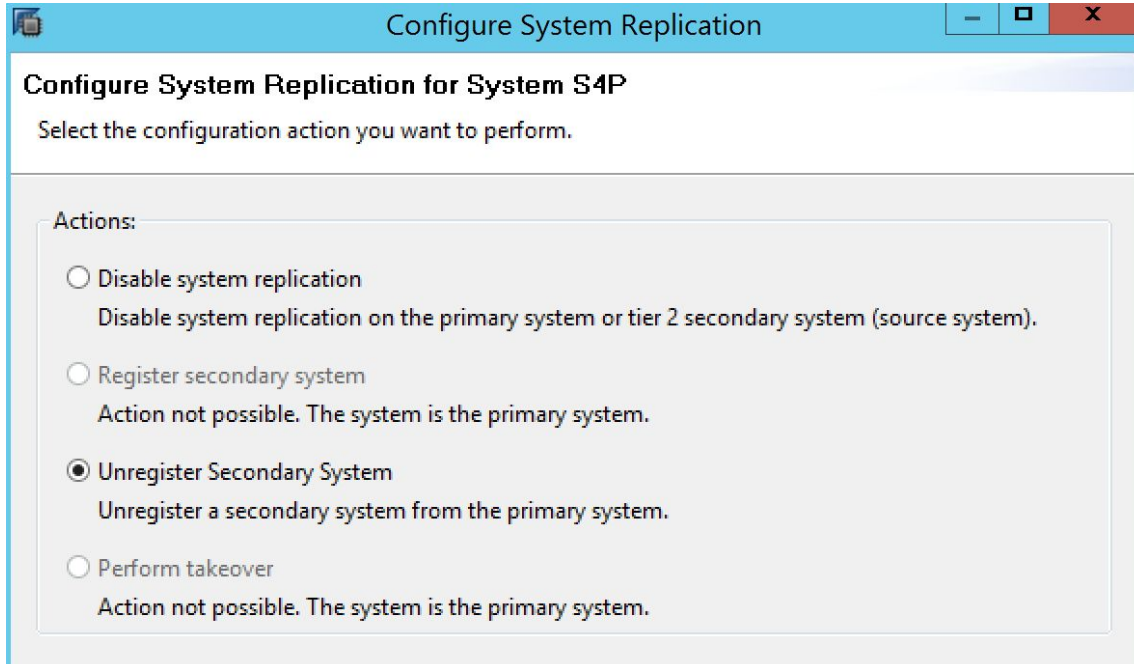
If the system does not shut down within the following stop wait timeout, shutdown is forced.

Stop Wait Timeout: 400 Seconds



Now putting back original Primary to its place





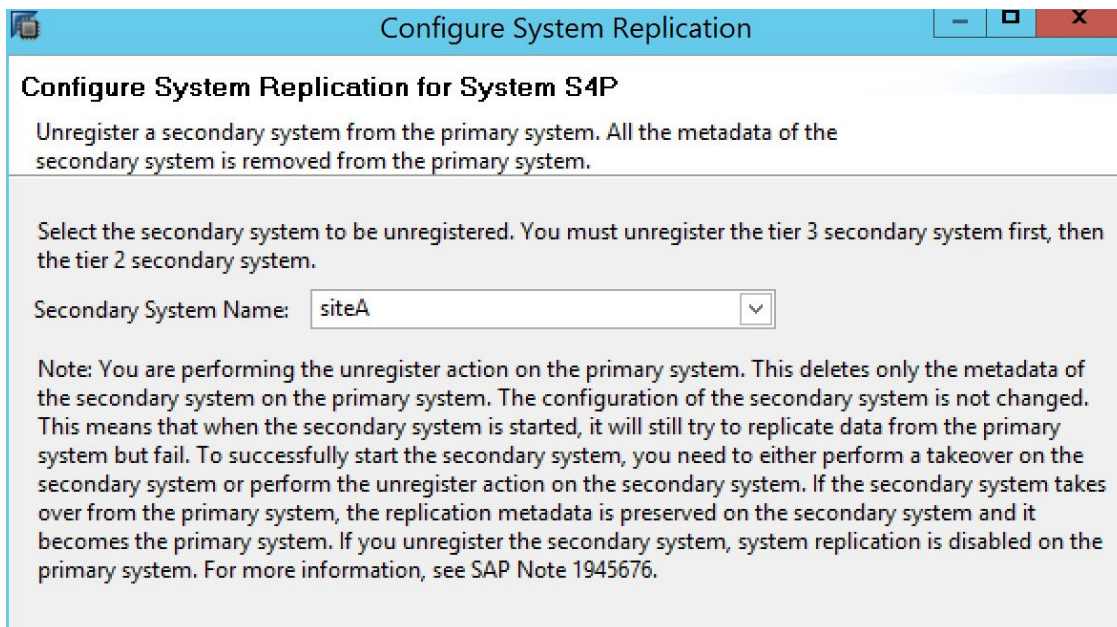
Configure System Replication

Configure System Replication for System S4P

Select the configuration action you want to perform.

Actions:

- ☐ Disable system replication
Disable system replication on the primary system or tier 2 secondary system (source system).
- ☐ Register secondary system
Action not possible. The system is the primary system.
- ☒ Unregister Secondary System
Unregister a secondary system from the primary system.
- ☐ Perform takeover
Action not possible. The system is the primary system.



Configure System Replication

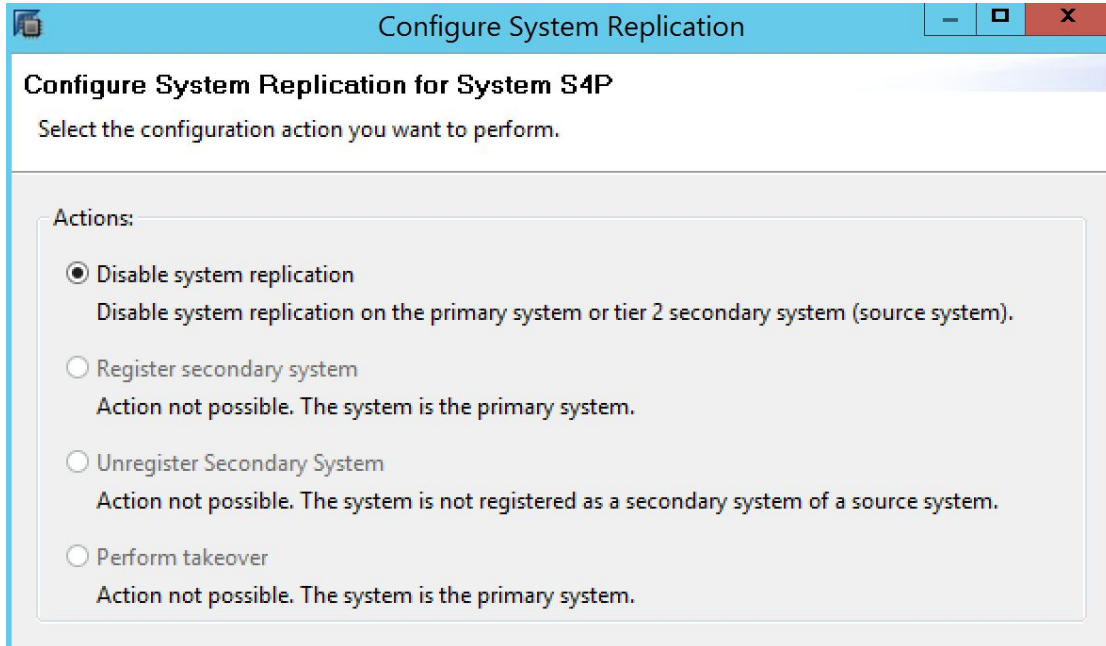
Configure System Replication for System S4P

Unregister a secondary system from the primary system. All the metadata of the secondary system is removed from the primary system.

Select the secondary system to be unregistered. You must unregister the tier 3 secondary system first, then the tier 2 secondary system.

Secondary System Name:

Note: You are performing the unregister action on the primary system. This deletes only the metadata of the secondary system on the primary system. The configuration of the secondary system is not changed. This means that when the secondary system is started, it will still try to replicate data from the primary system but fail. To successfully start the secondary system, you need to either perform a takeover on the secondary system or perform the unregister action on the secondary system. If the secondary system takes over from the primary system, the replication metadata is preserved on the secondary system and it becomes the primary system. If you unregister the secondary system, system replication is disabled on the primary system. For more information, see SAP Note 1945676.



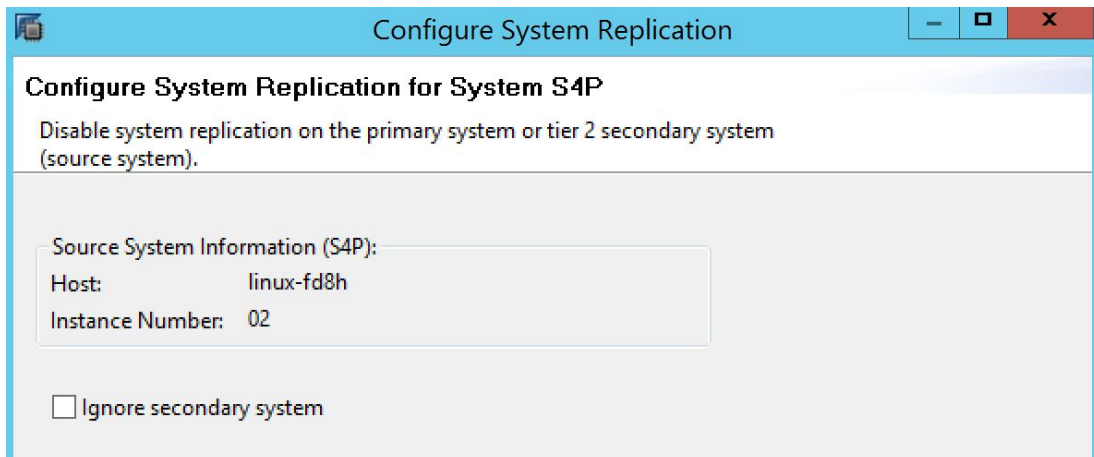
Configure System Replication

Configure System Replication for System S4P

Select the configuration action you want to perform.

Actions:

- ☒ **Disable system replication**
Disable system replication on the primary system or tier 2 secondary system (source system).
- ☐ **Register secondary system**
Action not possible. The system is the primary system.
- ☐ **Unregister Secondary System**
Action not possible. The system is not registered as a secondary system of a source system.
- ☐ **Perform takeover**
Action not possible. The system is the primary system.



Configure System Replication

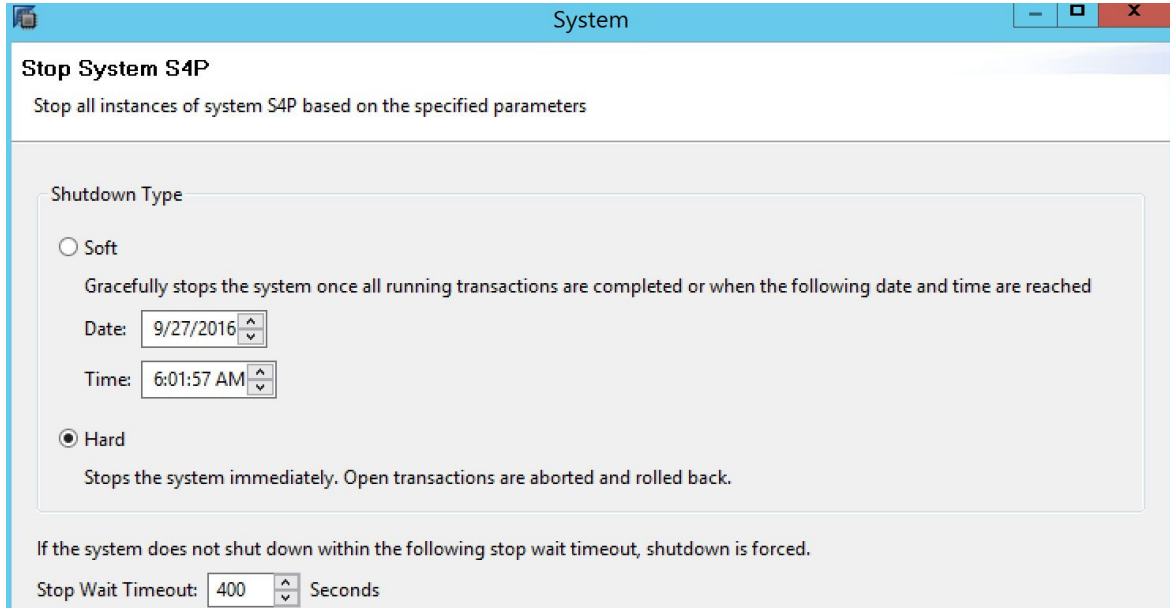
Configure System Replication for System S4P

Disable system replication on the primary system or tier 2 secondary system (source system).

Source System Information (S4P):

Host: linux-fd8h
Instance Number: 02

☐ Ignore secondary system



The screenshot shows a window titled "System" with a subtitle "Stop System S4P". The main text reads "Stop all instances of system S4P based on the specified parameters". Under the "Shutdown Type" section, there are two radio buttons: "Soft" and "Hard". The "Soft" option is selected, and its description is "Gracefully stops the system once all running transactions are completed or when the following date and time are reached". Below this, there are input fields for "Date" (9/27/2016) and "Time" (6:01:57 AM). The "Hard" option is also present with the description "Stops the system immediately. Open transactions are aborted and rolled back." At the bottom, there is a note: "If the system does not shut down within the following stop wait timeout, shutdown is forced." and a "Stop Wait Timeout" field set to 400 seconds.

System

Stop System S4P

Stop all instances of system S4P based on the specified parameters

Shutdown Type

☐ Soft

Gracefully stops the system once all running transactions are completed or when the following date and time are reached

Date: 9/27/2016

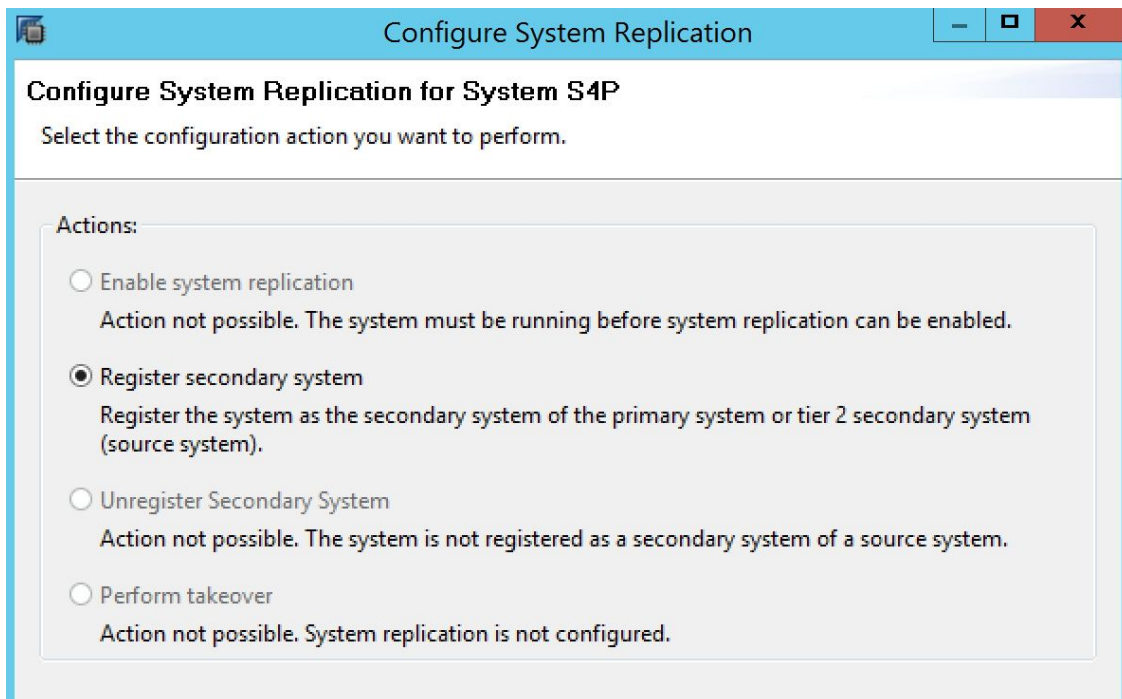
Time: 6:01:57 AM

☒ Hard

Stops the system immediately. Open transactions are aborted and rolled back.

If the system does not shut down within the following stop wait timeout, shutdown is forced.

Stop Wait Timeout: 400 Seconds



The screenshot shows a window titled "Configure System Replication" with a subtitle "Configure System Replication for System S4P". The main text reads "Select the configuration action you want to perform." Under the "Actions:" section, there are four radio buttons: "Enable system replication", "Register secondary system", "Unregister Secondary System", and "Perform takeover". The "Register secondary system" option is selected. Each option has a description: "Enable system replication" (Action not possible. The system must be running before system replication can be enabled.), "Register secondary system" (Register the system as the secondary system of the primary system or tier 2 secondary system (source system).), "Unregister Secondary System" (Action not possible. The system is not registered as a secondary system of a source system.), and "Perform takeover" (Action not possible. System replication is not configured.).

Configure System Replication

Configure System Replication for System S4P

Select the configuration action you want to perform.

Actions:

☐ Enable system replication

Action not possible. The system must be running before system replication can be enabled.

☒ Register secondary system

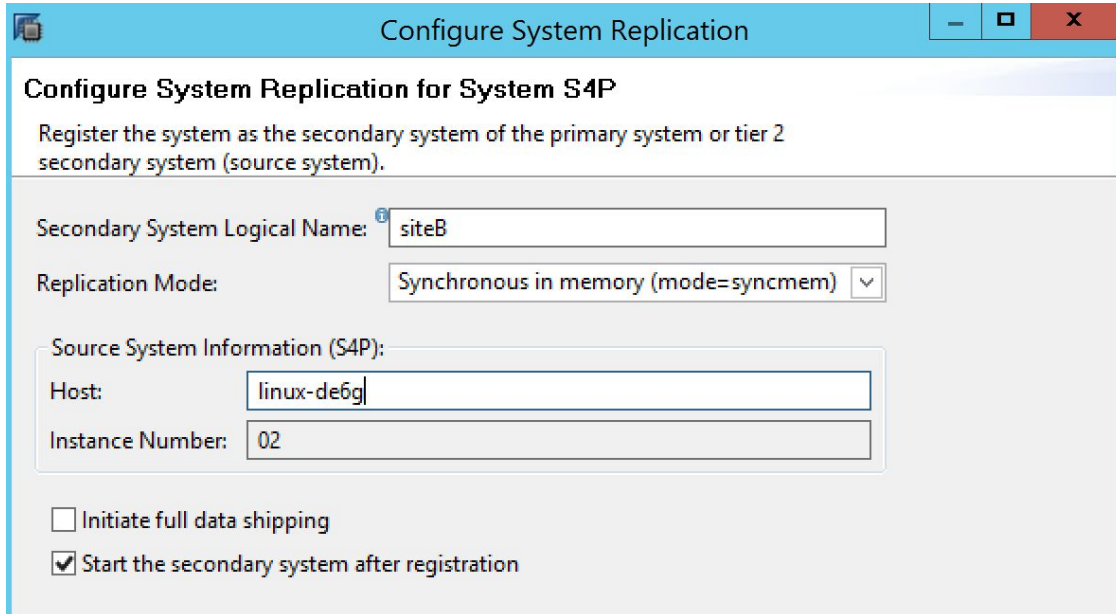
Register the system as the secondary system of the primary system or tier 2 secondary system (source system).

☐ Unregister Secondary System

Action not possible. The system is not registered as a secondary system of a source system.

☐ Perform takeover

Action not possible. System replication is not configured.



Configure System Replication

Configure System Replication for System S4P

Register the system as the secondary system of the primary system or tier 2 secondary system (source system).

Secondary System Logical Name:

Replication Mode:

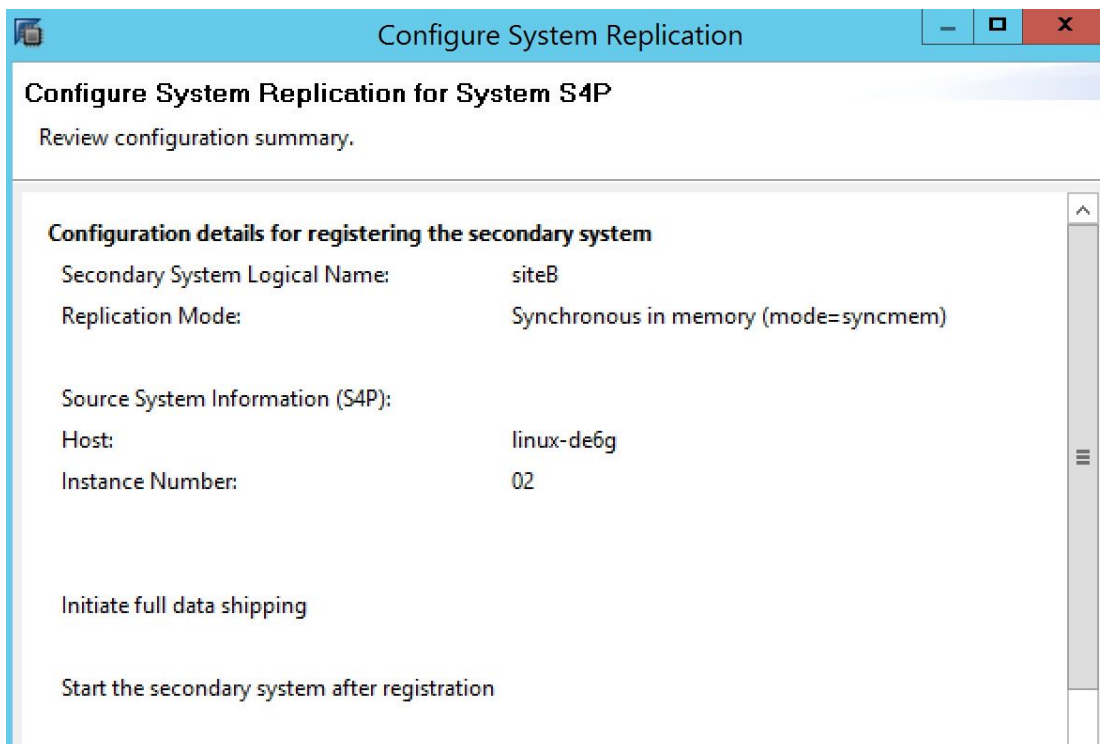
Source System Information (S4P):

Host:

Instance Number:

☐ Initiate full data shipping

☒ Start the secondary system after registration



Configure System Replication

Configure System Replication for System S4P

Review configuration summary.

Configuration details for registering the secondary system

Secondary System Logical Name: siteB

Replication Mode: Synchronous in memory (mode=syncmem)

Source System Information (S4P):

Host: linux-de6g

Instance Number: 02

Initiate full data shipping

Start the secondary system after registration

Confidential Document

Systems SQL Console 1 S4P S4P S4P S4P Backup S4P (SYSTEM)

S4P (SYSTEM) linux-de6g 02 Last Update: Sep 27, 2016 5:57:40 AM Interval: 5 Seconds

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

Services Hosts Redistribution System Replication

Enter your filter Visible rows: 4/4 Filter... Save a...

RB	HOST	RB	SECONDARY_HOST	RB	REPLICATION_MODE	RB	REPLICATION_STATUS	RB	REPLICATION_STATUS_DETAILS	12	PORT	12	VOLUME_ID
	linux-de6g		linux-fd8h		SYNCMEM		ACTIVE				30,205		2
	linux-de6g		linux-fd8h		SYNCMEM		ACTIVE				30,207		3
	linux-de6g		linux-fd8h		SYNCMEM		ACTIVE				30,201		1
	linux-de6g		linux-fd8h		SYNCMEM		INITIALIZING		Full Replica: 5 % (2816/50587 MB)		30,203		4

Related Content:

www.help.sap.com

www.sdn.sap.com/irj/sdn/index.

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