



# **SAP HANA Multiple-Container Mode**

## **HBD169**

Exercises / Solutions

Serge Muts / SAP Labs  
Alessandro Sabidussi / SAP SE

Gourav Ghosh / SAP Labs India  
Sumeet Yadav / SAP Labs India  
Sumeet Bagewadi / SAP Labs India

Dominique Noth / SAP SE  
Uwe Hahn / SAP SE

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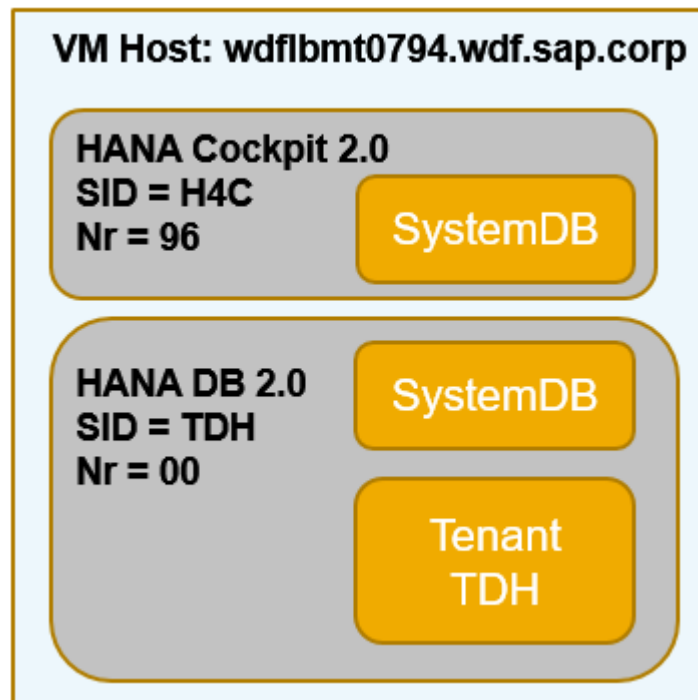
## BEFORE YOU START

In this hands-on session, you have the opportunity to work on several exercises in the SAP HANA Operations / Lifecycle Management area. The exercises are designed to be completed in sequence, starting at the top and working your way down. At the end, there is an optional exercise.

To complete the exercise each group will be given access to its own SAP HANA 2.0 SPS 01 server running remotely on a small virtual machine (this is different from most other hands-on sessions where all participants share one single database). The access to SAP HANA is established through the SAP TechEd laptop. First you login to a Virtual Machine using the "Remote Login" option, then you do the exercises using the Google Chrome browser and the PuTTY SSH client. Hostname and credentials will be provided by the instructors.

For the exercises, there are two SAP HANA instances with SIDs H4C and TDH. Both are multitenant instances.

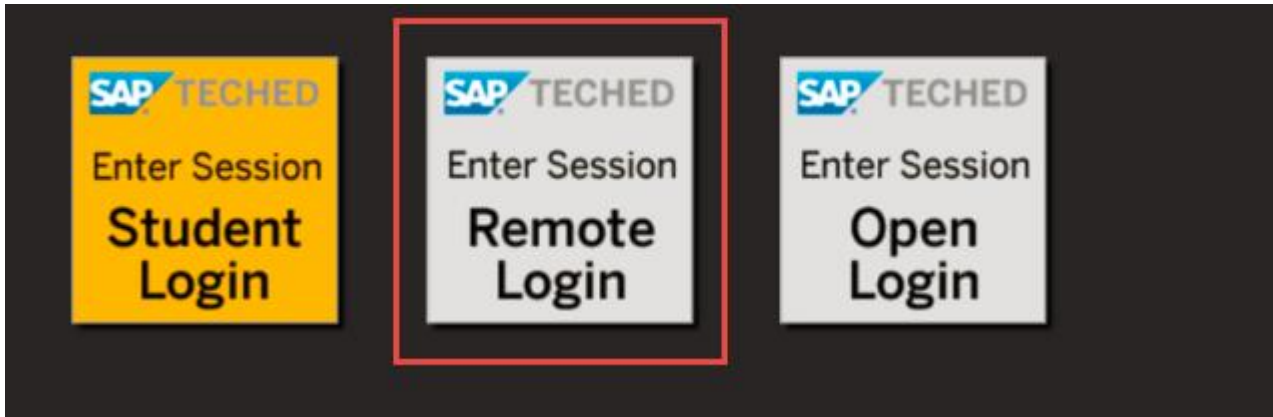
- Instance H4C is the new SAP HANA Cockpit 2.0 instance, replacing SAP HANA Studio as the recommended tool for administrative tasks. Instance H4C has a SYSTEMDB and no tenants.
- Instance TDH is a SAP HANA 2.0 SPS 01 database instance. Instance TDH has a SYSTEMDB and a database tenant also called TDH. During the exercise, you will create more tenants using SAP HANA Cockpit 2.0.



## SAP HANA COCKPIT URL'S:

- SAP HANA Admin Cockpit: <https://wdfilbmt0794.wdf.sap.corp:51023>  
The SAP HANA Admin Cockpit is used to register SAP HANA instances for the SAP HANA Cockpit.
- SAP HANA Cockpit: <https://wdfilbmt0794.wdf.sap.corp:51021>  
The SAP HANA Cockpit give administrators the ability to manage registered SAP HANA instances.

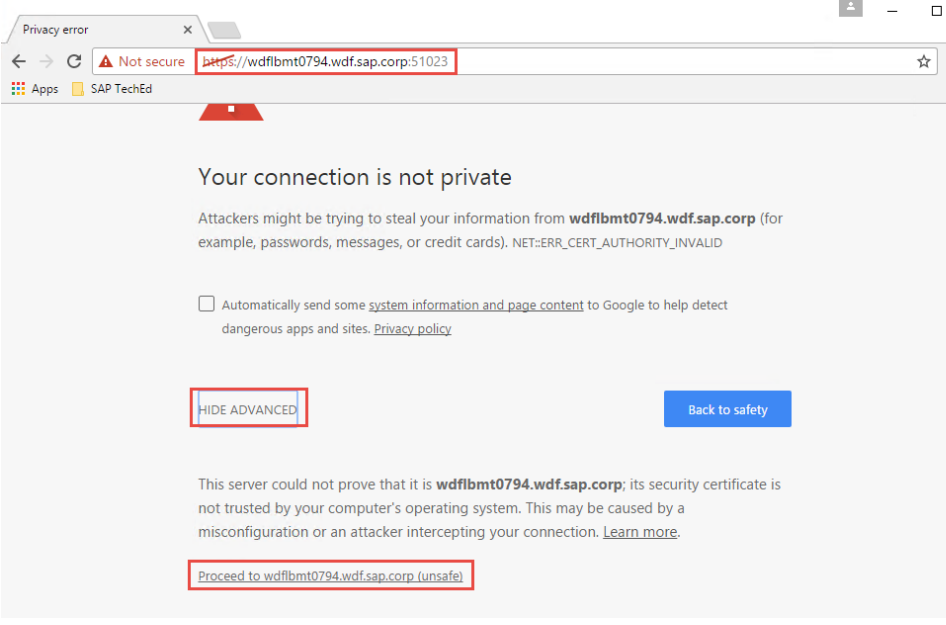
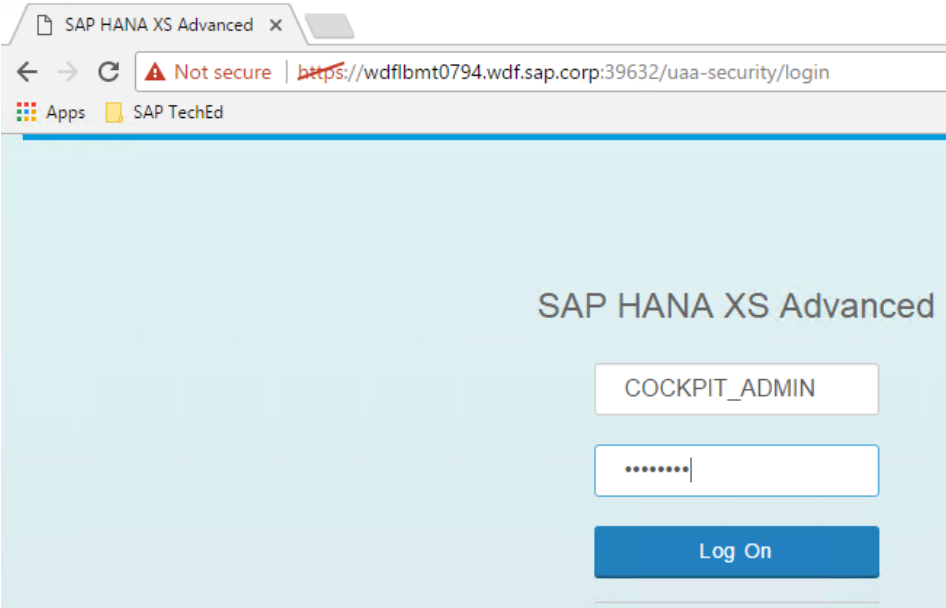
As stated, you first login into the front-end VM. On the laptop, choose the option “Remote Login”, enter the credentials supplied by the instructors

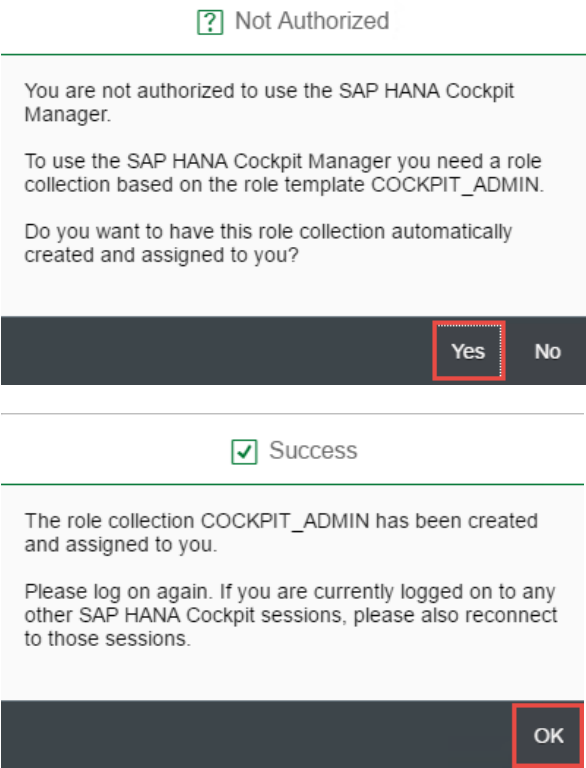
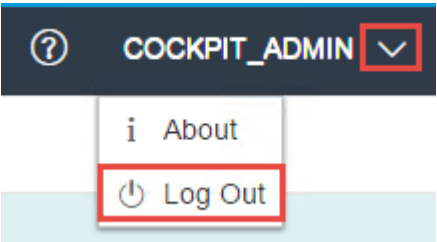


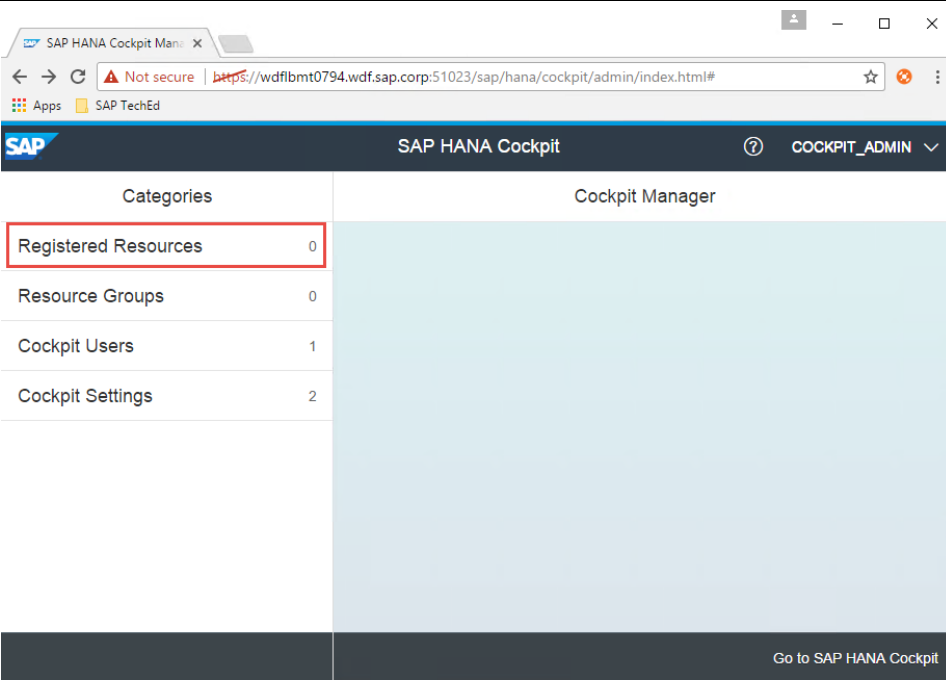
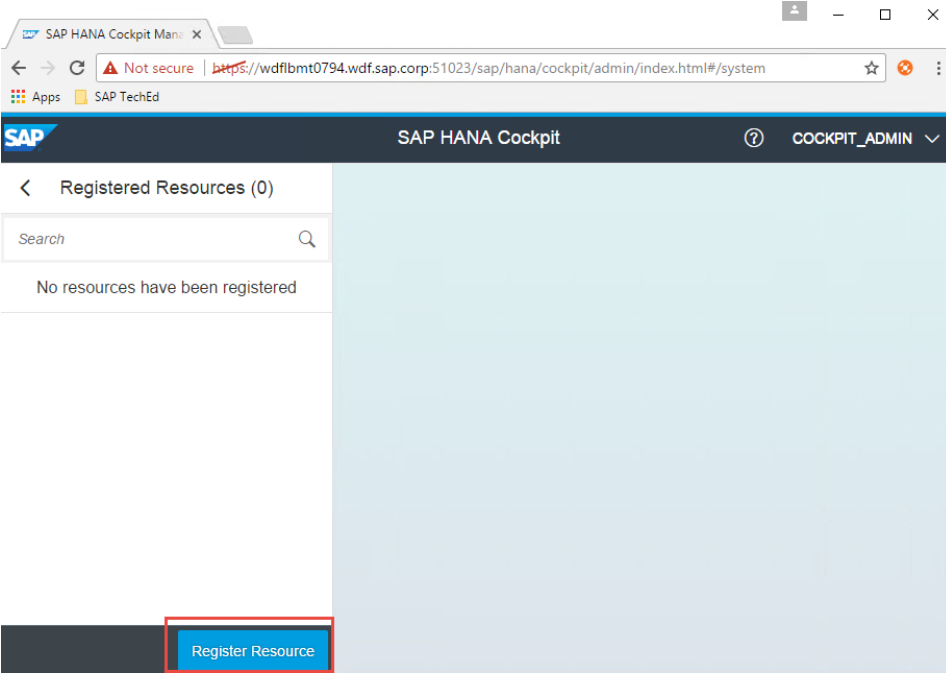
Once you are logged into the front-end Virtual Machine you can start the exercises.

## **EXERCISE 1: CONFIGURE SAP HANA COCKPIT**

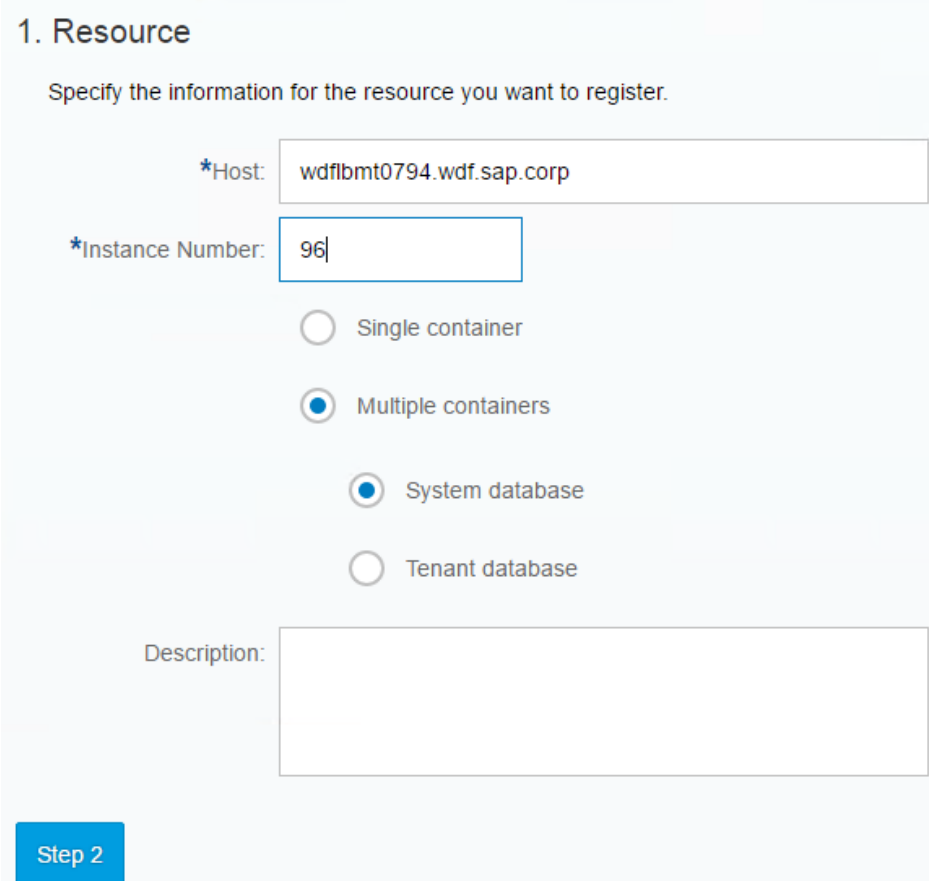
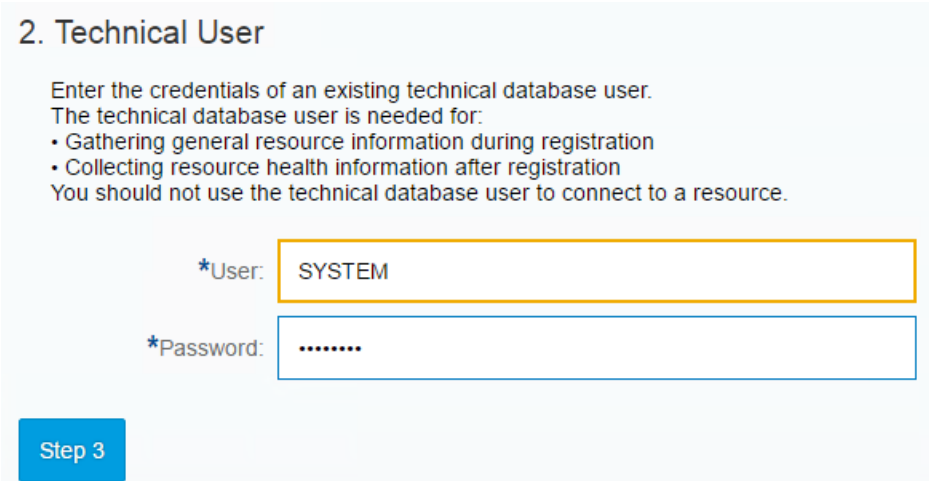
In this first exercise, we will setup SAP HANA Cockpit and register SAP HANA databases to it.

Explanation	Screenshot
<div>1. Open Google Chrome and enter URL <a href="https://wdfibmt0794.wdf.sap.corp:51023/">https://wdfibmt0794.wdf.sap.corp:51023/</a>.  Click through the security warning by selecting “Advanced” and “Proceed to https://wdfibmt0794.wdf.sap.corp:51023/ (unsafe)”</div>	
<div>2. Enter user <b>COCKPIT_ADMIN</b> and the <b>password</b> provided by the instructors.</div>	

Explanation	Screenshot
<p>3. You will get asked whether you want to have the role created and assigned to you. Select <b>Yes</b>. The next message will ask you to log on again.</p>	
<p>4. Log out by clicking on the triangle icon in the top right, and select <b>Log Out</b>. Next, <b>log in</b> using the same user and password (COCKPIT_ADMIN).</p> <p><u>Note:</u> If you get a blue browser screen without any text, hit <b>F5</b> to refresh.</p>	

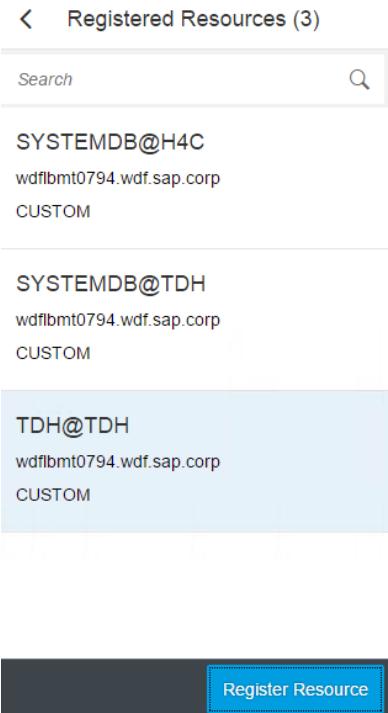
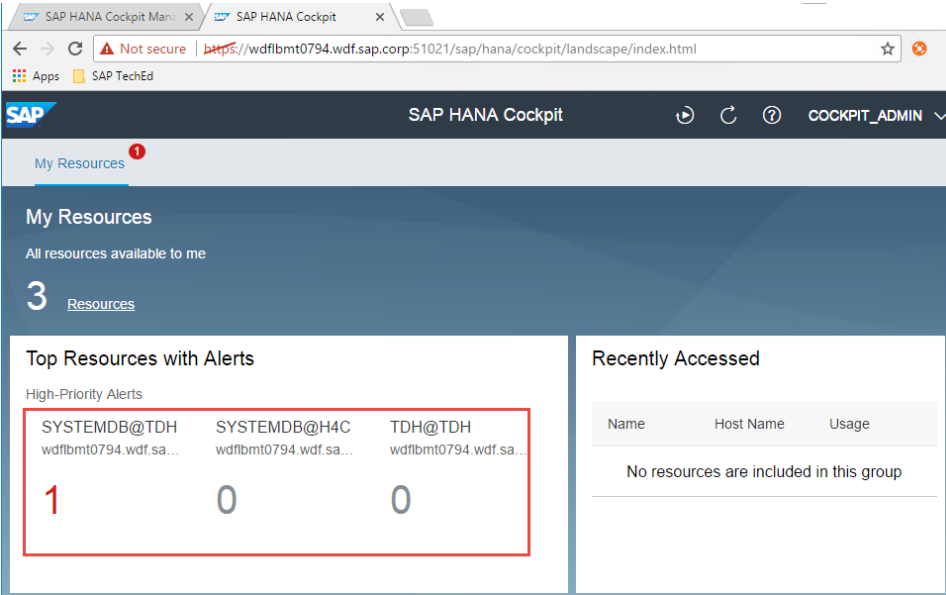
Explanation	Screenshot
5. Once logged in, click on "Registered Resources"	 <p>The screenshot shows the SAP HANA Cockpit Admin interface. The left sidebar contains a 'Categories' section with the following items: 'Registered Resources' (0), 'Resource Groups' (0), 'Cockpit Users' (1), and 'Cockpit Settings' (2). The 'Registered Resources' item is highlighted with a red rectangle. The main area is titled 'Cockpit Manager' and is currently empty. The browser address bar shows the URL: https://wdfibmt0794.wdf.sap.corp:51023/sap/hana/cockpit/admin/index.html#.</p>
6. Click on "Register Resource"	 <p>The screenshot shows the SAP HANA Cockpit Admin interface with the 'Registered Resources' page selected. The left sidebar shows 'Registered Resources (0)' with a search bar and the text 'No resources have been registered'. The main area is empty. The bottom right corner features a blue button labeled 'Register Resource', which is highlighted with a red rectangle. The browser address bar shows the URL: https://wdfibmt0794.wdf.sap.corp:51023/sap/hana/cockpit/admin/index.html#/system.</p>



Explanation	Screenshot
<p>7. We need to add three resources. We will start with the SYSTEMDB of HANA instance H4C.</p> <p>Enter / Select Host=<b>wdfibmt0794.wdf.sap.corp</b> Instance Number = <b>96</b> <b>Multiple Containers</b> <b>System Database</b> <b>Step 2</b></p>	 <p><b>1. Resource</b></p> <p>Specify the information for the resource you want to register.</p> <p>*Host: wdfibmt0794.wdf.sap.corp</p> <p>*Instance Number: 96</p> <p><input type="radio"/> Single container</p> <p><input checked="" type="radio"/> Multiple containers</p> <p><input checked="" type="radio"/> System database</p> <p><input type="radio"/> Tenant database</p> <p>Description:</p> <p>Step 2</p>
<p>8. Enter User = <b>SYSTEM</b> and the <b>password</b> provided by the instructors. <b>Go to Step 3.</b></p> <p><i>Note: a better option is to use a technical user, but we use SYSTEM for simplicity.</i></p>	 <p><b>2. Technical User</b></p> <p>Enter the credentials of an existing technical database user. The technical database user is needed for:</p> <ul style="list-style-type: none"> <li>• Gathering general resource information during registration</li> <li>• Collecting resource health information after registration</li> </ul> <p>You should not use the technical database user to connect to a resource.</p> <p>*User: SYSTEM</p> <p>*Password: .....</p> <p>Step 3</p>

Explanation	Screenshot
9. <b>Uncheck</b> the options to encrypt the communication. <b>Go to Step 4.</b>	<div><h3>3. Connection</h3><p>Use encryption for the connection to the database and to the start/stop service. If selected, an imported trusted certificate is required.</p><div><input type="checkbox"/> Encrypt SAP start service connection</div><div><input type="checkbox"/> Encrypt the database connection</div><div>Step 4</div></div>
10. <b>Go to step 5.</b>	<div><h3>4. Resource Groups</h3><p>Specify the resource groups you want this resource to be a member of.</p><div><div>Add Group</div><div>There are no groups available for this resource</div></div><div>Step 5</div></div>
11. Adding contact details is optional. Click on <b>Review</b> .	<div><h3>5. Contact</h3><p>Enter the contact information for the person or group responsible for this resource.</p><div><div>Contact:</div><div></div></div><div><div>Contact E-mail:</div><div></div></div><div><div>Contact Details:</div><div></div></div><div>Review</div></div>

Explanation	Screenshot		
12. Verify your entries and make any needed corrections. When finished, click <b>Register</b> .	<div><div>Register Resource Review</div><div><div>Resource</div><div><div>Host: wdfibmt0794.wdf.sap.corp</div><div>Instance Number: 96</div><div>Containers: Multiple containers</div><div>Database Type: System</div><div>Description:</div></div><div><div>Technical User</div><div><div>User: SYSTEM</div></div></div><div><div>Connection</div><div><div>Encrypt SAP connec...: No</div><div>Encrypt db connection: No</div></div></div><div><div>Register</div><div>Cancel</div></div></div></div> <tr><td>The result of registering the first of three resources.</td><td><div><div>&lt; Registered Resources (1)</div><div><div>Search</div><div>SYSTEMDB@H4C</div><div>wdfibmt0794.wdf.sap.corp</div><div>CUSTOM</div></div><div><div>Resource Details</div><div><div>SYSTEMDB@H4C</div><div>Host: wdfibmt0794.wdf.sap.corp</div><div>Usage: CUSTOM</div><div>Description:</div><div>0</div><div>Resource Details</div><div>Groups Associated with this Resource</div></div><div><div>Resource Details</div><div>Instance Number:</div><div>96</div><div>Type:</div><div>Multi Container - SYSTEM</div></div></div></div></td></tr>	The result of registering the first of three resources.	<div><div>&lt; Registered Resources (1)</div><div><div>Search</div><div>SYSTEMDB@H4C</div><div>wdfibmt0794.wdf.sap.corp</div><div>CUSTOM</div></div><div><div>Resource Details</div><div><div>SYSTEMDB@H4C</div><div>Host: wdfibmt0794.wdf.sap.corp</div><div>Usage: CUSTOM</div><div>Description:</div><div>0</div><div>Resource Details</div><div>Groups Associated with this Resource</div></div><div><div>Resource Details</div><div>Instance Number:</div><div>96</div><div>Type:</div><div>Multi Container - SYSTEM</div></div></div></div>
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Explanation	Screenshot
<p>13. Register two more resources by repeating steps 5 through 12 with the same data except for: Instance number = <b>00</b> Add both the System database and Tenant database = <b>TDH</b>. The result is shown in the picture.</p>	
<p>14. Open a new tab in Google Chrome and enter URL <a href="https://wdfibmt0794.wdf.sap.corp:51021">https://wdfibmt0794.wdf.sap.corp:51021</a></p> <p>You see that the resources are available for administrative tasks in the SAP HANA Cockpit.</p> <p>This concludes the SAP HANA Cockpit Setup.</p>	

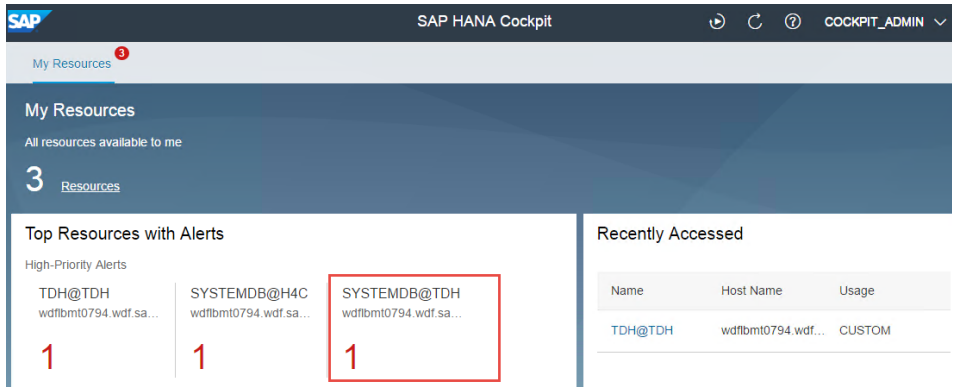
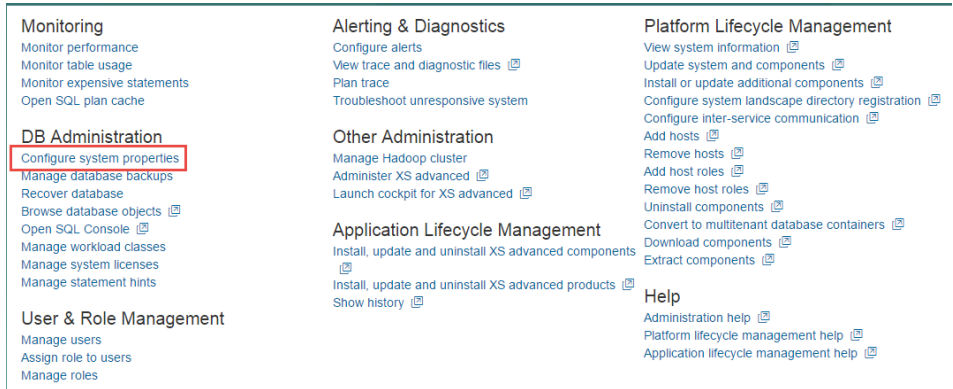
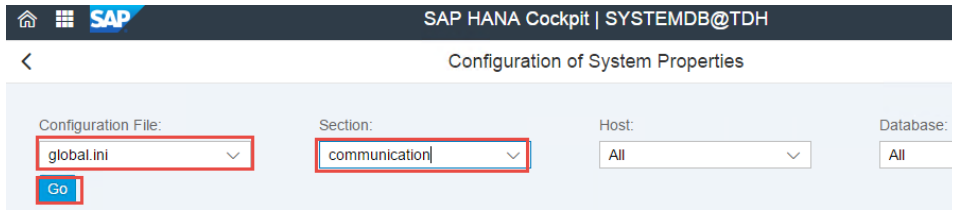
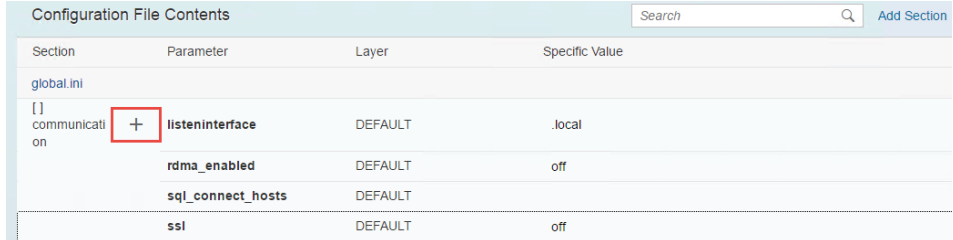
## EXERCISE 2: COPY/CLONE TENANT DATABASE TDH

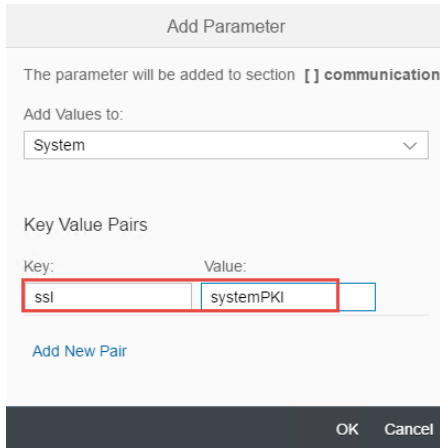
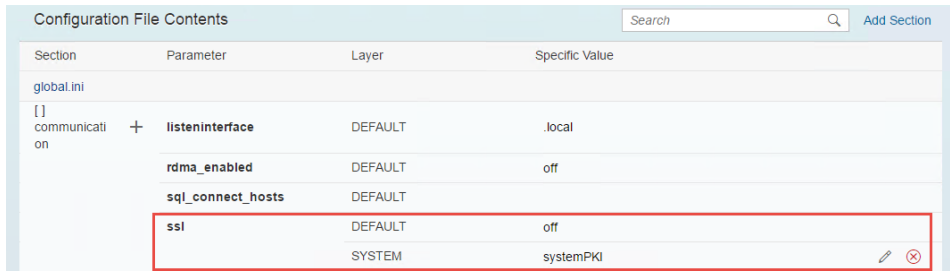
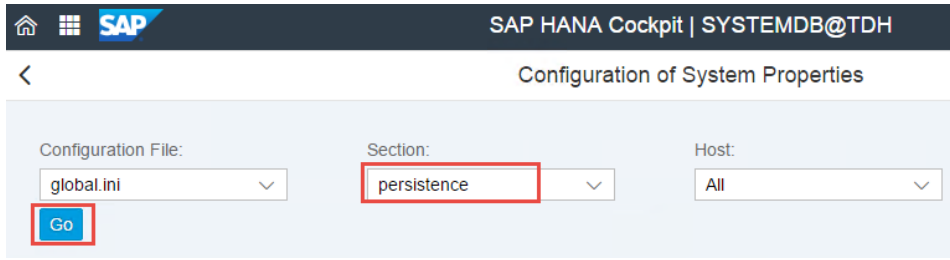
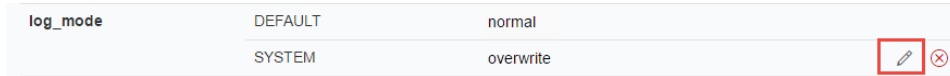
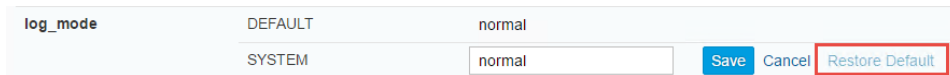
In a normal situation, you would most probably copy/clone a tenant between two SAP HANA instances. In the following exercise, we will perform the copy/clone in one HANA instance to illustrate the steps required to perform the copy/clone in a secure manner using SSL.


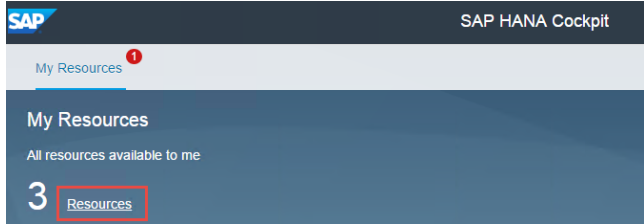
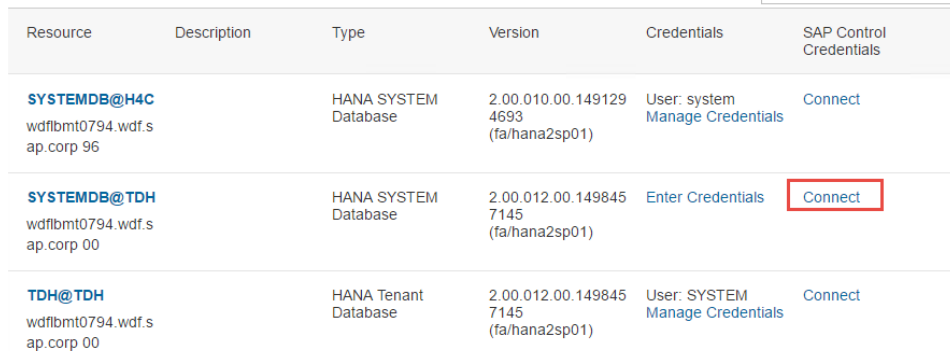
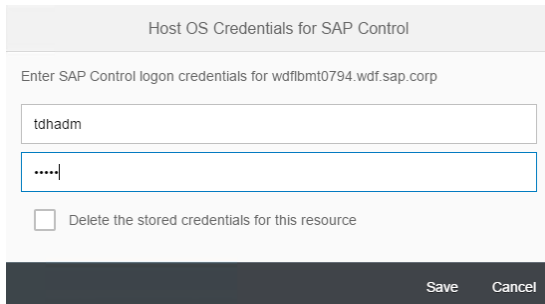

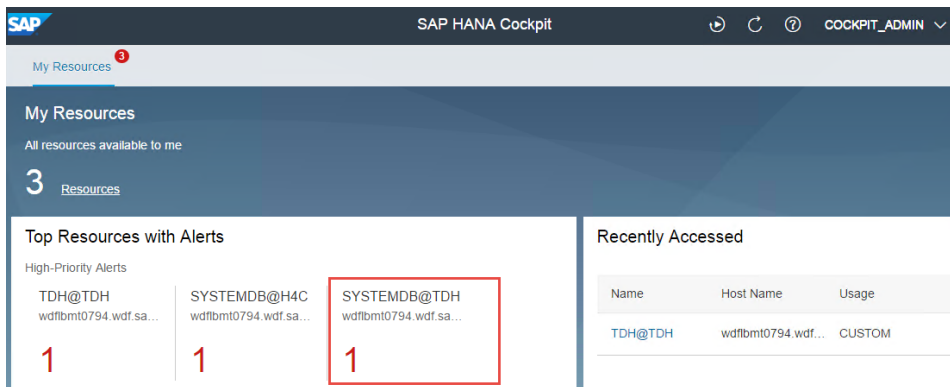
Example Use Cases:

### Use Cases

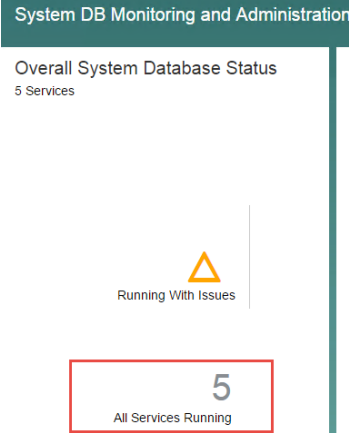
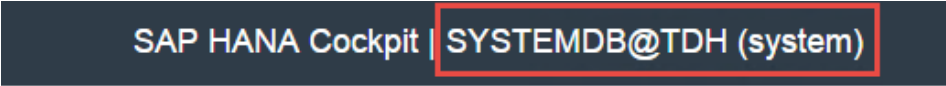
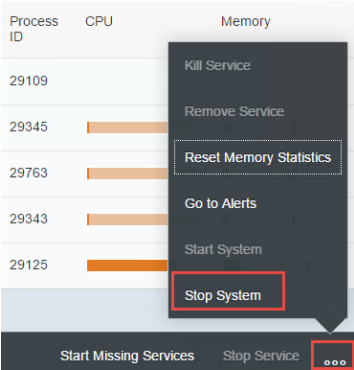
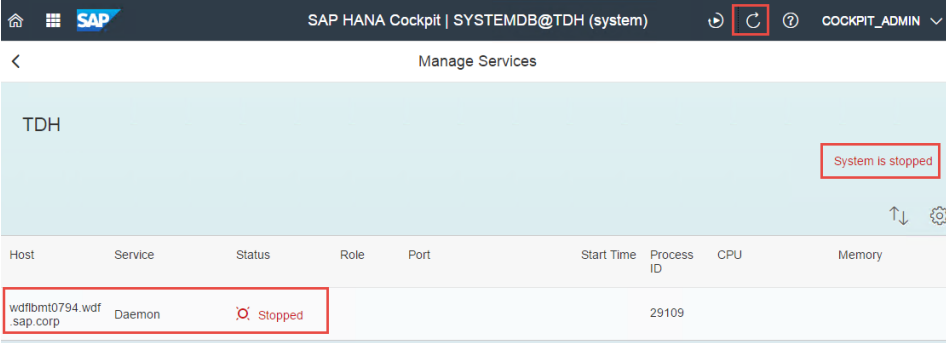
- Load balancing between systems – for example, a tenant database is running a more demanding workload than anticipated, so you move it to a system running on a host with more CPU resources.
- Management of deployment environment – for example, you want to copy a tenant database running in your test system to the live production system.
- Tenant-database-specific upgrades – for example, you want to upgrade a single tenant database but not the entire system, so you move the tenant database to a system already running the higher version.
- Template databases – for example, you create a tenant database with a default configuration that you want to reuse as the basis for new tenant databases in other systems. You can simply copy the tenant database as a template to other systems.

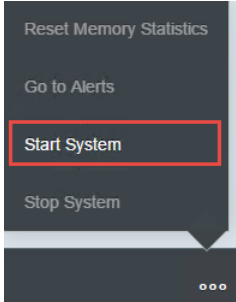
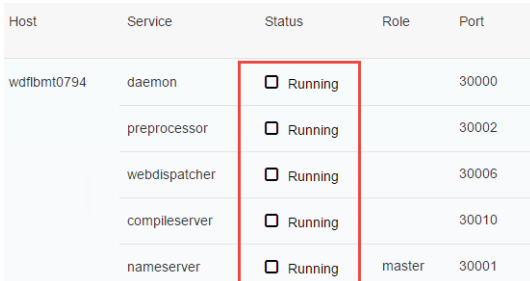
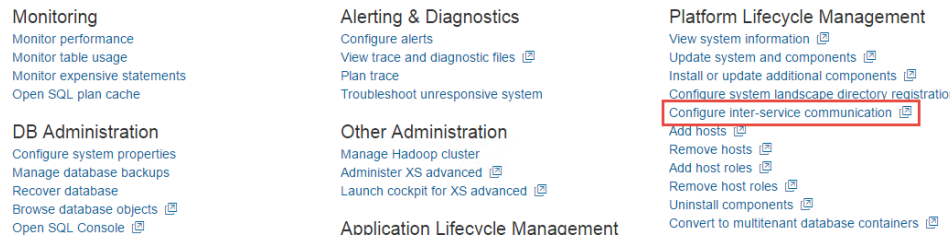
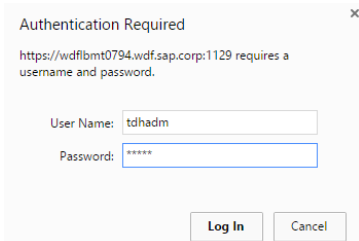
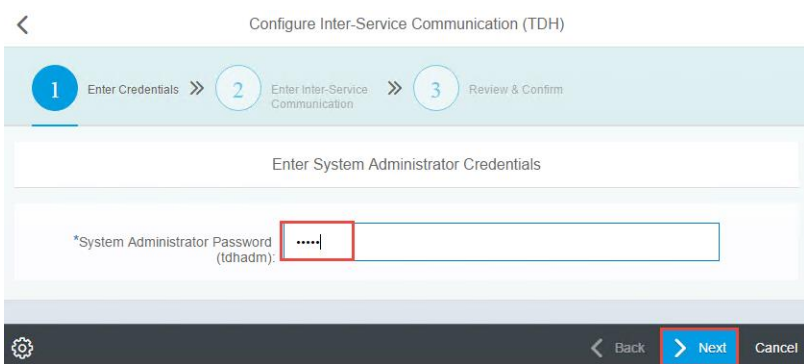
Explanation	Screenshot
15. Start logged in as <b>COCKPIT_ADMIN</b> user in the SAP HANA Cockpit ( <a href="https://wdfibmt0794.wdf.sap.corp:51021">https://wdfibmt0794.wdf.sap.corp:51021</a> ). Click on <b>SYSTEMDB@TDH</b> . If you are challenged for database credentials, use the <b>SYSTEM</b> user.	
16. Scroll down to select "Configure system properties"	
17. Use the drop down to select <b>global.ini</b> configuration file, section <b>communication</b> , and <b>Go</b> .	
18. To change a parameter setting, you have to add a new one. Click on the +.	

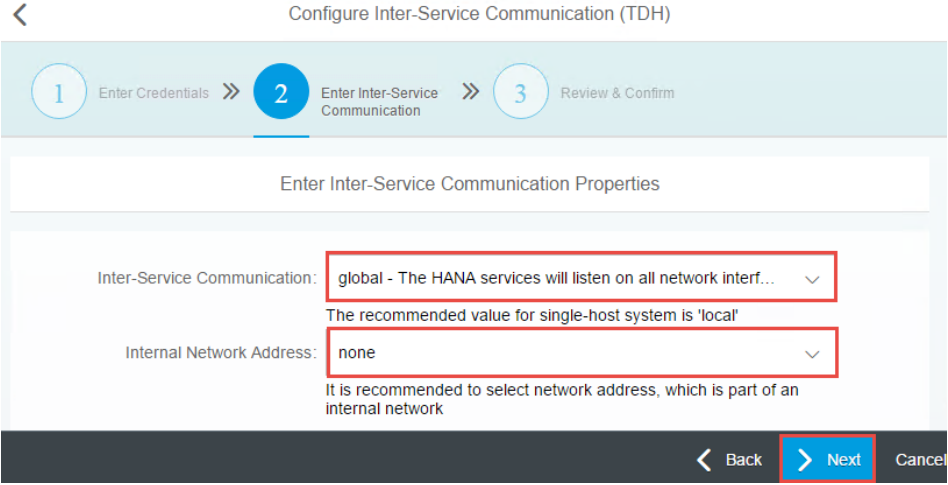
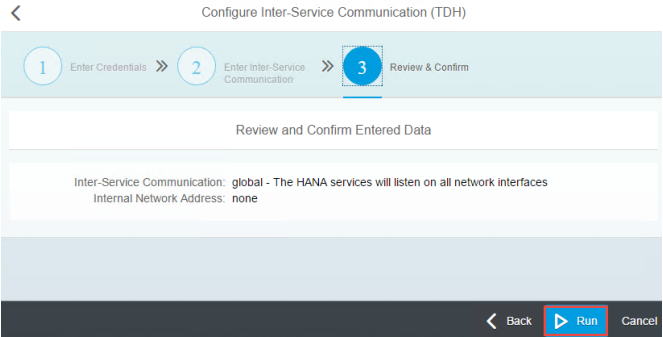
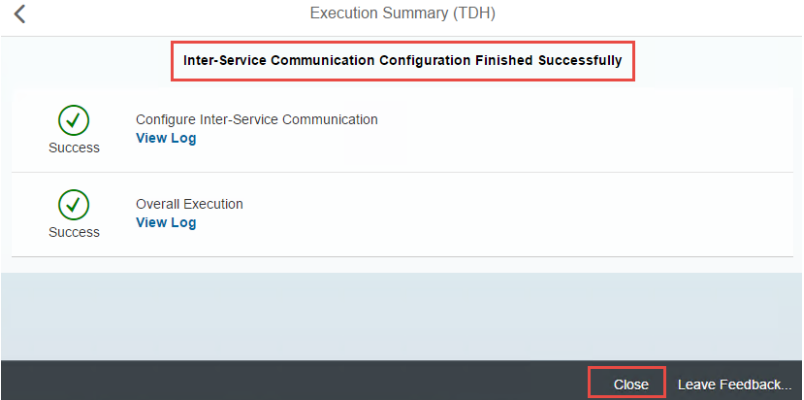
Explanation	Screenshot
19. Type <b>ssl</b> as the key, and <b>systemPKI</b> as the value (case-sensitive), and <b>OK</b> .	
20. The result looks like this.	
21. To change the next parameter, change the section to <b>persistence</b> and click on <b>Go</b> .	
22. Find the <b>log_mode</b> parameter and click on the <b>pencil</b> next to overwrite. <i>Note: for the sake of space we have set the log_mode to overwrite, usually this is set to normal in a customer system.</i>	
23. Click on <b>Restore Default</b> to set the value back to normal, and hit <b>Save</b> .	

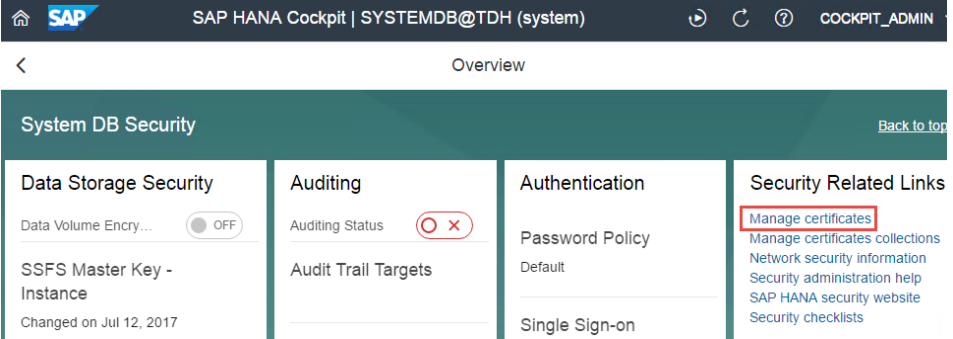
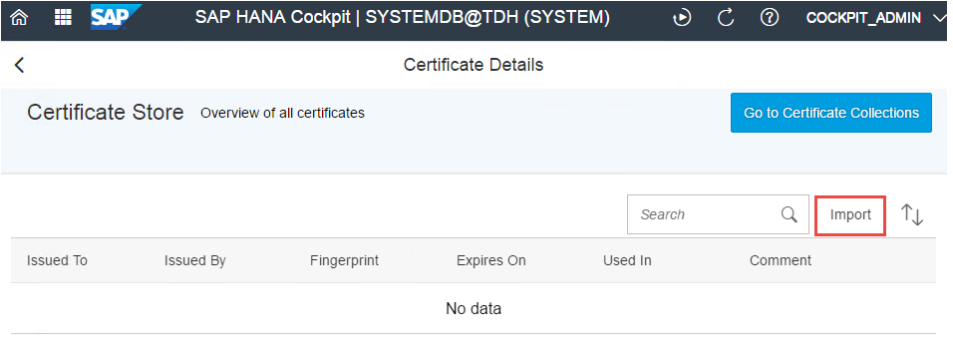
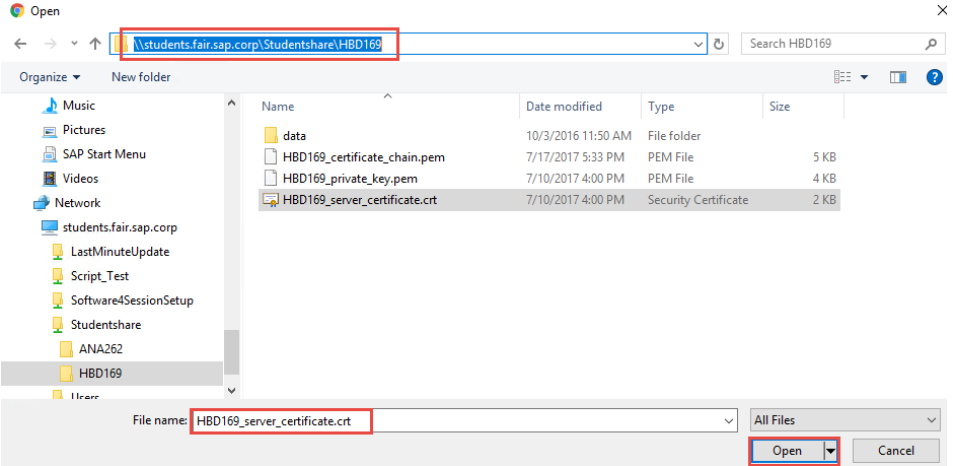
Explanation	Screenshot																								
24. Next we need to restart the SAP HANA instance TDH. Go to the Home  screen and click on <b>Resources</b> .																									
25. Find the entry for SYSTEMDB@TDH and select <b>Connect</b> .	 <table><thead><tr><th>Resource</th><th>Description</th><th>Type</th><th>Version</th><th>Credentials</th><th>SAP Control Credentials</th></tr></thead><tbody><tr><td>SYSTEMDB@H4C</td><td>wdfbmt0794.wdf.sap.corp 96</td><td>HANA SYSTEM Database</td><td>2.00.010.00.149129 4693 (fa/hana2sp01)</td><td>User: system Manage Credentials</td><td>Connect</td></tr><tr><td>SYSTEMDB@TDH</td><td>wdfbmt0794.wdf.sap.corp 00</td><td>HANA SYSTEM Database</td><td>2.00.012.00.149845 7145 (fa/hana2sp01)</td><td>Enter Credentials</td><td>Connect</td></tr><tr><td>TDH@TDH</td><td>wdfbmt0794.wdf.sap.corp 00</td><td>HANA Tenant Database</td><td>2.00.012.00.149845 7145 (fa/hana2sp01)</td><td>User: SYSTEM Manage Credentials</td><td>Connect</td></tr></tbody></table>	Resource	Description	Type	Version	Credentials	SAP Control Credentials	SYSTEMDB@H4C	wdfbmt0794.wdf.sap.corp 96	HANA SYSTEM Database	2.00.010.00.149129 4693 (fa/hana2sp01)	User: system Manage Credentials	Connect	SYSTEMDB@TDH	wdfbmt0794.wdf.sap.corp 00	HANA SYSTEM Database	2.00.012.00.149845 7145 (fa/hana2sp01)	Enter Credentials	Connect	TDH@TDH	wdfbmt0794.wdf.sap.corp 00	HANA Tenant Database	2.00.012.00.149845 7145 (fa/hana2sp01)	User: SYSTEM Manage Credentials	Connect
Resource	Description	Type	Version	Credentials	SAP Control Credentials																				
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26. Enter the credentials for the <b>tdhadm</b> user and click <b>Save</b> .																									
27. Go to the home  screen and click on <b>SYSTEMDB@TDH</b> .																									



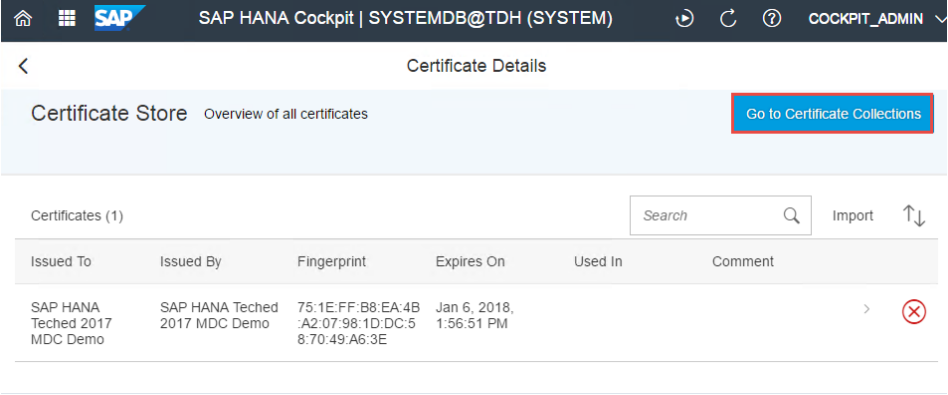
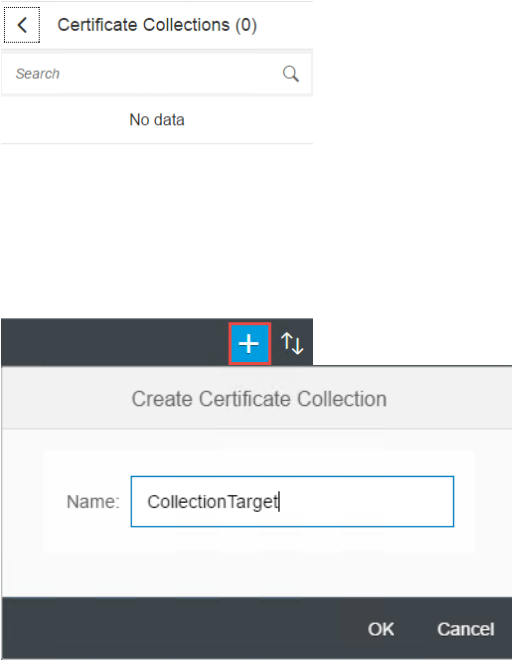
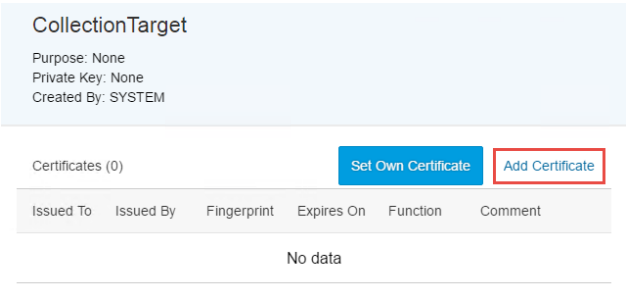
Explanation	Screenshot
28. Scroll down to System DB Monitoring and Administration. Click on the <b>All Services Running</b> icon.	
29. Verify that the top of the screen states SYSTEMDB@TDH.	
30. In the lower right corner click on the <b>three dots</b> , and select <b>Stop System</b>	
31. Click on the <b>refresh</b> icon a few times until the services disappear and you get the message "system is stopped".	

Explanation	Screenshot
32. In the lower right click on the <b>three dots icon</b> , and select <b>"Start System"</b> . When asked, answer <b>Yes</b> to confirm you really want to start the system.	
33. Click the <b>refresh</b> icon a few times until all the services show status running.	
34. Click on the back ( < ) button in the upper left and scroll down to select <b>"Configure Inter-service communication"</b> .	
35. Proceed through the security warnings and enter the <b>tdhadm</b> user and password. Click <b>Log In</b> .	
36. Enter the tdhadm password again and click <b>Next</b> .	

Explanation	Screenshot
<p>37. Select <b>global</b>, <b>none</b>, and <b>Next</b>.</p> <p>Note: in a customer system you likely will have an internal network to select.</p>	
<p>38. Select <b>Run</b></p>	
<p>39. Verify it finished correctly, and select <b>Close</b>.</p>	

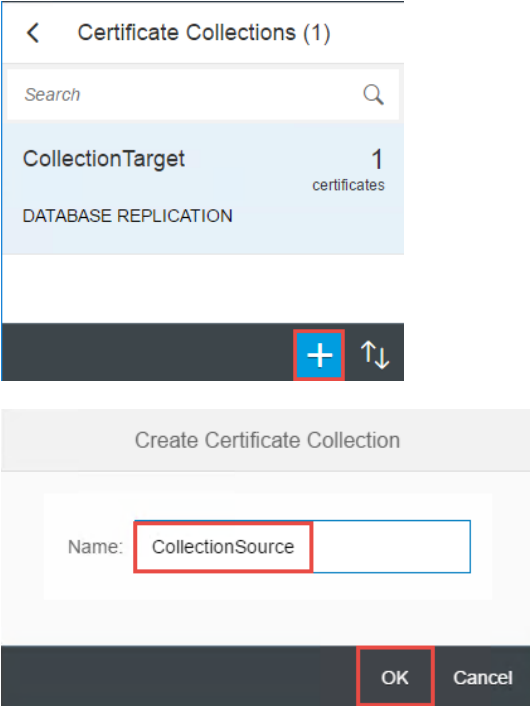
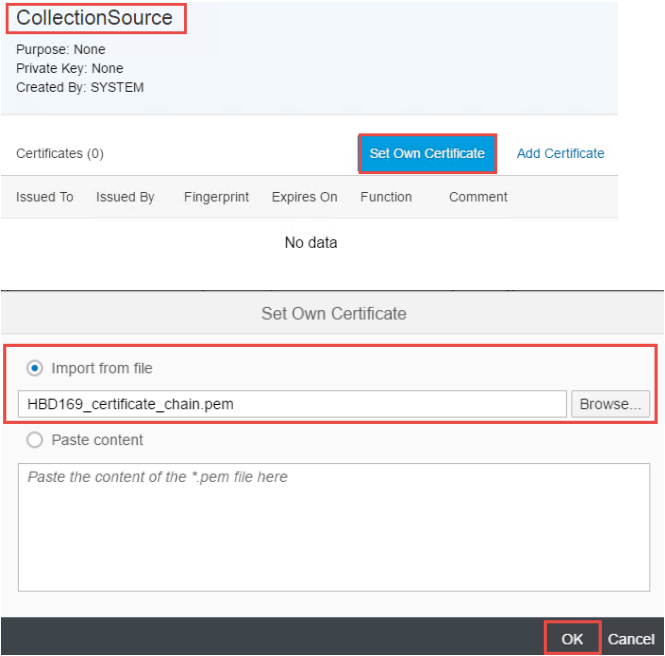
Explanation	Screenshot
40. Switch back to the SYSTEMDB@TDH cockpit tab. Scroll down to the System DB Security section and click on <b>"Manage certificates"</b>	
41. Select <b>Import</b>	
42. Browse to the student share for session HBD169. Select the <b>HDB169_server_certificate.crt</b> file, click Open and OK. You should get a message "Certificate saved"	

The location is  
\\students.fair.sap.corp\Studentshare\HBD169\Certificates

Explanation	Screenshot
43. Next, click on “Go to Certificate Collections”	 <p>The screenshot shows the SAP HANA Cockpit interface. The top bar displays 'SAP HANA Cockpit   SYSTEMDB@TDH (SYSTEM)' and the user 'COCKPIT_ADMIN'. The main content area is titled 'Certificate Details'. Below this, there's a 'Certificate Store' section with the subtitle 'Overview of all certificates'. A red box highlights the 'Go to Certificate Collections' button in the top right corner. Below this, there's a table of certificates. The table has columns: Issued To, Issued By, Fingerprint, Expires On, Used In, and Comment. One certificate is listed: 'SAP HANA TechEd 2017 MDC Demo' issued by 'SAP HANA TechEd 2017 MDC Demo' with a fingerprint of '75:1E:FF:B8:EA:4B:A2:07:98:1D:DC:58:70:49:A6:3E' and expires on 'Jan 6, 2018, 1:56:51 PM'. A red 'X' icon is visible in the bottom right corner of the table area.</p>
44. Click on + to add a Certificate Collection, enter <b>CollectionTarget</b> , and <b>OK</b> .	 <p>The screenshot shows the 'Certificate Collections (0)' section. A red box highlights the '+' button in the top right corner. Below this, there's a 'Create Certificate Collection' dialog box. The dialog has a 'Name:' field with the text 'CollectionTarget' entered. The 'OK' button is highlighted in red. The 'Cancel' button is also visible.</p>
45. Click “Add Certificate”, add the <b>SAP HANA TechEd 2017 MDC Demo</b> certificate you imported in the previous step, and click <b>OK</b> .	 <p>The screenshot shows the 'CollectionTarget' section. Below the title, there's a summary: 'Purpose: None', 'Private Key: None', and 'Created By: SYSTEM'. Below this, there's a table of certificates. The table has columns: Issued To, Issued By, Fingerprint, Expires On, Function, and Comment. The table is empty, with 'No data' displayed below it. A red box highlights the 'Add Certificate' button in the top right corner.</p>

Explanation	Screenshot												
	<div><div><div>Select Certificate</div><div><div>Search</div><div></div></div><div>Items selected: 1</div><div><div><div><input checked="" type="checkbox"/></div><div>SAP HANA Teched 2017 MDC Demo</div><div>75:1E:FF:B8:EA:4B:A2:07:98:1D:DC:58:70:49:A6:3E</div></div></div><div><div>OK</div><div>Cancel</div></div></div></div> <div><div>Result:</div><div><div>Certificates (1)</div><div><div>Set Own Certificate</div><div>Add Certificate</div></div><table><tr><th>Issued To</th><th>Issued By</th><th>Fingerprint</th><th>Expires On</th><th>Function</th><th>Comment</th></tr><tr><td>SAP HANA Teched 2017</td><td></td><td></td><td>Jan 6, 2018, 1:56:51 PM</td><td>Trust</td><td>&gt; </td></tr></table><div>Trusted certificate added to certificate collection CollectionTarget</div></div></div>	Issued To	Issued By	Fingerprint	Expires On	Function	Comment	SAP HANA Teched 2017			Jan 6, 2018, 1:56:51 PM	Trust	>
Issued To	Issued By	Fingerprint	Expires On	Function	Comment								
SAP HANA Teched 2017			Jan 6, 2018, 1:56:51 PM	Trust	>								
46. Now we must set a purpose for the CollectionTarget. Click <b>Edit</b> , select <b>"DATABASE REPLICATION"</b> and <b>Save</b> . Confirm with <b>"Yes"</b> when prompted.	<div><div><div>CollectionTarget</div><div><div>Purpose: None</div><div>Private Key: None</div><div>Created By: SYSTEM</div></div><div><div>Certificates (1)</div><div><div>Set Own Certificate</div><div>Add Certificate</div></div><table><tr><th>Issued To</th><th>Issued By</th><th>Fingerprint</th><th>Expires On</th><th>Function</th><th>Comment</th></tr><tr><td>SAP HANA Teched 2017</td><td>SAP HANA Teched 2017</td><td>75:1E:FF:B8:EA:4B:A2:07:98:1D:DC:58:70:49:A6:3E</td><td>Jan 6, 2018, 1:56:51 PM</td><td>Trust</td><td>&gt; </td></tr></table><div><div>Edit</div><div>Delete Certificate Collection</div></div></div></div></div>	Issued To	Issued By	Fingerprint	Expires On	Function	Comment	SAP HANA Teched 2017	SAP HANA Teched 2017	75:1E:FF:B8:EA:4B:A2:07:98:1D:DC:58:70:49:A6:3E	Jan 6, 2018, 1:56:51 PM	Trust	>
Issued To	Issued By	Fingerprint	Expires On	Function	Comment								
SAP HANA Teched 2017	SAP HANA Teched 2017	75:1E:FF:B8:EA:4B:A2:07:98:1D:DC:58:70:49:A6:3E	Jan 6, 2018, 1:56:51 PM	Trust	>								

Explanation	Screenshot																				
	<div><div>CollectionTarget</div><div><div><div>Purpose: NONE</div><div>Private Key: NONE</div><div>Created By: DATABASE REPLICATION</div></div><div><div>Certificates (1)</div><table><tr><th>Issued To</th><th>Issued By</th></tr><tr><td>SAP HANA Teched 2017 MDC Demo</td><td>SAP HANA Teched 2017 MDC Demo</td></tr></table></div><div><div>Set Own Certificate</div><div>Add Certificate</div><table><tr><th>Function</th><th>Comment</th></tr><tr><td></td><td></td></tr></table></div></div></div> <div><div>Confirmation</div><div>This collection will be used for the selected purpose immediately. Are you sure you want to change the purpose?</div><div><div>Yes</div><div>No</div></div></div> <div><div>Result:</div><div><div>CollectionTarget</div><div><div>Purpose: DATABASE REPLICATION</div><div>Private Key: None</div><div>Created By: SYSTEM</div></div><div><div>Certificates (1)</div><div>Set Own Certificate</div><div>Add Certificate</div><table><tr><th>Issued To</th><th>Issued By</th><th>Fingerprint</th><th>Expires On</th><th>Function</th><th>Comment</th></tr><tr><td>SAP HANA Teched 2017 MDC Demo</td><td>SAP HANA Teched 2017 MDC Demo</td><td>75:1E:FF:B8:EA:4B:A2:07:98:1D:D C:58:70:49:A6:3E</td><td>Jan 6, 2018, 1:56:51 PM</td><td>Trust</td><td></td></tr></table></div></div></div>	Issued To	Issued By	SAP HANA Teched 2017 MDC Demo	SAP HANA Teched 2017 MDC Demo	Function	Comment			Issued To	Issued By	Fingerprint	Expires On	Function	Comment	SAP HANA Teched 2017 MDC Demo	SAP HANA Teched 2017 MDC Demo	75:1E:FF:B8:EA:4B:A2:07:98:1D:D C:58:70:49:A6:3E	Jan 6, 2018, 1:56:51 PM	Trust	
Issued To	Issued By																				
SAP HANA Teched 2017 MDC Demo	SAP HANA Teched 2017 MDC Demo																				
Function	Comment																				
Issued To	Issued By	Fingerprint	Expires On	Function	Comment																
SAP HANA Teched 2017 MDC Demo	SAP HANA Teched 2017 MDC Demo	75:1E:FF:B8:EA:4B:A2:07:98:1D:D C:58:70:49:A6:3E	Jan 6, 2018, 1:56:51 PM	Trust																	

Explanation	Screenshot
<p>47. Next, click on the + sign to add another Certificate Collection. Name the collection "CollectionSource" and click OK</p>	
<p>48. Click on "Set Own Certificate", and browse to select "HBD169_certificate_chain.pem" from the student share, and then OK.</p> <p>The student share location is <u><a href="\\students.fair.sap.corp\Studentshare\HBD169\Certificates">\\students.fair.sap.corp\Studentshare\HBD169\Certificates</a></u></p>	



Explanation

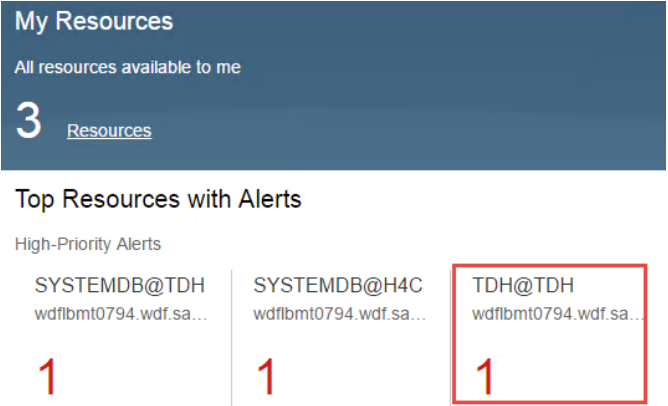
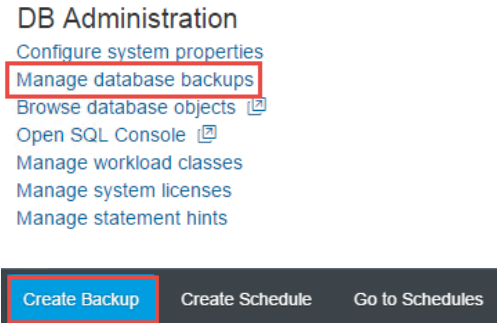
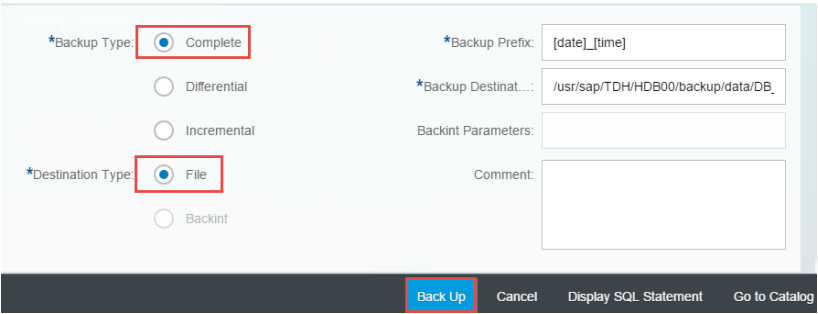
49. In the result screen we have to set a purpose. Select **"Edit"**, and select **SSL/TLS** from the Purpose drop down. Click **Save** and confirm the popup. The result should show and the private key as available (see screen print).

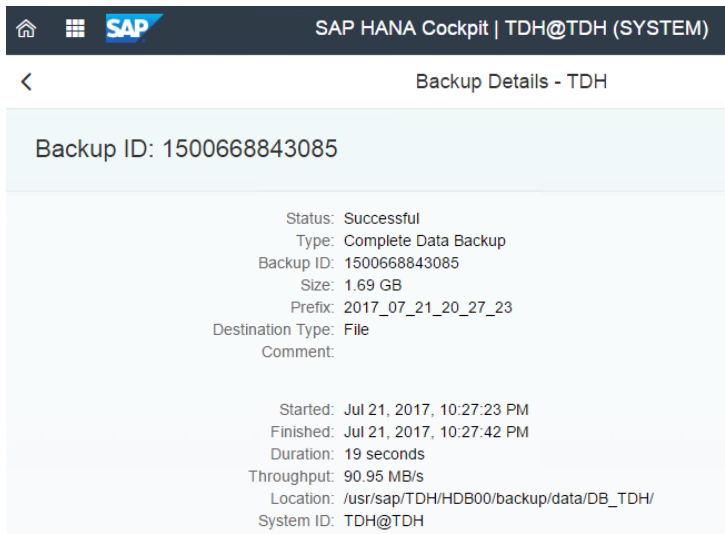
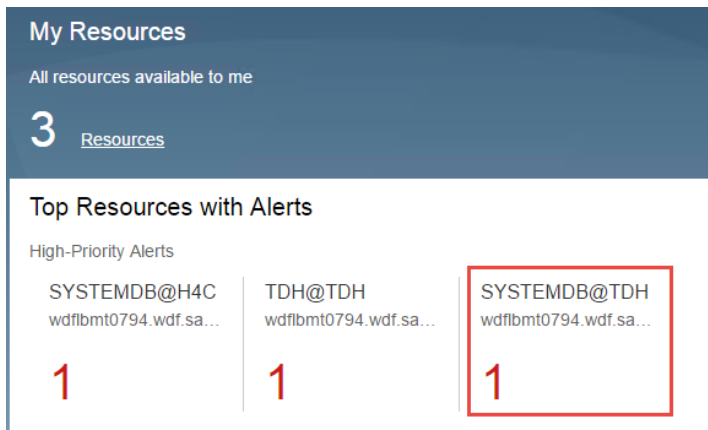
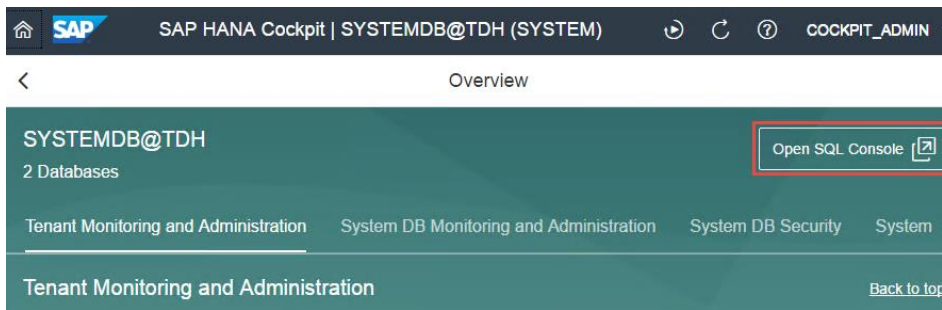
Screenshot


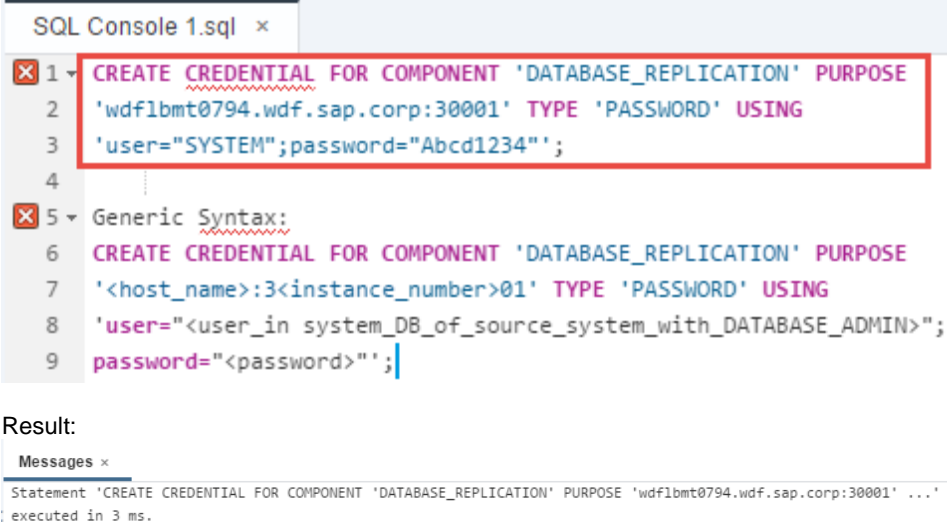

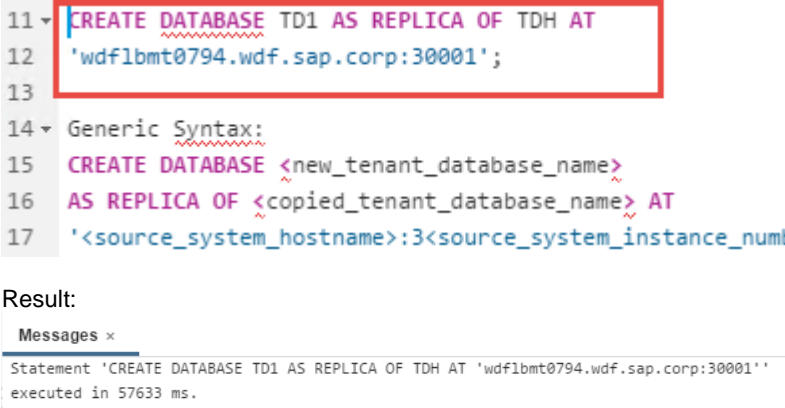
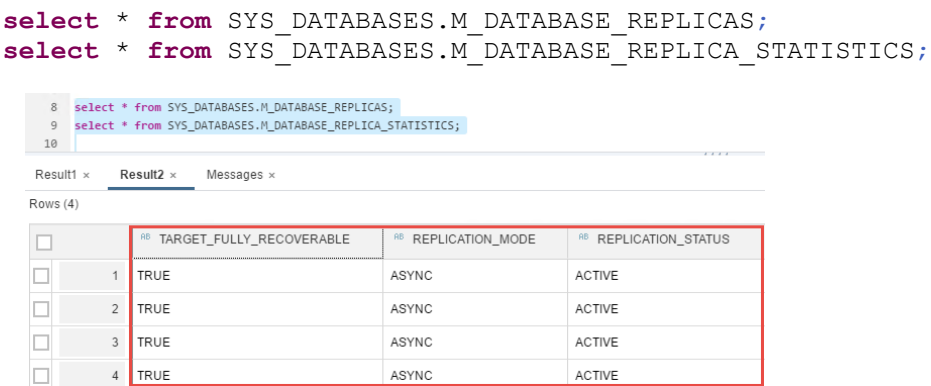
The screenshot shows the 'CollectionSource' configuration page. At the top, the 'Purpose' is set to 'None', which is highlighted with a red box. Below it, 'Private Key' is 'Available' and 'Created By' is 'SYSTEM'. A table titled 'Certificates (1)' shows one certificate issued to 'SAP HANA Teched 2017 MDC Demo' by 'SAP HANA Teched 2017 MDC Demo' on Jan 6, 2018. The 'Function' is 'Personal'. There are buttons for 'Set Own Certificate' and 'Add Certificate'. At the bottom, there are 'Save' and 'Cancel' buttons.

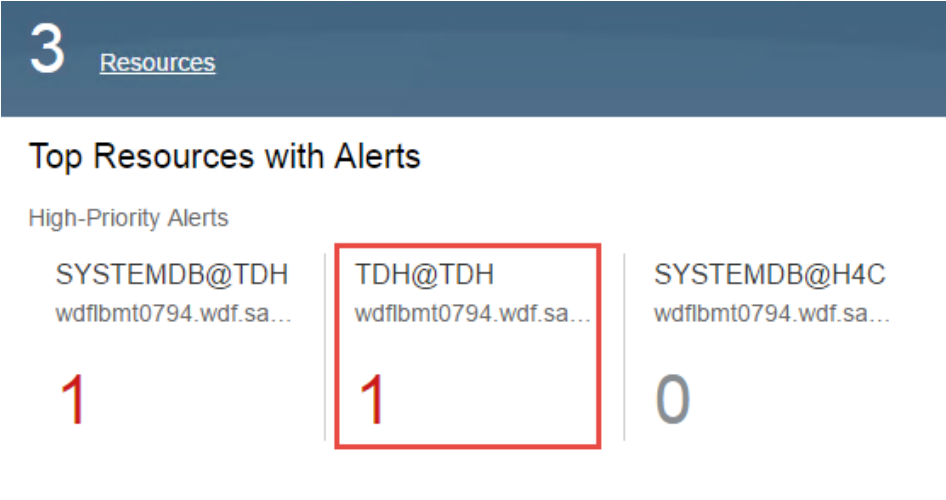
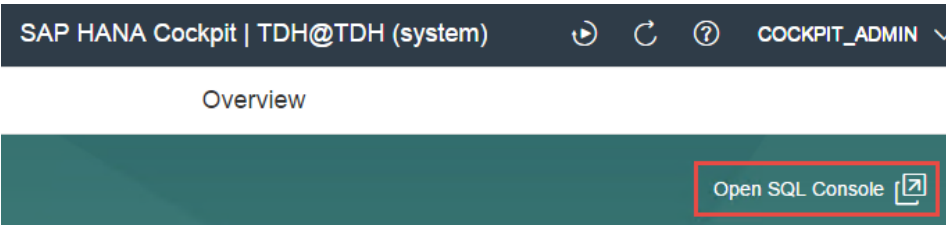
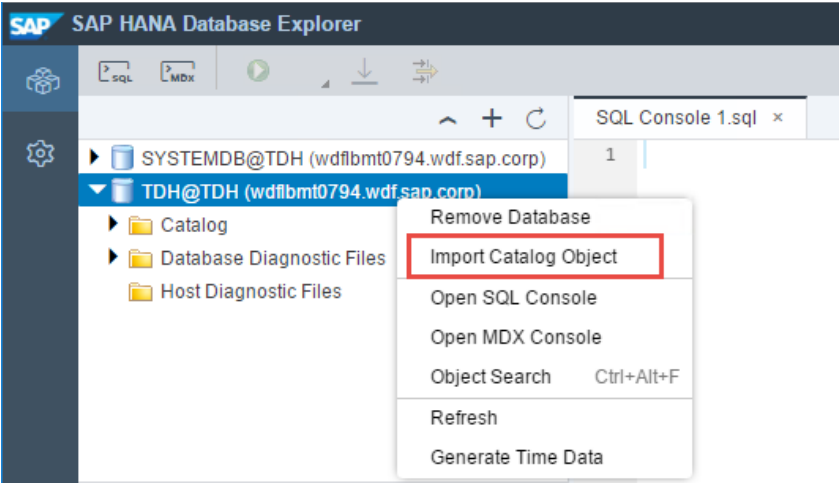
Result:

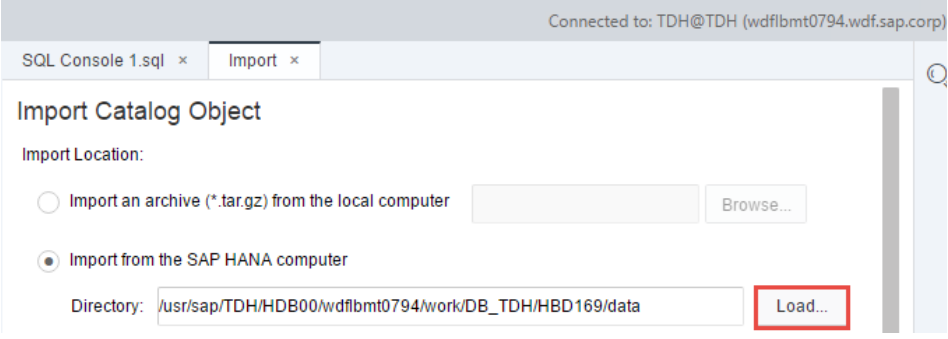
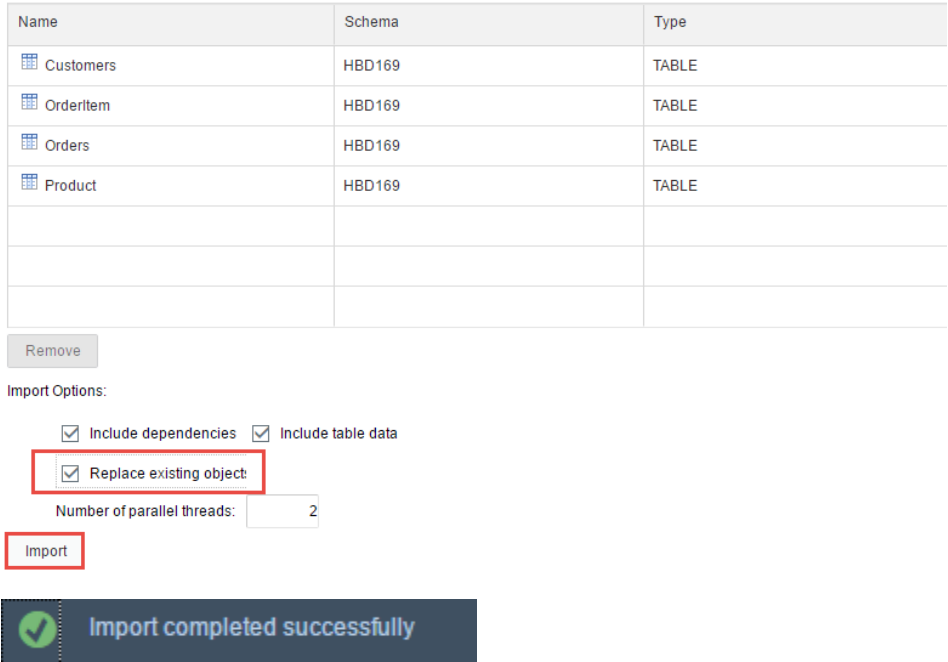
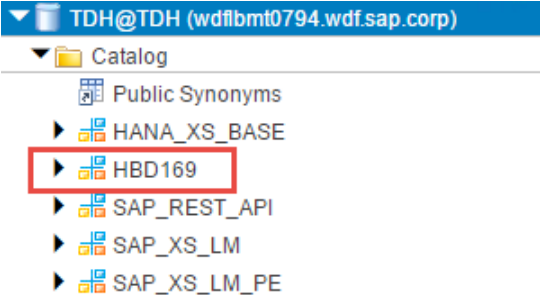
The screenshot shows the 'CollectionSource' configuration page after the change. The 'Purpose' is now 'SSL', highlighted with a red box. 'Private Key' is 'Available' and 'Created By' is 'SYSTEM'. The 'Certificates (1)' table remains the same. The 'Set Own Certificate' and 'Add Certificate' buttons are still present. At the bottom, there are 'Save' and 'Cancel' buttons.

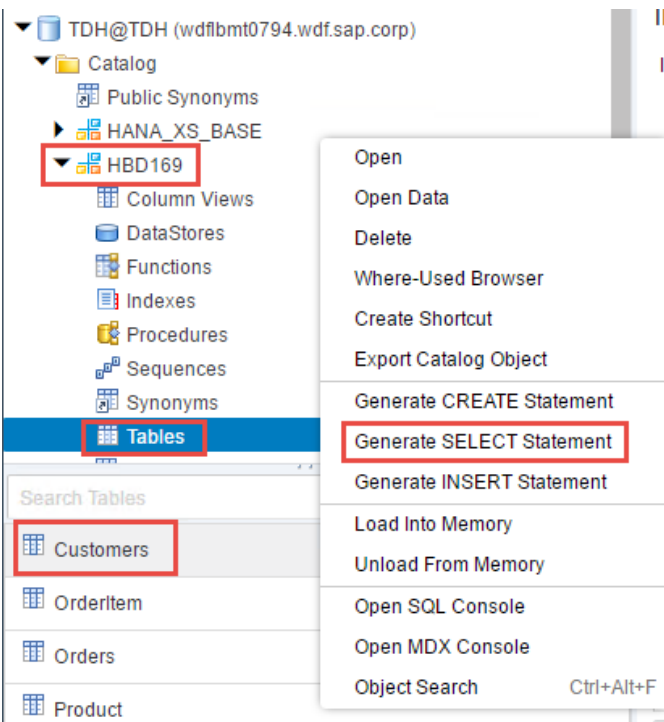
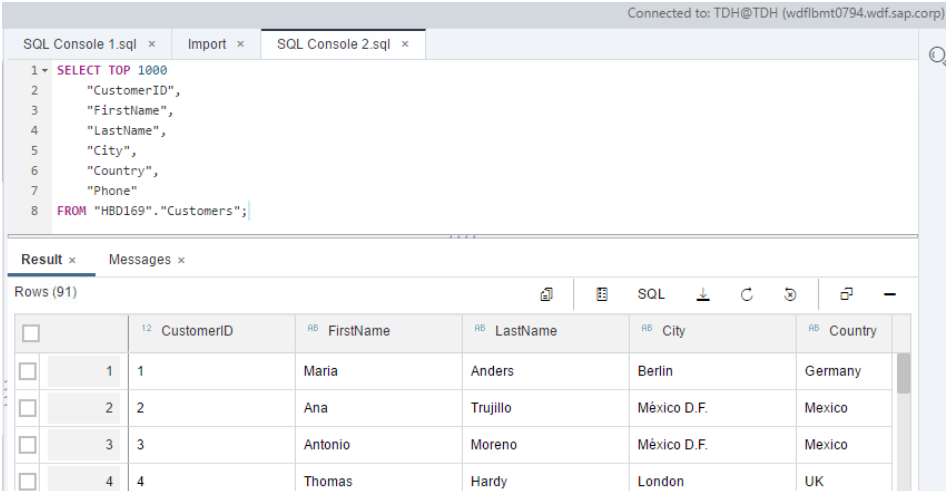
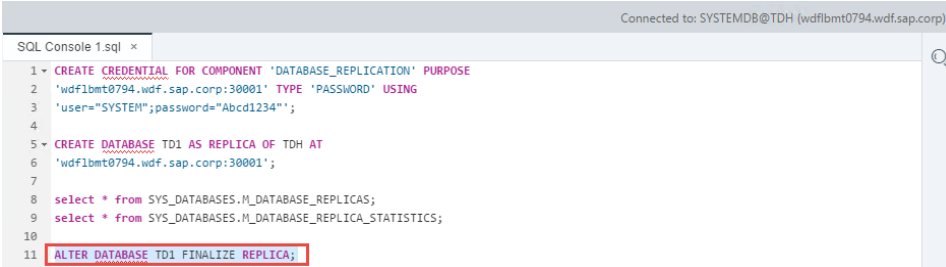
Explanation	Screenshot
50. Next, select the <b>home</b> screen, followed by tenant <b>TDH@TDH</b> .	
51. Scroll down and select <b>"Manage database backups"</b> .  In the next screen select <b>"Create Backup"</b>	
52. Now create a complete file backup of the TDH database tenant.	 <p>Result:</p>

Explanation	Screenshot
	
53. Next, select the <b>home</b> screen, followed by <b>SYSTEMDB@TDH</b> .	
54. Select “ <b>Open SQL Console</b> ” for <b>SYSTEMDB@TDH</b> .	

Explanation	Screenshot
<p>55. <b>Create a credential</b> for the Database Replication component. Make sure to enter the fully qualified hostname of the VM. Select the statement to execute and execute the SQL statement by selecting the statement and clicking execute (  )</p> <p><i>Note: copy the command from the provided SQL statements file in the session share.</i></p>	 <pre> SQL Console 1.sql x 1 CREATE CREDENTIAL FOR COMPONENT 'DATABASE_REPLICATION' PURPOSE 2 'wdf1bmt0794.wdf.sap.corp:30001' TYPE 'PASSWORD' USING 3 'user="SYSTEM";password="Abcd1234"'; 4 5 Generic Syntax: 6 CREATE CREDENTIAL FOR COMPONENT 'DATABASE_REPLICATION' PURPOSE 7 '&lt;host_name&gt;:3&lt;instance_number&gt;01' TYPE 'PASSWORD' USING 8 'user="&lt;user_in system_DB_of_source_system_with_DATABASE_ADMIN&gt;"; 9 password="&lt;password&gt;";  Result: Messages x Statement 'CREATE CREDENTIAL FOR COMPONENT 'DATABASE_REPLICATION' PURPOSE 'wdf1bmt0794.wdf.sap.corp:30001' ...' executed in 3 ms. </pre>
<p>56. Next, execute the <b>"Create Database"</b> SQL statement to start the replication. Make sure to enter the fully qualified hostname of the VM. Execute the SQL statement by selecting the statement and clicking execute (  )</p> <p><i>Note: copy the command from the provided SQL statements file in the session share.</i></p>	 <pre> 11 CREATE DATABASE TD1 AS REPLICA OF TDH AT 12 'wdf1bmt0794.wdf.sap.corp:30001'; 13 14 Generic Syntax: 15 CREATE DATABASE &lt;new_tenant_database_name&gt; 16 AS REPLICA OF &lt;copied_tenant_database_name&gt; AT 17 '&lt;source_system_hostname&gt;:3&lt;source_system_instance_number&gt;01';  Result: Messages x Statement 'CREATE DATABASE TD1 AS REPLICA OF TDH AT 'wdf1bmt0794.wdf.sap.corp:30001'' executed in 57633 ms. </pre>
<p>57. Run the monitoring statements from the same SQL Console. In the result window scroll over to the right and refresh a few times until the column "TARGET_FULLY_RECOVERABLE" is TRUE and column "REPLICATION_STATUSES" is ACTIVE. Now you can move to the next step.</p>	 <pre> select * from SYS_DATABASES.M_DATABASE_REPLICAS; select * from SYS_DATABASES.M_DATABASE_REPLICA_STATISTICS;  8 select * from SYS_DATABASES.M_DATABASE_REPLICAS; 9 select * from SYS_DATABASES.M_DATABASE_REPLICA_STATISTICS; 10  Result1 x Result2 x Messages x Rows (4)  RB TARGET_FULLY_RECOVERABLE RB REPLICATION_MODE RB REPLICATION_STATUS 1 TRUE ASYNC ACTIVE 2 TRUE ASYNC ACTIVE 3 TRUE ASYNC ACTIVE 4 TRUE ASYNC ACTIVE </pre>

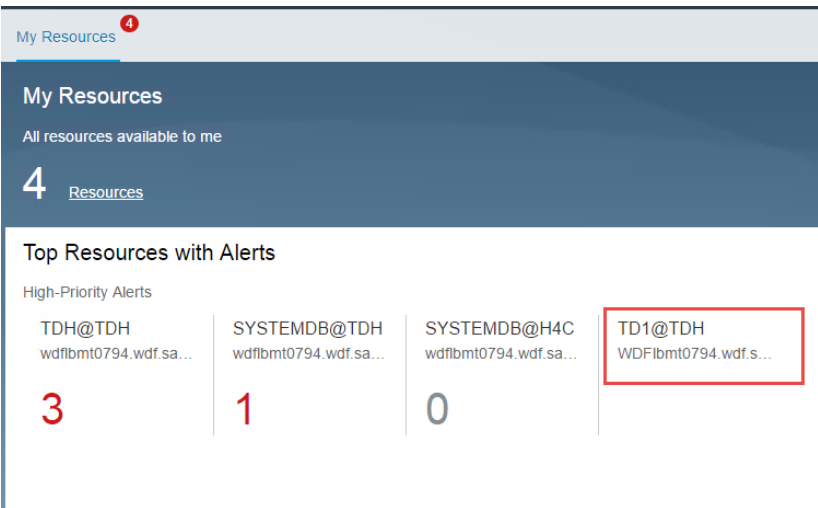
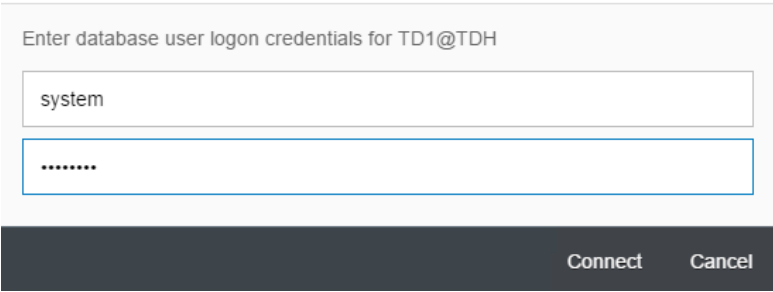

Explanation	Screenshot								
<p><i>Note: copy the command from the provided SQL statements file in the session share.</i></p>									
<p>58. To prove that replication is working we will load some data in the TDH tenant. Switch back to the SAP HANA Cockpit tab, navigate to the home page (🏠), and click on the <b>TDH@TDH</b> resource</p>	 <p>3 <a href="#">Resources</a></p> <h3>Top Resources with Alerts</h3> <p>High-Priority Alerts</p> <table border="1"> <thead> <tr> <th>Resource</th> <th>Alerts</th> </tr> </thead> <tbody> <tr> <td>SYSTEMDB@TDH wdfibmt0794.wdf.sa...</td> <td>1</td> </tr> <tr> <td><b>TDH@TDH</b> wdfibmt0794.wdf.sa...</td> <td>1</td> </tr> <tr> <td>SYSTEMDB@H4C wdfibmt0794.wdf.sa...</td> <td>0</td> </tr> </tbody> </table>	Resource	Alerts	SYSTEMDB@TDH wdfibmt0794.wdf.sa...	1	<b>TDH@TDH</b> wdfibmt0794.wdf.sa...	1	SYSTEMDB@H4C wdfibmt0794.wdf.sa...	0
Resource	Alerts								
SYSTEMDB@TDH wdfibmt0794.wdf.sa...	1								
<b>TDH@TDH</b> wdfibmt0794.wdf.sa...	1								
SYSTEMDB@H4C wdfibmt0794.wdf.sa...	0								
<p>59. Select <b>“Open SQL Console”</b> for TDH@TDH. This opens the SAP HANA Database Explorer in a new tab.</p>	 <p>SAP HANA Cockpit   TDH@TDH (system) 🔍 ↻ ⓘ COCKPIT_ADMIN ▾</p> <p>Overview</p> <p>Open SQL Console 🗑</p>								
<p>60. Right-click on TDH@TDH and select <b>“Import Catalog Object”</b>.</p>	 <p>SAP HANA Database Explorer</p> <p>SQL Console 1.sql x</p> <ul style="list-style-type: none"> <li>SYSTEMDB@TDH (wdfibmt0794.wdf.sap.corp)</li> <li><b>TDH@TDH (wdfibmt0794.wdf.sap.corp)</b> <ul style="list-style-type: none"> <li>Catalog</li> <li>Database Diagnostic Files</li> <li>Host Diagnostic Files</li> </ul> </li> </ul> <p>Context Menu:</p> <ul style="list-style-type: none"> <li>Remove Database</li> <li><b>Import Catalog Object</b></li> <li>Open SQL Console</li> <li>Open MDX Console</li> <li>Object Search Ctrl+Alt+F</li> <li>Refresh</li> <li>Generate Time Data</li> </ul>								

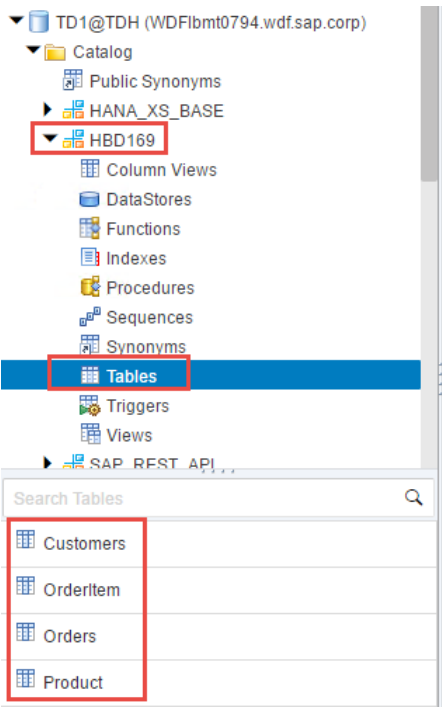
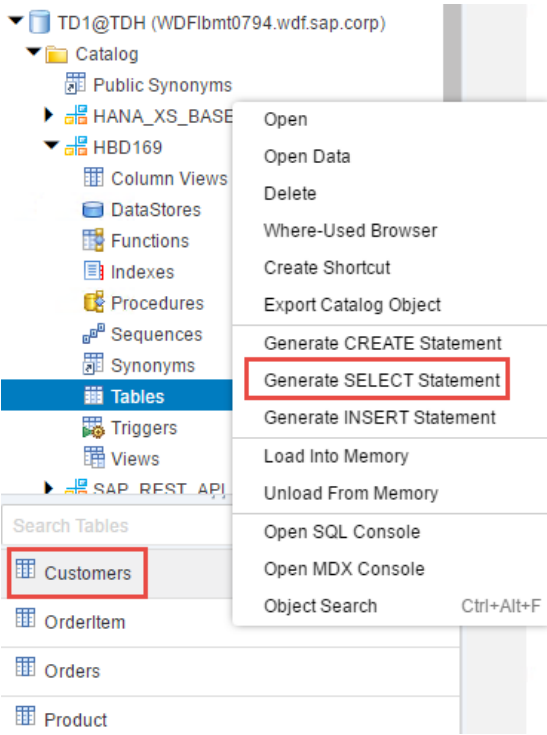
Explanation	Screenshot
<p>61. We will import objects from the SAP HANA computer. Enter the path <code>/usr/sap/TDH/HDB00/wdfibmt0794/work/DB_TDH/HBD169/data</code>, and click <b>Load</b></p>	
<p>62. Now the tables are visible, enable "<b>Replace existing object</b>", and click on <b>Import</b>. In the upper right, there will be a message "Import completed successfully".</p>	
<p>63. <b>Expand</b> the TDH@TDH, catalog tree. The imported tables should be in schema HBD169. If schema HBD169 is not visible, right click on TDH@TDH and select refresh.</p>	

Explanation	Screenshot																														
64. When you click on <b>Tables</b> , the 4 imported tables are visible in the pane right below. <b>Right click</b> on the Customers table and select “ <b>Generate SELECT Statement</b> ”.	 <p>The screenshot shows the SAP HANA Studio interface. On the left, the 'Catalog' tree is expanded to 'HBD169', and the 'Tables' tab is selected. Below the tree, a list of tables is shown: 'Customers', 'OrderItem', 'Orders', and 'Product'. The 'Customers' table is highlighted. A right-click context menu is open over the 'Customers' table, showing options like 'Open', 'Open Data', 'Delete', 'Where-Used Browser', 'Create Shortcut', 'Export Catalog Object', 'Generate CREATE Statement', 'Generate SELECT Statement' (highlighted), 'Generate INSERT Statement', 'Load Into Memory', 'Unload From Memory', 'Open SQL Console', 'Open MDX Console', and 'Object Search'.</p>																														
65. <b>Execute</b> the query	 <p>The screenshot shows the SQL Console interface. The query is: <code>SELECT TOP 1000 "CustomerID", "FirstName", "LastName", "City", "Country", "Phone" FROM "HBD169"."Customers";</code>. The result set is displayed below the query, showing 4 rows of customer data.</p> <table><tr><th></th><th>CustomerID</th><th>FirstName</th><th>LastName</th><th>City</th><th>Country</th></tr><tr><td>1</td><td>1</td><td>Maria</td><td>Anders</td><td>Berlin</td><td>Germany</td></tr><tr><td>2</td><td>2</td><td>Ana</td><td>Trujillo</td><td>México D.F.</td><td>Mexico</td></tr><tr><td>3</td><td>3</td><td>Antonio</td><td>Moreno</td><td>México D.F.</td><td>Mexico</td></tr><tr><td>4</td><td>4</td><td>Thomas</td><td>Hardy</td><td>London</td><td>UK</td></tr></table>		CustomerID	FirstName	LastName	City	Country	1	1	Maria	Anders	Berlin	Germany	2	2	Ana	Trujillo	México D.F.	Mexico	3	3	Antonio	Moreno	México D.F.	Mexico	4	4	Thomas	Hardy	London	UK
	CustomerID	FirstName	LastName	City	Country																										
1	1	Maria	Anders	Berlin	Germany																										
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3	3	Antonio	Moreno	México D.F.	Mexico																										
4	4	Thomas	Hardy	London	UK																										
66. Go back to the SQL Console for connection SYSTEMDB@TDH and execute SQL statement:  <b>ALTER DATABASE TD1 FINALIZE REPLICA;</b>	 <p>The screenshot shows the SQL Console interface. The query is: <code>ALTER DATABASE TD1 FINALIZE REPLICA;</code>. The result set is displayed below the query, showing 1 row of data.</p>																														

Explanation	Screenshot																				
<p>The command creates a clone, if you would want to move the tenant instead of a clone, the command would have been</p> <p>“<b>ALTER DATABASE</b> TD1 FINALIZE REPLICA <b>DROP SOURCE</b>”.</p> <p><b>Note: this may take a few minutes, so wait for the command to finish.</b></p> <p><i>When executing this statement, HANA goes through several steps:</i></p> <ol style="list-style-type: none"><li>1. Check replication status</li><li>2. Switch from async to sync replication</li><li>3. Wait for re-syncing</li><li>4. Stop replication</li><li>5. Trigger takeover (i.e. start database)</li></ol>	<p>Result:</p> <div>Messages x</div> <div>Statement 'ALTER DATABASE TD1 FINALIZE REPLICA' executed in 98402 ms.</div> <div>67. Verify database TD1 is running. In the same SQL Console window execute:</div> <div>Select * from m_databases;</div> <div><div>12 13 select * from m_databases;</div><div>Result x Messages x</div><div>Rows (3)</div><table><tr><th></th><th></th><th>DB DATABASE_NAME</th><th>DB DESCRIPTION</th><th>DB ACTIVE_STATUS</th></tr><tr><td><input type="checkbox"/></td><td>1</td><td>SYSTEMDB</td><td>SystemDB-TDH-00</td><td>YES</td></tr><tr><td><input type="checkbox"/></td><td>2</td><td>TDH</td><td>TDH-00</td><td>YES</td></tr><tr><td><input type="checkbox"/></td><td>3</td><td>TD1</td><td></td><td>YES</td></tr></table></div>			DB DATABASE_NAME	DB DESCRIPTION	DB ACTIVE_STATUS	<input type="checkbox"/>	1	SYSTEMDB	SystemDB-TDH-00	YES	<input type="checkbox"/>	2	TDH	TDH-00	YES	<input type="checkbox"/>	3	TD1		YES
		DB DATABASE_NAME	DB DESCRIPTION	DB ACTIVE_STATUS																	
<input type="checkbox"/>	1	SYSTEMDB	SystemDB-TDH-00	YES																	
<input type="checkbox"/>	2	TDH	TDH-00	YES																	
<input type="checkbox"/>	3	TD1		YES																	



Explanation	Screenshot										
68. <b>Register</b> the new tenant TD1 in the SAP HANA Cockpit Manager (see steps 5 – 12). Once registered switch the SAP HANA Cockpit tab, after refresh the TD1 tenant should be visible. Click on <b>TD1@TDH</b> .	 <p>The screenshot shows the 'My Resources' page in the SAP HANA Cockpit Manager. The page title is 'My Resources' with a subtitle 'All resources available to me'. Below this, there is a section 'Top Resources with Alerts' under the heading 'High-Priority Alerts'. This section displays a table of resources with their alert counts:</p> <table border="1"> <thead> <tr> <th>Resource</th> <th>Alerts</th> </tr> </thead> <tbody> <tr> <td>TDH@TDH wdfibmt0794.wdf.sa...</td> <td>3</td> </tr> <tr> <td>SYSTEMDB@TDH wdfibmt0794.wdf.sa...</td> <td>1</td> </tr> <tr> <td>SYSTEMDB@H4C wdfibmt0794.wdf.sa...</td> <td>0</td> </tr> <tr> <td>TD1@TDH WDFibmt0794.wdf.s...</td> <td></td> </tr> </tbody> </table> <p>The 'TD1@TDH' resource is highlighted with a red box.</p>	Resource	Alerts	TDH@TDH wdfibmt0794.wdf.sa...	3	SYSTEMDB@TDH wdfibmt0794.wdf.sa...	1	SYSTEMDB@H4C wdfibmt0794.wdf.sa...	0	TD1@TDH WDFibmt0794.wdf.s...	
Resource	Alerts										
TDH@TDH wdfibmt0794.wdf.sa...	3										
SYSTEMDB@TDH wdfibmt0794.wdf.sa...	1										
SYSTEMDB@H4C wdfibmt0794.wdf.sa...	0										
TD1@TDH WDFibmt0794.wdf.s...											
69. Authenticate using the <b>SYSTEM</b> user.	 <p>The screenshot shows the 'Connect' dialog box. The title is 'Connect'. The prompt is 'Enter database user login credentials for TD1@TDH'. The username field contains 'system'. The password field is masked with dots. The 'Connect' button is highlighted.</p>										
70. Open the <b>SQL Console</b> for tenant TD1@TDH.	 <p>The screenshot shows the 'SAP HANA Cockpit   TD1@TDH' page. The page title is 'SAP HANA Cockpit   TD1@TDH'. The page has a dark header with navigation icons and the user 'COCKPIT_ADMIN'. Below the header, the page is titled 'Overview'. At the bottom right, there is a button labeled 'Open SQL Console' with a link icon, which is highlighted with a red box.</p>										

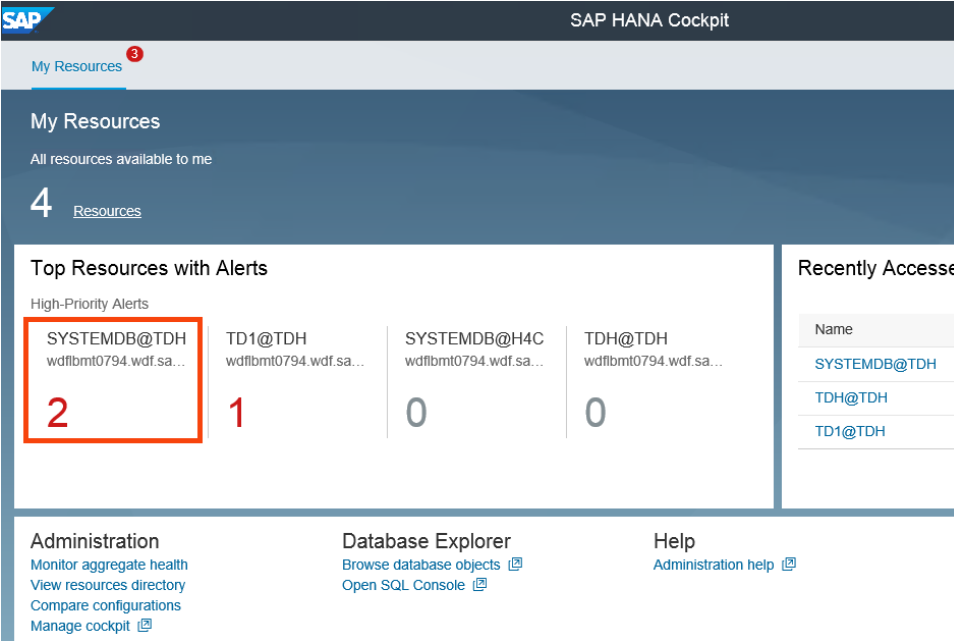
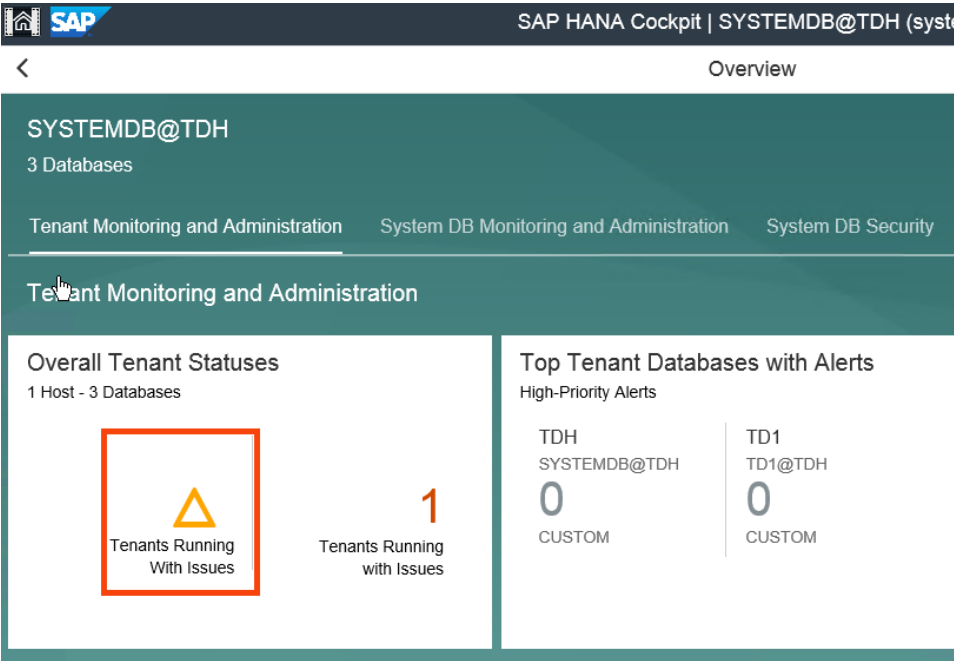
Explanation	Screenshot
71. <b>Verify</b> the table imported in source database TDH are present in target database TD1.	
72. Right click on table Customers, select <b>"Generate SELECT Statement"</b> and verify the data was replicated/copied.	

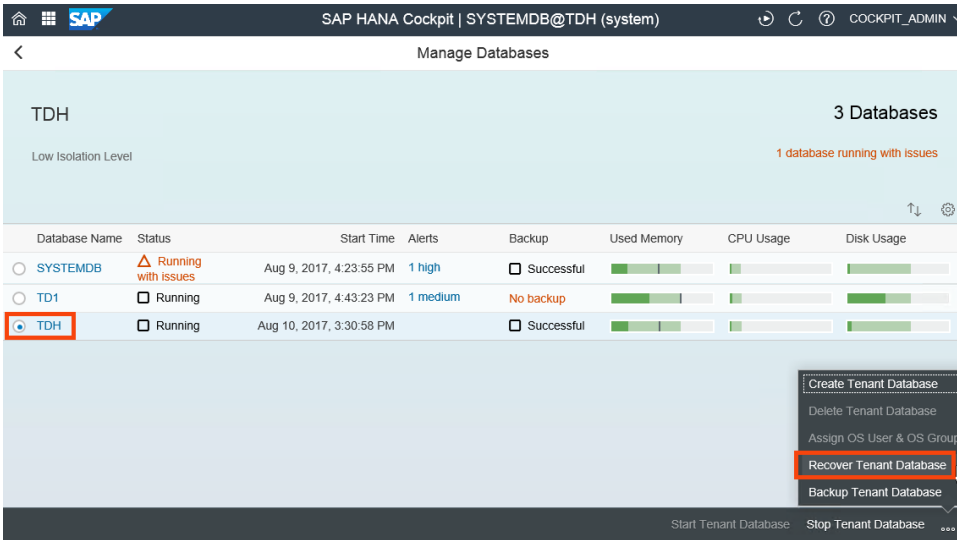
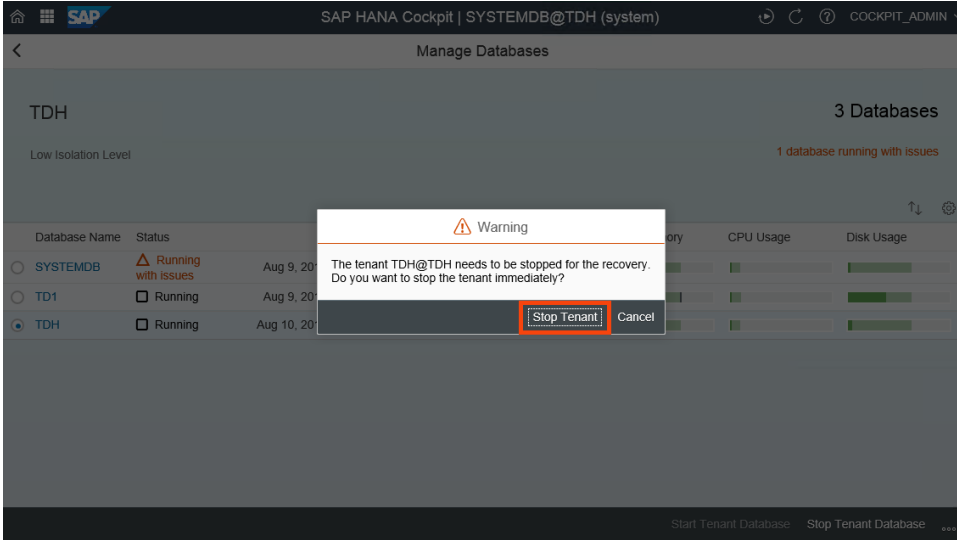
Explanation	Screenshot
73. Result.	<div><div>SQL Console 1.sql xSQL Console 2.sql x</div><div><div>1 SELECT TOP 1000</div><div>2 "CustomerID",</div><div>3 "FirstName",</div><div>4 "LastName",</div><div>5 "City",</div><div>6 "Country",</div><div>7 "Phone"</div><div>8 FROM "HBD169"."Customers";</div></div><div><div>Result xMessages x</div><div>Rows (91)</div><div><div><div></div><div>12</div><div>CustomerID</div></div><div><div></div><div>RB</div><div>FirstName</div></div><div><div></div><div>RB</div><div>LastName</div></div><div><div></div><div>RB</div><div>City</div></div></div><div><div></div><div>1</div><div>1</div><div>Maria</div><div>Anders</div><div>Berlin</div></div><div><div></div><div>2</div><div>2</div><div>Ana</div><div>Trujillo</div><div>México D.F.</div></div><div><div></div><div>3</div><div>3</div><div>Antonio</div><div>Moreno</div><div>México D.F.</div></div></div></div>

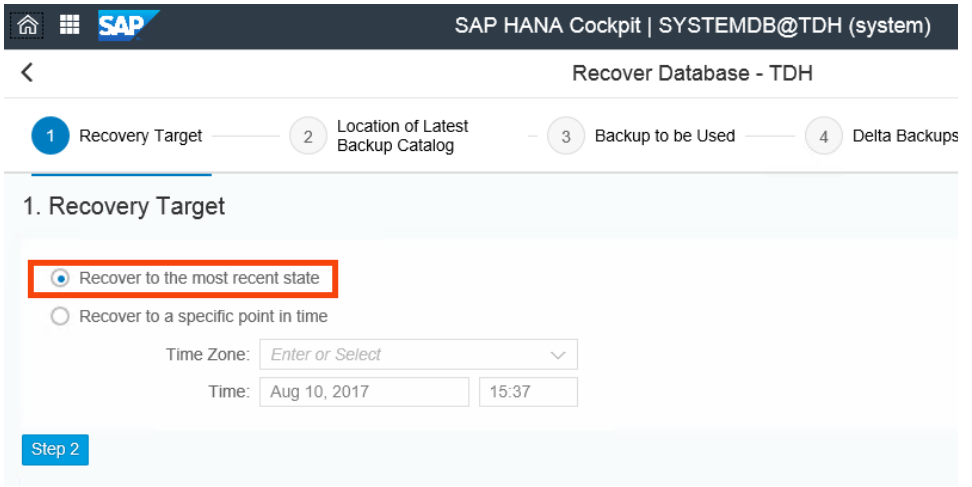
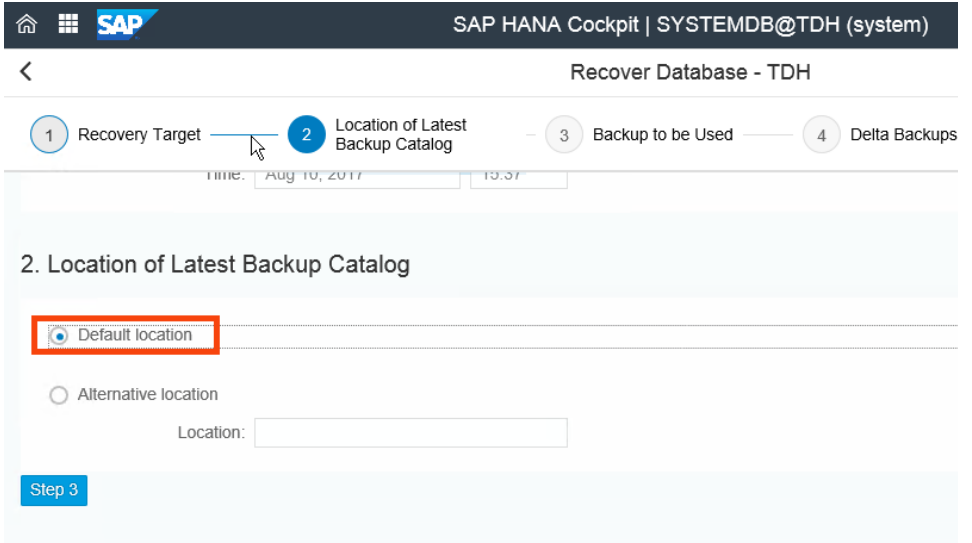
The results show that the copy of tenant TDH to tenant TD1 worked. The tables were replicated from tenant TDH to tenant TD1 successfully.

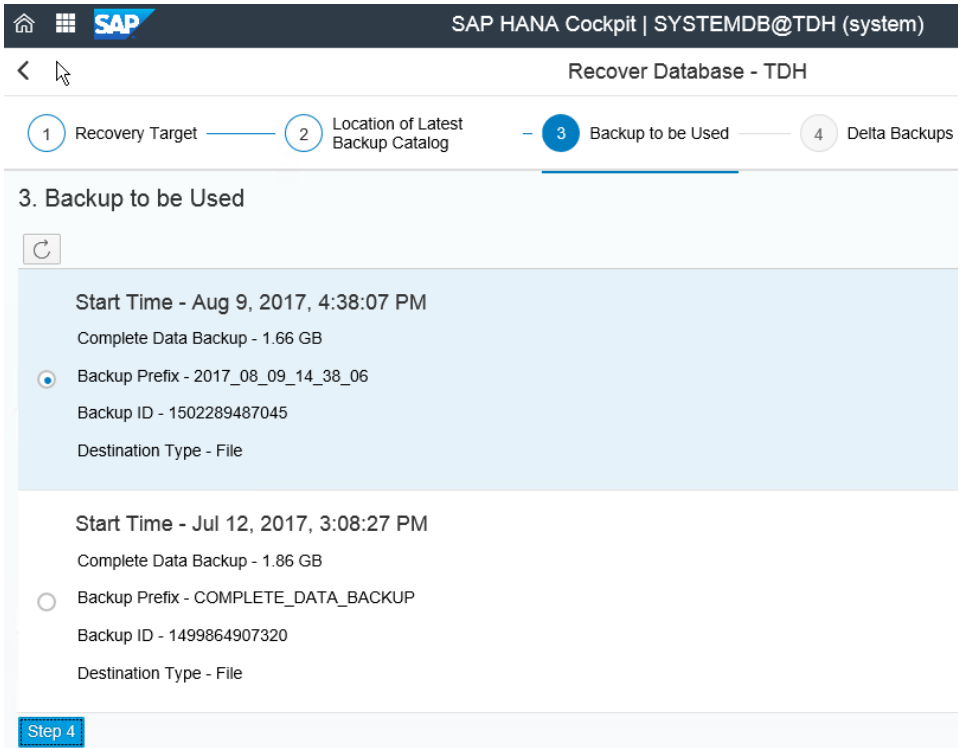
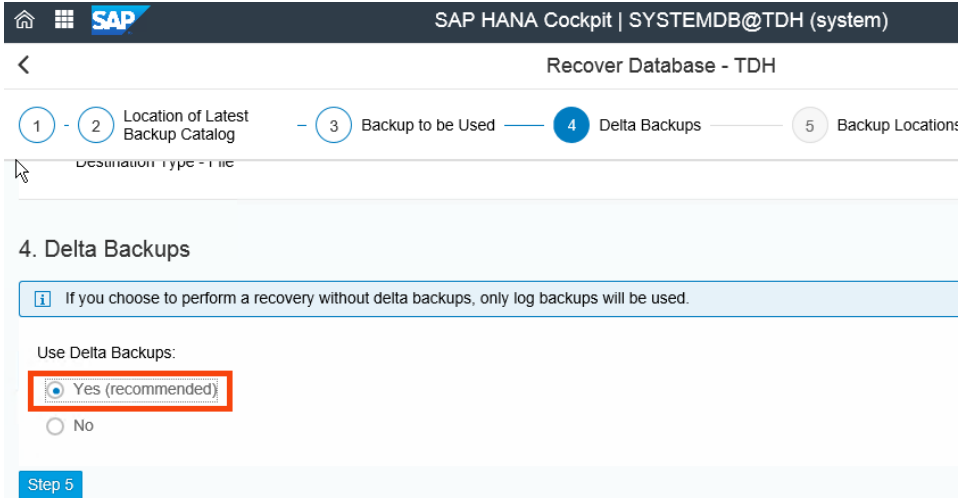
**EXERCISE 3 (OPTIONAL): RECOVER TENANT DATABASE**

In this exercise, you will use an existing backup to recover a tenant as an example of a tenant refresh. The steps to copy a tenant will be similar, but requires downtime on the source tenant.

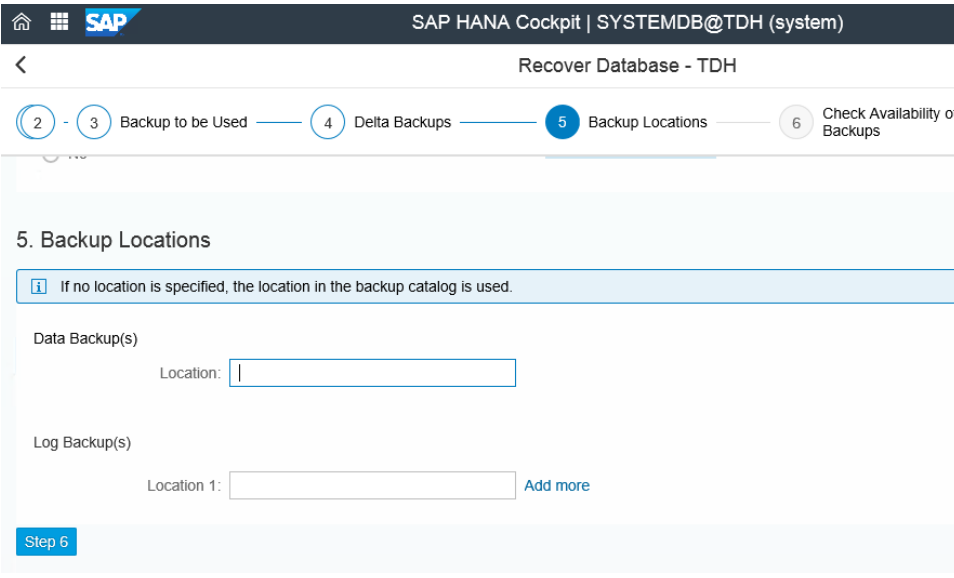
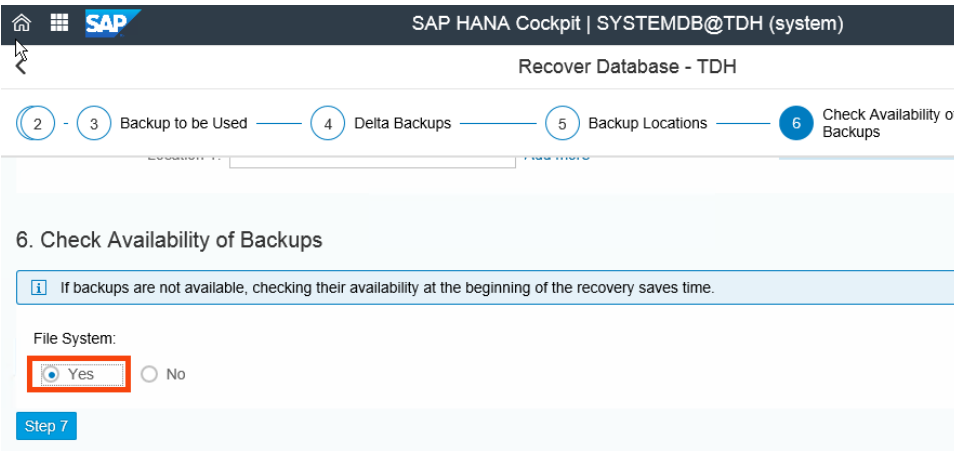
Explanation	Screenshot
74. Start logged in as <b>COCKPIT_ADMIN</b> user in the SAP HANA Cockpit ( <a href="https://wdfibmt0794.wdf.sap.corp:51021">https://wdfibmt0794.wdf.sap.corp:51021</a> ). Click on <b>SYSTEMDB@TDH</b> . If you are challenged for database credentials, use the <b>SYSTEM</b> user	
75. Click on <b>Tenants Running With Issues</b> icon.	

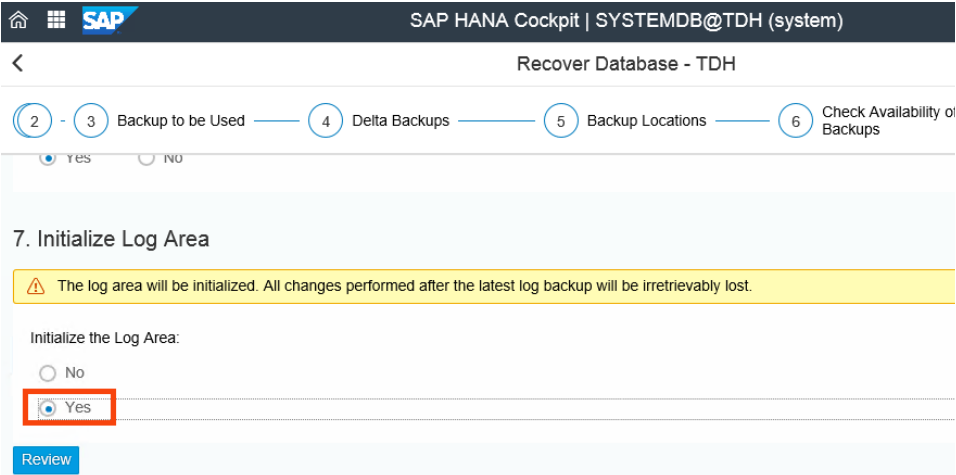
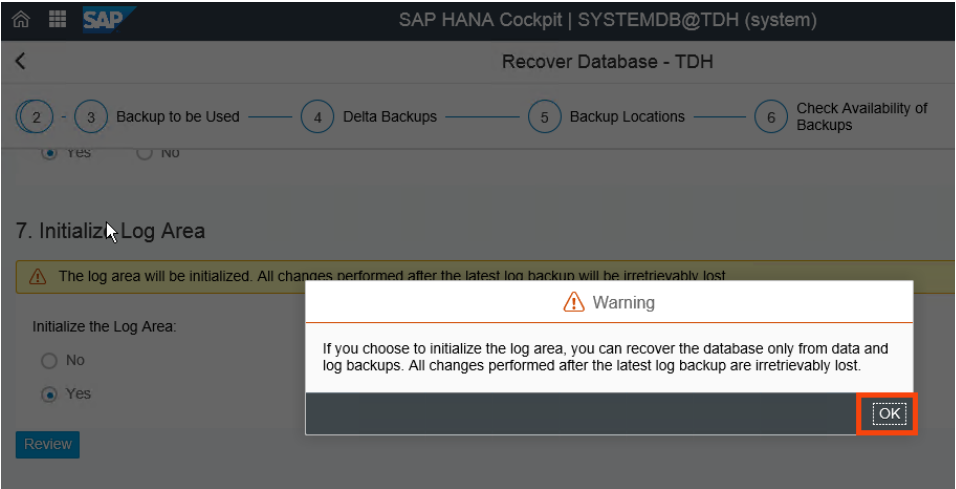
Explanation	Screenshot
76. Select tenant <b>TDH</b> . In the lower right corner click on the <b>three dots</b> , and select <b>Recover Tenant Database</b> .	
77. Click on <b>Stop Tenant</b> .	

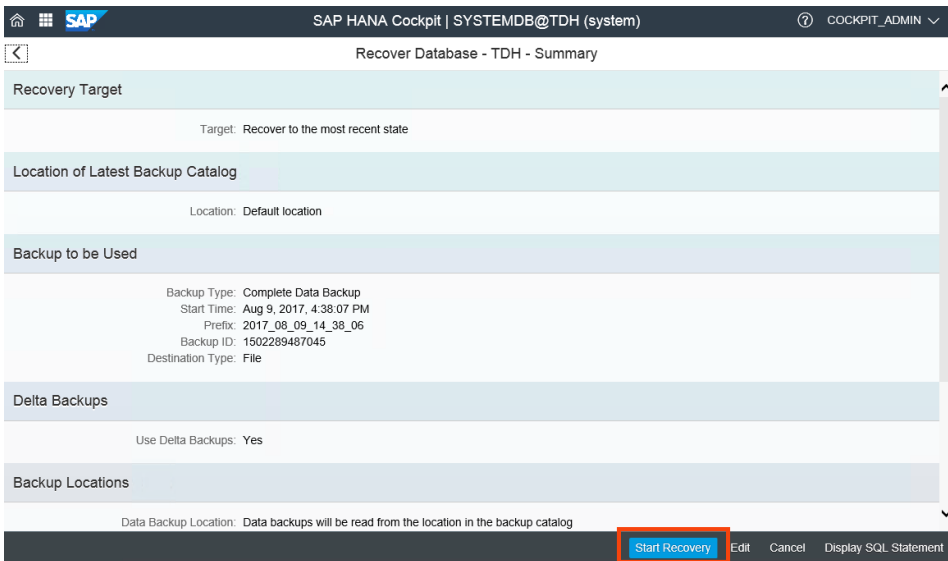

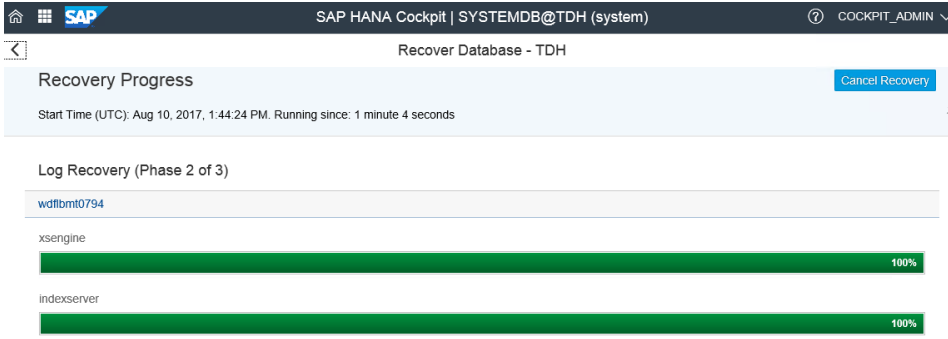
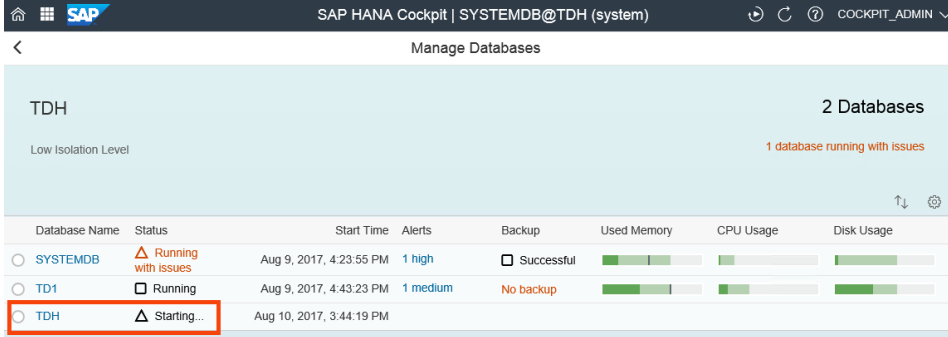
Explanation	Screenshot
78. Select <b>Recover to the most recent state</b> and click on <b>Step 2</b> .	 <p>SAP HANA Cockpit   SYSTEMDB@TDH (system)</p> <p>Recover Database - TDH</p> <p>1 Recovery Target — 2 Location of Latest Backup Catalog — 3 Backup to be Used — 4 Delta Backups</p> <p>1. Recovery Target</p> <p><input checked="" type="radio"/> Recover to the most recent state</p> <p><input type="radio"/> Recover to a specific point in time</p> <p>Time Zone: <input type="text" value="Enter or Select"/></p> <p>Time: <input type="text" value="Aug 10, 2017"/> <input type="text" value="15:37"/></p> <p>Step 2</p>
79. Select <b>Default location</b> and click on <b>Step 3</b> .	 <p>SAP HANA Cockpit   SYSTEMDB@TDH (system)</p> <p>Recover Database - TDH</p> <p>1 Recovery Target — 2 Location of Latest Backup Catalog — 3 Backup to be Used — 4 Delta Backups</p> <p>Time: <input type="text" value="Aug 10, 2017"/> <input type="text" value="15:37"/></p> <p>2. Location of Latest Backup Catalog</p> <p><input checked="" type="radio"/> Default location</p> <p><input type="radio"/> Alternative location</p> <p>Location: <input type="text"/></p> <p>Step 3</p>

Explanation	Screenshot
80. Select a backup (if more than one is available choose the most recent one) and click on <b>Step 4</b> .	 <p>The screenshot shows the 'Recover Database - TDH' wizard in the SAP HANA Cockpit. The progress bar at the top indicates four steps: 1. Recovery Target, 2. Location of Latest Backup Catalog, 3. Backup to be Used (current step), and 4. Delta Backups. Under '3. Backup to be Used', there are two backup options. The first option is selected with a radio button and shows details: Start Time - Aug 9, 2017, 4:38:07 PM; Complete Data Backup - 1.66 GB; Backup Prefix - 2017_08_09_14_38_06; Backup ID - 1502289487045; Destination Type - File. The second option is unselected and shows details: Start Time - Jul 12, 2017, 3:08:27 PM; Complete Data Backup - 1.86 GB; Backup Prefix - COMPLETE_DATA_BACKUP; Backup ID - 1499864907320; Destination Type - File. A 'Step 4' button is visible at the bottom left of the wizard area.</p>
81. Select <b>Yes</b> and click on <b>Step 5</b> .	 <p>The screenshot shows the 'Recover Database - TDH' wizard in the SAP HANA Cockpit. The progress bar at the top indicates five steps: 1. Recovery Target, 2. Location of Latest Backup Catalog, 3. Backup to be Used, 4. Delta Backups (current step), and 5. Backup Locations. Under '4. Delta Backups', there is an information icon and a message: 'If you choose to perform a recovery without delta backups, only log backups will be used.' Below this, there is a section 'Use Delta Backups:' with two radio button options: 'Yes (recommended)' (which is selected and highlighted with a red rectangle) and 'No'. A 'Step 5' button is visible at the bottom left of the wizard area.</p>



Explanation	Screenshot
82. Click on <b>Step 6</b> .	 <p>The screenshot shows the 'Recover Database - TDH' wizard in the SAP HANA Cockpit. The progress bar at the top indicates six steps: 2. Backup to be Used, 3. Backup to be Used, 4. Delta Backups, 5. Backup Locations (highlighted in blue), and 6. Check Availability of Backups. The main content area is titled '5. Backup Locations' and contains an information box stating: 'If no location is specified, the location in the backup catalog is used.' Below this, there are two sections: 'Data Backup(s)' with a 'Location:' text input field, and 'Log Backup(s)' with a 'Location 1:' text input field and an 'Add more' button. A blue 'Step 6' button is located at the bottom left of the wizard area.</p>
83. Select <b>Yes</b> and click on <b>Step 7</b> .	 <p>The screenshot shows the 'Recover Database - TDH' wizard in the SAP HANA Cockpit. The progress bar at the top indicates six steps: 2. Backup to be Used, 3. Backup to be Used, 4. Delta Backups, 5. Backup Locations, and 6. Check Availability of Backups (highlighted in blue). The main content area is titled '6. Check Availability of Backups' and contains an information box stating: 'If backups are not available, checking their availability at the beginning of the recovery saves time.' Below this, there is a 'File System:' section with two radio buttons: 'Yes' (selected and highlighted with a red box) and 'No'. A blue 'Step 7' button is located at the bottom left of the wizard area.</p>

Explanation	Screenshot
84. Select <b>Yes</b> .	
85. Confirm Warning with <b>OK</b> and click on <b>Review</b> .	

Explanation	Screenshot																																
86. Check Summary and click on <b>Start Recovery</b> .	 <p>The screenshot shows the 'Recover Database - TDH - Summary' page in SAP HANA Cockpit. The page includes sections for 'Recovery Target' (Target: Recover to the most recent state), 'Location of Latest Backup Catalog' (Location: Default location), 'Backup to be Used' (Backup Type: Complete Data Backup, Start Time: Aug 9, 2017, 4:38:07 PM, Prefix: 2017_08_09_14_38_06, Backup ID: 1502289487045, Destination Type: File), 'Delta Backups' (Use Delta Backups: Yes), and 'Backup Locations' (Data Backup Location: Data backups will be read from the location in the backup catalog). The 'Start Recovery' button is highlighted with a red box.</p>																																
87. Check result and click on the back (  ) button in the upper left.	 <p>The screenshot shows the 'Recovery Progress' page in SAP HANA Cockpit. The page displays the 'Recovery Progress' section with a 'Cancel Recovery' button. Below this, the 'Log Recovery (Phase 2 of 3)' section shows progress bars for 'xsengine' and 'indexserver', both at 100%. The back button in the upper left is highlighted with a red box.</p>																																
88. Check that tenant TDH is starting.	 <p>The screenshot shows the 'Manage Databases' page in SAP HANA Cockpit. The page displays a table of databases with columns: Database Name, Status, Start Time, Alerts, Backup, Used Memory, CPU Usage, and Disk Usage. The 'TDH' database is highlighted with a red box, showing a status of 'Starting...'.</p> <table><tr><th>Database Name</th><th>Status</th><th>Start Time</th><th>Alerts</th><th>Backup</th><th>Used Memory</th><th>CPU Usage</th><th>Disk Usage</th></tr><tr><td>SYSTEMDB</td><td>Running with issues</td><td>Aug 9, 2017, 4:23:55 PM</td><td>1 high</td><td>Successful</td><td><div><div></div></div></td><td><div><div></div></div></td><td><div><div></div></div></td></tr><tr><td>TD1</td><td>Running</td><td>Aug 9, 2017, 4:43:23 PM</td><td>1 medium</td><td>No backup</td><td><div><div></div></div></td><td><div><div></div></div></td><td><div><div></div></div></td></tr><tr><td>TDH</td><td>Starting...</td><td>Aug 10, 2017, 3:44:19 PM</td><td></td><td></td><td></td><td></td><td></td></tr></table>	Database Name	Status	Start Time	Alerts	Backup	Used Memory	CPU Usage	Disk Usage	SYSTEMDB	Running with issues	Aug 9, 2017, 4:23:55 PM	1 high	Successful	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	TD1	Running	Aug 9, 2017, 4:43:23 PM	1 medium	No backup	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	TDH	Starting...	Aug 10, 2017, 3:44:19 PM					
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TDH	Starting...	Aug 10, 2017, 3:44:19 PM																															

Explanation	Screenshot																																
89. Check that tenant TDH is running.	<div><div><div><div><div></div><div>SAP HANA Cockpit   SYSTEMDB@TDH (system)</div></div><div><div>Manage Databases</div><div>3 Databases</div><div>1 database running with issues</div></div><table><thead><tr><th>Database Name</th><th>Status</th><th>Start Time</th><th>Alerts</th><th>Backup</th><th>Used Memory</th><th>CPU Usage</th><th>Disk Usage</th></tr></thead><tbody><tr><td><input type="radio"/> SYSTEMDB</td><td><div><div>Running with issues</div></div></td><td>Aug 9, 2017, 4:23:55 PM</td><td>1 high</td><td><input type="checkbox"/> Successful</td><td><div><div></div></div></td><td><div><div></div></div></td><td><div><div></div></div></td></tr><tr><td><input type="radio"/> TD1</td><td><div><div>Running</div></div></td><td>Aug 9, 2017, 4:43:23 PM</td><td>1 medium</td><td>No backup</td><td><div><div></div></div></td><td><div><div></div></div></td><td><div><div></div></div></td></tr><tr><td><input checked="" type="radio"/> TDH</td><td><div><div>Running</div></div></td><td>Aug 10, 2017, 3:44:19 PM</td><td></td><td><input type="checkbox"/> Successful</td><td><div><div></div></div></td><td><div><div></div></div></td><td><div><div></div></div></td></tr></tbody></table></div></div></div>	Database Name	Status	Start Time	Alerts	Backup	Used Memory	CPU Usage	Disk Usage	<input type="radio"/> SYSTEMDB	<div><div>Running with issues</div></div>	Aug 9, 2017, 4:23:55 PM	1 high	<input type="checkbox"/> Successful	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<input type="radio"/> TD1	<div><div>Running</div></div>	Aug 9, 2017, 4:43:23 PM	1 medium	No backup	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<input checked="" type="radio"/> TDH	<div><div>Running</div></div>	Aug 10, 2017, 3:44:19 PM		<input type="checkbox"/> Successful	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>
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Congrats!! You completed the exercises. Please fill out the evaluation for session HBD169.

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