

### 還原及還原SAP HANA資料庫 Snap Creator Framework

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# 還原及還原SAP HANA資料庫

### 您可以使用SAP HANA Studio和Snap Creator來還原及還原SAP HANA資料庫。

- 1. 在SAP HANA Studio中:
  - a. 針對SAP HANA系統選取「恢復」。
  - b. SAP HANA系統已關機。
  - c. 選取恢復類型。
  - d. 提供記錄備份位置。
  - e. 此時會顯示資料備份清單
  - f. 選取備份以查看外部備份ID。
- 2. 若儲存系統只執行叢集Data ONTAP 式的不適用功能:
  - a. 只有在使用非最新的備份進行還原時才需要。
  - b. 僅SnapRestore 適用於主儲存設備的「Volume」。
  - c. 停用SnapVault 相依關係
- 3. 在Snap Creator中:
  - a. 針對SAP HANA系統選取「還原」。
  - b. 視主要儲存設備的備份可用度而定、選取從主要或次要儲存設備還原。
  - c. 選取儲存控制器、磁碟區名稱和Snapshot複本名稱。Snapshot複本名稱與先前的備份ID有關。
  - d. 對於多節點SAP HANA系統、需要還原多個磁碟區:
    - i. 選擇\*新增更多還原項目\*。
    - ii. 選取儲存控制器、磁碟區名稱和Snapshot複本名稱。
    - iii. 針對所有必要的磁碟區重複此程序。
  - e. 對於多租戶資料庫容器(MDC)單一租戶資料庫系統、系統和租戶資料庫都會還原。
  - f. 還原程序已開始
  - 9. 所有磁碟區的還原均已完成。
- 4. 在資料庫節點上、卸載並掛載所有資料磁碟區、以清除「過時的NFS處理代碼」。
- 5. 在SAP HANA Studio中:
  - a. 在備份清單中選取\* Refresh\*。
  - b. 選取可用的備份以進行恢復(綠色項目)。
  - C. 開始恢復程序。
  - d. 對於多租戶資料庫容器(MDC)單租戶資料庫系統、請先針對系統資料庫、然後針對租戶資料庫開始還 原程序。
  - e. SAP HANA系統隨即啟動。
- 6. (選用)恢復SnapVault 所有已還原磁碟區的彼此之間的關係。

### 從主要儲存設備還原及還原資料庫

您可以從主要儲存設備還原及還原資料庫。



i

您無法從Snap Creator還原檔案型備份複本。

1. 在SAP HANA Studio中、針對SAP HANA系統選取\* recover\*。

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SAP HANA系統隨即關機。

2. 選取恢復類型、然後按一下\*「下一步」\*。

5	Recovery of System ANA (on Schanar08)	×
pecify Recovery	Туре	
Select a recovery t	ype.	
Recover the d	atabase to its most recent state	
O Recover the d	atabase to the following point in time	
Date:	2014-03-20 Time 03:28:17	
Salart Time To	res (courte on the Day and Time	[6]
Treasure in		14
1. System of	e useo (dmi) 2014-03-2010/2017	
O Recover Data	base to a Specific Data Backup <sup>9</sup>	
		Advanced >>
0	< Back Next > Can	cel Emiste
0	Tawa Can	The second se

3. 提供記錄備份位置、然後按一下\*下一步\*。

5	Recovery of System ANA (on cishanar08)	
Locate Log Ba	ackups	
Specify locatio	in(s) of log backup files to be used to recover the database.	
Even if no	log backups were created, a location is still needed to read data that will be used	for recovery.
Recovery of L	og Backups	
If the log back location. If yo the log backu	kups were written to the file system and subsequently moved, you need to specify u do not specify an alternative location for the log backups, the system uses the l ups were first saved. The directory specified will be searched recursively.	their current ocation where
Locations:		Add
	/usr/sap/ANA/HDB42/backup/log	Remove All
		Remove
Ļ		, ,
	2	
0	Cantal Next > Cantal	- Court
0	Zack Daxes Caucal	E10000

您所看到的可用備份清單是根據備份目錄的內容而定。

4. 選取所需的備份並記錄外部備份ID。

ā		Recover	ry et System ANA "Ian cishanarôti	×
Select Backup	hot, it must be available in	the data area		
Selected Point in Time Database will be recover Backups The oveniew shows back	e ed to its most recent stat kups that were recorded in	e ) I the backup catalog	as successful. The backup at the top is estimated to have the shortest recovery time	
Start Time	Location	Backup Prefix	Available	
2014-03-20 02-39 47	mangidata/A265	ENAPSHOT	2 2 2 2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	
2014-03-20 01 39 47	/hanaldata/ANA	SNAPSHOT	0	
2014-03-20 00:39 47	/hana/data/ANA	SNAPSHOT	0	
2014-03-19 23 29 47	/hana/data/ANA	SNAPSHOT	0	
2014-03-19 22:39:47	/hana/data/ANA	SNAPSHOT	0	
2014-03-19 21 39:47	/hana/data/ANA	SNAPSHOT	0	
2014-03-19 20:39:47	/hana/data/ANA	SNAPSHOT	0	
Details of Selected He Start Time <sup>0</sup> 20 Size 4 Backup Name <sup>0</sup> 7h Atternative Location	m 14403-20 02:39:47 Destr 78 GB Backs ana/data/ANASNAPSH01	ation Type: SNAPSa p ID 1395308	aHOT External Backup ID: Backup-ANA-hourly_20140320103943	)
0			< Back Fried Sciences Cancel Comme	

5. 停用SnapVault「不合作關係」。



只有叢集Data ONTAP 式的不需要執行此步驟。

如果您需要還原的Snapshot複本比目前用做SnapVault 為基礎Snapshot複本的Snapshot複本舊、您必須先 停用SnapVault 叢集Data ONTAP 式故障恢復中的不再使用該功能。若要這麼做、請在備份叢集主控台上執 行下列命令:

hana::> snapmirror quiesce -destination-path hana2b:backup\_hana\_data
Operation succeeded: snapmirror quiesce for destination
hana2b:backup\_hana\_data.

hana::> snapmirror delete -destination-path hana2b:backup\_hana\_data
Operation succeeded: snapmirror delete the relationship with destination
hana2b:backup\_hana\_data.

hana::> snapmirror release -destination-path hana2b:backup\_hana\_data
[Job 6551] Job succeeded: SnapMirror Release Succeeded

6. 在Snap Creator GUI中、選取SAP HANA系統、然後選取\* Actions > Restore \*。

tackups A Configurations A							
Profiles and Configurations	Configuration Con	ntent : HANA	profile_ANA > AN	A_database_backup	P		
🔾 Add Profile 🥔 Refresh	🛄 Actions 🔹 🔗 R	eload   🔜 Si	ave				
HANA_profile_ANA ANA_database_DR	LUN Clone	Volumes	Snapshot settings	SnapMirror settings	Snap		
G ANA_database_backup	Volume Clone	R					
ANA_non_database_files_DR	Restore	8					
	🐣 scdump	30					
	Discover	No		~			
	Archive Log						
	Quiesce						
	G Unquiesce						
	- Mount						
	Jumount						
	a ossv						

「歡迎使用SnapCreator Framework還原精靈」畫面隨即出現。

7. 單擊 \* 下一步 \* 。



8. 選擇\* Primary\*(主\*)、然後按\* Next\*(下一步\*)。

Management • de Users and Roles •	🖉 Detx + 🗆 🏀 Polic	y • [* Reports	• @ rep •	S vieco
Bedupe * Configurations *				
Profiles and Configurations	Configuration Cont	ent : HANA_profi	le_ANA > ANA_database_backup	
🔾 Add Profile 🖉 Retreph	Di Actors • 1 2 fee	ond Since		
a 🔤 HANA_profile_ANA	General Cornection	Volumes Snig	PRestore	X pageme
ANA, database jackup	Paceword Encryption Use Oktow config.	*	Primery or Secondery Restore Please select either primery or secondary option.	
	Enable Log Trace:	No	<ul> <li>Pimary</li> <li>Secondary</li> </ul>	
	5		Buck Next Cancel	
Console				

- 9. 選取「從主要儲存設備還原」。
- 10. 選取儲存控制器、磁碟區名稱和Snapshot名稱。

Snapshot名稱與SAP HANA Studio中選取的備份ID有關。

achies * Configurations *					
Profiles and Configurations	Configuration Conte	nt : HANA_profile	ANA > ANA_dotabase_backup		
And Profile 🖉 Retrech	B Actions + 1 (2) Take	et   a Seve			
ANA statutor DR	General Correction	Volumes Street	/ Restore		
2 ANA_statuteurs_beckup 2 ANA_yon_database_ties_DR	Parment Encryption Use Oktob config	e B	Restore details. Enter Controller Neerver name, Volume	Reme, Policy, Snapshot r	ropy name and Restore type.
	Drain Log Trace No.	30	Controber/Vismiver name	nerata	(w)
		-	Restore volume name:	data_00001	*
			Policy	hourly	
			* Snap Creator Shapshot Copies	O All Snipshot Copies	
			Restore Snapohot copy name:	Bactup-ATGA-houry_20140	00201103941 🛩
			fiestore type:	Vulume Restore	
		_			Bich Net Carcel

11. 單擊\*完成\*。



12. 按一下「是」以新增更多還原項目。

congo anno								
Profiles and Configurations	Configuration Conte	nt : HANA	_profile_ANA > AN	A_databas	e_backu	p		
🔾 Add Profile 🛛 🖉 Retresh	Actions •   @ Relo	iad 📄 S	ave					
MANA_profile_ANA	General Connection	Volumes	Shapshot settings	SnepMirro	r settings	Snap/wuit settings	Clone settings	OnCommand/DPN
ANA_database_backup	Password Encryption:	*						
👙 ANA_ron_database_fles_DR	Use Global config.	0						
	Log Files:	30						
	Foshie Loo Trace	No		~				
		1000						
					and second second			
					warney	a		
					Would you like to add more restore items on this configuration? Select No' to start			
					more i	tre restore operabo restore items.	n or Yes'to ad	đ
						Yes	No	
					_			

13. 選取儲存控制器、其他磁碟區名稱和Snapshot名稱。

Snapshot名稱與SAP HANA Studio中選取的備份ID有關。



- 14. 重複步驟10到13、直到新增所有必要的磁碟區為止;在我們的範例中、需要選取data\_00001、data\_00002 和data\_00003來進行還原程序。
- 15. 選取所有磁碟區後、按一下「確定」開始還原程序。

Management • A User's and Roles •	😺 Data + 🚳 Polici	• T Reports	• 🔒 Help •	5
Sachups * Configurations *				_
Profiles and Configurations	Configuration Contr	ont : HANA_profil	e_ANA > ANA_database_backup	
Add Profile     Add Profile     AlkA_profile_ANA     AkA_database_DR     AkA_database_backup     AkA_non_database_tikes_DR	Actions + B Mee General Connection Password Encryption Use Global config: Log File: Enable Log Trace	volumes Srigo	Volume Itestore         You have selected to perform volume restore(s). The following volume(s) will be restored.         All data in volume data_00001 will be reverted to snapshot copy Backup-ARA-hourly_20140320103943.         All data in volume data_00002 will be reverted to snapshot copy Backup-ARA-hourly_20140320103943.         All data in volume data_00002 will be reverted to snapshot copy Backup-ARA-hourly_20140320103943.         All data in volume data_00002 will be reverted to snapshot copy Backup-ARA-hourly_20140320103943.         All data in volume data_00002 will be reverted to snapshot copy Backup-ARA-hourly_20140320103943.         Perform any precequiaite steps for application restores.         All outrent data in the above volume(s) will be lost! Cick 'Ck' to perform the restore(s).	×
🗔 Console				2

還原程序隨即開始。

🔎 Management 🔹	🝰 Users and Roles 🔹	🧭 Data 🕶	🝓 Policy •	Reports •	😣 Help 🕶	
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& Welcome, sc ! •

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Configurations ×													
Profiles and Configurations	Configuration Conter	nt : HANA_profile_ANA > AI	A_database_back	IP.									
🔾 Add Profile 🖉 Refresh	Actions	ad   🔤 Caue										¥ (*	
ANA_profile_ANA	General Connection	Volumes Snapshot settings	SnapMirror settings	SnapVault settings	Clone settings	OnCommand/DFM	Archive Log Managemen	N SAPHANA	Agent Eve	ent settings	Commands	~ ~~	
ANA_database_backup	Password Encryption:												1
SANA_non_database_files_DR	Use Global config.: Log Files: Enable Log Trace:	30 No	~										
Console	4											,	
HANA_profile_AI													
Logs													
3 Agent validation completed	successfully for age	int localhost: 9090											
4 ########## Plugin validatio	n ##########												1
5 Plugin validation completed	successfully for pl	ugin hana											
6 ########## Running Restore	Record id Finder ###												
7 ########## Restore Extended	RepositoryRecord Id	set: 113 ##################################											1
8 ######### Pre Restore com	ands #########												
9 Pre restore commands are no	t defined												
10 ########## Application Pre	Restore ####################################												
11 Pre Restore handling for pl	ugin: hana												
12 [localhost:9090 (4.1.1.1)]	Application specific	restoreFre operation	is not yet impl	emented for this	plugin								
13 Pre Restore handling for pl	ugin: hana finished	successfully											
14 ######### Application Pre	Restore finished suc	cessfully #########											

等待還原程序完成。

16. 在每個資料庫節點上、重新掛載所有資料磁碟區、以清除過時的NFS處理程序。

在此範例中、所有三個磁碟區都需要在每個資料庫節點上重新掛載。

mount -o remount /hana/data/ANA/mnt00001
mount -o remount /hana/data/ANA/mnt00002
mount -o remount /hana/data/ANA/mnt00003

17. 前往SAP HANA Studio並按一下\* Refresh\*以更新可用備份清單。

6		Recevery	y of System ANA (on cishanar08)
Select Backup			
O To recover this snapsh	tot, it must be available in the	e data area.	
Selected Point in Time Database will be recover Backups The overview shows back	e ed to its most recent state. sups that were recorded in th	e backup catalog i	is successful. The backup at the top is estimated to have the shortest recovery time.
Start Time	Location	Backup Prefix	Avariable
2014-03-20 02:30 47	manaldatatANA	SNAPSHOT	
2014-03-20 01 39 47	/hana/data/ANA	SNAPSHOT	0
2014-03-20 00:39:47	/hana/data/ANA	SNAP 1	Find Data Backups (on cishanarS0) ×
2014-03-19 23:39:47	/hana/data/ANA	SNAP O	Waiting for response from SAP HANA database
2014-03-19 22:39:47	/hana/data/ANA	SNAP	
2014-03-19 21 39 47	/hana/data/ANA	SNAP	
2014-03-19 20:39 47	/hana/data/ANA	SNAP	
Details of Selected Her Start Time: 0 Size Backup Name: 0	m Destination Type: Backup ID		ways ryn in background Cancel Details >> (Pun in Background)
Alternative Location			Chick Autobio
3			< Back   Cancel

使用Snap Creator還原的備份會在備份清單中顯示綠色圖示。

### 18. 選取備份、然後按一下\*下一步\*。

6		Recover	y of System Al	NA (on cish	anar08)				×
Select Backup									
Select a backup to reco	wer the SAP HANA databa	ise							
Selected Point in Tim	•								
Database will be recover	red to its most recent stat	*							
8ackups	WHATCH WITCOMPANY	AND STREET ADDRESS	10000124M	an en en					
The overview shows bac	kups that were recorded in	the backup catalog	as successful	The backup	at the top is estimate	d to have the st	ontest recovery time		1
Start Time	Location	Backup Prefix	1		Avai	12014		_	
2014-03-20 02 39.47	manaldatalANA	SNAPSHOT	1 1						
2014-03-20 01 39.47	/hana/data/ANA	SNAPSHOT	0						
2014-03-20-00-39-47	/hana/data/ANA	SNAPSHOT	0						1
2014-03-19 23:39:47	/hana/data/ANA	SNAPSHOT	0						
2014-03-19 22 39 47	/hana/data/ANA	SNAPSHOT	0						
2014-03-19 21:39:47	/hana/data/ANA	SNAPSHOT	0						
2014-03-19 20 39 47	/hana/data/ANA	SNAPSHOT	0						•
							Refesh	Show Mor	
Details of Selected Ite	m								
Start Time: 020	014-03-20 02:39 47 Destin	ation Type: SNAPS	TOF						
Size 4	78 GB Backs	ap ID: 1395308	387610	Exte	mal Backup ID Bac	kup-ANA-hourly	_20140320103943		
Backup Name: /h	ana/data/ANASNAPSH01	1							
Alternative Location	10.00110.000000000000								
			<b>1</b> 20						
			R						
3					< Back	Next >	Cancel		
1.01									

í d	Recovery of System ANA (on cishanar08)	×
Other Settings		
Ensure that the snapsho	t is available in the SAP HANA system.	
Check Availability of Lo	g Backups	_ 0
You can have the syste they will be listed and t performed but later in th backups.	m check whether all required log backups are available at the beginning of the recovery process. If log backups are missing he recovery process will stop before any data is changed. If you choose not to perform this check now, it will still be to process. This may result in a significant loss of time if the complete recovery must be repeated due to missing log	s
Check the availability of	flog backups stored in the relevant location(s)	
File System		
Third-Party Backup	Tool (Backint)	
Initialize Log Area		-
If you do not want to re area.	cover log entries residing in the log area, select this option. After the recovery, the log entries will be deleted from the log	2
initialize Log Area		
Install New License Key		
If you recover the datab	ase from a different system, the old license key will no longer be valid	
- Select a new license	key to install now	
- Install a new license i	ey manually after the database has been recovered	
L] Install New License	Key	
	Bitwi	
		-
0		
(I)	< gack Bigt > Cancel	

20. 單擊\*完成\*。

	Recovery at System ANA ion cishanar08i	
teview Recovery Settings		
Review the recovery settings and choo	se 'Finish' to start the recovery 'You can modify the recovery settings by choosing 'Back'	
System Information		Ï
System. Host Version	ANA cishanar08 1.00.70.386119	
Recovery Definition		
Recovery Type:	Snapshot (Point-In-Time Recovery (Until Now))	
Backup ID	1395308387610	
Backup Start Time:	2014-03-20 02:39:47 (Pacific Standard Time)	
Log Backup Location	/usr/sap/ANA/HDB42/backup/log	
Initialize Log Area	No	
Check Availability of Log Backups	Yes	
Configuration File Handling		
& ATTENTION		
If you want to recover customer-spi If you are performing a recovery to Note that the target system and th must be the same in both systems More information. SAP HANA Adm	ecific configuration changes, you may need to make the changes manually in the target system. a different system e source system must have the same configuration. In particular, the number of database services with their own persistency inistration Guide	
0	< Back Cancel Einish	

#### 恢復程序隨即開始。

	Receivery of System ANA: Lan cishanardo	0
Recovery Progress Information		
Prepare Recovery - Stopping System		
Hest: cishanar08 Recovery of host 'cishanar08' pending		
Recovery of host "cishanar10" sendina		
Host: cishanar11		
Recovery of host 'cishanar11' pending		
Cancel Rectinery)		
(2)		
w.		13

21. 恢復完成後、SnapVault 如有需要、請繼續恢復彼此之間的關係。

		Recovery of System ANA: con coltanar08;	
Recovery Execution 1	Summary		
i System ANA rec	evered.		
12 volumes were re	coversd		
Recovered to Time	Mar 20, 2014 3 27 54 AM G	MT-07-00	
Recovered to Log F	Position: 71030848		
		×	
		8	
3			Close

# 從二線儲存設備還原及還原資料庫

您可以從次要儲存設備還原及還原資料庫。

1. 在SAP HANA Studio中、針對SAP HANA系統選取\* recover\*。

			AP KASE A PRIME TO	Company State	PHAN .				
Ent Declare Extent	Weiten Dalk								
·					No. Contractor	1 23	S DAP H	NoA Administration Consider @ Linkoy	rche Mars
ystems II - #	Backup ANA (SYSTE)	NO ANA 11							- 0
11 - = # #	A Backup ANA (SYS	STEM ANA						Last Update 12 29 54 AM	
	Overview Configuration	Backup Catalog							
NOVA CONTRACTOR COLD	and a state				Backup Details				-
All lyster					0	Transation	4223		
CAL ADD System	Archee Link				Shahan	Successio	1		
Con Add Addition	nel Quer	Curation Sta	3429 Backap 7/94	Demonster (M	Backup Tupe	Data Back			
Pro II Administrati		#47 000 00m 12s	T 00 CB Data Backup	Samehar	Destination Type	Snapshut	70		
Sec System Bas	lication.	AT & con com 12s	5.01.08 Data Bacha	Shapshot	Started	Apr 3, 201	111 00:04 AS	(AmericalLos_Angeleti)	
Open Secur	ev.	47.6 00h 00m 13a	4 37 GD Data Bactum	Starshit	Feishet	Apr 3, 201	TT.00.16 AA	(America/Cos_Angelet)	
Back Up		47.6 000-00m 12s	4.80 G0 Data Bacture	Stapshit	Duration	00e 00m 1	26		
Storage Sea	partet.	47 8 00h 00m 13s	1.00 GB Data Balikup	Grapshit.	Sce	476.08			
100		47 1 00h 00m 12s	5 00 GB Data Backup	Snapshot	Throughput.				
Transport M	anagement	47 8 00H 00m 12s	1.07 GB Data Backup	Snapshot	Comment	Bechup-Ar	A-04/y_2014	M03200000	
D Lifecycle M	stagement	47 E 00n 00m 12s	5.04 GB Data Backup	Snapshot .					.G.
Open Memo	ry Dvevew	47 8 00h 00m 12e	5.01 GB Data Bacrup	Snapshie	Additional Information	1.490			1
Open Paros	nia Mazaban	47.6 00h 00m 4bs	5.08 GD Data Backup	Shapehot.					.Q.I
		3 47 00h 00m 12s	1.05 GD Data Bactur	Seapone	Location	/hana/data	ANA/mm8000	9M7	
P5 the		3.04 00h.00m 12s	100 GB Data Baihup	Snapshut					
Restart		3.04 00t.00m 12s	5.01 GB Data Backup	Snapshot.	Hoat Se	week .	Ser	ERO	
		3/64 00H 00m 12s	4.96 GB Data Backs	Snapshot .	cishanarilli na	meanver	76.89 MB	Backup-A/6A-8a/y_20140400200000	<u>8</u>
M Dalata	Delete	104 MIN 60m 135	# 76 UR Data Bacture	Stayshe	cishanarde and	hodener	200.3K MB	Bacsup AlsA 644y_20140403200000	2
AT BARAN		3.04 00h 00m 13s	4.69 GB Data Barrup	Snapshot	oshanarde ind	sexsener	257 N8 M8	Backup Ars4-sary_20140400200008	
all retent		35.8 00h 00m 17s	4.13 G0 Data Bachill	1.04	cishanarob and	No. 241444	256,24 MB	Backup AVA say_201404000000	
142.00					CISTARUM B	NORDC TREVE	196.00	Balsing Area Bary Jonabaro 300000	2
					Cohanada As	angera .	106.03 MB	Backup Arty-day 2014040120000	
IN SQL Camer					(sthangt)	a parter	104 22 100	Barlon AllA Sale 201404000	-
US Find Table					ristanatio an	ary harden	105 00 ME	Barbus AttA staty 20140401200000	
Properties	AdvEnter				osterall, no	National	124 KT ME	Battice AleA serv 2014040020000	
					cistanar11 au	lav server	102 41 140	Backup ANA daily 2014040000000	i 1
					and south the second	all shares of	114 41 440	Barbon Mid. and . 201 August Streets	

SAP HANA系統將會關閉。

2. 選取恢復類型、然後按一下\*「下一步」\*。

í —	Recover	ry of System ANA (on	i cishanar08)	
pecify Recover	у Туре			
Select a recovery	type.			
Recover the	database to its most reci	ent state <sup>10</sup>		
O Recover the	database to the following	point in time <sup>0</sup>		
Date	2014-04-07	Time 00:44:22		
Select Time 7	one: GMT-07.00) Pacifi	c Davlight Time		101
I System	me used (GMT) 2014-04	-07.07.44.22		
	abase to a Specific Data	Packup <sup>0</sup>		
O Necolei Da	abase to a Specific Data	Backup		
				Advanced >>
-				
(?)		< Back	Next > Can	cel Einish

3. 提供記錄備份位置、然後按一下\*下一步\*。

6	Recovery of System ANA (on cishanar08)	*
Locate Log	Backups	
Specity local	ion(s) of log backup files to be used to recover the database.	
Even if n	o log backups were created, a location is still needed to read data that will be use	d for recovery.
Recovery of If the log ba location. If y the log back	Log Backups ckups were written to the file system and subsequently moved, you need to speci you do not specify an alternative location for the log backups, the system uses the cups were first saved. The directory specified will be searched recursively.	fy their current location where
Locations		Add
	/usr/sap/ANA/HDB42/backup/log	Remove All
		Remove
(?)	< Back Next Cancel	Einish

可用備份清單會根據備份目錄的內容顯示。

4. 選取所需的備份並記下外部備份ID。

G		Recovery of 5	yatem ANA Jon	cishana/08)		_	*
Select Backup O To recover this snapsh	ot, if must be available in the d	lata area					
Selected Point in Time Database will be recover Backups The overview shows back	ed to its most recent state. wps that were recorded in the t	backup catalog a	s successful. Th	e backup at the top	is estimated to ha	ve the shortest re	ecovery time.
Start Time	Location	Backup Prefix			Asal	able	(*)
2014-04-06 11:00:04	/hana/data/ANA	SNAPSHOT	0				
2014-04-05 11 00:04	/hana/data/ANA	SNAPSHOT	0				
2014-04-04 11:00:04	/hana/data/ANA	SNAPSHOT	0				
2014-04-03 11 00:04	mana/data/ANA	SNUPSHOT	8				
2014-04-02 11 00:04	/hana/data/ANA	SNAPSHOT	0				
2014-04-01 02 18:55	/usi/sap/ANA/HDB42/backu	COMPLETE_D	0				
Details of Selected Iter Start Time <sup>0</sup> 20 Size 4.7 Backup Name <sup>0</sup> /ha Alternative Location <sup>0</sup>	m 14-04-03 11:00:04 Destination 76 GB Backup ID: ana/data/ANASNAPSHOT	Type: SNAPSH 13965480	OT 04221	External Backup I	D Backup-At-A-da	Reflection 100 Reflec	Show More
	4						(C: Alana (Ky)
•				< Back	laust >	Cancel	Ervish .

- 5. 移至SnapCreator GUI。
- 6. 選取SAP HANA系統、然後按一下「動作>\*還原\*」。

Configurations & Backups & Job Mor	hitor 18				
Profiles and Configurations	Configuration Co	ntent : HANA_	profile_ANA > ANA_	_database_backup	
🔕 Add Profile 🛛 🧬 Refresh	🚺 Actions 🔹 👸 I	Reload   📄 Sa	ive		
HANA_profile_ANA ANA_database_DR	JUN Clone	Volumes	Snapshot settings	SnapMirror settings	Sr
3 ANA_database_backup	Volume Clone		Backup-ANA		1
ANA_non_database_files_DR	Backup				
	Scdump Biscover		Use Policy	Use Policy Object	
	Archive Log	cies			
	Quiesce	olicy Name	Retention		
	Mount	ourly	12		
	- Umount	laily	3		
	a ossv	veekly	0		
		monthly	0		

歡迎畫面隨即出現。

figurations * Backups * Job Mor	nitor *			
Profiles and Configurations	Configuration Co	antent : HANA,	profile_ANA > ANA_da	tabase_backup
Add Profile 🖉 Netresh	Actions - 3	Reland   🔜 🌬	with .	
ANA_profile_ANA	General Connecto	vo Volumes	Snape PRestore	
J ANA_didabase_backup	Snapshot copy Name	é:	Dec	💭 Welcome
ANA_non_database_files_DR	Shapshot copy Labe	e.	Ē	Welcome to the Snap Greator Framework Restore Wizard
	Policy Type			The restore wizard helps you to perform Volume Restore, Single File Restore, or SnapVault Restore on the selected configuration.
	Snapshot copy P	olicies		
	Enable Policy	Policy Name	1	
	8	hourty		
	8	dely	1	
	0	weekly	C	
	0	morthiy	6	
	Prevent Snepshot co	opy Deletion	No	
	Policy Retention Age	č.	10 10-0	
	Naming Convention:		01	
	Consistency Group	6	6	
			- Print	

- 7. 單擊 \* 下一步 \* 。
- 8. 選擇\*二級\*並按\*下一步\*。

Management • gi- Ucers and Roles •	少 Data + 🚳	Policy -	Reports +	🔐 Help +	5
Configurations * Saciups * 305 M	ntor 1				
Profiles and Configurations	Configuration	Content : HANA	profile	ANA > ANA_database_backup	
🔾 Add Profile 🔗 Rethesh	Actions •   6	8 Reloeut   📄 S	ave.		
A THANA protie_ANA	General Connec	tion Volumes	Sneps	P Restore	× to
ANA_database_backup	Shapshot copy Ne	ete.	Bx	Primary or Secondary Restore	
ANA_non_database_tiles_DR	Snepshot copy La	and .	1	Please select ether primary or secondary option.	
	Policy Type		*1	Prmary	
	Snapshot copy Policies			Secondary	
	Emilie Policy	Policy Name			10
	8	houtly			
	8	deby	1		
	6	weekty	¢		
	0	monthly	5		
	Prevent Snapshot Policy Referition A	copy Deletion ge	No		
	Naming Conventio	e.	01		
	Consistency Grou	0			
			-	Back Next Cancel	

9. 輸入所需資訊。Snapshot名稱與SAP HANA Studio中選取的備份ID有關。

	AND DO					
configurations in Decupe in 300 Mo	ntor					
Prolifes and Configurations	Configuration	Content : HANA	profile_	ANA > ANA_database_backup		
🔾 Add Profile 🔗 Refresh	Actors • 1 8	/ Neloed   🔜 S	ave .			
ANA_store_ANA	General Connection Volumes Sinape			Restore		×
ANA_distabase_backup	Snapshot copy Name		Bac	SnapVoull Restore		
ANA_non_defabase_files_DR	Shapshot copy Latert		1	Enter details below to start a SnapYauR	resilers.	
	321112005					
	Policy Type			Policy:	daily	*
	Snapshot copy Policies			Secondary controller name:	hana2b	*
	Enable Policy	Policy Name	10	Secondary volume name: backup_date_00001      ® Snap Creator Snapshot Copies      Al Snapshot Co     Secondary Snapshot copy name:     Backup-ANA-SV_date     Source path on secondary:     Availabac.up_date_0000     Destination path on primary:     Availabac_00001 Availabac_00001	backup_data_00001	*
	8	hourly			① All Snapshot Copies	
	8	daily	4		Backup-ANA-SV_dely_20140403200	( *
	8	Constanting of the second			Aphacksp_data_00001/mre00001	*
	100	weekly			Avoildate_00001.#w#000001	
	0	moresy	-			
	Prevent Snanshot	core Deletion	No			
	Polcy Retertion Age		100			
			01			
	Consistency Grou		101			
			200		1	The second second

10. 選擇\*完成\*。

ndepurations * Eachups * 3cb Mor	nbor =						
Profiles and Configurations	Configuration	Content : HANA	profile_AN	A_database_backup			
Add Profile 🖉 Patresh	Actions + 13	🖓 Reload   🔛 S	ave .				
ANA_profile_ANA	General Conne	ction Vokateer	Snape 🔑				
ANA_database_backup	Shapshot copy N	lane	Bec.	St	ummary		
S ANA_ron_delekese_Ses_CR	Snepshot copy L	ated		Re	store type : Snap/Vault Restore condary controller name : hana2b		
	LORA Libe			Se	condary volume name : backup_data_00001		
	Snapshot copy Policies			Se	condary Snapshot copy name . Backup ANA		
	Enable Policy	Policy Name	1	80	urce path on secondary : Nol/backup_data_00001/mint00001		
	8	hourly	1	De	stination path on primary : Arolidata_00001/mr800001		
	8	dały	1	A5	er clicking the Finish button you can select additional		
	9	weekly	6	Sn	apVault relationships to restore.		
	0	monthly	¢				
	Prevent Snapshot copy Deletion Policy Retention Age Neening Convention		140				
			-	1			
			01	THO .			
	Consistency Gro	un in	15	25			

11. 按一下「是」以新增更多要還原的項目。

Configurations * Backups * Job Mo	nkor *										
Profiles and Configurations	Configuration 6	Content : HAN	A_profile_ANA > ANA_	database_bacloup							
🔘 Add Profile 🖉 Retresh	Actions • i 🖉 Recoal 📓 Save										
# THANA_profile_ANA	General Connection Volumes		Snapshot settings	SnepMirror settings	SnepVeut settings	Clone settings	OnCommand/CIFM	Arct			
ANA_database_backup	Shapshot copy Name		Backup-ANA								
ANA_non_database_tiles_DR	Snapshot copy Label:										
	Policy Type:      Sube Policy O Use Policy Object										
	Snapshot copy Policies										
	Enable Policy	Policy Name	Refertion	warriing	Would you like to add more restore items						
	8	hourly	12	😡 Weu							
	8	deity	2	on the	on this configuration? Select 140' to start the entire restore operation or Yes' to add more restore items.						
	0	weekly	0	more re							
	8	northly	0		Yes	No					
	Prevent Snapshot copy Deletion		No	*							
	Policy Retention Ag	ю.									
	Naming Convention	6	Recent      Timestamp								
	- Consistency Orbust		0								
	Consistency Oroug	ć.	0								

12. 針對所有需要還原的磁碟區、提供必要資訊。在設定data\_00001、data\_00002和data\_00003中、需要選取 以進行還原程序。

onfigurations * Backups * Job Mon	itor =			
Profiles and Configurations	Configuration C	ontent : HANA	profil	e_ANA > ANA_database_backup
Asd Profile Retreat	Actions + 28 General Connects Snapshot copy Late Policy Type Snapshot copy L Enable Policy C C C C C C C C C C C C C C C C C C C	Reload i i S Son Volumes et Policies Policies Policy Name hourly daily weekly monthly	Ba Ba Ba	SnapYault Restore       3         You have selected to perform Snap/Yault restore(s). The following file(s) will be restored.         The file hana?te Avotbackup_data_00001 met00001 in selepishet Backup-ANA-SV_dely_20140403200000 will be restored to hana1 a Avotbackup_data_00002/anet00002 in snapshot Backup-ANA-SV_dely_20140403200000 will be restored to hana1 a Avotbackup_data_00002/anet00002.         The file hana?te Avotbackup_data_00002/anet00002 in snapshot Backup-ANA-SV_dely_20140403200000 will be restored to hana1 a Avotbacks_00003/anet00003 in snapshot Backup-ANA-SV_dely_20140403200000 will be restored to hana1 a Avotbacks_00003/anet00003.
	Policy Retention Age: Naming Convectors Consistency Orouge		0	Perform any prerequisite steps for application restore.
			-	Cick VX to perform the restore(s).

13. 選取所有磁碟區後、選取\*確定\*以開始還原程序。

等待還原程序完成。

14. 在每個資料庫節點上、重新掛載所有資料磁碟區、以清除「『NFS句點』」。

在此範例中、所有三個磁碟區都需要在每個資料庫節點上重新掛載。

```
mount -o remount /hana/data/ANA/mnt00001
mount -o remount /hana/data/ANA/mnt00002
mount -o remount /hana/data/ANA/mnt00003
```

15. 前往SAP HANA Studio、然後按一下「\* Refresh\*(重新整理)」以更新備份清單。

<b>a</b>		Receivery at Sys	tem ANA (I	istranarios)		×
Select Backup						
Select a backup to reco	ver the SAP HANA database					
Selected Point in Time						
Database will be recover	ed to its most recent state.					
Backups						
The overview shows back time.	kups that were recorded in the l	backup catalog a	is successfu	. The backup at the t	op is estimated to have the shortest	recovery
Start Time	Location	Backup Prefix			Avaitable	-
2014-04-06 11:00:04	/nana/data/ANA	SNAPSHUI	0			
2014-04-05 11:00:04	/hana/data/ANA	SNAPSHOT	0			
2014-04-04 11:00:04	/hana/data/ANA	SNAPSHOT	0			
2014-04-03 11:00:04	/hats/data/ANA	SNAPSHDT	0			
2014-04-02 11:00:04	/hana/data/ANA	SNAPSHOT.	0			
2014-04-01 02 18:55	/ust/sap/ANA/HDB42/backu	COMPLETE_D	0			
6		40				
					Refresh	Show More
Datails of Calestad Ba	_					
Start Time 0 20	14.04.03 11.00.04 Destination	TUNE SNAPSH	OT:			
	Alece Contraction	12065400	04221	The second Providence of		
5/28: 4	ло ов Васкир Ю.	10000400	09261	External Backup IL	D Backup-ANA-daily_201404032000	00
Backup Name: /h	ana/data/ANASNAPSHOT					
Alternative Location 9						
(1)				1	10.000	

- 16. 使用Snap Creator還原的備份會在備份清單中顯示綠色圖示。選取備份、然後按一下\*下一步\*。
- 17. 視需要選取其他設定、然後按一下\*下一步\*。

á		ecovery at System ANA ion cishan	arðilli		×
Other Settings					
Ensure that the snapshot i	s available in the SAP HANA system	e.			
Check Availability of Log I You can have the system listed and the recovery po	Backups check whether all required log backu ocess will stop before any data is chi	ips are available at the beginning of the anged. If you choose not to perform this	e recovery process. If log backups are s check now, it will still be performed	e missing, they will be i but later in the process	ſ
Check the availability of a	icant loss of ome if the complete reci og blackups stored in the relevant loca	avery must be repeated due to missing abon(s)	g log backups.		
Third-Party Backup T	ool (Backint)				
Initialize Log Area If you do not want to reco Initialize Log Area	iver log entries residing in the log area	a, select this option. After the recovery	. the log entries will be deleted from I	the log area.	
Install New License Key If you recover the databas You can: - Select a new license ke - Install a new license ke	e from a different system, the old lice y to install now y manually after the database has ber	inse key will no longer be valid			
install New License K	ey				
				(Reave)	
					-
					9
			()()()()(		
0			< Back Next>	Cancel	

#### 18. 單擊\*完成\*。

	Recovery of System ANA (on cishana/08)
Review Recovery Settings	
Review the recovery settings and choo	se Finish' to start the recovery. You can modify the recovery settings by choosing Back'.
System Information	
System Host Version	ANA cishana/08 1.00.70.386119
Recovery Definition	
Recovery Type	Snapshot (Point-in-Time Recovery (Until Now))
Backup ID	1396548004221
Backup Start Time:	2014-04-03 11:00:04 (Pacific Standard Time)
Log Backup Location	/usi/sap/ANA/HDB42/backup/log
Initialize Log Area	No
Check Availability of Log Backups	Ves
Configuration File Handling	
ATTENTION	
If you want to recover customer-spe If you are performing a recovery to a Note that the target system and the own persistency must be the same More information: SAP HANA Adm	cific configuration changes, you may need to make the changes manually in the target system. I different system I source system must have the same configuration. In particular, the number of database services with their In both systems Inistration Guide
0	< Back Cancel Einish

恢復程序隨即開始。

	Recovery of System ANA (on cishanar08)	
covery Progress Int	ormation	
Prepare Recovery - S	Stopping System	
Host: cishanar10		
Becovery of host	cishanar10' pending	
Name Server	Process running but state unknown	
Host: cishanar11		
Becovery of host	cishanar11° pending	
Name Server	Process running but state unknown	
Host: cishanar08		
3 Recovery of host	cishanar08' pending	
Daemon Process	🛆 Initializing	
Name Server	8 Running	
Index Server	🛆 Initializing	
Statistics Server	🛆 Initializing	
XSEngine	🛆 Initializing	
Preprocessor	C Running	
(income second		
ancer successfuly		
0		

19. 恢復程序完成後、SnapVault 如有需要、請繼續執行「還原關係」。

i	Recovery of System ANA (on cishanar08)	2
ecovery Execution Sum	mary	
i System ANA recover	red.	
12 volumes were recove	red	
Recovered to Time:	Apr 7, 2014 10 29:57 PM GMT-07:00	
Recovered to Log Positi	ion: 31080960	

# 還原後恢復SnapVault 不還原關係

任何未使用最新Snapshot備份完成的還原、都會刪除SnapVault 主儲存系統的還原關係。

還原與還原程序完成後、SnapVault 必須恢復不二關係、才能使用Snap Creator再次執行備份。否則、Snap Creator會發出錯誤訊息、因為SnapVault 它無法在主要儲存系統上找到更多的相關資訊。

如果來源磁碟區與目的地磁碟區之間仍有通用的Snapshot複本、則所需的資料傳輸將以差異傳輸為基礎。

恢復SnapVault 以Data ONTAP 7-Mode運作的支援功能與支援功能之間的不正常關係

如果您使用非最新的Snapshot備份來還原、則需要恢復SnapVault 「支援」關係、以 便Snap Creator繼續執行備份。

 輸入下列命令、以SnapVault 7-Mode繼續執行支援的功能、恢復執行支援的功能。Data ONTAPSetsstart -r -S sSOUR\_控制器:source\_volumeBackup控制器:SnapVault backup\_volume

針對屬於SAP HANA資料庫的所有磁碟區執行此步驟。

hana2b> snapvault start -r -S hanala:/vol/data\_00001/mnt00001 hana2b:/vol/backup\_data\_00001/mnt00001 The resync base snapshot will be: Backup-ANA-SV\_daily\_20140406200000 Resync may alter the data in this qtree. Are you sure you want to resync the qtree? y Mon Apr 7 14:08:21 CEST [hana2b:replication.dst.resync.success:notice]: SnapVault resync of /vol/backup\_data\_00001/mnt00001 to hanala:/vol/data\_00001/mnt00001 was successful. Transfer started. Monitor progress with 'snapvault status' or the snapmirror log.

hana2b> snapvault start -r -S hana1b:/vol/data\_00002/mnt00002 hana2b:/vol/backup\_data\_00002/mnt00002 The resync base snapshot will be: Backup-ANA-SV\_daily\_20140406200000 Resync may alter the data in this qtree. Are you sure you want to resync the qtree? y Mon Apr 7 14:09:49 CEST [hana2b:replication.dst.resync.success:notice]: SnapVault resync of /vol/backup\_data\_00002/mnt00002 to hana1b:/vol/data\_00002/mnt00002 was successful. Transfer started. Monitor progress with 'snapvault status' or the snapmirror log. hana2b> snapvault start -r -S hanala:/vol/data\_00003/mnt00003 hana2b:/vol/backup\_data\_00003/mnt00003 The resync base snapshot will be: Backup-ANA-SV\_daily\_20140406200000 Resync may alter the data in this qtree. Are you sure you want to resync the qtree? y Mon Apr 7 14:10:25 CEST [hana2b:replication.dst.resync.success:notice]: SnapVault resync of /vol/backup\_data\_00003/mnt00003 to hanala:/vol/data\_00003/mnt00003 was successful. Transfer started. Monitor progress with 'snapvault status' or the snapmirror log.

資料傳輸完成後、您可以使用Snap Creator重新排程備份。

#### 使用SnapVault 叢集Data ONTAP 式的不一樣功能恢復不一樣的關係

如果您使用非最新的Snapshot備份來還原、則需要恢復SnapVault 「支援」關係、以 便Snap Creator繼續執行備份。

1. 重新建立SnapVault 及重新同步化此等資訊關係。

```
hana::> snapmirror create -source-path hanala:hana_data -destination
-path
hana2b:backup_hana_data -type XDP
Operation succeeded: snapmirror create the relationship with destination
hana2b:backup_hana_data.
hana::> snapmirror resync -destination-path hana2b:backup_hana_data
-type XDP
Warning: All data newer than Snapshot copy sc-backup-
daily_20140430121000 on volume
hana2b:backup_hana_data will be deleted.
Do you want to continue? {y|n}: y
[Job 6554] Job is queued: initiate snapmirror resync to destination
"hana2b:backup_hana_data".
[Job 6554] Job succeeded: SnapMirror Resync Transfer Queued
```

2. 若要實際重新啟動SnapVault 此功能、需要手動複製Snapshot複本。

```
hana::> snapshot create -vserver hanala -volume hana_data -snapshot
sv_resync
hana::> snapshot modify -vserver hanala -volume hana_data -snapshot
sv_resync -snapmirror-label daily
hana::> snapmirror update -destination-path hana2b:backup_hana_data
Operation is queued: snapmirror update of destination
hana2b:backup_hana_data.
```

3. 驗證SnapVault 目標清單中是否顯示了此等不景關係。

hana::> snapmirror list-destinations -source-path hana1a:hana\_data Progress Source Destination Transfer Last Relationship Type Path Status Progress Updated Id Path \_\_\_\_\_ \_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ hanala:hana data XDP hana2b:backup hana data Transferring 38.46KB 04/30 18:15:54 9137fb83cba9-11e3-85d7-123478563412

### 在主儲存設備故障後還原資料庫

主儲存設備故障、或從主儲存設備的磁碟區刪除所有Snapshot複本之後、Snap Creator將 無法處理還原、因為SnapVault 在主儲存系統上不再存在不可用的情況。

在主儲存設備故障後還原資料庫、Data ONTAP 以7-Mode運作

在Data ONTAP 執行以7-Mode運作的主儲存系統故障後、您可以還原SAP HANA資料庫。

1. 在這種情況下、必須使用下列命令直接在次要儲存系統上執行還原SnapVault :-s snapshot \_name -S backup\_controller : backup\_volumesource\_controller : source\_volume

針對屬於SAP HANA資料庫的所有磁碟區執行此步驟。

hanala> snapvault restore -s Backup-ANA-SV\_hourly\_20140410103943 -S hana2b:/vol/backup\_data\_00001/mnt00001 hanala:/vol/data\_00001/mnt00001 Restore will overwrite existing data in /vol/data\_00001/mnt00001. Are you sure you want to continue? y Thu Apr 10 11:55:55 CEST [hanala:vdisk.qtreePreserveComplete:info]: Qtree preserve is complete for /vol/data\_00001/mnt00001. Transfer started. Monitor progress with 'snapvault status' or the snapmirror log.

hanala> snapvault restore -s Backup-ANA-SV\_hourly\_20140410103943 -S hana2b:/vol/backup\_data\_00003/mnt00003 hanala:/vol/data\_00003/mnt00003 Restore will overwrite existing data in /vol/data\_00003/mnt00003. Are you sure you want to continue? y Thu Apr 10 11:58:18 CEST [hanala:vdisk.qtreePreserveComplete:info]: Qtree preserve is complete for /vol/data\_00003/mnt00003. Transfer started. Monitor progress with 'snapvault status' or the snapmirror log.

hanalb> snapvault restore -s Backup-ANA-SV\_hourly\_20140410103943 -S hana2b:/vol/backup\_data\_00002/mnt00002 hanalb:/vol/data\_00002/mnt00002 Restore will overwrite existing data in /vol/data\_00002/mnt00002. Are you sure you want to continue? y Thu Apr 10 12:01:29 CEST [hanalb:vdisk.qtreePreserveComplete:info]: Qtree preserve is complete for /vol/data\_00002/mnt00002. Transfer started. Monitor progress with 'snapvault status' or the snapmirror log.

還原程序完成後、您可以使用SAP HANA來執行還原。

使用叢集Data ONTAP 式的功能來還原資料庫、因為主要儲存設備故障

執行叢集Data ONTAP 式功能的主要儲存系統故障後、您可以還原SAP HANA資料庫。 假設主要磁碟區已完全遺失、您需要建立新的主要磁碟區、然後從備份磁碟區還原。

1. 建立具有資料類型保護的主要磁碟區。

hana::> volume create -vserver hanala -volume hana\_data -aggregate aggr\_sas\_101 -size 300G -state online -type DP -policy default -autosize -mode grow\_shrink -space-guarantee none -snapshot-policy none -foreground true [Job 6744] Job is queued: Create hana\_data. [Job 6744] Job succeeded: Successful

2. 從備份磁碟區還原所有資料。

hana::> snapmirror restore -destination-path hanala:hana data -source -path hana2b:backup hana data -source-snapshot sc-backupdaily 20140505121000 [Job 6746] Job is queued: snapmirror restore from source "hana2b:backup hana data" for the snapshot sc-backup-daily 20140505121000. hana::> job show -id 6746 Owning Job ID Name Vserver Node State \_\_\_\_\_ \_\_ 6746 SnapMirror restore hana hana01 Running Description: snapmirror restore from source "hana2b:backup hana data" for the snapshot sc-backupdaily 20140505121000

還原程序完成後、您可以使用SAP HANA來執行還原。

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