



# **TR-5007：透過Google Cloud NetApp Volumes上的伺服器內增量合併優化 Oracle VLDB 備份與還原**

NetApp database solutions

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# TR-5007：透過Google Cloud NetApp Volumes上的伺服器內增量合併優化 Oracle VLDB 備份與還原

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該解決方案提供了部署到 Google Compute Engine VM 的 Oracle VLDB 的概述和詳細信息，該 VM 透過在 Google Cloud NetApp Volumes 儲存池上掛載 NFS 來快速恢復，以暫存透過 RMAN 不斷增量合併的備用資料庫副本。

## 目的

使用 Oracle 復原管理器 (RMAN) 備份工具還原 Oracle 中的超大型資料庫 (VLDB) 可能是一項極具挑戰性的任務。發生故障時從備份媒體還原資料庫的過程可能非常耗時，從而延遲資料庫復原並可能嚴重影響您的服務等級協定 (SLA)。由於成本考慮，RMAN 備份通常串流傳輸到物件存儲，因此對於部署在雲端的 Oracle VLDB 來說，情況變得更加糟糕。因此，如果 SLA 必不可少，則恢復和恢復 VLDB 是不可行的。從 10g 版本開始，Oracle 引入了 RMAN 功能，允許使用者在資料庫伺服器主機上的附加磁碟儲存上建立 Oracle 資料庫資料檔案的分階段映像副本。這些影像副本可以使用 RMAN 依照使用者定義的間隔進行增量更新。如果發生故障，資料庫管理員 (DBA) 可以迅速將 Oracle 資料庫從故障媒體切換到映像副本，從而無需進行完整的資料庫媒體還原。儘管所需的資料庫儲存量增加了一倍，但其結果是 SLA 得到了極大改善。

如果您熱衷於 VLDB 的 SLA 並考慮將 Oracle 資料庫遷移到 Google Cloud Platform (GCP) 等公有雲，則可以使用 Google Cloud NetApp Volumes (GCNV) 等資源設定類似的資料庫保護結構來暫存備用資料庫映像副本。GCNV 是 Google 提供的完全託管的高效能文件儲存服務，它使在 Google Cloud 中遷移和運行要求嚴格的企業應用程式（例如 Oracle 資料庫）變得更容易、更安全、更有經濟。其多樣化的服務等級允許靈活地控制儲存成本，同時實現接近零的 RPO 和可管理的 RTO。在本文檔中，我們示範如何從 GCNV 儲存池配置和匯出 NFS 檔案系統，並將其掛載到 Oracle 資料庫伺服器上，以便在主儲存發生故障時暫存備用資料庫副本以便快速復原。

此解決方案適用於以下用例：

- Oracle 資料庫資料檔案映像透過 RMAN 複製備份到 Google Cloud NetApp Volumes 儲存池上的伺服器內 NFS 檔案系統。
- 當同一台或備用 Google Compute Engine VM 發生故障時，可以快速復原 Oracle VLDB。
- 在幾分鐘內從暫存資料庫映像副本複製主機上的 Oracle 資料庫副本以供其他用例使用。

## 對象

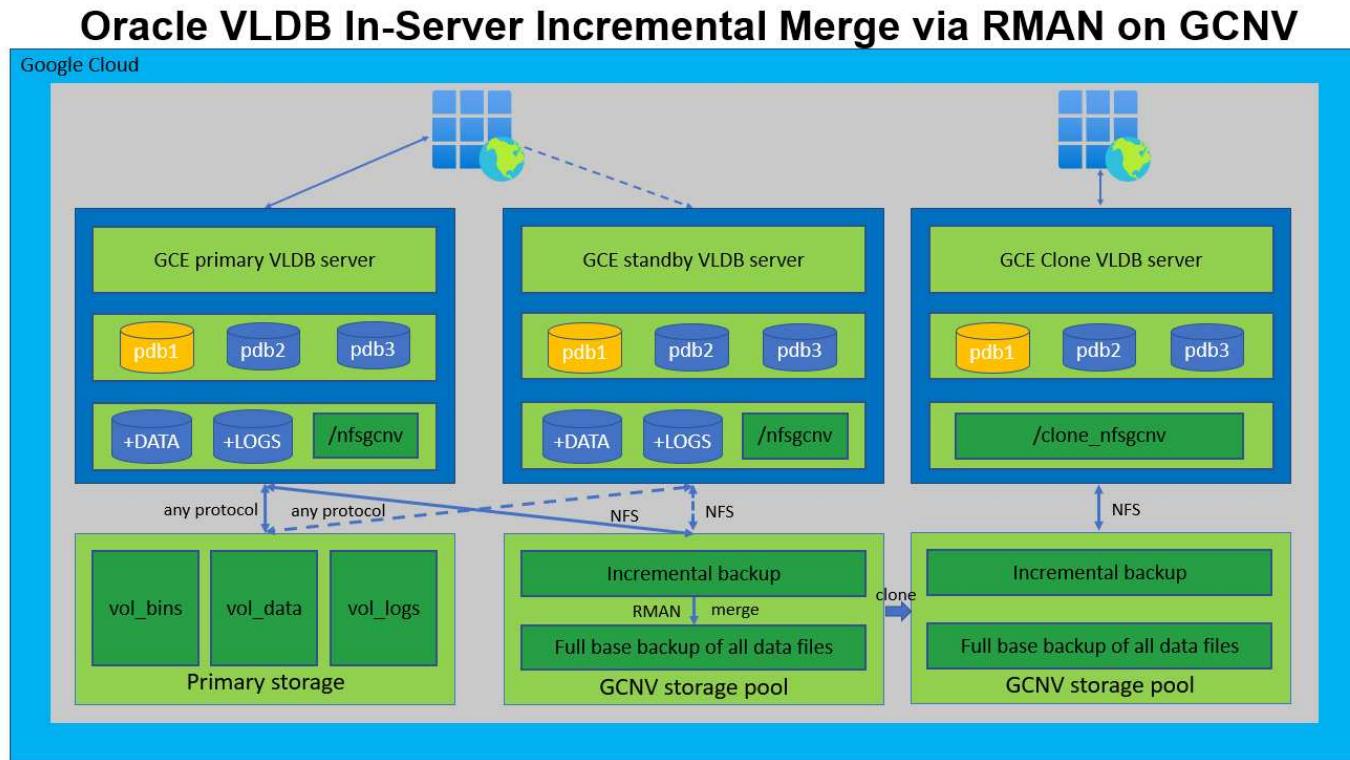
此解決方案適用於以下人群：

- 在 Google Cloud Platform 中設定和管理 Oracle VLDB 的 DBA。
- 在 Google Cloud Platform 中測試 Oracle 工作負載的資料庫解決方案架構師。
- 管理部署到 GCNV 儲存池的 Oracle 資料庫的儲存管理員。
- 希望在 Google Cloud Platform 中建立 Oracle 資料庫的應用程式擁有者。

# 解決方案測試和驗證環境

此解決方案的測試和驗證是在Google Cloud NetApp Volumes儲存池和 Google Compute Engine VM 中執行的，這些儲存池和虛擬機器可能與最終部署環境不符。有關更多信息，請參閱[\[部署考慮的關鍵因素\]](#)。

## 架構



## 硬體和軟體組件

硬體		
Google Cloud NetApp Volumes儲存池	Google 目前提供的服務	進階服務 2 TiB 儲存池，標準服務 2 TiB 儲存池
用於資料庫伺服器的 Google Compute Engine VM	N1 (4 個 vCPU，15 GiB 記憶體)	2 個虛擬機，一個作為主資料庫伺服器，另一個作為備用或克隆資料庫伺服器
軟體		
紅帽Linux	Red Hat Enterprise Linux 8.10 (Ootpa) - x86/64	RHEL 市場圖像，PAYG
Oracle 網格基礎架構	版本 19.18	已套用RU補丁p34762026_190000_Linux-x86-64.zip
Oracle 資料庫	版本 19.18	已套用RU補丁p34765931_190000_Linux-x86-64.zip

dNFS一次性補丁	p32931941_190000_Linux-x86-64.zip	適用於網格和資料庫
Oracle OPatch	版本 12.2.0.1.36	最新補丁 p6880880_190000_Linux-x86-64.zip
NFS	版本 3.0	已啟用 Oracle dNFS
Ansible	版本核心 2.16.2	python版本-3.10.13

## 部署考慮的關鍵因素

- \*GCNV 儲存池服務等級。 \* GCNV 儲存池提供四種服務等級：Standard、Premium、Extreme 和 Flex。預設情況下，自動 QoS 適用於儲存池內建立的捲，它會根據磁碟區的大小和服務等級限製卷的吞吐量。唯一的例外是，從 Flex 儲存池指派的磁碟區共用儲存池可用的吞吐量。
- \*RMAN 增量合併的 Oracle VLDB 伺服器內備份儲存限制。 \*在我們的測試和驗證中，用於 Oracle 增量備份和合併的 NFS 磁碟區是從具有標準服務等級的單一 GCNV 儲存池中分配的，該儲存池的容量限制為 200 TiB。對於超過該閾值的部署，可以並行實作多個 GCNV 儲存池和多個 NFS 掛載點，以提供更高的容量。
- \*使用 RMAN 增量合併實作 Oracle 可恢復性。 \* RMAN 伺服器內增量備份和合併通常會根據您的 RTO 和 RPO 目標以使用者定義的頻率執行。如果主資料庫檔案儲存和/或歸檔日誌完全遺失，則可能會發生資料遺失。Oracle 資料庫可以從伺服器內的資料庫備份映像副本還原到最新的可用增量備份。為了最大限度地減少資料遺失，需要在 GCNV NFS 備份掛載點上設定 Oracle 閃回復原區，並將存檔日誌與資料庫映像副本一起備份到同一個 NFS 掛載點，以便在發生故障時將資料庫前滾到最後的存檔日誌。因此，可以實現接近零的 RPO。
- \*在 GCNV 儲存池上從 NFS 映像備份執行 Oracle VLDB。 \*目前，不支援將資料庫磁碟區服務等級從標準重新分配為高級或極端。但是，支援將服務等級從高級重新分配到極致。為了在發生故障後長時間在映像副本上執行資料庫，建議從進階儲存池中指派磁碟區以用於資料庫映像副本備份。
- \*Google Compute Engine 虛擬機器。 \*在測試驗證中，我們使用 N1 類型的 GCE VM 實例作為 Oracle 資料庫伺服器。其他類型的 GCE VM 可能更優化，更適合資料庫工作負載。根據實際工作負載要求，適當調整虛擬機器的 vCPU 數量和 RAM 容量。
- \*dNFS 配置。 \* dNFS 內建於 Oracle 核心中，並且已知當 Oracle 部署到 NFS 儲存時可顯著提高 Oracle 資料庫效能。 dNFS 打包到 Oracle 二進位檔案中，但預設未開啟。對於 NFS 上的任何 Oracle 資料庫部署，都應該啟用它。對於 VLDB 的多個 GCNV 儲存池部署，應正確配置到不同 GCNV 儲存池的 dNFS 多路徑。

## 解決方案部署

此解決方案假定 Oracle VLDB 已部署在 VPC 內的 Google Cloud 環境中。Oracle VLDB 可以在 GCNV 儲存或 Google Cloud 生態系統內的任何其他儲存選項上運作。以下部分提供了設定 Oracle VLDB 映像備份並透過 RMAN 增量合併到從 GCNV 儲存池掛載的 NFS 檔案系統的逐步部署程序。Oracle VLDB 的主儲存也託管在不同的 GCNV 儲存池中。

### 部署先決條件

部署需要以下先決條件。

1. 已設定 GCP 帳戶，並在 Google Cloud 帳戶中的專案內建立了必要的 VPC 和網路配置。
2. 在 Google Cloud 入口網站控制台中，依照文件操作["建立儲存池"](#)建立一個具有標準服務的GCNV儲存池，如下所示。

The screenshot shows the Google Cloud Storage Pools page. On the left, there's a sidebar with sections for Storage pools, Volumes, Data protection, Backups, Backup vaults, Policies, Active Directory policies, CMEK policies, and Backup policies. The main area is titled "Storage pools" with "CREATE" and "REFRESH" buttons. It displays two storage pools:

Status	Name	Location	Service level	Capacity	Allocated to Volumes	Volume count	Created	Labels
Ready	ora-backup	us-east4	Standard	2048 GiB	2047 GiB	1	May 23, 2025, 11:26:36 AM	resource_id: 10853679974953495969, database: oracle, creator: acao
Ready	ora-prod	us-east4	Premium	3072 GiB	2000 GiB	8	May 20, 2025, 3:25:05 PM	database: oracle, creator: acao, resource_id: 5475979997962797836

3. 在 Google Cloud 入口網站控制台中，依照文件操作["創建卷"](#)為伺服器內 Oracle VLDB 映像備份建立磁碟區。在此解決方案演示中，Oracle VLDB 主儲存也託管在 GCNV 上，如下所示。

The screenshot shows the Google Cloud Volumes page. The sidebar is identical to the previous screenshot. The main area is titled "Volumes" with "CREATE" and "REFRESH" buttons. It displays multiple volumes:

Status	Name	Location	Service level	Share name	Capacity	Used	Protocol(s)	Storage pool	Labels
Ready	orap-bkup	us-east4	Standard	orap-bkup	2047	44.89% (919 GiB)	NFSV3	ora-backup	database: oracle, creator: acao, resource_id: 12664458934480123852
Ready	orap-u08	us-east4	Premium	orap-u08	300	66.67% (200 GiB)	NFSV3	ora-prod	resource_id: 5013208791319493120, database: oracle, creator: acao
Ready	orap-u07	us-east4	Premium	orap-u07	250	80.4% (201 GiB)	NFSV3	ora-prod	resource_id: 14994205951955147360, database: oracle, creator: acao
Ready	orap-u06	us-east4	Premium	orap-u06	250	80.4% (201 GiB)	NFSV3	ora-prod	resource_id: 2276456791356111503, database: oracle, creator: acao
Ready	orap-u05	us-east4	Premium	orap-u05	250	80.4% (201 GiB)	NFSV3	ora-prod	creator: acao, resource_id: 4493200584357705755, database: oracle
Ready	orap-u04	us-east4	Premium	orap-u04	250	80.4% (201 GiB)	NFSV3	ora-prod	resource_id: 1213548711092035313, database: oracle, creator: acao
Ready	orap-u03	us-east4	Premium	orap-u03	250	80.4% (201 GiB)	NFSV3	ora-prod	creator: acao, resource_id: 14567023349176120762, database: oracle
Ready	orap-u02	us-east4	Premium	orap-u02	250	80.4% (201 GiB)	NFSV3	ora-prod	creator: acao, resource_id: 16039063595587464348, database: oracle
Ready	orap-u01	us-east4	Premium	orap-u01	200	10% (20)	NFSV3	ora-prod	database: oracle, creator: acao

## 將 NFS 磁碟區從 GCNV 掛載到主 Oracle VLDB 伺服器

為了獲得更好的效能，為 Oracle VLDB 伺服器內備份配置的 GCNV 磁碟區理想情況下應位於與主資料庫伺服器和主儲存相同的 Google Cloud 區域。

1. 從 Google Cloud 控制台擷取 GCNV 磁碟區 NFS 匯出路徑。

The screenshot shows the Google Cloud Storage Volumes Overview page. The left sidebar shows 'Storage' with 'Volumes' selected. The main panel shows a volume named 'orap-bkup' with the following details:

Resource type	Volume
State	Ready
State details	Available for use

Below the details, there are tabs for OVERVIEW, SNAPSHOT, BACKUPS, REPLICATION, and QUOTA RULES. The OVERVIEW tab is selected. A note below the details states: "A volume provides NFS or SMB file services for your application with integrated data protection services. A volume is allocated from a storage pool and gets an individual or shared throughput limit based on its allocated capacity and storage pool service level." Under the 'Share name' section, it says "NFS export path". Below that, it says "Used to mount this file share on a linux client VM. Run the mount command with the following remote target on the VM's local directory." It shows the IP address "10.165.128.5:/orap-bkup". Below this, there is a table with the following data:

Name	orap-bkup
Capacity	2047 GiB
Used	44.89% (919 GiB)
Protocol(s)	NFSV3
Storage pool	ora-bkup

2. 登入主 Oracle VLDB 伺服器。以 root 身分掛載從 GCNV 儲存導出的 NFS 磁碟區。根據需要變更為您的 NFS 伺服器 IP 位址和檔案路徑。

```
sudo mkdir /nfsgcnv
```

```
mount 10.165.128.5:/orap-bkup /nfsgcnv -o  
rw,bg,hard,vers=3,proto=tcp,timeo=600,rszie=262144,wszie=262144
```

3. 將掛載點所有權更改為 oracle:oinstall，或根據需要更改為您的 oracle 使用者名稱和主要群組。

```
sudo chown oracle:oinstall /nfsgcnv
```

4. 將 NFS 掛載新增至 /etc/fstab。

```
sudo vi /etc/fstab
```

設定 Oracle RMAN 增量合併到 GCNV 上的映像副本，以進行伺服器內 VLDB 備份

RMAN 增量合併在每個增量備份/合併間隔持續更新暫存資料庫資料檔案映像副本。資料庫備份的映像副本將與您執行增量備份/合併的頻率一樣最新。因此，在決定 RMAN 增量備份和合併的頻率時，請考慮資料庫效能、RTO 和 RPO 目標。

1. 以 oracle 使用者登入主 Oracle VLDB 伺服器。
2. 為了驗證此解決方案，主資料庫設定為具有網格基礎架構重新啟動配置的獨立伺服器，如下所示。主儲存託管在提供優質服務的 GCNV 儲存池上。再次強調，這不是必需的，主儲存可以是 Google 雲端中的任何其他儲存選項。

```
[oracle@orap ~]$ df -h
Filesystem           Size   Used  Avail Use% Mounted on
devtmpfs              7.2G     0  7.2G  0% /dev
tmpfs                 7.3G  1.1G  6.2G 16% /dev/shm
tmpfs                 7.3G  8.5M  7.2G  1% /run
tmpfs                 7.3G     0  7.3G  0% /sys/fs/cgroup
/dev/sda2              50G   22G   29G 43% /
/dev/sda1             200M  5.9M 194M  3% /boot/efi
10.165.128.5:/orap-u02 250G  203G   48G 81% /u02
10.165.128.5:/orap-u07 250G  203G   48G 82% /u07
10.165.128.5:/orap-u06 250G  203G   48G 81% /u06
10.165.128.5:/orap-u04 250G  203G   48G 81% /u04
10.165.128.5:/orap-u05 250G  203G   48G 82% /u05
10.165.128.5:/orap-bkup 2.0T  918G  1.2T 45% /nfsgcnv
10.165.128.5:/orap-u03 250G  202G   49G 81% /u03
10.165.128.4:/orap-u01 200G   21G  180G 11% /u01
10.165.128.5:/orap-u08 300G  201G  100G 67% /u08
tmpfs                 1.5G     0  1.5G  0% /run/user/54321
```

```
[oracle@orap ~]$ crsctl stat res -t
```

```
-----
-----
```

Name	Target	State	Server	State
details				
-----				
-----				
Local Resources				
-----				
-----				
ora.DATA.dg	ONLINE	ONLINE	orap	STABLE
ora.LISTENER.lsnr	ONLINE	ONLINE	orap	STABLE
ora.LOGS.dg	ONLINE	ONLINE	orap	STABLE
ora.asm				

```

          ONLINE  ONLINE      orap
Started, STABLE
ora.ons
          OFFLINE OFFLINE      orap           STABLE
-----
-----
Cluster Resources
-----
-----
ora.cssd
    1      ONLINE  ONLINE      orap           STABLE
ora.diskmon
    1      OFFLINE OFFLINE
ora.evmd
    1      ONLINE  ONLINE      orap           STABLE
ora.ntap.db
    1      ONLINE  ONLINE      orap
Open, HOME=/u01/app/o
racle/product/19.0.0
/NTAP, STABLE
-----
```

```

[oracle@orap ~]$ asmcmd
ASMCMD> lsdg
State      Type   Rebal  Sector  Logical_Sector  Block       AU
Total_MB   Free_MB  Req_mir_free_MB  Usable_file_MB  Offline_disks
Voting_files  Name
MOUNTED    EXTERN  N            512           512     4096  4194304
1228800   1150288                 0           1150288           0
N  DATA/
MOUNTED    EXTERN  N            512           512     4096  4194304
204800    204636                  0           204636           0
N  LOGS/
ASMCMD> lsdsdk
Path
/u02/oradata/asm/orap_data_disk_01
/u02/oradata/asm/orap_data_disk_02
/u02/oradata/asm/orap_data_disk_03
/u02/oradata/asm/orap_data_disk_04
/u03/oradata/asm/orap_data_disk_05
/u03/oradata/asm/orap_data_disk_06
/u03/oradata/asm/orap_data_disk_07
```

```
/u03/oradata/asm/orap_data_disk_08  
/u04/oradata/asm/orap_data_disk_09  
/u04/oradata/asm/orap_data_disk_10  
/u04/oradata/asm/orap_data_disk_11  
/u04/oradata/asm/orap_data_disk_12  
/u05/oradata/asm/orap_data_disk_13  
/u05/oradata/asm/orap_data_disk_14  
/u05/oradata/asm/orap_data_disk_15  
/u05/oradata/asm/orap_data_disk_16  
/u06/oradata/asm/orap_data_disk_17  
/u06/oradata/asm/orap_data_disk_18  
/u06/oradata/asm/orap_data_disk_19  
/u06/oradata/asm/orap_data_disk_20  
/u07/oradata/asm/orap_data_disk_21  
/u07/oradata/asm/orap_data_disk_22  
/u07/oradata/asm/orap_data_disk_23  
/u07/oradata/asm/orap_data_disk_24  
/u08/oralogs/asm/orap_logs_disk_01  
/u08/oralogs/asm/orap_logs_disk_02  
/u08/oralogs/asm/orap_logs_disk_03  
/u08/oralogs/asm/orap_logs_disk_04
```

3. 在掛載點 /nfsgcnv 下建立一個 oracopy 目錄來儲存 oracle 資料檔案映像副本，以及一個 archlog 目錄用於 Oracle 閃回復原區。

```
mkdir /nfsgcnv/oracopy
```

```
mkdir /nfsgcnv/archlog
```

4. 透過 sqlplus 登入 Oracle 資料庫，啟用區塊變更追蹤以加快增量備份速度，如果 Oracle 快閃記憶體復原區目前位於主儲存體上，則將其變更為 GCNV NFS 掛載。這允許將 RMAN 預設控製檔/spfile 自動備份和存檔日誌備份到 GCNV NFS 掛載，以便將資料庫還原到最後一個可用的存檔日誌。

```
sqlplus / as sysdba
```

在 sqlplus 提示字元下，執行以下命令。

```
alter database enable block change tracking using file  
'/nfsgcnv/oracopy/bct_ntap.ctf'
```

```
alter system set db_recovery_file_dest='/nfsgcnv/archlog/'  
scope=both;
```

預期輸出：

```
[oracle@orap ~]$ sqlplus / as sysdba  
  
SQL*Plus: Release 19.0.0.0.0 - Production on Wed Mar 20 16:44:21  
2024  
Version 19.18.0.0.0  
  
Copyright (c) 1982, 2022, Oracle. All rights reserved.  
  
Connected to:  
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -  
Production  
Version 19.18.0.0.0  
  
SQL> alter database enable block change tracking using file  
'/nfsgcnv/oracopy/bct_ntap.ctf';  
  
Database altered.  
  
SQL> alter system set db_recovery_file_dest='/nfsgcnv/archlog/'  
scope=both;  
  
System altered.  
  
SQL> alter system set db_recovery_file_dest_size = 400G scope=both;  
  
System altered.  
  
SQL> show parameter recover
```

NAME	TYPE	VALUE
db_recovery_file_dest	string	/nfsgcnv/archlog/
db_recovery_file_dest_size	big integer	400G
db_unrecoverable_scn_tracking	boolean	TRUE
recovery_parallelism	integer	0
remote_recovery_file_dest	string	

```
SQL>
```

5. 建立 RMAN 備份和增量合併腳本。該腳本為並行 RMAN 備份和合併分配多個通道。第一次執行將產生初始的完整基線影像副本。在完整運行過程中，它首先清除保留視窗之外的過時備份，以保持暫存區清潔。然後它在合併和備份之前切換當前日誌檔案。增量備份在合併之後進行，因此資料庫映像副本落後於目前資料庫狀態備份/合併週期。可以根據使用者的喜好逆轉合併和備份的順序，以便更快地恢復。RMAN 腳本可以整合到一個簡單的 shell 腳本中，從主 DB 伺服器上的 crontab 執行。確保 RMAN 設定中的控製檔自動備份處於開啟狀態。

```
vi /home/oracle/rman_bkup_merge.cmd
```

Add following lines:

```
RUN
{
    allocate channel c1 device type disk format '/nfsgcnv/oracopy/%U';
    allocate channel c2 device type disk format '/nfsgcnv/oracopy/%U';
    allocate channel c3 device type disk format '/nfsgcnv/oracopy/%U';
    allocate channel c4 device type disk format '/nfsgcnv/oracopy/%U';
    delete obsolete;
    sql 'alter system archive log current';
    recover copy of database with tag 'OraCopyBKUPonGCNV_level_0';
    backup incremental level 1 copies=1 for recover of copy with tag
    'OraCopyBKUPonGCNV_level_0' database;
}
```

6. 在主 Oracle VLDB 伺服器上，以 oracle 使用者身分本地登入 RMAN，可以使用或不使用 RMAN 目錄。在此示範中，我們沒有連接到 RMAN 目錄。

```
rman target / nocatalog;
```

output:

```
[oracle@orap ~]$ rman target / nocatalog
```

```
Recovery Manager: Release 19.0.0.0.0 - Production on Wed Mar 20
16:54:24 2024
Version 19.18.0.0.0
```

```
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reserved.
```

```
connected to target database: NTAP (DBID=1379265854)
using target database control file instead of recovery catalog
```

7. 從 RMAN 提示字元執行腳本。第一次執行會建立基準資料庫映像副本，後續執行則會逐步合併和更新基準映像副本。以下是如何執行腳本以及典型的輸出。設定通道數以符合主機上的 CPU 核心。

```

RMAN> @/home/oracle/rman_bkup_merge.cmd

RMAN> RUN
2> {
3>   allocate channel c1 device type disk format
'nfsgcnv/oracopy/%U';
4>   allocate channel c2 device type disk format
'nfsgcnv/oracopy/%U';
5>   allocate channel c3 device type disk format
'nfsgcnv/oracopy/%U';
6>   allocate channel c4 device type disk format
'nfsgcnv/oracopy/%U';
7>   delete obsolete;
8>   sql 'alter system archive log current';
9>   recover copy of database with tag 'OraCopyBKUPonGCNV_level_0';
10>  backup incremental level 1 copies=1 for recover of copy with
tag 'OraCopyBKUPonGCNV_level_0' database;
11> }

allocated channel: c1
channel c1: SID=23 device type=DISK

allocated channel: c2
channel c2: SID=151 device type=DISK

allocated channel: c3
channel c3: SID=20 device type=DISK

allocated channel: c4
channel c4: SID=150 device type=DISK

RMAN retention policy will be applied to the command
RMAN retention policy is set to redundancy 1
Deleting the following obsolete backups and copies:
Type          Key    Completion Time    Filename/Handle
-----
Backup Set      1      22-MAY-25
  Backup Piece  1      22-MAY-25
+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201793914.260.1201793917
Backup Set      2      22-MAY-25
  Backup Piece  2      22-MAY-25
+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201795422.261.1201795425
Backup Set      3      22-MAY-25
  Backup Piece  3      22-MAY-25
+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201797230.262.1201797231
Backup Set      4      22-MAY-25
  Backup Piece  4      22-MAY-25

```

```
+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201799039.264.1201799041
Backup Set      5      22-MAY-25
  Backup Piece   5      22-MAY-25
+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201802655.265.1201802659
Backup Set      6      22-MAY-25
  Backup Piece   6      22-MAY-25
+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201803558.266.1201803561
Backup Set      7      22-MAY-25
  Backup Piece   7      22-MAY-25
+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201805066.267.1201805069
Backup Set      8      22-MAY-25
  Backup Piece   8      22-MAY-25
+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201806272.268.1201806275
Backup Set      9      22-MAY-25
  Backup Piece   9      22-MAY-25
+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201807778.269.1201807781
Backup Set     10      23-MAY-25
  Backup Piece  10      23-MAY-25
+LOGS/NTAP/AUTOBACKUP/2025_05_23/s_1201874668.271.1201874669
deleted backup piece
backup piece
handle=+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201793914.260.1201793917
RECID=1 STAMP=1201793917
deleted backup piece
backup piece
handle=+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201799039.264.1201799041
RECID=4 STAMP=1201799040
deleted backup piece
backup piece
handle=+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201795422.261.1201795425
RECID=2 STAMP=1201795424
deleted backup piece
backup piece
handle=+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201803558.266.1201803561
RECID=6 STAMP=1201803561
deleted backup piece
backup piece
handle=+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201797230.262.1201797231
RECID=3 STAMP=1201797231
deleted backup piece
backup piece
handle=+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201802655.265.1201802659
RECID=5 STAMP=1201802658
deleted backup piece
backup piece
handle=+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201805066.267.1201805069
```

```
RECID=7 STAMP=1201805069
Deleted 2 objects

deleted backup piece
backup piece
handle=+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201806272.268.1201806275
RECID=8 STAMP=1201806275
Deleted 3 objects

deleted backup piece
backup piece
handle=+LOGS/NTAP/AUTOBACKUP/2025_05_22/s_1201807778.269.1201807781
RECID=9 STAMP=1201807780
Deleted 2 objects

deleted backup piece
backup piece
handle=+LOGS/NTAP/AUTOBACKUP/2025_05_23/s_1201874668.271.1201874669
RECID=10 STAMP=1201874669
Deleted 3 objects

sql statement: alter system archive log current

Starting recover at 23-MAY-25
no copy of datafile 1 found to recover
no copy of datafile 3 found to recover
no copy of datafile 4 found to recover
no copy of datafile 5 found to recover
no copy of datafile 6 found to recover
no copy of datafile 7 found to recover
no copy of datafile 8 found to recover
no copy of datafile 9 found to recover
no copy of datafile 10 found to recover
no copy of datafile 11 found to recover
no copy of datafile 12 found to recover
no copy of datafile 13 found to recover
no copy of datafile 14 found to recover
no copy of datafile 15 found to recover
no copy of datafile 16 found to recover
no copy of datafile 17 found to recover
no copy of datafile 18 found to recover
no copy of datafile 19 found to recover
no copy of datafile 20 found to recover
no copy of datafile 21 found to recover
no copy of datafile 22 found to recover
```

```
no copy of datafile 23 found to recover
no copy of datafile 24 found to recover
no copy of datafile 25 found to recover
no copy of datafile 26 found to recover
no copy of datafile 27 found to recover
no copy of datafile 28 found to recover
no copy of datafile 29 found to recover
no copy of datafile 30 found to recover
no copy of datafile 31 found to recover
no copy of datafile 32 found to recover
no copy of datafile 33 found to recover
no copy of datafile 34 found to recover
no copy of datafile 35 found to recover
no copy of datafile 36 found to recover
no copy of datafile 37 found to recover
no copy of datafile 38 found to recover
no copy of datafile 39 found to recover
no copy of datafile 40 found to recover
no copy of datafile 41 found to recover
no copy of datafile 42 found to recover
no copy of datafile 43 found to recover
no copy of datafile 44 found to recover
no copy of datafile 45 found to recover
no copy of datafile 46 found to recover
no copy of datafile 47 found to recover
no copy of datafile 48 found to recover
no copy of datafile 49 found to recover
no copy of datafile 50 found to recover
Finished recover at 23-MAY-25
```

```
Starting backup at 23-MAY-25
no parent backup or copy of datafile 1 found
no parent backup or copy of datafile 3 found
no parent backup or copy of datafile 4 found
no parent backup or copy of datafile 7 found
no parent backup or copy of datafile 6 found
no parent backup or copy of datafile 5 found
no parent backup or copy of datafile 8 found
no parent backup or copy of datafile 21 found
no parent backup or copy of datafile 22 found
no parent backup or copy of datafile 25 found
no parent backup or copy of datafile 28 found
no parent backup or copy of datafile 32 found
no parent backup or copy of datafile 33 found
no parent backup or copy of datafile 36 found
no parent backup or copy of datafile 41 found
```

```
no parent backup or copy of datafile 44 found
no parent backup or copy of datafile 46 found
no parent backup or copy of datafile 10 found
no parent backup or copy of datafile 9 found
no parent backup or copy of datafile 11 found
no parent backup or copy of datafile 12 found
no parent backup or copy of datafile 23 found
no parent backup or copy of datafile 26 found
no parent backup or copy of datafile 29 found
no parent backup or copy of datafile 30 found
no parent backup or copy of datafile 34 found
no parent backup or copy of datafile 37 found
no parent backup or copy of datafile 39 found
no parent backup or copy of datafile 42 found
no parent backup or copy of datafile 47 found
no parent backup or copy of datafile 48 found
no parent backup or copy of datafile 14 found
no parent backup or copy of datafile 13 found
no parent backup or copy of datafile 15 found
no parent backup or copy of datafile 16 found
no parent backup or copy of datafile 24 found
no parent backup or copy of datafile 27 found
no parent backup or copy of datafile 31 found
no parent backup or copy of datafile 35 found
no parent backup or copy of datafile 38 found
no parent backup or copy of datafile 40 found
no parent backup or copy of datafile 43 found
no parent backup or copy of datafile 45 found
no parent backup or copy of datafile 49 found
no parent backup or copy of datafile 50 found
no parent backup or copy of datafile 18 found
no parent backup or copy of datafile 17 found
no parent backup or copy of datafile 19 found
no parent backup or copy of datafile 20 found
channel c1: starting datafile copy
input datafile file number=00021
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.286.1
201793019
channel c2: starting datafile copy
input datafile file number=00022
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.287.1
201793419
channel c3: starting datafile copy
input datafile file number=00025
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.290.1
201794401
```

```
channel c4: starting datafile copy
input datafile file number=00028
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.293.1
201795271
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE1_FNO-28_0f3q6gvn tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=4
STAMP=1201886858
channel c4: datafile copy complete, elapsed time: 01:19:26
channel c4: starting datafile copy
input datafile file number=00032
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.297.1
201797351
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE1_FNO-25_0e3q6gvn tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=5
STAMP=1201886918
channel c3: datafile copy complete, elapsed time: 01:20:21
channel c3: starting datafile copy
input datafile file number=00033
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.298.1
201800805
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE1_FNO-21_0c3q6gvm tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=6
STAMP=1201886943
channel c1: datafile copy complete, elapsed time: 01:20:50
channel c1: starting datafile copy
input datafile file number=00036
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.301.1
201801969
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE1_FNO-22_0d3q6gvm tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=7
STAMP=1201887138
channel c2: datafile copy complete, elapsed time: 01:24:05
channel c2: starting datafile copy
input datafile file number=00041
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.306.1
201803399
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE1_FNO-32_0g3q6lkl tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=8
STAMP=1201891753
channel c4: datafile copy complete, elapsed time: 01:21:26
channel c4: starting datafile copy
input datafile file number=00044
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.309.1
201804651
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE1_FNO-36_0i3q6ln9 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=9
```

```
STAMP=1201891755
channel c1: datafile copy complete, elapsed time: 01:20:03
channel c1: starting datafile copy
input datafile file number=00046
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.312.1
201806095
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE1_FNO-33_0h3q6lmf tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=10
STAMP=1201891766
channel c3: datafile copy complete, elapsed time: 01:20:44
channel c3: starting datafile copy
input datafile file number=00023
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.288.1
201793535
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE1_FNO-41_0j3q6ltd tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=11
STAMP=1201892161
channel c2: datafile copy complete, elapsed time: 01:23:37
channel c2: starting datafile copy
input datafile file number=00026
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.291.1
201795153
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE2_FNO-23_0m3q6qdr tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=12
STAMP=1201896617
channel c3: datafile copy complete, elapsed time: 01:20:53
channel c3: starting datafile copy
input datafile file number=00029
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.294.1
201796261
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE1_FNO-46_013q6qdc tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=13
STAMP=1201896650
channel c1: datafile copy complete, elapsed time: 01:21:35
channel c1: starting datafile copy
input datafile file number=00030
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.295.1
201797317
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE1_FNO-44_0k3q6qdc tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=14
STAMP=1201896694
channel c4: datafile copy complete, elapsed time: 01:22:20
channel c4: starting datafile copy
input datafile file number=00034
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.300.1
201800829
```

```
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE2_FNO-26_0n3q6qq7 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=15
STAMP=1201897015
channel c2: datafile copy complete, elapsed time: 01:20:53
channel c2: starting datafile copy
input datafile file number=00037
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.302.1
201802025
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE2_FNO-30_0p3q6v6b tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=16
STAMP=1201901480
channel c1: datafile copy complete, elapsed time: 01:20:37
channel c1: starting datafile copy
input datafile file number=00039
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.304.1
201803375
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE2_FNO-29_0o3q6v5h tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=17
STAMP=1201901527
channel c3: datafile copy complete, elapsed time: 01:21:48
channel c3: starting datafile copy
input datafile file number=00042
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.307.1
201804601
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE2_FNO-34_0q3q6v7o tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=18
STAMP=1201901805
channel c4: datafile copy complete, elapsed time: 01:25:14
channel c4: starting datafile copy
input datafile file number=00047
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.311.1
201806051
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE2_FNO-37_0r3q6vhу tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=19
STAMP=1201901963
channel c2: datafile copy complete, elapsed time: 01:22:23
channel c2: starting datafile copy
input datafile file number=00048
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.313.1
201873549
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE2_FNO-39_0s3q73th tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=20
STAMP=1201906343
channel c1: datafile copy complete, elapsed time: 01:20:55
channel c1: starting datafile copy
input datafile file number=00024
```

```
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.289.1
201793665
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE2_FNO-42_0t3q73uv tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=21
STAMP=1201906415
channel c3: datafile copy complete, elapsed time: 01:21:24
channel c3: starting datafile copy
input datafile file number=00027
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.292.1
201795207
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE2_FNO-47_0u3q747i tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=22
STAMP=1201906737
channel c4: datafile copy complete, elapsed time: 01:22:15
channel c4: starting datafile copy
input datafile file number=00031
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.296.1
201797343
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE2_FNO-48_0v3q74cd tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=23
STAMP=1201906865
channel c2: datafile copy complete, elapsed time: 01:21:45
channel c2: starting datafile copy
input datafile file number=00035
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.299.1
201800821
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE3_FNO-24_103q7818 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=24
STAMP=1201911205
channel c1: datafile copy complete, elapsed time: 01:21:03
channel c1: starting datafile copy
input datafile file number=00038
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.303.1
201802375
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE3_FNO-27_113q78nk tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=25
STAMP=1201911367
channel c3: datafile copy complete, elapsed time: 01:22:33
channel c3: starting datafile copy
input datafile file number=00040
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.305.1
201803381
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE3_FNO-31_123q791p tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=26
STAMP=1201911632
channel c4: datafile copy complete, elapsed time: 01:21:33
```

```
channel c4: starting datafile copy
input datafile file number=00043
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.308.1
201804629
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE3_FNO-35_133q795m tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=27
STAMP=1201911835
channel c2: datafile copy complete, elapsed time: 01:22:57
channel c2: starting datafile copy
input datafile file number=00045
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.310.1
201806031
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE3_FNO-38_143q7dd7 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=28
STAMP=1201916184
channel c1: datafile copy complete, elapsed time: 01:23:06
channel c1: starting datafile copy
input datafile file number=00049
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.314.1
201873563
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE3_FNO-40_153q7did tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=29
STAMP=1201916197
channel c3: datafile copy complete, elapsed time: 01:20:24
channel c3: starting datafile copy
input datafile file number=00050
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.315.1
201875477
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE3_FNO-43_163q7dqp tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=30
STAMP=1201916471
channel c4: datafile copy complete, elapsed time: 01:20:40
channel c4: starting datafile copy
input datafile file number=00001
name=+DATA/NTAP/DATAFILE/system.257.1201727295
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSTEM_FNO-1_1a3q7ii2 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=31
STAMP=1201916673
channel c4: datafile copy complete, elapsed time: 00:03:15
channel c4: starting datafile copy
input datafile file number=00003
name=+DATA/NTAP/DATAFILE/sysaux.258.1201727339
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE3_FNO-45_173q7e17 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=32
STAMP=1201916703
channel c2: datafile copy complete, elapsed time: 01:21:05
```

```
channel c2: starting datafile copy
input datafile file number=00004
name=+DATA/NTAP/DATAFILE/undotbs1.259.1201727365
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
UNDOTBS1_FNO-4_1c3q7ipa tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=33
STAMP=1201916821
channel c2: datafile copy complete, elapsed time: 00:01:55
channel c2: starting datafile copy
input datafile file number=00010
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/sysaux.273
.1201729255
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSAUX_FNO-3_1b3q7io5 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=34
STAMP=1201916851
channel c4: datafile copy complete, elapsed time: 00:02:58
channel c4: starting datafile copy
input datafile file number=00014
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/sysaux.278
.1201729279
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSAUX_FNO-10_1d3q7isu tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=35
STAMP=1201916936
channel c2: datafile copy complete, elapsed time: 00:01:52
channel c2: starting datafile copy
input datafile file number=00018
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/sysaux.283
.1201729301
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSAUX_FNO-14_1e3q7itp tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=36
STAMP=1201916940
channel c4: datafile copy complete, elapsed time: 00:01:25
channel c4: starting datafile copy
input datafile file number=00006
name=+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/sysaux.267
.1201728307
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSAUX_FNO-6_1g3q7j0e tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=37
STAMP=1201917017
channel c4: datafile copy complete, elapsed time: 00:01:25
channel c4: starting datafile copy
input datafile file number=00009
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/system.272
.1201729255
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSAUX_FNO-18_1f3q7j0e tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=38
STAMP=1201917035
```

```
channel c2: datafile copy complete, elapsed time: 00:01:34
channel c2: starting datafile copy
input datafile file number=00013
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/system.277
.1201729279
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSTEM_FNO-9_1h3q7j35 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=39
STAMP=1201917090
channel c4: datafile copy complete, elapsed time: 00:01:03
channel c4: starting datafile copy
input datafile file number=00017
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/system.282
.1201729301
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSTEM_FNO-13_1i3q7j3d tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=40
STAMP=1201917097
channel c2: datafile copy complete, elapsed time: 00:01:00
channel c2: starting datafile copy
input datafile file number=00005
name=+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/system.266
.1201728307
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSTEM_FNO-5_1k3q7j5a tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=42
STAMP=1201917174
channel c2: datafile copy complete, elapsed time: 00:01:25
channel c2: starting datafile copy
input datafile file number=00011
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/undotbs1.2
71.1201729255
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSTEM_FNO-17_1j3q7j56 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=41
STAMP=1201917174
channel c4: datafile copy complete, elapsed time: 00:01:31
channel c4: starting datafile copy
input datafile file number=00008
name=+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/undotbs1.2
68.1201728307
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
UNDOTBS1_FNO-11_1l3q7j80 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=44
STAMP=1201917237
channel c2: datafile copy complete, elapsed time: 00:00:56
channel c2: starting datafile copy
input datafile file number=00015
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/undotbs1.2
76.1201729279
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
```

```
UNDOTBS1_FNO-8_1m3q7j82 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=43
STAMP=1201917232
channel c4: datafile copy complete, elapsed time: 00:00:55
channel c4: starting datafile copy
input datafile file number=00019
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/undotbs1.2
81.1201729301
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
UNDOTBS1_FNO-15_1n3q7j9p tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=45
STAMP=1201917288
channel c2: datafile copy complete, elapsed time: 00:00:55
channel c2: starting datafile copy
input datafile file number=00007
name=+DATA/NTAP/DATAFILE/users.260.1201727365
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
UNDOTBS1_FNO-19_1o3q7j9p tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=46
STAMP=1201917295
channel c4: datafile copy complete, elapsed time: 00:00:55
channel c4: starting datafile copy
input datafile file number=00012
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/users.275.
1201729277
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
USERS_FNO-7_1p3q7jbg tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=47
STAMP=1201917297
channel c2: datafile copy complete, elapsed time: 00:00:02
channel c2: starting datafile copy
input datafile file number=00016
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/users.280.
1201729301
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
USERS_FNO-12_1q3q7jbh tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=48
STAMP=1201917297
channel c4: datafile copy complete, elapsed time: 00:00:01
channel c4: starting datafile copy
input datafile file number=00020
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/users.285.
1201729323
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
USERS_FNO-16_1r3q7jbi tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=49
STAMP=1201917298
channel c2: datafile copy complete, elapsed time: 00:00:01
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
USERS_FNO-20_1s3q7jbi tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=50
STAMP=1201917298
channel c4: datafile copy complete, elapsed time: 00:00:01
```

```

output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE3_FNO-50_193q7i95 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=51
STAMP=1201919158
channel c3: datafile copy complete, elapsed time: 00:49:26
output file name=/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SOE3_FNO-49_183q7i95 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=52
STAMP=1201919167
channel c1: datafile copy complete, elapsed time: 00:49:36
Finished backup at 24-MAY-25

Starting Control File and SPFILE Autobackup at 24-MAY-25
piece
handle=/nfsgcnv/archlog/NTAP/autobackup/2025_05_24/o1_mf_s_120191917
3_n32c1775_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 24-MAY-25
released channel: c1
released channel: c2
released channel: c3
released channel: c4

RMAN> **end-of-file**

```

RMAN>

#### 8. 列出備份後的資料庫映像副本，觀察到在 GCNV NFS 掛載點中已建立資料庫映像副本。

```

RMAN> list copy of database tag 'OraCopyBKUPonGCNV_level_0';

List of Datafile Copies
=====

Key      File  S Completion Time Ckp SCN      Ckp Time          Sparse
-----  ----- -  -----  -----  -----  -----  -----
31       1     A 24-MAY-25        2812886  24-MAY-25        NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSTEM_FNO-1_1a3q7i2
          Tag: ORACOPYBKUPONGCNV_LEVEL_0

34       3     A 24-MAY-25        2813001  24-MAY-25        NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
SYSAUX_FNO-3_1b3q7i05
          Tag: ORACOPYBKUPONGCNV_LEVEL_0

33       4     A 24-MAY-25        2813043  24-MAY-25        NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-

```

UNDOTBS1\_FNO-4\_1c3q7ipa  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

42 5 A 24-MAY-25 2377077 21-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 SYSTEM\_FNO-5\_1k3q7j5a  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 2, PDB Name: PDB\$SEED

37 6 A 24-MAY-25 2377077 21-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 SYSAUX\_FNO-6\_1g3q7j0e  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 2, PDB Name: PDB\$SEED

47 7 A 24-MAY-25 2813504 24-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 USERS\_FNO-7\_1p3q7jbg  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

43 8 A 24-MAY-25 2377077 21-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 UNDOTBS1\_FNO-8\_1m3q7j82  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 2, PDB Name: PDB\$SEED

39 9 A 24-MAY-25 2813238 24-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 SYSTEM\_FNO-9\_1h3q7j35  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 3, PDB Name: NTAP\_PDB1

35 10 A 24-MAY-25 2813112 24-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 SYSAUX\_FNO-10\_1d3q7isu  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 3, PDB Name: NTAP\_PDB1

44 11 A 24-MAY-25 2813425 24-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 UNDOTBS1\_FNO-11\_1l3q7j80  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 3, PDB Name: NTAP\_PDB1

48 12 A 24-MAY-25 2813508 24-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-

USERS\_FNO-12\_1q3q7jbh

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 3, PDB Name: NTAP\_PDB1

40 13 A 24-MAY-25 2813243 24-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
SYSTEM\_FNO-13\_1i3q7j3d

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 4, PDB Name: NTAP\_PDB2

36 14 A 24-MAY-25 2813124 24-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
SYSAUX\_FNO-14\_1e3q7itp

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 4, PDB Name: NTAP\_PDB2

45 15 A 24-MAY-25 2813463 24-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
UNDOTBS1\_FNO-15\_1n3q7j9p

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 4, PDB Name: NTAP\_PDB2

49 16 A 24-MAY-25 2813512 24-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
USERS\_FNO-16\_1r3q7jbi

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 4, PDB Name: NTAP\_PDB2

41 17 A 24-MAY-25 2813364 24-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
SYSTEM\_FNO-17\_1j3q7j56

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 5, PDB Name: NTAP\_PDB3

38 18 A 24-MAY-25 2813185 24-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
SYSAUX\_FNO-18\_1f3q7j0e

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 5, PDB Name: NTAP\_PDB3

46 19 A 24-MAY-25 2813467 24-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
UNDOTBS1\_FNO-19\_1o3q7j9p

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 5, PDB Name: NTAP\_PDB3

50	20	A	24-MAY-25	2813516	24-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-						
USERS_FNO-20_1s3q7jbi						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 5, PDB Name: NTAP_PDB3						
6	21	A	23-MAY-25	2768847	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-						
21_0c3q6gvm						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
7	22	A	23-MAY-25	2768851	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-						
22_0d3q6gvm						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
12	23	A	23-MAY-25	2777335	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-						
23_0m3q6qdr						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
24	24	A	24-MAY-25	2803186	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-						
24_103q7818						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 5, PDB Name: NTAP_PDB3						
5	25	A	23-MAY-25	2768856	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-						
25_0e3q6gvn						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
15	26	A	23-MAY-25	2777644	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-						
26_0n3q6qq7						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
25	27	A	24-MAY-25	2803231	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-						
27_113q78nk						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						

Container ID: 5, PDB Name: NTAP\_PDB3

4        28     A 23-MAY-25              2768859     23-MAY-25        NO  
       Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
 28\_0f3q6gvn  
       Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
       Container ID: 3, PDB Name: NTAP\_PDB1

17      29     A 23-MAY-25              2781833     23-MAY-25        NO  
       Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE2\_FNO-  
 29\_0o3q6v5h  
       Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
       Container ID: 4, PDB Name: NTAP\_PDB2

16      30     A 23-MAY-25              2781842     23-MAY-25        NO  
       Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE2\_FNO-  
 30\_0p3q6v6b  
       Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
       Container ID: 4, PDB Name: NTAP\_PDB2

26      31     A 24-MAY-25              2803450     23-MAY-25        NO  
       Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE3\_FNO-  
 31\_123q791p  
       Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
       Container ID: 5, PDB Name: NTAP\_PDB3

8        32     A 23-MAY-25              2773143     23-MAY-25        NO  
       Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
 32\_0g3q6lkl  
       Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
       Container ID: 3, PDB Name: NTAP\_PDB1

10      33     A 23-MAY-25              2773183     23-MAY-25        NO  
       Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
 33\_0h3q6lmf  
       Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
       Container ID: 3, PDB Name: NTAP\_PDB1

18      34     A 23-MAY-25              2781890     23-MAY-25        NO  
       Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE2\_FNO-  
 34\_0q3q6v7o  
       Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
       Container ID: 4, PDB Name: NTAP\_PDB2

27      35     A 24-MAY-25              2803827     23-MAY-25        NO  
       Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE3\_FNO-

35\_133q795m

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 5, PDB Name: NTAP\_PDB3

9       36     A 23-MAY-25           2773193     23-MAY-25       NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
36\_0i3q6ln9

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 3, PDB Name: NTAP\_PDB1

19      37     A 23-MAY-25           2782104     23-MAY-25       NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE2\_FNO-  
37\_0r3q6vhv

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 4, PDB Name: NTAP\_PDB2

28      38     A 24-MAY-25           2808047     24-MAY-25       NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE3\_FNO-  
38\_143q7dd7

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 5, PDB Name: NTAP\_PDB3

20      39     A 23-MAY-25           2786009     23-MAY-25       NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE2\_FNO-  
39\_0s3q73th

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 4, PDB Name: NTAP\_PDB2

29      40     A 24-MAY-25           2808169     24-MAY-25       NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE3\_FNO-  
40\_153q7did

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 5, PDB Name: NTAP\_PDB3

11      41     A 23-MAY-25           2773323     23-MAY-25       NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
41\_0j3q6ltd

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 3, PDB Name: NTAP\_PDB1

21      42     A 23-MAY-25           2786042     23-MAY-25       NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE2\_FNO-  
42\_0t3q73uv

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 4, PDB Name: NTAP\_PDB2

30	43	A	24-MAY-25	2808367	24-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-43_163q7dqp						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 5, PDB Name: NTAP_PDB3						
14	44	A	23-MAY-25	2777322	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-44_0k3q6qdc						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
32	45	A	24-MAY-25	2808624	24-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-45_173q7e17						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 5, PDB Name: NTAP_PDB3						
13	46	A	23-MAY-25	2777326	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-46_013q6qdc						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
22	47	A	23-MAY-25	2786345	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-47_0u3q747i						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
23	48	A	23-MAY-25	2786456	23-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-48_0v3q74cd						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
52	49	A	24-MAY-25	2812634	24-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-49_183q7i95						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 5, PDB Name: NTAP_PDB3						
51	50	A	24-MAY-25	2812638	24-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-50_193q7i95						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						

RMAN&gt;

9. 從 Oracle RMAN 命令提示字元報告模式以觀察目前 VLDB 資料檔案是否位於主儲存上。

```
RMAN> report schema;

Report of database schema for database with db_unique_name NTAP

List of Permanent Datafiles
=====
File  Size(MB)  Tablespace          RB  segs  Datafile Name
----  -----  -----
1     1070      SYSTEM             YES
+DATA/NTAP/DATAFILE/system.257.1201727295
3     970       SYSAUX            NO
+DATA/NTAP/DATAFILE/sysaux.258.1201727339
4     680       UNDOTBS1         YES
+DATA/NTAP/DATAFILE/undotbs1.259.1201727365
5     400       PDB$SEED:SYSTEM   NO
+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/system.266.1201
728307
6     460       PDB$SEED:SYSAUX  NO
+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/sysaux.267.1201
728307
7     5        USERS             NO
+DATA/NTAP/DATAFILE/users.260.1201727365
8     235      PDB$SEED:UNDOTBS1 NO
+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/undotbs1.268.12
01728307
9     410      NTAP_PDB1:SYSTEM   YES
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/system.272.1201
729255
10    510      NTAP_PDB1:SYSAUX  NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/sysaux.273.1201
729255
11    240      NTAP_PDB1:UNDOTBS1 YES
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/undotbs1.271.12
01729255
12    5        NTAP_PDB1:USERS   NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/users.275.12017
29277
13    410      NTAP_PDB2:SYSTEM   YES
```

```

+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/system.277.1201
729279
14 510      NTAP_PDB2:SYSAUX      NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/sysaux.278.1201
729279
15 235      NTAP_PDB2:UNDOTBS1    YES
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/undotbs1.276.12
01729279
16 5       NTAP_PDB2:USERS      NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/users.280.12017
29301
17 410      NTAP_PDB3:SYSTEM      YES
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/system.282.1201
729301
18 510      NTAP_PDB3:SYSAUX      NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/sysaux.283.1201
729301
19 235      NTAP_PDB3:UNDOTBS1    YES
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/undotbs1.281.12
01729301
20 5       NTAP_PDB3:USERS      NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/users.285.12017
29323
21 30720     NTAP_PDB1:SOE1      NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.286.120179
3019
22 30720     NTAP_PDB1:SOE1      NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.287.120179
3419
23 30720     NTAP_PDB2:SOE2      NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.288.120179
3535
24 30720     NTAP_PDB3:SOE3      NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.289.120179
3665
25 30720     NTAP_PDB1:SOE1      NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.290.120179
4401
26 30720     NTAP_PDB2:SOE2      NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.291.120179
5153
27 30720     NTAP_PDB3:SOE3      NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.292.120179
5207
28 30720     NTAP_PDB1:SOE1      NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.293.120179

```

5271  
29 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.294.120179  
6261  
30 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.295.120179  
7317  
31 30720 NTAP\_PDB3:SOE3 NO  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.296.120179  
7343  
32 30720 NTAP\_PDB1:SOE1 NO  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.297.120179  
7351  
33 30720 NTAP\_PDB1:SOE1 NO  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.298.120180  
0805  
34 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.300.120180  
0829  
35 30720 NTAP\_PDB3:SOE3 NO  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.299.120180  
0821  
36 30720 NTAP\_PDB1:SOE1 NO  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.301.120180  
1969  
37 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.302.120180  
2025  
38 30720 NTAP\_PDB3:SOE3 NO  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.303.120180  
2375  
39 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.304.120180  
3375  
40 30720 NTAP\_PDB3:SOE3 NO  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.305.120180  
3381  
41 30720 NTAP\_PDB1:SOE1 NO  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.306.120180  
3399  
42 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.307.120180  
4601  
43 30720 NTAP\_PDB3:SOE3 NO  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.308.120180  
4629

```

44 30720 NTAP_PDB1:SOE1 NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.309.120180
4651
45 30720 NTAP_PDB3:SOE3 NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.310.120180
6031
46 30720 NTAP_PDB1:SOE1 NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.312.120180
6095
47 30720 NTAP_PDB2:SOE2 NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.311.120180
6051
48 30720 NTAP_PDB2:SOE2 NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.313.120187
3549
49 30720 NTAP_PDB3:SOE3 NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.314.120187
3563
50 30720 NTAP_PDB3:SOE3 NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.315.120187
5477

```

#### List of Temporary Files

File	Size (MB)	Tablespace	Maxsize (MB)	Tempfile Name
1	123	TEMP	32767	+DATA/NTAP/TEMPFILE/temp.265.1201727469
2	123	PDB\$SEED:TEMP	32767	+DATA/NTAP/35AD01790801A78FE063060B460ABC41/TEMPFILE/temp.269.120172 8335
3	16384	NTAP_PDB1:TEMP	32767	+DATA/NTAP/35AD38314E81AF11E063060B460AE362/TEMPFILE/temp.274.120172 9271
4	30720	NTAP_PDB2:TEMP	32767	+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/TEMPFILE/temp.279.120172 9295
5	30720	NTAP_PDB3:TEMP	32767	+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/TEMPFILE/temp.284.120172 9319

RMAN>

#### 10. 驗證來自 OS NFS 掛載點的資料庫映像副本。

```
[oracle@orap ~]$ ls -l /nfsgcnv/oracopy/
total 954924748
-rw-r---- 1 oracle asm 11600384 May 27 16:25 bct_ntap.ctf
-rw-r---- 1 oracle asm 32212262912 May 23 17:29 data_D-NTAP_I-
1379265854_TS-SOE1_FNO-21_0c3q6gvm
-rw-r---- 1 oracle asm 32212262912 May 23 17:32 data_D-NTAP_I-
1379265854_TS-SOE1_FNO-22_0d3q6gvm
-rw-r---- 1 oracle asm 32212262912 May 23 17:28 data_D-NTAP_I-
1379265854_TS-SOE1_FNO-25_0e3q6gvm
-rw-r---- 1 oracle asm 32212262912 May 23 17:27 data_D-NTAP_I-
1379265854_TS-SOE1_FNO-28_0f3q6gvm
-rw-r---- 1 oracle asm 32212262912 May 23 18:49 data_D-NTAP_I-
1379265854_TS-SOE1_FNO-32_0g3q61kl
-rw-r---- 1 oracle asm 32212262912 May 23 18:49 data_D-NTAP_I-
1379265854_TS-SOE1_FNO-33_0h3q6lmf
-rw-r---- 1 oracle asm 32212262912 May 23 18:49 data_D-NTAP_I-
1379265854_TS-SOE1_FNO-36_0i3q6ln9
-rw-r---- 1 oracle asm 32212262912 May 23 18:56 data_D-NTAP_I-
1379265854_TS-SOE1_FNO-41_0j3q6ltd
-rw-r---- 1 oracle asm 32212262912 May 23 20:11 data_D-NTAP_I-
1379265854_TS-SOE1_FNO-44_0k3q6qdc
-rw-r---- 1 oracle asm 32212262912 May 23 20:10 data_D-NTAP_I-
1379265854_TS-SOE1_FNO-46_0l3q6qdc
-rw-r---- 1 oracle asm 32212262912 May 23 20:10 data_D-NTAP_I-
1379265854_TS-SOE2_FNO-23_0m3q6qdr
-rw-r---- 1 oracle asm 32212262912 May 23 20:16 data_D-NTAP_I-
1379265854_TS-SOE2_FNO-26_0n3q6qq7
-rw-r---- 1 oracle asm 32212262912 May 23 21:32 data_D-NTAP_I-
1379265854_TS-SOE2_FNO-29_0o3q6v5h
-rw-r---- 1 oracle asm 32212262912 May 23 21:31 data_D-NTAP_I-
1379265854_TS-SOE2_FNO-30_0p3q6v6b
-rw-r---- 1 oracle asm 32212262912 May 23 21:36 data_D-NTAP_I-
1379265854_TS-SOE2_FNO-34_0q3q6v7o
-rw-r---- 1 oracle asm 32212262912 May 23 21:39 data_D-NTAP_I-
1379265854_TS-SOE2_FNO-37_0r3q6vhv
-rw-r---- 1 oracle asm 32212262912 May 23 22:52 data_D-NTAP_I-
1379265854_TS-SOE2_FNO-39_0s3q73th
-rw-r---- 1 oracle asm 32212262912 May 23 22:53 data_D-NTAP_I-
1379265854_TS-SOE2_FNO-42_0t3q73uv
-rw-r---- 1 oracle asm 32212262912 May 23 22:58 data_D-NTAP_I-
1379265854_TS-SOE2_FNO-47_0u3q747i
-rw-r---- 1 oracle asm 32212262912 May 23 23:01 data_D-NTAP_I-
1379265854_TS-SOE2_FNO-48_0v3q74cd
-rw-r---- 1 oracle asm 32212262912 May 24 00:13 data_D-NTAP_I-
1379265854_TS-SOE3_FNO-24_103q7818
-rw-r---- 1 oracle asm 32212262912 May 24 00:16 data_D-NTAP_I-
```

```
1379265854_TS-SOE3_FNO-27_113q78nk
-rw-r----- 1 oracle asm 32212262912 May 24 00:20 data_D-NTAP_I-
1379265854_TS-SOE3_FNO-31_123q791p
-rw-r----- 1 oracle asm 32212262912 May 24 00:23 data_D-NTAP_I-
1379265854_TS-SOE3_FNO-35_133q795m
-rw-r----- 1 oracle asm 32212262912 May 24 01:36 data_D-NTAP_I-
1379265854_TS-SOE3_FNO-38_143q7dd7
-rw-r----- 1 oracle asm 32212262912 May 24 01:36 data_D-NTAP_I-
1379265854_TS-SOE3_FNO-40_153q7did
-rw-r----- 1 oracle asm 32212262912 May 24 01:41 data_D-NTAP_I-
1379265854_TS-SOE3_FNO-43_163q7dqp
-rw-r----- 1 oracle asm 32212262912 May 24 01:45 data_D-NTAP_I-
1379265854_TS-SOE3_FNO-45_173q7e17
-rw-r----- 1 oracle asm 32212262912 May 24 02:26 data_D-NTAP_I-
1379265854_TS-SOE3_FNO-49_183q7i95
-rw-r----- 1 oracle asm 32212262912 May 24 02:25 data_D-NTAP_I-
1379265854_TS-SOE3_FNO-50_193q7i95
-rw-r----- 1 oracle asm 534781952 May 24 01:48 data_D-NTAP_I-
1379265854_TS-SYSAUX_FNO-10_1d3q7isu
-rw-r----- 1 oracle asm 534781952 May 24 01:49 data_D-NTAP_I-
1379265854_TS-SYSAUX_FNO-14_1e3q7itp
-rw-r----- 1 oracle asm 534781952 May 24 01:50 data_D-NTAP_I-
1379265854_TS-SYSAUX_FNO-18_1f3q7j0e
-rw-r----- 1 oracle asm 985669632 May 24 01:47 data_D-NTAP_I-
1379265854_TS-SYSAUX_FNO-3_1b3q7io5
-rw-r----- 1 oracle asm 482353152 May 24 01:50 data_D-NTAP_I-
1379265854_TS-SYSAUX_FNO-6_1g3q7j0e
-rw-r----- 1 oracle asm 1121984512 May 24 01:44 data_D-NTAP_I-
1379265854_TS-SYSTEM_FNO-1_1a3q7ii2
-rw-r----- 1 oracle asm 429924352 May 24 01:51 data_D-NTAP_I-
1379265854_TS-SYSTEM_FNO-13_1i3q7j3d
-rw-r----- 1 oracle asm 429924352 May 24 01:52 data_D-NTAP_I-
1379265854_TS-SYSTEM_FNO-17_1j3q7j56
-rw-r----- 1 oracle asm 419438592 May 24 01:52 data_D-NTAP_I-
1379265854_TS-SYSTEM_FNO-5_1k3q7j5a
-rw-r----- 1 oracle asm 429924352 May 24 01:51 data_D-NTAP_I-
1379265854_TS-SYSTEM_FNO-9_1h3q7j35
-rw-r----- 1 oracle asm 251666432 May 24 01:53 data_D-NTAP_I-
1379265854_TS-UNDOTBS1_FNO-11_113q7j80
-rw-r----- 1 oracle asm 246423552 May 24 01:54 data_D-NTAP_I-
1379265854_TS-UNDOTBS1_FNO-15_1n3q7j9p
-rw-r----- 1 oracle asm 246423552 May 24 01:54 data_D-NTAP_I-
1379265854_TS-UNDOTBS1_FNO-19_1o3q7j9p
-rw-r----- 1 oracle asm 713039872 May 24 01:47 data_D-NTAP_I-
1379265854_TS-UNDOTBS1_FNO-4_1c3q7ipa
-rw-r----- 1 oracle asm 246423552 May 24 01:53 data_D-NTAP_I-
```

```
1379265854_TS-UNDOTBS1_FNO-8_1m3q7j82
-rw-r----- 1 oracle asm      5251072 May 24 01:54 data_D-NTAP_I-
1379265854_TS-USERS_FNO-12_1q3q7jbh
-rw-r----- 1 oracle asm      5251072 May 24 01:54 data_D-NTAP_I-
1379265854_TS-USERS_FNO-16_1r3q7jbi
-rw-r----- 1 oracle asm      5251072 May 24 01:54 data_D-NTAP_I-
1379265854_TS-USERS_FNO-20_1s3q7jbi
-rw-r----- 1 oracle asm      5251072 May 24 01:54 data_D-NTAP_I-
1379265854_TS-USERS_FNO-7_1p3q7jbg
```

11. 依照所需的時間間隔，從 crontab 中的簡單 UNIX shell 腳本執行 RMAN 備份腳本。

```
[oracle@orap ~]$ cat rman_bkup_merge.sh
#!/usr/bin/sh

log=/home/oracle/logs/ora_bkup_merge_`date +"%Y-%m%d-%H%M%S"`.log

echo "Begin Oracle DB incremental backup/merge to copy at `date
+"%Y-%m%d-%H%M%S`" >> $log

export ORACLE_HOME=/u01/app/oracle/product/19.0.0/NTAP
export ORACLE_SID=NTAP
export PATH=$ORACLE_HOME/bin:$PATH

rman target / nocatalog <<EOF>> $log
@/home/oracle/rman_bkup_merge.cmd
EOF

echo "End Oracle DB incremental backup/merge to copy at `date +"%Y-
%m%d-%H%M%S`" >> $log
```

這完成了從 GCNV 儲存在伺服器內 NFS 掛載上對 Oracle VLDB 備用映像副本備份和合併的設定。

## 使用備份映像副本快速還原 Oracle VLDB

完全恢復遺失或損壞的 **Oracle** 資料文件

如果因主儲存問題（例如資料遺失或損壞）而發生故障，資料庫可以快速切換到 GCNV NFS 掛載上的映像副本，並還原到目前狀態，而無需資料庫還原。消除媒體復原可大幅加快 VLDB 的資料庫復原速度。此用例假設 Oracle VLDB DB 伺服器完好無損，且資料庫控製文件、存檔日誌和目前日誌均可供復原。

1. 以 oracle 使用者身分登入主 VLDB 伺服器主機並在切換之前建立測試表。

```
[oracle@orap ~]$ sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Tue May 27 17:31:23
2025
Version 19.18.0.0.0

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Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Version 19.18.0.0.0

SQL> alter session set container=ntap_pdb1;

Session altered.

SQL> create table test(id integer, dt timestamp, event
varchar(100));

Table created.
```

2. 在測試表中插入一行。該行是在最近的增量備份和合併之後插入的，其資料不在備份集中。後續演示將顯示資料庫完全恢復後，測試行也被恢復。

```
SQL> insert into test values (1, sysdate, 'validate a full recovery
after a switch to DB backup copy on GCNV');

1 row created.

SQL> commit;

Commit complete.
```

3. 透過關閉資料庫來模擬故障。

```
SQL> alter session set container=cdb$root;  
  
Session altered.  
  
SQL> shutdown immediate;  
Database closed.  
Database dismounted.  
ORACLE instance shut down.
```

#### 4. 以 oracle 使用者身份，透過 RMAN 連接到 Oracle 資料庫切換要複製的資料庫。

```
[oracle@orap ~]$ rman target / nocatalog;  
  
Recovery Manager: Release 19.0.0.0.0 - Production on Tue May 27  
17:40:59 2025  
Version 19.18.0.0.0  
  
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reserved.  
  
connected to target database (not started)  
  
RMAN> startup mount;  
  
Oracle instance started  
database mounted  
  
Total System Global Area      5620363744 bytes  
  
Fixed Size                  9175520 bytes  
Variable Size                1023410176 bytes  
Database Buffers             4580179968 bytes  
Redo Buffers                 7598080 bytes  
  
RMAN> switch database to copy;  
  
datafile 1 switched to datafile copy "/nfsgcnv/oracopy/data_D-  
NTAP_I-1379265854_TS-SYSTEM_FNO-1_1a3q7ii2"  
datafile 3 switched to datafile copy "/nfsgcnv/oracopy/data_D-  
NTAP_I-1379265854_TS-SYSAUX_FNO-3_1b3q7io5"  
datafile 4 switched to datafile copy "/nfsgcnv/oracopy/data_D-  
NTAP_I-1379265854_TS-UNDOTBS1_FNO-4_1c3q7ipa"  
datafile 5 switched to datafile copy "/nfsgcnv/oracopy/data_D-  
NTAP_I-1379265854_TS-SYSTEM_FNO-5_1k3q7j5a"  
datafile 6 switched to datafile copy "/nfsgcnv/oracopy/data_D-
```

```
NTAP_I-1379265854_TS-SYSAUX_FNO-6_1g3q7j0e"
datafile 7 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-7_1p3q7jbg"
datafile 8 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-8_1m3q7j82"
datafile 9 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-9_1h3q7j35"
datafile 10 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-10_1d3q7isu"
datafile 11 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-11_113q7j80"
datafile 12 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-12_1q3q7jbh"
datafile 13 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-13_1i3q7j3d"
datafile 14 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-14_1e3q7itp"
datafile 15 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-15_1n3q7j9p"
datafile 16 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-16_1r3q7jbi"
datafile 17 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-17_1j3q7j56"
datafile 18 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-18_1f3q7j0e"
datafile 19 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-19_1o3q7j9p"
datafile 20 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-20_1s3q7jbi"
datafile 21 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-21_0c3q6gvm"
datafile 22 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-22_0d3q6gvm"
datafile 23 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-23_0m3q6qdr"
datafile 24 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-24_103q7818"
datafile 25 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-25_0e3q6gvn"
datafile 26 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-26_0n3q6qq7"
datafile 27 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-27_113q78nk"
datafile 28 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-28_0f3q6gvn"
datafile 29 switched to datafile copy "/nfsgcnv/oracopy/data_D-
```

```
NTAP_I-1379265854_TS-SOE2_FNO-29_0o3q6v5h"
datafile 30 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-30_0p3q6v6b"
datafile 31 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-31_123q791p"
datafile 32 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-32_0g3q61kl"
datafile 33 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-33_0h3q61mf"
datafile 34 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-34_0q3q6v7o"
datafile 35 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-35_133q795m"
datafile 36 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-36_0i3q6ln9"
datafile 37 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-37_0r3q6vhu"
datafile 38 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-38_143q7dd7"
datafile 39 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-39_0s3q73th"
datafile 40 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-40_153q7did"
datafile 41 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-41_0j3q6ltd"
datafile 42 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-42_0t3q73uv"
datafile 43 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-43_163q7dqp"
datafile 44 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-44_0k3q6qdc"
datafile 45 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-45_173q7e17"
datafile 46 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-46_013q6qdc"
datafile 47 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-47_0u3q747i"
datafile 48 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-48_0v3q74cd"
datafile 49 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-49_183q7i95"
datafile 50 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-50_193q7i95"
```

5. 還原並開啟資料庫，使其從上次增量備份更新到目前狀態。

```
RMAN> recover database;

Starting recover at 27-MAY-25
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=139 device type=DISK
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00012: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-12_1q3q7jbh
destination for restore of datafile 00028: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-28_0f3q6gvn
destination for restore of datafile 00041: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-41_0j3q6ltd
destination for restore of datafile 00044: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-44_0k3q6qdc
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/213qh3m5_65_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/213qh3m5_65_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00011: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-11_113q7j80
destination for restore of datafile 00025: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-25_0e3q6gvn
destination for restore of datafile 00036: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-36_0i3q6ln9
destination for restore of datafile 00046: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-46_013q6qdc
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/1u3qh3m5_62_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/1u3qh3m5_62_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00015: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-15_1n3q7j9p
destination for restore of datafile 00029: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-29_0o3q6v5h
```

```
destination for restore of datafile 00039: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-39_0s3q73th
destination for restore of datafile 00048: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-48_0v3q74cd
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/1v3qh3m5_63_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/1v3qh3m5_63_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00019: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-19_1o3q7j9p
destination for restore of datafile 00031: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-31_123q791p
destination for restore of datafile 00043: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-43_163q7dqp
destination for restore of datafile 00050: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-50_193q7i95
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/203qh3m5_64_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/203qh3m5_64_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00010: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-10_1d3q7isu
destination for restore of datafile 00021: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-21_0c3q6gvm
destination for restore of datafile 00032: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-32_0g3q6lkl
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/243qh3m7_68_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/243qh3m7_68_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00016: /nfsgcnv/oracopy/data_D-
```

```
NTAP_I-1379265854_TS-USERS_FNO-16_1r3q7jbi
destination for restore of datafile 00030: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-30_0p3q6v6b
destination for restore of datafile 00042: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-42_0t3q73uv
destination for restore of datafile 00047: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-47_0u3q747i
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/223qh3m6_66_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/223qh3m6_66_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00020: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-20_1s3q7jbi
destination for restore of datafile 00035: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-35_133q795m
destination for restore of datafile 00045: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-45_173q7e17
destination for restore of datafile 00049: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-49_183q7i95
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/233qh3m7_67_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/233qh3m7_67_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00009: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-9_1h3q7j35
destination for restore of datafile 00022: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-22_0d3q6gvm
destination for restore of datafile 00033: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-33_0h3q6lmf
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/273qh3m7_71_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/273qh3m7_71_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
```

```
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00013: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-13_1i3q7j3d
destination for restore of datafile 00026: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-26_0n3q6qq7
destination for restore of datafile 00037: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-37_0r3q6vh
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/283qh3m7_72_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/283qh3m7_72_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00014: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-14_1e3q7itp
destination for restore of datafile 00023: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-23_0m3q6qdr
destination for restore of datafile 00034: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-34_0q3q6v7o
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/253qh3m7_69_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/253qh3m7_69_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00018: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-18_1f3q7j0e
destination for restore of datafile 00024: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-24_103q7818
destination for restore of datafile 00038: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-38_143q7dd7
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/263qh3m7_70_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/263qh3m7_70_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:02
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
```

```
set
destination for restore of datafile 00001: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-1_1a3q7ii2
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/2a3qh3m9_74_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/2a3qh3m9_74_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00017: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-17_1j3q7j56
destination for restore of datafile 00027: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-27_113q78nk
destination for restore of datafile 00040: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-40_153q7did
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/293qh3m9_73_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/293qh3m9_73_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00007: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-7_1p3q7jbg
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/2g3qh3ma_80_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/2g3qh3ma_80_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00004: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-4_1c3q7ipa
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/2c3qh3m9_76_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/2c3qh3m9_76_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:03
```

```
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00003: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-3_1b3q7io5
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/2b3qh3m9_75_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/2b3qh3m9_75_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:07
```

```
starting media recovery
media recovery complete, elapsed time: 00:00:04
```

```
Finished recover at 27-MAY-25
```

```
RMAN> alter database open;
```

```
Statement processed
```

```
RMAN>
```

6. 復原後從 sqlplus 檢查資料庫結構，觀察到除控制、臨時和目前日誌檔案之外的所有 VLDB 資料檔案現在都已切換到 GCNV NFS 檔案系統上的副本。

```
[oracle@orap ~]$ sqlplus / as sysdba;

SQL*Plus: Release 19.0.0.0.0 - Production on Tue May 27 17:45:04
2025
Version 19.18.0.0.0

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Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Version 19.18.0.0.0

SQL> show pdbs;

CON_ID CON_NAME          OPEN MODE RESTRICTED
----- -----
2 PDB$SEED              READ ONLY NO
3 NTAP_PDB1              READ WRITE NO
```

<pre>         4 NTAP_PDB2         5 NTAP_PDB3 SQL&gt; select name from v\$datafile   2 union   3 select name from v\$tempfile   4 union   5 select name from v\$controlfile   6 union   7 select member from v\$logfile; </pre> <p>NAME</p> <hr/> <hr/> <pre> +DATA/NTAP/35AD01790801A78FE063060B460ABC41/TEMPFILE/temp.269.120172 8335 +DATA/NTAP/35AD38314E81AF11E063060B460AE362/TEMPFILE/temp.274.120172 9271 +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/TEMPFILE/temp.279.120172 9295 +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/TEMPFILE/temp.284.120172 9319 +DATA/NTAP/CONTROLFILE/current.261.1201727423 +DATA/NTAP/ONLINELOG/group_1.262.1201727425 +DATA/NTAP/ONLINELOG/group_2.263.1201727425 +DATA/NTAP/ONLINELOG/group_3.264.1201727425 +DATA/NTAP/TEMPFILE/temp.265.1201727469 +LOGS/NTAP/CONTROLFILE/current.256.1201727423 +LOGS/NTAP/ONLINELOG/group_1.258.1201727433 </pre> <p>NAME</p> <hr/> <hr/> <pre> +LOGS/NTAP/ONLINELOG/group_2.257.1201727431 +LOGS/NTAP/ONLINELOG/group_3.259.1201727433 /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-21_0c3q6gvm /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-22_0d3q6gvm /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-25_0e3q6gvn /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-28_0f3q6gvn /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-32_0g3q6lkl /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-33_0h3q6lmf /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-36_0i3q6ln9 /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-41_0j3q6ltd /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-44_0k3q6qdc </pre> <p>NAME</p> <hr/> <hr/>	<table border="0"> <tr><td>READ</td><td>WRITE</td><td>NO</td></tr> <tr><td>READ</td><td>WRITE</td><td>NO</td></tr> </table>	READ	WRITE	NO	READ	WRITE	NO
READ	WRITE	NO					
READ	WRITE	NO					

```
-----  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-46_013q6qdc  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-23_0m3q6qdr  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-26_0n3q6qq7  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-29_0o3q6v5h  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-30_0p3q6v6b  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-34_0q3q6v7o  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-37_0r3q6vh  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-39_0s3q73th  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-42_0t3q73uv  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-47_0u3q747i  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-48_0v3q74cd
```

NAME

```
-----  
-----
```

```
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-24_103q7818  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-27_113q78nk  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-31_123q791p  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-35_133q795m  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-38_143q7dd7  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-40_153q7did  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-43_163q7dqp  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-45_173q7e17  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-49_183q7i95  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-50_193q7i95  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSAUX_FNO-10_1d3q7isu
```

NAME

```
-----  
-----
```

```
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSAUX_FNO-14_1e3q7itp  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSAUX_FNO-18_1f3q7j0e  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSAUX_FNO-3_1b3q7io5  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSAUX_FNO-6_1g3q7j0e  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSTEM_FNO-13_1i3q7j3d  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSTEM_FNO-17_1j3q7j56  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSTEM_FNO-1_1a3q7ii2  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSTEM_FNO-5_1k3q7j5a  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSTEM_FNO-9_1h3q7j35  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-UNDOTBS1_FNO-  
11_113q7j80  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-UNDOTBS1_FNO-  
15_1n3q7j9p
```

NAME

```
-----  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-UNDOTBS1_FNO-  
19_1o3q7j9p  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-UNDOTBS1_FNO-4_1c3q7ipa  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-UNDOTBS1_FNO-8_1m3q7j82  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-USERS_FNO-12_1q3q7jbh  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-USERS_FNO-16_1r3q7jbi  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-USERS_FNO-20_1s3q7jbi  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-USERS_FNO-7_1p3q7jbg
```

62 rows selected.

- 從 SQL plus 中，驗證上次增量備份之後和切換到映像備份副本之前我們已惰性化的測試行是否已還原。

```
SQL> alter session set container=ntap_pdb1;  
Session altered.  
  
SQL> select * from test;  
  
 ID  
-----  
DT  
-----  
-----  
EVENT  
-----  
-----  
 1  
27-MAY-25 05.35.44.000000 PM  
validate a full recovery after a switch to DB backup copy on GCNV  
  
SQL>
```

## 將 Oracle VLDB 從備份副本還原到主存儲

主存儲的存儲故障修復後，資料庫可以輕鬆恢復到主存儲，並且停機時間最短。以下是逐步操作步驟。

1. 從 RMAN 檢查 DB 模式目前位於 GCNV 備份儲存上。

```
RMAN> report schema;

Report of database schema for database with db_unique_name NTAP

List of Permanent Datafiles
=====
File  Size(MB)  Tablespace          RB  segs  Datafile Name
-----  -----  -----
1     1070      SYSTEM             YES
NTAP_I-1379265854_TS-SYSTEM_FNO-1_1a3q7ii2
3     970       SYSAUX            NO
NTAP_I-1379265854_TS-SYSAUX_FNO-3_1b3q7io5
4     680       UNDOTBS1         YES
NTAP_I-1379265854_TS-UNDOTBS1_FNO-4_1c3q7ipa
5     400       PDB$SEED:SYSTEM   NO
NTAP_I-1379265854_TS-SYSTEM_FNO-5_1k3q7j5a
6     460       PDB$SEED:SYSAUX  NO
NTAP_I-1379265854_TS-SYSAUX_FNO-6_1g3q7j0e
7     5        USERS             NO
NTAP_I-1379265854_TS-USERS_FNO-7_1p3q7jbg
8     235      PDB$SEED:UNDOTBS1 NO
NTAP_I-1379265854_TS-UNDOTBS1_FNO-8_1m3q7j82
9     410      NTAP_PDB1:SYSTEM   YES
NTAP_I-1379265854_TS-SYSTEM_FNO-9_1h3q7j35
10    510      NTAP_PDB1:SYSAUX  NO
NTAP_I-1379265854_TS-SYSAUX_FNO-10_1d3q7isu
11    240      NTAP_PDB1:UNDOTBS1 YES
NTAP_I-1379265854_TS-UNDOTBS1_FNO-11_1l3q7j80
12    5        NTAP_PDB1:USERS   NO
NTAP_I-1379265854_TS-USERS_FNO-12_1q3q7jbh
13    410      NTAP_PDB2:SYSTEM   YES
NTAP_I-1379265854_TS-SYSTEM_FNO-13_1i3q7j3d
14    510      NTAP_PDB2:SYSAUX  NO
NTAP_I-1379265854_TS-SYSAUX_FNO-14_1e3q7itp
15    235      NTAP_PDB2:UNDOTBS1 YES
NTAP_I-1379265854_TS-UNDOTBS1_FNO-15_1n3q7j9p
16    5        NTAP_PDB2:USERS   NO
NTAP_I-1379265854_TS-USERS_FNO-16_1r3q7jbi
17    410      NTAP_PDB3:SYSTEM   YES
NTAP_I-1379265854_TS-SYSTEM_FNO-17_1j3q7j56
18    510      NTAP_PDB3:SYSAUX  NO
```

NTAP_I-1379265854_TS-SYSAUX_FNO-18_1f3q7j0e				
19 235	NTAP_PDB3:UNDOTBS1	YES	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-UNDOTBS1_FNO-19_1o3q7j9p				
20 5	NTAP_PDB3:USERS	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-USERS_FNO-20_1s3q7jbi				
21 30720	NTAP_PDB1:SOE1	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE1_FNO-21_0c3q6gvm				
22 30720	NTAP_PDB1:SOE1	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE1_FNO-22_0d3q6gvm				
23 30720	NTAP_PDB2:SOE2	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE2_FNO-23_0m3q6qdr				
24 30720	NTAP_PDB3:SOE3	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE3_FNO-24_103q7818				
25 30720	NTAP_PDB1:SOE1	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE1_FNO-25_0e3q6gvn				
26 30720	NTAP_PDB2:SOE2	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE2_FNO-26_0n3q6qq7				
27 30720	NTAP_PDB3:SOE3	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE3_FNO-27_113q78nk				
28 30720	NTAP_PDB1:SOE1	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE1_FNO-28_0f3q6gvn				
29 30720	NTAP_PDB2:SOE2	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE2_FNO-29_0o3q6v5h				
30 30720	NTAP_PDB2:SOE2	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE2_FNO-30_0p3q6v6b				
31 30720	NTAP_PDB3:SOE3	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE3_FNO-31_123q791p				
32 30720	NTAP_PDB1:SOE1	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE1_FNO-32_0g3q61kl				
33 30720	NTAP_PDB1:SOE1	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE1_FNO-33_0h3q61mf				
34 30720	NTAP_PDB2:SOE2	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE2_FNO-34_0q3q6v7o				
35 30720	NTAP_PDB3:SOE3	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE3_FNO-35_133q795m				
36 30720	NTAP_PDB1:SOE1	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE1_FNO-36_0i3q6ln9				
37 30720	NTAP_PDB2:SOE2	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE2_FNO-37_0r3q6vhу				
38 30720	NTAP_PDB3:SOE3	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE3_FNO-38_143q7dd7				
39 30720	NTAP_PDB2:SOE2	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE2_FNO-39_0s3q73th				
40 30720	NTAP_PDB3:SOE3	NO	/nfsgcnv/oracopy/data_D-	
NTAP_I-1379265854_TS-SOE3_FNO-40_153q7did				
41 30720	NTAP_PDB1:SOE1	NO	/nfsgcnv/oracopy/data_D-	

```

NTAP_I-1379265854_TS-SOE1_FNO-41_0j3q6ltd
42 30720 NTAP_PDB2:SOE2 NO /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-42_0t3q73uv
43 30720 NTAP_PDB3:SOE3 NO /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-43_163q7dqp
44 30720 NTAP_PDB1:SOE1 NO /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-44_0k3q6qdc
45 30720 NTAP_PDB3:SOE3 NO /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-45_173q7e17
46 30720 NTAP_PDB1:SOE1 NO /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-46_013q6qdc
47 30720 NTAP_PDB2:SOE2 NO /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-47_0u3q747i
48 30720 NTAP_PDB2:SOE2 NO /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-48_0v3q74cd
49 30720 NTAP_PDB3:SOE3 NO /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-49_183q7i95
50 30720 NTAP_PDB3:SOE3 NO /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-50_193q7i95

```

#### List of Temporary Files

File	Size (MB)	Tablespace	Maxsize (MB)	Tempfile Name
1	123	TEMP	32767	
	+DATA/NTAP/TEMPFILE/temp.265.1201727469			
2	123	PDB\$SEED:TEMP	32767	
	+DATA/NTAP/35AD01790801A78FE063060B460ABC41/TEMPFILE/temp.269.1201728335			
3	16384	NTAP_PDB1:TEMP	32767	
	+DATA/NTAP/35AD38314E81AF11E063060B460AE362/TEMPFILE/temp.274.1201729271			
4	30720	NTAP_PDB2:TEMP	32767	
	+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/TEMPFILE/temp.279.1201729295			
5	30720	NTAP_PDB3:TEMP	32767	
	+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/TEMPFILE/temp.284.1201729319			

- 一旦主資料庫切換到映像副本，主資料庫現在就是 RMAN 記錄中的副本。

```
RMAN> list copy of database;
```

#### List of Datafile Copies

Key	File	S	Completion Time	Ckp	SCN	Ckp	Time	Sparse
53	1	A	27-MAY-25		2901679		27-MAY-25	NO
			Name:	+DATA/NTAP/DATAFILE/system.257.1201727295				
54	3	A	27-MAY-25		2901679		27-MAY-25	NO
			Name:	+DATA/NTAP/DATAFILE/sysaux.258.1201727339				
55	4	A	27-MAY-25		2901679		27-MAY-25	NO
			Name:	+DATA/NTAP/DATAFILE/undotbs1.259.1201727365				
56	5	A	27-MAY-25		2377077		21-MAY-25	NO
			Name:					
			+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/system.266.1201728307					
			Container ID: 2, PDB Name: PDB\$SEED					
57	6	A	27-MAY-25		2377077		21-MAY-25	NO
			Name:					
			+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/sysaux.267.1201728307					
			Container ID: 2, PDB Name: PDB\$SEED					
58	7	A	27-MAY-25		2901679		27-MAY-25	NO
			Name:	+DATA/NTAP/DATAFILE/users.260.1201727365				
59	8	A	27-MAY-25		2377077		21-MAY-25	NO
			Name:					
			+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/undotbs1.268.1201728307					
			Container ID: 2, PDB Name: PDB\$SEED					
60	9	A	27-MAY-25		2901354		27-MAY-25	NO
			Name:					
			+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/system.272.1201729255					
			Container ID: 3, PDB Name: NTAP_PDB1					
61	10	A	27-MAY-25		2901354		27-MAY-25	NO
			Name:					
			+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/sysaux.273.1201729255					
			Container ID: 3, PDB Name: NTAP_PDB1					
62	11	A	27-MAY-25		2901354		27-MAY-25	NO

Name:  
 +DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/undotbs1.271.12  
 01729255  
 Container ID: 3, PDB Name: NTAP\_PDB1

63 12 A 27-MAY-25 2901354 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/users.275.12017  
 29277  
 Container ID: 3, PDB Name: NTAP\_PDB1

64 13 A 27-MAY-25 2901510 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/system.277.1201  
 729279  
 Container ID: 4, PDB Name: NTAP\_PDB2

65 14 A 27-MAY-25 2901510 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/sysaux.278.1201  
 729279  
 Container ID: 4, PDB Name: NTAP\_PDB2

66 15 A 27-MAY-25 2901510 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/undotbs1.276.12  
 01729279  
 Container ID: 4, PDB Name: NTAP\_PDB2

67 16 A 27-MAY-25 2901510 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/users.280.12017  
 29301  
 Container ID: 4, PDB Name: NTAP\_PDB2

68 17 A 27-MAY-25 2901509 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/system.282.1201  
 729301  
 Container ID: 5, PDB Name: NTAP\_PDB3

69 18 A 27-MAY-25 2901509 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/sysaux.283.1201  
 729301  
 Container ID: 5, PDB Name: NTAP\_PDB3

70	19	A 27-MAY-25	2901509	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/undotbs1.281.1201729301					
Container ID: 5, PDB Name: NTAP_PDB3					
71	20	A 27-MAY-25	2901509	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/users.285.1201729323					
Container ID: 5, PDB Name: NTAP_PDB3					
72	21	A 27-MAY-25	2901354	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.286.1201793019					
Container ID: 3, PDB Name: NTAP_PDB1					
73	22	A 27-MAY-25	2901354	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.287.1201793419					
Container ID: 3, PDB Name: NTAP_PDB1					
74	23	A 27-MAY-25	2901510	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.288.1201793535					
Container ID: 4, PDB Name: NTAP_PDB2					
75	24	A 27-MAY-25	2901509	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.289.1201793665					
Container ID: 5, PDB Name: NTAP_PDB3					
76	25	A 27-MAY-25	2901354	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.290.1201794401					
Container ID: 3, PDB Name: NTAP_PDB1					
77	26	A 27-MAY-25	2901510	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.291.1201795153					

Container ID: 4, PDB Name: NTAP\_PDB2

78	27	A 27-MAY-25	2901509	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.292.120179					
5207					
Container ID: 5, PDB Name: NTAP_PDB3					
79	28	A 27-MAY-25	2901354	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.293.120179					
5271					
Container ID: 3, PDB Name: NTAP_PDB1					
80	29	A 27-MAY-25	2901510	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.294.120179					
6261					
Container ID: 4, PDB Name: NTAP_PDB2					
81	30	A 27-MAY-25	2901510	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.295.120179					
7317					
Container ID: 4, PDB Name: NTAP_PDB2					
82	31	A 27-MAY-25	2901509	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.296.120179					
7343					
Container ID: 5, PDB Name: NTAP_PDB3					
83	32	A 27-MAY-25	2901354	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.297.120179					
7351					
Container ID: 3, PDB Name: NTAP_PDB1					
84	33	A 27-MAY-25	2901354	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.298.120180					
0805					
Container ID: 3, PDB Name: NTAP_PDB1					
85	34	A 27-MAY-25	2901510	27-MAY-25	NO
Name:					

+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.300.120180  
0829  
Container ID: 4, PDB Name: NTAP\_PDB2

86 35 A 27-MAY-25 2901509 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.299.120180  
0821  
Container ID: 5, PDB Name: NTAP\_PDB3

87 36 A 27-MAY-25 2901354 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.301.120180  
1969  
Container ID: 3, PDB Name: NTAP\_PDB1

88 37 A 27-MAY-25 2901510 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.302.120180  
2025  
Container ID: 4, PDB Name: NTAP\_PDB2

89 38 A 27-MAY-25 2901509 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.303.120180  
2375  
Container ID: 5, PDB Name: NTAP\_PDB3

90 39 A 27-MAY-25 2901510 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.304.120180  
3375  
Container ID: 4, PDB Name: NTAP\_PDB2

91 40 A 27-MAY-25 2901509 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.305.120180  
3381  
Container ID: 5, PDB Name: NTAP\_PDB3

92 41 A 27-MAY-25 2901354 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.306.120180  
3399  
Container ID: 3, PDB Name: NTAP\_PDB1

93	42	A 27-MAY-25	2901510	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.307.120180					
4601					
Container ID: 4, PDB Name: NTAP_PDB2					
94	43	A 27-MAY-25	2901509	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.308.120180					
4629					
Container ID: 5, PDB Name: NTAP_PDB3					
95	44	A 27-MAY-25	2901354	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.309.120180					
4651					
Container ID: 3, PDB Name: NTAP_PDB1					
96	45	A 27-MAY-25	2901509	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.310.120180					
6031					
Container ID: 5, PDB Name: NTAP_PDB3					
97	46	A 27-MAY-25	2901354	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.312.120180					
6095					
Container ID: 3, PDB Name: NTAP_PDB1					
98	47	A 27-MAY-25	2901510	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.311.120180					
6051					
Container ID: 4, PDB Name: NTAP_PDB2					
99	48	A 27-MAY-25	2901510	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.313.120187					
3549					
Container ID: 4, PDB Name: NTAP_PDB2					
100	49	A 27-MAY-25	2901509	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.314.120187					
3563					

Container ID: 5, PDB Name: NTAP\_PDB3

101 50 A 27-MAY-25 2901509 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.315.120187  
5477  
Container ID: 5, PDB Name: NTAP\_PDB3

3. 如果存在，請清除主儲存上現已過時的資料文件，以釋放空間和/或清除記錄。

```
RMAN> delete copy of database;

allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=137 device type=DISK
List of Datafile Copies
=====

Key      File  S Completion Time Ckp SCN      Ckp Time          Sparse
-----  ----- -  -----  -----  -----  -----  -----
53       1     A 27-MAY-25    2901679 27-MAY-25   NO
Name: +DATA/NTAP/DATAFILE/system.257.1201727295

54       3     A 27-MAY-25    2901679 27-MAY-25   NO
Name: +DATA/NTAP/DATAFILE/sysaux.258.1201727339

55       4     A 27-MAY-25    2901679 27-MAY-25   NO
Name: +DATA/NTAP/DATAFILE/undotbs1.259.1201727365

56       5     A 27-MAY-25    2377077 21-MAY-25   NO
Name:
+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/system.266.1201
728307
Container ID: 2, PDB Name: PDB$SEED

57       6     A 27-MAY-25    2377077 21-MAY-25   NO
Name:
+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/sysaux.267.1201
728307
Container ID: 2, PDB Name: PDB$SEED

58       7     A 27-MAY-25    2901679 27-MAY-25   NO
Name: +DATA/NTAP/DATAFILE/users.260.1201727365

59       8     A 27-MAY-25    2377077 21-MAY-25   NO
Name:
```

```

+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/undotbs1.268.12
01728307
    Container ID: 2, PDB Name: PDB$SEED

60      9     A 27-MAY-25          2901354    27-MAY-25        NO
        Name:
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/system.272.1201
729255
    Container ID: 3, PDB Name: NTAP_PDB1

61      10    A 27-MAY-25          2901354    27-MAY-25        NO
        Name:
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/sysaux.273.1201
729255
    Container ID: 3, PDB Name: NTAP_PDB1

62      11    A 27-MAY-25          2901354    27-MAY-25        NO
        Name:
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/undotbs1.271.12
01729255
    Container ID: 3, PDB Name: NTAP_PDB1

63      12    A 27-MAY-25          2901354    27-MAY-25        NO
        Name:
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/users.275.12017
29277
    Container ID: 3, PDB Name: NTAP_PDB1

64      13    A 27-MAY-25          2901510    27-MAY-25        NO
        Name:
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/system.277.1201
729279
    Container ID: 4, PDB Name: NTAP_PDB2

65      14    A 27-MAY-25          2901510    27-MAY-25        NO
        Name:
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/sysaux.278.1201
729279
    Container ID: 4, PDB Name: NTAP_PDB2

66      15    A 27-MAY-25          2901510    27-MAY-25        NO
        Name:
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/undotbs1.276.12
01729279
    Container ID: 4, PDB Name: NTAP_PDB2

```

67	16	A	27-MAY-25	2901510	27-MAY-25	NO
Name: +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/users.280.12017 29301						
Container ID: 4, PDB Name: NTAP_PDB2						
68	17	A	27-MAY-25	2901509	27-MAY-25	NO
Name: +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/system.282.1201 729301						
Container ID: 5, PDB Name: NTAP_PDB3						
69	18	A	27-MAY-25	2901509	27-MAY-25	NO
Name: +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/sysaux.283.1201 729301						
Container ID: 5, PDB Name: NTAP_PDB3						
70	19	A	27-MAY-25	2901509	27-MAY-25	NO
Name: +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/undotbs1.281.12 01729301						
Container ID: 5, PDB Name: NTAP_PDB3						
71	20	A	27-MAY-25	2901509	27-MAY-25	NO
Name: +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/users.285.12017 29323						
Container ID: 5, PDB Name: NTAP_PDB3						
72	21	A	27-MAY-25	2901354	27-MAY-25	NO
Name: +DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.286.120179 3019						
Container ID: 3, PDB Name: NTAP_PDB1						
73	22	A	27-MAY-25	2901354	27-MAY-25	NO
Name: +DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.287.120179 3419						
Container ID: 3, PDB Name: NTAP_PDB1						
74	23	A	27-MAY-25	2901510	27-MAY-25	NO
Name: +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.288.120179 3535						

Container ID: 4, PDB Name: NTAP\_PDB2

75 24 A 27-MAY-25 2901509 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.289.120179  
 3665

Container ID: 5, PDB Name: NTAP\_PDB3

76 25 A 27-MAY-25 2901354 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.290.120179  
 4401

Container ID: 3, PDB Name: NTAP\_PDB1

77 26 A 27-MAY-25 2901510 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.291.120179  
 5153

Container ID: 4, PDB Name: NTAP\_PDB2

78 27 A 27-MAY-25 2901509 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.292.120179  
 5207

Container ID: 5, PDB Name: NTAP\_PDB3

79 28 A 27-MAY-25 2901354 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.293.120179  
 5271

Container ID: 3, PDB Name: NTAP\_PDB1

80 29 A 27-MAY-25 2901510 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.294.120179  
 6261

Container ID: 4, PDB Name: NTAP\_PDB2

81 30 A 27-MAY-25 2901510 27-MAY-25 NO  
 Name:  
 +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.295.120179  
 7317

Container ID: 4, PDB Name: NTAP\_PDB2

82 31 A 27-MAY-25 2901509 27-MAY-25 NO  
 Name:

+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.296.120179  
7343

Container ID: 5, PDB Name: NTAP\_PDB3

83 32 A 27-MAY-25 2901354 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.297.120179  
7351

Container ID: 3, PDB Name: NTAP\_PDB1

84 33 A 27-MAY-25 2901354 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.298.120180  
0805

Container ID: 3, PDB Name: NTAP\_PDB1

85 34 A 27-MAY-25 2901510 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.300.120180  
0829

Container ID: 4, PDB Name: NTAP\_PDB2

86 35 A 27-MAY-25 2901509 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.299.120180  
0821

Container ID: 5, PDB Name: NTAP\_PDB3

87 36 A 27-MAY-25 2901354 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.301.120180  
1969

Container ID: 3, PDB Name: NTAP\_PDB1

88 37 A 27-MAY-25 2901510 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.302.120180  
2025

Container ID: 4, PDB Name: NTAP\_PDB2

89 38 A 27-MAY-25 2901509 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.303.120180  
2375

Container ID: 5, PDB Name: NTAP\_PDB3

90 39 A 27-MAY-25 2901510 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.304.120180  
3375  
Container ID: 4, PDB Name: NTAP\_PDB2

91 40 A 27-MAY-25 2901509 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.305.120180  
3381  
Container ID: 5, PDB Name: NTAP\_PDB3

92 41 A 27-MAY-25 2901354 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.306.120180  
3399  
Container ID: 3, PDB Name: NTAP\_PDB1

93 42 A 27-MAY-25 2901510 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.307.120180  
4601  
Container ID: 4, PDB Name: NTAP\_PDB2

94 43 A 27-MAY-25 2901509 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.308.120180  
4629  
Container ID: 5, PDB Name: NTAP\_PDB3

95 44 A 27-MAY-25 2901354 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.309.120180  
4651  
Container ID: 3, PDB Name: NTAP\_PDB1

96 45 A 27-MAY-25 2901509 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.310.120180  
6031  
Container ID: 5, PDB Name: NTAP\_PDB3

97 46 A 27-MAY-25 2901354 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.312.120180  
6095

Container ID: 3, PDB Name: NTAP\_PDB1

98	47	A	27-MAY-25	2901510	27-MAY-25	NO
Name:						
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.311.120180						
6051						
Container ID: 4, PDB Name: NTAP_PDB2						
99	48	A	27-MAY-25	2901510	27-MAY-25	NO
Name:						
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.313.120187						
3549						
Container ID: 4, PDB Name: NTAP_PDB2						
100	49	A	27-MAY-25	2901509	27-MAY-25	NO
Name:						
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.314.120187						
3563						
Container ID: 5, PDB Name: NTAP_PDB3						
101	50	A	27-MAY-25	2901509	27-MAY-25	NO
Name:						
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.315.120187						
5477						
Container ID: 5, PDB Name: NTAP_PDB3						

Do you really want to delete the above objects (enter YES or NO) ?

YES

```
deleted datafile copy
datafile copy file name=+DATA/NTAP/DATAFILE/system.257.1201727295
RECID=53 STAMP=1202233336
deleted datafile copy
datafile copy file name=+DATA/NTAP/DATAFILE/sysaux.258.1201727339
RECID=54 STAMP=1202233336
deleted datafile copy
datafile copy file name=+DATA/NTAP/DATAFILE/undotbs1.259.1201727365
RECID=55 STAMP=1202233336
deleted datafile copy
datafile copy file
name=+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/system.266
.1201728307 RECID=56 STAMP=1202233336
deleted datafile copy
datafile copy file
name=+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/sysaux.267
.1201728307 RECID=57 STAMP=1202233336
```

```
deleted datafile copy
datafile copy file name=+DATA/NTAP/DATAFILE/users.260.1201727365
RECID=58 STAMP=1202233336
deleted datafile copy
datafile copy file
name=+DATA/NTAP/86B637B62FE07A65E053F706E80A27CA/DATAFILE/undotbs1.2
68.1201728307 RECID=59 STAMP=1202233336
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/system.272
.1201729255 RECID=60 STAMP=1202233336
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/sysaux.273
.1201729255 RECID=61 STAMP=1202233336
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/undotbs1.2
71.1201729255 RECID=62 STAMP=1202233336
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/users.275.
1201729277 RECID=63 STAMP=1202233336
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/system.277
.1201729279 RECID=64 STAMP=1202233336
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/sysaux.278
.1201729279 RECID=65 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/undotbs1.2
76.1201729279 RECID=66 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/users.280.
1201729301 RECID=67 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/system.282
.1201729301 RECID=68 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/sysaux.283
```

```
.1201729301 RECID=69 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/undotbs1.2
81.1201729301 RECID=70 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/users.285.
1201729323 RECID=71 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.286.1
201793019 RECID=72 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.287.1
201793419 RECID=73 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.288.1
201793535 RECID=74 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.289.1
201793665 RECID=75 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.290.1
201794401 RECID=76 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.291.1
201795153 RECID=77 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.292.1
201795207 RECID=78 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.293.1
201795271 RECID=79 STAMP=1202233337
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.294.1
201796261 RECID=80 STAMP=1202233337
deleted datafile copy
```

```
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.295.1
201797317 RECID=81 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.296.1
201797343 RECID=82 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.297.1
201797351 RECID=83 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.298.1
201800805 RECID=84 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.300.1
201800829 RECID=85 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.299.1
201800821 RECID=86 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.301.1
201801969 RECID=87 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.302.1
201802025 RECID=88 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.303.1
201802375 RECID=89 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.304.1
201803375 RECID=90 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.305.1
201803381 RECID=91 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.306.1
```

```
201803399 RECID=92 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.307.1
201804601 RECID=93 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.308.1
201804629 RECID=94 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.309.1
201804651 RECID=95 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.310.1
201806031 RECID=96 STAMP=1202233338
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.312.1
201806095 RECID=97 STAMP=1202233339
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.311.1
201806051 RECID=98 STAMP=1202233339
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.313.1
201873549 RECID=99 STAMP=1202233339
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.314.1
201873563 RECID=100 STAMP=1202233339
deleted datafile copy
datafile copy file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.315.1
201875477 RECID=101 STAMP=1202233339
Deleted 49 objects
```

```
RMAN> list copy of database;
```

```
specification does not match any datafile copy in the repository
```

- 修改 rman 備份和合併腳本以指向主存儲，在我們的測試案例中 - RMAN 通道定義中的 ASM 磁碟組 +DATA。執行修改後的備份腳本以在主儲存體上建立新的映像副本。

```

RMAN> @/home/oracle/rman_bkup_merge.cmd.1

RMAN> RUN
2> {
3>   allocate channel c1 device type disk format '+DATA';
4>   allocate channel c2 device type disk format '+DATA';
5>   allocate channel c3 device type disk format '+DATA';
6>   allocate channel c4 device type disk format '+DATA';
7>   delete obsolete;
8>   sql 'alter system archive log current';
9>   recover copy of database with tag 'OraCopyBKUPonGCNV_level_0';
10>  backup incremental level 1 copies=1 for recover of copy with
tag 'OraCopyBKUPonGCNV_level_0' database;
11> }

released channel: ORA_DISK_1
allocated channel: c1
channel c1: SID=137 device type=DISK

allocated channel: c2
channel c2: SID=397 device type=DISK

allocated channel: c3
channel c3: SID=390 device type=DISK

allocated channel: c4
channel c4: SID=274 device type=DISK

RMAN retention policy will be applied to the command
RMAN retention policy is set to redundancy 1
Deleting the following obsolete backups and copies:
-----  

Type          Key      Completion Time    Filename/Handle
-----  

Backup Set    12       24-MAY-25  

  Backup Piece 12       24-MAY-25  

/nfsgcnv/archlog/NTAP/autobackup/2025_05_24/o1_mf_s_1201919173_n32cl  

775_.bkp  

deleted backup piece  

backup piece  

handle=/nfsgcnv/archlog/NTAP/autobackup/2025_05_24/o1_mf_s_120191917  

3_n32cl775_.bkp RECID=12 STAMP=1201919175  

Deleted 1 objects

sql statement: alter system archive log current

Starting recover at 27-MAY-25

```

```
no copy of datafile 1 found to recover
no copy of datafile 3 found to recover
no copy of datafile 4 found to recover
no copy of datafile 5 found to recover
no copy of datafile 6 found to recover
no copy of datafile 7 found to recover
no copy of datafile 8 found to recover
no copy of datafile 9 found to recover
no copy of datafile 10 found to recover
no copy of datafile 11 found to recover
no copy of datafile 12 found to recover
no copy of datafile 13 found to recover
no copy of datafile 14 found to recover
no copy of datafile 15 found to recover
no copy of datafile 16 found to recover
no copy of datafile 17 found to recover
no copy of datafile 18 found to recover
no copy of datafile 19 found to recover
no copy of datafile 20 found to recover
no copy of datafile 21 found to recover
no copy of datafile 22 found to recover
no copy of datafile 23 found to recover
no copy of datafile 24 found to recover
no copy of datafile 25 found to recover
no copy of datafile 26 found to recover
no copy of datafile 27 found to recover
no copy of datafile 28 found to recover
no copy of datafile 29 found to recover
no copy of datafile 30 found to recover
no copy of datafile 31 found to recover
no copy of datafile 32 found to recover
no copy of datafile 33 found to recover
no copy of datafile 34 found to recover
no copy of datafile 35 found to recover
no copy of datafile 36 found to recover
no copy of datafile 37 found to recover
no copy of datafile 38 found to recover
no copy of datafile 39 found to recover
no copy of datafile 40 found to recover
no copy of datafile 41 found to recover
no copy of datafile 42 found to recover
no copy of datafile 43 found to recover
no copy of datafile 44 found to recover
no copy of datafile 45 found to recover
no copy of datafile 46 found to recover
no copy of datafile 47 found to recover
```

```
no copy of datafile 48 found to recover  
no copy of datafile 49 found to recover  
no copy of datafile 50 found to recover  
Finished recover at 27-MAY-25
```

```
Starting backup at 27-MAY-25  
no parent backup or copy of datafile 1 found  
no parent backup or copy of datafile 3 found  
no parent backup or copy of datafile 4 found  
no parent backup or copy of datafile 7 found  
no parent backup or copy of datafile 6 found  
no parent backup or copy of datafile 5 found  
no parent backup or copy of datafile 8 found  
no parent backup or copy of datafile 21 found  
no parent backup or copy of datafile 22 found  
no parent backup or copy of datafile 25 found  
no parent backup or copy of datafile 28 found  
no parent backup or copy of datafile 32 found  
no parent backup or copy of datafile 33 found  
no parent backup or copy of datafile 36 found  
no parent backup or copy of datafile 41 found  
no parent backup or copy of datafile 44 found  
no parent backup or copy of datafile 46 found  
no parent backup or copy of datafile 10 found  
no parent backup or copy of datafile 9 found  
no parent backup or copy of datafile 11 found  
no parent backup or copy of datafile 12 found  
no parent backup or copy of datafile 23 found  
no parent backup or copy of datafile 26 found  
no parent backup or copy of datafile 29 found  
no parent backup or copy of datafile 30 found  
no parent backup or copy of datafile 34 found  
no parent backup or copy of datafile 37 found  
no parent backup or copy of datafile 39 found  
no parent backup or copy of datafile 42 found  
no parent backup or copy of datafile 47 found  
no parent backup or copy of datafile 48 found  
no parent backup or copy of datafile 14 found  
no parent backup or copy of datafile 13 found  
no parent backup or copy of datafile 15 found  
no parent backup or copy of datafile 16 found  
no parent backup or copy of datafile 24 found  
no parent backup or copy of datafile 27 found  
no parent backup or copy of datafile 31 found  
no parent backup or copy of datafile 35 found  
no parent backup or copy of datafile 38 found
```

```
no parent backup or copy of datafile 40 found
no parent backup or copy of datafile 43 found
no parent backup or copy of datafile 45 found
no parent backup or copy of datafile 49 found
no parent backup or copy of datafile 50 found
no parent backup or copy of datafile 18 found
no parent backup or copy of datafile 17 found
no parent backup or copy of datafile 19 found
no parent backup or copy of datafile 20 found
channel c1: starting datafile copy
input datafile file number=00021 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-21_0c3q6gvm
channel c2: starting datafile copy
input datafile file number=00022 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-22_0d3q6gvm
channel c3: starting datafile copy
input datafile file number=00025 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-25_0e3q6gvn
channel c4: starting datafile copy
input datafile file number=00028 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-28_0f3q6gvn
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.313.1
202239779 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=148 STAMP=1202243608
channel c2: datafile copy complete, elapsed time: 01:03:56
channel c2: starting datafile copy
input datafile file number=00032 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-32_0g3q6lkl
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.311.1
202239779 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=149 STAMP=1202243617
channel c3: datafile copy complete, elapsed time: 01:03:60
channel c3: starting datafile copy
input datafile file number=00033 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-33_0h3q6lmf
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.315.1
202239779 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=150 STAMP=1202243621
channel c1: datafile copy complete, elapsed time: 01:04:03
channel c1: starting datafile copy
input datafile file number=00036 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-36_0i3q6ln9
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.314.1
202239779 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=151 STAMP=1202243625
channel c4: datafile copy complete, elapsed time: 01:04:11
```

```
channel c4: starting datafile copy
input datafile file number=00041 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-41_0j3q6ltd
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.312.1
202243617 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=153 STAMP=1202247449
channel c2: datafile copy complete, elapsed time: 01:03:60
channel c2: starting datafile copy
input datafile file number=00044 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-44_0k3q6qdc
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.310.1
202243619 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=152 STAMP=1202247446
channel c3: datafile copy complete, elapsed time: 01:03:57
channel c3: starting datafile copy
input datafile file number=00046 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-46_013q6qdc
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.308.1
202243631 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=154 STAMP=1202247463
channel c4: datafile copy complete, elapsed time: 01:04:02
channel c4: starting datafile copy
input datafile file number=00023 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-23_0m3q6qdr
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.309.1
202243625 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=155 STAMP=1202247473
channel c1: datafile copy complete, elapsed time: 01:04:12
channel c1: starting datafile copy
input datafile file number=00026 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-26_0n3q6qq7
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.307.1
202247457 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=156 STAMP=1202251305
channel c2: datafile copy complete, elapsed time: 01:04:15
channel c2: starting datafile copy
input datafile file number=00029 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-29_0o3q6v5h
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.306.1
202247457 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=157 STAMP=1202251305
channel c3: datafile copy complete, elapsed time: 01:04:15
channel c3: starting datafile copy
input datafile file number=00030 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-30_0p3q6v6b
output file
```

```
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.305.1
202247473 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=158 STAMP=1202251311
channel c4: datafile copy complete, elapsed time: 01:04:01
channel c4: starting datafile copy
input datafile file number=00034 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-34_0q3q6v7o
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.304.1
202247477 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=159 STAMP=1202251313
channel c1: datafile copy complete, elapsed time: 01:03:59
channel c1: starting datafile copy
input datafile file number=00037 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-37_0r3q6vh
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.302.1
202251311 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=160 STAMP=1202255139
channel c3: datafile copy complete, elapsed time: 01:03:48
channel c3: starting datafile copy
input datafile file number=00039 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-39_0s3q73th
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.303.1
202251311 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=161 STAMP=1202255150
channel c2: datafile copy complete, elapsed time: 01:04:04
channel c2: starting datafile copy
input datafile file number=00042 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-42_0t3q73uv
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.301.1
202251313 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=162 STAMP=1202255155
channel c4: datafile copy complete, elapsed time: 01:04:03
channel c4: starting datafile copy
input datafile file number=00047 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-47_0u3q747i
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.299.1
202251315 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=163 STAMP=1202255166
channel c1: datafile copy complete, elapsed time: 01:04:17
channel c1: starting datafile copy
input datafile file number=00048 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-48_0v3q74cd
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.298.1
202255157 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=164 STAMP=1202258984
channel c2: datafile copy complete, elapsed time: 01:03:51
channel c2: starting datafile copy
```

```
input datafile file number=00024 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-24_103q7818
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.297.1
202255157 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=165 STAMP=1202258992
channel c4: datafile copy complete, elapsed time: 01:03:59
channel c4: starting datafile copy
input datafile file number=00027 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-27_113q78nk
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.296.1
202255171 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=166 STAMP=1202259002
channel c1: datafile copy complete, elapsed time: 01:03:59
channel c1: starting datafile copy
input datafile file number=00031 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-31_123q791p
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.300.1
202255141 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=167 STAMP=1202259003
channel c3: datafile copy complete, elapsed time: 01:04:30
channel c3: starting datafile copy
input datafile file number=00035 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-35_133q795m
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.295.1
202258989 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=168 STAMP=1202262811
channel c2: datafile copy complete, elapsed time: 01:03:49
channel c2: starting datafile copy
input datafile file number=00038 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-38_143q7dd7
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.294.1
202258997 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=169 STAMP=1202262817
channel c4: datafile copy complete, elapsed time: 01:03:43
channel c4: starting datafile copy
input datafile file number=00040 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-40_153q7did
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.292.1
202259011 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=170 STAMP=1202262857
channel c3: datafile copy complete, elapsed time: 01:04:13
channel c3: starting datafile copy
input datafile file number=00043 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-43_163q7dqp
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.293.1
```

```
202259011 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=171 STAMP=1202262866
channel c1: datafile copy complete, elapsed time: 01:04:16
channel c1: starting datafile copy
input datafile file number=00045 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-45_173q7e17
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.291.1
202262817 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=172 STAMP=1202266648
channel c2: datafile copy complete, elapsed time: 01:03:56
channel c2: starting datafile copy
input datafile file number=00049 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-49_183q7i95
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.290.1
202262819 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=173 STAMP=1202266665
channel c4: datafile copy complete, elapsed time: 01:04:10
channel c4: starting datafile copy
input datafile file number=00050 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-50_193q7i95
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.288.1
202262869 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=174 STAMP=1202266695
channel c1: datafile copy complete, elapsed time: 01:03:56
channel c1: starting datafile copy
input datafile file number=00001 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-1_1a3q7ii2
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.289.1
202262865 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=175 STAMP=1202266710
channel c3: datafile copy complete, elapsed time: 01:04:08
channel c3: starting datafile copy
input datafile file number=00003 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-3_1b3q7io5
output file name=+DATA/NTAP/DATAFILE/sysaux.281.1202266713
tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=176 STAMP=1202266836
channel c3: datafile copy complete, elapsed time: 00:02:06
channel c3: starting datafile copy
input datafile file number=00004 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-4_1c3q7ipa
output file name=+DATA/NTAP/DATAFILE/system.285.1202266707
tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=177 STAMP=1202266837
channel c1: datafile copy complete, elapsed time: 00:02:14
channel c1: starting datafile copy
input datafile file number=00010 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-10_1d3q7isu
output file
```

```
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/sysaux.282
.1202266839 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=178 STAMP=1202266904
channel c1: datafile copy complete, elapsed time: 00:01:15
channel c1: starting datafile copy
input datafile file number=00014 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-14_1e3q7itp
output file name=+DATA/NTAP/DATAFILE/undotbs1.283.1202266839
tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=179 STAMP=1202266919
channel c3: datafile copy complete, elapsed time: 00:01:24
channel c3: starting datafile copy
input datafile file number=00018 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-18_1f3q7j0e
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/sysaux.280
.1202266915 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=180 STAMP=1202266976
channel c1: datafile copy complete, elapsed time: 00:01:03
channel c1: starting datafile copy
input datafile file number=00006 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-6_1g3q7j0e
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/sysaux.276
.1202266923 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=181 STAMP=1202266987
channel c3: datafile copy complete, elapsed time: 00:01:10
channel c3: starting datafile copy
input datafile file number=00009 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-9_1h3q7j35
output file
name=+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/sysaux.278
.1202266977 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=182 STAMP=1202267033
channel c1: datafile copy complete, elapsed time: 00:01:00
channel c1: starting datafile copy
input datafile file number=00013 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-13_1i3q7j3d
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/system.277
.1202266995 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=183 STAMP=1202267043
channel c3: datafile copy complete, elapsed time: 00:00:53
channel c3: starting datafile copy
input datafile file number=00017 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-17_1j3q7j56
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/system.275
.1202267039 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=184 STAMP=1202267089
channel c1: datafile copy complete, elapsed time: 00:00:53
channel c1: starting datafile copy
input datafile file number=00005 name=/nfsgcnv/oracopy/data_D-
```

```
NTAP_I-1379265854_TS-SYSTEM_FNO-5_1k3q7j5a
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/system.271
.1202267047 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=185 STAMP=1202267099
channel c3: datafile copy complete, elapsed time: 00:01:00
channel c3: starting datafile copy
input datafile file number=00011 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-11_113q7j80
output file
name=+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/system.273
.1202267093 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=186 STAMP=1202267137
channel c1: datafile copy complete, elapsed time: 00:00:51
channel c1: starting datafile copy
input datafile file number=00008 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-8_1m3q7j82
output file
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/undotbs1.2
72.1202267109 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=187
STAMP=1202267138
channel c3: datafile copy complete, elapsed time: 00:00:35
channel c3: starting datafile copy
input datafile file number=00015 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-15_1n3q7j9p
output file
name=+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/undotbs1.2
68.1202267143 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=188
STAMP=1202267172
channel c1: datafile copy complete, elapsed time: 00:00:36
channel c1: starting datafile copy
input datafile file number=00019 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-19_1o3q7j9p
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/undotbs1.2
60.1202267143 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=189
STAMP=1202267172
channel c3: datafile copy complete, elapsed time: 00:00:35
channel c3: starting datafile copy
input datafile file number=00007 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-7_1p3q7jbg
output file name=+DATA/NTAP/DATAFILE/users.266.1202267179
tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=190 STAMP=1202267179
channel c3: datafile copy complete, elapsed time: 00:00:01
channel c3: starting datafile copy
input datafile file number=00012 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-12_1q3q7jbh
output file
```

```
name=+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/users.259.
1202267181 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=191 STAMP=1202267182
channel c3: datafile copy complete, elapsed time: 00:00:03
channel c3: starting datafile copy
input datafile file number=00016 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-16_1r3q7jbi
output file
name=+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/users.258.
1202267185 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=192 STAMP=1202267185
channel c3: datafile copy complete, elapsed time: 00:00:03
channel c3: starting datafile copy
input datafile file number=00020 name=/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-20_1s3q7jbi
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/users.257.
1202267189 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=193 STAMP=1202267190
channel c3: datafile copy complete, elapsed time: 00:00:03
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/undotbs1.2
67.1202267179 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=194
STAMP=1202267199
channel c1: datafile copy complete, elapsed time: 00:00:24
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.287.1
202266655 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=195 STAMP=1202268827
channel c2: datafile copy complete, elapsed time: 00:36:19
output file
name=+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.286.1
202266669 tag=ORACOPYBKUPONGCNV_LEVEL_0 RECID=196 STAMP=1202268833
channel c4: datafile copy complete, elapsed time: 00:36:14
Finished backup at 28-MAY-25
```

```
Starting Control File and SPFILE Autobackup at 28-MAY-25
piece
handle=/nfsgcnv/archlog/NTAP/autobackup/2025_05_28/o1_mf_s_120226884
2_n3f11d04_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 28-MAY-25
released channel: c1
released channel: c2
released channel: c3
released channel: c4
```

```
RMAN> **end-of-file**
```

```
RMAN>
```

5. 驗證現在在主儲存體上是否建立了新的 VLDB 映像副本。

```
RMAN> list copy of database;

List of Datafile Copies
-----
Key      File S Completion Time Ckp SCN      Ckp Time      Sparse
-----  ----- -  -----  -----  -----  -----
177      1    A 28-MAY-25        2951405 28-MAY-25      NO
          Name: +DATA/NTAP/DATAFILE/system.285.1202266707
          Tag: ORACOPYBKUPONGCNV_LEVEL_0

176      3    A 28-MAY-25        2951427 28-MAY-25      NO
          Name: +DATA/NTAP/DATAFILE/sysaux.281.1202266713
          Tag: ORACOPYBKUPONGCNV_LEVEL_0

179      4    A 28-MAY-25        2951801 28-MAY-25      NO
          Name: +DATA/NTAP/DATAFILE/undotbs1.283.1202266839
          Tag: ORACOPYBKUPONGCNV_LEVEL_0

186      5    A 28-MAY-25        2377077 21-MAY-25      NO
          Name:
+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/system.273.1202
267093
          Tag: ORACOPYBKUPONGCNV_LEVEL_0
          Container ID: 2, PDB Name: PDB$SEED

182      6    A 28-MAY-25        2377077 21-MAY-25      NO
          Name:
+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/sysaux.278.1202
266977
          Tag: ORACOPYBKUPONGCNV_LEVEL_0
          Container ID: 2, PDB Name: PDB$SEED

190      7    A 28-MAY-25        2952103 28-MAY-25      NO
          Name: +DATA/NTAP/DATAFILE/users.266.1202267179
          Tag: ORACOPYBKUPONGCNV_LEVEL_0

188      8    A 28-MAY-25        2377077 21-MAY-25      NO
          Name:
+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/undotbs1.268.12
02267143
          Tag: ORACOPYBKUPONGCNV_LEVEL_0
          Container ID: 2, PDB Name: PDB$SEED
```

183	9	A	28-MAY-25	2951919	28-MAY-25	NO
Name:						
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/system.277.1202						
266995						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
178	10	A	28-MAY-25	2951806	28-MAY-25	NO
Name:						
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/sysaux.282.1202						
266839						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
187	11	A	28-MAY-25	2952000	28-MAY-25	NO
Name:						
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/undotbs1.272.12						
02267109						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
191	12	A	28-MAY-25	2952108	28-MAY-25	NO
Name:						
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/users.259.12022						
67181						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
184	13	A	28-MAY-25	2951954	28-MAY-25	NO
Name:						
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/system.275.1202						
267039						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
180	14	A	28-MAY-25	2951863	28-MAY-25	NO
Name:						
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/sysaux.280.1202						
266915						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
189	15	A	28-MAY-25	2952084	28-MAY-25	NO
Name:						
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/undotbs1.260.12						
02267143						

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 4, PDB Name: NTAP\_PDB2

192	16	A	28-MAY-25	2952113	28-MAY-25	NO
Name: +DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/users.258.12022 67185						
Tag: ORACOPYBKUPONGCNV_LEVEL_0 Container ID: 4, PDB Name: NTAP_PDB2						
185	17	A	28-MAY-25	2951961	28-MAY-25	NO
Name: +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/system.271.1202 267047						
Tag: ORACOPYBKUPONGCNV_LEVEL_0 Container ID: 5, PDB Name: NTAP_PDB3						
181	18	A	28-MAY-25	2951870	28-MAY-25	NO
Name: +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/sysaux.276.1202 266923						
Tag: ORACOPYBKUPONGCNV_LEVEL_0 Container ID: 5, PDB Name: NTAP_PDB3						
194	19	A	28-MAY-25	2952099	28-MAY-25	NO
Name: +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/undotbs1.267.12 02267179						
Tag: ORACOPYBKUPONGCNV_LEVEL_0 Container ID: 5, PDB Name: NTAP_PDB3						
193	20	A	28-MAY-25	2952119	28-MAY-25	NO
Name: +DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/users.257.12022 67189						
Tag: ORACOPYBKUPONGCNV_LEVEL_0 Container ID: 5, PDB Name: NTAP_PDB3						
150	21	A	27-MAY-25	2912326	27-MAY-25	NO
Name: +DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.315.120223 9779						
Tag: ORACOPYBKUPONGCNV_LEVEL_0 Container ID: 3, PDB Name: NTAP_PDB1						
148	22	A	27-MAY-25	2912334	27-MAY-25	NO

Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.313.120223  
9779

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 3, PDB Name: NTAP\_PDB1

158 23 A 27-MAY-25 2919519 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.305.120224  
7473

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 4, PDB Name: NTAP\_PDB2

168 24 A 28-MAY-25 2943784 28-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.295.120225  
8989

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 5, PDB Name: NTAP\_PDB3

149 25 A 27-MAY-25 2912330 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.311.120223  
9779

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 3, PDB Name: NTAP\_PDB1

159 26 A 27-MAY-25 2919524 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.304.120224  
7477

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 4, PDB Name: NTAP\_PDB2

169 27 A 28-MAY-25 2943790 28-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.294.120225  
8997

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 5, PDB Name: NTAP\_PDB3

151 28 A 27-MAY-25 2912331 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.314.120223  
9779

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 3, PDB Name: NTAP\_PDB1

161	29	A	27-MAY-25	2936579	27-MAY-25	NO
Name:						
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.303.120225						
1311						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
160	30	A	27-MAY-25	2936583	27-MAY-25	NO
Name:						
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.302.120225						
1311						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
171	31	A	28-MAY-25	2943799	28-MAY-25	NO
Name:						
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.293.120225						
9011						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 5, PDB Name: NTAP_PDB3						
153	32	A	27-MAY-25	2915938	27-MAY-25	NO
Name:						
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.312.120224						
3617						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
152	33	A	27-MAY-25	2915943	27-MAY-25	NO
Name:						
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.310.120224						
3619						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
162	34	A	27-MAY-25	2936588	27-MAY-25	NO
Name:						
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.301.120225						
1313						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
170	35	A	28-MAY-25	2943803	28-MAY-25	NO
Name:						

+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.292.120225  
9011

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 5, PDB Name: NTAP\_PDB3

155 36 A 27-MAY-25 2915949 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.309.120224  
3625

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 3, PDB Name: NTAP\_PDB1

163 37 A 27-MAY-25 2936592 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.299.120225  
1315

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 4, PDB Name: NTAP\_PDB2

172 38 A 28-MAY-25 2947486 28-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.291.120226  
2817

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 5, PDB Name: NTAP\_PDB3

167 39 A 28-MAY-25 2940255 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.300.120225  
5141

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 4, PDB Name: NTAP\_PDB2

173 40 A 28-MAY-25 2947490 28-MAY-25 NO  
Name:  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.290.120226  
2819

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 5, PDB Name: NTAP\_PDB3

154 41 A 27-MAY-25 2915970 27-MAY-25 NO  
Name:  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.308.120224  
3631

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
Container ID: 3, PDB Name: NTAP\_PDB1

164	42	A 28-MAY-25	2940264	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.298.120225					
5157					
Tag: ORACOPYBKUPONGCNV_LEVEL_0					
Container ID: 4, PDB Name: NTAP_PDB2					
175	43	A 28-MAY-25	2947509	28-MAY-25	NO
Name:					
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.289.120226					
2865					
Tag: ORACOPYBKUPONGCNV_LEVEL_0					
Container ID: 5, PDB Name: NTAP_PDB3					
156	44	A 27-MAY-25	2919491	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.307.120224					
7457					
Tag: ORACOPYBKUPONGCNV_LEVEL_0					
Container ID: 3, PDB Name: NTAP_PDB1					
174	45	A 28-MAY-25	2947515	28-MAY-25	NO
Name:					
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.288.120226					
2869					
Tag: ORACOPYBKUPONGCNV_LEVEL_0					
Container ID: 5, PDB Name: NTAP_PDB3					
157	46	A 27-MAY-25	2919495	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.306.120224					
7457					
Tag: ORACOPYBKUPONGCNV_LEVEL_0					
Container ID: 3, PDB Name: NTAP_PDB1					
165	47	A 28-MAY-25	2940268	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.297.120225					
5157					
Tag: ORACOPYBKUPONGCNV_LEVEL_0					
Container ID: 4, PDB Name: NTAP_PDB2					
166	48	A 28-MAY-25	2940277	27-MAY-25	NO
Name:					
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.296.120225					
5171					

```

Tag: ORACOPYBKUPONGCNV_LEVEL_0
Container ID: 4, PDB Name: NTAP_PDB2

195      49    A 28-MAY-25          2951380    28-MAY-25      NO
Name:
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.287.120226
6655

Tag: ORACOPYBKUPONGCNV_LEVEL_0
Container ID: 5, PDB Name: NTAP_PDB3

196      50    A 28-MAY-25          2951389    28-MAY-25      NO
Name:
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.286.120226
6669

Tag: ORACOPYBKUPONGCNV_LEVEL_0
Container ID: 5, PDB Name: NTAP_PDB3

```

6. 在測試表中插入新的測試行，並驗證還原到主儲存上的影像副本是否可以恢復所有交易。

```

[oracle@orap ~]$ sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Wed May 28 20:04:53
2025
Version 19.18.0.0.0

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Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 -
Production
Version 19.18.0.0.0

SQL> show pdbs

  CON_ID CON_NAME                  OPEN MODE  RESTRICTED
----- -----
2  PDB$SEED                      READ ONLY   NO
3  NTAP_PDB1                      READ WRITE  NO
4  NTAP_PDB2                      READ WRITE  NO
5  NTAP_PDB3                      READ WRITE  NO

SQL> alter session set container=ntap_pdb1;

Session altered.

SQL> select * from test;

```

```
ID
-----
DT
-----
EVENT
-----
1
27-MAY-25 05.35.44.000000 PM
validate a full recovery after a switch to DB backup copy

SQL> insert into test values(2, sysdate, 'Swing database back to
primary storage from nfs backup mount on GCNV');

1 row created.

SQL> commit;

Commit complete.

SQL> select * from test;

ID
-----
DT
-----
EVENT
-----
1
27-MAY-25 05.35.44.000000 PM
validate a full recovery after a switch to DB backup copy on GCNV

2
28-MAY-25 08.09.34.000000 PM
Swing database back to primary storage from nfs backup mount on GCNV

ID
-----
DT
-----
```

EVENT

-----

-----

SQL>

- 從 RMAN 關閉資料庫以切換回主儲存體上的備份映像副本。

```
[oracle@orap ~]$ rman target / nocatalog

Recovery Manager: Release 19.0.0.0.0 - Production on Wed May 28
20:01:55 2025
Version 19.18.0.0.0

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reserved.

connected to target database: NTAP (DBID=1379265854)
using target database control file instead of recovery catalog

RMAN> shutdown abort;

Oracle instance shut down

RMAN> startup mount;

connected to target database (not started)
Oracle instance started
database mounted

Total System Global Area      5620363744 bytes

Fixed Size                  9175520 bytes
Variable Size                1023410176 bytes
Database Buffers             4580179968 bytes
Redo Buffers                 7598080 bytes

RMAN> switch database to copy;

datafile 1 switched to datafile copy
"+DATA/NTAP/DATAFILE/system.285.1202266707"
datafile 3 switched to datafile copy
"+DATA/NTAP/DATAFILE/sysaux.281.1202266713"
datafile 4 switched to datafile copy
"+DATA/NTAP/DATAFILE/undotbs1.283.1202266839"
```

```
datafile 5 switched to datafile copy
"+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/system.273.120
2267093"
datafile 6 switched to datafile copy
"+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/sysaux.278.120
2266977"
datafile 7 switched to datafile copy
"+DATA/NTAP/DATAFILE/users.266.1202267179"
datafile 8 switched to datafile copy
"+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/undotbs1.268.1
202267143"
datafile 9 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/system.277.120
2266995"
datafile 10 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/sysaux.282.120
2266839"
datafile 11 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/undotbs1.272.1
202267109"
datafile 12 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/users.259.1202
267181"
datafile 13 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/system.275.120
2267039"
datafile 14 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/sysaux.280.120
2266915"
datafile 15 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/undotbs1.260.1
202267143"
datafile 16 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/users.258.1202
267185"
datafile 17 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/system.271.120
2267047"
datafile 18 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/sysaux.276.120
2266923"
datafile 19 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/undotbs1.267.1
202267179"
datafile 20 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/users.257.1202
```

```
267189"
datafile 21 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.315.12022
39779"
datafile 22 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.313.12022
39779"
datafile 23 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.305.12022
47473"
datafile 24 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.295.12022
58989"
datafile 25 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.311.12022
39779"
datafile 26 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.304.12022
47477"
datafile 27 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.294.12022
58997"
datafile 28 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.314.12022
39779"
datafile 29 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.303.12022
51311"
datafile 30 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.302.12022
51311"
datafile 31 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.293.12022
59011"
datafile 32 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.312.12022
43617"
datafile 33 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.310.12022
43619"
datafile 34 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.301.12022
51313"
datafile 35 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.292.12022
59011"
```

```
datafile 36 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.309.12022
43625"
datafile 37 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.299.12022
51315"
datafile 38 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.291.12022
62817"
datafile 39 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.300.12022
55141"
datafile 40 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.290.12022
62819"
datafile 41 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.308.12022
43631"
datafile 42 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.298.12022
55157"
datafile 43 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.289.12022
62865"
datafile 44 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.307.12022
47457"
datafile 45 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.288.12022
62869"
datafile 46 switched to datafile copy
"+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.306.12022
47457"
datafile 47 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.297.12022
55157"
datafile 48 switched to datafile copy
"+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.296.12022
55171"
datafile 49 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.287.12022
66655"
datafile 50 switched to datafile copy
"+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.286.12022
66669"
```

```
RMAN> recover database;

Starting recover at 28-MAY-25
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=139 device type=DISK

starting media recovery
media recovery complete, elapsed time: 00:00:07

Finished recover at 28-MAY-25

RMAN> alter database open;

Statement processed

RMAN>
```

#### 8. 驗證資料庫現在是否已返回主儲存。

```
RMAN> report schema;

Report of database schema for database with db_unique_name NTAP

List of Permanent Datafiles
=====
File  Size(MB)  Tablespace          RB  segs  Datafile Name
-----  -----  -----
1      1070     SYSTEM            YES
+DATA/NTAP/DATAFILE/system.285.1202266707
3      1020     SYSAUX           NO
+DATA/NTAP/DATAFILE/sysaux.281.1202266713
4      680      UNDOTBS1        YES
+DATA/NTAP/DATAFILE/undotbs1.283.1202266839
5      400      PDB$SEED:SYSTEM   NO
+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/system.273.1202
267093
6      460      PDB$SEED:SYSAUX  NO
+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/sysaux.278.1202
266977
7      5       USERS            NO
+DATA/NTAP/DATAFILE/users.266.1202267179
8      235     PDB$SEED:UNDOTBS1 NO
+DATA/NTAP/35AD01790801A78FE063060B460ABC41/DATAFILE/undotbs1.268.12
02267143
9      410     NTAP_PDB1:SYSTEM  YES
```

```

+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/system.277.1202
266995
10 510      NTAP_PDB1:SYSAUX      NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/sysaux.282.1202
266839
11 240      NTAP_PDB1:UNDOTBS1    YES
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/undotbs1.272.12
02267109
12 5       NTAP_PDB1:USERS      NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/users.259.12022
67181
13 410      NTAP_PDB2:SYSTEM      YES
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/system.275.1202
267039
14 510      NTAP_PDB2:SYSAUX      NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/sysaux.280.1202
266915
15 235      NTAP_PDB2:UNDOTBS1    YES
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/undotbs1.260.12
02267143
16 5       NTAP_PDB2:USERS      NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/users.258.12022
67185
17 410      NTAP_PDB3:SYSTEM      YES
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/system.271.1202
267047
18 510      NTAP_PDB3:SYSAUX      NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/sysaux.276.1202
266923
19 235      NTAP_PDB3:UNDOTBS1    YES
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/undotbs1.267.12
02267179
20 5       NTAP_PDB3:USERS      NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/users.257.12022
67189
21 30720    NTAP_PDB1:SOE1      NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.315.120223
9779
22 30720    NTAP_PDB1:SOE1      NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.313.120223
9779
23 30720    NTAP_PDB2:SOE2      NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.305.120224
7473
24 30720    NTAP_PDB3:SOE3      NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.295.120225

```

8989  
25 30720 NTAP\_PDB1:SOE1 NO  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.311.120223  
9779  
26 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.304.120224  
7477  
27 30720 NTAP\_PDB3:SOE3 NO  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.294.120225  
8997  
28 30720 NTAP\_PDB1:SOE1 NO  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.314.120223  
9779  
29 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.303.120225  
1311  
30 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.302.120225  
1311  
31 30720 NTAP\_PDB3:SOE3 NO  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.293.120225  
9011  
32 30720 NTAP\_PDB1:SOE1 NO  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.312.120224  
3617  
33 30720 NTAP\_PDB1:SOE1 NO  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.310.120224  
3619  
34 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.301.120225  
1313  
35 30720 NTAP\_PDB3:SOE3 NO  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.292.120225  
9011  
36 30720 NTAP\_PDB1:SOE1 NO  
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.309.120224  
3625  
37 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.299.120225  
1315  
38 30720 NTAP\_PDB3:SOE3 NO  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.291.120226  
2817  
39 30720 NTAP\_PDB2:SOE2 NO  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.300.120225  
5141

```

40 30720 NTAP_PDB3:SOE3 NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.290.120226
2819
41 30720 NTAP_PDB1:SOE1 NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.308.120224
3631
42 30720 NTAP_PDB2:SOE2 NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.298.120225
5157
43 30720 NTAP_PDB3:SOE3 NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.289.120226
2865
44 30720 NTAP_PDB1:SOE1 NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.307.120224
7457
45 30720 NTAP_PDB3:SOE3 NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.288.120226
2869
46 30720 NTAP_PDB1:SOE1 NO
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/DATAFILE/soe1.306.120224
7457
47 30720 NTAP_PDB2:SOE2 NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.297.120225
5157
48 30720 NTAP_PDB2:SOE2 NO
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/DATAFILE/soe2.296.120225
5171
49 30720 NTAP_PDB3:SOE3 NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.287.120226
6655
50 30720 NTAP_PDB3:SOE3 NO
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/DATAFILE/soe3.286.120226
6669

```

#### List of Temporary Files

File	Size (MB)	Tablespace	Maxsize (MB)	Tempfile Name
1	123	TEMP	32767	
+DATA/NTAP/TEMPFILE/temp.265.1201727469				
2	123	PDB\$SEED:TEMP	32767	
+DATA/NTAP/35AD01790801A78FE063060B460ABC41/TEMPFILE/temp.269.120172				
8335				
3	16384	NTAP_PDB1:TEMP	32767	
+DATA/NTAP/35AD38314E81AF11E063060B460AE362/TEMPFILE/temp.274.120172				
9271				

```
4      30720      NTAP_PDB2:TEMP        32767  
+DATA/NTAP/35AD39A949B7AF76E063060B460A61D2/TEMPFILE/temp.279.120172  
9295  
5      30720      NTAP_PDB3:TEMP        32767  
+DATA/NTAP/35AD3B0BAD41AFCEE063060B460AD1CC/TEMPFILE/temp.284.120172  
9319
```

9. 從 sqlplus 驗證測試表中所有交易均已復原。

```

SQL> alter session set container=ntap_pdb1;
Session altered.

SQL> select * from test;

        ID
-----
DT
-----
EVENT
-----
1
27-MAY-25 05.35.44.000000 PM
validate a full recovery after a switch to DB backup copy on GCNV

2
28-MAY-25 08.09.34.000000 PM
Swing database back to primary storage from nfs backup mount on GCNV

        ID
-----
DT
-----
EVENT
-----
```

SQL> select systimestamp from dual;

```

SYSTIMESTAMP
-----
28-MAY-25 08.17.55.895654 PM +00:00
```

SQL>

10. 最後，刪除 GCNV 備份儲存體上過時的 DB 映像副本，並在 GCNV 備份儲存體上建立新的備份映像以完成循環。



如果發生故障，導致主儲存和/或主資料庫伺服器主機遺失，則存檔日誌檔案中沒有的所有交易都會遺失。但是，GCNV NFS 檔案系統上提供的 Oracle 資料庫備份映像副本非常方便。您可以使用備份映像副本將主資料庫快速還原到同一個主資料庫伺服器或備用資料庫伺服器（如果有）。在本節中，我們將演示還原到主資料庫伺服器的逐步過程。恢復到新的備用資料庫伺服器的方法幾乎相同；但是，必須在安裝和配置相同的 Oracle 軟體堆疊的備用資料庫伺服器上安裝資料庫備份映像副本。

1. 在我們先前建立的測試表中插入一行，以進行 Oracle VLDB 時間點復原驗證。

```

SQL> insert into test values(3, sysdate, 'validate a point-in-time
recovery by switching to DB backup copy on GCNV');

1 row created.

SQL> commit;

Commit complete.

SQL> select * from test;

          ID
-----
DT
-----
EVENT
-----
1
27-MAY-25 05.35.44.000000 PM
validate a full recovery after a switch to DB backup copy on GCNV

2
28-MAY-25 08.09.34.000000 PM
Swing database back to primary storage from nfs backup mount on GCNV

          ID
-----
DT
-----
EVENT
-----
3
29-MAY-25 03.22.22.000000 PM
validate a point-in-time recovery by switching to DB backup copy on
GCNV

```

2. 歸檔目前日誌文件，以便將交易推送到歸檔日誌檔案。

```
SQL> alter session set container=cdb$root;
Session altered.

SQL> alter system archive log current;
System altered.
```

3. 關閉主 VLDB 伺服器主機以模擬儲存和 DB 伺服器主機的完全故障。
4. 如果在備用資料庫伺服器上執行恢復，請確保它與主資料庫伺服器主機具有相同的作業系統、相同的版本，並且作業系統核心已修補。此外，已在僅使用軟體選項的備用資料庫伺服器上安裝和設定了相同版本和修補程式的 Oracle。
5. 另外，在備用資料庫伺服器上配置與主資料庫伺服器類似的 oracle 環境，例如 oratab 和 oracle 使用者 .bash\_profile 等。將這些檔案備份到 GCNV NFS 掛載點是一個很好的做法。
6. 然後將 GCNV NFS 檔案系統上的 Oracle 資料庫備份映像副本安裝在備用 DB 伺服器上以進行還原。以下步驟示範了流程的細節。

以管理員使用者身分建立掛載點。

```
sudo mkdir /nfsgcnv
```

以管理員使用者身分掛載儲存 Oracle VLDB 備份映像副本的 NFS 磁碟區。

```
sudo mount 10.165.128.5:/orap-bkup /nfsgcnv -o  
rw,bg,hard,vers=3,proto=tcp,timeo=600,rszie=262144,wszie=262144
```

7. 驗證 GCNV NFS 掛載上可用的 Oracle 存檔日誌以進行恢復，並記下最後一個日誌檔案日誌序號。在我們的測試案例中，這個數字是 27。我們的復原點最多到日誌序號 28。
8. 如果從備用資料庫主機恢復，以 oracle 使用者身份，將 ORACLE\_HOME 變數設定為備用資料庫伺服器上的目前 Oracle 安裝，將 ORACLE\_SID 設定為主 Oracle 實例 SID。本次測試中為 NTAP。

```
[oracle@ora-02 ~]$ export  
ORACLE_HOME=/u01/app/oracle/product/19.0.0/NTAP  
[oracle@ora-02 ~]$ export ORACLE_SID=NTAP  
[oracle@ora-02 ~]$ export PATH=$PATH:$ORACLE_HOME/bin
```

9. 以 oracle 使用者身份，在 \$ORACLE\_HOME/dbs 目錄中建立一個通用 Oracle 初始化文件，並配置適當的管理目錄。最重要的是，擁有 Oracle flash recovery area`指向主 Oracle VLDB 伺服器中定義的 GCNV NFS 掛載路徑。`flash recovery area`配置在章節中進行了演示 `Setup Oracle RMAN incremental merge to image copy on GCNV for in-server VLDB backup。將 Oracle 控制檔設定為 GCNV NFS 備份檔案系統。

```
vi /home/oracle/initNTAP.ora
```

使用以下範例條目：

```
*.audit_file_dest='/u01/app/oracle/admin/NTAP/adump'  
*.audit_trail='db'  
*.compatible='19.0.0'  
.control_files=('/nfsgcnv/oracopy/NTAP.ctl')  
.db_block_size=8192  
.db_create_file_dest='/nfsgcnv/oracopy/'  
.db_name='NTAP'  
.db_recovery_file_dest_size=85899345920  
.db_recovery_file_dest='/nfsgcnv/archlog/'  
.diagnostic_dest='/u01/app/oracle'  
.enable_pluggable_database=true  
.local_listener='LISTENER'  
.nls_language='AMERICAN'  
.nls_territory='AMERICA'  
.pga_aggregate_target=1024m  
.processes=320  
.remote_login_passwordfile='EXCLUSIVE'  
.sga_target=10240m
```

如果出現差異，則應使用從主 Oracle VLDB 伺服器復原的備份初始化檔案取代上述初始化檔案。

10. 以 oracle 使用者身分啟動 RMAN 在主或備用 DB 伺服器主機上執行 Oracle 復原。首先，啟動 Oracle 實例 `nomount` 狀態。

```
[oracle@orap ~]$ rman target / nocatalog

Recovery Manager: Release 19.0.0.0.0 - Production on Thu May 29
15:46:15 2025
Version 19.18.0.0.0

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reserved.

connected to target database (not started)

RMAN> startup nomount pfile='/home/oracle/initNTAP.ora';

Oracle instance started

Total System Global Area    10737418000 bytes

Fixed Size                  9174800 bytes
Variable Size                1577058304 bytes
Database Buffers            9126805504 bytes
Redo Buffers                 24379392 bytes
```

11. 設定資料庫ID。可以從 GCNV NFS 掛載點上的映像副本的 Oracle 檔案名稱中檢索資料庫 ID。

```
RMAN> set dbid = 1379265854;

executing command: SET DBID
```

12. 從自動備份還原控製檔。如果啟用了 Oracle 控製檔案和 spfile 自動備份，則它們會在每個增量備份和合併週期中備份。如果有多個副本可用，將還原最新的備份。

```
RMAN> restore controlfile from autobackup;

Starting restore at 29-MAY-25
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=2 device type=DISK

recovery area destination: /nfsgcnv/archlog/
database name (or database unique name) used for search: NTAP
channel ORA_DISK_1: AUTOBACKUP
/nfsgcnv/archlog/NTAP/autobackup/2025_05_29/o1_mf_s_1202395822_n3jx1
hnf_.b kp found in the recovery area
channel ORA_DISK_1: looking for AUTOBACKUP on day: 20250529
channel ORA_DISK_1: restoring control file from AUTOBACKUP
/nfsgcnv/archlog/NTAP/autobackup/2025_05_29/o1_mf_s_1202395822_n3jx1
hnf_.b kp
channel ORA_DISK_1: control file restore from AUTOBACKUP complete
output file name=/nfsgcnv/oracopy/NTAP.ctl
Finished restore at 29-MAY-25
```

13. 將初始化檔案從 spfile 還原到 \$ORACLE\_HOME/dbs 資料夾，以便稍後更新參數檔案以與主 VLDB 相符。

```
RMAN> restore spfile to pfile
'/u01/app/oracle/product/19.0.0/NTAP/dbs/initNTAP.ora' from
autobackup;

Starting restore at 29-MAY-25
using channel ORA_DISK_1

recovery area destination: /nfsgcnv/archlog/
database name (or database unique name) used for search: NTAP
channel ORA_DISK_1: AUTOBACKUP
/nfsgcnv/archlog/NTAP/autobackup/2025_05_29/o1_mf_s_1202395822_n3jx1
hnf_.b kp found in the recovery area
channel ORA_DISK_1: looking for AUTOBACKUP on day: 20250529
channel ORA_DISK_1: restoring spfile from AUTOBACKUP
/nfsgcnv/archlog/NTAP/autobackup/2025_05_29/o1_mf_s_1202395822_n3jx1
hnf_.b kp
channel ORA_DISK_1: SPFILE restore from AUTOBACKUP complete
Finished restore at 29-MAY-25
```

14. 掛載控制檔並驗證資料庫備份映像副本。

```
RMAN> alter database mount;
```

```

released channel: ORA_DISK_1
Statement processed

RMAN> list copy of database tag 'ORACOPYBKUPONGCNV_LEVEL_0';

List of Datafile Copies
=====

Key      File  S Completion Time Ckp SCN      Ckp Time          Sparse
-----  ----- -  -----  -----  -----  -----
273      1     A 29-MAY-25       3310055  29-MAY-25        NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
          SYSTEM_FNO-1_6j3ql96a
          Tag: ORACOPYBKUPONGCNV_LEVEL_0

274      3     A 29-MAY-25       3310333  29-MAY-25        NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
          SYSAUX_FNO-3_6k3ql9c3
          Tag: ORACOPYBKUPONGCNV_LEVEL_0

275      4     A 29-MAY-25       3310521  29-MAY-25        NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
          UNDOTBS1_FNO-4_613ql9hu
          Tag: ORACOPYBKUPONGCNV_LEVEL_0

283      5     A 29-MAY-25       2377077  21-MAY-25        NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
          SYSTEM_FNO-5_6t3qlaa4
          Tag: ORACOPYBKUPONGCNV_LEVEL_0
          Container ID: 2, PDB Name: PDB$SEED

279      6     A 29-MAY-25       2377077  21-MAY-25        NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
          SYSAUX_FNO-6_6p3ql9vu
          Tag: ORACOPYBKUPONGCNV_LEVEL_0
          Container ID: 2, PDB Name: PDB$SEED

288      7     A 29-MAY-25       3311276  29-MAY-25        NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
          USERS_FNO-7_723qlaif
          Tag: ORACOPYBKUPONGCNV_LEVEL_0

285      8     A 29-MAY-25       2377077  21-MAY-25        NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-
          UNDOTBS1_FNO-8_6v3qlae9

```

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 2, PDB Name: PDB\$SEED

280 9 A 29-MAY-25 3310854 29-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 SYSTEM\_FNO-9\_6q3qla21  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 3, PDB Name: NTAP\_PDB1

276 10 A 29-MAY-25 3310587 29-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 SYSAUX\_FNO-10\_6m3ql91h  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 3, PDB Name: NTAP\_PDB1

284 11 A 29-MAY-25 3311150 29-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 UNDOTBS1\_FNO-11\_6u3qlacg  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 3, PDB Name: NTAP\_PDB1

289 12 A 29-MAY-25 3311281 29-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 USERS\_FNO-12\_733qlaij  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 3, PDB Name: NTAP\_PDB1

281 13 A 29-MAY-25 3310906 29-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 SYSTEM\_FNO-13\_6r3qla52  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 4, PDB Name: NTAP\_PDB2

277 14 A 29-MAY-25 3310662 29-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 SYSAUX\_FNO-14\_6n3ql9ou  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 4, PDB Name: NTAP\_PDB2

286 15 A 29-MAY-25 3311229 29-MAY-25 NO  
 Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-  
 UNDOTBS1\_FNO-15\_703qlaft  
 Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
 Container ID: 4, PDB Name: NTAP\_PDB2

290 16 A 29-MAY-25 3311286 29-MAY-25 NO

			Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-			
			USERS_FNO-16_743qlaik			
			Tag: ORACOPYBKUPONGCNV_LEVEL_0			
			Container ID: 4, PDB Name: NTAP_PDB2			
282	17	A	29-MAY-25	3311063	29-MAY-25	NO
			Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-			
			SYSTEM_FNO-17_6s3qla7n			
			Tag: ORACOPYBKUPONGCNV_LEVEL_0			
			Container ID: 5, PDB Name: NTAP_PDB3			
278	18	A	29-MAY-25	3310747	29-MAY-25	NO
			Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-			
			SYSAUX_FNO-18_6o3ql9s9			
			Tag: ORACOPYBKUPONGCNV_LEVEL_0			
			Container ID: 5, PDB Name: NTAP_PDB3			
287	19	A	29-MAY-25	3311242	29-MAY-25	NO
			Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-			
			UNDOTBS1_FNO-19_713qlago			
			Tag: ORACOPYBKUPONGCNV_LEVEL_0			
			Container ID: 5, PDB Name: NTAP_PDB3			
291	20	A	29-MAY-25	3311290	29-MAY-25	NO
			Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-			
			USERS_FNO-20_753qlail			
			Tag: ORACOPYBKUPONGCNV_LEVEL_0			
			Container ID: 5, PDB Name: NTAP_PDB3			
251	21	A	28-MAY-25	3261788	28-MAY-25	NO
			Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-			
			21_5o3qkcd8			
			Tag: ORACOPYBKUPONGCNV_LEVEL_0			
			Container ID: 3, PDB Name: NTAP_PDB1			
295	22	A	29-MAY-25	3261776	28-MAY-25	NO
			Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-			
			22_5i3qk79h			
			Tag: ORACOPYBKUPONGCNV_LEVEL_0			
			Container ID: 3, PDB Name: NTAP_PDB1			
255	23	A	29-MAY-25	3266361	28-MAY-25	NO
			Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-			
			23_5v3qkh6o			
			Tag: ORACOPYBKUPONGCNV_LEVEL_0			
			Container ID: 4, PDB Name: NTAP_PDB2			

266	24	A	29-MAY-25	3280010	29-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-24_693qkvfv						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 5, PDB Name: NTAP_PDB3						
296	25	A	29-MAY-25	3261780	28-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-25_5j3qk79h						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
257	26	A	29-MAY-25	3270370	29-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-26_603qklqo						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
268	27	A	29-MAY-25	3280164	29-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-27_6a3qkj9						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 5, PDB Name: NTAP_PDB3						
297	28	A	29-MAY-25	3261784	28-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-28_5k3qk79h						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 3, PDB Name: NTAP_PDB1						
258	29	A	29-MAY-25	3270566	29-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-29_613qkm09						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
259	30	A	29-MAY-25	3270571	29-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-30_623qkm0g						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						
Container ID: 4, PDB Name: NTAP_PDB2						
267	31	A	29-MAY-25	3280168	29-MAY-25	NO
Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-31_6b3qkj9						
Tag: ORACOPYBKUPONGCNV_LEVEL_0						

Container ID: 5, PDB Name: NTAP\_PDB3

249        32     A 28-MAY-25              3261793     28-MAY-25        NO  
             Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
 32\_5p3qkcd9  
             Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
             Container ID: 3, PDB Name: NTAP\_PDB1

250        33     A 28-MAY-25              3261797     28-MAY-25        NO  
             Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
 33\_5q3qkcd9  
             Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
             Container ID: 3, PDB Name: NTAP\_PDB1

260        34     A 29-MAY-25              3270587     29-MAY-25        NO  
             Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE2\_FNO-  
 34\_633qkm1b  
             Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
             Container ID: 4, PDB Name: NTAP\_PDB2

269        35     A 29-MAY-25              3284192     29-MAY-25        NO  
             Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE3\_FNO-  
 35\_6c3ql412  
             Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
             Container ID: 5, PDB Name: NTAP\_PDB3

252        36     A 28-MAY-25              3261801     28-MAY-25        NO  
             Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
 36\_5r3qkcd9  
             Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
             Container ID: 3, PDB Name: NTAP\_PDB1

261        37     A 29-MAY-25              3275627     29-MAY-25        NO  
             Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE2\_FNO-  
 37\_643qkqjf  
             Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
             Container ID: 4, PDB Name: NTAP\_PDB2

270        38     A 29-MAY-25              3297172     29-MAY-25        NO  
             Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE3\_FNO-  
 38\_6d3ql47q  
             Tag: ORACOPYBKUPONGCNV\_LEVEL\_0  
             Container ID: 5, PDB Name: NTAP\_PDB3

262        39     A 29-MAY-25              3275722     29-MAY-25        NO  
             Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE2\_FNO-

39\_653qkqnn

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 4, PDB Name: NTAP\_PDB2

271 40 A 29-MAY-25 3297259 29-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE3\_FNO-  
40\_6e3ql4b5

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 5, PDB Name: NTAP\_PDB3

253 41 A 29-MAY-25 3266273 28-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
41\_5s3qkh37

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 3, PDB Name: NTAP\_PDB1

264 42 A 29-MAY-25 3275738 29-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE2\_FNO-  
42\_663qkqoq

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 4, PDB Name: NTAP\_PDB2

272 43 A 29-MAY-25 3297314 29-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE3\_FNO-  
43\_6f3ql4bo

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 5, PDB Name: NTAP\_PDB3

254 44 A 29-MAY-25 3266318 28-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
44\_5t3qkh4m

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 3, PDB Name: NTAP\_PDB1

292 45 A 29-MAY-25 3309950 29-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE3\_FNO-  
45\_6g3ql91c

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 5, PDB Name: NTAP\_PDB3

256 46 A 29-MAY-25 3266357 28-MAY-25 NO  
Name: /nfsgcnv/oracopy/data\_D-NTAP\_I-1379265854\_TS-SOE1\_FNO-  
46\_5u3qkh6o

Tag: ORACOPYBKUPONGCNV\_LEVEL\_0

Container ID: 3, PDB Name: NTAP\_PDB1

```

263      47   A 29-MAY-25          3275799    29-MAY-25      NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-
        47_673qkqr5
          Tag: ORACOPYBKUPONGCNV_LEVEL_0
          Container ID: 4, PDB Name: NTAP_PDB2

265      48   A 29-MAY-25          3279927    29-MAY-25      NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-
        48_683qkvb4
          Tag: ORACOPYBKUPONGCNV_LEVEL_0
          Container ID: 4, PDB Name: NTAP_PDB2

293      49   A 29-MAY-25          3309965    29-MAY-25      NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-
        49_6h3ql91s
          Tag: ORACOPYBKUPONGCNV_LEVEL_0
          Container ID: 5, PDB Name: NTAP_PDB3

294      50   A 29-MAY-25          3310038    29-MAY-25      NO
          Name: /nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-
        50_6i3ql955
          Tag: ORACOPYBKUPONGCNV_LEVEL_0
          Container ID: 5, PDB Name: NTAP_PDB3

```

15. 將資料庫切換到複製以運行恢復，而無需資料庫還原。

```

RMAN> switch database to copy;

Starting implicit crosscheck backup at 29-MAY-25
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=12 device type=DISK
Crosschecked 20 objects
Finished implicit crosscheck backup at 29-MAY-25

Starting implicit crosscheck copy at 29-MAY-25
using channel ORA_DISK_1
Crosschecked 49 objects
Finished implicit crosscheck copy at 29-MAY-25

searching for all files in the recovery area
cataloging files...
cataloging done

List of Cataloged Files
=====

```

File Name:  
/nfsgcnv/archlog/NTAP/archivelog/2025\_05\_29/o1\_mf\_1\_27\_n3jzbgh2\_.arc  
File Name:  
/nfsgcnv/archlog/NTAP/autobackup/2025\_05\_29/o1\_mf\_s\_1202395822\_n3jx1  
hnf\_.bkp

datafile 1 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SYSTEM\_FNO-1\_6j3ql96a"  
datafile 3 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SYSAUX\_FNO-3\_6k3ql9c3"  
datafile 4 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-UNDOTBS1\_FNO-4\_613ql9hu"  
datafile 5 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SYSTEM\_FNO-5\_6t3qlaa4"  
datafile 6 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SYSAUX\_FNO-6\_6p3ql9vu"  
datafile 7 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-USERS\_FNO-7\_723qlaif"  
datafile 8 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-UNDOTBS1\_FNO-8\_6v3qlae9"  
datafile 9 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SYSTEM\_FNO-9\_6q3qla21"  
datafile 10 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SYSAUX\_FNO-10\_6m3ql9lh"  
datafile 11 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-UNDOTBS1\_FNO-11\_6u3qlacg"  
datafile 12 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-USERS\_FNO-12\_733qlaij"  
datafile 13 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SYSTEM\_FNO-13\_6r3qla52"  
datafile 14 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SYSAUX\_FNO-14\_6n3ql9ou"  
datafile 15 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-UNDOTBS1\_FNO-15\_703qlaft"  
datafile 16 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-USERS\_FNO-16\_743qlaik"  
datafile 17 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SYSTEM\_FNO-17\_6s3qla7n"  
datafile 18 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SYSAUX\_FNO-18\_6o3ql9s9"  
datafile 19 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-UNDOTBS1\_FNO-19\_713qlago"  
datafile 20 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-USERS\_FNO-20\_753qlail"  
datafile 21 switched to datafile copy "/nfsgcnv/oracopy/data\_D-  
NTAP\_I-1379265854\_TS-SOE1\_FNO-21\_5o3qkcd8"

```
datafile 22 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-22_5i3qk79h"
datafile 23 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-23_5v3qkh6o"
datafile 24 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-24_693qkvfv"
datafile 25 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-25_5j3qk79h"
datafile 26 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-26_603qklqo"
datafile 27 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-27_6a3qkvj9"
datafile 28 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-28_5k3qk79h"
datafile 29 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-29_613qkm09"
datafile 30 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-30_623qkm0g"
datafile 31 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-31_6b3qkvj9"
datafile 32 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-32_5p3qkcd9"
datafile 33 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-33_5q3qkcd9"
datafile 34 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-34_633qkm1b"
datafile 35 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-35_6c3ql412"
datafile 36 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-36_5r3qkcda"
datafile 37 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-37_643qkqjf"
datafile 38 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-38_6d3ql47q"
datafile 39 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-39_653qkqnn"
datafile 40 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-40_6e3ql4b5"
datafile 41 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-41_5s3qkh37"
datafile 42 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-42_663qkqoq"
datafile 43 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-43_6f3ql4bo"
datafile 44 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-44_5t3qkh4m"
```

```
datafile 45 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-45_6g3ql91c"
datafile 46 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-46_5u3qkh6o"
datafile 47 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-47_673qkqr5"
datafile 48 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-48_683qkvb4"
datafile 49 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-49_6h3ql91s"
datafile 50 switched to datafile copy "/nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-50_6i3ql955"
```

16. 執行 Oracle 復原直到閃回復原區中最後一個可用的存檔日誌。

```
RMAN> run {
2> set until sequence=28;
3> recover database;
4> }

executing command: SET until clause

Starting recover at 29-MAY-25
using channel ORA_DISK_1
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00011: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-11_6u3qlacg
destination for restore of datafile 00025: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-25_5j3qk79h
destination for restore of datafile 00036: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-36_5r3qkcda
destination for restore of datafile 00046: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-46_5u3qkh6o
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/773qm617_231_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/773qm617_231_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00012: /nfsgcnv/oracopy/data_D-
```

```
NTAP_I-1379265854_TS-USERS_FNO-12_733qlaij
destination for restore of datafile 00028: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-28_5k3qk79h
destination for restore of datafile 00041: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-41_5s3qkh37
destination for restore of datafile 00044: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-44_5t3qkh4m
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7a3qm617_234_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7a3qm617_234_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:02
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00015: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-15_703qlaft
destination for restore of datafile 00029: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-29_613qkm09
destination for restore of datafile 00039: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-39_653qkqnn
destination for restore of datafile 00048: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-48_683qkvb4
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/783qm617_232_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/783qm617_232_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00019: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-19_713qlago
destination for restore of datafile 00031: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-31_6b3qkvj9
destination for restore of datafile 00043: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-43_6f3ql4bo
destination for restore of datafile 00050: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-50_6i3ql955
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/793qm617_233_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/793qm617_233_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
```

```
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00010: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-10_6m3ql9lh
destination for restore of datafile 00021: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-21_5o3qkcd8
destination for restore of datafile 00032: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-32_5p3qkcd9
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7d3qm619_237_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7d3qm619_237_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00014: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-14_6n3ql9ou
destination for restore of datafile 00023: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-23_5v3qkh6o
destination for restore of datafile 00034: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-34_633qkm1b
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7e3qm619_238_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7e3qm619_238_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00016: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-16_743qlaik
destination for restore of datafile 00030: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-30_623qkm0g
destination for restore of datafile 00042: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-42_663qkqoq
destination for restore of datafile 00047: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-47_673qkqr5
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7b3qm619_235_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7b3qm619_235_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
```

```
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00020: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-20_753qlail
destination for restore of datafile 00035: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-35_6c3ql412
destination for restore of datafile 00045: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-45_6g3ql91c
destination for restore of datafile 00049: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-49_6h3ql91s
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7c3qm619_236_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7c3qm619_236_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00001: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-1_6j3ql96a
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7j3qm61a_243_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7j3qm61a_243_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00009: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-9_6q3qla21
destination for restore of datafile 00022: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-22_5i3qk79h
destination for restore of datafile 00033: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE1_FNO-33_5q3qkcd9
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7g3qm619_240_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7g3qm619_240_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
```

```
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00013: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-13_6r3qla52
destination for restore of datafile 00026: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-26_603qklqo
destination for restore of datafile 00037: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE2_FNO-37_643qkqjf
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7h3qm6la_241_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7h3qm6la_241_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00017: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSTEM_FNO-17_6s3qla7n
destination for restore of datafile 00027: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-27_6a3qkvj9
destination for restore of datafile 00040: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-40_6e3ql4b5
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7i3qm6la_242_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7i3qm6la_242_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00018: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-18_6o3ql9s9
destination for restore of datafile 00024: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-24_693qkvfv
destination for restore of datafile 00038: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SOE3_FNO-38_6d3ql47q
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7f3qm619_239_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7f3qm619_239_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
```

```
set
destination for restore of datafile 00004: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-UNDOTBS1_FNO-4_613ql9hu
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/713qm6la_245_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/713qm6la_245_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:02
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00007: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-USERS_FNO-7_723qlaif
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7p3qm6lb_249_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7p3qm6lb_249_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:01
channel ORA_DISK_1: starting incremental datafile backup set restore
channel ORA_DISK_1: specifying datafile(s) to restore from backup
set
destination for restore of datafile 00003: /nfsgcnv/oracopy/data_D-
NTAP_I-1379265854_TS-SYSAUX_FNO-3_6k3ql9c3
channel ORA_DISK_1: reading from backup piece
/nfsgcnv/oracopy/7k3qm6la_244_1_1
channel ORA_DISK_1: piece handle=/nfsgcnv/oracopy/7k3qm6la_244_1_1
tag=ORACOPYBKUPONGCNV_LEVEL_0
channel ORA_DISK_1: restored backup piece 1
channel ORA_DISK_1: restore complete, elapsed time: 00:00:03

starting media recovery
```

```
archived log for thread 1 with sequence 27 is already on disk as
file
/nfsgcnv/archlog/NTAP/archivelog/2025_05_29/o1_mf_1_27_n3jzbgh2_.arc
archived log file
name=/nfsgcnv/archlog/NTAP/archivelog/2025_05_29/o1_mf_1_27_n3jzbgh2
_.arc thread=1 sequence=27
media recovery complete, elapsed time: 00:00:01
Finished recover at 29-MAY-25
```

```
RMAN>
RMAN> exit
```

Recovery Manager complete.



為了更快地恢復，請使用 `recovery_parallelism` 參數啟用並行會話或在資料庫恢復的恢復命令中指定並行度：`RECOVER DATABASE PARALLEL (DEGREE d INSTANCES DEFAULT)`；。一般來說，並行度應該等於主機上的 CPU 核心數。

17. 退出 RMAN，透過 sqlplus 以 oracle 使用者登入 Oracle，以在不完全恢復後開啟資料庫並重設日誌。

```
SQL> select name, open_mode from v$database;
```

NAME	OPEN_MODE
NTAP	MOUNTED

```
SQL> select instance_name, host_name from v$instance;
```

INSTANCE_NAME
HOST_NAME
-----
NTAP
orap

```
SQL> select member from v$logfile;
```

MEMBER
+DATA/NTAP/ONLINELOG/group_3.264.1201727425
+LOGS/NTAP/ONLINELOG/group_3.259.1201727433
+DATA/NTAP/ONLINELOG/group_2.263.1201727425
+LOGS/NTAP/ONLINELOG/group_2.257.1201727431
+DATA/NTAP/ONLINELOG/group_1.262.1201727425
+LOGS/NTAP/ONLINELOG/group_1.258.1201727433

```
6 rows selected.
```

```
SQL> alter database rename file
  '+LOGS/NTAP/ONLINELOG/group_1.258.1201727433' to
  '/nfsgcnv/oracopy/group_1.258.1201727433';
```

```
Database altered.
```

```
SQL> alter database rename file  
'+DATA/NTAP/ONLINELOG/group_1.262.1201727425' to  
'/nfsgcnv/oracopy/group_1.262.1201727425';
```

Database altered.

```
SQL> alter database rename file  
'+LOGS/NTAP/ONLINELOG/group_2.257.1201727431' to  
'/nfsgcnv/oracopy/group_2.257.1201727431';
```

Database altered.

```
SQL> alter database rename file  
'+DATA/NTAP/ONLINELOG/group_2.263.1201727425' to  
'/nfsgcnv/oracopy/group_2.263.1201727425';
```

Database altered.

```
SQL> alter database rename file  
'+LOGS/NTAP/ONLINELOG/group_3.259.1201727433' to  
'/nfsgcnv/oracopy/group_3.259.1201727433';
```

Database altered.

```
SQL> alter database rename file  
'+DATA/NTAP/ONLINELOG/group_3.264.1201727425' to  
'/nfsgcnv/oracopy/group_3.264.1201727425';
```

Database altered.

```
SQL> alter database open resetlogs;
```

Database altered.

```
SQL> show pdbs
```

CON_ID	CON_NAME	OPEN	MODE	RESTRICTED
2	PDB\$SEED	READ ONLY	NO	
3	NTAP_PDB1	READ WRITE	NO	
4	NTAP_PDB2	READ WRITE	NO	
5	NTAP_PDB3	READ WRITE	NO	

#### 18. 驗證資料庫檔案現在位於 GCNV 上的備份檔案系統上。

```
SQL> select name from v$datafile;
```

NAME

---

---

```
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSTEM_FNO-1_6j3ql96a
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSAUX_FNO-3_6k3ql9c3
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-UNDOTBS1_FNO-4_6l3ql9hu
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSTEM_FNO-5_6t3qlaa4
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSAUX_FNO-6_6p3ql9vu
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-USERS_FNO-7_723qlaif
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-UNDOTBS1_FNO-8_6v3qlae9
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSTEM_FNO-9_6q3qla21
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSAUX_FNO-10_6m3ql9lh
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-UNDOTBS1_FNO-
11_6u3qlacg
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-USERS_FNO-12_733qlaij
```

NAME

---

---

```
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSTEM_FNO-13_6r3qla52
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSAUX_FNO-14_6n3ql9ou
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-UNDOTBS1_FNO-
15_703qlaft
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-USERS_FNO-16_743qlaik
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSTEM_FNO-17_6s3qla7n
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SYSAUX_FNO-18_6o3ql9s9
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-UNDOTBS1_FNO-
19_713qlago
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-USERS_FNO-20_753qlail
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-21_5o3qkcd8
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-22_5i3qk79h
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-23_5v3qkh6o
```

NAME

---

---

```
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-24_693qkvfv
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-25_5j3qk79h
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-26_603qklqo
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-27_6a3qkvj9
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-28_5k3qk79h
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-29_613qkm09
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-30_623qkm0g
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-31_6b3qkvj9
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-32_5p3qkcd9
```

```
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-33_5q3qkcd9  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-34_633qkm1b
```

NAME

```
-----  
-----  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-35_6c3ql412  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-36_5r3qkcda  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-37_643qkqjf  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-38_6d3ql47q  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-39_653qkqnn  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-40_6e3ql4b5  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-41_5s3qkh37  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-42_663qkqoq  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-43_6f3ql4bo  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-44_5t3qkh4m  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-45_6g3ql91c
```

NAME

```
-----  
-----  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE1_FNO-46_5u3qkh6o  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-47_673qkqr5  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE2_FNO-48_683qkvb4  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-49_6h3ql91s  
/nfsgcnv/oracopy/data_D-NTAP_I-1379265854_TS-SOE3_FNO-50_6i3ql955
```

49 rows selected.

```
SQL> select member from v$logfile;
```

MEMBER

```
-----  
-----  
/nfsgcnv/oracopy/group_3.264.1201727425  
/nfsgcnv/oracopy/group_3.259.1201727433  
/nfsgcnv/oracopy/group_2.263.1201727425  
/nfsgcnv/oracopy/group_2.257.1201727431  
/nfsgcnv/oracopy/group_1.262.1201727425  
/nfsgcnv/oracopy/group_1.258.1201727433
```

6 rows selected.

```
SQL> select name from v$controlfile;
```

NAME

-----

-----

/nfsgcnv/oracopy/NTAP.ctl

## 19. 其他恢復後任務

- Add GCNV NFS mount to fstab of the standby DB server if recovering from a standby DB server so that the NFS file system will be mounted when DB server host rebooted.
- Update pfile restored to \$ORACLE\_HOME/dbs directory and create spfile from pfile.

## 20. 要恢復到主存儲，請按照第節中詳述的完全相同的步驟操作 Reverse VLDB back to primary storage from backup copy。如果在備用資料庫伺服器上恢復，則需要將主儲存匯入備用資料庫伺服器。還需要將 Oracle 控製文件和當前線上日誌檔案從 GCNV nfs 掛載重新定位回主存儲，這可以在幾分鐘的停機時間內完成。

這樣就完成了從 GCNV NFS 檔案系統上的備份映像副本到同一主 DB 伺服器或備用 DB 伺服器的 Oracle VLDB 資料庫時間點復原。

## 從備份映像副本複製 Oracle VLDB 以供其他用例使用

從 GCNV 上的備份映像副本複製新的 Oracle VLDB 類似於將主資料庫按時間點還原到新的 DB 伺服器。NetApp解決方案工程團隊提供了自動化工具包，以促進整個流程的快速（幾分鐘）和輕鬆實施。

以下自動化工具包包含一個劇本，可用於透過 NFS 掛載從儲存在 GCNV 儲存上的主資料庫備份映像副本建立或刷新 Oracle VLDB 的克隆，以實現完整的克隆生命週期管理。詳細內容請參考文件：["透過伺服器內映像備份實現 Oracle VLDB 克隆生命週期自動化"](#)。

[https://bitbucket.ngage.netapp.com/mvc/projects/NS-BB/repos/na\\_oracle\\_bkup\\_clone/browse](https://bitbucket.ngage.netapp.com/mvc/projects/NS-BB/repos/na_oracle_bkup_clone/browse)



目前，只有具有 bitbucket 存取權限的NetApp內部使用者才能存取該工具包。對於有興趣的外部用戶，請向您的客戶團隊要求存取權限或聯絡NetApp解決方案工程團隊。

## 在哪裡可以找到更多信息

要了解有關本文檔中描述的信息的更多信息，請查看以下文檔和/或網站：

- NetApp 在 Google Cloud 上提供一流的文件儲存服務

<https://cloud.google.com/netapp-volumes?hl=en>

- RMAN：合併增量備份策略（文件 ID 745798.1）

"[https://support.oracle.com/knowledge/Oracle%20Database%20Products/745798\\_1.html](https://support.oracle.com/knowledge/Oracle%20Database%20Products/745798_1.html)"

- RMAN 備份與還原使用者指南

"<https://docs.oracle.com/en/database/oracle/oracle-database/19/bradv/getting-started-rman.html>"

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