



# 快速入門總覽

## NetApp Solutions

NetApp  
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# 快速入門總覽

本節摘要說明必須完成的工作、以符合上一節所述的先決條件要求。下節提供內部部署和公有雲作業的高層級工作清單。按一下相關連結即可存取詳細的程序和程序。

## 內部部署

- 設定SnapCenter 資料庫管理員使用者
- 安裝外掛程式的必要條件SnapCenter
- 安裝主機外掛程式SnapCenter
- 資料庫資源探索
- 設定儲存叢集對等和DB Volume複寫
- 將CVO資料庫儲存SVM新增SnapCenter 至SVM
- 設定資料庫備份原則SnapCenter
- 實作備份原則以保護資料庫
- 驗證備份

## AWS公有雲

- 機前檢查
- 在Cloud Volumes ONTAP AWS中部署Cloud Manager和功能不全的步驟
- 為資料庫工作負載部署EC2運算執行個體

如需詳細資料、請按一下下列連結：

["內部部署"、"公有雲-AWS"](#)

## 內部部署入門

NetApp SnapCenter 解決方案支援工具使用角色型存取控制（RBAC）來管理使用者資源存取和權限授予、SnapCenter 而安裝此工具則可建立預先填入的角色。您也可以根據自己的需求或應用程式來建立自訂角色。

### 內部部署

#### 1 SnapCenter 、設定資料庫管理員使用者

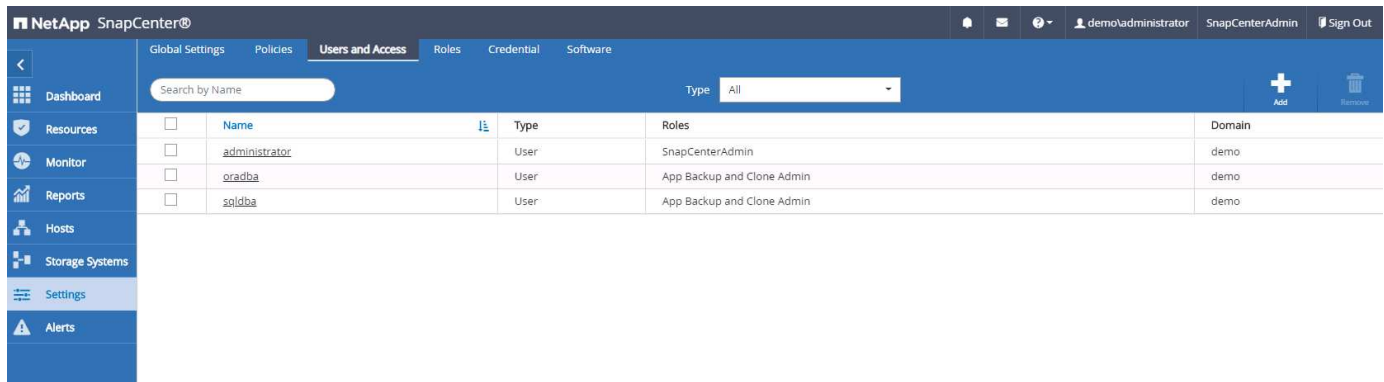
針對支援的每個資料庫平台、使用專屬的管理員使用者ID進行SnapCenter 資料庫備份、還原及/或災難恢復是很合理的做法。您也可以使用單一ID來管理所有資料庫。在我們的測試案例和示範中、我們分別為Oracle和SQL Server建立專屬的管理使用者。

某些SnapCenter 支援功能資源只能以SnapCenterAdmin角色來配置。然後可以將資源指派給其他使用者ID以供

存取。

在預先安裝及設定的內部部署SnapCenter 環境中、下列工作可能已經完成。如果沒有、請執行下列步驟來建立資料庫管理員使用者：

1. 將管理使用者新增至Windows Active Directory。
2. 使用SnapCenterAdmin角色授予的ID登入SnapCenter 功能。
3. 瀏覽至「設定與使用者」下方的「存取」索引標籤、然後按一下「新增」以新增使用者。新的使用者ID會連結至步驟1中在Windows Active Directory中建立的管理員使用者。。視需要指派適當的角色給使用者。視情況指派資源給管理使用者。



## 2、安裝此外掛程式的先決條件SnapCenter

使用資料庫主機上執行的外掛程式代理程式執行備份、還原、複製及其他功能。SnapCenter它會透過設定和認證索引標籤下設定的認證、連線至資料庫主機和資料庫、以進行外掛程式安裝和其他管理功能。根據目標主機類型（例如Linux或Windows）以及資料庫類型、有特定的權限要求。

資料庫主機認證資料必須先設定、才能SnapCenter 安裝非必要的外掛程式。一般而言、您想要使用資料庫主機上的系統管理員使用者帳戶做為外掛程式安裝的主機連線認證。您也可以使用OS型驗證、將相同的使用者ID授予資料庫存取。另一方面、您也可以使用資料庫驗證搭配不同的資料庫使用者ID來進行DB管理存取。如果您決定使用OS型驗證、則必須將OS管理使用者ID授予DB存取權。對於Windows網域型SQL Server安裝、網域管理帳戶可用於管理網域內的所有SQL Server。

適用於SQL Server的Windows主機：

1. 如果您使用Windows認證來進行驗證、則必須先設定認證、才能安裝外掛程式。
2. 如果您使用SQL Server執行個體進行驗證、則必須在安裝外掛程式之後新增認證。
3. 如果您在設定認證資料時啟用SQL驗證、則探索到的執行個體或資料庫會顯示紅色鎖定圖示。如果出現鎖定圖示、您必須指定執行個體或資料庫認證、才能將執行個體或資料庫成功新增至資源群組。
4. 當符合下列條件時、您必須將認證指派給沒有Sysadmin存取權的RBAC使用者：
  - 認證資料會指派給SQL執行個體。
  - SQL執行個體或主機會指派給RBAC使用者。
  - RBAC DB管理使用者必須同時擁有資源群組和備份權限。

適用於Oracle的UNIX主機：

1. 您必須編輯sshd.conf並重新啟動sshd服務、為root或非root使用者啟用密碼型SSH連線。AWS執行個體上的

密碼型SSH驗證預設為關閉。

2. 設定非root使用者的Sudo權限、以安裝及啟動外掛程式程序。安裝外掛程式之後、程序會以有效的root使用者身分執行。
3. 使用Linux驗證模式為安裝使用者建立認證。
4. 您必須在Linux主機上安裝Java 1.8.x（64位元）。
5. 安裝Oracle資料庫外掛程式也會安裝SnapCenter 適用於Unix的支援程式。

### 3. SnapCenter 安裝支援主機外掛程式

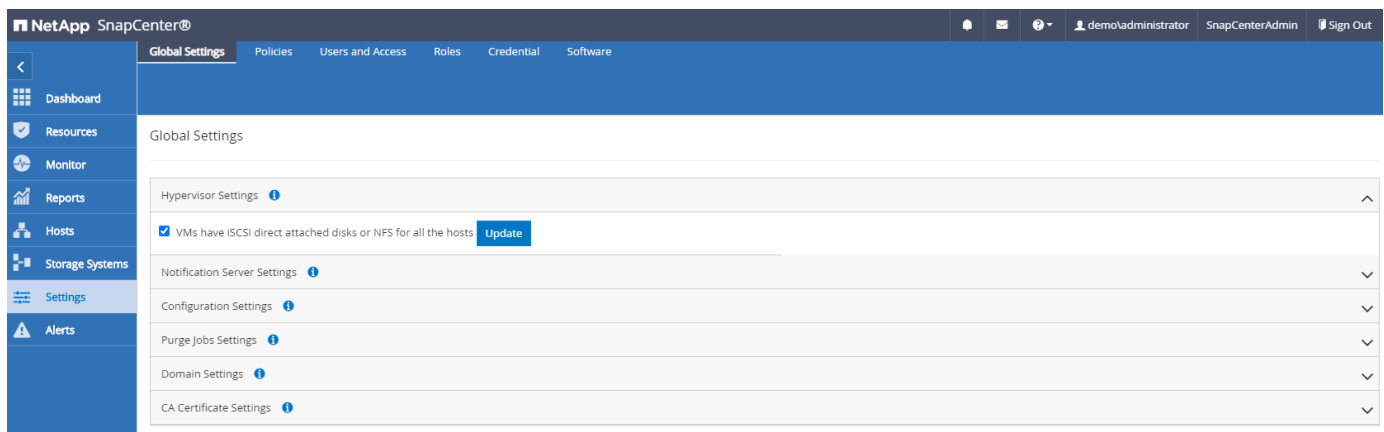


在嘗試在SnapCenter 雲端DB伺服器執行個體上安裝時、請先確認所有組態步驟均已完成、如運算執行個體部署的相關雲端區段所列。

下列步驟說明如何在SnapCenter 主機上安裝一個支援程式的情況下、將資料庫主機新增至支援程式。SnapCenter此程序適用於新增內部部署主機和雲端主機。下列示範新增位於AWS中的Windows或Linux主機。

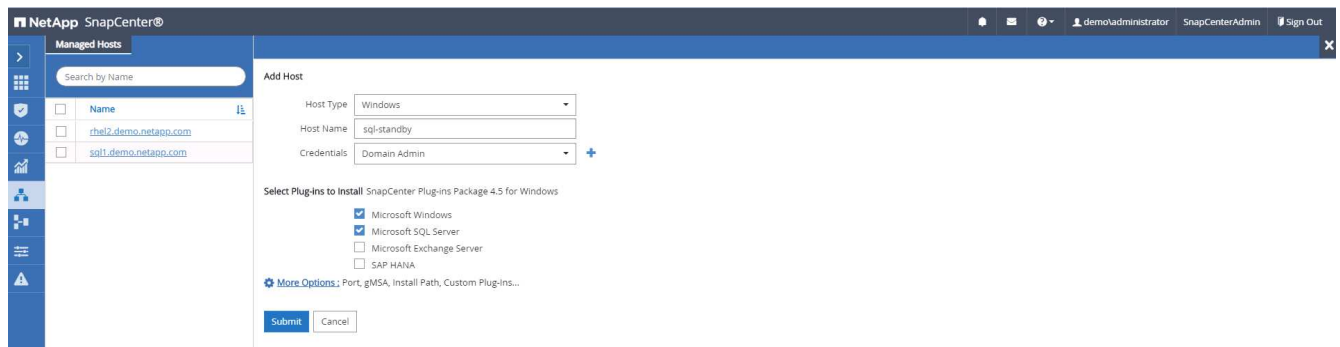
#### 設定SnapCenter VMware全域設定

瀏覽至「設定」>「全域設定」。選取Hypervisor設定下的「VM有iSCSI直接附加磁碟或所有主機的NFS」、然後按一下「Update（更新）」。



#### 新增Windows主機、並在主機上安裝外掛程式

1. 使用具有SnapCenterAdmin權限的使用者ID登入SnapCenter 功能。
2. 按一下左側功能表中的「hosts（主機）」索引標籤、然後按一下「Add（新增）」以開啟「Add Host（新增主機）」工作流程。
3. 選擇Windows作為主機類型、主機名稱可以是主機名稱或IP位址。主機名稱必須從SnapCenter 該支援主機解析為正確的主機IP位址。選擇在步驟2中建立的主機認證資料。選擇Microsoft Windows和Microsoft SQL Server做為要安裝的外掛套件。

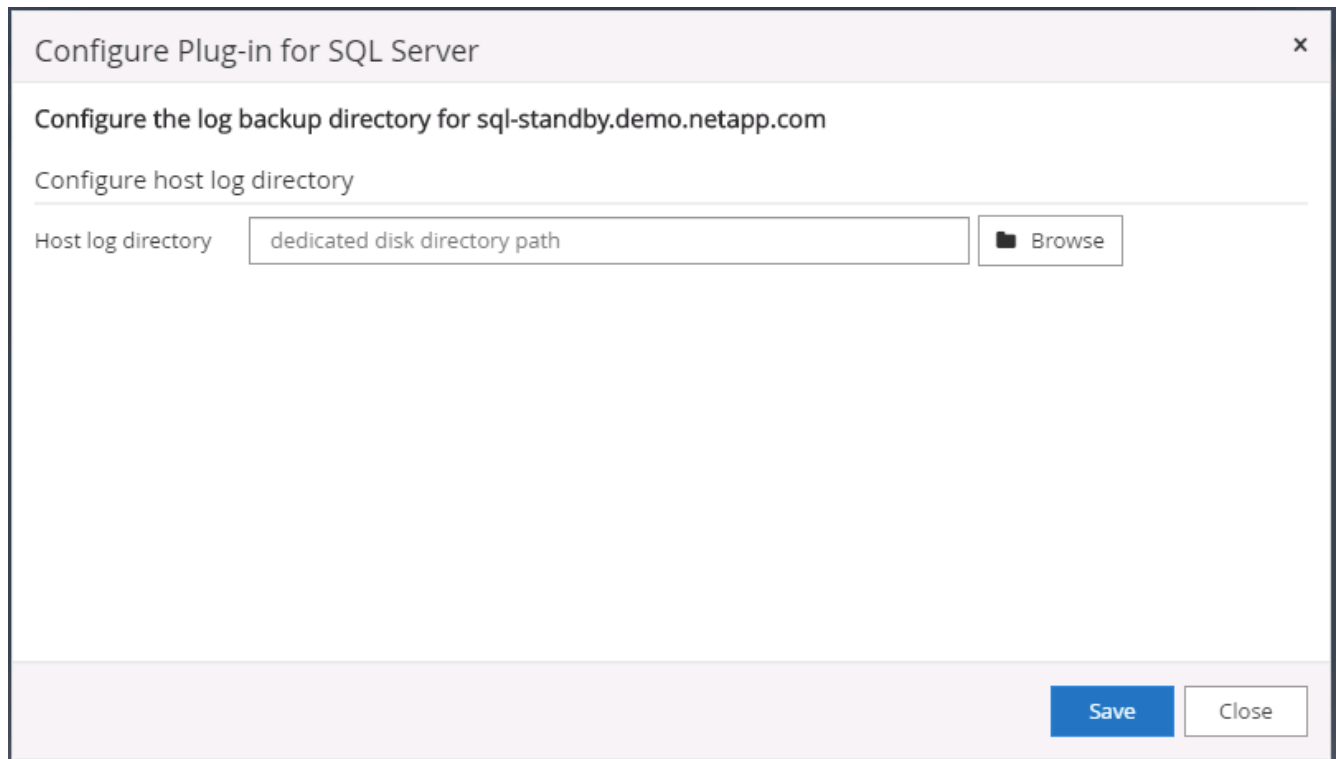


4. 在Windows主機上安裝外掛程式之後、其整體狀態會顯示為「Configure log目錄」。

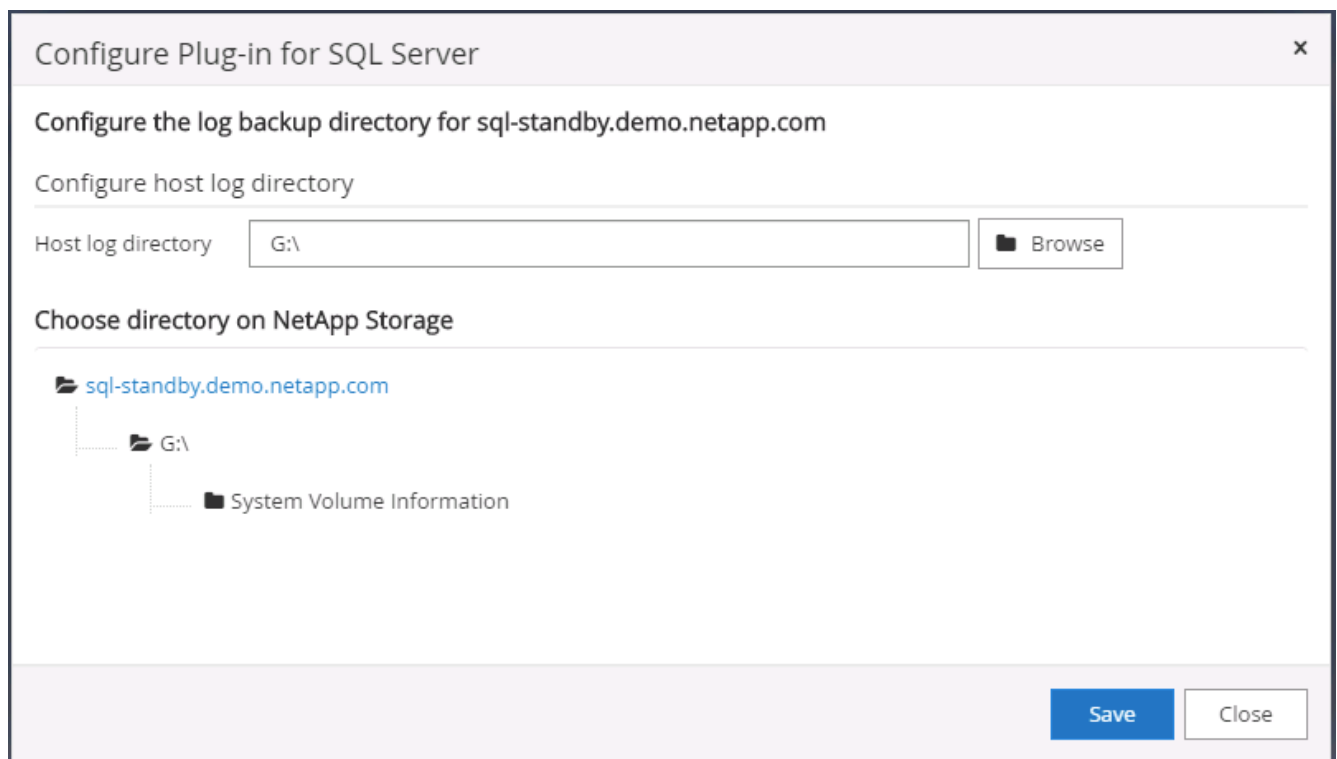
Name	Type	System	Plug-in	Version	Overall Status
rhei2.demo.netapp.com	Linux	Stand-alone	UNIX, Oracle Database	4.5	Running
sql1.demo.netapp.com	Windows	Stand-alone	Microsoft Windows Server, Microsoft SQL Server	4.5	Running
sql-standby.demo.netapp.com	Windows	Stand-alone	Microsoft Windows Server, Microsoft SQL Server	4.5	Configure log directory

5. 按一下主機名稱以開啟SQL Server記錄目錄組態。

6. 按一下「設定記錄目錄」以開啟「設定SQL Server的外掛程式」。



7. 按一下「瀏覽SnapCenter」以探索NetApp儲存設備、以便設定記錄目錄；使用此記錄目錄來彙總SQL Server交易記錄檔。然後按一下「儲存」。



若要探索配置至資料庫主機的NetApp儲存設備、必須將儲存設備（內部部署或CVO）新增至SnapCenter 支援區、如CVO步驟6所示。

8. 設定記錄目錄之後、Windows主機外掛程式的整體狀態會變更為執行中。

Name	Type	System	Plug-in	Version	Overall Status
rhel2.demo.netapp.com	Linux	Stand-alone	UNIX, Oracle Database	4.5	Running
sql1.demo.netapp.com	Windows	Stand-alone	Microsoft Windows Server, Microsoft SQL Server	4.5	Running
sql-standby.demo.netapp.com	Windows	Stand-alone	Microsoft Windows Server, Microsoft SQL Server	4.5	Running

9. 若要將主機指派給資料庫管理使用者ID、請瀏覽至「Settings and Users（設定與使用者）」下的「Access（存取）」索引標籤、按一下資料庫管理使用者ID（在我們的案例中是主機需要指派的sqldba）、然後按一下「Save（儲存）」完成主機資源指派。

Name	Type	Roles	Domain
administrator	User	SnapCenterAdmin	demo
oracdba	User	App Backup and Clone Admin	demo
sqldba	User	App Backup and Clone Admin	demo

**Assign Assets**

Asset Type: Host

search

Asset Name
rhel2.demo.netapp.com
sql1.demo.netapp.com
<input checked="" type="checkbox"/> sql-standby.demo.netapp.com

Save Close

新增**Unix**主機、並在主機上安裝外掛程式

1. 使用具有SnapCenterAdmin權限的使用者ID登入SnapCenter 功能。
2. 按一下左側功能表中的「主機」索引標籤、然後按一下「新增」以開啟「新增主機」工作流程。
3. 選擇Linux作為主機類型。主機名稱可以是主機名稱或IP位址。不過、主機名稱必須解析、才能從SnapCenter 功能主機修正主機IP位址。選擇在步驟2中建立的主機認證。主機認證資料需要Sudo權限。將Oracle資料庫核取為要安裝的外掛程式、安裝Oracle和Linux主機外掛程式。



demo administrator SnapCenterAdmin Sign Out

Add Host

Host Type: Linux

Host Name: ora-standby

Credentials: admin

Select Plug-ins to Install: SnapCenter Plug-ins Package 4.5 for Linux

☒ Oracle Database

☐ SAP HANA

[More Options](#): Port, Install Path, Custom Plug-ins...

Submit Cancel

4. 按一下「更多選項」、然後選取「跳過預先安裝檢查」。系統會提示您確認跳過預先安裝檢查。按一下「Yes（是）」、然後按一

More Options

Port: 8145

Installation Path: /opt/NetApp/snapcenter

☒ Skip preinstall checks

☒ Add all hosts in the oracle RAC

Custom Plug-ins

Choose a File

Browse Upload

No plug-ins found.

Save Cancel

5. 按一下「提交」開始安裝外掛程式。系統會提示您確認指紋、如下所示。

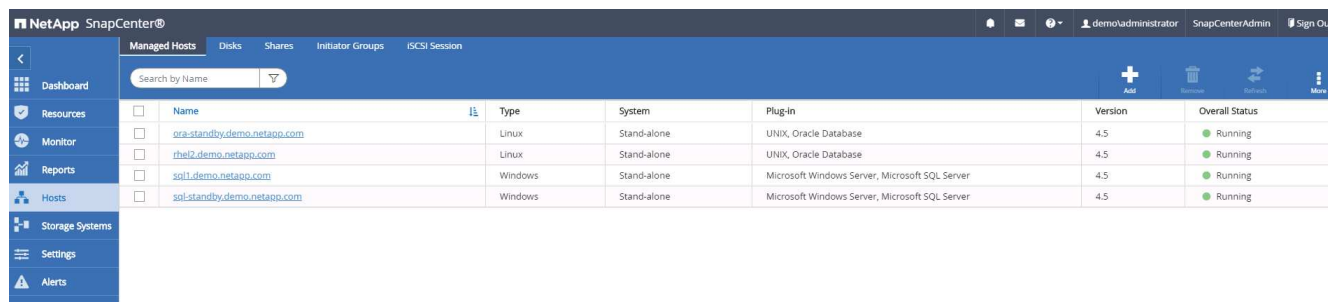
Confirm Fingerprint

Authenticity of the host cannot be determined

Host name	Fingerprint	Valid
ora-standby.demo.netapp.com	ssh-rsa 3072 5C:02:EF:6B:63:54:59:10:84:DF:4D:6B:AB:FB:61:67	

Confirm and Submit Close

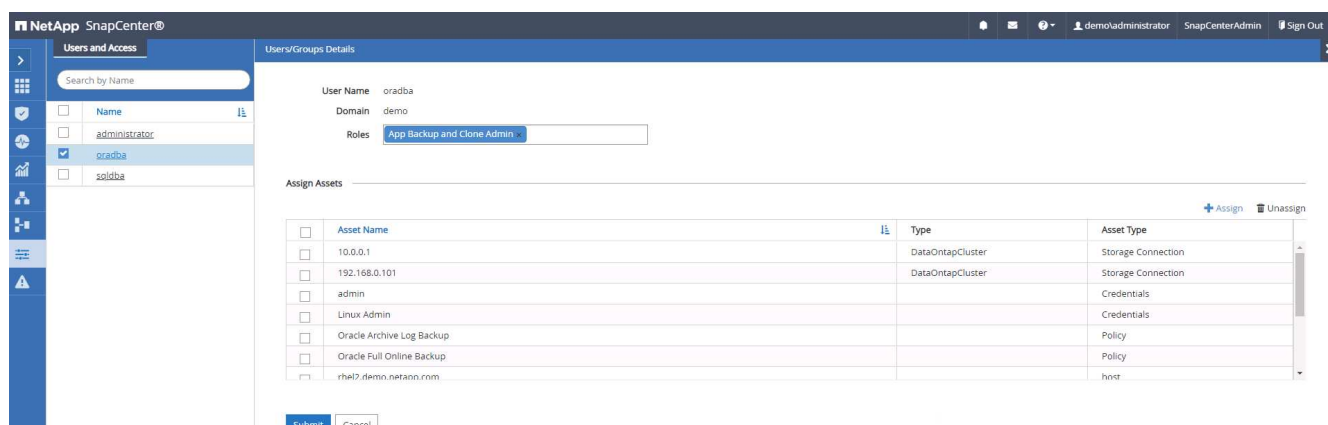
6. 執行主機驗證和登錄、然後在Linux主機上安裝外掛程式。SnapCenter狀態會從「安裝外掛程式」變更為「執行中」。



The screenshot shows the NetApp SnapCenter interface with the 'Managed Hosts' tab selected. A table lists four hosts with their details.

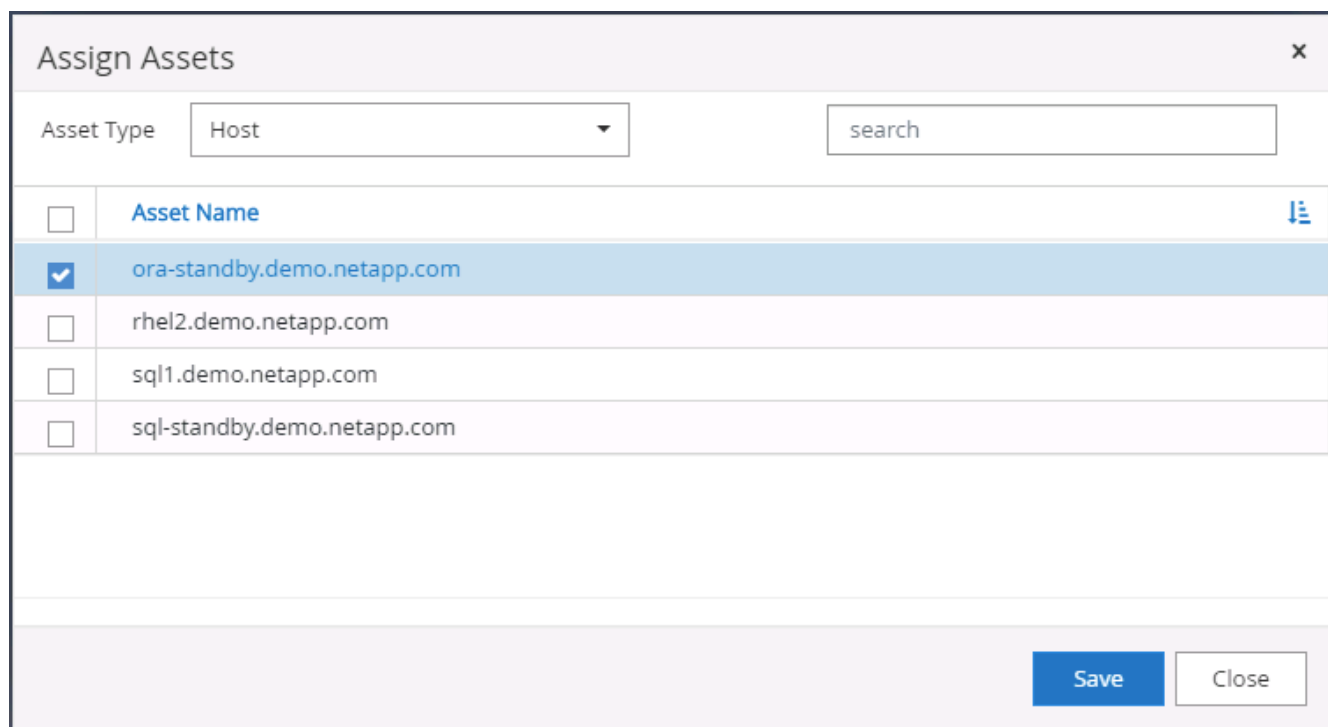
Name	Type	System	Plug-in	Version	Overall Status
ora-standby.demo.netapp.com	Linux	Stand-alone	UNIX, Oracle Database	4.5	Running
rhel2.demo.netapp.com	Linux	Stand-alone	UNIX, Oracle Database	4.5	Running
sql1.demo.netapp.com	Windows	Stand-alone	Microsoft Windows Server, Microsoft SQL Server	4.5	Running
sql-standby.demo.netapp.com	Windows	Stand-alone	Microsoft Windows Server, Microsoft SQL Server	4.5	Running

7. 將新增的主機指派至適當的資料庫管理使用者ID（在我們的案例中為oradba）。



The screenshot shows the 'Users and Access' section in NetApp SnapCenter. The 'Users/Groups Details' panel is open for the user 'oradba' in the 'demo' domain. The 'Roles' field is set to 'App Backup and Clone Admin'. Below, the 'Assign Assets' section shows a list of assets to be assigned to this user.

Asset Name	Type	Asset Type
10.0.0.1	DataOntapCluster	Storage Connection
192.168.0.101	DataOntapCluster	Storage Connection
admin		Credentials
Linux Admin		Credentials
Oracle Archive Log Backup		Policy
Oracle Full Online Backup		Policy
rhel2.demo.netapp.com		Host



The 'Assign Assets' dialog box is shown. The 'Asset Type' is set to 'Host'. A search bar is present. Below, a list of assets is displayed with checkboxes for selection.

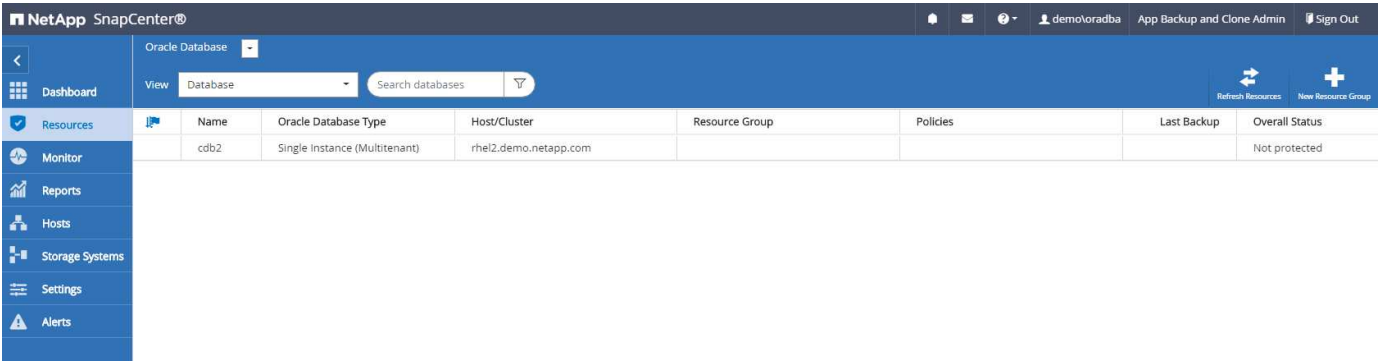
Asset Name
<input checked="" type="checkbox"/> ora-standby.demo.netapp.com
<input type="checkbox"/> rhel2.demo.netapp.com
<input type="checkbox"/> sql1.demo.netapp.com
<input type="checkbox"/> sql-standby.demo.netapp.com

Buttons: Save, Close

#### 4. 資料庫資源探索

成功安裝外掛程式後、即可立即探索主機上的資料庫資源。按一下左側功能表中的「Resources（資源）」索引

標籤。視資料庫平台的類型而定、有許多檢視可供使用、例如資料庫、資源群組等。如果未發現並顯示主機上的資源、您可能需要按一下「Refresh Resources（重新整理資源）」索引標籤。

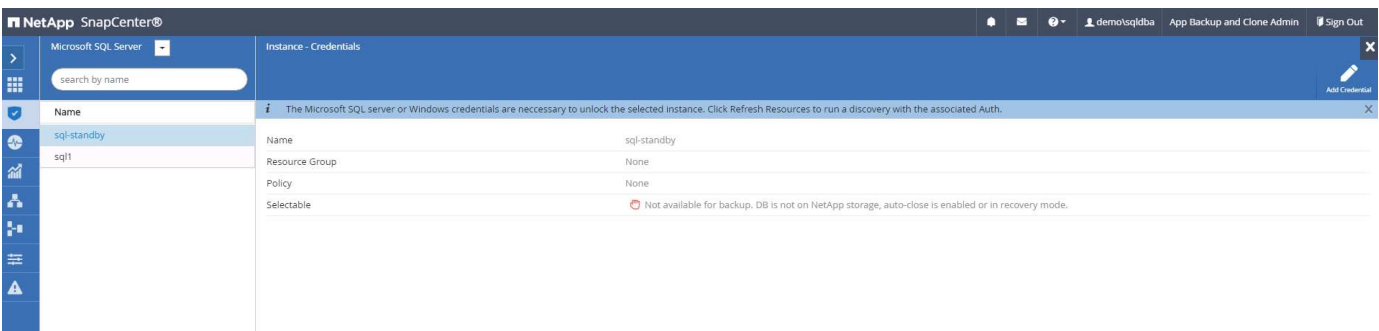
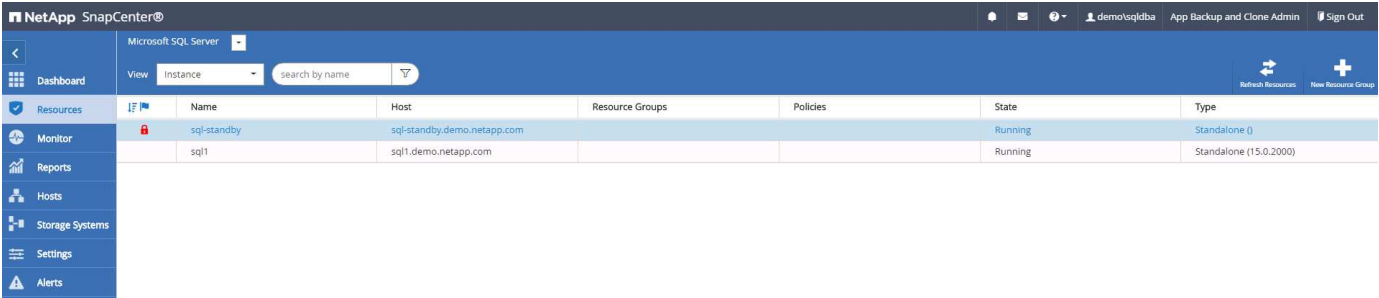


初次探索資料庫時、整體狀態會顯示為「未受保護」。上一個螢幕快照顯示Oracle資料庫尚未受到備份原則的保護。

設定備份組態或原則並執行備份時、資料庫的整體狀態會顯示備份狀態為「備份成功」、以及上次備份的時間戳記。下列螢幕擷取畫面顯示SQL Server使用者資料庫的備份狀態。



如果資料庫存取認證未正確設定、則紅色鎖定按鈕表示無法存取資料庫。例如、如果Windows認證沒有資料庫執行個體的Sysadmin存取權、則必須重新設定資料庫認證、才能解除鎖定紅色鎖定。



在Windows層級或資料庫層級設定適當的認證之後、紅色鎖定就會消失、SQL Server類型資訊也會收集並檢

閱。



NetApp SnapCenter®

Microsoft SQL Server

View: Instance search by name

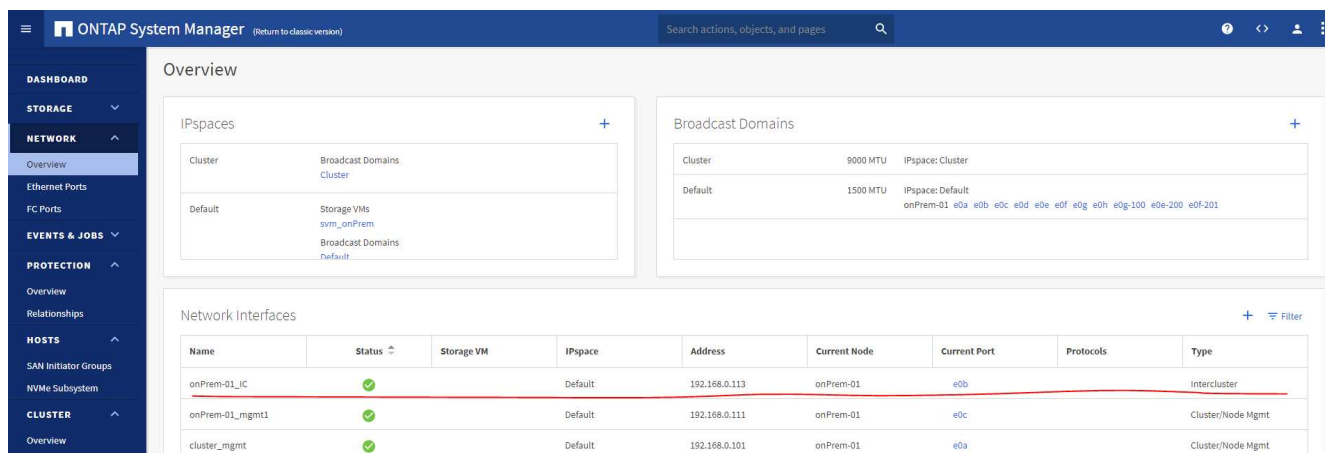
Name	Host	Resource Groups	Policies	State	Type
sql1	sql1.demo.netapp.com			Running	Standalone (15.0.2000)
sql-standby	sql-standby.demo.netapp.com			Running	Standalone (15.0.2000)

## 5. 設定儲存叢集對等和資料庫磁碟區複寫

為了使用公有雲作為目標目的地來保護內部部署資料庫資料、內部部署ONTAP 的叢集資料庫磁碟區會使用NetApp SnapMirror技術複寫至雲端CVO。然後可以複製複寫的目標磁碟區、以供開發/營運或災難恢復之用。下列高層級步驟可讓您設定叢集對等和資料庫磁碟區複寫。

1. 在內部部署叢集和CVO叢集執行個體上設定叢集間對等關係。此步驟可透過ONTAP 「系統管理員」執行。預設的CVO部署會自動設定叢集間的LIF。

內部部署叢集：



ONTAP System Manager (Return to classic version)

Search actions, objects, and pages

Overview

IPspaces

Cluster	Broadcast Domains
Default	Storage VMs svm_onPrem Broadcast Domains Default

Broadcast Domains

Cluster	9000 MTU	IPspace: Cluster
Default	1500 MTU	IPspace: Default onPrem-01 e0a e0b e0c e0d e0e e0f e0g e0h e0g-100 e0e-200 e0f-201

Network Interfaces

Name	Status	Storage VM	IPspace	Address	Current Node	Current Port	Protocols	Type
onPrem-01_IC	✓		Default	192.168.0.113	onPrem-01	e0b		Intercluster
onPrem-01_mgmt1	✓		Default	192.168.0.111	onPrem-01	e0c		Cluster/Node Mgmt
cluster_mgmt	✓		Default	192.168.0.101	onPrem-01	e0a		Cluster/Node Mgmt

目標CVO叢集：

ONTAP System Manager

Search actions, objects, and pages

DASHBOARD

STORAGE

NETWORK

Overview

Ethernet Ports

EVENTS & JOBS

PROTECTION

HOSTS

CLUSTER

Overview

IPspaces

Broadcast Domains

Network Interfaces

Cluster

Broadcast Domains

Cluster

Default

Storage VMs

svm\_hybridcvo

Broadcast Domains

Default

Broadcast Domains

Cluster

9000 MTU

IPspace: Cluster

hybridcvo-01 e0b

hybridcvo-02 e0b

Default

9001 MTU

IPspace: Default

hybridcvo-01 e0a

hybridcvo-02 e0a

Network Interfaces

Search

Download

Filter

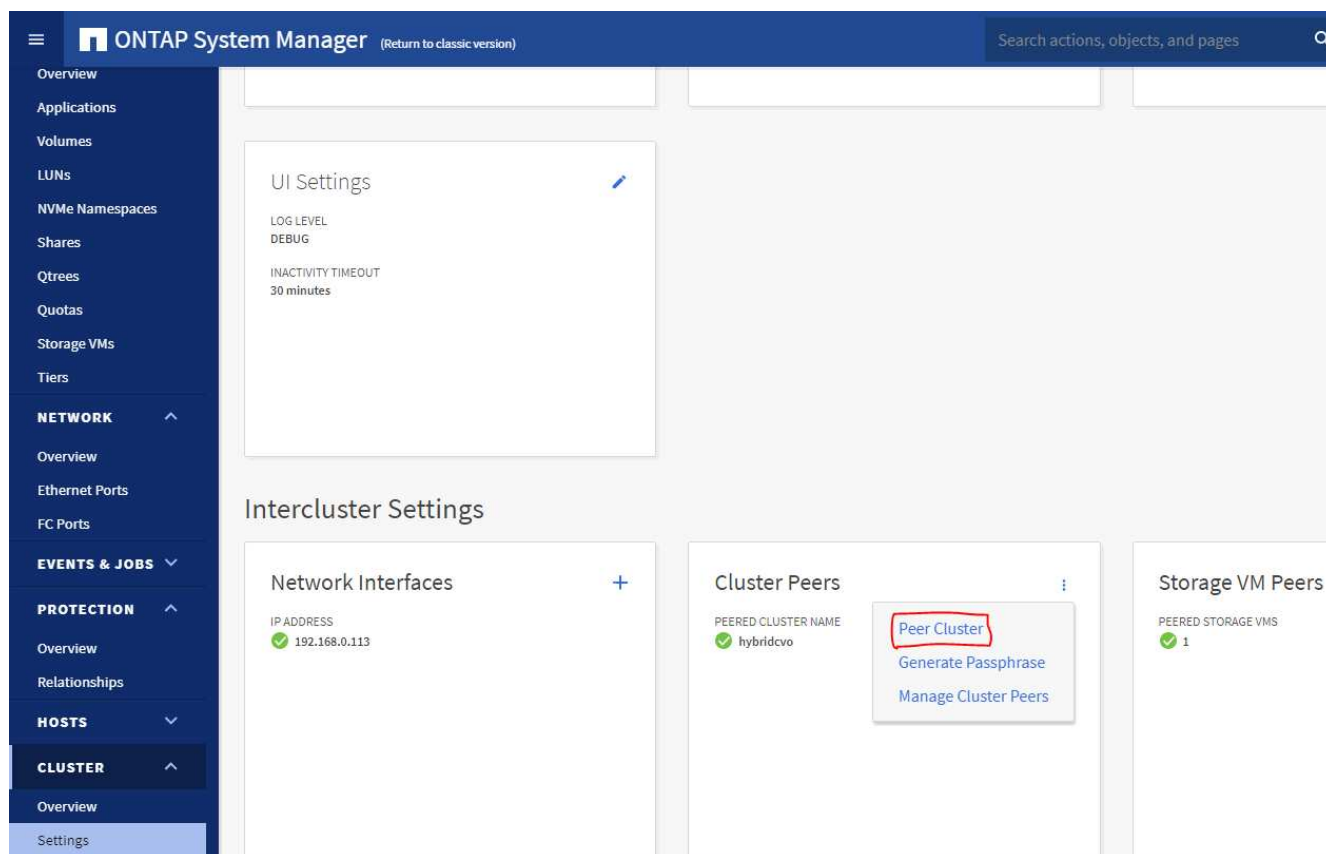
Show / Hide

Name	Status	Storage VM	IPspace	Address	Current Node	Current Port	Protocols	Type	Throughput (I)
hybridcvo-02_mgmt1	✓		Default	10.221.2.104	hybridcvo-02	e0a		Cluster/Node Mgmt	0
inter_1	✓		Default	10.221.1.180	hybridcvo-01	e0a		Intercluster, Cluster/Node Mgmt	0.02
inter_2	✓		Default	10.221.2.250	hybridcvo-02	e0a		Intercluster, Cluster/Node Mgmt	0.03
iscsi_1	✓	svm_hybridcvo	Default	10.221.1.5	hybridcvo-01	e0a	ISCSI	Data	0
iscsi_2	✓	svm_hybridcvo	Default	10.221.2.168	hybridcvo-02	e0a	ISCSI	Data	0

2. 在設定叢集間生命體之後、您可以使用NetApp Cloud Manager中的拖放功能來設定叢集對等和磁碟區複寫。請參閱 "[入門指南- AWS公有雲](#)" 以取得詳細資料。

或者、您ONTAP 也可以使用下列功能、使用下列的「系統管理程式」來執行叢集對等和資料庫Volume複寫：

3. 登入ONTAP 《系統管理程式》。瀏覽至「叢集」>「設定」、然後按一下「對等叢集」、以設定叢集與雲端中CVO執行個體的對等關係。



4. 前往「Volumes（磁碟區）」索引標籤選取要複寫的資料庫磁碟區、然後按一下「Protect（保護）」。

ONTAP System Manager (Return to classic version)

Search actions, objects, and pages

**Volumes**

+ Add Delete **Protect** More

Name	rhel2_u03
onPrem_data	
rhel2_u01	
rhel2_u02	
<input checked="" type="checkbox"/> rhel2_u03	
rhel2_u0309232119421203118	
sql1_data	
sql1_log	
sql1_snapctr	
svm_onPrem_root	

**Overview** Snapshot Copies Clone Hierarchy SnapMirror (Local or Remote)

**Capacity**

0% 10% 20% 30% 40% 50%

SNAPSHOT CAPACITY

0 Bytes Available 2.36 GB Used 2.36 GB Overflow

**Performance**

Hour Day Week

**Latency**

1.5

1

STATUS: Online

STYLE: FlexVol

MOUNT PATH: /rhel2\_u03

STORAGE VM: svm\_onPrem

LOCAL TIER: onPrem\_01\_SSD\_1

SNAPSHOT POLICY: default

QUOTA: Off

TYPE: Read Write

SPACE RESERVATION

5. 將保護原則設為「非同步」。選取目的地叢集和儲存SVM。

ONTAP System Manager (Return to classic version)

Search actions, objects, and pages

**Protect Volumes**

PROTECTION POLICY: Asynchronous

Source: CLUSTER: onPrem, STORAGE VM: svm\_onPrem, SELECTED VOLUMES: rhel2\_u03

Destination: CLUSTER: hybridcvo, STORAGE VM: svm\_hybridcvo

Destination Settings: 2 matching labels

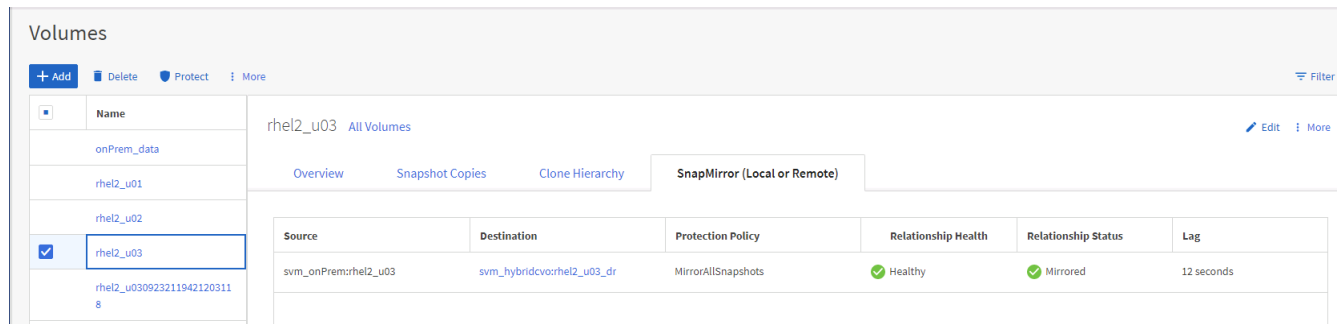
VOLUME NAME: PREFIX: vol\_, SUFFIX: <SourceVolumeName>\_dest

☐ Override default storage service name

Configuration Details: ☒ Initialize relationship, ☐ Enable FabricPool

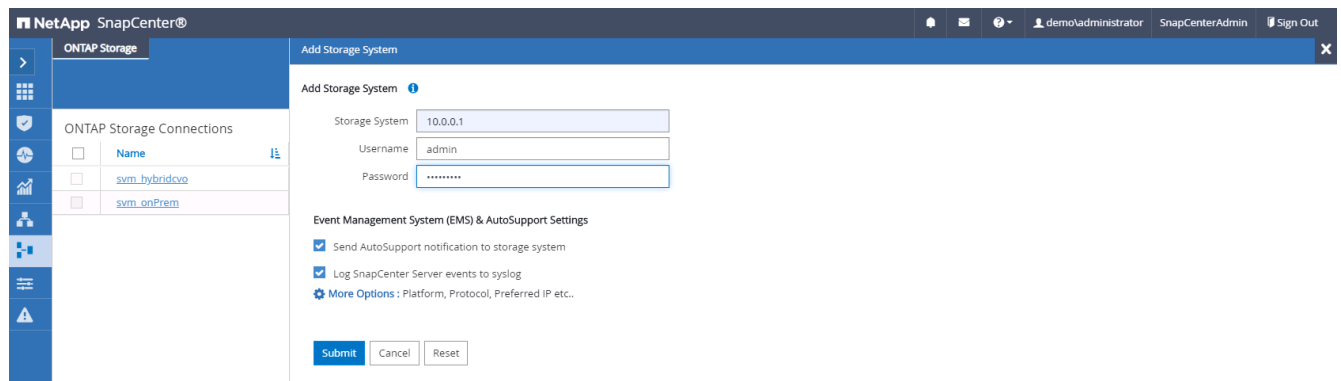
Save Cancel

6. 驗證來源與目標之間的磁碟區是否同步、以及複寫關係是否健全。

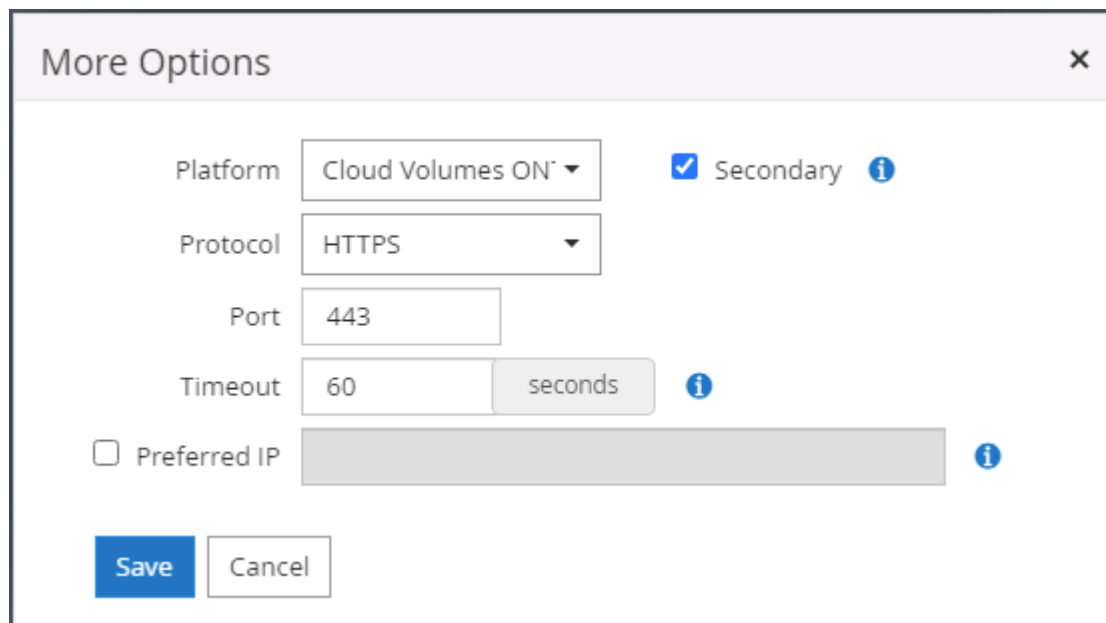


## 6. 將CVO資料庫儲存SVM新增SnapCenter 至

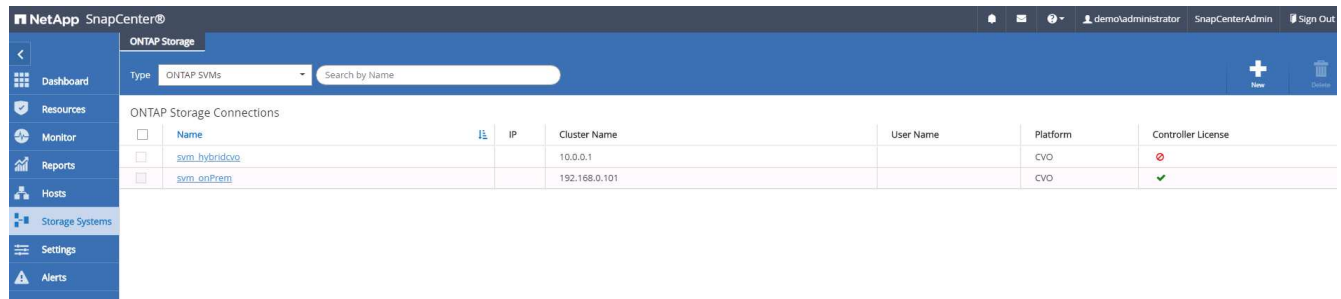
1. 使用具有SnapCenterAdmin權限的使用者ID登入SnapCenter 功能。
2. 按一下功能表中的「Storage System (儲存系統)」索引標籤、然後按一下「New (新增)」以新增裝載複寫目標資料庫Volume的CVO儲存SVM SnapCenter。在Storage System (儲存系統) 欄位中輸入叢集管理IP、然後輸入適當的使用者名稱和密碼。



3. 按一下「更多選項」以開啟其他儲存組態選項。在「Platform (平台)」欄位中、選取Cloud Volumes ONTAP「效益」、選取「次要」、然後按一下「Save (儲存)」。



4. 如SnapCenter 所示、將儲存系統指派給不實的資料庫管理使用者ID 3. SnapCenter 安裝支援主機外掛程式。

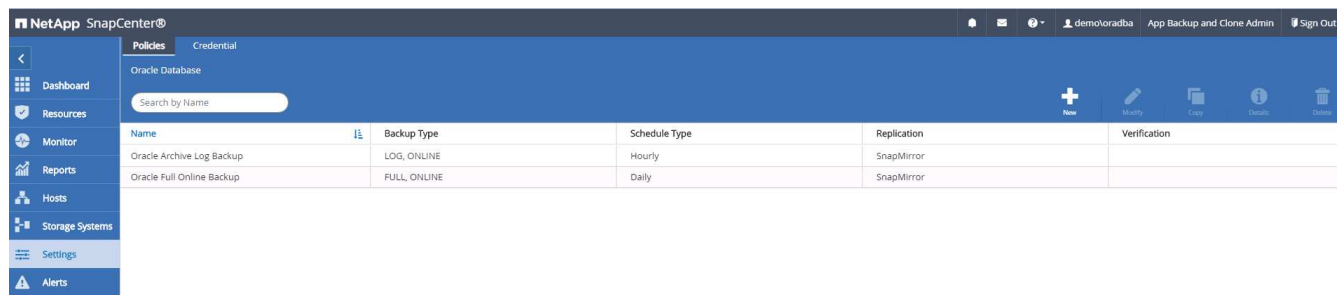


## 7. SnapCenter 在VMware中設定資料庫備份原則

下列程序示範如何建立完整資料庫或記錄檔備份原則。然後可以實作原則來保護資料庫資源。恢復點目標（RPO）或恢復時間目標（RTO）決定了資料庫和（或）記錄備份的頻率。

建立Oracle的完整資料庫備份原則

1. 以SnapCenter 資料庫管理使用者ID登入功能表、按一下「設定」、然後按一下「原則」。



2. 按一下「新增」以啟動新的備份原則建立工作流程、或選擇要修改的現有原則。



Modify Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Provide a policy name

Policy name

Oracle Full Online Backup

Details

Backup all data and log files

Previous

Next

3. 選取備份類型和排程頻率。

Modify Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select Oracle database backup options

Choose backup type

☒ Online backup

☒ Datafiles, control files, and archive logs

☐ Datafiles and control files

☐ Archive logs

☐ Offline backup

☒ Mount

☐ Shutdown

☐ Save state of PDBs

Choose schedule frequency

Select how often you want the schedules to occur in the policy. The specific times are set at backup job creation enabling you to stagger your start times.

☐ On demand

☐ Hourly

☒ Daily

Previous

Next

4. 設定備份保留設定。這會定義要保留多少完整資料庫備份複本。

Modify Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Retention settings

Daily retention settings

Data backup retention settings

Total Snapshot copies to keep

7

Keep Snapshot copies for

14

days

Archive Log backup retention settings

Total Snapshot copies to keep

7

Keep Snapshot copies for

14

days

Previous

Next

5. 選取次要複寫選項、將本機主要快照備份推送至雲端的次要位置。

17

Modify Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select secondary replication options ⓘ

☒ Update SnapMirror after creating a local Snapshot copy.  
☐ Update SnapVault after creating a local Snapshot copy.

Secondary policy label 

Daily ⓘ

Error retry count 

3 ⓘ

Previous

Next

6. 指定在備份執行前後執行的任何選用指令碼。

Modify Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Specify optional scripts to run before and after performing a backup job

Prescript full path

/var/opt/snapcenter/spl/scripts/

Enter Prescript path

Prescript arguments

Postscript full path

/var/opt/snapcenter/spl/scripts/

Enter Postscript path

Postscript arguments

Script timeout

60

secs

Previous

Next

7. 視需要執行備份驗證。

19

Modify Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select the options to run backup verification

Run Verifications for following backup schedules

Select how often you want the schedules to occur in the policy. The specific verification times are set at backup job creation enabling you to stagger your verification start times.

☐ Daily

Verification script commands

Script timeout

60

secs

Prescript full path

/var/opt/snapcenter/spl/scripts/

Enter Prescript path

Prescript arguments

Choose optional arguments...

Postscript full path

/var/opt/snapcenter/spl/scripts/

Enter Postscript path

Postscript arguments

Choose optional arguments...

Previous

Next

8. 摘要：

1

Name

2

Backup Type

3

Retention

4

Replication

5

Script

6

Verification

7

Summary

Summary

Policy name	Oracle Full Online Backup
Details	Backup all data and log files
Backup type	Online backup
Schedule type	Daily
RMAN catalog backup	Disabled
Archive log pruning	None
On demand data backup retention	None
On demand archive log backup retention	None
Hourly data backup retention	None
Hourly archive log backup retention	None
Daily data backup retention	Delete Snapshot copies older than : 14 days
Daily archive log backup retention	Delete Snapshot copies older than : 14 days
Weekly data backup retention	None
Weekly archive log backup retention	None
Monthly data backup retention	None
Monthly archive log backup retention	None
Replication	SnapMirror enabled , Secondary policy label: Daily , Error retry count: 3

Previous

Finish

## 為Oracle建立資料庫記錄備份原則

1. 使用資料庫管理使用者ID登入SnapCenter 功能表、按一下「設定」、然後按一下「原則」。
2. 按一下「新增」以啟動新的備份原則建立工作流程、或選擇要修改的現有原則。

New Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Provide a policy name

Policy name

Details

Oracle Archive Log Backup

Backup Oracle archive logs

Previous

Next

3. 選取備份類型和排程頻率。

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New Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select Oracle database backup options

Choose backup type

☒ Online backup

☐ Datafiles, control files, and archive logs

☐ Datafiles and control files

☒ Archive logs

☐ Offline backup

☒ Mount

☐ Shutdown

☐ Save state of PDBs

Choose schedule frequency

Select how often you want the schedules to occur in the policy. The specific times are set at backup job creation enabling you to stagger your start times.

☐ On demand

☒ Hourly

☐ Daily

Previous

Next

4. 設定記錄保留期間。

New Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Retention settings

Hourly retention settings

Data backup retention settings

Total Snapshot copies to keep

7

Keep Snapshot copies for

14 days

Archive Log backup retention settings

Total Snapshot copies to keep

7

Keep Snapshot copies for

7 days

Previous

Next

5. 啟用複寫至公有雲中的次要位置。

24

New Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select secondary replication options

☒ Update SnapMirror after creating a local Snapshot copy.

☐ Update SnapVault after creating a local Snapshot copy.

Secondary policy label

Hourly

Error retry count

3

Previous

Next

6. 指定在記錄備份前後執行的任何選用指令碼。

New Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Specify optional scripts to run before and after performing a backup job

Prescript full path

/var/opt/snapcenter/spl/scripts/

Enter Prescript path

Prescript arguments

Postscript full path

/var/opt/snapcenter/spl/scripts/

Enter Postscript path

Postscript arguments

Script timeout

60

secs

Previous

Next

7. 指定任何備份驗證指令碼。

26

New Oracle Database Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select the options to run backup verification

Run Verifications for following backup schedules

Select how often you want the schedules to occur in the policy. The specific verification times are set at backup job creation enabling you to stagger your verification start times.

Verification script commands

Script timeout

60secs

Prescript full path

/var/opt/snapcenter/spl/scripts/

Enter Prescript path

Prescript arguments

Choose optional arguments...

Postscript full path

/var/opt/snapcenter/spl/scripts/

Enter Postscript path

Postscript arguments

Choose optional arguments...

Previous

Next

8. 摘要：

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

### Summary

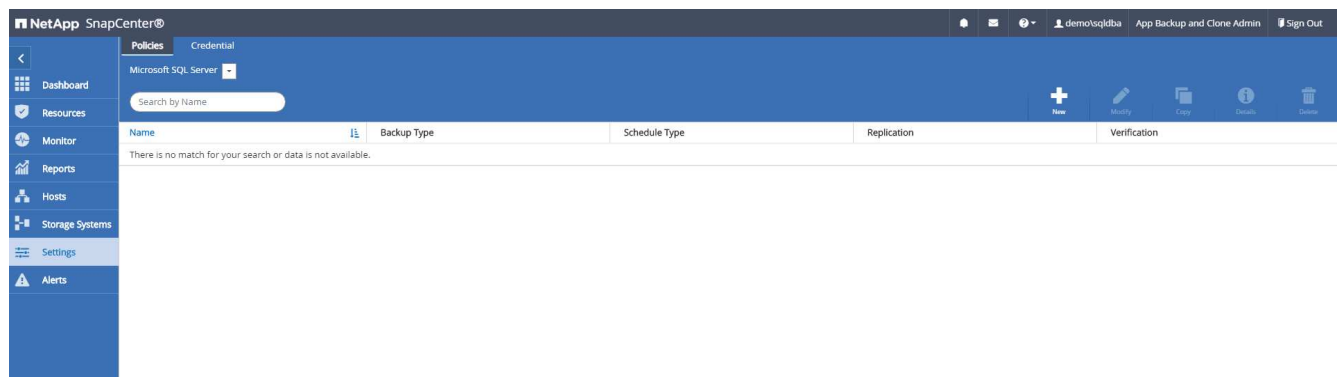
Policy name	Oracle Archive Log Backup
Details	Backup Oracle archive logs
Backup type	Online backup
Schedule type	Hourly
RMAN catalog backup	Disabled
Archive log pruning	None
On demand data backup retention	None
On demand archive log backup retention	None
Hourly data backup retention	None
Hourly archive log backup retention	Delete Snapshot copies older than : 7 days
Daily data backup retention	None
Daily archive log backup retention	None
Weekly data backup retention	None
Weekly archive log backup retention	None
Monthly data backup retention	None
Monthly archive log backup retention	None
Replication	SnapMirror enabled , Secondary policy label: Hourly , Error retry count: 3

Previous

Finish

## 建立SQL的完整資料庫備份原則

1. 使用資料庫管理使用者ID登入SnapCenter 功能表、按一下「設定」、然後按一下「原則」。



2. 按一下「新增」以啟動新的備份原則建立工作流程、或選擇要修改的現有原則。

New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Provide a policy name

Policy name

SQL Server Full Backup

Details

Backup all data and log files

Previous

Next

3. 定義備份選項和排程頻率。對於使用可用度群組設定的SQL Server、可以設定偏好的備份複本。

New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select SQL server backup options

Choose backup type

☒ Full backup and log backup

☐ Full backup

☐ Log backup

☐ Copy only backup

Maximum databases backed up per Snapshot copy: 100

Availability Group Settings

Schedule frequency

Select how often you want the schedules to occur in the policy. The specific times are set at backup job creation enabling you to stagger your start times.

☐ On demand

☐ Hourly

☒ Daily

☐ Weekly

☐ Monthly

Previous

Next

4. 設定備份保留期間。



New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Retention settings

Retention settings for up-to-the-minute restore operation ⓘ

☒ Keep log backups applicable to last

7

full backups

☐ Keep log backups applicable to last

14

days

Full backup retention settings ⓘ

Daily

☒ Total Snapshot copies to keep

7

☐ Keep Snapshot copies for

14

days

Previous

Next

5. 啟用備份複本複寫至雲端的次要位置。

New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select secondary replication options

☒ Update SnapMirror after creating a local Snapshot copy.

☐ Update SnapVault after creating a local Snapshot copy.

Secondary policy label

Daily

Error retry count

3

Previous

Next

6. 指定在備份工作之前或之後執行的任何選用指令碼。

New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Specify optional scripts to run before performing a backup job

Prescript full path

Prescript arguments

Choose optional arguments...

Specify optional scripts to run after performing a backup job

Postscript full path

Postscript arguments

Choose optional arguments...

Script timeout

60

secs

Previous

Next

7. 指定執行備份驗證的選項。

New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select the options to run backup verification

Run verifications for the following backup schedules

Select how often you want the schedules to occur in the policy. The specific verification times are set at backup job creation enabling you to stagger your verification start times.

☐ Daily

Database consistency checks options

☒ Limit the integrity structure to physical structure of the database (PHYSICAL\_ONLY)

☒ Suppress all information message (NO\_INFOMSGS)

☐ Display all reported error messages per object (ALL\_ERRORMSGSGS)

☐ Do not check non-clustered indexes (NOINDEX)

☐ Limit the checks and obtain the locks instead of using an internal database Snapshot copy (TABLOCK)

Log backup

☐ Verify log backup.

Verification script settings

Script timeout  secs

Previous

Next

8. 摘要：

1

Name

2

Backup Type

3

Retention

4

Replication

5

Script

6

Verification

7

Summary

Summary

Policy name	SQL Server Full Backup
Details	Backup all data and log files
Backup type	Full backup and log backup
Availability group settings	Backup only on preferred backup replica
Schedule Type	Daily
UTM retention	Total backup copies to retain : 7
Daily Full backup retention	Total backup copies to retain : 7
Replication	SnapMirror enabled , Secondary policy label: Daily , Error retry count: 3
Backup prescript settings	undefined Prescript arguments:
Backup postscript settings	undefined Postscript arguments:
Verification for backup schedule type	none
Verification prescript settings	undefined Prescript arguments:
Verification postscript settings	undefined Postscript arguments:

Previous

Finish

建立SQL的資料庫記錄備份原則。

1. 使用資料庫管理使用者ID登入SnapCenter 功能表、按一下「設定」>「原則」、然後按一下「新增」以啟動新的原則建立工作流程。

New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Provide a policy name

Policy name

Details

SQL Server Log Backup

Backup SQL server log

Previous

Next

2. 定義記錄備份選項和排程頻率。對於使用可用度群組設定的SQL Server、可以設定偏好的備份複本。

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New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select SQL server backup options

Choose backup type

☐ Full backup and log backup

☐ Full backup

☒ Log backup

☐ Copy only backup

Maximum databases backed up per Snapshot copy:

100

Availability Group Settings

Schedule frequency

Select how often you want the schedules to occur in the policy. The specific times are set at backup job creation enabling you to stagger your start times.

☐ On demand

☒ Hourly

☐ Daily

☐ Weekly

☐ Monthly

Previous

Next

3. SQL Server資料備份原則會定義記錄備份保留；在此接受預設值。

New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Log backup retention settings

Up-to-the-minute (UTM) retention settings retains log backups created as part of full backup and full and log backup operations. UTM retention settings also decides for how many full backups the log backups are to be retained. For example, if UTM retention settings is configured to retain log backups of the last 5 full backups, then the log backups of the last 5 full backups are retained and the rest are deleted.

Previous

Next

4. 在雲端中啟用次要的記錄備份複寫。



New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Select secondary replication options

☒ Update SnapMirror after creating a local Snapshot copy.

☐ Update SnapVault after creating a local Snapshot copy.

Secondary policy label

Hourly

Error retry count

3

Previous

Next

5. 指定在備份工作之前或之後執行的任何選用指令碼。

New SQL Server Backup Policy

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Specify optional scripts to run before performing a backup job

Prescript full path

Prescript arguments

Specify optional scripts to run after performing a backup job

Postscript full path

Postscript arguments

Script timeout

Choose optional arguments...

Choose optional arguments...

60secs

Previous

Next

6. 摘要：

1 Name

2 Backup Type

3 Retention

4 Replication

5 Script

6 Verification

7 Summary

Summary

Policy name	SQL Server Log Backup
Details	Backup SQL server log
Backup type	Log transaction backup
Availability group settings	Backup only on preferred backup replica
Schedule Type	Hourly
Replication	SnapMirror enabled , Secondary policy label: Hourly , Error retry count: 3
Backup prescript settings	undefined Prescript arguments:
Backup postscript settings	undefined Postscript arguments:
Verification for backup schedule type	none
Verification prescript settings	undefined Prescript arguments:
Verification postscript settings	undefined Postscript arguments:

Previous

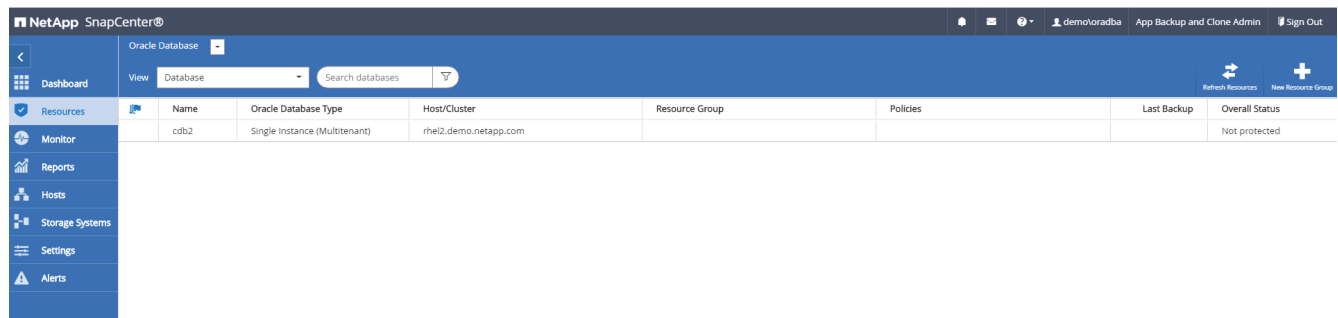
Finish

## 8.實作備份原則以保護資料庫

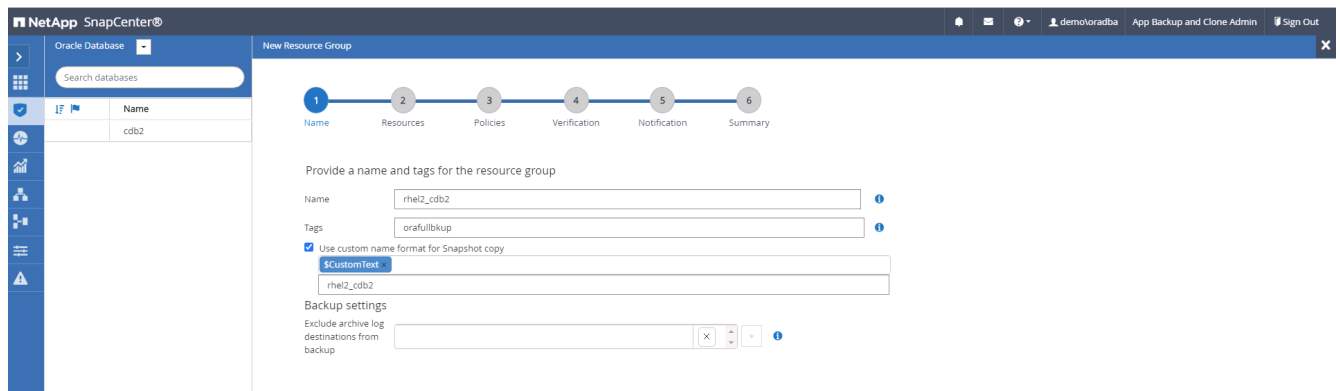
使用資源群組在資料庫資源的邏輯群組中備份資料庫、例如同伺服器上裝載的多個資料庫、共用相同儲存磁碟區的資料庫、支援商業應用程式的多個資料庫等。SnapCenter保護單一資料庫會建立自己的資源群組。下列程序示範如何實作第7節所建立的備份原則、以保護Oracle和SQL Server資料庫。

### 建立資源群組以完整備份Oracle

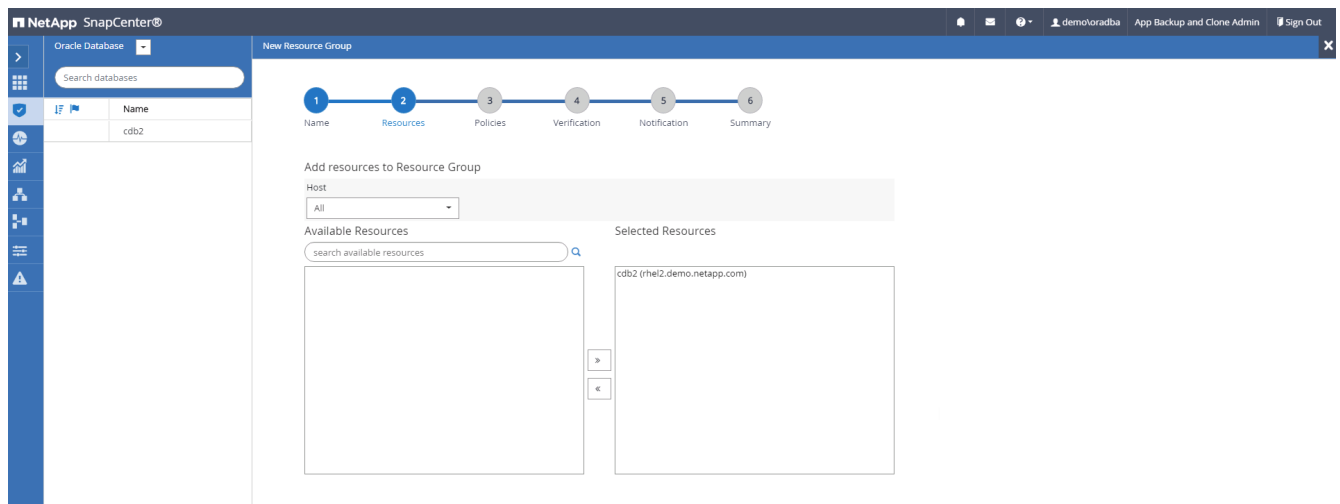
1. 使用資料庫管理使用者ID登入SnapCenter 功能表、然後瀏覽至「資源」索引標籤。在「檢視」下拉式清單中、選擇「資料庫」或「資源群組」以啟動資源群組建立工作流程。



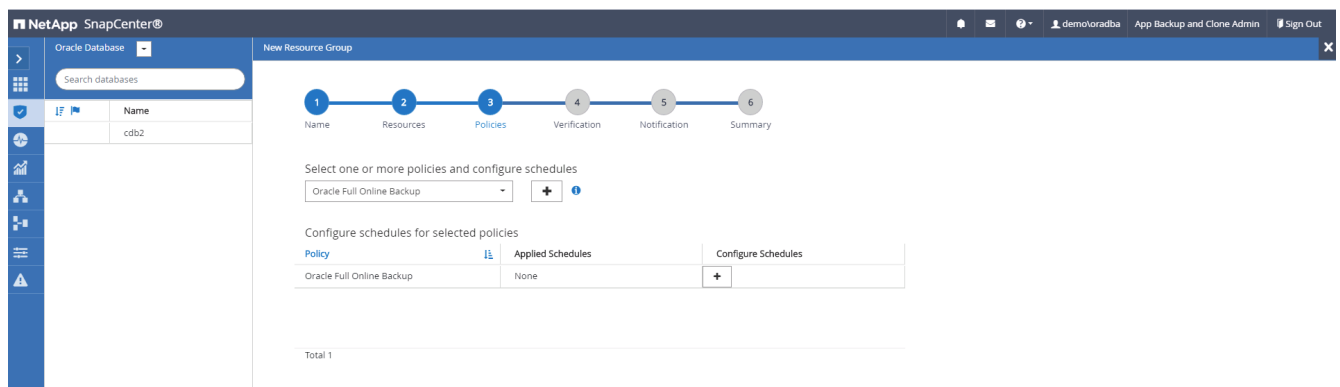
2. 提供資源群組的名稱和標記。您可以定義Snapshot複本的命名格式、並略過備援歸檔記錄目的地（如果已設定）。



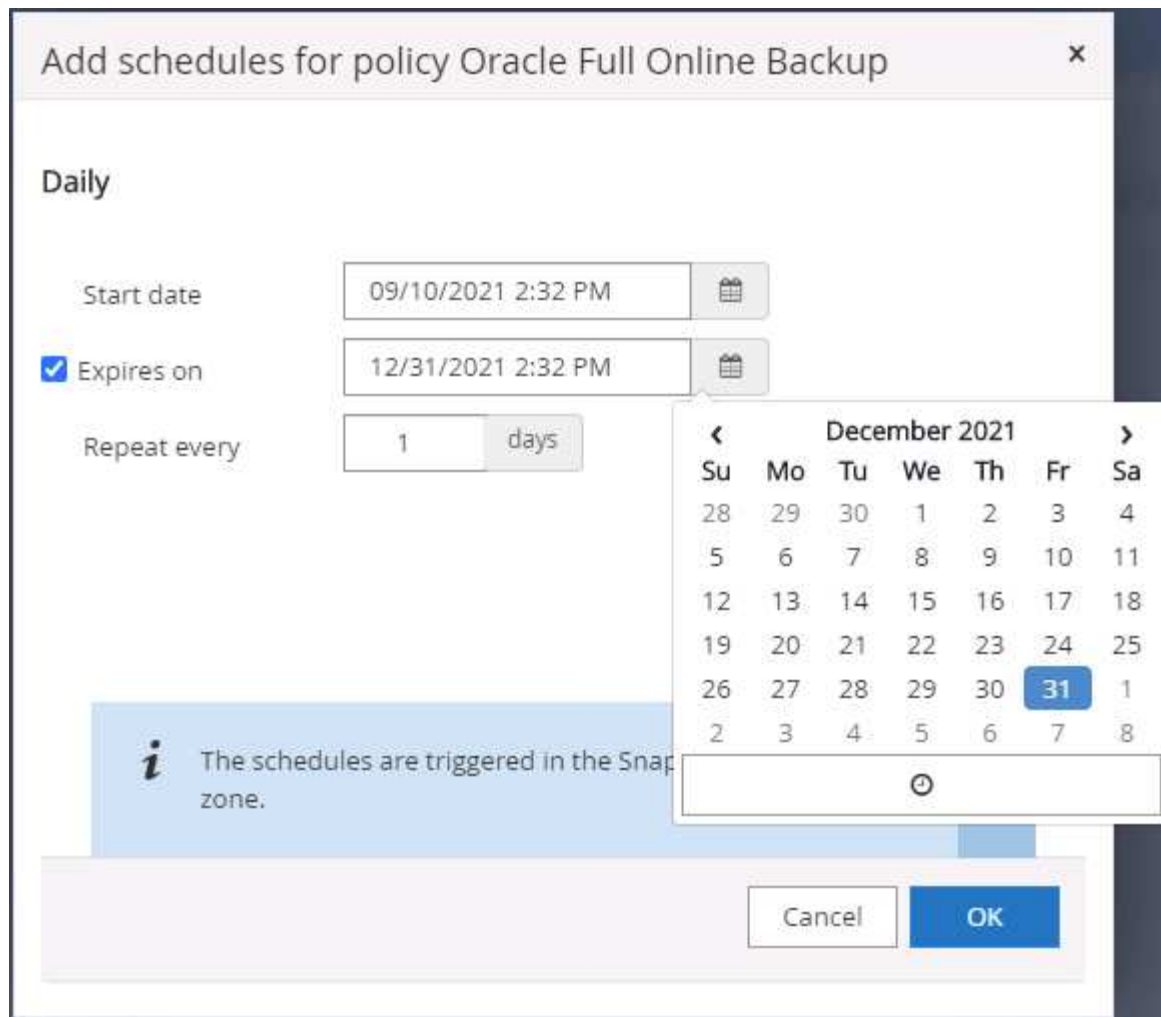
3. 將資料庫資源新增至資源群組。



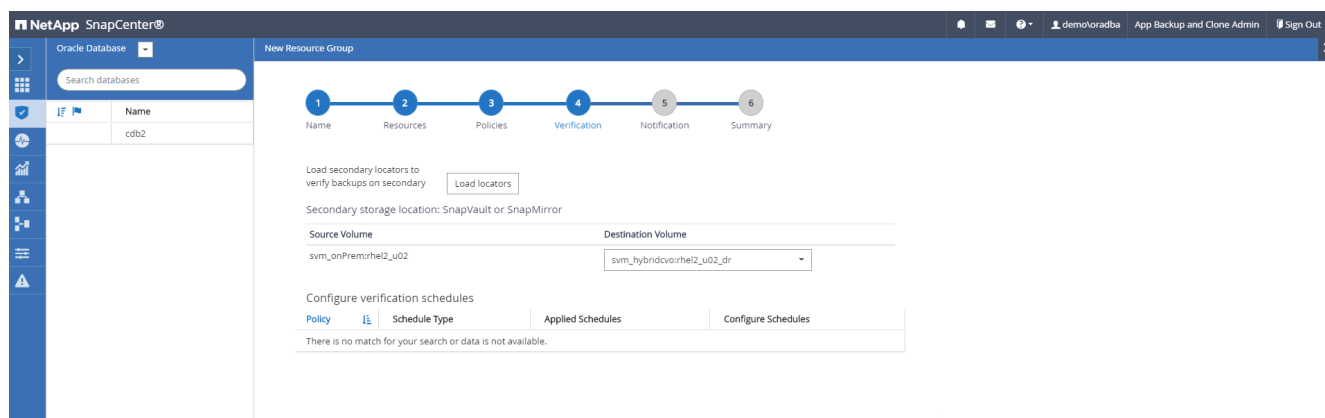
4. 從下拉式清單中選取第7節所建立的完整備份原則。



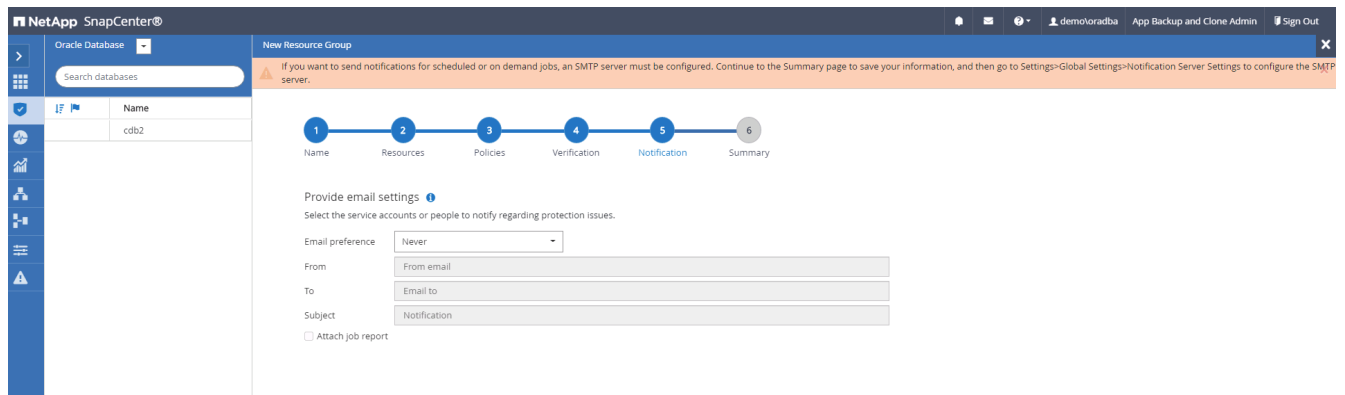
5. 按一下 (+) 號以設定所需的備份排程。



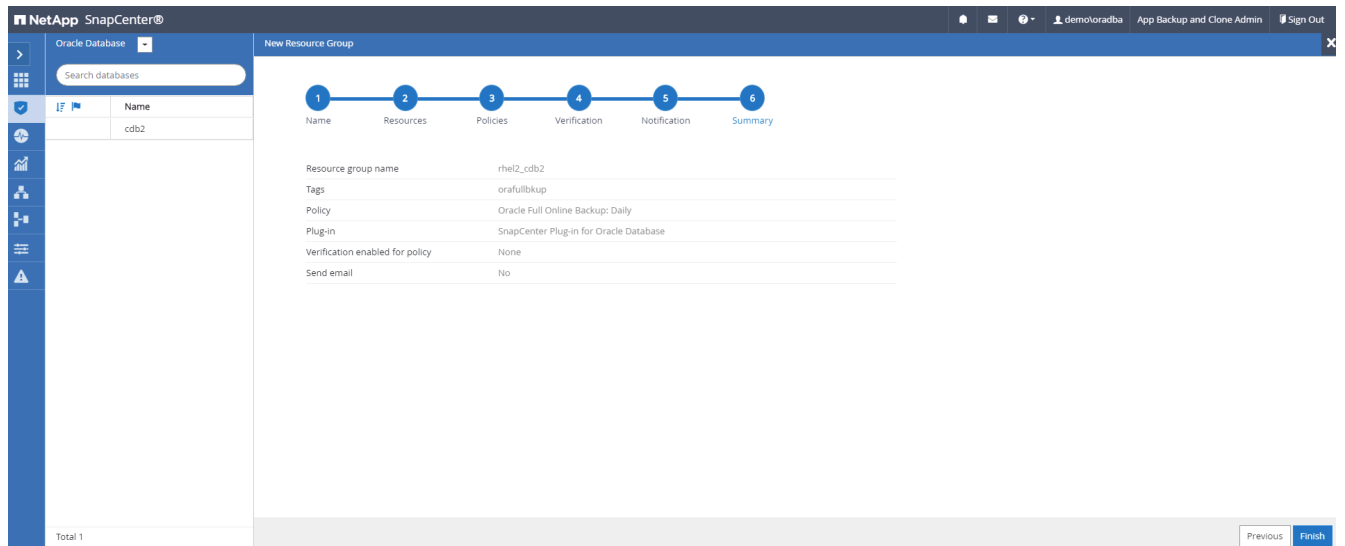
6. 按一下「Load Locators（載入定位器）」以載入來源和目的地Volume。



7. 如有需要、請設定用於電子郵件通知的SMTP伺服器。

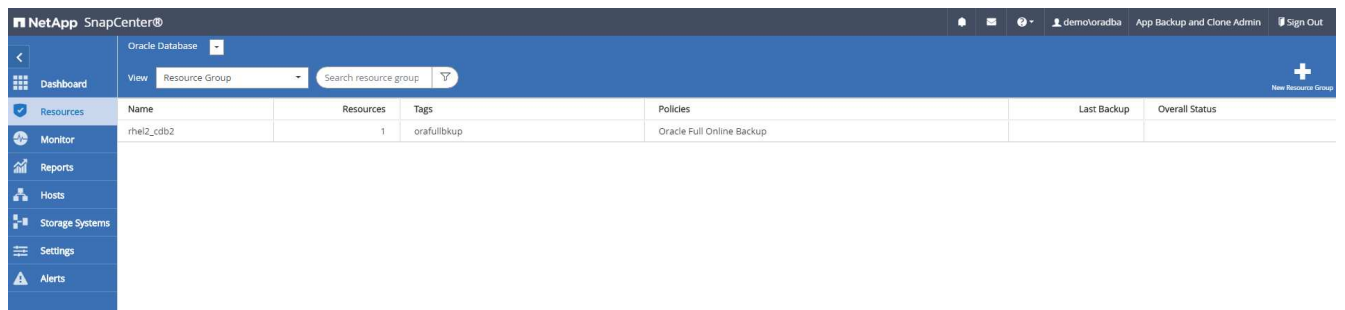


## 8. 摘要：

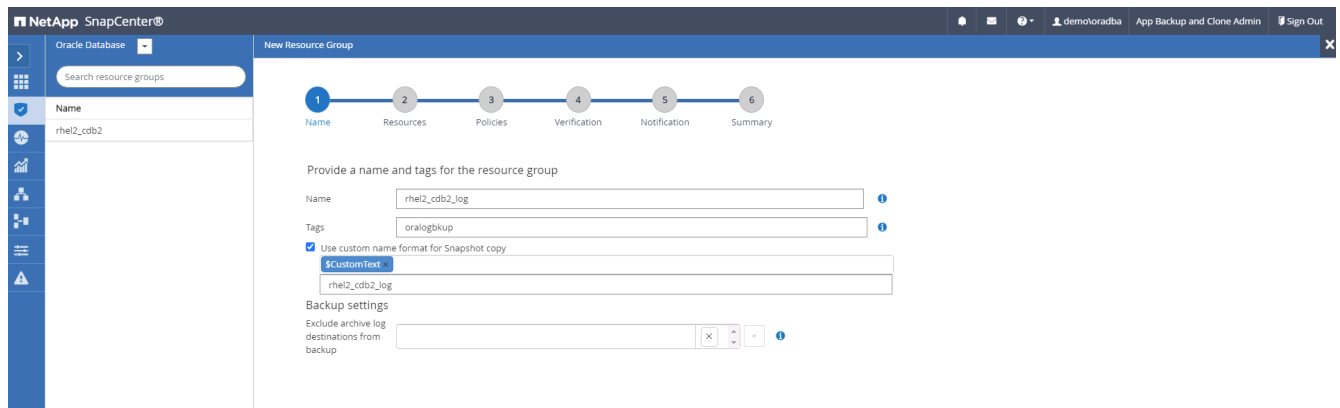


## 建立資源群組以記錄Oracle備份

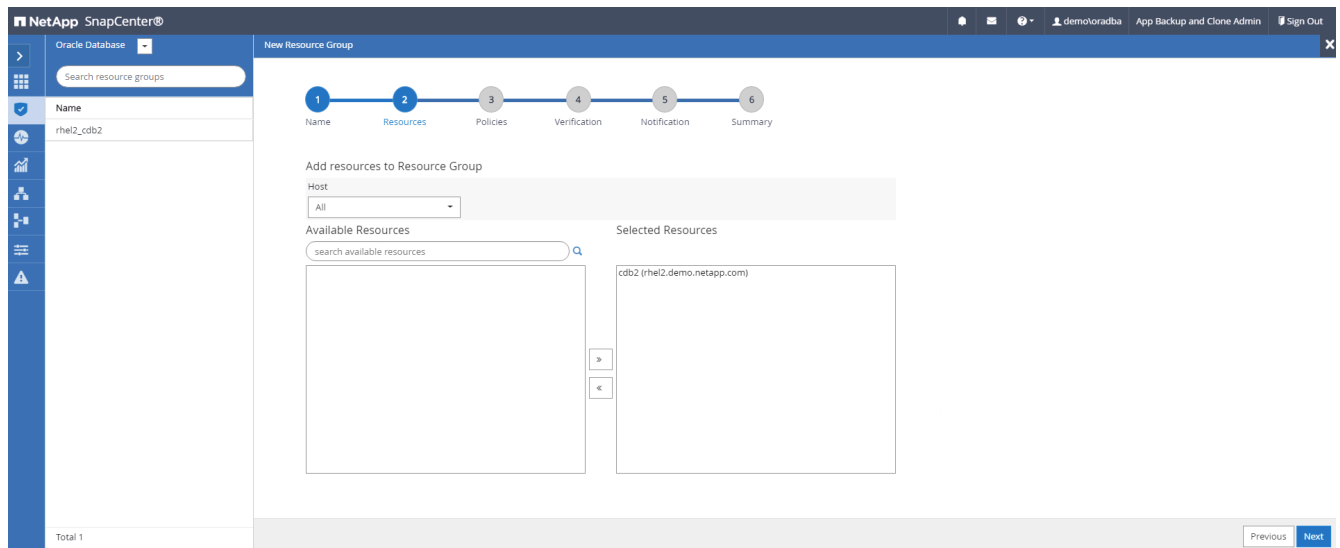
1. 使用資料庫管理使用者ID登入SnapCenter 功能表、然後瀏覽至「資源」索引標籤。在「檢視」下拉式清單中、選擇「資料庫」或「資源群組」以啟動資源群組建立工作流程。



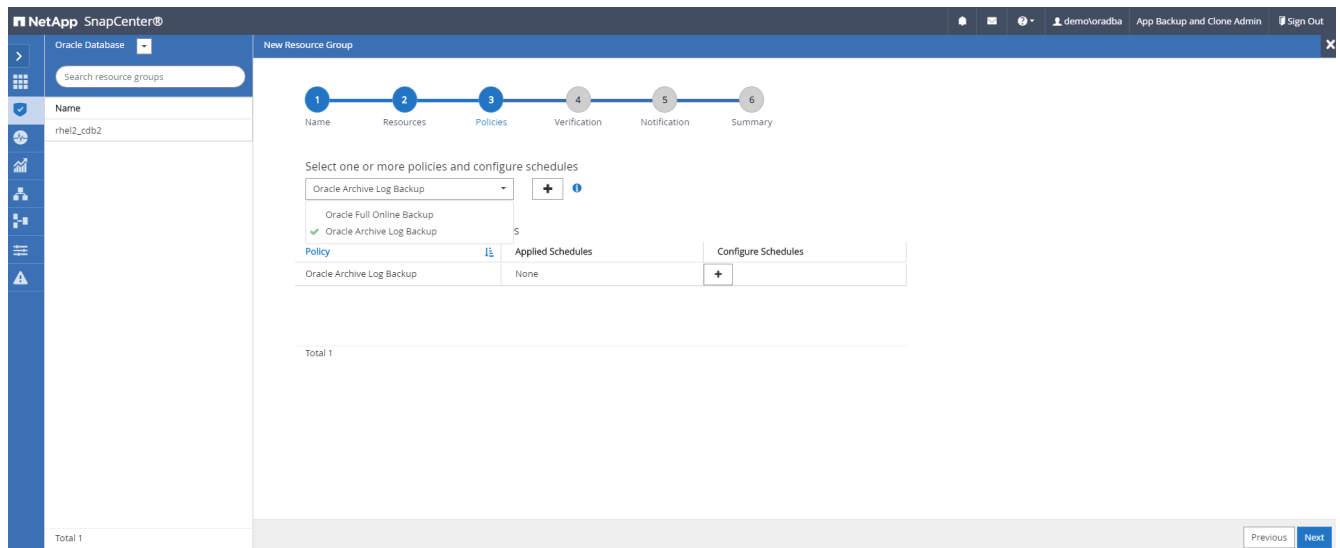
2. 提供資源群組的名稱和標記。您可以定義Snapshot複本的命名格式、並略過備援歸檔記錄目的地（如果已設定）。



3. 將資料庫資源新增至資源群組。



4. 從下拉式清單中選取第7節中建立的記錄備份原則。



5. 按一下 (+) 號以設定所需的備份排程。

Add schedules for policy Oracle Archive Log Backup

Hourly

Start date

09/10/2021 3:00 PM

☒ Expires on

12/31/2021 3:00 PM

Repeat every

1

hours

0

mins

*i* The schedules are triggered in the SnapCenter Server time zone.

Cancel

OK

6. 如果已設定備份驗證、則會顯示於此處。

NetApp SnapCenter®

Oracle Database

New Resource Group

1 2 3 4 5 6  
Name Resources Policies Verification Notification Summary

Configure verification schedules

Policy Schedule Type Applied Schedules Configure Schedules

There is no match for your search or data is not available.

Total 0

Total 1

Previous Next

7. 如有需要、請設定用於電子郵件通知的SMTP伺服器。



NetApp SnapCenter®

Oracle Database

Search resource groups

Name

rhel2\_cdb2

Total 1

New Resource Group

If you want to send notifications for scheduled or on demand jobs, an SMTP server must be configured. Continue to the Summary page to save your information, and then go to Settings>Global Settings>Notification Server Settings to configure the SMTP server.

1 Name 2 Resources 3 Policies 4 Verification 5 Notification 6 Summary

Provide email settings ⓘ

Select the service accounts or people to notify regarding protection issues.

Email preference: Never

From: From email

To: Email to

Subject: Notification

☐ Attach job report

Previous Next

## 8. 摘要：

NetApp SnapCenter®

Oracle Database

Search resource groups

Name

rhel2\_cdb2

Total 1

New Resource Group

1 Name 2 Resources 3 Policies 4 Verification 5 Notification 6 Summary

Resource group name: rhel2\_cdb2\_log

Tags: oralogbkup

Policy: Oracle Archive Log Backup: Hourly

Plug-in: SnapCenter Plug-in for Oracle Database

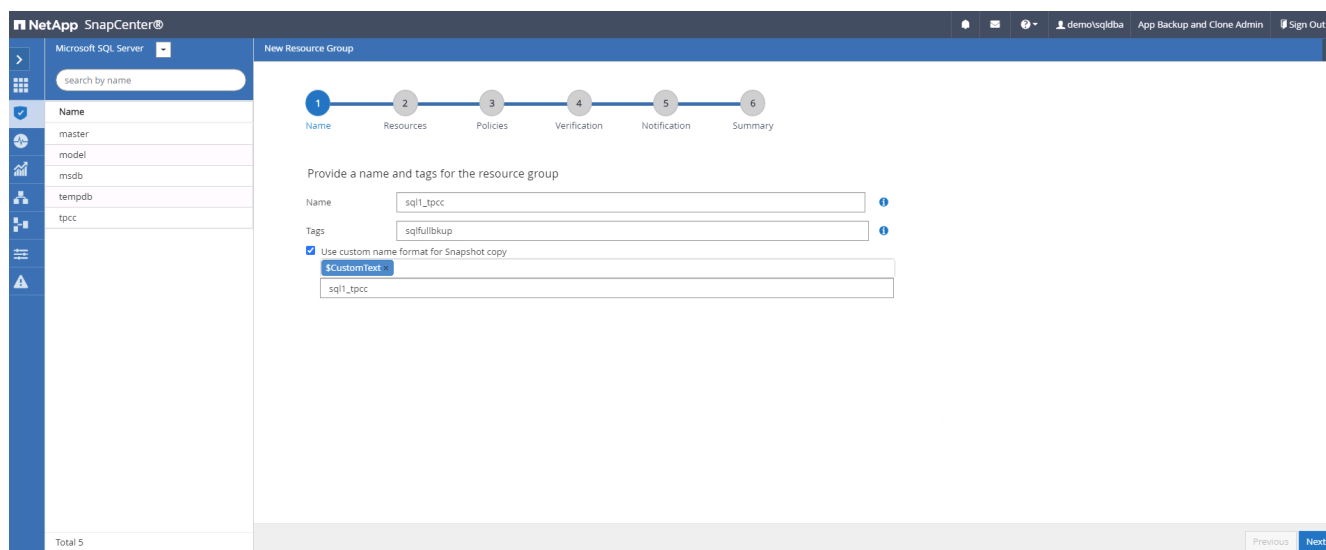
Verification enabled for policy: None

Send email: No

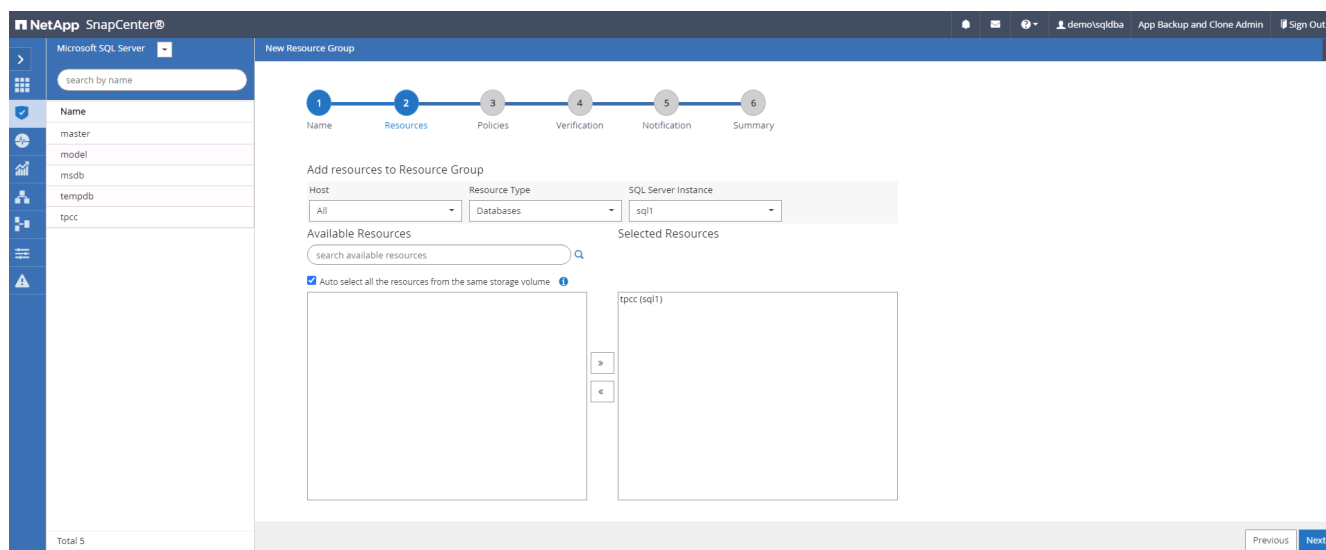
Previous Finish

## 建立資源群組以完整備份SQL Server

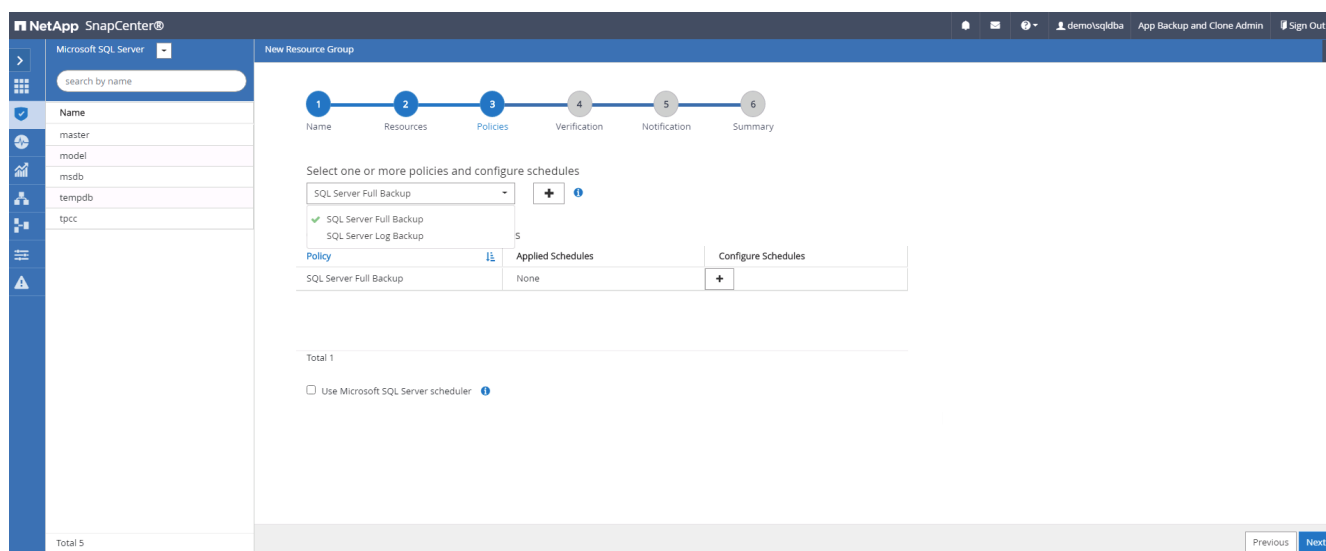
1. 使用資料庫管理使用者ID登入SnapCenter 功能表、然後瀏覽至「資源」索引標籤。在「檢視」下拉式清單中、選擇「資料庫」或「資源群組」來啟動資源群組建立工作流程。提供資源群組的名稱和標記。您可以定義Snapshot複本的命名格式。



2. 選取要備份的資料庫資源。



3. 選取在第7節中建立的完整SQL備份原則。



4. 增加準確的備份時間和頻率。

Add schedules for policy SQL Server Full Backup

Daily

Start date 09/10/2021 6:20 PM

☒ Expires on 12/31/2021 6:20 PM

Repeat every 1 days

**i** The schedules are triggered in the SnapCenter Server time zone.

Cancel OK

5. 如果要執行備份驗證、請選擇驗證伺服器進行次要備份。按一下「Load Locator（載入定位器）」以填入次要儲存位置。

NetApp SnapCenter®

Microsoft SQL Server

New Resource Group

1 Name 2 Resources 3 Policies 4 Verification 5 Notification 6 Summary

Select the verification servers

Verification server Select one or more servers

Load secondary locators to verify backups on secondary Load locators

Secondary storage location: SnapVault or SnapMirror

Source Volume Destination Volume

svm\_onPrem:sql1\_data svm\_hybridvols:sql1\_data\_dr

svm\_onPrem:sql1\_log svm\_hybridvols:sql1\_log\_dr

Configure verification schedules

Policy Schedule Type Applied Schedules Configure Schedules

There is no match for your search or data is not available.

Total 5 Previous Next

6. 如有需要、請設定用於電子郵件通知的SMTP伺服器。

NetApp SnapCenter®

Microsoft SQL Server

search by name

master  
model  
msdb  
tempdb  
tpcc

Total 5

New Resource Group

If you want to send notifications for scheduled or on demand jobs, an SMTP server must be configured. Continue to the Summary page to save your information, and then go to Settings>Global Settings>Notification Server Settings to configure the SMTP server.

1 Name 2 Resources 3 Policies 4 Verification 5 Notification 6 Summary

Provide email settings ⓘ  
Select the service accounts or people to notify regarding protection issues.

Email preference: Never

From: From email

To: Email to

Subject: Notification

☐ Attach job report

Previous Next

## 7. 摘要：

NetApp SnapCenter®

Microsoft SQL Server

search by name

Name  
There is no match for your search or data is not available.

Resources are not found. Click Refresh Resources to discover databases in the database view or create new resource group on the discovered databases from the resource view.

New Resource Group

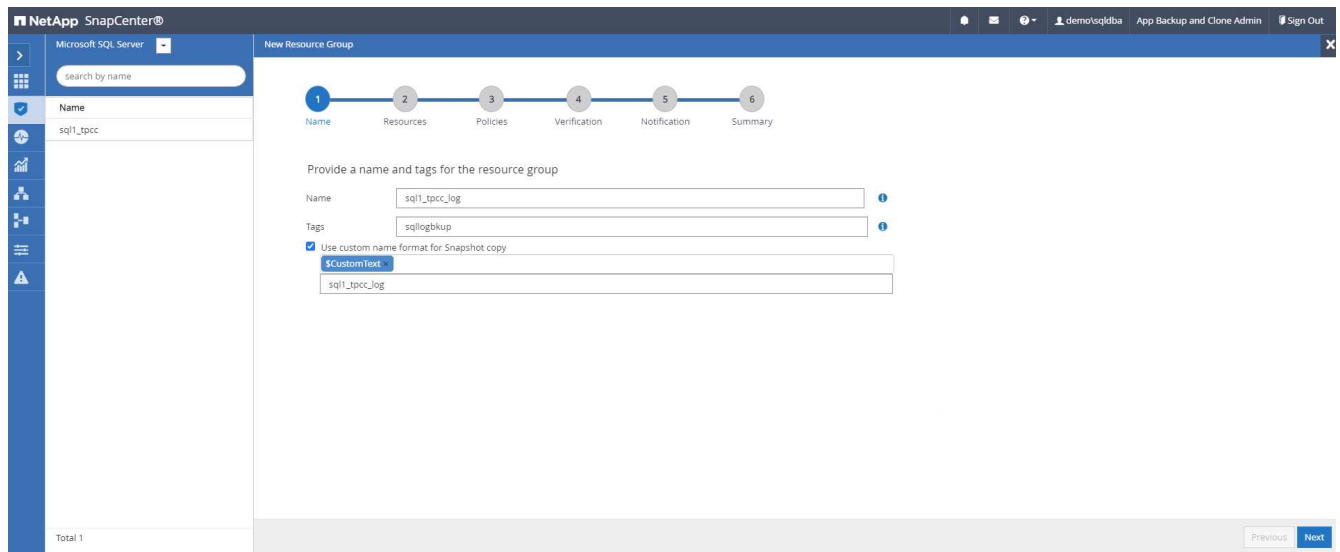
1 Name 2 Resources 3 Policies 4 Verification 5 Notification 6 Summary

Resource group name	sql1_tpcc
Tags	sqlfullbkup
Policy	SQL Server Full Backup: Daily
Plug-in	SnapCenter Plug-in for Microsoft SQL Server
Verification Server	None
Verification enabled for policy	None
Send email	No

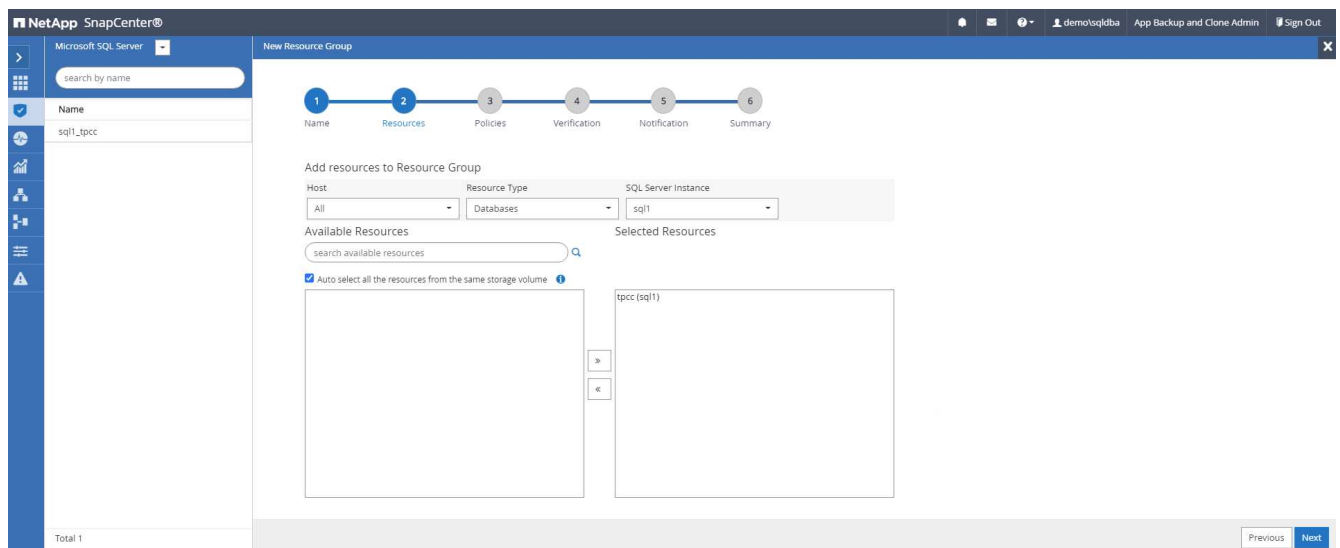
Previous Finish

## 建立資源群組以記錄SQL Server備份

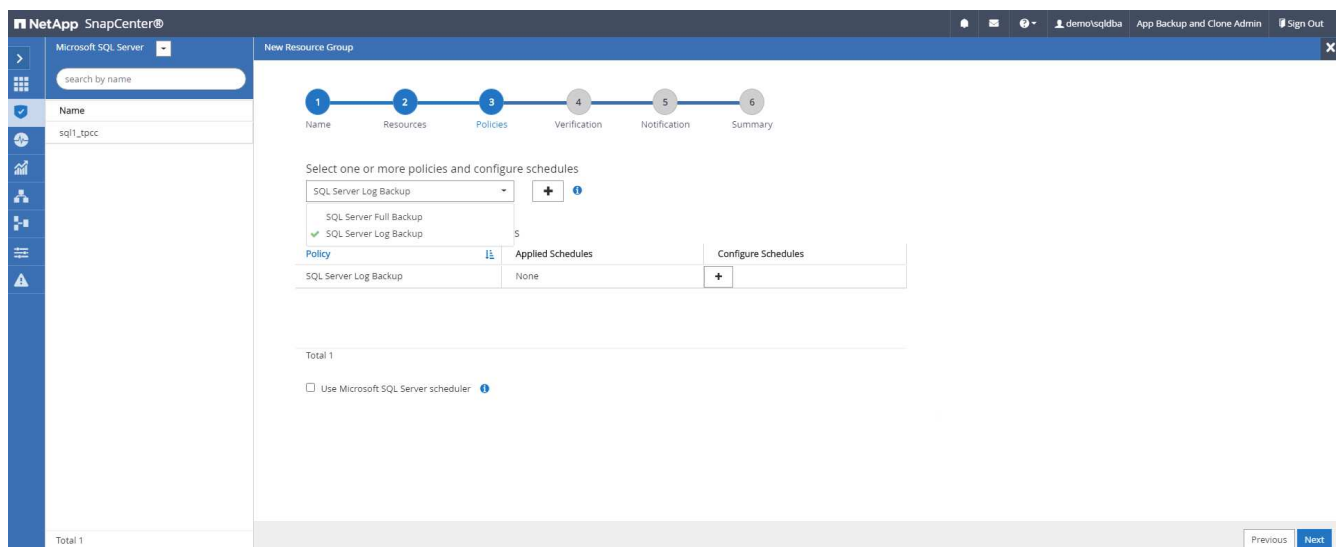
1. 使用資料庫管理使用者ID登入SnapCenter 功能表、然後瀏覽至「資源」索引標籤。在「檢視」下拉式清單中、選擇「資料庫」或「資源群組」來啟動資源群組建立工作流程。提供資源群組的名稱和標記。您可以定義Snapshot複本的命名格式。



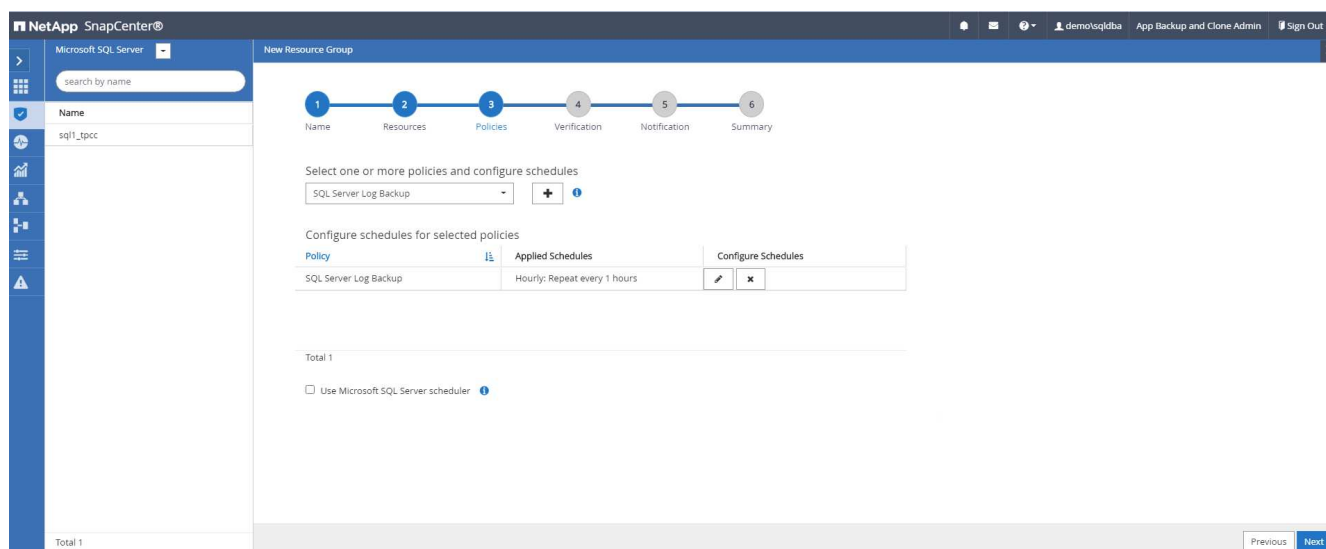
## 2. 選取要備份的資料庫資源。



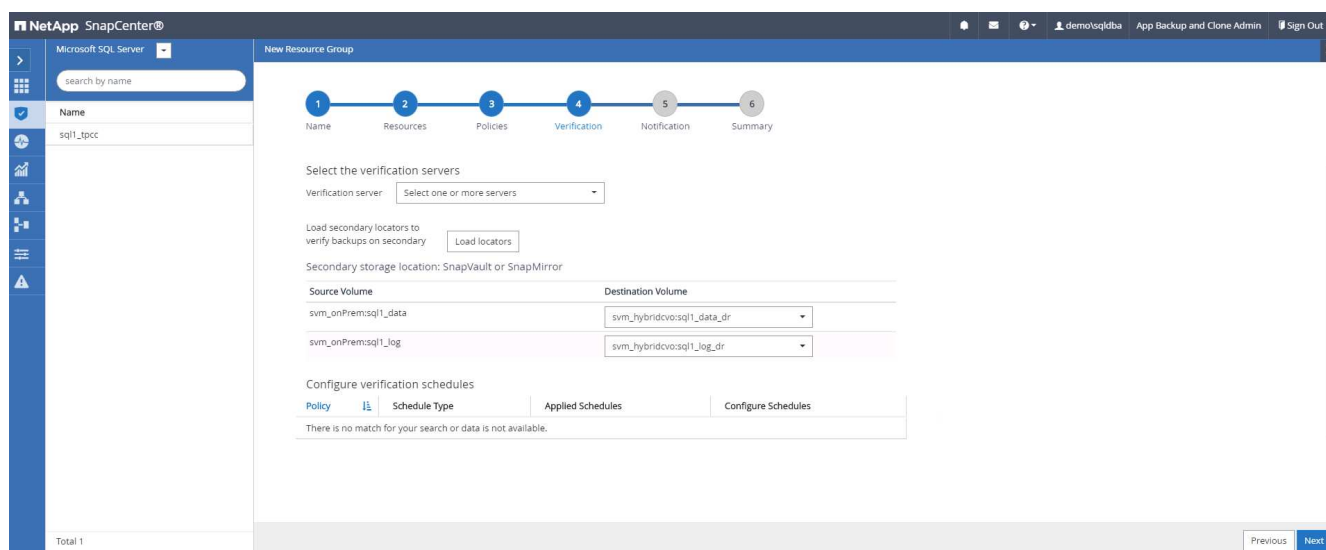
## 3. 選取在第7節中建立的SQL記錄備份原則。



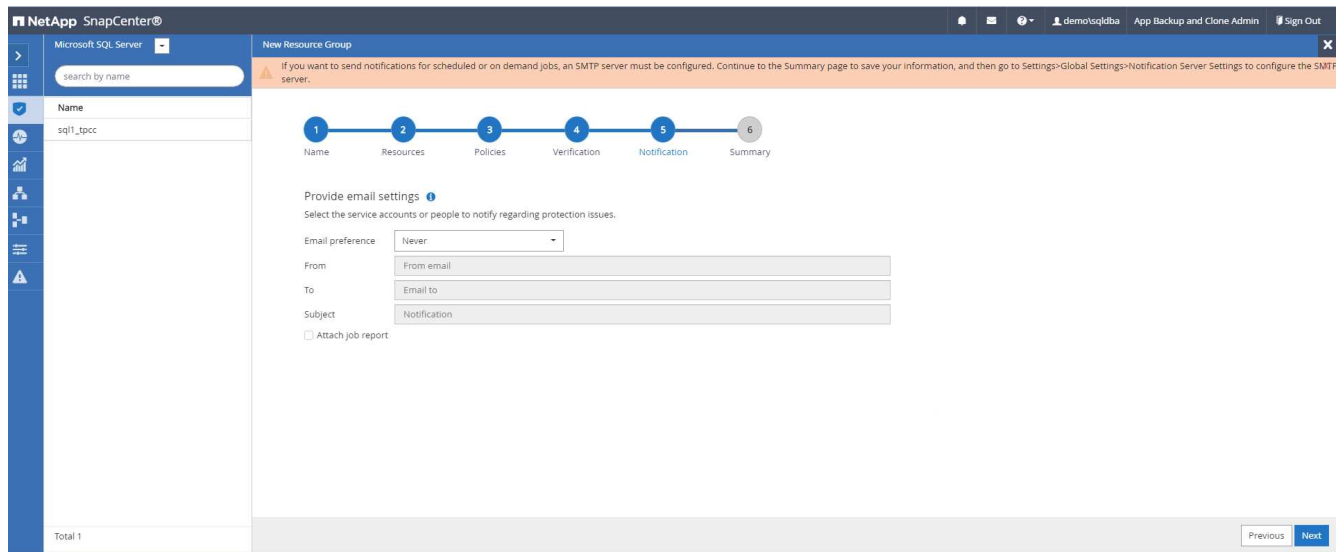
4. 新增確切的備份時間和頻率。



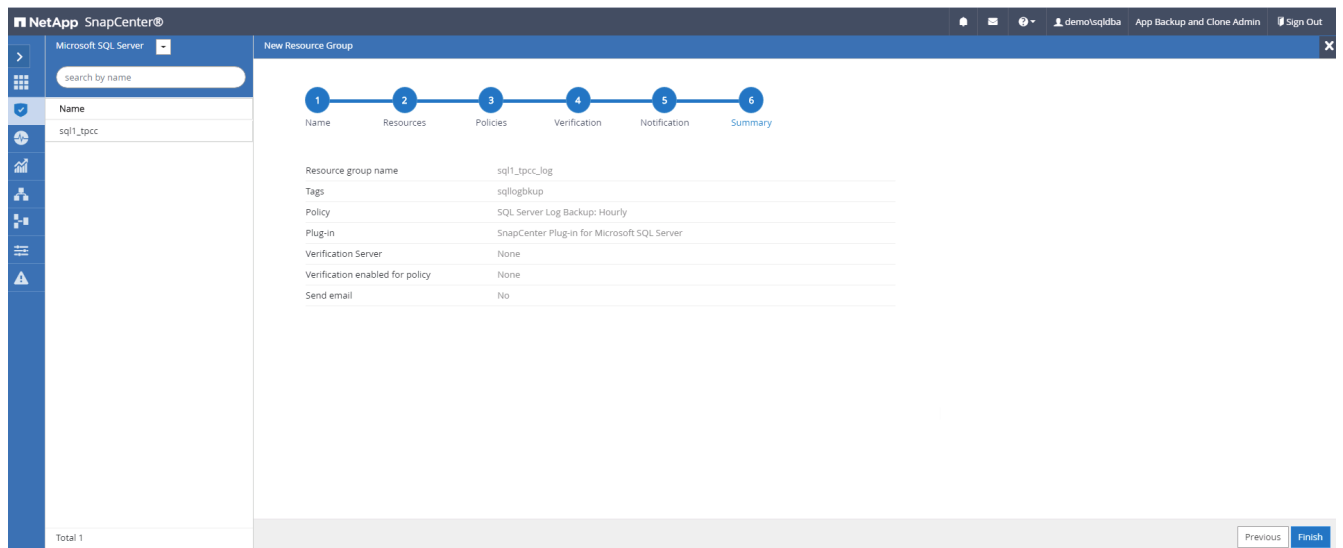
5. 如果要執行備份驗證、請選擇驗證伺服器進行次要備份。按一下「Load Locator（載入定位器）」以填入次要儲存位置。



6. 如有需要、請設定用於電子郵件通知的SMTP伺服器。



## 7. 摘要：

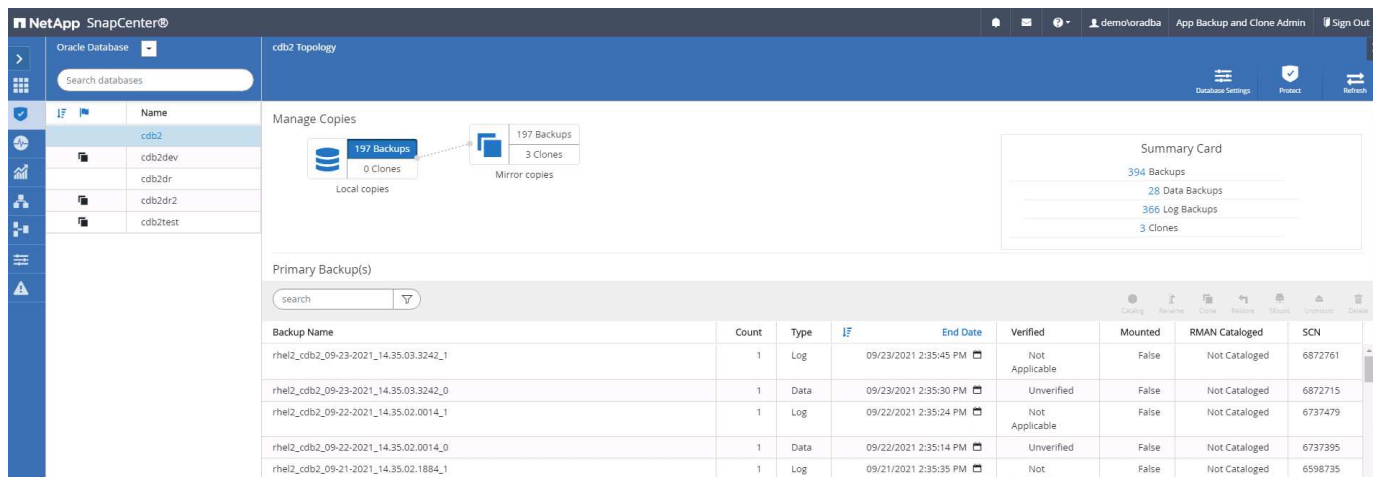


## 9. 驗證備份

建立資料庫備份資源群組以保護資料庫資源之後、備份工作會根據預先定義的排程執行。檢查「監控」索引標籤下的工作執行狀態。

NetApp SnapCenter®						
Jobs - Filter						
ID	Status	Name	Start date	End date	Owner	
532	✓	Backup of Resource Group 'sql1_tpcc_log' with policy 'SQL Server Log Backup'	09/14/2021 8:35:01 PM	09/14/2021 8:37:10 PM	demo/sqldba	
528	✓	Backup of Resource Group 'sql1_tpcc_log' with policy 'SQL Server Log Backup'	09/14/2021 7:35:01 PM	09/14/2021 7:37:09 PM	demo/sqldba	
524	✓	Backup of Resource Group 'sql1_tpcc_log' with policy 'SQL Server Log Backup'	09/14/2021 6:35:01 PM	09/14/2021 6:37:08 PM	demo/sqldba	
521	✓	Backup of Resource Group 'sql1_tpcc' with policy 'SQL Server Full Backup'	09/14/2021 6:25:01 PM	09/14/2021 6:27:14 PM	demo/sqldba	
517	✓	Backup of Resource Group 'sql1_tpcc_log' with policy 'SQL Server Log Backup'	09/14/2021 5:35:01 PM	09/14/2021 5:37:09 PM	demo/sqldba	
513	✓	Backup of Resource Group 'sql1_tpcc_log' with policy 'SQL Server Log Backup'	09/14/2021 4:35:01 PM	09/14/2021 4:37:08 PM	demo/sqldba	
509	✓	Backup of Resource Group 'sql1_tpcc_log' with policy 'SQL Server Log Backup'	09/14/2021 3:35:01 PM	09/14/2021 3:37:10 PM	demo/sqldba	
503	✓	Backup of Resource Group 'sql1_tpcc_log' with policy 'SQL Server Log Backup'	09/14/2021 2:35:01 PM	09/14/2021 2:37:09 PM	demo/sqldba	

移至「資源」索引標籤、按一下資料庫名稱以檢視資料庫備份的詳細資料、然後在本機複本和鏡射複本之間切換、以驗證Snapshot備份是否已複製到公有雲的次要位置。



此時、雲端中的資料庫備份複本已準備好複製、以便在發生一線故障時執行開發/測試程序或進行災難恢復。

## AWS公有雲入門

本節說明在Cloud Volumes ONTAP AWS中部署Cloud Manager和更新功能的程序。

### AWS公有雲



為了更容易追蹤、我們根據AWS部署建立了這份文件。不過、Azure和GCP的程序非常類似。

#### 1、飛行前檢查

在部署之前、請先確定基礎架構已就緒、以便在下一階段進行部署。這包括下列項目：

- AWS帳戶
- 您所在地區的VPC
- 可存取公共網際網路的子網路
- 將IAM角色新增至AWS帳戶的權限
- AWS使用者的秘密金鑰和存取金鑰

#### 2、在Cloud Volumes ONTAP AWS中部署Cloud Manager與功能不全的步驟



部署Cloud Manager和Cloud Volumes ONTAP NetApp有許多方法；這種方法最簡單、但需要最大權限。如果此方法不適用於您的AWS環境、請參閱 "[NetApp雲端文件](#)"。

#### 部署Cloud Manager連接器

1. 瀏覽至 "[NetApp Cloud Central](#)" 並登入或註冊。





[Continue to Cloud Manager](#)

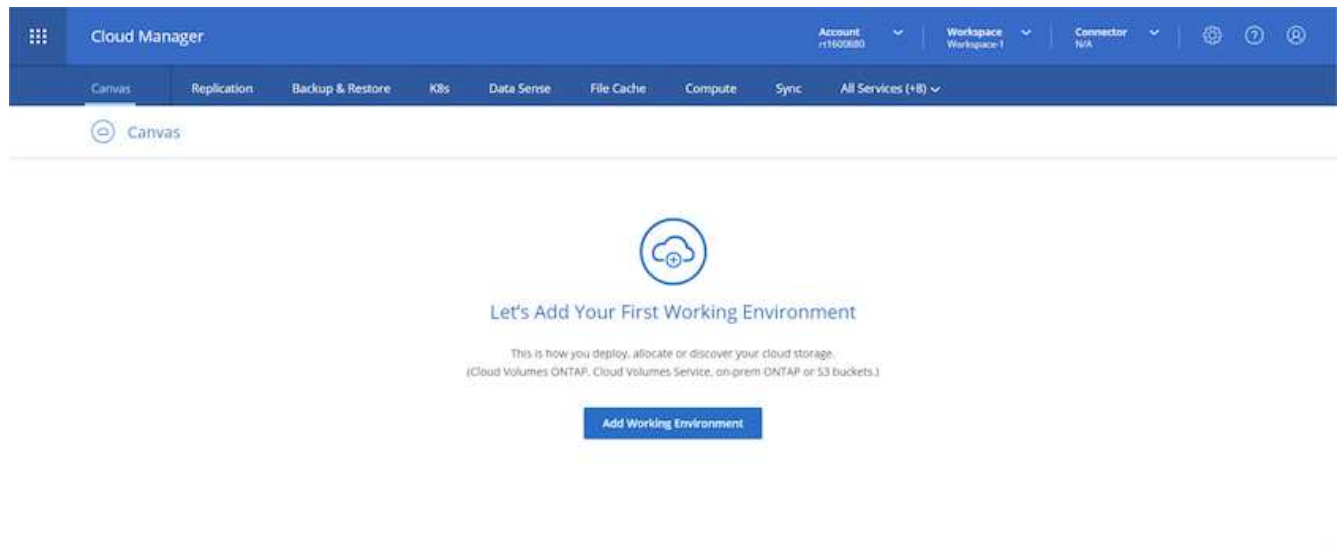
## Log In to NetApp Cloud Central

Don't have an account yet? [Sign Up](#)

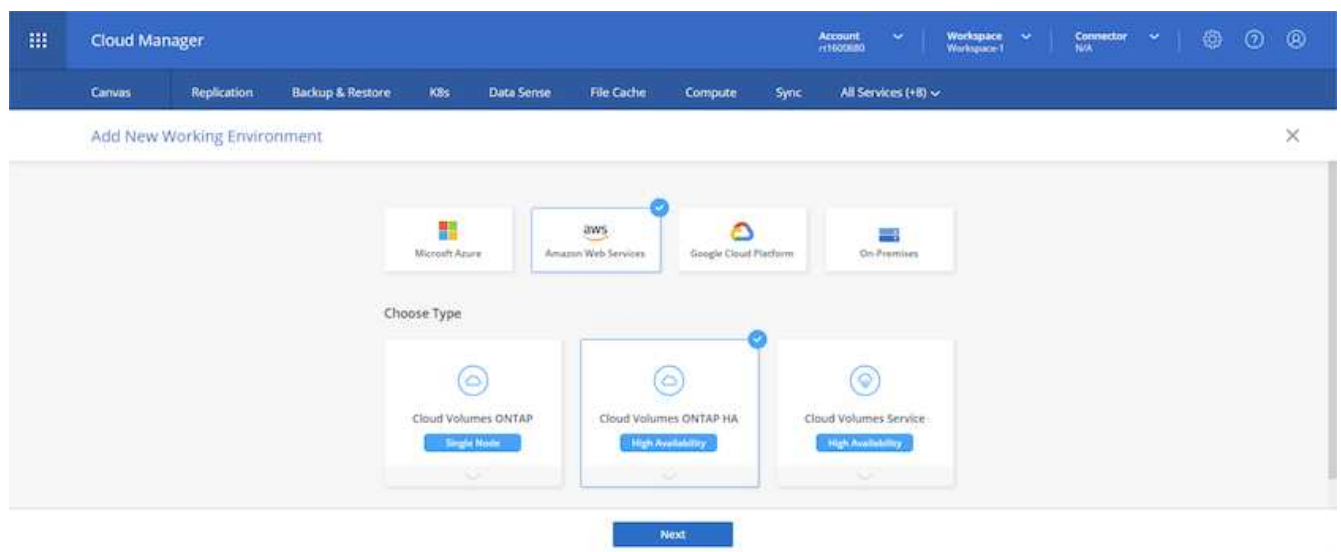
**LOGIN**

[Forgot your password?](#)

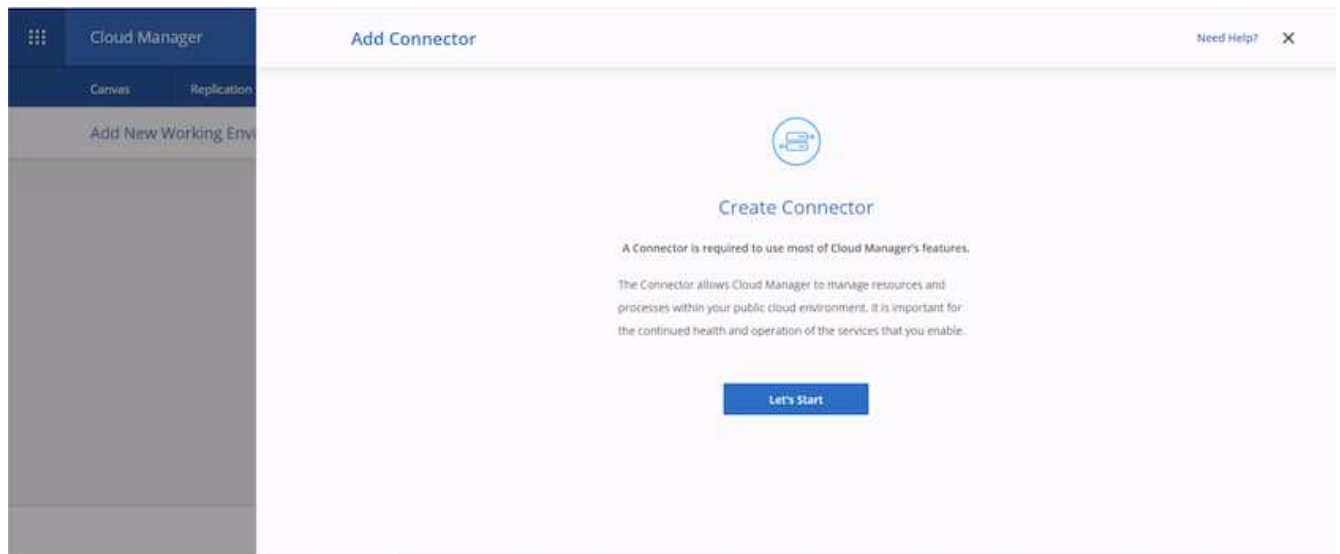
2. 登入之後、您應該會被帶到Canvas.



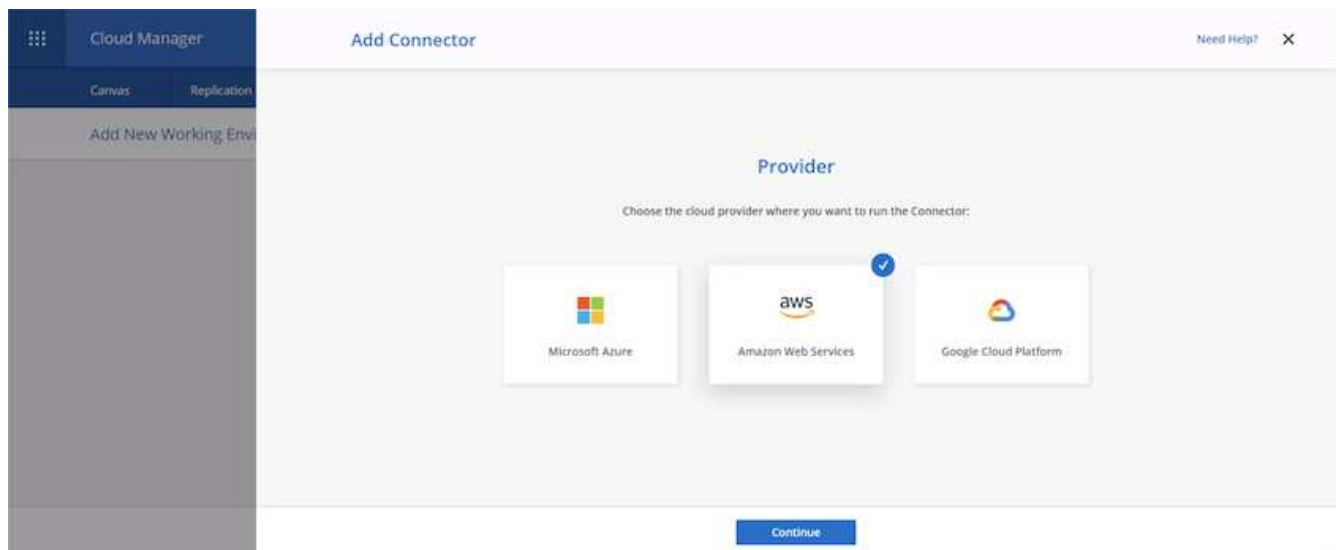
3. 按一下「Add Working Environment」（新增工作環境）、然後在Cloud Volumes ONTAP AWS中選擇「您也可以在此選擇要部署單一節點系統或高可用度配對。我選擇部署高可用度配對。」



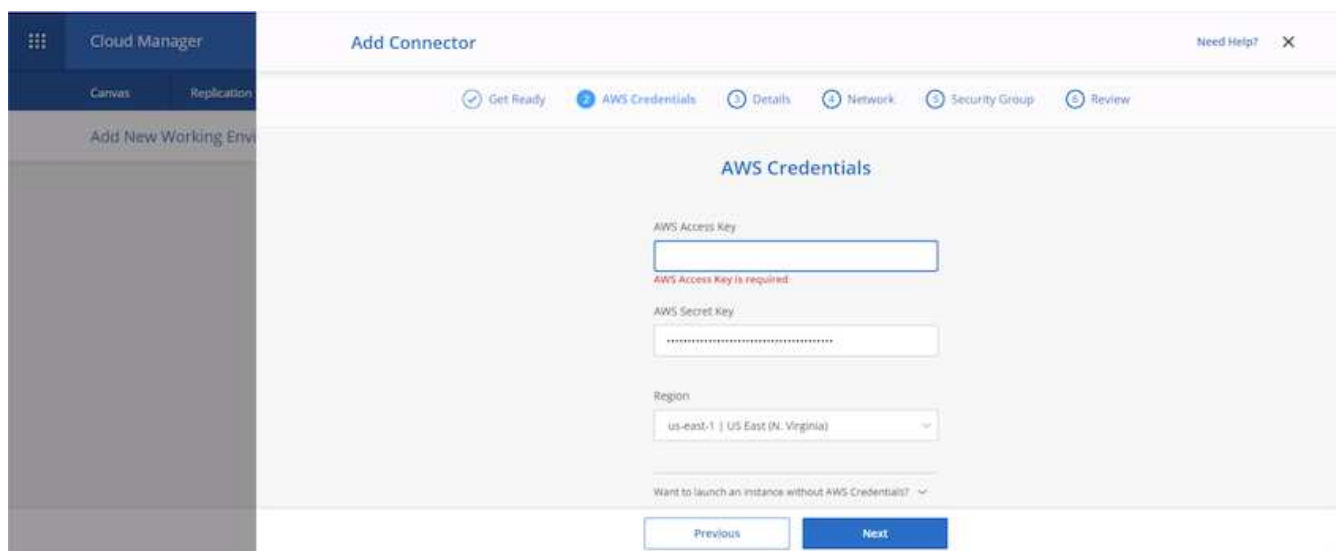
4. 如果尚未建立連接器、則會出現快顯視窗、要求您建立連接器。



5. 按一下「讓我們開始」、然後選擇「AWS」。



6. 輸入您的秘密金鑰和存取金鑰。請確定您的使用者擁有上所述的正確權限 "[NetApp原則頁面](#)"。



7. 為連接器命名、並使用預先定義的角色、如所述 "[NetApp原則頁面](#)" 或請Cloud Manager為您建立角色。

The screenshot shows the 'Add Connector' wizard in the AWS Cloud Manager console. The 'Details' step is active, showing the 'Connector Instance Name' field with the value 'awscloudmanager'. The 'Connector Role' section has 'Create Role' selected. The 'Role Name' field contains 'Cloud-Manager-Operator-IBHt24j'. The 'Add Tags to Connector Instance' button is visible. The 'Previous' and 'Next' buttons are at the bottom.

8. 提供部署連接器所需的網路資訊。確認已啟用傳出網際網路存取：
- 為連接器提供公有IP位址
  - 為連接器提供可處理的Proxy
  - 透過網際網路網路閘道將連接器分配給公共網際網路

The screenshot shows the 'Add Connector' wizard in the AWS Cloud Manager console, Step 4: Network. The 'Connectivity' section shows 'VPC' as 'vpc-083fcd79f75dfb6e - 10.221.0.0/16', 'Subnet' as '10.221.4.0/24 | publicSN\_us-east-1a\_r11600...', 'Key Pair' as 'r11600680', and 'Public IP' as 'Enable'. The 'Proxy Configuration (Optional)' section shows 'HTTP Proxy' as 'Example: http://172.16.254.1:8080'. The 'Define Credentials for this Proxy' and 'Upload a root certificate' options are also visible. The 'Previous' and 'Next' buttons are at the bottom.

9. 提供安全群組或建立新的安全群組、以透過SSH、HTTP和HTTPS與連接器進行通訊。我已啟用從IP位址存取連接器的功能。

Cloud Manager

Canvas Replication

Add New Working Env

### Add Connector

Need Help? X

Get Ready AWS Credentials Details Network **Security Group** Review

The security group must allow inbound HTTP, HTTPS and SSH access.

Assign a security group: ☒ Create a new security group ☐ Select an existing security group

HTTP (Port 80)	HTTPS (Port 443)	SSH (Port 22)
Source Type: My IP	Source Type: My IP	Source Type: My IP
Source (CIDR): 216.240.31.145/32	Source (CIDR): 216.240.31.145/32	Source (CIDR): 216.240.31.145/32

Previous Next

10. 檢閱摘要頁面上的資訊、然後按一下「新增」以部署連接器。

Cloud Manager

Canvas Replication

Add New Working Env

### Add Connector

Need Help? X

Get Ready AWS Credentials Details Network Security Group **Review**

Code for Terraform Automation

Connector Name	awscloudmanager
Region	us-east-1
VPC	vpc-083fcbd79f75dfb6e - 10.221.0.0/16
Subnet	10.221.4.0/24   publicSN_us-east-1a_rt1600680
Key Pair	rt1600680
Public IP	Enable
Proxy	None
Security Group	HTTP: 216.240.31.145/32, HTTPS: 216.240.31.145/32, SSH: 216.240.31.145/32

Previous Add

11. 連接器現在使用雲端形成堆疊進行部署。您可以從Cloud Manager或透過AWS監控其進度。

Cloud Manager

Canvas Replication

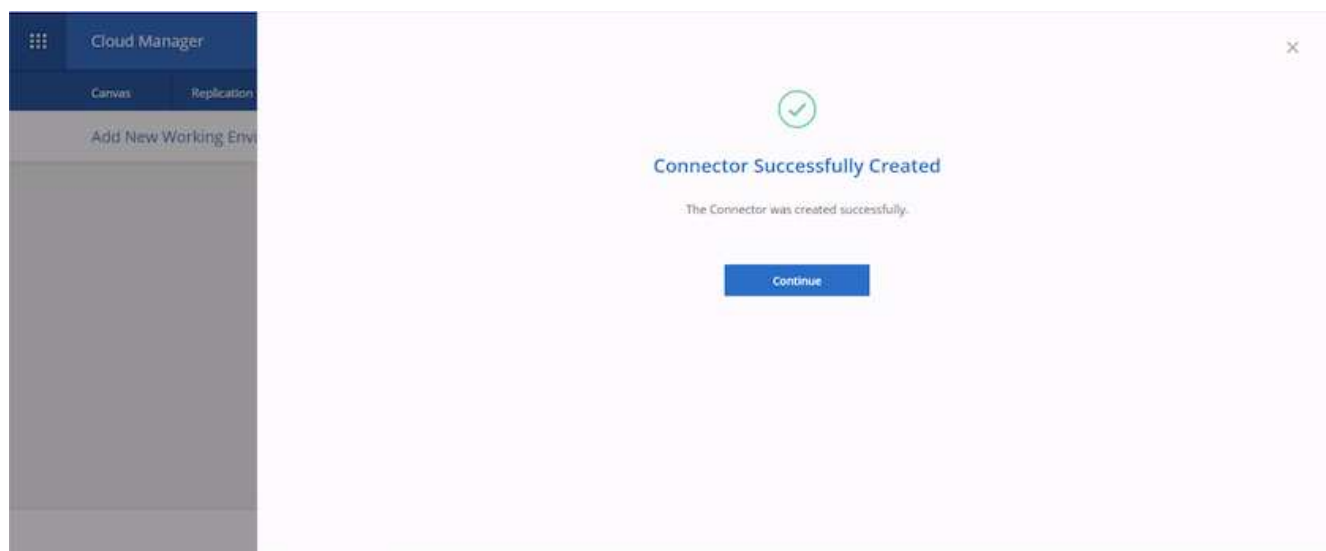
Add New Working Env

### Deploying a Connector

Show Details

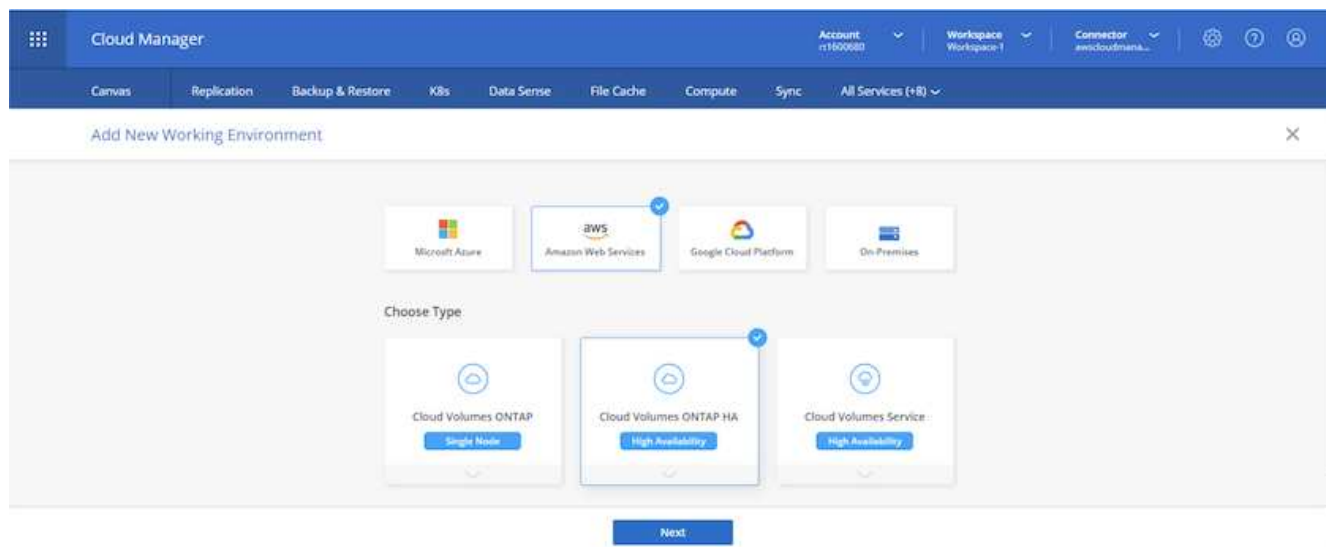
- Keep this wizard open until the deployment process is complete. It usually takes about 7 minutes.
- No other Cloud Manager features are available during deployment.
- When the process is complete, you can continue the operation that you started.

12. 部署完成後、會顯示成功頁面。



## 部署 Cloud Volumes ONTAP

1. 根據您的需求選擇AWS和部署類型。



2. 如果尚未指派訂閱、且您想要與PAYGO一起購買、請選擇「編輯認證」。

Cloud Manager

Account: r1600680 | Workspace: Workspace 1 | Connector: awscloudmana...

Canvas | Replication | Backup & Restore | K8s | Data Sense | File Cache | Compute | Sync | All Services (+8)

Create a New Working Environment

### Details and Credentials

↑ Previous Step

Instance Profile: 322944748816

Credential Name: Account ID

Marketplace Subscription: No subscription is associated [Edit Credentials](#)

Details

Working Environment Name (Cluster Name)  
Up to 40 characters

[Add Tags](#) Optional Field | Up to four tags

Credentials

User Name  
admin

Password

Confirm Password

[Continue](#)

Cloud Manager 3.9.0 Build 0 Aug 18, 2021 04:13:05 am UTC

3. 選擇「新增訂閱」。

Cloud Manager

Account: r1600680 | Workspace: Workspace 1 | Connector: awscloudmana...

Canvas | Replication | Backup & Restore | K8s | Data Sense | File Cache | Compute | Sync | All Services (+8)

Create a New Working Environment

### Details and Credentials

↑ Previous Step

Instance Profile: 322944748816

Credential Name: Account ID

Marketplace Subscription: No subscription is associated with this credential [Edit Credentials](#)

Details

Working Environment Name (Cluster Name)  
Up to 40 characters

[Add Tags](#) Optional Field | Up to four tags

Credentials

User Name  
admin

Password

Confirm Password

[Continue](#)

Cloud Manager 3.9.0 Build 0 Aug 18, 2021 04:13:05 am UTC

#### Edit Credentials & Add Subscription

Associate Subscription to Credentials

Credentials  
Instance Profile | Account ID: 322944748816

Marketplace Subscription  
No subscription is associated with this credential

[Add Subscription](#)

[Apply](#) [Cancel](#)

4. 選擇您要訂閱的合約類型。我選擇了隨用隨付。

Cloud Manager

Account: r1600680 | Workspace: Workspace 1 | Connector: awscloudmana...

Canvas | Replication | Backup & Restore | K8s | Data Sense | File Cache | Compute | Sync | All Services (+8)

Create a New Working Environment

### Details and Credentials

↑ Previous Step

Instance Profile: 322944748816

Credential Name: Account ID

Marketplace Subscription: No subscription is associated with this credential [Edit Credentials](#)

Details

Working Environment Name (Cluster Name)  
Up to 40 characters

[Add Tags](#) Optional Field | Up to four tags

Credentials

User Name  
admin

Password

Confirm Password

[Continue](#)

Cloud Manager 3.9.0 Build 0 Aug 18, 2021 04:13:05 am UTC

#### Edit Credentials & Add Subscription

Select a subscription option and click Continue. The AWS Marketplace enables you to view pricing details and then subscribe.

☐ Pay-Per-T1B - Annual Contract

Pay for Cloud Volumes ONTAP with an annual, upfront payment.

☒ Pay-as-you-go

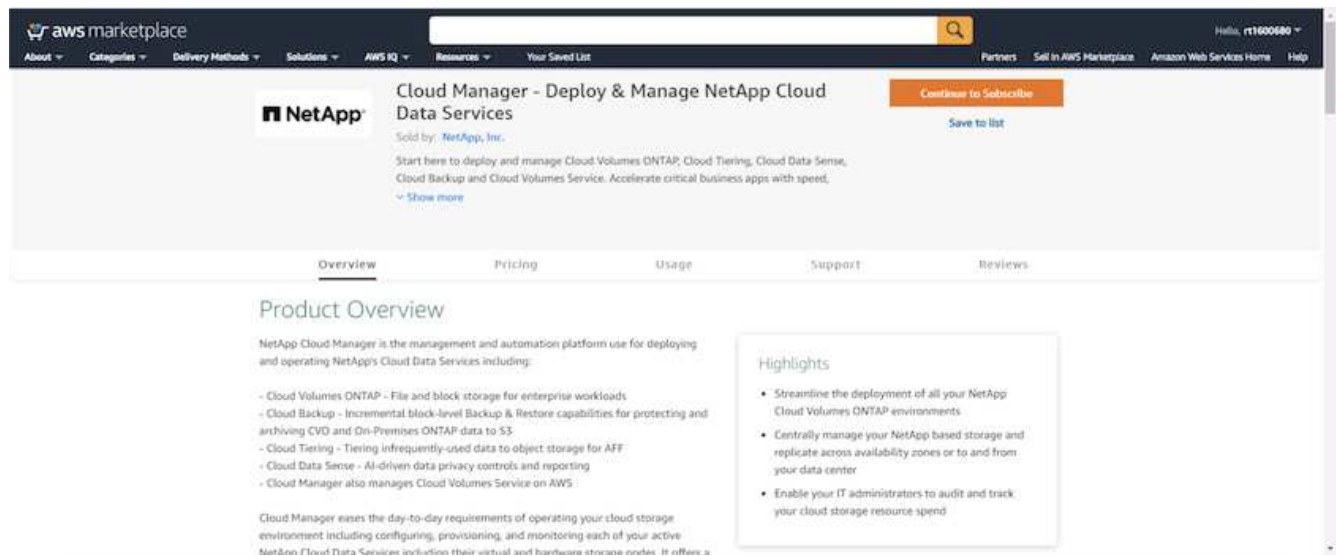
Pay for Cloud Volumes ONTAP at an hourly rate.

The next steps:

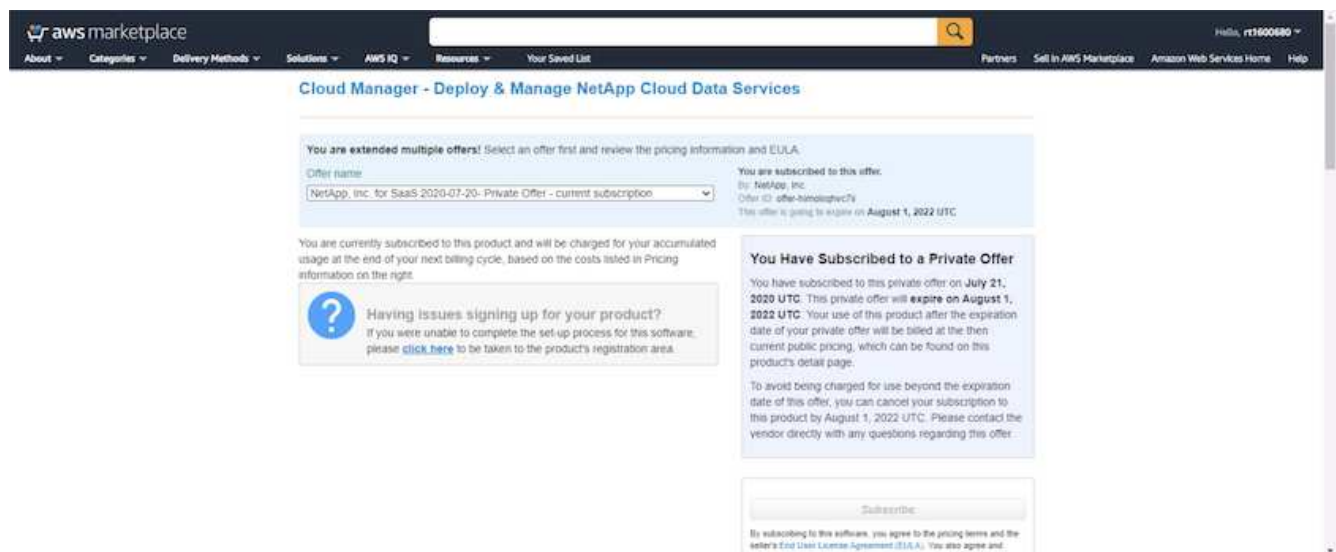
- AWS Marketplace**  
Subscribe and then click [Set Up Your Account](#) to configure your account.
- Cloud Manager**  
Save your subscription and associate the Marketplace subscription with your AWS credentials.

[Continue](#) [Cancel](#)

5. 您會重新導向至AWS、請選擇「Continue（繼續）」以訂閱。

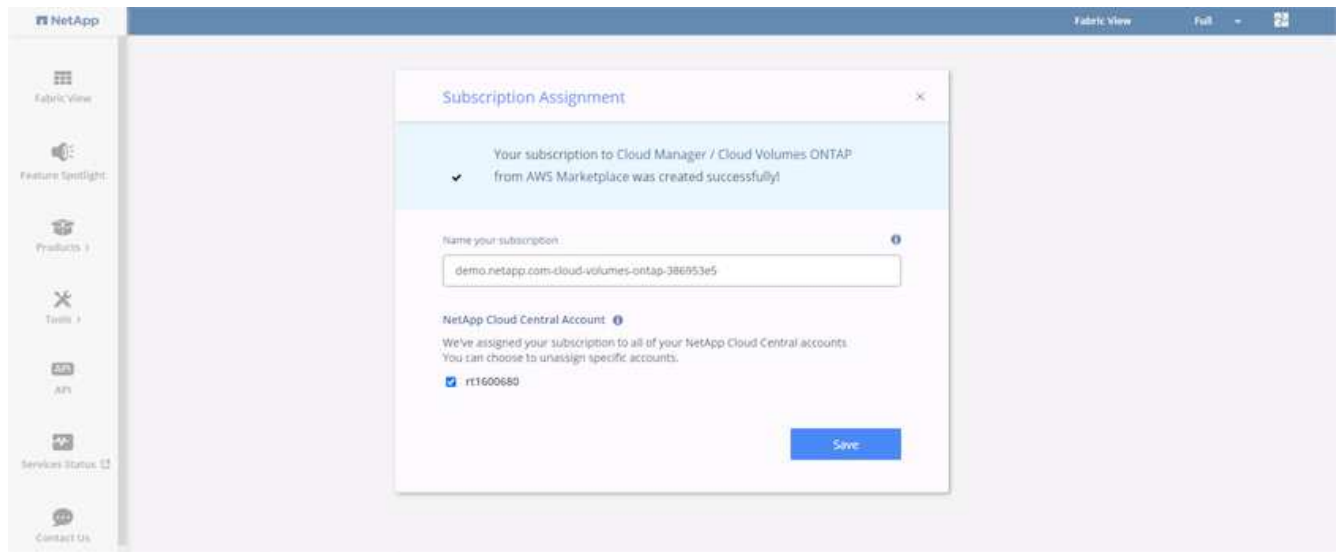


6. 訂閱之後、您將被重新導向回NetApp Cloud Central。如果您已訂閱但未重新導向、請選擇「按一下此處」連結。

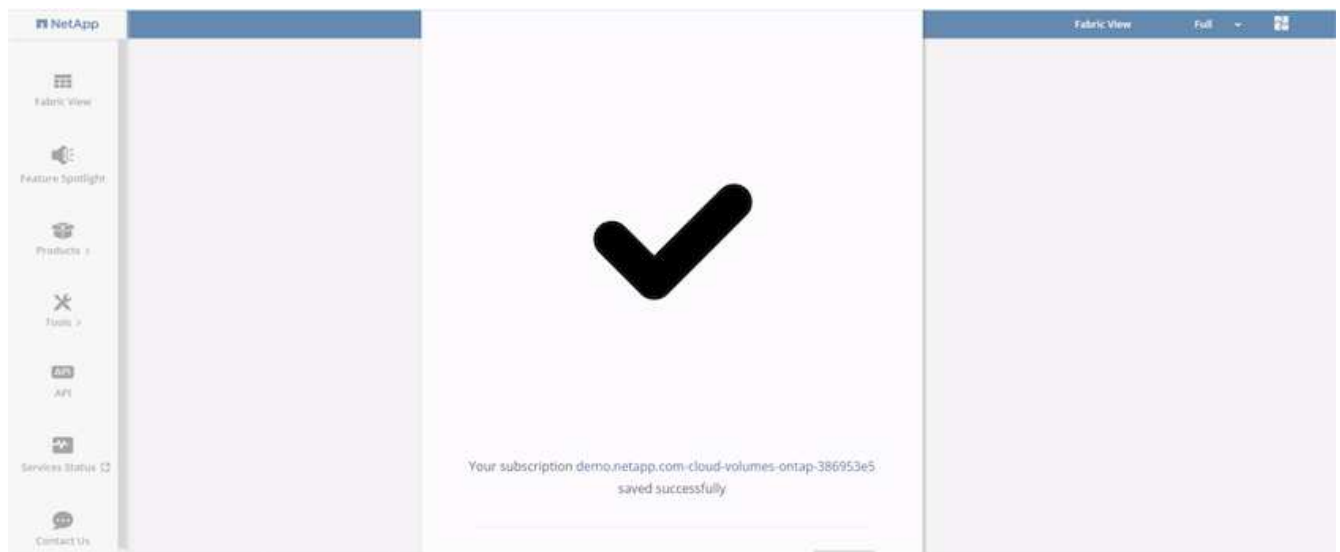


7. 您會重新導向至Cloud Central、在其中必須為訂閱命名、並將其指派給Cloud Central帳戶。

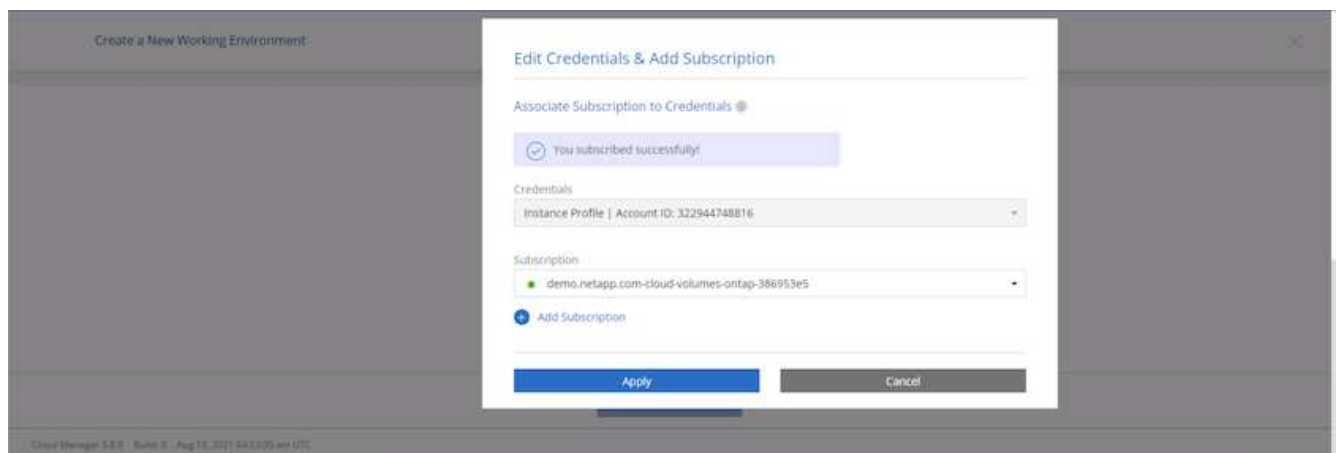




8. 成功時、會出現核取標記頁面。瀏覽返回Cloud Manager索引標籤。



9. 訂購內容現在會顯示在Cloud Central中。按一下「套用」繼續。



10. 輸入工作環境詳細資料、例如：

- a. 叢集名稱
- b. 叢集密碼
- c. AWS標籤（選用）

The screenshot shows the 'Details and Credentials' step in the Cloud Manager console. The top navigation bar includes 'Canvas', 'Replication', 'Backup & Restore', 'K8s', 'Data Sense', 'File Cache', 'Compute', 'Sync', and 'All Services (+8)'. The main content area is titled 'Create a New Working Environment' and 'Details and Credentials'. It features a 'Previous Step' button and a table with the following details:

Instance Profile	322944748816	demo.netapp.com-cloud-vol...
Credential Name	Account ID	Marketplace Subscription

Below the table, there are two sections: 'Details' and 'Credentials'. The 'Details' section includes a text input for 'Working Environment Name (Cluster Name)' with the value 'hybirdawsco', an 'Add Tags' button, and a note 'Optional Field | Up to four tags'. The 'Credentials' section includes a 'User Name' dropdown with 'admin' selected, a 'Password' field with masked characters, and a 'Confirm Password' field with masked characters. A 'Continue' button is at the bottom right. The footer shows 'Cloud Manager 3.9.9 | Build 3 | Aug 18, 2021 06:13:05 am UTC'.

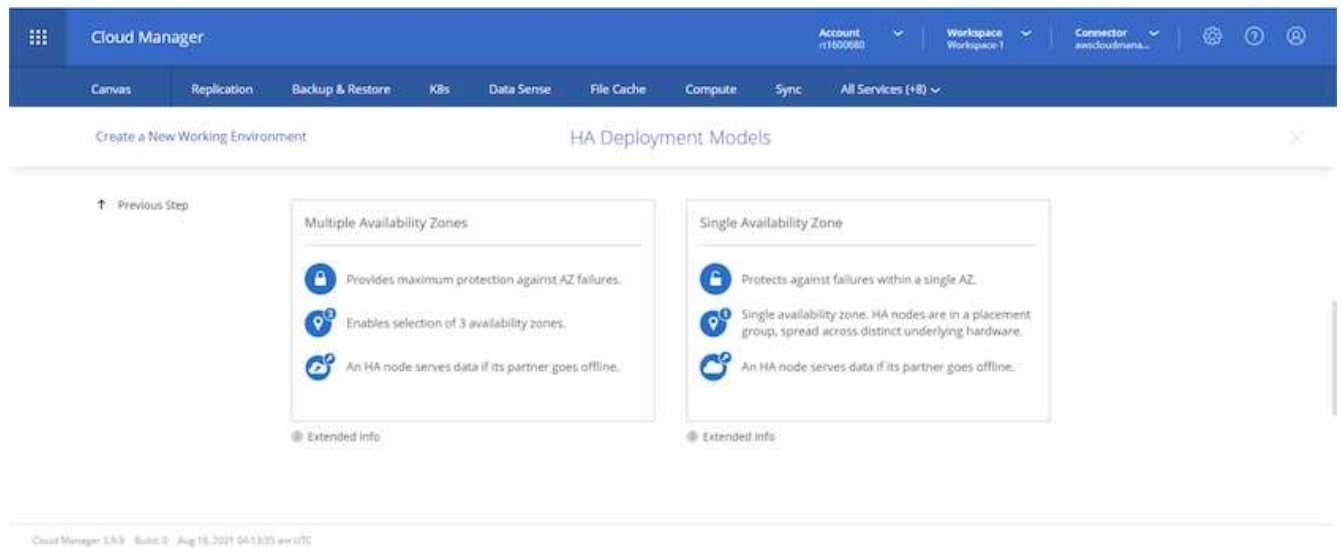
11. 選擇您要部署的其他服務。若要深入瞭解這些服務、請造訪 "NetApp Cloud首頁"。

The screenshot shows the 'Services' step in the Cloud Manager console. The top navigation bar is the same as the previous screenshot. The main content area is titled 'Create a New Working Environment' and 'Services'. It features a 'Previous Step' button and a list of services with toggle switches and dropdown menus:

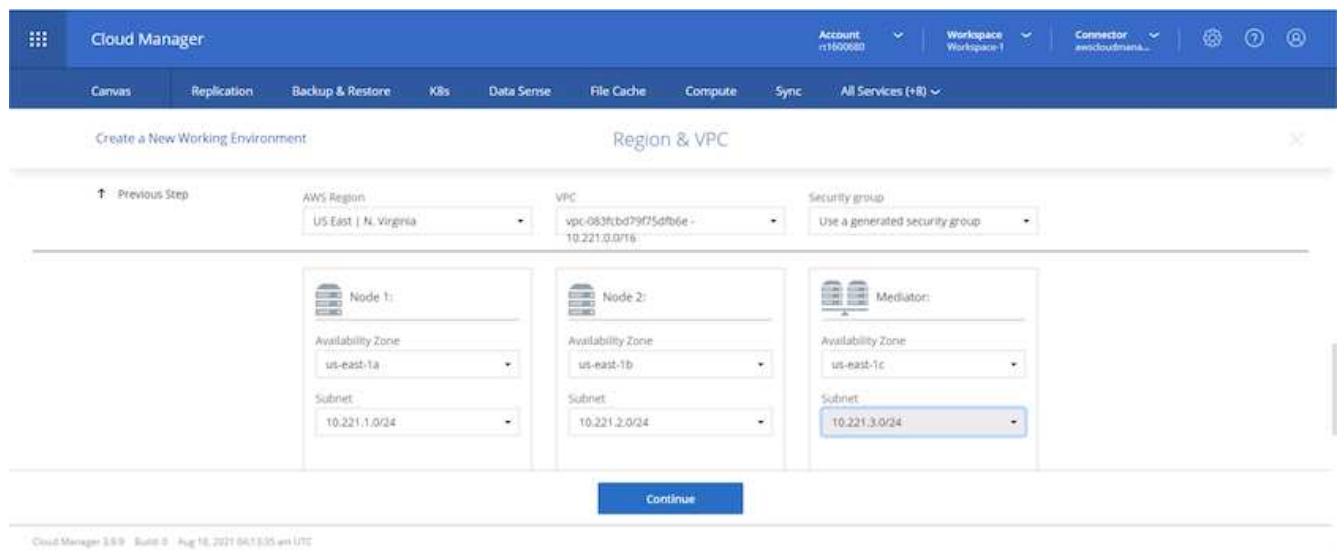
- Data Sense & Compliance: Toggle is on, dropdown is open.
- Backup to Cloud: Toggle is on, dropdown is open.
- Monitoring: Toggle is on, dropdown is open.

A 'Continue' button is at the bottom right. The footer shows 'Cloud Manager 3.9.9 | Build 3 | Aug 18, 2021 06:13:05 am UTC'.

12. 選擇是部署在多個可用度區域（重新設定三個子網路的組權、每個子網路位於不同的AZ）、還是部署單一可用度區域。我選擇了多個AZs。



13. 為要部署的叢集選擇區域、VPC和安全性群組。在本節中、您也可以指派每個節點（和中介）的可用度區域、以及它們所佔用的子網路。



14. 選擇節點和中介器的連線方法。

Cloud Manager

Account: rt1600680 | Workspace: Workspace 1 | Connector: awscloudmana...

Canvas | Replication | Backup & Restore | K8s | Data Sense | File Cache | Compute | Sync | All Services (+8)

Create a New Working Environment | Connectivity & SSH Authentication

Previous Step

**Nodes**

SSH Authentication Method: Password

**Mediator**

Security Group: Use a generated security group

Key Pair Name: rt1600680

Internet Connection Method: Public IP address

Continue

Cloud Manager 3.8.9 | Build 2 | Aug 18, 2021 06:13:35 am UTC



中介者需要與AWS API通訊。只要在部署了中介EC2執行個體之後、API就能連線、就不需要公有IP位址。

1. 浮動IP位址可用來存取Cloud Volumes ONTAP 各種使用的IP位址、包括叢集管理和資料服務IP。這些位址必須是網路中無法路由傳送的位址、而且必須新增至AWS環境中的路由表。在容錯移轉期間、必須啟用一致的HA配對IP位址。如需浮動IP位址的詳細資訊、請參閱 ["NetApp雲端文件"](#)。

Cloud Manager

Account: rt1618349 | Workspace: Workspace 1 | Connector: awscloudmana...

Canvas | Replication | Backup & Restore | K8s | Data Sense | File Cache | Compute | Sync | All Services (+8)

Create a New Working Environment | Floating IPs

Previous Step

Floating IP addresses are required for cluster and SVM access and for NFS and CIFS data access. These floating IPs can migrate between HA nodes if failures occur. To access the data from outside the VPC, you can set up an AWS transit gateway.

You must specify IP addresses that are outside of the CIDR blocks for all VPCs in the selected AWS region.

Floating IP address for cluster management: 10.222.0.200

Floating IP address 1 for NFS and CIFS data: 10.222.0.201

Floating IP address 2 for NFS and CIFS data: 10.222.0.202

Floating IP address for SVM management (Optional): Enter Floating IP Address

Continue

2. 選取要新增浮動IP位址的路由表。這些路由表可供用戶端用來與Cloud Volumes ONTAP 無法分享的資料。

Cloud Manager

Account: r1600680 | Workspace: Workspace 1 | Connector: awscloudmana...

Canvas | Replication | Backup & Restore | K8s | Data Sense | File Cache | Compute | Sync | All Services (+8)

Create a New Working Environment

### Route Tables

↑ Previous Step

Select the route tables that should include routes to the floating IP addresses. This enables client access to the Cloud Volumes ONTAP HA pair. If you leave a route table unselected, clients that are associated with the route table cannot access the HA pair.

Additional information ⓘ

<input checked="" type="checkbox"/>	Name	Main	ID	Associate with Subnet	Tags
<input checked="" type="checkbox"/>	private_rt_r1600680	No	rtb-08b4cb88f5c826a5	3 Subnets	1 Tags
<input checked="" type="checkbox"/>	public_rt_r1600680	Yes	rtb-0e46720d0da10c593	1 Subnets	1 Tags

2 Route Tables | The main route table is the default for the VPC

Continue

Cloud Manager 3.8.9 | Build 0 | Aug 18, 2021 06:13:35 am UTC

- 選擇是啟用AWS託管加密、還是啟用AWS KMS來加密ONTAP 支援的支援、以加密整個過程中的所有資料磁碟。

Cloud Manager


Account: r1600680 | Workspace: Workspace 1 | Connector: awscloudmana...

Canvas | Replication | Backup & Restore | K8s | Data Sense | File Cache | Compute | Sync | All Services (+8)

Create a New Working Environment

### Data Encryption

↑ Previous Step

 AWS Managed Encryption

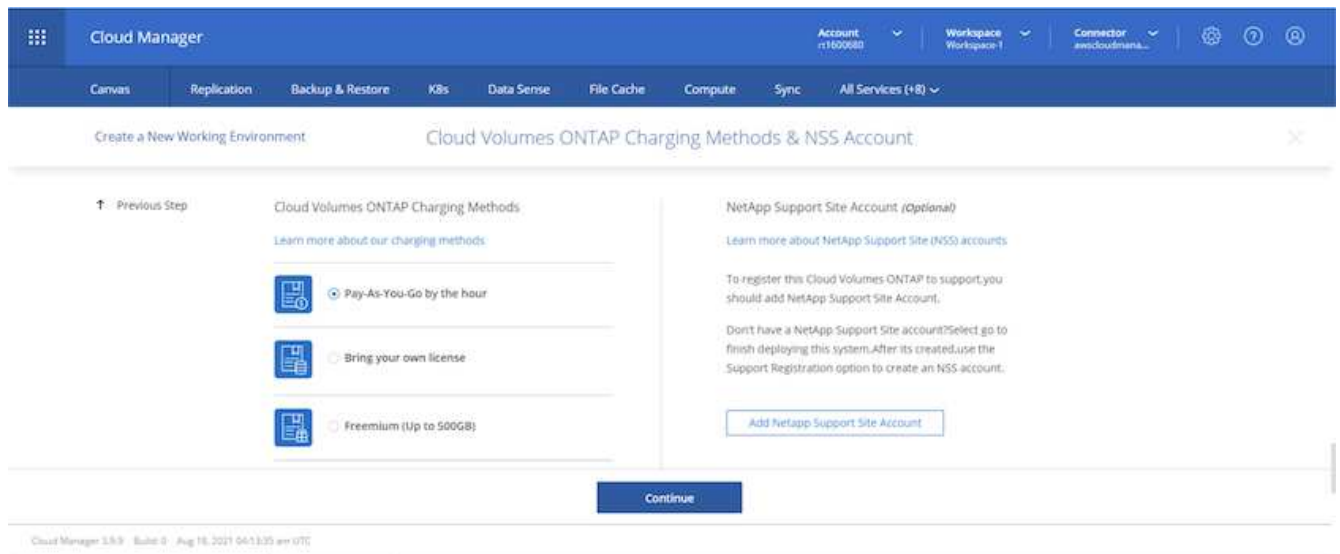
AWS is responsible for data encryption and decryption operations. Key management is handled by AWS key management services.

Default Master Key: aws/ebs

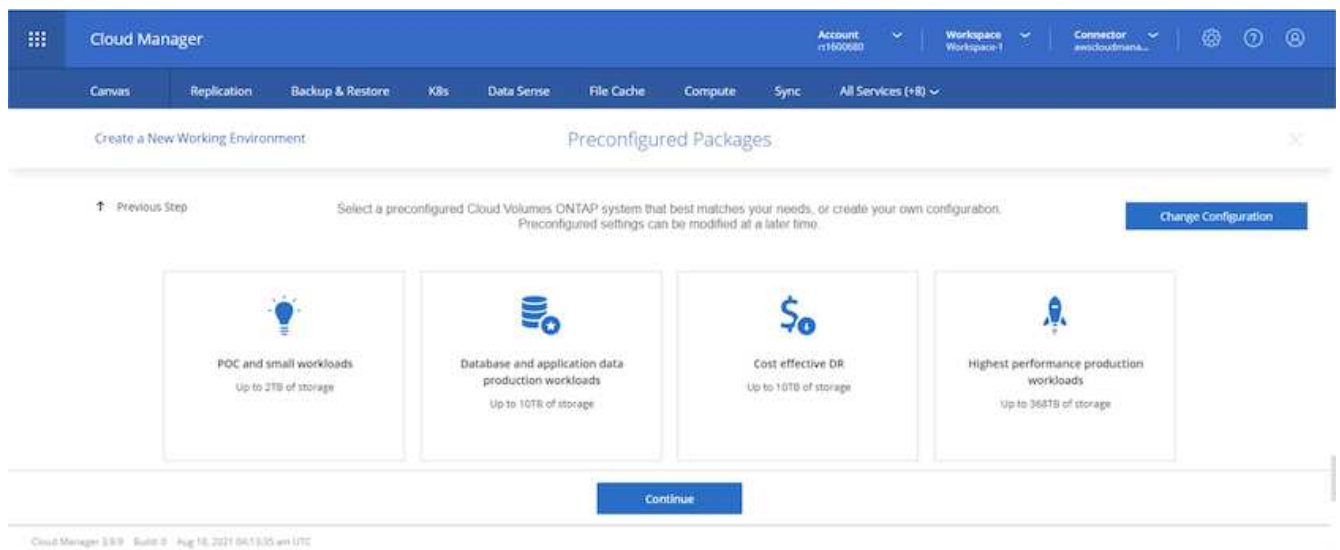
Continue

Cloud Manager 3.8.9 | Build 0 | Aug 18, 2021 06:13:35 am UTC

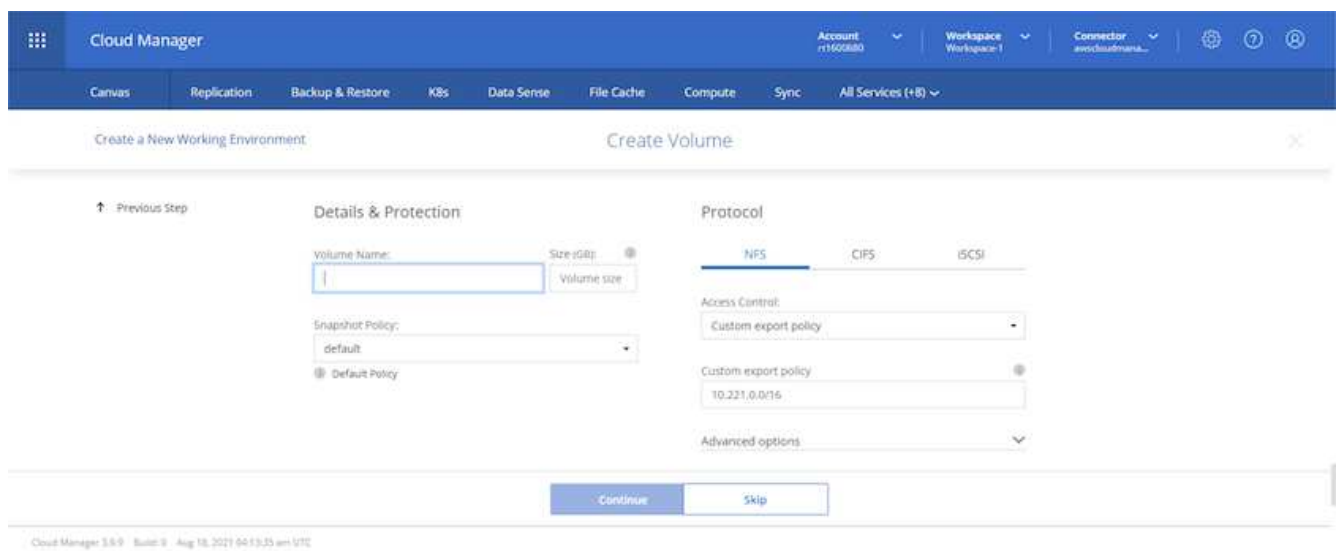
- 選擇您的授權模式。如果您不知道該選擇哪一項、請聯絡您的NetApp代表。



5. 選取最適合您使用案例的組態。這與「必要條件」頁面所涵蓋的規模調整考量有關。



6. 也可以建立Volume。這是不必要的、因為後續步驟使用SnapMirror、為我們建立磁碟區。



7. 請檢閱所做的選擇、並勾選方塊、確認您瞭解Cloud Manager已將資源部署到AWS環境。準備好後、按一下「Go (執行)」

Cloud Manager

Account: r1600680 | Workspace: Workspace 1 | Connector: #wicloudmana...

Canvas | Replication | Backup & Restore | KMs | Data Sense | File Cache | Compute | Sync | All Services (+8) v

Create a New Working Environment | Review & Approve

Previous Step: hybridawsco | us-east-1 | HA | Show API request

☒ I understand that in order to activate support, I must first register Cloud Volumes ONTAP with NetApp. More information >

☒ I understand that Cloud Manager will allocate the appropriate AWS resources to comply with my above requirements. More information >

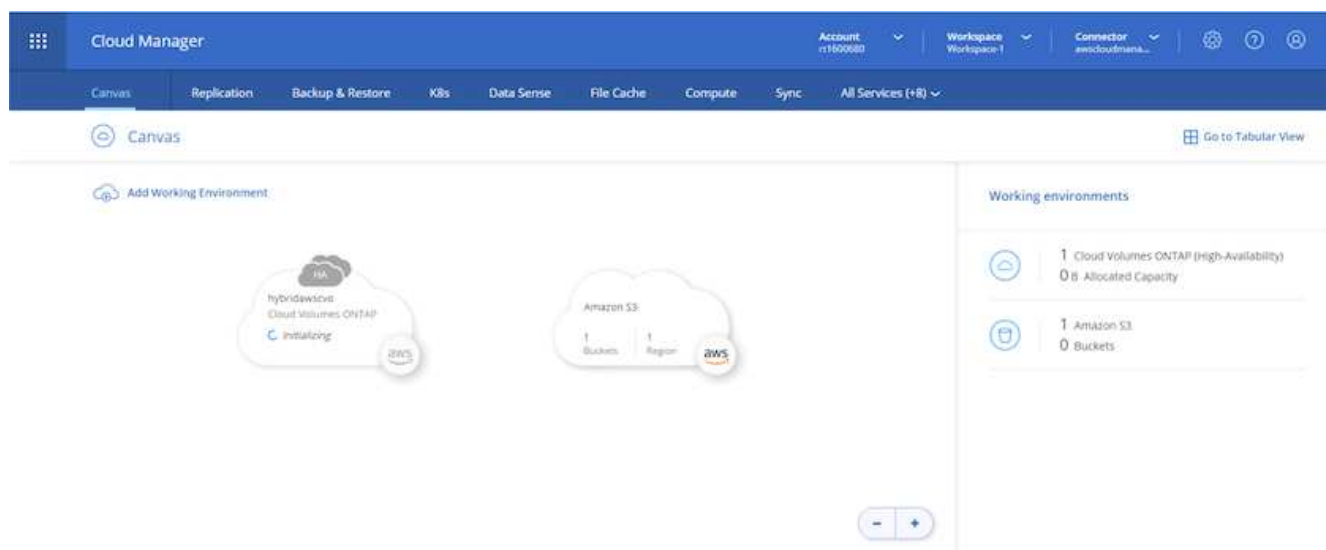
Overview | Networking | Storage

Storage System:	Cloud Volumes ONTAP HA	HA Deployment Model:	Multiple Availability Zones
License Type:	Cloud Volumes ONTAP Standard	Encryption:	AWS Managed
Capacity Limit:	10TB	Customer Master Key:	aws/ebs

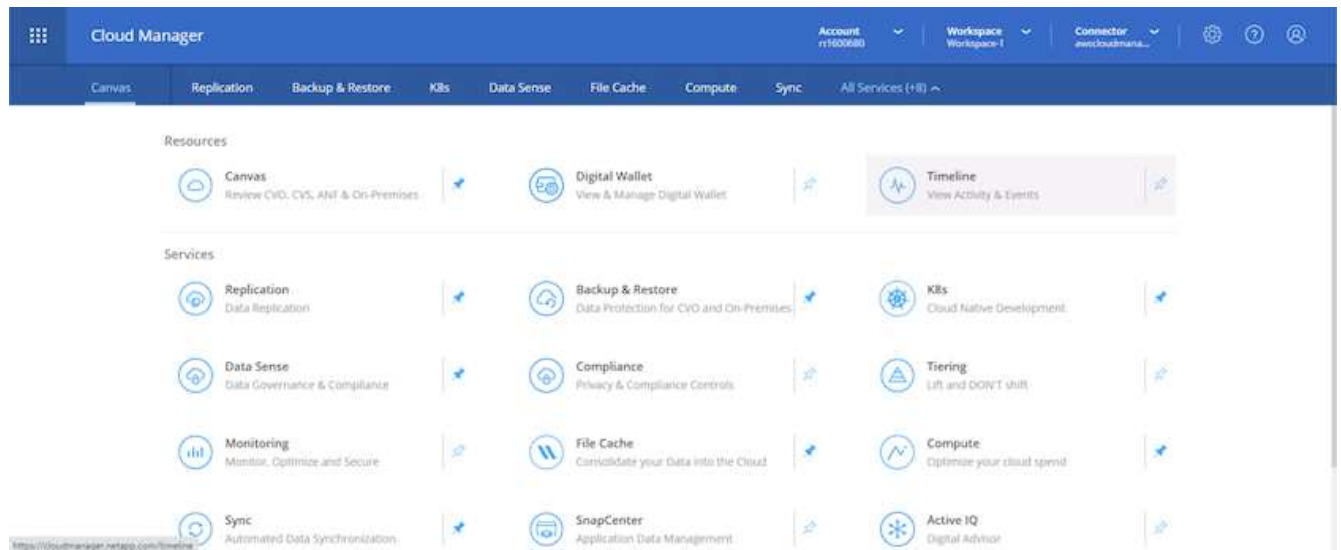
Go

Cloud Manager 3.9.9 Build 0 Aug 18, 2021 06:13:05 am UTC

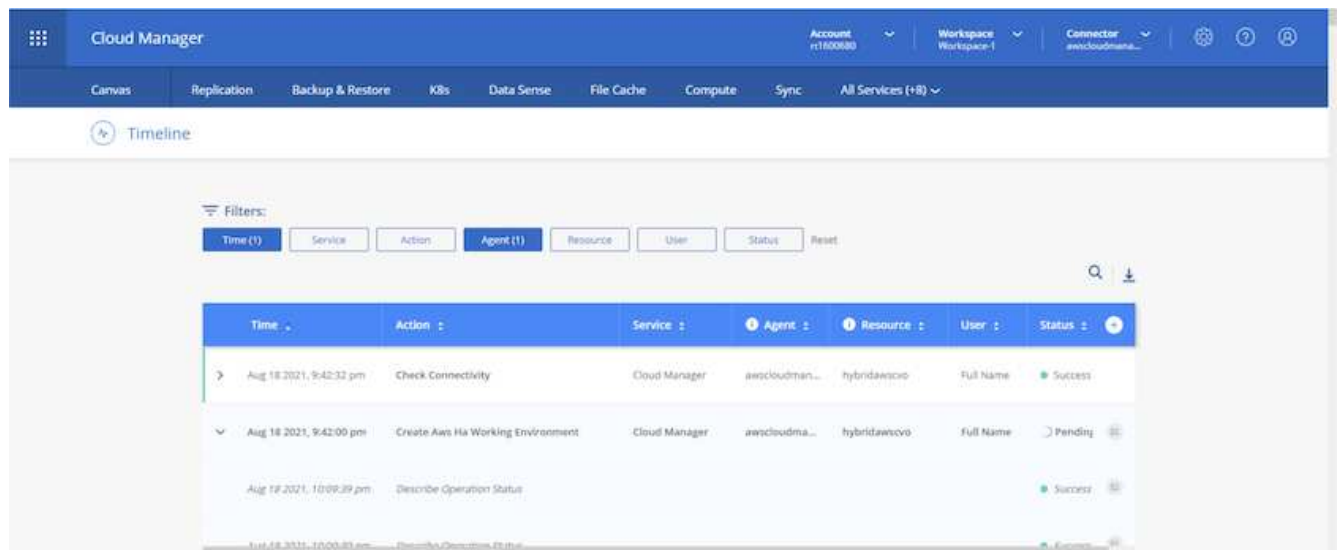
8. 現在、即可開始部署程序。Cloud Volumes ONTAPCloud Manager使用AWS API和雲端形成堆疊來部署Cloud Volumes ONTAP 功能。然後將系統設定為符合您的規格、讓您立即使用隨裝即用的系統。此程序的時間取決於所做的選擇。



9. 您可以瀏覽至時間軸來監控進度。

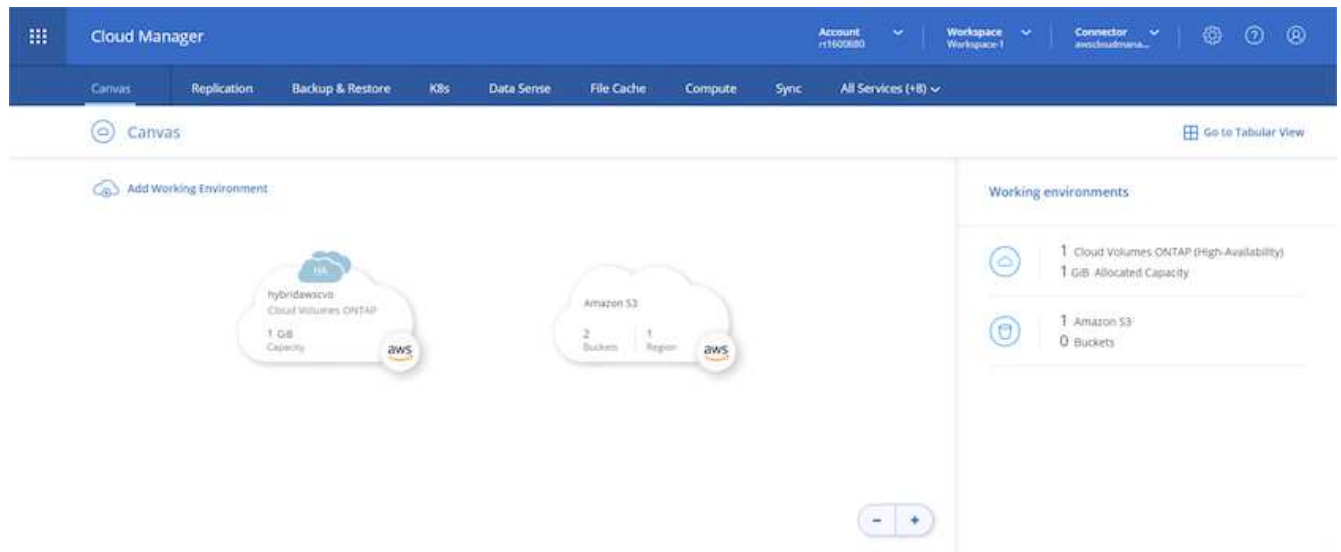


10. 時間軸可稽核Cloud Manager中執行的所有動作。您可以檢視Cloud Manager在設定AWS和ONTAP 支援叢集期間所發出的所有API呼叫。這也可有效用來疑難排解您所面臨的任何問題。



11. 部署完成後、CVO叢集會顯示在目前容量的畫版上。目前狀態下的整個叢集已經過完整設定、可提供真正的隨裝即用體驗。ONTAP



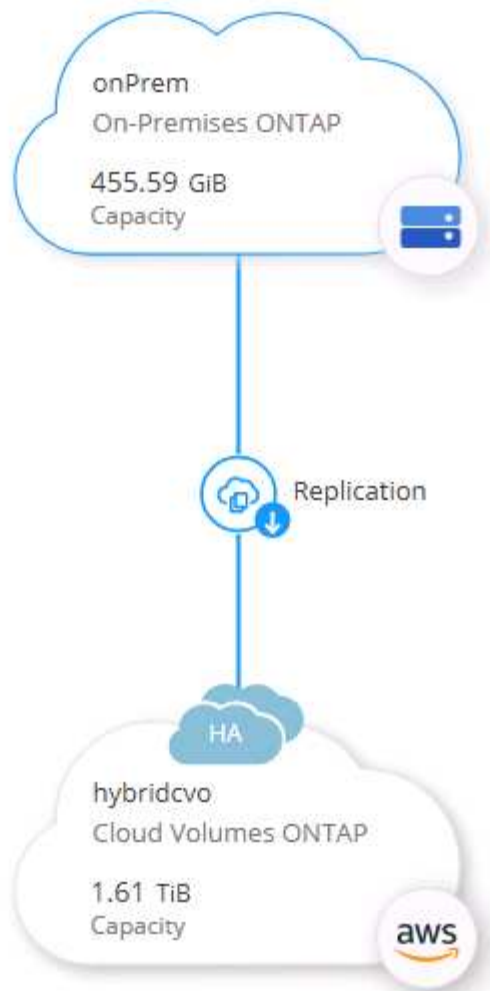


設定**SnapMirror**從內部部署到雲端

現在ONTAP 您已部署來源的一套來源系統和目的地ONTAP 的一套系統、您可以將包含資料庫資料的磁碟區複寫到雲端。

如需ONTAP SnapMirror相容的版本資訊指南、請參閱 "[SnapMirror相容性對照表](#)"。

1. 按一下來源ONTAP 支援系統（內部部署）、然後將其拖放到目的地、選取「Replication（複製）」>「Enable（啟用）」、或選取「Replication（複製）」>「Menu（功能表）」>「Replicate（複製）」。



選取「啟用」。

#### SERVICES

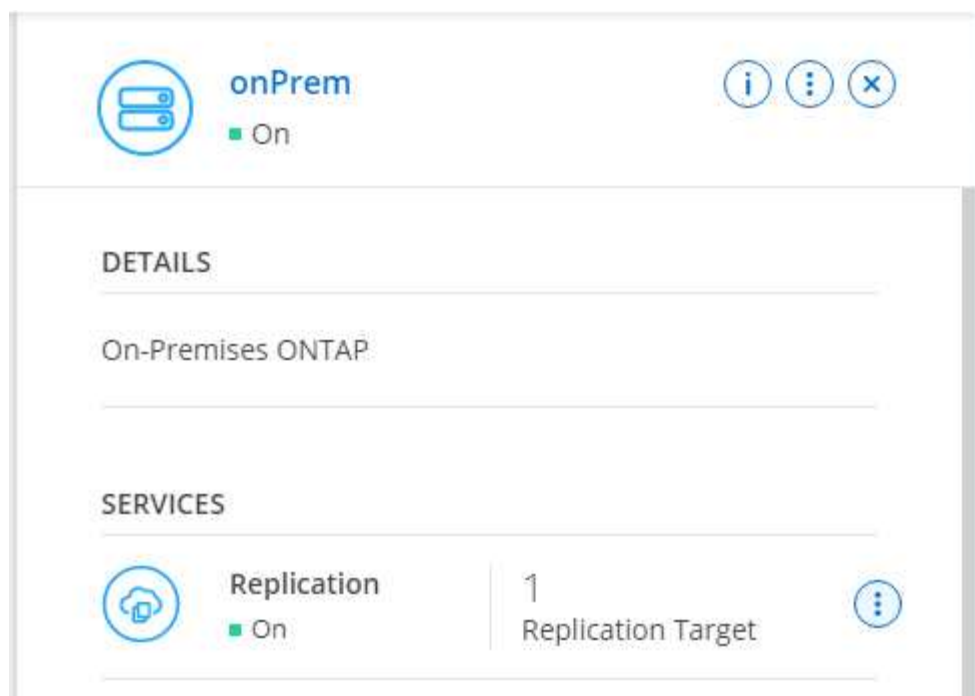


Replication  
■ Off

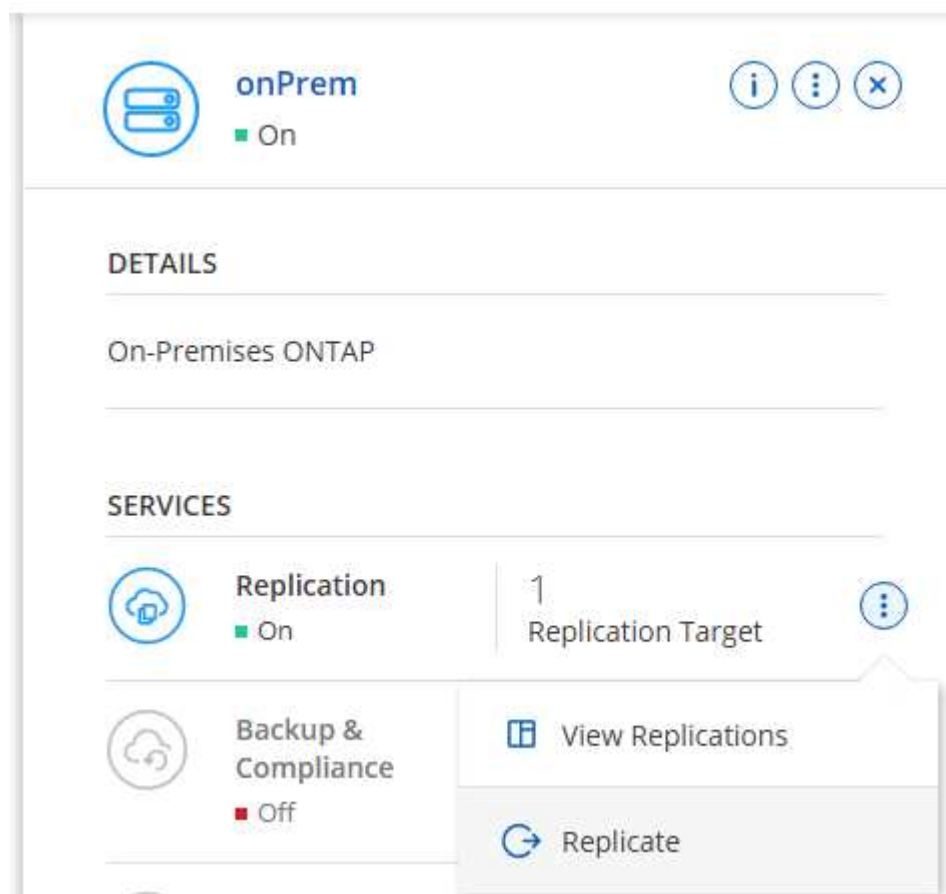
Enable



或選項。



複寫：



2. 如果您沒有拖放、請選擇要複寫的目的地叢集。

## Replicate Data

**From: onPrem**

**To: select the Working Environment to which you want to replicate data**

**Replication Target**

hybridcvo (Cloud Volumes ONTAP)

Start Replication Wizard

Cancel

- 選擇您要複寫的磁碟區。我們複寫了資料和所有記錄磁碟區。

Replication Setup
Source Volume Selection
✕

Volume Name	Status	Storage VM Name	Tiering Policy	Volume Type	Capacity	Disk Used
rhel2_u03	ONLINE	svm_onPrem	None	RW	100 GB	7.29 GB
rhel2_u0309232119421203118	ONLINE	svm_onPrem	None	RW	100 GB	35.83 MB
sql1_data	ONLINE	svm_onPrem	None	RW	53.37 GB	45.09 GB
sql1_log	ONLINE	svm_onPrem	None	RW	21.35 GB	18.16 GB
sql1_snapctr	ONLINE	svm_onPrem	None	RW	24.87 GB	21.23 GB

Cloud Manager 3.9.10 Build: 2 Sep 12, 2021 06:47:41 am UTC

- 選擇目的地磁碟類型和分層原則。對於災難恢復、我們建議使用SSD做為磁碟類型、並維持資料分層。資料分層將鏡射資料分層儲存至低成本的物件儲存設備、並節省您在本機磁碟上的成本。當您中斷關係或複製磁碟區時、資料會使用快速的本機儲存設備。

Replication Setup Destination Disk Type and Tiering ×


[↑ Previous Step](#)

Destination Disk Type

General Purpose SSD

General Purpose SSD - Dynamic Performance

Throughput Optimized HDD

 S3 Tiering What are storage tiers?

☒ Enabled ☐ Disabled

Note: If you enable S3 tiering, thin provisioning must be enabled on volumes created in this aggregate.

[Continue](#)

Cloud Manager 3.9.10 Build: 2 Sep 12, 2021 06:47:41 am UTC

5. 選擇目的地Volume名稱：我們選擇了「[SOUR資料\_ Volume名稱]\_DR」。

## Destination Volume Name

Destination Volume Name

sql1\_data\_dr

Destination Aggregate

Automatically select the best aggregate

6. 選取複寫的最大傳輸率。這可讓您在連線至雲端（例如VPN）的頻寬過低時、節省頻寬。

## Max Transfer Rate

You should limit the transfer rate. An unlimited rate might negatively impact the performance of other applications and it might impact your Internet performance.


- ☒ Limited to:  MB/s
- ☐ Unlimited (recommended for DR only machines)

7. 定義複寫原則。我們選擇了鏡射、它會將最新的資料集複寫到目的地Volume中。您也可以根據需求選擇不同的原則。

## Replication Policy


Default Policies

Additional Policies

 Mirror

Typically used for disaster recovery

More info

 Mirror and Backup (1 month retention)

Configures disaster recovery and long-term retention of backups on the same destination volume

More info

8. 選擇觸發複寫的排程。NetApp建議針對資料磁碟區設定「每日」排程、並針對記錄磁碟區設定「每小時」排程、不過可根據需求加以變更。

Replication Setup Schedule

---

↑ Previous Step

Select a replication schedule

One-time copy

No schedule

10min

Every hour  
Minutes: 0th, 10th, 20th, 3...

12-hourly

Every day  
Hours: 12 AM and 12 PM  
Minutes: 15th minute

5min

Every hour  
Minutes: 0th, 5th, 10th, 15t...

6-hourly

Every day  
Hours: 12 AM, 6 AM, 12 PM...  
Minutes: 15th minute

8hour

Every day  
Hours: 2 AM, 10 AM and 6 ...  
Minutes: 15th minute

daily

Every day  
Hours: 12 AM  
Minutes: 10th minute

hourly

Every hour  
Minutes: 5th minute

monthly

Every month  
Days: 2nd  
Hours: 12 AM  
Minutes: 20th minute

pg-15-minutely

Every hour

pg-6-hourly

Every day

pg-daily

Every day

pg-daily-set2

Every day

9. 檢閱輸入的資訊、按一下「Go（執行）」以觸發叢集對等端點和SVM對等端點（如果這是您第一次在兩個叢集之間複寫）、然後實作並初始化SnapMirror關係。

Replication Setup Review & Approve

---

↑ Previous Step

Review your selection and start the replication process

Source

onPrem

sql1\_data

Destination

hybridcvo

sql1\_data\_copy

☒ I understand that Cloud Manager will allocate the appropriate AWS resources to comply with my above requirements.  
[More information >](#)

Source Volume Allocated Size:	53.37 GB	Destination Thin Provisioning:	Yes
Source Volume Used Size:	45.09 GB	Destination Aggregate:	aggr1 (Automatically s...
Source Thin Provisioning:	Yes	Destination Storage VM:	svm_hybridcvo
Destination Volume Allocated Size:	53.37 GB	Max Transfer Rate:	100 MB/s
Destination Volume Disk Type:	General Purpose SSD (...)	SnapMirror Policy:	Mirror
Capacity Tiering:	S3	Replication Schedule:	daily

[Go](#)

10. 繼續執行資料磁碟區和記錄磁碟區的此程序。
11. 若要檢查所有關係、請瀏覽至Cloud Manager中的「Replication（複寫）」索引標籤。您可在此管理關係、並查看其狀態。

Replication

7 Volume Relationships

153.32 GiB Replicated Capacity

0 Currently Transferring

7 Healthy

0 Failed

7 Volume Relationships

Health Status	Source Volume	Target Volume	Total Transfer Time	Status	Mirror State	Last Successful Transfer
	rhel2_u01 onPrem	rhel2_u01_dr hybridcvo	43 minutes 43 seconds	idle	snapmirrored	Sep 30, 2021, 12:12:50 AM 19.73 MiB
	rhel2_u02 onPrem	rhel2_u02_dr hybridcvo	1 hour 37 minutes 59 seconds	idle	snapmirrored	Sep 30, 2021, 2:37:08 PM 239.78 MiB
	rhel2_u03 onPrem	rhel2_u03_dr hybridcvo	16 hours 1 minute 9 seconds	idle	snapmirrored	Sep 30, 2021, 4:07:14 PM 225.37 KiB
	sql1_data onPrem	sql1_data_dr hybridcvo	1 hour 6 minutes 50 seconds	idle	snapmirrored	Sep 30, 2021, 12:12:28 AM 24.56 KiB

12. 複寫完所有磁碟區之後、您會處於穩定狀態、準備好繼續進行災難恢復和開發/測試工作流程。

### 3：為資料庫工作負載部署EC2運算執行個體

AWS已針對各種工作負載預先設定EC2運算執行個體。執行個體類型的選擇決定了CPU核心數量、記憶體容量、儲存類型和容量、以及網路效能。在使用案例中、除了OS分割區之外、用於執行資料庫工作負載的主儲存區是從CVO或FSX ONTAP 還原儲存引擎配置。因此、要考量的主要因素是CPU核心、記憶體和網路效能等級的選擇。典型的AWS EC2執行個體類型可在這裡找到：["EC2執行個體類型"](#)。

#### 調整運算執行個體規模

1. 根據所需的工作負載、選取適當的執行個體類型。需要考量的因素包括要支援的商業交易數量、並行使用者數量、資料集規模調整等。
2. EC2執行個體部署可透過EC2儀表板啟動。確切的部署程序不在本解決方案的範圍之內。請參閱 ["Amazon EC2"](#) 以取得詳細資料。

#### 適用於Oracle工作負載的Linux執行個體組態

本節包含部署EC2 Linux執行個體之後的其他組態步驟。

1. 將Oracle待命執行個體新增至DNS伺服器、以便SnapCenter 在支援範圍內解析名稱。
2. 新增Linux管理使用者ID作為SnapCenter 不含密碼的Sudo權限的Sudo OS認證。在EC2執行個體上啟用具有SSH密碼驗證的ID。（依預設、EC2執行個體的SSH密碼驗證和無密碼Sudo會關閉。）
3. 設定Oracle安裝、使其符合內部部署的Oracle安裝、例如OS修補程式、Oracle版本和修補程式等。
4. NetApp Ansible DB自動化角色可用於設定EC2執行個體、以用於資料庫開發/測試和災難恢復使用案例。自動化程式碼可從NetApp Public GitHub網站下載：["Oracle 19c自動化部署"](#)。目標是在EC2執行個體上安裝及設定資料庫軟體堆疊、以符合內部部署作業系統和資料庫組態。

#### SQL Server工作負載的Windows執行個體組態

本節列出最初部署EC2 Windows執行個體之後的其他組態步驟。

1. 擷取Windows系統管理員密碼、以透過RDP登入執行個體。
2. 停用Windows防火牆、將主機加入Windows SnapCenter 支援網域、然後將執行個體新增至DNS伺服器以進行名稱解析。
3. 配置SnapCenter 一個可儲存SQL Server記錄檔的流通記錄磁碟區。
4. 在Windows主機上設定iSCSI、以掛載磁碟區並格式化磁碟機。
5. 同樣地、許多先前的工作都可以透過適用於SQL Server的NetApp自動化解決方案來自動化。如需最新發表的角色與解決方案、請參閱NetApp自動化公有GitHub網站：["NetApp自動化"](#)。



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