Clone IBM Db2 resource backups

SnapCenter Software 6.0

NetApp
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Clone IBM Db2 resource backups

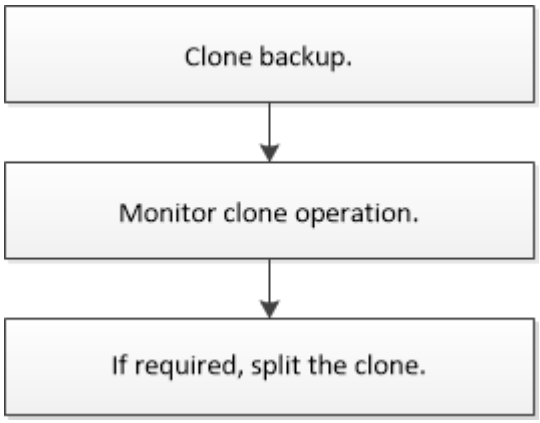
Clone workflow

The clone workflow includes performing the clone operation and monitoring the operation.

About this task

- You can clone on the source IBM Db2 server.
- You might clone resource backups for the following reasons:
  - To test functionality that has to be implemented using the current resource structure and content during application development cycles
  - For data extraction and manipulation tools when populating data warehouses
  - To recover data that was mistakenly deleted or changed

The following workflow shows the sequence in which you must perform the clone operation:



You can also use PowerShell cmdlets manually or in scripts to perform backup, restore, and clone operations. The SnapCenter cmdlet help and the cmdlet reference information contain detailed information about PowerShell cmdlets.

After you finish

After cloning the automatically discovered Db2 resources, the cloned resource is marked as manual resource. Click **Refresh resources** to recover the cloned Db2 resource. When you delete the clone, the storage and the host also gets cleaned up.

If you do not refresh the resources after the clone operation and attempt to delete the clone, the storage and the host will not be cleaned up. You must delete the entries manually in fstab.

Clone a IBM Db2 backup

You can use SnapCenter to clone a backup. You can clone from primary or secondary backup.

Before you begin

- You should have backed up the resources or resource group.
- You should ensure that the aggregates hosting the volumes should be in the assigned aggregates list of

the storage virtual machine (SVM).

- While creating a clone for Db2 on an alternate host, you must create a n-1 directory structure for the clone mount path same as the original mount path on the other host. The mount path should have *755* execution permission.
- For pre clone or post clone commands, you should check if the commands exist in the command list available on the plug-in host from the following paths:
  - Default location on the Windows host: *C:\Program Files\NetApp\SnapCenter\Snapcenter Plug-in Creator\etc\allowed_commands.config*
  - Default location on the Linux host: */opt/NetApp/snapcenter/scc/etc/allowed_commands.config*

If the commands do not exist in the command list, then the operation will fail.

About this task

- For information about clone split operation limitations, see ONTAP 9 Logical Storage Management Guide.
- For ONTAP 9.12.1 and below version, the clones created from the SnapLock Vault Snapshots as part of restore will inherit the SnapLock Vault expiry time. Storage admin should manually cleanup the clones post the SnapLock expiry time.

SnapCenter UI

Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the Resources page, filter resources from the **View** drop-down list based on resource type.

   The resources are displayed along with information such as type, host, associated resource groups and policies, and status.

3. Select the resource or resource group.

   You must select a resource if you select a resource group.

   The resource or resource group topology page is displayed.

4. From the Manage Copies view, select **Backups** either from the primary or secondary (mirrored or vaulted) storage systems.
5. Select the data backup from the table, and then click  .
6. In the Location page, perform the following actions:

For this field…	Do this…
Clone server	Choose a host on which the clone should be created.
Target Clone Instance	Enter the target Db2 clone instance ID to clone from the existing backups. This is applicable only for ANF storage type resource.
Target Clone Name	Enter the name of the clone. This is applicable only for Db2 database resource.
NFS Export IP Address	Enter IP addresses or the host names on which the cloned volumes will be exported. This is applicable only to NFS storage type resource.
Capacity Pool Max. Throughput (MiB/s)	Enter the maximum throughput of a capacity pool.

7. In the Scripts page, perform the following steps:

   The scripts are run on the plug-in host.

a. Enter the commands for pre clone or post clone that should be run before or after the clone operation, respectively.
   - Pre clone command: delete existing databases with the same name
   - Post clone command: verify a database or start a database.

b. Enter the mount command to mount a file system to a host.

   Mount command for a volume or qtree on a Linux machine:

   Example for NFS: `mount VSERVER_DATA_IP:%VOLUME_NAME_Clone /mnt`

8. In the Notification page, from the **Email preference** drop-down list, select the scenarios in which you want to send the emails.

   You must also specify the sender and receiver email addresses, and the subject of the email.

9. Review the summary, and then click **Finish**.
10. Monitor the operation progress by clicking **Monitor** > **Jobs**.

After you finish

After cloning the automatically discovered Db2 resources, the cloned resource is marked as manual resource. Click **Refresh resources** to recover the cloned Db2 resource. When you delete the clone, the storage and the host also gets cleaned up.

If you do not refresh the resources after the clone operation and attempt to delete the clone, the storage and the host will not be cleaned up. You must delete the entries manually in fstab.

PowerShell cmdlets

Steps

1. Initiate a connection session with the SnapCenter Server for a specified user by using the Open-SmConnection cmdlet.

```
Open-SmConnection  -SMSbaseurl  https://snapctr.demo.netapp.com:8146
```

2. List the backups that can be cloned by using the Get-SmBackup or Get-SmResourceGroup cmdlet.

   This example displays information about all available backups:

```
C:\PS>PS C:\> Get-SmBackup

BackupId   BackupName                    BackupTime   BackupType
--------   ----------                    ----------   ----------
1          Payroll Dataset_vise-f6_08...  8/4/2015     Full Backup
                                          11:02:32 AM

2          Payroll Dataset_vise-f6_08...  8/4/2015
                                          11:23:17 AM
```

This example displays information about a specified resource group, its resources, and associated policies:

```
PS C:\> Get-SmResourceGroup -ListResources –ListPolicies

Description :
CreationTime : 8/4/2015 3:44:05 PM
ModificationTime : 8/4/2015 3:44:05 PM
EnableEmail : False
EmailSMTPServer :
EmailFrom :
EmailTo :
EmailSubject :
EnableSysLog : False
ProtectionGroupType : Backup
EnableAsupOnFailure : False
Policies : {FinancePolicy}
HostResourceMaping : {}
Configuration : SMCoreContracts.SmCloneConfiguration
LastBackupStatus :
VerificationServer :
EmailBody :
EmailNotificationPreference : Never
VerificationServerInfo : SMCoreContracts.SmVerificationServerInfo
SchedulerSQLInstance :
CustomText :
CustomSnapshotFormat :
SearchResources : False
ByPassCredential : False
IsCustomSnapshot :
MaintenanceStatus : Production
PluginProtectionGroupTypes : {SMSQL}
Name : Payrolldataset
Type : Group
Id : 1
Host :
UserName :
Passphrase :
Deleted : False
Auth : SMCoreContracts.SmAuth
IsClone : False
CloneLevel : 0
ApplySnapvaultUpdate : False
ApplyRetention : False
RetentionCount : 0
RetentionDays : 0
```

```
ApplySnapMirrorUpdate : False
SnapVaultLabel :
MirrorVaultUpdateRetryCount : 7
AppPolicies : {}
Description : FinancePolicy
PreScriptPath :
PreScriptArguments :
PostScriptPath :
PostScriptArguments :
ScriptTimeOut : 60000
DateModified : 8/4/2015 3:43:30 PM
DateCreated : 8/4/2015 3:43:30 PM
Schedule : SMCoreContracts.SmSchedule
PolicyType : Backup
PluginPolicyType : SMSQL
Name : FinancePolicy
Type :
Id : 1
Host :
UserName :
Passphrase :
Deleted : False
Auth : SMCoreContracts.SmAuth
IsClone : False
CloneLevel : 0
clab-a13-13.sddev.lab.netapp.com
DatabaseGUID :
SQLInstance : clab-a13-13
DbStatus : AutoClosed
DbAccess : eUndefined
IsSystemDb : False
IsSimpleRecoveryMode : False
IsSelectable : True
SqlDbFileGroups : {}
SqlDbLogFiles : {}
AppFileStorageGroups : {}
LogDirectory :
AgName :
Version :
VolumeGroupIndex : -1
IsSecondary : False
Name : TEST
Type : SQL Database
Id : clab-a13-13\TEST
Host : clab-a13-13.sddev.mycompany.com
UserName :
```

```
Passphrase :
Deleted : False
Auth : SMCoreContracts.SmAuth
IsClone : False
```

3. Initiate a clone operation from an existing backup by using the New-SmClone cmdlet.

   This example creates a clone from a specified backup with all logs:

```
PS C:\> New-SmClone
-BackupName payroll_dataset_vise-f3_08-05-2015_15.28.28.9774
-Resources @{"Host"="vise-f3.sddev.mycompany.com";
"Type"="SQL Database";"Names"="vise-f3\SQLExpress\payroll"}
-CloneToInstance vise-f3\sqlexpress -AutoAssignMountPoint
-Suffix _clonefrombackup
-LogRestoreType All -Policy clonefromprimary_ondemand

PS C:> New-SmBackup -ResourceGroupName PayrollDataset -Policy
FinancePolicy
```

   This example creates a clone to a specified Microsoft SQL Server instance:

```
PS C:\> New-SmClone
-BackupName "BackupDS1_NY-VM-SC-SQL_12-08-2015_09.00.24.8367"
-Resources @{"host"="ny-vm-sc-sql";"Type"="SQL Database";
"Names"="ny-vm-sc-sql\AdventureWorks2012_data"}
-AppPluginCode SMSQL -CloneToInstance "ny-vm-sc-sql"
-Suffix _CLPOSH -AssignMountPointUnderPath "C:\SCMounts"
```

4. View the status of the clone job by using the Get-SmCloneReport cmdlet.

   This example displays a clone report for the specified job ID:

```
PS C:\> Get-SmCloneReport -JobId 186

SmCloneId : 1
SmJobId : 186
StartDateTime : 8/3/2015 2:43:02 PM
EndDateTime : 8/3/2015 2:44:08 PM
Duration : 00:01:06.6760000
Status : Completed
ProtectionGroupName : Draper
SmProtectionGroupId : 4
PolicyName : OnDemand_Clone
SmPolicyId : 4
BackupPolicyName : OnDemand_Full_Log
SmBackupPolicyId : 1
CloneHostName : SCSPR0054212005.mycompany.com
CloneHostId : 4
CloneName : Draper__clone__08-03-2015_14.43.53
SourceResources : {Don, Betty, Bobby, Sally}
ClonedResources : {Don_DRAPER, Betty_DRAPER, Bobby_DRAPER,
                   Sally_DRAPER}
```

The information regarding the parameters that can be used with the cmdlet and their descriptions can be obtained by running *Get-Help command_name*. Alternatively, you can also refer to the SnapCenter Software Cmdlet Reference Guide.

Monitor IBM Db2 clone operations

You can monitor the progress of SnapCenter clone operations by using the Jobs page. You might want to check the progress of an operation to determine when it is complete or if there is an issue.

About this task

The following icons appear on the Jobs page, and indicate the state of the operation:

- In progress
- Completed successfully
- Failed
- Completed with warnings or could not start due to warnings
- Queued
- Canceled

Steps

1. In the left navigation pane, click **Monitor**.
2. In the **Monitor** page, click **Jobs**.
3. In the **Jobs** page, perform the following steps:
   a. Click  to filter the list so that only clone operations are listed.
   b. Specify the start and end dates.
   c. From the **Type** drop-down list, select **Clone**.
   d. From the **Status** drop-down list, select the clone status.
   e. Click **Apply** to view the operations that are completed successfully.
4. Select the clone job, and then click **Details** to view the job details.
5. In the Job Details page, click **View logs**.

Split a clone

You can use SnapCenter to split a cloned resource from the parent resource. The clone that is split becomes independent of the parent resource.

About this task

- You cannot perform the clone split operation on an intermediate clone.

  For example, after you create clone1 from a database backup, you can create a backup of clone1, and then clone this backup (clone2). After you create clone2, clone1 is an intermediate clone, and you cannot perform the clone split operation on clone1. However, you can perform the clone split operation on clone2.

  After splitting clone2, you can perform the clone split operation on clone1 because clone1 is no longer the intermediate clone.

- When you split a clone, the backup copies and clone jobs of the clone are deleted.
- For information about clone split operation limitations, see ONTAP 9 Logical Storage Management Guide.
- Ensure that the volume or aggregate on the storage system is online.

Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the **Resources** page, select the appropriate option from the View list:

Option	Description
For database applications	Select **Database** from the View list.
For file systems	Select **Path** from the View list.

3. Select the appropriate resource from the list.

   The resource topology page is displayed.

4. From the **Manage Copies** view, select the cloned resource (for example, the database or LUN), and then click  .

5. Review the estimated size of the clone that is to be split and the required space available on the aggregate, and then click **Start**.
6. Monitor the operation progress by clicking **Monitor** > **Jobs**.

   The clone split operation stops responding if the SMCore service restarts. You should run the Stop-SmJob cmdlet to stop the clone split operation, and then retry the clone split operation.

   If you want a longer poll time or shorter poll time to check whether the clone is split or not, you can change the value of *CloneSplitStatusCheckPollTime* parameter in *SMCoreServiceHost.exe.config* file to set the time interval for SMCore to poll for the status of the clone split operation. The value is in milliseconds and the default value is 5 minutes.

   For example:

   ```
   <add key="CloneSplitStatusCheckPollTime" value="300000" />
   ```

   The clone split start operation fails if backup, restore, or another clone split is in progress. You should restart the clone split operation only after the running operations are complete.

Related information

SnapCenter clone or verification fails with aggregate does not exist

Delete or split IBM Db2 database clones after upgrading SnapCenter

After upgrading to SnapCenter 4.3, you will no longer see the clones. You can delete the clone or split the clones from the Topology page of the resource from which the clones were created.

About this task

If you want to locate the storage footprint of the hidden clones, run the following command: `Get-SmClone -ListStorageFootprint`

Steps

1. Delete the backups of the cloned resources by using the remove-smbackup cmdlet.
2. Delete the resource group of the cloned resources by using the remove-smresourcegroup cmdlet.
3. Remove the protection of the cloned resource by using the remove-smprotectresource cmdlet.
4. Select the parent resource from the Resources page.

   The resource topology page is displayed.

5. From the Manage Copies view, select the clones either from the primary or secondary (mirrored or replicated) storage systems.
6. Select the clones, and then click  to delete clones or click  to split the clones.
7. Click **OK**.

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