



BackBox[®] E4.11 Catalog Sync Option

Published: October 2022

Edition: H06.06, J06.06 or L06.06 RVUs, or subsequent H-series, J-series or L-series RVUs



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Preface

The *BackBox E4.11 Catalog Sync Option* contributes to a D/R plan by replicating the DSM/TC and BackPak tape catalogs.

The data replication is not handled by Catalog Sync.

To enable the Catalog Sync Option a specific license is required. Contact ETI-NET support to have this option enabled.

Related Documentation

- *BackBox NonStop Installation Guide*
- *BackBox User Manual*
- *BackBox Messages Manual and Troubleshooting*

Catalog Sync Option Description

Introduction

BackBox VTC replicates ETI-NET BackBox and HPE DSM/TC catalogs from a primary NonStop system to a secondary system. The replicated information is:

- The BackPak catalog
- The DSM/TC catalog entries related to BackPak volumes (TAPEVOLUME, TAPEFILE and optionally DISKFILE).

The data replication (the image of tape volumes written by the NonStop backups) is independent of the metadata replication. The data replication remains under the responsibility of the user and depends on the storage technology used:

BackBox duplicates Windows files through LUN mirroring, BackBox scripts or the replication feature of high-end NAS, such as StoreOnce and DataDomain.

A third replication is required for encrypted volumes, whereby the replication of the encryption keys is stored in a Key Manager, such as HPE ESKM.

The user is responsible for enabling the replication offered by the Key Manager and for configuring, in the SECONDARY BackPak domain, a Key Manager with the same BackPak ID that points to the SECONDARY Key Manager that contains the replicated keys.

Notes:

- The volume labels must be unique in the enterprise to copy tape volume data and metadata from environment to environment.

The NonStop tape environment issues mount requests only for labeled volumes; in a NonStop node, the volumes' labels have to be unique to ensure that the tapes are correctly mounted.

A tape label must be unique in a BackPak domain.

A tape label must be unique in the DSM/TC SSL (System Search List). Primary and SECONDARY systems linked by SSL are incompatible with volume duplication. For more information see [DSM/TC Management](#).

- Even if restore tests using the replicated catalogs are successfully executed during the setup, an additional verification must be carried out once all configuration activities have been completed.

A DSM/TC catalog updated by both locally executed backups and by BackPak import processes could be at risk: **as soon as a tape volume label or a tapefile field is not unique across both environments, the DSM/TC catalog would become corrupted.**

The catalog replication is implemented by two independent operations executed in two distinct BackPak domains:

1. New catalog information is automatically **exported** from the primary site as soon as possible after each backup execution and it is written to a staging disk area in the SECONDARY site.
2. The catalogs of the SECONDARY site are updated (from the staging area) by **import** processes, manually initiated through BackBox UI or scheduled in NetBatch.

Full catalog re-synchronization can also be scheduled or initiated manually.

The catalog information is transferred over the Expand network.

When **Expand** is not available between primary and SECONDARY systems, an intermediate area can be used. The user is responsible for moving the export files from this intermediate area to the SECONDARY system. See [Appendix – Transport without Expand](#) for a sample setup of backup/restore.

Catalog export and import are configured and operated through the BackPak UI Client. Operations can also be triggered by TACL macros that can be included in jobs scheduled in NetBatch.

When the BackPak domain license contains the Catalog Sync option, new pages and new elements appear in BackBox UI. These specific elements of the Catalog Sync are described in this manual. For the other features refer to the appropriate documentation.

Export and import can also be used to migrate parts of a DSM/TC catalog from one node to another or to merge/split a BackPak domain Data Store by Data Store. See also the **Data Store Detach** function in the *BackBox User Manual*.

High-level Operations

For all BackPak installations, the catalog replication works the same way. The replication over **Expand** is executed in two steps:

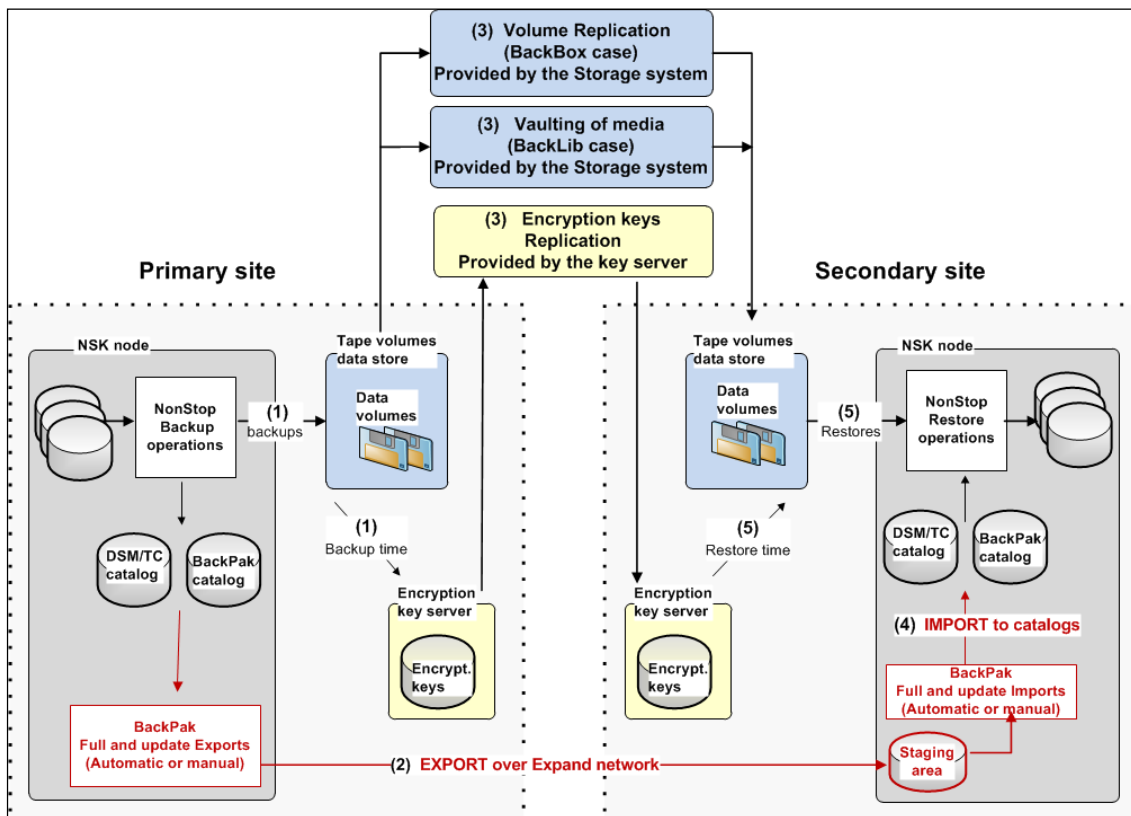
1. In the primary system, as soon as a tape volume written by a tape application is unloaded, the related new catalog information is sent by automatic Export processes to a staging area on the remote SECONDARY system.

There are, as well, other events, such as creation of tape volumes, that initiate Export processes.

2. In the SECONDARY system, the BackPak and DSM/TC catalogs are updated from the staging area by Import processes initiated manually through the BackPak UI or automatically by TACL commands scheduled in NetBatch.

The staging area always contains all the catalog information required to re-execute a full import and rebuild the BackPak and DSM/TC catalog entries.

Successive exports will rewrite the same export files. No cleanup of the staging area is required, even if no import was executed – although regular imports ensure the good reconstruction of metadata before the site recovery event.



Unit of Management

The purpose of a replication is not to replicate the entire BackBox VOLUME file or the entire DSM/TC VOLCAT or FILECAT, but the set of entries in these files related to a specific Data Store and to all its volumes. The Data Store is the main entity that is managed by Catalog Sync Operations. Incremental changes are transferred volume per volume.

On the replication source side, the BackPak domain has PRIMARY access to the Data Store.

On the target side, the receiving domain has SECONDARY access to the replicated Data Store.

There is no longer a need to reserve dedicated BackPak domains for Catalog Sync. A BackPak domain defines a tape processing environment where both primary and SECONDARY Data Stores can be included.

In sites where a BackPak domain was implemented for each NonStop node, these same domains can operate both the normal “primary” activity of the node and the other “SECONDARY” activity for other nodes in remote domains.

A primary Data Store can become SECONDARY and vice-versa. It is the user’s responsibility to maintain coherent roles between domains.

The corresponding Data Store and Volume Groups should ideally have the same name in the two domains. It is possible to use different names on the SECONDARY side. When they are different, the original primary name is entered in the SECONDARY side configuration. For more information, consult the *BackBox User Manual* and [Catalog Sync Import Configuration Page](#).

DSM/TC Management

The unit of management of an export/import operation for the DSM/TC consist of all entries (TAPEVOLUME, TAPEFILE, DISKFILE) related to the volumes of a BackPak Data Store. Entries not related to these BackPak volumes are not impacted by the replication.

DSM/TC System Search List (SSL)

In the DSM/TC, the replication of volumes on the SECONDARY NonStop systems will create instances of the same volume labels that violate the label uniqueness rule of the DSM/TC, if the two systems are present in a SSL.

Primary and SECONDARY systems must not belong to the same SSL. Before initiating export/import operations, check and adjust the SSL on each side by:

```
MEDIACOM INFO MEDIADEFS  
MEDIACOM ALTER MEDIADEFS , SSL (...)
```

Number of DSM/TC Catalogs on the SECONDARY Site

Although the same DSM/TC catalog can contain the backup metadata executed locally (primary Data Store) and the result of a BackPak Catalog Sync import (SECONDARY Data Store), and non-BackPak volumes, it is suggested that a distinct DSM/TC catalog be created to receive the entries created by the BackPak Catalog Sync Import for each primary source.

The isolation is useful because:

- the FILEID naming convention generally does not ensure the uniqueness of a FILEID across an enterprise; the collision between FILEID created by DSM/TC for local backups and FILEID created by BackPak will corrupt the DSM/TC catalog.
- a greater granularity of distinct catalogs allows better management of these catalogs by the means of BACKUP/RESTORE and by the patterns within MEDIACOM commands.

Because a PRIMARY system can become SECONDARY, it is also recommended to isolate the source of the DSM/TC replication in a separate catalog.

Between a primary and a SECONDARY site, the DSM/TC VOLCAT, FILECAT names are typically different – at least by their node name. There are cases of ‘mirror’ nodes where the node name is identical. For further information, see [Configure the SECONDARY Data Store](#).

The POOL names can be either identical or different, without having any adverse impact.

Uniqueness of Volume Labels



A tape volume name (tape label) must be unique in a DSM/TC system search space. That system search space can encompass the two NonStop systems on Expand, primary and SECONDARY systems.

It is impossible to insert in the SECONDARY environment a volume with the same name as the existing one in the primary environment.

To bypass such an issue, it could be possible to create a DSM/TC SECONDARY pool to exclude the name from the system search space. To properly manage the name duplicates:

- 1) the DSM/TC requires that volumes in such pools be used with the specification of a tape drive in the TAPECATALOG DEFINE.
- 2) BackPak, which requires label uniqueness, will need two or more BackPak domains to operate all volumes.

Specifying a certain tape drive in TAPE DEFINE prevents the BackPak automatic drive selection and also requires additional care to avoid conflicts between concurrent jobs.

When both primary and SECONDARY systems are on Expand, the scope of the DSM/TC system search space is normally reduced:

- With the replication, the need for remote DSM/TC operations is reduced.
- As all volumes are known by the two BackPak domains, the risk of creating different volumes with the same label is limited to the elapsed time between the creation on one side and the import of this volume on the other side.

Node Name in DSM/TC Catalogs

A NonStop node name is present in two areas of the DSM/TC catalog:

In TAPEVOLUME and TAPEFILE entries, there is a node name qualifying the VOLCAT and FILECAT names.

In DISKFILE entries, the name of backed up disk files is qualified by a node name.

For TAPEVOLUME and TAPEFILE, the fully qualified catalog names are updated by the BackPak import functionality. These VOLCAT/FILECAT names must identify existing DSM/TC catalogs in the SECONDARY site accessible locally or via Expand by the BackPak domain manager.

For DISKFILE, there are two cases:

Case 1: If the node names present in the disk file names are known by the SECONDARY system, there is no problem to use the original name of backed up files. In MEDIACOM, the LOCALTOREMOTE parameter of the RECOVER DISKFILE command might be required.

Case 2: If the node name present in the disk filenames are not known by the SECONDARY system, MEDIACOM rejects commands qualifying the disk file name or pattern by these unknown nodes.

For example:

```
MC>INFO DISKFILE \NODEP.$*.*.*
**ERROR-5048** DISKFILE \NODEP.$*.*.* is invalid.
```


This makes replicated DISKFILE entries useless, and might create subsequent difficulties in DSM/TC processing.

BackPak provides two possibilities for bypassing this constraint:

- 1) The user can prevent DISKFILES from being replicated at the time of export and/or at the time of job import submission. Only TAPEVOLUME and TAPEFILE will be replicated.
- 2) The user can configure BackPak to replace the original node names of backed up disk files by other node names that are valid in the SECONDARY system.


This node name replacement is a way to automate what is described by the HPE note 100.0.3006075.2839037 in the HPE NonStop Knowledge Base *DSM/TC: How to adjust a FILECAT containing CATALOGFILES for a missing system*.

A list of node name pairs (old value, new value) must be entered in the configuration of the catalog import at the Data Store level. In all catalog import processes for this Data Store, the node part of the disk file name will be adjusted in the inserted DISKFILE entries.

 This file name change is likely to create confusion in the catalog if the target FILECAT for the replication also contains the disk files backed up by the SECONDARY system.

It is recommended to isolate in a separate FILECAT the entries where the disk file names are modified by BackPak.

The BackPak configuration partially enforces this isolation on the system running the Domain Manager.

 If the node replacement in the disk file name is configured for the Data Store, no Volume Group in this Data Store can direct the replicated DISKFILES in a FILECAT that is also the default FILECAT in MEDIACOM/MEDIADEFS.

Additional notes:

- VOLCAT is not involved with the change of disk file names. The change of disk file names is not a reason to isolate a VOLCAT as a target of replication, although there is a general recommendation to isolate the DSM/TC entries replicated by BackPak from the entries created by BACKUP executed on the SECONDARY local system. It is recommended that a dedicated VOLCAT and FILECAT be created to receive the replicated entries.
- The user should carefully plan for potential consequences before changing the node name in the disk file names of replicated DISKFILE entries.

Types of Data Store Processing

A BackPak domain processes the tape volumes of a Data Store depending on the **Domain access** configured for the Data Store.

Domain Access	Usage	Usage
PRIMARY	Normal Data Store. Possible source of catalogue replication.	OWNER attributes was the value for Data Stores
SECONDARY	Data Store prepared for a backup site. Target of a catalogue replication from a primary Data Store.	None
RESTRICTED	Manual registration of BackBox tape volumes that already exist in storage. For manual recovery of lost BackPak metadata on NonStop, or for ad-hoc sharing of volumes across different domains.	Identical to previous RESTRICTED

Domain Access	BackBox Volume Creation	Catalog Export	Catalog Import	Load for Input	Load for Output	Daily Cleanup FREE_EXPIRED DEL_BACKEDUP
PRIMARY	Write the tape in Data Store Write the catalogs (BackPak, DSMTC, TMF)	OK	No	OK	OK	Executed
SECONDARY	Rejected	No	OK	OK	Rejected	Skipped
RESTRICTED	No write to tape in Data Store Write BackBox catalog No write to DSMTC & TMF	No	No	OK	Rejected	Skipped

Data Store De-Activation

As additional control, a Data Store can be de-activated by configuration. This will disable all automated actions and most manual actions on the Data Store. Requests to load tape volumes in particular will be rejected.

The catalog export and import functions initiated through BackBox UI will still be allowed on de-activated Data Stores.

Full or Update Export/Import

Full Export extracts the catalog information for all the volumes of a BackPak primary Data Store.

Full Import replaces the catalog information already known for the volumes of a BackPak SECONDARY Data Store, by the content of the staging area.

Export Update extracts the new catalog information that was not successfully written to the staging area.

Import Update reads the new files received in the staging area since the previous successful import and applies this new metadata to the catalogs. If an error occurs in one of the volumes to import and to ensure nothing is missing, all volumes will be re-imported at the next Import Update.

The exported catalog information of a volume consists in:

- 1) The tape volume BackPak record.
- 2) The DSM/TC volume records.

The imported catalog information of a volume consists in:

- 1) The tape volume BackPak record.

BackPak entries are always applied to the SECONDARY Data Store. Deleted volumes are removed from the SECONDARY side only during a Full Import.

- 2) The DSM/TC volume records.

DSM/TC entries are created when missing and are updated if different from the imported volumes. The DSM/TC tape volumes are only deleted during a Full Import and only if there was an associated BackPak volume in the SECONDARY site.

Export/Import Initiation

Each export or import is an independent Guardian process. A single export or import can be run per Data Store.

FULL Export/Import

Full export and full import are executed on demand only, either through BackBox UI or through the scheduled TACL macro:

- 1) By using BackBox UI, at the implementation of the replication.
- 2) By scheduling TACL macros in NetBatch on a regular basis to ensure the synchronization of the two sites and to remove the volumes that were deleted on the primary site after being replicated.

UPDATE Export/Import

To save the catalog information remotely as soon as possible, export updates are automatically initiated by the BackBox domain:

- 1) When a volume written by a tape application is unloaded.

- 2) When a volume is created in the domain.
- 3) When a change is detected in the DSM/TC tape volume status in the daily OBB017 batch or in an interactive function that manipulates the DSM/TC tape volume status through a BackPak functionality.

Failed exports are re-initiated by the BackPak EMS Extractor. Retry frequency is set in the Data Store export configuration.

When there are several EMS Extractors for the domain, they collaborate so that any running EMS Extractor will take charge of the monitoring and reinitiate the export.

To accelerate an export retry, export updates might also be manually initiated through BackBox UI.

Import updates are executed on demand only, through BackBox UI or scheduled TACL macro.

Considerations for Encrypted Volumes

If the volumes were written with encryption, the encryption key is needed to achieve restore on the SECONDARY side.

BackBox encryption keys are always stored in a tier-party Key Manager such as HPE ESKM or KMIP compatible Key Manager.

Typically, using duplication tools imbedded in the Key Manager, the user enables the duplication of encryption keys created on the primary side, into an alternate Key Manager server available on the SECONDARY site.

This key replication is transparent to BackBox.

Using the same Key Manager from the SECONDARY side can be configured, but it is acceptable only if this SECONDARY side is used for data sharing only. It is not acceptable for Catalog Sync.

BackPak does not support encryption in RESTRICTED Data Stores.

For SECONDARY Data Stores, the BackPak catalog contains the BackPak Key Manager ID that stored the encryption key at backup time, volume per volume.

In the domain on the SECONDARY side, the same Key Manager IDs must be configured for the local VTCs and for pointing to the alternate Key Manager that contains the duplicated keys.

The report BB038 can be used on the SECONDARY side to identify all Key Manager IDs required for all encrypted volumes.

It is recommended to specify the Key Manager ID in the Volume Groups of the SECONDARY side, although it will be used only when the user promotes the Data Store to PRIMARY access and runs backups in this environment.

Initial Setup and Configuration

Setup

Prepare BackPak for DSM/TC Catalog Sync

In both primary and SECONDARY domains, BBDBM is the SQL program reading and writing to the DSM/TC catalogs and must be prepared before its first use.

A TAFL session with SUPER.SUPER is needed and an SQL/MP catalog must be chosen to register the BBDBM program. The SQL/MP system catalogue is a suggested catalog. As alternative to the system catalogue, choose a stable and permanent DSM/TC VOLCAT; for example, the same that was used to SQL-compile \$SYSTEM.SYSnn.MEDIADB. To get the target –sql-catalog:

```
>SQLCI GET CATALOG OF SYSTEM  
>EXIT
```

Manual preparation of BBDBM

To prepare BBDBM manually, start a TAFL session running with SUPER.SUPER, and enter:

```
>VOLUME <BackPak-target-sub-volume>  
>SQLCOMP /IN BBDBM / CATALOG target-sql-catalog  
>FUP LICENSE BBDBM
```

Reserve a Disk Sub-Volume per SECONDARY Data Store

On the SECONDARY NonStop node, a disk sub-volume must be reserved for the metadata staging area, one sub-volume per SECONDARY Data Store.

Get BackPak License Key(s) Enabling Catalog Sync

The Catalog Sync license option is required on the primary side, as well as on the SECONDARY side. Verify the license option on BackPak UI > **Configuration** > **Domain Page** > **License Details**.



```
BackPak-QA411
BACKPAK®
BackPak E04.11 UI Client Build 28
User: super.oper
Domain: QA411
10/11/2022 1:47 PM

Copyright ETI-NET, 2003-2022

PRODUCTION LICENSE KEY number: 210042, created 2021/06/23 for BackPak E04.09
License To : E0366900
Site name : Montreal
Expiry Date : 2026-06-23
Enabled products : BACKSON: Yes BACKLIB: No

Data Store types: TSM APT (Conduit mode): Yes
WINDROW (Disk files): Yes
Tape library (BackLib): No

WinDisk details
Optimisations : DataDomain NAS, VTC internal disk, StoreOnce NAS, FalconStor NAS, Quantum NAS, Storage Client, RapidCIFS, HYDRastor NAS
Storage SMD : ignored
Advanced disk pool is ENABLED
Copy Pool Sync: YES (Script controller allowed: Yes)
Back-end scripts: Generic, TSM, Manual Restore
Script controller allowed: Yes
Advance Scripting option: Yes

Global options: TMP labels + other labels
Catalog Sync is ENABLED
Encryption is ENABLED for VLE and non-VLE (compatibility)
ComForte SSL is ENABLED
Virtualize/materialize media through VTC
using standard physical tape drives. YES
using legacy physical tape drives... YES
using direct attached VTS. YES
Virtualize/materialize media through NonStop is ENABLED

NonStop NCES
Node System Run Domain Virtual Tape
name number manager tapes libraries
-----
VETIMIN 078275 Yes Yes No

VTC servers: no limitation on VTCs and numbers of (FC,SCSI,ISCSI) ports,
no limitation on the number of encryption drives
```

Configure the Primary Data Store

When the Catalog Sync option is set in the license key, the list of Data Stores shows a link to **Catalog Sync Export**.

Administration								
Domain	NSK Nodes	VT Controller	Key Manager	Data Store	Volume Group			
				Data Store ID	Store Type	Status	Domain Access	Description
				DATASTORE01	WINDISK	Active	PRIMARY	Catalog Sync Export
				P_DATASTORE	WINDISK	Active	SECONDARY	Catalog Sync Import
				TSM_DATASTORE01	TSM	Active	PRIMARY	Catalog Sync Export
				TSM_DATASTORE02	TSM	Active	PRIMARY	Catalog Sync Export

In the main Data Store attributes, click the **Switch to Edit Mode** and click the **Catalog Sync Export** for a PRIMARY Data Store.

Data Store Information Configuration Page [primary]

Administration								
Domain	NSK Nodes	VT Controller	Data Store	Volume Group				
			Data Store ID	Store Type	Status	Domain Access	Description	
			DANOC	WINDISK	Active	SECONDARY		Catalog Sync Import
			FC_DATASTORE	WINDISK	Active	PRIMARY		Catalog Sync Export
			ISCSI_DATASTORE	WINDISK	Active	PRIMARY		Catalog Sync Export
			P_DATASTORE	WINDISK	Active	PRIMARY		Catalog Sync Export
			QC_DATASTORE	WINDISK	Active	PRIMARY		Catalog Sync Export

Data Store Information

Data Store ID*

Data Store Type

Status

Domain Access to Data Store

Description

Windows Details

User Account

Password

Confirm Password

Disk Space Warning Threshold (%)

Check Volume Timestamp

Storage Optimization

Archive bit support

Windows Pool

Storage Pool	Spare Pool	Copy Pool
Path	Rank	Reserved For
\\172.17.197.217\DANIELTEST\	1	ANY

Catalog Sync Export Configuration Page

BACKPAK Administration

Domain NSK Nodes VT Controller Key Manager Data Store Volume Group

User: super.etinet Domain: SLAB_A 4/6/2022 12:45 PM

Status

Configuration

Storage Admin

Volume

Data Store ID	Store Type	Status	Domain Access	Description		
P_DATASTORE	QORESTOR	Active	PRIMARY		Catalog Sync Export	Advanced
SLAB_A-MONTHLY	QORESTOR	Active	PRIMARY		Catalog Sync Export	Advanced
SLAB_A-WEEKLY	QORESTOR	Active	PRIMARY		Catalog Sync Export	Advanced

Catalog Sync Export Configuration

Full Export Frequency Days

Export Check Delay Minutes

Export Report Location

Export Destination

Process Priority 0~199

Include DSM/TC Disk File Entries

Page Elements

Full Export Frequency: This is an alternative to scheduling a Full Export through NetBatch. Full Export frequency should only be considered in systems when NetBatch is not installed.

This parameter is tested when executing an export update. If the delay is reached, the export update will be converted into a full export.

This method has the inconvenience that the full export will typically occur when automatic incremental exports are initiated at the end of the normal backups.

Export Check Delay: When there are export updates, the Export Check Delay enables the export retry by the EMS Extractor.

Export Report Location: The Export Report Location is the location of the export process log. A spooler location is suggested to hold more than the latest execution log.

Export Destination: The presence of an Export Destination is the trigger to execute exports. It identifies the staging area of a remote sub-volume where export files will be written.

Process Priority: Process Priority is the priority of the Export process. If it is not specified (value zero), the export processes will inherit the priority of the domain manager BBSV process, as started by the LISTNER process.

Include DSM/TC Disk File Entries: If un-checked, the DISKFILE entries created by BACKUP executed with the CATALOGFILES option will never be sent to the remote staging area. When checked:

- Automatic Export Updates will send DISKFILE entries.
- Depending on the request parameter, exports initiated by BackBox UI and TACL macro will send the DISKFILES.

Schedule Batch on the Primary Side

Export updates are internally initiated by any BackPak operation that changes a tape volume status. Other exports must be scheduled in NetBatch jobs running the BB026_EXPORT_CATALOG macro.

It is suggested to schedule a monthly re-synchronization export (TYPE FULL) that resends all BackPak volumes and all related DSM/TC TAPEVOLUME and TAPEFILE entries, but not the DISKFILE (CATALOGFILES NO).

On the SECONDARY site, the corresponding import (TYPE FULL, CATALOGFILES NO) would be scheduled to run after this monthly export.

BB026_EXPORT_CATALOG macro

Macro syntax:

```
LOAD /KEEP 1/ BBOX.BBSETUP BBOX.MACROS
BB026_EXPORT_CATALOG STOREID {stored-id | ALL},
    [, CATALOGFILES {YES | NO}]
    [, TYPE {FULL | UPDATE}]
```

This macro connects to the domain manager that will start an export process. Its priority and output specifications are defined in the Data Store configuration.

STOREID	Mandatory. Specifies the Data Store to process. ALL refers to all primary Data Stores.
CATALOGFILES	Optional. Specifies if DISKFILE entries must be exported.
TYPE	Optional. Specifies if the whole Data Store or only not yet exported information must be exported.

Configure the SECONDARY Data Store

The Data Store and its Volume Groups must be configured in the SECONDARY site in the Data Store and Volume Group configuration pages.



For the SECONDARY Volume Groups associated with the DSM/TC, not only VOLCAT and POOL, but also FILECAT must be entered.

- If the Data Store ID is different, specify the Primary Store ID in the Catalog Import Configuration page on the SECONDARY side.
- If the Volume Group ID is different, specify the primary Volume Group ID in the Volume Group configuration page on the SECONDARY side.
- Volume Groups missing in the SECONDARY Data Store will be reported as errors in the import reports and their volumes will simply not be imported.

After a first export is executed on the primary side, the import status page makes available a button to compare the catalog types and names between primary and SECONDARY sides.

When the Catalog Sync option is set in the license key, the list of Data Stores shows a link to **Catalog Sync Import**.

Administration								User: sup
Domain	NSK Nodes	VT Controller	Key Manager	Data Store	Volume Group			Domain: E 1/5/2018 6 Sign out
Data Store ID	Store Type	Status	Domain Access	Description				
DATASTORE01	WINDISK	Active	PRIMARY		Catalog Sync Export	Advanced	Delete	
VOLCAT01	WINDISK	Active	SECONDARY		Catalog Sync Import	Advanced	Delete	
TSM_DATASTORE0C	TSM	Active	PRIMARY		Catalog Sync Export	Advanced	Delete	
TSM_DATASTORE0C2	TSM	Active	PRIMARY		Catalog Sync Export	Advanced	Delete	

Data Store Information Configuration Page [SECONDARY]

The Data Store must be created with SECONDARY as the Domain Access.

Administration

Domain
NSK Nodes
VT Controller
Key Manager
Data Store
Volume Group

Data Store Information

Data Store ID*

Data Store Type

Status

Domain Access to Data Store

Primary Data Store Id

Description

Windows Details

User Account

Password

Confirm Password

Disk Space Warning Threshold (%)

Check Volume Timestamp

Storage Optimization

Archive bit support

Windows Pool

Storage Pool	Spare Pool	Copy Pool
Path	Rank	Reserved For
\\172.17.197.217\DANIELTEST\	1	ANY

Storage Route

Rank*	VT Controller ID*
1	VBB-2

Page Elements to Consider for a SECONDARY Volume Group

Domain Access to Data Store: Must be SECONDARY.

Primary Data Store ID: Must be entered if the Data Store ID is different on the PRIMARY side.

Catalog Sync Import Configuration Page

To configure the Catalog Sync Import, go to **Data Store ID > Switch the Edit Mode > Catalog Sync Import.**

Administration

Domain
NSK Nodes
VT Controller
Key Manager
Data Store
Volume Group

Data Store ID	Store Type	Status	Domain Access	Description		
DATASTOREEQC_01	WINDISK	Active	PRIMARY		Catalog Sync Export	Advanced
S_DATASTORE	WINDISK	Active	SECONDARY		Catalog Sync Import	Advanced
TSM_DATASTOREEQC	TSM	Active	PRIMARY		Catalog Sync Export	Advanced
TSM_DATASTOREEQC2	TSM	Active	PRIMARY		Catalog Sync Export	Advanced

Catalog Sync Import Configuration

Import Source

Import Report Location

Process Priority 0~199

Max Number of DISKFILE's per TME Transaction 100~100,000,000

Import to the secondary system which is different from the primary system but shares the same node name as the primary system.

Allow to store replicated DSM/TC entries in a local DSM/TC catalogue that is not dedicated to this replication (i.e. merged with other replications or with local backups).

Nodes Replacement

You might want to change the node in the name of the backed-up DISKFILES cataloged in DSM/TC. Please consult the BackPak Catalog Sync Option Manual before configuring the modification of the DISKFILE name in DSM/TC

Original Node Name	New Node Name

Page Elements

Import Source: Is the staging area receiving export files.

Import Report Location: Is the location of the import process log. A spooler location is suggested.

Process Priority: Is the priority of the started import process. If not specified (value 0), the import process will inherit the priority of the domain manager BBSV process as started by the LISTNER process.

Max Number of DISKFILES per TMF Transaction: In addition to doing a commit for each tapefile, a commit is executed each time the number of disk files reaches the value entered. Default is 20,000, maximum is 100,000,000.

(Checkbox) Import to a SECONDARY System that Shares the Same Node Name as the Primary System: If checked, at import time, this option disables the validation and verifies that the DSM/TC qualified volume catalog names are different between PRIMARY and SECONDARY sides. Identical names are a symptom of a configuration error, except if the two NonStop systems have identical names and are not connected by Expand. If the user wants to configure identical DSM/TC catalog names in Volume Groups on both PRIMARY and SECONDARY sides (*of two NSK*), this box must be checked.

(Checkbox) Allow to store replicated DSM/TC entries in a local DSM/TC catalog that is not dedicated to the replication system (i.e. merged with other replications or local backups).

At import time, this checkbox disables a validation and verifies that the target DSM/TC catalog is different from the DSM/TC catalog used to register locally executed backups.

The collision risk is relatively high on the FILEID, if for example, a backup with FILEID FULL_BACKUP is imported into the same DSM/TC catalog that registers locally executed backups on FILEID FULL_BACKUP; the DSM/TC catalog may become corrupted.

Nodes Replacement: Is the optional change of the node names in the disk file names of replicated DISKFILE entries.

Enter a list of old value and new value node name pairs.



This change must not be configured before reading the associated chapter [Node Name in DSM/TC Catalogs](#).

Volume Group Configuration

This section refers only to specifics of SECONDARY Volume Groups. See the *BackBox User Manual* for a description of the configuration of a Volume Group.

The screenshot shows the 'Volume Group' configuration page. At the top, there is a table listing existing volume groups:

Volume Group ID	Data Store	Type	Advanced
S_IMP_VG_NOCAT	S_DATASTORE	SECONDARY	Advanced
UNLABEL_VG	DATASTOREQC_01	PRIMARY	Advanced

Below the table is the 'Volume Group Information' configuration form:

- Volume Group ID***: S_IMP_VG
- Description**: [Empty]
- Data Store ID**: S_DATASTORE
- Primary Volume Group ID**: P_EXP_VG
- Tape Catalog**: DSM/TC
- Auto Scratch at Load Time**: YES - data discarded only for expired volumes
- Delete Expired Volumes**: Yes
- Media Type**: LTO3
- Warning Threshold (Min % Of Scratch Volumes)**: 0%
- Delete Backed-up Files ?**: [Checked]
- Days Past Last Update**: 0
- Days Past Last Access**: 0
- Min File Size For Deletion(MBytes)**: 0
- Catalog Information - DSM/TC**:
 - Volcat***: LVNSK17.VOLETIQC
 - Pool***: S_CATSINVC
 - File Catalog***: LVNSK17.FILETIQC
- Class Information**:
 - Compression Algorithm**: None
 - Volume Class**: [Empty]
 - Max Volume Size(MB)***: 2500
 - Encryption Algorithm**: None
 - Key Manager ID**: [Empty]

Page Elements to Consider for a SECONDARY Volume Group

Primary Volume Group ID: This element is available only for SECONDARY or RESTRICTED Data Stores. If the corresponding PRIMARY and SECONDARY Volume Groups don't have the same name, it is possible to set the correspondence by entering the name of the primary group here.

Catalog Type: The catalog type (NONE, DSM/TC, TMF, CA..) must be consistent between the PRIMARY Volume Group and its SECONDARY corresponding group, but not necessarily identical. A PRIMARY group can be TMF and the SECONDARY can be NONE.

The only catalog types supported in SECONDARY Data Stores are NONE and DSM/TC.

Media Type: The media type might be different from the original one. The media type of the SECONDARY Volume Group will be assigned to all volumes replicated in the DSM/TC SECONDARY catalog, regardless of the media type in the PRIMARY DSM/TC.

Volcat: The DSM/TC VOLCAT and FILECAT catalogs cannot be duplicated on themselves and their names thus qualified by the node name must be different in the SECONDARY Data Store. However, when PRIMARY and SECONDARY systems are not linked by Expand and when both systems share the same node name, the qualified catalog names can be identical.

Catalog Sync Import: Configuration Page to allow the same name.

Pool: Pool names can be equal, as well as different.

File Catalog: This element is available only for SECONDARY Data Stores. The DSM/TC file catalog – not only the volume catalog – must be entered to specify where the duplicated DSM/TC TAPEFILE and DISKFILE must be written. This must be entered whether the FILECAT and VOLCAT are in the same SQL sub-volume or not.

Key Manager Configuration

Each of the encrypted volumes imported in the BackPak catalog refers to the BackPak Key Manager ID of the server that contains the encryption key for the volume.

This BackPak Key Manager ID must be configured in the domain containing the SECONDARY Data Store.

It is recommended to name the Key Manager ID in the configuration of the Volume Groups of the SECONDARY Data Store.

Schedule Batch on the SECONDARY Side

No import is internally initiated by BackPak. Any systematic import must be scheduled in a NetBatch job, running the BB027_IMPORT_CATALOG macro.

Running an import periodically:

- 1) checks if the replication is running correctly.
- 2) maintains the SECONDARY catalog state as close as possible to the PRIMARY catalog state in order to minimize the role swap.
- 3) deletes tape volumes that were removed from the catalogs on the PRIMARY side.

It is recommended to avoid running BackPak import during the target system DSM/TC daily expiration process. This requires explicitly controlling the time that the DSM/TC expiration is started by \$ZSVR through the TACL command "PARAM AUTOEXPIRE^TIME hh:mm" before starting \$ZSVR. For further information, refer to the HPE Technical Library and HPE Knowledge Base.

A possible schedule would be to run:

An import UPDATE with CATALOGFILES YES each day, with some delay after the backup window on the primary site.

A FULL import with CATALOGFILES NO each month, after a corresponding FULL export on the primary site has been completed.

BB027_IMPORT_CATALOG macro

Macro syntax:

```
LOAD /KEEP 1/ BBOX.BBSETUP BBOX.MACROS
BB027_IMPORT_CATALOG STOREID {stored-id | ALL},
    [, STOREID_ALIAS {0 | 1 | 2}]
    [, CATALOGFILES {YES | NO}]
    [, TYPE {FULL | UPDATE}]
```

This macro connects to the domain manager that will start an export process, whose priority and output specifications are defined in the Data Store configuration.

STOREID	Mandatory. Specifies the Data Store to process. ALL refers to all primary Data Stores.
STOREID_ALIAS	Indicates that STOREID must be interpreted, for Store IDs named with embedded spaces: value 0: no interpretation value 1: replace '_' characters by spaces value 2: replace '+' characters by spaces Optional, default value is 0.
CATALOGFILES	Optional. Specifies if DISKFILE entries must be imported.
TYPE	Optional. Specify if the whole Data Store or only not yet exported information must be exported.

Export Operations

User Interface

Storage Admin Page

When the license key is set for Catalog Sync option, the link to the Export Status page is presented in the column **Catalog Sync Import/Export** in the **Storage Admin** tab.

Data Store	Type	Status	Domain Access	Catalog Sync Import/Export	External Administrative Client
DATASTOREQC_04	WINDISK	Active	Primary	Export Status	Catalog Detach
TSM_DATASTOREQC	TSM	Active	Primary	Export Status	Catalog Detach
TSM_DATASTOREQC2	TSM	Active	Primary	Export Status	Catalog Detach
S_DATASTORE	WINDISK	Active	Secondary	Import Status	Catalog Detach

Export Status Page

BACKPAK Administration

Status Datastore Administration Catalog Export for DataStore SLAB_A-DAILY

Configuration Export Full Catalog Export Catalog Updates Refresh

Storage Admin

Volume

The Most Recently Written Volume Exported
Volume SAD006 (Unloaded on 2022-01-05 12:02:56)

Latest Completed Full Export

Export Id:	2022-01-04_11:41:49
Export Process:	\ETINIUM.\$X5DB
Start Time:	2022-01-05 00:41:49
Report:	\$.#SLABA.EXPDAYL
Number of Exported Volumes:	30
Export Written To:	\INSIDX.\$etinet.slabadl

Latest Export Process

Export Id:	2022-01-04_23:03:02
Export Process:	\ETINIUM.\$X13A
Export Type:	UPDATE
Process Status:	FINISHED
Start Time:	2022-01-05 12:03:02
Report:	\$.#SLABA.EXPDAYL
Number of Volumes Processed	1
Export Written To:	\INSIDX.\$etinet.slabadl

Page Elements

Most Recently Written Volume Exported: Identifies the most recent exported catalog information activity.

Pending Volumes to Export: Evaluates volume count pending export.

Latest Completed Full Export: Identifies the latest full export that completed without error.

Latest Export Process: Identifies the latest export process submitted.

Page Buttons

Export Full Catalog button: Initiates a full export.

Export Catalog Updates button: Initiates an export for pending volumes. There is normally no need to manually initiate Export Updates or their retries.

Refresh button: Displays the latest status.

Most Recent Volume Exported

When there is no pending export during normal tape operations, this shows the most recent volume loaded for a backup.

Volume: Label of the volume.

Time: Time of the volume activity.

Number of Pending Catalog Updates to Export

Number: Number of volumes with modified catalog information to export. The three oldest activities to export are listed.

Volume: Label of the tape volume.

Unload Time: Time of the activity.

Latest Completed Full Export

Export ID: Timestamp identifying the export execution.

Export Process: Guardian name of the export process.

Export Status: Always FINISHED.

Start Time: Starting time of the export process.

Report: Location of the export log.

Number of Exported Volumes: Number of volumes whose catalog information was extracted.

Export Written To: Staging area where export files were written.

Latest Export Process

Export ID: Timestamp identifying the export execution.

Export Process: Guardian name of the export process.

Export Type: FULL or UPDATE.

Export Status: FINISHED or RUNNING.

Start Time: Starting time of the export process.

Report: Location of the export log.

Number of Exported Volumes: Number of volumes from which catalog information was extracted.

Export Written To: Staging area where export files were written.

Export Confirmation Page



Page Elements

Include DSM/TC Disk File Entries: Check to send the content of backups to the remote staging area. This option is available only if the Data Store Export configuration allows it.

Page Buttons

Confirm button: Starts the Export process.

Cancel button: Returns to the Export status.

Export Execution Traces

For each export process issued:

- A starting process EMS message, if EMS Verbose is set in the domain configuration.

- Possible EMS error messages.

- An ending process EMS message, if EMS Verbose is set in the domain configuration.

- A log report in the location set in the export configuration.

Sample EMS Messages

```
2022-01-05 17:44:50 \ETINIUM.$Z4M9 ETINET.100.100 3279 SLAB_A-I3279
\ETINIUM.$Z4M9 exported FULL catalogs for data store SLAB_A-DAILY (30 volumes
processed). Report in $$.#SLABA.EXPDAYL
```

```
2022-01-05 17:44:50 \ETINIUM.$Z4M9 ETINET.100.100 3279 SLAB_A-I3279
\ETINIUM.$Z4M9 exported FULL catalogs for data store SLAB_A-DAILY (30 volumes
processed). Report in $$.#SLABA.EXPDAYL
```

Sample Catalog Export Report

The following shows a sample of typical data in a Catalog Export Report:

```
SARD0E VG_SLAB_A_BRCOM-DAILY ASSIGNED SLABA-BAK11-BRCOM-DAILY, gen=21
SARD0F VG_SLAB_A_BRCOM-DAILY ASSIGNED SLABA-BAK11-BRCOM-DAILY, gen=22

Volume group      NSK primary catalog (pool name)      Number of  Nbr DSM/TC
Most recently written volume          volumes   disk files
=====
VG_SLAB_A-DAILY   DSM/TC volcat \ETINIUM.SLABVC, pool SLAB_A_DAILY
SAD006 unloaded on 2022-01-04 23:02:56      15          0

VG_SLAB_A_BRCOM-DAILY
DSM/TC volcat \ETINIUM.SLABVC, pool SLAB_A_BRCOM_DAILY
SARD02 unloaded on 2022-01-04 19:02:32      15          0

SLAB_A-I3279 \ETINIUM.$Z4M9 exported FULL catalogs for data store SLAB_A-DAILY
(30 volumes processed). Report in $S.#SLABA.EXPDAYL

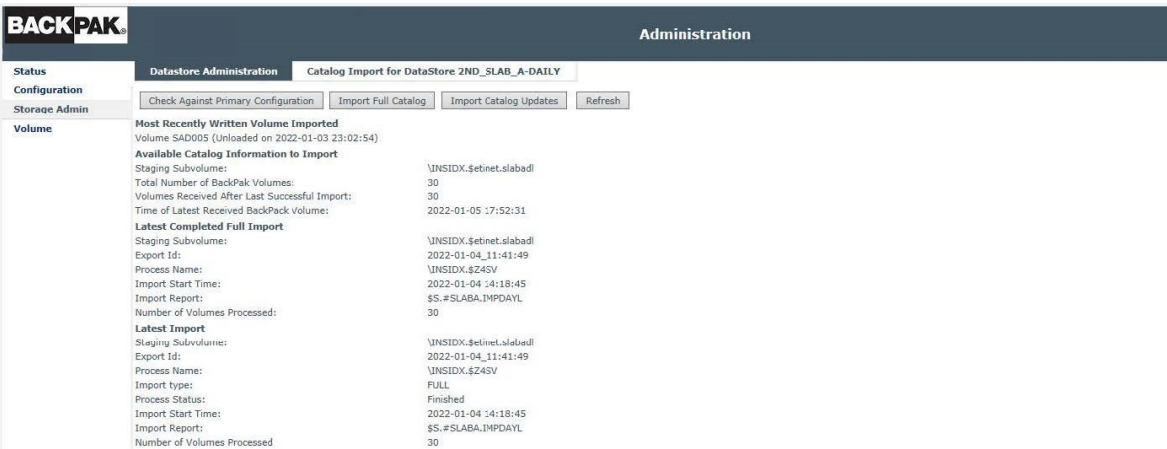
SLAB_A-BB051 Process \ETINIUM.$Z4M9 ended on 2022-01-05 17:44
```

Import Operations

User Interface

Storage Admin Page

When the license key is set for the Catalog Sync option, a new column appears in the list of Data Stores presented in the **Storage Admin** tab **Catalog Sync Import/Export** that presents a link to an **Import Status** page.



Page Elements

Possible Page Sections:

Most Recently Written Volume Imported: Identifies the most recent volume metadata imported.

Available Catalog Information to Import: Provides reports of the export files in the staging area.

Latest Completed Full Import: Identifies the latest full import that completed without fatal error.

Latest Import: Identifies the latest import process submitted.

Page buttons

Check Against Primary Configuration button: Compares the configuration of Volume Groups in the PRIMARY and SECONDARY Data Stores.

Import Full Catalog button: Initiates an import from the whole staging area.

Import Catalog Updates button: Initiates an import from the export files received, following the last successful import.

Refresh button: Displays the latest status.

Most Recent Volume Imported

Volume: Label of the imported volume that shows the latest activity.

Time: Time of the volume activity.

Available Catalog Information to Import

Staging Sub-Volume: Location of the export files to read.

Total Number of BackPak Volumes: Number of per-volume export files present in the staging sub-volume.

Volumes Received After Last Successful Import: Number of volumes to process in the next import update.

Time of Latest Received BackPak Volume: Modification time of the latest per-volume export file.

Latest Completed Full Import

Staging Sub-Volume: Sub-volume where export files were read.

Export ID: Timestamp that was assigned at export time.

Process Name: Guardian name of the import process.

Import Type: Always FULL

Process Status: Always FINISHED.

Import Start Time: Starting time of the import process.

Import Report: Location of the import log.

Number of Processed Volumes: Number of volumes whose catalog information was applied to the catalogs.

Latest Import

Staging Sub-Volume: sub-volume where export files were read.

Export ID: Timestamp that was assigned at export time.

Process Name: Guardian name of the import process.

Import Type: FULL or UPDATE.

Process Status: RUNNING or FINISHED.


Import Start Time: Starting time of the import process.

Import Report: Location of the import log.

Number of Processed Volumes: Number of volumes whose catalog information was applied to the catalogs.

Configuration Check Page

The PRIMARY and SECONDARY Data Store must have matching Volume Group ID and coherent tape catalog type (DSM/TC, TMF...). This configuration information is sent by the PRIMARY site in the summary export file (FULL or UPDATE file) that can be compared to the local SECONDARY configuration.

 BackPak E04.11 UI Client Build 28	Catalog Import Check Report	User: super.oper Domain: QAE411 10/13/2022 6:16 PM
Copyright ETI-NET, 2003-2022		
Volume group	NSK tape catalog and pool for primary and secondary sites	
VG_QS_CS2	Primary volume group: VG_QS_CS Primary : DSM/TC volcat \ETINIUM.SHCH409VC, pool E411CS Secondary: DSM/TC volcat \ETINIUM.SHE409_VC1, pool E411SC2	

The confirmation page elements are the following:

- Include DSM/TC Disk File Entries:** Check to insert the missing DSM/TC DISKFILES.
- Confirm** button: Starts the Import process.
- Cancel** button: Returns to the Import status.

Import Execution Traces

For each **Import Execution Trace** process, the following messages are issued:

- A starting process EMS message, if EMS Verbose is set in the domain configuration.
- Possible EMS error messages.
- An ending process EMS message, if EMS Verbose is set in the domain configuration.
- A log report in the location set in the import configuration.

Sample EMS Messages

```
2022-01-05 23:00:06 \INSIDX.$X0PB ETINET.100.100 3286 CH409DR-I3286 Process  
\INSIDX.$X0PC started for IMPORTING the entire catalogs of data store  
2ND_SLAB_A-DAILY. Output report sent to $$.#SLABA.IMPDAYL.
```

```
2022-01-05 23:00:08 \INSIDX.$X0PC ETINET.100.100 3342 CH409DR-I3342  
\INSIDX.$X0PC imported FULL catalogs for data store 2ND_SLAB_A-DAILY (30  
volumes processed). Report in $$.#SLABA.IMPDAYL
```

Sample Catalog Import Report

The following shows a sample of typical data in a Catalog Import Report:

```
CH409DR-BB051 - CatSync Export/Import process \INSIDX.$X0PC 2022-01-05 23:00
Data store : 2ND_SLAB_A-DAILY -
              Primary data store: SLAB_A-DAILY
Process type : IMPORT FULL catalogs
DSM/TC disk files : insert new entries and delete obsolete entries
Export id : 2022-01-05_17:44:48
Import source : \INSIDX.$etinet.slabad1

CONFIGURATION VALIDATION, VOLUME GROUPS

Volume group      NSK tape catalog and pool for primary and secondary sites
=====
VG_2ND_SLAB_A-DAILY Primary volume group: VG_SLAB_A-DAILY
                    Primary : DSM/TC volcat \ETINIUM.SLABVC,
                    pool SLAB_A_DAILY
                    Secondary: DSM/TC volcat \INSIDX.QCVOLCAT,
                    pool CH409DR_2ND_SLABA_DAILY

VG_2ND_SLAB_A_BRCOM-DAILY
                    Primary volume group: VG_SLAB_A_BRCOM-DAILY
                    Primary : DSM/TC volcat \ETINIUM.SLABVC,
                    pool SLAB_A_BRCOM_DAILY
                    Secondary: DSM/TC volcat \INSIDX.QCVOLCAT,
                    pool CH409DR_2ND_SLABA_BRCOM_DAILY

Volume  Group              Catalog status
=====
SAD001 VG_2ND_SLAB_A-DAILY  ASSIGNED  SLABA-BAK11-DAILY, gen=18
SAD002 VG_2ND_SLAB_A-DAILY  ASSIGNED  SLABA-BAK11-DAILY, gen=19
SAD003 VG_2ND_SLAB_A-DAILY  ASSIGNED  SLABA-BAK11-DAILY, gen=20
SAD004 VG_2ND_SLAB_A-DAILY  ASSIGNED  SLABA-BAK11-DAILY, gen=21
SAD005 VG_2ND_SLAB_A-DAILY  ASSIGNED  SLABA-BAK11-DAILY, gen=22
SAD006 VG_2ND_SLAB_A-DAILY  ASSIGNED  SLABA-BAK11-DAILY, gen=23
SAD007 VG_2ND_SLAB_A-DAILY  SCRATCH
SAD008 VG_2ND_SLAB_A-DAILY  SCRATCH
SAD009 VG_2ND_SLAB_A-DAILY  SCRATCH
```

```

SARD0F VG_2ND_SLAB_A_BRCOM-DAILY ASSIGNED SLABA-BAK11-BRCOM-DAILY, gen=22

Deletion of unreferenced volumes

Volume Group
=====

IMPORT RESULT SUMMARY: Numbers of tape volumes

Volume Import <===BackPak catalog===> <===NSK tape catalog===>
group source Added Updated Deleted Added Updated Deleted
=====

VG_2ND_SLAB_A-DAILY
DSM/TC volcat \INSIDX.QCVOLCAT, pool CH409DR_2ND_SLABA_DAILY
Newest volume in Import: SAD006 unloaded on 2022-01-05 04:02:56
15 0 15 0 0 3 0

VG_2ND_SLAB_A_BRCOM-DAILY
DSM/TC volcat \INSIDX.QCVOLCAT, pool CH409DR_2ND_SLABA_BRCOM_DAI
Newest volume in Import: SARD02 unloaded on 2022-01-05 00:02:32
15 0 15 0 0 3 0

IMPORT RESULT SUMMARY: other activity on DSM/TC

Volume <=====Tape files=====> <===Disk files===>
group Added Deleted Added
=====

VG_2ND_SLAB_A-DAILY
DSM/TC volcat \INSIDX.QCVOLCAT, pool CH409DR_2ND_SLABA_DAILY
1 0 0

VG_2ND_SLAB_A_BRCOM-DAILY
DSM/TC volcat \INSIDX.QCVOLCAT, pool CH409DR_2ND_SLABA_BRCOM_DAI
1 0 0

CH409DR-I3342 \INSIDX.$X0PC imported FULL catalogs for data store
2ND_SLAB_A-DAILY (30 volumes processed). Report in $$.#SLABA.IMPDAYL

CH409DR-BB051 Process \INSIDX.$X0PC ended on 2022-01-05 23:00

```

Configuration Changes

The Configuration Changes procedures that follow are given as reference, actual procedures will vary according to exact Catalog Sync configuration and context. Careful planning is always required because of the potential impact of a Catalog Sync.

Stop All Export Activities

- Remove any scheduled Export job in NetBatch.
- Update the Catalog Sync Export configuration page.
 - Set *Full Export Frequency* to zero.
 - Set *Export Check Delay* to zero.
 - Set *Export Destination* to blanks.

Stop All Import Activities

- Remove any scheduled Import job in NetBatch.

Delete All Data Related to a SECONDARY Data Store

Cleanup when a SECONDARY Data Store is definitively abandoned:

- Delete the content of disk sub-volume *Export Destination*.
- Delete the DSM/TC entries associated with the MEDIACOM commands DELETE TAPE FILE and DELETE TAPEVOLUME.
- Delete the volumes of the SECONDARY Data Store using the BackPak UI **Data Store Administration > Catalog Detach**.
- Remove the Volume Groups and Data Store from the configuration, by using the BackPak UI **Configuration**.
- If possible, delete the replicated images of virtual volumes in the SECONDARY Data Store by using native tools for this storage: Windows Explorer for the WINDISK Data Stores.
- If possible, delete the encryption keys replicated in the SECONDARY key server by using native tools for this key server: the administrative client of the HPE ESKM.

Delete All Data Related to a PRIMARY Data Store

Cleanup when a PRIMARY Data Store is definitively abandoned:

- By MEDIACOM, delete the DSM/TC TAPE FILE entries associated with the volumes of the Data Store; it ensures that all volumes are SCRATCH in DSM/TC and TMF, so they can be deleted in the next step.

- Delete the volumes of the PRIMARY Data Store by using the BackPak UI **Volume**. This will delete the following three items:
 - Actual backup data in the storage.
 - Entries in the DSM/TC or TMF catalogues.
 - Entries in the primary BackPak catalogue.
- Remove the Volume Groups and Data Store from the configuration by using the BackPak UI **Configuration**.
- Possibly delete the encryption keys in the PRIMARY key server by using native tools for this key server: the administrative client of the HPE ESKM.

Switch Between PRIMARY and SECONDARY Sides

The scenario assumes a planned switch between the PRIMARY system \A and SECONDARY system \B, in a context where:

- The backup data is replicated by the storage facility. Only the replication direction will change.
- The encryption keys are duplicated by a key server facility. The keys are not relocated and only the replication direction will change.
- The two BackPak domains are kept in their installation sub-volumes and they will exchange their roles for a specific Data Store: the PRIMARY Data Store will become SECONDARY and vice-versa.
- On both sides, the DSM/TC catalogs (VOLCAT & FILECAT) contain entries related to this Data Store. The pools and cataloged backups are kept in the same DSM/TC locations and they will exchange the roles of source and the replication target.
- Expand is available between \A and \B.

The role switch is associated with the staging area location swap.

On the system that will become SECONDARY, disk space in the new staging area must be available for the metadata.

- 1) On the PRIMARY side \A wait for completion of backups.

Wait for a time before replicating, when no backup is being executed on tape volumes of the Data Store.

- 2) On the PRIMARY side \A, stop all BackPak catalog export activities.

If the PRIMARY side is still available, check the status of export updates on the **Export Status** Page and wait for completion of pending exports.

On this page, the **Most Recently Written Volume Exported** label and unload time should help in steps 3) and 4) below.

Fix conditions preventing the export updates to complete. If the EMS Extractor is stopped, automatic Export executions and retries will not execute, but it is possible to manually initiate a final Export update from this page.

As a final step, disable all export activities: **Stop All Export Activities**.

- 3) On the PRIMARY side \A, change the domain access to the Data Store from PRIMARY to SECONDARY, to prohibit any new backup.
- 4) In the encryption key servers, ensure all replication of encryption keys is completed, and then reverse the direction of replication.

Eventually identify the latest key generated in the Volume detail page of the latest volume exported. See step 2) above.

- 5) In the storage, ensure that all backup data replication is completed (certain commands, such as **sync** for DataDomain servers might be required) and then reverse the direction of replication.

Verify the replication completion: check the status of the **Most Recently Written Volume Exported**.

- 6) On the former PRIMARY side \A, assign a disk sub-volume for the staging area of its new SECONDARY role.
- 7) On the SECONDARY side \B, complete import activities.

Remove any scheduled Import job in NetBatch.

Check the status of import updates in the **Import Status Page**.

Initiate a last Import update from this page.

Compare the result in the Import Status page to the Export Status page of the other system \A.

Execute a restore LISTONLY from the latest tape volume included in the catalog import.

- 8) Promote the SECONDARY Data Store on side \B to PRIMARY.

Change the domain access to the **Data Store** from SECONDARY to PRIMARY. Configure the Catalog export for the **Data Store**.

Execute a full export.

- 9) On the SECONDARY side \A configure the Catalog Import for the Data Store.

Execute an import update.

When completed successfully, schedule import jobs in Netbatch.

- 10) If possible, schedule full export jobs in NetBatch.

- 11) Execute a test backup on system \B and verify the restore from replicated data and metadata in system \A.

Appendix – Transfer Without Expand

If Expand is not available between the PRIMARY and the SECONDARY sites to quickly move the export files, the user must implement an additional intermediate staging area target of the export function on the PRIMARY side.

The user must set and operate the move of these export files between the intermediate staging area on the PRIMARY side and the staging area on the SECONDARY side.

A way to move the files is to use backup/restore on a BackPak tape volume. This volume will be moved/replicated by the same means as the other BackPak tape volumes are made available to the SECONDARY side.

Important: This special volume **should be not cataloged**. It will be created in a different primary BackPak Data Store: Data Store-2 under a very specific label that will be dedicated to this usage.

The path(s) of this Data Store must also be set for replication, preferably by using the same paths as the main primary Data Store.

On the primary side:

- For a full export, the user must submit a backup of the whole intermediate staging area after the FULL export has completed, to this special not cataloged volume.
- A partial backup should be scheduled as soon as possible after the backup window, to quickly save on the other site the catalog information about the new backups.

On the SECONDARY side:

- On the SECONDARY side, create a **Restricted** Data Store as a pair to Data Store-2. For simplicity use the same name as Data Store-2. This will point to the replication folder where all the volumes from primary site will be restored - including the special un-cataloged volume containing the catalog information.
Before this tape volume can be read on the SECONDARY site, it must be created in this restricted Data Store, in a Volume Group not associated to a DSM/TC or other catalog.
- After a full export and the backup of the staging area in the primary site,
 - Restore the whole content of the backup on the staging area in the SECONDARY site replacing the files that are already existing on disk.
 - In the BackPak UI > **Storage Admin** > **Catalog Import**.
 - Check the statistics about new files to import
 - Initiate a FULL Import
- Injecting the update information into the local catalogs can be operated manually or automatically.
 - The manual operation consists in restoring the special volume that backed up the new catalog data, then through the BackPak UI, in checking the status of the local staging area, and in submitting an update import.

- For the automation, a batch job can be scheduled in NetBatch. It will contain the restore from the special volume including the catalog data and the execution of the TACL macro `BB027_IMPORT_CATALOG` with the parameter `TYPE UPDATE`.

The frequency of this job is less critical as the catalog information is already available in the special volume in the replicated storage.