NetBackup 7.6 Feature Briefing

Secondary operation windows in SLPs

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This document describes a feature introduced in NetBackup 7.6 and available in this and higher releases.

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Feature Description

Storage Lifecycle Policies (SLPs) were first introduced in NetBackup 6.5 as mechanism to control the creation, duplication and retention of backups. The idea behind the SLP model is to simplify backup policy configuration by allowing the same rules on where the backups are stored and for how long to all backups with the same requirements.

One of the original design concepts behind the SLP model was that backups should be duplicated at the first practical opportunity. Rather than limiting duplications to only running at fixed times the SLP model has relied on prioritization of backups and duplications to determine which takes precedence when storage resources are limited. While this approach is very efficient it is quite complex to operate and has discouraged the adoption of SLPs.

NetBackup 7.6 introduces two new features that can be used to control secondary operations such as the duplication, indexing or replication of backup images and snapshots:

1. Operating windows – these restrict the times at which secondary operations can occur and prevent resource contention issues between primary and secondary operations. The same window can be applied to multiple secondary operations on multiple SLPs.
2. Deferred copy creation – the duplication or replication operation is delayed until the source copy of the image is about to expire. This effectively creates a hierarchical storage model where the image copy is "moved" to different locations at it ages.

Business Value

Both of these new features reduce operational expenditure by simplifying the administration of the environment and improving storage performance and space efficiency. The ability to be able to control when duplications and replications occur is particularly useful if the resulting traffic travels over shared networks where bandwidth may be limited at certain times of day. It is also important where public cloud storage is used as some cloud providers charge a premium for uploading data a certain times of day. Deferring copy operations also reduces capital cost by reducing the amount of data being stored unnecessarily and thus the amount of storage required.

Underlying Principles

The secondary operation windows are configured in the same way as the windows in the schedules used in backup policies. The primary difference between the two window types is that windows in backup

policies control when a backup can start but, once started, the backup runs to completion. The windows in SLP operations are operating windows and the operation stops when the window closes.

The exact behavior when the window closes will depend on the storage devices involved and the type of data the operation is carried out on. By default the operation will suspend processing of the "active" images at the time the windows closes and resume where it left off the next time the window opens. However for some storage types, including deduplicating disk storage and NDMP devices, suspending and resuming is not possible. Where these storage types are used the default behavior is to finish processing the active images when the window closes before terminating. However the user has the option to terminate the active processing immediately, in which case any partially processed image data will be discarded. In all cases any unprocessed images in the work list when the window closes will be added to the work list when the window reopens.

SLP windows are applied to individual storage operations so it is possible to limit the times when duplication to individual storage targets is allowed.

Deferred copy creation is also applied to individual storage operations. By default the operation is queued to start 4 hours before the source copy expires. Deferred copy creation uses the same persistent logic that regular SLP copy creation uses. If the processing has not completed when the source copy expires, either because it takes longer than 4 hours or because operating windows or storage availability have not allowed it, the source image is retained until the copy is created and then expired.

Guided Tour

Operating windows are stored independently of the SLP definitions in the relational database and can be added individually from the SLP Windows tab on the Storage Operation GUI (Figure 1).
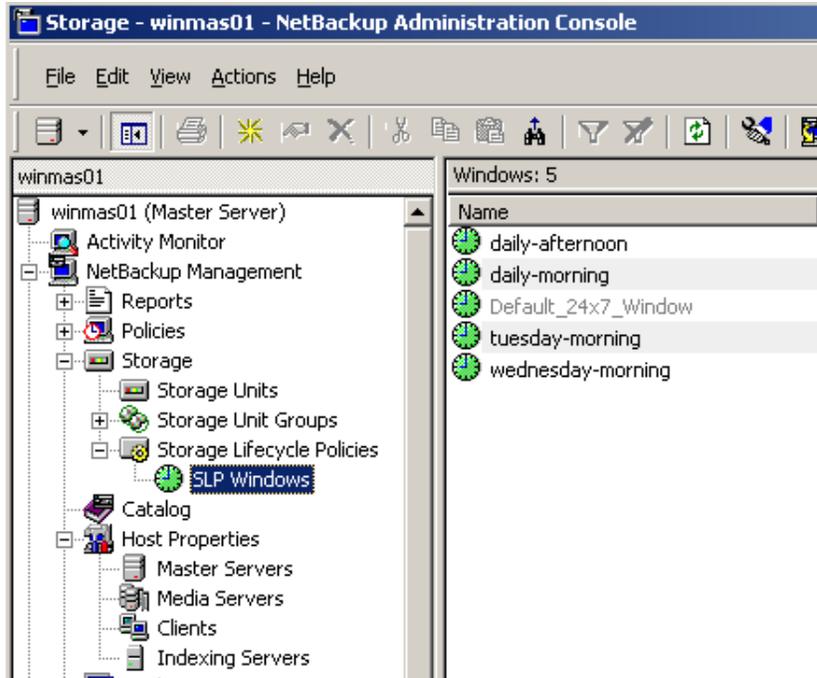
Figure 1- SLP Windows from the administration console

The window "Default_24x7_Window" is applied if no other window is used and allows the default behavior of secondary operations starting as soon as resources are available.

SLP Windows have the same basic attributes as the windows in schedules used for backup policies with windows being open for set periods each day and the ability to specify exclude days. When the windows are associated with SLPs it is possible to run an impact report to see which SLPs are affected by a change to a window (Figure 2)
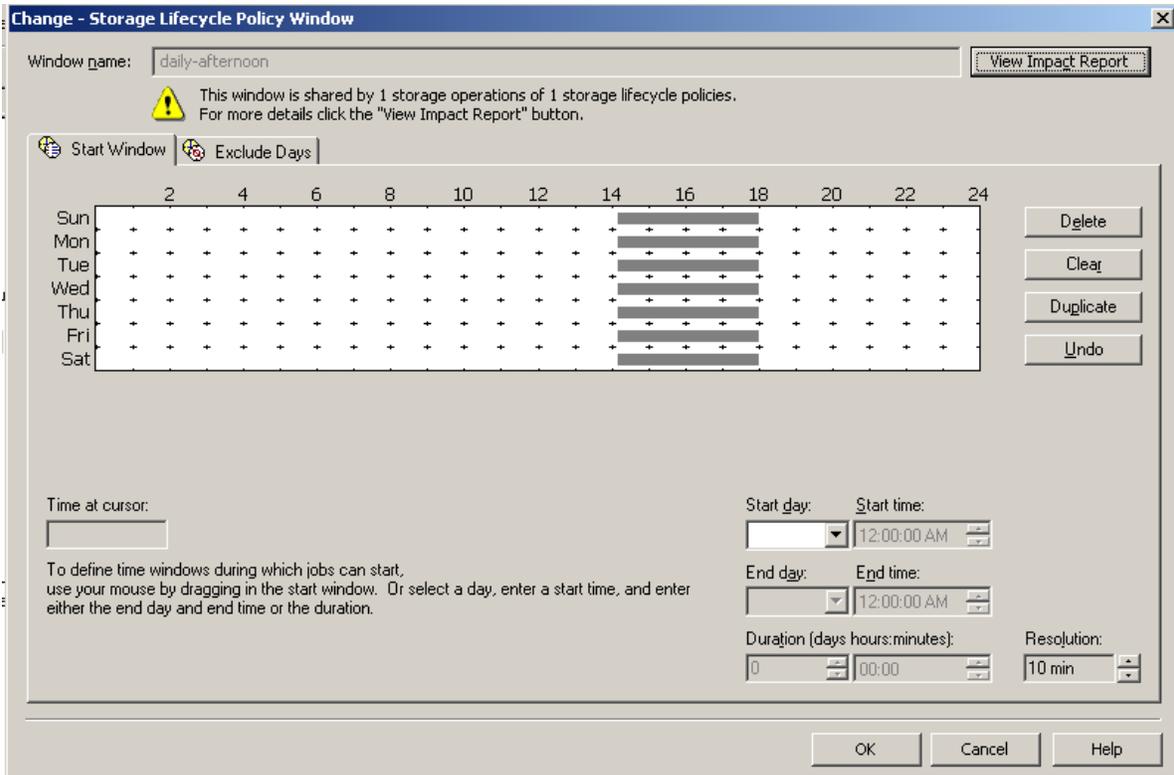
Figure 2 - Window configuration

A window is associated with a Storage Operation by selecting it from the pull down on the "window" tab (Figure 3). If no suitable window exists a new one can be created from the Storage Operation by selecting "create new". This window is added to the SLP Windows database when the SLP definition is saved.
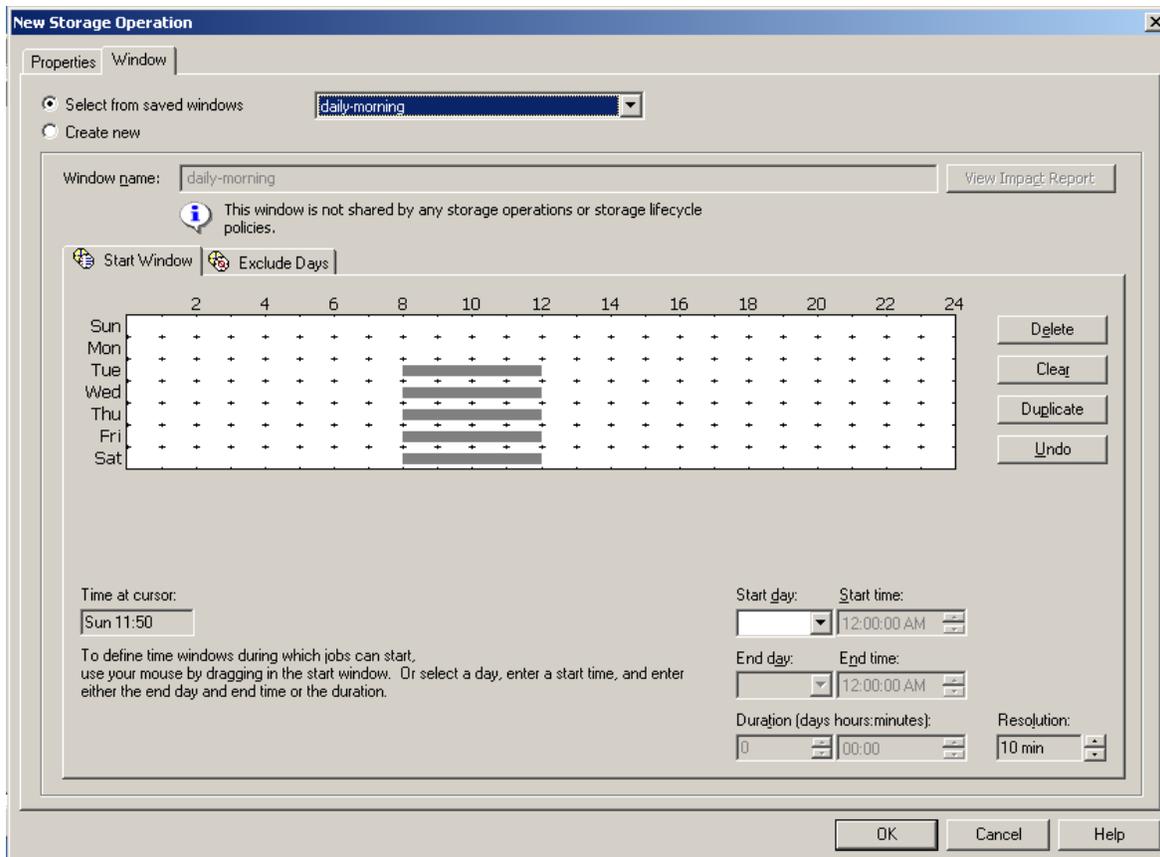
Figure 3 – Applying a window to a storage operation

Configuring deferred copy creation is simply a matter of selecting the option to "Postpone creation of this copy until the source copy is about to expire" on the properties of tab of the storage operation (Figure 4). When this option is selected the operation to create the copy will not be queued until 4 hours before the source copy is due to expire. The source copy will not be expired until the target copy has been created. The period before the source expiration can be adjusted by varying the SLP Parameter "Deferred duplication offset time" in the master server host properties.

Note: In NetBackup 7.6 the LIFECYCLE_PARAMTERS file no longer exists. Instead SLP parameters are stored under the master server host properties in the relational database and are modified from the Administration GUI by going to Host Properties -> Master Server -> SLP Parameters
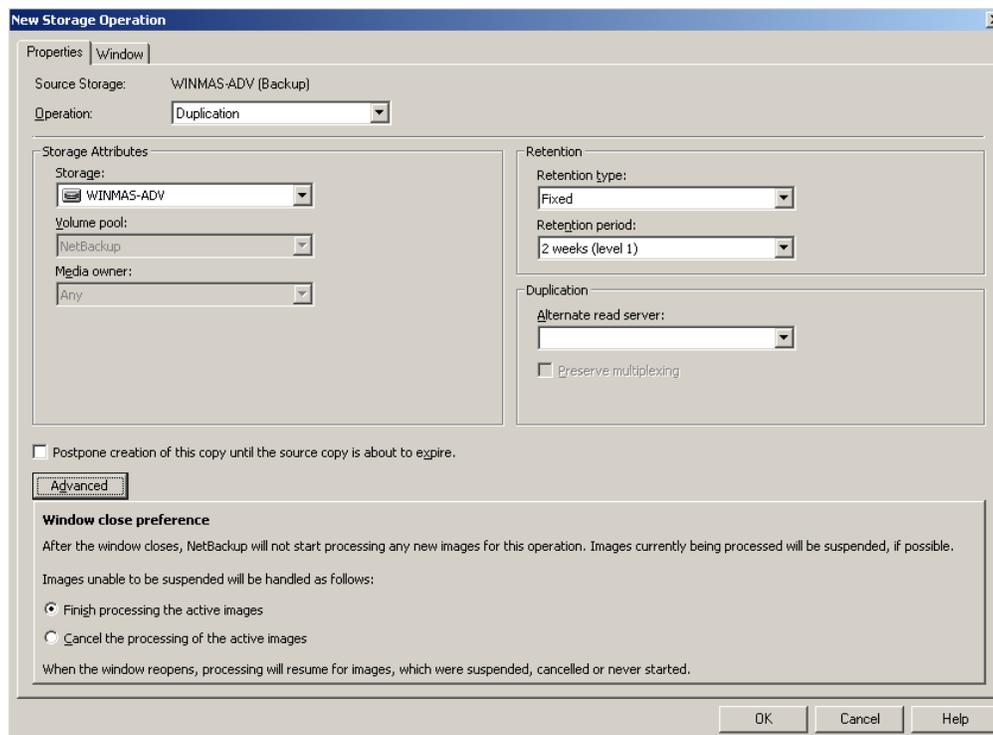
Figure 4 – Storage Operation Properties

This tab also displays the "Window close preference" which determines how images that cannot be suspended when the window closes and handled. By default the processing of the active images will be allowed to complete. Optionally image processing can be terminated when the window closes. In this case the incomplete copies will be removed and the operations will be added to the queue when the window next opens.

Licensing and support considerations

These features are part of the Storage Lifecycle Policies feature and do not require any separate licenses.

Related documents

NetBackup Administrator's Guide, volume I

Best practices for SLPs and AIR in NetBackup 7.6

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