

Symantec NetBackup Blueprints Blueprint for Storage Lifecycle Policies

NetBackup Product Management

Product Management, IMG

Symantec NetBackup Blueprints FEEDBACK





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Symantec NetBackup BlueprintsPreface/disclaimer



Start Preface How to Use Advantages Whiteboards and Diagrams Life Preservers



This NetBackup Blueprint presentation includes example diagrams that contain objects that represent applications and platforms from other companies such as Microsoft and VMware. These diagrams may or may not match or resemble actual implementations found in end user environments. Any likeness or similarity to actual end user environments is completely by coincidence.

The goal of the diagrams included in this blueprint presentation is not to recommend specific ways in which to implement applications and platforms from other companies such as Microsoft and VMware; the purpose of these diagrams is to illustrate NetBackup best practices only.

For guidelines and best practices on installing and configuring applications and platforms from other companies, please refer to best practice documentation and other resources provided by those companies.

Symantec NetBackup Blueprints *How to use*



Start Preface How to Use Advantages Whiteboards and Diagrams Life Preserver

These **Blueprints** are designed to show customer challenges and how NetBackup solves these challenges.

- Each Blueprint consists of:
 - Pain Points: What challenges a customer faces
 - Whiteboard & Example Diagram: Shows how NetBackup solves the customer challenges
 - Advantages: Summarizes the NetBackup advantages
- Use these Blueprints to:
 - Understand the customer challenges and how NetBackup solves them
 - Present the NetBackup best practice solution



Pain Points

NetBackup Blueprints: Storage Lifecycle Policies Today's challenges



- Provide a single place to view the storage plan.
- Create a reusable storage plan for similar types of data.
- Duplications to be created automatically, without manual intervention. Duplications are retried as necessary until they are completed.
- Provide additional staging locations, including all supported disk types, VTL and tape.
- Provide additional staging retentions for greater control of image management.
- Rank backup data according to its business value or importance.
- Uses the desired cache period and the data classification to manage disk capacity.



NetBackup Advantages

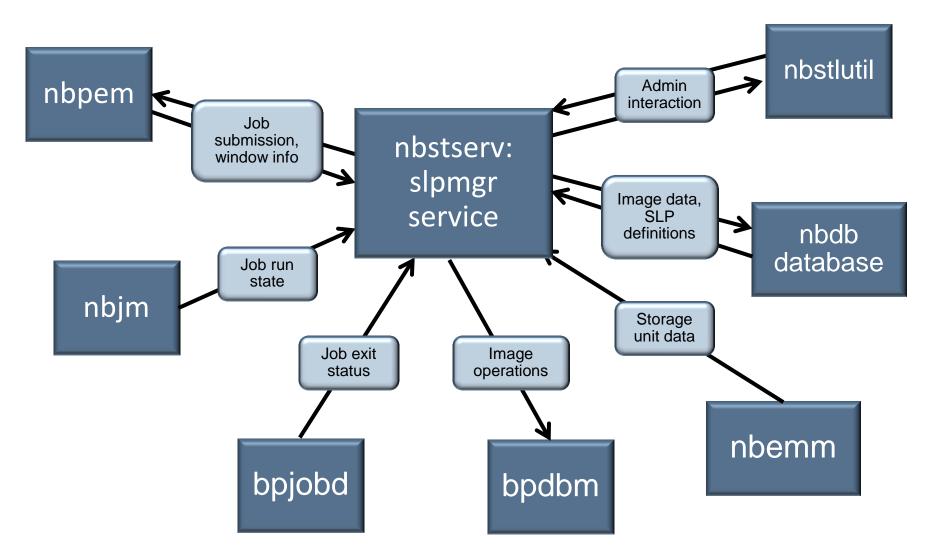
NetBackup Blueprints: Advantages What is SLP?



- A storage lifecycle policy (SLP) is a storage plan for a set of backups.
- A SLP contains instructions in the form of storage operations, to be applied to the data that is backed up by a backup policy.
 Operations are added to the SLP that determine how the data is stored, copied, replicated, and retained. NetBackup retries the copies as necessary to ensure that all copies are created.
- SLPs offer the opportunity for users to assign a classification to the data at the policy level.
- SLPs can be set up to provide staging behavior. They simplify data management by applying a prescribed behavior to all the backup images that are included in the SLP.

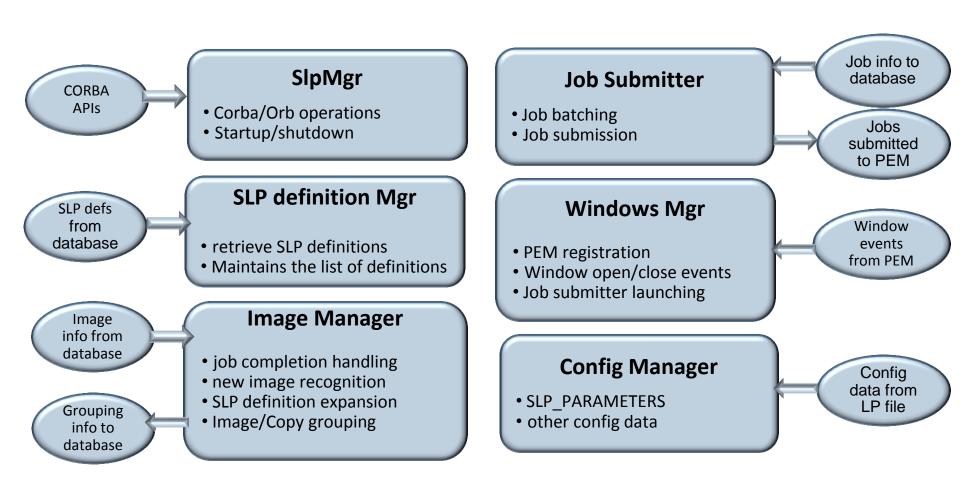
Whiteboards: **SLP** SLP component Interaction





White Boards: **SLP** SLP Manager (SlpMgr) Major Subsystems







Whiteboards and Diagrams

White Boards: **SLP** Terminology



Term	Description
Storage operation	Operations are the instructions for the SLP to follow and apply to the data that is specified in the backup policy.
Retention type	Retention type for an operation in a storage lifecycle policy determines how long the data is kept on that storage media.
Hierarchical operation	One operation depends on another operation. For example, a snapshot may serve as the source for a replication. Or, a backup may serve as the source of a duplication.
Data classification	Data classification(DC) defines the level or classification of data that the SLP is allowed to process. DC is optional.
SLP Windows	SLP Windows define when the job for a secondary storage operation can run. SLP Windows can be shared by SLP, SLP Windows are optional for secondary storage operations. There is a default 24x7 Window defined which will be used if no Window is specified.
Auto Image Replication	Auto Image Replication (AIR) Automates duplication of backup images from one NetBackup domain to another using SLP.

White Boards: SLP Retention type



Retention type	Description
Fixed	Indicates that the data on the storage is retained for the specified length of time, after which the backups or snapshots are expired.
Expire after copy	Indicates that after all direct (child) copies of an image are successfully duplicated to other storage, the data on this storage is expired.
Maximum Snapshot limit	Determines the maximum number of snapshots that can be stored for a particular policy and client pair.
Mirror	Indicates that NetApp volume SnapMirror is to be used as the replication method.
Target retention	Indicates that the data at the target master shall use the expiration date that was imported with the image. This setting is used in AIR.
Capacity managed	NetBackup automatically manages the space on the storage, based on the High water mark setting for each volume.

White Boards: SLP Operation type and Retention type



Retention type	Backup	Snapshot	Replication	Backup From Snapshot	Duplication
Fixed	Valid	Valid	Valid	Valid	Valid
Expire after copy	Valid	Valid	Valid	Valid	Valid
Maximum Snapshot limit	Invalid	Valid	Invalid	Invalid	Invalid
Mirror	Invalid	Invalid	Valid	Invalid	Valid
Target retention	Invalid	Invalid	Valid	Invalid	Valid
Capacity managed	Valid	Invalid	Invalid	Invalid	Valid

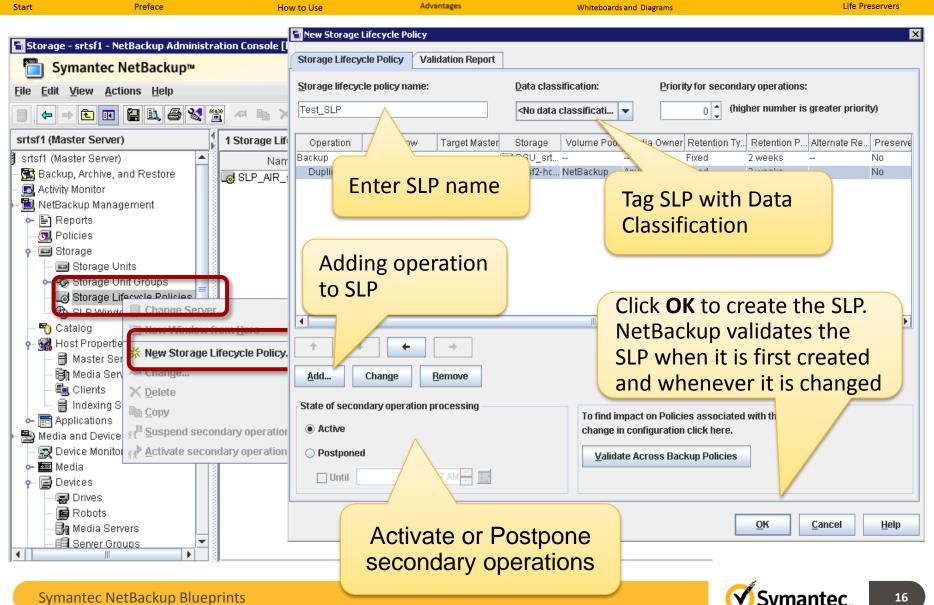
White Boards: **SLP**Prerequisites to creating a SLP



Advantages Whiteboards and Diagrams 1. Design a data protection strategy. 2. Configure physical resources (drives, tapes, disks). 3. Configure logical resources (volume pools, disk pools, storage servers, storage units, storage unit groups, server groups). 4. Configure host properties (maximum backup copies, data classifications).

Example Diagram: SLP **Creating a SLP**





Example Diagram: SLPAdd a Backup Operation



Start Life Preservers Whiteboards and Diagrams New Operation Properties Operation type Source storage: ---Operation: Backup Backup Destination Stor Snap hot ion Retention type Destination stor Impor DSU_srtsf2 Retention type: Volume pool: Fixed Retention period: Media owner: 2 weeks **Backup** operation in a SLP to create a backup. If a **Backup** operation appears in an SLP, it must be the first operation. OK Cancel Help

Example Diagram : SLPAdd a Duplication Operation



Advantages Life Preservers Whiteboards and Diagrams 🔁 New Operation **Properties** Windows Source storage: srtsf2-hcart-robot-tld-0 (Duplication) Operation: Retention type Duplication Destination Storage At butes Retention Destination storage Retention type: srtsf2-hcart-ro/ Fixed Volume pog Retention period: 2 weeks **Duplication** operation to create a Duplication copy of a Backup, a Backup from **Snapshot**, or another **Duplication** Postpone duplication operation. processing until source copy is about to expire Postpone creation of this copy until the source copy is about to expire Advanced Window close behavior After the window closes, NetBackup will not start processing When a SLP window closes, Images currently being processed will be suspended, if pr Images unable to be suspended will be handled as folsecondary SLP jobs are either Finish processing the active images suspended, cancelled or Cancel the processing of the active images continue to finish processing. OK Cancel Help

Example Diagram : SLPAdd a Replication Operation



Advantages Start Whiteboards and Diagrams 🛅 New Operation Window tab appears **Properties** Windows for secondary Source storage: srtsf2-hcart-robot-tld-0 (Backup) Operation: Replication operations in a SLP. Destination Storage Attr utes Send the backups to: All replication tar/ rage servers(across different NetBac nains) for the source Retention type: storage server/ Fixed A specific N Retention period: Tar 2 weeks Replication Director to replicate a snapshot, or Auto Image Replication to replicate a backup. Post out to expire Advanced Window close behavior After the window closes, NetBackup will not start processing any new images for this operation. Images currently being processed will be suspended, if possible. Images unable to be suspended will be handled as follows: Finish processing the active images Cancel the processing of the active images When the window reopens, processing will resume for images which were suspended, cancelled, or never started. OK Cancel <u>H</u>elp

Example Diagram: SLPAdd a Import Operation



Start Life Preservers Whiteboards and Diagrams New Operation **Properties** Windows Source storage: ---Operation: Import $\overline{}$ Destination Storag Attributes Retention Destination stor Retention type DSU_srtsf2 $\overline{}$ Retention type: Import Target Retention Over/ brity Expire after copy Fixed **Import** operation in an SLP indicates Target Retention that the SLP is to automatically import Advanced images into the target master domain. Use the **Import** operation as part of Auto Image Replication. okCancel <u>H</u>elp

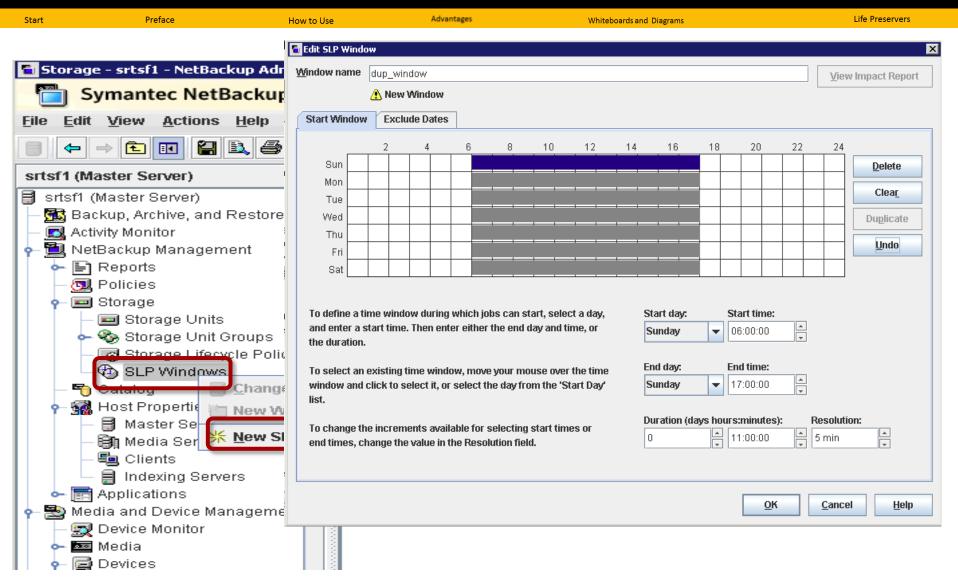
Example Diagram: SLPAdd a Snapshot Operation



Advantages Life Preservers Start Whiteboards and Diagrams 🔁 New Operation **Properties** Source storage: ---Operation: Snapshot Retention type Destination Storage ibutes Retention Destination storage Retention type: srtsf2-hcart-rob/ Maximum snapshot limit Fixed Maximum snapshot limit Expire after copy **Snapshot** operation creates a point-intime, read-only, disk-based copy of a client volume. Use a **Snapshot** operation as the first operation in a SLP for a Replication Director configuration. **OK** Cancel Help

Example Diagram: SLP SLP Window





Example Diagram: SLP SLP Window in operation



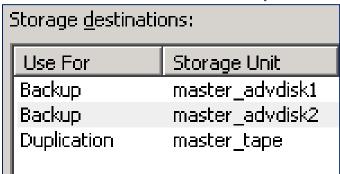
Advantages Life Preservers Start Whiteboards and Diagrams New Operation × **Properties** Windows Select from saved windows Create <u>n</u>ew Window name air_windows View Impact Report 🔥 New Window Start Window **Exclude Dates** 22 24 **Window** tab appears for secondary Sun Delete Mon operations in a SLP. Either assign an Clear Tue existing window to the operation or Wed Duplicate Thu create a new window for the Undo Fri Sat operation To define a time window during w day, and enter a start time. Then enter either the end day and 07:00:00 Sunday time, or the duration. End day: End time: To select an existing time window, move your mouse over the Sunday 18:00:00 time window and click to select it, or select the day from the 'Start Day' list. Duration (days hours:minutes): Resolution: To change the increments available for selecting start times or 0 11:00:00 5 min end times, change the value in the Resolution field. OK Cancel Help

Whiteboards: **SLP**Configuring hierarchical operation



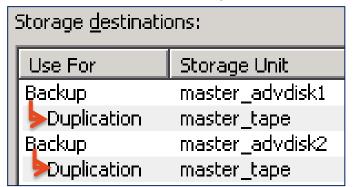
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Without hierarchical duplication:



- Backups run first, as inline copies.
- Duplications are scheduled using the primary backup copy.

With hierarchical duplication:



- Backups run first, as inline copies.
- Duplications are scheduled using the backup copy to which they are assigned in the hierarchy.
- Multiple levels of duplication hierarchy can be configured.

Buttons in the storage lifecycle policy enable the administrator to customize the hierarchy.



Whiteboards: **SLP** SLP Logs



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• Monitor SLP activity and status by viewing the log messages that the SLP processes generate. Veritas unified log (VxUL) files use a standardized name and file format for log files. An originator ID identifies the process that writes the log messages.

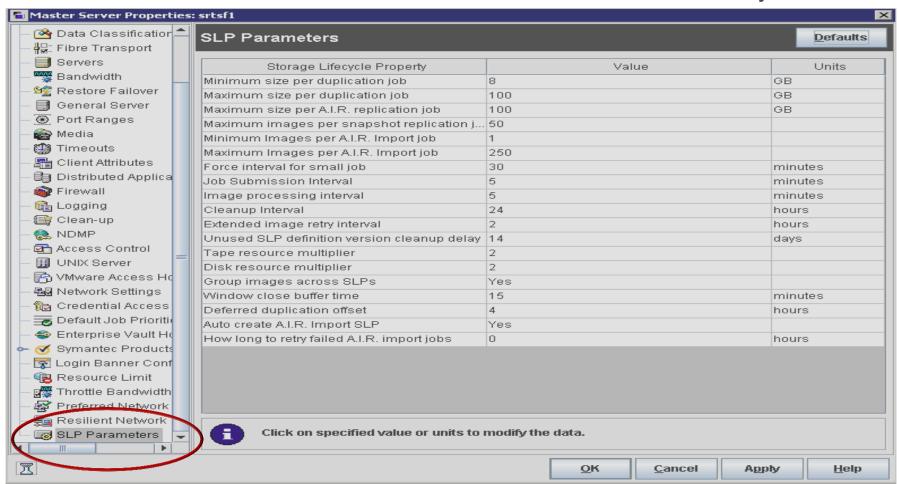
Originator ID	SLP processes that use the ID
226	Storage services controls the lifecycle image duplication operations
272	Expiration Manager handles the capacity management and the image expiration for storage lifecycle operations.
369	NetBackup Import Manager.

Example Diagram: SLP SLP Parameters



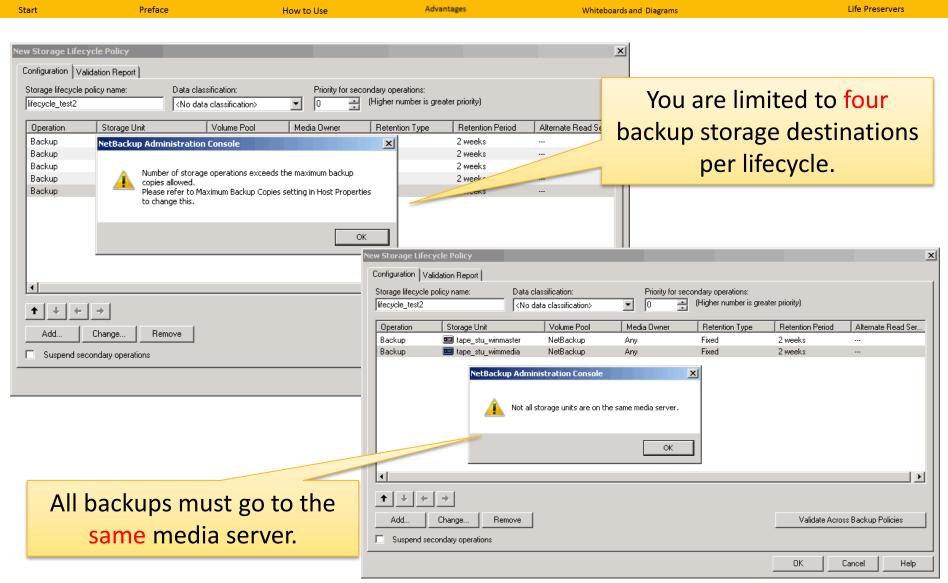
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• SLP Parameters properties in the NetBackup Administration Console allow administrators to customize how SLP are maintained and how SLP jobs run.



Example Diagram: SLP SLP Restrictions





White Boards: **SLP**Managing Lifecycle Operation



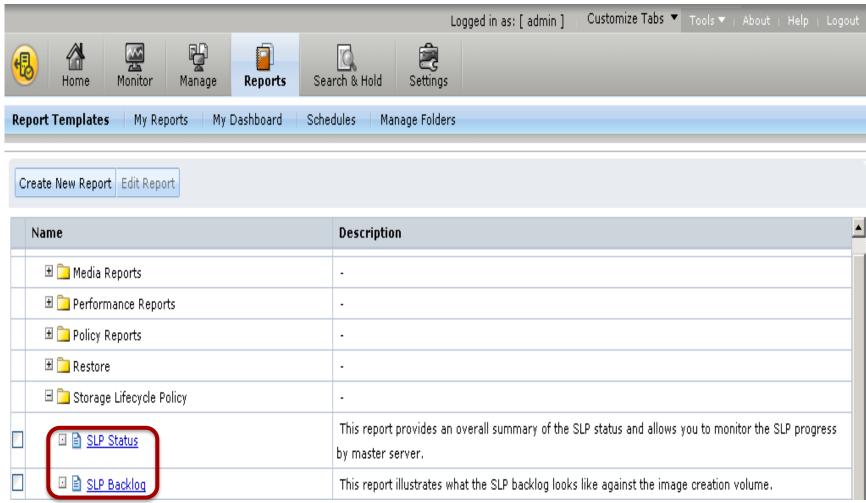
Whiteboards and Diagrams If you want to ... Use this command nbstlutil active Activate or resume suspended SLP operations on an image or image [-lifecycle name] [-version number] [-destination name] copy [-backupid value] nbstlutil inactive Deactivate or suspend pending and future SLP operations on an [-lifecycle name] [-version number] [-destination name] image or image copy [-backupid value] nbstlutil cancel Cancel pending duplication operations on an image or image [-lifecycle name] [-version number] [-destination name] copy [-backupid value] nbstlutil redo Repeat an SLP operation on an -backupid value image or recreate a copy -slpindex value nbstlutil list -copy_type [0|1|2|3|4] List lifecycle operations

White Boards: **SLP** Reporting



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OpsCenter now includes reporting for SLP and Auto Image Replication



Example Diagram : SLP SLP Status report



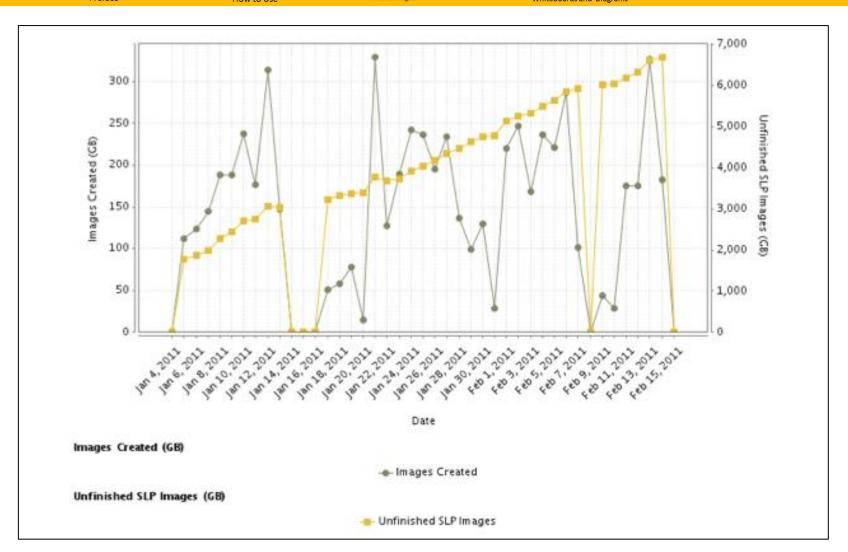
SLP Status												
Master Server (where the SLP lives)	Oldest Unfinished Image	Total Clients	Total Existing Images	Images % SLP Complete	Images SLP Complete	Images Not SLP Complete	Total Expected Copies	% Copy Complete	Copies Completed	Copies Not Complete	Total Expect Size - a copies	
master1	-	<u>2</u>	<u>631</u>	100	<u>631</u>	<u>0</u>	<u>1252</u>	100	<u>1252</u>	<u>0</u>	123,9	

SLP Status By SLP													
Master Server (where the SLP lives)	SLP Name	SLP Version	Oldest Unfinished Image	Total Clients	Total Existing Images		Images SLP Complete	Images Not SLP Complete	Total Expected Copies	% Copy Complete	Copies Completed	Copies Not Complete	Total Exper Size - copie
master1	AIR-DUPE-MSDP	<u>0</u>	-	2	326	100	<u>326</u>	0	<u>652</u>	100	<u>652</u>	0	93,86
master1	ØPT-DUPE-MSDP	1	•	1	<u>305</u>	100	<u>305</u>	<u>0</u>	<u>600</u>	100	<u>600</u>	<u>0</u>	30,11

SLP Status By Destinations												
Master Server (where the SLP lives)	SLP Name	SLP Version	Data Classification	Origin Master Server (created the image)	Operation	Retention	Destination	Average Lag Time:(Copy Time - Backup Time)	Total Expected Copies	Copies Completed	% Copy Complete	Total Expec Size - copies
master1	AIR-DUPE-MSDP	0	-	master1	Backup	Fixed	MEDIA1-MSDP	0	326	326	100	46,93
master1	AIR-DUPE-MSDP	0	-	master1	Duplication	Fixed	*Remote*Master*	429,055.012	326	326	100	46,93

Example Diagram : SLP SLP Backlog report







Life Preservers

Best Practices: **SLP Duplication best practices**



- Plan for duplication time. Duplication of a backup usually takes longer than writing the initial backup itself.
- Use OpenStorage devices rather than VTLs. OpenStorage devices can also take advantage of NetBackup's "optimized duplication" capability to duplicate images more efficiently.
- Use "Maximum I/O streams per volume" with Disk Pools to limit the total number of jobs that access the disk pool concurrently.
- Be conservative when using storage unit groups with Media Server Load Balancing. Using the Media Server Load Balancing option on storage unit groups can negatively affect Resource Broker performance.

Best Practices: SLP Rules and recommendations



- All SLPs that write to a volume in a disk storage unit should write images of the same retention type: fixed or capacitymanaged.
- Do not write images both to a volume in a disk storage unit within an SLP and to the same volume (by the storage unit) directly from a policy.
- Mark all disk storage units that are used with SLPs as On demand only.
- Check any storage unit groups to make sure that fixed and capacity-managed images cannot be written to the same volume in a disk storage unit.

Best Practices: SLP General best practices



- Introduce SLPs into the environment gradually.
- Balance your duplication resources.
- Avoid increasing backlog. Monitoring SLP progress and backlog growth.
- Reduce backlog by delaying or canceling the duplication of the older images.
- Be conservative with the number of SLPs you create.
- Reduce device contention by using windows to control SLP operations
- Use Duplication Job Priority to give backups priority over duplications.
- Use duplication job priority to group SLPs.
- Be conservative when using storage unit groups with Inline Copy.
- Use Network Optimized Duplication to reduce traffic over the LAN.
- Performance considerations for preferred and required options.
- Large duplication jobs are more efficient.



Best Practices: SLP Top Support Technotes



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Best Practices for using SLP and AIR in NetBackup 7.6

http://www.symantec.com/docs/TECH208536

NetBackup Administrator's Guide, Volume I

http://www.symantec.com/docs/DOC6452

NetBackup 7.6 Troubleshooting Guide

http://www.symantec.com/docs/DOC6470

Thank You!

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