NetBackup Best Practice

Using Tape Storage with Deduplicating Disk Storage

This document looks at best practices around creating multiple copies of backups on a mixture of tape and deduplicating disk storage.

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This document applies to NetBackup: 6.5.x, 7.0, 7.0.1 and 7.1 and to PureDisk 6.5, 6.6 and 6.6.1.

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Introduction

The use of deduplicating disk storage as a backup medium is becoming increasingly common both with deduplicating OpenStorage devices, including PureDisk Deduplication Option (PDDO), and with NetBackup's built in Media Server Deduplication Option (MSDP). However for long term storage tape still offers the best storage solution (particularly if the backups are to be stored at an off-site location) and it is becoming increasingly common to create copies of the backup on both deduplicating disk storage and tape.

The different characteristics of deduplicating disk storage and tape mean that, while it is possible to duplicate data directly from one to the other transfer rates may not always be optimal. In extreme cases this may cause the tape drive to drop out of streaming mode which both reduces transfer rates and degrades the tape drive reliability. This paper presents some recommended best practice options for optimal performance when creating multiple copies of backups and storing them on deduplicated disk storage and tape.

Best practice for creating disk and tape copies at the primary site

In most cases writing the backup to the deduplicating disk storage and then deduplicating it to tape, as shown in Figure 1, will result in acceptable transfer rates but in some cases the performance may be less than optimal.

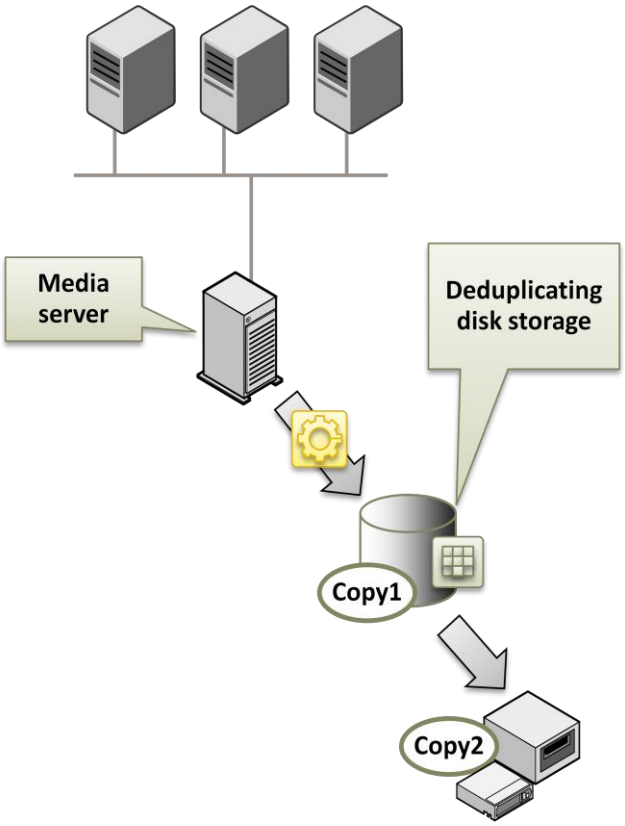

Figure 1 – Write to deduplicating storage and then duplicate to tape

In the event that poor performance is experienced it is recommended that the tape copy is made independently of the deduplicated disk copy. This can be achieved either during the backup itself using

the in-line copy feature in NetBackup as shown in Figure 2 or after staging to an AdvancedDisk storage unit as shown in Figure 3.

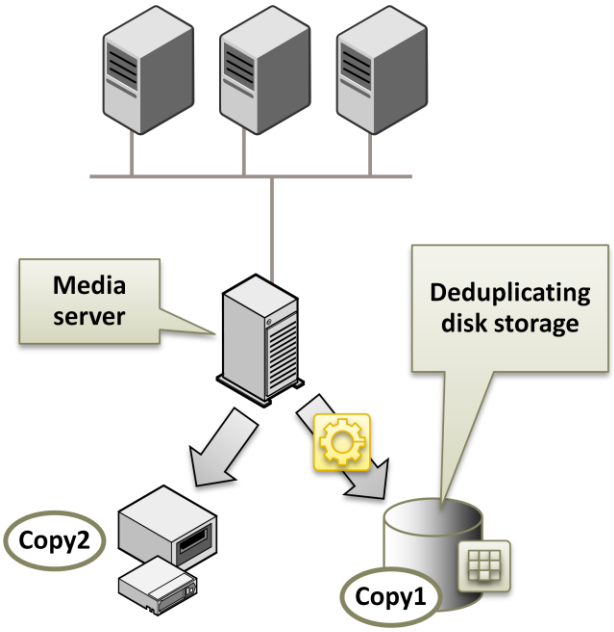

Figure 2 – In-line backup direct to tape and deduplicating storage

Using the in-line copy feature requires both the tape and disk storage to be presented to the same media server. Staging allows the copies to be duplicated over the LAN using different media servers.

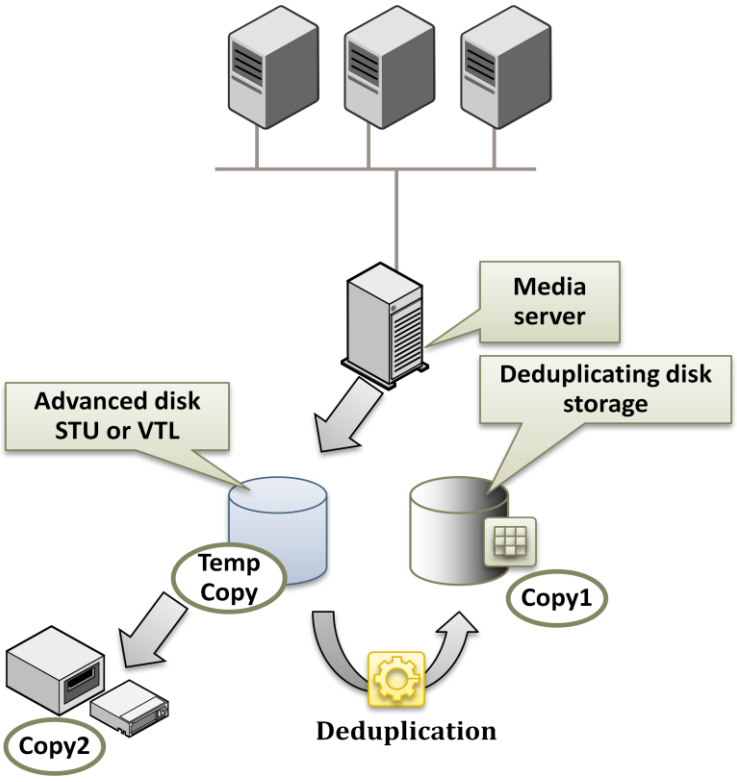

Figure 3 - Staging to AdvancedDisk before copying

The disadvantage of staging is the need for additional disk storage. However if SLPs are used with the retention on the AdvancedDisk storage set to 'expire on duplication' this requirement can be minimized.

Best practice for creating tape copies from disk at a secondary site

One of the primary use cases for optimized duplication is to electronically "off-site" backups over limited bandwidth connections. Once a copy exists at the off-site location it is then often copied to tape for long term storage (possibly at a 3rd party storage facility). Duplication directly from the deduplicating disk storage to tape, as shown in Figure 4, is possible and usually provides acceptable transfer rates but in some cases the performance may be less than optimal.

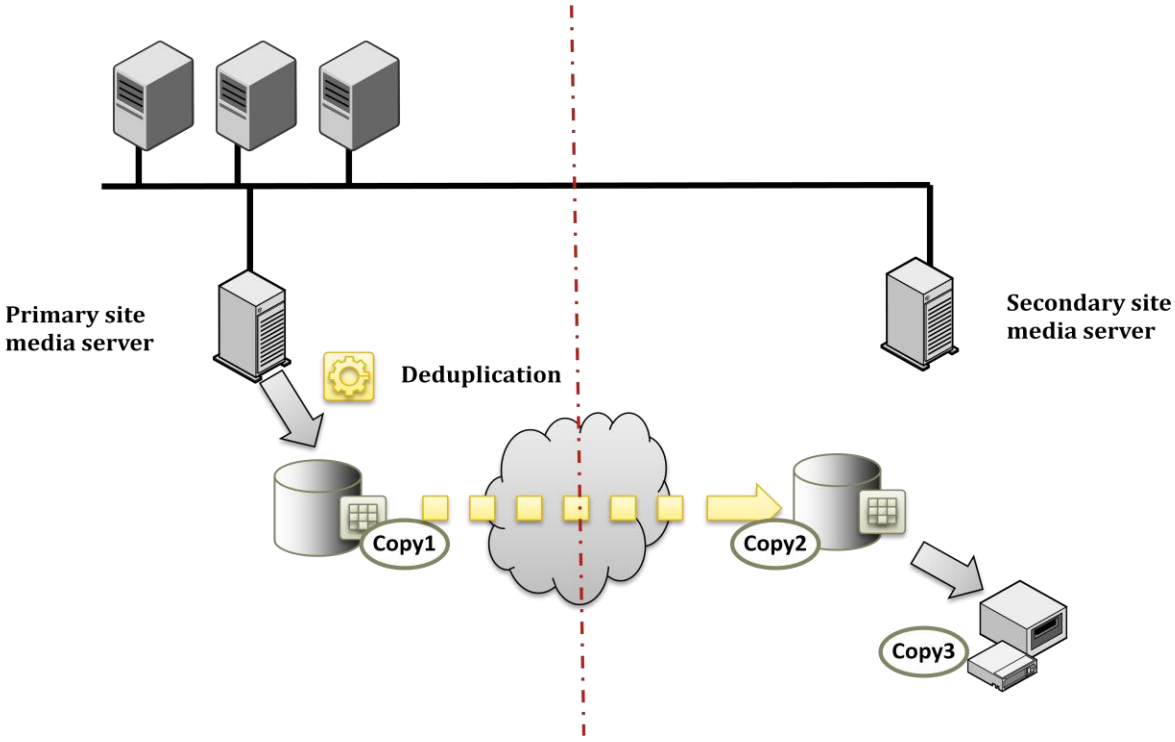

Figure 4 – Direct duplication at the secondary site

In the event that poor performance is seen when duplicating to tape at a secondary site the recommendation is to stage the copy on AdvancedDisk storage prior to sending it to tape as shown in Figure 5. Staging in this way allows the AdvancedDisk storage to act as a buffer providing optimal transfer rates both from the deduplicating storage and to the tape storage.

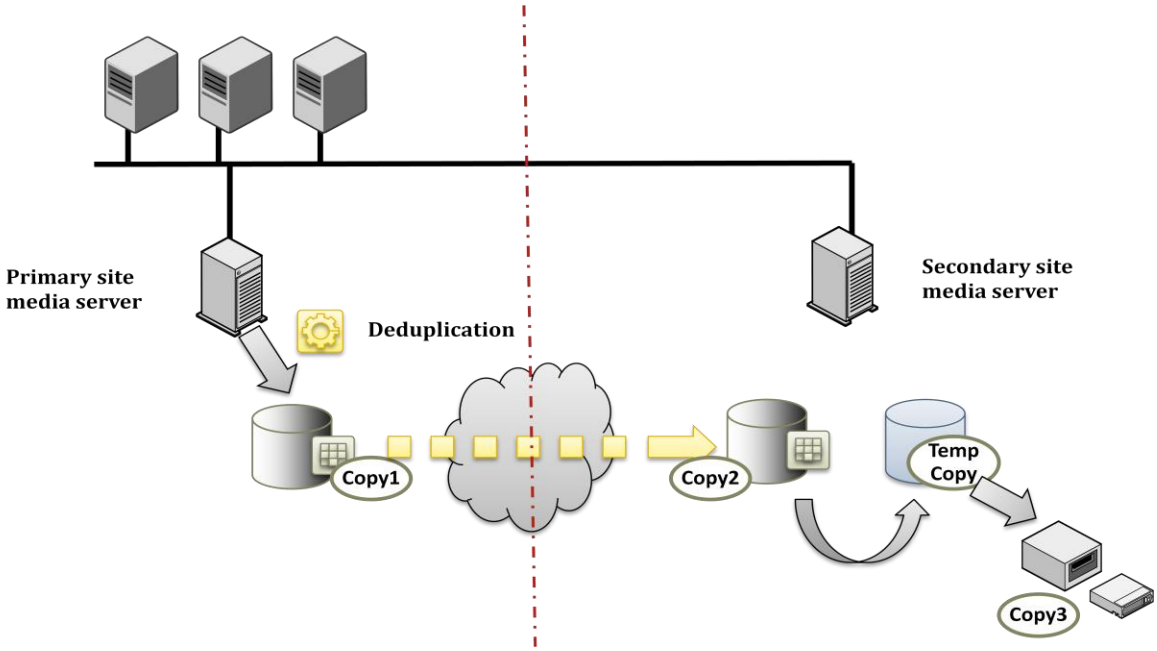

Figure 5 - Staging at the secondary site

Best practice for creating tape and disk copies at both sites

These approaches for primary as secondary site can be combined in situations where tape copies are required at both sites as shown in Figure 6.

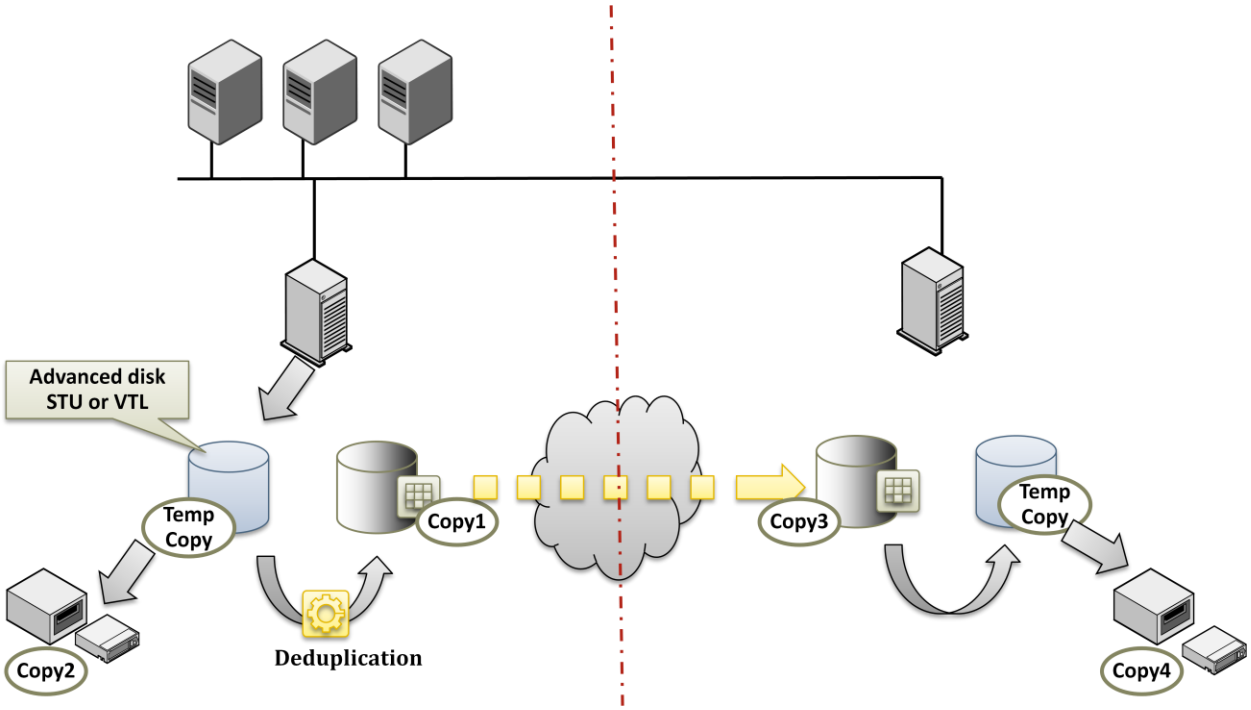

Figure 6 - Staging at both sites.

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