

Data Protection of NetApp Storage in Virtualized Environments



Backup in the Virtual World

The benefits of server virtualization are obvious: increased utilization rates, increased business flexibility, lower hardware costs, better utilization of computing resources, reduced space requirements, power and cooling requirements and improved IT staff productivity. However, none of these benefits can be realized if IT doesn't address the new challenges that virtualization can bring when it comes to protecting data. Data protection challenges associated with expanded use of virtualization includes increased risks to enterprise data and additional costs to protect that data.

Backing up virtualized environments presents very different challenges than in the physical world. As more production environments include both virtual and physical servers, the methods of backing them up make it difficult to determine which guests are backed up and therefore which applications are being protected. Meanwhile, regulatory compliance and business continuity requirements must continue to be maintained.

Visibility- Do You Know What Has Been Backed Up?

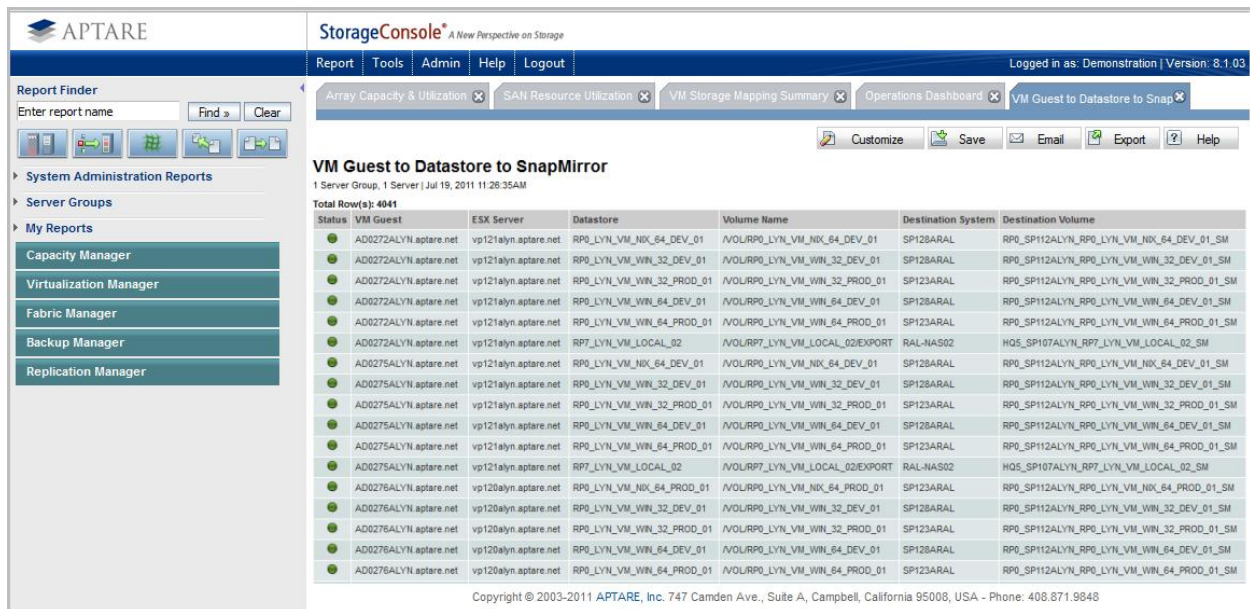
Current backup software was made for physical environments and doesn't provide the visibility required for IT to be assured that their data is protected and that it can be recovered quickly. In the virtual world, VM guests are not backed up individually like physical servers. VM guests usually are mapped to a common data source and when the data source is backed up it is assumed that all the guests are backed up as well. The backup, whether by Snapshot®, SnapVault® or traditional method, does not have awareness of the guests or their applications.

For instance, in a NetApp® environment using NetBackup® once a SnapVault is backed up, there is no visibility into it and it is very difficult to tell if the VM guests that make up that SnapVault are part of a critical business application, such as SAP or Oracle. Further complicating the issue is that once the SnapVaults are moved to an off-site facility, they become further abstracted from the origin of the data, making visibility nearly impossible.

The Solution: APTARE StorageConsole

APTARE StorageConsole is a single platform that provides a storage perspective of the data center from the physical, virtual and backup environments. Using a common, standard database across all products, APTARE StorageConsole maintains the detailed relationships between all three components of your storage environment related to VM storage and backup: (1) Virtual Servers, their guests, and the storage to which they are mapped; (2) Storage Arrays, their volumes and Snapshots; and (3) Backups, including environment, jobs, policies, schedules, and retention periods. APTARE StorageConsole provides the visibility needed to proactively manage your virtualized backup environment and proactively achieve data compliance.

The following APTARE report consolidates all of the critical information into one report, enabling an at-a-glance view of VM guests, along with their locations on the destination systems and volumes.

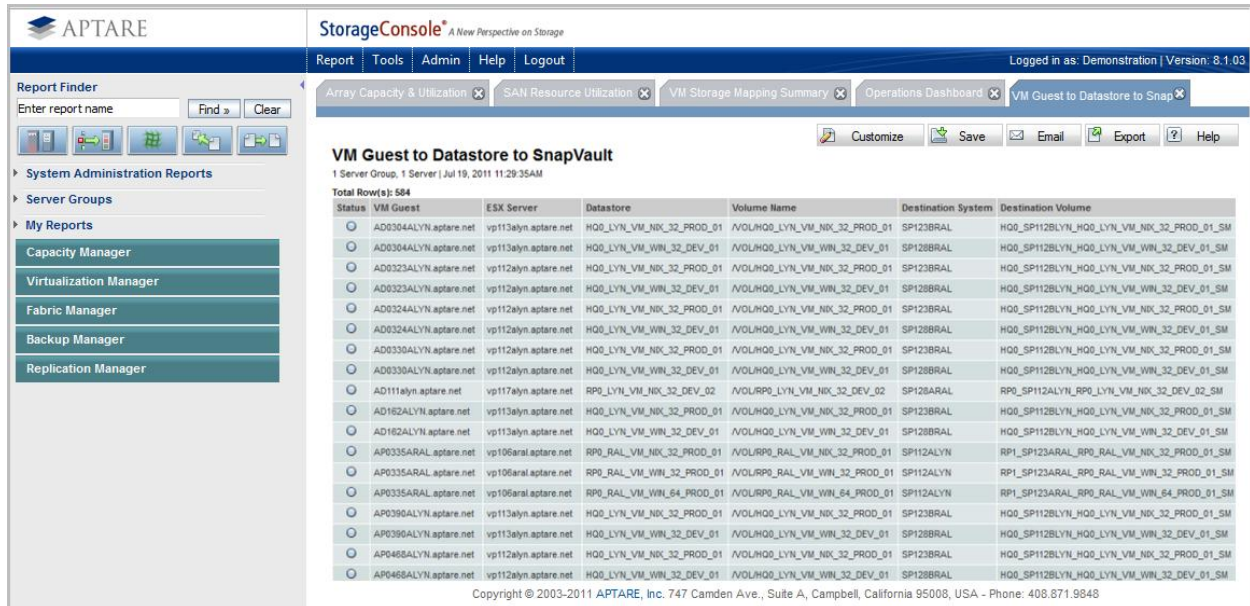


The screenshot displays the APTARE StorageConsole interface. The top navigation bar includes 'Report', 'Tools', 'Admin', 'Help', and 'Logout'. The user is logged in as 'Demonstration' on version 8.1.03. The main content area shows a report titled 'VM Guest to Datastore to SnapMirror' for 1 Server Group, dated July 19, 2011, at 11:26:35AM. The report contains 4041 rows of data. The table below summarizes the data columns and provides a sample of the content.

Status	VM Guest	ESX Server	Datastore	Volume Name	Destination System	Destination Volume
●	AD0272ALYN.aptare.net	vp121alyn.aptare.net	RP0_LYN_VM_NDK_64_DEV_01	/VOLRR0_LYN_VM_NDK_64_DEV_01	SP128ARAL	RP0_SP112ALYN_RP0_LYN_VM_NDK_64_DEV_01_SM
●	AD0272ALYN.aptare.net	vp121alyn.aptare.net	RP0_LYN_VM_WIN_32_DEV_01	/VOLRR0_LYN_VM_WIN_32_DEV_01	SP128ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_32_DEV_01_SM
●	AD0272ALYN.aptare.net	vp121alyn.aptare.net	RP0_LYN_VM_WIN_32_PROD_01	/VOLRR0_LYN_VM_WIN_32_PROD_01	SP123ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_32_PROD_01_SM
●	AD0272ALYN.aptare.net	vp121alyn.aptare.net	RP0_LYN_VM_WIN_64_DEV_01	/VOLRR0_LYN_VM_WIN_64_DEV_01	SP128ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_64_DEV_01_SM
●	AD0272ALYN.aptare.net	vp121alyn.aptare.net	RP0_LYN_VM_WIN_64_PROD_01	/VOLRR0_LYN_VM_WIN_64_PROD_01	SP123ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_64_PROD_01_SM
●	AD0272ALYN.aptare.net	vp121alyn.aptare.net	RP7_LYN_VM_LOCAL_02	/VOLRR7_LYN_VM_LOCAL_02EXPORT	RAL-NAS02	H05_SP107ALYN_RP7_LYN_VM_LOCAL_02_SM
●	AD0275ALYN.aptare.net	vp121alyn.aptare.net	RP0_LYN_VM_NDK_64_DEV_01	/VOLRR0_LYN_VM_NDK_64_DEV_01	SP128ARAL	RP0_SP112ALYN_RP0_LYN_VM_NDK_64_DEV_01_SM
●	AD0275ALYN.aptare.net	vp121alyn.aptare.net	RP0_LYN_VM_WIN_32_DEV_01	/VOLRR0_LYN_VM_WIN_32_DEV_01	SP128ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_32_DEV_01_SM
●	AD0275ALYN.aptare.net	vp121alyn.aptare.net	RP0_LYN_VM_WIN_32_PROD_01	/VOLRR0_LYN_VM_WIN_32_PROD_01	SP123ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_32_PROD_01_SM
●	AD0275ALYN.aptare.net	vp121alyn.aptare.net	RP0_LYN_VM_WIN_64_DEV_01	/VOLRR0_LYN_VM_WIN_64_DEV_01	SP128ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_64_DEV_01_SM
●	AD0275ALYN.aptare.net	vp121alyn.aptare.net	RP0_LYN_VM_WIN_64_PROD_01	/VOLRR0_LYN_VM_WIN_64_PROD_01	SP123ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_64_PROD_01_SM
●	AD0275ALYN.aptare.net	vp121alyn.aptare.net	RP7_LYN_VM_LOCAL_02	/VOLRR7_LYN_VM_LOCAL_02EXPORT	RAL-NAS02	H05_SP107ALYN_RP7_LYN_VM_LOCAL_02_SM
●	AD0276ALYN.aptare.net	vp120alyn.aptare.net	RP0_LYN_VM_NDK_64_PROD_01	/VOLRR0_LYN_VM_NDK_64_PROD_01	SP123ARAL	RP0_SP112ALYN_RP0_LYN_VM_NDK_64_PROD_01_SM
●	AD0276ALYN.aptare.net	vp120alyn.aptare.net	RP0_LYN_VM_WIN_32_DEV_01	/VOLRR0_LYN_VM_WIN_32_DEV_01	SP128ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_32_DEV_01_SM
●	AD0276ALYN.aptare.net	vp120alyn.aptare.net	RP0_LYN_VM_WIN_32_PROD_01	/VOLRR0_LYN_VM_WIN_32_PROD_01	SP123ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_32_PROD_01_SM
●	AD0276ALYN.aptare.net	vp120alyn.aptare.net	RP0_LYN_VM_WIN_64_DEV_01	/VOLRR0_LYN_VM_WIN_64_DEV_01	SP128ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_64_DEV_01_SM
●	AD0276ALYN.aptare.net	vp120alyn.aptare.net	RP0_LYN_VM_WIN_64_PROD_01	/VOLRR0_LYN_VM_WIN_64_PROD_01	SP123ARAL	RP0_SP112ALYN_RP0_LYN_VM_WIN_64_PROD_01_SM

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This APTARE StorageConsole report lists the information as it relates to the VM guest for SnapVault backups.



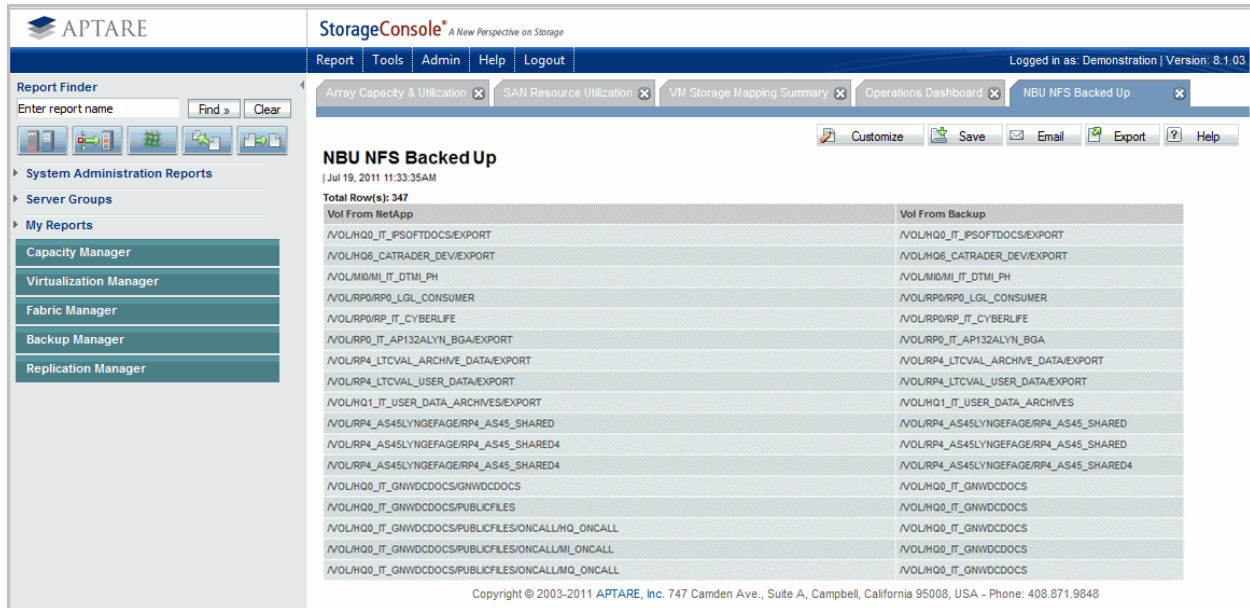
VM Guest to Datastore to SnapVault
1 Server Group, 1 Server | Jul 19, 2011 11:29:35AM

Total Row(s): 54

Status	VM Guest	ESX Server	Datastore	Volume Name	Destination System	Destination Volume
<input type="radio"/>	AD0304ALYN.aplare.net	vp113alyn.aplare.net	HQ0_LYN_VM_NKX_32_PROD_01	/VOL/HQ0_LYN_VM_NKX_32_PROD_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_NKX_32_PROD_01_SM
<input type="radio"/>	AD0304ALYN.aplare.net	vp113alyn.aplare.net	HQ0_LYN_VM_WIN_32_DEV_01	/VOL/HQ0_LYN_VM_WIN_32_DEV_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_WIN_32_DEV_01_SM
<input type="radio"/>	AD0323ALYN.aplare.net	vp112alyn.aplare.net	HQ0_LYN_VM_NKX_32_PROD_01	/VOL/HQ0_LYN_VM_NKX_32_PROD_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_NKX_32_PROD_01_SM
<input type="radio"/>	AD0323ALYN.aplare.net	vp112alyn.aplare.net	HQ0_LYN_VM_WIN_32_DEV_01	/VOL/HQ0_LYN_VM_WIN_32_DEV_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_WIN_32_DEV_01_SM
<input type="radio"/>	AD0324ALYN.aplare.net	vp112alyn.aplare.net	HQ0_LYN_VM_NKX_32_PROD_01	/VOL/HQ0_LYN_VM_NKX_32_PROD_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_NKX_32_PROD_01_SM
<input type="radio"/>	AD0324ALYN.aplare.net	vp112alyn.aplare.net	HQ0_LYN_VM_WIN_32_DEV_01	/VOL/HQ0_LYN_VM_WIN_32_DEV_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_WIN_32_DEV_01_SM
<input type="radio"/>	AD0330ALYN.aplare.net	vp112alyn.aplare.net	HQ0_LYN_VM_NKX_32_PROD_01	/VOL/HQ0_LYN_VM_NKX_32_PROD_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_NKX_32_PROD_01_SM
<input type="radio"/>	AD0330ALYN.aplare.net	vp112alyn.aplare.net	HQ0_LYN_VM_WIN_32_DEV_01	/VOL/HQ0_LYN_VM_WIN_32_DEV_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_WIN_32_DEV_01_SM
<input type="radio"/>	AD111alyn.aplare.net	vp117alyn.aplare.net	RP0_LYN_VM_NKX_32_DEV_02	/VOL/RRP0_LYN_VM_NKX_32_DEV_02	SP123ARAL	RP0_SP112ALYN_RP0_LYN_VM_NKX_32_DEV_02_SM
<input type="radio"/>	AD162ALYN.aplare.net	vp113alyn.aplare.net	HQ0_LYN_VM_NKX_32_PROD_01	/VOL/HQ0_LYN_VM_NKX_32_PROD_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_NKX_32_PROD_01_SM
<input type="radio"/>	AD162ALYN.aplare.net	vp113alyn.aplare.net	HQ0_LYN_VM_WIN_32_DEV_01	/VOL/HQ0_LYN_VM_WIN_32_DEV_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_WIN_32_DEV_01_SM
<input type="radio"/>	AP033ARAL.aplare.net	vp106aral.aplare.net	RP0_RAL_VM_NKX_32_PROD_01	/VOL/RRP0_RAL_VM_NKX_32_PROD_01	SP112ALYN	RP1_SP123ARAL_RP0_RAL_VM_NKX_32_PROD_01_SM
<input type="radio"/>	AP033ARAL.aplare.net	vp106aral.aplare.net	RP0_RAL_VM_WIN_32_PROD_01	/VOL/RRP0_RAL_VM_WIN_32_PROD_01	SP112ALYN	RP1_SP123ARAL_RP0_RAL_VM_WIN_32_PROD_01_SM
<input type="radio"/>	AP033ARAL.aplare.net	vp106aral.aplare.net	RP0_RAL_VM_WIN_64_PROD_01	/VOL/RRP0_RAL_VM_WIN_64_PROD_01	SP112ALYN	RP1_SP123ARAL_RP0_RAL_VM_WIN_64_PROD_01_SM
<input type="radio"/>	AP0390ALYN.aplare.net	vp113alyn.aplare.net	HQ0_LYN_VM_NKX_32_PROD_01	/VOL/HQ0_LYN_VM_NKX_32_PROD_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_NKX_32_PROD_01_SM
<input type="radio"/>	AP0390ALYN.aplare.net	vp113alyn.aplare.net	HQ0_LYN_VM_WIN_32_DEV_01	/VOL/HQ0_LYN_VM_WIN_32_DEV_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_WIN_32_DEV_01_SM
<input type="radio"/>	AP0465ALYN.aplare.net	vp112alyn.aplare.net	HQ0_LYN_VM_NKX_32_PROD_01	/VOL/HQ0_LYN_VM_NKX_32_PROD_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_NKX_32_PROD_01_SM
<input type="radio"/>	AP0465ALYN.aplare.net	vp112alyn.aplare.net	HQ0_LYN_VM_WIN_32_DEV_01	/VOL/HQ0_LYN_VM_WIN_32_DEV_01	SP123BRAL	HQ0_SP112BLYN_HQ0_LYN_VM_WIN_32_DEV_01_SM

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The following report leverages the StorageConsole database, which contains all the information collected by the APTARE StorageConsole products: Backup Manager, Virtualization Manager, and Capacity Manager. StorageConsole data collection can discover volumes that have been backed up. Using a report similar to the following example, customers have been able to identify volumes that they thought were being backed up, but that were overlooked because a backup policy was not in place for those particular volumes. In addition, once the policy was in place, APTARE StorageConsole made it easy to confirm that the volumes actually were being backed up.



StorageConsole® A New Perspective on Storage

Report Tools Admin Help Logout Logged in as: Demonstration | Version: 8.1.03

Report Finder
Enter report name Find

System Administration Reports
Server Groups
My Reports
Capacity Manager
Virtualization Manager
Fabric Manager
Backup Manager
Replication Manager

Array Capacity & Utilization | SAN Resource Utilization | VM Storage Mapping Summary | Operations Dashboard | **NBU NFS Backed Up**

Customize Save Email Export Help

NBU NFS Backed Up

Jul 19, 2011 11:33:35AM

Total Row(s): 347

Vol From NetApp	Vol From Backup
/VOL/HQ0_IT_IPSOFTDOCS/EXPORT	/VOL/HQ0_IT_IPSOFTDOCS/EXPORT
/VOL/HQ6_CATRADE/DEV/EXPORT	/VOL/HQ6_CATRADE/DEV/EXPORT
/VOL/M0M/IT_DTML_PH	/VOL/M0M/IT_DTML_PH
/VOL/RP0/RP0_LGL_CONSUMER	/VOL/RP0/RP0_LGL_CONSUMER
/VOL/RP0/RP_IT_CYBERLIFE	/VOL/RP0/RP_IT_CYBERLIFE
/VOL/RP0_IT_AP132ALYN_BGA/EXPORT	/VOL/RP0_IT_AP132ALYN_BGA
/VOL/RP4_LTCVAL_ARCHIVE_DATA/EXPORT	/VOL/RP4_LTCVAL_ARCHIVE_DATA/EXPORT
/VOL/RP4_LTCVAL_USER_DATA/EXPORT	/VOL/RP4_LTCVAL_USER_DATA/EXPORT
/VOL/HQ1_IT_USER_DATA_ARCHIVES/EXPORT	/VOL/HQ1_IT_USER_DATA_ARCHIVES
/VOL/RP4_AS45LYNGEFAGE/RP4_AS45_SHARED	/VOL/RP4_AS45LYNGEFAGE/RP4_AS45_SHARED
/VOL/RP4_AS45LYNGEFAGE/RP4_AS45_SHARED4	/VOL/RP4_AS45LYNGEFAGE/RP4_AS45_SHARED4
/VOL/RP4_AS45LYNGEFAGE/RP4_AS45_SHARED4	/VOL/RP4_AS45LYNGEFAGE/RP4_AS45_SHARED4
/VOL/HQ0_IT_GNWDCCDCS/GNWDCCDCS	/VOL/HQ0_IT_GNWDCCDCS
/VOL/HQ0_IT_GNWDCCDCS/PUBLICFILES	/VOL/HQ0_IT_GNWDCCDCS
/VOL/HQ0_IT_GNWDCCDCS/PUBLICFILES/ONCALL/HQ_ONCALL	/VOL/HQ0_IT_GNWDCCDCS
/VOL/HQ0_IT_GNWDCCDCS/PUBLICFILES/ONCALL/M_ONCALL	/VOL/HQ0_IT_GNWDCCDCS
/VOL/HQ0_IT_GNWDCCDCS/PUBLICFILES/ONCALL/MQ_ONCALL	/VOL/HQ0_IT_GNWDCCDCS

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