PoINT Storage Manager

PoINT NetApp FPolicy Server for 7-Mode

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Attention
A functioning storage workflow requires a well configured system environment with devices working free of faults and, if applicable, flawless storage media. Therefore it is of the essence that the user does backup all data by functions offered by PoINT software and/or (if required) by supplementary software products at adequate intervals (i.e. in accordance with the scope and frequency of changes), and thereby to facilitate the reinstatement of these data even in exceptional situations (i.e. in case of hardware malfunction).

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Contents

1 Overview **4**

2 Requirements **5**

2.1 NFS Client Software 6

2.1.1 Microsoft NFS Client 6

2.1.2 OpenText NFS Solo 6

3 Functionality **7**

3.1 FPolicy Configuration 7

4 Restrictions **8**

5 Installation and Uninstallation **9**

5.1 Installation 9

5.2 Uninstallation 9

5.3 Using PoINT NetApp FAS Agent without the FPolicy Server 9

6 Removing FPolicy Configuration **10**

7 Logging and Error Reporting **11**

1 Overview

This document describes functionality, requirements and restrictions of the PoINT NetApp FPolicy Server for 7-Mode which is an optional component of PoINT Storage Manager. It is available as a separate installation package which has to be installed after installing PoINT Storage Manager.

It is intended for administrators responsible for configuration and administration of PoINT Storage Manager. This document must be used in combination with the PoINT Storage Manager manual and the documentation for the PoINT NetApp FAS Agent. Please refer also to the related documentation of your NetApp storage system.

In combination with PoINT Storage Manager the PoINT NetApp FPolicy Server for 7-Mode provides transparent “stub”-based read access to archived files for NetApp FAS systems. The archiving functionality is provided by the module PoINT NetApp FAS Agent.

2 Requirements

The following requirements must be fulfilled for operating the PoINT NetApp FPolicy Server for 7-Mode of PoINT Storage Manager:

- PoINT Storage Manager Version 6.3 must have been installed and licensed. The license key must enable the PoINT NetApp FPolicy Server for 7-Mode and one PoINT NetApp FAS Agent license per addressed NetApp FAS or vFiler, if configured.

- Tested NetApp ONTAP Versions: 7.3.2, 7.3.5, 7.3.6, 8.0.1, 8.1, 8.1.3 and 8.2. The 8.x versions are supported in 7-Mode.

- Both, the NetApp FAS and the Windows server (PoINT Storage Manager) systems, have to be members of the same or a trusted computer domain. Otherwise, the following security policy of the Windows server system has to be enabled by the Administrator:
  Network access: Let Everyone permissions apply to anonymous users
  Security policies can be modified by means of the Security Policy Editor (secpol.msc). A reboot is required after changing this option. If this option has been enabled by the Administrator, the FPolicy Server automatically adds the names of the communication pipes to the following security option:
  Network access: Named pipes that can be accessed anonymously
  When using a cluster configuration make sure that these settings have been modified on all physical cluster nodes.
  If the systems are not members of trusted domains and the security settings have not been adjusted, the NetApp FAS will not be able to send FPolicy requests.

- PoINT NetApp FPolicy Server for 7-Mode also creates the following registry value, if it does not exist:
  HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\LanmanWorkstation\Parameters
  Value Name: DirectoryCacheLifetime
  Content: 0 (DWORD)
  If this setting does not exist, PoINT NetApp FPolicy Server for 7-Mode creates it and requires a server reboot before it allows activating Storage Vaults. This value will not be changed if it already exists.

- The Storage Agent Account requires administrative privileges on the system where PoINT Storage Manager is installed. The same account must exist on the NetApp FAS system with the same password and it must be in the group of Backup Operators on the NetApp FAS system. You can also use a domain account if both systems are members of trusted domains.
  On the NetApp FAS the account additionally requires the following capabilities:
  api-system-get-version,api-fpolicy-*,api-cifs-share-list-*,api-nfs-exportfs-list-*,api-nfs-exportfs-storage-path

- File system access via CIFS to the Data Source on the NetApp FAS is required, even if clients are only using NFS.

- If the Data Source is also exported using NFS, the PoINT Storage Agent account requires read access to this export. Please refer to chapter 2.1, NFS Client Software, for more information about supported NFS client software.

- The local firewall of the Windows server system must allow CIFS/SMB connections from and to the NetApp FAS system.

- NetBIOS must be enabled on the network interface used by the Windows server to connect to the NetApp FAS.
- The length of the name of the computer where PoINT Storage Manager is running must not exceed 15 characters.
- The number of inodes for NetApp FAS volumes containing PoINT Storage Manager Storage Vaults must be increased to at least three times the maximal number of files which will be stored on that volume. The maximal and current number of inodes can be viewed using the ONTAP command “maxfiles”. This command can also be used to increase the maximal number of inodes. No more files can be stored on the volume and PoINT Storage Manager job cycles will fail with an error indicating insufficient disc space if the maximal number of inodes has been reached. Therefore it is recommended to regularly use the command “maxfiles” to make sure that sufficient inodes are available.

2.1 NFS Client Software

If the Data Source is also exported using NFS, the PoINT NetApp FPolicy Server for 7-Mode requires read access to this export. PoINT NetApp FPolicy Server for 7-Mode automatically selects the best matching NFS export, i.e. the export which is as close as possible to the selected Data Source. To mount the export the software detects if one of the supported NFS clients is present on the system and executes the appropriate command to perform the mount operation. If the mount operation requires additional parameters, it is possible to specify these parameters while configuring the Storage Vault. These parameters will be passed to the mount command line.

2.1.1 Microsoft NFS Client

The Microsoft NFS Client can be used if no other NFS software is installed. To use this client, the Windows server roles “Services for NFS” and “Client for NFS” must be enabled on the computer where PoINT Storage Manager is running.

PoINT NetApp FPolicy Server for 7-Mode does not pass additional parameters when using Microsoft NFS. Parameters which have been specified in the Storage Vault configuration will be ignored.

2.1.2 OpenText NFS Solo

If this third party software is installed, PoINT NetApp FPolicy Server for 7-Mode will use it to mount the NFS export. It is possible to specify additional parameters in the Storage Vault configuration, for example to select a specific NFS protocol version or a character set. Please refer to the documentation of the OpenText NFS Solo command line tool “nfs”. The specified NFS parameters must not contain a drive letter or NFS export because this information will be inserted by PoINT NetApp FPolicy Server for 7-Mode.

This version of PoINT NetApp FPolicy Server for 7-Mode has been tested with OpenText NFS Solo 14.

3 Functionality

PoINT NetApp FPolicy Server for 7-Mode utilizes the NetApp FPolicy feature of Data ONTAP to allow transparent read access to files which have been archived to the configured archive devices. Whenever an archived file is read the NetApp FAS requests the data from the PoINT NetApp FPolicy Server for 7-Mode which then reads the data from the archive device.

When a Storage Vault is configured for a NetApp FAS system, the PoINT NetApp FPolicy Server for 7-Mode creates "FPolicy policies" on the NetApp FAS, adds the related volume to these policies and registers itself as an FPolicy Server. If the FPolicy feature is not enabled on the NetApp FAS system, PoINT NetApp FPolicy Server for 7-Mode automatically enables this feature.

3.1 FPolicy Configuration

PoINT NetApp FPolicy Server for 7-Mode configures the following policies on the NetApp FAS which has been specified as Performance Tier for the Storage Vault:

PSM_REV01_IDxxxxxxxxxxxxxxxx

The last part of the name of this policy differs on each installation. It is used to ensure that one NetApp FAS system will not be used by different PoINT Storage Manager installations. This policy does not monitor any file system operations on the NetApp FAS.

PSM_P1

This policy registers for read and write requests for files which are marked as ‘offline’, i.e. which have been replaced by a stub. All NetApp FAS volumes which contain PoINT Storage Manager Storage Vaults will automatically be added to the list of volumes monitored by this policy. Therefore, all file system operations for ‘offline’-files on these volumes will be sent to PoINT Storage Manager. Access to such files will fail, if PoINT Storage Manager is not running or the Storage Vault is not active.

PSM_P2

This policy has been used by previous software versions. Please delete this policy if it still exists.

4 Restrictions

The following restrictions apply to the PoINT NetApp FPolicy Server for 7-Mode and must be considered:

- There should not be other FPolicy Servers configured which provide stubbing functionality using the offline-attribute mechanism.
- Only one PoINT Storage Manager installation can access a NetApp FAS. The NetApp FAS must be manually reconfigured to allow access from another PoINT Storage Manager installation. See also chapter 6, Removing FPolicy Configuration, later in this document.
- Up to four different NetApp FAS or vFilers can be accessed by one PoINT Storage Manager installation.
- Files on the NetApp FAS must not be accessed from the system where PoINT Storage Manager is installed. When accessing purged files from this system, the NetApp FAS would return files filled with 0-bytes. Additionally, if changes are performed on the NetApp FAS, these changes will not be reported to PoINT Storage Manager. This may lead to inconsistencies and inaccessible data.
- The functionality to purge files, i.e. replace archived files by a stub file, cannot be used on SnapLock volumes. Trying to purge such files will result in error messages during job execution.
- Purging of files which are 4 GByte or larger is not supported by the tested NetApp ONTAP versions. An error message will be logged when trying to purge such a file. To avoid this error message add a condition to the policy so that only files smaller than 4 GByte will be purged.
- Because the Windows 'offline'-attribute is used to identify purged files, it is recommended that no files have this attribute set by other applications. Otherwise PoINT Storage Manager may remove this attribute for files which have not been purged by PoINT Storage Manager.
- PoINT NetApp FPolicy Server can only purge files with valid Windows file names. Therefore if the volume on the NetApp FAS will also be accessed by NFS clients, some restrictions apply: Files or directories which contain one of the characters :*?<>|\/ will not be processed. Also, if the names of two or more file or directory entries in the same directory differ only in capitalization, only one of these entries will be processed. If such a file name has been detected, a warning message will be logged to the Migration job log file of the Storage Vault. Additionally, PoINT Storage Manager prevents renames of files or directories via NFS if the resulting name would be an illegal name. In this case a warning message will be logged to the Migration job log file of the Storage Vault.

5 Installation and Uninstallation

5.1 Installation

To install PoINT NetApp FPolicy Server for 7-Mode log on to the computer where the PoINT Storage Manager server has been installed and run the installer with administrative privileges. If Storage Vaults have already been configured, it is necessary to restart the PoINT Storage Manager Service after installing this module.

The installer also copies this documentation to installation directory of PoINT Storage Manager.

5.2 Uninstallation

After uninstalling PoINT NetApp FPolicy Server for 7-Mode it is not possible to access purged files on the NetApp FAS system. Therefore it is strongly recommended to first restore all purged files to the NetApp FAS system. After restoring all files, stop PoINT Storage Manager and remove the file DLLFPC7M64.DLL from the installation directory of PoINT Storage Manager. Refer to chapter 6, Removing FPolicy Configuration, later in this document for information how to remove the FPolicy policies configured by the PoINT NetApp FPolicy Server for 7-Mode.

If you plan to use existing Storage Vaults on NetApp FAS without the FPolicy Server, refer to chapter 5.3, Using PoINT NetApp FAS Agent without the FPolicy Server, for more information.

5.3 Using PoINT NetApp FAS Agent without the FPolicy Server

It is possible to use Storage Vaults on NetApp FAS systems without PoINT NetApp FPolicy Server for 7-Mode. In this case it is not possible to purge files and to access purged files from client computers.

6 Removing FPolicy Configuration

Before removing the FPolicy configuration for a Storage Vault make sure that all archived data have been restored to the NetApp FAS system. Otherwise the NetApp FAS system would return incorrect data (files filled with zeros) when reading these files. After deleting the Storage Vault configuration, it is necessary to adjust the FPolicy policies on the NetApp FAS system.

If other Storage Vaults are still using the PoINT NetApp FPolicy Server for 7-Mode with other volumes on the NetApp FAS system it is necessary to change the configuration so that the volume, for which the Storage Vault has been deleted, will not be affected by the existing FPolicy policies. To do this, open a command line on the NetApp FAS system and execute these commands:

fpolicy vol inc remove PSM_P1 <vol_spec>
fpolicy vol inc remove PSM_P2 <vol_spec>

<vol_spec> must be replaced by the volume specification (e.g. vol1) of the NetApp FAS volume for which the Storage Vault has been deleted. Please note that the FPolicy PSM_P2 is optional and need not exist on your system.

If no further Storage Vaults exist for this NetApp FAS or you are uninstalling the PoINT NetApp FPolicy Server for 7-Mode, it is necessary to disable and remove all FPolicy policies which have been created by PoINT Storage Manager. To disable and remove a policy, open a command line on the NetApp FAS and execute the following commands:

fpolicy disable <policy_name>
fpolicy destroy <policy_name>

<policy_name> must be replaced by the policy to process. PoINT Storage Manager creates the policy PSM_P1, the optional policy PSM_P2 and one policy whose name is similar to PSM_REV01_ID66F2A3629E74745C. The actual name of this policy is different on each system. You can determine this name by means of the command "fpolicy" without additional parameters.

7 Logging and Error Reporting

PoINT NetApp FPolicy Server for 7-Mode logs warning and error messages to the "Log File of PoINT Storage Agent". This log file can be opened in the "Log Files View" of PoINT Storage Manager.