

HP OpenView Storage Data Protector A.05.50 and HP StorageWorks File System Extender Server integration white paper



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Introduction

This document provides you with guidance for HP OpenView Storage Data Protector A.05.50 and HP StorageWorks File System Extender Server integration. The following patches are needed for utilizing this feature in Data Protector A.05.50:

- SSPUX550_114
- SSPNT550_123

Data Protector File System Extender Server integration provides an extra level of protection for File System Extender Server systems. It provides functionality for backing up and restoring File System Extender databases and system files, volumes, and configuration files.

Data Protector Disk Agent is customized to back up File System Extender Server databases and system files, volumes, and configuration files using the Volume Shadow Copy Service and Logical Volume Manager functionality on Windows and Linux systems, respectively. It enables very short downtime of the File System Extender during backup.

For details of platform support, refer to the Data Protector support matrices at:

<http://www.hp.com/go/dataprotector>

Select **Support matrices**, and then click the link for Data Protector version A.05.50.

Windows systems

You might be interested in backing up File System Extender databases and system files, volumes, and configuration files located in the following directories:

- <FSE_home>\etc
- <FSE_home>\var\cfg
- <FSE_home>\var\fri
- <FSE_home>\var\part
- <FSE_home>\var\log

The restore process must be performed manually.

Requirements

The synchronization file is located in the directory specified by the first of the following existing references:

- The path specified by the TMP environment variable
- The path specified by the TEMP environment variable
- The path specified by the USERPROFILE environment variable
- The Windows installation directory

Installation

It is assumed that the Data Protector 5.5 Disk Agent client is already configured.

1. Locate the <Data_Protector_home> directory.
2. Copy `vbda.exe` and `fse_server_prepare.bat` to the <Data_Protector_home>\bin directory.
3. Copy `OmniEnu.dll` to the <Data_Protector_home>\bin directory.

All of the preceding files must have executable permissions. It might also be necessary to copy message catalogs to the client system's Cell Manager host.

Configuration

File System Extender Server can be customized in several different ways. Data Protector Disk Agents require information about the File System Extender configuration and environment to perform backup and restore procedures. Configuration parameters are located in the `.omnirc` Data Protector configuration file and are crucial for successful backups.

Backups involve several Disk Agents working simultaneously. If any of the Disk Agents working on a File System Extender system volumes fails, the whole backup or restore session fails.

Add the relevant variable to the <Data_Protector_home>\.omnirc file and set the appropriate value. The possible variables and options include:

- `OB2FSEGBAKPATH=<Path_to_Firebird_binary_directory>`
Default: `%ProgramFiles%\Firebird\bin`
This variable contains the path to the `gbak`, Firebird backup utility. If it is not set properly, the Disk Agent's pre-exec command will not be able to back up the File System Extender Resource Management Database.
- `OB2FSERMDBPATH=<Path_to_the_File_System_Extender_Resource_Management_Database>`
Default: `%ProgramFiles%\Hewlett-Packard\FSE\var\rmdb`
This variable should point to the directory in which the File System Extender Resource Management Database resides. It is used by the pre-exec command to perform its backup.
- `OB2FSEBINS=<Path_to_directory_where_the_File_System_Extender_bin, sbin, lbin_directories_reside>`
Default: `%ProgramFiles%\Hewlett-Packard\FSE`
This variable contains the path to the File System Extender home directory (containing the `bin`, `sbin`, and `lbin` subdirectories).
- `OB2FSENOFSYSFS=<Number_of_File_System_Extender_system_volumes>`
Default: 1
This variable represents the number of File System Extender system volumes, namely, the number of volumes used by the File System Extender to store its internal data.
The number will be 1 if you configure your system according to the recommendations in the File System Extender documentation.

- `OB2FSETIMEOUT=<Time_Disk_Agents_will_wait_for_master_Disk_Agent_to_suspend_the_database>`

Default: 60

The value of `OB2FSETIMEOUT` controls how long dependent Disk Agents will wait for the master Disk Agent to dump the File System Extender Resource Management Database.

One of the Disk Agents will dump the File System Extender Resource Management Database into the volume it is working on. Other Disk Agents will have to wait before proceeding with the backup of other volumes. The master Disk Agent is defined by the presence of the `fse_server_prepare.bat` pre-exec command.

Make the following adjustment after the relevant `.omnirc` variables have been set and during the creation of the backup specifications for each Disk Agent operating on File System Extender system volumes:

1. In the Data Protector GUI, click **Backup Object Summary, Properties, Other, User defined variables**.
2. Set the `FSE_SERVER` user variable to 1.

When there are several Disk Agents working on File System Extender system volumes, set the following pre-exec command for one of the Disk Agents:

- `fse_server_prepare.bat`
`<Path_where_you_want_to_dump_the_FSE_Resource_Management_Database>`

To set the pre-exec command in the Data Protector GUI, click **Backup Object Summary, Properties, Options, Pre-exec**.

`<Path_where_you_want_to_dump_the_FSE_Resource_Management_Database>` must point to a location on the volume from which the master Disk Agent is backing up data.

The File System Extender Resource Management Database backup file (`FSE_RMDB.bckp`) will be created at the specified path during backup.

The restore process must be performed manually.

1. Restore the backed up files to a temporary location.
2. Stop the File System Extender Services.
3. Copy the files to their original locations.
4. Restore the File System Extender Resource Management Database using the `gbak` tool provided by Firebird.

Linux systems

You might be interested in backing up File System Extender databases and system files, volumes, and configuration files located in the following directories:

- `/etc/opt/fse` (backup of these files does not require snapshot creation)
- `/var/opt/fse/cfg`
- `/var/opt/fse/fri`
- `/var/opt/fse/part`
- `/var/opt/fse/log`

The restore process must be performed manually.

Requirements

The synchronization file is located in the `/tmp` directory. Linux Logical Volume Manager commands must be present in the `/sbin` directory.

Installation

It is assumed that the Data Protector 5.5 Disk Agent client is already configured.

1. Locate the `<Data_Protector_home>` directory.
2. Copy `vbda`, `vrda`, and `fse_server_prepare.sh` to the directory `<Data_Protector_home>/bin`.
3. Copy `omni.cat` to the directory `<Data_Protector_home>/nls/C`.
4. Verify that all copied files have executable permissions set.
5. Copy message catalogs to the client system's Cell Manager host.

Configuration

File System Extender Server can be customized in several different ways. Data Protector Disk Agents require information about the File System Extender configuration and environment to perform backup and restore procedures. Configuration parameters are located in the `.omnirc` Data Protector configuration file and are crucial for successful backups.

Backups involve several Disk Agents working simultaneously. If any of the Disk Agents working on a File System Extender system volumes fails, the whole backup or restore session fails.

Add the relevant variable to the `<Data_Protector_home>/.omnirc` file and set the appropriate value. The possible variables and options include:

- `OB2FSEGBAKPATH=<Path_to_Firebird_binary_directory>`
Default: `/opt/interbase/bin`
This variable contains the path to the `gbak`, Firebird backup utility. If it is not set properly, the Disk Agent's pre-exec command will not be able to back up the File System Extender Resource Management Database.
- `OB2FSERMDBPATH=<Path_to_the_File_System_Extender_Resource_Management_Database>`
Default: `/var/opt/fse/rmdb`
This variable should point to the directory in which the File System Extender Resource Management Database resides. It is used by the pre-exec command to perform its backup.
- `OB2FSEBINS=<Path_to_directory_where_the_File_System_Extender_bin, sbin, lbin_directories_reside>`
Default: `/opt/fse`
This variable contains the path to the File System Extender home directory (containing the `bin`, `sbin`, and `lbin` subdirectories).
- `OB2FSENOFSYSFS=<Number_of_File_System_Extender_system_volumes>`
Default: 2
This variable represents the number of File System Extender system volumes, namely, the number of volumes used by the File System Extender to store its internal data.
The number will be 2 if you configure your system according to the recommendations in the File System Extender documentation.

- `OB2FSETIMEOUT=<Time_Disk_Agents_will_wait_for_master_Disk_Agent_to_suspend_the_database>`

Default: 60

The value of `OB2FSETIMEOUT` controls how long dependent Disk Agents will wait for the master Disk Agent to dump the File System Extender Resource Management Database.

One of the Disk Agents will dump the File System Extender Resource Management Database into the volume it is working on. Other Disk Agents will have to wait before proceeding with the backup of other volumes. The master Disk Agent is defined by the presence of the `fse_server_prepare.sh pre-exec`.

Make the following adjustments after the relevant `.omnirc` variables have been set and during the creation of the backup specifications for each Disk Agent working on File System Extender system volumes:

1. In the Data Protector GUI, click **Backup Object Summary, Properties, Other, User defined variables**.
2. Set the `FSE_SERVER` user variable to 1.
3. Set the `FSE_SNAP` user variable to match the percentage of the original file system size dedicated to snapshots (for example, 65 means that the disk space allocated by the snapshot is equivalent to 65% of the snapped file system size).

When there are several Disk Agents working on File System Extender system volumes, set the following pre-exec command for one of the Disk Agents:

- `fse_server_prepare.sh`
`<Path_where_you_want_to_dump_the_FSE_Resource_Management_Database>`

To set the pre-exec command, in the Data Protector GUI, click **Backup Object Summary, Properties, Options, Pre-exec**.

`<Path_where_you_want_to_dump_the_FSE_Resource_Management_Database>` must point to a location on the volume from which the master Disk Agent is backing up data.

The File System Extender Resource Management Database backup file (`FSE_RMDB.bckp`) will be created at the specified path during backup.

The restore process must be performed manually:

1. Restore the backed up files to a temporary location.
2. Stop the File System Extender Services.
3. Copy the files to their original locations.

Restore the File System Extender Resource Management Database using the `gbak` tool provided by Firebird.

Following is an example of a command used to restore the File System Extender Resource Management Database: `/opt/interbase/bin/gbak -C FSE_RMDB.bckp -R /var/opt/fse/rmdb/rmdb.gdb`

Limitations and known issues

Important

All limitations and known issues imposed by File System Extender and Data Protector are applicable. In this white paper, only the limitations and known issues imposed by Data Protector File System Extender Server integration are specified.

For details about specific functionality, see the appropriate platform, File System Extender, and Data Protector documentation.

The following are limitations of the Data Protector File System Extender Server integration:

- If File System Extender databases are suspended, the pre-exec script and corresponding Disk Agent will be blocked until the databases are resumed.
- The synchronization file located in the Linux `/tmp` and the Windows temporary directory will not be removed in the event of the failure of any Disk Agent. Under certain circumstances, snapshots and the corresponding mount points may remain on the file system. In such cases, the synchronization file (`fse_server.lock`), snapshots, and their mount points must be removed manually. Snapshots and their mount points can be easily recognized by the `.dpsnap` string in their names.
- During a backup session, snapshots will be created in `.dpsnap` directories, which must not exist on the system before running the File System Extender backup.
- The `fse_server_prepare.bat` file (Windows) or `fse_server_prepare.sh` script (Linux) must always be followed by an argument that represents the path of the master Disk Agent's mount point.
- Device concurrency may require updating to reflect the number of Disk Agents running in parallel.

Related documentation

- HP StorageWorks File System Extender Installation Guide
- HP StorageWorks File System Extender User Guide
- HP StorageWorks File System Extender Management Console Reference Guide
- HP StorageWorks File System Extender Release Notes
- HP OpenView Storage Data Protector Installation Guide
- HP OpenView Storage Data Protector Administrator's Guide
- Firebird documentation (gbak tool)

For more information

For more information on HP Data Protector software, visit: <http://www.hp.com/go/dataprotector>

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