



esXpress v3.1

File Level Backups

**esXpress v3.1 File Level
Backups**

Rev 1.1, April. 2008

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File Level Backups Configuration

With the release of v3.1 esXpress now provides File Level Backups in addition to Image Level backups. When running with FLBs the folders you defined will be backed up and a compressed archive created on the backup target you define. The backups are run in the VBA at the same time the image backup is performed. The FLB archive created is a separate archive from the image backup making it very easy to access and restore your file level backups.

In esXpress there are a number of host level configuration options also discussed in this document. However the actual configuration for the FLBs is done at the VM level using the local configuration file (local.vmx.phd). In the local file there are a number of variables to consider for configuring file level backups for esXpress which are explained below.

There currently are some limitations with FLBs in esXpress 3.1. They will only work on Linux partitions and Windows partitions. Solaris might work. On NTFS, only basic partitions for now, and only the standard cluster size of 4k. In future releases of esXpress these issues will be fixed. There is a new VBA is being tested that will include a kernel that can handle all of this plus more operating systems, like Novell. Currently FLB backups are to NETWORK target only. There are No VMFS backup for FLB.

Note: File Level Backups (FLB) is a licensed product of esXpress v3.1.

Local Configurations Options (From ReadMe)

FLB - File Level Backups

For each VM you need to define which VMDK, the PARTITION and the FOLDER to back up.

You can have as many #VM_FLB lines as you need. One per folder.

These are special variables and are different from all others in this file.

Having two # (pound signs) is commented out. To activate, use one #

The VM_FLB must always have at least # (pound sign) in front, ALWAYS

```
VM_FLB= Yes/No/Only/Wait |  
    SCSI ID (or * for all) |  
    Partition (or * for all) |  
    Folder to Backup |  
    Max Size in MB (0=Use System Default) |  
    Archive Method (def/tgz/lzop/zip) |  
    Backup Target (0=Use Default, 1-9) |  
    Extra Options
```

```
VM_FLB=yes|scsi0:0|1|/home|99999|zip|3
```

The 1st field is the control field for the FLB

YES = This FLB line is enabled. Run this FLB.

NO = Ignore this FLB line.

ONLY = Only run FLB on this VMDK. Do not run FULL or INDEX backup EVER.

When using '*' to match the scsi id, this will be the same as enabling

VM_AUTO_FORCE_FLB because all disks would match '*' but for all the time.

With ONLY set for a VMDK, then ONLY FLB can ever be done for this VMDK.
WAIT = This FLB was requested, and it awaiting update to YES/NO/ONLY

The 2nd field is the SCSI ID of the disk to backup.
This can also be set to *, to mean all disks.

The 3rd field is the PARTITION on the disk to backup.
This can also be set to *, to mean all partitions.

The 4th field is the FOLDER to backup.
Only list one folder here. Use multiple FLB lines for multiple folders.
This is the folder name starting at this partition. If this partition was your /var folder, then to backup /var/log you would just use /log

This is the folder name starting at this partition. If this partition was your /var folder, then to backup /var/log you would just use /log

The 5th field is the maximum size of the Folder to backup in Megabytes
If the Raw size of the Folder is bigger, then it will be skipped.
Setting to 0 will use the system default.

The 6th field is the archive method to use. Options are TGZ, LZOP and ZIP
For this release, ZIP has limits. It will not handle very large files.
Set to 'def' to use system default archive method.

The 7th field is the backup target to use. If it us set to 0, then the system default will be used. Can be set from 0, 1-9.

The 8th field is for Extra Options.
Options are separated by a semicolon; fields of an option are separated by a comma.
Example: opt1;opt2=x,y,z;opt3

Current options are:

separate subfolders = Will create a separate archive per subfolder.

Files in this current folder will not be backed up, only subfolders.

You can use * for the SCSI ID or the Partition, or both.

```
VM_FLB=yes|*|*/home|0|def|0
```

```
VM_FLB=yes|scsi0:0|*|/My Documents|1024|zip|8
```

This line below is actually enabled; it has only one # (pound sign)

But because it is set to NO, the #VM_FLB will still be ignored.

```
VM_FLB=no|*|*|/|0|def|0
```

Force This VM to FLB only. Only run File Level Backups for this VM

Set this to yes to force this VM to backup FLB only.

This only applies to Auto Once a Day Backups or Backup All

```
VM_AUTO_FORCE_FLB='yes'
```

Force a VMDK to FLB ONLY mode on AUTO Backup only.

This only applies to Auto Once a Day Backups or Backup All

You can define has many as you need

```
VM_AUTO_FORCE_FLB SCSI='scsi0:0'
```

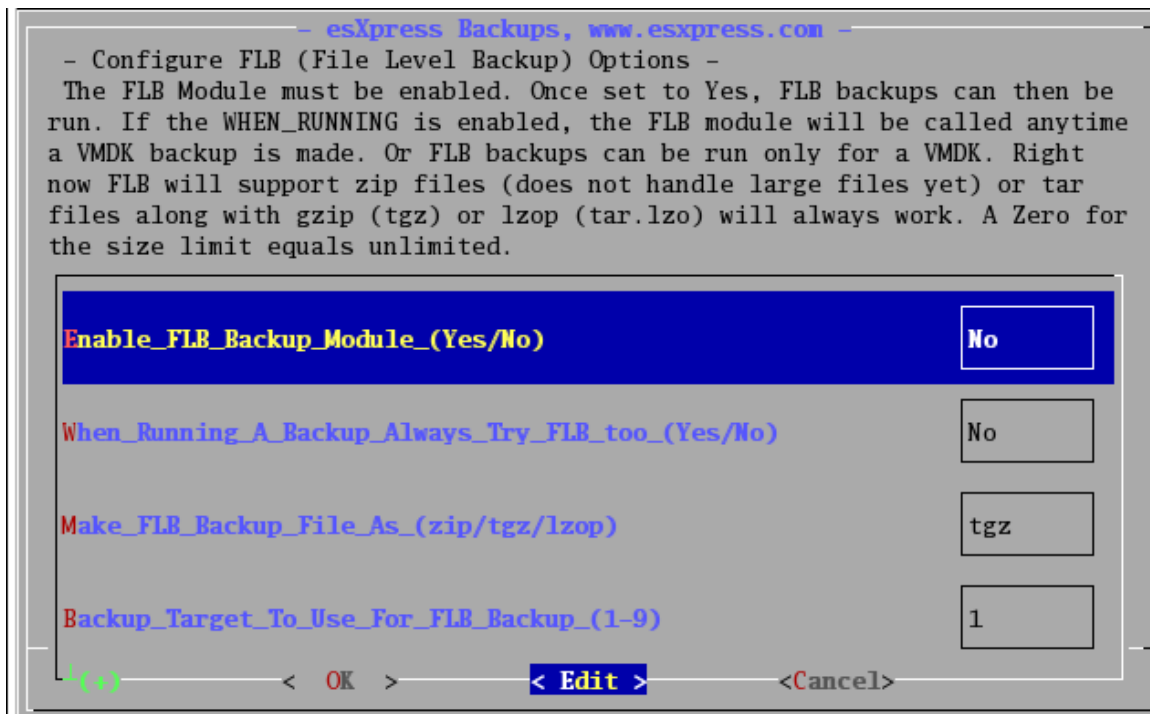
ESX Host Level Configuration for FLBs

In addition to the Local Configuration options for File Level Backups there are a number of esx host level configuration files to be aware of and need consideration. These options can be maintained in either the phd text menu or in the esXpress GUI.

Configure FLB (File Level Backup) Options (PHD Menu – Configuration Options Menu)

esXpress has the ability to also backup specific folders in a VMDK along with Image level Full and Delta backups. esXpress now provides a complete soup to nuts virtual machine backup solution. Each VM's file level backups are controlled and configured using the Local Configuration file set per VMX. It is here that you define which VMDKs, the partition, and the folders you want to backup. Then when the backups run, the partitions will be mounted and the folders you defined will be zipped or tar'd up and sent to a backup target. If a VBA has one CPU, then the image (Delta/Full) level backup will run first, then the FLB will run after. If the VBA has more then one CPU then they will run at the same time (multi-threaded).

Figure 1: esXpress Configuration Menu – Configure FLB Options



Enable FLB Backup Module (Yes/No) - The FLB Module must be enabled.

Yes – Enabled the FLB Module. This will enable the calling of FLBs.

No – Do not enable the FLB module. No FLBs will be made.

When Running A Backup Always Try FLB too (Yes/No) - If the WHEN_RUNNING is enabled, the FLB module will be called anytime a VMDK backup is made. Or FLB backups can be run only for a VMDK. *It is important to understand the difference with this option and how you want to control when a FLB is made. If you want to run FLB each time a VMDK backup (including automatic backups) is made enable this option. If you want to only take a File Level Backup when you initiate one then disable this option.*

Make FLB Backup File as (zip/tgz/lzop) - Right now esXpress is using the open source zip, which does not support files or archives bigger than 4 GB. If you have big files to FLB, use tar along with gzip (tgz) or lzop (tar.lzo). These two methods will always work.
zip – Make a zip compatible file using the open source zip
tgz – Make a tar file that is compressed with gzip
lzop – Make a tar file that is compressed with lzop

Backup Target to Use for FLB_Backup (1-9) - Choose the backup target you want FLBs to go to. This can be target #1 to target #9. Folders on the FLB target will be created following the same rules as image backups. If you choose to use Full/Delta in the folder name, then FLB will be used.

Do Not FLB Folder If Raw Size Is Greater Than (0-99999 meg) - Before a folder is backed up, the amount of space used is checked. If the space is greater than what is defined in this option in megabytes, then the folder is skipped and noted as an Error in your logs.

A Zero for the size limit equals unlimited.

If you enter 4096 then the user could have no more than 4 Gb worth of data to backup.

File Level Backups Restores

With esXpress v3.1 file level backups it is simply creating a gzip or tgz file on a network share. Because of that the backups can be simply restored by the end users and therefore there isn't any built in esXpress restore feature at this time.

What we recommend is that you identify the correct dated FLB backup and use whatever tools you are comfortable with to uncompress the file (for example WinZip). Then extract the needed file or files from that archive and copy them to your associated virtual machine.

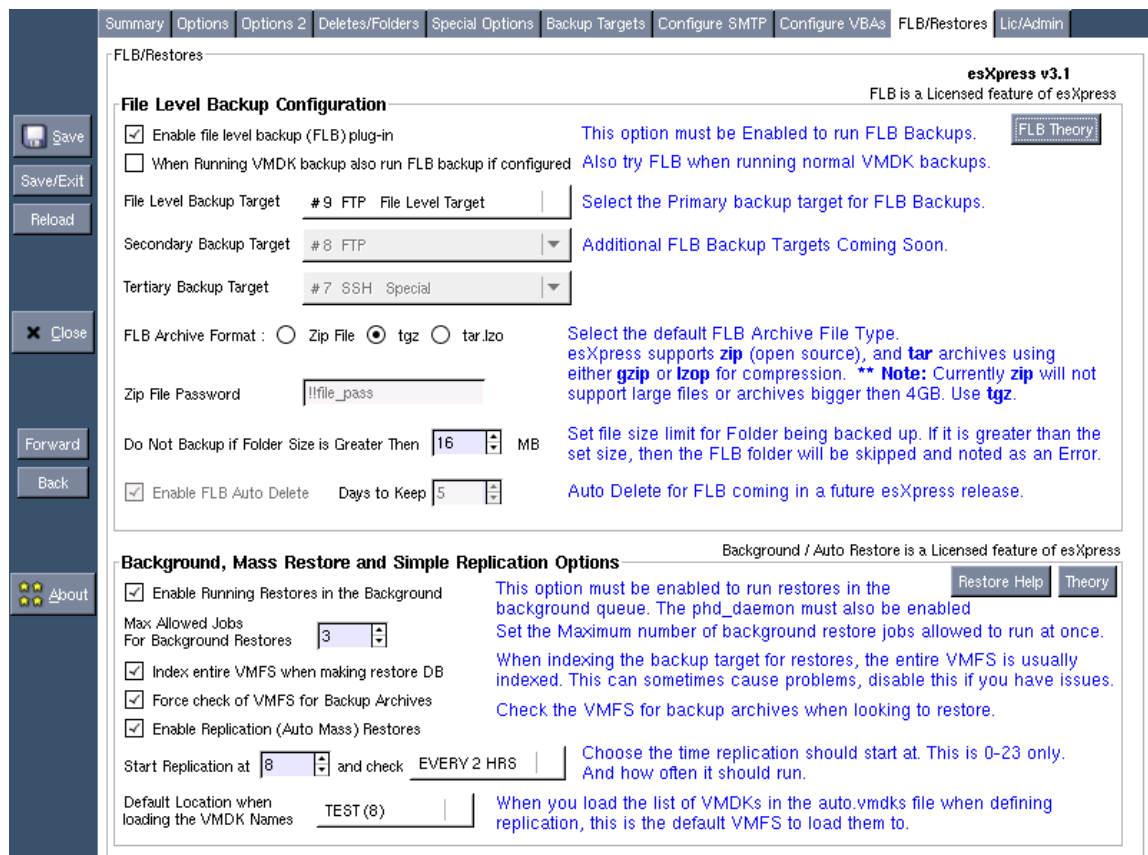
GUI Configuration for FLB

In the esXpress GUI the File Level Backup configuration options are found on the FLB/Restores Tab.

FLB/Restores TAB

The FLB/Restore tab (*figure gui.11*) has the maintenance options for the host level options for three important features of esXpress v3.1. That is enabling and configuring file level backups, background restores and simple replication. All of these features are licensed options of esXpress. The file level options can also be found in FLB Configuration menu of the phd text menu system while the restore and replication options can be found under Replication/Restore Options menu. For a detailed explanation of these options see the Configuration section of this manual.

Figure gui.11, esXpress v3.1 gui Configurator FLB/Restores Tab



Note the three help buttons on this tab. The 'FLB Theory' button provides additional on-line information on how esXpress File Level Backups work and run The 'Restore Help'

has on-line assistance for the Simple Replication and background restore configuration options while the 'Theory' button provides additional information on how the esXpress restore and replication process works.

FLB Theory Button ReadMe

File Level Backup (FLB) Options

Enable file level backups (FLB) plug-in:

The FLB option must be enabled here (or in the (C)onfiguration, (F)LB Configuration menu in phd text mode) or FLB backups will not run. This option basically enables the FLB Module. The FLB Module is a licensed feature of esXpress.

When Running VMDK backup also run FLB backup if configured:

When the image level (Delta/Full) backup is being run, should esXpress also try to run FLB. This will attempt to call the FLB module for each VMDK being backed up. If nothing is defined for a VMDK, then it is not a problem. This allows you to turn off FLB for most VMDKs except for the ones which have been defined as ONLY FLB, or if calling FLB manually from the phd text menu or by using `[xFLB]`

File Level Backup Target:

This is the target to use when running FLB. It is currently set for only one target. The roll-over targets are coming soon. You must define a target to use.

Secondary and Tertiary Backup Targets:

Coming Soon.

FLB Archive Format:

You pick the default FLB archive type. Current options include ZIP, TGZ and TAR.LZO. For this release, ZIP will not handle large files. TGZ or LZOP will handle all files. This setting can be over-riden on a per FLB VMDK basis.

Zip File Password:

Coming Soon.

Do Not Backup if Folder Size is Greater Than:

You can set a file size limit on the FLB backup folder. This is set in megabytes. If you set this to 4096, then if a FLB Folder has more then 4Gb of data, the FLB backup of this folder will be skipped, and noted as an ERROR.

FLB (File Level Backups) Theory

In this release, the INDEX/FULL backup will process first, and then the FLB will run afterwards. If you have given the VBAs more then one CPU, then they will run multi-threaded, at the same time.

You can run FLB only, normal image level (Delta/Full) backups, or both for a given VMDK.

Not all file systems are currently supported. NTFS and most Linux should work, with the exception of Novell related file systems.

The FLB configuration is done for each VM in the LOCAL CONFIG file.

A new variable called #VM_FLB= is defined.

NOTE: The setting of #VM_FLB is different from all the other variables in the local config file of a VM. More detail in the Local Config file

Current config of #VM_FLB is defined as:

```
#VM_FLB= (yes/no/only)|scsi ID|Partition|Folder|MaxSize|(zip/tgz/lzop)|Target|Options  
#VM_FLB=yes|scsi0:0|1|/My Documents|1024|zip|8  
#VM_FLB=yes|*|*/My Documents|0|def|0
```

QUICK START FOR FLB (File Level Backups)

Enable FLB Options in phd text menu. (C)onfiguration, (F)LB Config.

Edit local config for a VM. (M)aint Menu, (E)dit Local CFG.

At the bottom should be new options ##VM_FLB=

Read instructions in local config file.

Run a test FLB backup only of this test VM. In the VI3 client, add [xFLB] to the VM name. The back-end will then do a FLB only backup.

To backup one VM for FLB only from the console, you need to use the phd command line for now: `phd-INDEX vmname --flb`

Watch the esXpress backup log in the phd menu. (T)ail Backup Log

An archive file should be created on your backup share. Sure you can read it, and it contains what you think it should.

KNOWN ISSUES

esXpress will not delete FLB backup archives (coming)

When using ZIP, large files get skipped and not noted.

Frequently Asked Questions

Q: Where is the local config file that I need to edit for FLB ?

A: It is stored in a folder called "phd" under each VMX file on the VMFS. The name of the local config is the same as the /phd/VMX.phd file. To edit it, use the phd text menu, (M)aint, then (E)dit or you can navigate to the folder and edit it manually.

Q: For every folder that I want to backup do I have to insert a #VM_FLB entry? Also will sub-folders be backed up?

A: The answer is Yes for both questions. For every folder you want to backup you need to have a corresponding VM_FLB entry. Also any associated sub-folders will be backed up.

Q: How can I go about restoring a single file from a folder?

A: EsXpress makes a zip (or tgz) file and puts it on a file share for you. Use whatever you are comfortable with for the restore, such as WinZip. You would simply just extract the files you need from the zip file.

Q: Can FLBs backup folders on Linux servers?

A: Yes with esXpress File Level Backups you can backup folders in Linux servers as well as on Windows servers.

Q: What targets can I send esXpress File Level Backups to?

A: Currently FLBs can only be sent to NETWORK targets (ftp/ssh/smb). You can not backup FLBs to vmfs.

Technical Support

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