

Tru64 UNIX Best Practice

Improving AdvFS Performance by Disabling the Frag File

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Product Version: **Tru64 UNIX Version 5.1A and later**

This Best Practice describes when and how to disable the frag file to increase AdvFS performance for the Tru64 UNIX operating system.

Contents

Disabling the Frag File

Is This Best Practice Right for You?	1
Before You Begin	2
Applying the Best Practice	2
Verifying Success	3
Alternative Practices	3
Comments and Questions	3
Legal Notice	4

Disabling the Frag File

For some file system configurations, disabling the AdvFS frag (fragment) file significantly improves performance and reduces the overall fragmentation of a domain. The environments that benefit the most are typically those that create or write to many small files in a single fileset and that can tolerate using additional disk space to store these files. You can choose to disable the frag file on a per file system (fileset) basis. If the frag file is disabled, small files will occupy more disk space.

The page size in AdvFS is 8 kilobytes. For small files that are not an even multiple of 8 kilobytes in length, the last partial page of data is stored in the frag file. Using the frag file saves significant disk space for filesets containing many small files but degrades file system performance. Thus disabling the frag file improves file system performance at the cost of space allocation.

Version 5.1A and later versions of the operating system let you enable and disable the frag file using the `-o frag` and `-o nofrag` options for the `mkfset` and `chfsets` commands. Selecting the `frag` argument causes files to allocate fragments in the normal manner. Selecting the `nofrag` argument disables the fragment allocation process. Existing files are not directly affected, so files with fragments retain them. The operating system default is to enable the frag file.

See the Tru64 UNIX Best Practices Web page for more information about Best Practices documentation.

Is This Best Practice Right for You?

Not all Best Practices apply to all configurations, so you must be sure that disabling the frag file is appropriate for your system and circumstances. Any file system that contains mostly small files with many file creations or extending writes is a good candidate for disabling the frag file.

There may be no benefit to disabling the frag file for a file system:

- That contains mostly large files; that is, files greater than 200 kilobytes.
- Where disk space is limited and must be conserved.

- That consists of files that are mostly read and infrequently written.

To use this Best Practice, you must meet the requirements described in the following table before you can disable frag files for a fileset.

Requirement	Description
Operating System	Tru64 UNIX version 5.1A and above of the operating system.
Privileges	You must be root user to run the <code>mkfset</code> and <code>chfsets</code> commands.
File Size and Activity	Mostly small files undergoing many file creations and/or extending writes
Space Needed	Disabling the frag file will generally use more disk space.

If you do not meet the previous requirements, see *Alternative Practices* for information.

Before You Begin

Before you disable the frag file for a file system, you must understand some background information.

If you disable the frag file on an existing fileset, the frag file is not immediately affected. If some or all of a file resides in the frag file, the fragment is not automatically removed.

Opening and reading a file after disabling the frag file will not cause its fragments to be removed from the frag file. To remove the fragments from files, after you have disabled the frag file do one of the following:

- Backup the fileset, recreate it using the `nofrag` option of the `mkfset` command, then restore data to the new fileset.
- Create a script that identifies files that have frag files, copies them with a temporary name, deletes the original and the renames the temporary file back to its original name.

Applying the Best Practice

Before you disable the frag file for a fileset, be sure to read the information in *Before You Begin*.

The `mkfset` and `chfsets` commands allow you to control the frag file usage for a fileset.

If you are creating a fileset and want to disable the frag file for that fileset, enter:

```
# mkfset -o nofrag domain_name fileset
```

If you have an existing fileset and want to disable the frag file for all subsequent file operations on it, enter:

```
# chfsets -o nofrag domain_name fileset
```

To access the `mkfset` or `chfsets` reference page, see the Tru64 UNIX publications page for your version of the operating system.

Verifying Success

After you apply the Best Practice for disabling an AdvFS frag file, you can verify whether it was successful. To view the status of an AdvFS file system, use the `showfsets` command:

```
# showfsets domain_name fileset
```

For example, to disable the frag file and check the domain news with the fileset Monday, enter:

```
# chfsets -o nofrag news Monday
# showfsets news Monday
fileset
  Id      : 3a75c788.00030354.1.8001
  Files   : 157136,  SLim= 0,  HLim= 0
  Blocks (512) : 7488129,  SLim= 0,  HLim= 0
  Quota Status : user=off group=off
  Object Safety: off
  Fragging   : off
  DMAPi     : off
```

Alternative Practices

If your system does not meet the requirements described in *Is This Best Practice Right for You?*, it is recommended that you do not disable the frag file.

Comments and Questions

We value your comments and questions on the information in this document. Please mail your comments to us at this address:

best_practices@zk3.dec.com

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