Exporting FUSE-based filesystems with GANESHA

1   Quick Start

1.1   Compiling and installing

Go to the "src" directory of NFS-GANESHA distribution. Then run:

```
./configure --with-fsal=FUSE
make
make install
```

1.2   Exporting your FUSE-based file system

- In your source code, replace `#include <fuse.h>` with `#include <ganesha_fuse_wrap.h>`

- For linking your program, replace `-lfuse` with `-lganeshaNFS`

That's done! You can now start your daemon and mount your filesystem (here is an example in NFSv3):

```
./my_daemon
mount -o vers=3,udp localhost:/ /mnt
```

2   Details about GANESHA FUSE-like binding

2.1   Interface

Ganesha FUSE-like interface provides most FUSE's "high-level" structures and calls (struct fuse_file_info, struct fuse_operations, fuse_main(), fuse_get_context(), ...)

Basically, it supports FUSE-based filesystems using `<fuse.h>` (at least version 2.6).

2.2   Filesystem mandatory features

For being able to export your filesystem with NFS-GANESHA, the following features are mandatory:

- **getattr** must be implemented

- Each entry in your filesystem must have a unic <st_ino, st_dev> peer

- You must set a correct value to the "st_mode" field of "struct stat" (type and access mode)

- The "st_nlink" field of "struct stat" must not be null

- Deprecated call "getdir" is not supported, replace it with "readdir"

2.3 Command line arguments

fuse_main() parameters slightly differ from FUSE implementation.

The expected command line parameters are:

```
Usage: fusexmp [-hds][-L <logfile>][-N <dbg_lvl>][-f <config_file>]
        [-h]                  display this help
        [-s]                  single-threaded (for MT-unsafe filesystems)
        [-L <logfile>]      set the logfile for the daemon
        [-N <dbg_lvl>]      set the verbosity level
        [-f <config_file>]  set the config file to be used
        [-d]                  the daemon starts in background,
                              in a new process group
        [-R]                  daemon will manage RPCSEC_GSS
                              (default is no RPCSEC_GSS)
        [-F] <nb_flushers>  flushes the data cache with purge,
                              but do not answer to requests
        [-S] <nb_flushers>  flushes the data cache without purge,
                              but do not answer to requests
```

2.4 Example

FUSE-binding examples are provided in the GANESHA repository (directory src/example-fuse).

These are the same as provided with FUSE distributions, except that #include <fuse.h> have been changed to #include <ganesha_fuse_wrap.h>.

After compiling GANESHA with FUSE FSAL, you can simply run it the following way:

```
./fusexmp
```