

FA & LFI

- Model state input/output
- Three important features :
 - An index at beginning of file
 - Unique 16-characters ID for each record (field or metadata)
 - Store any kind of data
- Eventually : an index followed by GRIB2 data

LFI

- Rewritten in C
- Can handle various backends with the same interface :
 - Plain LFI
 - Multi-file LFI (output of IO server)
 - LFI over FTP or HTTP
 - Other ?
- Limitations ; only a few thousands of fields for plain LFI, 16 character id hard wired

IO server output

```
io_serv.000001.d/ICMSHFCST+0003:00.sfx
io_serv.000002.d/ICMSHFCST+0003:00.gridall
io_serv.000002.d/ICMSHFCST+0003:00.sfx
io_serv.000003.d/ICMSHFCST+0003:00.gridall
io_serv.000003.d/ICMSHFCST+0003:00.sfx
io_serv.000004.d/ICMSHFCST+0003:00.gridall
io_serv.000004.d/ICMSHFCST+0003:00.sfx
...
```

- merge all files with « io_poll »
- move/copy/pack using LFI tools

Merge IO server output

```
$ io_poll --prefix ICMSH
```

```
ICMSHFCST+0000:00
```

```
ICMSHFCST+0001:00
```

```
ICMSHFCST+0002:00
```

```
ICMSHFCST+0003:00
```

```
ICMSHFCST+0003:00.sfx
```

```
ICMSHFCST+0004:00
```

```
ICMSHFCST+0005:00
```

```
ICMSHFCST+0006:00
```

```
ICMSHFCST+0006:00.sfx
```

Each file ICMSHFCST+NNNN is a « symbolic » merge of sub-files produced by the IO server

Content of symbolic merge

```
LFI_ALTМ
28 76
/chaine/work/marguina/forecast/io_serv.000001.d/ICMSHFCST+0001:00.gridall
/chaine/work/marguina/forecast/io_serv.000002.d/ICMSHFCST+0001:00.gridall
/chaine/work/marguina/forecast/io_serv.000003.d/ICMSHFCST+0001:00.gridall
/chaine/work/marguina/forecast/io_serv.000004.d/ICMSHFCST+0001:00.gridall
/chaine/work/marguina/forecast/io_serv.000005.d/ICMSHFCST+0001:00.gridall...
...
/chaine/work/marguina/forecast/io_serv.000021.d/ICMSHFCST+0001:00.speca.0003
/chaine/work/marguina/forecast/io_serv.000022.d/ICMSHFCST+0001:00.speca.0003
/chaine/work/marguina/forecast/io_serv.000023.d/ICMSHFCST+0001:00.speca.0003
/chaine/work/marguina/forecast/io_serv.000023.d/ICMSHFCST+0001:00.speca.0004
/chaine/work/marguina/forecast/io_serv.000024.d/ICMSHFCST+0001:00.speca.0004
1496 16
0 CADRE-DIMENSIONS
0 CADRE-FRANKSCHMI
0 CADRE-REDPOINPOL
0 CADRE-SINLATITUD
0 CADRE-FOCOHYBRID
...
0 SURFFL.COND.L.GE
0 SURFPREC.NEI.GEC
0 SURFFL.COND.N.GE
0 SOMMFLU.RAY.SOLA
0 SURFFLU.RAY.SOLA
0 SOMMFLU.RAY.THER
0 SURFFLU.RAY.THER
0 SURFFLU.LAT.MEVA
...
```

Can be opened/read/written by the LFI library

Tools

- `lfi_copy [-pack] [-force] [-intent=in|inout] source... dest`
- `lfi_move [-pack] [-force] [-intent=in|inout] source... dest`
- `lfi_pack source`

Optimized commands : use hard links whenever possible, transform plain files into indexed files to make them read/write

`lfi_pack` output can be piped to commands like `ftp` or `ssh`

Modify an indexed file

```
$ ls -l ICMSHARPEINIT ICMSHARPEINIT.d/*
-rw-r--r-- 1 marguina mrpm      32323 Sep  2 13:57 ICMSHARPEINIT
-r--r--r-- 5 mxpt001  mxpt 921452544 Sep  2 08:45 ICMSHARPEINIT.d/000000
-r--r--r-- 5 mxpt001  mxpt 985939968 Sep  2 08:45 ICMSHARPEINIT.d/000001
-r--r--r-- 5 mxpt001  mxpt 983777280 Sep  2 08:45 ICMSHARPEINIT.d/000002
...
-r--r--r-- 5 mxpt001  mxpt 761634816 Sep  2 08:45 ICMSHARPEINIT.d/000027
$ cat testfa.in
OUV
77 T ICMSHARPEINIT OLD T T 2 0 c
RAZ
IENC
77 SURF 0 TEST F
IRME
77 KEEP
STOP
$ $LFITOLS testfa < testfa.in # modify file using testfa
$ ls -l ICMSHARPEINIT ICMSHARPEINIT.d/*
-rw-r--r-- 1 marguina mrpm      32367 Sep  2 14:01 ICMSHARPEINIT
-r--r--r-- 5 mxpt001  mxpt 921452544 Sep  2 08:45 ICMSHARPEINIT.d/000000
-r--r--r-- 5 mxpt001  mxpt 985939968 Sep  2 08:45 ICMSHARPEINIT.d/000001
...
-r--r--r-- 5 mxpt001  mxpt 761634816 Sep  2 08:45 ICMSHARPEINIT.d/000027
-rw-r--r-- 1 marguina mrpm    12976128 Sep  2 14:01 ICMSHARPEINIT.d/000028 < - new file
```