OTF Tools

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Introduction

The Open Trace Format Library (OTF) comes with support tools that perform frequent tasks.

otfmerge: change the number of streams for an existing trace.

otfmerge-mpi: MPI version of otfmerge.

otfaux: add snapshot and statistics information to an otf trace.

vtf2otf: translate VTF3 traces to OTF.

otf2vtf: translate OTF to VTF3 backwards (limited functionality).

otfdump: print information about a tracefile in human readable format.

otfcompress: compress/decompress OTF traces.

otfconfig: show configure parameters for the existing OTF installation.

otfprofile: generate concise profile in Latex format for an OTF trace.

otfprofile-mpi: MPI version of otfprofile.

otfshrink: create a new otf file that only includes specified processes.

otfinfo: get basic information about a tracefile.

For all OTF tools the `-V` option will print the OTF version. See below for detailed description of each tool.

otfmerge

The **otfmerge** tool allows to merge an existing OTF trace to a different number of streams. The `-n` option specifies the number of output streams. At maximum there will be as many output streams as there are trace processes. Setting `-n 0` will create the maximum number of streams automatically.

The output file name is set via the `-o` option. With `-f` it is possible to restrict the number of file handles used concurrently by `otfmerge`. This is necessary if the number of files exceeds the limit of file handles as set by the environment.

Via `-rb` and `-wb` the internal input resp. output buffer sizes per stream can be changed. However, the default buffer sizes should be suitable most of the time. The `-stats` and `-snaps` options allow to include statistics and snapshot records when merging. By default they are ignored.

Global definition records are copied to the output trace. Local definitions are also copied even though this is invalidates the trace! Local definitions are not expected and should have been translated to global definitions beforehand by the resp. creator.

The following short help message is given when `otfmerge` is called with the `-h` option:

```
otfmerge - converter program of OTF library.

otfmerge [Options] <input file name>

  Options:
    -h, --help    show this help message
    -V            show OTF version
    -n <n>        set number of streams for output
                  set this to 0 for using one stream
                  per process - standard is 1
    -f <n>        set max number of filehandles
                  available
    -o <name>     namestub of the output file
                  (default 'out')
    -rb <size>    set buffersize of the reader
    -wb <size>    set buffersize of the writer
    -stats        cover statistics too
    -snaps        cover snaphots too
```

```
    -z <zlevel>   write compressed output
                  zlevel reaches from 0 to 9 where
                  0 is no compression and 9 is the
                  highest level
    -l            write long OTF format
    -p            show progress
```

otfmerge-mpi

The `otfmerge-mpi` tool is the MPI version of the `otfmerge` tool.

```
otfmerge-mpi - an MPI implementation of otfmerge

otfmerge-mpi [options] <input file name>

  options:
    -h, --help    show this help message
    -V            show OTF version
    -n <n>        set number of streams for output
                  set this to 0 for using one stream
                  per process - default is 1
    -f <n>        set max number of filehandles
                  available per rank
    -o <name>     namestub of the output file
                  (default 'out')
    -rb <size>    set buffersize of the reader
                  (for each rank)
    -wb <size>    set buffersize of the writer
                  (for each rank)
    -stats        cover statistics too
    -snaps        cover snapshots too
    -z <zlevel>   write compressed output
                  zlevel reaches from 0 to 9 where
                  0 is no compression and 9 is the
                  highest level
    -l            write long OTF format
    -p            show progress
```

otfaux

The `otfaux` tool appends auxiliary information to an existing OTF trace. The event records are read but not modified.

There are two kinds of auxiliary data. First, there are snapshot information that provide the complete status of a trace process at a given time stamp. This contains call stack information, pending messages, current performance counter values, etc. Second, there are statistics information accumulated from the beginning of the trace until the current time stamp. Statistics involve the number of calls, exclusive and inclusive time for per function resp. function group or accumulated message count and message volume for communication, etc. Statistics are always monotone increasing not unlike program profiles. Let S_a and S_b two statistics at time stamps $a < b$ then $S := S_b - S_a$ is the profile information for the time interval $[a, b]$.

Both, snapshots and statistics are generated at certain break point, which can be specified in several ways: First, `-n x` allows to have `x` break points distributed regularly over the trace's time interval. Second, `-p y` will generate a break point every `y` ticks starting from the beginning of the trace. If both options are given the one producing more break points wins. In addition break points can be specified with `-t z` which will add a single explicit break point regardless of`-n` and `-p` options.

If the `-g` switch is set then function statistics are replaced by function group statistics. This produces more terse output. The option `-v` switches on verbose mode which prints break point time stamps while processing.

In case there are auxiliary information already present the `-o` option forces otfaux to overwrite it. Otherwise otfaux exits with an error message. Via `-b` internal buffer size per stream can be adjusted although the default setting is suitable most of the time.

The `-h` switch provides the following short help message:

```
otfaux - append snapshots and statistics to existing
           otf traces at given 'break' time stamps

otfaux [Options] <file name>

  Options:
    -h, --help     show this help message
```

```
-V              show OTF version
-b <size>       buffer size for read and write
                operations
-n <n>          number of breaks
                (distributed regularly)
                if -p and -t are not set,
                the default for -n is 200 breaks
-p <p>          create break every 'p' ticks
                (if both, -n and -p are specified
                the one producing more breaks wins)
-t <t>          define (additional) break at given
                time stamp
-F              force overwrite old snapshots and
                statistics
-R              delete existing snapshots and
                statistics only
-f <n>          max number of filehandles output
--funcgroups    create functiongroup summaries
                instead of function summaries
--filegroups    create file group summaries
                instead of file summaries
-v              verbose mode, print break
                time stamps
-a              show advancing progress during
                operation

--snapshots     write ONLY snapshots but
                NO statistics
--statistics    write ONLY statistics but
                NO snapshots

-s a[,b]*       regard given streams only when
                computing statistics.
                expects a single token or comma
                separated list.
                this implies the '--statistics'
                option!
-l              list existing stream tokens
```

vtf2otf

The `vtf2otf` tool translates a VTF3 trace to OTF. With `-o` the output file name is specified. If it has no '.otf' suffix already then it is appended automatically. This tool supports only those record types supported by OTF. Some deprecated or experimental VTF3 records are ignored.

The number of output streams to be generated is given with `-n n`. The `-f` option allows to restrict the number of file handles to be opened concurrently in case there are too many streams. Again, `-b` adjusts the output buffer size per stream if the default is not suitable. If the `-h` switch is set the following help message is provided:

```
vtf2otf - Convert VTF3 trace files to OTF format.

vtf2otf [Options] <input file name>

  Options:
    -h, --help   show this help message
    -V           show OTF version
    -o <file>    output file
    -f <n>       max count of filehandles
    -n <n>       output stream count
    -b <n>       size of the writer buffer
    -z <n>       use zlib compression
    -io          compute io events. This is
                 neccessary for getting correct
                 durations in IO-operations.
                 Result of this step is a file with
                 extra information. This file is used
                 for creating correct duration-
                 information in a normal run.
                 If you do not have these extra
                 -information-file, the duration of
                 every IO-operation will be zero.
```

otf2vtf

The `otf2vtf` tool performs the backward transformation from OTF to VTF3. Again, `-o` gives the VTF3 output file name including file suffix. Via `-b` OTF's input buffer size per stream can be adjusted if necessary.

With `-A` resp. `-B` the VTF3 sub-format can be set to ASCII (default) resp. binary. The `-h` switch produces a short help message like follows:

```
otf2vtf - Convert OTF trace files to VTF format.

otf2vtf [Options] <input file name>

  Options:
    -h, --help   show this help message
    -V           show OTF version
    -o <file>    output file
    -b <n>       size of the reader buffer
    -A           write VTF3 ASCII sub-format
 (default)
    -B           write VTF3 binary sub-format
```

otfdump

The `otfdump` tool prints information about a tracefile in human readable format.

```
otfdump - convert otf traces or parts of it into a
          human readable, long version

  Options:
    -h, --help     show this help message
    -V             show OTF version
    -o <file>      output file
                   if the ouput file is unspecified
                   the stdout will be used
```

```
--num <a> <b>  output only records no. [a,b]
--time <a> <b> output only records with time-
               stamp in [a,b]

--nodef        omit definition records
--noevent      omit event records
--nostat       omit statistic records
--nosnap       omit snapshot records
--nomarker     omit marker records

--nokeyvalue   omit key-value pairs
--fullkeyvalue show key-value pairs including
               the contents of byte-arrays

--procs <a>    show only processes <a>
               <a> is a space-seperated list of
               process-tokens

--records <a>  show only records <a>
               <a> is a space-seperated list of
               record-type-numbers

               record-type-numbers can be found in
               OTF_Definitions.h (OTF_*_RECORD)

-s, --silent   do not display anything except
               the time otfdump needed to read
               the tracefile
```

otfcompress

The `otfcompress` tool performs compression and decompression on traces.

```
otf(de)compress - compression program for single
                  OTF files.

  Usage: otf(de)compress [OPTIONS] <FILES>
```

```
  -h, --help   show this help message
  -V           show OTF version
  -c           compress (default action when called
               as 'otfcompress')
  -d           decompress (default action if called
               as 'otfdecompress')
  -k           keep original file (compressed resp. uncompressed)
  -o <dir>     output directory (implicitly sets -k)
  -[0-9]       use given compression level (default 4)
               0 - plain
               1 - minimum compression, fastest
               9 - maximum compression, slowest
```

otfconfig

The `otfconfig` tool shows various installation parameters of OTF, which are important for developers.

```
otf-config - shows parameters of the otf configuration.

otf-config [Options]

  Options:
     -h, --help    show this help message
     --version     show the otf version
     --have-zlib   is zlib enabled
     --includes    path to the otf headers
     --libs        libline needed for linking otf
     --sizes       print size of integer types
```

otfprofile

The `otfprofile` tool creates a concise profile of an OTF trace in Latex format.

```
otfprofile - generates a profile of a trace in Latex
             or CSV format.

  options:
    -h, --help    show this help message
    -b <x>        readbuffer size
    -f <x>        max. number of filehandles to use
    -i <file>     specify an input trace name
    -csv <file>   specify an input csv-file trace name
                  (as produced by otfprofiler before),
                  don't use -i and -csv together
    -o <path>     specify the path for the output files
    -tex <x>      writes Latex output in different
                  flavours: all,func,p2p,collop,none
    -notex        disable Latex output
    -nops         disable Postscript output
    -var          also show statistic variance
    -top <x>      max. number of functions shown
                  (default 50)
    -progress     show progress information
    -sum          reads only summarized information,
                  no events
    -omp <x>      specify the number of threads which
                  are used while reading the otf-file
                  parallel
                  Note: This option overrides the environ-
                  ment variable OMP_NUM_THREADS,
                  only useful if compiled with OpenMP
                  support
    -lite         ignore P2P and collective communication
                  (saves memory for highly parallel cases)
```

otfprofile-mpi

The `otfprofile-mpi` tool creates a concise profile of an OTF trace in Latex format.

```
otfprofile-mpi - generate a profile of a trace in LaTeX format.

Syntax: otfprofile-mpi [options] <input file name>

  options:
     -h, --help           show this help message
     -V                   show OTF version
     -v                   increase output verbosity
                          (can be used more than once)
     -p                   show progress
     -f <n>               max. number of filehandles available per r
                          (default: 50)
     -b <size>            set buffersize of the reader
                          (default: 1048576)
     -o <prefix>          specify the prefix of output file(s)
                          (default: result)
     --stat               read only summarized information, no event
     --nopdf              do not produce PDF output

PDF creation requires the PGFPLOTS package version >1.4
http://sourceforge.net/projects/pgfplots/
```

otfshrink

The `otfshrink` tool creates a new otf file that is reduced to specified processes.

```
otfshrink - creates a new otf file that only includes
            specified processes

  options:
    -h, --help   show this help message
    -i <file>    specify the input trace file
    -o <file>    specify the output file
    -l <list>    a space-separated list of processes
                 to show,
                 e.g. -l 1 2 3-4 8-5
    -v <list>    a space-separated list of processes
```

```
                NOT to show,
                see -l for exact syntax
   -s <mode>    display all selected processes,
                no files are created (simulation mode),
                modes: (l)ist, (r)ange or (t)able
                defaut: range
```

otfinfo

The `otfinfo` tool is useful to get basic information about a tracefile.

```
otfinfo - program to get basic information of a trace.

otfinfo [Options] <input file name>

  options:
     -h, --help    show this help message
     -V            show OTF version
     -f <n>        set max number of filehandles
                   available
     -l <ilevel>   set the information level for
                   the output
                   (0 - 4) the default level is 1
     -a            set the information level to 4
     -p            show progress bar for reading
                   event files
```