

Automated process: ONE view

Create and fill a ONE view configuration file

```
$ maqao oneview --create-config  
$ vim config.lua
```

- Define path to the binary

```
binary = "./my_app"
```

- Sequential / OpenMP profiling

```
run_command = "<binary> input=a.dat..."
```

<binary> will be automatically replaced with the binary variable value

- OpenMP thread numbers

```
omp_num_threads = 4
```

- MPI / hybrid profiling

```
mpi_command = "mpirun -n 32"
```

For Sbatch scripts:

- Modify sbatch script to replace mpi command with <run_command>
- Update ONE View config file

```
sbatch_script = "<path to modified sbatch script>"
```

Profile and analyze

```
$ maqao oneview --create-report=one --config=config.lua \  
-xp=<exp_dir> --format=html
```

If **exp_dir** is omitted, an experiment directory **maqao_<timestamp>** will be created.
If **format** is omitted, the XLSX report will be generated

Display

- Path to the report file is displayed at the end of the experiment

```
Info: -> HTML INDEX FILE : <exp_dir>/RESULTS//<binary>_one_html/index.html
```

Custom/advanced process: LProf + CQA

Analysis process

- 1) Profile with MAQAO LProf
- 2) Identify hotspots
 - Function names
 - Loop ids
- 3) Analyse hotspots with CQA
 - Functions bodies
 - Loops by functions
 - Loops by identifiers as returned by LProf

Profile with MAQAO LProf

- Sequential / OpenMP profiling

If **exp_dir** is omitted, a directory named **maqao_lprof_<timestamp>** will be created.

```
$ maqao lprof [-xp=exp_dir] -- ./my_app arg1 arg2 ...
```

- MPI / hybrid profiling

```
$ mpirun -n 32 maqao lprof [-xp=exp_dir] -- ./my_app arg1 arg2 ...
```

Display LProf results

- For functions (console output)

```
$ maqao lprof -df -xp=exp_dir
```

- For loops (console output)

```
$ maqao lprof -dl -xp=exp_dir
```

- Create HTML summary in **<exp_dir>/html/index.html**

```
$ maqao lprof -xp=exp_dir -of=html
```

Analysis with CQA

- Analysing a given loop or set of loops

```
$ maqao cqa ./my_app -loop=id1,id2,id3...
```

id1, id2, id3 ... are the numerical loop identifiers returned by **LProf**.

- Analysing all innermost loops in a given function or set of functions

```
$ maqao cqa ./my_app -fct-loops="regexp"
```

- Analysing the body of a given function or set of functions

```
$ maqao cqa ./my_app fct-body="regexp"
```

regexp is a regular expression: *foo* matches "foo1", "foo" or "afoo", while *^bar\$* matches "bar" only