

Installation Guide for Windows 10

Step 0. Set environment

Windows 10 + git-2.34 + cmake-3.22 + Visual Studio 2022 + Intel oneAPI/oneMKL 2022

In the Intel CMD for x64, the environment is usually set by default. If not, first set environment for Intel 2022 with:

```
"C:\Program Files (x86)\Intel\oneAPI\setvars.bat"
```

or with the following

```
'C:\Program Files (x86)\Intel\oneAPI\setvars.bat'
```

If you do not do anything, it will use MSVC instead of Intel compilers. In case you want to use the Intel 2022 compilers (icl/icx/dpcpp), you need to use the following (icl for Intel Classical C++, icx for Intel NextGen C++, dpcpp for Intel DPC++):

```
set CC=icx  
set CXX=icx
```

Step 1. Download and install fasp solver (required)

The solver package fasp solver is currently required. You can get it from the GitHub repository

[git@github.com:FaspDevTeam/faspsolver.git](https://github.com/FaspDevTeam/faspsolver.git)

After obtained the package, run:

```
cd faspsolver; mkdir Build; cd Build
```

Now you can generate a VS2022 solution with MKL Pardiso support

```
cmake -T "Intel C++ Compiler 2022" -DCMAKE_C_COMPILER="icx" -DUSE_PARDISO=ON ..
```

Here we assume there is only one Visual Studio available; and, it will be used by default.

If you have multiple VS versions (for example, VS2022 and VS2019) installed on your system, you can use specify which VS to use using the **-G** option. For example, in order to use VS2022, you may run

```
cmake -G "Visual Studio 17 2022"
```

Once cmake succeeded, open fasp solver.sln and build the **ALL_BUILD** target as well as the **INSTALL** target.

Step 2. Download and install fasp4blkoi (optional)

If case you only wish to use the basic solvers in *fasp solver*, you can skip this step. In case you want to use the preconditioners from *fasp4blkoi*, you should first download it from

[git@github.com:FaspDevTeam/fasp4blkoi.git](https://github.com/FaspDevTeam/fasp4blkoi.git)

Similar to the above steps, run

```
cd fasp4blkoi; mkdir Build; cd Build
```

Then you need to tell **cmake** where is fasp solver by

```
set FASP_DIR=\prog\0.FASP\fasp solver
```

Generate VS2022 solution with the MKL Pardiso support with

```
cmake -T "Intel C++ Compiler 2022" -DCMAKE_C_COMPILER="icx" -DUSE_PARDISO=ON ..
```

Open fasp4blkoi.sln and build the **ALL_BUILD** and **INSTALL** targets.

Usually, the above two steps are only needed for the first time.

Step 3. Download and install OpenCAEPoro

Now we are ready to build *OpenCAEPoro*. First, download it from

[git@github.com:FaspDevTeam/OpenCAEPoro.git](https://github.com/FaspDevTeam/OpenCAEPoro.git)

Then follow the standard steps to generate Visual Studio solutions using cmake:

```
cd OpenCAEPoro; mkdir Build; cd Build
set FASP_DIR=\prog\0.FASP\fasp solver
set FASP4BLKOIL_DIR=\prog\0.FASP\fasp4blkoi
```

and then

```
cmake -T "Intel C++ Compiler 2022" -DCMAKE_C_COMPILER="icx" -DUSE_FASP4BLK0IL=ON -  
DUSE_PARDISO=ON ..
```

Now you are ready. Just open OpenCAEPoro.sln and build the **ALL_BUILD** target. And then build **INSTALL** target if you wish to install the lib and exe files to desirable directories.

Modified on Feb/06/2022 by Chensong Zhang