

# AOCC 1.0 Install Guide

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“AMD Optimizing C/C++ Compiler” - abbreviated as AOCC is a highly optimized C, C++ and Fortran compiler for x86 targets especially for Zen based AMD processors. This release of AOCC is based on LLVM 4.0 release. This manual documents how to install AOCC and the dependencies that need to be satisfied.

## Installing AOCC on Linux

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### C, C++ and FORTRAN Compiler

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1. Download packages listed below to directory of your choice say <compdir>

- *AOCC-1.0-Compiler.tar*
- *AOCC-1.0-FortranPlugin.tar*
- *AOCC-1.0-GoldLinkerPlugin.tar*
- *AOCC-1.0-Fortran-Prerequisites.tar*
- Above packages contains AOCC (C, C++ and FORTRAN compiler) and their prerequisites
- *cd <compdir>*
- *tar -xvf AOCC-1.0-Compiler.tar\**
- *cd AOCC-1.0-Compiler*
- *sudo bash install.sh*
  - This step will generate file called *<compdir>/setenv\_AOCC.sh*
- *source <compdir>/setenv\_AOCC.sh*
  - This will set up shell environment for using AOCC
- *clang -v*
  - This will show AOCC version
- For details on GFortran and DragonEgg please read [AOCC User guide](#)
  - DragonEgg used for FORTRAN compiler has dependency on GNU Fortran 4.8.2. which has dependency on libgcc from GCC 4.8.2. GCC 4.8.2 is already setup by *setenv\_AOCC.sh* in your shell environment. You can check this by running *gcc -v*

- You can run `sudo bash <compdir>/AOCC-1.0-Compiler/AOCC-1.0-prerequisites-check.sh` to check if you have all the prerequisites and that your shell environment is set up correctly
  - If there are failing checks then correct them (repeat any of the above steps that you may have missed) and run `prerequisites_check.sh` again
  - Repeat until `prerequisites_check.sh` displays 'Check:PASSED'
  - Note: If you have only warnings in failing checks then you can proceed if packages mentioned in the warnings are not required for your run
- 2. The compiler is installed and your environment set to point to the current release of AOCC. At any point in time you can `source <compdir>/setenv_AOCC.sh` to set the environment variables for the installed compiler
- 3. It is recommended that you install gold linker to take advantage of whole program optimization through AOCC's link time optimizer (LTO). Please follow these [steps](#) to build and install gold linker

## Using AOCC

- `source <compdir>/setenv_AOCC.sh`
- To build and run a C/C++ program
  - `$ clang [optimization flags] xyz.c -o xyz`
  - `$ ./xyz`
  - Optimization flags: Please read the options listed in [Clang - the C, C++ Compiler guide](#)
- To build and run Fortran programs:
  - `$ gfortran [GFortran flags] -fplugin=<absolute path>/AOCC-1.0-FortranPlugin/dragonegg.so [plugin optimization flags] -c xyz.f90`
  - `$ clang -O3 -lgfortran -o xyz xyz.o`
  - `$ ./xyz`
  - GFortran flags: flags that GFortran frontend will use to generate the IR for DragonEgg plugin. It is recommend to use basic out-of-the-box
    - eg: "-m64 -O2"
  - plugin optimization flags: Optimization flags DragonEgg plugin will use to generate the optimized LLVM IR and code generation. Please read the options listed in [DragonEgg - the Fortran compiler guide](#)

## AOCC compiler prerequisites

AOCC has few prerequisite software installs for its working. To quickly check if you already have the required prerequisites you can run this script as follows

- `sudo bash <compdir>/AOCC-1.0-Compiler/AOCC-1.0-prerequisites-check.sh`

## Supported Operating systems

This release has been tested on the following OS

- RHEL 7.2
- SLES 12 SP1
- Ubuntu 16.04 LTS

## Known issues and limitations

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1. DragonEgg in this release is compatible with GCC 4.8.2 only. Please install the 4.8.2 release provided as part of prerequisite package or follow the steps mentioned under Fortran compiler section, to avoid “incompatible plugin” build error when building benchmarks or applications. DragonEgg.so has been validated with gfortran only. If you have downloaded AOCC-1.0-Compiler.tar then following steps in above [Installing AOCC on Linux](#) will set it up for you.
2. AOCC compiler binaries are suitable to run on Linux systems having glibc version 2.17 and above only.