



Documentation:

*Ag++ Manual:*

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## 1 Introduction

The `ag++` program provides a more intuitive frontend to the AspectC++ weaver (`ac++`) in a GNU environment. The only preliminaries are a working installation of GNU C++ compiler, which also can run within a cygwin environment. It basically wraps the functionality of the aspect weaver and the c++ compiler into one single program.

## 2 Invocation

The usage of `ag++` is mainly influenced by the usage of the GNU `g++` compiler and the synopsis is like:

```
ag++ [options] [files...].
```

Let's say, you want to **compile** a single file (here: `main.cc`) with `g++`, you have to run

```
g++ -c main.cc
```

in order to generate an object file.

To **weave** and **compile** a single file you simply invoke

```
ag++ -c main.cc
```

the same way like you did before with `g++`.

### 2.1 Concept

As `ag++` is just a wrapper, it first generates the puma configuration file, then calls `ac++` and afterwards `g++`. The intermediate files generated by `ac++` are stored in the directory which is extracted from the `-o` option or in current directory. In some cases this may lead to a situation where the names of intermediate files interfere with each other.

### 2.2 Options

All available options are summed up in the options table (see table 1). The column labeled with `AC++` shows if the option is taken over from `ac++` by `ag++` ('X'), not supported by `ac++` ('-') or modified by `ag++` ('!'). All options which are taken over, are not described in this document. Consult the AC++ Compiler Manual instead. Options which are not listed in the option table are accounted as `g++` options. Some `g++` options can not be automatically handled correctly by the options parser of `ag++`. So all `g++` options starting with `-p`, `-a`, `-d` and `-r` (e.g. `-pipe`, `-ansi`, `-dletters`, `-remap`) have to be written between `--Xcompiler` (see 2.2.12) and `--Xweaver` (see 2.2.13). If such options passed to `ag++` without using `--Xcompiler` they will be interpreted as `ag++/ac++` options ; e.g. `-pipe` will be interpreted as `-p "ipe"`.

Option	AC++	Description
--gen_config	–	Only generate Puma configuration file
--weave_only	–	Weave only
-c	!	Compile only
--keep_acc	–	Keep woven source code files
--c_compiler <arg>	–	Path to C++ compiler
--ac_compiler <arg>	–	Path to AspectC++ compiler
--config_command <arg>	–	Specify command which prints information about compiler
--Xcompiler	–	In case of doubt account following options as g++ options.
--Xweaver	–	In case of doubt account following options as ac++ options.
-p --path <arg>	!	Defines a project directory
-d --dest <arg>	X	Specifies a target directory for saving
-v --verbose <arg>	!	Level of verbosity (0-9)
-o --output <arg>	X	Name of the output file
--include_files	X	Generate manipulated header files (short version -i is not supported)
-a --aspect_header <arg>	!	Name of aspect header file or 0
-r --repository <arg>	X	Name of the project repository
--config <arg>	!	Parser configuration file
--no_line	X	Disable generation of #line directives
-k --keywords	X	Allow AspectC++ keywords in normal project files
--real-instances	X	Let ac++ perform a full template analysis
--problem...	X	Enable back-end compiler problem workaround
--no_problem...	X	Disable back-end compiler problem workaround
--warn...	X	Show a specific ac++ warning that is suppressed by default
--no_warn...	X	Suppress a specific ac++ warning
-I <arg>	X	Include file search path
-D <name>[=<value>]	X	Macro definitions
-U <name>	X	Undefine a macro
--include <arg>	X	Forced include

Table 1: ag++ Compiler Option Summary

### 2.2.1 `--gen_config`

Just create a parser configuration and quit afterwards. The argument of the `-o` option specifies the name of the file. In any other case (no `--gen_config` and/or no `-o` option) a configuration file with the name 'puma.config' will be generated in the directory where `ag++` was invoked.

### 2.2.2 `--weave_only`

Generate only woven source code files. With `-o` option and one file the generated output is named after the argument of the `-o` option.

### 2.2.3 `--path`

This options differs only slightly from the `--path` option of `ac++`. In `ac++` it is mandatory to specify a project path, whereby `ag++` the current working directory is used as project path by default. Especially for larger projects it is NOT wise to rely on the default project path, as weaving take a lot of time. See the AspectC++ Compiler Manual for a more detailed description of this option.

### 2.2.4 `-c`

Like the `-c` option of `g++`, this options effects the creation of object files of one or more source files.

### 2.2.5 `-v|--verbose [<arg>]`

Set the level of verbosity.

### 2.2.6 `--aspect-header <arg>`

This option differs from meaning in `ac++` only if dependencies are generated ( see [2.3](#)).

### 2.2.7 `--keep_acc`

Don't remove intermediate `.acc` files generated by `ac++`.

### 2.2.8 `--c_compiler`

Specify path to GNU C++ compiler' The default is `g++`.

### 2.2.9 `--ac_compiler`

Specify path to AspectC++ compiler. By default `ag++` assumes, that the `ac++` executable is located in the same directory like itself.

### 2.2.10 `--config_command`

Specify the command which prints information about the compiler. This information is necessary for generating the parser (puma) configuration file. The default value is "`<compiler> <compiler options> -E -dM -v -x c++ <an empty file>`".

### 2.2.11 `--config <arg>`

Path to a puma configuration file. If this option is available the configuration file will not be generated automatically.

### 2.2.12 `--Xcompiler`

`ac++` and `ag++` options that might interfere with `g++` options are not recognized after using `--Xcompiler` in the argument list of an `ag++` invocation.

### 2.2.13 `--Xweaver`

Enable the recognition of those `ac++` and `ag++` options which previously have been disabled by the usage of `-Xcompiler`.

## 2.3 Generating dependency information

To produce dependency files just pass the `-M` or `-MM` (consult the GNU C++ Compiler Manual) to `ag++`. Dependency files generated by `ag++` are slightly different from dependency files created by `g++`, as they contain dependencies to aspect header files. If the `--aspect-header` option is provided, only the header file specified as option argument is considered when building the dependency file; otherwise the dependency file will contain all aspect header files within the whole project path.

## 2.4 Examples

- `ag++ --help`  
Displays all options with a short description.

- `ag++ -o test Test.cc main.cc`  
Weave, compile and link the source files `Test.cc` and `main.cc`. The created executable will be named `'test'`.
- `ag++ --gen_config`  
Create a puma configuration file named `puma.config` within the current working directory.
- `ag++ --gen_config -o my.config`  
Create a puma configuration file named `my.config`.
- `ag++ --path src --include_files --dest gen/includes`  
Generate modified include files out of all include files found below `src` directory and store them under `'gen/includes'`.
- `ag++ -M -MFmain.dep main.cc`  
Generate dependency file `main.dep` from source file `main.cc`.
- `ag++ -p ../aspects -p . --Xcompiler`  
This string could be used to substitute `g++` in a simple `make` environment.