

This has a new binding scheme in building OpenSSL-3.0.0 library with Node.js. OpenSSL-3.0.0 uses a new build system with Perl for various supported platforms. See `openssl/Configurations/README` and `openssl/Configurations/README-design.md` in the OpenSSL source for details.

In order to build OpenSSL library without Perl in the build of Node.js for various supported platforms, platform dependent files (e.g. asm and header files) are pre-generated and stored into the `config/archs` directory.

- `config/Makefile` and `config/generate_gypi.pl`

Makefile has supported platform list and generates and copies platform dependent files (e.g. asm files) into arch directory with `generate_gypi.pl`. Platform dependent gypi files are also created obtaining build information from `configdata.pm` that is generated with `Configure` in the OpenSSL build system.

For Windows, `Configure` generates `makefile` that is only available to `nmake` command. `config/Makefile_VC-WIN32` and `config/Makefile_VC-WIN64A` are made by hand for the use of GNU make. If `makefile` rules or targets are changed in the version up of OpenSSL, they should be also updated.

- gyp and gypi files (`openssl*.{gyp,gypi}`)

`openssl.gyp` has two targets of `openssl` and `openssl-cli` referred from `node.gyp`. They include `asm` and `no_asm` gypi files with arch dependent gypi according to its build options and platforms. The gyp data which is common with `asm` and `no_asm` are stored in `openssl_common.gypi`.

- header files (`config/*.{h,h.tmpl}`)

`bn_conf.h`, `dso_conf.h` and `opensslconf.h` are platform dependent in the OpenSSL sources. They are replaced with `config/*.{h,h.tmpl}` files to include the file in the `../.././config/` and referred to each arch file that depends on `asm` and `no-asm` option. These headers are generated by the make target `generate_headers`.

Supported architectures for use of ASM

Here is a list of supported architectures for use of ASM in OpenSSL.

| <code>-dest-os</code> | <code>-dest-cpu</code> | OpenSSL target arch | CI |
|-----------------------|------------------------|---------------------|----|
| aix | ppc | aix-gcc | o |
| aix | ppc64 | aix64-gcc | o |
| linux | ia32 | linux-elf | o |
| linux | x32 | linux-x32 | - |
| linux | x64 | linux-x86_64 | o |
| linux | arm | linux-armv4 | o |

| -dest-os | -dest-cpu | OpenSSL target arch | CI |
|----------|-----------|----------------------|----|
| linux | arm64 | linux-aarch64 | o |
| linux | ppc | linux-ppc | o |
| linux | ppc64 | linux-ppc64 | o |
| linux | ppc64(*1) | linux-ppc64le | o |
| linux | s390 | linux32-s390x | o |
| linux | s390x | linux64-s390x | o |
| mac | ia32 | darwin-i386-cc | - |
| mac | x64 | darwin64-x86-cc | o |
| win | ia32 | VC-WIN32 | - |
| win | x64 | VC-WIN64A | o |
| solaris | ia32 | solaris-x86-gcc | o |
| solaris | x64 | solaris64-x86_64-gcc | o |
| freebsd | ia32 | BSD-x86 | - |
| freebsd | x64 | BSD-x86_64 | o |
| openbsd | ia32 | BSD-x86 | - |
| openbsd | x64 | BSD-x86_64 | - |
| others | others | linux-elf | - |

(*1: This needs to be configured with the variable of node_byteorder: little)

These are listed in config/Makefile. Please refer config/opensslconf_asm.h for details.

Upgrading OpenSSL

Please refer to maintaining-openssl.