

# Open Source Toolchain Proposal to OpenEuler Releases

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# Agenda

- Motivation
- Support to Next Generation Intel Processors in GCC13/14
- Open Source Toolchain Support to Intel Platforms
- Toolchain Proposals to OpenEuler Releases
- Toolchain Proposals to OpenEuler Releases (2024~2026)

# Motivation

- Intel在硬件上快速地演进，不断地推出新硬件平台和新特性
- Intel在开源工具链上持续提供对下一代硬件的支持
- OpenEuler也在不断快速演进，迭代新的特性和性能
- 在OpenEuler发布版支持Intel当前最新的硬件平台，让用户开箱即用
- 目前多样性计算和芯片及设备的更新节奏快，工具链支持是大家的共同诉求
- 通过工业界和社区合作，实现共赢

# Support to Next Generation Intel Processors in GCC13

- Granite Rapids
  - AMX-FP16
  - PREFETCHIT0/1
- Granite Rapids-D
  - AMX-COMPLEX
- Sierra Forest
  - AVX-IFMA
  - AVX-VNNI-INT8
  - AVX-NE-CONVERT
  - CMPccXADD
  - RAO-INT
- -march=raptorlake
- -march=meteorlake
- -march=sierraforest
- -march=grandridge
- -march=graniterapids
- -march=graniterapids-d

# Support to Next Generation Intel Processors in GCC14

- Lunar Lake/Arrow Lake/Clearwater Forest
    - AVX-VNNI-INT16
    - SHA512
    - SM3
    - SM4 (VEX)
    - USER\_MSR
  - Granite Rapids
    - AVX10.1
  - Next Generation
    - APXF
- -march=arrowlake
  - -march=arrowlake-s
  - -march=clearwaterforest
  - -march=lunarlake
  - -march=pantherlake

# Open Source Toolchain Support to Intel Platforms

2024

## ■ Granite Rapids

- GCC13.1
- Binutils 2.40
- Glibc 2.37
- LLVM 16.0

## ■ Granite Rapids-D

- GCC13.1
- Binutils 2.41
- Glibc 2.37
- LLVM 17.0

## ■ Sierra Forest

- GCC13.1
- Binutils 2.40
- Glibc 2.37
- LLVM 16.0

## ■ Lunar Lake/Arrow Lake

- GCC14.1
- Binutils 2.42
- Glibc 2.39
- LLVM 18.0

2025

## ■ Clear Water Forest

- GCC14.1
- Binutils 2.42
- Glibc 2.39
- LLVM 18.0

## ■ Panther Lake

- GCC14.1
- Binutils 2.42
- Glibc 2.39
- LLVM 18.0

# Toolchain Proposals to OpenEuler Releases

- OpenEuler支持dev toolset, 同时兼顾稳定性和前瞻性
- LTS release采用当前最新的GCC**稳定**版本(GCC x.2/3) 作为系统编译器
- LTS update不改变系统编译器, 最新的GCC版本进入dev toolset供用户使用
- 创新release快速迭代, 尽早采用最新的GCC版本, 为下一次LTS release做技术准备
  - 最新的GCC版本可以首先进入dev toolset, 经过测试和客户实测
  - 当dev toolset的GCC趋于稳定, 就可以进入下一个LTS update的dev toolset
  - 在适当时机最新的GCC版本也可以直接进入创新版本的system toolchain, 趋于稳定后成为新的LTS release的系统编译器备选版本

# Toolchain Proposal to OpenEuler Releases (2024)

## ■ 24.03 LTS

- System toolset
  - GCC 12.3
  - Binutils 2.40
  - Glibc 2.38
  - LLVM 17.0.6
- Dev toolset
  - N/A

## ■ 24.09 IR

- System toolset
  - GCC 12.3/12.4
  - Binutils 2.40
  - Glibc 2.38
  - LLVM 17.0.6
- Dev toolset
  - GCC 14.1/14.2
  - Binutils 2.42
  - LLVM 18.0

## ■ 24.03 LTS SP1 (12 '24)

- System toolset
  - GCC 12.4
  - Binutils 2.40
  - Glibc 2.38
  - LLVM 17.0.6
- Dev toolset
  - GCC 14.2
  - Binutils 2.42
  - LLVM 18.0



# Toolchain Proposal to OpenEuler Releases (2025)

## ■ 25.03 IR

- System toolset
  - GCC 12.4
  - Binutils 2.40
  - Glibc 2.38
  - LLVM 17.0.6
- Dev toolset
  - GCC 14.2
  - Binutils 2.42
  - LLVM 19.0

## ■ 24.03 LTS 2(Jun) ■ 25.09 IR

- System toolset
  - GCC 12.4
  - Binutils 2.40
  - Glibc 2.38
  - LLVM 17.0.6
- Dev toolset
  - GCC 14.2
  - Binutils 2.42
  - LLVM 19.0

## ■ 25.09 IR

- System toolset
  - GCC 15.1/15.2
  - Binutils 2.44
  - Glibc 2.42
  - LLVM 20.0
- Dev toolset
  - NA

## ■ 24.03 LTS 3(Dec)

- System toolset
  - GCC 12.4
  - Binutils 2.40
  - Glibc 2.38
  - LLVM 17.0.6
- Dev toolset
  - GCC 15.2
  - Binutils 2.44
  - LLVM 20.0

# Toolchain Proposal to OpenEuler Releases (2026)

- 26.03 LTS (Projected)

- System toolset
  - GCC 15.2
  - Binutils 2.44
  - Glibc 2.42
  - LLVM 20.0
- Dev toolset - NA