



AGL and Yocto Project 6.0

AGL All Member Meeting

May 14, 2026

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About me

- Linux user/developer since 1994
- Embedded Linux developer since 2000
- Principal Software Engineer at Konsulko Group since 2014
- Working on AGL on contract since 2016
 - Yocto Project maintenance
 - Demo development, integration, and maintenance
- Rust mixins and meta-security layer maintainer

Agenda

- Yocto Project 6.0 AKA "Wrynose"
- AGL's Path to Wrynose
- Wrynose features
- Status and future development

Yocto Project 6.0 AKA Wrynose

- Yocto Project's (YP) spring 2026 long term support (LTS) release, released yesterday (05/13)
- Support until Spring 2030
- Support window overlaps Scarthgap (EOL 2028)
 - AGL Ultimate Unagi (21.0) branch will keep tracking YP Scarthgap

Wrynose Pass



Katanaismybike / Wikipedia (CC BY)

https://en.wikipedia.org/wiki/Wrynose_Pass

YP Release Naming Note

- YP release names for the past several years have been based on passes in the Lake District in the UK
- Next release name still being considered
- Two possibilities:
 - More mountain pass names, but break alphabetical ordering
 - Switch to a new scheme

AGL's Path to Wrynose

Starting Point

- YP Scarthgap support merged into AGL master in April 2024 for Royal Ricesfish (18.0) release
- AGL "next" branch rebased to YP master a couple of months later
- "next" branch updated since then:
 - Typically more active around/after YP releases
 - "next" branch process discussed in previous presentations, will not go into detail

YP Releases 2024-2026

Release Name	Version	Release Date	End of Life
Scarthgap	5.0	April 2024	April 2028
Styhead	5.1	October 2024	May 2025 (EOL)
Walnascar	5.2	April 2025	November 2025
Whinlatter	5.3	October 2025	May 2026
Wrynose	6.0	May 2026	April 2030

From: <https://wiki.yoctoproject.org/wiki/Releases>

Intermediate Non-LTS Releases

- Typically, next branch updated to match these releases within a few weeks of upstream release
- Significant changes handled early since upstream master branch is being tracked
- See presentation from 2025 Berlin AMM for more details on per-release changes:
 - <https://hosted-files.sched.co/aglammsummer2025/fa/AGL%27s%20Path%20to%20Wrynose.pdf>
 - <https://www.youtube.com/watch?v=0Bq6ma5Y79U>

Wrynose Features

BitBake / core changes

- UNPACKDIR addition, S changes
- Assignment whitespace requirements
- "debug-tweaks" image feature removed
 - Now need to be more explicit with debug configuration
- systemd now default in openembedded-core
 - But poky still defaults to sysvinit
- Host tools requirements:
 - python 3.8 in Scarthgap, 3.9 in Wrynose
 - make 4.0 expected
 - gcc 9.0 in Scarthgap, 10.1 in Wrynose

BitBake / core changes (cont.)

- Supported host distributions:
 - Fedora 42 - 43
 - Debian 11 - 13
 - Ubuntu non-LTS 25.04 and 25.10
 - Ubuntu LTS 22.04, 24.04, and 26.04
 - Recent CentOS, Rocky, Alma, etc.
- buildtools tarball still an option for unsupported distros

BitBake / core changes (cont.)

- SPDX v3 support
 - Has been mostly backported to Scarthgap
- SPDX v2 support has been removed!
 - Maintenance burden viewed as too high for LTS
 - Feeling that some v3 features are required for serious SBoM implementations
 - Some tooling exists to create v2 from v3
 - e.g. <https://pypi.org/project/spdx-tools/>

BitBake / core changes (cont.)

- CVE checking significantly reworked
- cve-check.bbclass removed!
- Replaced with use of sbom-cve-check tool
 - <https://github.com/bootlin/sbom-cve-check>
 - Uses SPDX SBoM files
 - Opens door to rescans outside build environment

BitBake / core changes (cont.)

- NPM fetcher (i.e. "npm://" SRC_URIs) disabled
- Driven by inherent security issues
 - NPM packages not being checksummed
 - So vulnerable to package supply chain attacks
 - View that it's better to make the issue obvious to downstream users, even at the cost of functionality
- Some interest expressed in developing new fetcher
 - Hard requirement of per-package checksums like the Go and Rust support

bitbake-setup

- New "bitbake-setup" tool considered feature complete
- Layer setup and configuration generation tool
 - Somewhat comparable to kas
 - Lives inside bitbake repository, reuses fetching code
- Jan-Simon will discuss his recent evaluation in the workshop on Friday

Toolchain changes

Package	Scarthgap	Wrynose
gcc	13.2	15.2
llvm / clang	18.1.6	22.1.3
glibc	2.39	2.43
Go	1.22.12	1.26.2
Rust	1.75.0	1.94.1

Toolchain notes: gcc

- gcc 16.0 arrived too late for Wrynose
- Expect changes to support gcc 16.x on build host
- Similar to situation with Scarthgap and gcc 14.x
- gcc now defaults to C23 instead of C17
- C++23 and C++26 support improvements in g++
- A few new errors/warnings
 - Not too bad for AGL demo sources
 - Expect at least some issues in your downstream source

Toolchain notes: clang

- clang integrated into oe-core/poky in Walnascar
 - i.e. meta-clang no longer required to use clang
 - Driven by some Mesa drivers now requiring clang
- Recipes can use TOOLCHAIN = "clang"
- meta-clang no longer useful for most projects
 - Just compilation fixes for some recipes in non-core layers
 - Slowly being removed over time as layers adapt
 - Removed from AGL demo repo manifest

Toolchain notes: Rust

- oe-core/poky only carry a single Rust version
- Rust ecosystem moves quickly
 - Required version somewhat at the mercy of ecosystem crate developers
- Need for newer Rust handled with mixin layer(s)
 - kirkstone/rust and scarthgap/rust in meta-lts-mixins
- Model unlikely to change for Wrynose
 - Testing of multiple versions would be resource intensive

linux-yocto changes

- 6.6 in Scarthgap, now 6.18 in Wrynose
 - Used as kernel for e.g. QEMU, Xen guests
- Default LTS kernel support is now effectively ~2 years
 - linux-yocto version may change during YP LTS!
 - Scarthgap update a bit less certain as 6.6 EOL pushed to Dec 2027...
- Related, glibc minimum kernel now 5.4
 - Hopefully no BSP ships a kernel that old...

Notable package updates

Package	Scarthgap	Wrynose
systemd	255.21	259.5
Mesa	24.0.7	26.0.5
weston	13.0.1	15.0.0
PipeWire	1.0.9	1.6.3
QEMU	8.2.7	10.2.0
Xen	4.19	4.21

Notable systemd changes

- SystemV init script support deprecated
- Minimum Linux kernel now 5.10
- cgroups v1 support dropped
- TPM 1.2 support dropped
- Many other changes, see:

<https://github.com/systemd/systemd/blob/main/NEWS>

Notable Weston changes

- New "lua-shell"
 - Allows using Lua to customize window management or implementing a custom shell
- Experimental Vulkan renderer support
- Perfetto profiling support
- Improved high dynamic range (HDR) color support
- For more details see:
<https://www.collabora.com/news-and-blog/news-and-events/weston-15-here-lua-shells-vulkan-rendering-smoother-display-stack.html>

Speaking of Vulkan...

- "vulkan" distro feature enabled in AGL since several Vulkan drivers are now considered mature in Mesa
- Flutter embedder built with Vulkan backend for:
 - Raspberry Pi 4 and 5
 - NanoPC-T6 (Rockchip RK3588)
 - Can be considered for other BSPs if Vulkan support becomes available
- Some room for experimentation, e.g. trying new Weston Vulkan renderer with agl-compositor

Current Status / Future Development

Staying on the Path

- Increased focus on AGL "next" branch since Q4 2025
 - More frequent rebases and testing
 - Did not want surprises before Wrynose release
- Rounded out testing of demos
 - Various layers & demos, e.g. meta-agl-devel
 - Non-core demos lagged a bit on Scarthgap update, should be better this time
- BSP support as available
 - Raspberry Pi and NanoPC-T6 currently working

Reaching Wrynose

- Aim to merge to AGL master branch starting next week
 - Same timeframe after upstream release as followed for YP Scarthgap release
- If you have interest in a particular platform or demo
 - Please test if it is not part of the reference builds!
 - Reach out on mailing list, Discord, or JIRA if you see issues

Going Past Wrynose

- Next branch will be rebased back onto upstream master branches once AGL master branch Wrynose branch has settled down
 - Likely some minor issues that will get shaken out after the merge
 - Some BSPs will lag on their Wrynose support
- Major next branch update a month or two out
 - Definitely will be updated once YP 6.1 release gets close

More Information

More information

- "AGL's Path to Wrynose" presentation
<https://hosted-files.sched.co/aglammsummer2025/fa/AGL%27s%20Path%20to%20Wrynose.pdf>
<https://www.youtube.com/watch?v=0Bq6ma5Y79U>
- Yocto Project releases
<https://wiki.yoctoproject.org/wiki/Releases>
- Yocto Project release information
<https://docs.yoctoproject.org/migration-guides/index.html>

Questions?
