Yocto Project Long Term Support (LTS)

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Agenda

- Yocto Project organisation and membership
- Current release process
- Automated testing improvements
- LTS background and overview
- How can you help?
What is the Yocto Project?

The Yocto Project is a set of templates, tools and methods that help you build custom Linux-based systems.
Yocto Project organisation

● An open source, collaborative project
  ○ Hosted by the Linux Foundation in 2010
  ○ Project architect is Richard Purdie.
  ○ Uses OpenEmbedded which started in 2003.

● Yocto Project Governing Board
  ○ Platinum, Gold and Silver member organizations
  ○ Linux Foundation corporate members
  ○ Wish to influence the project direction (vote)
  ○ Contribute financially to its infrastructure and stability.
  ○ Nominate/vote: Technical Steering Committee (TSC)

● Links
  ○ https://www.yoctoproject.org/ecosystem/members/
  ○ https://www.yoctoproject.org/how-to-join/
Yocto Project governance model

- **Governing Board**: Oversee business decisions, budgets, and general administration
- **Technical Steering Committee**: Technical oversight to project and upstream
- **Advocacy Team**: Oversee Marketing, Communication, Outreach, Events, and Training
- **Community**: Oversee Community and ecosystem
Current release process
Predictable release cadence

- Full releases twice a year
- Spring and fall release without fail since inception
- A release is: OE-core + bitake + meta-yocto + yocto-docs
Typical release content

- **Major component upgrades**
  - Includes ABI/API changes
  - Include major version upgrades
  - New features
  - Using Long Term Support kernels
- **Bug fixes for issues reported to Yocto Project**
- **New Yocto Project tooling features**
  - Test infrastructure changes
  - Automation changes
- **New architectures added/removed**
- **Tight integration loop with upstreams**
Stable release content

- **Strict backport policy (master first)**
- **Acceptable:**
  - Security and CVE fixes
  - Fixes for bugs
  - Fixes so codebase works with newly released distros
  - Bug fix only version upgrades (especially where follows upstream policy)
- **Unacceptable:**
  - General version upgrades
  - New Features
- **Same testing as regular releases**
Stable release challenges

- Typically, alongside the latest release the previous two releases are also maintained
  - *Maintenance window is up to one year.*
- Done thanks to developers volunteering community time
- Manual testing overhead relying on Yocto Project members resources.
Automated testing improvements
Yocto Project automated testing recent improvements

- Continuous integration (CI) using Yocto Project autobuilder infrastructure
  - [https://autobuilder.yoctoproject.org/](https://autobuilder.yoctoproject.org/)
  - 25+ builders to validate 12+ numbers of host distros
  - Fairly large project expense in 2019 to modernize builders

- Major improvements over the last two years to reduce needs for manual testing
  - ptests on x86 and arm for ~60 pieces of software
  - LTP and LTP posix tests
  - Test reproducibility of our toolchain and minimal images
  - gcc, binutils and glibc testsuites on all arm/mips/powerpc/x86 32/64 bit
  - Over 1.9 million tests in 8 hours
LTS background and overview
Yocto Project Long term support background

- Six month release cadence aligns well with pace of open source development
  - However *too frequent* for some use cases and markets
- Many companies using Yocto Project releases end up doing *some* LTS on their own
- Over the years it became a common complain at developers’ events and BoF.
  - YP TSC presented to the governing board a request to establish a formal LTS process at ELCE 2019
  - LTS announced in March 2020
  - [https://www.yoctoproject.org/yocto-project-long-term-support-announced/](https://www.yoctoproject.org/yocto-project-long-term-support-announced/)
Yocto Project LTS proposal in a nutshell

- **An LTS every two years**
  - Maintained for two years
  - Yocto Project 3.1 is the first LTS

- **Funded by the Yocto Project membership**
  - 20 hours a week of maintainer duties
  - Hiring is in process (RFQ), to be finalized early April

- **Intermediate stable release maintenance is reduced to seven months**

- **The TSC is responsible for LTS releases, processes and maintainer.**
Yocto Project LTS

- **Components to be covered**
  - Bitbake, OpenEmbedded-core
  - meta-yocto, yocto-docs

- **Not covered**
  - meta-oe, vendor layers, ...

- **Only on a subset of supported native build platforms**

- **Rely on Yocto Project AB resources and automated testing**
  - Follow the same testing process as the original release
  - Only run virtualized tests

- **Evaluate use of CVE automated tools (cve-check)**
Yocto Project LTS: is / is not

- **IS**
  - A major change for the Yocto Project, which requires significant resources from the membership
  - An initiative to create a place for the community to collaborate on LTS
  - A guarantee that we have resources available to integrate and test changes in a timely manner and to have fast turn around of point releases

- **IS NOT**
  - A replacement for commercial offering from OSVs which offer very long term support (5y, 10y, ...)
  - A guarantee of "all" CVE fixes, we only agree to integrate what is submitted and passes testing
  - Is not able to check your own additions and customisations
How can you help?
How can you help?

- Contribute, share your bug fixes, CVEs and security patches
- Test LTS branch with your distro and BSP
- Report bugs
- Continue to test and develop the main release branch
- Join us and support the Yocto Project