OpenSourceWatershed

"watching software flow downstream"

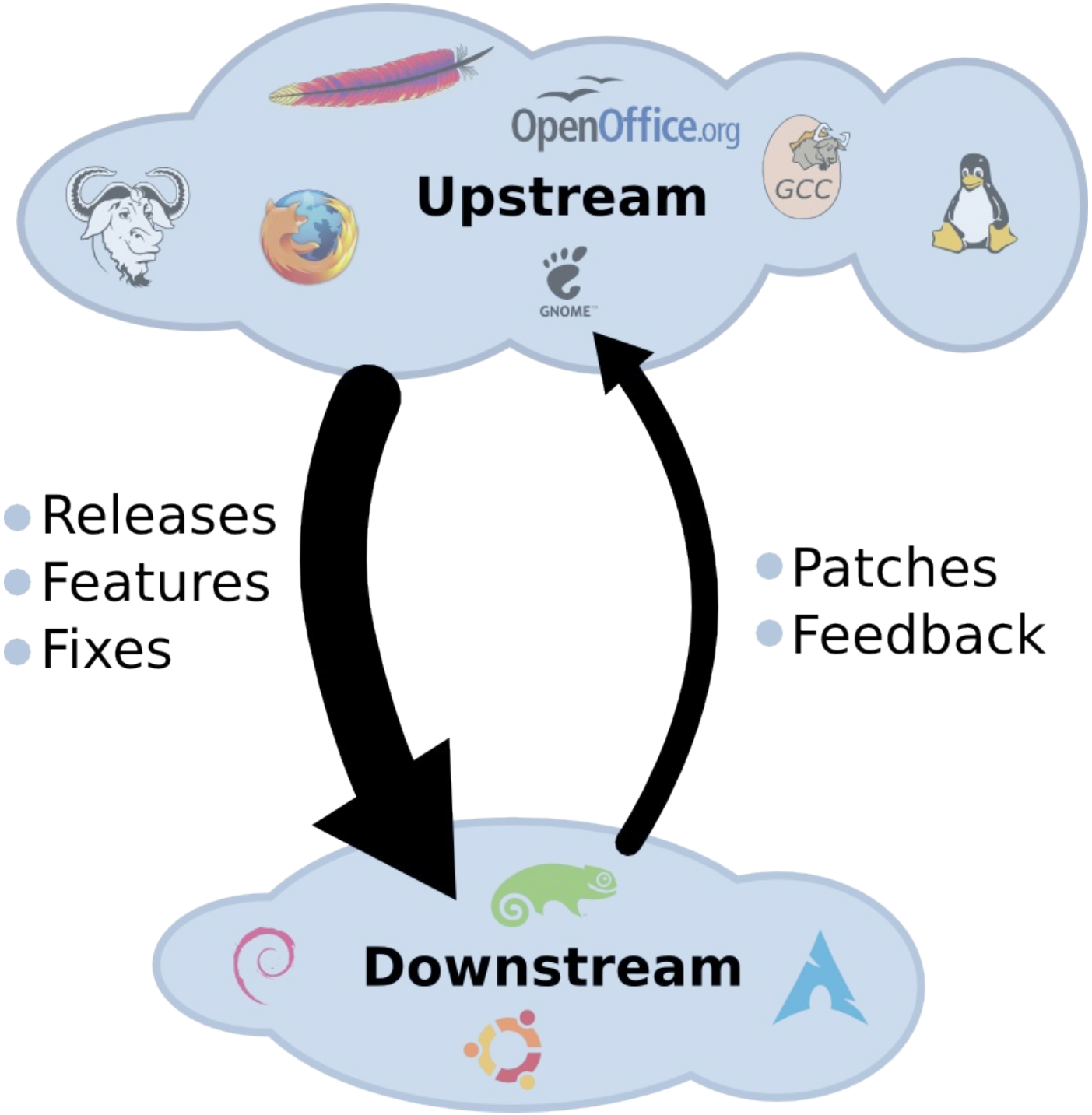
http://oswatershed.org

Scott Shawcroft
July 22, 2009

Scott Shawcroft

- Class of 2009 ~ University of Washington
- Computer Engineer
- Creative Commons, Google and more Google
- OS Projects: touchd, Menzies, Annoamp, denu
- Linux since spring '04.
- LFS → Gentoo → Ubuntu → Gentoo

Watershed


OpenOffice.org
Upstream
GCC
GNOME
Releases
Features
Fixes
Patches
Feedback
Downstream

Study of

distrology dis·trol·o·gy dĭ-strŏl-ə-jē

The formal study of open source software distributions.

Data Gathered

Gather release information from upstream and downstream.

- **Name**
- **Version**
- **Date**
- Revision

Data Sources

Upstream

- **Directory Listings**
- **Sourceforge**

Distributions/Repositories

- **Name**
- **Codename**
- **Component**
- **Architecture**

Branches

- **Experimental**
- **Future**
- **Current**
- **LTS**
- **Past**

Results

Upstream/Downstream relationship metrics:

- **% Obsolete**
- **# Obsolete**
- **Lag**

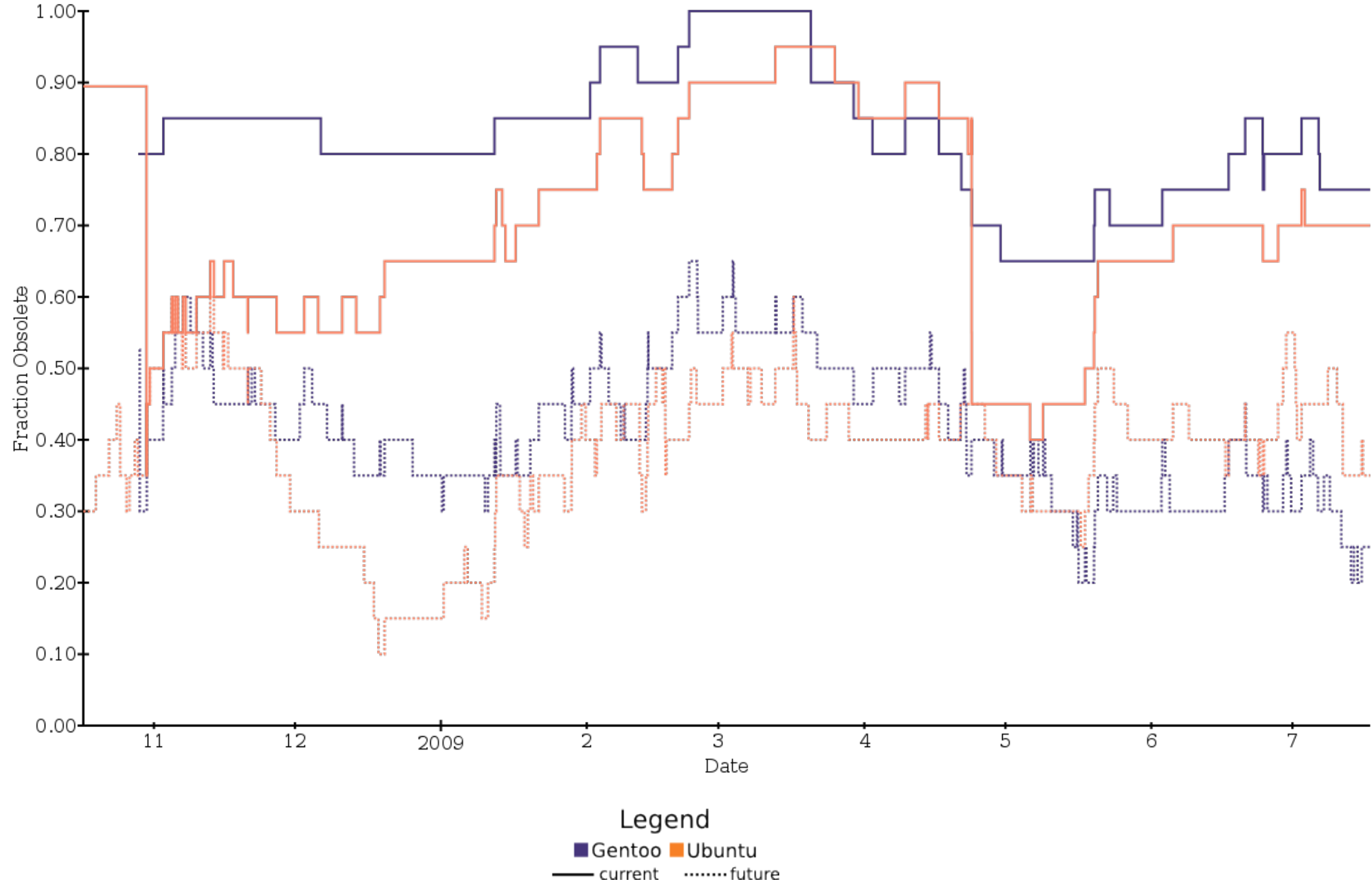
oswatershed.org

- **Per Package Data (badges)**
- **Per Distro Data**
- **Different Group Analysis**
- **Data Quality Tools**

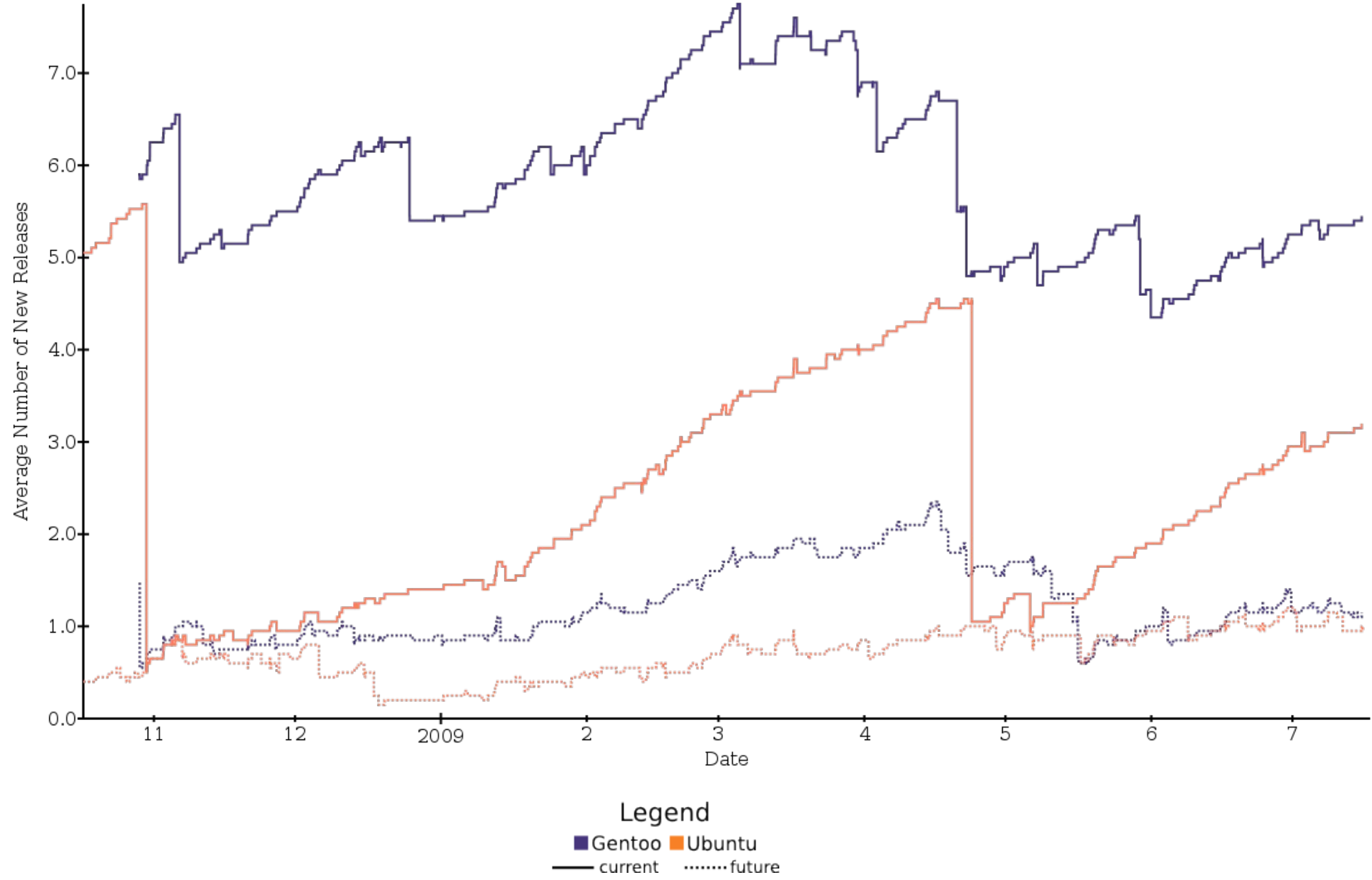
Scott's Chosen 20

alsa-utils
cups
emacs
firefox
gcc
ghostscript-gpl
gimp
glibc
gnome-desktop
gnupg
httpd (apache)
kdebase
linux
NetworkManager
openssh
pidgin
postgresql
python
ruby
xorg-server

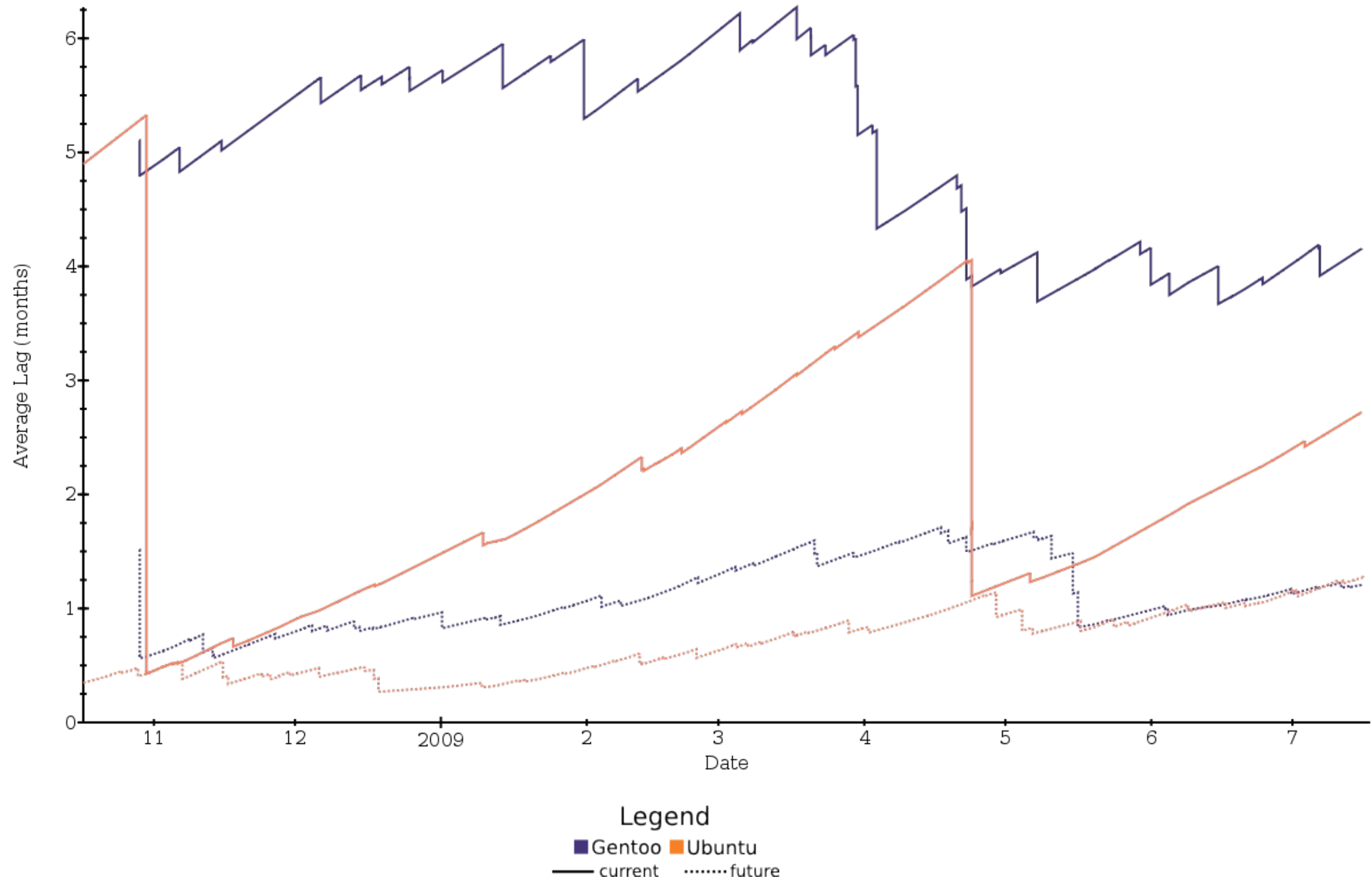
Ubuntu/Gentoo (% obsolete)



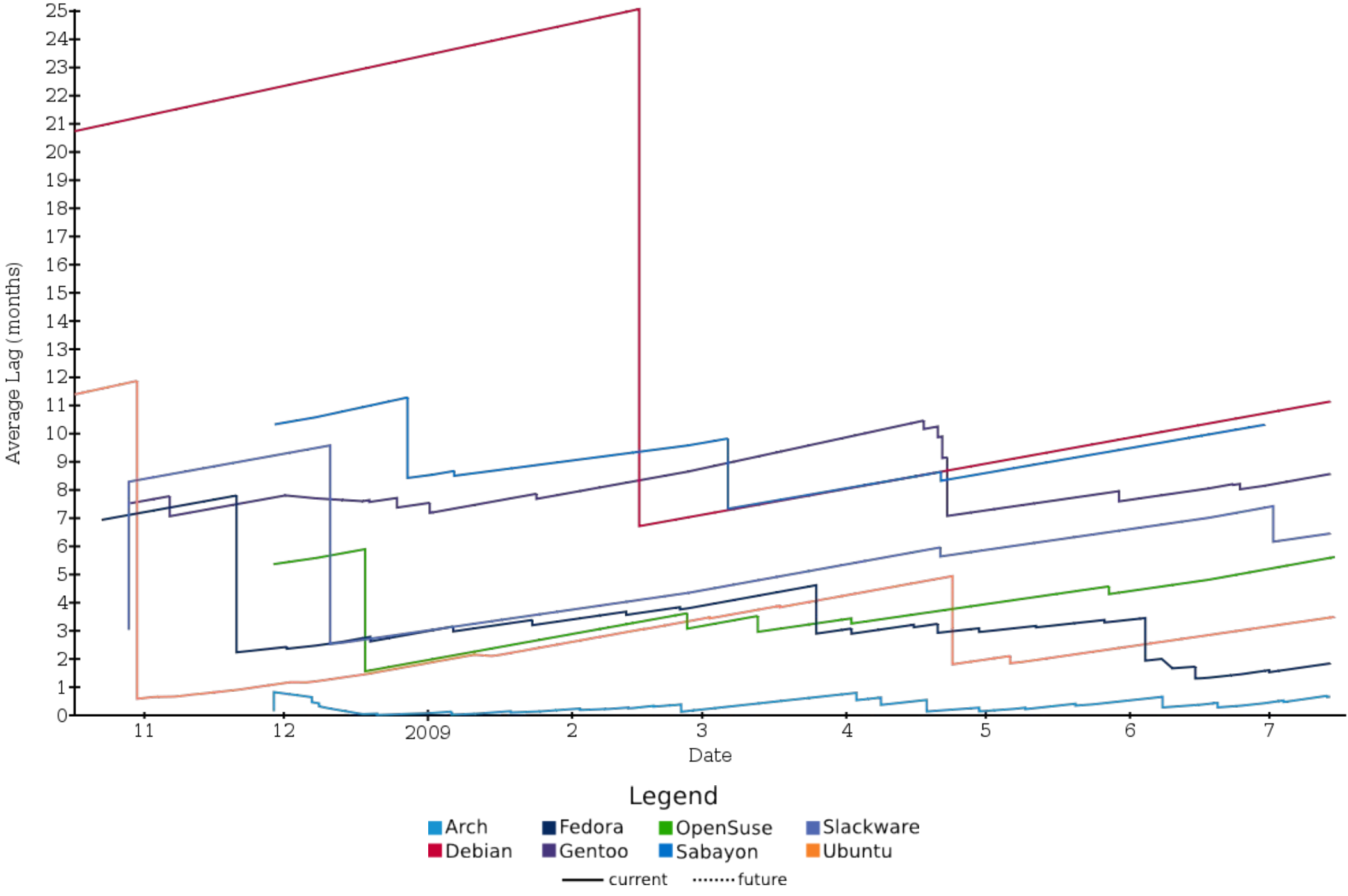
Ubuntu/Gentoo (# obsolete)



Ubuntu/Gentoo (lag)



LAMPPP (lag)


Average Lag (months)
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future

LAMPPP (lag)

OSW linux **2.6.31-rc3**	2.6.30.1	2.6.26	2.6.30	2.6.30	2.6.30	2.6.27.23	--	2.6.27.7	2.6.28.14.18
OSW httpd **2.2.11**	**2.2.11**	2.2.9	**2.2.11**	**2.2.11**	**2.2.11**	2.2.10	**2.2.11**	**2.2.11**	**2.2.11**
OSW mysql **5.4.1-beta**	5.1.36	5.0.51a	5.1.35	5.0.70	5.0.72	5.0.67	5.0.76	5.0.67	5.1.31
OSW python **3.1**	2.6.2	2.5.2	2.6	2.5.4	2.5.4	3.0b3	2.5.4	2.5.2	3.0~rc3
OSW php **5.3.0**	5.2.10	5.2.6	5.2.10	5.2.10	5.2.10	5.2.9	5.2.8	5.2.10	5.2.6
OSW perl **5.8.9**	**5.10.0**	**5.10.0**	**5.10.0**	**5.10.0**	5.8.8	**5.10.0**	5.8.8	**5.10.0**	**5.10.0**

Challenges

- Lots of data.

- Comparing it all.
  - Normalizing names.
  - Determining obsoletion.
    (aka understanding versions)

Lots of Data

- **9** Distributions
  - Each has its own custom crawl script.

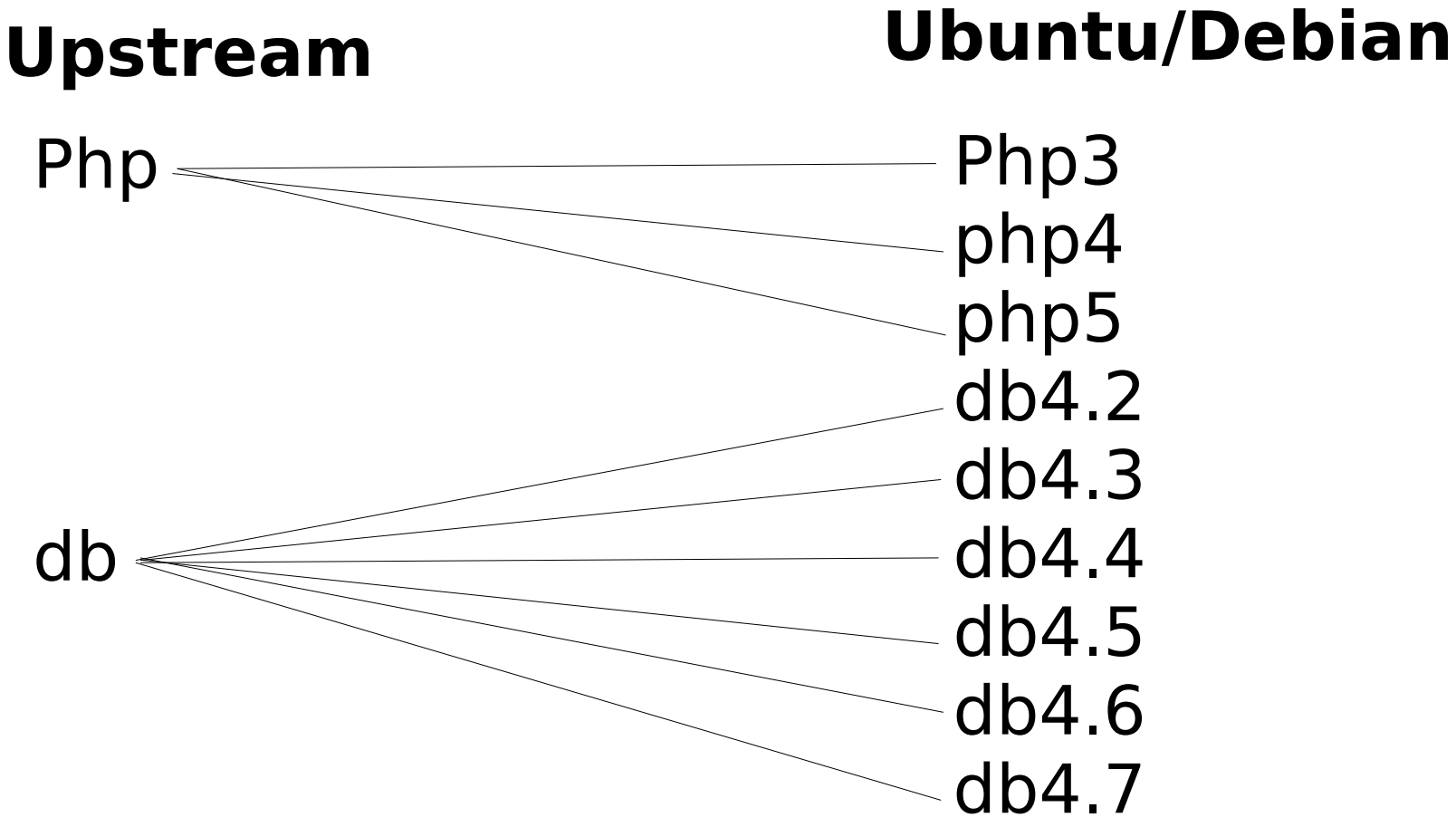
- **78,476** Total Packages
  - Mostly inflated by custom distro names. 10K – 15k estimated distinct.

- **735,859** Releases
  - Distinct package name and version combinations. Skewed by different naming.

- **2,463** Upstream Packages
  - **78** Sourceforge Sources
  - **106** Directory Sources
  - **3** Custom Scripts

Normalizing Names

Distros must also deal with package branches. Gentoo uses 'slotting', most use new package names.



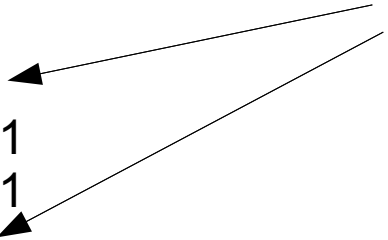
Ordering Versions

Original ordering based only on release date.

Problems:

- All new releases obsolete old ones.
- Any new downstream release that doesn't match an upstream release is completely fresh.

2008-10-02 20:24:00	2.6
2008-11-07 04:30:00	3.0rc2
2008-11-21 02:50:00	3.0rc3
2008-12-03 20:37:00	3.0
2008-12-05 05:57:00	2.6.1
2008-12-13 14:43:00	2.4.6c1
2008-12-13 16:47:00	2.5.3c1
2008-12-19 16:14:00	2.4.6
2008-12-19 16:15:00	2.5.3
2008-12-23 14:28:00	2.5.4
2009-02-14 01:10:00	3.0.1

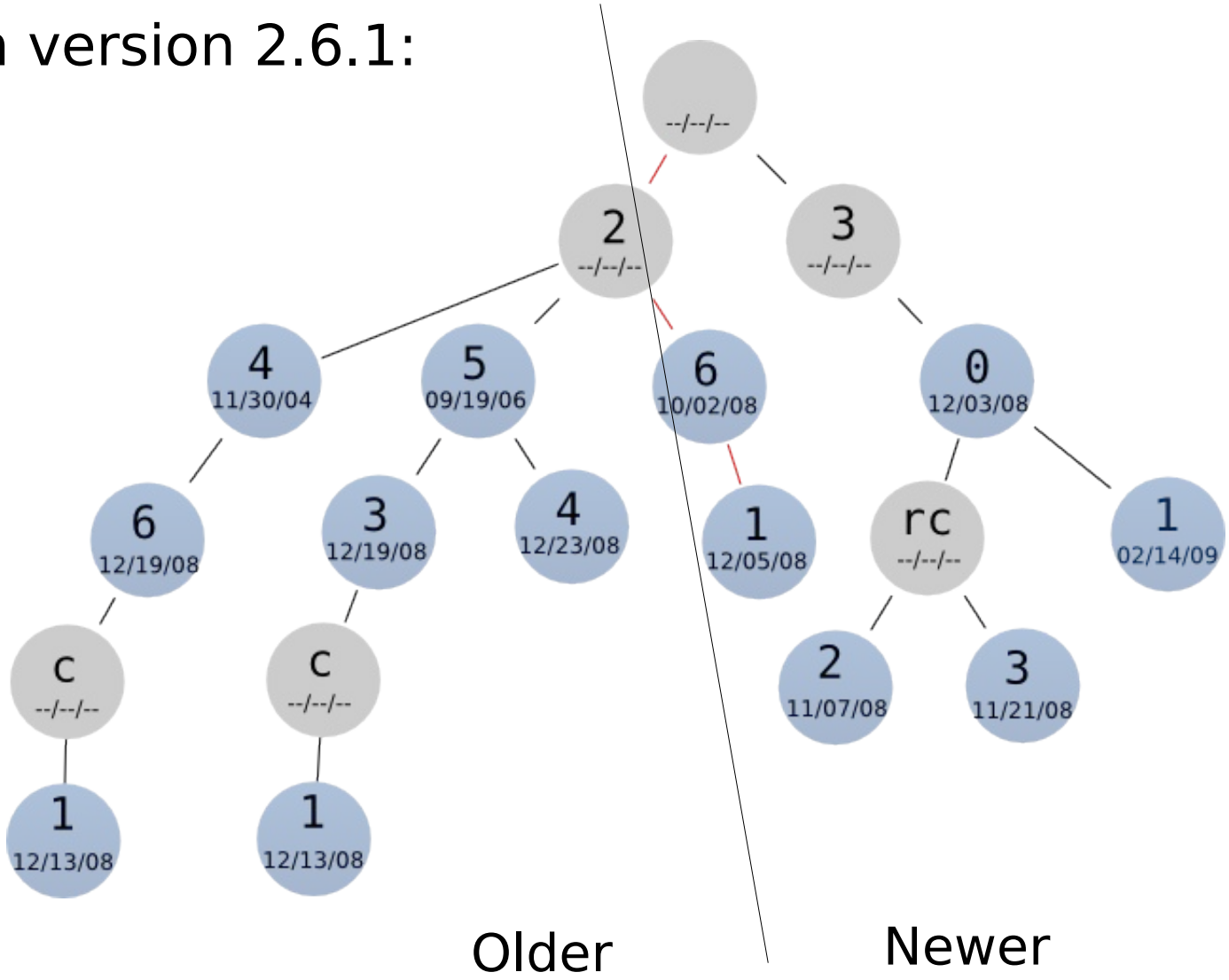


Should we obsolete 2.6.1 with 2.4.6?

Ordering Versions

1) Split the version.
2) Build a tree with children sorted by release date.

For Python version 2.6.1:



Conclusions

Release cycle does not effect overall freshness.

Package management includes many hacks.

- Many downstream to one upstream.
  - Libpng → libpng, libpng-dev
- Mangling package names. (Slotting)
  - Php → php3, php4, php5
- Mangling version numbers.
  - Mysql 5.1.30really5.0.83

OSW Future

Need volunteers and supporters!

- User centric features brainstormed.
  - Add sources.
  - Verify sources.
  - Link packages.
  - Custom package groups.
- More eyes on all of the data and code.
- Publicity! Online articles, blogs and badges.

Links

- scott.shawcroft @ gmail.com
- oswatershed.org
- github.com/tannewt/open-source-watershed

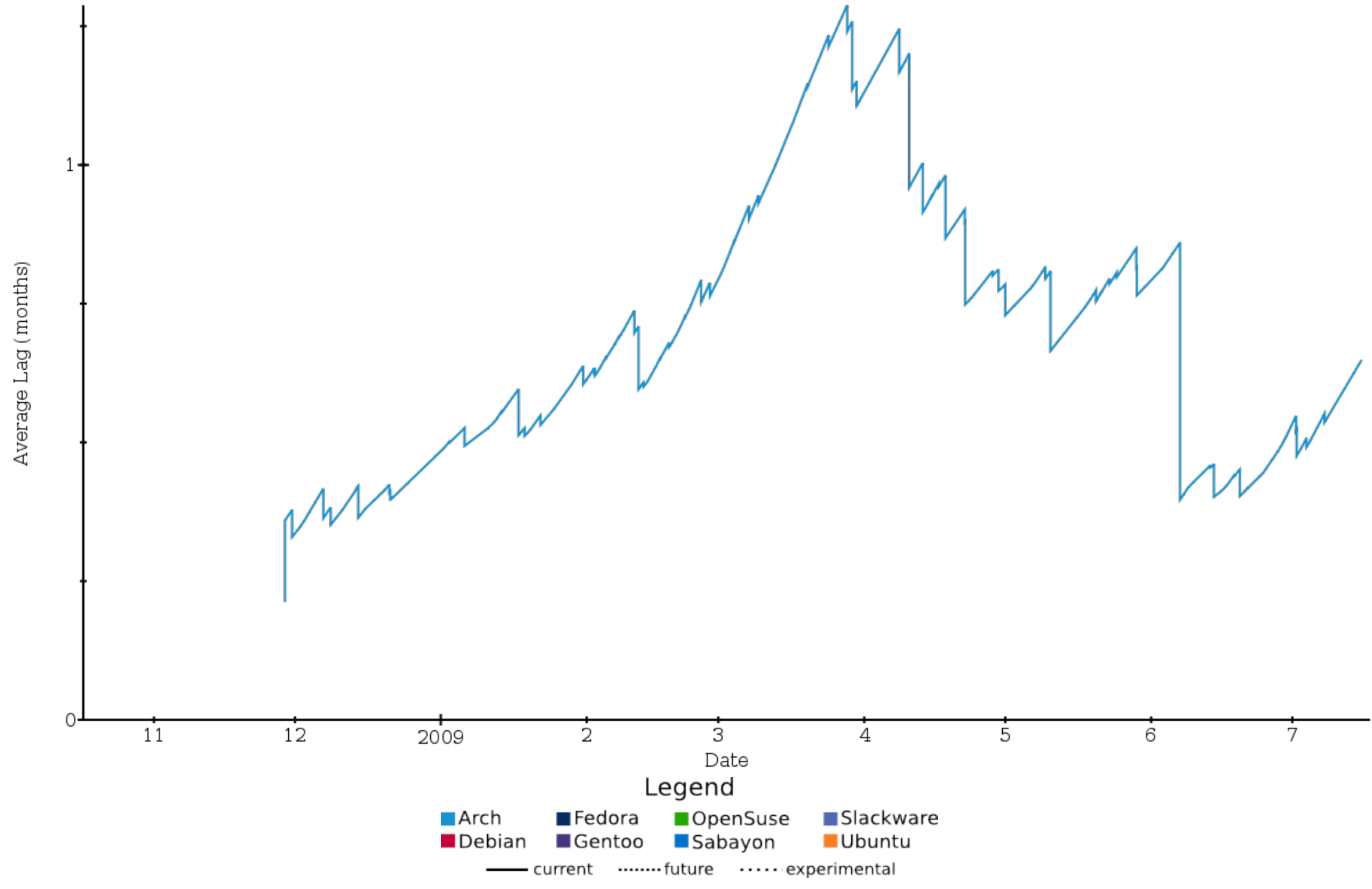
OpenSourceWatershed

"watching software flow downstream"

Appendix

- Arch
- Debian
- Fedora
- Gentoo
- OpenSUSE
- Sabayon
- Slackware
- Ubuntu

Arch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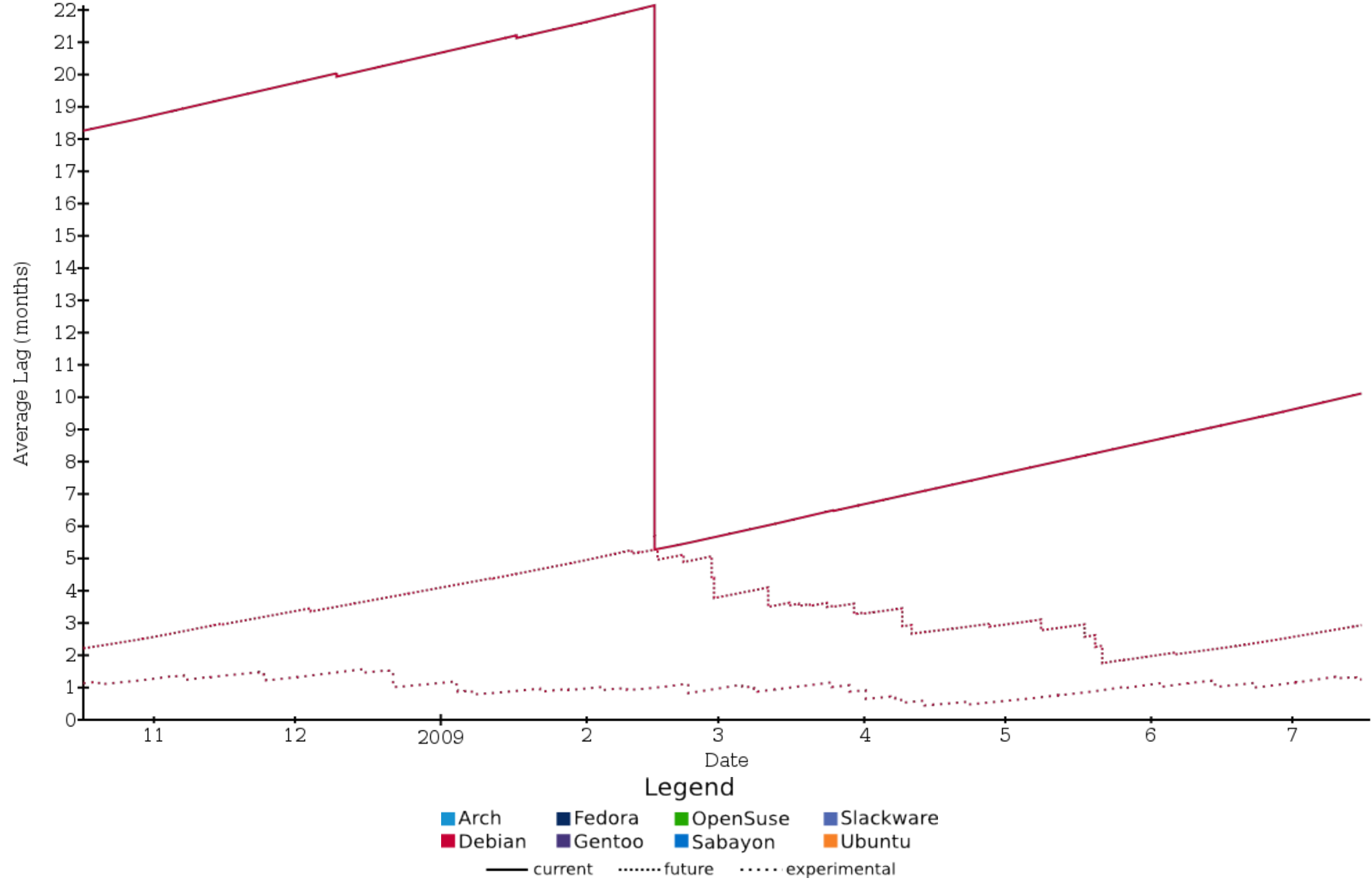
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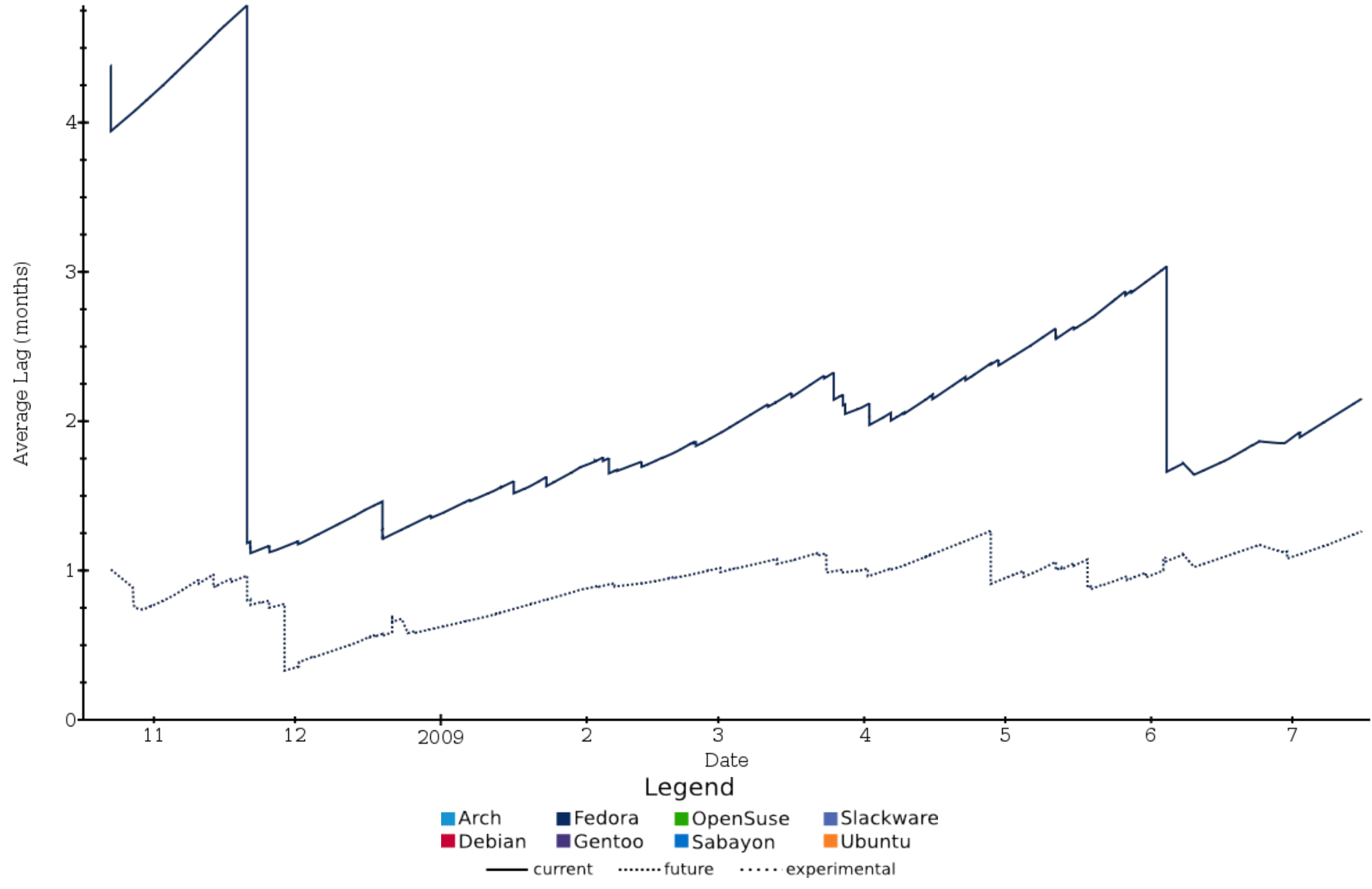
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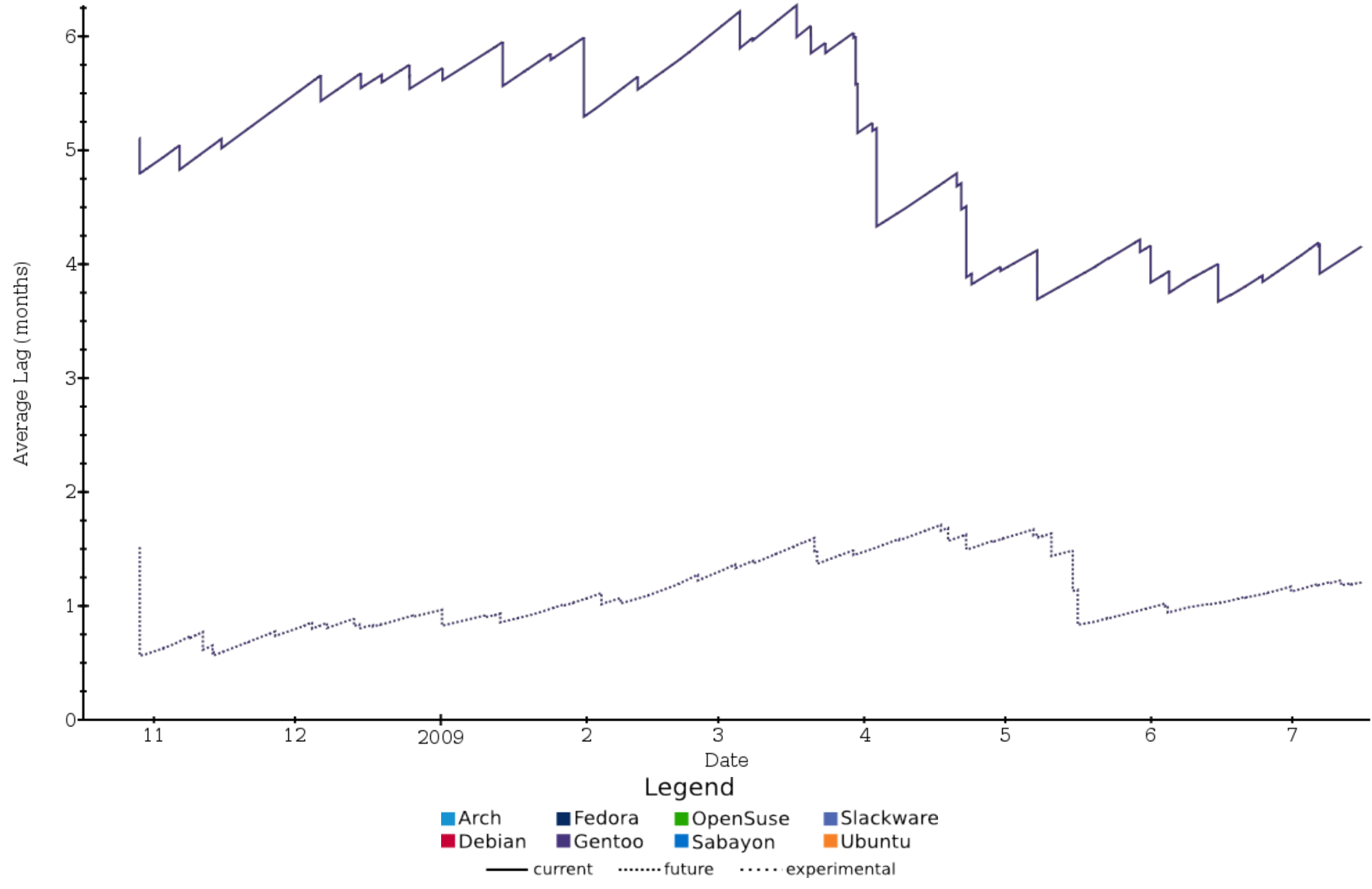
Gentoo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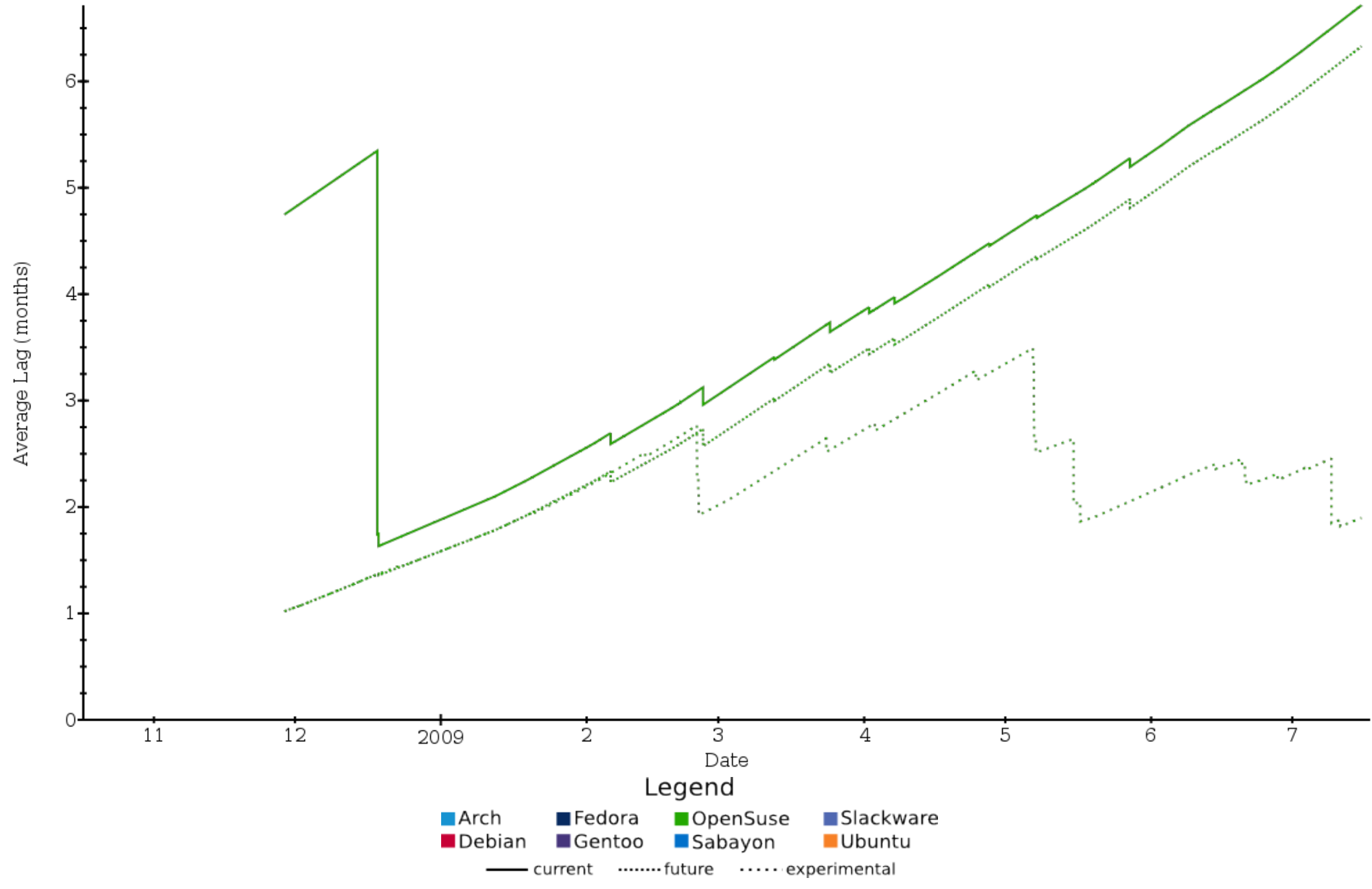
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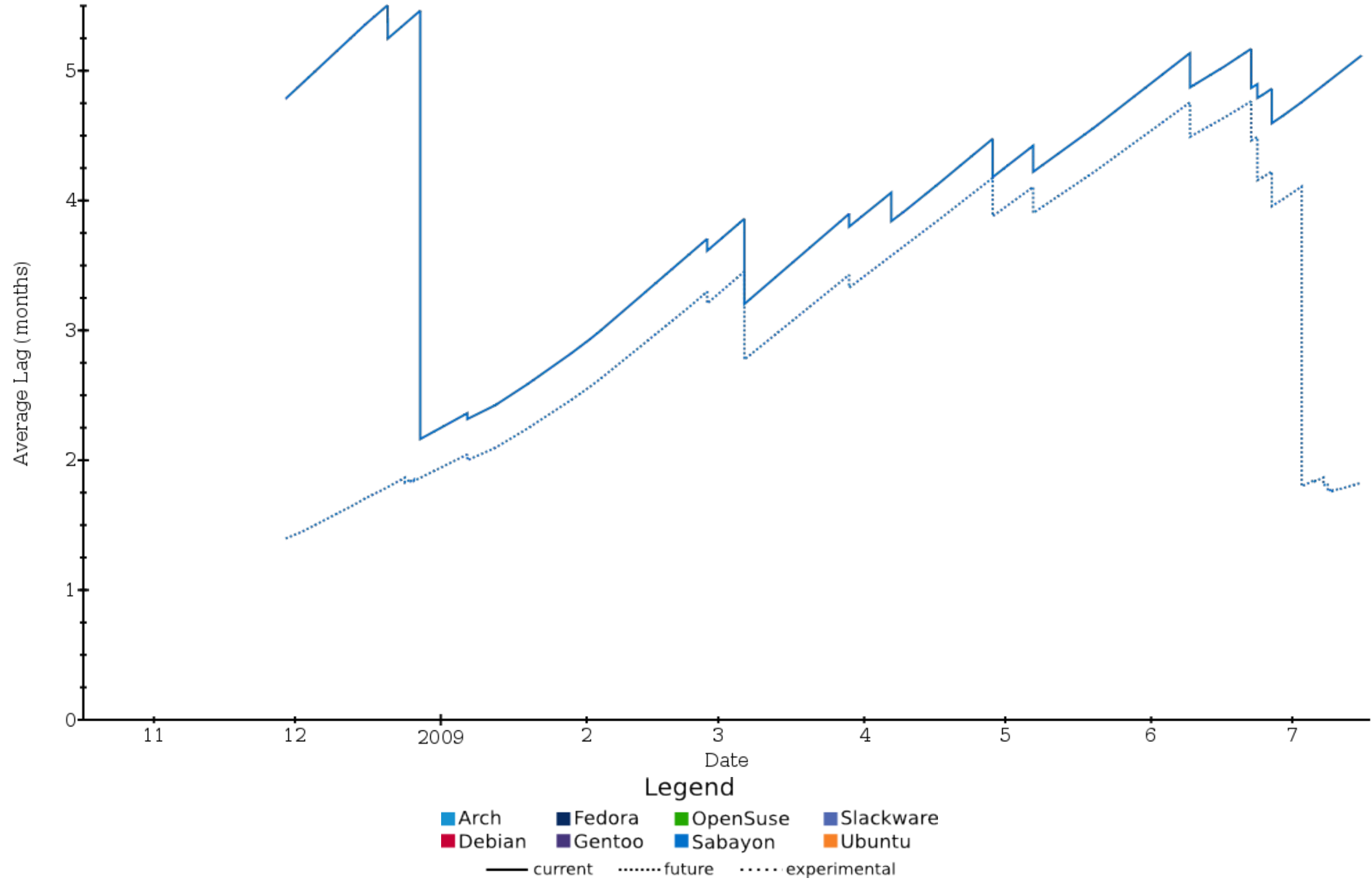
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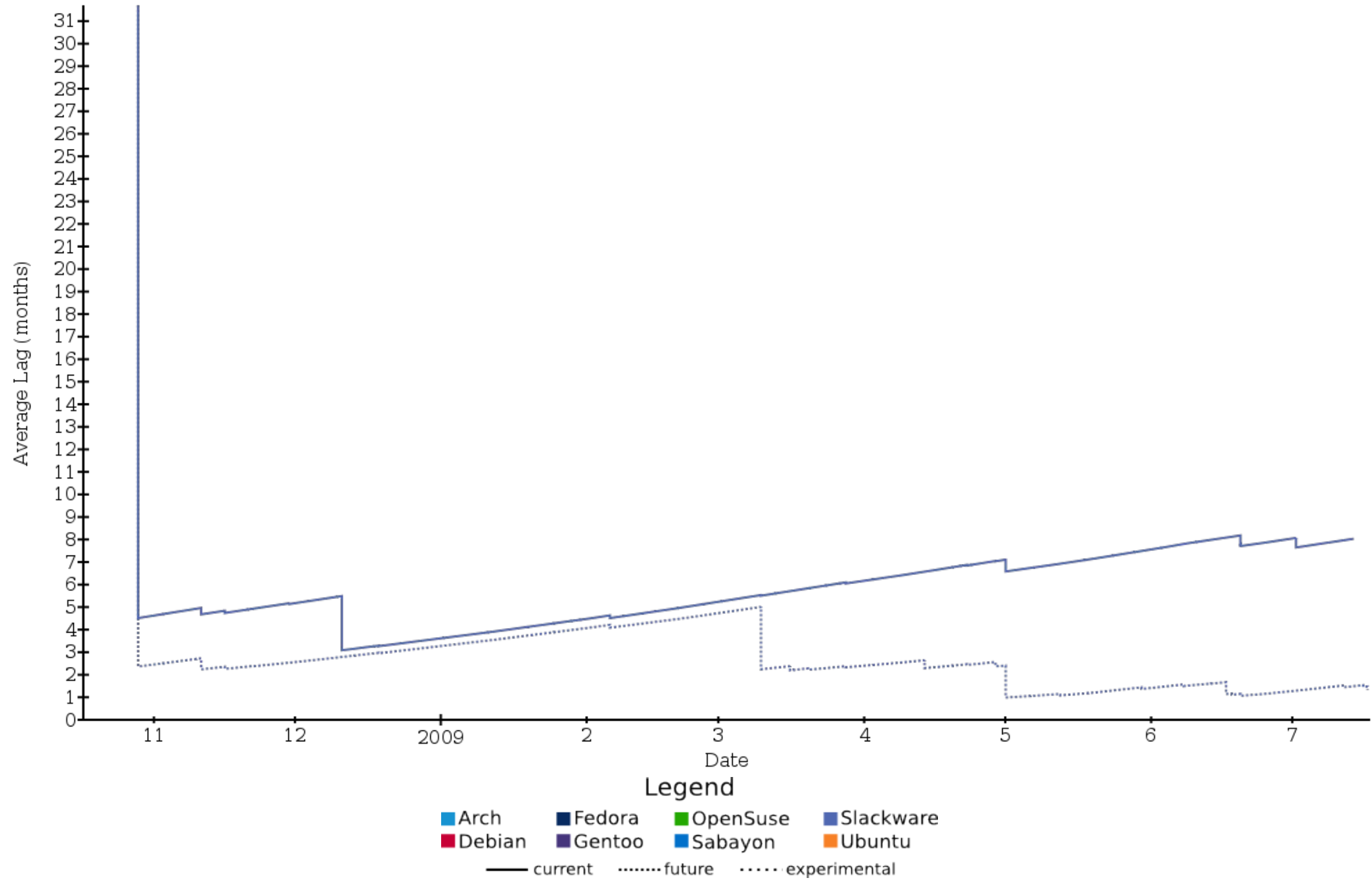
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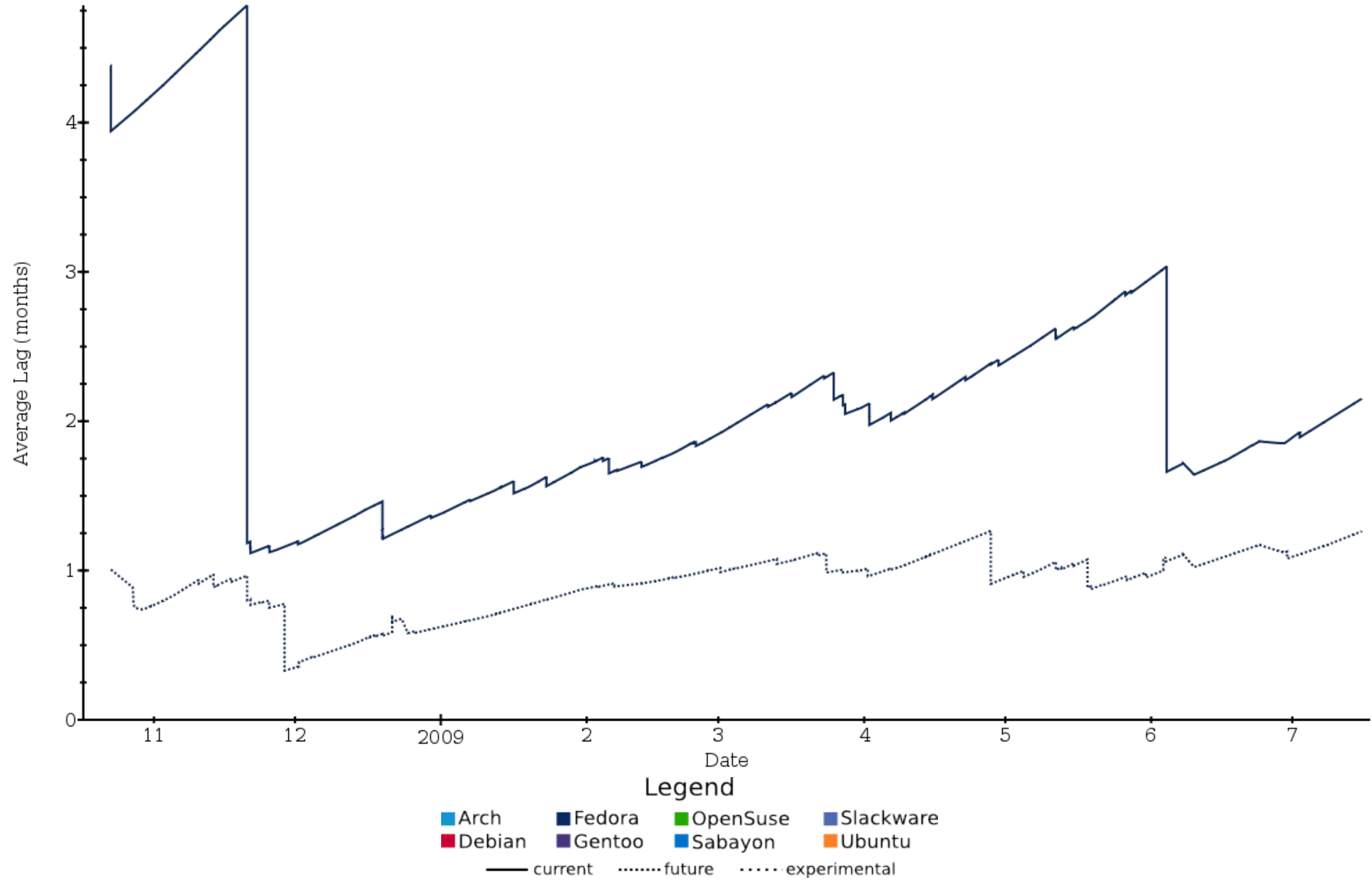
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