

PostgreSQL Native packaging - RPM and DEB packager view

Devrim Gündüz
PostgreSQL Major Contributor
Not a UK Prime Minister (yet)

devrim.gunduz@enterprisedb.com

devrim@gunduz.org

Christoph Berg
PostgreSQL Major Contributor
Not even planning to become UK Prime Minister (yet)

christoph.berg@netapp.com

myon@debian.org

Agenda

- General overview of PGDG
 - RPMS and DEBs
- OS related issues
- Extra and non-free repos
- Testing
- Toolchain issues
- Upstream and us
- Getting your favourite extension packaged

Current status

General overview of PGDG RPMs

- Common packages (packages which are independent of PostgreSQL versions): 125

General overview of PGDG RPMs

- Common packages (packages which are independent of PostgreSQL versions): 125
- Non-common packages (Packages which depend on PostgreSQL versions): 164

General overview of PGDG RPMs

- Common packages (packages which are independent of PostgreSQL versions): 125
- Non-common packages (Packages which depend on PostgreSQL versions): 164
- Extra packages: 4

General overview of PGDG RPMs

- Common packages (packages which are independent of PostgreSQL versions): 125
- Non-common packages (Packages which depend on PostgreSQL versions): 164
- Extra packages: 4
- Non-free packages: 6

General overview of PGDG RPMs

- Common packages (packages which are independent of PostgreSQL versions): 125
- Non-common packages (Packages which depend on PostgreSQL versions): 164
- Extra packages: 4
- Non-free packages: 6
- Repo packages: 2

General overview of PGDG RPMs

- Common packages (packages which are independent of PostgreSQL versions): 125
- Non-common packages (Packages which depend on PostgreSQL versions): 164
- Extra packages: 4
- Non-free packages: 6
- Repo packages: 2
- srpm-macros: 1

Total: 302!

Platform support

- Red Hat Enterprise Linux
 - RHEL 9
 - RHEL 8
 - RHEL 7
 - RHEL 6 (EOLed, up to PostgreSQL 12)

<https://access.redhat.com/support/policy/updates/errata>

Platform support

- Red Hat Enterprise Linux
 - RHEL 9
 - RHEL 8
 - RHEL 7
 - RHEL 6 (EOLed, up to PostgreSQL 12)

<https://access.redhat.com/support/policy/updates/errata>

- Fedora
 - Fedora 37
 - Fedora 36
 - Fedora 35

Platform support

- Red Hat Enterprise Linux
 - RHEL 9
 - RHEL 8
 - RHEL 7
 - RHEL 6 (EOLed, up to PostgreSQL 12)

<https://access.redhat.com/support/policy/updates/errata>
- Fedora
 - Fedora 37
 - Fedora 36
 - Fedora 35
- SuSE Enterprise Linux
 - SLES 15 SP4
 - SLES 12 SP5

EOLed distro / PostgreSQL packages

- Yum-archive:
 - yum-archive.postgresql.org
 - There is no website :)
 - <https://yum.postgresql.org/repofiles/epackages/#pgredhatoldrepos>
 - All info is there.

Support for RHEL derivatives

- Red Hat Enterprise Linux 9
 - Rocky Linux 9
- Red Hat Enterprise Linux 8
 - Rocky Linux 8
- Red Hat Enterprise Linux 7
 - CentOS 7

What about other clones?

- RHEL 9 and 8:
 - Testing only against Rocky 9 and 8

What about other clones?

- RHEL 9 and 8:
 - Testing only against Rocky 9 and 8
 - Alma Linux, Oracle Linux: Not tested, but should work (there are lots of known production sites)

What about other clones?

- RHEL 9 and 8:
 - Testing only against Rocky 9 and 8
 - Alma Linux, Oracle Linux: Not tested, but should work (there are lots of known production sites)
 - In case of any issues, we don't provide support.

What about other clones?

- RHEL 9 and 8:
 - Testing only against Rocky 9 and 8
 - Alma Linux, Oracle Linux: Not tested, but should work (there are lots of known production sites)
 - In case of any issues, we don't provide support.
 - **CentOS 8: EOLed, not supported.**

CentOS Stream

- CentOS Stream:
 - **Not supported**
 - Use OS packages

Fedora Lifecycle

- Fedora lifecycle:
 - Fedora latest
 - Fedora latest -1
 - Fedora soon-to-be-EOLed

General overview of PGDG DEBs

- Plain packages (packages which are independent of PostgreSQL versions): 80

General overview of PGDG DEBs

- Plain packages (packages which are independent of PostgreSQL versions): 80
- Extension packages (Packages which depend on PostgreSQL versions): 74

General overview of PGDG DEBs

- Plain packages (packages which are independent of PostgreSQL versions): 80
- Extension packages (Packages which depend on PostgreSQL versions): 74
- Extra packages: (none)

General overview of PGDG DEBs

- Plain packages (packages which are independent of PostgreSQL versions): 80
- Extension packages (Packages which depend on PostgreSQL versions): 74
- Extra packages: (none)
- Non-free packages: 0

Total: 154

Platform support

- **Debian**
 - unstable
 - bookworm (testing, to be 12)
 - bullseye (11)
 - buster (10)
 - No longer supported: stretch (9)

Platform support

- **Debian**
 - unstable
 - bookworm (testing, to be 12)
 - bullseye (11)
 - buster (10)
 - No longer supported: stretch (9)
- **Ubuntu**
 - kinetic (22.10, non-LTS)
 - jammy (22.04)
 - focal (20.04)
 - bionic (18.04, EOL in April 23)

EOLed distro / PostgreSQL packages

- apt-archive:
 - apt-archive.postgresql.org
 - Very basic website, static index.html files uploaded to S3
 - Usable as normal apt archive
 - foo-pgdg
 - foo-pgdg-archive

Support for Debian derivatives

- Ubuntu
- No others so far :)

Pros/cons of using PGDG packages vs OS packages

Pros/cons of using PGDG RPMs vs OS RPMs

- **Common pros:**
 - Sticking to OS libraries

Pros/cons of using PGDG RPMs vs OS RPMs

- **Common pros:**
 - Sticking to OS libraries
- **Pros:**
 - Packages are always up2date
 - PostgreSQL: Ability to install multiple versions in parallel
 - More packages are available

Pros/cons of using PGDG RPMs vs OS RPMs

- **Common pros:**
 - Sticking to OS libraries
- **Pros:**
 - Packages are always up2date
 - PostgreSQL: Ability to install multiple versions in parallel
 - More packages are available
- **Cons:**
 - May rarely override OS packages (PGDG: libpq5 vs RHEL: libpq)
 - Not supported by OS vendor (Red Hat, SuSE)
 - Needs commercial support from PostgreSQL companies

Pros/cons of using PGDG DEBs vs OS DEBs

- **Common pros:**
 - Sticking to OS libraries
 - Packages built from same Git, very close to Debian

Pros/cons of using PGDG DEBs vs OS DEBs

- **Common pros:**
 - Sticking to OS libraries
 - Packages built from same Git, very close to Debian
- **Pros:**
 - Packages are always up2date
 - PostgreSQL: Ability to install multiple versions in parallel

Pros/cons of using PGDG DEBs vs OS DEBs

- **Common pros:**
 - Sticking to OS libraries
 - Packages built from same Git, very close to Debian
- **Pros:**
 - Packages are always up2date
 - PostgreSQL: Ability to install multiple versions in parallel
- **Cons:**
 - Needs commercial support from PostgreSQL companies

- OS-related issues

OS related issues

- RHEL: LLVM & CLANG
 - RHEL bumps up LLVM/CLANG on each RHEL minor version
 - Solved with “sysupdates” repo.

OS related issues

- **RHEL: LLVM & CLANG**
 - RHEL bumps up LLVM/CLANG on each RHEL minor version
 - Solved with “sysupdates” repo.
- **Fedora**
 - Rarely breaks
 - Rare bump of a major component due to short life cycle.

OS related issues

- Debian/Ubuntu
 - Library transitions in unstable and Ubuntu+1 need manual work

- “Extra” packages

Extra RPM packages for PostgreSQL

- Extras repo
 - Not directly PostgreSQL related

Extra RPM packages for PostgreSQL

- Extras repo
 - Not directly PostgreSQL related
 - Latest releases

Extra RPM packages for PostgreSQL

- Extras repo
 - Not directly PostgreSQL related
 - Latest releases
 - Currently targeted for Patroni
 - consul
 - haproxy
 - etcd
 - consul-template

Extra RPM packages for PostgreSQL

- Extras repo
 - Not directly PostgreSQL related
 - Latest releases
 - Currently targeted for Patroni
 - consul
 - haproxy
 - etcd
 - consul-template
 - More may come in the future

- “non-free” packages

Non-free RPM packages

- Non-free repo
 - Licensing issues
 - <https://yum.postgresql.org/repopackages/#pgredhatoldrepos>
 - All info is there.
 - db2_fdw, perl-DBD-Oracle, pg_strom, oracle_fdw and timescaledb-tsl
 - informix_fdw is in the queue.

Non-free DEB packages

- None yet
- Candidates are oracle_fdw and informix_fdw
- Actually “contrib”
- Hard to build, need proprietary libs (which need packaging and a public (?) repo)
- Hard to distribute

- More testing

More DEB testing

- “make installcheck” running at DEB build time

More DEB testing

- “make installcheck” running at DEB build time
- Normally needs installing to /usr/share/postgresql/XX/extension

More DEB testing

- “make installcheck” running at DEB build time
- Normally needs installing to /usr/share/postgresql/XX/extension
- extension_destdir patch

Snapshot DEBs

- All packages now built automatically from packaging git every 6 hours

Snapshot DEBs

- All packages now built automatically from packaging git every 6 hours
- Uploaded to *-pgdg-testing

Snapshot DEBs

- All packages now built automatically from packaging git every 6 hours
- Uploaded to *-pgdg-testing
- Some packages additionally follow upstream git
 - postgresql-16
 - postgresql-XX
 - pgloader
 - ...
 - ... more once we configure it

Snapshot RPMs

- postgresql-16 RPMs built daily

Snapshot RPMs

- postgresql-16 RPMs built daily
- Available from *pgdg16-updates-testing* repos.

Snapshot RPMs

- postgresql-16 RPMs built daily
- Available from *pgdg16-updates-testing* repos.
- Last 2 builds are available.

Snapshot RPMs

- postgresql-16 RPMs built daily
- Available from *pgdg16-updates-testing* repos.
- Last 2 builds are available.
- *NOT signed*

- Toolchain issues

Language issues

- Debian and Fedora policies do not like extra downloads at build time

Language issues

- Debian and Fedora policies do not like extra downloads at build time
- All dependencies have to be packaged

Language issues

- Debian and Fedora policies do not like extra downloads at build time
- All dependencies have to be packaged
- Difficult for languages ...
 - with very small modules (Node)
 - that are very new (Go)
 - that aren't widely used for OSS (Java)

Language issues

- Debian and Fedora policies do not like extra downloads at build time
- All dependencies have to be packaged
- Difficult for languages ...
 - with very small modules (Node)
 - that are very new (Go)
 - that aren't widely used for OSS (Java)
- “Vendoring” of dependencies as a workaround

Language issues

- Debian and Fedora policies do not like extra downloads at build time
- All dependencies have to be packaged
- Difficult for languages ...
 - with very small modules (Node)
 - that are very new (Go)
 - that aren't widely used for OSS (Java)
- “Vendoring” of dependencies as a workaround
- Some languages work better than others, but each workaround is different

Testsuite issues

- We are PostgreSQL experts, and running tests against other databases is hard

Testsuite issues

- We are PostgreSQL experts, and running tests against other databases is hard
- `mysql_fdw`

Testsuite issues

- We are PostgreSQL experts, and running tests against other databases is hard
- `mysql_fdw`
- Each Debian/Ubuntu release has different ideas about what MySQL flavour is default, and how to start it

- How upstream can help produce good packages

Upstream and us

- Upstream, and packages

Upstream and us

- Upstream, and packages
- Common goal of providing users with software

Upstream and us

- Upstream, and packages
- Common goal of providing users with software
- We are not here to annoy you

Upstream and us

- Upstream, and packages
- Common goal of providing users with software
- We are not here to annoy you

Expectations from upstream

Expectations from upstream

- Please fix bugs

Expectations from upstream

- Please fix bugs
- Please work on supporting PG+1 *before* it is released

Expectations from upstream

- Please fix bugs
- Please work on supporting PG+1 *before* it is released
- We provide PG+1 packages well before beta for testing

Expectations from upstream

- Please fix bugs
- Please work on supporting PG+1 *before* it is released
- We provide PG+1 packages well before beta for testing
- Whatever you fix, please make a release

Expectations from upstream

- Please fix bugs
- Please work on supporting PG+1 *before* it is released
- We provide PG+1 packages well before beta for testing
- Whatever you fix, please make a release
- In the Github age, “git tag” is enough

Testing
testing
testing

- Testsuites are good

Testing
testing
testing

- Testsuites are good
- Make them part of your build pipeline

Testing
testing
testing

- Testsuites are good
- Make them part of your build pipeline
- We make them part of our build pipelines

Testing
testing
testing

- Testsuites are good
- Make them part of your build pipeline
- We make them part of our build pipelines
- When tests are broken, the software is broken, please fix that just like “real” bugs

Getting your favourite extension packaged



Getting your favourite extension packaged

- Pick an existing package as template

Getting your favourite extension packaged

- Pick an existing package as template
- Talk to us
 - Redmine for now

Getting your favourite extension packaged

- Pick an existing package as template
- Talk to us
 - Redmine for now
 - Github soon
- We should write some Howto docs

Questions?

THANK YOU

PostgreSQL Native packaging - RPM and DEB packager view

Devrim Gündüz
PostgreSQL Major Contributor
Not a UK Prime Minister (yet)

devrim.gunduz@enterprisedb.com

devrim@gunduz.org

Christoph Berg
PostgreSQL Major Contributor
Not even planning to become UK Prime Minister (yet)

christoph.berg@netapp.com

myon@debian.org