Ein Repository für PostgreSQL in Debian

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Der Vortragende

- Debian Developer
  - Quality Assurance, New Members
  - maintaining PostgreSQL programs and extensions

- senior consultant at credativ GmbH in Mönchengladbach, Germany (not too far from here)
  - PostgreSQL support and operation
  - general Debian topics

- Wir stellen ein!
Agenda

- PostgreSQL und Debian-Releases
- PostgreSQL-Extensions paketieren
- Repository
- Offene Fragen
- Zusammenfassung
PostgreSQL und Debian-Releases
## PostgreSQL und Debian-Releases

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- PostgreSQL: about every year
- Debian: about every 2 years
## Versions-Matrix

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<th>8.0</th>
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- since Etch: several PostgreSQL versions installable in parallel
- usually only one shipped
- server extension packages are available for a subset of these
- **goal: fill in missing X/·, and build extensions for them**
PostgreSQL-Extensions paketieren
Debian-Pakete im Schnelldurchlauf

- source package = orig.tar.gz + diff + pkg_version.dsc file
- binary package = pkg_version_arch.deb file
- debian/control: package name, (build) dependencies, description, maintainer
- debian/rules: Makefile with targets to build, install, and build binary package
- dpkg-buildpackage invokes targets to build one or more binary packages from source tree
- example: source postgresql-plproxy_2.1-1.dsc builds postgresql-8.4-plproxy_2.1-1_amd64.deb (armel, i386, ia64, kfreebsd-amd64, kfreebsd-i386, mips, mipsel, powerpc, s390, sparc)
extension packages build-depend on postgresql-server-dev-X.Y
version change needs manual editing of several files in debian/
usually no support to build for two PostgreSQL versions

debian/control:

Source: postgresql-plproxy
Build-Depends: debhelper (>= 7), postgresql-server-dev-8.4, flex, bison
Standards-Version: 3.9.1

Package: postgresql-8.4-plproxy
Architecture: any
Depends: postgresql-8.4, ${misc:Depends}, ${shlibs:Depends}
Description: PL/Proxy is a proxy language for PostgreSQL 8.4
#!/usr/bin/make -f

PG_CFG84 = /usr/lib/postgresql/8.4/bin/pg_config
CFLAGS84 = $(shell $(PG_CFG84) --cflags)
SRCDIR = $(CURDIR)
TGT84 = $(CURDIR)/debian/prefix-8.4

install: build
    mkdir -p $(TGT84)
    cd $(TGT84) && $(MAKE) -f $(SRCDIR)/Makefile \
        CFLAGS="$(CFLAGS)" PG_CONFIG="$(PG_CFG84)" \
        VPATH="$(SRCDIR)"
    dh_install -ppostgresql-8.4-prefix
#!/usr/bin/make -f

PACKAGE := $(shell dh_listpackages)
PGVERSION = $(patsubst postgresql-%-plproxy,%,$(PACKAGE))
PG_CONFIG = /usr/lib/postgresql/$(PGVERSION)/bin/pg_config

build:
    $(MAKE) PG_CONFIG=$(PG_CONFIG) PG_CPPFLAGS='$(PG_INC)' 

install: build
    $(MAKE) install PG_CONFIG=$(PG_CONFIG) PG_CPPFLAGS='$(PG_INC)' \
    DESTDIR=$(CURDIR)/debian/postgresql-$(PGVERSION)-plproxy
Die Zukunft: pg_buildext

- system provides /
  /usr/share/postgresql-common/supported-versions
- package provides debian/pgversions
- **pg_buildext** works on intersection of these lists
- Build-Depends: postgresql-server-dev-all

debian/rules:

build:

  +pg_buildext build $(CURDIR) build-%v

install: build

  +pg_buildext install $(CURDIR) build-%v \
  postgresql-%v-plsh
debian/control generated from debian/control.in:

Source: postgresql-plproxy
Build-Depends: debhelper (>= 7), flex, bison, asciidoc, postgresql-server-dev-all (>= 119~)
Standards-Version: 3.9.2

Package: postgresql-PGVERSION-plproxy
Architecture: any
Depends: postgresql-PGVERSION, ${misc:Depends}, ${shlibs:Depends}
Description: database partitioning for PostgreSQL PGVERSION
Repository
Repository

- http://pgapt.debian.net/
- repository with PostgreSQL server and extension packages
  - Debian Lenny/Squeeze/Wheezy/unstable
  - PostgreSQL 8.2/8.3/8.4/9.0/9.1
- packages are imported from unstable
- build daemons build for all releases
- http://pgapt.debian.net/bin/packages.cgi
- currently: hstore-new, ip4r, pgfincore, plr, pljava, pllua, plproxy, plsh, prefix, preprepare, skytools(3)

/etc/apt/sources.list:

```
deb http://pgapt.debian.net/ lenny-pgapt main # 5.0
deb http://pgapt.debian.net/ squeeze-pgapt main # 6.0
```
Pakete bauen

- custom /usr/share/postgresql-common/supported-versions file to cover all PostgreSQL versions
- debian/pgversions extended where needed
- add new changelog entry && dpkg-buildpackage

- packages built have version suffix ~pgapt+1 (unstable)
  ~pgaptNN+1 (others)
- ~ sorts before “empty string”
- 1.0~pgapt50+1 < 1.0~pgapt60+1 < 1.0~pgapt+1 < 1.0
- postgresql-9.1-plproxy_2.2-3~pgapt60+1_i386.deb
repository is imported in a PostgreSQL database (qa.debian.org schema)

- package (version, architecture, maintainer, ...)
- suite (distribution, architecture)
- packagelist (suite_id, package_id)
- package_source (package_id, source_id)
- other meta data

extended to cover new package–PostgreSQL version combinations
Neue Paket-Version-Kombinationen

- table pgversion – list of targeted versions
  - 8.2 8.3 8.4 9.0 9.1
- view all_versioned_packages – synthetic list of all possible packages (postgresql-*-extension)

```sql
SELECT DISTINCT
    -- prefix, e.g. 'postgresql-
    regexp_replace (package, E'[0-9]+\.[0-9].*', '') ||
    pgversion ||
    -- suffix, e.g. '-plproxy'
    regexp_replace (package, E'.*[0-9]+\.[0-9]', '') AS package
FROM package NATURAL JOIN pgversion
WHERE package ~ E'[0-9]\.[0-9]';
```
Was bauen?

- view missing_packages – packages not yet built (per Debian release/architecture)
- view outdated_packages – packages needing rebuild

CREATE VIEW outdated_packages AS
SELECT ap.*, s.suite, s.architecture, p.version AS oldversion
FROM all_versioned_packages ap
JOIN package p ON (ap.package = p.package)
JOIN packagelist pl ON (p.package_id = pl.package_id)
JOIN suite s ON (pl.suite_id = s.suite_id)
WHERE p.version::debversion < ap.version::debversion; -- FIXME

- [ RECORD 1 ]+----------------------------------------
  pgversion | 9.0
  package    | postgresql-9.0-pljava-gcj
  source     | postgresql-pljava
  version    | 1.4.3-1~pgapt70+1
  suite      | wheezy-pgapt
  architecture | i386
  oldversion | 1.4.2-4
Offene Fragen
- many packages not yet converted
- many extensions do not support out-of-tree builds – “VPATH”
- mkdir build-8.4
  cd build-8.4
  make -f ../Makefile VPATH=$PWD/..
- maybe a PGXS deficiency
- pg_buildext might do in-place build&&install instead
pg_regress

- Testing extensions manually on all PostgreSQL versions is infeasible
- pg_regress supported by many extensions
- But pg_regress wants files in their final location (:libdir)
- At build time only present in debian/$pkg/usr/...
- Idea: fakeroot/fakechroot-like wrapper to create an overlay filesystem (LD_PRELOAD)
- actually use the database for automated building
- pgq?
- remember package-version combinations that are not supported
- per-version suites to provide distinct libpq5.deb packages?
- more QA ⇒ apt.postgresql.org
- “best-effort” support for old releases
Zusammenfassung
Was Extension-Autoren tun können

- document PostgreSQL versions supported
- support 9.1’s extension control files
- make your Makefile VPATH-friendly
- provide regression tests
Was Paket-Maintainer tun können

- use pg_buildext (at least “supported-versions”)
- put all supported versions into debian/pgversions, not just the current one
- try to avoid debian/$pkg.install and friends
Was DBAs und Benutzer tun können

- test & report
- does this meet your needs?
Zusammenfassung

- http://pgapt.debian.net/
- Extensions werden für viele Versionen gebaut
- derzeit noch eine Baustelle
- bald auf apt.postgresql.org?
- Danke an Dimitri Fontaine!

- https://www.postgresql.eu/events/feedback/pgconfde2011/