

Happy 5th anniversary
pkg-provides



Who am I

- Rodrigo Osorio
- FreeBSD port committer since 2014

What's pkg-provides (1)

pkg(8) command was designed to be extended with plugins to

- run special commands
- handle hooks
- replace existing commands
- Access the pkg database

pkg-provides is a pkg plugin to query which package provides a file matching a particular pattern.

What's pkg-provides (2)

A simple example :

```
rodrigo@deltaflyer ~ > pkg provides "libmpg123.so*"
Name      : zoom-video-conferencing-client-5.3.465578.0920_1
Comment   : Zoom videoconferencing client (CAVEAT: Sound doesn't yet work)
Repo      : FreeBSD
Filename:  compat/linux/opt/zoom/libmpg123.so

Name      : mpg123-1.31.1
Comment   : Command-line player for MPEG Layer 1, 2, and 3 audio files
Repo      : FreeBSD
Filename:  usr/local/lib/libmpg123.so.0.47.0
           usr/local/lib/libmpg123.so.0
           usr/local/lib/libmpg123.so
```

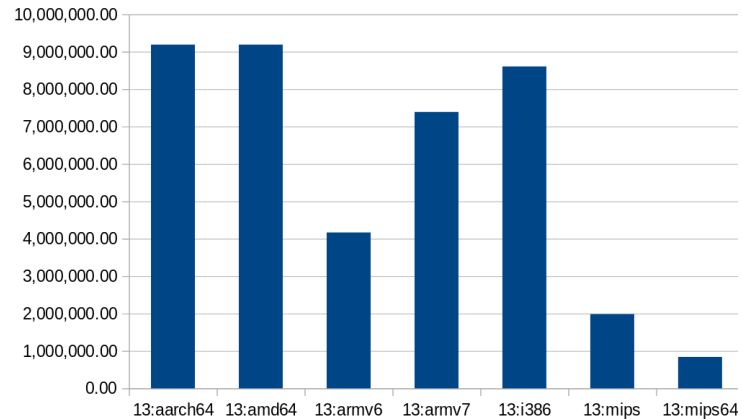
What's pkg-provides (3)

Pkg-provides uses a database which contains all the installable files for each package

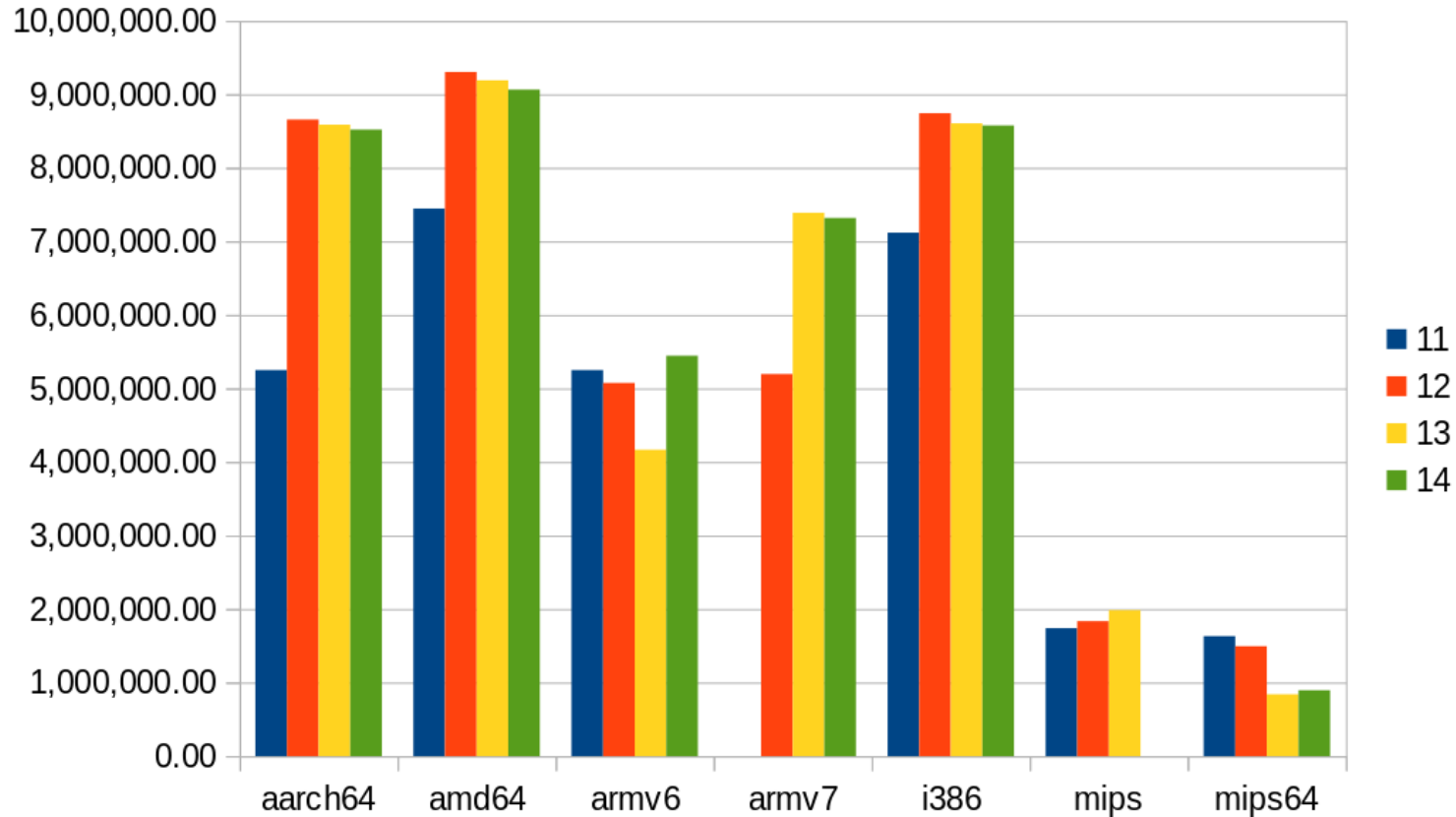
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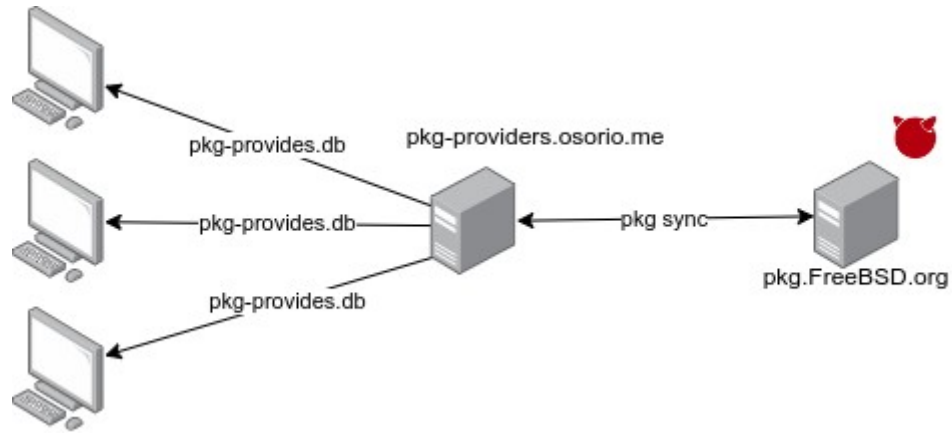
- Around 9M files for 13.1 amd64, aarch64, i386



What's pkg-provides (4)



What's pkg-provides (2)



Pkg-provides history (1)

- I start writing pkg-provides in 2017
- Multiple motivations :
 - As a port maintainer I need a tool to hep me with dependencies
 - No more find/grep drama
 - ``find /usr/ports/ -name pkg-plist grep -H libtest.so {} \ ;``
 - As a developer, I wanna write a pkg plugin

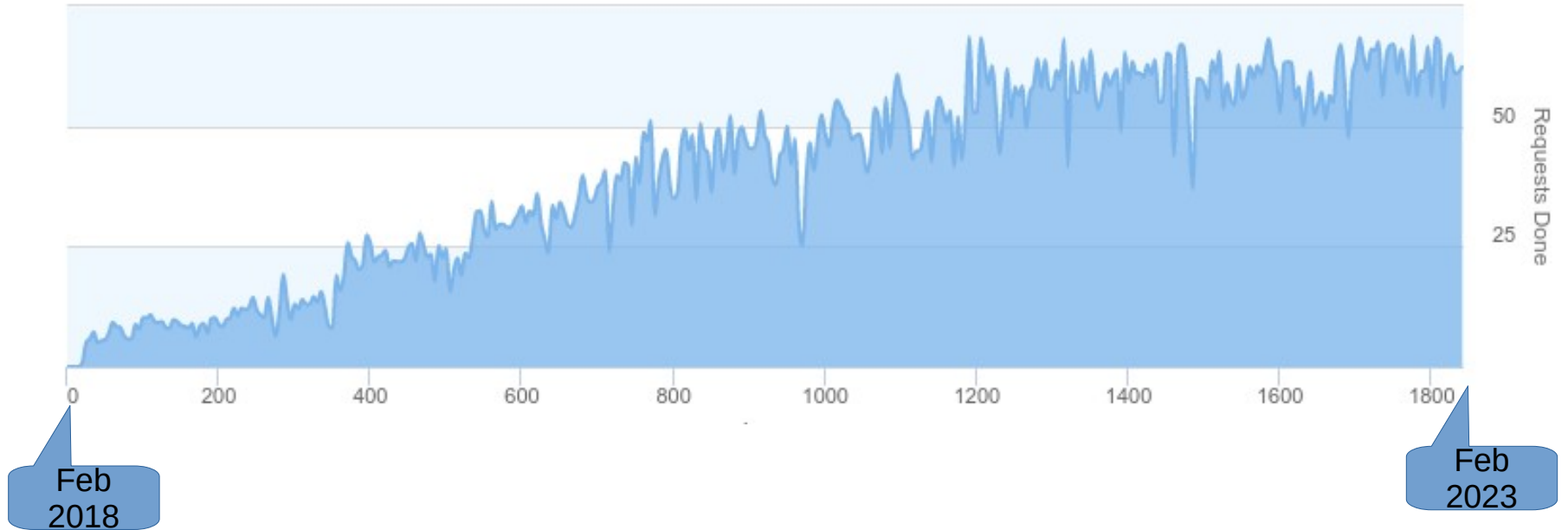
Pkg-provides history (2)

- Committed in ports the 25th January 2018
- Publicly introduced in February at Fosdem



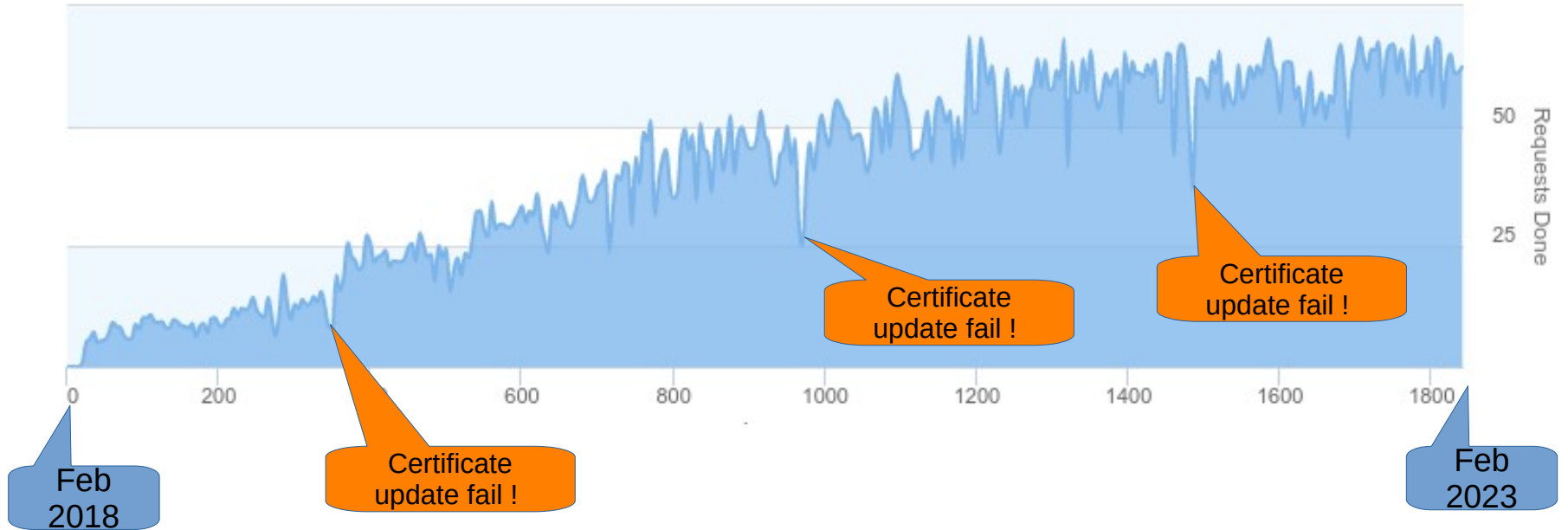
Pkg-provides stats (1)

Unique ip per day count since 2018



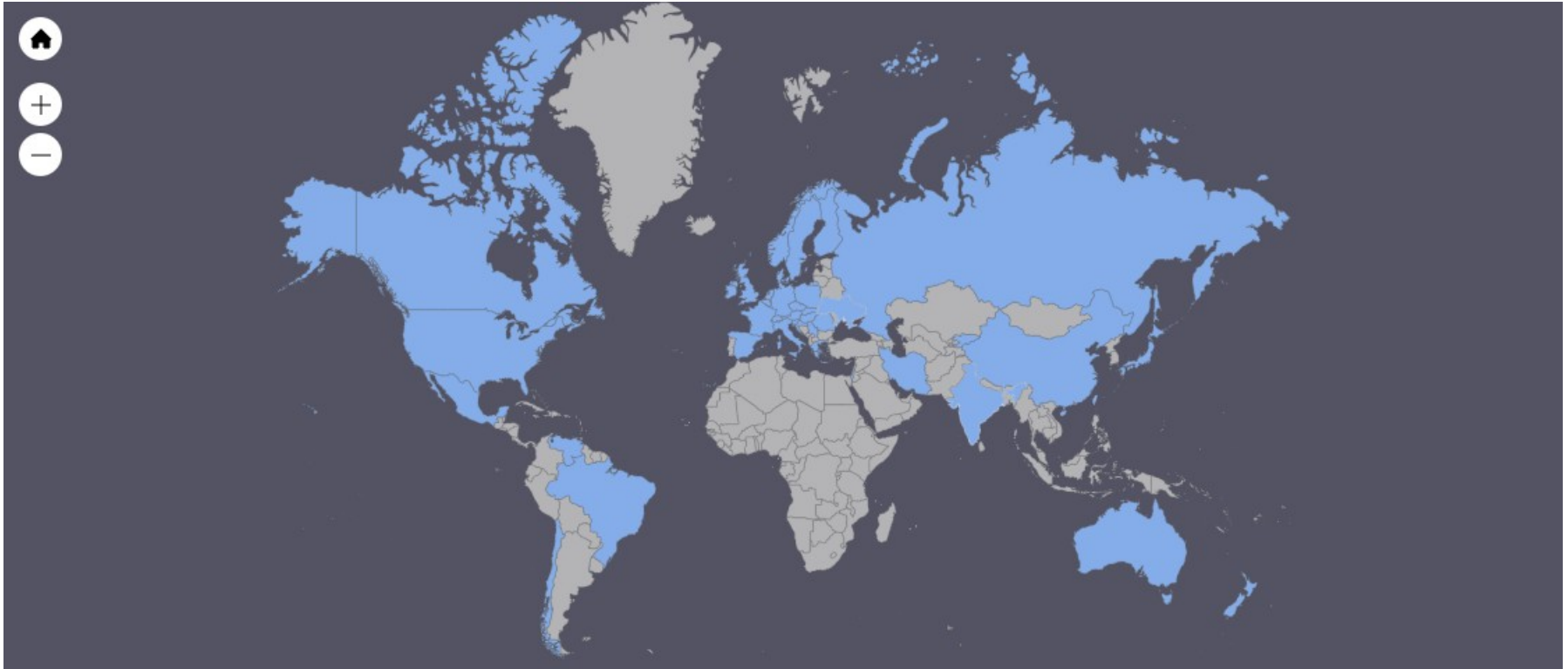
Pkg-provides stats (2)

Unique ip per day count

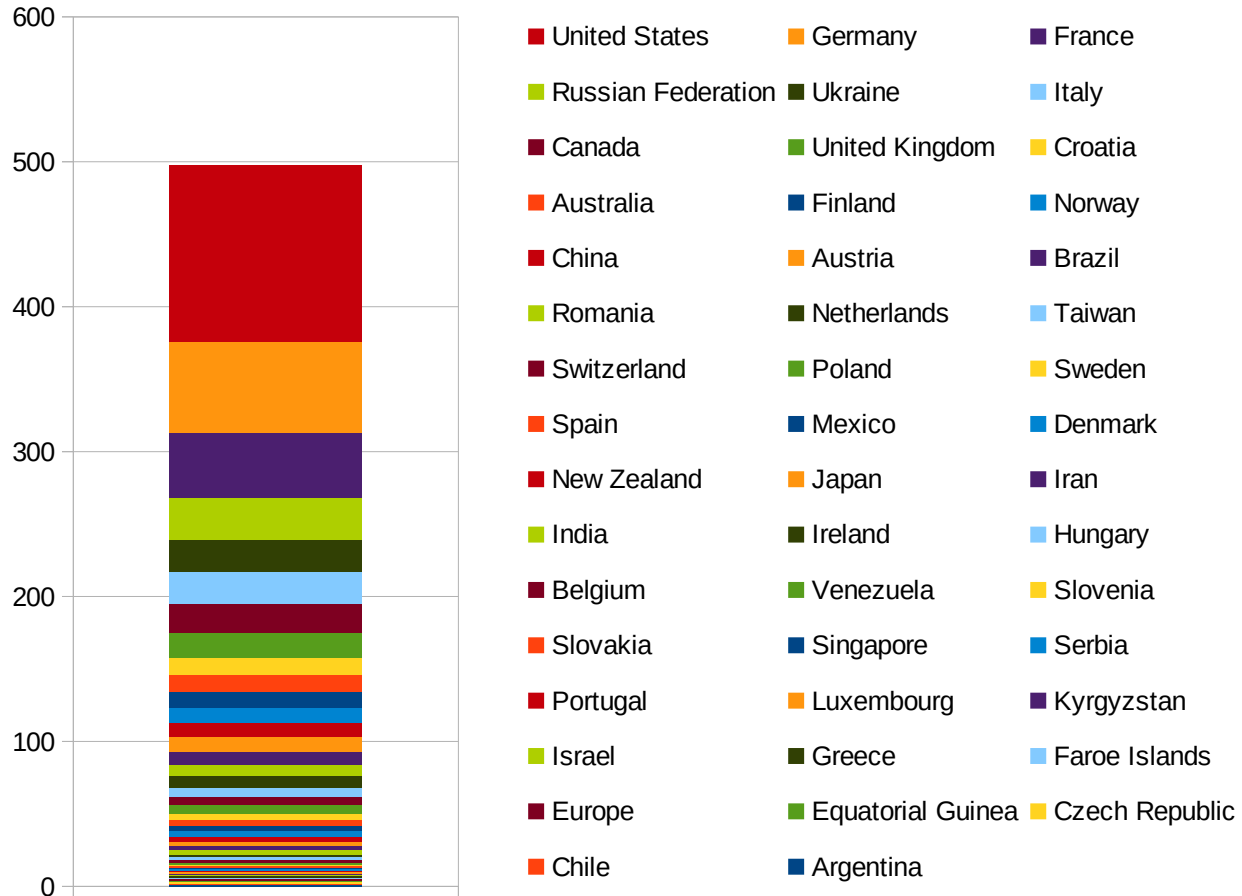


Pkg-provides stats (3)

where do the users come from ?



Pkg-provides stats (4)

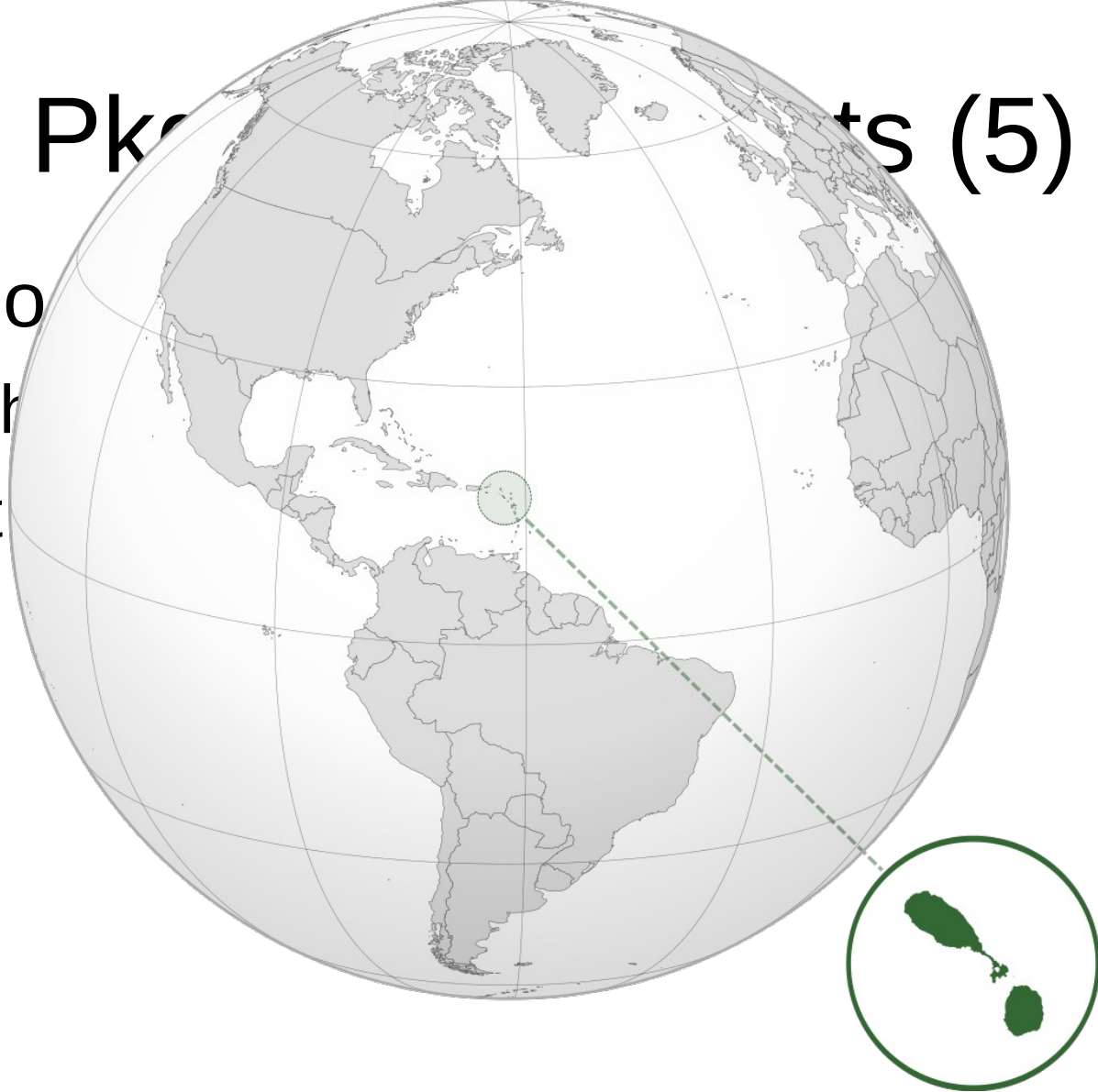


Pkg-provides stats (5)

- But also some strange locations
 - British Virgin Islands
 - Saint Kitts et Nevis

Puerto Rico (5)

- But also
 - British
 - Saint



Pkg-provides database (1)

- Building the database was the tricky part
 - 58k ports
 - 3 supported releases (currently 12, 13 and 14)
 - 6 architectures (amd64, i386, armv6, armv7, aarch64, mips64)

$58000 \times 3 \times 6 = 1044k$ packages

Pkg-provides database (2)

- I can't build every package (space, horsepower)
- I can't trust pkg-plist files or PLIST_FILES for any architecture
- I can't download all the packages (time, space) and have impact on mirrors performances

Pkg-provides database (3)

- Packages are archive files who contains
 - +COMPACT_MANIFEST (json)
 - +MANIFEST (json with the list of intalled files)
 - The port files...

We can abuse them to recover only the manifest using HEAD http request

Pkg-provides database (4)

- How ?
 - curl -r 0-4000 <http://pkg.FreeBSD.org/>.....
 - Extract the +MANIFEST file
 - If the json is valid we are done, otherwise increase the chunk and fetch it again

Pkg-provides database (5)

- Using HTTP HEAD, a totally standard method
 - No need to break http(s) connexions
 - We save everybody's bandwidth
 - We save everybody's time

Pkg-provides database (6)

- At the beginning the database was a simple text file
 - Easy to read
 - But it's 36M xz compressed

Pkg-provides database (7)

- At the beginning the database was a simple text file
 - Easy to read
 - But it's 36M xz compressed
- At EuroBSDcon 2018 Marc Espie (espie@openbsd.org) suggest me I can use locate file format (bigram)
 - Database size is now 17M compressed (46 % of the original text file)

Pkg-provides usages (1)

- Reverse search engine

Pkg-provides usages (2)

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- Identify unexpected packaged files such as core dumps

Pkg-provides usages (3)

- Reverse search engine
- Identify unexpected packaged files such as core dumps
- Search for duplicate file who can cause conflicts
 - Stefan Esser (se@) uses pkg-provides database to fix conflicts

Questions ?

Thank you.