



# MirrorManager and CentOS Stream 9

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# About myself

- Running a mirror server since 1998
- Involved in Fedora (fedora.us) for over 20 years
- First MirrorManager patches in 2008
- Main point of contact for MirrorManager since 2016
- Red Hat Core Kernel Team
- Working on checkpoint and restore (CRIU)

# Agenda

What is MirrorManager

Who uses MirrorManager

How does MirrorManager work

Some numbers

# What is MirrorManager?

# Find "best" mirror

Based on the client IP

# Netblock

# Private Mirror



ASN

# Internet2 (no longer)

# GeoIP Country

# GeoIP Continent

# Get global mirrors

Randomize and order by prefix size

# Weighted shuffle by bandwidth

# Who uses MirrorManager



MirrorManager in use since 2007

Fedora and EPEL

RPM Fusion

Rocky Linux

# CentOS Stream 9

# How does MirrorManager work

What happens during

```
dnf install
```

# mirrorlist

# metalink

`https://mirrors.centos.org/metalink?repo=centos-baseos-9-stream&arch=x86_64`



```
1 <files>
2   <file name="repomd.xml">
3     <mm0:timestamp>1642386319</mm0:timestamp>
4     <size>4843</size>
5     <verification>
6       <hash type="md5">304051e1daed2d...bfff15ba781c</hash>
7       <hash type="sha1">be5753534d8df1a8...224bc4a892ad</hash>
8       <hash type="sha256">8e3f7dc1a2f9640b15686db...b1a0b8</hash>
9       <hash type="sha512">3d2b429dc31310f41135220...d31c0520b5d</hash>
10    </verification>
11    <mm0:alternates>
12      <mm0:alternate>
13        <mm0:timestamp>1642298581</mm0:timestamp>
14        <size>4844</size>
15        <verification>
16          <hash type="md5">6101a2d6f2e652...0aed60036</hash>
17          <hash type="sha1">3badc0625b7a47b2...72b93992ed6b</hash>
18          <hash type="sha256">392544cbd0a6e88a0...c66c128e65712</hash>
19          <hash type="sha512">78c79ec7aaff6b38b...1c9a2559c89f8d6</hash>
20        </verification>
```

```
1 <resources maxconnections="1">
2   <url protocol="https" type="https" location="DE" preference="100">https://
   mirror.netzwerke.de/centos-stream/9-stream/BaseOS/x86_64/os/repo/repodata/
   repomd.xml</url>
3   <url protocol="https" type="https" location="DE" preference="99">https://
   mirror1.hs-esslingen.de/pub/Mirrors/centos-stream/9-stream/BaseOS/x86_64/
   os/repo/repodata/repomd.xml</url>
4   <url protocol="https" type="https" location="DE" preference="98">https://ftp.
   plusline.net/centos-stream/9-stream/BaseOS/x86_64/os/repo/repodata/repomd.xml</
   url>
5   <url protocol="https" type="https" location="DK" preference="97">https://
   mirror.netsite.dk/centos-stream/9-stream/BaseOS/x86_64/os/repo/repodata/repomd.
   xml</url>
6   <url protocol="https" type="https" location="NL" preference="96">https://
   centos-stream.mirror.wearetriple.com/9-stream/BaseOS/x86_64/os/repo/repodata/
   repomd.xml</url>
7   <url protocol="https" type="https" location="CH" preference="95">https://
   linuxsoft.cern.ch/centos-stream/9-stream/BaseOS/x86_64/os/repo/repodata/repomd.
   xml</url>
```

Download `repomd.xml`

# Download repository files

# Download actual RPM

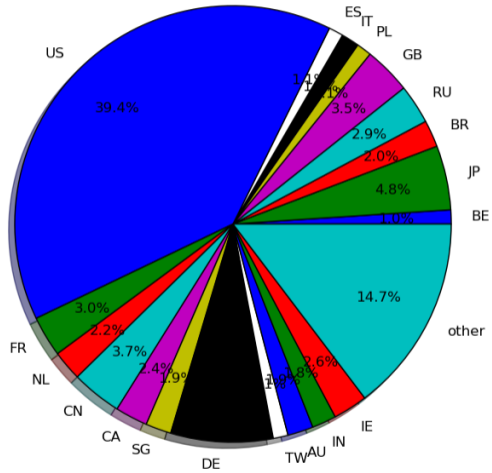
# Some numbers

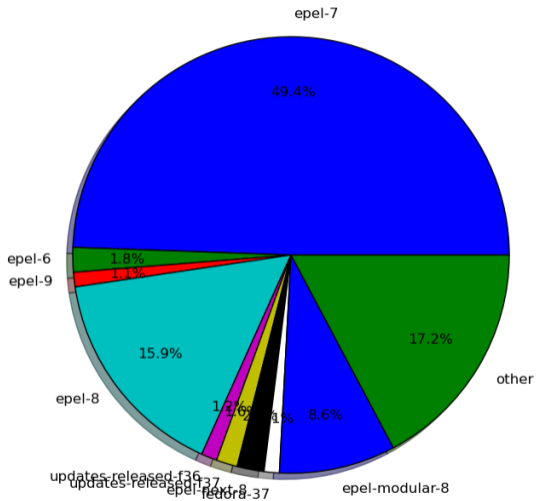
Over 1200 mirrors

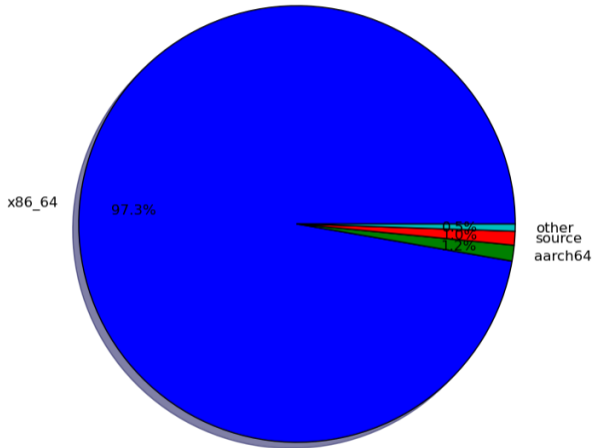




Around 64 million requests per day









# Thank you

# Fedora's setup

Proxies (25)

Frontends (3)

Backend

Crawlers (2)

Database

# MirrorManager2 since 2015



# Proxies on Fedora

We needed Python 3 support

# Python 3 support (2017)

Backend Python 2

Proxies Python 3

Switched to Protocol Buffers

protobuf

# Introducing Rust

## Starting with the Proxies

# Introducing Rust

## Step two

(protobuf generation)

# Introducing Rust

## Step three

(scan primary mirror)

# Known Problems



baseos

appstream

crb