

Basics of a Free Software Mirror (and how Debian does it)

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whoami

Sahil Dhiman

- Do network and infrastructure at
- Writes at <https://blog.sahilister.in>
- Community affiliations
 - Debian Developer non uploading
 - OSM India/Delhi



Mirrors I run

- <https://mirrors.in.sahilister.net> in India – hosting KDE, VLC, LibreOffice etc – pushing 900 GB+/day
- <https://mirrors.de.sahilister.net> in Germany – hosting Ubuntu, EPEL, GIMP, Termux etc. – pushing 2.5 TB+/day

We'll talk about

- Mirrors (and how it works) and trends
- How Debian distributes .deb(s)
- Who runs mirrors in India
- How you can do it too (hint – lots of b/w)

Free Software

User is free to run, copy distribute, study, change and improve

<https://www.gnu.org/philosophy/free-sw.html>

Free Software is community goods.

Community develops, support and help
distribute it (we'll talk about this today!)

There're plenty of mirror redirectors, but
Mirrorbits is the most common.



https://itsmeh.com/chirag_sukhala

wants





<https://krita.org>

Krita is a professional FREE and open source painting program. It is made by artists that want to see affordable art tools for everyone.

DOWNLOAD



<https://download.kde.org/stable/krita/5.2.9/krita-5.2.9-release.dmg> → Mirrorbits
→ HTTP 301 or 302

What Mirrorbit sees – *client info*

- What to download – *we want krita*
- IP – *a public IP*
- GeoIP – *rough location*
- Nearest mirror – *run by a stranger on the internet*

What Mirrorbit *has* – *mirrors side*

- List of available mirrors – *mirrorlist*
- Mirror IPs – *a public IP*
- Mirror GeoIP – *rough location*
- What mirror carry – *is krita available?*
- Weight – *how much traffic it can handle*

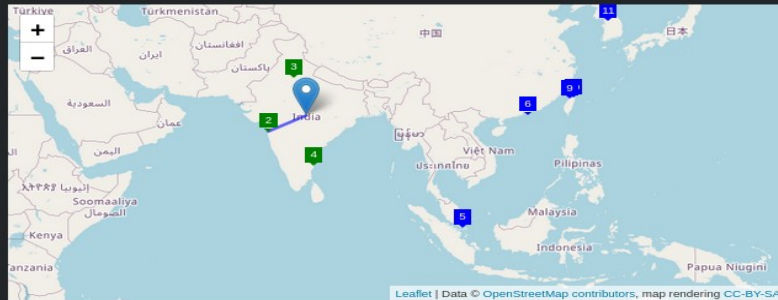


/stable/krita/5.2.9/krita-5.2.9-release.dmg

Client

You are connecting with IP address *14.195.69.246*, which belongs to autonomous system *Tata Teleservices ISP AS (ASN45820)*.

We believe you are somewhere in *India* and have selected mirrors based on this.



File

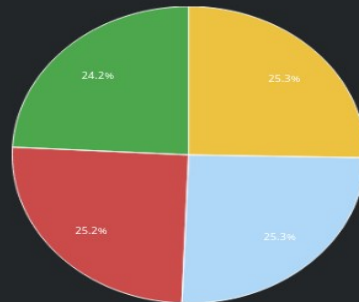
The file */stable/krita/5.2.9/krita-5.2.9-release.dmg* has a size of 351.8 MB (368909212 bytes) and was last modified on Mon, 27 Jan 2025 15:14:53 UTC.

Known hashes:

MD5 d140b100664ba8961e7944d587477a07

SHA1 8cbec504a06ada36d27629d548dbc09b10386871

SHA256 fff90ce72124029fc57e0f2225980ec6a6c5146b0c41b36eeb501d4a43965a6a



sahillister.net
albony.in
mirrors.saswata.cc
mirror.maa.albony.in

Mirrors

Rank	Mirror Name	URL	Country	Continent	Distance	Selection
1.	Sahil Dhiman	https://mirrors.in.sahillister.net/kde/	IN	AS	715 Km	25%
2.	Albony Mirror	https://mirror.nag.albony.in/kde/	IN	AS	715 Km	25%
3.	Saswata Sarkar	https://mirrors.saswata.cc/kde/	IN	AS	745 Km	25%
4.	mirror.maa.albony.in	https://mirror.maa.albony.in/kde/	IN	AS	1020 Km	24%

<https://download.kde.org/stable/krita/5.2.9/krita-5.2.9-release.dmg?mirrorlist>

Let's talk Deb(ian) Now

- Package mirror ie archive
- ISO mirror

Package Distributions

- Source for `apt install/updates/upgrades`
- Mostly via Fastly ie <https://deb.debian.org> or AWS <https://aws.debian.org> nowadays.
- In India, NIT Calicut hosts the only public mirror now at <https://mirror.nitc.ac.in>
- Mirror hierarchy at <https://mirror-master.debian.org/status/mirror-hierarchy.html> and explanation at <https://blog.sahilister.in/2024/12/debian-mirrors-hierarchy/>



Phil

@phil@social.kern.pm

@maswan @sahil Fastly is serving between 150 (weekend)-350 (weekday) TB/d in archive content (including security). According to their data, they are serving 2 PB/week for us. To give an order of magnitude. I'm very grateful to Fastly here!

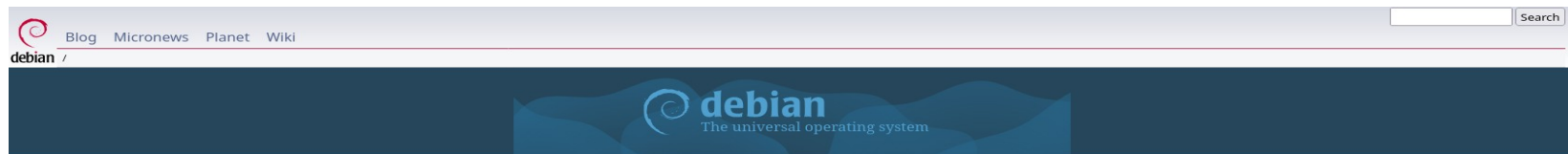
Dec 23, 2024, 11:06 PM · 🌐 · Tusky

Last edited Dec 23, 11:06 PM

1 boost · 3 favorites

<https://social.kern.pm/@phil/113703346936523507>

ISO downloads



THE COMMUNITY

Debian is a Community of People!

DC25 Group Photo



People

Who we are and what we do

THE OPERATING SYSTEM

Debian is a complete Free Operating System!



Why Debian

What makes Debian special

<https://cdimage.debian.org/debian-cd/current/amd64/iso-cd/debian-13.2.0-amd64-netinst.iso>

`https://cdimage.debian.org` is served via Academic Computer Club in Umea, Sweden

Network

All machines are reachable via both IPv4 and IPv6 and connected with 10 or 25 gigabit ethernet, external bandwidth available is 200 gigabit/s.

Current and historical [bandwidth graphs](#) for the frontends.

`https://mirror.accum.se/about/index.html`

Who runs mirrors?

- Individuals
- Universities
- Datacenter and ISPs
- Enterprises

North India

- Bharat Datacenter - mirror.bharatdatacenter.com (AS151704)
- Cyfuture - cyfuture.dl.sourceforge.net (AS55470)
- Extreme IX - repo.extreme-ix.org | repos.del.extreme-ix.org (AS135814)
- Hopbox - mirrors.hopbox.net (AS10029 | [Statistics](#))
- IIT Delhi - mirrors.iitd.ac.in (AS132780)
- Institute of Engineering and Technology Lucknow - mirror.ietlucknow.ac.in (AS55824)
- Naman Garg - in-mirror.garudalinux.org (AS133661)
- NKN - debianmirror.nkn.in (AS4758)
- Nxtgen - mirrors.nxtgen.com (AS132717)
- Saswata Sarkar - mirrors.saswata.cc (AS132453 | [Statistics](#))
- Shrirang Kahale - mirror.del.albony.in (AS135814 | [Statistics](#))
- Shiv Nadar Institution of Eminence - ubuntu-mirror.snu.edu.in (AS132785)

East India

- NISER Bhubaneshwar - mirror.niser.ac.in (AS141288)
- Shrirang Kahale - mirror.ajl.albony.in (AS141253 | [Statistics](#))

<https://blog.sahilister.in/2024/10/free-software-mirrors-in-india/>

South India

- Cogan Ng - in.mirror.coganng.com (AS31898)
- CUSAT - foss.cusat.ac.in/mirror (AS55824)
- Excell Media - centos-stream.excellmedia.net | excellmedia.dl.sourceforge.net (AS17754)
- IIT Madras - ftp.iitm.ac.in (AS141340)
- Niranjan Fartare - in.arch.niranjan.co (AS141340 | [Statistics](#))
- NIT Calicut - mirror.nitc.ac.in (AS55824 | [Statistics](#))
- NKN - mirrors-1.nkn.in (AS148003)
- Planet Unix - mirror.planetunix.net | ariel.in.ext.planetunix.net (AS14061)
- Shrirang Kahale - mirror.hyd.albony.in (AS24560 | [Statistics](#))

<https://blog.sahilister.in/2024/10/free-software-mirrors-in-india/>

West India

- Abhijith PA - mirrors.abhijithpa.in (AS141995 | Statistics)
- Abhinav Krishna C K - mirrors.abhy.me (AS31898 | Statistics)
- Arun Mathai - mirrors.arunmathaisk.in (AS141995 | Statistics)
- Avinash Duduskar - mirror.4v1.in (AS24560)
- Balvinder Singh Rawat - mirror.ubuntu.bsr.one (AS31898)
- ICTS - cran.icts.res.in (AS134322)
- Navaneeth - mirror.fossindia.ovh (AS141995)
- PicoNets-WebWerks - mirrors.piconets.webwerks.in | webwerks.dl.sourceforge.net (AS133296)
- Ravi Dwivedi - mirrors.ravidwivedi.in (AS141995 | Statistics)
- Sahil Dhiman - mirrors.in.sahilister.net (AS141995 | Statistics), 2.mirrors.in.sahilister.net (AS141995 | Statistics)
- Shrirang Kahale - mirror.bom.albony.in (AS24560 | Statistics), mirror.bom2.albony.in (AS135814 | Statistics), mirror.nag.albony.in (AS24560 | Statistics)
- Starburst Services - elrepo.in.ssimn.org (AS141995)
- Utkarsh Gupta - mirrors.utkarsh2102.org (AS31898 | Statistics)

<https://blog.sahilister.in/2024/10/free-software-mirrors-in-india/>

CDN (or behind one)

- Alibaba Cloud - mirrors.aliyun.com (AS21859)
- AlmaLinux OS Foundation - blr.aws.repo.almalinux.org (AS16509)
- Amazon Cloudfront - cdn-aws.deb.debian.org (AS16509)
- Chirag Sukhala - mirrors.sukhala.in (AS13335 | [Statistics](#))
- Cicku - in.mirrors.cicku.me (AS13335)
- CIQ - rocky-linux-asia-south1.production.gcp.mirrors.ctrlq.cloud | rocky-linux-asia-south2.production.gcp.mirrors.ctrlq.cloud (*GeolP doubtful. Could be behind a CDN or single node*) (AS396982)
- Cloudflare - cloudflare.cdn.openbsd.org | kali.download (AS13335)
- Fastly - cdn.openbsd.org | deb.debian.org | dlcdn.apache.org | dlcdn.alpinelinux.org | fastly.linuxmint.io | images-cdn.endlessm.com (*sponsored?*) | repo-fastly.voidlinux.org (AS54113)
- Niranjana Fartare - termux.niranjana.co (AS13335)
- Sahil Kokamkar - mirror.sahil.world (AS13335)
- Tencent - mirrors.cloud.tencent.com (AS21859)

<https://blog.sahilister.in/2024/10/free-software-mirrors-in-india/>

How it's done

- rsync + cron – to get data/static files
- A webserver (nginx good!)
- Lots of bandwidth (depending on projects chosen)
- Need plenty of projects need it (let's talk)

OpenMirror

Zero-config Open Source Mirror Hosting.
Select your mirrors, configure settings, and get your setup script.

1. Global Settings

Server Name (Domain)

☒ Use Default (⌵)

If "Use Default" is checked, this server will handle all unmatched requests (and remove default Nginx config).

Web Root Path

Where files will be stored and served from.

☒ Enable Analytics (GoAccess)

Sync Frequency

How often the mirrors should update from upstream.

Sync Start Hour (0-23)

The first mirror will sync at this hour. Subsequent mirrors will be staggered by 30 minutes to prevent upstream overload. (Default is random).

2. Select Mirrors

Ubuntu

Official Ubuntu Archive Mirror

Upstream: [rsync://archive.ubuntu.com/ubuntu](https://archive.ubuntu.com/ubuntu)

[Official Registration Info](#) ➔

Add

Generated Script

Refresh Preview

```
#!/bin/bash
# OpenMirror Setup Script
# Generated on 2025-12-13T05:16:55.237Z

set -e

# 1. Install Dependencies
echo "Installing dependencies..."
apt-get update
apt-get install -y nginx rsync goaccess cron

# 2. Create Web Root
echo "Creating web root at /var/www/html..."
mkdir -p /var/www/html
chown -R www-data:www-data /var/www/html

# 3. Configure Nginx
echo "Configuring Nginx..."
cat <<EOF > /etc/nginx/conf.d/openmirror.conf
server {
    listen 80;
    server_name _;

    root /var/www/html;
    autoindex on;

    access_log /var/log/nginx/openmirror_access.log;
    error_log /var/log/nginx/openmirror_error.log;

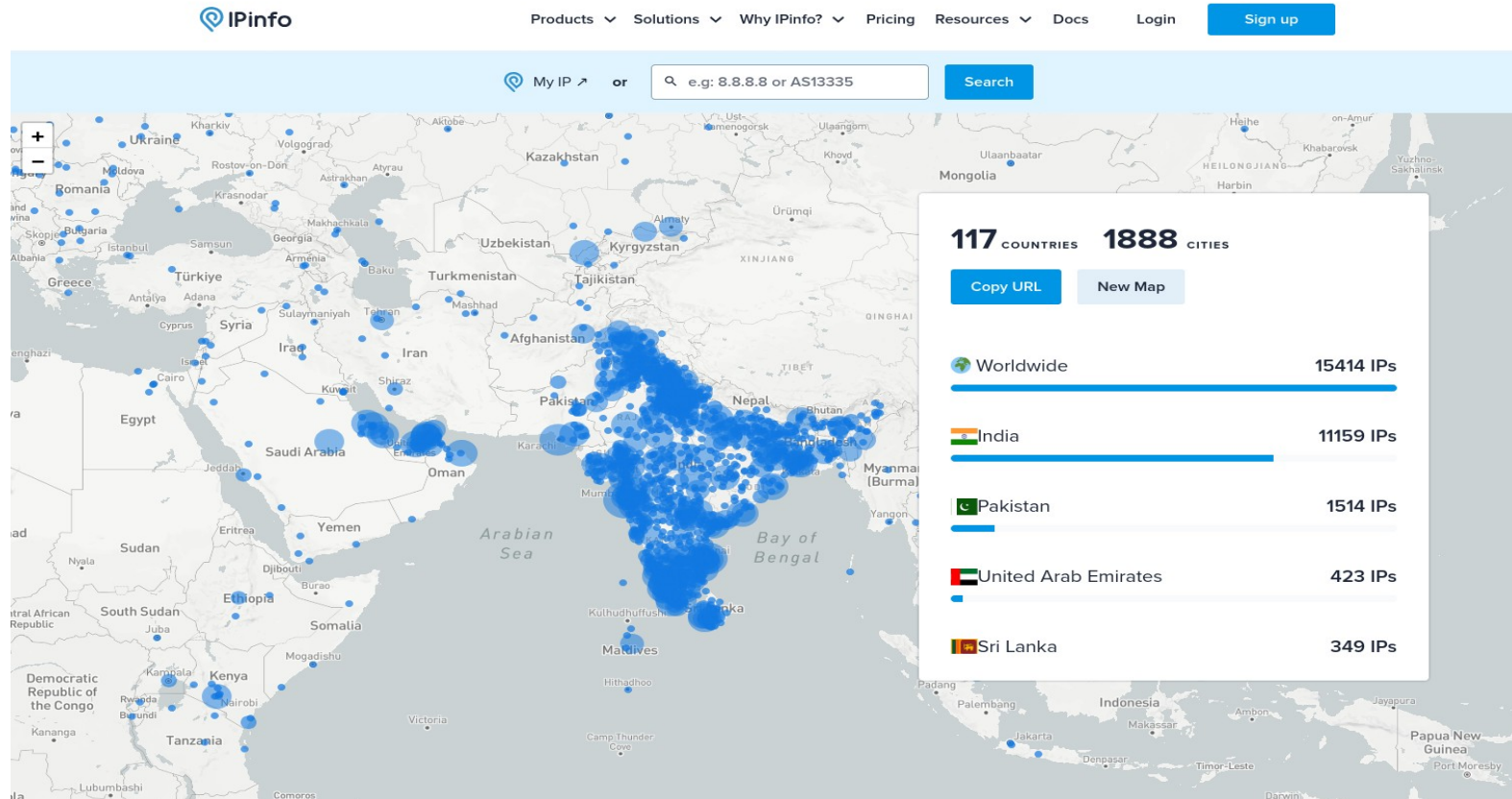
    location / {
        try_files \$uri \$uri/ =404;
    }

    location /stats.html {
```

<https://github.com/ChiragSukhala/OpenMirror>

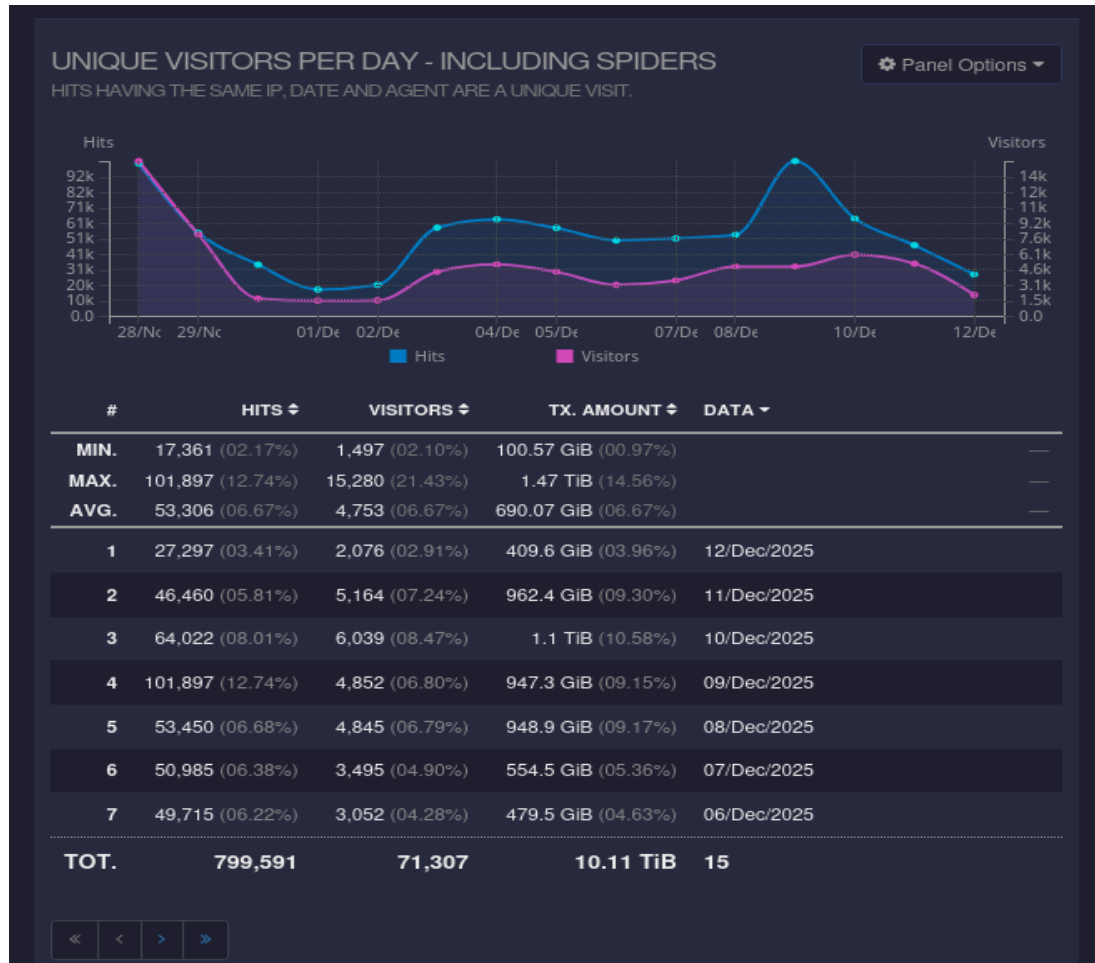
Let's talk operational trends

India mirror traffic GeolP visualization



Full map at <https://ipinfo.io/tools/map/97db4110-d56a-404c-8f15-8963b2e1d1ea>

Some download trends*



From <https://mirrors.in.sahilister.net/stats/overall.html>

* basis mirror traffic on my IN mirror

Why?

Read more

- Setting up a Debian archive mirror <https://www.debian.org/mirror/ftpmirror>
- Debian Mirrors Hierarchy <https://blog.sahilister.in/2024/12/debian-mirrors-hierarchy/>
- KDE mirrors how to https://kde.org/mirrors/ftp_howto/
- Free Software mirrors in India <https://blog.sahilister.in/2024/10/free-software-mirrors-in-india/>
- First Iteration of My Free Software mirror <https://blog.sahilister.in/2024/06/first-iteration-of-my-free-software-mirror/>

Thank you!

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