# Philippines Ubuntu Mirror Initiative

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2025.03.25

# What is Ubuntu?

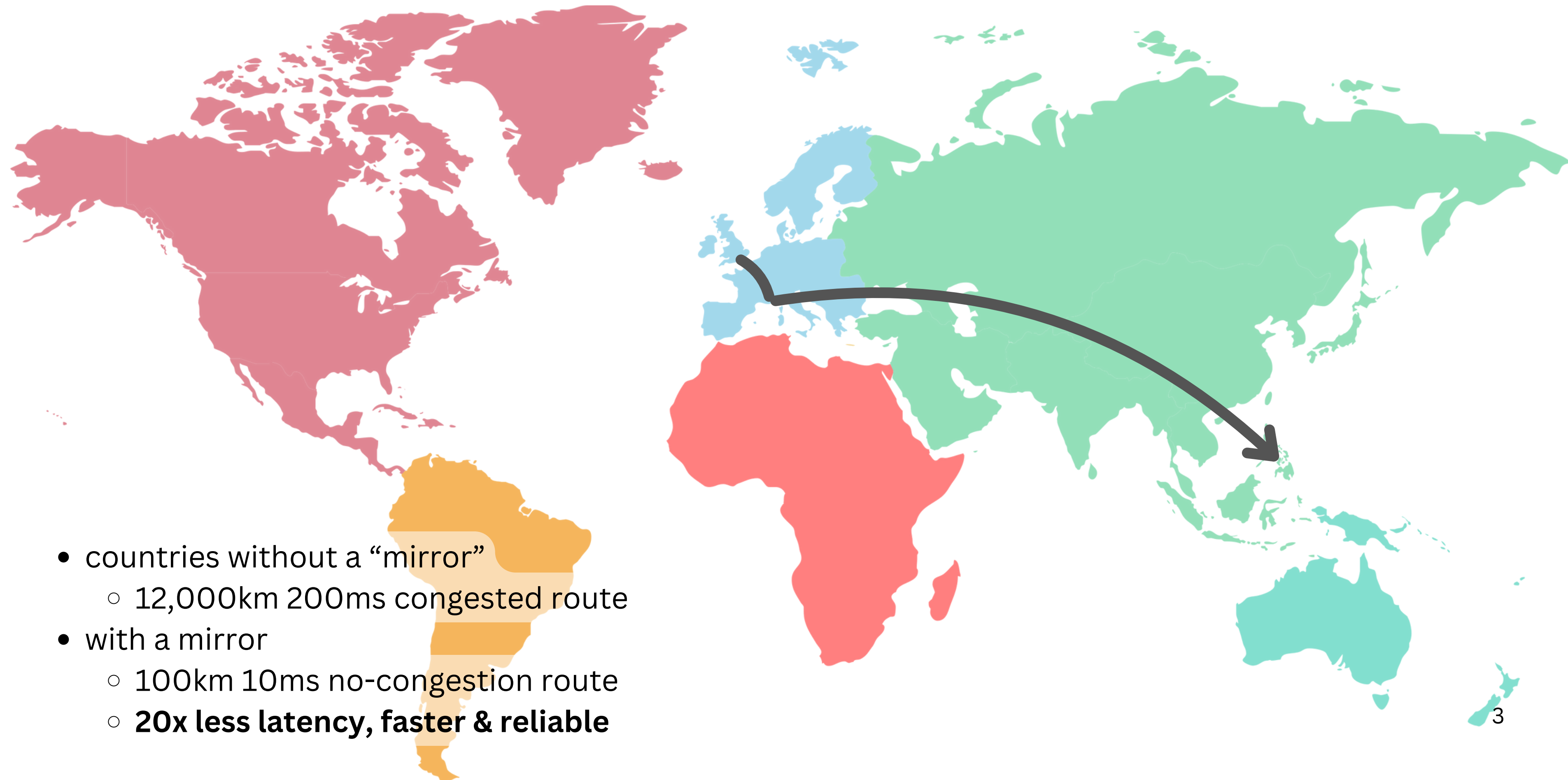The most popular Free and Open Source operating system for laptop, server and devices
- specialised editions for education, content editing, simple vs advanced interfaces
- no cost, restrictions, lock-in or licensing
- source code and freedom to audit, copy, learn and contribute
- built on GNU/Linux, runs ~90% of worldwide devices from phones, televisions, servers and supercomputers

Why is Ubuntu important?
- allows full and unlimited use of their devices, old and new

**On a poor internet connection, installing and updating is unreliable or slow**

# Why slow/unreliable downloads?



- countries without a "mirror"
  - 12,000km 200ms congested route
- with a mirror
  - 100km 10ms no-congestion route
  - **20x less latency, faster & reliable**

# How to deploy a mirror service?

1. check if your country already has a mirror service
2. find organisations with mission overlap ie willing to host
   a. government, academic or commercial
3. help raise awareness
4. donate suitable hardware



expensive!

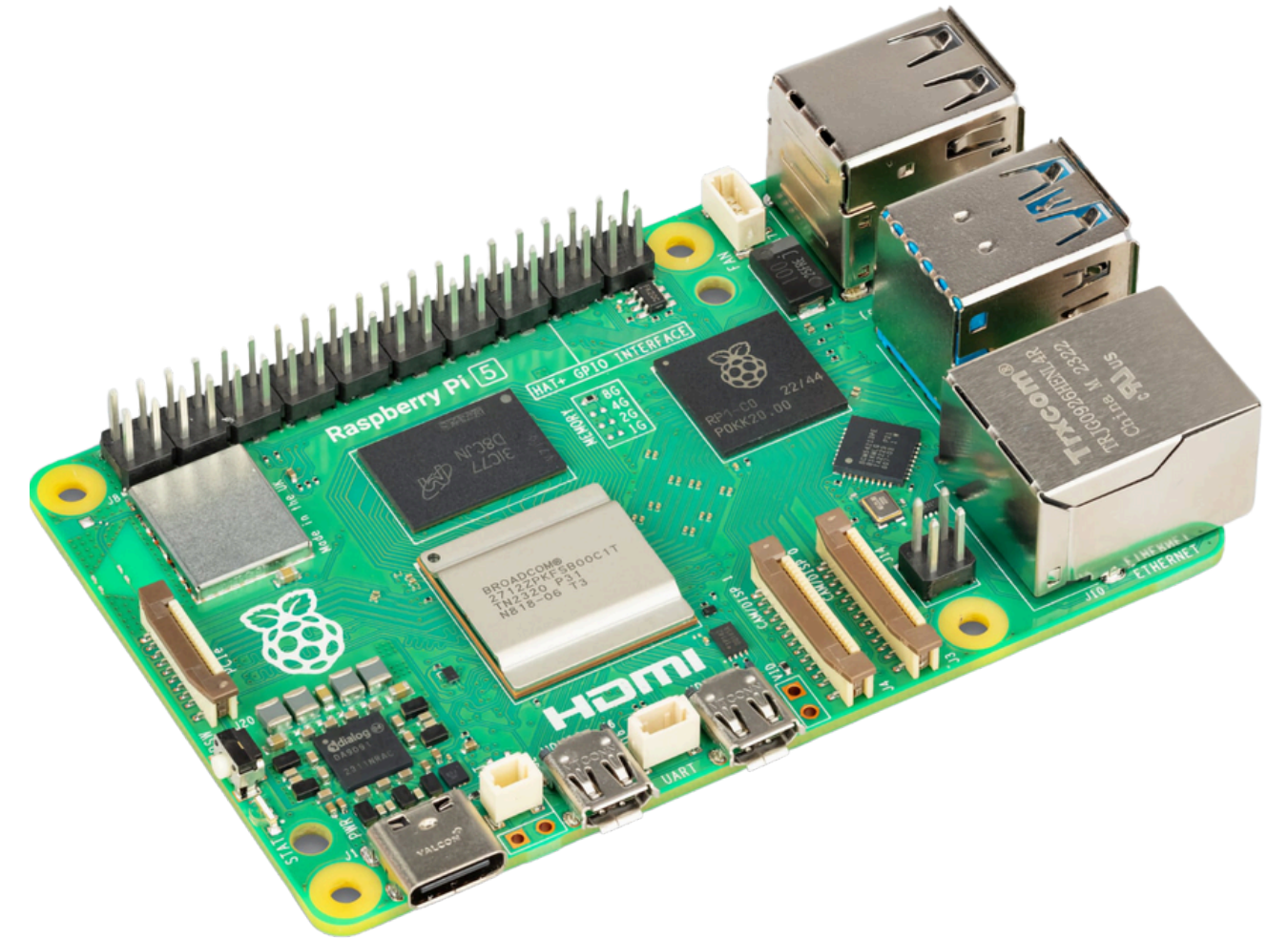## France has an in-country mirror

```
❯ ping fr.archive.ubuntu.com
PING ubuntu.lafibre.info (51.158.154.169) 56(84) bytes of data.
64 bytes from fr.archive.ubuntu.com (51.158.154.169): icmp_seq=1 ttl=50 time=11.5 ms
```

## Philippines has no in-country mirror

```
❯ ping ph.archive.ubuntu.com
PING ph.archive.ubuntu.com (185.125.190.82) 56(84) bytes of data.
64 bytes from ubuntu-mirror-2.ps5.canonical.com (185.125.190.82): icmp_seq=1 ttl=52 time=193 ms
```

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# Raspberry Pi 5

- Latest generation supports 4-8TB NVMe drives
- 16GB DRAM, 4TB SSD, total cost ~USD500
- Low component count, ~16 year Mean Time Between Failure
- Runs Ubuntu

# Reliability?

- Classical approaches
  - redundant disks, power supplies, power connections, battery backup
- Alternative via the AnyCast routing protocol
- Just deploy more servers in different locations
- Geographic diversity
- Already widely used (Google DNS)

# Quantifying efficacy

- Statistics to allow insight
- Connection IP addresses
  - Resolve to geographical areas, plot on map
  - Download speed/latency?
- Network utilisation
- Unique service users
  - IPs not useful due to NAT and movement
  - single update download count
- Long-term trends show uptake of Ubuntu
- Store time-series data for insight analysis
- Privacy via aggregation

# Setting a precedent

- Engaged Philippines government Dept of Sci and Tech
- Trial of 2 mirror nodes + 1 test unit
  - add more if 100% utilisation seen
- Collection of usage data for project efficacy
- Present findings in later technical paper
- Publish setup and tuning steps for everyone
- Engage Philippines Dept of Ed
- Ecological impact - TCO, manufacturing, UX

# Questions?

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