AIORI Standards Hackathon
FunnyCast

AIORI-2

HACKATHON 2025

GRAND FINALE

12-13 Nov, 2025

Hackathon Plan

- Our Problem Statement (06) focuses on Anycast Flipping and how it effects CDN driven Web Performance - especially metrics like FCP

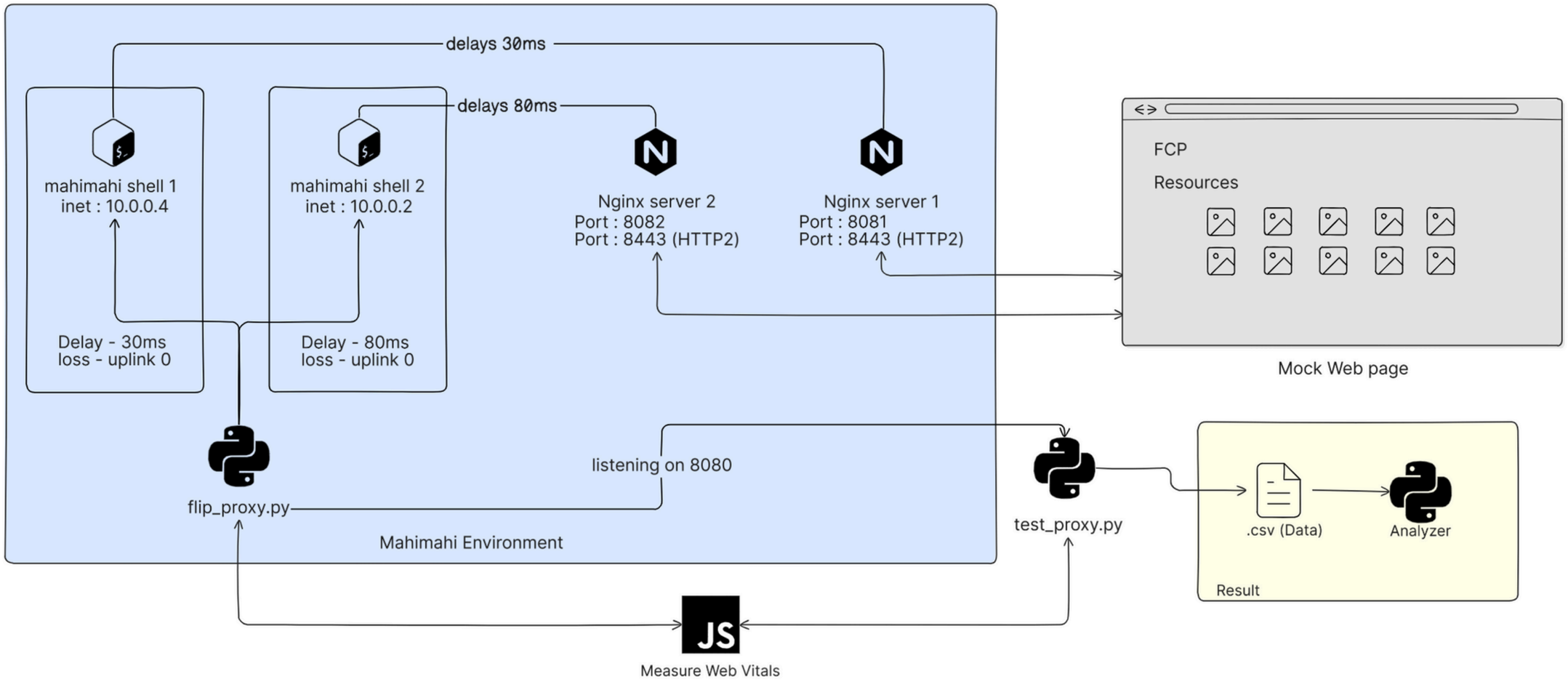
RFC/Drafts used -

- RFC 4786 – Operation of Anycast Services, Characterizing Anycast Flipping: Prevalence and Impact by Xiao Zhang.
- The flipping causes latency, instability in web performance.

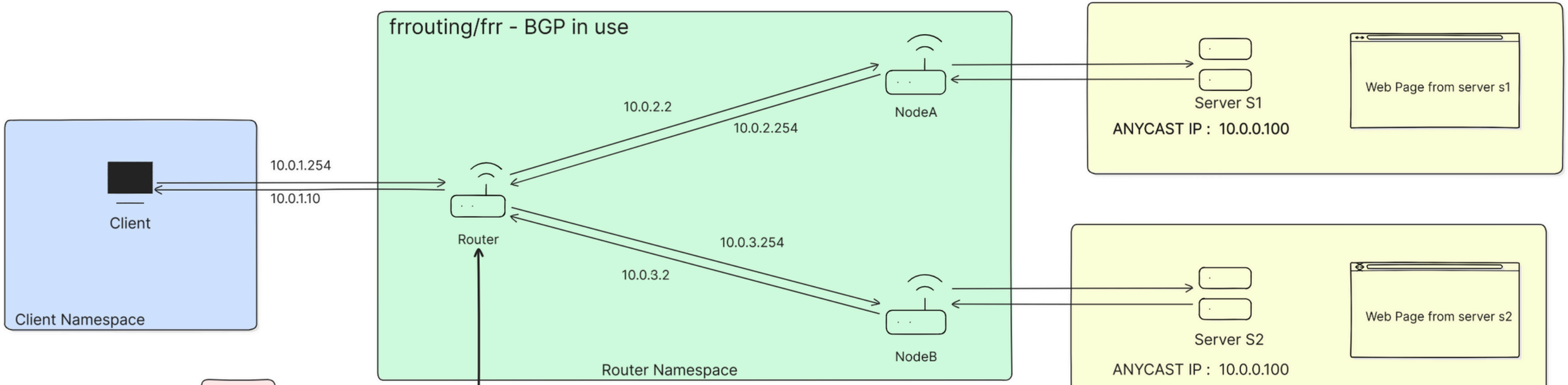
Approach -

- Mahimahi-Based Anycast Flip Emulation with Nginx and Web Vitals Measurement
- Docker-Based Anycast Flip Simulation Using FRRouting with BGP

Nginx servers inside Mahimahi shells



Docker containerization with specific ASNs



anycast_flip.sh

Makes changes in the router/frr.conf To change preferences between nodea and nodeb

```
case "$1" in
nodea)
    flip_to_nodea
    ;;
nodeb)
    flip_to_nodeb
    ;;
equal)
    set_equal_preference
    ;;
```

anycast_manager.sh

Checks Health of NodeA , NodeB and accordingly tells to flip preference

What got done

What you achieved

We have successfully demonstrated the difference between HTTP/1.1 and HTTP/2 under flip conditions

New Ideas -

- We implemented network node simulations inside containers which mitigates the limitation of getting global probes or getting ASNs

Github Link -

- Github Repository

Architecture -

We have a docker based comprehensive architecture where containers interact based on specific ASN, IP pairing.

Demos -

Youtube Link

What we learned

Lessons learned -

- We found out ways in which we can generate real world testing datasets with minimal cost.

RFCs Limitation -

- The RFCs/drafts is not providing a testing codebase. They use probes by RIPE Atlas or Brightdata which can be an overhead.
- Instead of using routers deployed distinctly we can have containerised virtual machines running .

New Work to take to WG -

- We have a full setup with configurations running efficiently which implements anycast flipping.

Wrap Up

Team FunnyCast

Team members:

- Jhalak Dutta (Mentor)
- Aayushmaan
- Sanchayan Khan

from Heritage Institute of Technology, Kolkata

Github repo - https://github.com/heres-aayush/FunnyCast
Documentation - https://docs.google.com/document/d/1-uFeC7B5LJ4hgEFsKNKpbJyWdwnLC1os/edit#heading=h.lbcg5xl07q8u
Medium Blog Post -
https://medium.com/@sanchayan.khan18/simulating-anycast-flips-measuring-cdn-web-performance-and-user-experience-impact-7a6cb62d951f

LinkedIn Handles -
https://www.linkedin.com/in/jhalak-dutta-hitkcse/
https://www.linkedin.com/in/heresaayush/
https://www.linkedin.com/in/sanchayan-khan/