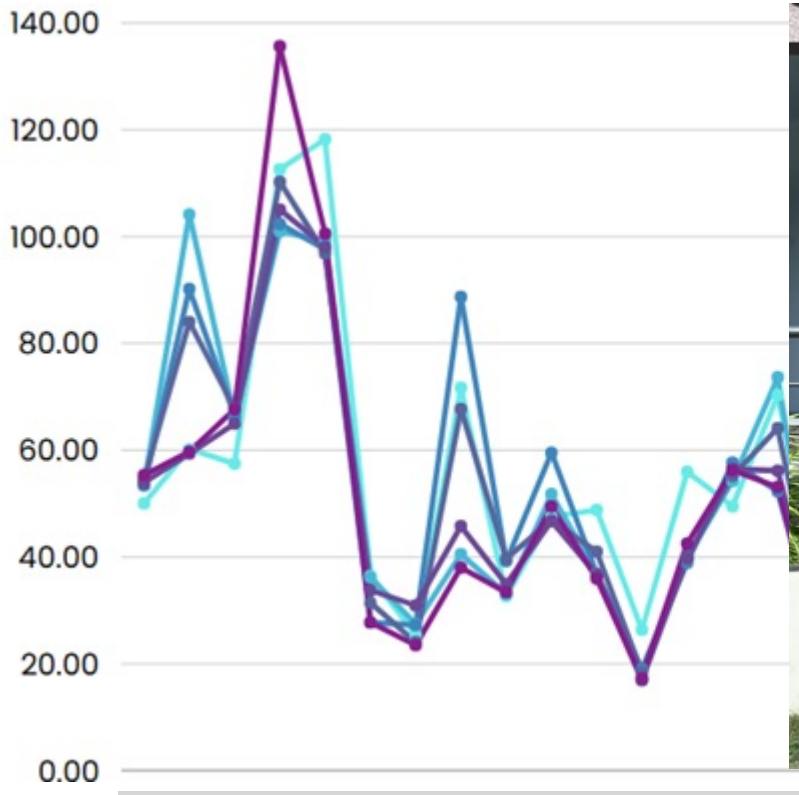
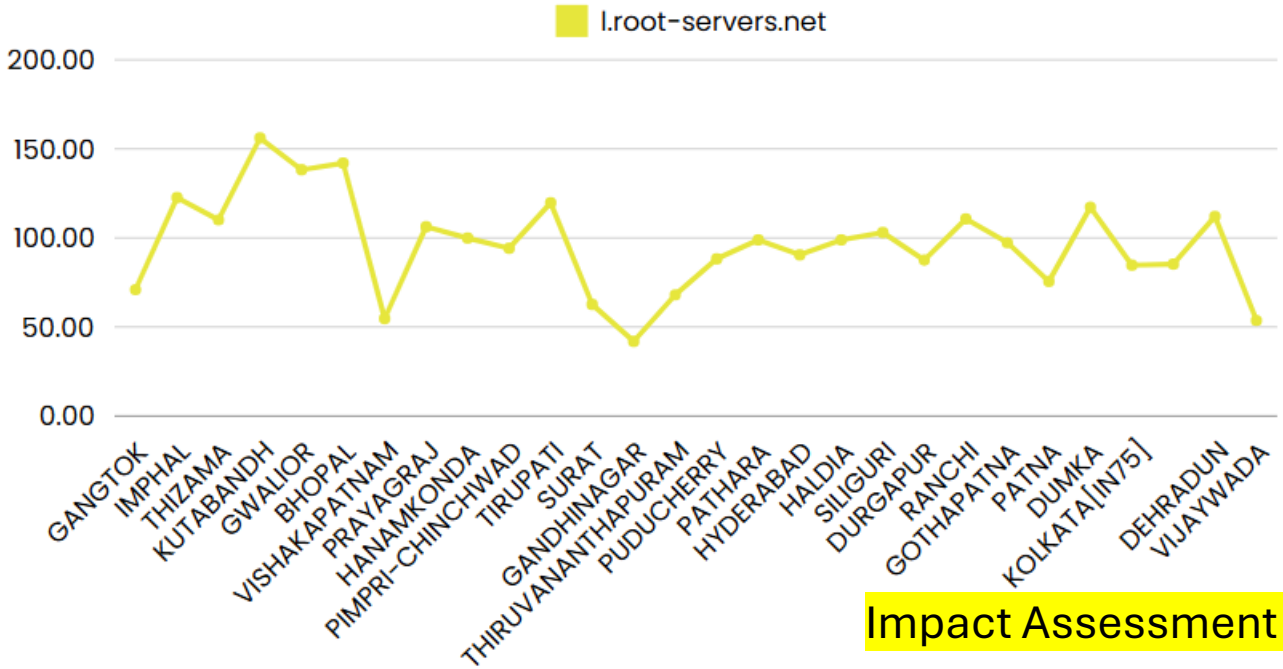
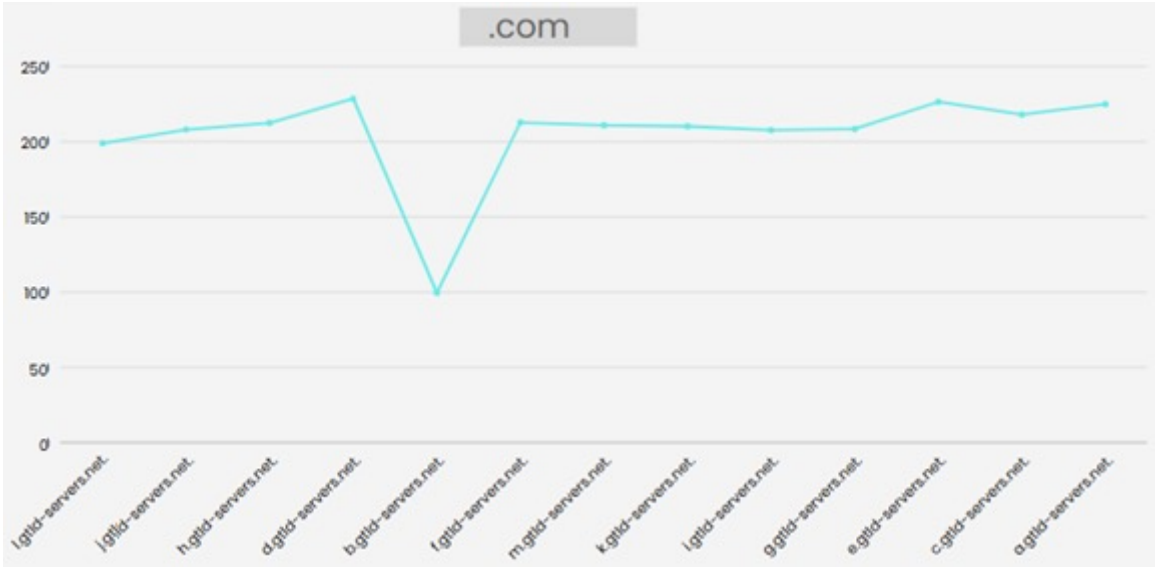


The AIORI
Internet Measurement Platform

Presentation For:

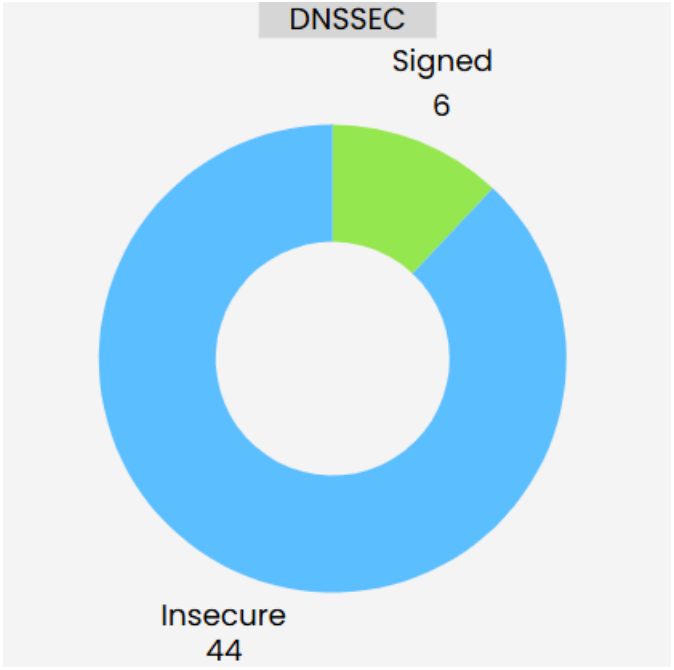
Internet Society Pulse

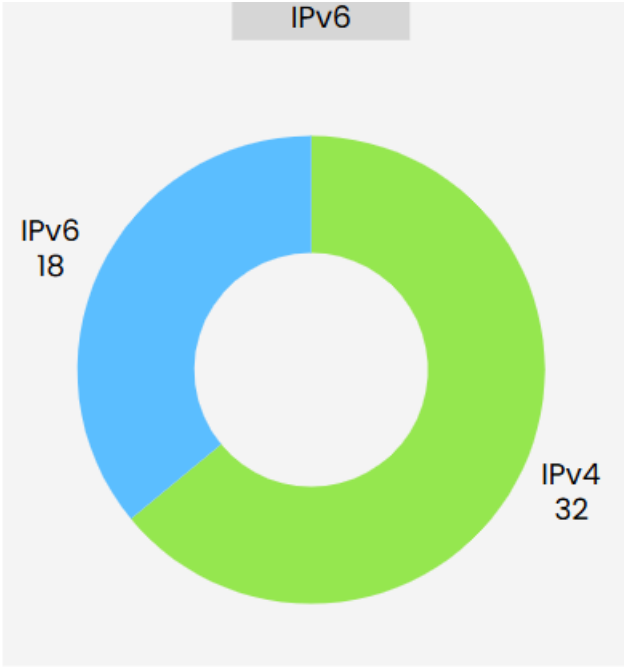


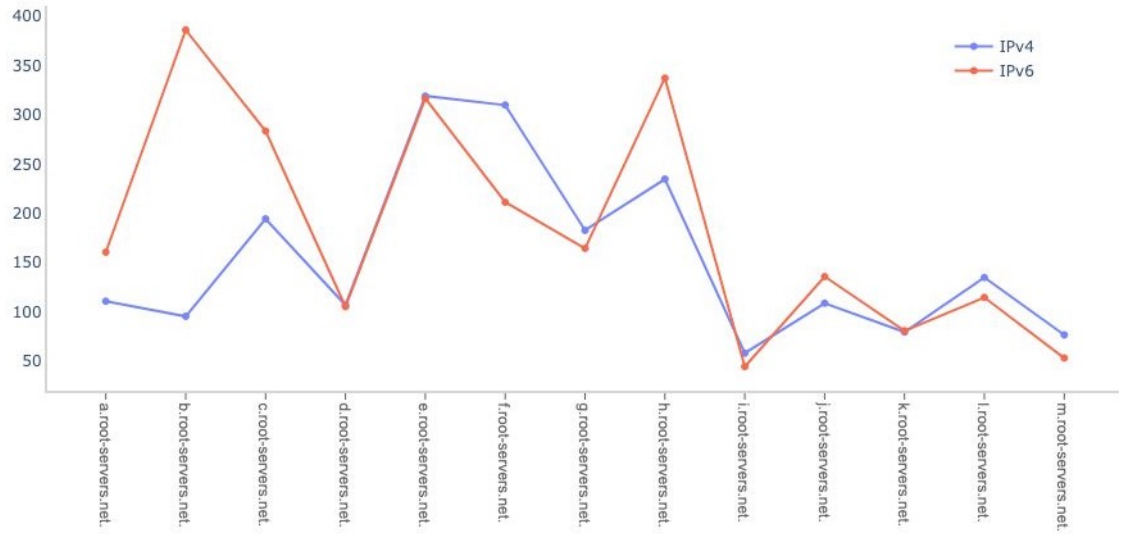


KOLKATA[IN75]

Impact Assessment - Service Delivery





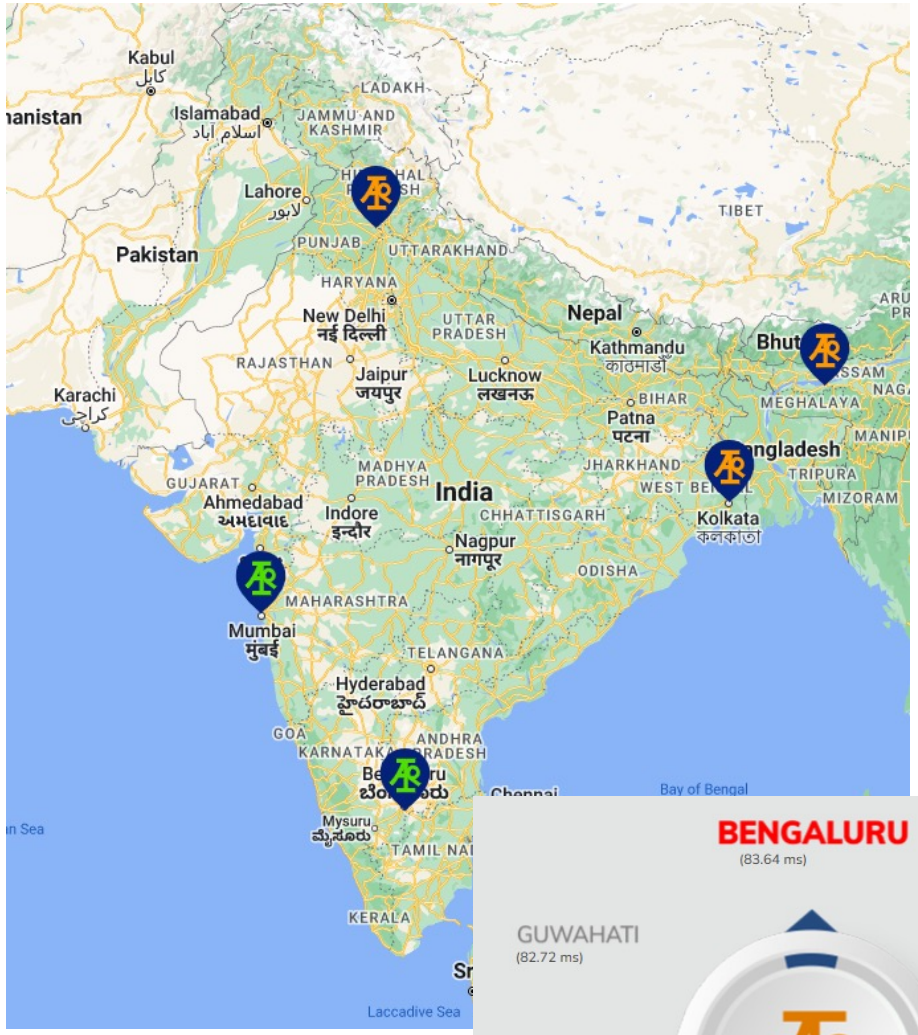


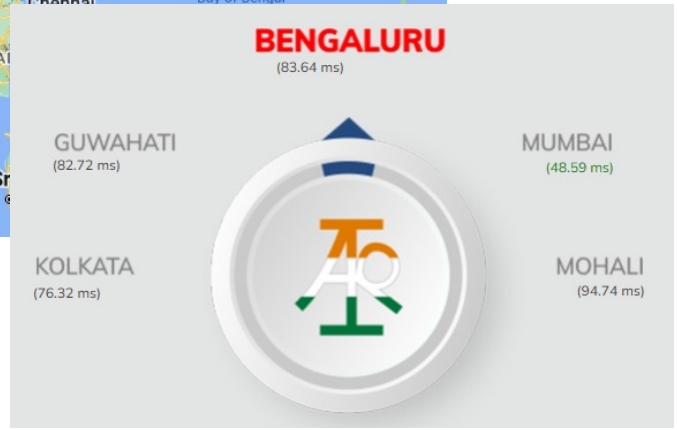
KOLKATA[IN75]

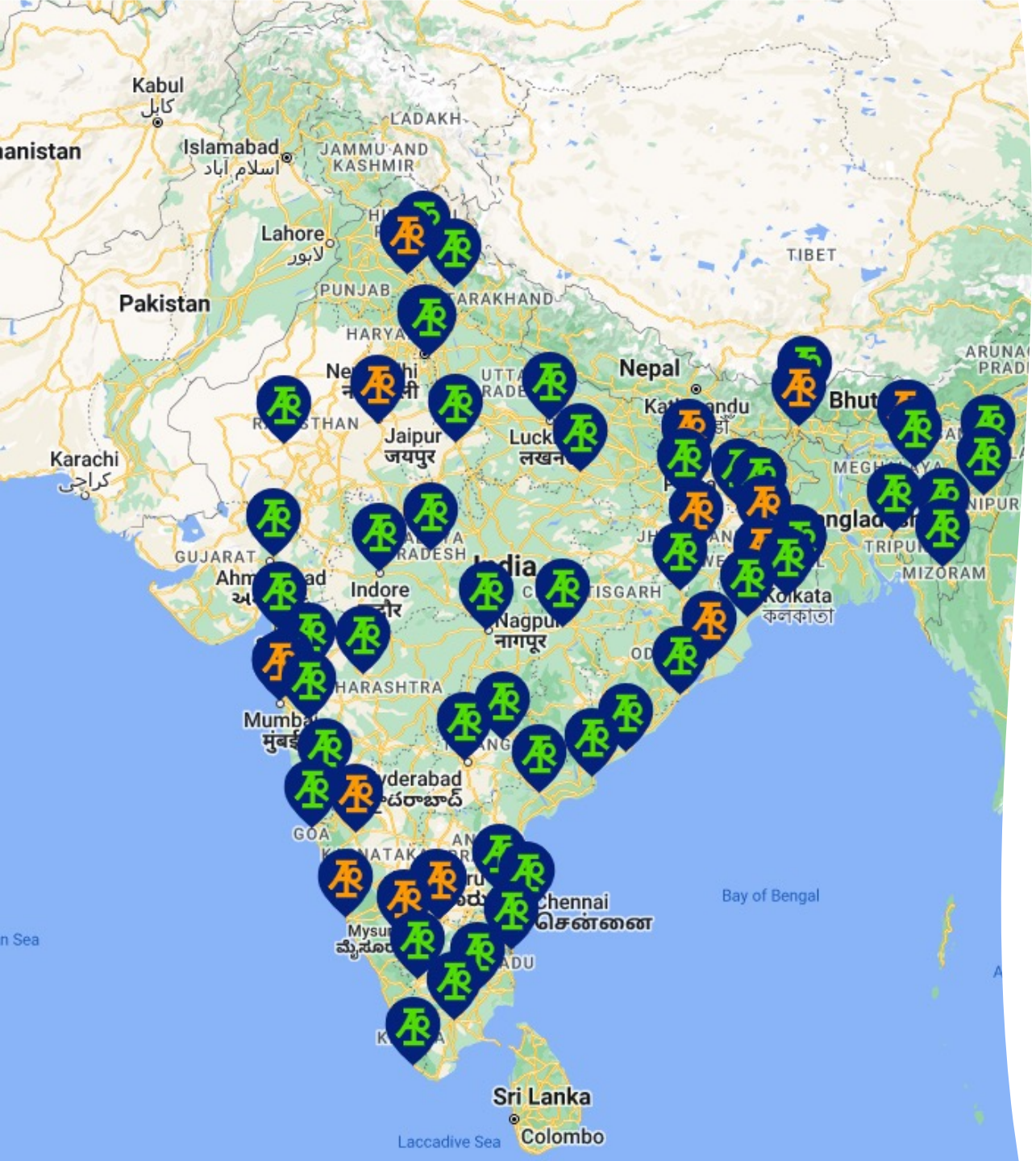
Anycast Testbed

ANYCAST PRIVATE CLOUD Infrastructure

- In Five Locations across INDIA
- This is helping us measure the local interconnection availabilities and uncover the issues related to resilient functioning of Internet.
- We are adding more academic institutions to host the testbed for more research initiatives to be taken up from academia.
- This testbed is giving us insights of building resilient services and researching on fututistic models of deployment.







ANCHOR NETWORK

- Edge Measurement Devices
- In 100+ locations across India
- This is helping us measure from user endpoints

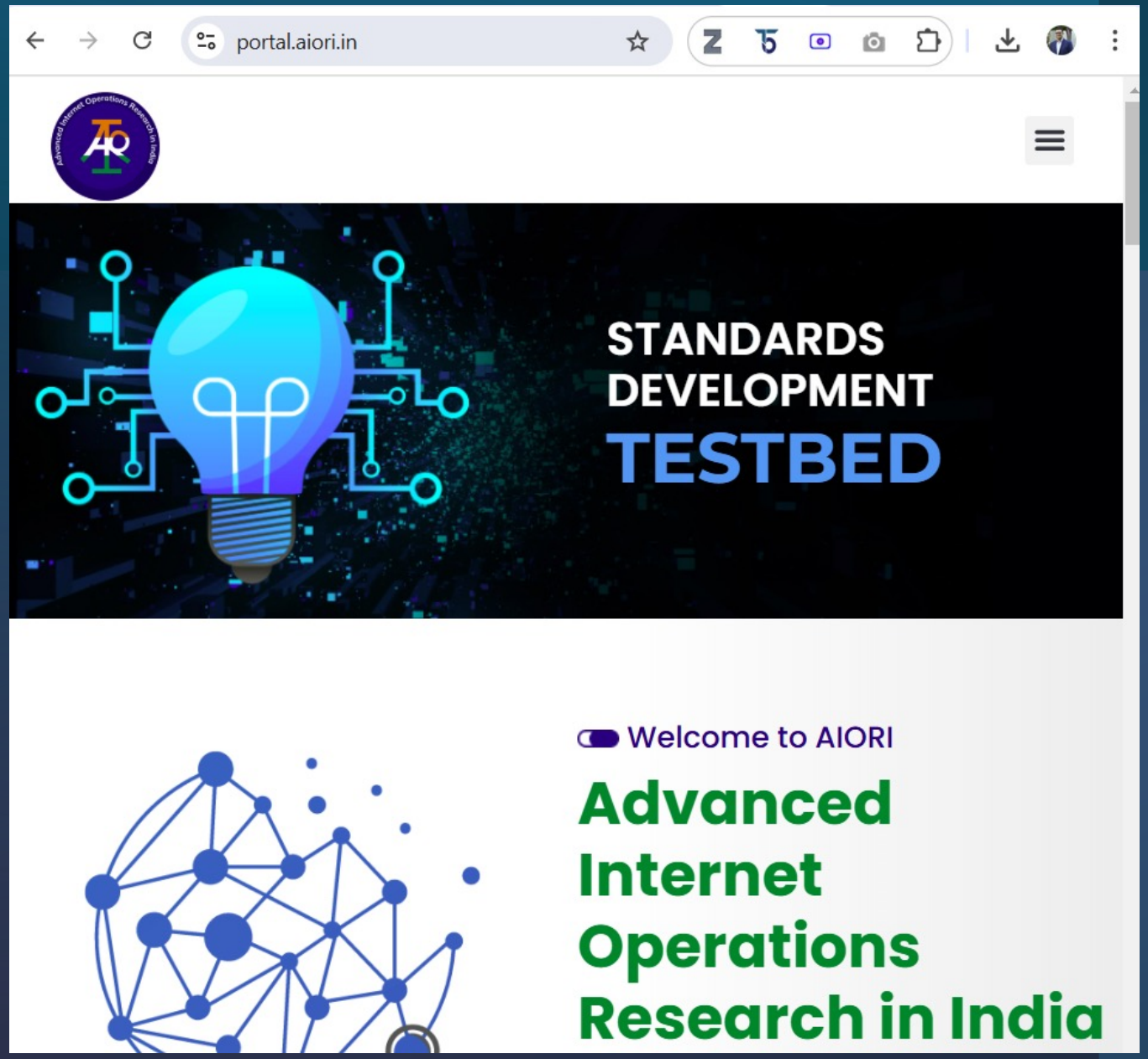
Chennai


Mumbai


Noida


Guwahati


Kolkata



https://portal.aiori.in/

Agenda

- The Need assessment
- Key Architectural Considerations
- Key Attributes and Differentiators
- Measurement Tasks
- Components of High-Level Architecture
- The AIORI-IMN Layered Architecture
- Task Execution Flow
- The Distributed Microservices
- The Task Scheduling Algorithm
- Results
- References

The need assessment and key architectural considerations

- End-to-end measurements
- Easy to integrate new measurement modules
- Interoperable
- Cohesive Modules
- Reference architecture for product prototyping
- Internet Standards development platform

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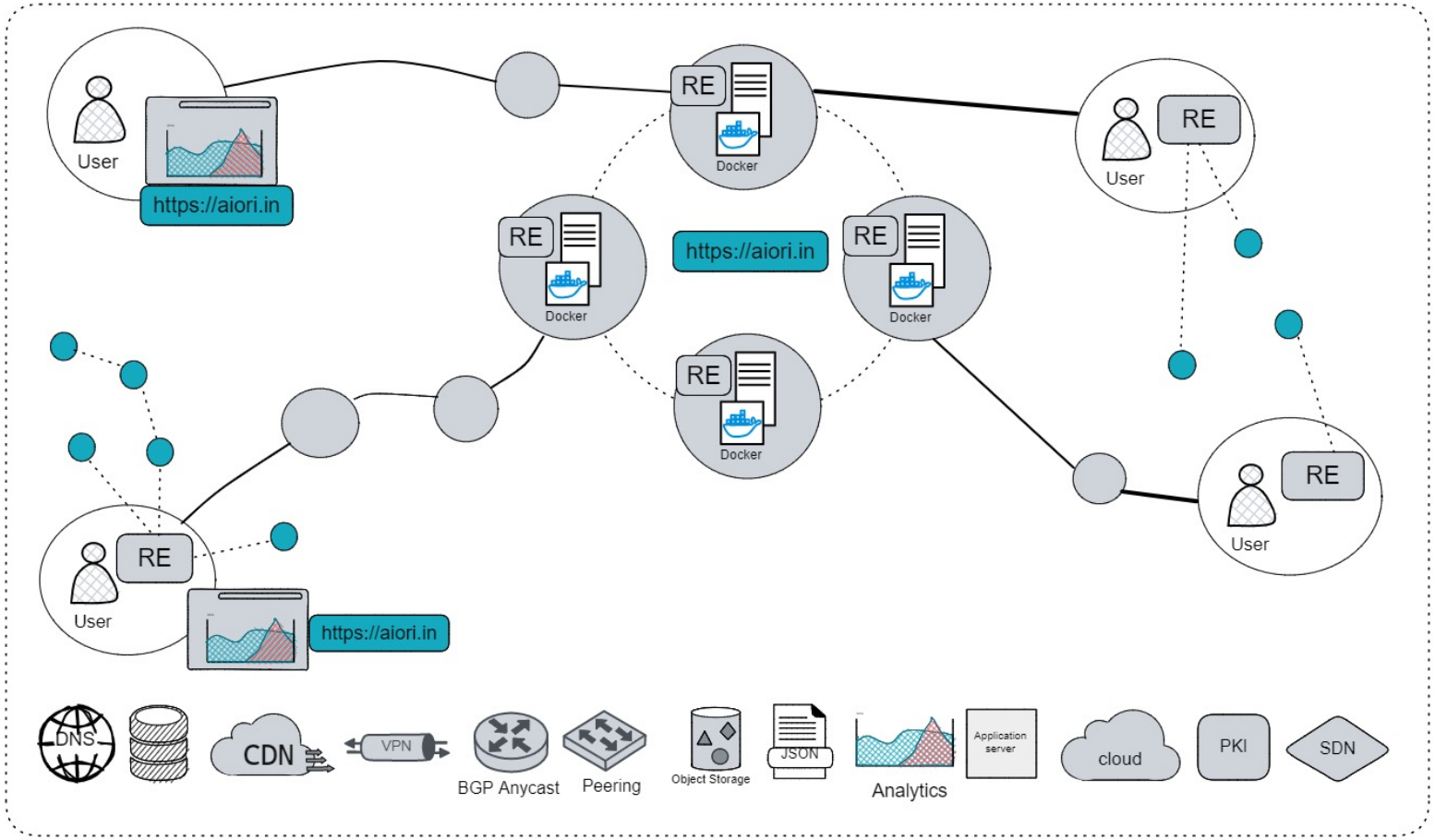
Measurement Tasks

The measurement tasks in AIORI-IMN platform can be one of the following:

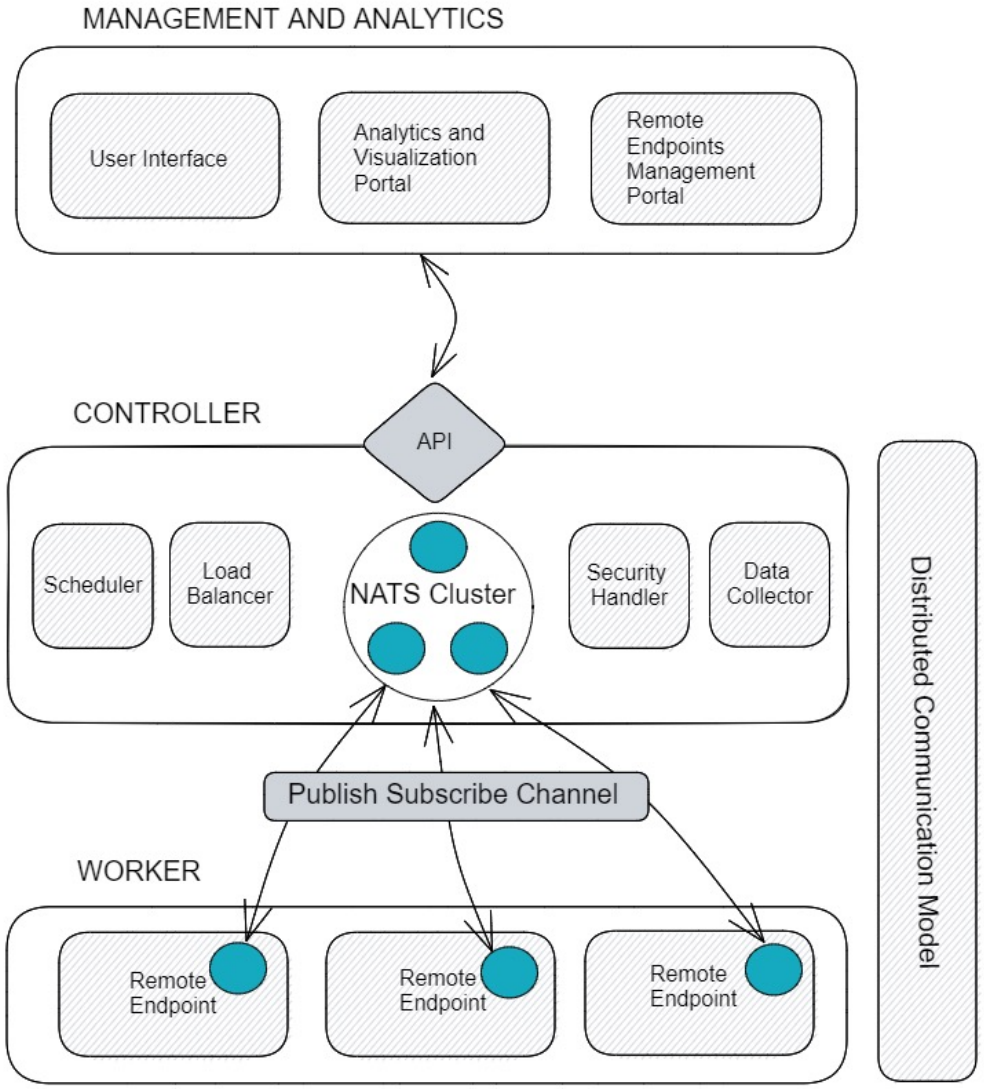
- Tasks based on commands like ping, traceroute etc.
- Tasks based on Protocols like ICMP, DNS, DNSSEC, HTTP, TLS etc.
- Tasks based on implementation of Protocols from new RFCs

The task uses using reference implementations is detailed in IEEE paper “The Internet Measurement Network (AIORI-IMN)” DOI: 10.1109/I3CS58314.2023.10127255

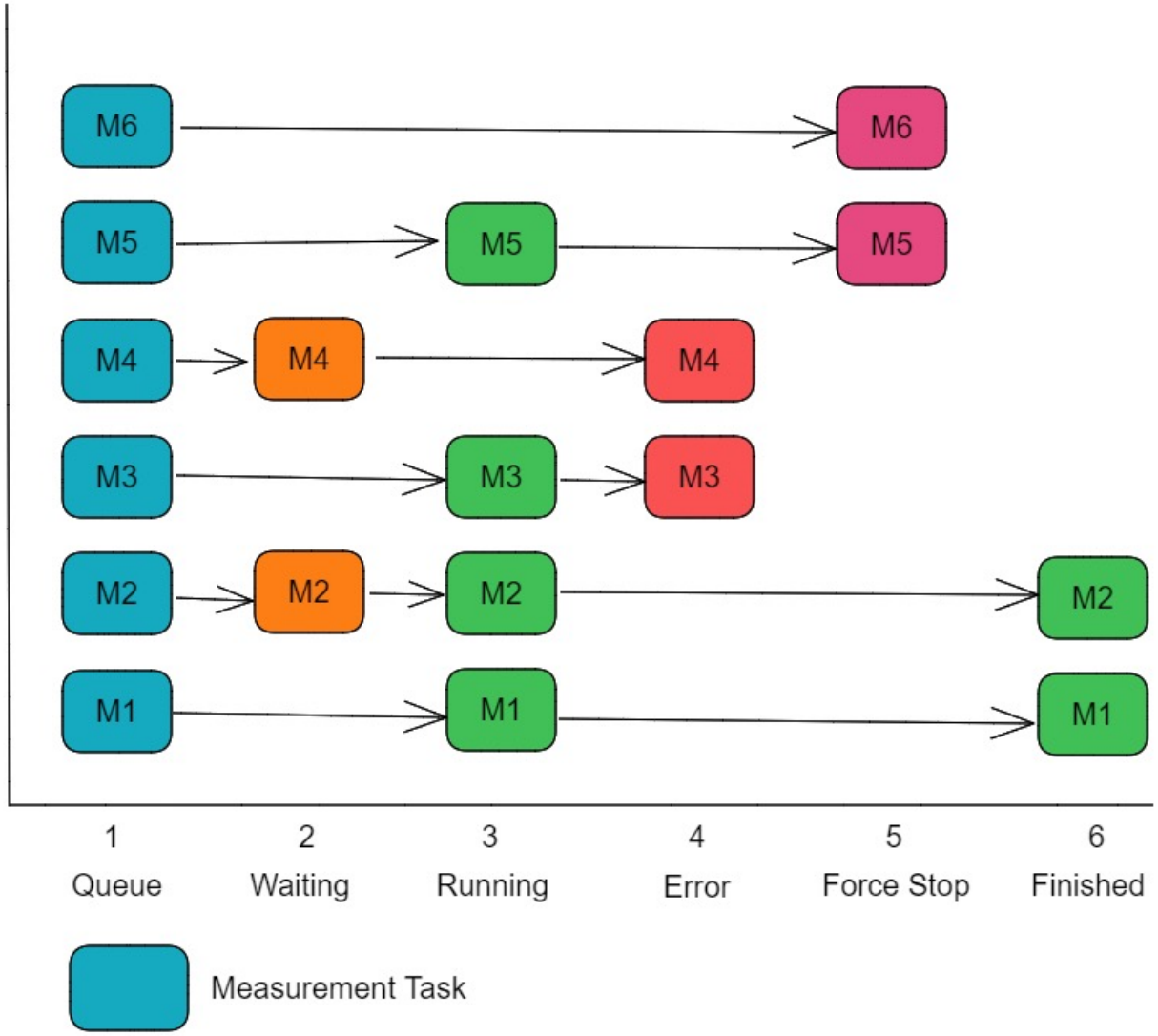
Components of High-Level Architecture



The AIORI-IMN Layered Architecture



The task Scheduling Algorithm



Results

Description	Statistics	Remarks
Anycast Server (DNS, CDN, Cloud)	5	Kolkata, Guwahati, Bengaluru, Mumbai, Mohali
Controller Cluster	3	
Remote Endpoints	100	Across India

Based on the AIORI project implementation.

Results

Table 3 Remote Endpoint deployment Statistics

Description	Statistics
Average Task Load Per RE per minute	30
Average daily Query that can be fired from one RE	43,200
Average Task that Can be fired from (50%)[1] RE Per day	21,60,000
Average Bandwidth Consumption Per RE (Receive)	10 Kbps
Average Bandwidth Consumption Per RE (Send)	50 Kbps
Average CPU Utilization	30%
Average memory Utilization	40%

Based on the AIORI project implementation.

IEEE IC IIFON Standards Hackathon using AIORI Platform

1

Standards Workshop

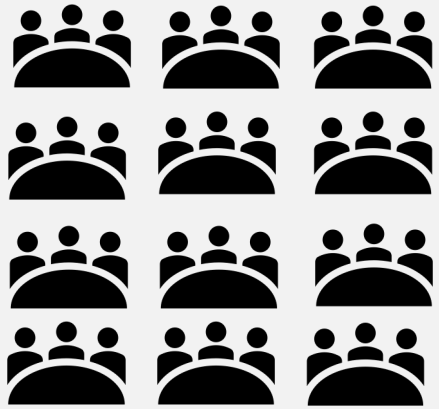
- North Zone
- East Zone
- West Zone
- South Zone
- NE Zone

One-day event in an Engineering institution

September 2024

2

Standards Hackathon using AIORI-IMN Platform

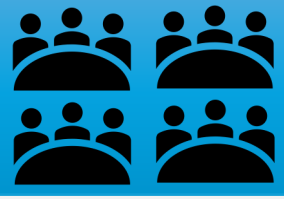


Remote Hackathon for 2 months

Oct - Nov 2024

3

APCIMSS
(Asia Pacific Conference of Internet Measurement, Security and Standards)



Standards Hackathon Finale

- Call for Paper
- BoF
- Industry Talks

3 Day event in Northeast

December 2024

4

IETF 122 Hackathon Participation

2-day Participation in IETF 122 Hackathon

March 2025

Thanks
Team AIORI

Project Supporters and Contributors

MeitY, Govt. of India | NIXI | India Internet Foundation

Network Operators | Academia | Research Institutions