

AIORI 1

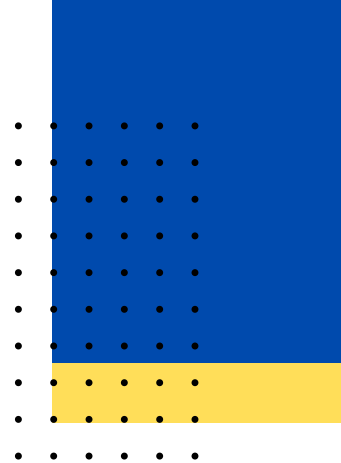
Internet Standards, Measurement &
Research Engagement Platform

Workshops | Hackathon | Symposium

Winter 2024

GENESIS SPARK

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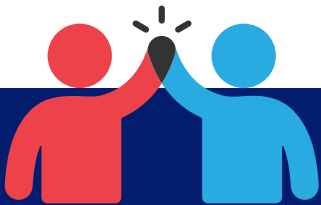
THE IDEA



Future leadership in Internet requires a foundation of sustained technology advances that can enable the development of more capable, reliable, and lower-cost Internet technologies to achieve Internet Resilience goals.

Internet technology development foundation is needed to enhance readiness of new use cases, mitigate the technological risks initiating from the design of internet, improve the quality of Internet for all, and thereby contribute to better overall Internet penetration.

The foundational work is happening through creating workshops, hackathons, symposiums and has been wrapped under the umbrella of AIORI I which benefits all the stakeholders.



Partners

Host Institution Support

Local event management

- Accommodation for resource persons
- Banners and local promotions
- Conference Hall for 50 participants, Food, AV, Lab with Internet facility

IEEE IC IAYP Support

- Strategy development
- Coordination and execution
- Sponsor outreach
- Joint certification
- Participant screening and registration

IIFON Support

- Providing the AIORI Internet Measurement Platform (IMN) for Hackathon
- Managing the Hackathon program
- Travel support for two resource persons per workshop

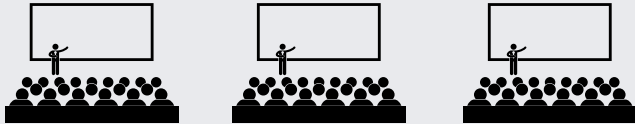
AIORI 1 – AT A GLANCE

Internet Standards, Measurement & Research Engagement Platform

Plan

Execution

1



Workshops

5 Locations

250 Participants

2

Remote



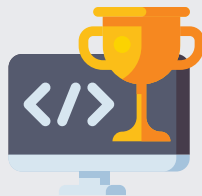
2 Months

23 Teams

5 Problem Statements from
(RFC 9606, 9411)



Finale



9 Teams

2 days

5 Finalists

IIT Guwahati

2 Winning Teams

3

APSIMSS

Asia Pacific
Symposium on
Internet
Measurement,
Security & Standards

4 Tracks

20 Speakers

IIT Guwahati

IETF Contributors



2 Winning Teams Participating
IETF 122 Hackathon

1

WORKSHOPS

This workshop was designed to equip the aspiring engineers and faculties with the knowledge and skills to build the future of the internet. The workshops covered a comprehensive range of topics, providing a strong foundation on Internet engineering and standards principles. Following the workshops, participants were provided with the opportunity to apply their newfound knowledge in a thrilling hackathon.

portal.aiori.in/hackathon

**Organized By IAYPC 2024 - IEEE India Council
in collaboration with India Internet Foundation,
NIXI with Host Partner Institutions**

Organizing Team



Anand Rajeev
(Program Coordinator)
CTO, India Internet
Foundation, Industry
Member, IAYPC 2024 -
IEEE India Council



Dr. John Jose
Associate
Professor,
Department of CSE,
IIT Guwahati, Vice-
Chair, IEEE India
Council



Anupam Agrawal,
Chair, India
Internet
Foundation



R. Sreekanth
Assistant Professor,
Department of EEE,
St. Joseph's College
of Engineering,
Chennai Academia
Member, IAYPC 2024
- IEEE India Council



Dr. Ruchika Gupta
Professor, Department
of CSE, Chandigarh
University, Punjab
Secretary - IAYPC
2024 - IEEE India
Council

WORKSHOPS

REGIONAL VENUE SELECTION PROCESS

The Process

The workshop selection process consisted of seven steps and ran from July 01, 2024 to August 30, 2024. In its first edition, the committee opted for a zone-wise venue selection approach, identifying five geographic zones in India: East, West, North, South, and Northeast.

1. Submission of Expression of Interest for Regional Venues
2. Screening of Regional Venues
3. Announcement of Final Regional Venues
4. Announcements of Regional Workshop dates
5. Call for Participation in Standards Workshop
6. Last Date for Participants to Register in the AIORI Portal
7. Announcement of Final List of Participants in Each Regional Venue

Selected Regional Venues



18-SEP-24
CHENNAI



19-SEP-24
MUMBAI



21-SEP-24
DELHI



24-SEP-24
KOLKATA



26-SEP-24
GUWAHATI

EASTERN WORKSHOP

St. Joseph College of Engineering, Chennai,
Tamil Nadu



Key Speakers



18th Sep 2024

St. JOSEPH'S COLLEGE OF ENGINEERING
(An Autonomous Institution)
St. JOSEPH'S GROUP OF INSTITUTIONS
OMR, CHENNAI - 119

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
&
IEEE St. JOSEPH'S COLLEGE OF ENGINEERING STUDENT BRANCH CHAPTER (SBC60101)
IEEE INDIA COUNCIL ACADEMIA YOUNG PROFESSIONALS COMMITTEE
INDIAN INTERNET FOUNDATION
Presents

STANDARDS WORKSHOP HACKATHON
Resource Persons

MR. SHONE JOSE
Vice Chair - IEEE India Council

DR. SUDHA BHUVANESHWARI N
President, ISOC Chennai

DR. RAMYA T.R
Principal Research Engineer at
Center of Excellence in Wireless
Technology

MR. ANAND RAJE
Co-Founder,
CTO at India Internet Foundation
(IFON)

St. JOSEPH'S GROUP OF INSTITUTIONS
The Choice of
Disciplined Toppers



WESTERN WORKSHOP

Sardar Patel Institute of Technology, Mumbai,
Maharashtra

Key Speakers



19th Sep 2024

The banner features logos for IAYPC, IEEE India Council, IIFON, and SPIT at the top. The main title is 'Standards Workshop and Hackathon' in large blue letters. Below it, the text reads 'Insightful workshop for aspiring engineers' and '19th September, 2024' followed by '9 a.m. onwards'. On the right, five speakers are listed with their photos and titles: Dr. John Jose (Associate Professor, CSE Department, SIT GUMHATI), Anand Rajee (Co-founder, CTO @ India Internet Foundation (IIFON)), Amit Gupta (Advisor at TSDSI, Start-up Strategy), Manikandan K (Director at Bureau of Indian Standards), and Dr. Mansi Subhedar (PHCET, Navi Mumbai). The bottom of the banner includes the location 'Sardar Patel Institute of Technology, Room 003' and the sponsor 'Brought to you by: IEEE SPIT'.

IAYPC & IEEE-SPIT PRESENTS
Standards Workshop and Hackathon

Insightful workshop for aspiring engineers

19th September, 2024

9 a.m. onwards

DR JOHN JOSE
ASSOCIATE PROFESSOR
CSE DEPARTMENT, SIT GUMHATI

ANAND RAJEE
CO-FOUNDER,
CTO @ INDIA INTERNET
FOUNDATION (IIFON)

AMIT GUPTA
ADVISOR AT TSDSI,
START-UP STRATEGY

MANIKANDAN K
DIRECTOR AT
BUREAU OF INDIAN STANDARDS

DR MANSI SUBHEDAR
PHCET, NAVI MUMBAI

Sardar Patel Institute of Technology, Room 003

Brought to you by: IEEE SPIT



NORTHERN WORKSHOP

Sharda University, Greater Noida, UP

Key Speakers



21st Sep 2024



IAYPC-2024 - IEEE India Council in Collaboration with India Internet Foundation

Sharda School of Engineering & Technology
Department of Computer Science & Engineering

PRESENTS

IEEE-IC: Standard Workshop and Hackathon 2024
21st September 2024

Speakers



Dr. John Jose
Associate Professor,
IIT Guwahati
Vice Chair, IEEE India Council



Mr. Anand Raj
Co-Founder, CTO @ India
Internet Foundation (iFON) |
Internet Resiliency Researcher



Amitabh Singhal
Director Designate, Internet
Corporation for Assigned Names
and Numbers (ICANN), Internet &
Telecoms Policy & Regulations



Dr. Pimpy Gandotra
Telecommunications Standards
Development Society, India
(TSOSI)



Prof. (Dr.) Parma Nand
Pro-VC Sharda University and
Dean, SSET.



Dr. Anil Kumar Sagar
Professor & HoD, Computer
Science & Engineering, Sharda
University



Dr. Rani Astya
Associate Professor- CSE, Faculty
Coordinator Technova Sharda University



Mr. Dharm Raj
Assistant Professor- CSE, IEEE Student
Branch Counsellor Sharda University

For more details:
<https://portal.aiori.in/hackathon/>

ABOUT PROGRAM
Chance to participate in a thrilling hackathon
Equip aspiring engineers and faculty with essential internet skills.
Provides a strong foundation for future technological innovations.
Covers key topics in internet engineering and standards.

Mr. Dharm Raj
IEEE Student Branch Counsellor,
Sharda University
Contact Number: 8920025836
Mail: dharm.raj@sharda.ac.in

Venue
APJ Abdul Kalam
Auditorium, RM. 005, Block 3
Computer Lab RM. 010 Block-1

Organizing Committee

- Prof. (Dr.) Mandrep Kaur, Advisor,
IEEE Student Branch SU
- Dr. Rani Astya, Technova
- Dr. Vishal Jain, Asso. Prof., SSET
- Dr. Sudeep Varshney, Asso. Prof., SSET
- Ms. Sapteepa Kalita, Chairperson,
IEEE Student Branch SU



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REGISTRATION

EASTERN WORKSHOP

Heritage Institute of Technology, Kolkata,
West Bengal



Key Speakers



24th Sep 2024



Heritage Institute of Technology
Presents
**STANDARDS
WORKSHOP & HACKATHON**

**Organized by
IAYPC-2024, IEEE IC and IIFON**

September 24, 2024 || 9:30 a.m. onwards



Anand Raje
Co-Founder, CTO@ IIFON,
Co-Founder @ BASIS
Technologies Pvt. Ltd.



Abhijan Bhattacharyya
Consultant, Sr. Scientist @
Network Solutions & Services
TCS



Anupam Agrawal
Digital Governance | ICT
Standards | Chevening Fellow |
IEC GRAC - Member | PTI -
Board Member | TCS



Mousiki Kar
Associate Professor
Heritage Institute of Technology
Joint Secretary, IEEE IAYPC



Administrative Building , Heritage Institute of Technology

www.heritageit.edu

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REGISTRATION



NORTH-EASTERN WORKSHOP

Assam Royal Global University, Guwahati, Assam

Key Speakers



26th Sep 2024

IEEE

INDIA COUNCIL

ROYAL GLOBAL UNIVERSITY
GUWAHATI

nixi
Engineering Initiatives

IFON
India Internet Foundation

IAYPC-2024-IEEE India Council in Collaboration with India Internet Foundation
and The Assam Royal Global University

PRESENTS

IEEE-IC: STANDARD WORKSHOP AND HACKATHON 2024

26th September 2024

Speakers



Dr. John Jose
Associate Professor,
IIT Guwahati
Vice Chair, IEEE India Council



Mr. Anand Raja
Co-Founder, CTO@India
Internet Foundation (IIFON)
Internet Resiliency Researcher



Anupam Agrawal
Digital Governance | ICT
Standards | Chevening Fellow |
IEC GRAC - Member | PTI -
Board Member | TCS



Prof. (Dr.) Y.S.R. Murthy
Vice Chancellor
The Assam Royal Global University



Prof. (Dr.) Ankur Ganguly
Dean Academics & Dean RSET
The Assam Royal Global University



Dr. Anupam Das
Convener, IEEE-IC Standard
Workshop & Head of the Department,
Royal School of Information Technology (RSIT)



Dr. Ishita Chakraborty
Associate Professor &
Head of the Department,
Department of CSE, RSET

For more details :

<https://portal.aiori./hakathon/>

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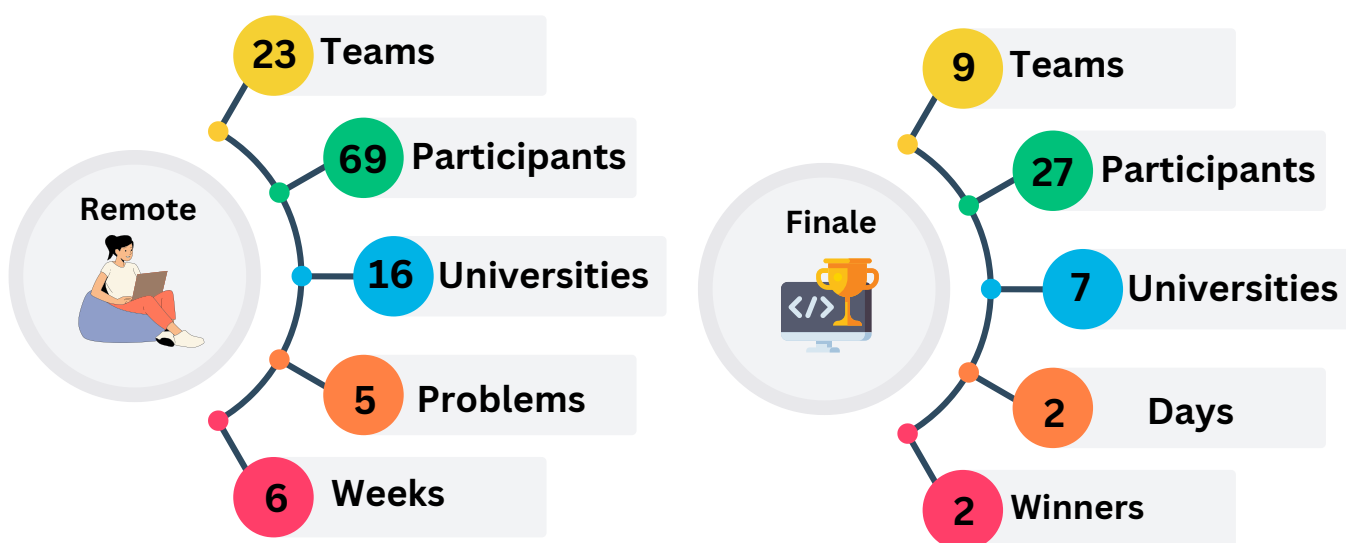
REGISTRATION



2

HACKATHON

A unique hackathon opportunity which enables the participants learning key nuances of Internet standards development process and its open source implementation in SDOs, like IETF. The hackathon brings both remote and physical hackathon experiences implementing global practices.



HACKATHON

PEOPLE BEHIND



Organizing Team & Mentors



Anand Raje
CTO, India Internet Foundation,
Industry Member, IAYPC 2024 -
IEEE India Council



Dr. John Jose Associate Professor,
Department of CSE, IIT Guwahati, Vice-
Chair, IEEE India Council



Mrignayani Chandra
Research Associate
IIFON



Arnav Das
Research Associate
IIFON



Aindri Mukherjee
Research Associate
IIFON



Debayan Mukherjee
Research Associate
IIFON



Debraj Dey
Senior Cybersecurity Engineer
Bridge System and Service



Jury Members



Anupam Agrawal
Chair
IIFON



Dr. Indrajit De
Professor, IEM
Advisor, IIFON



Dr. Sundeep Oberoi
IIT Bombay



Speakers



Prof. T Venkatesh,
IIT Guwahati



Dr. John Jose, IIT
Guwahati, Vice-
Chair, IEEE India
Council



Amrita Chowdhury,
Director, CCAOI



Mr. Abhijjan
Bhattacharyya,
TCS



Dr. Ratnajit
Bhattacharjee, IIT
Guwahati



Dr. Indrajit De
Professor, IEM
Advisor, IIFON

HACKATHON THE STAGES

Problem Statements

1. Designing a Tool for Querying DNS Resolver Information (**RFC 9606**)
2. Automating Service Binding Discovery for Multi-Service Environments (**RFC 9461**)
3. Intrusion Detection/Prevention System (IDS/IPS) Throughput and Latency Benchmarking (**RFC 9411**)
4. Stateful vs. Stateless Filtering Performance Comparison (**RFC 9411**)
5. Measurement of Power Consumption in NSDs During High Load Traffic (**RFC 9411**)

Teams running for Hackathon

23

Registered
Teams

10

Selected
Teams

Teams	Problem Statement	Status
SecureNet Innovator	#3	Winner
Red Relay	#1	Winner
Throughput Thieves	#4	Finalist
Cyber Wizards	#3	Finalist
RAGNAROK	#3	Finalist
TEAM CARBONO	#5	Remote and Finale
Aarambh	#1	Remote and Finale
GeekBuddies	#3	Remote and Finale
Net Ninjas	#4	Remote and Finale
Bits	#1	Remote only



HACKATHON THE WINNERS



Team:
SecureNet Innovators

Team Members:

- Nabhonil Bhattacharjee
- Sampurna Pyne and
- Raja Karmakar

Problem Statement: 3

Intrusion Detection/
Prevention System (IDS/IPS)
Throughput and Latency
Benchmarking, RFC 9606

Implementation:

Developed an end-to-end solution to reproducibly measure KPIs like latency, throughput, accuracy, etc while maintaining a controlled and contained environment, by producing pre-profiled network scenarios like regular traffic profile, attack traffic profile, high-load profile, etc



Team:
Red Relay

Team Members:

- Debarghya Bhattacharya
- Aditya Ghosh
- Dipankar Basu

Problem Statement: 1

Designing a Tool for Querying DNS
Resolver Information, RFC 9411.

Implementation:

Developed a web-based tool to visualise RESINFO DNS Record and compare various DNS servers on their Answers, DNSSEC implementation, etc, all at once.



About

APSIMSS (**Asia Pacific symposium on Internet Measurement Security and Standards**) aimed to engage a diverse audience, including students, researchers, practitioners, and industry professionals from India and the Asia-Pacific region. The symposium was held in conjunction with the prestigious **IEEE ANTS Conference**, fostering interdisciplinary collaboration and knowledge exchange.

Detailed Agenda: <https://portal.aiori.in/aiori-1/>

At a Glance

When and where	18 December 2024 Indian Institute of Technology Guwahati (IIT Guwahati) , Assam, India
Participation in Numbers	Participants – 70+ Virtual Engagement – 170+
Theme	Internet Measurement, Security and Standards
Sessions	<ul style="list-style-type: none"> • Inaugurals • AIORI Showcase • Round table on Internet Standards and India's participation • Hackathon Team Presentations • Keynote Address 1 : Internet Measurement • Keynote address 2 : Internet Security and evolving technology. • Hackathon Valedictory Session
Objective	To bring together individuals from industry, academia and government to initiate a conversation on Internet Measurements, Security and Standards.
Key Takeaways	<ol style="list-style-type: none"> 1. Internet Measurement as an AIORI initiative is required for the country and the initial efforts should be scaled upon to include different services on Internet and many more locations for measurement. 2. Work on Evolving cryptographic standards and transition to new protocols to create a more secure and reliable communication over internet 3. Increased participation from India in Global bodies like IETF, ICANN, APNIC, and others and interdisciplinary collaboration including participation and hosting of IETF in India.

APSIMSS

KEY DIGNITARIES



Shri Sushil Pal,
Joint Secretary –
IG Division, MeitY
(Online)



**Dr. Sundeep
Oberoi, IIT
Bombay**



**Mr. Samiran Gupta, Vice
President, Stakeholder
Engagement– APAC, ICANN**



Mr. Geoff Houston,
Chief Scientist,
APNIC



Dr. Devesh Tyagi,
CEO, NIXI
(Online)



Dr. Tej Pratap,
VC, Sri Sri
University



Prof. Devendra Jaliha,
Director, IIT Guwahati



Prof. Goutam Paul,
ISI Kolkata



**Prof. Charu
Malhotra, IIPA**



Mr. Deep Singh
(Catla ISP)



Dr. Pimmy Gandotra,
TSDSI



Dr. Ratnajit Bhattacharjee,
IIT Guwahati



Anupam Agrawal,
Chair, IIFON



Anand Raje,
CTO, AIORI

SESSION INAUGURALS

The inaugural session set the tone for APSIMSS 2024, with opening remarks from Mr. Anupam Agrawal, Chair, IIFON

Key Messages



Shri Sushil Pal, Joint Secretary, MeitY, a Leader in Digital Governance and Policy Innovation, presented virtually. Shri Pal shared his valuable insight on how AIORI Project is a “milestone for India’s role in internet governance” and the importance for more focus on internet measurement, security, and standards. He further stressed on India’s participation in Global forums and platforms and contributing to global bodies such as IETF, ICANN and APNIC and how it remains a top priority for the Government



Prof. Devendra Jaliha, Director, IIT Guwahati shared his perspective on India’s transition to a predominantly wireless access country and importance of standardization. He shared how India’s idea of low mobility large cell was adopted by the world. He mentioned the overall requirement of even lower latencies across our nation



Prof. Sukumar Nandi of IIT Guwahati highlighted the challenges of transitioning from IPv4 to IPv6 in India, emphasizing the need for seamless coexistence, user feedback, and ISP data to enhance service quality. He stressed the role of robust internet governance in addressing security concerns and advocated for active participation in hackathons to advance internet standards and foster a secure digital future.

SESSION INAUGURALS



Shri Devesh Tyagi, CEO, NIXI, Leading Internet Governance and Digital Innovation in India, shared his thoughts on the growth of the digital world and increasing accessibility of Internet even in rural areas. He explained AIORI's infrastructural aspect and how it is contributing with monitoring and benchmarking and data that drives the government towards making informed decisions regarding internet governance, infrastructure and digital incubation initiatives.



Mr. Samiran Gupta, Vice President, Stakeholder Engagement, and Managing Director, Asia Pacific for ICANN, highlighted ICANN's role in improving the security, stability, and resilience of the internet, with specific projects on domain metrics and analysing maliciously registered domains.



Dr. Sundeep Oberoi, IIT Bombay shared three key insights from the Internet's evolution. Firstly, he stressed the need for adaptive methodologies to manage large-scale internet demands. Secondly, he highlighted the importance of robust global standards, noting that the success of the Internet is rooted in these standards, and the lack of interoperability represents a missed opportunity. Lastly, he advised India to actively participate in global forums to effectively influence policy decisions.



Professor Taj Partap, Sri Sri University highlighted the growing role of the Internet, even in rural areas, where terms like "network" have become part of everyday vocabulary. He emphasized the need to incorporate modern technological skills, such as IoT and AI, into skill training programs, in line with India's educational policy. Additionally, he stressed the importance of building robust internet infrastructure across the country and the pivotal role universities play in preparing the workforce for an evolving tech landscape.

SESSION

ROUND TABLE ON STANDARDS



Speakers



Dr. Sundeep Oberoi
IIT Bombay



Dr. Ratnajit Bhattacharjee
IIT Guwahati



Prof. Rabinarayan Satpathy
Sri Sri University



Mr. Deep Singh Catla
ISP



Dr. Pimmy Gandotra
TSDSI

Key Takeaways

The round table discussion on ICT Standards and India's Participation highlighted the need for a stronger role in global standardization efforts, addressing ground challenges, and leveraging growth opportunities. The Key takeaways are as follows:

- Academic researchers contribute significantly to defining technical standards globally and there is a significant lag in India. Increasing the participation of academia in standardization will ensure adaptability to diverse policy contexts and support the evolving digital landscape.
- Standardization is crucial for better data handling, reduced latency, and cybersecurity. The ISP sector's growth is hindered by poor adherence to standards. More coordinated policy efforts are needed to align industry practices with global standards.
- Encouraging students by providing support to contribute to ICT standards through hackathons and International Standards Development forums.
- Focus on integrating standardization efforts in emerging areas like IoT and rural broadband so that the

SESSION KEYNOTES

Keynote 1 : Internet Measurements

Mr. Geoff Huston, Chief Scientist APNIC



The key points discussed by Mr. Geoff Huston were focused on increased IPv6 adoption and enhanced DNS security in India. He also mentioned how routing security is crucial in preventing malicious routing and India saw a huge push towards secure BGP routing with cryptographic signatures. Despite such measures, it is a concern to ensure active usage of these adoptions. He emphasized on the role of ads as it provides a way to measure internet usage on massive scale as virtually every internet user encounters these online advertisements. The massive reach enables us for large scale internet measurement research.

Keynote 2 : Internet Security

Dr. Goutam Paul, Associate Professor CSRU, ISI



Dr. Goutam Paul's speech pointed towards impact of quantum computing and cryptographic standards and migration to new standards involving PQC Migration that involves the process of transitioning from traditional cryptographic algorithms (e.g., RSA) to post-quantum algorithms. He also spoke on adapting systems and networks to accommodate new, quantum-resistant algorithms and how India and globally PQC systems are becoming critical in their infrastructure with ongoing efforts to integrate these systems into real world networks.

SESSION

AIORI Project Showcase

Mr. Anand Raje, CTO, AIORI started the AIORI showcase with an overview on the AIORI program and its components, supported by MeitY and NIXI and implemented by India Internet Foundation.

Technical Components

Anycast Testbed: A private cloud computing environment, deployed across India, it focuses on DNS research. The AIORI testbed helps in end to end measurements and evolving as a protocols development and troubleshoot testbed.

Anchor Network: SBC (Single Board Computer) based measurement devices deployed in 100 locations across India provide real time data on internet performance, enabling end to end network analysis. It's helpful in measuring from user locations.

These efforts combine to create a standard Internet measurement and standards development platform that can be used for troubleshooting, protocol testing and real-time monitoring. The second phase of AIORI focuses more on user experience and protocol development and testing platforms.



<https://portal.aiori.in>

References:

1. An Edge Computing Architecture for Internet Measurement Network to Measure and Analyze Protocol Data <https://doi.org/10.1007/s42979-023-02267-1>
2. The Internet Measurement Network (AIORI-IMN) <https://doi.org/10.1109/I3CS58314.2023.10127255>

SESSION

AIORI Project Showcase

The AIORI program aims to address this gap by providing accessible infrastructure for both researchers and industry stakeholders. The workshop and hackathon are to promote and sensitize this topic regarding Internet Measurement, Security and Standards.

The AIORI program represents a significant initiative to improve internet measurement, security, and standards in India, with a focus on building a community-driven research network and tackling future challenges such as post-quantum cryptography and DNS resilience. The program's efforts aim to empower researchers, ISPs, and enterprises to enhance the overall quality and security of the internet infrastructure in India.

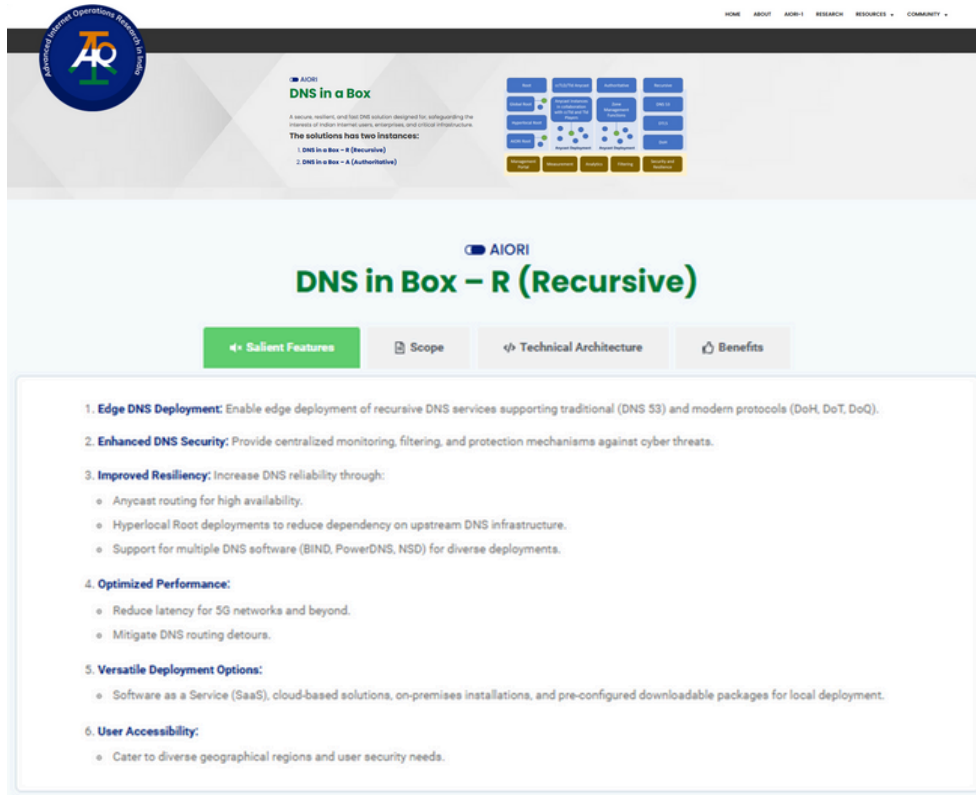
Call for Academic Institutions in India to collaborate

We need Internet engineering professionals who understand and work at the core of Internet infrastructure. As we transition into a fully digital society, it's essential to establish research and innovation centers focused on foundational Internet engineering. While AI and digital platforms depend on robust systems and networks, our progress in Internet standards development is lagging. If left unaddressed, this gap may lead to digital dependency on external entities, risking digital colonialism. Some of the key benefits in engaging with us:

- **Empowering Future Engineers and professionals** with hands-on skills in Internet infrastructure using AIORI-IMN platform, cybersecurity, and protocol engineering, enhancing employability and technical leadership in the Internet engineering domain.
- **Internet Measurement Hub** to research and remediate on Internet resiliency and availability issues for disaster prone regions.
- **Building Industry-Academia Collaboration** which will help Foster partnerships with industry, government, and international research organizations to bring cutting-edge practices and industry insights into academic research and curriculum.
- **Establishing a premier hub** for research, innovation, and capacity-building in Internet technologies, measurement, Critical Internet Infrastructure, standards, and cybersecurity within India.
- **Supporting Digital Transformation** in India by driving initiatives and innovations that support the nation's goals for secure, scalable, and inclusive Internet infrastructure, with particular focus on rural and underserved regions.

AIORI PRODUCT SHOWCASE

DNS IN A BOX & MOBILE APP



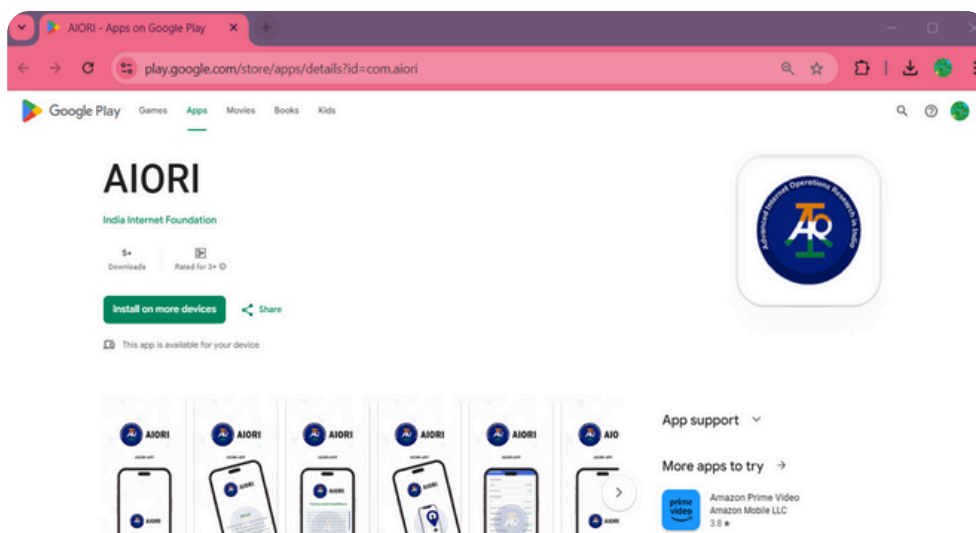
The screenshot shows the AIORI website's 'DNS in a Box' section. At the top left is the AIORI logo, a circular emblem with 'AIORI' and 'Advanced Internet Operations Research Institute' text. The main header area features the title 'DNS in a Box' and a brief description: 'A secure, resilient, and fast DNS solution designed for safeguarding the interests of Indian internet users, enterprises, and critical infrastructure. The solution has two instances: 1. DNS in a Box - R (Recursive) 2. DNS in a Box - A (Authoritative)'. To the right is a diagram showing the architecture with components like Root, Recursive, Authoritative, and various DNS servers. Below this, the 'DNS in Box - R (Recursive)' section is highlighted with a green header. It includes four tabs: 'Salient Features', 'Scope', 'Technical Architecture', and 'Benefits'. The 'Salient Features' tab is active, displaying a list of six features: 1. Edge DNS Deployment, 2. Enhanced DNS Security, 3. Improved Resiliency, 4. Optimized Performance, 5. Versatile Deployment Options, and 6. User Accessibility, each with a brief description and sub-points.

AIORI
DNS in Box – R (Recursive)

Salient Features | Scope | Technical Architecture | Benefits

- Edge DNS Deployment:** Enable edge deployment of recursive DNS services supporting traditional (DNS 53) and modern protocols (DoH, DoT, DoQ).
- Enhanced DNS Security:** Provide centralized monitoring, filtering, and protection mechanisms against cyber threats.
- Improved Resiliency:** Increase DNS reliability through:
 - Anycast routing for high availability.
 - Hyperlocal Root deployments to reduce dependency on upstream DNS infrastructure.
 - Support for multiple DNS software (BIND, PowerDNS, NSD) for diverse deployments.
- Optimized Performance:**
 - Reduce latency for 5G networks and beyond.
 - Mitigate DNS routing detours.
- Versatile Deployment Options:**
 - Software as a Service (SaaS), cloud-based solutions, on-premises installations, and pre-configured downloadable packages for local deployment.
- User Accessibility:**
 - Cater to diverse geographical regions and user security needs.

<https://portal.aiori.in/dns-in-a-box/>



The screenshot shows the AIORI app page on the Google Play Store. The header includes the Google Play logo and navigation tabs for Games, Apps, Movies, Books, and Kids. The app title 'AIORI' is prominently displayed, followed by 'India Internet Foundation'. Below this, there are icons for '5+' downloads and 'Rated for 3+'. A green 'Install on more devices' button is visible, along with a 'Share' icon. To the right is the app's icon, which is the same circular AIORI logo seen in the previous image. Below the main app information, there are several smaller images showing the app's interface on different mobile devices. On the right side, there is a section for 'App support' and 'More apps to try', which includes links to 'Amazon Prime Video' and 'Amazon Mobile LLC'.

AIORI
India Internet Foundation

5+ Downloads | Rated for 3+ |

Install on more devices | Share

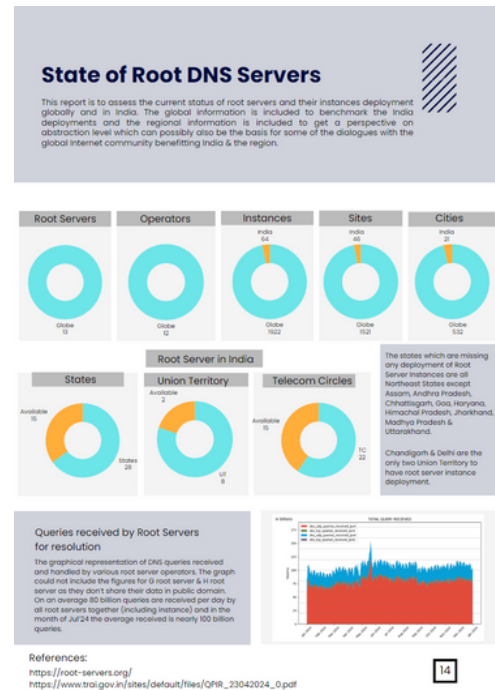
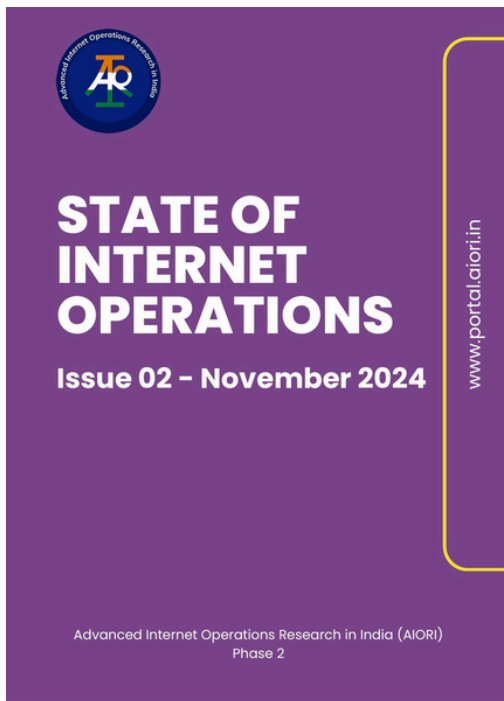
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AIORI PRODUCT SHOWCASE

STATE OF INTERNET REPORT



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IETF 122 HACKATHON PARTICIPATION

About

The AIORI-IMN team and AIORI 1 Hackathon winners worked on implementing RFC 8250 in AIORI-IMN platform and participated in IETF 122 hackathon as champions.

Project: Evaluating the Performance of Different DNS Server Software Implementations with PDM using AIORI IMN measurement platform

Presentation: <https://datatracker.ietf.org/meeting/122/materials/slides-122-hackathon-sessd-evaluating-the-performance-of-different-dns-server-software-implementations-with-pdm-using-aiori-imn-measurement-platform-01>

The Team



Objectives:

1. Implement RFC 8250 IPv6 Destination Option in AIORI-IMN platform.
2. Analyze the performance of different DNS Servers
3. Implementation - Linux module and eBPF, Scapy contribution (Client), PDM Python Package for DNS measurement
4. Setup of IPv6 DNS Testbed and making scenarios of traffic to measure and analyze.

Repos:

- <https://github.com/indiainternetfoundation/IPv6PerformanceDiagnosticMetric>
- https://github.com/indiainternetfoundation/py_measure_dns
- <https://github.com/secdev/scapy/pull/4695>

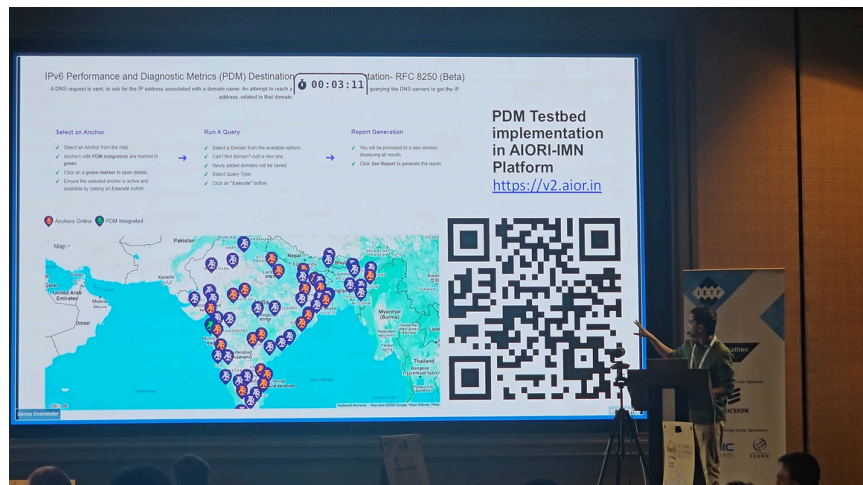
URLs:

1. AIORI Portal : <https://portal.aiori.in>
2. PDM Implementation: <https://v2.aior.in/PDM>

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IETF 122 HACKATHON PARTICIPATION

Glimpses from IETF 122 Hackathon



AIORI 1

PARTNERS AND SUPPORTERS



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AIORI - An Internet Measurement Platform

<https://portal.aiori.in>