DNS

THE NEXT GENERATION INNOVATIONS

TEAM AIORI

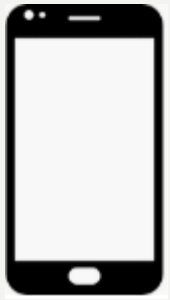
ADVANCED INTERNET OPERATIONS RESEARCH IN INDIA

DNS USES


Back
Forward
Reload
Home
Search
Netscape
Print
Security
Shop
Stop
Bookmarks
Location: http://www.apple.com
What's Related
Find It
Product Information
Customer Support
Technology & Research
Developer World
Groups & Interests
Resources Online
About Apple
Apple Sites Worldwide
Welcome to Apple
JULY 14
1997
Introducing CyberDrive
Register today for a free CD-ROM.
EMATE 300
Mobile, Affordable, & Smart
MOVIES FROM MARS
What's Hot
Preorder Mac OS 8
Be the First to Know


E €
M
A
I
L

DNS USES



VISA

prime video

NETFLIX

UPI
UNIFIED PAYMENTS INTERFACE

Google

twitter

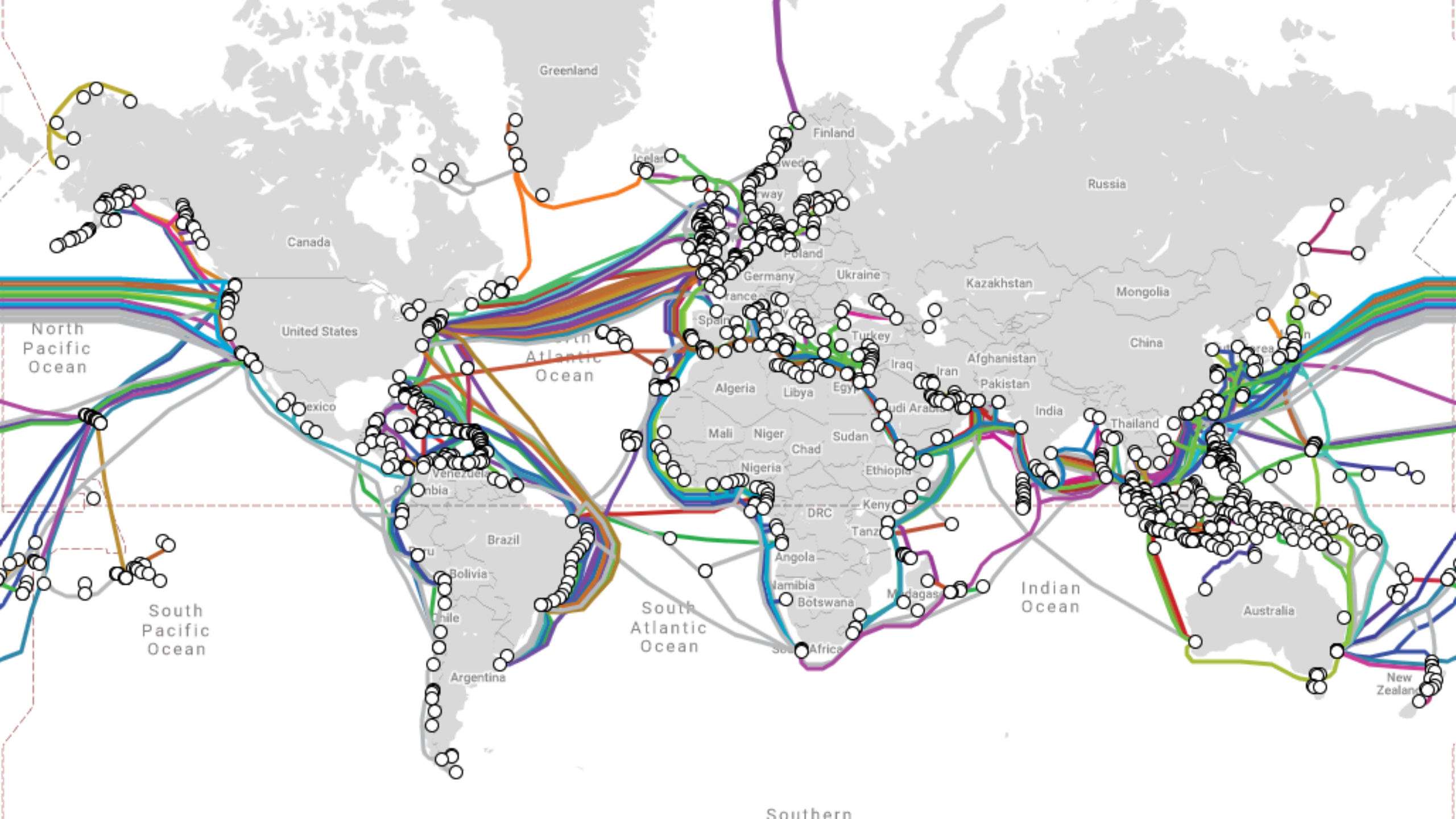
AADHAAR

facebook

YouTube

DNS USES


Smart manufacturing
Smart/ digital citizens
Smart buildings
Smart transportation
H
SMART CITY COMPONENTS


Greenland
Canada
United States
Finland
Russia
Kazakhstan
Mongolia
China
Germany
Ukraine
Poland
Spain
Turkey
Iraq
Iran
Afghanistan
Pakistan
India
Thailand
Algeria
Libya
Egypt
Mali
Niger
Chad
Sudan
Nigeria
Ethiopia
Kenya
DRC
Angola
Namibia
Botswana
Brazil
Bolivia
Chile
Argentina
Australia
North Pacific Ocean
South Pacific Ocean
South Atlantic Ocean
Indian Ocean

DNS STAKEHOLDERS

- Internet Service Providers
- Enterprise Network
- Root Server Operators
- Zone Operators
- Domain Registrars
- Govt. Authorities
- Internet Research Organizations
- Content Providers
- G2C, G2G services
- IoT companies
- Public DNS Operators
- Smart Entities
- ……..

STANDARD TRACK IETF

UPCOMING STANDARDS

NEXT GEN DNS – STANDARD TRACK

	Do53	DoT	DoH
Can it be read?	Y	N	N
Monitored traffic?	Y	Y	N
Monitored content?	Y	N	N
Blocked?	Y	Y	N
Modified?	Y/N	N	N
Redirected	Y	N	N

Others: DoQ etc.

RANDOM QUOTE ☺

The right answer is that everyone should be running a feature-complete caching + forwarding resolver on localhost.

All the rest of theses discussions are noise from companies that want eyeballs.

DOT – DNS OVER TLS

- Uses same encryption as HTTPS
- TCP port 853
- Encrypted
- Easily monitored (for traffic, not content)
- Not easily modified
- More CPU intensive

DOH – DNS OVER HTTPS

- DNS over HTTPS
- TCP port 443
- Encrypted
- Not easily monitored, blocked, redirected, modified
- Mostly browser based implementations
- The content is only exposed to the DoH provider

“Mozilla has stated directly that their intension is to transfer control over DNS data from ISPs to their partners”

Microsoft has shown interest in DoH and is rolling out DoH in Windows 10 upgrades.

DPRIVE WG

Mailing List: dns-privacy@ietf.org

The DNS PRIVate Exchange (DPRIVE) Working Group develops mechanisms
to provide confidentiality to DNS transactions in order to address concerns surrounding pervasive monitoring.

6 RFCs from this working group

https://datatracker.ietf.org/wg/dprive/documents/

Document	Date	Status
Active Internet-Drafts (4 hits)		
draft-ietf-dprive-bcp-op-07 **Recommendations for DNS Privacy Service Operators**	2019-12-19 42 pages	Waiting for AD Go-Ahead::Revised I-D Needed for 18 days Submitted to IESG for Publication:Best Current Practice Reviews: genart, opsdir, secdir
draft-ietf-dprive-phase2-requirements-00 **DNS Privacy Requirements for Exchanges between Recursive Resolvers and Authoritative Servers**	2019-12-15 10 pages	I-D Exists WG Document
draft-ietf-dprive-rfc7626-bis-04 **DNS Privacy Considerations**	2020-01-16 28 pages New	In Last Call (ends 2020-02-03) for 0 days Submitted to IESG for Publication:Informational Reviews: genart, secdir, tsvart
draft-ietf-dprive-xfr-over-tls-00 **DNS Zone Transfer-over-TLS**	2019-11-18 19 pages	I-D Exists WG Document:Proposed Standard

DNSOP WG

https://datatracker.ietf.org/wg/dnsop/documents/

Mailing List: dnsop@ietf.org

The DNS Operations Working Group will develop guidelines for the operation of DNS software and services and for the administration of DNS zones. These guidelines will provide technical information relating to the implementation of the DNS protocol by the operators and administrators of DNS zones.

Active Internet-Drafts (15 hits)		
draft-ietf-dnsop-7706bis-07 **Running a Root Server Local to a Resolver**	2020-01-12 13 pages New	I-D Exists WG Consensus: Waiting for Write-Up:Informational
draft-ietf-dnsop-alt-tld-12 **The ALT Special Use Top Level Domain**	2019-08-23 11 pages	I-D Exists Held by WG:Proposed Standard
draft-ietf-dnsop-dns-tcp-requirements-05 **DNS Transport over TCP - Operational Requirements**	2019-11-02 26 pages	I-D Exists WG Document:Best Current Practice
draft-ietf-dnsop-dns-zone-digest-03 **Message Digest for DNS Zones**	2019-12-03 29 pages	I-D Exists In WG Last Call:Proposed Standard
draft-ietf-dnsop-extended-error-14 **Extended DNS Errors**	2020-01-15 14 pages New	I-D Exists In WG Last Call
draft-ietf-dnsop-iana-class-type-yang-00 **YANG Types for DNS Classes and Resource Record Types**	2019-12-17 13 pages	I-D Exists WG Document
draft-ietf-dnsop-multi-provider-dnssec-03 **Multi Signer DNSSEC models**	2019-07-22 14 pages	AD Evaluation::Revised I-D Needed for 2 days Submitted to IESG for Publication:Informational
draft-ietf-dnsop-no-response-issue-14 **A Common Operational Problem in DNS Servers - Failure To Communicate.**	2019-11-04 26 pages	Waiting for Writeup for 32 days Submitted to IESG for Publication:Best Current Practice Reviews: genart, opsdir, secdir, tsvart
draft-ietf-dnsop-obsolete-dlv-02 **Moving DNSSEC Lookaside Validation (DLV) to Historic Status**	2019-10-31 6 pages	RFC Ed Queue : EDIT for 77 days Submitted to IESG for Publication:Proposed Standard Reviews: genart, opsdir, secdir
draft-ietf-dnsop-resolver-information-00 **DNS Resolver Information Self-publication**	2019-08-19 9 pages	I-D Exists WG Document
draft-ietf-dnsop-rfc2845bis-06 **Secret Key Transaction Authentication for DNS (TSIG)**	2019-11-01 27 pages	In Last Call (ends 2020-01-21) for 13 days Submitted to IESG for Publication:Internet Standard Reviews: genart, secdir
draft-ietf-dnsop-serve-stale-10 **Serving Stale Data to Improve DNS Resiliency**	2019-12-09 13 pages	RFC Ed Queue : EDIT for 38 days Submitted to IESG for Publication:Proposed Standard Reviews: genart, opsdir, secdir
draft-ietf-dnsop-server-cookies-02 **Interoperable Domain Name System (DNS) Server Cookies**	2019-11-18 16 pages	I-D Exists WG Document
draft-ietf-dnsop-svcb-httpssvc-01 **Service binding and parameter specification via the DNS (DNS SVCB and HTTPSSVC)**	2019-11-04 35 pages	I-D Exists WG Document
draft-ietf-dnsop-terminology-ter-00 **Terminology for DNS Transports and Location**	2019-08-15 3 pages	I-D Exists WG Document

48 RFCs from this working group

DNSSD WG

Mailing List: dnssd@ietf.org

The focus of the WG is to develop a solution for extended, scalable DNS-SD. This work is likely to highlight problems and challenges with naming protocols, as some level of coexistence will be required between local zero configuration name services and those forming part of the global DNS. It is important that these issues are captured and documented for further analysis; solving those problems is however not within the scope of this WG.

https://datatracker.ietf.org/wg/dnssd/documents/

Active Internet-Drafts (3 hits)		
draft-ietf-dnssd-hybrid-10 **Discovery Proxy for Multicast DNS-Based Service Discovery**	2019-03-24 39 pages	RFC Ed Queue : EDIT **for 550 days** Submitted to IESG for Publication:Proposed Standard Reviews: genart, intdir, iotdir, opsdir, secdir
draft-ietf-dnssd-prireq-03 **DNS-SD Privacy and Security Requirements**	2019-12-20 20 pages	AD Evaluation for 4 days Submitted to IESG for Publication:Informational
draft-ietf-dnssd-push-25 **DNS Push Notifications**	2019-10-13 42 pages	RFC Ed Queue : EDIT for 59 days Submitted to IESG for Publication:Proposed Standard Reviews: genart, opsdir, secdir, tsvart

2 RFCs from this working group

QUIC WG

Mailing List: quic@ietf.org

- The QUIC working group will provide a standards-track specification for a UDP-based, stream-multiplexing, encrypted transport protocol, based on pre-standardization implementation and deployment experience

draft-Huitema-quic-dnsoquic-07

This document describes the use of QUIC to provide transport privacy for DNS. The encryption provided by QUIC has similar properties to that provided by TLS, while QUIC transport eliminates the head-of-line blocking issues inherent with TCP and provides more efficient error corrections than UDP. DNS over QUIC (DNS/QUIC) has privacy properties similar to DNS over TLS specified in RFC7858, and performance similar to classic DNS over UDP.

Specification of DNS over dedicated QUIC connection

DOH WG

Mailing List: doh@ietf.org

This working group will standardize encodings for DNS queries and responses that are suitable for use in HTTPS. This will enable the domain name system to function over certain paths where existing DNS methods (UDP, TLS [RFC 7857], and DTLS [RFC 8094]) experience problems.

Document	Date	Status
RFC (1 hit)		
RFC 8484 *(was draft-ietf-doh-dns-over-https)* **DNS Queries over HTTPS (DoH)**	2018-10 21 pages	Proposed Standard RFC
Related Internet-Drafts (2 hits)		
draft-livingood-doh-implementation-risks-issues-04 **Centralized DNS over HTTPS (DoH) Implementation Issues and Risks**	2019-09-16 24 pages	I-D Exists
draft-peterson-doh-dhcp-01 **DNS over HTTP resolver announcement Using DHCP or Router Advertisements**	2019-10-21 6 pages	I-D Exists

INTAREA WG

Mailing List: int-area@ietf.org

The Internet Area Working Group (INTAREA WG) acts primarily as a forum for discussing far-ranging topics that affect the entire area. Such topics include, for instance, address space issues, basic IP layer functionality, and architectural questions.

NEXT GEN DNS – EXPERIMENTAL TRACK

Yeti DNS Testbed : IETF RFC 8483 – AN experimental root server testbed.

[Docs] [txt|pdf] [draft-song-yeti...] [Tracker] [Diff1] [Diff2]

INFORMATIONAL

Independent Submission
Request for Comments: 8483
Category: Informational
ISSN: 2070-1721

L. Song, Ed.
D. Liu
Beijing Internet Institute
P. Vixie
TISF
A. Kato
Keio/WIDE
S. Kerr
October 2018

Yeti DNS Testbed

Abstract

Yeti DNS is an experimental, non-production root server testbed that provides an environment where technical and operational experiments can safely be performed without risk to production root server infrastructure. This document aims solely to document the technical and operational experience of deploying a system that is similar to but different from the Root Server system (on which the Internet's Domain Name System is designed and built).

DNS LIBRARIES

GETDNS

The GETDNS API is intended to be useful to application developers and operating system distributors as a way of making all types of DNS information easily available in many types of programs.

MINIDNS

https://github.com/MiniDNS/minidns

A DNSSEC enabled DNS library

MiniDNS is a minimal DNS client client library for Android and Java SE. It can parse resource records (A, AAAA, NS, SRV, …) and is easy to use and extend. MiniDNS aims to be secure, modular, leightweight and as simple as possible.

EXPERIMENTS FROM THE COMMUNITIES

NON STANDARD TRACK

OPEN NIC

https://www.opennic.org/

- OpenNIC (also referred to as the OpenNIC Project) is a user owned and controlled top-level Network Information Center offering a non-national alternative to traditional Top-Level Domain (TLD) registries; such as ICANN.

- Use of OpenNIC DNS servers, enables host name resolution in the Legacy U.S. Government DNS, OpenNIC operated namespaces, and namespaces that OpenNIC has peering agreements with.

EMER DNS

https://emercoin.com/en/documentation/blockchain-services/emerdns/emerdns-introduction

EmerDNS is a system for decentralized domain names supporting a full range of DNS records. EmerDNS operates under the **"dns"** service abbreviation in the Emercoin NVS.

AIORI

ADVANCED INTERNET OPERATIONS RESEARCH IN INDIA

WHY AIORI?

- No root server testbed implemented and running by Indian research community
- No test zone maintainer for DNS operations community in India
- No internet measurement infrastructure run by the community to test the DNS metrics
- Very less or no contribution on IETF standard making process
- No community working on research and development of next generation DNS implementation in India
- No datapoint of best practices for new service platforms of IoT, smart devices etc.

AIORI PROJECTS

- DNS root testbed
- Next Generation Public DNS implantation
- Internet Measurements
- IETF DNS Drafts
- ICANN RSSAC caucus work items
- Experimental DNS solutions
- DNS APIs

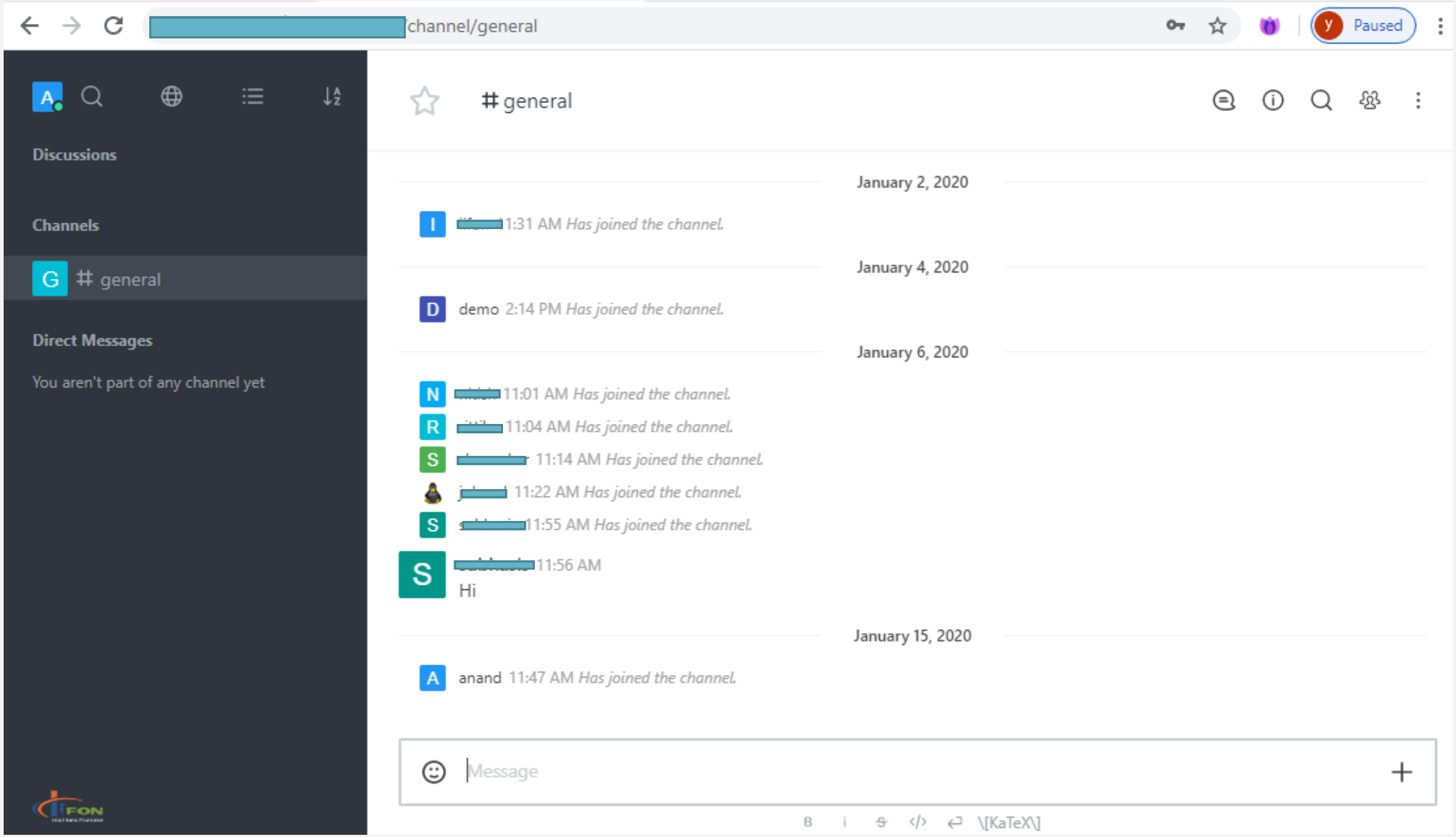
FROM THE PROJECT

ADVANCED INTERNET OPERATIONS RESEARCH IN INDIA
OUR PROGRESS SO FAR

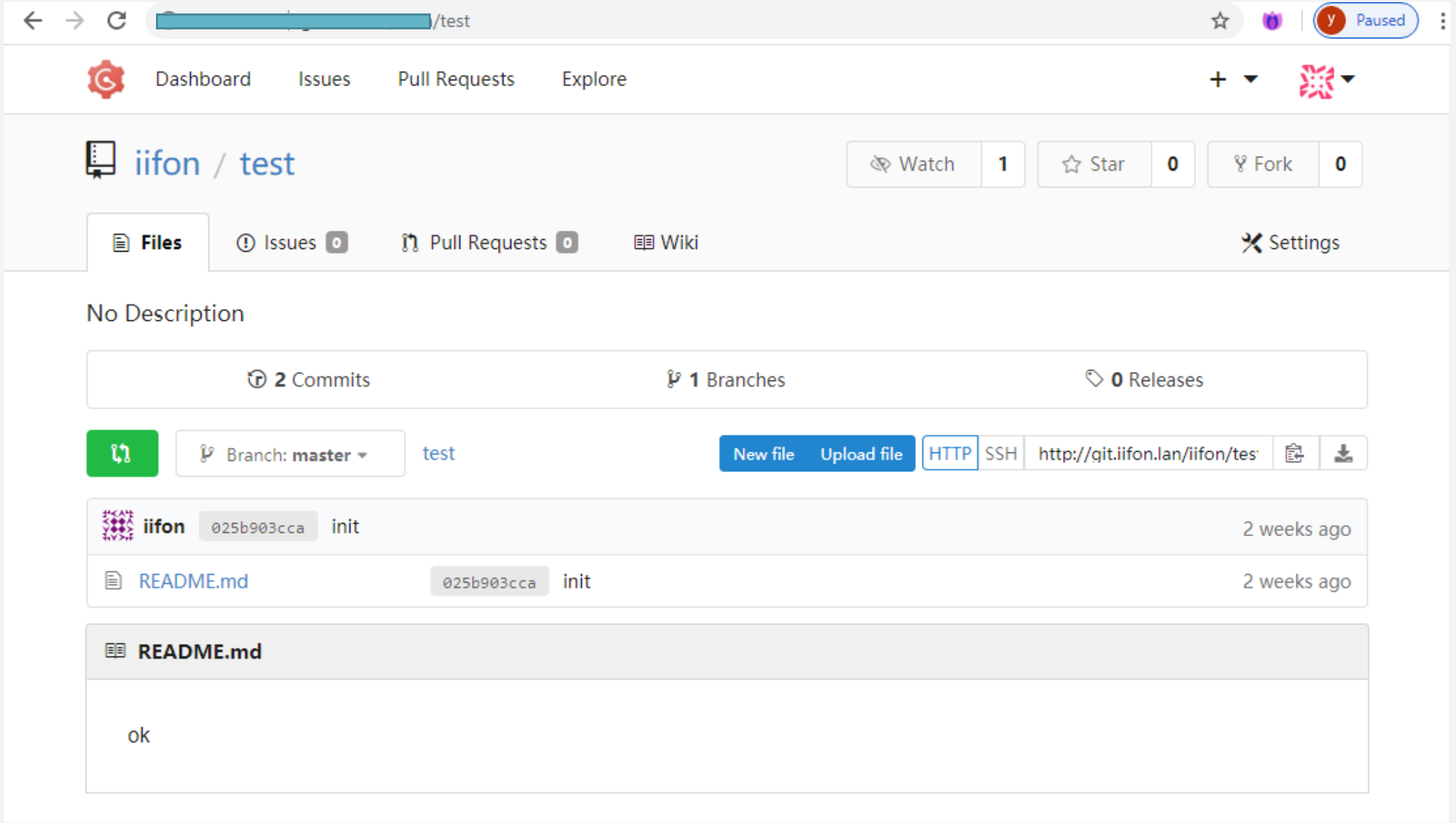
DEPLOYMENT OF DNS/ANALYTICS/MEASUREMENT SERVERS

–multiple locations in India

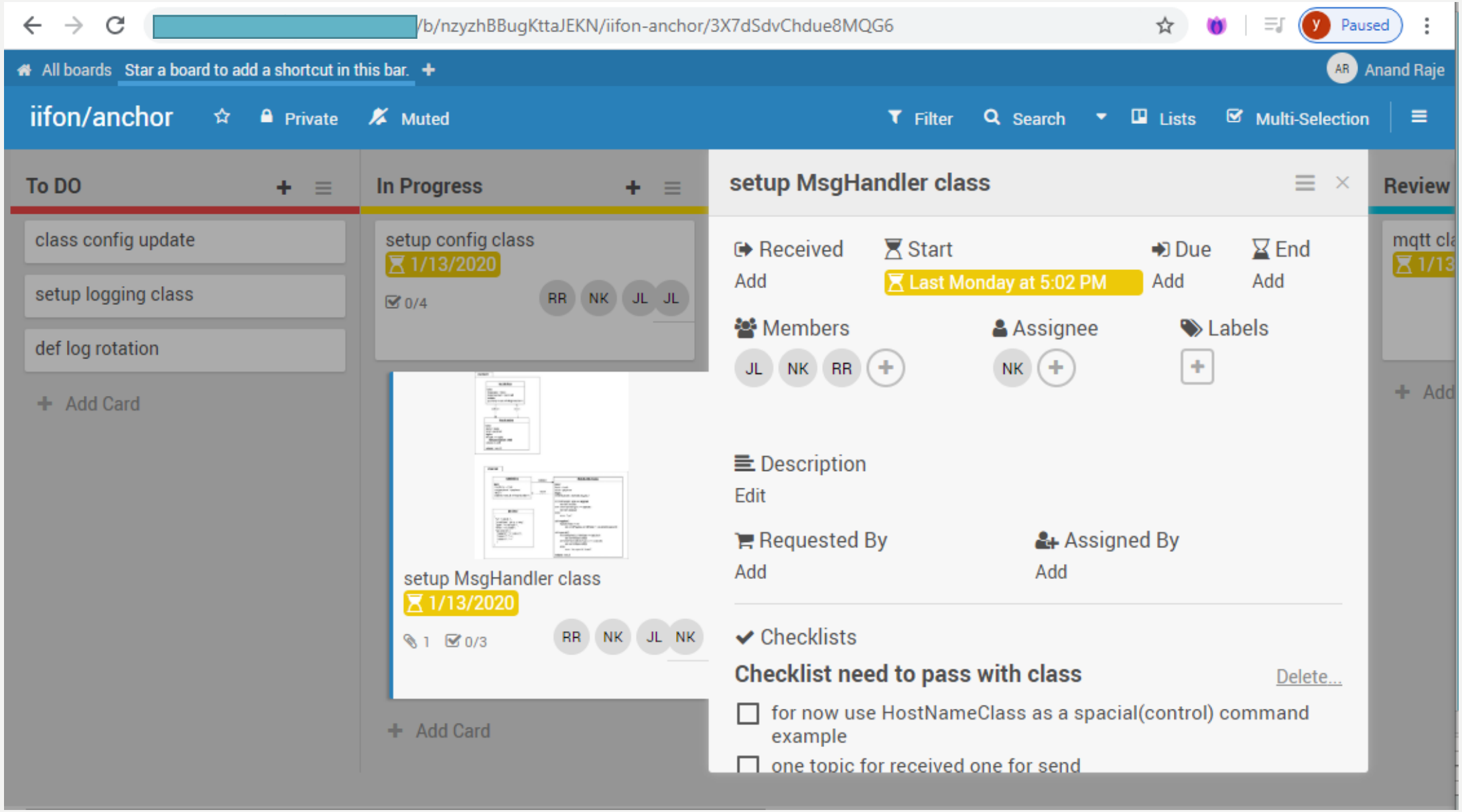
CHAT SYSTEM FOR DEVELOPERS



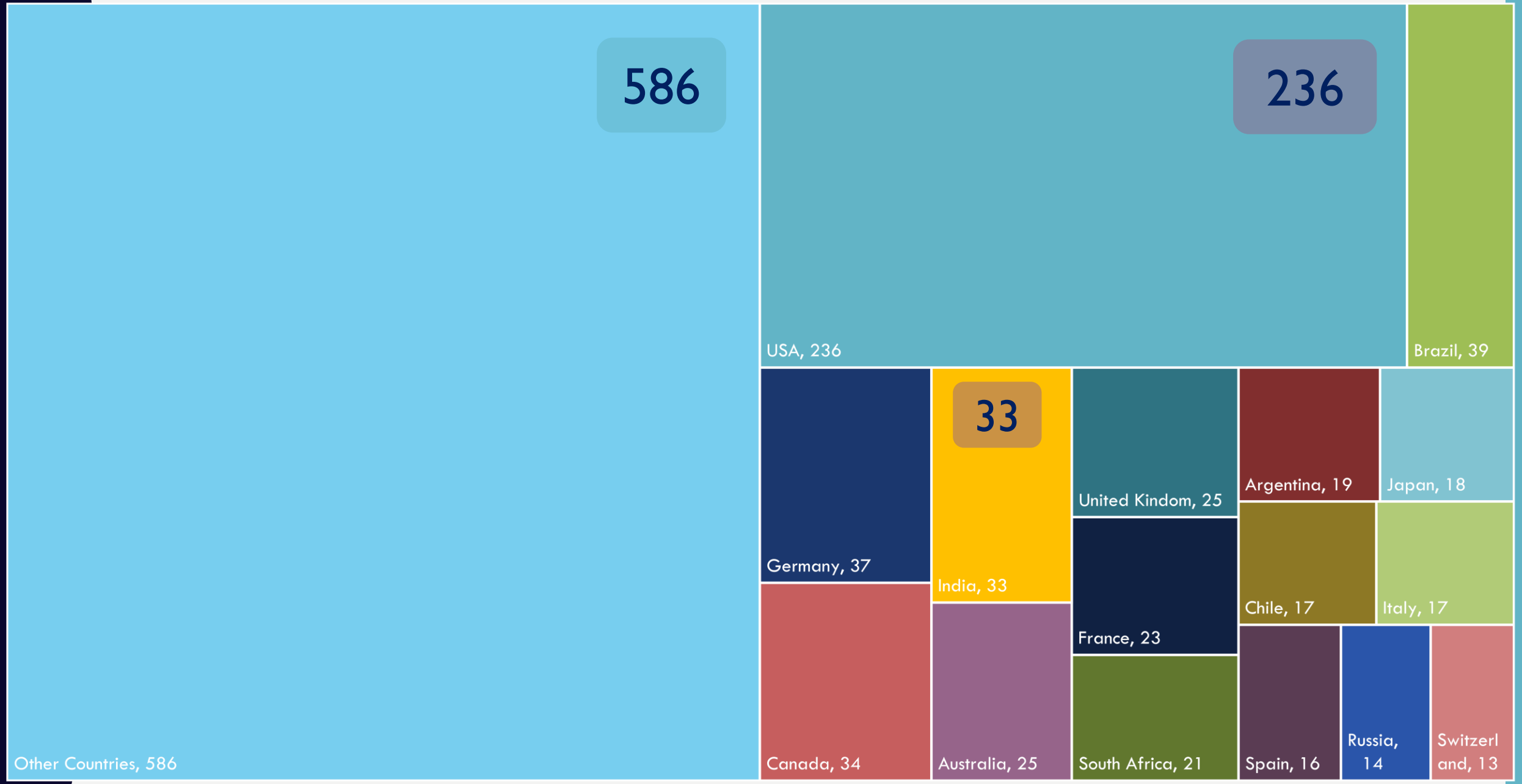
GIT IMPLEMENTATION IN OUR SERVERS



DEVELOPMENT ACTIVITIES IN SYNC WITH GIT

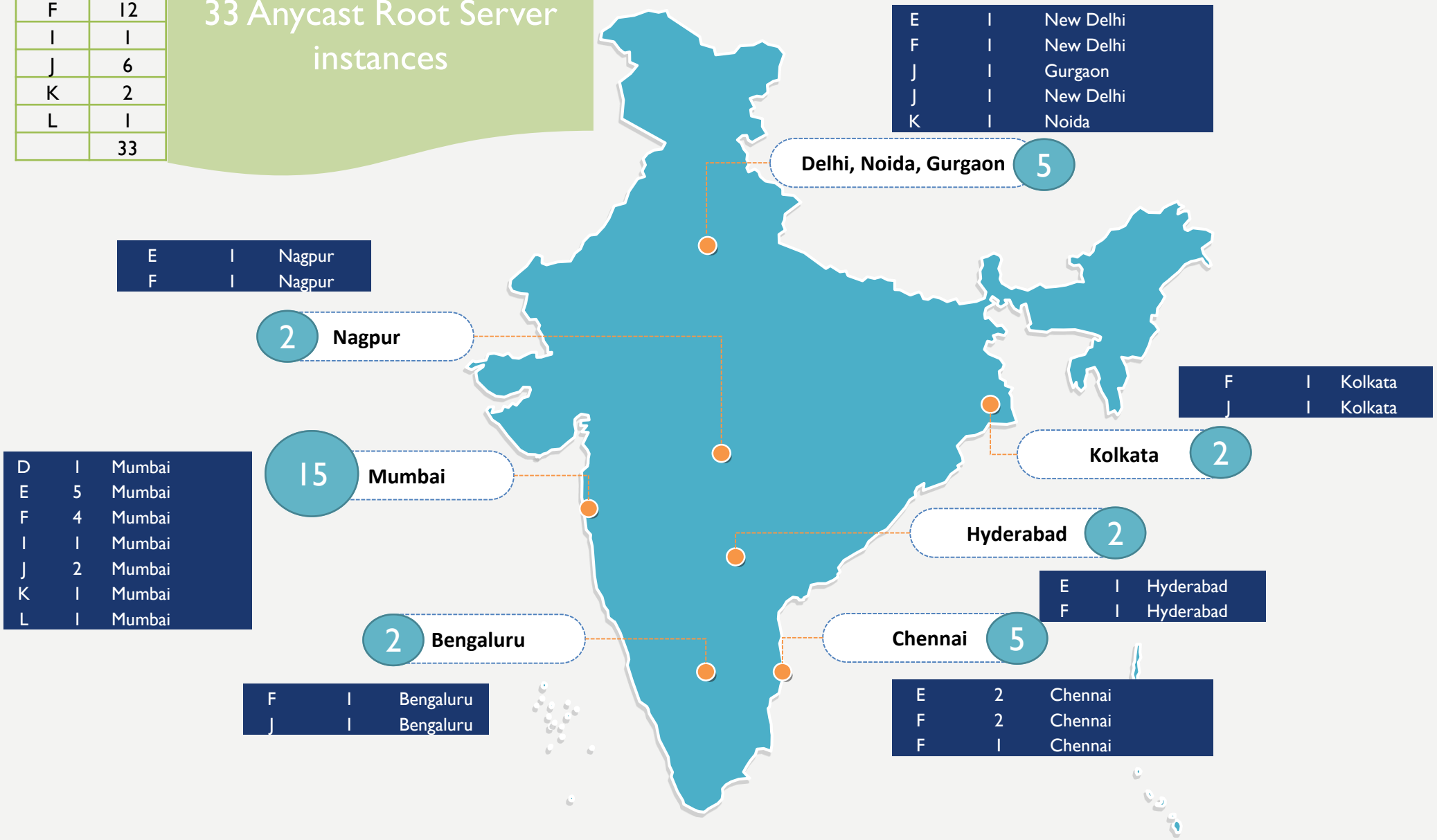


Anycast Root Server Deployment | 2019 | Total : 1173



D	1
E	10
F	12
I	1
J	6
K	2
L	1
	33

33 Anycast Root Server instances



WISH TO CONTRIBUTE

DROP A MAIL

ANAND@IIFON.ORG

COLLABORATE & INNOVATE

THANKS
TEAM AIORI