

INDIAN IETF CAPACITY BUILDING PROGRAM

IICB

www.iicb.org

APRIL - 2015



INDIAN IETF CAPACITY BUILDING PROGRAM- IICB PROGRAM

A project conceived by ISOC Kolkata Chapter and approved by
DeitY, Government of India

Welcome Message

Welcome to the compendium of content about IETF as part of India IETF Capacity Building Program. At Internet Society Kolkata Chapter technical issues, awareness and technical capacity development has been one of the core themes on which volunteer energy was used. Similarly over the next few months as well we will take an exciting journey of technical capacity development and have started our journey of multiple roadshows and seminars in this series from Guwahati.

This compendium is only an effort to provide a general overview about IETF and the way forward for India. Internet Society Kolkata Chapter or the editor is not responsible for the facts and figures. This compendium is not a claim on the authenticity of the facts and figures mentioned in this compendium. This document has been created by contributions from ISOC Kolkata Chapter Members and Anupam Agrawal, Chair of Kolkata Chapter. I wish to thank Indrajit De, Arijit Sarkar, T K Bhakta for the significant contributions and others who did their piece in small little way. The information contained herein is mostly from the open source but some data has been taken on as is where basis to complete the study and required permission has not been taken from the source. The idea is not to do plagiarism but to complete the view on the subject for internal consumption only. The recipient of this document, by its retention and use, agrees to protect the same and do not use for public display.

The initiative here in termed Indian IETF Capacity Building (IICB) Program is an attempt to increase the lower participation of Indians, corporate in the International Internet standard making process and specifically in IETF with the following objectives:

- Exposes and encourages participation in the IETF process from all states in India.
- Empower Internet professionals by broadening their experience and enabling their participation in open Internet standards development.
- Provides opportunities for Fellows to participate in the global Internet ecosystem and to interact and engage with the broader Internet engineering community.
- Increases the visibility of Fellows and prepares them to deliver more meaningful impacts at the local and regional level.

IICB Program Deliverables

Success Factor	ISOC IKOL Actions (Next 6 Months)
Conducive Environment	Road show on IETF Participation in educational Institutes. Ensure Individuals are part of WGs mailing list Road show in SME segment.
Logistical Arrangement	Two technical Seminars by forming consortium of Colleges / educational Institution named as IICB1 & IICB2 with call for paper. Creation of IETF area specific groups to submit bi weekly reports on work being done in that area.
IT Enablement	Development and Creation of Website with initiative details. Dashboard on Participation activities.

Let's make it a success!!!

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Prologue

The Internet we know is primarily defined by the mentioned attributes with an objective of keeping the core working and constant while edge of the network continues to grow. Internet allows for :

- ❖ Different Players at Different Layers
- ❖ Functional Interoperability
- ❖ Voluntary adoption of Technology
- ❖ Bottom Up Innovation
- ❖ Collaboration where needed.

In this process standardization plays a big role because just for browsing the web, there is a strong **interoperability** requirements which if not met will make Internet cease to exist.

BROWSING THE WEB			
802.11	IEEE	TCP/IP	IETF
URL	IETF	BGP	IETF
NAT	Propriet	HTTP	IETF
CSS	W3C	PNG	IETF
HTML	W3C/ISO	MPEG	ISO / IEC
XML	W3C	ADSL	ITU-T

The Standardization helps in meeting interoperability requirements and also enables the following:

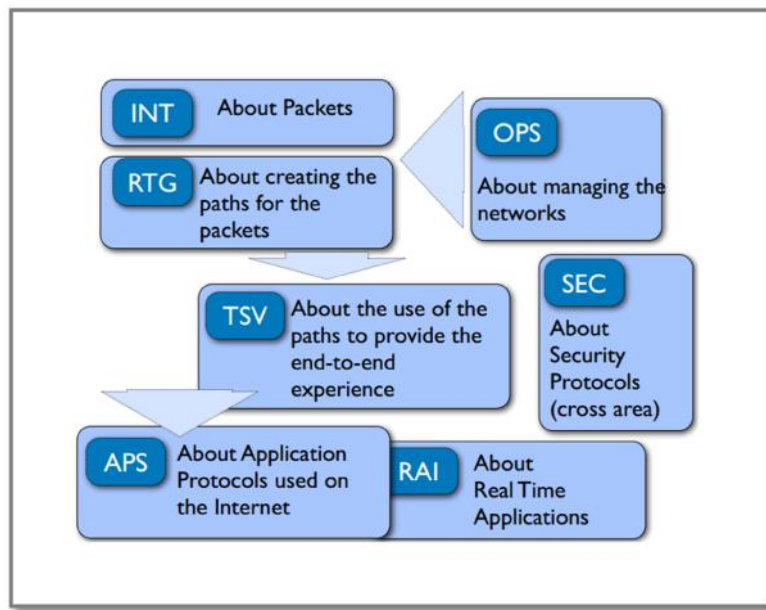
- ❖ Collective Empowerment
- ❖ Voluntary Adoption
- ❖ Availability
- ❖ Adherence to Principles
- ❖ Cooperation

The IETF (Internet Engineering Task Force) is the Internet's premier standards-making body, responsible for the development of protocols used in IP-based networks. IETF participants represent an international community of network designers, operators, vendors, and researchers involved in the technical operation of the Internet and the continuing evolution of Internet architecture.

The IETF Trust was created by the Internet Society and the Corporation for National Research Initiatives as settlors, the Internet Engineering Task Force and the Initial Trustees on December 15, 2005. The IETF Trust has been requested by the IESG and RFC Editor in November 2014 to provide a license in cases where RFCs contain Templates. The Trustees propose modifying the Trust Legal Provisions (TLP) based upon a need to extract and fill in text from RFCs that contain Templates. The change enables specific text in an RFC that is designated as a Template to be subject to a new provision in the TLP that says that extraction and modification are authorized.

The IETF Administrative Support Activity (IASA) as an activity housed within the Internet Society (ISOC). It defines the roles and responsibilities of the IETF Administrative Oversight Committee (IAOC), the IETF Administrative Director (IAD), and ISOC in the fiscal and administrative support of the IETF standards process. It also defines the membership and selection rules for the IAOC. The process by which the members of the IAB and IESG, and some members of the IAOC, are selected, confirmed, and recalled is specified in RFC 7437.

The IETF's standards development work is organized into 8 Areas. Each Area has 1 or more Area Directors (ADs), which together comprise the Internet Engineering Steering Group (IESG). The IESG is responsible for technical management of IETF activities, the Internet standards process, and for the actions associated with entry into and movement along the Internet "standards track," including final approval of specifications as Internet Standards and publication as an **RFC**



Within each Area¹ there is multiple **Working Groups** (WG)². Each WG has one or more chairs who manage the work, and a written charter defining what the work is and when it is due. There are 129 WGs. The WGs produce Internet Drafts (I-Ds) which often lead to the publication of an Internet standard as an RFC. People interested in particular technical issues join the mailing list³ of a WG and occasionally attend one or more of the three IETF meetings⁴ held every year.

IESG is considering some major changes in the IETF process and structure for balancing the need of timely response to industry and workload on Area Directors. Some major changes on the cards in IETF are:

MERGING OF UPPER LAYER PROTOCOL AREAS - Merge the APP, RAI, and TSV areas into one combined Network Applications (NAPP) area. From March 2015-March 2016, this combined area would be overseen by the five remaining ADs from APP, RAI, and TSV, with some redistribution of WG shepherding responsibilities among them to balance workloads. DISPATCH, TSVWG, and APPSAWG would continue to function much as they currently do.

ADDING A THIRD RTG Area Director- The load in the RTG area is currently unsustainably high. The placement of a third AD will have the effect of spreading that load such that the time requirement may now be more consistent with the work loads of ADs in other areas.

SHIFTING OF WG RESPONSIBILITY TO OUT-OF-AREA ADS - There are numerous instances where the constituency of a WG exists in a particular IETF area, but the most appropriate AD for that work happens to be in a different area, or where the ADs in the area are simply overloaded and an AD outside of the area is perfectly capable of managing the work. To address these possibilities, the IESG is moving towards a model where a WG can exist in one area, but its shepherding AD comes from another area. This flexibility will allow the IESG to apply its skills where they can be of most use while still keeping related WGs together within an area. The IESG proposes to experiment with this approach initially by shifting to out-of-area ADs for RADEXT, DIME, LMAP, and ANIMA, perhaps with another few WGs to follow.

¹ <http://datatracker.ietf.org/wg/> for the list of the Areas, the current WGs and their chairs

² <http://www.ietf.org/wg/> for Working Group Charters

³ (<http://datatracker.ietf.org/list/wg/>)

⁴ <http://www.ietf.org/meeting/> for meeting details

There has been participation by Indians in IETF and the state of affairs is as below as compiled from various sources.

POINT OF DEPARTURE -2015 - LOW BUT NOT TO BE DISCOURAGED



POINT OF ARRIVAL – 2020 – AMBITIOUS BUT DREAMING IS IMPORTANT



In this context ISOC Kolkata Chapter appreciates the confidence shown on us by NiXi (Dr. Govind & K B Narayanan) and special thanks to Dr. Ajay Kumar – Joint Secretary DeitY for supporting us. We look forward to your feedback to improve further.

Regards
 Anupam Agrawal
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 Internet Society Kolkata Chapter
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1 Overview

1.1 IETF background

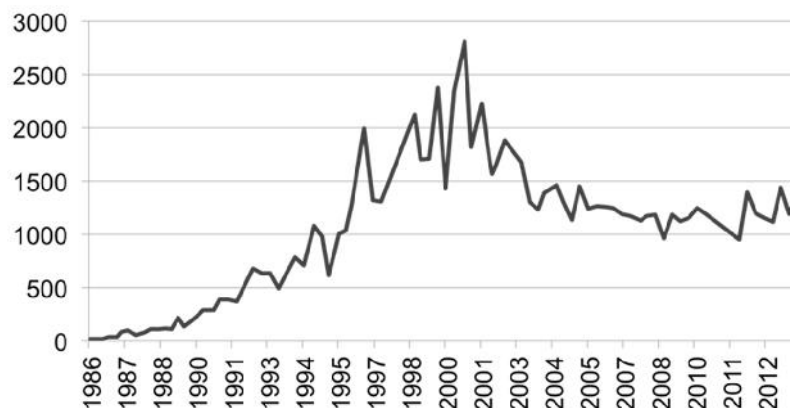
Internet Engineering Task Force was formed in 1986 as expansion of US ARPANET-related government activities primarily Internet Configuration Control Board (ICCB) (1979) and Internet Activities Board (1983). The activities of ICCB and IAB were not considered important for a long time, hence this was formed outside government control but continued to revive the US government support till 1997. The belief was

We reject kings, presidents and voting. We believe in rough consensus and running code – David Clarke (1992) on IETF Activities.

Some Key pointers are.

- IETF is an organized activity of Internet Society.
- Large open international community of network designers, operators, vendors, and researchers
- It is open to any interested individual. Companies Propose but ownership is of individual only.
- The IETF Mission Statement is documented in RFC 3935.
- 3 Physical Meeting are held each year with an average participation of 1500 people.

IETF Attendance Over the years



1.2 What is IETF

The Internet Engineering Task Force is a loosely self-organized group of people who contribute to the engineering and evolution of Internet technologies. It is the principal body engaged in the development of new Internet standard specifications. The IETF is unusual in that it exists as a collection of happenings, but is not a corporation and has no board of directors, no members, and no dues.⁵

⁵ <http://www.ietf.org/rfc/rfc4677.txt>

Network Working Group
Request for Comments: 1611
FYI: 17
Obsoletes: 3160
Category: Informational

P. Hoffman
VPN Consortium
S. Harris
University of Michigan
September 2006

The Tao of IETF: A Novice's Guide to
the Internet Engineering Task Force

Status of This Memo

This memo provides information for the Internet community. It does not specify an Internet standard of any kind. Distribution of this memo is unlimited.

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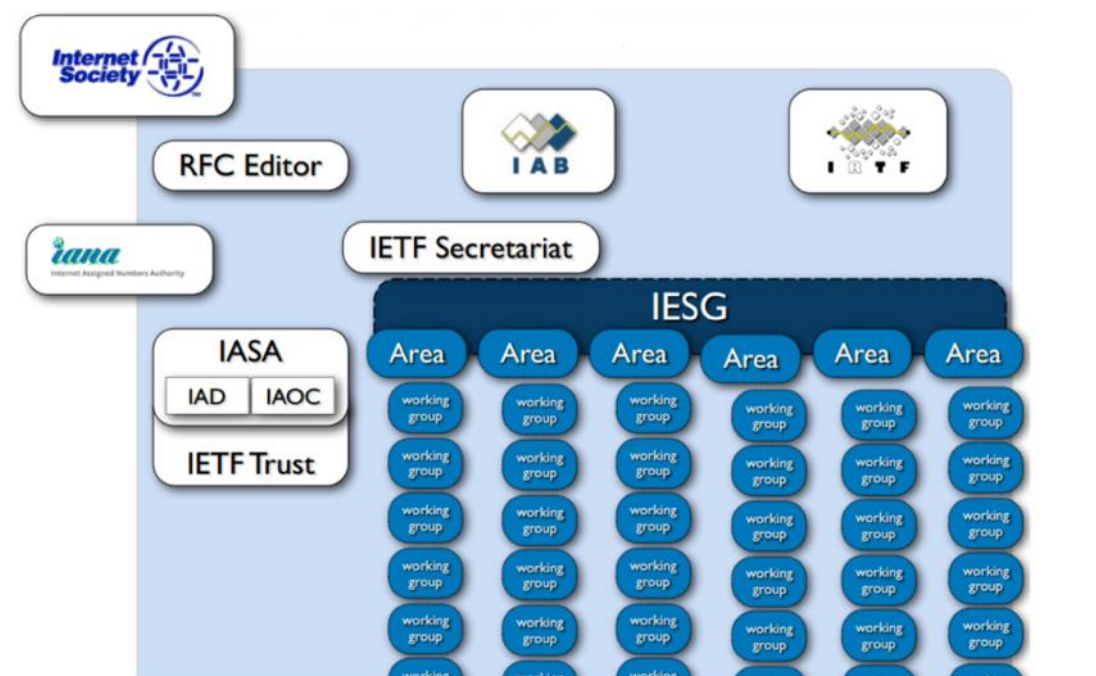
Abstract

This document describes the inner workings of IETF meetings and working groups, discusses organizations related to the IETF, and introduces the standards process. It is not a formal IETF process document but instead an informational overview.

1.3 IETF Mission

The mission of the IETF is to produce high quality, relevant technical and engineering documents that influence the way people design, use, and manage the Internet in such a way as to make the Internet work better. These documents include protocol standards, best current practices, and informational documents of various kinds.⁶ The details of the IETF purpose and objectives are in RFC 3935.

1.4 IETF Universe



⁶ <http://www.ietf.org/rfc/rfc3935.txt>

IETF agreed to come under ISOC legal umbrella in 1996 after a (long) open working-group-based discussion. ISOC is now the organizational and administrative home for IETF. It is the legal umbrella, insurance, IASA home, IAD employer, etc. Some important pointers:

- ISOC Board of Trustees part of appeal chain
- ISOC President appoints chair of nomcom of IETF.
- IAB chartered by ISOC
- ISOC President is on the IAB list & calls
- IETF (through IAB) appoints 4 ISOC trustees

Details and interlinking of various internet organizations is depicted in Section 2.

1.5 IETF Leadership

The standards process governed by IETF is fully open and everybody can participate and contribute to the development of the Internet. However the

IETF leadership analysis tells it is still a US controlled organization based on the people involved and organization involved.

Role	Area Name	Abbreviation	Name	Affiliation	Country
IETF Chair	Overall	ietf	Jeri Arkko	Ericsson	Finland
Area Director	Applications	app	Barry Leiba	Huawei Technologies	USA
Area Director	Applications	app	Pete Resnick	Qualcomm	USA
Area Director	Internet	int	Brian Haberman	Johns Hopkins University	USA
Area Director	Internet	int	Ted Lemon	Nominum	USA
Area Director	Operations & Management	ops	Benoit Claise	Cisco	USA
Area Director	Operations & Management	ops	Joel Jaeggli	Fastly	USA
Area Director	Real Time & Infrastructure	rai	Richard Barnes	Mozilla	USA
Area Director	Real Time & Infrastructure	rai	Alla Cooper	Cisco	USA
Area Director	Routing	rtg	Alia Atlas	Juniper Networks	USA
Area Director	Routing	rtg	Adrian Farrel	Juniper Networks	USA
Area Director	Security	sec	Stephen Farrell	Trinity College Dublin	Ireland
Area Director	Security	sec	Kathleen Moriarty	FMC Corporation	USA
Area Director	Transport	tsv	Spencer Dawkins	Huawei Technologies	USA
Area Director	Transport	tsv	Martin Stiemerling	NEC & Darmstadt University of Applied Sciences	Germany
Liasion - IAB Chair	Overall	ietf	Russ Housley	Vigil Security, LLC	USA
Liasion - IAB	Overall	ietf	Mary Barnes	Polycom	USA
Liasion - IETF Executive Director	Overall	ietf	Alexa Morris	Association Management Solutions, LLC	USA
Liasion - IANA	Overall	ietf	Michelle Cotton	ICANN	USA
Liasion - RFC Editor	Overall	ietf	Sandy Ginoza	Association Management Solutions, LLC	USA

1.6 IETF Trust

The IETF Trust was created by the Internet Society and the Corporation for National Research Initiatives as settlors, the Internet Engineering Task Force and the Initial Trustees on December 15, 2005. The purposes of the trust include the advancement of educational and public interest by acquiring, holding, maintaining and licensing certain existing and future intellectual property and other property used in connection with the Internet standards process and its administration, for the advancement of the science and technology associated with the Internet and related technology. The Beneficiary of the Trust shall be the IETF as whole and not any individuals who may participate in IETF activities or either of the Settlers.

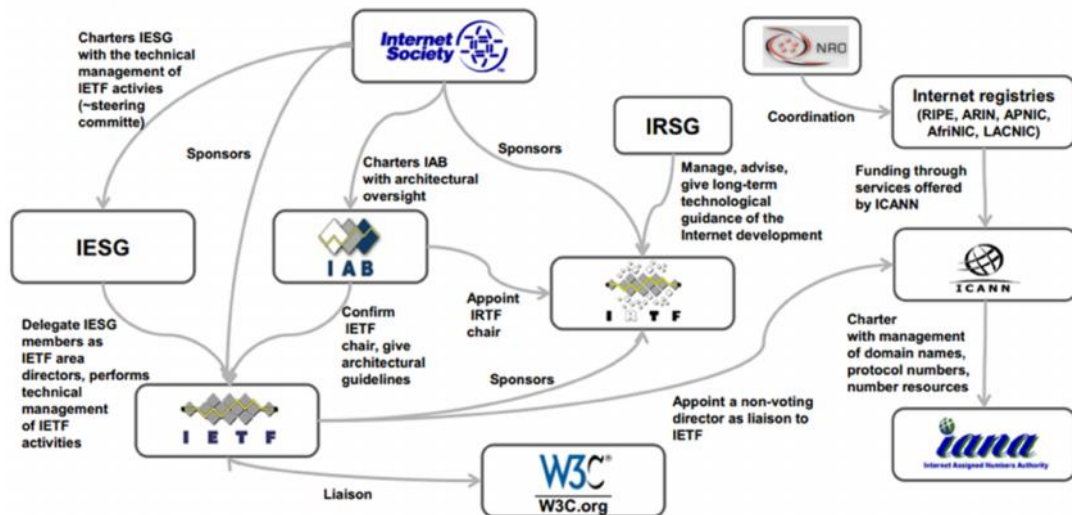
The trust agreement was amended on February 20, 2014 in accordance with the provisions of Section 10.1 hereof which states the Trustees may unilaterally amend the provisions of this Agreement without the written consent of the Settlers, except that no amendment shall be made with respect to the requirement that the Trust be used in furtherance of the Purpose or subject to the provisions of Sections 2.1 and 9.7. The

amendment was with respect to disposal of assets which was not permitted earlier. The details of the current trustees are as follows.

Role	Name	Affiliation	Country
Trustee	Jari Arkko	Ericsson	Finland
Trustee	Scott Bradner	Harvard University	USA
Trustee	Randy Bush	Internet Initiative	Japan
Trustee Chair	Tobias Gondrom	Thames Stanley	Germany
Trustee	Chris Griffiths	Dyn Engineering	USA
Trustee	Bob Hinden	Check Point Software	Israel
Trustee	Russ Housley	Vigil Security, LLC	USA
Trustee	Ray Pelletier	IETF Administrative Director	USA
Trustee	Kathy Brown	Internet Society	USA

2 Internet Organizations

The interlinking of various Internet organizations is as depicted below:



IAB – Internet Architecture Board

The IAB is responsible for the architecture and protocol development oversight. It is responsible for the Internet architecture as a whole with respect to aspects like scalability, openness of standards and evolution of the Internet architecture. While IETF is responsible for the IETF draft and RFC management, IAB oversees this activity and is the appeal board in case of complaints. IAB is a member of ISOC.

IESG - Internet Engineering Steering Group

IESG carries out the technical management of IETF activities and the Internet standards process. IRTF – Internet Research Task Force: IRTF conducts research on protocols, applications, architecture and technology.

IRSG – Internet Research Steering Group

The IRSG is responsible for steering the IRTF and provide good conditions for research carried out by IRTF.

W3C – World Wide Web Council

W3C develops web technology standards. W3C is not directly related to IETF, IAB or ISOC.

RIR - Regional Internet Registries

RIRs are responsible for the management and allocation of Internet number resources, namely IP addresses and AS numbers. There are 5 RIRs, each responsible for a region in the world: RIPE: Europe ARIN: America APNIC: Asia AfriNIC: Africa LACNIC: Latin America

NRO (Number Resource Organization) is a coordinating body for the efforts of the five RIRs.

ICANN

ICANN (formerly InterNIC) is an internationally organized non-profit organization under Californian right. The responsibilities of ICANN are:

- IP address space allocation
- gTLD (generic Top Level Domain) and ccTLD (country code TLD) DNS management (ICANN is the body that decides about the introduction of new TLDs)
- Root server system management
- Protocol identifier assignment While ICANN bears the responsibility for the tasks listed above, its sub-organization IANA actually does the management of these. ICANN is funded by the services it provides to the different internet registries.

IANA - Internet Assigned Numbers Authority:

IANA is the predecessor organization of ICANN. IANA still exists and now is an organization that actually manages the different duties of ICANN, namely the TLD, protocol number, IP address and AS number management.

More Organization Membership of ISOC from India and consolidated lobbying efforts for ISOC board seat. Use board position to push nominations for IESG, IAB, IRTF.

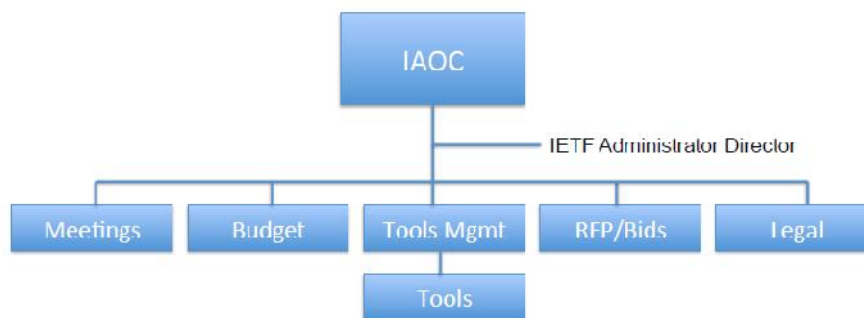
Further, for any IETF position, attendance in 3 out of last 5 IETF physical meeting is desired criteria. Continuity of people participating is the key.

3 IETF Administrative Oversight Committee

RFC 4071 provides the structure and guidance for the IASA, IAOC and IAD. The IASA structure is designed to ensure accountability and transparency of the IETF administrative and fiscal activities to the IETF community. The IAOC shall be accountable to the IETF community for the effectiveness, efficiency, and transparency of the IASA⁷

The IAOC has 6 Standing Committees:

- Finance Committee
- Legal Management Committee
- Meetings Committee
- Technology Management Committee
- Tools Development Committee
- RFP Committee



Around 20 Subpeonas & Legal Requests have been received by IETF and the details, of latest is given below.⁸

Month / Year	Legal Case	Status
Sep-14	Todd S. Glassey v. MicroSemi Inc et Al September 4, 2014	Order Denying Motions Filed 7 January 2015 21 January 2015
Nov-14	Ericsson Inc. v. Intellectual Ventures I LLC	RFC Editor Response 2014-11-20
Nov-14	Microsoft Corporation v. VirnetX 2014-11-03	RFC Editor Response 2014-11-07
Aug-14	Straight Path IP Group v. Samsung Electronics Co Ltd 2nd Request	RFC Editor Response 2014-08-19

⁷ <https://iaoc.ietf.org/about.html>

⁸ <https://iaoc.ietf.org/subpoenas.html>

4 IETF Meetings

The IAOC approves IETF meeting venues and requests the Internet Society to contract with the venue and appropriate vendors to effect that selection; approves new sponsorship initiatives; approves extraordinary meeting-related expenditures; and approves the IETF meetings calendar.

The Meetings Committee of the IAOC recommends IETF meeting venues to the IAOC; oversees the venues selection process; tracks the meetings sponsorship program; recommends extraordinary meeting-related expenses; and recommends the IETF meetings calendar to the IAOC.

4.1 Meetings Committee Roles and Responsibilities

- Oversee the 3 Year Plan venue selection process
- Select venues for site visits
- Recommend IETF meeting venues to the IAOC
- Track the meeting Sponsorship Program
- Recommend extraordinary expenses to the IAOC
- Recommend the IETF Meetings Calendar to the IAOC
- Ensure appropriate transparency for meetings-related matters
- Review and recommend meetings-related portions of the IAOC
- Mailing list: iaoc-mtgs@isoc.org

4.2 Members

- Fred Baker
- Marcia Beaulieu
- Dave Crocker
- **Drew Dvorshak**
- Tobias Gondrom
- Chris Griffiths
- Bob Hinden
- **Ole Jacobsen, Chair**
- Scott MacDonald
- Kirsten Machi
- Jim Martin
- Stephanie McCammon
- Alexa Morris
- Laura Nugent
- Ray Pelletier

4.3 Upcoming Meetings

Meeting No	Month / Year	Date	Location	Host
92	Mar - 2015	Mar 22-27	Dallas US	Google
93	Jul – 2015	Jul 19-24	Prague, Czech	TBD
94	Nov- 2015	Nov 1 - 6	Yokohama Japan	WIDE
95	Apr - 2016	April 3 -8	Argentina	TBD
96	Jul - 2016	Jul 17 - 22	Berlin, Germany	Juniper

IETF INVOLVEMENT – INSIGHTS & NEXT STEPS

97	Nov - 2016	Nov 13 - 18	Seoul, South Korea	TBD
98	Mar -2017	Mar 26-31	Canada	TBD
99	Jul – 2017	Jul 16-21	Europe	TBD
100	Nov- 2017	Nov 12- 17	Asia Pacific	TBD

India Should aim for Hosting the 100th Meeting. Time Short and bid / initial intent should be made now.

Sting

Work has started on this and NIXI is going to be hosting agency for India.

If not 100, we are getting 103rd IETF to India.

5 IETF Financials

5.1 Yearly Budget & Monthly Expense

Below is the ISOC Statement of Activity for the month ended 2014. Budgeted expectation from ISOC is 2.473 M USD in 2015 & 2.859 M USD in 2016.

Internet Society IETF Statement of Activity For the Month Ending October 31, 2014					
	October Actuals	YTD Actual	YTD Budget	YTD Variance	Annual Budget
Income					
IETF Registrations	\$ -	\$ 1,593,135	\$ 1,440,750	\$ 152,385	\$ 2,195,000
Meeting Sponsorships	-	650,000	600,000	60,000	930,000
InKind Sponsorships	-	175,330	173,334	4,996	250,000
Hotel Commissions	-	180,581	110,000	50,581	170,000
Bits-N-Bites	-	65,625	150,000	(84,375)	225,000
Event Revenue	-	105,500	100,000	5,500	150,000
Miscellaneous Revenue	(1,361)	122,921	20,000	102,921	25,000
Total Income	\$ (1,361)	\$ 2,886,093	\$ 2,594,084	\$ 292,009	\$ 3,955,000
Expenses					
RFC Editor	\$ 82,113	\$ 808,802	\$ 808,340	(462)	\$ 970,000
IETF Secretariat & Meeting (AMS)	155,400	1,546,600	1,546,600	-	1,857,000
Variable Managed Meeting Costs	13,882	683,059	618,929	(64,130)	945,000
Meeting Space	-	120,077	140,000	19,923	140,000
Other Meeting Expenses	10,089	225,094	176,057	(52,037)	254,400
NOC Expenses	-	399,757	390,000	(9,757)	568,000
IASA Support (incl. IAD expenses & salary)	14,896	277,161	331,837	54,676	402,500
IETF Support	-	22,617	23,750	1,233	33,000
IAB Support	-	36,870	23,750	(13,120)	33,000
IRTF Support	-	5,310	6,866	1,356	10,000
Independent Submissions Editor	-	11,143	13,334	2,191	20,000
Special Projects	-	-	37,500	37,500	50,000
NetCom Support	-	3,553	5,400	1,847	8,000
IETF Trust Expenses	7,010	31,839	32,580	741	38,100
Transition Expenses	-	-	7,500	7,500	10,000
IT Maintenance	10,650	75,770	100,000	21,231	150,000
G&A/Governance (Indirect)	13,858	139,581	250,000	110,419	300,000
Total Expenses	\$ 308,098	\$ 4,393,134	\$ 4,512,243	\$ 119,110	\$ 5,817,000
ISOC Direct Contribution excl. development	\$ (309,458)	\$ (1,507,041)	\$ (1,918,159)	\$ 411,118	\$ (1,862,000)
IT Tools Development	16,000	21,997	-	(21,997)	250,000
ISOC Direct Contribution incl. development	\$ (325,458)	\$ (1,529,038)	\$ (1,918,159)	\$ 389,121	\$ (2,112,000)

5.2 Meeting Expense & Income

The meeting expense and income for Toronto is given below to have a quick idea in terms expenditure and income. The Host sponsorship of 330, 000 USD (Rs. 2.1 Crore approximately) is the key income account for IETF.

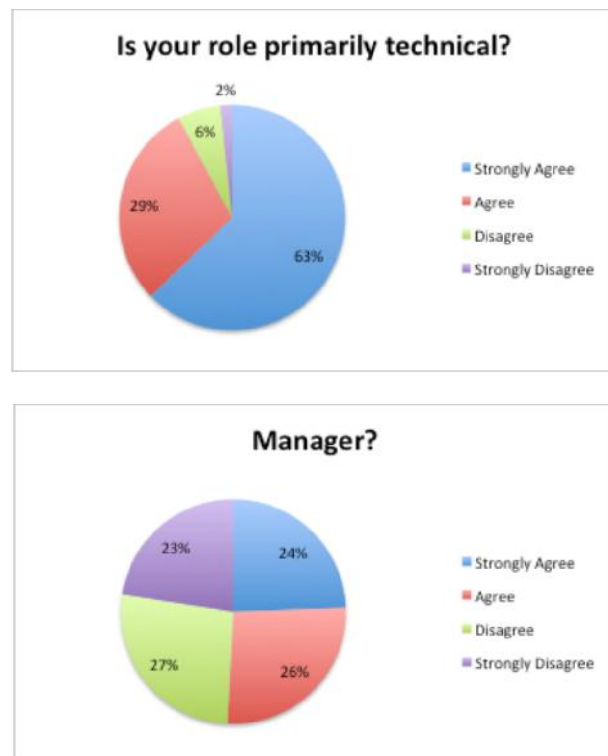
IETF Meetings 2014 IETF 90 Toronto				
Meeting Revenue	Actual	Budget	Variance	Notes
Registration	\$ 756,760	\$ 682,750	\$ 74,010	1
Sponsorships	\$ 330,000	\$ 300,000	\$ 30,000	
Event Sponsorships	\$ 75,500	\$ 50,000	\$ 25,500	
Bits-N-Bites	\$ 77,500	\$ 75,000	\$ 2,500	
Hotel Commissions	\$ 57,000	\$ 50,000	\$ 7,000	
Miscellaneous	\$ 104,930	\$ 73,500	\$ 31,430	2
TOTAL INCOME	\$ 1,401,690	\$ 1,231,250	\$ 170,440	
Meeting Expenses	Actual	Budget	Variance	Notes
Food & Beverage	\$ 243,802	\$ 247,720	\$ 3,918	
Network & Connectivity	\$ 165,898	\$ 185,000	\$ 19,102	
Meeting Space	\$ -	\$ -	\$ -	3
Meeting Labor	\$ 111,726	\$ 111,500	\$ (226)	
Audio Visual & Power	\$ 52,759	\$ 37,330	\$ (15,429)	
Miscellaneous	\$ 65,549	\$ 80,093	\$ 14,544	4
Total Meeting Expenses	\$ 639,734	\$ 661,643	\$ 21,909	
Funds Available for IETF Operations	\$ 761,956	\$ 569,607	\$ 192,349	5

Hosting Charges are USD 330,000 USD.
Approximately Rs.2 Crore INR.

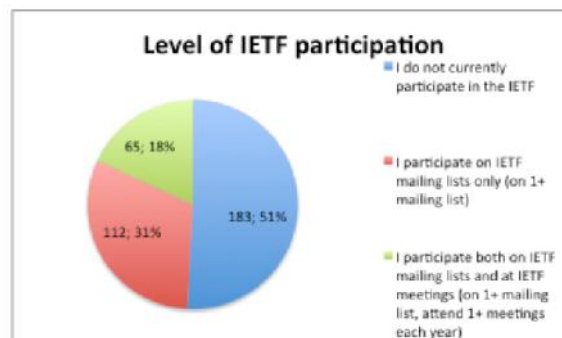
6 IETF Participation

Chris Gunderman of ISOC created a massive online Survey which started at the beginning of 2014 and ended on 1st of July 2014 and 368 people answered the survey. The key results are given below. Part of that is to understand what the issues are from the operators' perspective so that we can address the concerns and ultimately help make better standards.

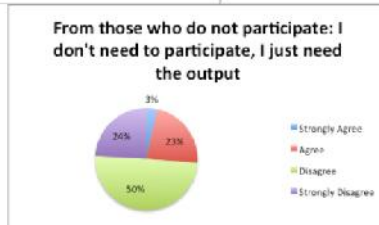
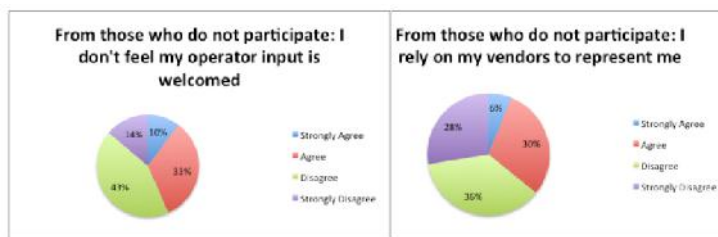
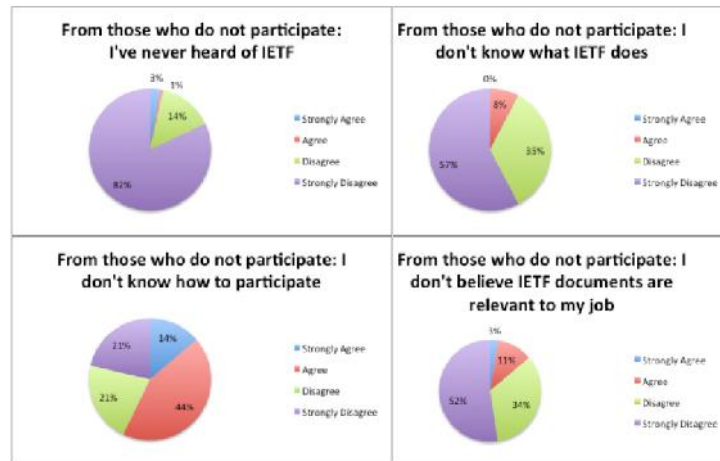
6.1 Role & Responsibility



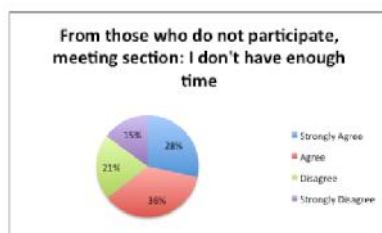
6.2 Level of IETF Participation



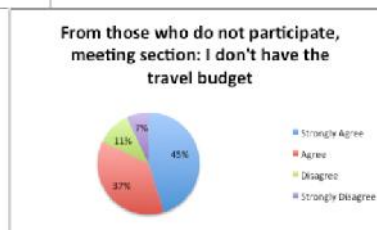
6.3 Do Not Participate - Reason Details



The Internet Society



The Internet Society



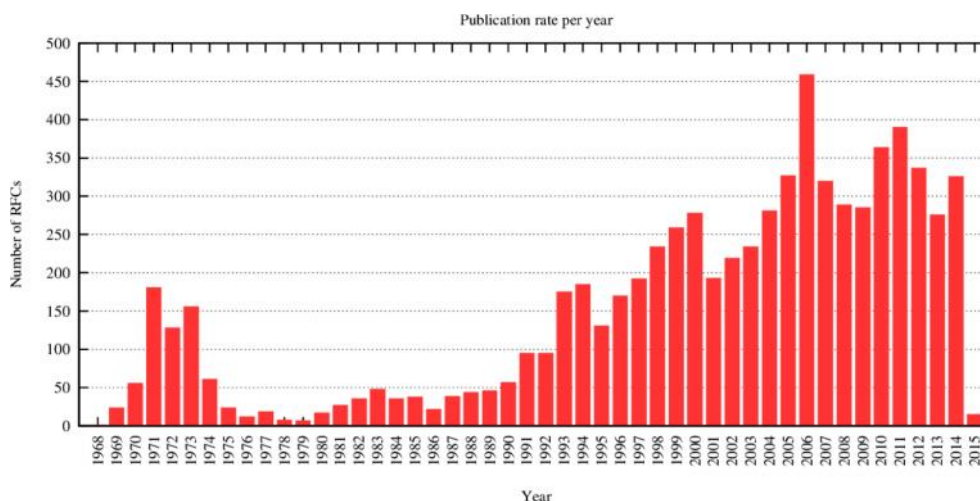
Do a similar survey in SANOG. Similar results expected. Take the results operators, vendors and service providers top down right from CEO.

Massive Campaign for IETF participation be initiated.

7 IETF Document Statistics

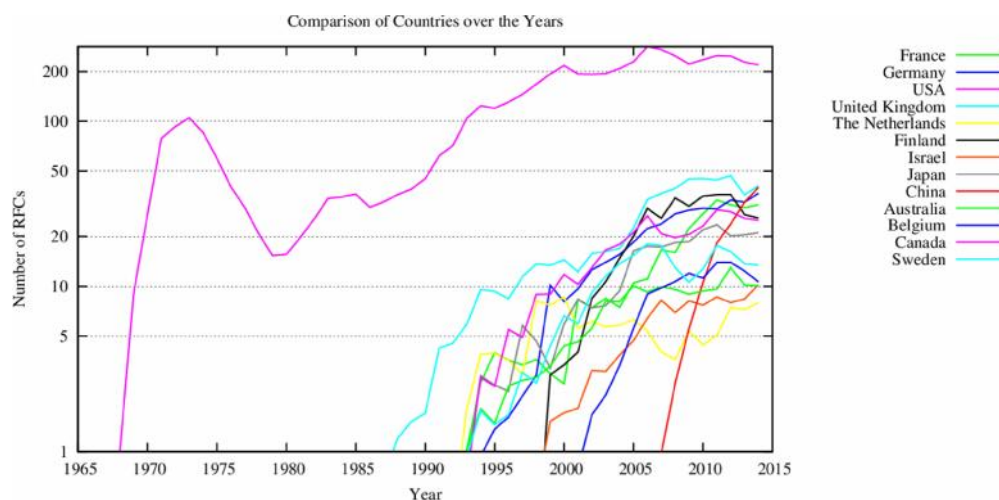
The source of this data is www.arkko.com. This is a website being run by Jari Arkko, the current chair of IETF. Data collected from arkko and datatracker.ietf.org have used to generate insights and / or individual opinions.

7.1 RFC Publication Rate & Involvement



Year	No. of RFC
2010	364
2011	390
2012	337
2013	276
2014	326

This was seen in the light of countries which were active in last 5 years.

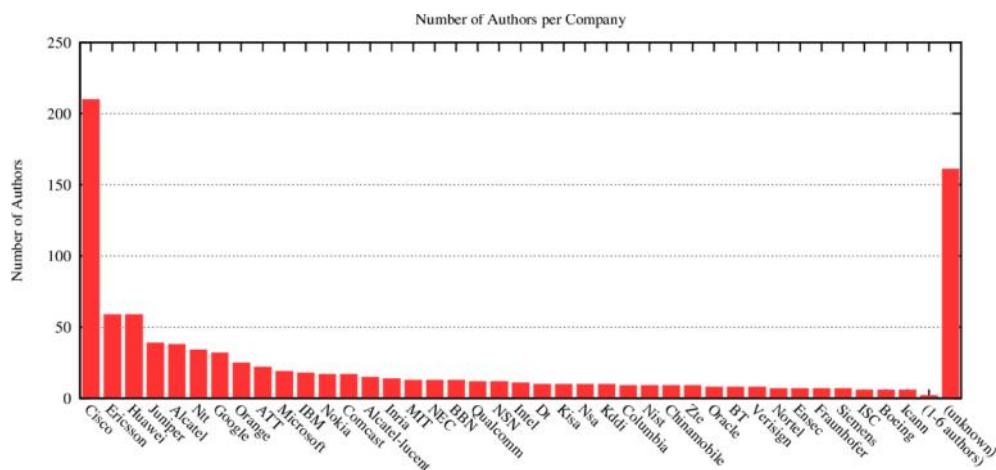


USA is maintaining the lead in terms of involvement and contribution. China has an exponential rise and Israel is also showing a positive trend.

Country data is calculated from the first occurrence of an author. The scale is logarithmic, and data has been smoothed using an exponential moving average with $\alpha = 0.40$. The last year (2015) has been excluded because of lack of sufficiently reliable data.

7.2 Authors & Their Backing Organization

Though it is the individual contribution, it is the organization behind which drives the standardization. Below is the most active organizations.



The name of the organization which has more than 10 active authors in IETF are listed below.

- Cisco has 210 (11.95%) authors.
- Ericsson has 59 (3.36%) authors.
- Huawei has 59 (3.36%) authors.
- Juniper has 39 (2.22%) authors.
- Alcatel has 38 (2.16%) authors.
- Ntt has 34 (1.94%) authors.
- Google has 32 (1.82%) authors.
- Orange has 25 (1.42%) authors.
- ATT has 22 (1.25%) authors.
- Microsoft has 19 (1.08%) authors.
- IBM has 18 (1.02%) authors.
- Nokia has 17 (0.97%) authors.
- Comcast has 17 (0.97%) authors.
- Alcatel-lucent has 15 (0.85%) authors.
- Inria has 14 (0.80%) authors.

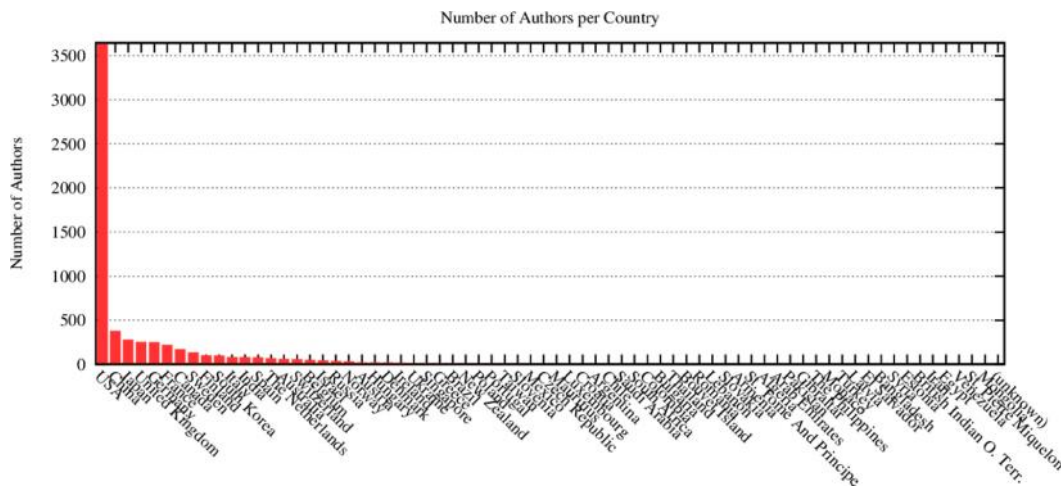
- MIT has 13 (0.74%) authors.
- NEC has 13 (0.74%) authors.
- BBN has 13 (0.74%) authors.
- Qualcomm has 12 (0.68%) authors.
- NSN has 12 (0.68%) authors.
- Intel has 11 (0.63%) authors.

No Company from India is having more than 10 authors involved in IETF.

7.3 Authors from Country View & India's Position

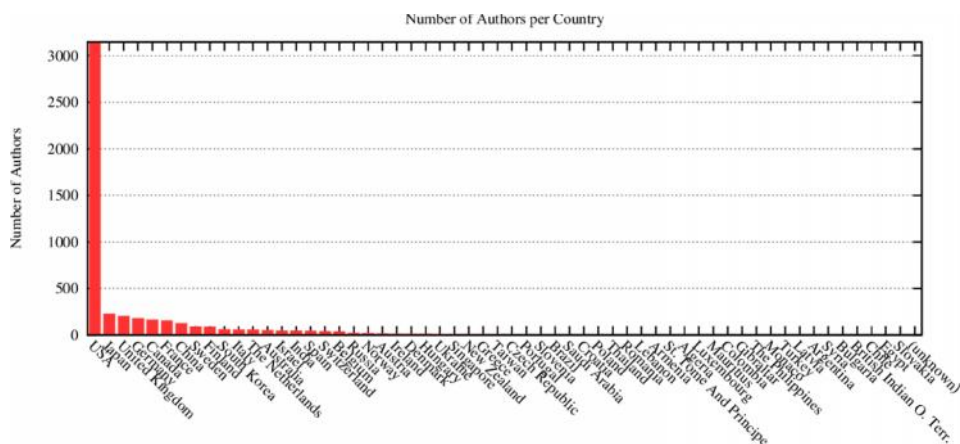
The analysis is being done on all document basis, recent RFC basis and draft document submitted basis to understand the participation level and the pipeline.

All Documents



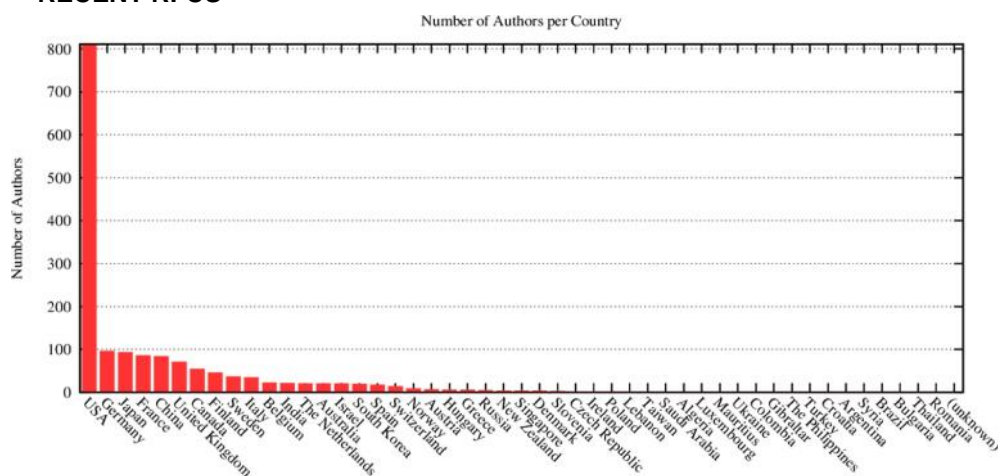
INDIA – 80 Authors, 15th Position

RFCs



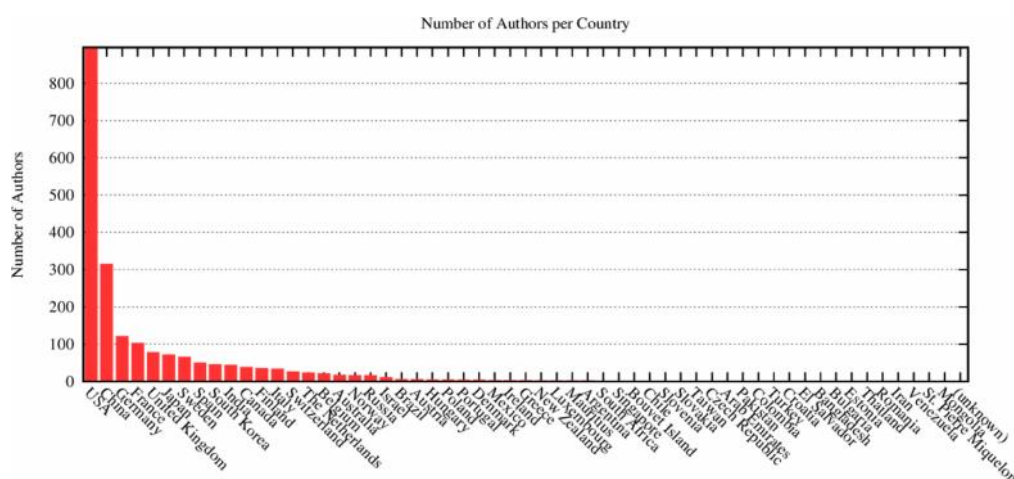
INDIA – 45 Authors, 15th Position

RECENT RFCS



21 AUTHORS- 12 TH POSITION

DRAFTS



45 AUTHORS, 10TH POSITION

45 Indians with 80 documents is occupying the 10th position in the draft category. This is weak pipeline compared to 229 authors from Japan and 3146 authors from USA.

The Indian authors who are active from India along with their organization affiliation is listed below. The count of Author's contribution alongside the organization and the number of documents which have converted to RFC gives a rare insight.

Name of Company	Count of Author	Count of Documents	Count of RFC
CISCO	21	21	18
Individual	8	8	6
Huawei	7	7	1
Juniper	6	6	
HCL	3	3	1
Ipinfusion	3	3	
TCS	3	3	
Wipro	3	3	3
Not Known	2	2	
Dell	2	2	
Samsung	2	2	
Airtel	2	2	1
Broadcom	2	2	
Infosys	2	2	2
Ixiacom	2	2	
Ernet	1	1	1
Freescall	1	1	1
Ti	1	1	
Microsoft	1	1	1
HNS	1	1	1
Motorola	1	1	1
Tenetindia	1	1	1
Alcatel	1	1	1
Verizon	1	1	
Oracle	1	1	1
Masconit	1	1	1
Ordyn	1	1	1
Grand Total	80	80	42

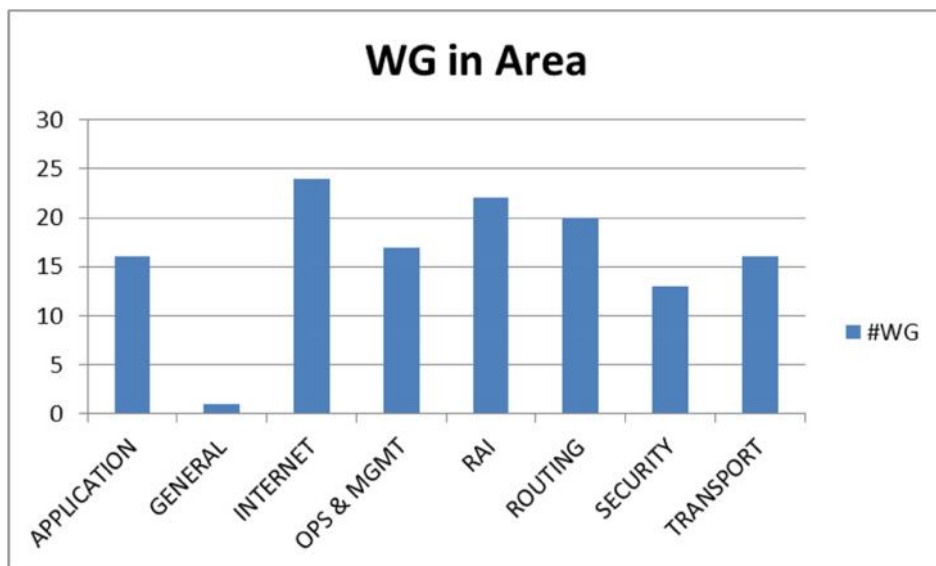
- 25 Companies are listed with Indian authors
- Indian Origin company is only 5.
- S V Raghavan from Ernet submitted RFC in 1995.

Collaboration among Indian companies to submit joint standards and push for each other.

8 IETF Areas & Working Groups

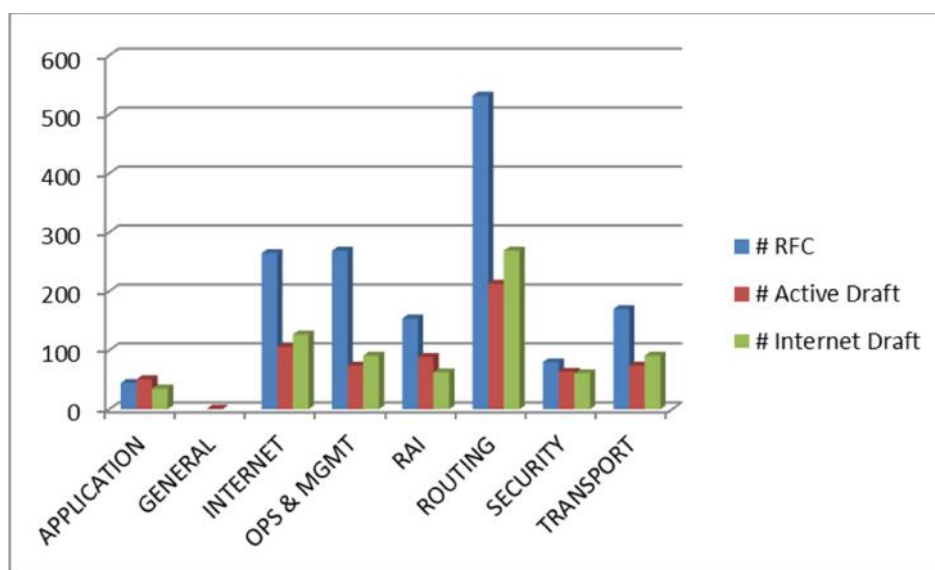
There are 129 WGs and 8 areas, an average of 16.12 WGs/area.

Area	#WG	WG %	RANK
APPLICATION	16	12.40%	5.5
GENERAL	1	0.78%	8
INTERNET	24	18.60%	1
OPS & MGMT	17	13.18%	4
RAI	22	17.05%	2
ROUTING	20	15.50%	3
SECURITY	13	10.08%	7
TRANSPORT	16	12.40%	5.5
Grand Total	129	100.00%	



The top 3 Areas for participation based on number of working groups in Area are Internet, RAI & Routing

Area	# RFC	# Active Draft	# Internet Draft	PRODUCT	RANK
APPLICATION	45	51	35	268	7
GENERAL		1		3	8
INTERNET	265	106	127	837	2
OPS & MGMT	269	74	91	673	3
RAI	154	89	63	547	5
ROUTING	532	213	269	1709	1
SECURITY	80	64	61	394	6
TRANSPORT	170	74	91	574	4
Grand Total	1515	672	737	5005	



The Areas based on the number of RFC, Active Draft and Internet Draft is Routing, Internet & OPS & Management

The working groups under various Areas based on the weightage received from the classification of Areas above and the activity of RFC, Internet Drafts and Active Drafts has been given below

AREA	WG NAME	WG DESCRIPTION	No. of RFC	No. of Active Draft	No. of Internet Draft
ROUTING	mpls	Multiprotocol Label Switching	135	21	31
ROUTING	idr	Inter-Domain Routing	67	26	23
ROUTING	ccamp	Common Control and Measurement Plane	91	16	5
INTERNET	dhc	Dynamic Host Configuration	85	9	11
ROUTING	pce	Path Computation Element	29	14	29
ROUTING	ospf	Open Shortest Path First IGP	57	12	17
TRANSPORT	tsvwg	Transport Area Working Group	60	11	17
OPS & MGMT	v6ops	IPv6 Operations	61	7	13
RAI	mmusic	Multiparty Multimedia Session Control	48	12	9
INTERNET	6man	IPv6 Maintenance	33	6	24
ROUTING	isis	IS-IS for IP Internets	39	7	15
INTERNET	trill	Transparent Interconnection of Lots of Links	18	19	7
OPS & MGMT	dnsop	Domain Name System Operations	17	14	15
INTERNET	softwire	Softwires	17	13	12
TRANSPORT	tcpm	TCP Maintenance and Minor Extensions	30	6	15
TRANSPORT	nfsv4	Network File System Version 4	19	14	8
ROUTING	manet	Mobile Ad-hoc Networks	22	12	9
SECURITY	tls	Transport Layer Security	31	9	9
TRANSPORT	ippm	IP Performance Metrics	34	8	8
SECURITY	oauth	Web Authorization Protocol	5	14	9
INTERNET	lisp	Locator/ID Separation Protocol	9	9	13
APPLICATION	appsawg	Applications Area Working Group	25	9	5

The working groups which should be focused on three to 6 months' time frame are the new ones created under the following areas there is no RFC published but the activity is very high in terms of Internet drafts and active drafts.

AREA	WG NAME	WG DESCRIPTION	No. of Active Draft	No. of Internet Draft
ROUTING	bess	BGP Enabled Services	23	16
ROUTING	i2rs	Interface to the Routing System	5	27
ROUTING	sfc	Service Function Chaining	5	25
RAI	rtweb	Real-Time Communication in WEB-browsers	13	10
ROUTING	teas	Traffic Engineering Architecture and Signaling	15	1
ROUTING	spring	Source Packet Routing in Networking	4	15
ROUTING	pals	Pseudowire And LDP-enabled Services	12	1
TRANSPORT	rmcat	RTP Media Congestion Avoidance Techniques	5	7
INTERNET	6tisch	IPv6 over the TSCH mode of IEEE 802.15.4e	6	5
OPS & MGMT	lmap	Large-Scale Measurement of Broadband Performance	3	8
SECURITY	htpauth	Hypertext Transfer Protocol Authentication	7	1
TRANSPORT	aqm	Active Queue Management and Packet Scheduling	7	1
SECURITY	ace	Authentication and Authorization for Constrained Environments	1	10

The working groups which should be focused on immediate basis are the new ones created under the following areas there is no RFC published, no active drafts but the activity is very high in terms of Internet drafts.

AREA	WG NAME	WG DESCRIPTION	No.of Internet Draft
RAI	dispatch	Dispatch	10
SECURITY	trans	Public Notary Transparency	7
OPS & MGMT	anima	Autonomic Networking Integrated Model and Approach	6
OPS & MGMT	lime	Layer Independent OAM Management in the Multi-Layer Environment	3
RAI	webpush	Web-Based Push Notifications	3
TRANSPORT	tcpinc	TCP Increased Security	2
APPLICATION	dmarc	Domain-based Message Authentication, Reporting & Conformance	1
TRANSPORT	dtn	Delay/Disruption Tolerant Networking	1

9 Focused Technical Areas

9.1 Security Updates

There are security updates for the following which needs to be seen and noted.

- BIND 9.10.1-P1
- BIND 9.9.6-P1
- Unbound 1.5.1 (1.4.22-P1)
- Power DNS Recursor 3.6.2

9.2 DNS

Following recently released RFC should be taken note of :

RFC	Title			Category
7344	Automating Maintenance	DNSSEC	Delegation Trust	Informational

Critical Pointers are

- automates the updates of the DNSSEC trust chain information in the parent zone
- defines two new record types: CDS (Client-DS) and CDNSKEY (Client-DNSKEY)
- operator of a DNSSEC secured child zone publishes new DS via CDS, or new DNSKEY via CDNSKEY
- parent zone operator monitors the child zone and imports new DS and DNSKEY data from the child

9.3 .home Special Use Domain Name

Critical Pointers are

- Proposal to designate the ".home" TLD as a "private use" domain
- <http://www.ietf.org/proceedings/91/slides/slides-91-dnsop-8.pdf>
- <http://tools.ietf.org/html/draft-cheshire-homenet-dot-home-01>

9.4 DNS Privacy

Critical Pointers are

- New Working group formed in Dec-14.
- The DNS Private Exchange (DPRIVE) Working Group is mandated to develop mechanisms to provide confidentiality to DNS transactions, to address concerns surrounding pervasive monitoring (RFC 7258).
- One document submitted - draft-bortzmeyer-dnsop-dns-privacy
- By Mar-15 one protocol is expected on this.

9.5 QUIC Deployment

Critical Pointers are

- Quick UDP Internet Connections (QUIC).
- Increases load performance of web pages
- Will be supported in future chrome browsers and google sites are being QUIC enabled.

9.6 IPv6 / IPv4 Sunset

Critical Pointers of issues and the related drafts are

- Some problems observed in only IPv6 deployments.
 - draft-song-sunset4-ipv6only-dns
- Recommendation on Stable IPv6 Interface Identifiers
 - draft-ietf-6man-default-iids
- Deprecating the Generation of IPv6 Atomic Fragments
 - draft-ietf-6man-deprecate-atomfraggeneration
- IPv6 Prefix Length Recommendation for Forwarding
 - draft-boucadair-6man-prefix-routing-reco
- IPv6 Extension Headers in Real world
 - draft-gont-v6ops-ipv6-ehs-in-real-world-01
- Transmission and Processing of IPv6 Options
 - draft-gont-6man-ipv6-opt-transmit-00
- IPv4 Service Continuity for IPv6 Data Centres
 - draft-anderson-v6ops-siit-dc-01

RFC	Title	Category
7335	IPv4 Service Continuity Prefix (192.0.0.0/29)	Standards Track
7343	An IPv6 Prefix for Overlay Routable Cryptographic Hash Identifiers Version 2 (ORCHIDv2)	Standards Track
7346	IPv6 Multicast Address Scopes	Standards Track
7371	Updates to the IPv6 Multicast Addressing Architecture	Standards Track
7381	Enterprise IPv6 Deployment Guidelines	Informational
7404	Using Only Link-Local Addressing inside an IPv6 Network	Informational

9.7 DHCP

Critical Pointers of issues and the related drafts are

- Privacy in DHCP.
 - draft-krishnan-dhc-dhcpv6-privacy-00
 - draft-jiang-dhc-dhcpv4-privacy-00
- DHCPv6 Options
 - draft-ietf-dhc-dhcpv6-statefulissues-09

RFC	Title	Category
7341	DHCPv4-over-DHCPv6 (DHCP 4o6) Transport	Standards Track

9.8 Recently Released RFCs

RFC 7400 6LoWPAN-GHC: Generic Header Compression for IPv6 over Low-Power Wireless Personal Area Networks (6LoWPANs)

Authors: C. Bormann.
Date: November 2014

RFC 6282 defines header compression in 6LoWPAN packets (where "6LoWPAN" refers to "IPv6 over Low-Power Wireless Personal Area Network"). The present document specifies a simple addition that enables the compression of generic headers and header-like payloads, without a need to define a new header compression scheme for each such new header or header-like payload.

RFC 7403 A Media-Based Traceroute Function for the Session Initiation Protocol (SIP)

Authors: H. Kaplan.
Date: November 2014

SIP already provides the ability to perform hop-by-hop traceroute for SIP messages using the Max-Forwards header field to determine the reachability path of requests to a target. A mechanism for media- loopback calls has also been defined separately, which enables test calls to be generated that result in media being looped back to the originator. This document describes a means of performing hop-by-hop traceroute-style test calls using the media-loopback mechanism to test the media path when SIP sessions go through media-relaying back- to-back user agents (B2BUAs).

RFC 7405 Case-Sensitive String Support in ABNF

Authors: P. Kyzivat.
Date: December 2014

This document extends the base definition of ABNF (Augmented Backus-Naur Form) to include a way to specify US-ASCII string literals that are matched in a case-sensitive manner.

RFC 7407 A YANG Data Model for SNMP Configuration

Authors: M. Bjorklund, J. Schoenwaelder. This document defines a collection of YANG definitions for configuring SNMP engines.
Date: December 2014

RFC 7408 Forwarding and Control Element Separation (ForCES) Model Extension

Authors: E. Haleplidis.
Date: November 2014

This memo extends the Forwarding and Control Element Separation(ForCES) model defined in RFC 5812 and updates that RFC to allow complex data types for metadata, optional default values for data types, and optional access types for structures. It also fixes an issue with Logical Functional Block (LFB) inheritance and introduces two new features: a new event condition called eventBecomesEqualTo and LFB properties. The changes introduced in this memo do not alter the protocol and retain backward compatibility with older LFB models.

RFC 7410 A Property Types Registry for the Authentication-Results Header Field

Authors: M. This document updates RFC 7001 by creating a registry

Kucherawy.
 Date: December 2014
 for property types in the Authentication-Results header field, used in email authentication work, rather than limiting participants to using the original, small set of fixed values.

RFC 7420 Path Computation Element Communication Protocol (PCEP) Management Information Base (MIB) Module

Authors: A. Koushik, E. Stephan, Q. Zhao, D. King, J. Hardwick.
 Date: December 2014
 This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it describes managed objects for modeling of the Path Computation Element Communication Protocol (PCEP) for communications between a Path Computation Client (PCC) and a Path Computation Element (PCE), or between two PCEs.

RFC 7427 Signature Authentication in the Internet Key Exchange Version 2 (IKEv2)

Authors: T. Kivinen, J. Snyder.
 Date: January 2015
 The Internet Key Exchange Version 2 (IKEv2) protocol has limited support for the Elliptic Curve Digital Signature Algorithm (ECDSA). The current version only includes support for three Elliptic Curve groups, and there is a fixed hash algorithm tied to each group. This document generalizes IKEv2 signature support to allow any signature method supported by PKIX and also adds signature hash algorithm negotiation. This is a generic mechanism and is not limited to ECDSA; it can also be used with other signature algorithms.

RFC 7433 A Mechanism for Transporting User-to-User Call Control Information in SIP

Authors: A. Johnston, J. Rafferty.
 Date: January 2015
 There is a class of applications that benefit from using SIP to exchange User-to-User Information (UII) data during session establishment. This information, known as call control UII data, is a small piece of data inserted by an application initiating the session and utilized by an application accepting the session. The syntax and semantics for the UII data used by a specific application are defined by a UII package. This UII data is opaque to SIP and its function is unrelated to any basic SIP function. This document defines a new SIP header field, User-to-User, to transport UII data, along with an extension mechanism.

RFC 7434 Interworking ISDN Call Control User Information with SIP

Authors: K. Drage, Ed., A. Johnston.
 Date: January 2015
 The motivation and use cases for interworking and transporting User- to-User Information (UII) from the ITU-T Digital Subscriber Signaling System No. 1 (DSS1) User-user information element within SIP are described in RFC 6567. As networks move to SIP, it is important that applications requiring this data can continue to function in SIP networks as well as have the ability to interwork with this ISDN service for end-to-end transparency. This document defines a usage (a new package called the ISDN UII package) of the User-to-

User header field to enable interworking with this ISDN service.

This document covers interworking with both public ISDN and private ISDN capabilities, so the potential interworking with QSIG will also be addressed.

The package is identified by the new value "isdn-uu" of the "purpose" header field parameter.

RFC 7438 Multipoint LDP (mLDP) In-Band Signaling with Wildcards

Authors: IJ. Wijnands, Ed., E. Rosen, A. Gulko, U. Joorde, J. Tantsura.
 Date: January 2015

There are scenarios in which an IP multicast tree traverses an MPLS domain. In these scenarios, it can be desirable to convert the IP multicast tree "seamlessly" into an MPLS Multipoint Label Switched Path (MP-LSP) when it enters the MPLS domain, and then to convert it back to an IP multicast tree when it exits the MPLS domain. Previous documents specify procedures that allow certain kinds of IP multicast trees (either Source-Specific Multicast trees or Bidirectional Multicast trees) to be attached to an MPLS Multipoint Label Switched Path (MP-LSP). However, the previous documents do not specify procedures for attaching IP Any-Source Multicast trees to MP-LSPs, nor do they specify procedures for aggregating multiple IP multicast trees onto a single MP-LSP. This document specifies the procedures to support these functions. It does so by defining "wildcard" encodings that make it possible to specify, when setting up an MP-LSP, that a set of IP multicast trees, or a shared IP multicast tree, should be attached to that MP-LSP. Support for non-bidirectional IP Any-Source Multicast trees is subject to certain applicability restrictions that are discussed in this document. This document updates RFCs 6826 and 7246.

RFC 7440 TFTP Window Size Option

Authors: P. Masotta.
 Date: January 2015

The "Trivial File Transfer Protocol" (RFC 1350) is a simple, lockstep, file transfer protocol that allows a client to get or put a file onto a remote host. One of its primary uses is in the early stages of nodes booting from a Local Area Network (LAN). TFTP has been used for this application because it is very simple to implement. The employment of a lockstep scheme limits throughput when used on a LAN.

This document describes a TFTP option that allows the client and server to negotiate a window size of consecutive blocks to send as an alternative for replacing the single-block lockstep schema. The TFTP option mechanism employed is described in "TFTP Option Extension" (RFC 2347).

RFC 7441 Encoding Multipoint LDP (mLDP) Forwarding Equivalence Classes (FECs) in the NLRI of BGP MCAST-VPN Routes

Authors: IJ. Wijnands, E. Rosen, U. Joorde.
 Date: January 2015

Many service providers offer "BGP/MPLS IP VPN" service to their customers. Existing IETF standards specify the procedures and protocols that a service provider uses in order to offer this service to customers.

who have IP unicast and IP multicast traffic in theirVPNs. It is also desirable to be able to support customers who haveMPLS multicast traffic in their VPNs. This document specifies the procedures and protocol extensions that are needed to support customers who use the Multipoint LDP (mLDP) as the control protocol for their MPLS multicast traffic. Existing standards do provide some support for customers who use mLDP, but only under a restrictive set of circumstances. This document generalizes the existing support to include all cases where the customer uses mLDP, without any restrictions. This document updates RFC 6514.

LDP Extensions to Support Maximally Redundant Trees

draft-ietf-mpls-ldp-mrt-00.txt

Date: 08/01/2015

Authors: Alia Atlas, Kishore
Tiruveedhula, Chris
Bowers, Jeff Tantsura,
JJsbrand Wijnands

Working Multiprotocol Label
Group: Switching (mpls)

This document specifies extensions to the Label Distribution Protocol(LDP) to support the creation of label-switched paths for Maximally Redundant Trees (MRT). A prime use of MRTs is for unicast and multicast IP/LDP Fast-Reroute, which we will refer to as MRT-FRR. The sole protocol extension to LDP is simply the ability to advertise an MRT Capability. This document describes that extension and the associated behavior expected for LSRs and LERs advertising the MRT Capability. MRT-FRR uses LDP multi-topology extensions and requires three different multi-topology IDs to be allocated from the LDP MT-ID space.

10EPILOGUE

The key recommendations are basically the guiding principles for all activities related to increased IETF participation and meaningful IETF contribution.

- ❖ **Continuity in Participation**
 - For any position in IETF, physical participation in IETF meetings is mandatory. At least three out of last five meetings, one should have attended.
 - Identify IETF Team and ensuring their continuous participation.
- ❖ **Bid for Hosting IETF & Sponsorships**
 - Work for finalization of place of meeting starts 3 year before the meeting date.
 - Nov-2017 meeting is 100th IETF meeting scheduled to be hosted in Asia Pacific.
 - Nov-2018 Meeting is 103rd meeting.
- ❖ **Mass Awareness and Participation**
 - All the engineering students and faculty to be made aware fo the possibilities of participation.
 - All SMEs and IT Companies to be encouraged for participation in the creation of standards.

*** End of Document ***