IETF Structure and Internet Standards Process

Scott Bradner
62nd IETF
Minneapolis, MN
The IETF

Internet Engineering Task Force
Formed in 1986
Was not considered important for a long time - good!!
Not government approved - great!!
People not companies

“rough consensus and running code”

Dave Clark
IETF Overview

IETF has **no** members, **no** voting
1,200 to 2,000 at 3/year meetings, **more** on mail lists
124ish **working groups** (where real work happens)
If it matters to the Internet, it matters to us
7 **areas** (for organizational convenience)
   - APS, GEN, INT, O&M, RTG, SEC, TSV
Management: **IESG** (ADs, chosen by community)
Architectural guidance & liaisons: **IAB** (also chosen by community)
Produces **standards** and other **documents**
Organization of the IETF

Internet Society

IAB

IRTF

IANA

RFC

IASA

IESG

area

area

area

“the IETF”
The Internet Society (ISOC)

Non-profit, non-governmental, international, professional membership organization
100 organization and 20,000 individual members in over 180 countries
Provides organizational and administrative home for IETF
Legal umbrella, insurance, etc.
The ISOC BoT part of IETF appeal chain
The ISOC president appoints chair of IETF nomcom
IAB chartered by the ISOC
The ISOC president is on the IAB mailing list & calls
IETF (through IAB) appoints 3 ISOC trustees

join at www.isoc.org
Internet Research Task Force (IRTF)

Focused on long term problems in Internet

- Anti-Spam
- Crypto Forum
- Delay-Tolerant Networking
- End-to-End
- Host Identity Protocol
- Internet Measurement
- IP Mobility Optimizations
- Network Management
- Peer-to-Peer
- Routing

For more information see http://www.irtf.org
Internet Architecture Board (IAB)

Provides overall **architectural advice** to the IESG, the IETF & the ISOC
Advises the IESG on IETF working group formation
Deals with IETF external liaisons
Appoints the IRTF chair
Selects the IETF-IANA
Oversees the RFC Editor
Hosts workshops
Chartered by the ISOC
IAB Members

Bernard Aboba
Loa Andersson
Brian Carpenter
  (new IETF Chair)
Leslie Daigle
  (current IAB chair)
Patrik Fältström
Kurtis Lindqvist

Bob Hinden
Dave Meyer
Eric Rescorla
Pekka Nikander
Pete Resnick
Jonathan Rosenberg
Lixia Zhang
Internet Assigned Number Authority (IANA)

Assigns parameters and keeps them from colliding
  protocol numbers
  IP addresses
    mostly delegated to the 4 (going on 5) IP Address registries
  domain names
    deals with top level domains (TLDs)
    rest delegated to DNS name registries
Functions split with the creation of ICANN
  Internet Corporation for Assigned Names and Numbers
  Independent corporation to take over IANA functions
  Under contract with US government
Now IETF-IANA and non-IETF-IANA
RFC Editor

Historically Jon Postel and helpers
Now a small group funded by the ISOC
.rfc-editor@rfc-editor.org
Semi-independent
Gets requests to publish IETF IDs from IESG
Gets requests to publish independent info and exp RFCs
asks IESG for advice on publishing independent RFCs
but can exercise own discretion
presumption is to publish technically competent IDs
which sometimes is a conflict with IESG
IETF Chair

Brian Carpenter <chair@ietf.org>
also chair of the IESG
also director of the General Area
also ex officio member of the IAB
Nominated by IETF community - this includes you
Selected by nomcom
IETF’s “CTO” - “Chief Talking (& Traveling) Officer”
Internet Engineering Steering Group (IESG)

IETF Chair + rest of ADs
IETF \textbf{process management and RFC approval} body
Approves WG creation
Reviews & approves publication of IETF documents
reviews and comments on non-IETF submissions
\textbf{Multi-disciplinary technical review} group
Area Directors (ADs)

Nominated by the community – this includes you
Selected by nomcom

Responsible for setting direction in Area
Responsible for managing process in Area

approve BOFs & working group charters
then go to IESG & IAB for final approval

Reviews working group documents

Most Areas have 2 ADs
all but General Area
IETF Areas

IETF Chair & AD for General Area (gen) (3 WGs)
  Brian Carpenter <chair@ietf.org>
Applications (app) (14 WGs)
  Ted Hardie <hardie@qualcomm.com>
  Scott Hollenbeck <sah@428cobrajet.ne>
Internet (int) (21 WGs)
  Mark Townsley <townsley@cisco.com>
  Margaret Wasserman <margaret@thingmagic.com>
Operations & Management (ops) (23 WGs)
  David Kessens <david.kessens@nokia.com>
  Bert Wijnen <bwijnen@lucent.com>
IETF Areas (cont.)

Routing (rtg) (14 WGs)
  Bill Fenner <fenner@research.att.com>
  Alex Zinin <zinin@psg.com>

Security (sec) (22 WGs)
  Sam Hartman <hartmans-ietf@mit.edu>
  Russ Housley <housley@vigilsec.com>

Transport Services (tsv) (27 WGs)
  Allison Mankin mankin@psg.com
  Jon Peterson <jon.peterson@neustar.biz>
IETF Secretariat

Organizes/Coordinates

- plenary meetings
- mailing lists hosted by IETF
- Internet-Draft directory
- IESG teleconferences
- day to day work of IESG and working groups

Currently provided by Foretec – Reston, Virginia

Will be changing

Funded from IETF meeting fees & (soon) ISOC
IETF Administrative Support Activity (IASA)

Provides the administrative structure required to support the IETF standards process
Housed within the Internet Society
creates budget for IETF
money from meeting fees & ISOC
responsible for IETF finances
contracts for IETF support functions
  Secretariat functions, RFC Editor & IETF-IANA
deals with IETF IPR
IAASA
(continued)

Includes

IETF Administrative Director (IAD)
ISOC employee
day to day operations oversight

IETF Administrative Oversight Committee (IAOC)
8-member body - IAB & IETF chairs & ISOC prez plus members selected by nomcom, IAB, IESG & ISOC
IAASA oversight
Selecting IETF Management

RFC 3777 describes process
IESG & IAB members normally have 2-year terms
Picked by a nominations committee (nomcom)
nomcom chair appointed by the ISOC president
nomcom selects community nominees for each job
reviews one half of the IESG, half of the IAB each year
includes the IETF chair
IESG approved by IAB, IAB approved by the ISOC BoT
nomcom selected randomly from list of volunteers
volunteers have to have been at 3 of last 5 IETF meetings
very random selection process
Dots

- IAB member (red)
- IESG member (yellow)
- Working Group chair (blue)
- nomcom (orange)
- Local host (green)
Working Groups

This is where the IETF primarily get its work done.

RFC 2418 describes WG operation.

Working group focused by charter agreed between chair(s) and area director.

- restrictive charters with deliverables and milestones
- working groups closed when their work is done

Charter approved by IESG with IAB advice.

AD with IESG has final say on charter & chair(s).
Working Groups
(continued)

“...rough consensus and running code.”
No formal voting
   can do show of hands or hum
Does not require unanimity
Disputes resolved by discussion
Mailing list and face-to-face meetings
   most work happens on mailing lists
   all decisions must be verified on mailing list
   face-to-face discussion to resolve disagreements
IETF Documents

All open - no “confidential contributions”
Developed as Internet-Drafts
  anyone can submit - “expire” in 6 months
  some I-Ds are working group documents
Published as RFCs
  archival publications (never changed once published)
  different types: (not all RFCs are standards!)
    informational, experimental, BCP, standards track, historic
  3-stage standards track, under review in NEWTRK
    Proposed Standard, Draft Standard, Internet Standard

Interoperability not conformance
What is a RFC?

IETF document publication series
RFC used to stand for Request for Comments
   now just a name
   now tend to be more formal documents than early RFCs
Now nearly 3700 RFCs
   RFC 1 Host Software - Apr 7 1969
   “Not all RFCs are standards”
      see RFC 1796
      though some vendors imply otherwise
Many types of RFCs
IETF “Standards”

IETF standards not standards “because we say so”
Only standards if/when people use them
No formal recognition
No submitting to “traditional” standards bodies
RFC Repository Contains:

- Standards track
  - OSPF, IPv6, IPsec ...
- Obsolete Standards
  - RIPv1
- Requirements
  - Host Requirements
- Policies
  - Classless InterDomain Routing
- April fool’s day jokes
- IP on Avian Carriers ...
  - ... updated for QoS
- Poetry
  - ‘Twas the night before startup
- White papers
  - On packet switches with infinite storage
- Corporate documentation
  - Ascend multilink protocol (mp+)
- Experimental history
  - Netblt
- Process documents
  - IETF Standards Process
Working Documents

Internet-Draft

input to the process or for background information

no admissions control other than IPR statements

anyone can submit an ID

zapped from IETF directory after 6 months

but many mirrors exist

almost all RFCs must pre-exist as IDs

exceptions: some RFCs created by IANA or RFC Editor
Standards Track RFCs:

Start at Proposed Standard (PS)
good idea, no known problems
implementation required at AD discretion

Advance to Draft Standard (DS)
stable Proposed Standard specification
multiple interoperable implementations
note IPR restriction

Advance again to Internet Standard (STD)
Draft Standard with wide deployment and use

Best Current Practices (BCP)
generally policies or IETF procedures
(best way we know how)
Internet Standards Documentation (ISDs)

New concept about to be approved in the newtrk WG does not replace RFCs

Meta document (XML is definitive version)

Contains list of documents that make up a standard

  e.g. a TCP ISD would list many RFCs with comments (e.g., RFC 43 updates section 2.3 of RFC 23)
  documents do not all need to be RFCs

Contains date stamps

  so it can be determined what a standard was on a particular date
IETF Standards Process

Specification published as Internet Draft
Discussed in a working group - creates revised IDs
ID sent to IESG after working group consensus
IESG issues **IETF Last Call** (2 weeks)
   anyone can comment
   IESG considers comments and its own review
      may approve publication as standards track RFC
      may point out issues to working group & return ID

Same process for ISDs
Similar process for non-WG drafts (with 4-week LC)
IETF Submission

- Working group doc, or individual standards track doc
  - Submit
  - Concerns
  - IESG
    - "Last Call"
    - Comments, suggestions
      - IETF Community Review
      - RFC Editor
      - Published RFC
Non-IETF Submissions

Submit

Content concerns and editorial details

RFC Editor

Comments

IESG

Publish
Working Group Creation

- may have BOF
- Chair, description, goals and milestones
- Area Director
- IESG
- IAB
- Working group created

- new-work & IETF Announce
- community
Appeals Process

IETF decisions can be appealed
   start level above decision being appealed
1st to the WG chair(s)
Only then to the Area Director
Only then to the IESG
Only then to the IAB
If claim is that the process has not been followed,
   only then an appeal can be made to the ISOC Board
It is OK to appeal decisions – people do
   but appeals are not quick
starting “low” is the right thing to do
IPR (Patents)

IETF IPR (patent) rules in RFC 3668

Current IETF rules

require disclosure of your own IPR in your own submissions & submissions of others

“reasonably and personally” known IPR

i.e., no patent search required

WG takes IPR into account when choosing technology

RFC 3669 gives background and guidance

Push from open source people for RF-only process

consensus to not change to mandatory RF-only

but many WGs tend to want RF or IPR-free
IPR (Copyright)

Author(s) need to give publication rights to the ISOC (IETF) if document is to be published at all even as an Internet-Draft.

But authors retain most rights.

ID notices:

1/ agreement that IPR disclosures have been (or will be) made
2/ (optional) no right to produce derivative works
3/ (optional) just publish as ID
4/ Copyright statement

Standards track requires IETF change control i.e., no derivative works restrictions
Note Well (1)

The “Note Well” statement shows up a lot at the IETF. Mailing lists, registration, meeting openings, etc.

“Any submission to the IETF intended by the Contributor for publication as all or part of an IETF Internet-Draft or RFC and any statement made within the context of an IETF activity is considered an "IETF Contribution".

continued ...
Note Well (2)

“Such statements include oral statements in IETF sessions, as well as written and electronic communications made at any time or place, which are addressed to:

- the IETF plenary session
- any IETF working group or portion thereof
- the IESG, or any member thereof on behalf of the IESG
- the IAB or any member thereof on behalf of the IAB
- any IETF mailing list, including the IETF list itself, any working group or design team list, or any other list functioning under IETF auspices
- the RFC Editor or the Internet-Drafts function”

continued ...
“All IETF Contributions are subject to the rules of RFC 3667 and RFC 3668.

Statements made outside of an IETF session, mailing list or other function, that are clearly not intended to be input to an IETF activity, group or function, are not IETF Contributions in the context of this notice.

Please consult RFC 3667 for details.”
Other IETF Training/Tutorials

1300 -1500 Working Group Leadership - Salon F
1500 -1700 Routing, Bridging and Switching - Salon G
1500 -1700 How to Write an RFC - Salon E
1700 -1900 Welcome Reception - Salon D
(talking to IETF people is often an education!)
What next?

Join mailing lists
This is where the work happens
Read the drafts
Don’t be shy
Talk to people
Look for common ground
Help people
Don’t settle for second-rate
Questions?