

RELATED ORGANISATIONS INTERNET ENGINEERING TASK FORCE



Anyone can join the activities of the IETF by participating in mailing list discussions and in IETF meetings that are held three times each year.

The Internet Society is proud to be the organisational home of the Internet's premier Internet standards-making body: the Internet Engineering Task Force (IETF). Without the technical achievements of the IETF and its participants, the Internet would never have become the success that it is today.

The IETF standards process involves several groups, including ISOC, the Internet Architecture Board (IAB), the Internet Engineering Steering Group (IESG), the Internet Assigned Numbers Authority (IANA), the Internet Research Task Force (IRTF), the Request for Comments (RFC) Editor and the IETF itself. ISOC funds the RFC Editor and provides insurance coverage and discretionary funds for the IETF. ISOC also acts as the IETF's educational channel to communicate and promote standards internationally.

As a standardisation body, the IETF focuses on the development of protocols used in IP-based networks. Its unique process is based on "rough consensus and running

code." The IETF is different from most standardisation bodies in that it is a totally open community with no membership requirements. It is an international community of network designers, operators, vendors, and researchers concerned with the evolution of Internet architecture and smooth operation of the Internet. As an open forum, anyone can join the activities of the IETF.

IETF standards are specifications that are stable and well understood; are technically competent; have multiple, independent, and interoperable implementations with substantial operational experience; enjoy significant public support; and are recognisably useful within some or all parts of the Internet. IETF standards are freely available on the Internet, without cost, to everyone.

The IAB is chartered by the Internet Society Board of Trustees to provide oversight of the architecture of the Internet and its protocols. The IETF Nominations Committee nominates candidates for the IESG and IAB. The IAB confirms the IETF chair and

the nominations of IESG candidates. ISOC's Board of Trustees confirms the nominated IAB members. The IESG also administers the Internet standards process according to community-defined rules and procedures.

The IESG is responsible for actions associated with the progression of technical specifications along the standards track, including initial approval of new working groups and final approval of specifications as Internet standards. The IESG is composed of the IETF area directors and the IETF chair, who also serves as IESG chair.

The IANA is responsible for assigning Internet protocol parameters and works with the IETF on the basis of a memorandum of understanding (RFC 2860). Many protocol specifications include numbers, keywords, and other parameters that must be uniquely assigned. Examples include version numbers, protocol numbers, port numbers, and management information base numbers.

The IRTF consists of a number of Research Groups working on topics related to Internet protocols, applications, architecture, and technology. The IRTF chair is appointed by the IAB. In addition to managing the Research Groups, the IRTF may from time to time hold topical workshops focusing on research areas of importance to the evolution of the Internet or may hold more general workshops to discuss research priorities from an Internet perspective. An example of an IRTF Research Group is the Anti-Spam Research Group, which addresses new or improved anti-spam tools and techniques as well as administrative tools and techniques.

The RFC Editor is an organisation (financially supported by and under contract to ISOC and overseen by the IAB) responsible for the publication of RFCs—a series of formal documents of the Internet community. The documents include but are not limited to Internet standards documents.

ORGANISATIONAL STRUCTURE

The IETF consists of a number of working groups (WGs) classified into several areas. Currently, there are seven areas: Applications, General, Internet, Operations and Management, Routing, Security, and Transport. Three IETF meetings are held annually. In meetings or mailing list discussions, decisions are made based not on formal voting but on rough consensus. The IESG considers standards. The specification documents of the Internet protocol suite, as defined by the IETF and the IESG, are published as RFCs. The RFC editor prepares and publishes the RFCs and is responsible for final editorial review of the standards in their definitive form.

FUNDING

ISOC provides a major source of funding and support for the IETF and its processes. Notably, ISOC funds 100 percent of the RFC Editor function. Funding for these efforts is provided by ISOC Organisation Members as well as ISOC's Platinum Sponsors for Internet standards programmes: APNIC, ARIN, RIPE NCC, and Microsoft.

OTHER SUPPORT

ISOC's contributions also extend to policy and public relations support on behalf of the IETF as well as legal and insurance coverage. ISOC is the IETF's sole source of financial support apart from IETF meeting fees. Support from companies whose products and services so clearly depend on the standards developed by the IETF is essential.

www.ietf.org, www.iab.org, www.iesg.org, www.irtf.org, www.iana.org

REVIEW OF IETF ACTIVITIES DURING 2004

General Area

In the General area, which mainly looks after IETF process issues, updated RFCs were approved that set out the IETF's intellectual property rules.

AREA HIGHLIGHT

How the IETF works with IPR
IETF policies about intellectual property rights (IPR), such as patent rights, relative to technologies developed in the IETF are designed to ensure that IETF working groups and participants have as much information as possible about any IPR constraints on a technical proposal. RFC 3978 (IETF Rights

in Contributions) and RFC 3979 (Intellectual Property Rights in IETF Technology) clearly explain how the IETF works with IPR.

Applications Area

Several long-running Applications area working groups completed their work in 2004, including the Internet Printing Protocol (IPP), Message Tracking Protocol, Instant Messaging and Presence, Extensible Messaging and Presence Protocol, MTA Authorisation Records in DNS, and Calendaring and Scheduling working groups. Two new working groups were chartered to produce specifications for Web syndication and mail filtering.

AREA HIGHLIGHT

Atom: Syndicating Web content
The Atom Publishing Format and Protocol working group started work in 2004 on formalising the specifications for a feed format for representing and on a protocol for editing Web resources such as Web logs (blogs), online journals, Wikis, and similar content. The feed format facilitates syndication, which is the provision of a channel combining information from multiple resources in a single document. Typical uses for Atom feeds include

tracking changes and updates to Web sites through a reader utility. Although work is still in progress, Atom feeds have already proved to be very popular with major Web log operators such as Blogger (run by Google, a new ISOC Organisation Member) adopting the format.

Internet Area

In 2004 the Internet area was expanded to include four working groups that had been formed within the temporary Sub-IP area: the Virtual Private Network (L2VPN & L3VPN), Layer 2 Tunnelling Protocol (L2TPEXT), and Pseudo Wire Emulation (PWE3) working groups.

Work continued on traditional Internet area efforts such as IP version 6 (IPv6) and Domain Name System Security (DNSSEC). By the end of 2004, nearly all of the IPv6 core specifications were at the Draft Standard level, indicating that the core IPv6 specifications are now stable and widely implemented. The Secure Neighbor Discovery (SEND) working group completed its charter, providing a mechanism for securing the low-level mechanism that IPv6 uses to map IPv6 addresses to MAC addresses in most networks. The DNSSEC speci-

The IETF EDU team manages IETF's internal education efforts that are focused primarily on role and process education for IETF participants and leaders. Responsibilities include tutorials for IETF newcomers, introductory sessions for working group chairs, and technical training.

To find out more about the work of the EDU team, refer to edu.ietf.org.

INTERNET ENGINEERING STEERING GROUP MEMBERS (2004)

Internet Architecture Board (IAB) Members, 2004

Leslie Daigle, *VeriSign (IAB Chair)*
 Bernard Aboba, *Microsoft*
 Harald Alvestrand, *Cisco (IETF Chair)*
 Rob Austein, *Internet Systems Consortium*
 Patrik Fältström, *Cisco*
 Sally Floyd, *ICIR*
 Mark Handley, *University College London*
 Bob Hinden, *Nokia*
 Geoff Huston, *APNIC*
 Jun-ichiro Itojun Hagino, *III*
 Eric Rescorla, *RTFM*
 Pete Resnick, *Qualcomm*
 Jonathan Rosenberg, *Dynamicsoft*

Ex Officio

Vern Paxson, *ICIR (IRTF Chair)*

Liaisons

Joyce Reynolds, *ISI (RFC Editor Liaison)*
 Lynn St. Amour, *ISOC (ISOC Liaison)*
 Bert Wijnen, *Lucent (IESG Liaison)*

IETF Chair

Harald Alvestrand, *Cisco*

Applications Area

Ted Hardie, *Qualcomm*
 Scott Hollenbeck, *VeriSign*

Internet Area

Thomas Narten, *IBM*
 Margaret Wasserman, *ThingMagic*

Operations and Management Area

David Kessens, *Nokia*
 Bert Wijnen, *Lucent*

Routing Area

Bill Fenner, *AT&T*
 Alex Zinin, *Alcatel*

Security Area

Steven Bellovin, *AT&T Labs-Research*
 Russ Housley, *Vigil Security*

Transport Area

Allison Mankin, *Shinkuro*
 Jon Peterson, *NeuStar*

Liaison and Ex Officio Members

Leslie Daigle, *VeriSign (IAB Chair)*
 Barbara Fuller, *Foretec Seminars (IETF Executive Director)*
 Michelle Cotton, *Internet Assigned Numbers Authority (IANA Liaison)*
 Joyce Reynolds, *ISI (RFC Editor Liaison)*
 Rob Austein, *Internet Systems Consortium (IAB Liaison)*

fication was nearly complete, with completion expected in early 2005. DNSSEC offers a practical approach for securing the Domain Name System (DNS), a critical piece of the Internet infrastructure.

AREA HIGHLIGHT***NEMO: A new standard for network mobility***

Mobility work also continued within the Internet area, with an emphasis on enabling fast handoff and routing optimisation in mobile IP (MIP) networks. A new standard for Network Mobility (NEMO) was published that allows entire networks, such as those that might be found on a boat or airplane, to change their point of attachment to the Internet. A new working group, Detecting Network Attachment was started to explore mechanisms for detecting changes to the point of network attachment, particularly in mobile or wireless networks.

Operations and Management Area

In the Operations and Management area, the Policy Framework working group concluded its work and was closed. In the area of Network Management, work continued on the Network Configuration protocol

(NETCONF). The ISMS (Integrated Security Model for SNMP) working group was started (housed in the Security area) to try to improve operational aspects of SNMPv3 and to try to integrate better with existing and commonly deployed security infrastructures. Furthermore, two new working groups were started within the Operations and Management area: OPSEC (Operational Security Capabilities for IP Network Infrastructure) and RADIUS EXTensions (radext).

AREA HIGHLIGHT***Defining the security features for tomorrow's networks***

The Internet is being recognised as a critical infrastructure similar in nature to the power grid and a potable water supply. Just like those infrastructures, means are needed to provide the Internet with resiliency and adaptability so that it remains consistently available to the public throughout the world even during times of duress or attack. Network operators need the appropriate feature sets and tools on their infrastructure devices to ensure that they can effectively deploy and manage their networks securely while maintaining the ability to provide reliable service for

their customers. Vendors need guidelines on which security features and functionality are critical for operators to be able to reach that goal. The OPSEC working group will produce a list of capabilities appropriate for ISP networks and enterprise networks.

Routing Area

Two new working groups were created in the Routing area in 2004: The Routing Area working group (RTGWG) was chartered to host a number of smaller projects in the Routing area, including one on IP fast-reroute technologies. The Bidirectional Forwarding Detection (BFD) working group was chartered to specify a generic protocol for bidirectional forwarding detection. BFD is a protocol intended to detect faults in the bidirectional path between two forwarding engines, including physical interfaces, sub-interfaces, data links, and, to the extent possible, the forwarding engines themselves, with potentially very low latency. It operates independently of media, data protocols, and routing protocols. An additional goal is to provide a single mechanism that can be used for liveness detection over any media,

at any protocol layer, and with a wide range of detection times and overhead so as to avoid a proliferation of different methods.

Two working groups completed work in 2004: BGMP (Border Gateway Multicast Protocol) and MSDP (Multicast Source Discovery Protocol). During the year, a number of RFCs were published, including specifications for BGMP and MPLS (Multi-protocol Label Switching) fast reroute.

Security Area

In the Security area, all of the S/MIME specifications were updated to reflect current practice, supporting the dominant use of RSA for signature and key management. Support for AES was also added. In support of multicast security, the

MIKEY key management protocol was published. In support of European PKI initiatives, the X.509 certificate profile for Qualified Certificates was updated. In support of the Global Grid Forum, the X.509 certificate profile for Proxy Certificates was published. An X.509 certificate extension to indicate the assignment of IP address blocks and Autonomous System (AS) numbers was specified. The hope is that IANA and the RIRs will employ this extension in a manner that will enable ISPs to validate the assignment of Internet address space.

AREA HIGHLIGHT

Enhanced security for allocating Internet resources

IP address space is currently managed by a hierarchy nominally

rooted at IANA but managed by the RIRs. IANA allocates IP address space to the RIRs, which in turn allocate IP address space to ISPs, which may allocate IP address space to downstream providers, customers, and so on. RFC 3779 (X.509 Extensions for IP Addresses and AS Identifiers) is intended to add an extra level of security to this process. The RFC describes X.509 v3 certificate extensions that bind either a list of IP address blocks or a list of AS identifiers to a certificate, thereby facilitating verification of the authority of a body to transfer custodianship of the specified Internet resources. This is an example of an IETF standards activity aimed at supporting and enhancing the current successful Internet administration processes.

Transport Area

In 2004 the Transport area had many noteworthy events, including publication of the IP storage protocols (iSCSI and the Fiber Channel over TCP/IP) RFCs, Real-Time Transport Protocol (RTP) Full Standard, Secure Real-Time Transport Protocol (SRTP), and Procedures for Modifying the Resource Reservation Protocol. New working groups were set up for TCP oversight (TCPM), Emergency Context Resolution using Internet Technologies (ECRIT), which takes advantage of the location/privacy technology work passed by the Applications area in 2004 and Network address translator guidance (BEHAVE).

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FUTURE INTERNET TECHNOLOGY AREAS TO WATCH

Fending off public network predation. People and systems that take advantage of the Internet’s essentially open nature are creating spam, denial-of-service attacks, and deliberate attempts to mislead end users with false network identifiers (phishing and pharming). The technical challenges are to continue to support the inherent liberty that fosters Internet growth while curtailing these activities.

Blogging: content or revolution? Web logs (blogs) are recognised primarily for their dynamic content. However, their next step could be to challenge the boundaries of the application that hosts them. The IAB held a messaging workshop in the autumn of 2004 and discussed potential directions for the evolution of Internet-based communications.

Networking while on the go. Mobility at all levels is required in order to adequately support the modern networker. The architectural challenge is to ensure that various levels of the protocol stack can support the distinction between an identifier (which is invariant) and a locator (which will update), even as the basic definition of what constitutes a network host evolves.