IETF: Internet Engineering Task Force

- "governs" the Internet (according to some)
  - What does this mean? Who elects the members?

- RFC: request for comments
  - Informational, Proposed Standard, Standard
    Anyone can write an RFC and independently submit it to the RFC Editor for possible publication. It will be published after review, and perhaps revision, for technical competence, relevance, and adequate writing. [http://www.rfc-editor.org/rfcfaq.html](http://www.rfc-editor.org/rfcfaq.html)

What does the IETF do?

- The IETF has at times been ascribed nearly magical abilities by the trade press, who assumed its mechanisms were responsible for the success of the Internet because it works on the Internet's core protocols. The reality that it is a group of engineers putting together specifications so that multiple vendors' products can operate across networks is considerably more mundane. [http://en.wikipedia.org/wiki/IETF](http://en.wikipedia.org/wiki/IETF)

The Tao of the IETF

- [http://www.ietf.org/tao.html](http://www.ietf.org/tao.html)
  - 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;

Rough consensus and running code

- One of the "founding beliefs" is embodied in an early quote about the IETF from David Clark: "We reject kings, presidents and voting. We believe in rough consensus and running code". Another early quote that has become a commonly-held belief in the IETF comes from Jon Postel: "Be conservative in what you send and liberal in what you accept".
- "A government interested in using us is a government interested in how we work." In other words, once governments realize what a treasure there is in the Net, they want to mess with it, regulate it, and censor it. [http://www.wired.com/wired/archive/3.10/ietf_pr.html](http://www.wired.com/wired/archive/3.10/ietf_pr.html)
Who runs the Internet? You do!

- One more thing that is important for newcomers: the IETF in no way "runs the Internet", despite what some people mistakenly might say. The IETF makes standards that are often adopted by Internet users, but it does not control, or even patrol, the Internet. If your interest in the IETF is because you want to be part of the overseers, you may be badly disappointed by the IETF.

http://www.marvel.com/universe/Antiphon_the_Overseer

IPv4 Header

- What is a packet? What is a packet header?
  - Who puts information into packets?
  - Who gets information out of packets?
- How many bits in source and destination address?
  - What is total number of addresses available?

<table>
<thead>
<tr>
<th>Field</th>
<th>Bits</th>
<th>Type</th>
<th>Format</th>
<th>Length</th>
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<tbody>
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<td>Ver</td>
<td>Length</td>
<td>Type of service</td>
<td>Protocol</td>
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<tr>
<td>5-11</td>
<td>Header length</td>
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<tr>
<td>12-15</td>
<td>Identification</td>
<td></td>
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<td>Fragment Offset</td>
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<td>16-63</td>
<td>Time to Live</td>
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<td>Protocol</td>
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<td>Source Address</td>
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<td>Destination Address</td>
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</tbody>
</table>

What is IPv6?

- What is 6 in IPv6? Who creates the protocol?
  - What’s needed to deploy the protocol?
  - What incentives are needed to deploy?
  - What disincentives are there?

- What's the difference between 32 bits and 128 bits?
  - \(2^{32} = 4,294,967,296\)
  - \(2^{128} = 340,282,366,920,938,463,463,374,374,607,768,176,211,456\)

IP, CIDR, Youtube

- Originally Duke would get 65,536 IP addresses
  - Original IP protocol, how many bits is this?
  - How do you figure this out?
  - Only 24 or 16 or 8 bits originally

- CIDR (Classless Inter-Domain Routing)
  - Any power of 2 for range of addresses, why?
  - Youtube advertises: 208.65.152.0/22
  - Pakistan advertises: 208.65.153.0/24