

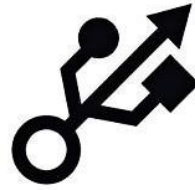
# Does Humour belong in (internet) Engineering?



Female



Male



Engineer

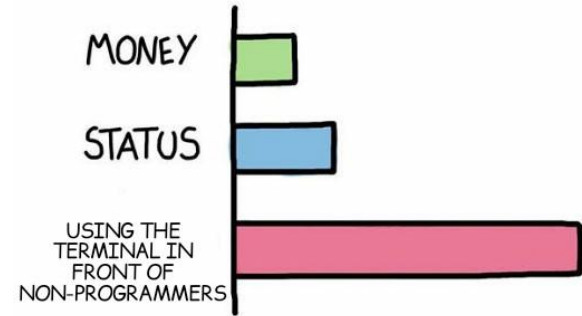
# What is this about?

Not memes, not internet kittens.

An attempt to see if we can laugh at ourselves while maintaining the rigor and technical excellence that characterizes network engineering (AHEM ...)



## WHAT GIVES PEOPLE FEELINGS OF POWER



@iamnotanartist\_

# Already have good stuff

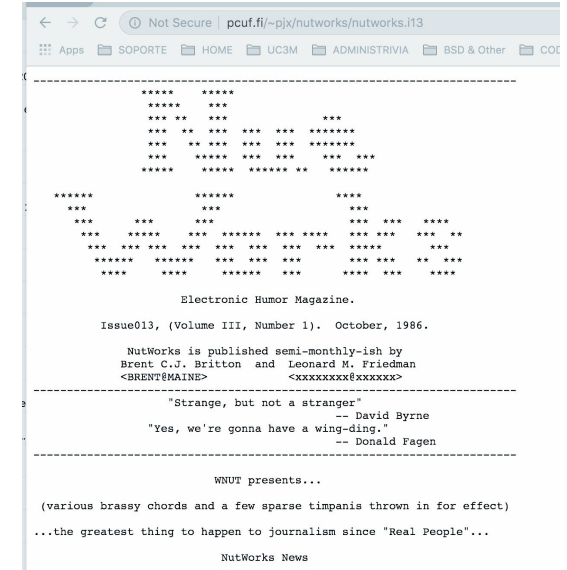
Of course, there are some good references:

[NutWorks - Electronic Humor Magazine](#) (1985)

[xkcd: Preprint](#)

[Homepage | Dilbert by Scott Adams](#)

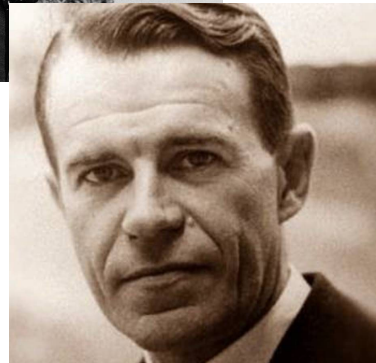
HOW STANDARDS PROLIFERATE:  
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)



# A more "serious" approach

Other disciplines manage to be fun, maintaining formality and technical rigor. Or something...

- Physics
- Music
- Mathematics
- Literature



$$\frac{d\psi}{dt} = \frac{rd\psi^2 - 2rs\psi - gr \cos \theta}{r^2 + I/m}$$

$$\frac{ds}{dt} = [r(r^2 + d^2 + I/m)\psi^2 - 2drs\psi - gdr \cos \theta - g(r^2 + I/m) \sin \theta]$$

where the coordinates  $r$  and  $\theta$  are defined as in Figure 2 and

$$\frac{d\theta}{dt} = \psi$$

$$\frac{dr}{dt} = s$$

(2) Equation of motion (integrated form) of slice in time interval  $t_1 < t < t_2$  (phase II), where bread severs contact with table at time  $t_1$  and establishes contact with floor (carpet) at time  $t_2$ :

$$x(t) = x(t_1) + \frac{dx}{dt}(t_1) \cdot (t - t_1)$$

$$y(t) = y(t_1) + \frac{dy}{dt}(t_1) \cdot (t - t_1) - \frac{1}{2}g(t - t_1)^2$$

$$\phi(t) = \phi(t_1) + \frac{d\phi}{dt}(t_1) \cdot (t - t_1)$$

where

$$x = r \cos \theta + d \cos \phi$$

$$y = r \sin \theta + d \sin \phi$$

As well may be imagined, the physics of the transition from phase II (in flight) to phase III (landing) are nontrivial. This nontriviality is manifest in the

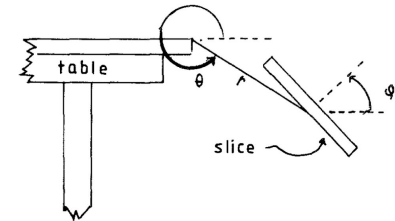
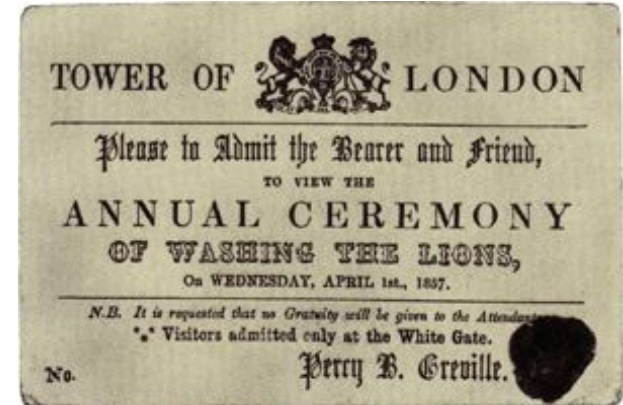


Fig. 2. Phase II—Slice is moving towards bottom of page.

# 1st April RFCs

## Let's start: 1st April RFCs

Since 1978, sometimes a "curious" RFC is published by IETF, on April 1st.



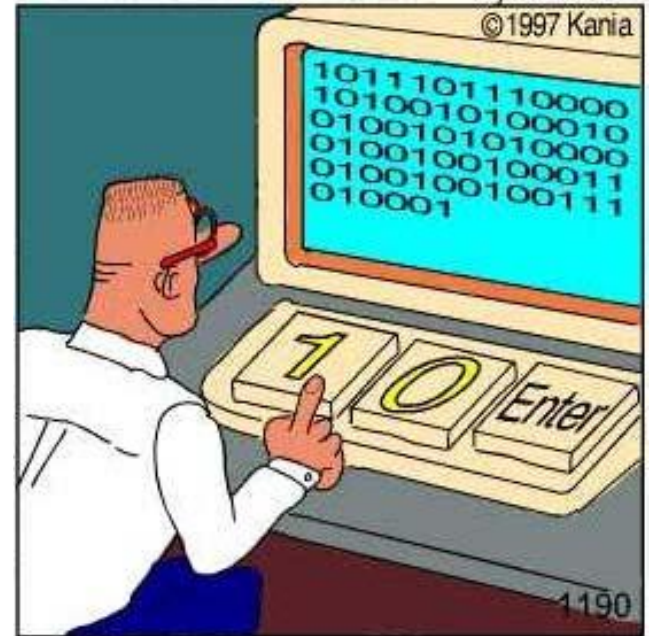
Complete list:

[https://en.wikipedia.org/wiki/April\\_Fools%27\\_Day\\_Request\\_for\\_Comments](https://en.wikipedia.org/wiki/April_Fools%27_Day_Request_for_Comments)



# Some History

- **First:** <https://tools.ietf.org/html/rfc748> -  
Telnet randomly-lose option (1978)
- **Second:** <https://tools.ietf.org/html/rfc1097>  
- Telnet subliminal messages option  
(1989)



Real programmers code in binary.

# Some History

And then it all begins

**Third:** <https://tools.ietf.org/html/rfc1149> - IP over Avian Carriers (1990)

MENÚXatapa móvil

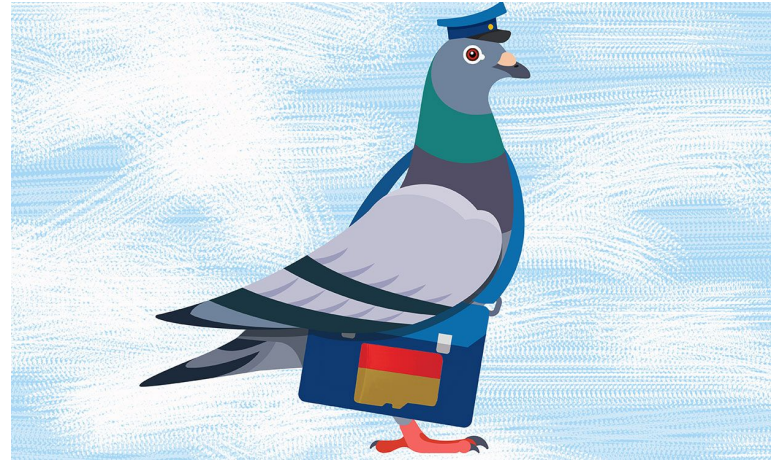
Telefónica implantará IP over Avian Carriers en las áreas con microcortes

[f](#) [t](#) [r](#) [v](#)



28 Diciembre 2011 Sin Comentarios

 **MANULS**  
@manuls



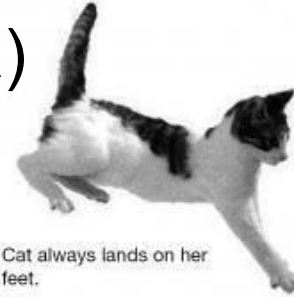
# Remarcable cases (application area)

## [RFC3251](#) - Electricity over IP

(**MPLampS**: Mostly Pointless Lamp Switching arch.,  
**LER**: Low-voltage Electricity Receptor,  
**OSPF-TE, ISIS-TE**: OSPF and ISIS with Tariff Extensions,  
**VPN**: Voltage Protected Network, etc.)

## [RFC3091](#) - Pi Digit Generation Protocol

(TCP port 314159 based client/server architecture,  
Approximation stateless service over UDP port 22007,  
Random digits sent over multicast)

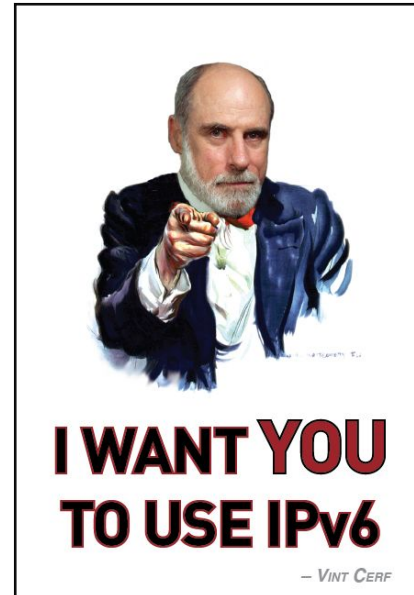




# Remarcable cases (transport)

[RFC1149](#) - A Standard for the  
Transmission of IP Datagrams  
on Avian Carriers *(implemented)*

[RFC5514](#) - IPv6 over Social  
Networks *(deployed)*



# Remarcable cases (layer 8+)



[RFC3751](#) - Omniscience Protocol Requirements (*premonitory flag ON!*)

[RFC5984](#) - Increasing Throughput in IP Networks  
with ESP-Based Forwarding:

"...reduce latency by means of precognitive datagram detection and generation."

[RFC4041](#) - Requirements for Morality Sections  
in Routing Area Drafts

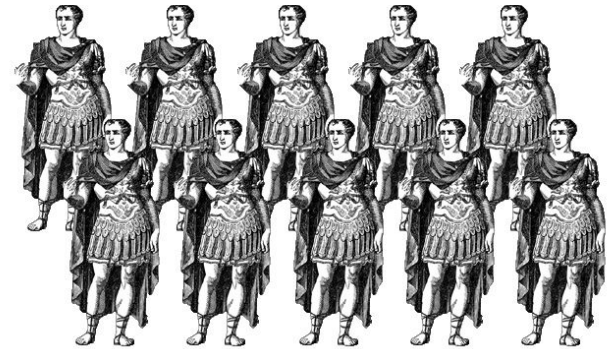


# Remarcable cases (addressing & numbering)

[RFC2551](#) - The Roman Standards Process -- Revision III.

[RFC1776](#) - The Address is the Message

"...the IPng WG has selected a packet format which includes 1696 bytes of address space."



**X-MEN**

# Remarcable cases (socializing networks)

[RFC3514](#) - The Security Flag in the IPv4 Header (the evil bit)

[RFC5841](#) - TCP Option to Denote Packet Mood



TCP Header Format

Kind	Length	Meaning
----	-----	-----
25	Variable	Packet Mood

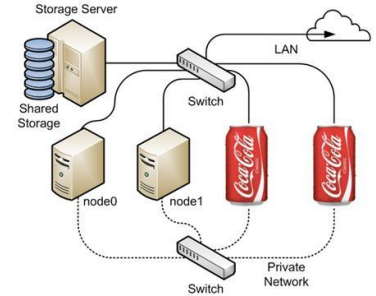
In more detail:

```
+-----+-----+-----+-----+
| 00011001 | 00000100 | 00111010 | 00101001 |
+-----+-----+-----+-----+
Kind=25 Length=4 ASCII : ASCII )
```

```
+-----+-----+-----+-----+-----+
| 00011001 | 00000101 | 00111110 | 00111010 | 01000000 |
+-----+-----+-----+-----+-----+
Kind=25 Length=5 ASCII > ACSII : ASCII @
```

# Remarcable cases (home care & furnishing)

[RFC2325](#) - Definitions of Managed Objects  
for Drip-Type Heated Beverage Hardware  
Devices using SMIv2



[RFC2324](#) - Hyper Text Coffee  
Pot Control Protocol (HTCPCP/1.0)  
*(implemented)*





# Peg-dhcp IP Assign protocol - [RFC2322](https://en.wikipedia.org/wiki/Peg_DHCP)

During the preparation of **Hacking in Progress** 1997, the organizers were looking for a robust way to assign IP addresses to the participants. The obvious first choice, DHCP, almost completely defenseless against **rogue servers**, was not retained considering the traditionally creative use of the network.

Instead, for every address to allocate, the variable (host) part is written on a wooden peg with waterproof marker. The user would then **attach it to the cable** connecting that device to the network. The peg is accompanied by a leaflet with further information such as the static (net) part of the IP address, the **netmask**, the **default gateway**, **DNS** servers, and often also their **MAC addresses** to prevent **ARP spoofing**. **Different subnets**, such as **LAN** and **WLAN** are distinguished by **different colors used** to write on the pegs.



[https://en.wikipedia.org/wiki/Peg\\_DHCP](https://en.wikipedia.org/wiki/Peg_DHCP)

# My experience

Real IP addresses assigned on RIPE meetings through 2005 to 2011, and "borrowed" home by the author.



# IP Datagrams on Avian Carriers - [RFC1149](#)

Aka **Token Wing** protocol aka **Feathernet**



# Implementation

On 28 April 2001, IPoAC was implemented by the [Bergen Linux user group](#), under the name CPIP (for "Carrier Pigeon Internet Protocol").<sup>[4]</sup> They sent nine [packets](#) over a distance of approximately five kilometers (three miles), each carried by an individual pigeon and containing one ping ([ICMP Echo Request](#)), and received four responses.

([https://en.wikipedia.org/wiki/IP\\_over\\_Avian\\_Carriers](https://en.wikipedia.org/wiki/IP_over_Avian_Carriers))

<http://blog.boreas.ro/2007/12/couple-of-cool-april-1st-rfcs-rfc-1149.html>

<http://www.boiledbeans.net/2008/02/03/loong-rtts/>

```
Script started on Sat Apr 28 11:24:09 2001
$ /sbin/ifconfig tun0
tun0      Link encap:Point-to-Point Protocol
          inet addr:10.0.3.2  P-t-P:10.0.3.1  Mask:255.255.255.255
          UP POINTOPOINT RUNNING NOARP MULTICAST  MTU:150  Metric:1
          RX packets:1 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0
          RX bytes:88 (88.0 b)  TX bytes:168 (168.0 b)
```

```
$ ping -c 9 -i 900 10.0.3.1
PING 10.0.3.1 (10.0.3.1): 56 data bytes
64 bytes from 10.0.3.1: icmp_seq=0 ttl=255 time=6165731.1 ms
64 bytes from 10.0.3.1: icmp_seq=4 ttl=255 time=3211900.8 ms
64 bytes from 10.0.3.1: icmp_seq=2 ttl=255 time=5124922.8 ms
64 bytes from 10.0.3.1: icmp_seq=1 ttl=255 time=6388671.9 ms
```

```
--- 10.0.3.1 ping statistics ---
9 packets transmitted, 4 packets received, 55% packet loss
round-trip min/avg/max = 3211900.8/5222806.6/6388671.9 ms
```

Script done on Sat Apr 28 14:14:28 2001

## Packet loss



De Kulmalukko - Trabajo propio, CC BY 3.0,  
<https://commons.wikimedia.org/w/index.php?curid=6795799>

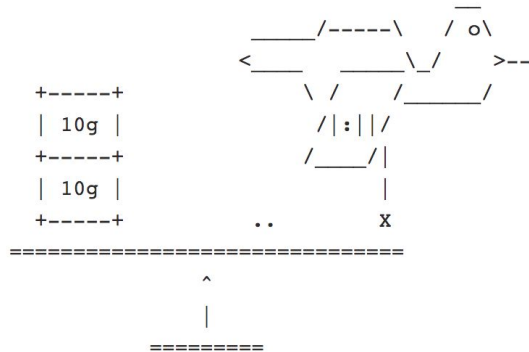


# Avian Carriers RFCs evolution

## [RFC2549](#) - IP over Avian Carriers with Quality of Service.

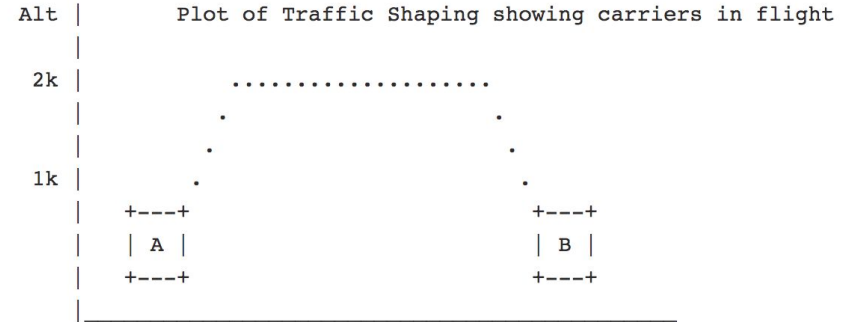
Packets MAY be marked for deletion using RED paint while enqueued.

Weighted fair queueing (WFQ) MAY be implemented using scales, as shown:



Carriers in the queue too long may leave log entries, as shown on the scale.

The following is a plot of traffic shaping, from cooperative host sites.



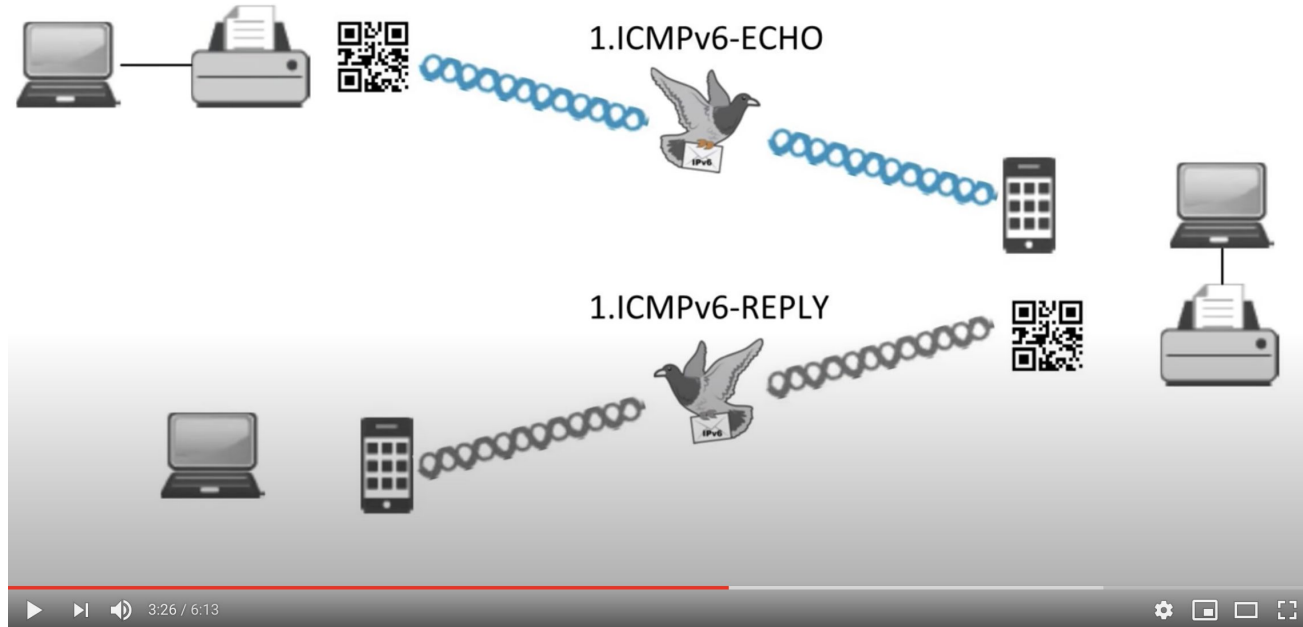
Avian carriers normally bypass bridges and tunnels but will seek out worm hole tunnels. When carrying web traffic, the carriers may digest the spiders, leaving behind a more compact representation. The carriers may be confused by mirrors.



# Avian Carriers RFCs evolution

[RFC6214](#) - Adaptation of RFC 1149 for IPv6

[https://www.youtube.com/watch?v=GTFXkXp\\_pig](https://www.youtube.com/watch?v=GTFXkXp_pig)



# Conclusions

*OK, your last 20 seconds, think something creative to say...  
...or else just show some decent memes and internet kitten.*

