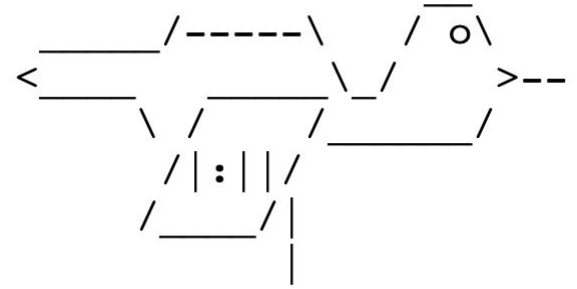


IP over Web-Avian Carriers (IPoWAC)

 Dan Lüdtkke

Historical Context

- IP over Avian Carriers
 - RFC 1149
 - RFC 2549
- Write/print IP datagram on paper
- Attach paper to avian carrier
 - e.g. homing pigeon
- MTU depends in carrier strength and leg length



Problems

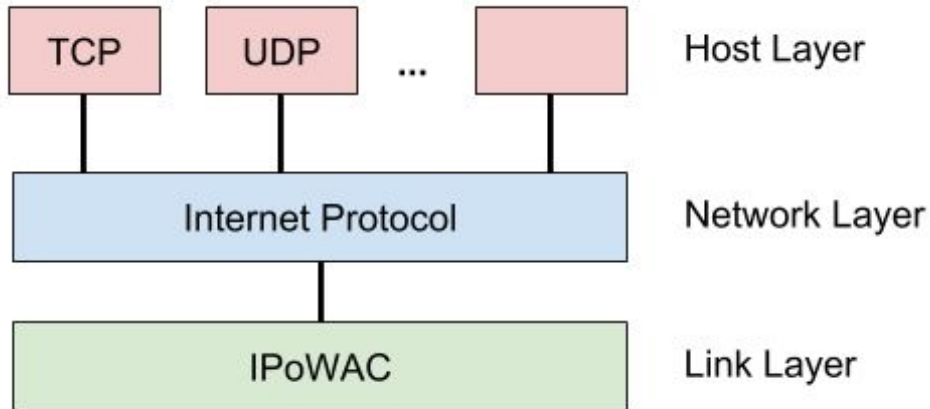
- Reliability
 - Storms
 - Raptors
- Limited bandwidth
- High latency

Natural avian-carriers are NOT a reliable medium!





Solution: Web-avian carriers!

- Web-avian carriers are the perfect medium for IP datagram transmissions!



Medium Properties: Advantages

- Relaying 
 - Technically not necessary
 - Improves reliability and redundancy
 - The link-layer adds "weight" to certain messages
 - The link-layer acts like a "hivemind"
- Node Verification 
 - Medium can be used anonymously
 - Some nodes are eager to verify their identity
 - Link-layer rewards this behaviour with a blue checkmark

Medium Properties: Challenges

- Automatic Error Correction
 - Some nodes engage heavily in error correction activities
 - Error correction messages often start with "yes, but..." or "well, actually..."
 - Error correction activity is believed to correlate with having little to no meaningful relationships with other human beings
- Godwin's law applies

🏠 > Technology Intelligence

Microsoft deletes 'teen girl' AI after it became a Hitler-loving sex robot within 24 hours

<https://www.telegraph.co.uk/technology/2016/03/24/microsofts-teen-girl-ai-turns-into-a-hitler-loving-sex-robot-wit/>



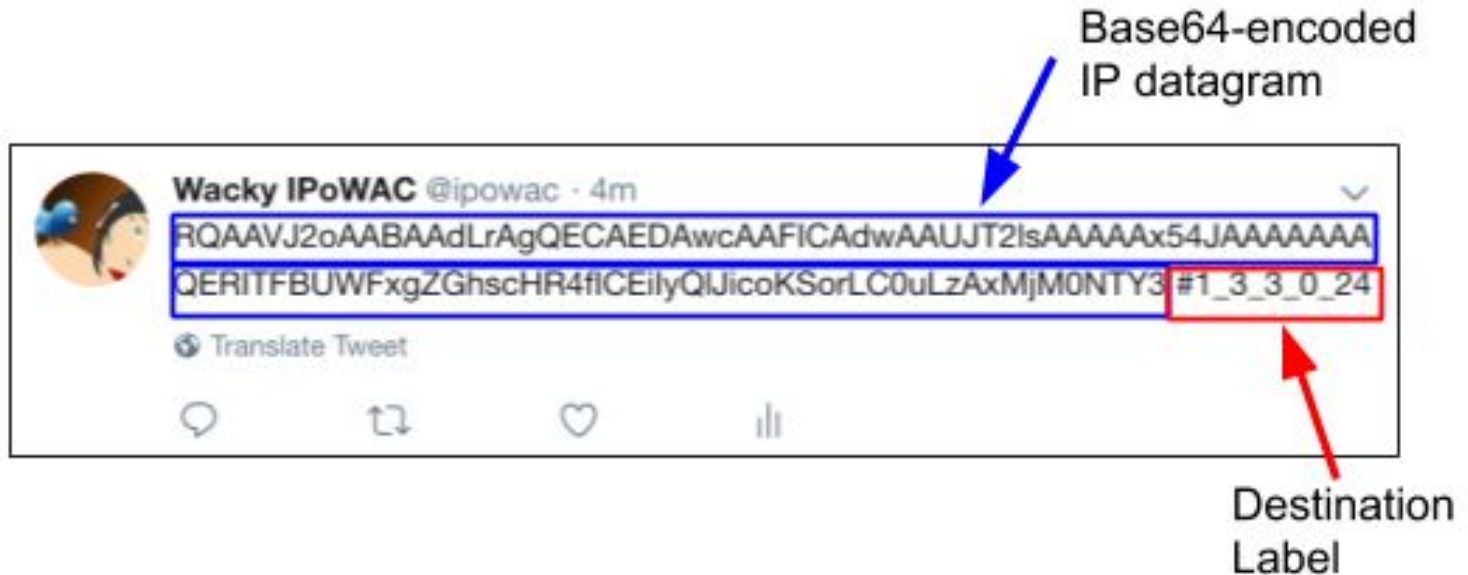
Addressing

- Hashtags are used to represent IP networks
- 193.160.39.0/24 → #193_160_39_0_24



Wire Format

- Base64-encoded IP datagram
- Destination label (hashtag)



Does it work?

World's first IPoWAC transmission

```
root@wacky-1:~# ping -c 1 -W 120 2.4.4.8
PING 2.4.4.8 (2.4.4.8): 56(84) bytes of data.
64 bytes from 2.4.4.8: icmp_seq=1 ttl=64 time=11933 ms

--- 2.4.4.8 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 11933.267/11933.267/11933.267/0.000 ms
```

Does it work?

World's first IPoWAC transmission



Wacky IPoWAC @ipowac · 7h

RQAAVJ2oAABAAdLrAgQECAEDAwcAAFICA
dwAAUJT2IsAAAAAx54JAAAAAAQERITFBU
WFxgZGhscHR4fICEilyQIJicoKSorLC0uLzAx
MjM0NTY3 #1_3_3_0_24



Echo Reply
to 1.3.3.7



Wacky IPoWAC @ipowac · 7h

RQAAVaxZQABAASQ7AQMDBwIEBAglAEoC
AdwAAUJT2IsAAAAAx54JAAAAAAQERITFB
UWFxgZGhscHR4fICEilyQIJicoKSorLC0uLzAx
MjM0NTY3 #2_4_4_0_24



Echo Request
to 2.4.4.8

"Full Specification"

Reference Implementation (Go)

Video of world's first IPoWAC data transmission



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