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How to grow
IPv6 *only* services

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PARENTAL ADVISORY EXPLICIT CONTENT

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There is no chicken or the egg problem.

IPv6 axiom #1

Connectivity: solved.

- ISPs offer native IPv6
  - Those who don't: you don't have time to wait anymore
- Hardware / network equipment supports IPv6
- No native IPv6?
  - Use a tunnel (Wireguard, OpenVPN, ...)
  - ~~Use teredo/miredo~~ (deprecated, but works)
- Running IPv6 VPNs in Spain, France, China, Turkey, Slovakia, South Korea, Venezuela, Croatia, Netherlands, ...
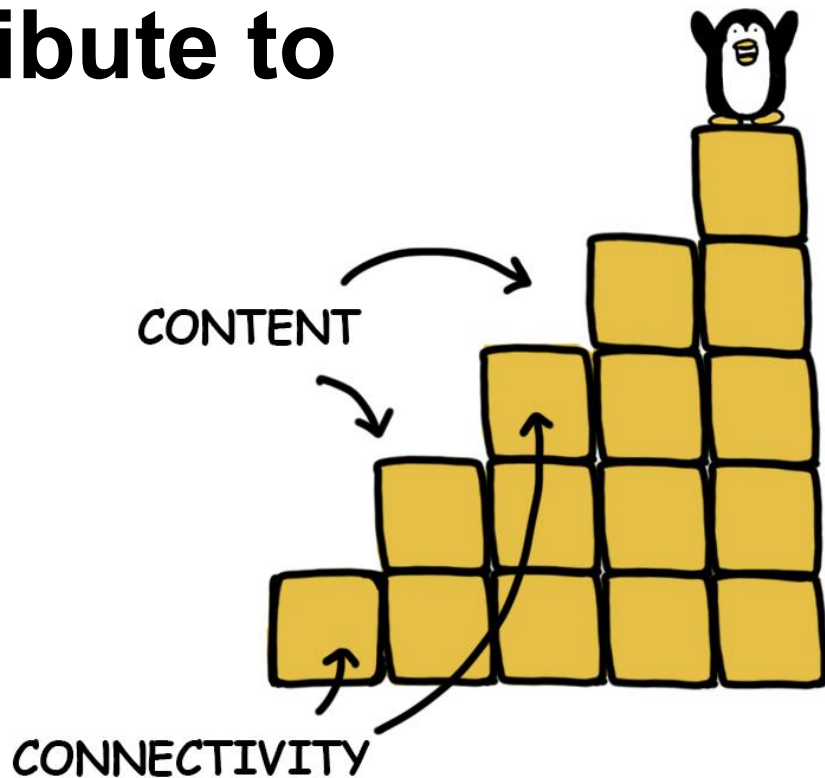
Content providers: solved.

- CDNs support IPv6
- Cloud providers support IPv6

Everyone can contribute to IPv6 growth today.

IPv6 axiom #2

Action 1: Create an IPv6 only network at home

- Get an IPv6 network at home (at least /56, /48 preferred)
  - /64 is not an option!
- Setup a WiFi that is dual stack
  - Name it "Legacy IP supported"
- Setup a WiFi that is IPv6 only
  - Name it "The future is here"

Action 2: Offer IPv6 only services from home

- Offer IPv6 only services on your raspberry PI or APU towards the Internet
- Setup DNS (almost nobody likes to read IP addresses)
- Use an IPv4 warning page like https://no-ipv4-here.ungleich.ch
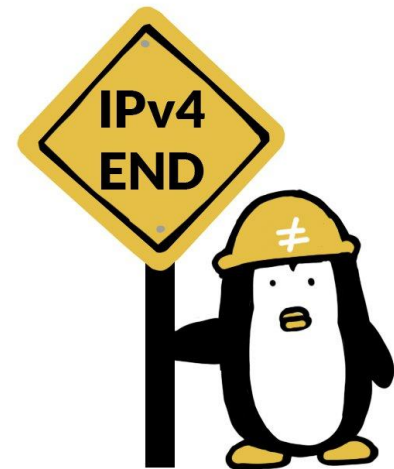
Action 3: Communicate

- Announce your IPv6 only services
- IPv4 is legacy IP
- IPv6 is now, not tomorrow
- Refuse legacy IP only

Action 4: Refuse legacy IP only

- The newly bought webcam/toaster/router does not (fully) support IPv6?
  - Return it.
- The software only supports legacy IP?
  - Use an alternative (where possible)
  - Make the authors/vendor aware of the problem
- Your ISP only offers legacy IP?
  - This is not a proper Internet connection
  - Request a refund / price reduction
  - Change the ISP / Use a tunnel
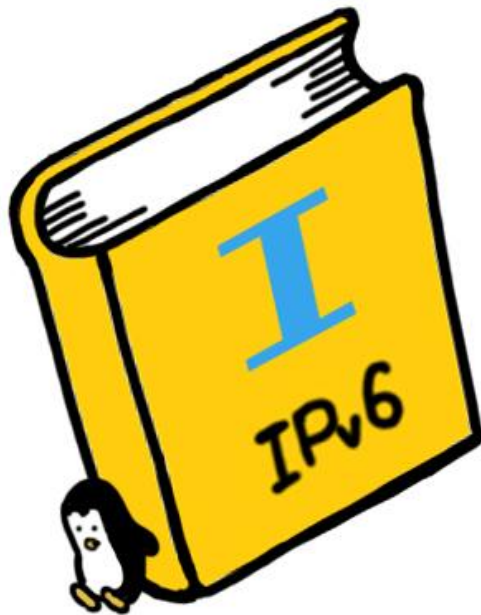
Action 5: Plan IPv6 first

- Think IPv6 first
  - Network plans, address allocation, routing, upstream, …
- Implement IPv6 first
  - Step 1 of every new network
- Teach IPv6 first
  - No C-class network, no legacy IP networks
- Plan with IPv6 only, but accept dual stack as in interim solution

Action 6: Implement IPv6 only services

- You have IPv6 connectivity, you can build on it
- Move internal services to IPv6 only
    - Web, DNS, Mail, storage, …
- External employees can access it from anywhere in the world
    - Because everyone can have IPv6
    - Because you configured your firewall correctly

Action 7: (optional) bridge legacy IP

- Offer public content (aka websites) IPv6 only
- Add a NAT64 gateway to provide access for legacy IP users
- No need for internal legacy IP

Action 8: Understand and explain the motivation

- Different audiences have different needs
- **Hackers**: freedom to choose, cool stuff, fun
- **Developers**: Apps don't work anymore
- **Content producers**: Content not reachable anymore
- **Managers**: Save time and money, be future proof! Also: required for IoT
- **Your parents**: I can remotely fix your computer problems
- **Noobs**: 64 bit is outdated, 128 bit is now cool

The three IPv6 axioms

1. There is no **chicken or the egg problem.**
2. Everyone can contribute to IPv6 growth
3. IPv6 only services make everyone's easier

Continue the IPv6 discussion

- The IPv6 Chat on https://ipv6.chat
- IPv6 Hack @ Hack4Glarus: https://www.hack4glarus.ch/
  - 2019-05-31 .. 2019-06-02 in Linthal
- Comment? Drop a line at ipv6@ungleich.ch

THIS PENGUIN NEEDS IPV6.

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