

# RIPE83: Building IPv4 islands for fun and profit



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<2020-11-25 Wed>

# Background / Motivation

- ▶ More and more networks are shifting to IPv6 only
- ▶ Motivations are known
  - ▶ Simplification
  - ▶ Unification
- ▶ Some devices are IPv6 incompatible
- ▶ Work started in 2020

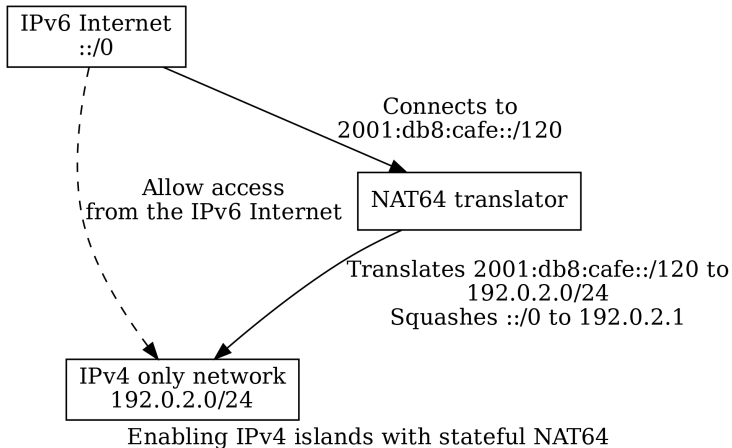
# Examples of incompatible devices

- ▶ X-Ray scanners
- ▶ Ultrasound scanners
- ▶ LoraWAN Gateways
- ▶ Printers
- ▶ Power plants ( . . . )

# Strategies

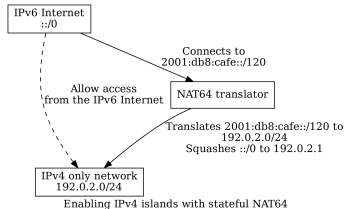
- ▶ Replacement of devices
  - ▶ Sometimes possible
  - ▶ Sometimes extremely expensive
- ▶ Isolation translation via external device
  - ▶ Devices believe they are still in IPv4 only world
  - ▶ Rest of the network stays IPv6 only

# IPv4 islands Concept



# IPv4 islands in practice

- ▶ Often low bandwidth ("the old devices")
- ▶ OpenWrt routers
- ▶ Stateful NAT64
  - ▶ Jool NAT64
  - ▶ Squashing the IPv6 Internet to 192.0.2.1



# Creating your own IPv4 islands

```
# OpenWrt vs. Kernel IPv6 configuration - jool needs accept_ra=2
sysctl -w net.ipv6.conf.all.accept_ra=2
# Load the kernel module
modprobe jool
# Configure stateful NAT64
nat64_prefix=2a0a:e5c0:10:b00::/96
jool instance add default --netfilter -6 ${nat64_prefix}
```

<https://code.ungleich.ch/ungleich-public/ungleich-tools/>

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Issues Pull Requests Milestones Explore



ungleich-public / ungleich-tools

<> Code

🕒 Issues

🔗 Pull Requests

📁 Projects

📦 Releases

No Description

Manage Topics

🕒 465 Commits

🌿 3 Branches

## Ready-to-go device

- ▶ Any 2+ port OpenWrt devices easily works
- ▶ VIWIB (rebranded, reflashed, pre-configured) GL-Inet MT300N
  - ▶ 100 Mbit/s + WiFi 802.11b/g/n



- ▶ <https://ungleich.ch/u/products/viwib-wifi-ipv6-box/>



## Conclusion / Follow up

- ▶ Even if networks need to maintain legacy devices, you can switch to IPv6 only today
- ▶ <https://www.youtube.com/watch?v=Gfe35IFdx-Q>
  - ▶ full technical details on Youtube
- ▶ <https://IPv6.chat> (Matrix chat: #ipv6:ungleich.ch)
- ▶ For questions / suggestions: [ipv6@ungleich.ch](mailto:ipv6@ungleich.ch)