

A decorative graphic consisting of four 'x' symbols and four 'o' symbols arranged in a square pattern around the central text. The 'x' symbols are located at the top-left, top-right, and bottom-right corners, while the 'o' symbols are at the top-left, top-right, and bottom-right corners. The symbols are white with a light gray glow.

Fun with VLANs on Proxmox

About me

- + Ceph Connoisseur at croit GmbH (<https://croit.io>)
- + Coffee Connoisseur at home
- + Self-anointed Infrastructure specialist (<https://kayg.org>)
- + Love hosting free software as a service to the www / friends

A decorative graphic consisting of four 'X' symbols and four circles arranged in a square pattern around the text. The 'X' symbols are larger and more prominent, while the circles are smaller and less distinct.

**A very important detail
about me**

that I missed

A decorative graphic consisting of four 'X' symbols and four circles arranged in a square pattern around the central text. The 'X' symbols are located at the top-left, top-right, and bottom-right corners, while the circles are at the top-right, top-left, and bottom-right corners. The symbols are white with a soft, glowing effect.

I suck at networking
a lot.

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So I made sure you don't

What are VLANs?

- + Logical division of a network that can span multiple physical devices
- + Bridge, bond, NIC, you name it
- + Each VLAN is a separate broadcast domain
- + A broadcast domain is a logical division of a single computer network

What are VLANs?

- + Devices in a broadcast domain can talk to each other
- + Therefore, devices within a VLAN can talk to each other
- + Devices in one broadcast domain cannot talk to devices in another
- + Therefore, devices in one VLAN *should not be able to talk to* devices in another VLAN

Why VLANs?

- + Separate set of machines with intent
- + Route and shape traffic for a set of machines without affecting others
- + Don't let your smart fridge eat 300 gigs a month. Spend the data scrolling Instagram instead... maybe not.
- + Learn networking!

Proxmox...

- + Open-source hypervisor, with active development
- + Based on Debian, so familiar to most people
- + Mature, widely used with years of community support
- + Serves as a superb testbed for learning containers, networking, virtualization, orchestration... most things Linux



Enough tell

Please show



The two paths to VLANs

- + Transparent: make bridge vlan-aware, create vlans on the linux bridge, assign vlan tag to the vm network device
- + Traditional: connect a linux bridge to a vlan on the NIC (dynamically created/destroyed), assign bridge to the vm network device

✕ Walking both paths



+ Ping within the VLAN

- Transparent?
- Traditional?

+ Ping another VLAN

- Transparent? **?**
- Traditional? **???**





WHY?



A decorative graphic consisting of three 'x' symbols and three 'o' symbols arranged in a triangular pattern around the central text. The 'x' symbols are located at the top-left, top-right, and bottom-right positions, while the 'o' symbols are at the top-left, top-right, and bottom-right positions. The symbols are white with a soft glow effect.

Because forwarding

✕ How does that work?

- + Remember how the host is also on the VLAN?
- + Remember how the gateway for our vms is the VLAN?
- + Our host is forwarding the packets here because:
 - We have it configured as our gateway
 - AND the linux kernel is configured to forward packets
- + Our host acts as a router here to forward packets the same way your router forwards packets to your isp's router at home

✕ How do we prevent it?

- + with a firewall – iptables!
- + Prevent forwarding by default
 - Allow communication between bridge and NIC, both ways
 - Allow communication between VLANs and bridge, both ways
 - Finally, allow communication within VLANs
- + Now we have completely configured VLANs!

✕ Out of Scope / Later

- + Trunk ports
- + VLAN in VLAN (QinQ)
- + Bonds
- + ...



A decorative graphic consisting of four 'X' symbols and four circle symbols arranged in a 2x2 grid pattern. The 'X' symbols are larger and positioned at the corners, while the circle symbols are smaller and positioned slightly inward from the corners. All symbols are white with a soft, glowing effect.

Thank you for your patience

until next time!