Snabb Switch: Simple and fast packet networking

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snabb.co

Hello

- Started Snabb Switch project.
- Many years in networking vendors/startups.
- Tech lover: Lua, Erlang, Lisp, Forth, ...
- Now 100% open source.

Overview

- What is the project all about?
- What is the software architecture?
- How do some real applications work?

Network industry

- Lots of wonderful products.
- Open to new ideas.
- How far can we push open source on x86?

x86 server

Software?

Snabb Switch

- packetblaster: infinite load generator.
- VPLS: Virtual Private LAN Service.
- NFV: Fast Virtio-net for KVM/OpenStack.
- lwAFTR: Lightweight IPv4/IPv6 translation.
- LISP: Locator/ID Separation Protocol.
- Snabbwall: Stateful firewall appliance.

Community

- Network operators.
- Professional open source developers.
- Network equipment vendors.
- Creative people.

How does it work?

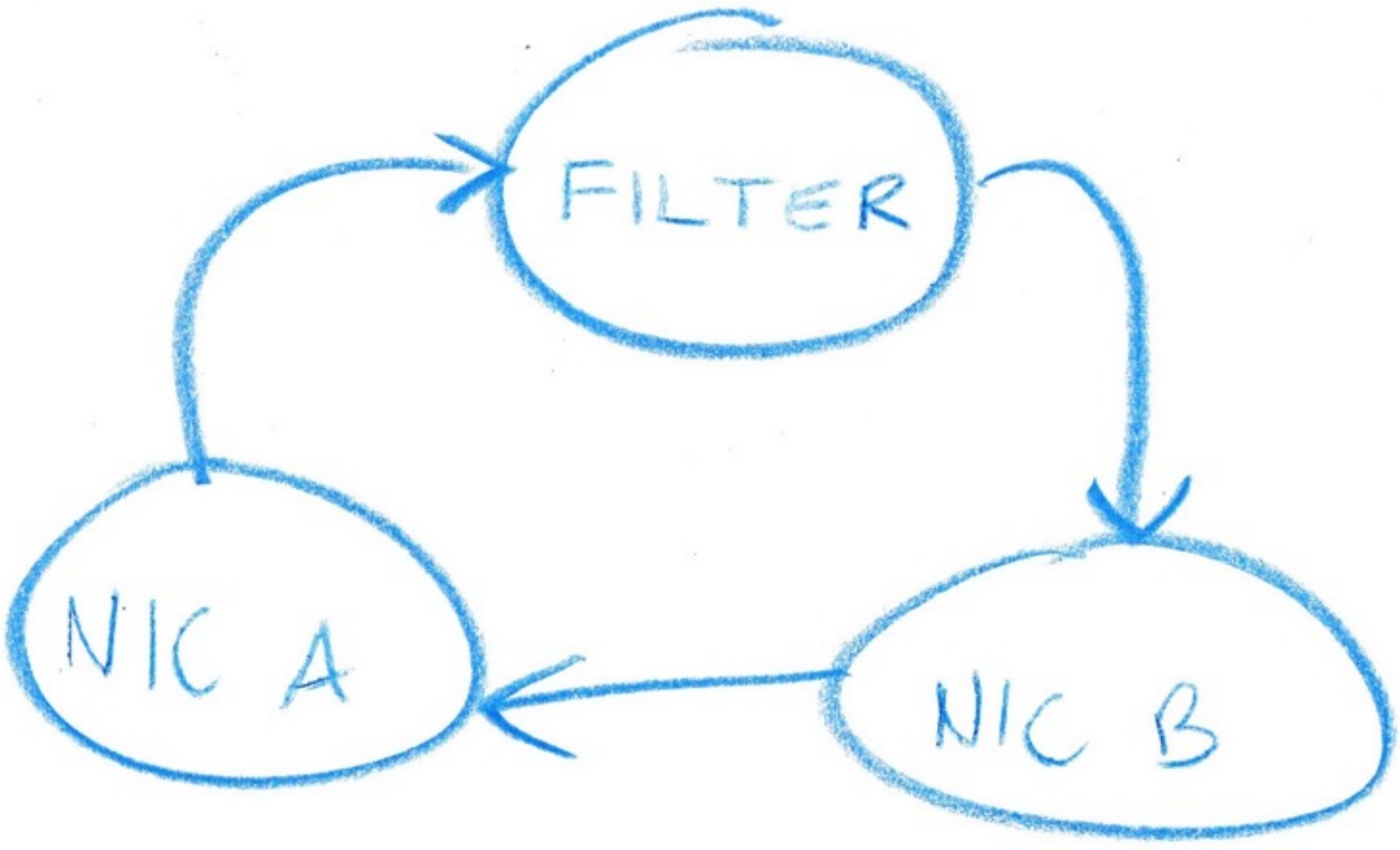
Style

- High-level: written in Lua.
- Low-level: built-in device drivers.
- Avoids complicated things:
  threads, locks, interrupts, kernel modules.

Budget

- 10,000 lines of code.
- 1 second compile (1 minute with deps).
- 1 megabyte stand-alone executable.

Architecture



Packet

```
struct packet {
    char data[10240];
    int length;
};
```

Link

```
struct link {
    struct packet *packets[256];
    int read, write;
};
```

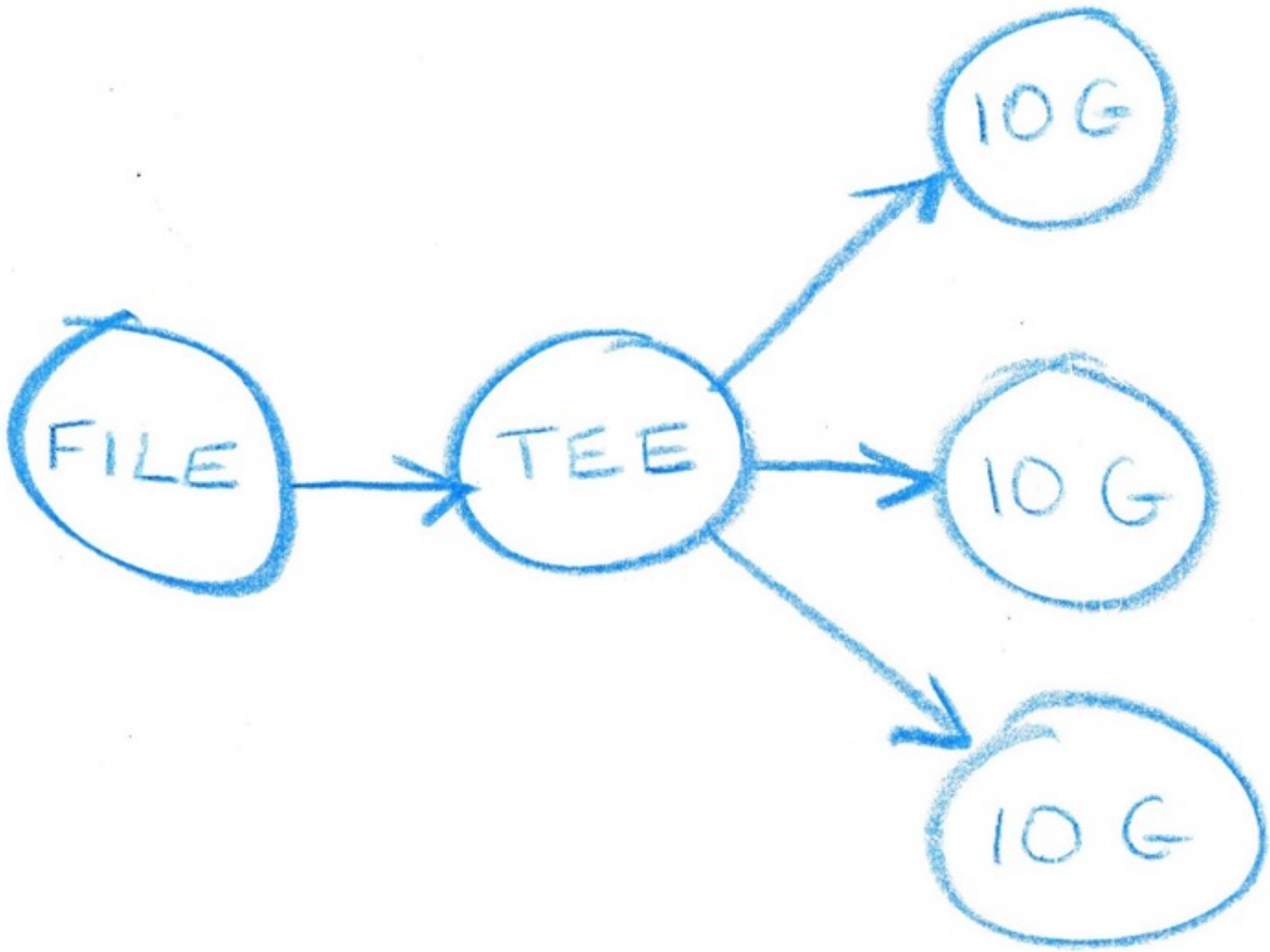
App

```
MyApp = {}

function MyApp:pull () ... end

function MyApp:push () ... end
```

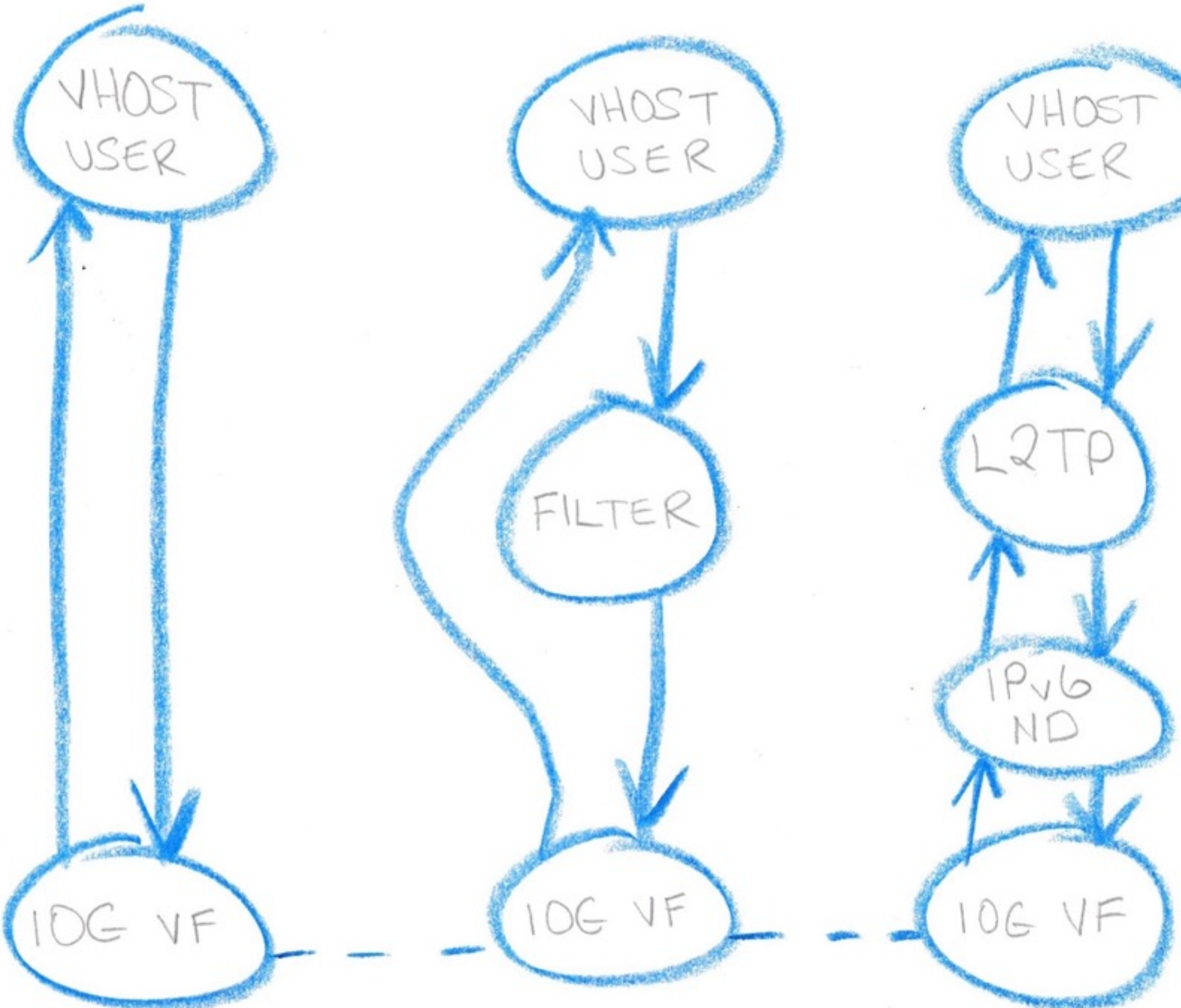
App Catalogue

Basic	I/O	Processing
join	intel10g	flooding_bridge
repeater	loadgen	learning_bridge
sink	pcap_reader	keyed_ipv6_tunnel
source	pcap_writer	ipv6_nd
split	raw_socket	ipv6_ns
tee	solarflare	pcap_filter
	vhost_user	rate_limiter

packetblaster



snabbnfv


VHOST USER
10G VF
VHOST USER
FILTER
10G VF
VHOST USER
L2TP
IPv6 ND
10G VF

Join in

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