WEPOQ AND OVN

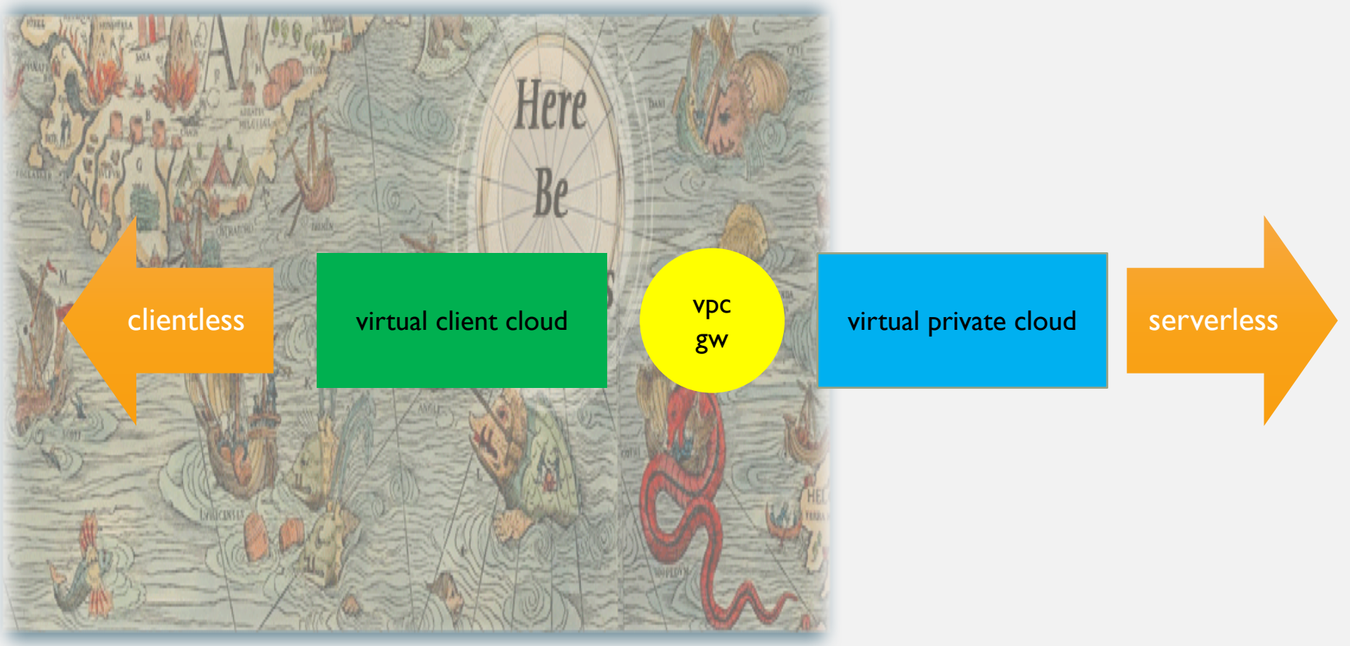
TALK FLOW

- Context
  - my background
  - big picture
- Wepoq Overview
  - sample apps
- Wepoq-OVN Overview
- Next Steps
  - FQDN dns
  - logical trunk port
  - Virtual Client Cloud

MY BACKGROUND

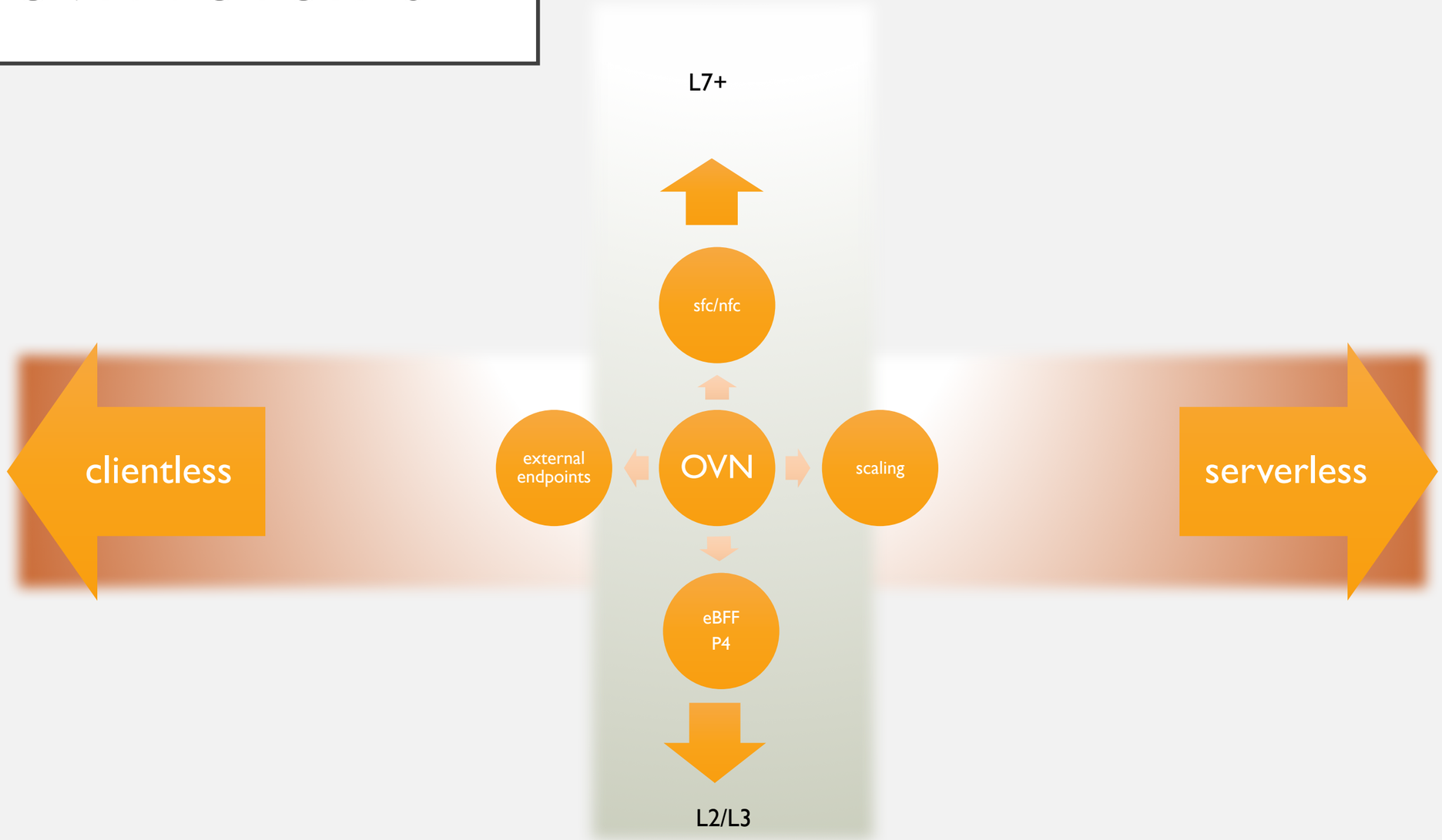
- Worked in UI system software early career
  - First OSS project was X Window System
  - up the stack: Xt, Motif, CDE
- Worked at protocol/interop layer next
  - XML Schema, Linking, RDF, RSS 2.0
- Switched to Media system interop in 2000
  - MultiPhoto/Video (MPV) standard and toolkit
  - Windows Media interop (DRM)
  - Video packaging and distribution (Blu-ray,large scale video streaming)
- Returning to OSS an networking ☺

CLIENTLESS VS SERVERLESS

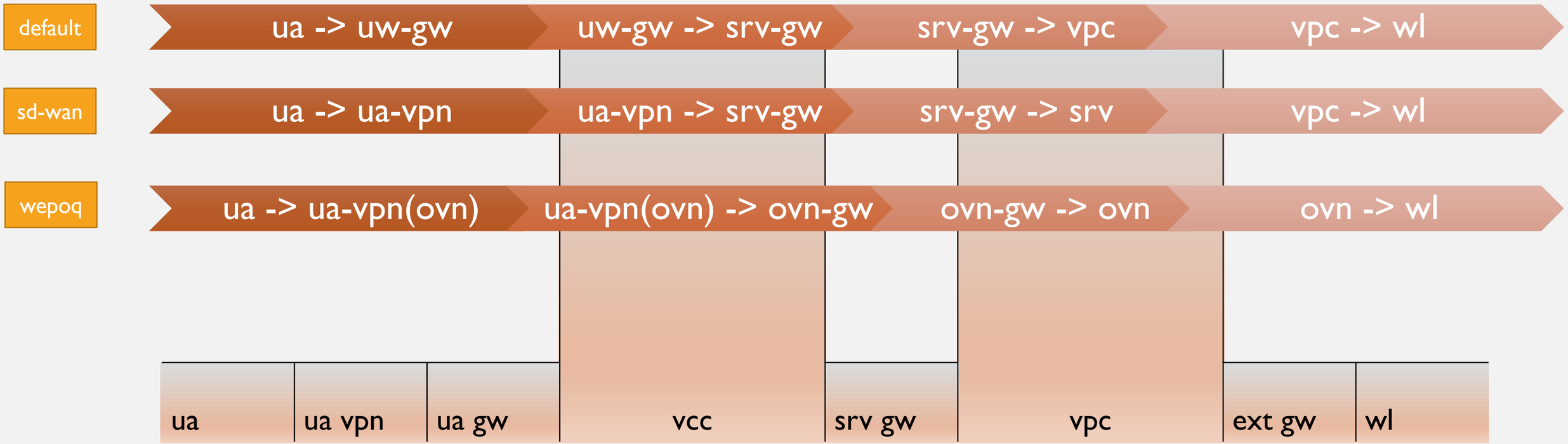


- Two worlds
- VPC (virtual private cloud)
- VCC (virtual client cloud) aspirational

OVN FUTURES


L7+
sfc/nfc
clientless
external endpoints
OVN
scaling
serverless
eBFF P4
L2/L3

OVERVIEW OF END TO END PATHS



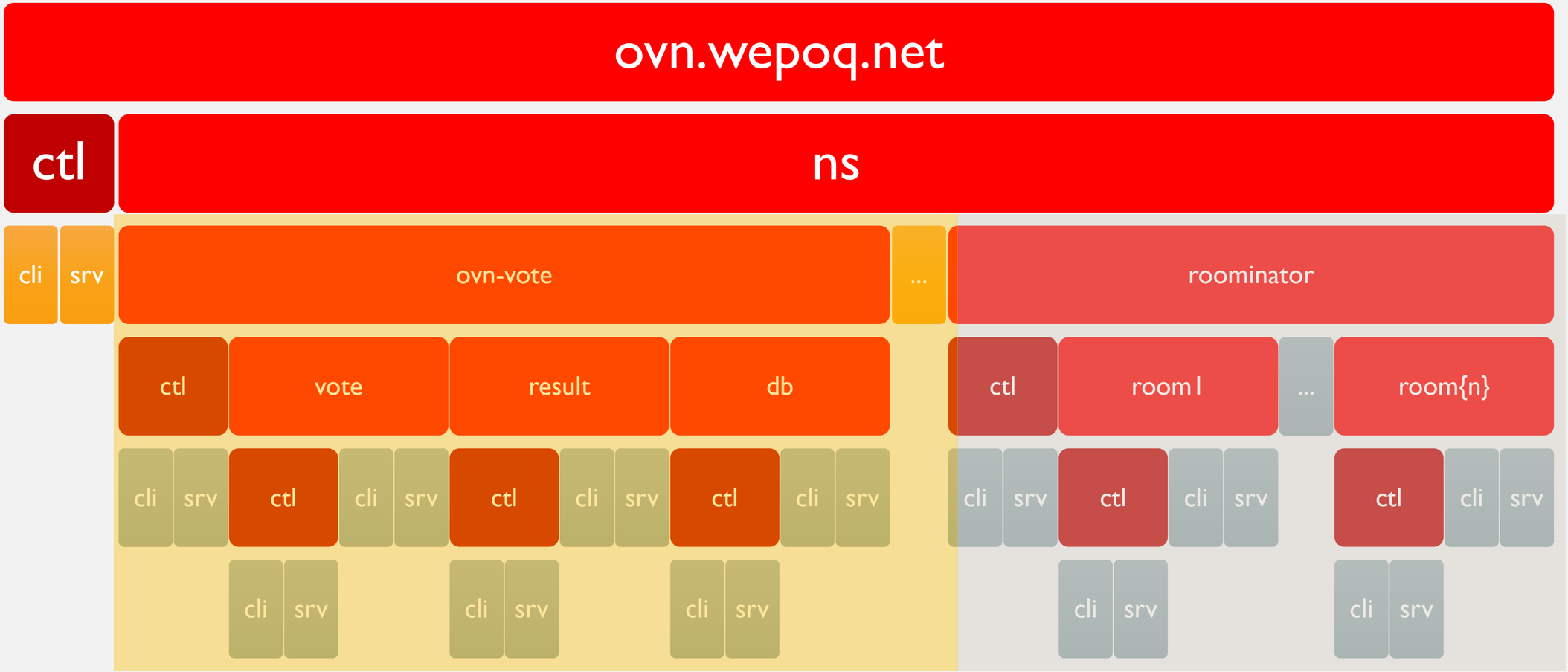
WEPOQ

WHAT IS WEPOQ

- End to end L3 architecture for logical application networks
- Focus on client-side cloud and making client endpoints 1st class OVN ports
- Hierarchically scoped topology which drives control plane flow (up/down)
- Support for client/server and P2P application networks
- all traffic is from known L2 endpoints, no MAC learning
- application topology directly expressed in OVN topology and DNS naming

- Current VPC approach is client-less, Wepoq makes it client-yes!

WEPOQ TOPO


ovn.wepoq.net
ctl
ns
cli
srv
ovn-vote
...
roominator
ctl
vote
result
db
ctl
room 1
...
room{n}
cli
srv
ctl
cli
srv
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DNS NAMING HIERARCHY

- net.wepoq.ovn
  - { namespace }
    - { app }
      - { room/service }
        - (“cli” | “svr” }
          - endpoint (c{n}, s{n})

ep	cli	room/service	app	ns.wepoq.net
			roominator	ns.wepoq.net
		ctl	roominator	ns.wepoq.net
	cli	ctl	roominator	ns.wepoq.net
c1	cli	ctl	roominator	ns.wepoq.net
...				
c32	cli	ctl	roominator	ns.wepoq.net
	svr	ctl	roominator	ns.wepoq.net
vip	svr	ctl	roominator	ns.wepoq.net
		room1	roominator	ns.wepoq.net
	cli	room3	roominator	ns.wepoq.net
c1	cli	room3	roominator	ns.wepoq.net
		room3	roominator	ns.wepoq.net

DNS EXAMPLES

- cluster controller
  - vip.svr.ctl.ovn.wepoq.net
- namespace controller
  - vip.svr.ctl.ns.wepoq.net
- app controller
  - vip.svr.ctl.roominator.ns.wepoq.net, vip.svr.ctl.ovn-vote.ns.wepoq.net
- the third room controller
  - vip.svr.ctl.room3.roominator.ns.wepoq.net
- the third client in room3
  - c3.room3.roominator.ns.wepoq.net
- the third client of the ovn-vote result invoking the service
- c3.cli.result.ovn-vote.ns.wepoq.net ->
  - vip.svr.result.ovn-vote.ns.wepoq.net

WEPOQ-OVN (SECTION)

NETWORK INTERFACE HIERARCHY

	PIF	VIF	CIF	WIF	
level of host integration	1	2	3	4	
NIC	HOST HW	Host Kernel	Nested Guest Kernel	External host Kernel	

- Physical network interface (PIF)
- Virtual network interface (VIF)
- Container network interface (CIF)
- Wepoq network interface (WIF)

LOGICAL TRUNK PORT (SECTION)

- ovs tunnel connect internal OVN hypervisors
- vlan trunk ports connect nested server-side hypervisors to OVN
- l4 trunk ports connect external client-side hypervisors to OVN

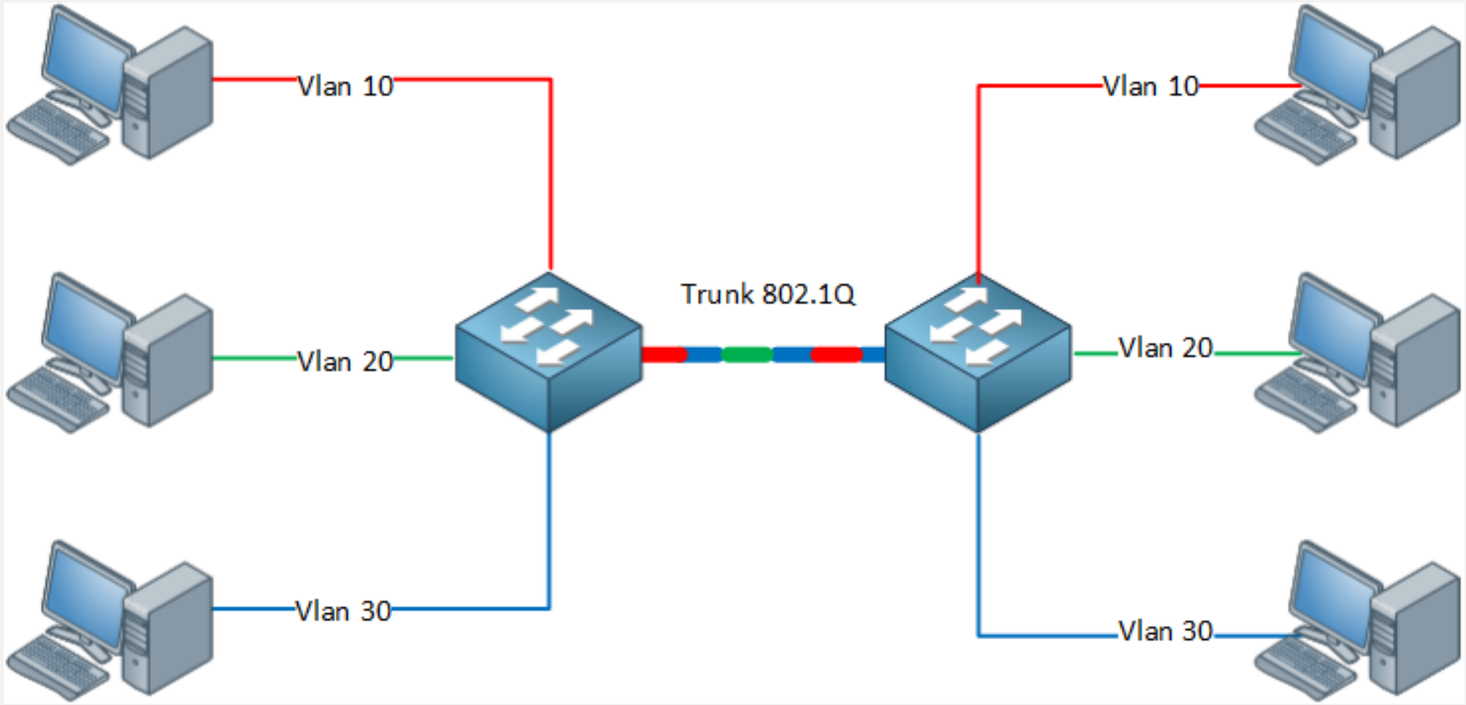
src	dst	connect	signal
HV	HV	L2 tunnel	external
HV-lite	HV	VLAN trunk	inline
HV-ext	HV	L4 trunk	payload

ovs port type	netdev type	encap layer	relative to L2
tunnel	internal	L2	outer
CIF trunk	nested	L2.5	inline
wepoq (*)	external	L4	inner

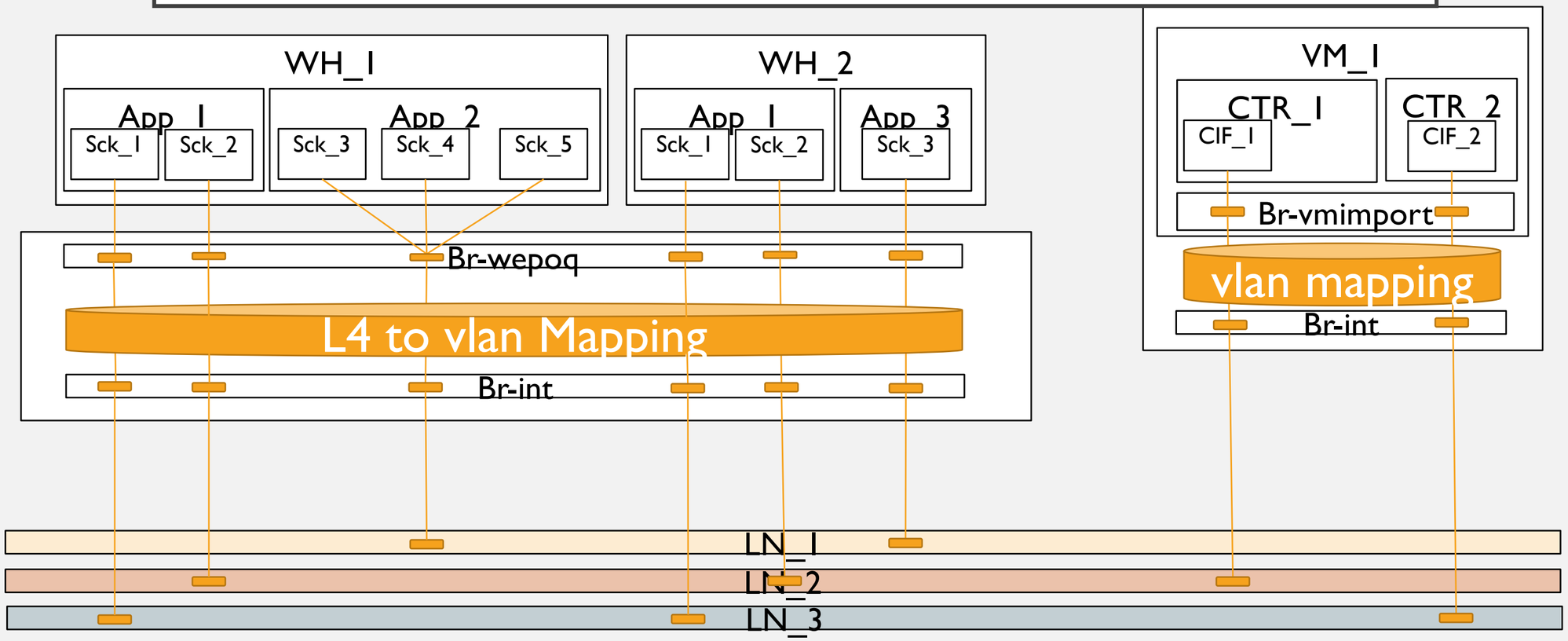
TYPES OF TRUNK PORTS

- physical 802.1q port
- ipvlan/macvlan port
- logical trunk port
  - vlan container port
  - l4 client port
    - client vpn
    - client ingress router

PHYSICAL TRUNK



CIF AND L4 LOGICAL TRUNK PORT



LOGICAL TRUNK AND OVN-NB

- wepoq cluster controller manages a set of wepoq apps. Each chassis in the cluster runs the wepoq agent which manages br-wepoq which provides client network access
- br-wepoq creates one or more veth pairs to br-int, to serve as logical trunk ports on that chasis.
- a client wepoq port is represented in ovn-nb in the externals_ids column of the ports table
  - external_ids:wepoq-addr="mac-addr ipv4-addr {protocol/port, … protocol/port}"
  - external_ids:wepoq-name="c1.cli.room3.roominator.ns.wepoq.net"
- trunk port has
  - externdl_ids:wepoq="???"

NEXT STEPS

DNS PROPOSAL

- add table to ovn_sb to maintain dns mapping (suggested by ben pfaff)
- add FQDN option in addition to naked hostname
  - enables FQDN to be used instead of ip
  - significant robustness and speed potential

LOGICAL TRUNK PORT

- Generalize container ports to not be specific to VM nesting use case
- Allow multiple methods of signaling OVN on how to handle logical trunk port
  - vlan signalling
  - L4 port signalling
- make logical trunk port an explicit type
  - logical location for metadata about nested/external guests

VIRTUAL CLIENT CLOUD

- Flesh out a complete proposal
- investigate what other capabilities might enable OVN to better support VCC
  - limited resource environments (opposite of current focus)
  - add use cases