



NETWORKING

Open-Only Data-Center Network

Alex Saroyan/CEO/XCloud Networks INC

OPEN. FOR BUSINESS

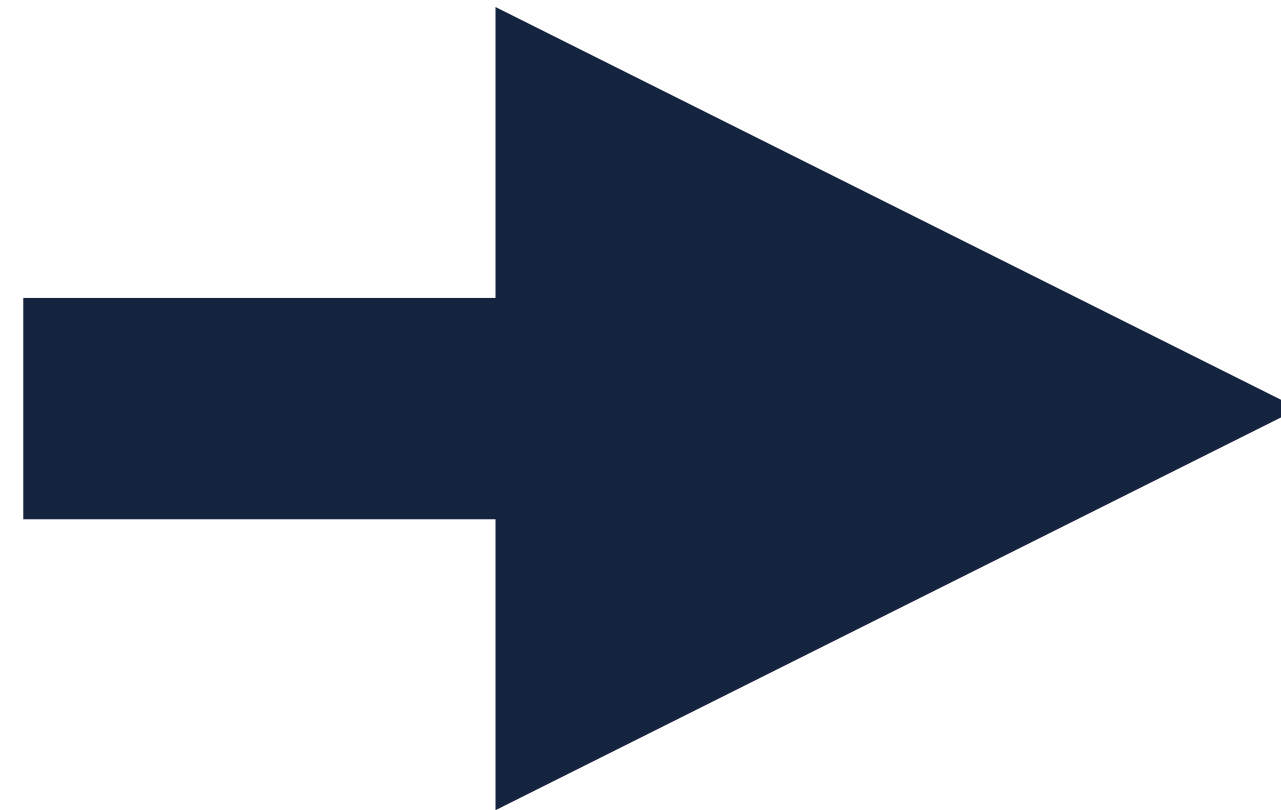


TRADITIONAL NETWORKING



OCP

MAJOR TRANSFORMATION



- 10-30X Total saving
- HW Agnostic
- Decrease of Human Load
- No Human Mistakes

OPEN NETWORKING

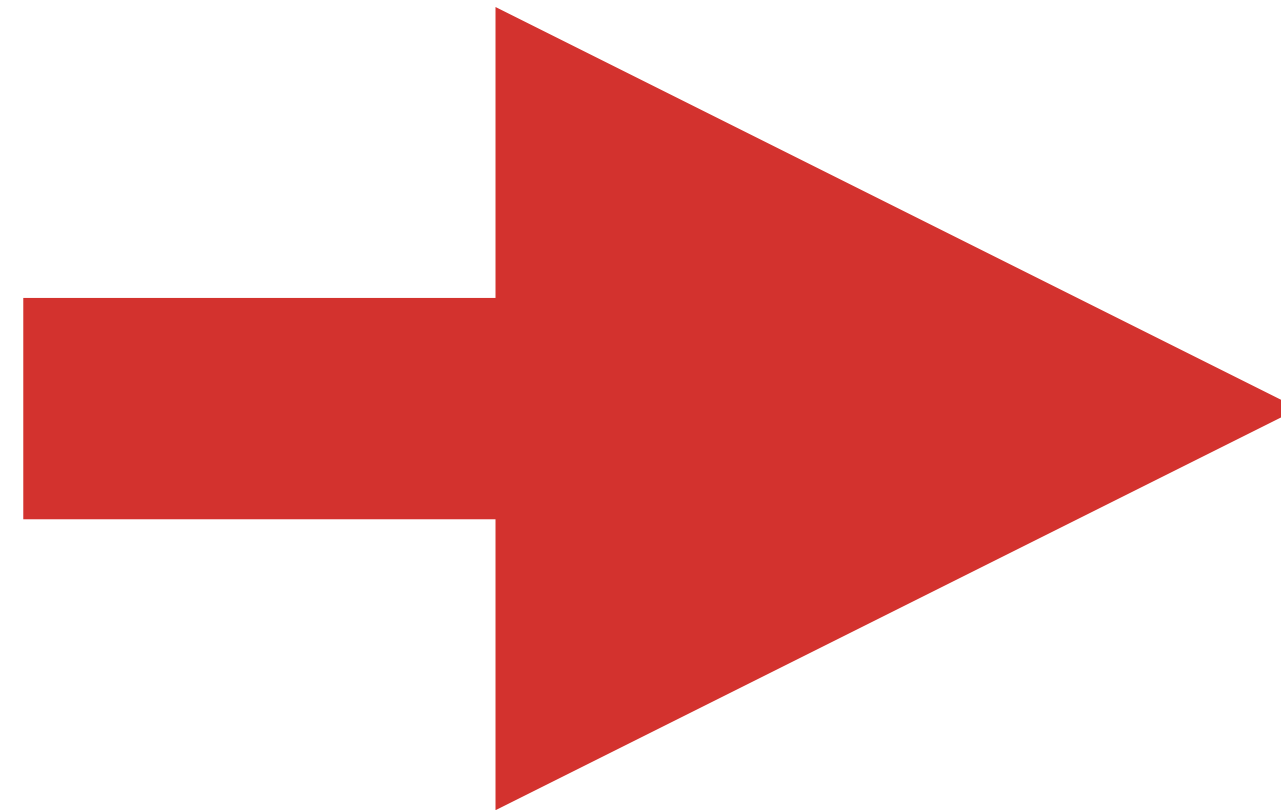


TRADITIONAL NETWORKING



OCP

PARTIAL TRANSFORMATION

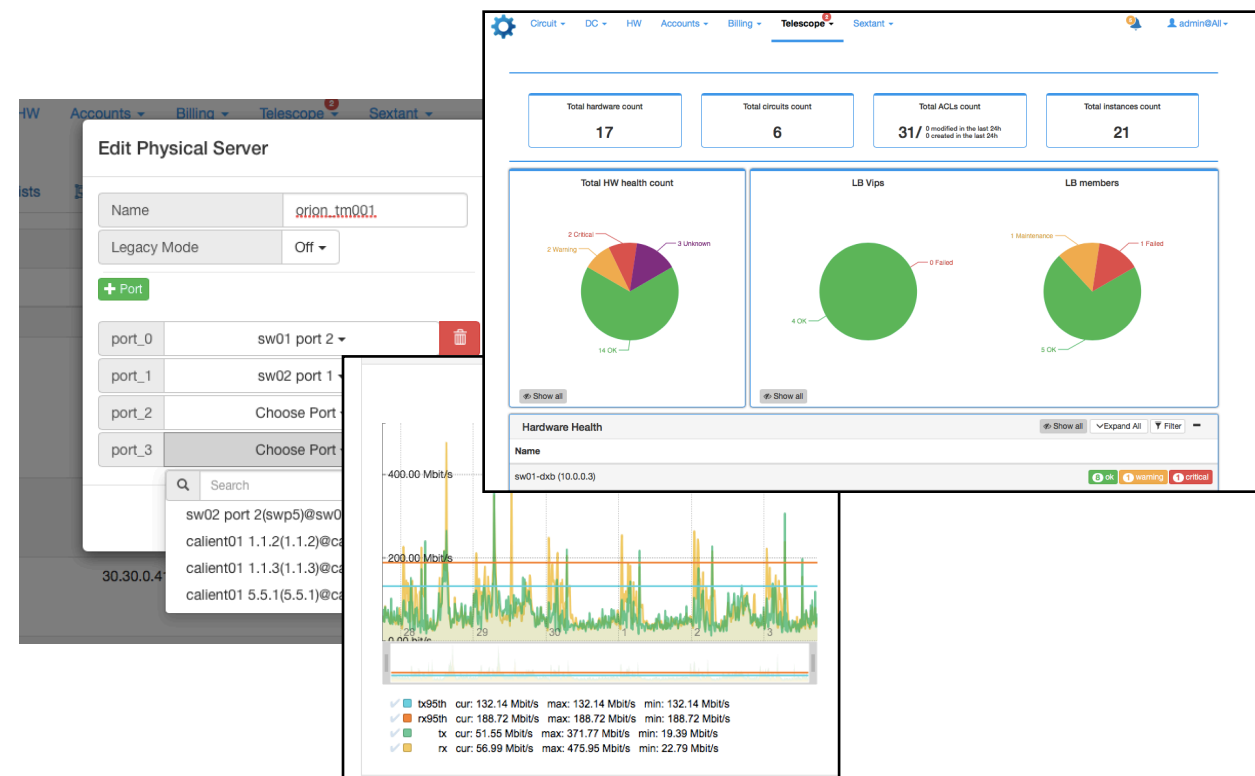


- Requires Knowledge
- Requires Efforts
- Partial Deployment

OPEN NETWORKING



INTEGRATION NEEDS



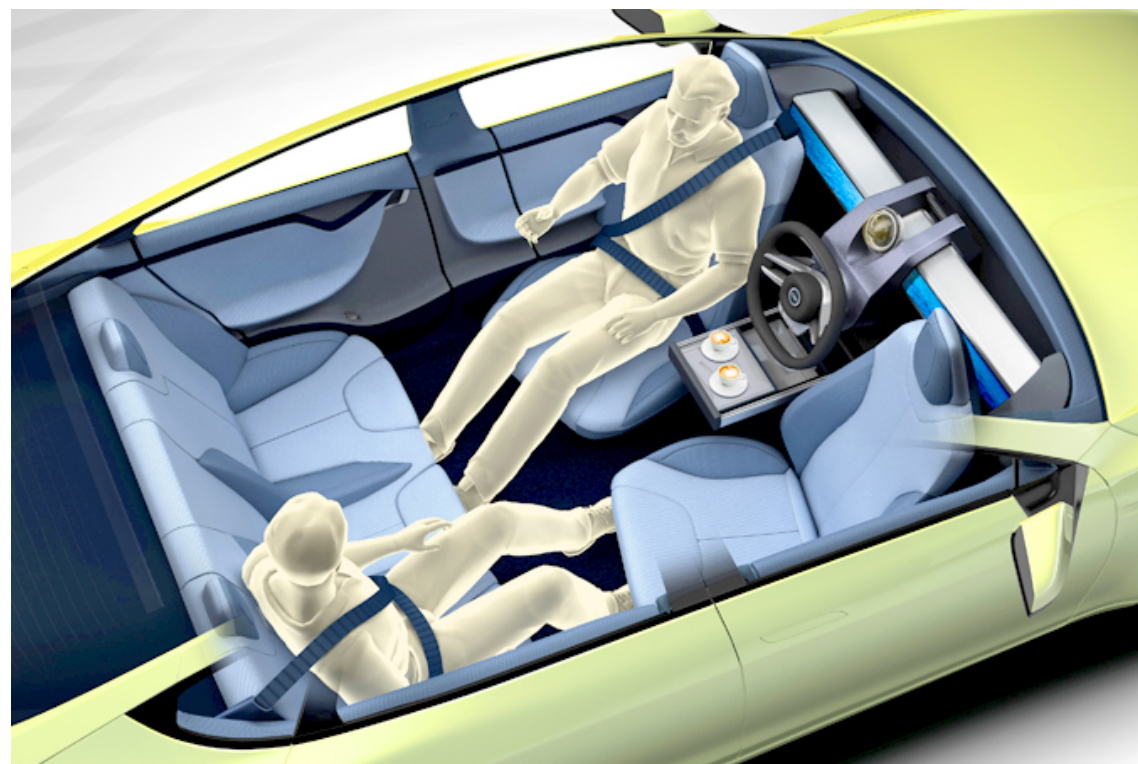
ALL-IN-ONE



OCP HARDWARE



OPEN-SOURCE



INTENT-BASED APPROACH



OTHER COMPATIBLE HARDWARE



NETWORK OPERATING SYSTEMS

SIMPLIFIED & AUTOMATED NETWORKING

APPLICATIONS

CONTROLLER

SDN Agent

NFV Agent

SDN Agent

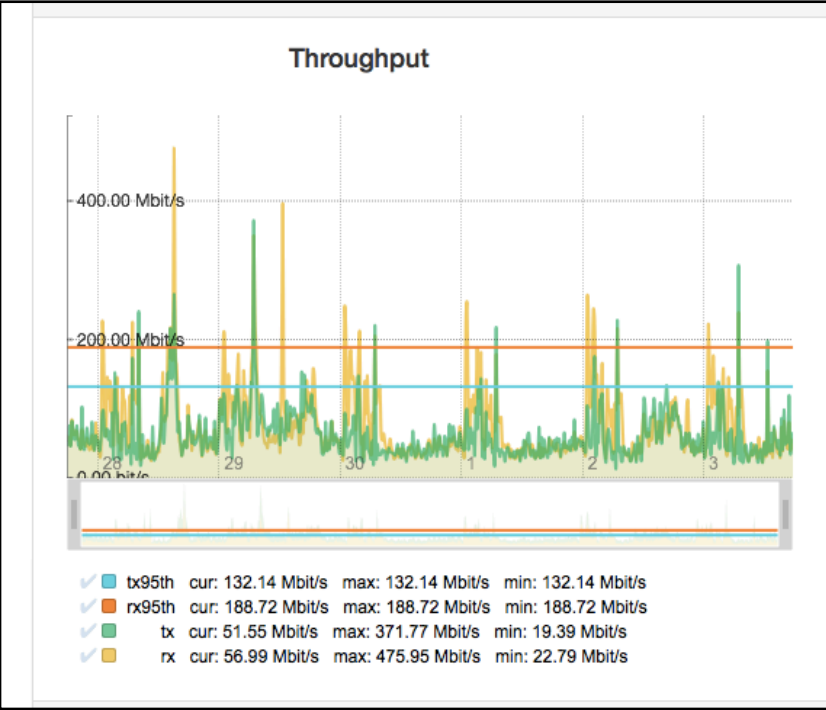
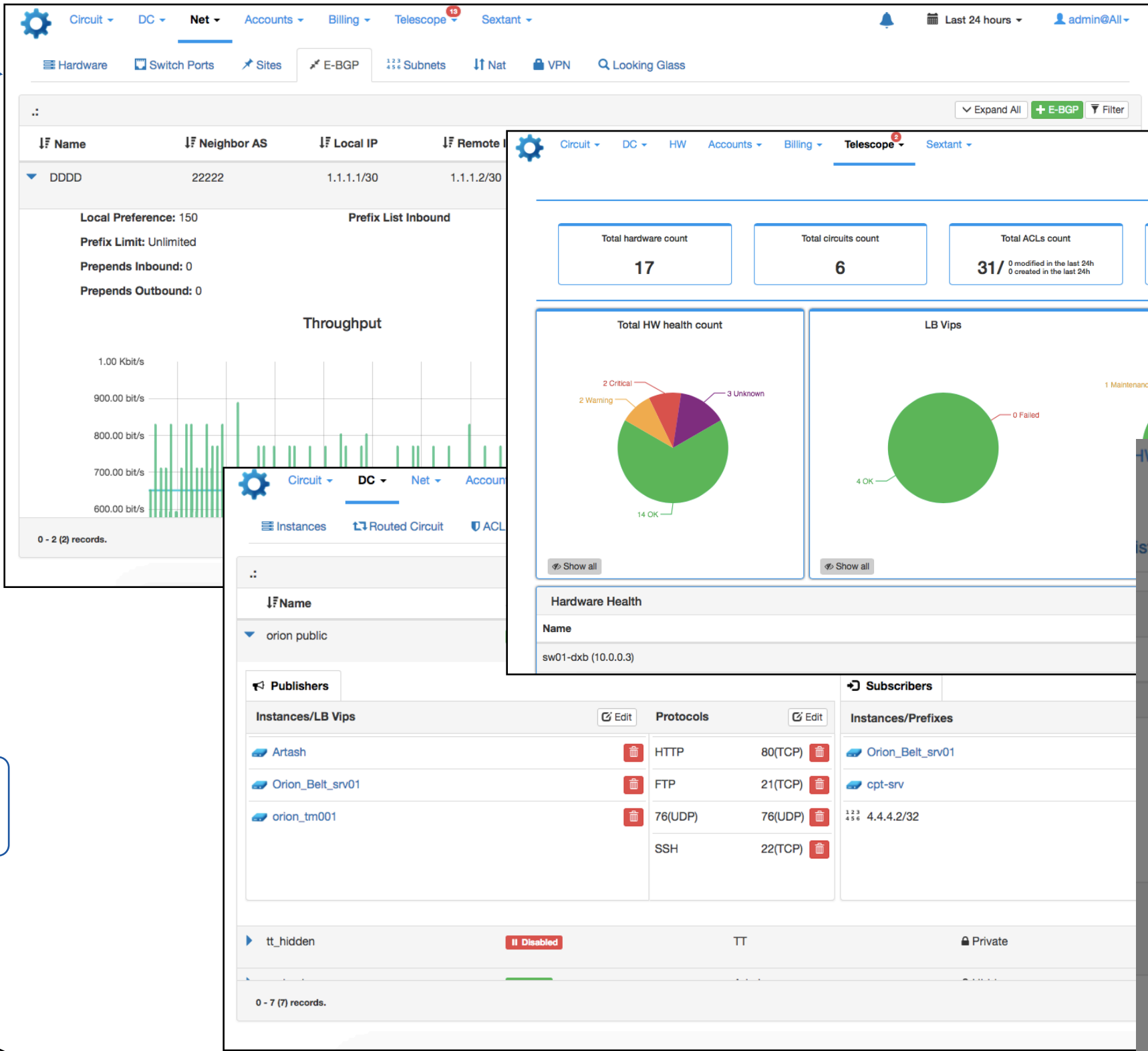
SDN Agent

SDN Agent

Customer Servers

Customer Servers

Customer Servers



The 'Edit Physical Server' form allows for detailed configuration of server ports. It includes a table for port settings and a search results dropdown.

Port	Configuration	Status
port_0	sw01 port 2	BGP: Established
port_1	sw02 port 1	BGP: Established
port_2	Choose Port	
port_3	Choose Port	

Search results for 'sw02 port 2(swp5)@sw01-hkg':

- callent01 1.1.2(1.1.2)@callent01
- callent01 1.1.3(1.1.3)@callent01
- callent01 5.5.1(5.5.1)@callent01

✓ Routing on the host

Add Physical Server

Name

server name

Site

Amsterdam

Legacy Mode

☐

+Port

sw01-lon swp2(swp2)...

BGP: Unknown

sw01-sof bond(bond0)...

BGP: Unknown

+IPv4

5.63.129.0/24

5.63.129.1

☐ Anycast

5.63.129.0/24

Choose IP

☐ Anycast

5.63.129.2

5.63.129.3

5.63.129.4

5.63.129.5

5.63.129.6

5.63.129.7

5.63.129.8

5.63.129.9

Close

Add

Routing on the host

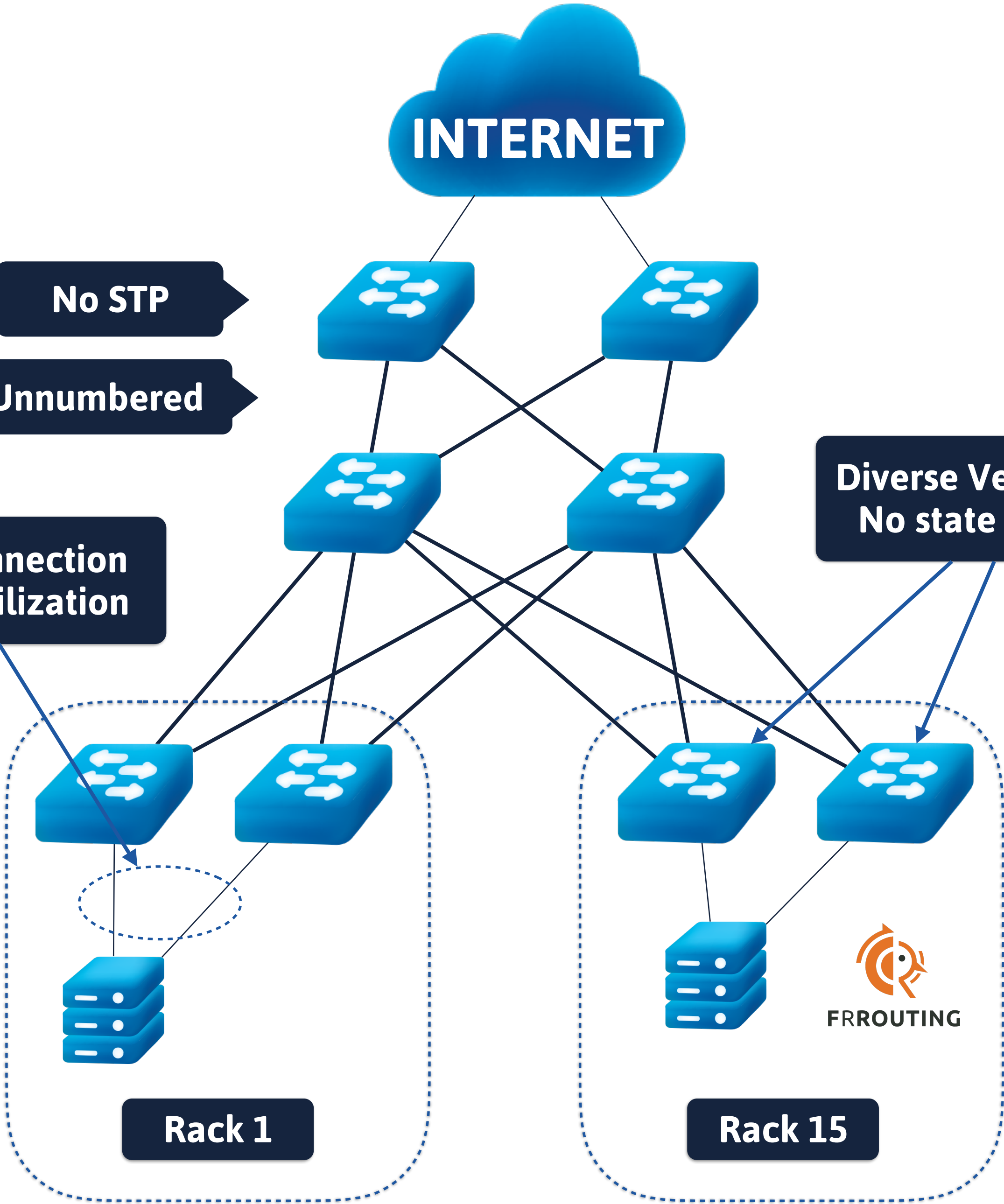
Server mobility

1+N LEG Connection
Full equal utilization

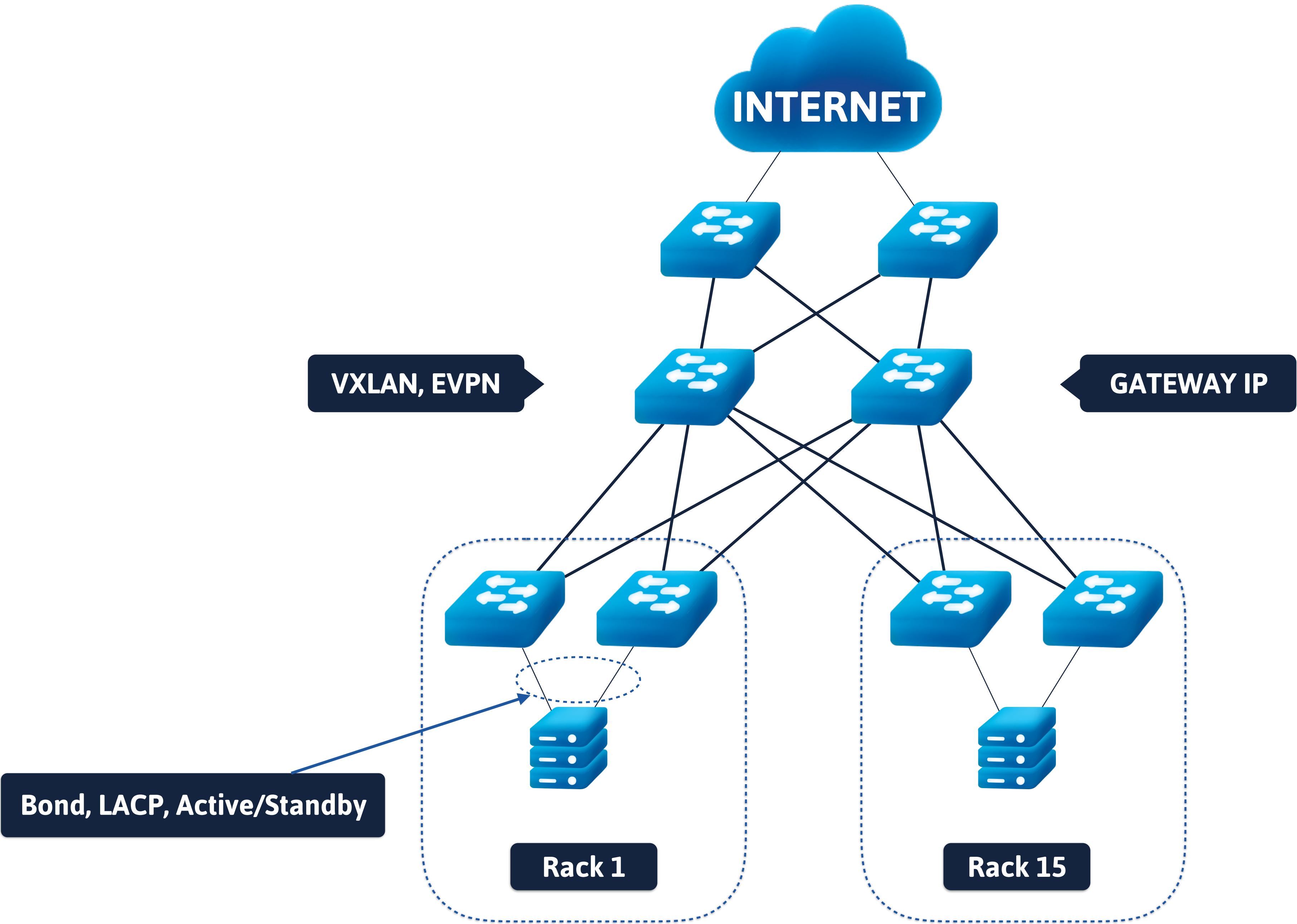
BGP Unnumbered

No STP

Diverse Vendor/Model
No state replication



✓ Old School L2/L3 ???



✓ Old School L2/L3 ???

⚙️

DC ▾Net ▾Accounts ▾Telescope ▾Sextant ▾

HardwareSwitch PortsSitesE-BGPSubnets

⋮

Check all

Name	Port	Assigned	Switch
▶ ☐ sw01-msk swp3	swp3	Admin	sw01-msk
▶ ☐ sw01-msk swp4	swp4	Unassigned	sw01-msk
▶ ☒ sw01-msk swp5	swp5	Admin	sw01-msk
▶ ☒ sw01-msk swp6	swp6	Admin	sw01-msk
▶ ☒ sw01-msk swp7	swp7	Admin	sw01-msk
▶ ☒ sw01-msk swp8	swp8	Admin	sw01-msk
▶ ☒ sw01-msk swp9	swp9	Admin	sw01-msk
▶ ☐ sw01-sao swp1	swp1	Unassigned	sw01-sao

Edit L3 Circuit

NameServer Farm

SiteAmsterdam

StatusEnable

Gateway IP1.0.1.0/241.0.1.6

+Physical Port

Search

sw01-msk swp1(swp1)@sw01-msk

sw02 port 1(swp4)@sw01-hkg

sw02 port 2(swp5)@sw01-hkg

sw01-tyo swp1(swp1)@sw01-tyo

sw01-tor swp1(swp1)@sw01-tor

sw01-sfo swp1(swp1)@sw01-sfo

sw01-sfo swp2(swp2)@sw01-sfo

sw01-sao swp1(swp1)@sw01-sao

Check all

444UntagLACP

2 - 4094UntagLACP

Close

Update

⚙️

DC ▾Net ▾Accounts ▾Telescope ▾Sextant ▾

HardwareSwitch PortsSitesE-BGPSubnets

⋮

Check all

Name	Port	Assigned	Switch
▶ ☐ sw01-msk swp3	swp3	Admin	sw01-msk
▶ ☐ sw01-msk swp4	swp4	Unassigned	sw01-msk
▶ ☒ sw01-msk swp5	swp5	Admin	sw01-msk
▶ ☒ sw01-msk swp6	swp6	Admin	sw01-msk
▶ ☒ sw01-msk swp7	swp7	Admin	sw01-msk
▶ ☒ sw01-msk swp8	swp8	Admin	sw01-msk
▶ ☒ sw01-msk swp9	swp9	Admin	sw01-msk

Add Ports to L3 Circuit

Circuit NameChoose circuit

Vlan2 - 4094Untag

swp5@sw01-msk

swp6@sw01-msk

swp7@sw01-msk

swp8@sw01-msk

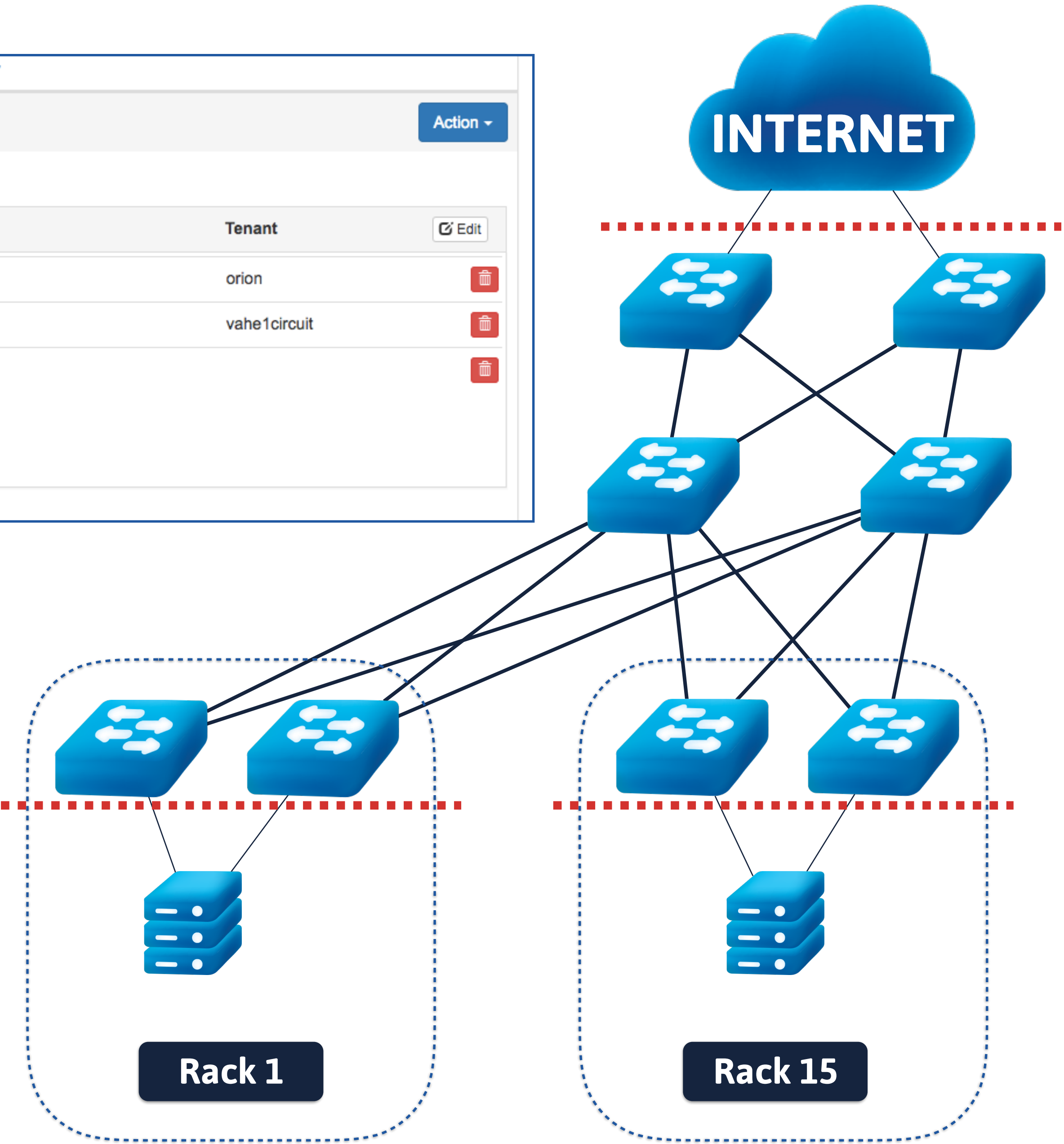
swp9@sw01-msk

Close

Add

✓ **ACL ENFORCEMENT, \$0 extra cost**

Name	Status	Tenant	Privacy	Action
orion public	Disabled	orion	Private	
Publishers		Subscribers		
Instances/LB Vips	Edit	Protocols	Edit	Instances/Prefixes
Orion_Belt_srv01		HTTP	80(TCP)	Orion_Belt_srv01
web01		FTP	21(TCP)	YYYY
		76(UDP)	76(UDP)	4.4.4.2/32
		SSH	22(TCP)	



Edit "haripinl3 test tcp"

Name

haripinl3 test tcp

Protocol

TCP

Active Until

09/10/2018 18:57

Action

Permit

Established

Source

Source

0.0.0.0/0

Ports Type

Port Range

From port

1

To port

65535

Destination

Destination

1.0.1.9/32

Ports Type

Port Range

From port

443

To port

443

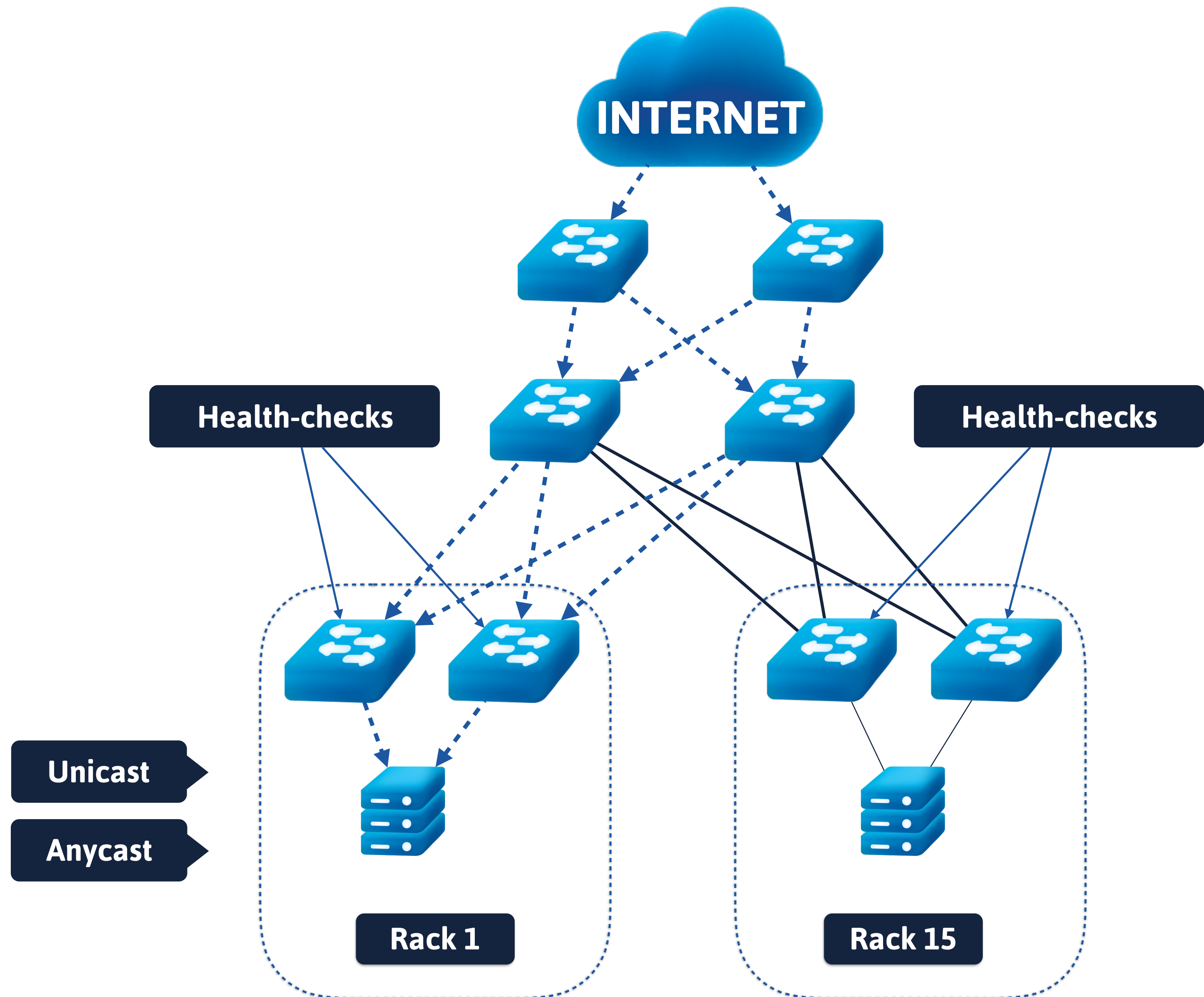
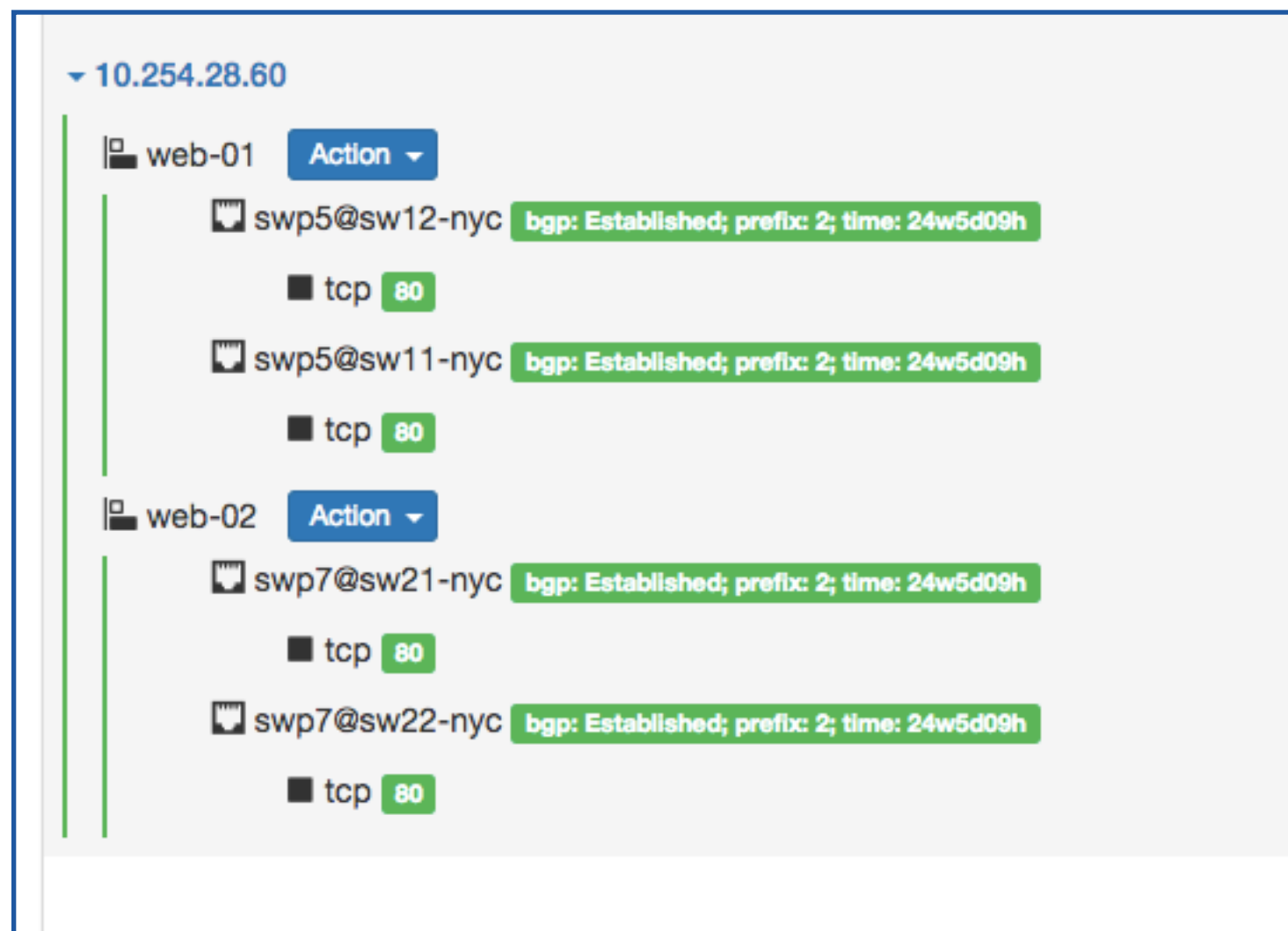
Comment

Close

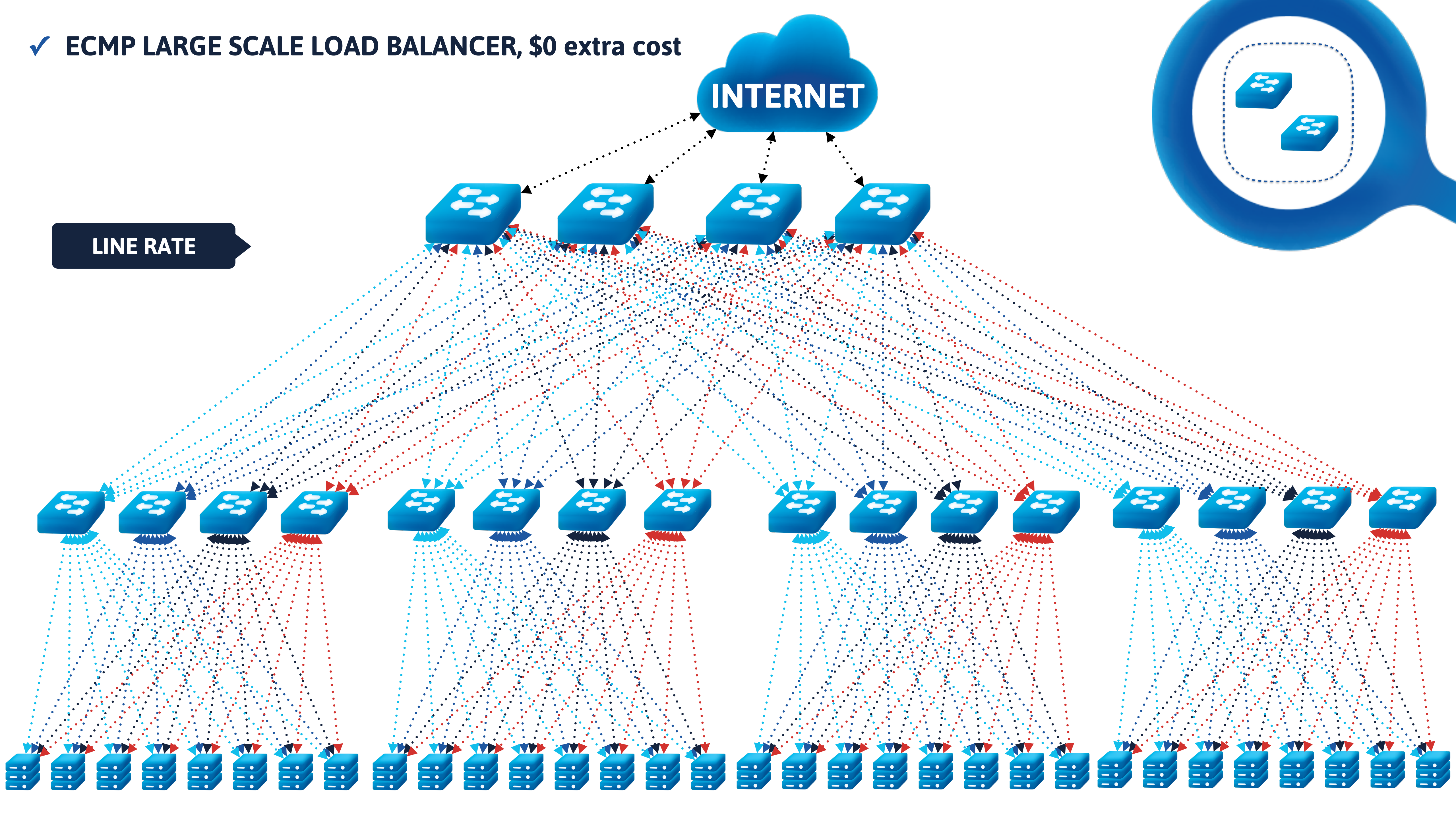
Check

Update

✓ ECMP LARGE SCALE LOAD BALANCER, \$0 extra cost



✓ ECMP LARGE SCALE LOAD BALANCER, \$0 extra cost



✓ APPLICATION LAYER LOAD BALANCER, \$0 extra cost

Edit "qa"

Name

qa

Haproxy Cluster

ha-cluster-... (7.7.7.100)

Frontend

Bind port

http

8080

Virtual Host

aaa

SSL Certificate

Load Balancer Members

ACLs from frontend towards members will be generated automatically

+ Member

Search

pve03

pve04

ub01-dxb

ub01-cpt

qatest01

tm-srv01-qa-tenant

Close

Update

Edit "haproxy01"

Name

haproxy01

Site

Amsterdam

Haproxy Cluster

ha-cluster-qa(7.7.7.1...

Rename

Unicast address

7.7.7.0/24

7.7.7.41

+Physical Port

sw01-cpt swp8(swp8)...

sw01-cpt swp10(swp...

Close

Update

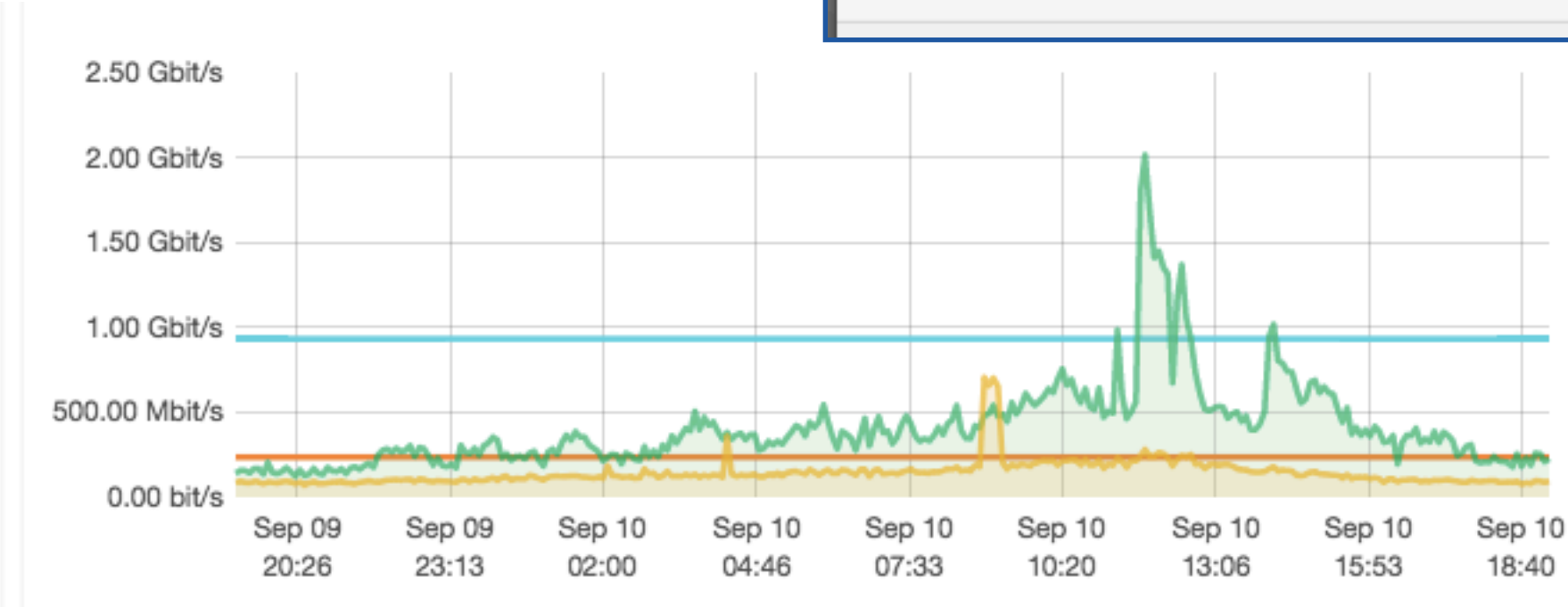
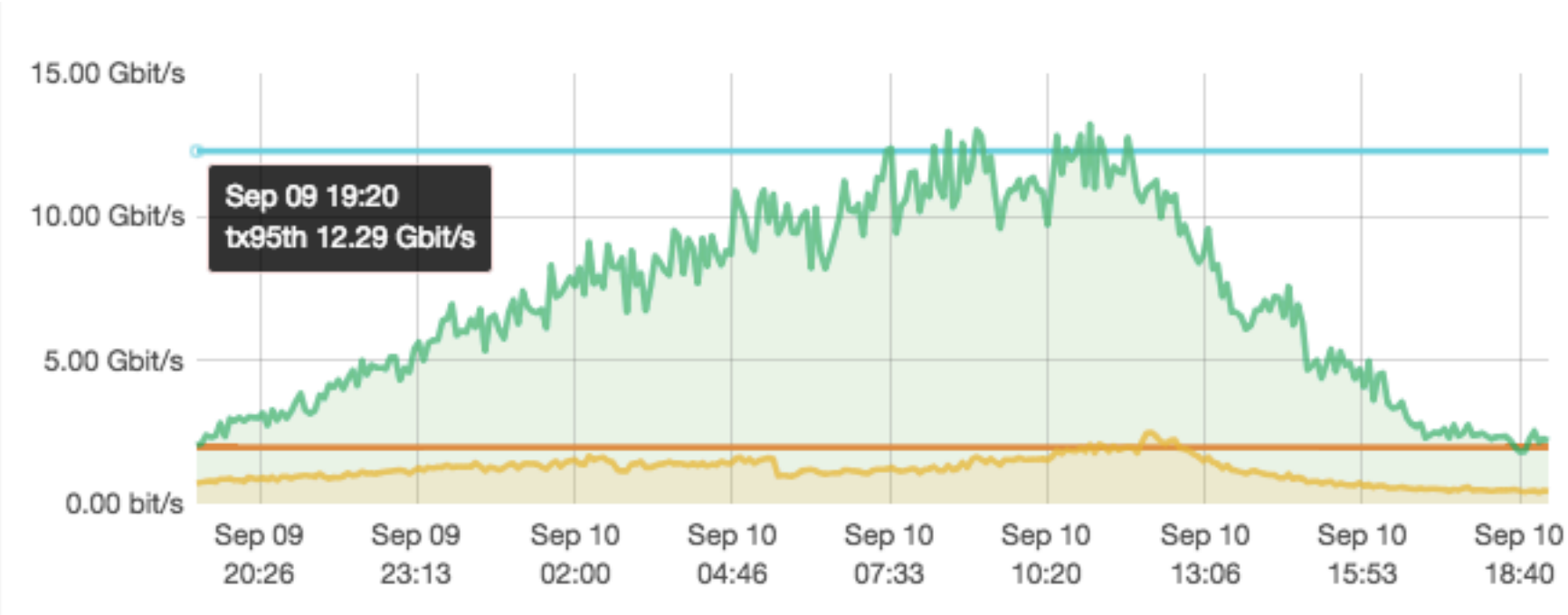
The diagram illustrates a network architecture for application layer load balancing. At the top, a blue cloud labeled "INTERNET" represents the source of traffic. Below it, four blue square nodes with white arrows (representing load balancers) are arranged in a mesh topology. Dashed lines connect these nodes, indicating network connectivity. Solid red curved arrows show the path of traffic from the Internet cloud, through the load balancers, to the servers in two racks. The first rack, labeled "Rack 1", contains a server icon. The second rack, labeled "Rack 15", contains two server icons. A dark blue arrow labeled "HAProxy" points to the right, indicating the load balancer technology used.

✓ E-BGP, Connecting Upstreams & Peers



Name	Neighbor AS	Local IP	Remote IP	Switch Port
NTT	22222	1.1.1.1/24	1.1.1.2/24	sw01-cpt swp9(swp9)@sw01-cpt bgp: Established; prefix: 4; time: 10:44:19
new bgp	111	3.3.3.3/8	3.3.3.4/8	sw01-cpt swp9(swp9)@sw01-cpt bgp: Connect; prefix: 0; time: never

Name	Upstream	
Neighbor AS	22222	
Local IP	1.1.1.1	/24 ▾
Remote IP	1.1.1.2	/24
Switch port	sw01-cpt swp9(ens4)@sw... ▾	
Status	Q Search sw01-cpt swp2(swp2)@sw01-cpt swp3(swp3)@sw01-cpt Controller - sw01-cpt swp7(swp7)@sw01-cpt sw01-cpt swp9(swp9)@sw01-cpt brd01-sj swp2(swp2)@brd01-sj	
▼ Advanced Settings (optional)		
Local Preference		
BGP password		
VLAN	3000 ☐ Untagged	
Prefix Inbound Max	Unlimited	
Prepend Inbound (times)	0	
Prepend Outbound (times)	0	
Prefix List Inbound	permit 4.4.4.0/24 ge 25 le 24 deny 4.4.4.0/24 le/ge 32 permit 4.4.4.0/24	
Prefix List Outbound	permit 4.4.4.0/24 ge 25 le 24 deny 4.4.4.0/24 le/ge 32 permit 4.4.4.0/24	





ISP 1

ISP N

LINK PROPAGATION

LOW NUMBER
PREFIXES

FULL TABLE,
NAT, DNAT,
VPN



FRRROUTING



FRRROUTING

ubuntu

swp1

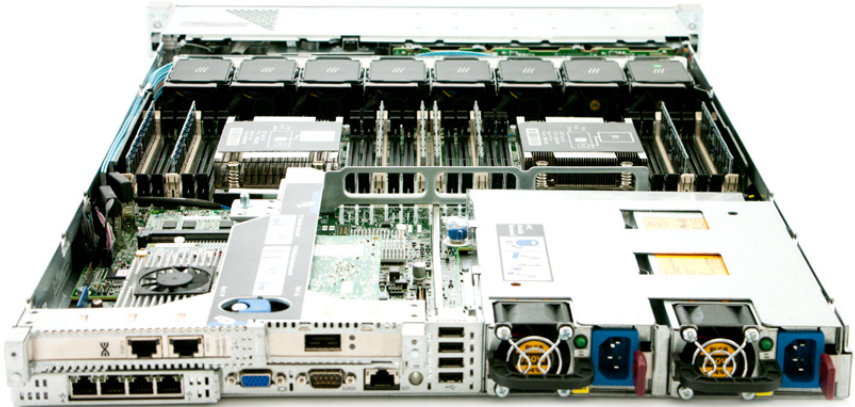
swp2

swp54.4093

eth0.1
eth0.2
eth0.3
eth0.4093

40G

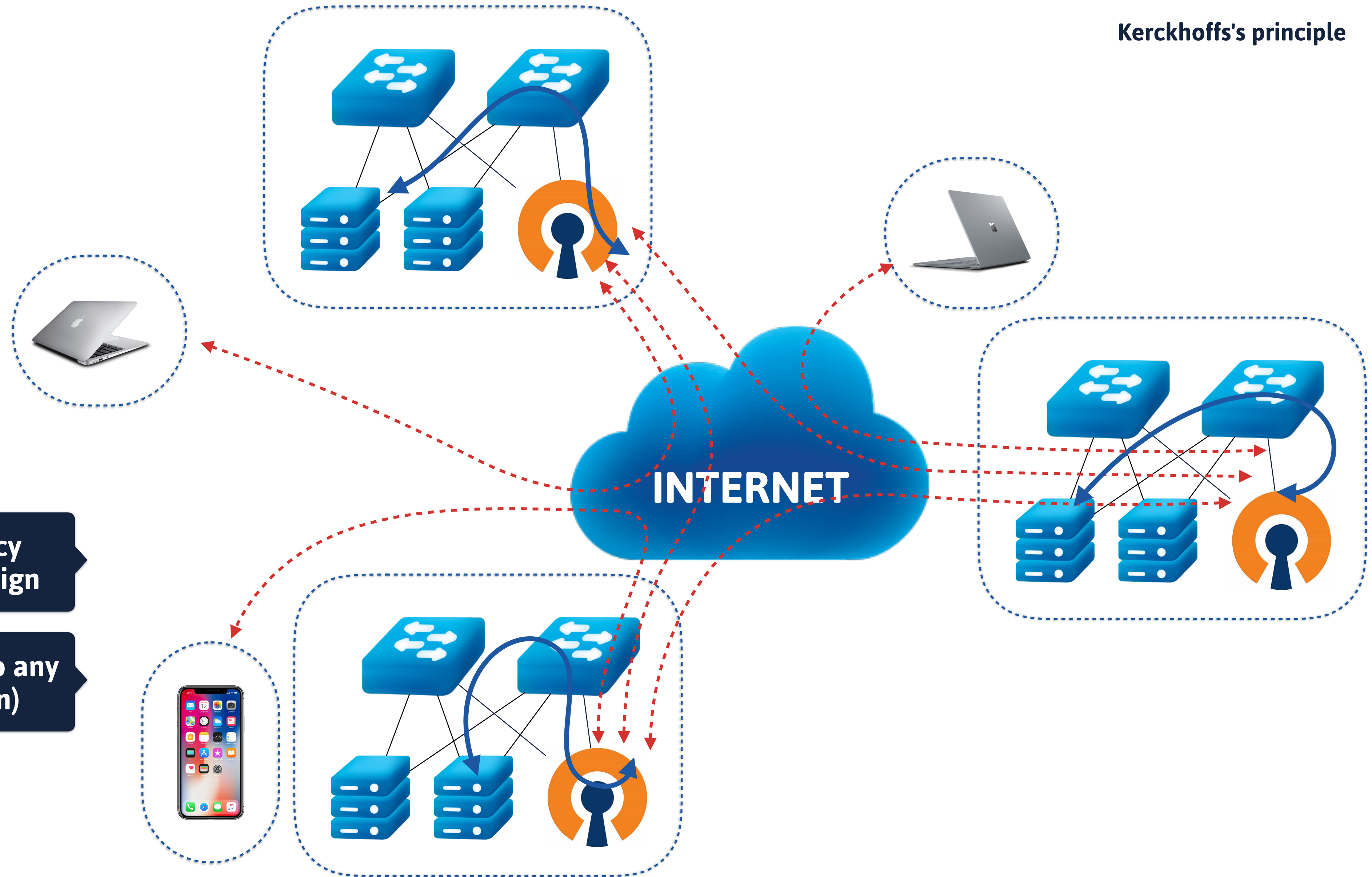
SWITCH



✓ OpenVPN

A crypto-system should be secure even if everything about the system, except the key, is public knowledge

Kerckhoffs's principle



**FULL-MESH low latency
redundant dynamic design**

**Remote users can connect to any
site (disaggregated design)**

CUSTOMER CASE STUDY

25M user-base INNOVA fully transitioned to XCloud Networks solution

INNOVA

**MMORPG
EU/CIS region**

	BEFORE XCLOUD	WITH XCLOUD
Hardware	Cisco, Juniper, F5	Edge-Core
Network CapEx	\$3,000,000	\$150,000
Network OpEx	\$570,000	\$170,000
change delivery time	2-5 days	2-5 minutes
Per rack expansion CapEx	\$150,000	\$18,750
Engineer to Device ratio	1	5

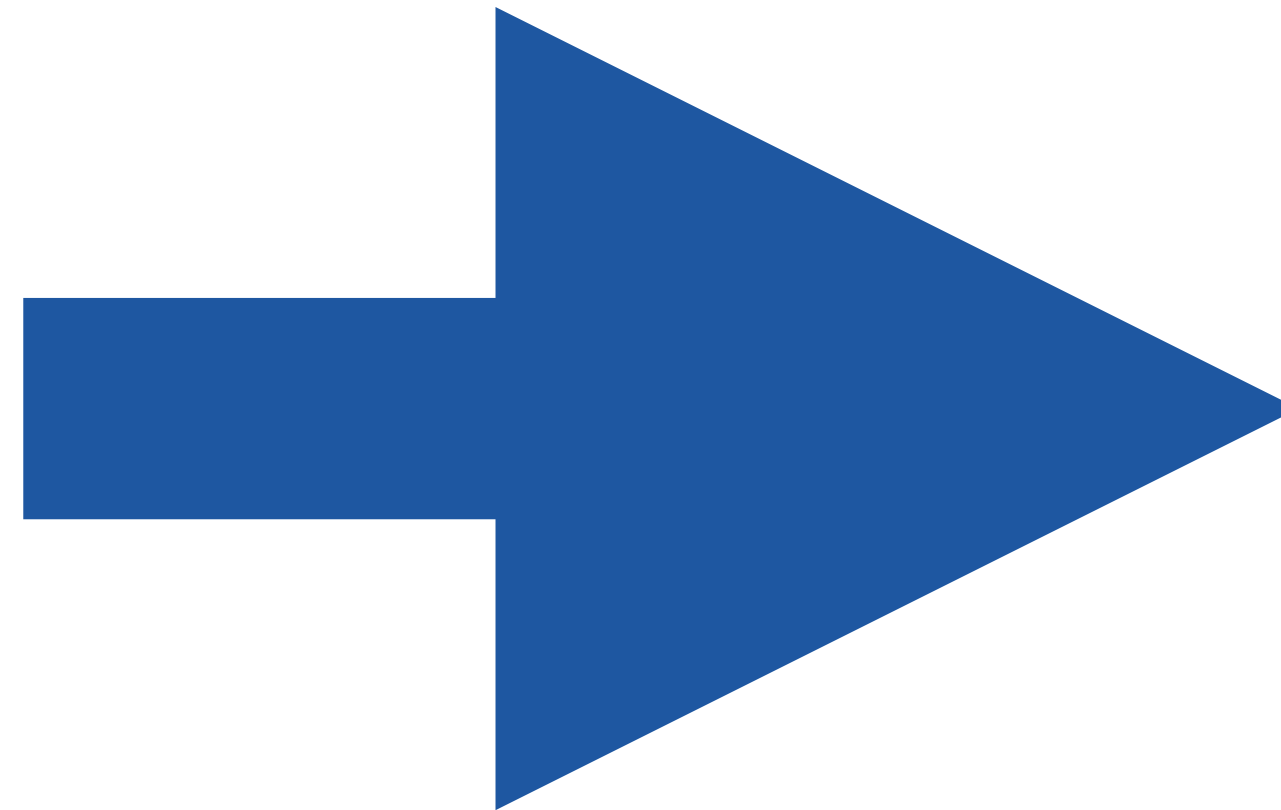
* We were able to build an extremely agile and cost-effective network which scales effortlessly - fulfilling our strategic needs.
Raf Soghomonyan, CTO of Innova.

TRADITIONAL NETWORKING



OCP

FULL/ACCELERATED TRANSFORMATION



- ✓ 30X Cost-effective
- ✓ Easy to deploy
- ✓ Hyper-Scalable

OPEN NETWORKING





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QUESTIONS ?



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