

pracelab

Bare metal provisioning in multi-tenancy and multi-arch environment using SDN and OpenStack Ironic

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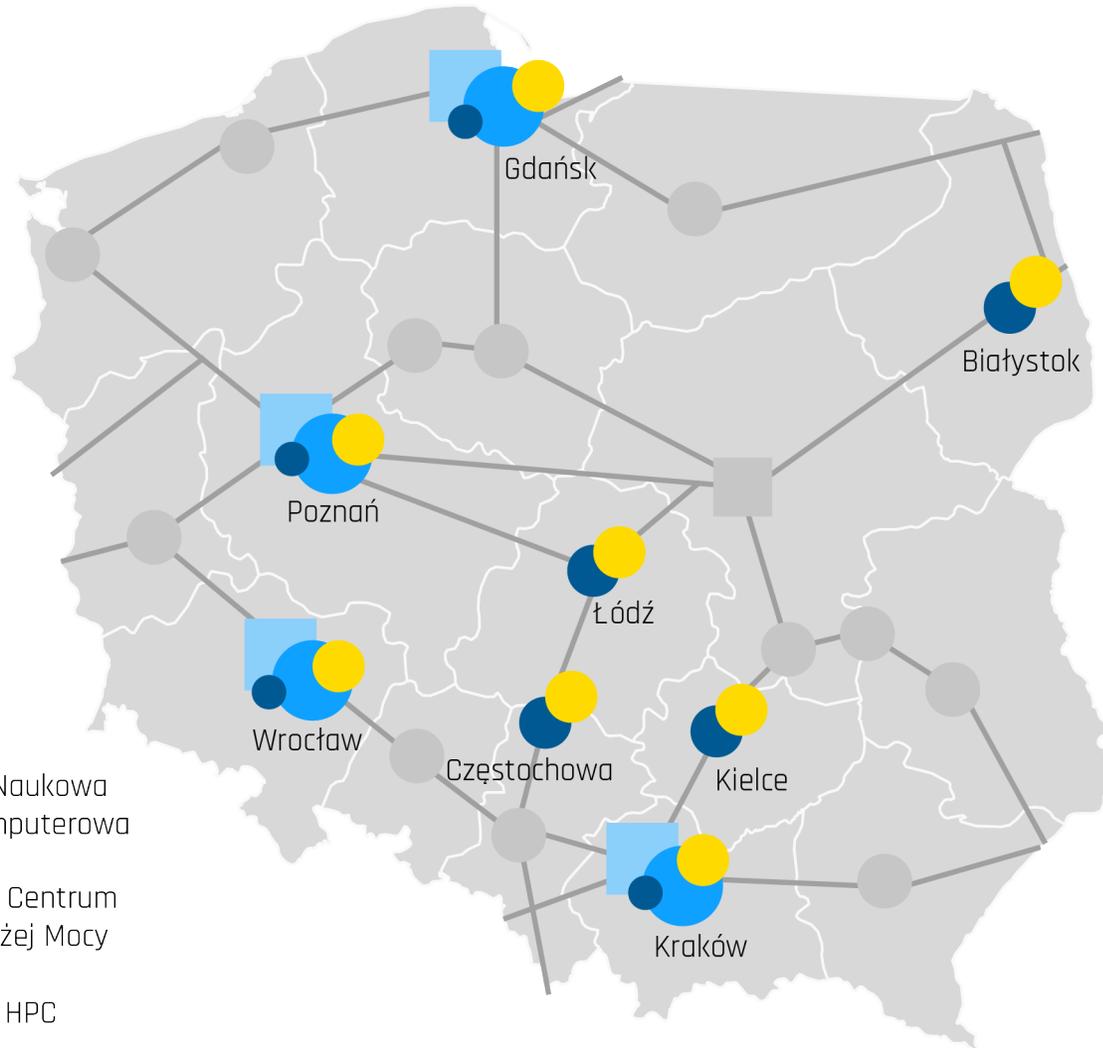
Rzeczpospolita
Polska

Unia Europejska
Europejski Fundusz
Rozwoju Regionalnego



www.prace-lab.pl

pracelab at glance



-  MAN - Miejska Naukowa Sieć Komputerowa
-  MAN oraz KDM - Centrum Komputerów Dużej Mocy
-  e-Infrastruktura HPC
-  Infrastruktura Danych



POLITECHNIKA ŁÓDZKA
Centrum Komputerowe



WCSS

Motivation

2015

Brand new DC

Brand new EAGLE cluster
about 1100 machines

64+ ETH switches

94 IB switches

New **L2 core fabric**



Motivation ...

2020
ALTAIR cluster + storage
1330 new HPC nodes
111+ new ETH switches
250+ storage nodes (x86 and ARM)



Building blocks

OpenStack IRONIC

NCE - Agile

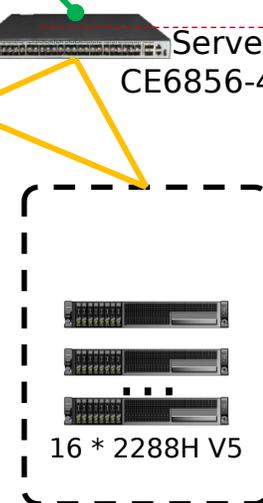
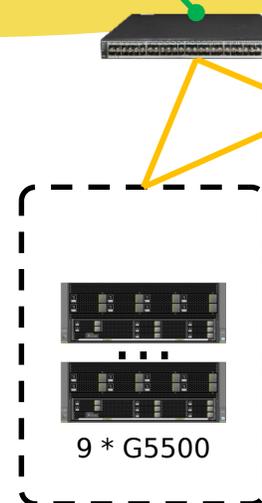
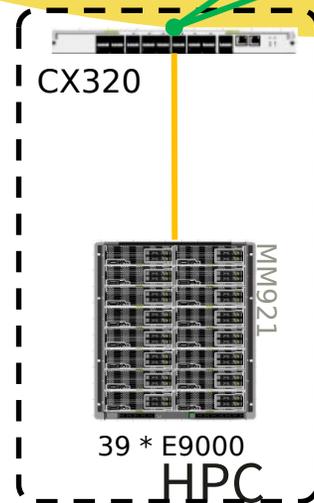
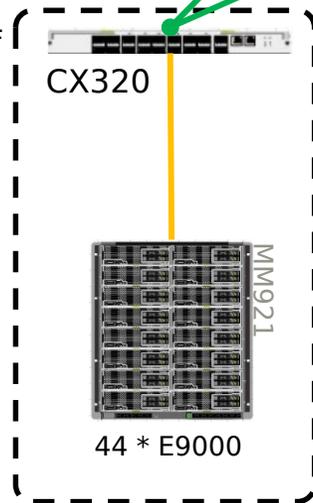
IP Fabric

HPC LAN IP Fabric underlay design

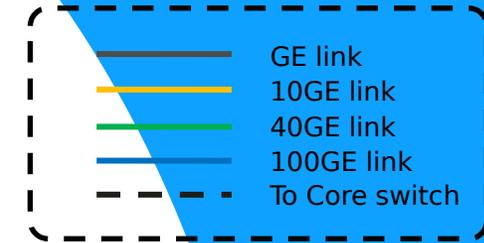
Super Spine/Borderleaf CE8861-4C-EI

Spine CE8850-64CQ

Server Leaf



STORAGE

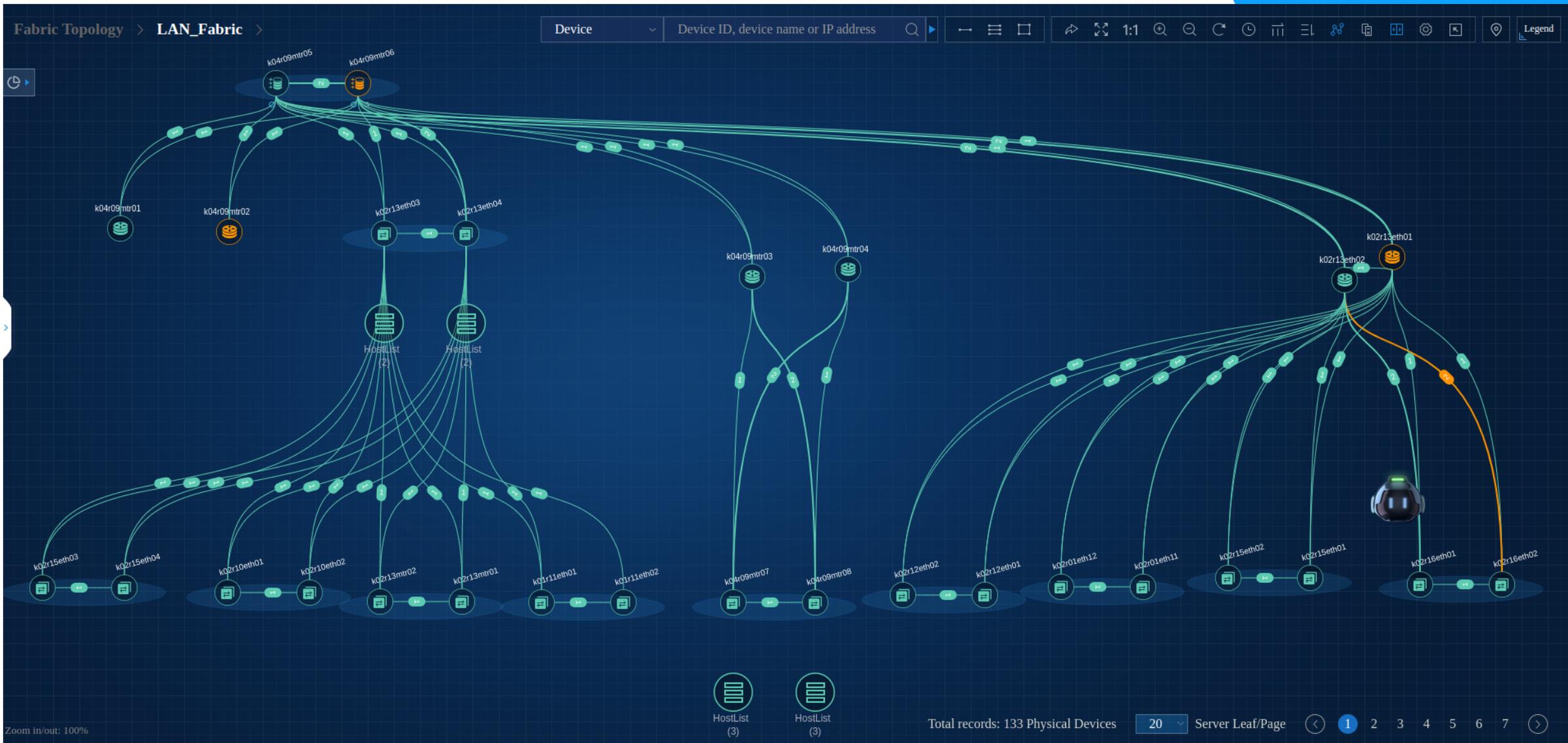


Loopback0: iBGP peer
Loopback1: VTEP

OSPF 10 Area0

Layer3 connection

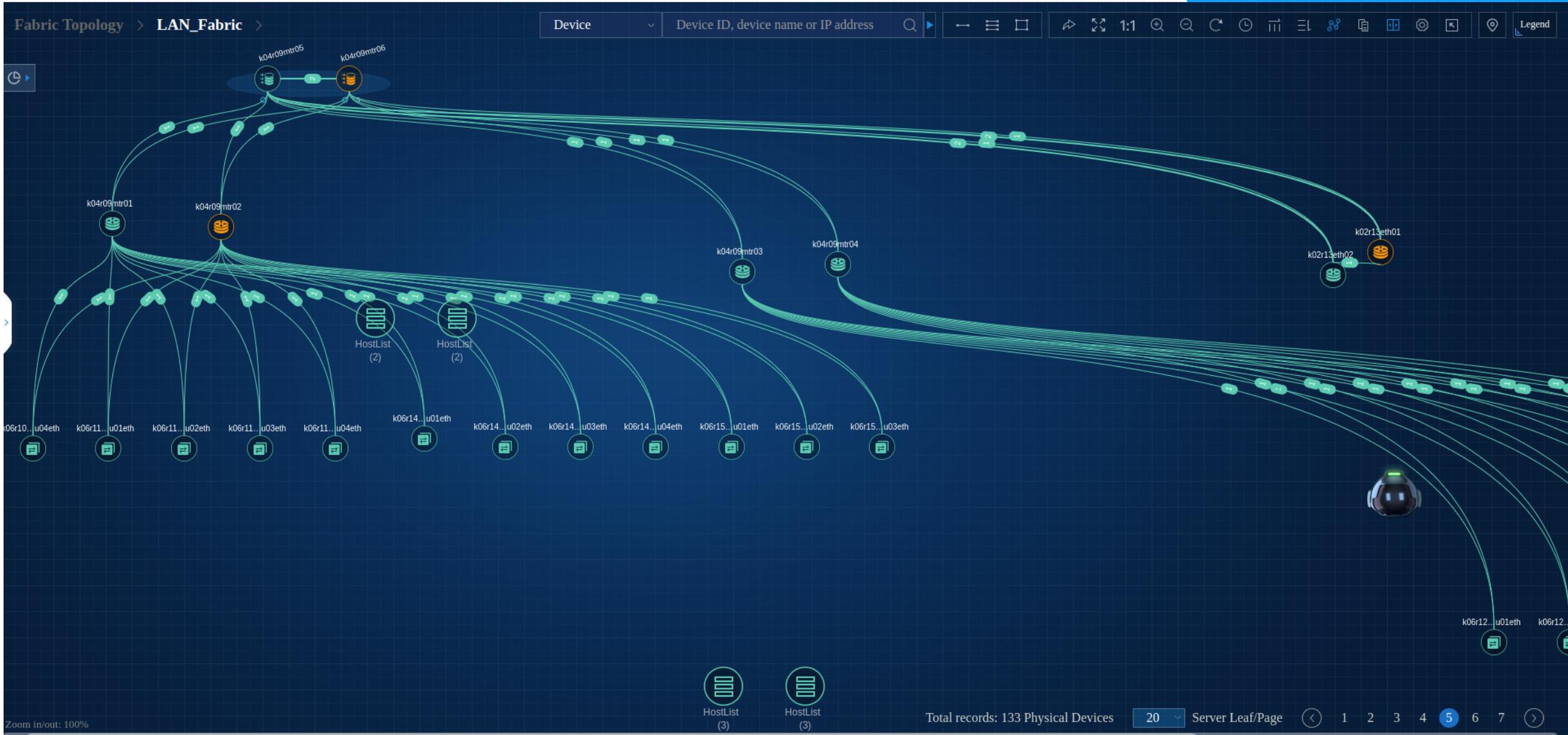
Layer3 connection



Zoom In/out: 100%

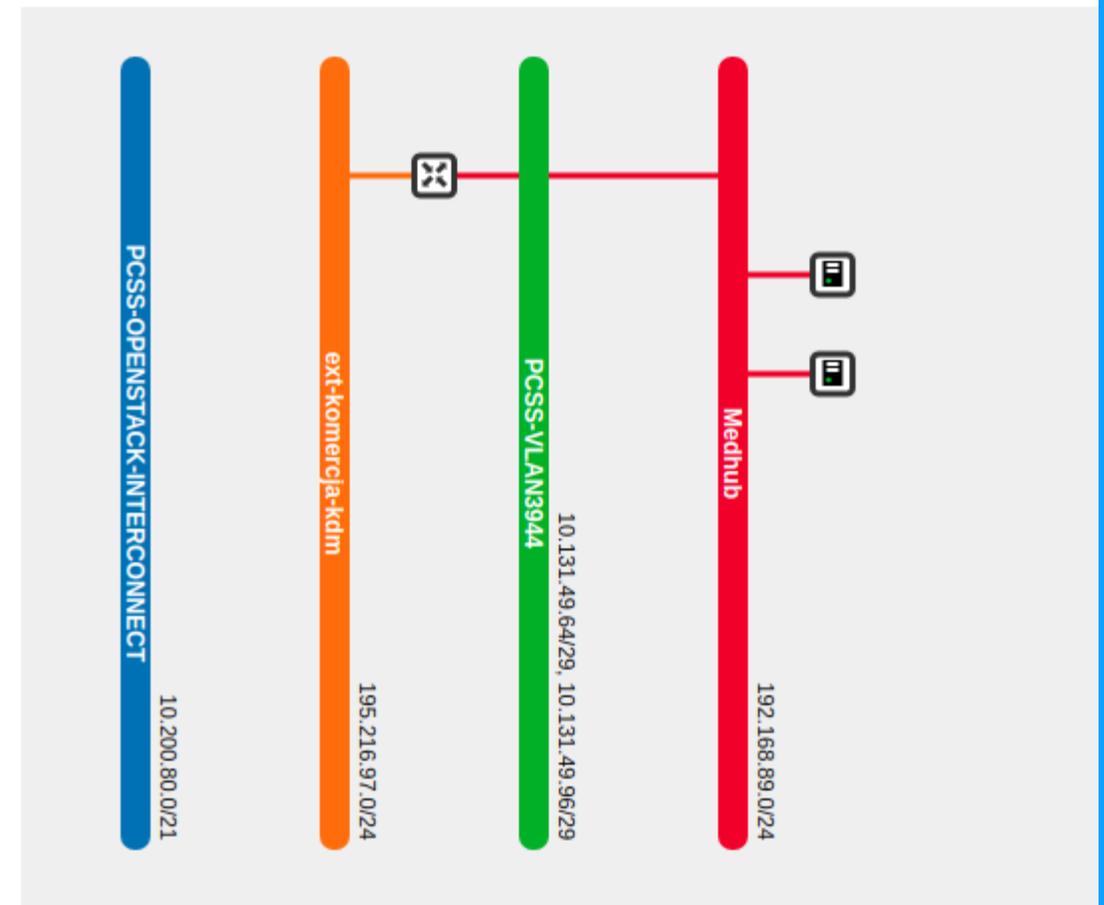


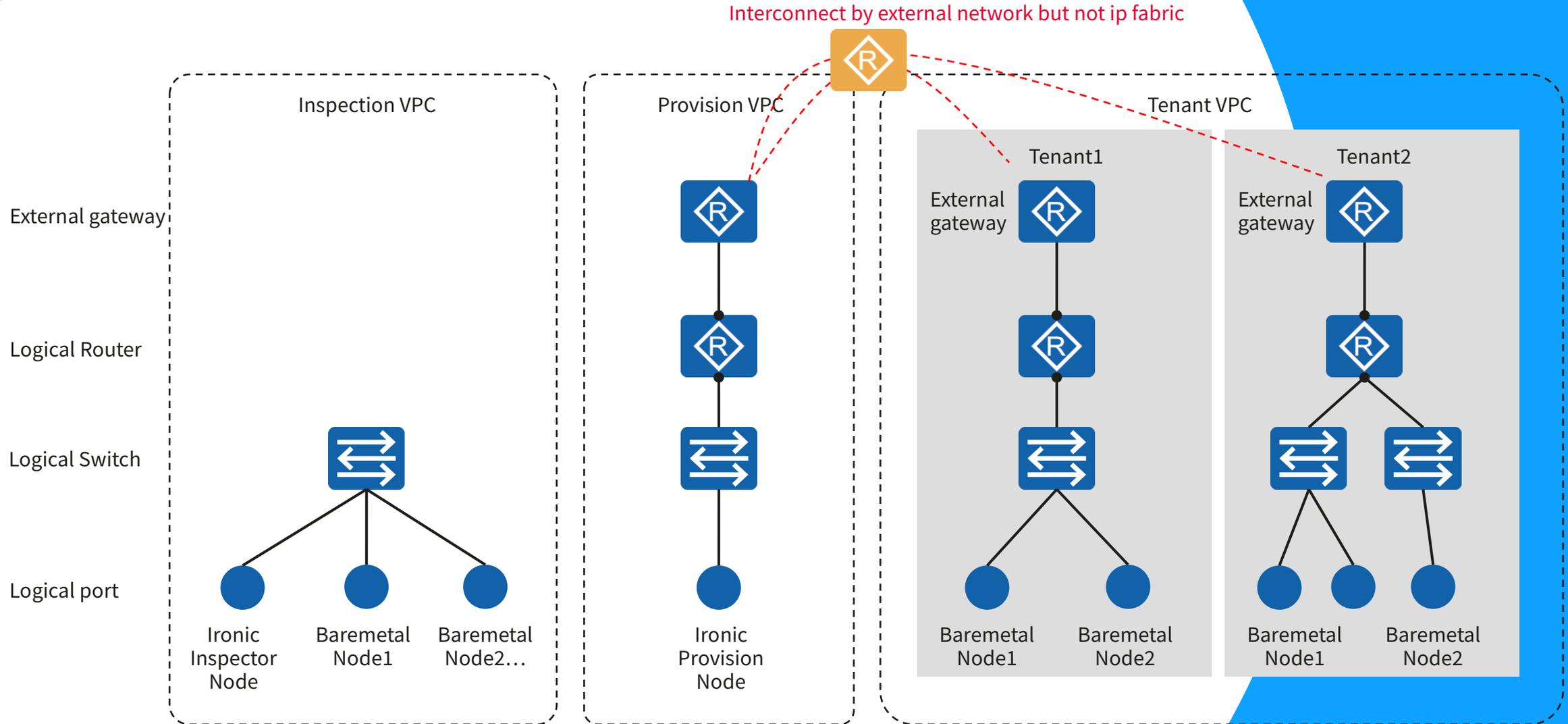
pracelab NCE – Agile Controller



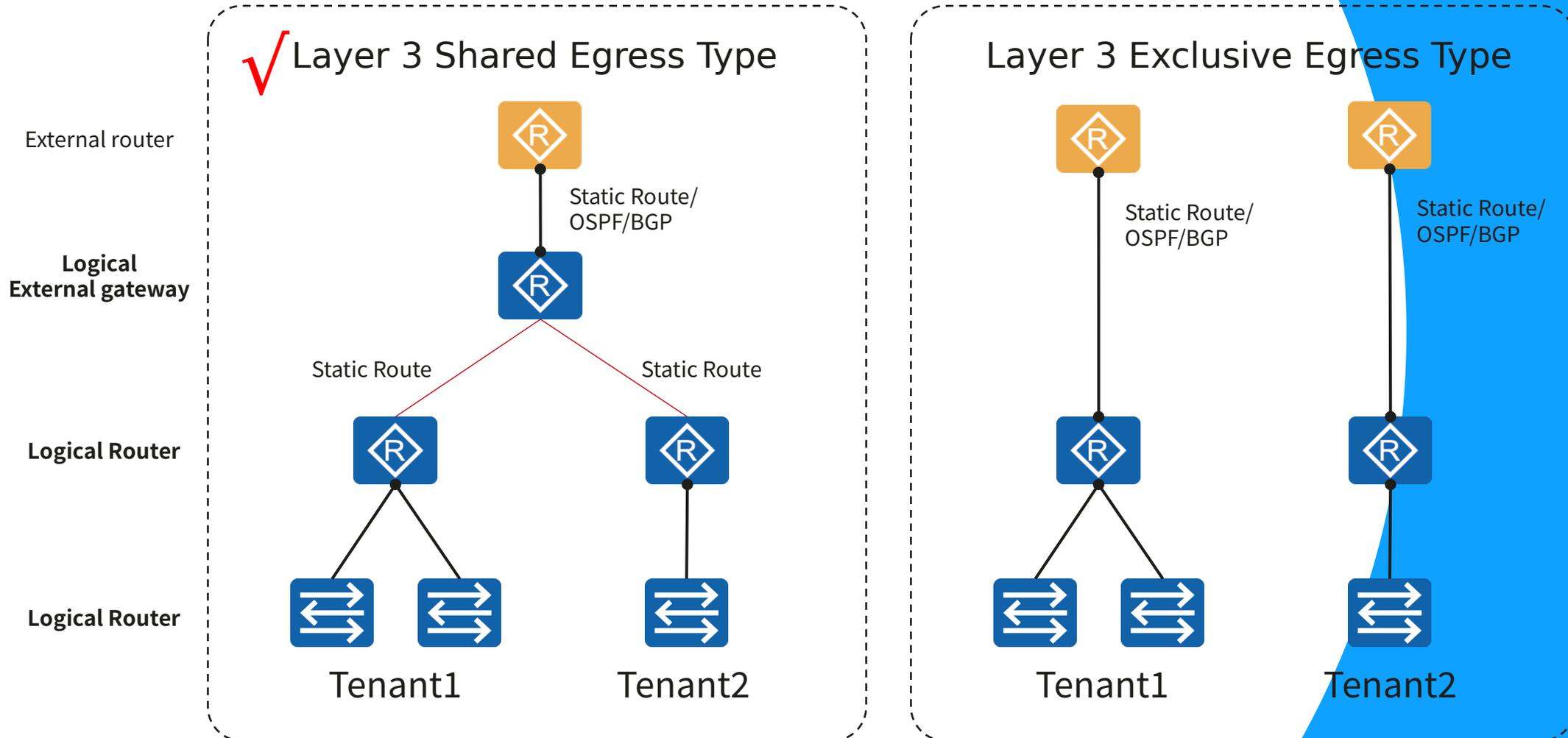
Entity translation :Openstack <-> SDN (NCE)

- ▷ project: VPC
- ▷ Project network : vswitch / bridge domain
- ▷ Virtual router : VPN instance (VRF by Huawei)
- ▷ provider network : external gateway

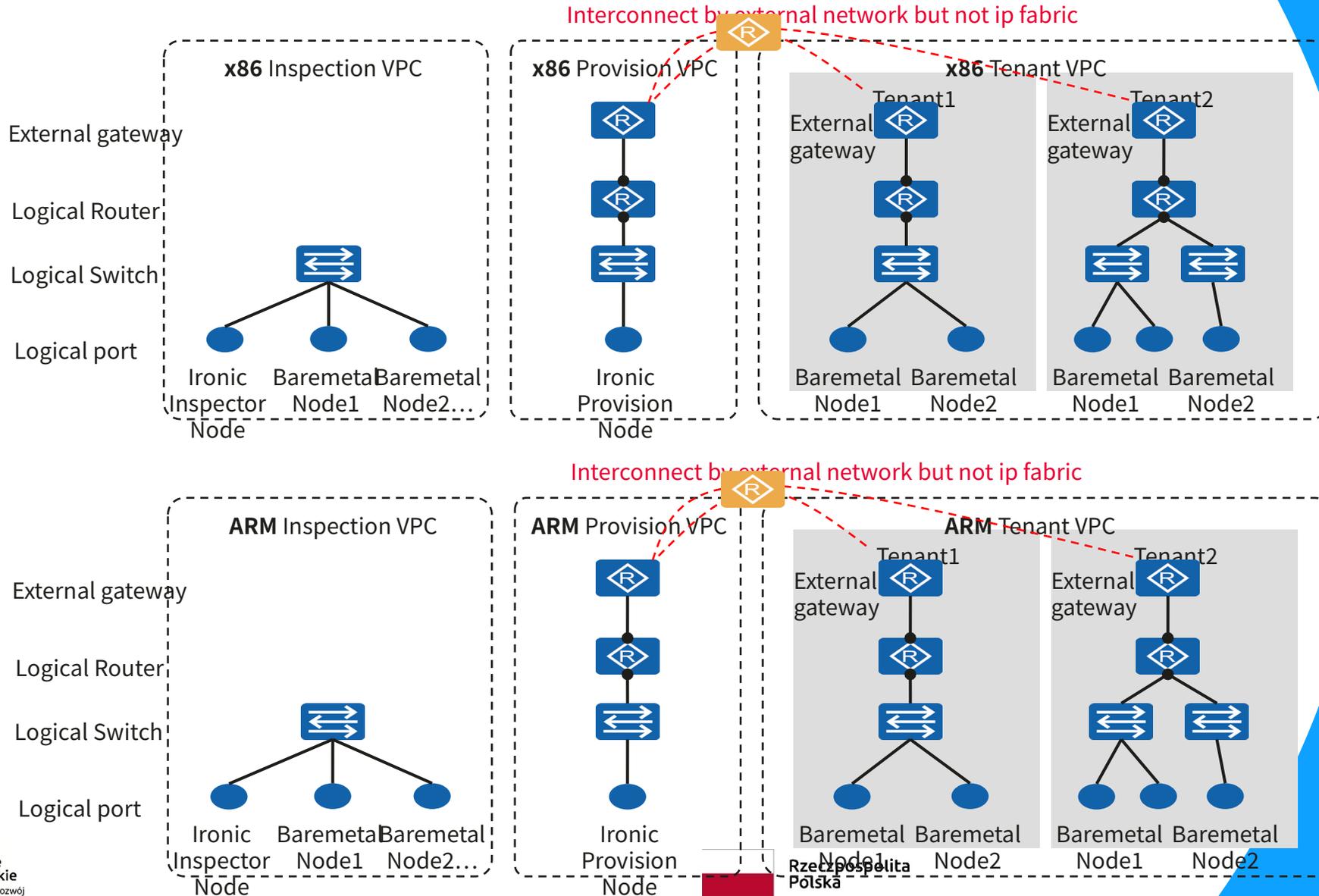




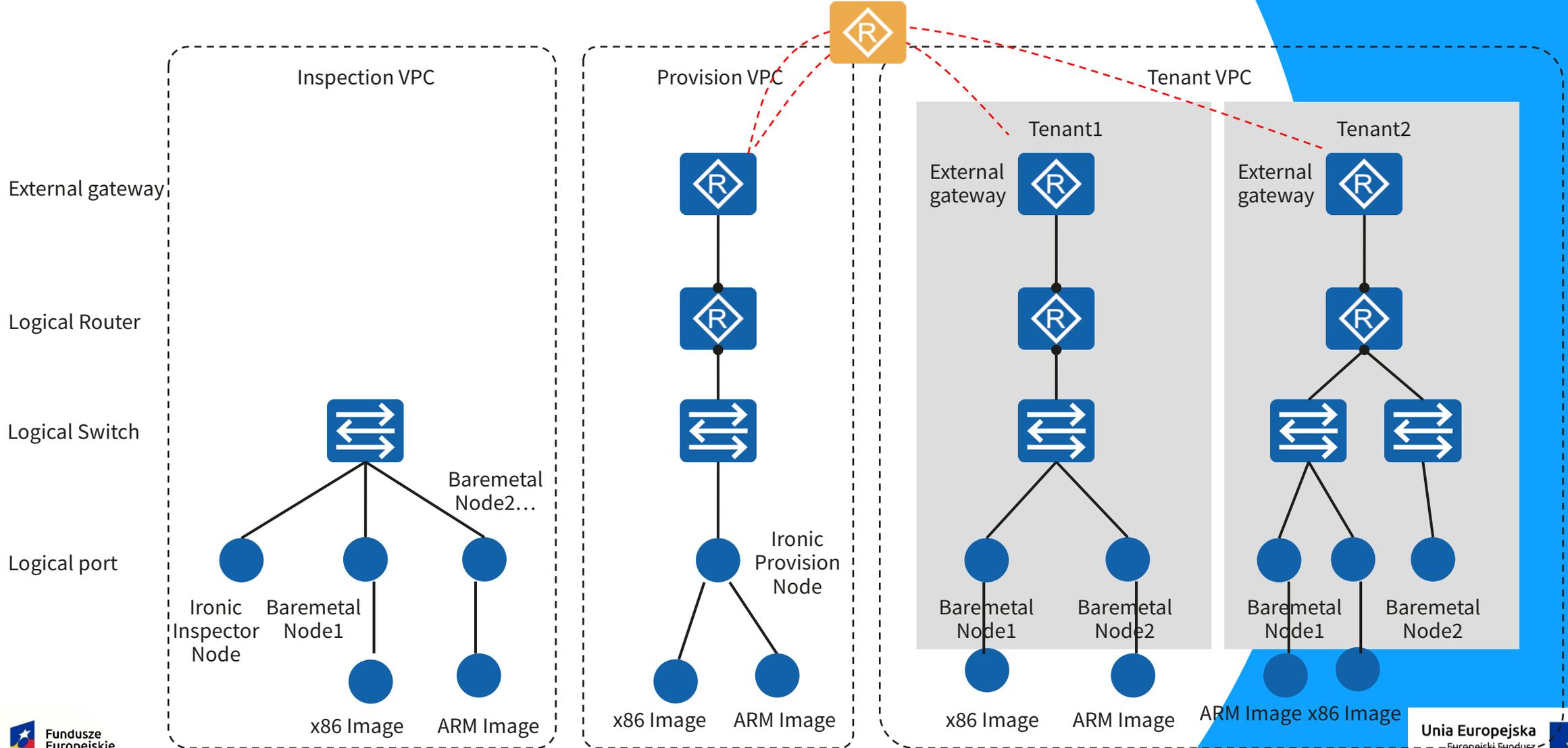
pracelab SDN : tennant interconnect



MultiARCH workflow ?



Interconnect by external network but not ip fabric



PSNC future plans



DC
Infrastructure
expansion



On-site and
Off-site
storage
expansion
KMD2



Tape library
expansion



HPC system
expansion
PraceLab 2



... ??? ...

Questions ?

Thank you !

PSNC

Radek Januszewski
Piotr Brona
Sebastian Petruczynik
Marcin Pospieszny

Piotr Kędra **IntegraleIT**