CONNECTING CLOUDS OVER FTTH: HOW EASY CAN **CES**

SPEAKERS:
- DARRAGH GREALISH CLOUD ENGINEER @ACP.IO – 56K.CLOUD
- STEFAN THOMA – NETWORK ENGINEER INIT7

CONNECTING CLOUDS

Agenda
- ACP Intro Intro
- What is CES and Ethernet7
- How we connect Cloud(s)
- AWS Direct Connect Example
- Demo + Q/A

WHO IS ACP ENGINEERING (56K.CLOUD)

Today!

aws PARTNER Amazon Direct Connect Delivery

A team 18 passionate Cloud specialists, determined to push the boundaries of innovation since 2010.

- Application migrations to the cloud
- Modernization of "legacy" applications
- Cloud Native Application Development

All this in a context of transformation of the operating model and the adoption of new technologies by our customers. (Joined the ACP Group in mid-2025)

2026

aws PARTNER IoT Services Competency

aws PARTNER Advanced Tier Services

aws PARTNER Migration Services Competency

aws PARTNER Generative AI Services Competency

Cloud Connect

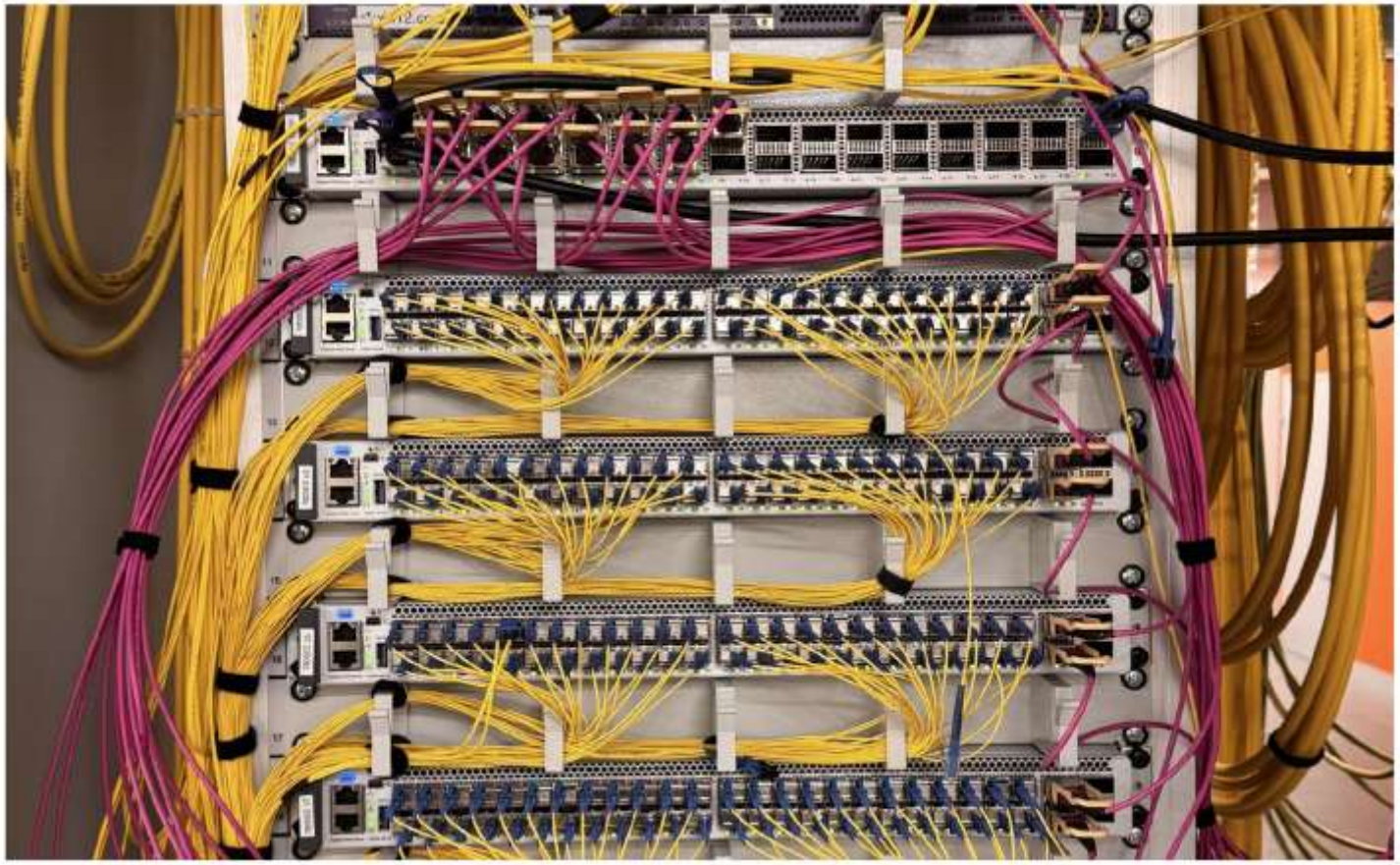
Direct Cloud Access

Layer 2 connect to the Cloud

Stefan Thoma

Init7

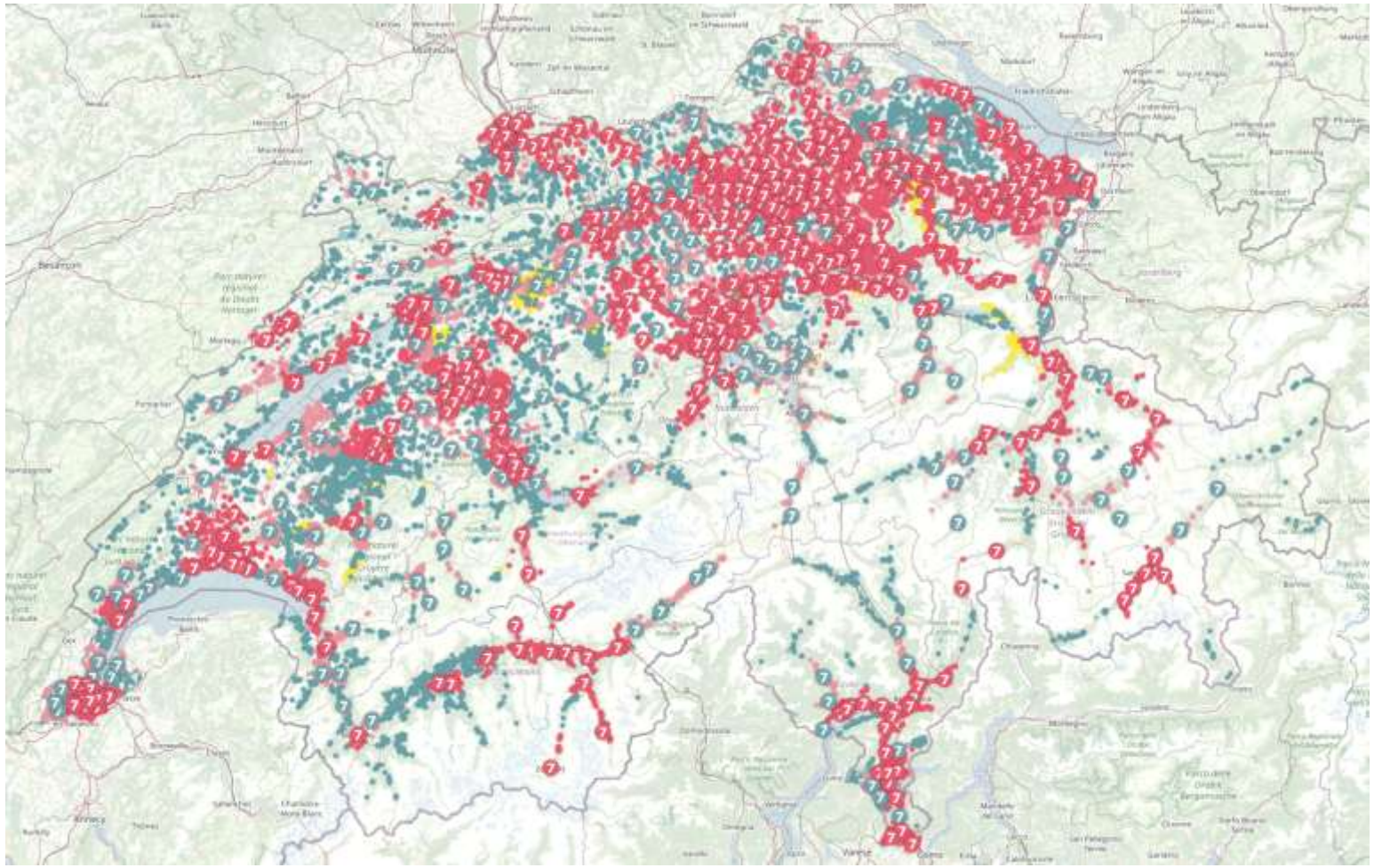
FTTH based Network access



Credits: Thomas
(CHNUG #1: "Residential Access @Init7 - First Hop Security at the Customer Network Edge)"

Init7

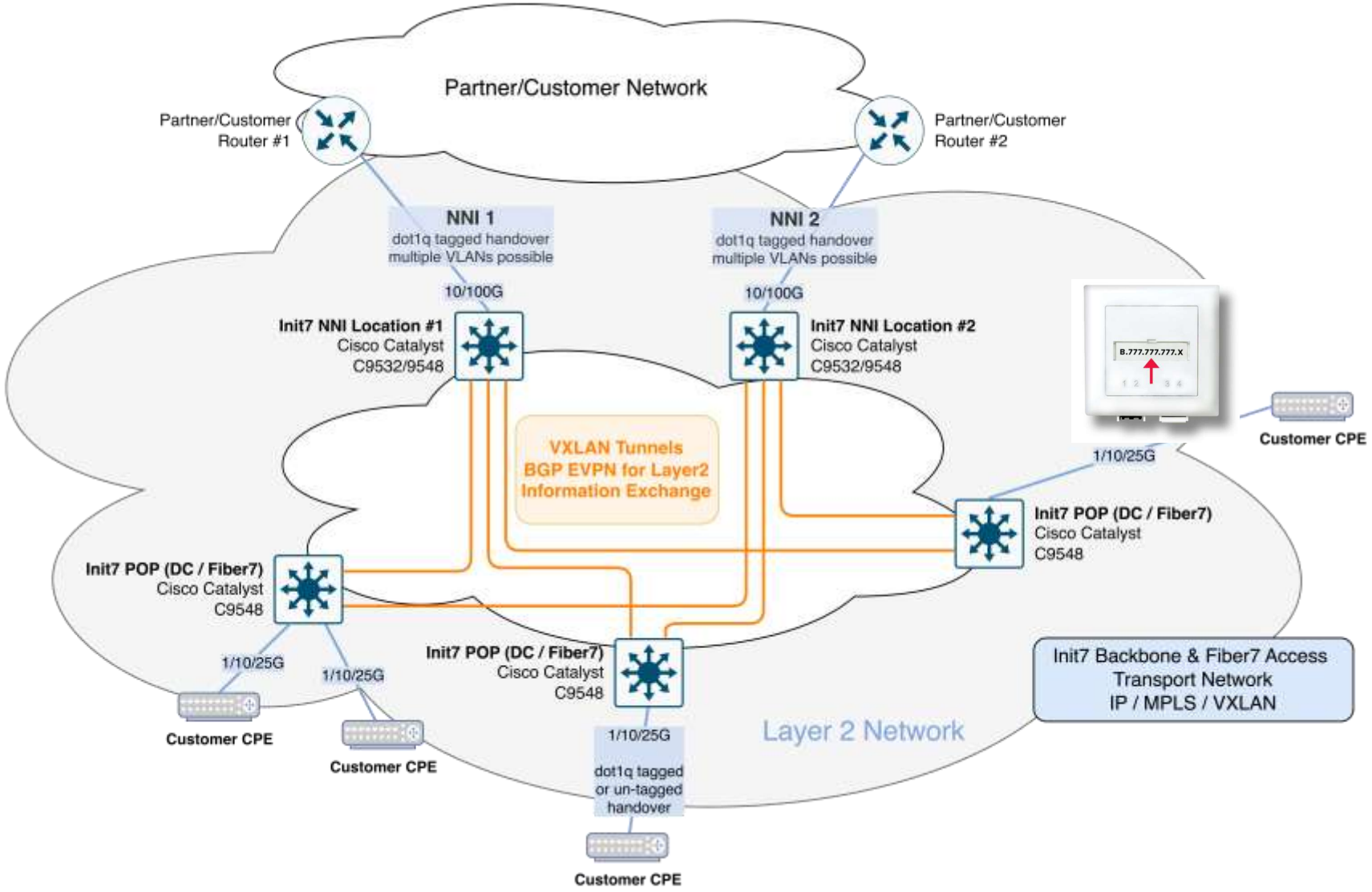
FTTH Access (P2P)



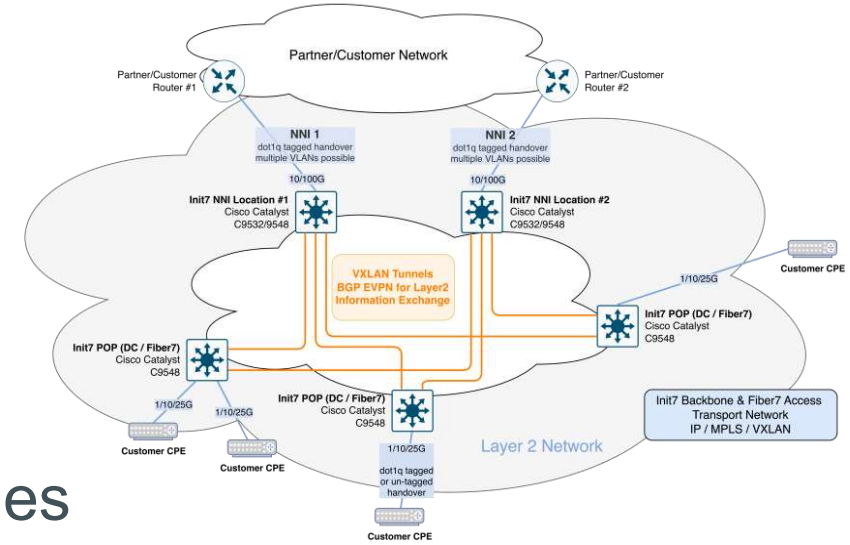
- 400+ Regional PoP's
- 2.5m + (P2P) FTTH ports

Init7

Ethernet7 Network Architecture



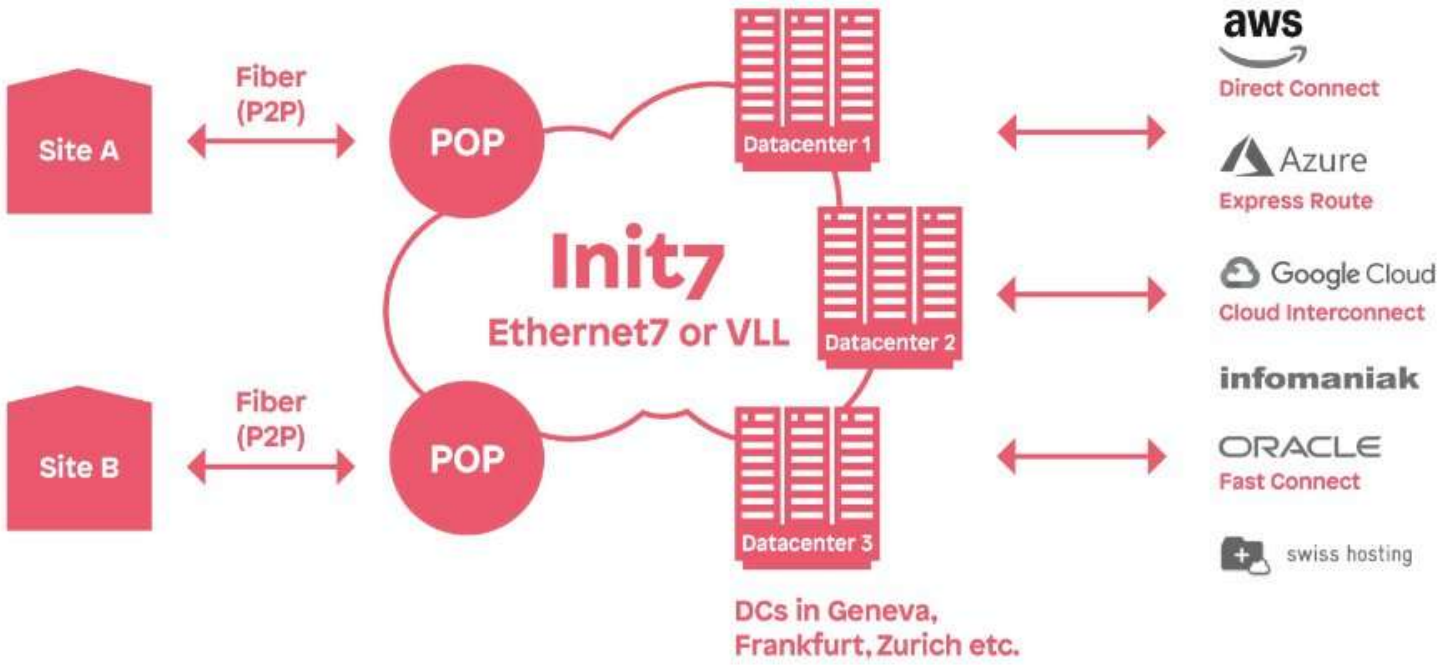
Ethernet7



- EVP (Ethernet Virtual Private) LAN Service
- MEF: E-LAN Service (MP2MP)
- Platform: Cisco Catalyst 9500 Series Switches
- BGP EVPN for Layer2 Information Exchange via Init7 Route Reflectors
- Encapsulation of Layer2 Frames in VXLAN UDP Segments (Port 4789)
- MTU: 9100 Bytes
- QinQ not supported, 1 Vlan per Layer 2 Domain (EVP LAN)
- Vlan ID's managed by Init7
- UNI: Untagged/Tagged
- max 3 MAC Addresses allowd per Vlan
- CPE managed by Partner/Customer

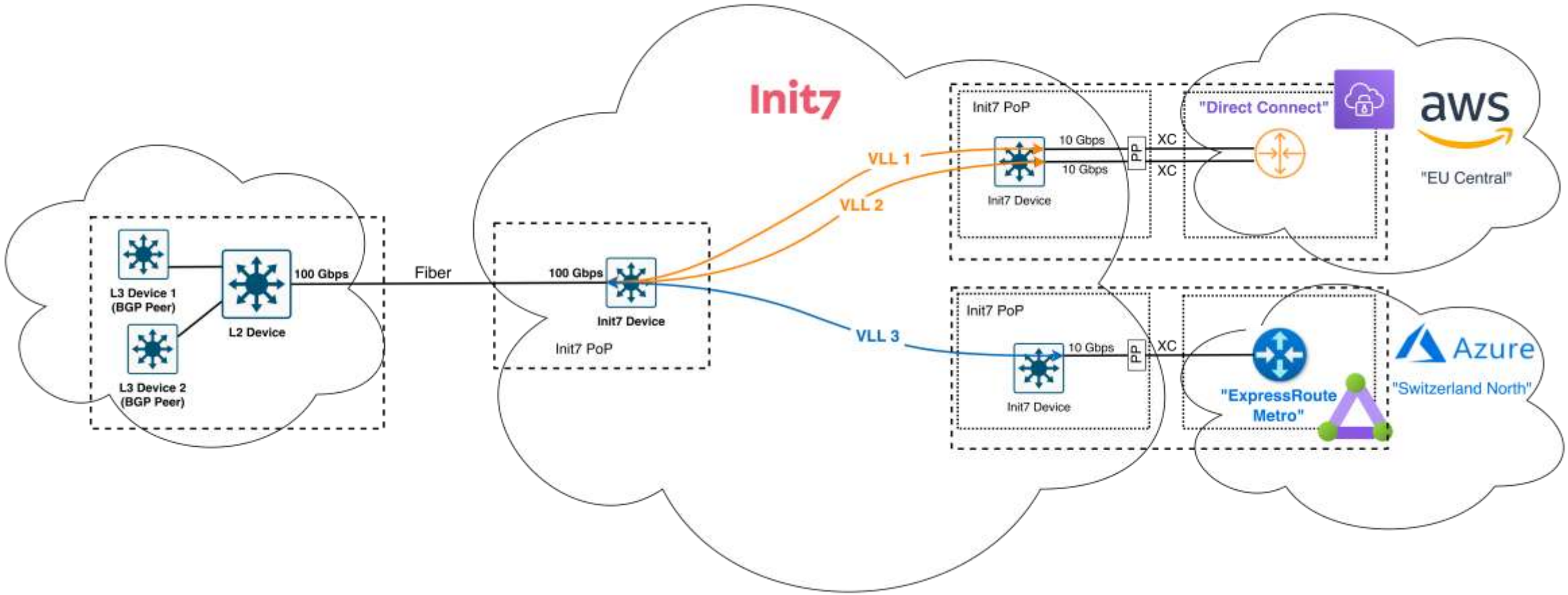
Cloud "NNI's"

- Init7 is present @ DC's in CH & Europe (same locations as CSP's)
- Cloud Ports connected directly to Init7 equipment (XC)
- Ethernet7 (&VLL) Interconnect



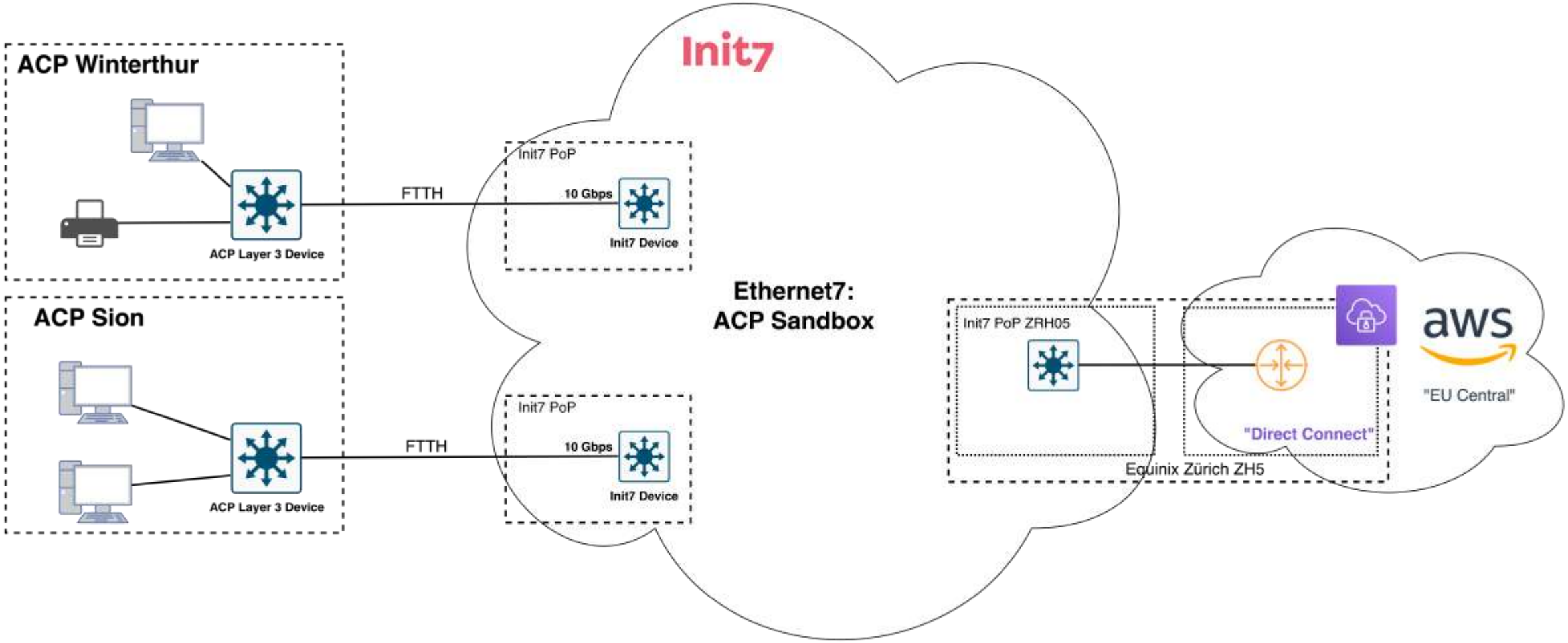
Init7

Customer Design with VLL



Init7

ACP Sandbox: DX Cloud access with E7



Init7

| LETS LOOK AT IMPLEMENTATION

FTTH TO CLOUD(S)

USE CASE: AIR-GAP AI AND DATA => CLOUD

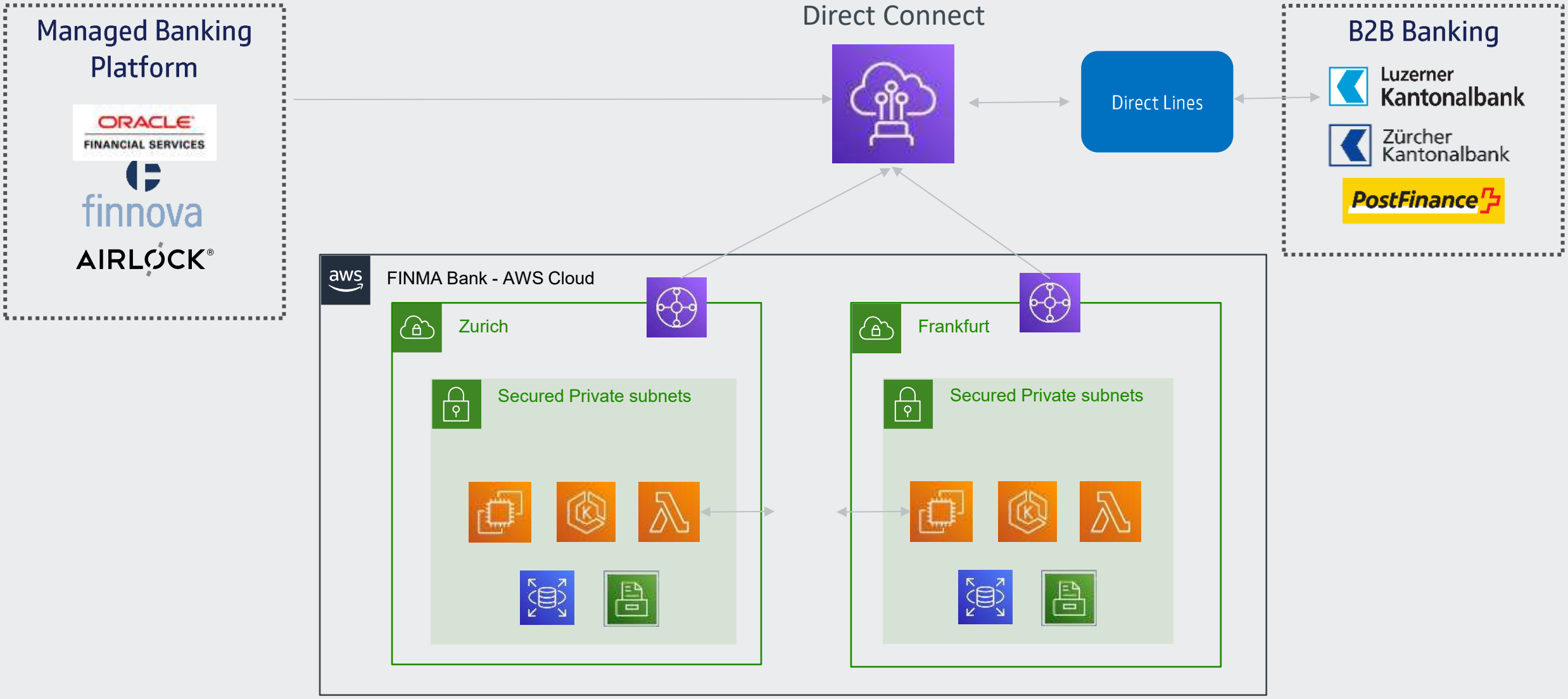
RDMA over TCP
SMA + NFS

RDMA over RoCE
JumboFrame + MACsec

10/25/100G

Virtual private cloud (VPC)

EXAMPLE BANKING B2B DEPLOYMENT



HOW DOES CONNECTIVITY LOOK LIKE ALREADY

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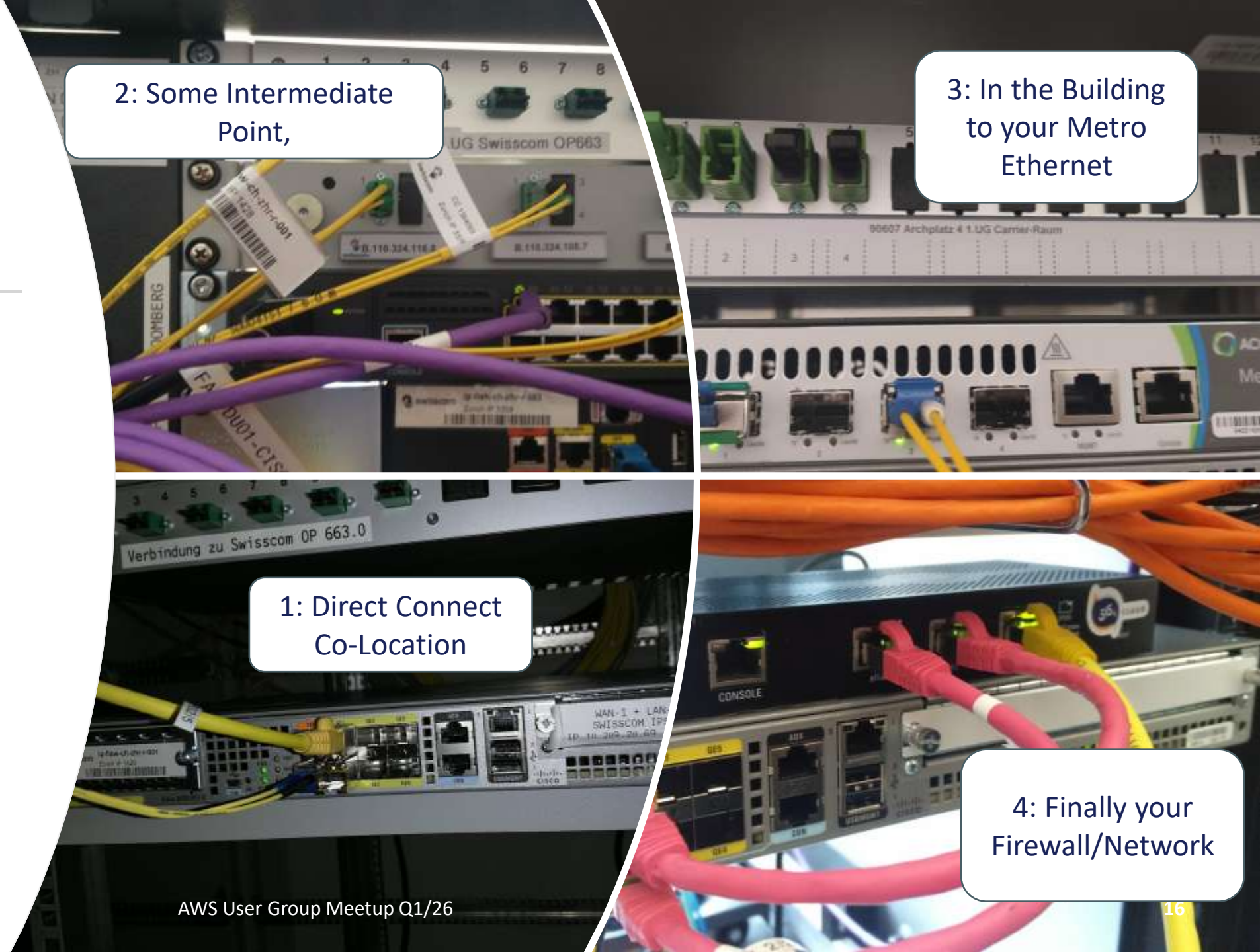
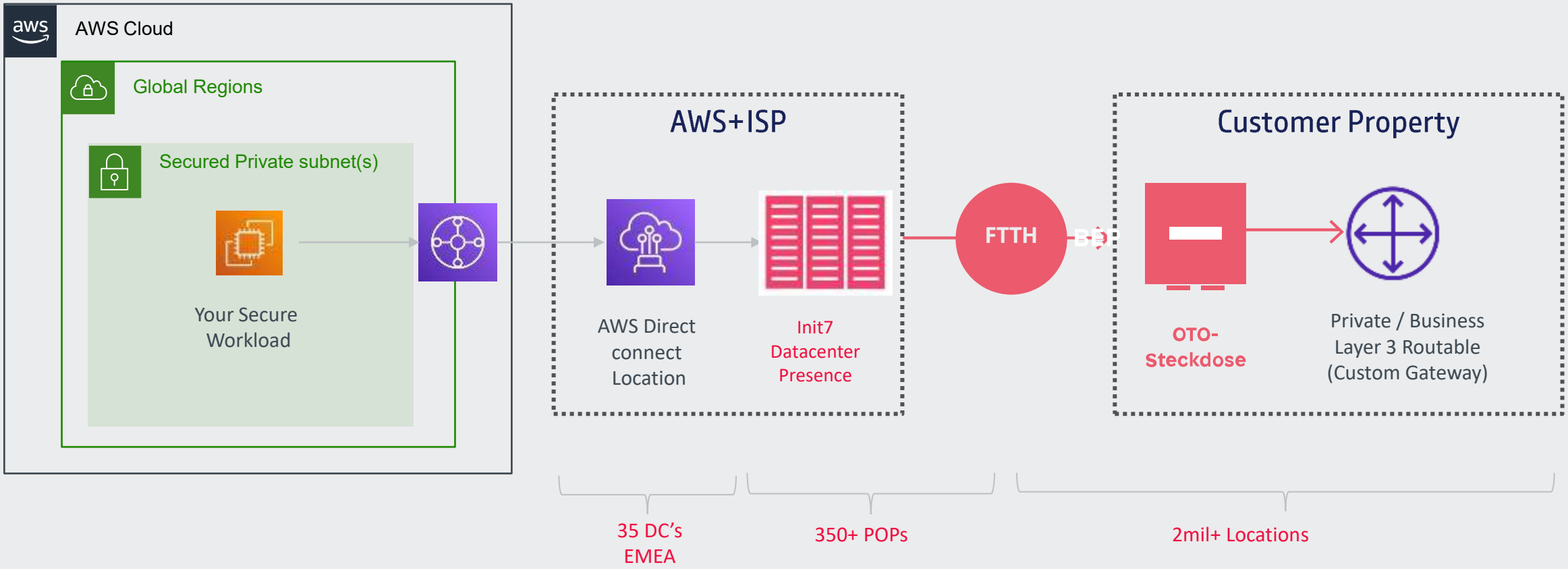
Typical Classic Deployment

From A to B:

- CES / VLL (Layer 2)
- Underlayer Network
- IT Provider Firewall
- Finally Your network (Overlay), maybe with a IPsec Tunnel ontop

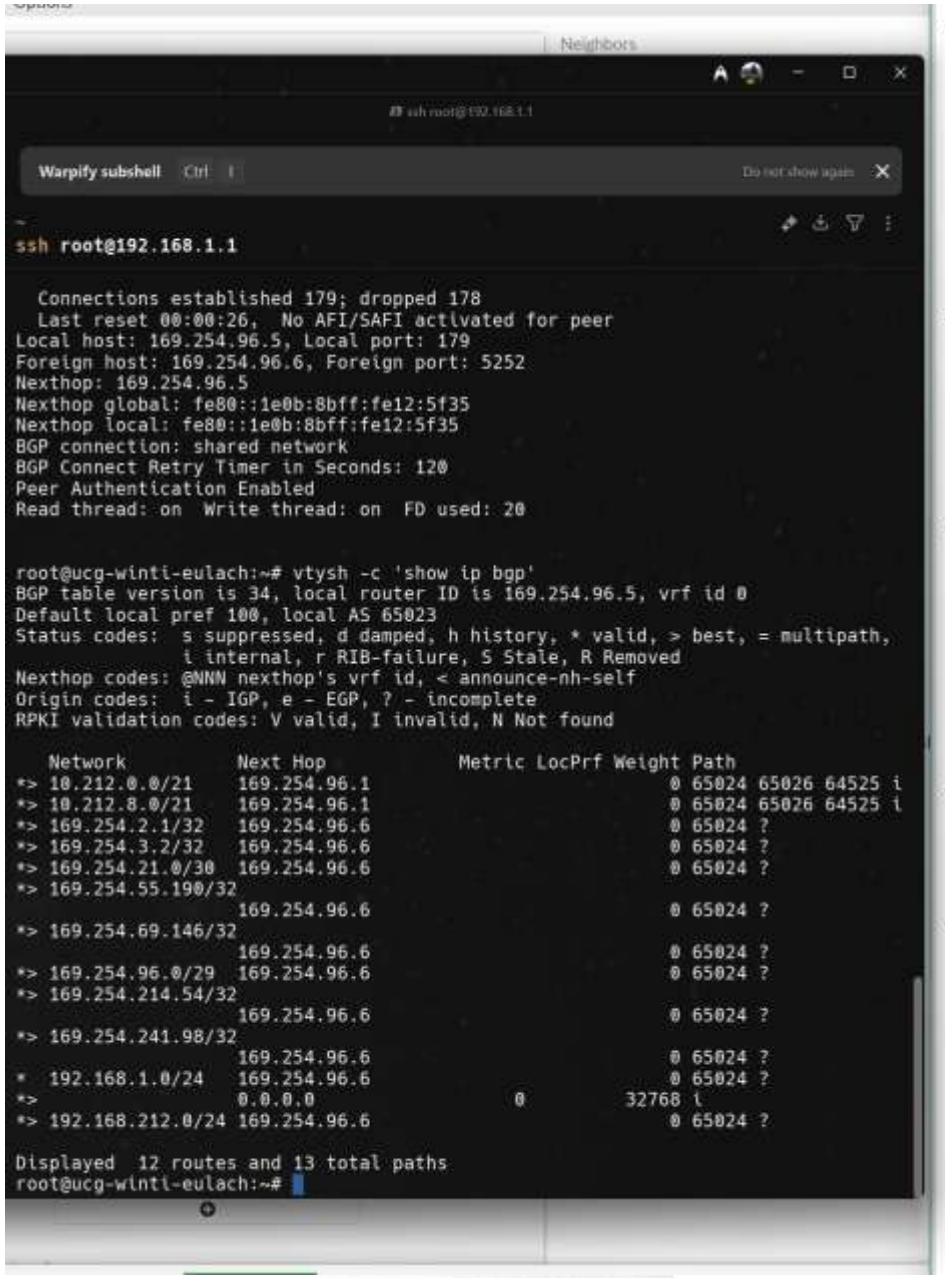


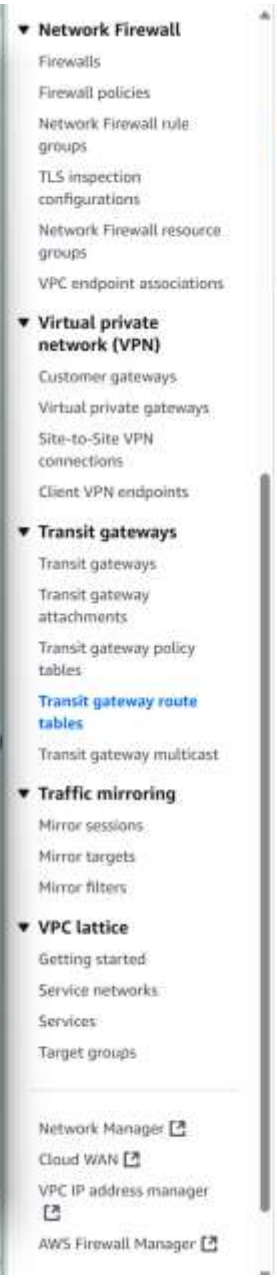
SIMPLIFIED IDEA (ETHERNET7 + AWS)

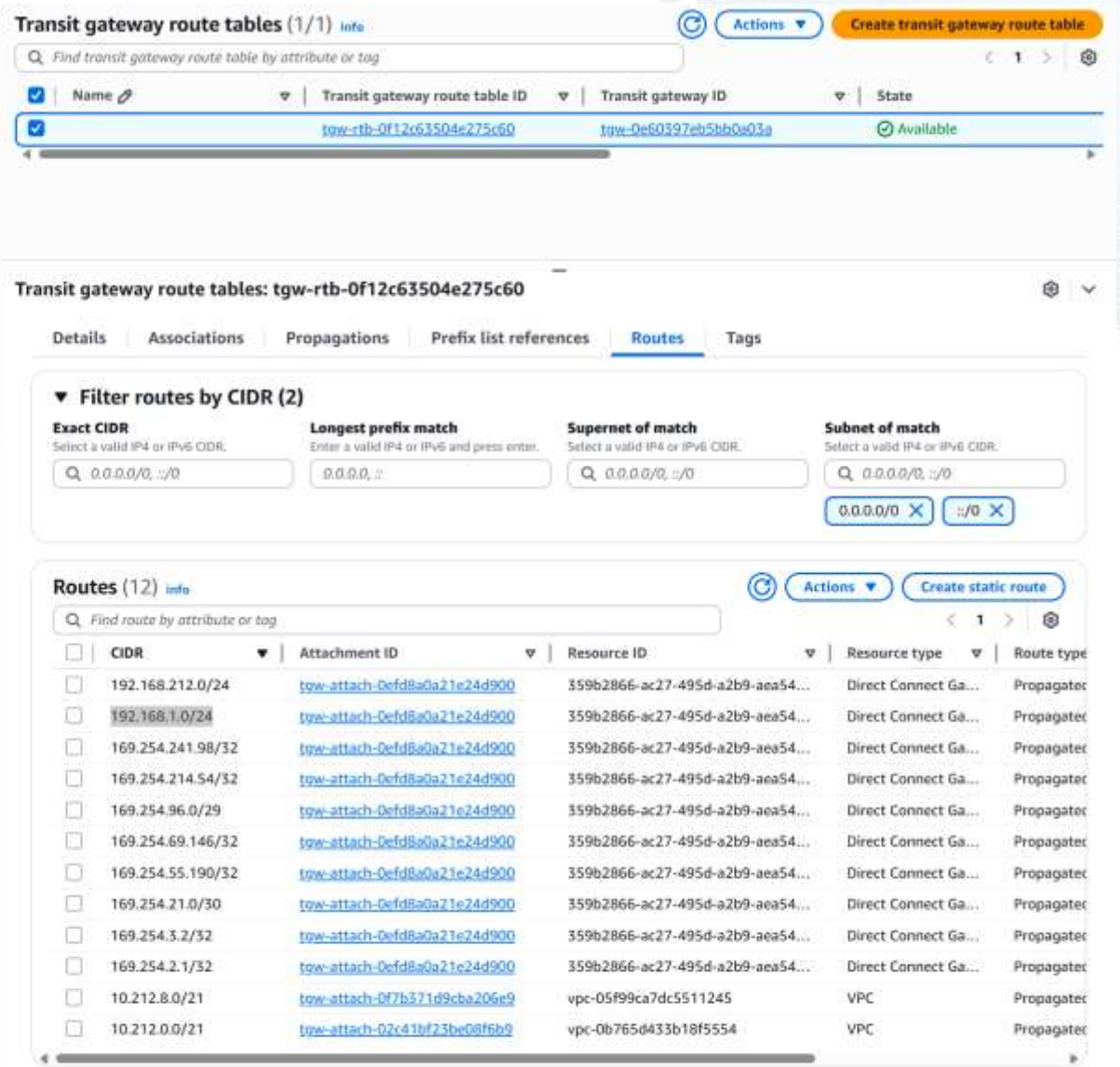


EXAMPLE DEPLOYMENT (INIT7 + DX CES)

- SIMPLE UNIFI (BASIC BGP)
- 10G + WIFI 7 (2.5G~5G)
- 2X 10G NAS (THE DATA)
- 2X FTTH CONNECTIONS
  - FIBER7 BUSINESS ETHERNET7 +
  - AWS DIRECT CONNECT


Warpify subshell Ctrl I
ssh root@192.168.1.1
Connections established 179; dropped 178
Last reset 00:00:26, No AFI/SAFI activated for peer
Local host: 169.254.96.5, Local port: 179
Foreign host: 169.254.96.6, Foreign port: 5252
Nexthop: 169.254.96.5
Nexthop global: fe80::1e0b:8bff:fe12:5f35
Nexthop local: fe80::1e0b:8bff:fe12:5f35
BGP connection: shared network
BGP Connect Retry Timer in Seconds: 120
Peer Authentication Enabled
Read thread: on Write thread: on FD used: 20
root@ucg-winti-eulach:~# vtysh -c 'show ip bgp'
BGP table version is 34, local router ID is 169.254.96.5, vrf id 0
Default local pref 100, local AS 65023
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
Network Next Hop Metric LocPrf Weight Path
*> 10.212.0.0/21 169.254.96.1 0 65024 65026 64525 i
*> 10.212.8.0/21 169.254.96.1 0 65024 65026 64525 i
*> 169.254.2.1/32 169.254.96.6 0 65024 ?
*> 169.254.3.2/32 169.254.96.6 0 65024 ?
*> 169.254.21.0/30 169.254.96.6 0 65024 ?
*> 169.254.55.190/32
169.254.96.6 0 65024 ?
*> 169.254.69.146/32
169.254.96.6 0 65024 ?
*> 169.254.96.0/29 169.254.96.6 0 65024 ?
*> 169.254.214.54/32
169.254.96.6 0 65024 ?
*> 169.254.241.98/32
169.254.96.6 0 65024 ?
* 192.168.1.0/24 169.254.96.6 0 65024 ?
*> 0.0.0.0 0 32768 i
*> 192.168.212.0/24 169.254.96.6 0 65024 ?
Displayed 12 routes and 13 total paths
root@ucg-winti-eulach:~#


Network Firewall
Firewalls
Firewall policies
Network Firewall rule groups
TLS inspection configurations
Network Firewall resource groups
VPC endpoint associations
Virtual private network (VPN)
Customer gateways
Virtual private gateways
Site-to-Site VPN connections
Client VPN endpoints
Transit gateways
Transit gateways
Transit gateway attachments
Transit gateway policy tables
Transit gateway route tables
Transit gateway multicast
Traffic mirroring
Mirror sessions
Mirror targets
Mirror filters
VPC lattice
Getting started
Service networks
Services
Target groups
Network Manager
Cloud WAN
VPC IP address manager
AWS Firewall Manager


Transit gateway route tables (1/1) info
Actions
Create transit gateway route table
Find transit gateway route table by attribute or tag
Name
Transit gateway route table ID
Transit gateway ID
State
tgw-rtb-0f12c63504e275c60
tgw-0e60397eb5bb0a03a
Available
Transit gateway route tables: tgw-rtb-0f12c63504e275c60
Details
Associations
Propagations
Prefix list references
Routes
Tags
Filter routes by CIDR (2)
Exact CIDR
Longest prefix match
Supernet of match
Subnet of match
0.0.0.0/0
::/0
Routes (12) info
Actions
Create static route
Find route by attribute or tag
CIDR
Attachment ID
Resource ID
Resource type
Route type
192.168.212.0/24
192.168.1.0/24
169.254.241.98/32
169.254.214.54/32
169.254.96.0/29
169.254.69.146/32
169.254.55.190/32
169.254.21.0/30
169.254.3.2/32
169.254.2.1/32
10.212.8.0/21
10.212.0.0/21
tgw-attach-0efd8a0a21e24d900
tgw-attach-0f7b371d9cba206e9
tgw-attach-02c41bf23be08f6b9
359b2866-ac27-495d-a2b9-aea54...
vpc-05f99ca7dc5511245
vpc-0b765d433b18f5554
Direct Connect Ga...
VPC
Propagated

Thank You – Quick Demo and Q/A

- *Darragh Grealish Cloud Engineer @ACP.IO – 56k.Cloud – Darragh@acp.io*
- *Stefan Thoma – Network Engieer Init7 – Stefan.Thoma@init7.net*

Find out more on Ethernet7 + Direct Access

Direct Cloud Access

https://www.init7.net/en/offer/direct-cloud/

Find out more on ACP Cloud Connect

Cloud Connect

https://www.acp.io/en/solutions/cloud-connect

DEMO, BACKUP SLIDES

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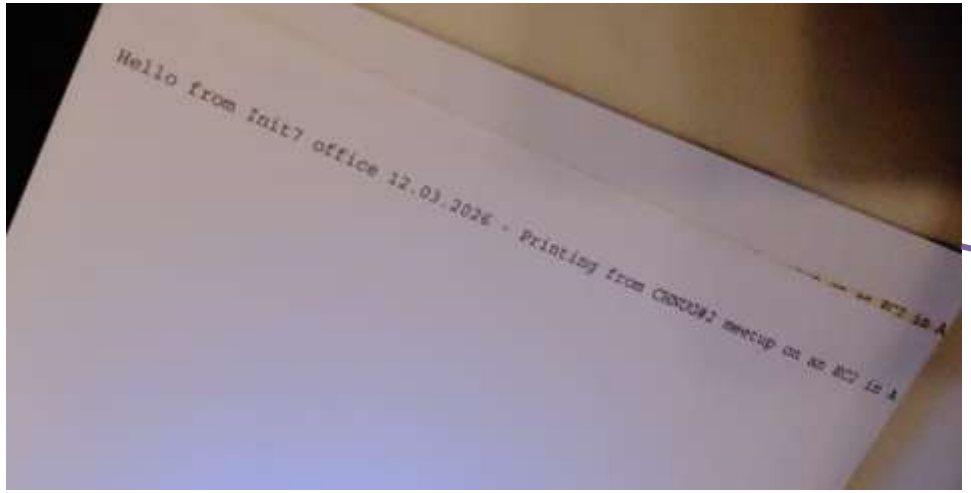
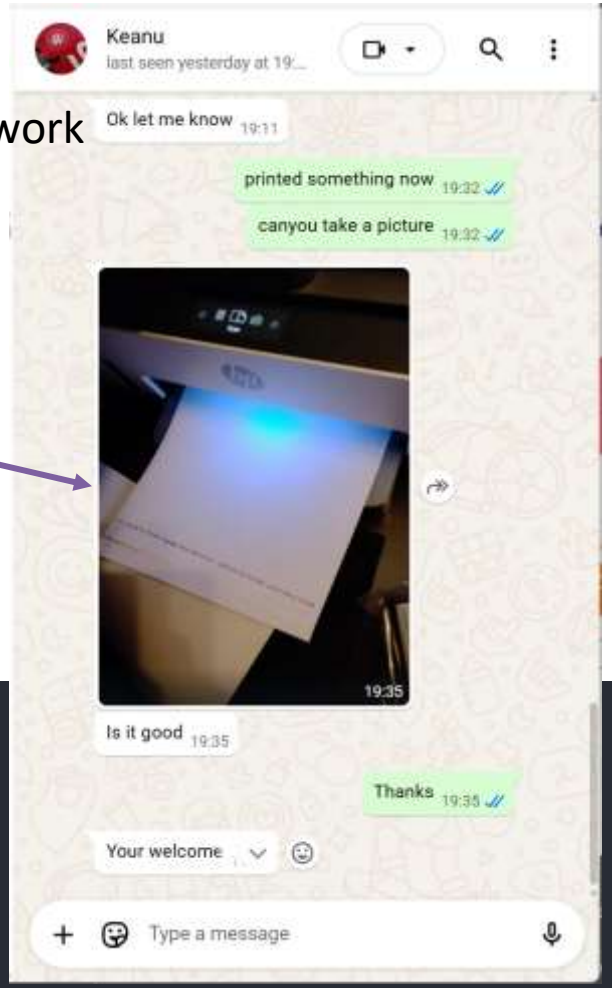
Connecting Clouds over FTTH: How Easy Can **CES**

DEMO OUTPUT

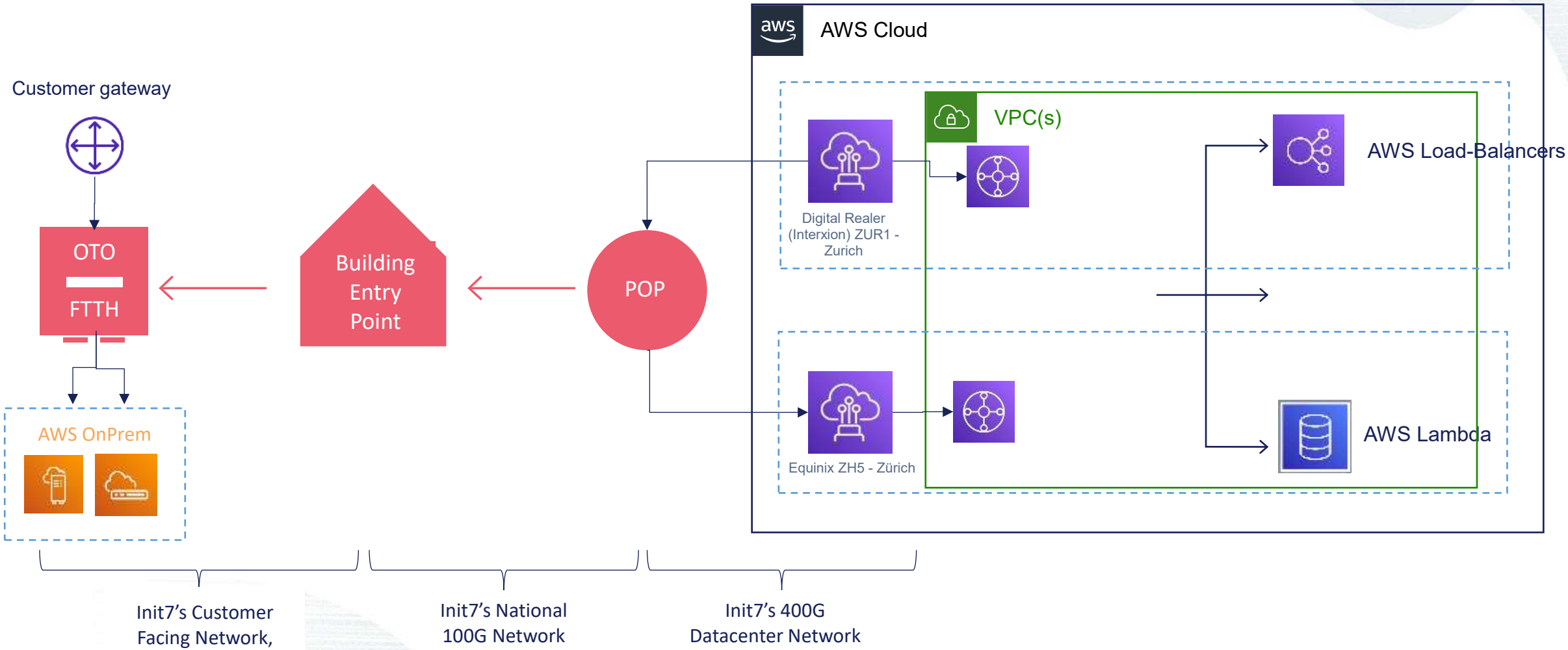
Printing from AWS EC2 instance in air-gapped network over Ethernet7 and AWS Direct Connect across the Swiss FTTH network





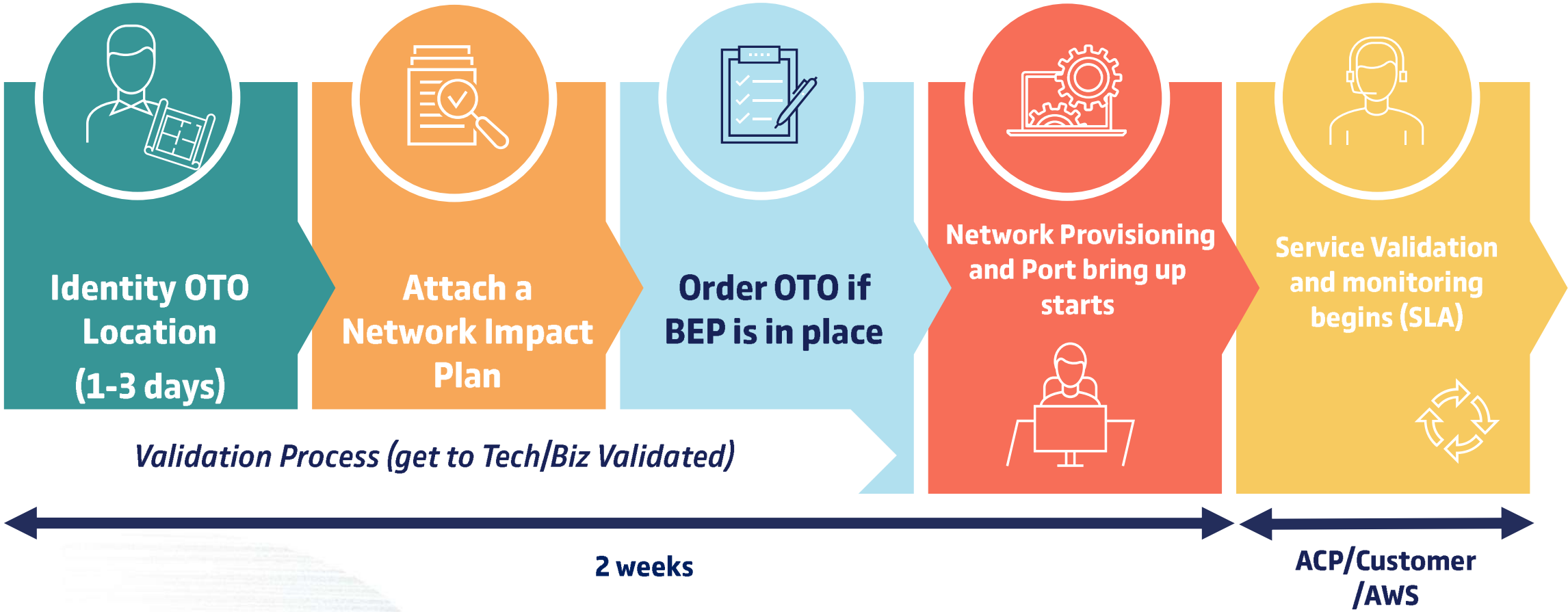

```
[ec2-user@ip-10-212-3-25 ~]$ tracepath 192.168.5.1
 1?: [LOCALHOST]                                         pmtu 9001
 1:  ip-10-212-3-1.eu-central-2.compute.internal           0.075ms pmtu 8500
 1:  no reply
 2:  169.254.200.5                                         1.098ms
 3:  169.254.96.1                                          1.457ms
 4:  169.254.96.1                                          1.310ms pmtu 1500
 4:  no reply
 5:  no reply
 6:  no reply
^C
[ec2-user@ip-10-212-3-25 ~]$ python3 print_raw.py 192.168.5.8 -p 9100 -t 30 -m "Hello from Init7 office 12.03.2026 - Printing from CHNUG#2 meetup on an EC2 in AWS cloud
 eu-central-2, thanks Keanu"
Connecting to 192.168.5.8:9100 ...
Connected. Sending data ...
Done. Page sent successfully.
[ec2-user@ip-10-212-3-25 ~]$ curl 192.168.5.8
```

Init7 + 56k Dual DX, Single Connection

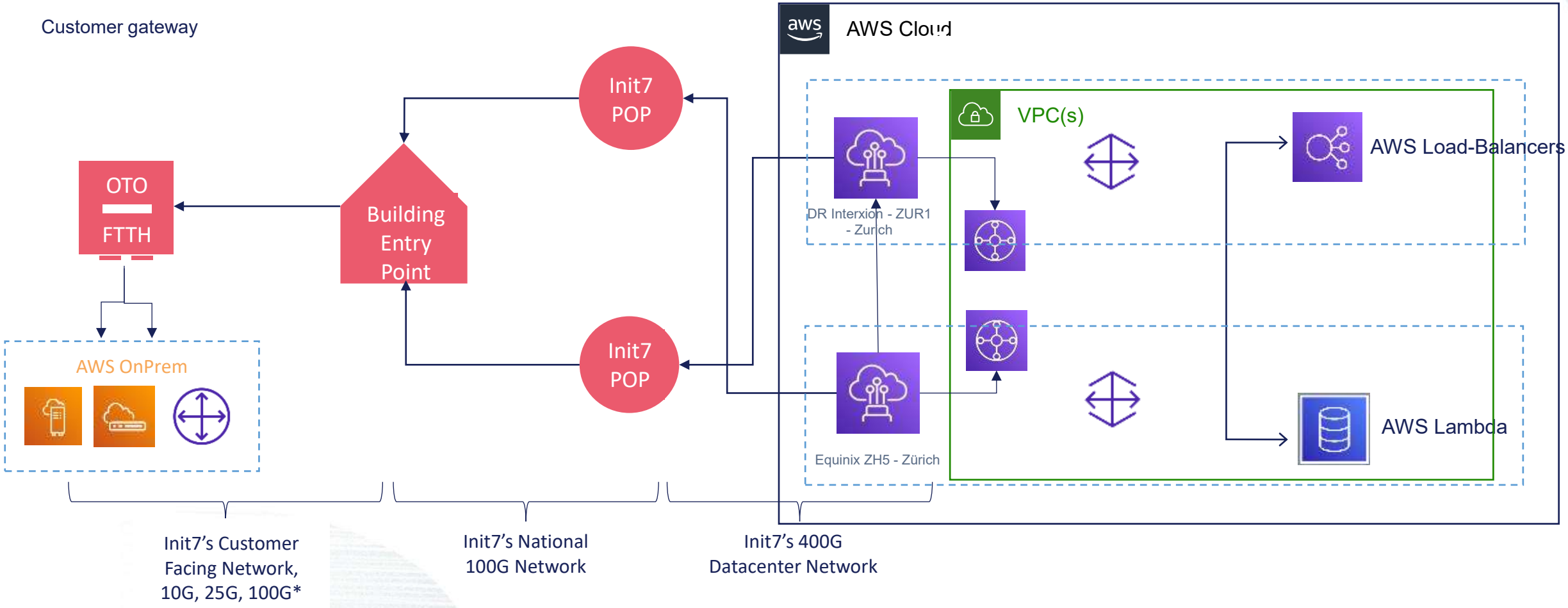


Cloud Connect and Direct Connect Order Process

Connection onboarding steps



Init7 + 56k High Available- Dual Location, Dual Link Per site



Highest resilience and reliable network design