

ÚJDONSÁGOK AZ ADATKÖZPONTOK VILÁGÁBAN



Balla Attila

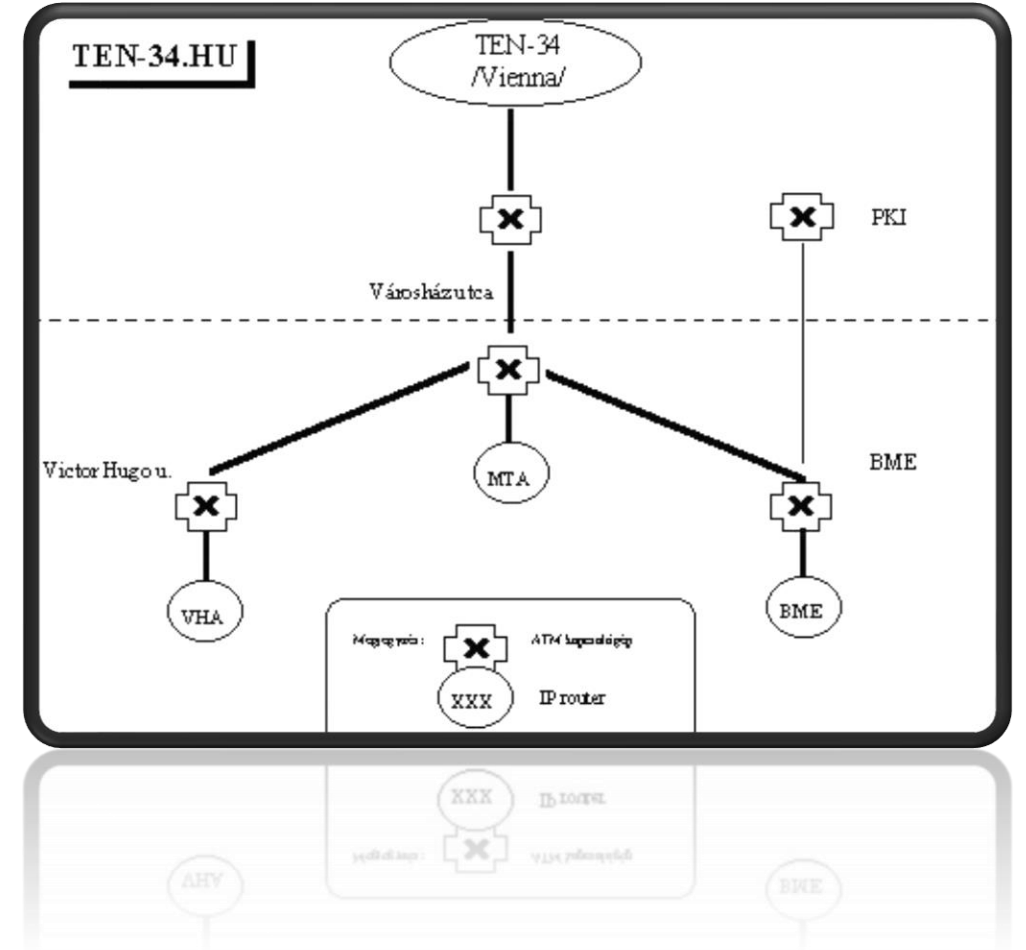
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BUSINESS SOLUTIONS – SAP, INFOR, CAD/CAM/PLM • INDUSTRIAL DIGITALIZATION

BEVEZETŐ

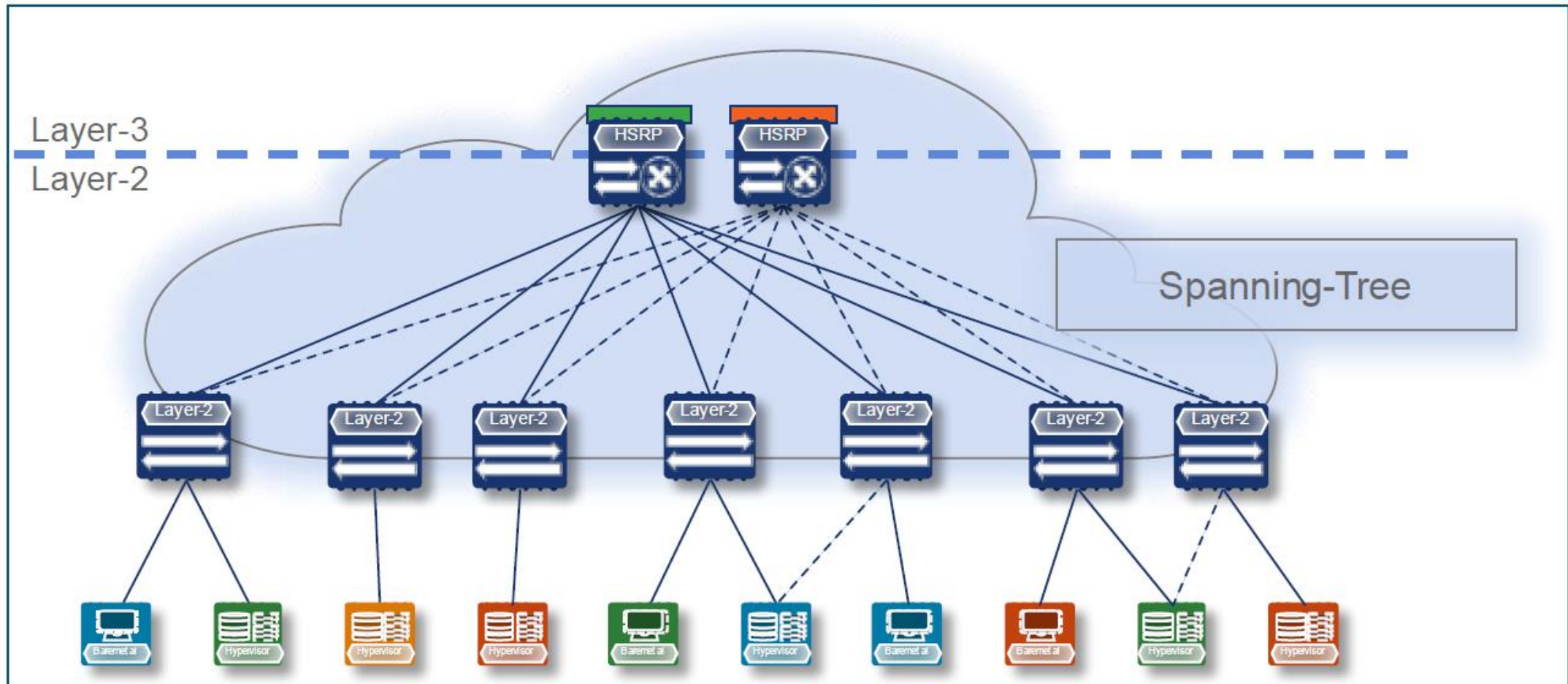


- › ~25 éve
- › Ten-34 üzemeltetés, mint szolgáltató
- › Geant projektben, mint beszállító
- › Alapvetően SP terület, később DC is
 - › Cisco mellett Huawei, Alcatel, Juniper
 - › Optical networking
 - › F5 LTM
 - › DC: Nexus portfólió, VxLAN, ACI
 - › SP: ASR9k, NCS5k, MPLS/SR bevezetése



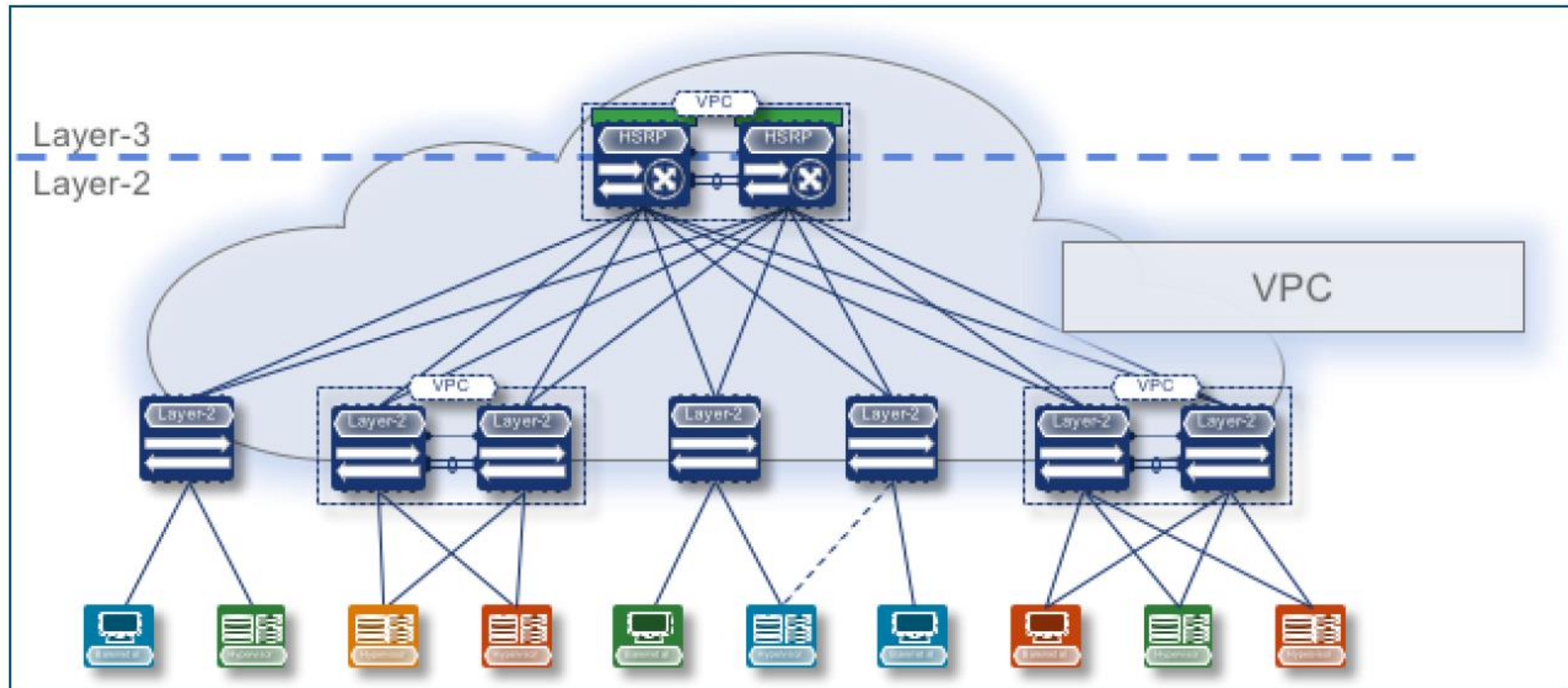
ADATKÖZPONTOK FEJLŐDÉSE I.

Spanning Tree Protocol



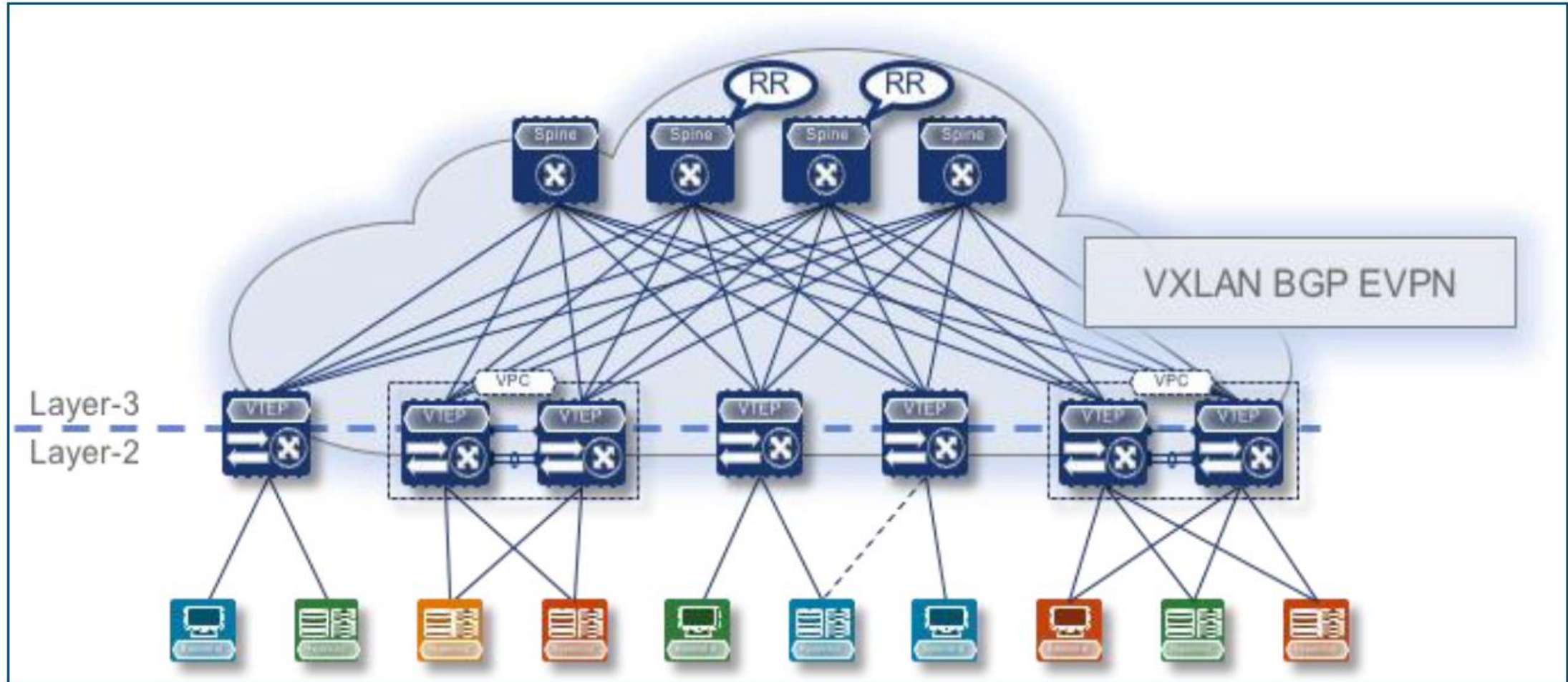
ADATKÖZPONTOK FEJLŐDÉSE II.

vPC



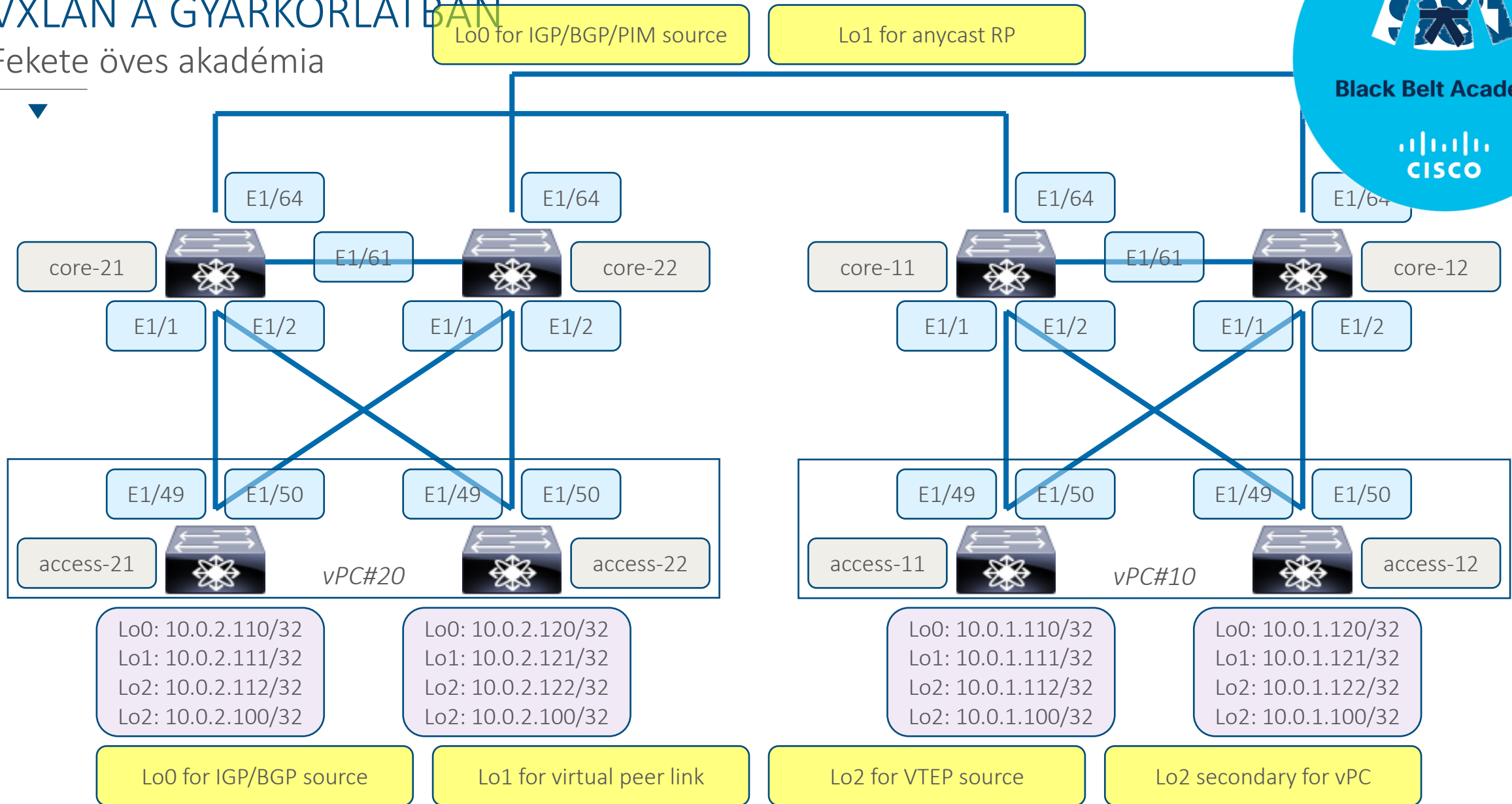
ADATKÖZPONTOK FEJLŐDÉSE III.

VxLAN, flood & learn → BGP/EVPN



VXLAN A GYARKORLATBAN

Fekete öves akadémia



MIT IS KELL KONFIGURÁLNI?

Fekete öves akadémia



- › IPv4 címzési terv
 - › Loopback0: IGP, BGP
 - › Loopback1: virtual peer-link
 - › Loopback2: VTEP
 - › Loopback3: PIM anycast
 - › P2P linkek
- › Underlay routing protocol
 - › OSPF/ISIS + BFD
- › BGP for EVPN
 - › RR
- › Multicast for BUM traffic
- › vPC virtual peer-link
- › VTEP

- › VLAN – VNI összerendelés
- › Multicast csoportok kialakítása

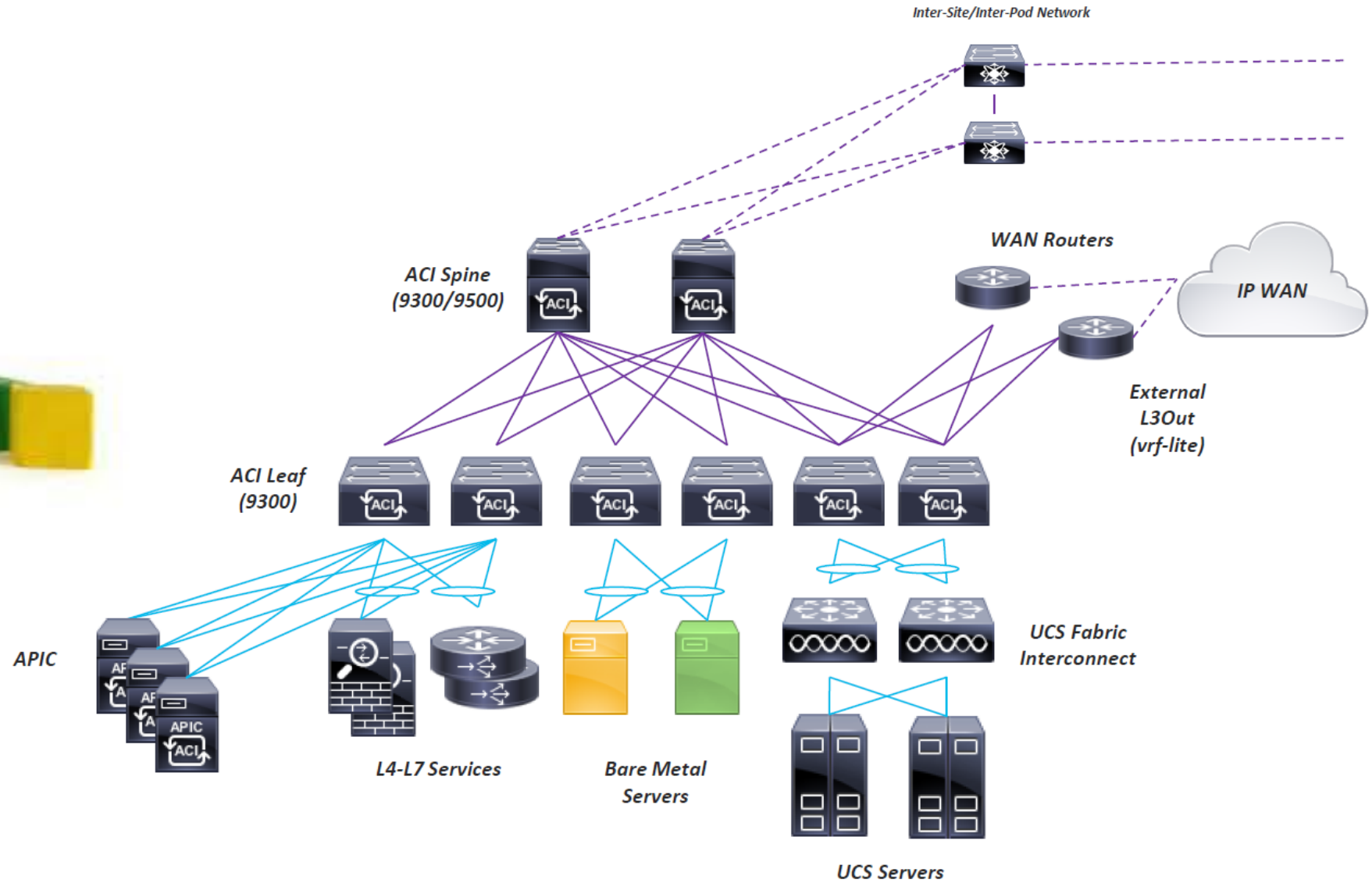
Megoldás:

- › DCNM
- › ACI



ACI FABRIC

Építőkockák



L3 OUT



- › Per VRF L3 OUT
 - › per subinterface BGP session
- › GOLF router
 - › Spine-hoz kapcsolódik
 - › VxLAN fabric része
 - › egy BGP session
- › MPLS/SR handoff
 - › Leaf-hez kapcsolódik
 - › Leaf-ig tart az MPLS/SR domain
 - › egy BGP session





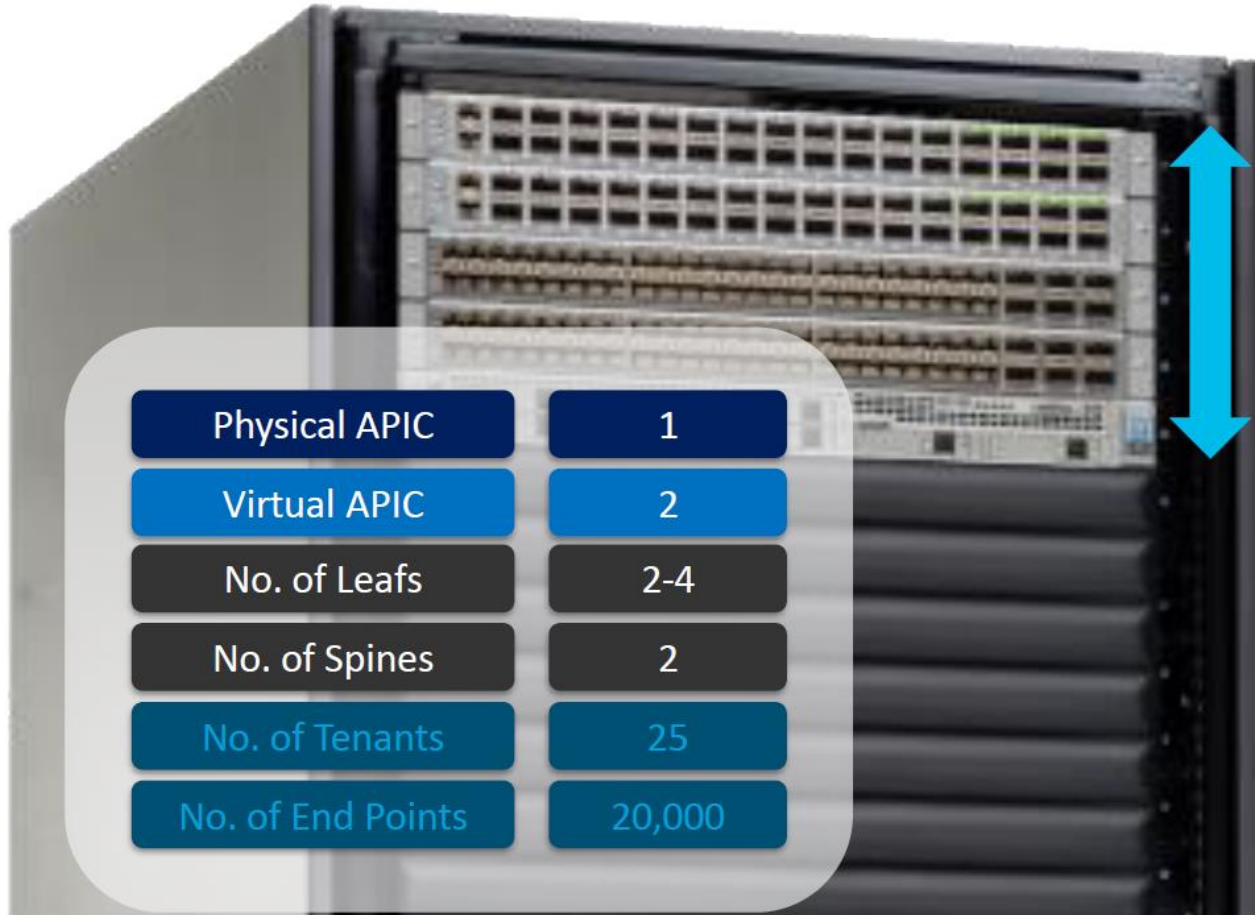
- 6 ACI Spines
- Up to 16 x 16p 400G LCs
- 6.4Tb per LC
- >100Tb per Spine

- Up to 200 x Access Leaf Switches
- Each 28 x 100G Access
- >400Tb Access Bandwidth!
- 326 RU of Space!!



MINI ACI

Maximum features, Minimum size



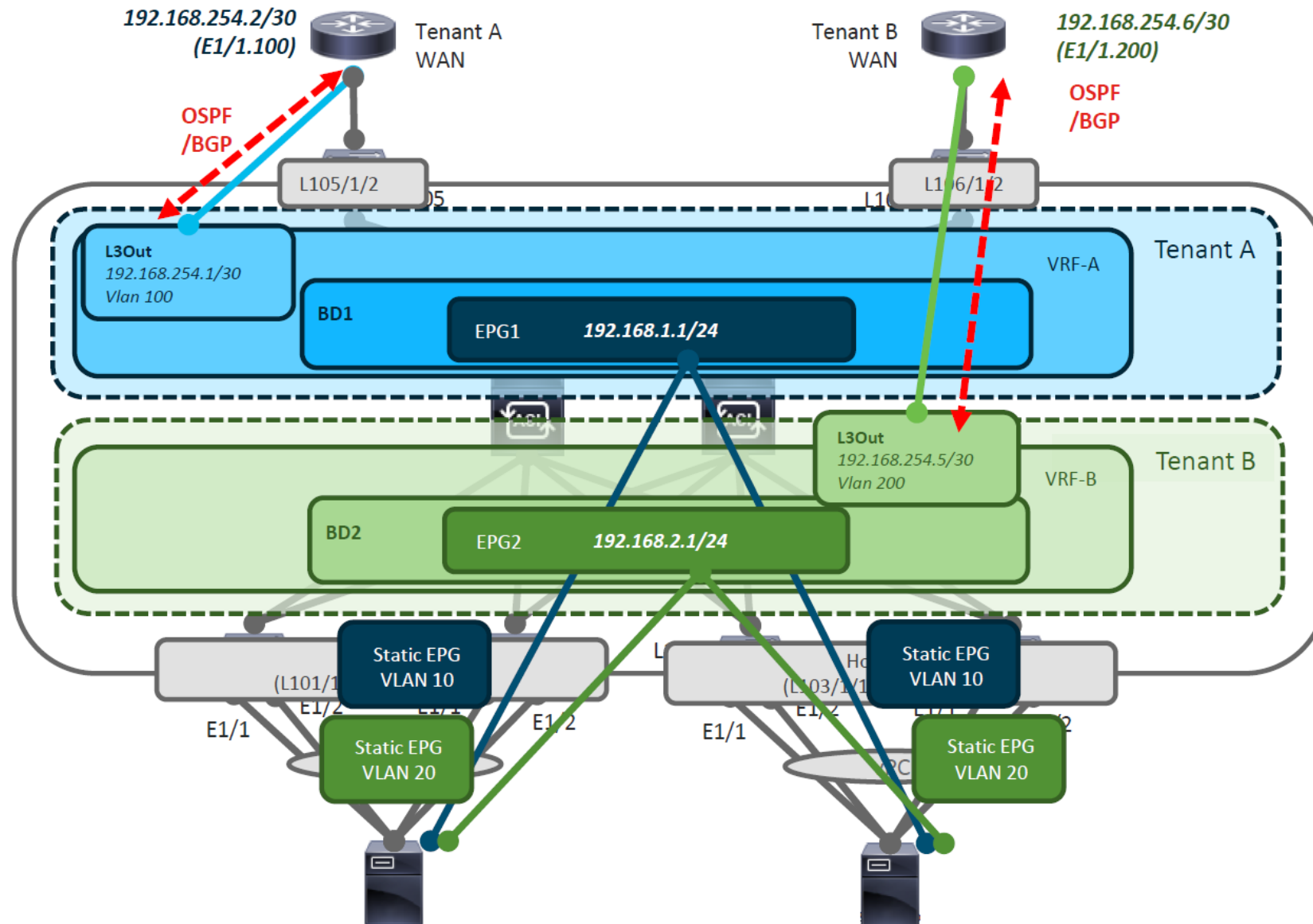
- › 5 RU
- › Spine: 2 x Nexus 9332C
- › Leaf: 2 x Nexus 93180YC
- › 1 x APIC M3 Controller Server

Physical APIC	1
Virtual APIC	2
No. of Leafs	2-4
No. of Spines	2
No. of Tenants	25
No. of End Points	20,000

TENANT POLICY MODEL

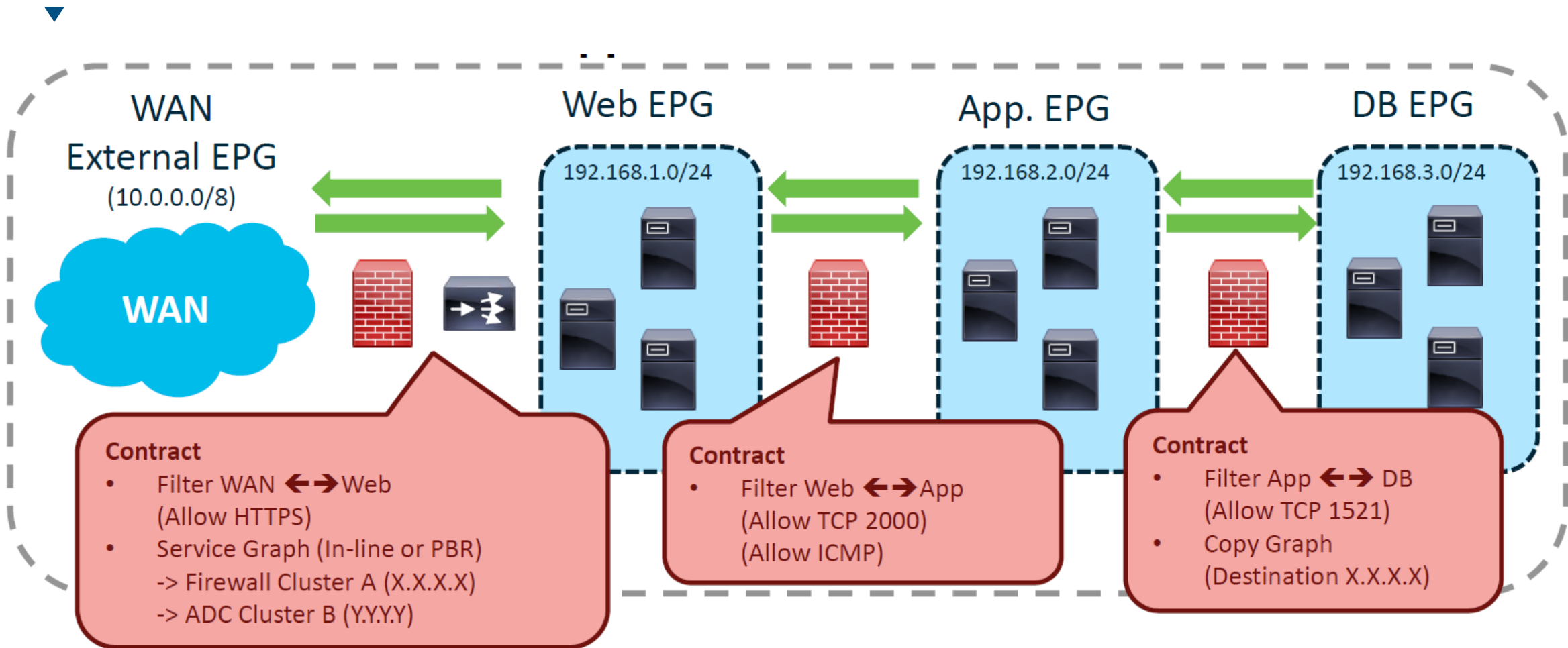


ACI Fabric



APPLICATION PROFILES (AP)

Abstracted logical construct of an “Application” and associated policies



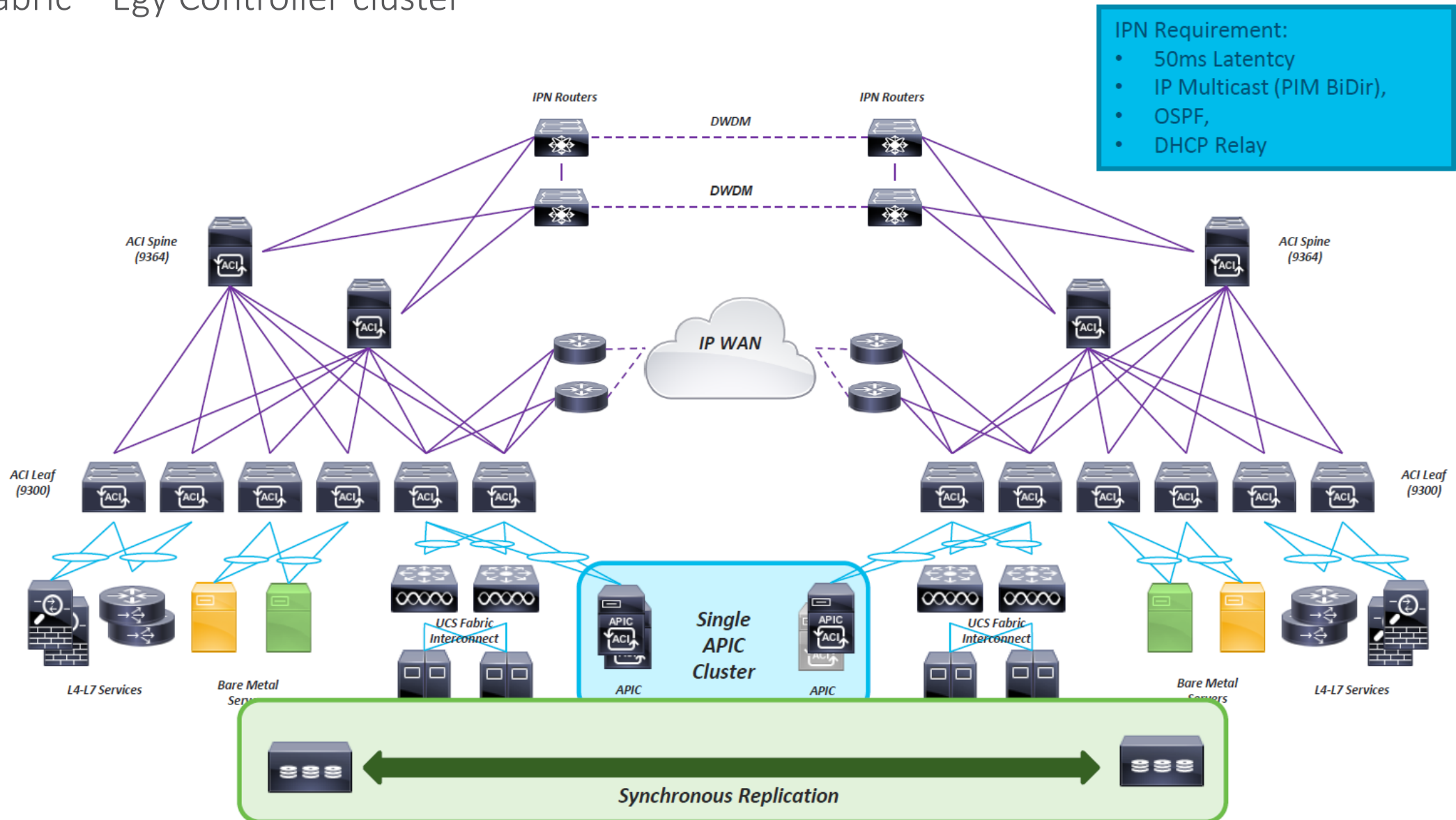
ACI FEJLŐDÉSE



- › Multi PoD
- › Multi Site
- › Remote Leaf
- › Virtual PoD
- › Cloud Integration
- › MPLS/SR
- › Day-2 Op. Tool

ACI MULTI POD

Egy Fabric – Egy Controller cluster

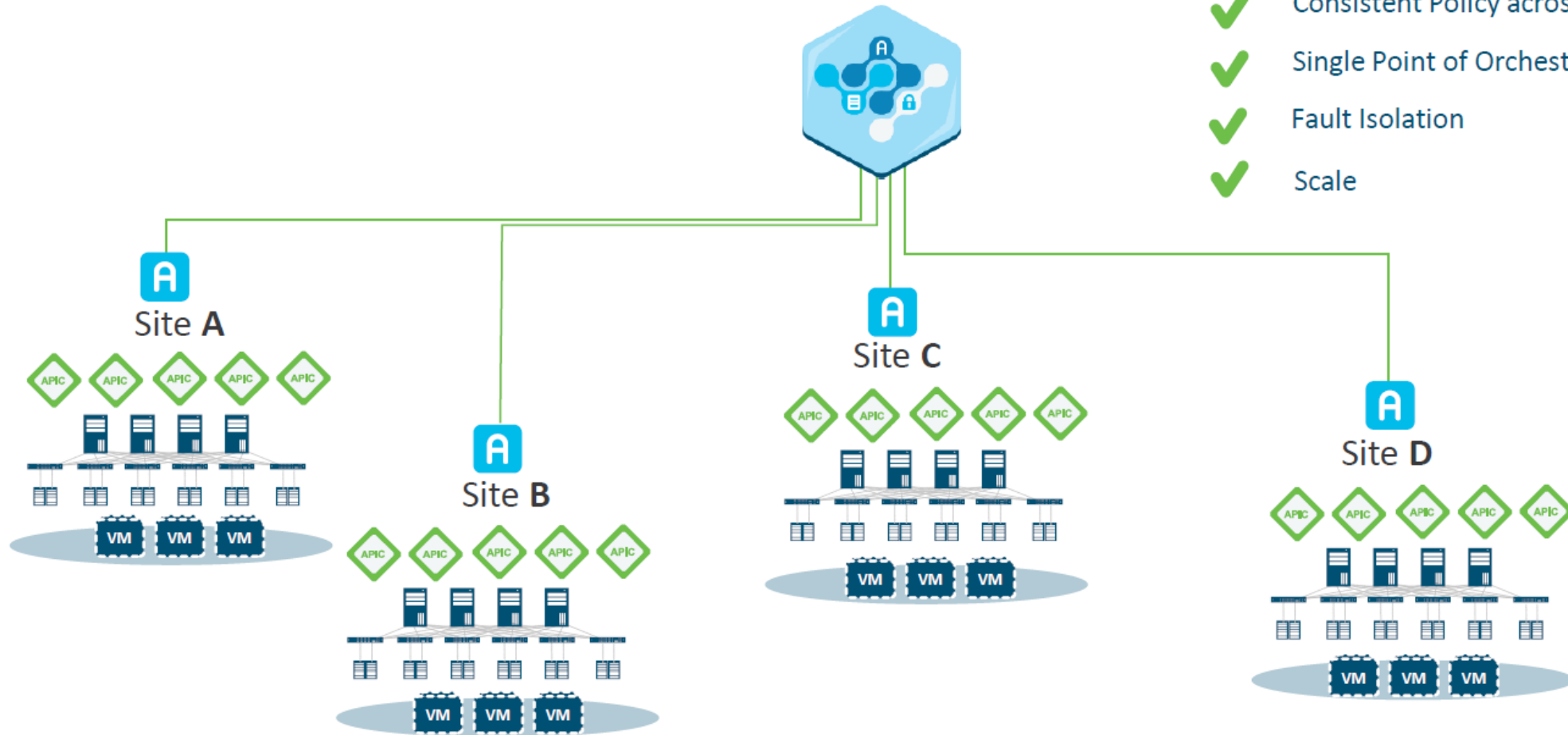


ACI MULTI SITE



Egy Multi Site controller cluster: több Fabric, több APIC cluster

Multi-Site Orchestrator



- ✓ Consistent Policy across sites
- ✓ Single Point of Orchestration
- ✓ Fault Isolation
- ✓ Scale

Policy Consistency

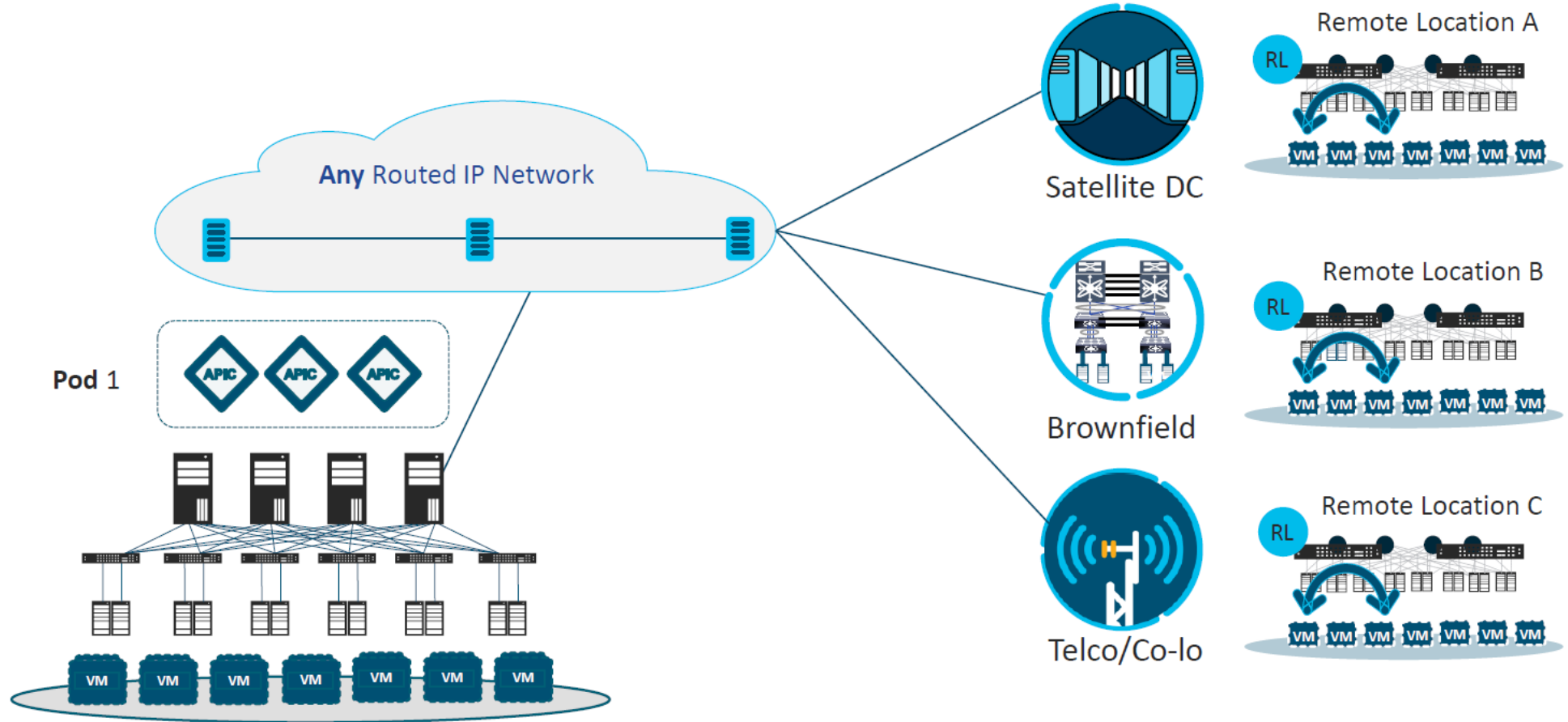
Single Point Of Orchestration

Availability Fault Isolation

Scale

ACI REMOTE LEAF

Kisebb távoli telephelyek integrálása



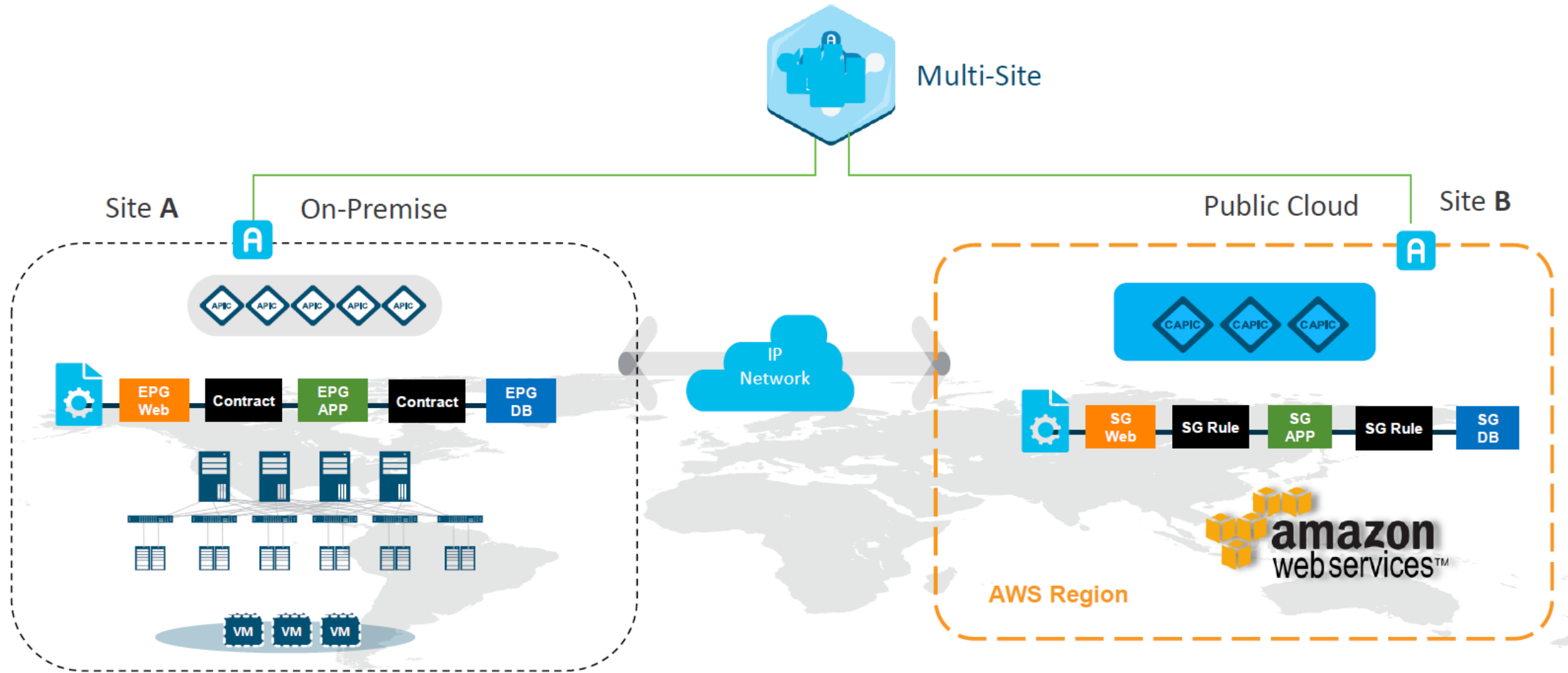
Zero Touch Auto Discovery of Remote Leaf

≤ 300 ms RTT, 100M+ BW
Up to 20 Remote Locations

Single central management
Automated L2 VXLAN extension

ACI CLOUD INTEGRATION

Amazon, Azure, Google



Common Governance

Discovery & Visibility

Policy Translation

Monitoring & Troubleshooting

Single Point Of Orchestration

Operational Consistency

NEXUS DASHBOARD



- › MSO
- › Insights
 - › Day-2 Operation Tool, proactive
 - › Visibility, Monitoring
 - › Analytics, Correlation
 - › Advisories, Tools
 - › DCNM/ACI
 - › Licensing

NEXUS PORTFÓLIÓ



ASIC	BW	Leaf/Spine	MACSec/CloudSec	Telemetry	400G
GX2	6.4Tbps	Leaf/Spine	✓/✓	FT, FTE, SSX, INT-XD	✓
GX	6.4Tbps	Leaf/Spine	-/-	FT, FTE, SSX, INT-XD	✓
FX3	1.8Tbps	Leaf	✓/✓	FT, FTE, SSX	-
FX2	3.6Tbps	Leaf	✓/✓	FT, FTE, SSX	-
FX	1.8Tbps	Leaf	✓/-	FT, FTE	-
EX	1.8Tbps	Leaf	-/-	FT	-

UTOLSÓ SLIDE



-
- ▼
- › Referenciák
 - › ACI labor
 - › Webin árok

Q & A



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