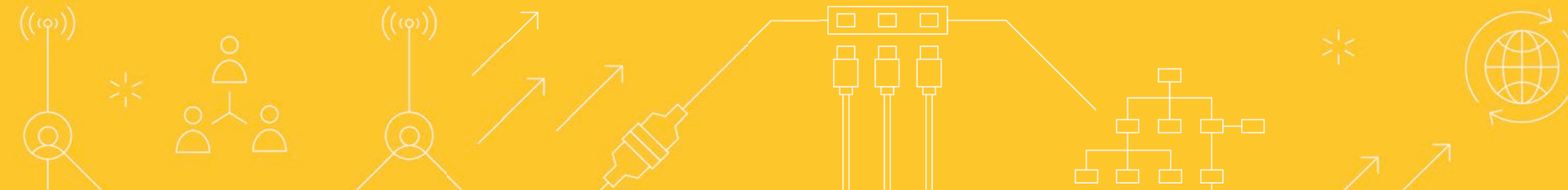
CISCO ACI
FÜR RECHENZENTREN
BOXENSTOPP



Cisco ACI DC EVOLUTION

28.10.2020 | Rosenheim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{
    "firstName": "Stefan",
    "lastName": "Ronge",
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    "motivation": "Relax, we care",
    "loves": ["NTS", "Datacenter", "DevNet", "Cisco"]
    "age": "31",
    "team": "NTS Deutschland -> Team Bayern",
}
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NTS


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{
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    "age": "27",
    "team": "NTS Deutschland -> Team Bayern",
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NTS

AGENDA

Challenges in Data Center Networking

ACI Building Blocks und Designs

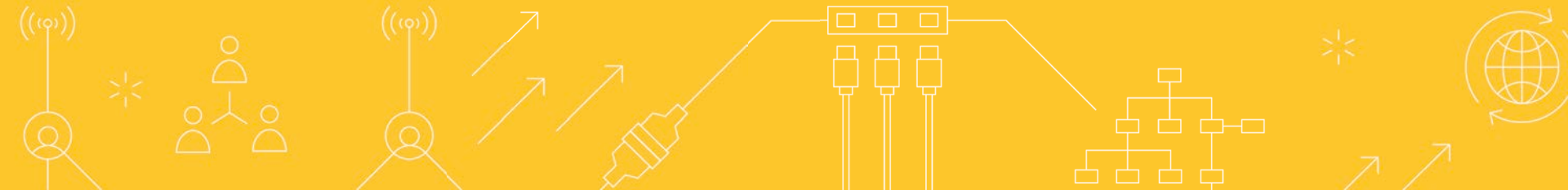
Hot Topics for Customers

Road to Cisco ACI

Call to Action

NTS

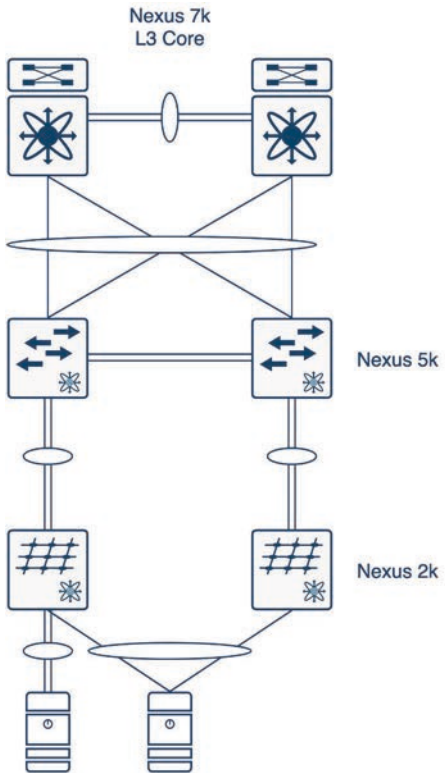
CHALLENGES
IN DATA CENTER NETWORKING

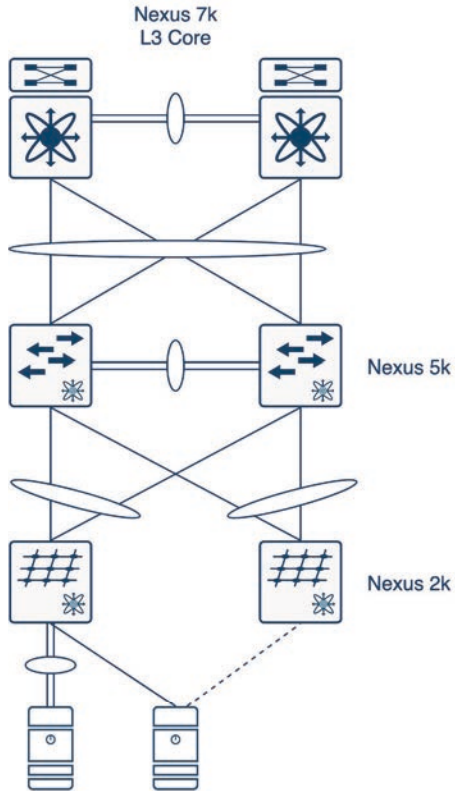


CHALLENGES

NTS

KLASSISCHE **N7K-N5K-N2K** TOPOLOGY

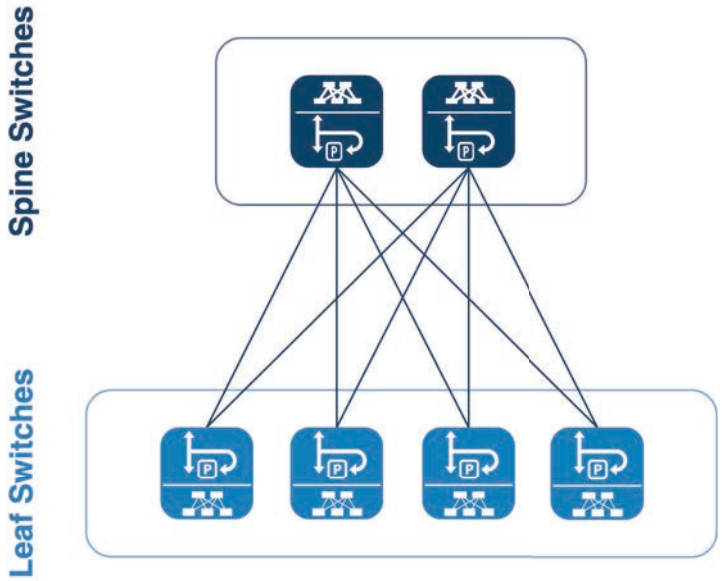




CHALLENGES

NTS

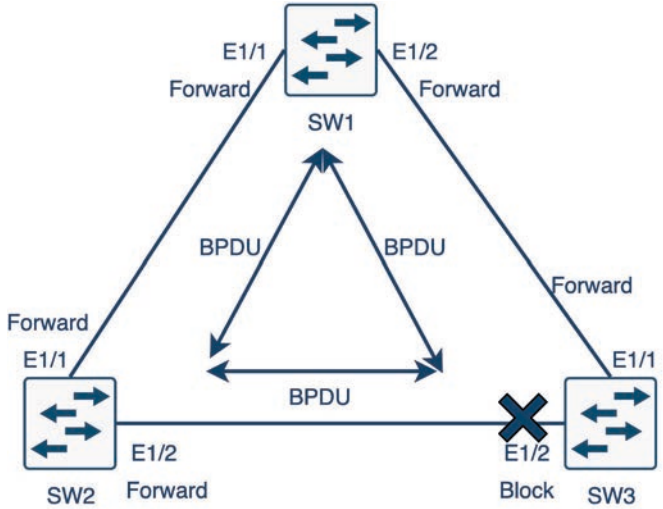
ACI SPINE LEAF TOPOLOGY



CHALLENGES

NTS

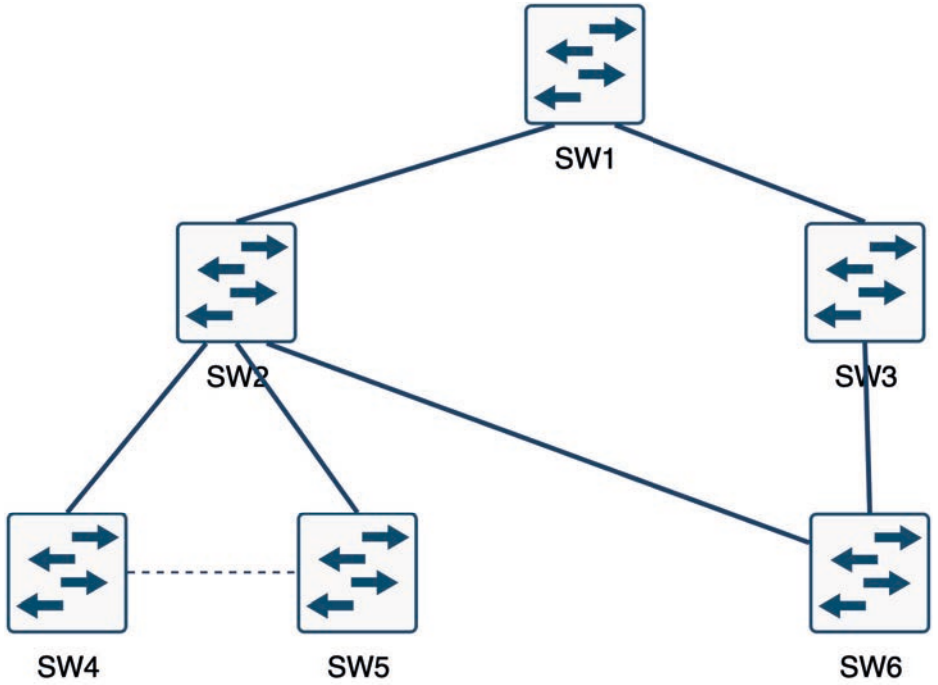
SPANNING TREE KLASSISCH



CHALLENGES

NTS

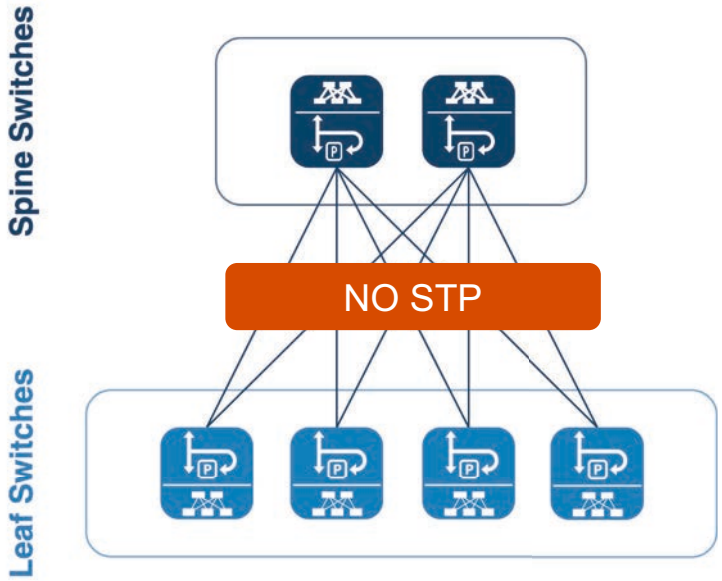
SPANNING TREE KLASSISCH



CHALLENGES

NTS

ACI ECMP ROUTING
BETWEEN SPINE AND LEAFS



CHALLENGES

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SECURITY IM DC KLASSISCH

FTP **HTTP** **Telnet**

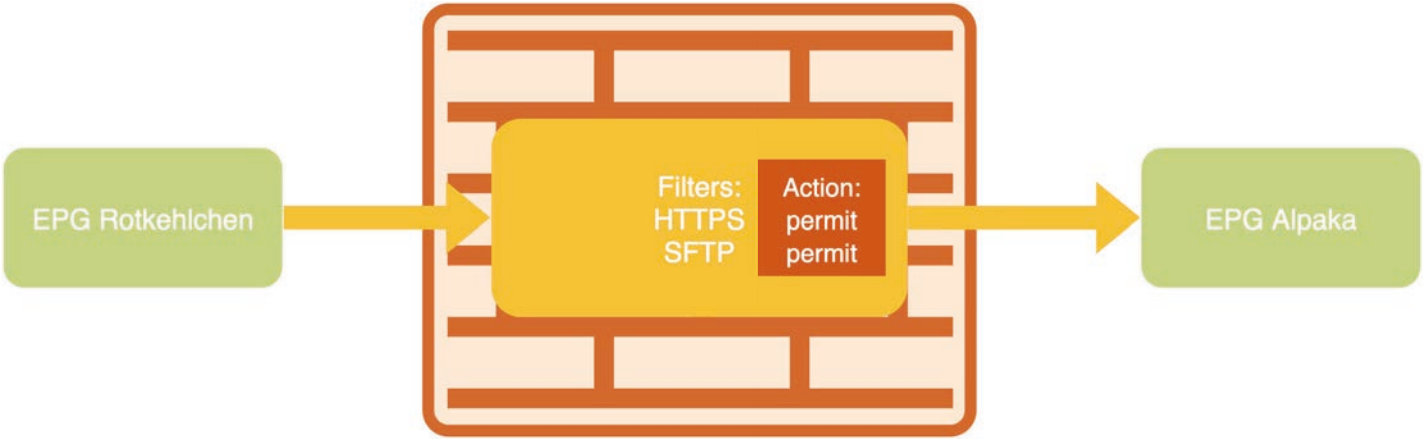
Rotkehlchen Applikation

Alpaka Applikation

CHALLENGES

NTS

ACI BUILT-IN DEFAULT SECURITY



CHALLENGES

NTS

INITIAL FABRIC SETUP KLASSISCH

- Nexus 9000 VTEP-1 configuration:

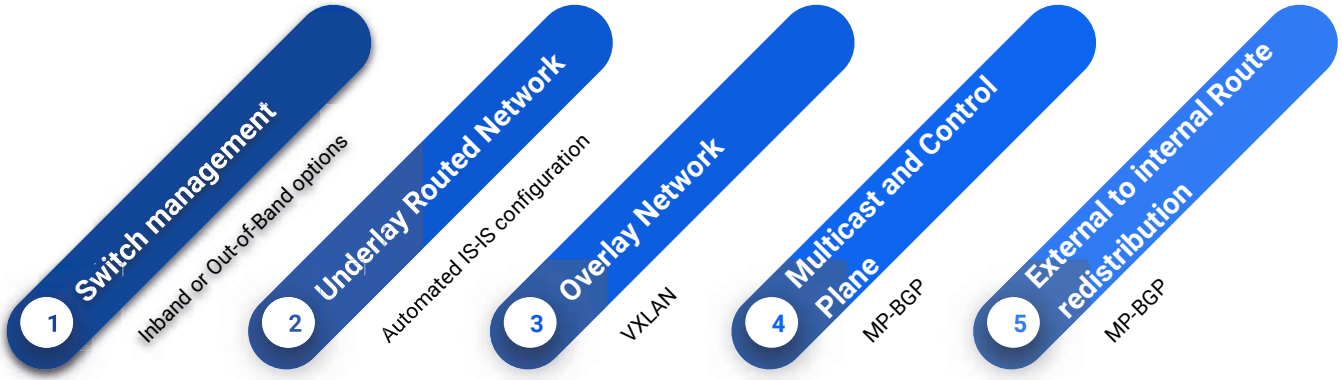
```
switch-vtep-1(config)# feature nv overlay
switch-vtep-1(config)# feature vn-segment-vlan-based

switch-vtep-1(config)# feature ospf
switch-vtep-1(config)# feature pim
switch-vtep-1(config)# router ospf 1
switch-vtep-1(config-router)# router-id 200.200.200.1
switch-vtep-1(config)# ip pim rp-address 10.1.1.1 group-list
switch-vtep-1(config)# interface loopback0
switch-vtep-1(config-if)# ip address 200.200.200.1/32
switch-vtep-1(config-if)# ip address 100.100.100.1/32 second
switch-vtep-1(config-if)# ip router ospf 1 area 0.0.0.0
switch-vtep-1(config-if)# ip pim sparse-mode
switch-vtep-1(config)# interface e2/1
switch-vtep-1(config-if)# ip address 20.1.1.1/30
switch-vtep-1(config-if)# ip router ospf 1 area 0.0.0.0
switch-vtep-1(config-if)# ip pim sparse-mode

switch-vtep-1(config)# interface port-channel 10
switch-vtep-1(config-if)# vpc 10
switch-vtep-1(config-if)# switchport
switch-vtep-1(config-if)# switchport mode access
switch-vtep-1(config-if)# switchport access vlan 10
switch-vtep-1(config-if)# no shutdown
switch-vtep-1(config)# interface e1/1
switch-vtep-1(config-if)# channel-group 10 mode active
switch-vtep-1(config-if)# no shutdown

switch-vtep-1(config)# interface nve1
switch-vtep-1(config-if)# no shutdown
switch-vtep-1(config-if)# source-interface loopback0

switch-vtep-1(config-if)# member vni 10000 mcast-group 230.1
switch-vtep-1(config)# vlan 10
switch-vtep-1(config-vlan)# vn-segment 10000
switch-vtep-1(config-vlan)# exit
```

```
switch-vtep-1(config)# feature nv overlay
switch-vtep-1(config)# feature vn-segment-vlan-based

switch-vtep-1(config)# feature ospf
switch-vtep-1(config)# feature pim
switch-vtep-1(config)# router ospf 1
switch-vtep-1(config-router)# router-id 200.200.200.1
switch-vtep-1(config)# ip pim rp-address 10.1.1.1 group-list 224.0.0.0/4
switch-vtep-1(config)# interface loopback0
switch-vtep-1(config-if)# ip address 200.200.200.1/32
switch-vtep-1(config-if)# ip address 100.100.100.1/32 secondary
switch-vtep-1(config-if)# ip router ospf 1 area 0.0.0.0
switch-vtep-1(config-if)# ip pim sparse-mode
switch-vtep-1(config)# interface e2/1
switch-vtep-1(config-if)# ip address 20.1.1.1/30
switch-vtep-1(config-if)# ip router ospf 1 area 0.0.0.0
switch-vtep-1(config-if)# ip pim sparse-mode

switch-vtep-1(config)# interface port-channel 10
switch-vtep-1(config-if)# vpc 10
switch-vtep-1(config-if)# switchport
switch-vtep-1(config-if)# switchport mode access
switch-vtep-1(config-if)# switchport access vlan 10
switch-vtep-1(config-if)# no shutdown
switch-vtep-1(config)# interface e1/1
switch-vtep-1(config-if)# channel-group 10 mode active
switch-vtep-1(config-if)# no shutdown

switch-vtep-1(config)# interface nve1
switch-vtep-1(config-if)# no shutdown
switch-vtep-1(config-if)# source-interface loopback0

switch-vtep-1(config-if)# member vni 10000 mcast-group 230.1.1.1
switch-vtep-1(config)# vlan 10
switch-vtep-1(config-vlan)# vn-segment 10000
switch-vtep-1(config-vlan)# exit
```

CHALLENGES

NTS

INITIAL FABRIC SETUP WITH ACI

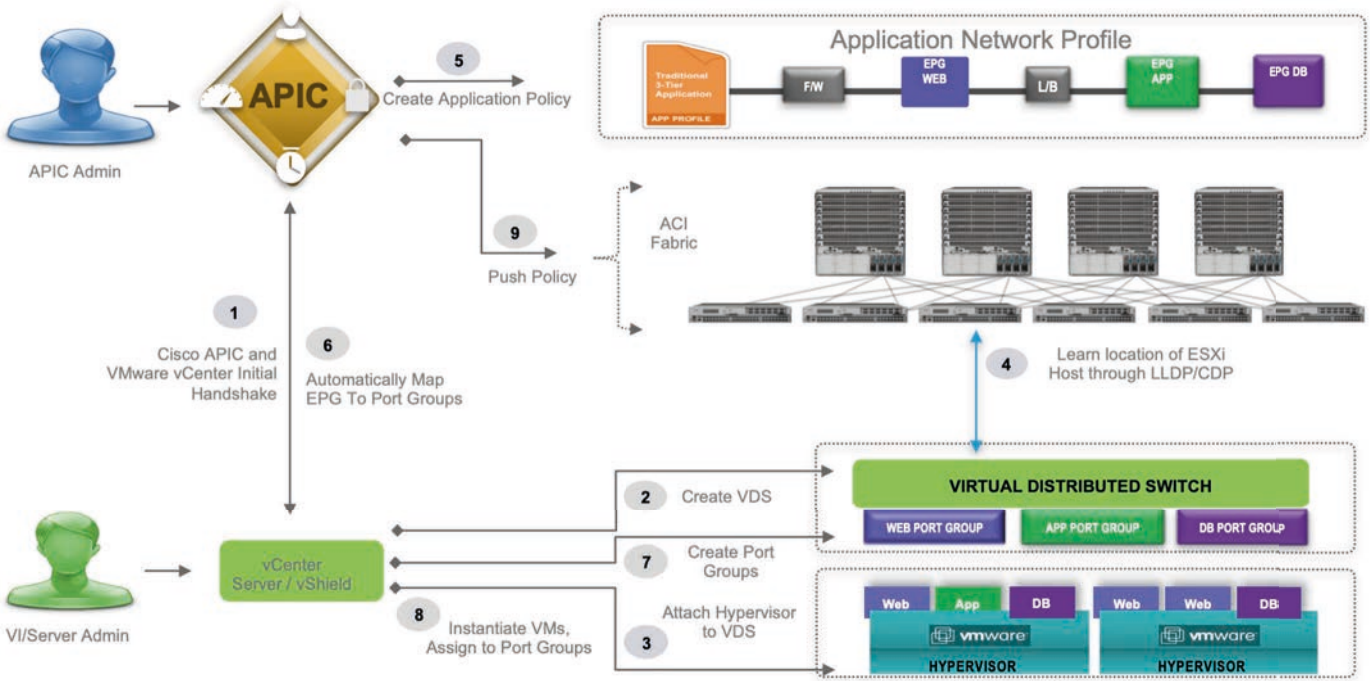


ACI API-DRIVEN **CONFIGURATION**

```
stefanronge@stefans-macb fabric_node %
stefanronge@stefans-macb fabric_node % ansible-playbook create_delete_node.yml -i ../hosts.yml

PLAY [Register or unregister an ACI node (Spine, Leaf)] ****************************************************************

TASK [get list of nodes] ***********************************************************************************************
ok: [apic1]

TASK [Add fabric node] *************************************************************************************************
changed: [apic1] => (item={'node_id': 2001, 'pod_id': 1, 'role': 'leaf', 'serial': 'TEP-1-101', 'state': 'present', 'switch': 'Leaf_2001'})
changed: [apic1] => (item={'node_id': 2002, 'pod_id': 1, 'role': 'leaf', 'serial': 'TEP-1-102', 'state': 'present', 'switch': 'Leaf_2002'})
changed: [apic1] => (item={'node_id': 1001, 'pod_id': 1, 'role': 'spine', 'serial': 'TEP-1-103', 'state': 'present', 'switch': 'Spine_1001'})
[WARNING]: Platform darwin on host apic1 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python
interpreter could change this. See https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.

PLAY RECAP *************************************************************************************************************
apic1                      : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

stefanronge@stefans-macb fabric_node %
```

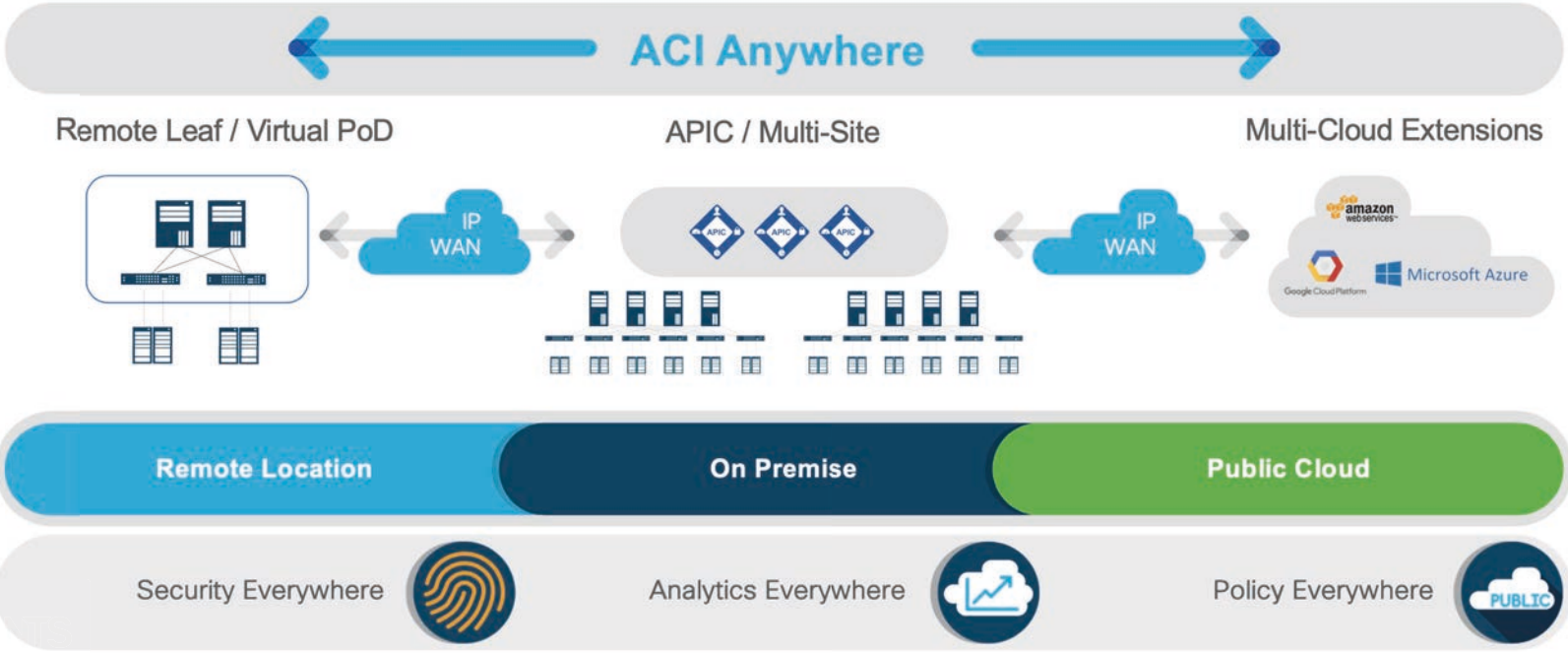

HYPERVISOR INTEGRATION
KLASSISCH

ACI HYPERVISOR INTEGRATION (VMWARE)



Cisco ACI Anywhere

Any Workload, Any Location, Any Cloud



CHALLENGES

NTS

DAY2 OPERATIONS

CHALLENGES

NTS

DAY2 OPERATIONS

Von reaktiv zu proaktiv

- Network Assurance Engine (NAE)
- Network Insights - Resources (NIR)
- Network Insights Advisor (NIA)

CHALLENGES

NTS

NETWORK ASSURANCE ENGINE

Von reaktiv zu proaktiv

- Auswirkungen von Netzwerk Changes vorhersagen
- Kontinuierliche Analyse

CHALLENGES

NTS

NETWORK INSIGHTS RESOURCES

Understand what´s Running In Your Network

- Events & Faults
- Network-wide Flows

CHALLENGES

NTS

NETWORK INSIGHTS ADVISOR

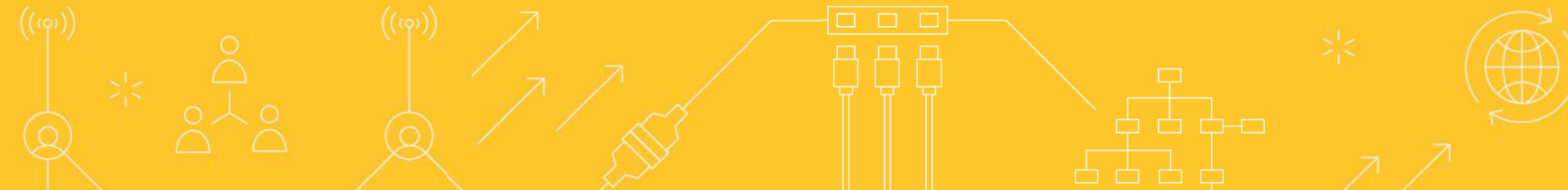
Analyse and Advise

- Security Advisories
- Known Bugs
- Software Empfehlungen
- EoL/EoS Field Notices


Network Insights - Advisor
Fabric:
mutate-fab
Dashboard
Advisories
Notices
Issues
Anomalies
Bugs
PSIRTs
Devices
TAC Assist
Dashboard
Total Controllers
1
Total Switches
11
Critical Devices
11
Advisories
4
Advisories
1
CRITICAL
0
SEVERE
3
MODERATE
Issues By Severity
32
24
16
8
0
Number of Issues
Anomalies
Bugs
PSIRTs
Issue Type
Notices
1
Notices
1
CRITICAL
0
SEVERE
0
MODERATE
TAC Assist
5
Logs Collected
5
COMPLETE
0
IN PROGRESS

NTS

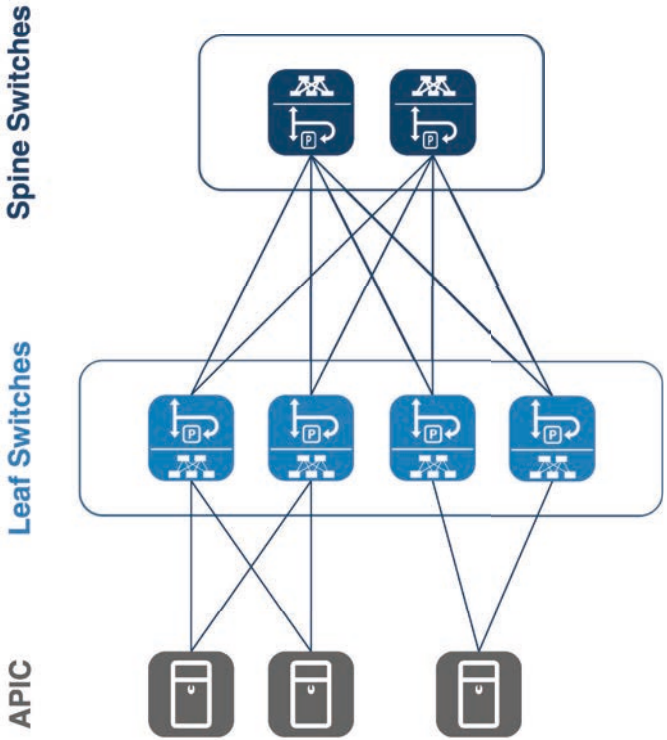
ACI BUILDING BLOCKS & DESIGNS



ACI BLOCKS

NTS

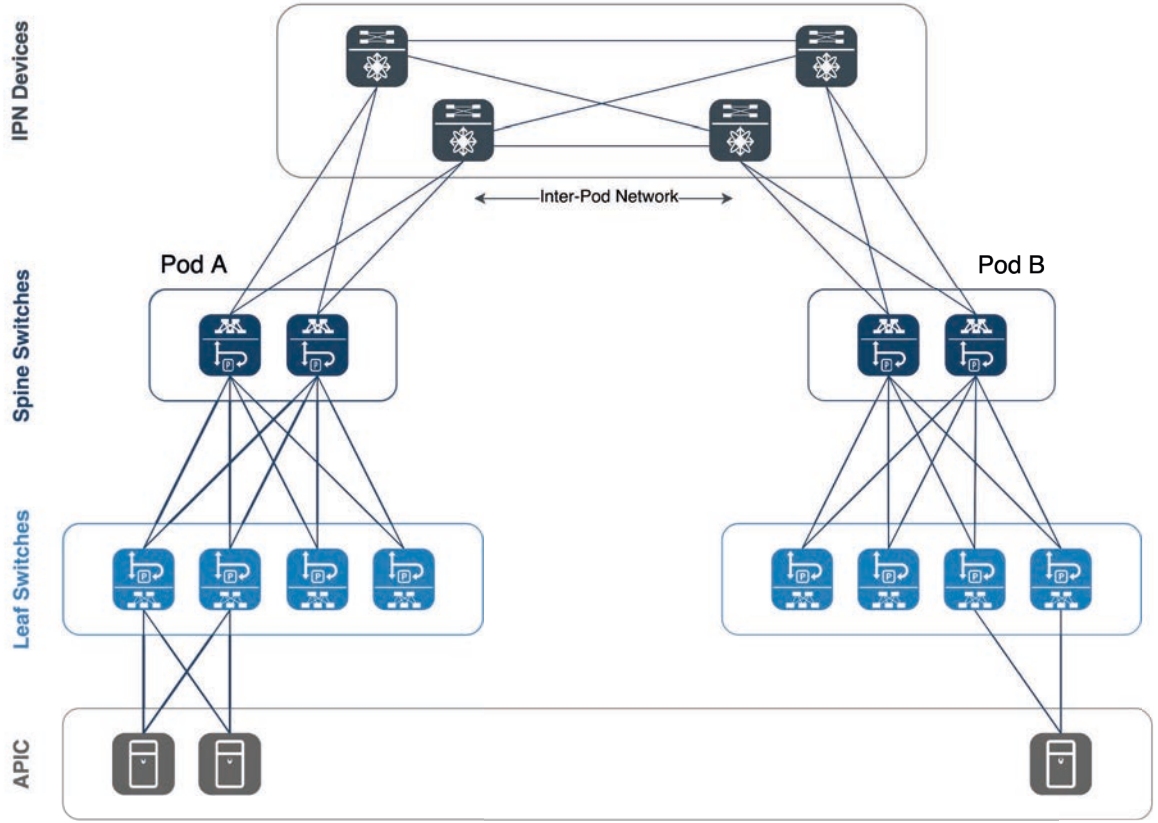
ACI BUILDING BLOCKS



ACI DESIGNS

NTS

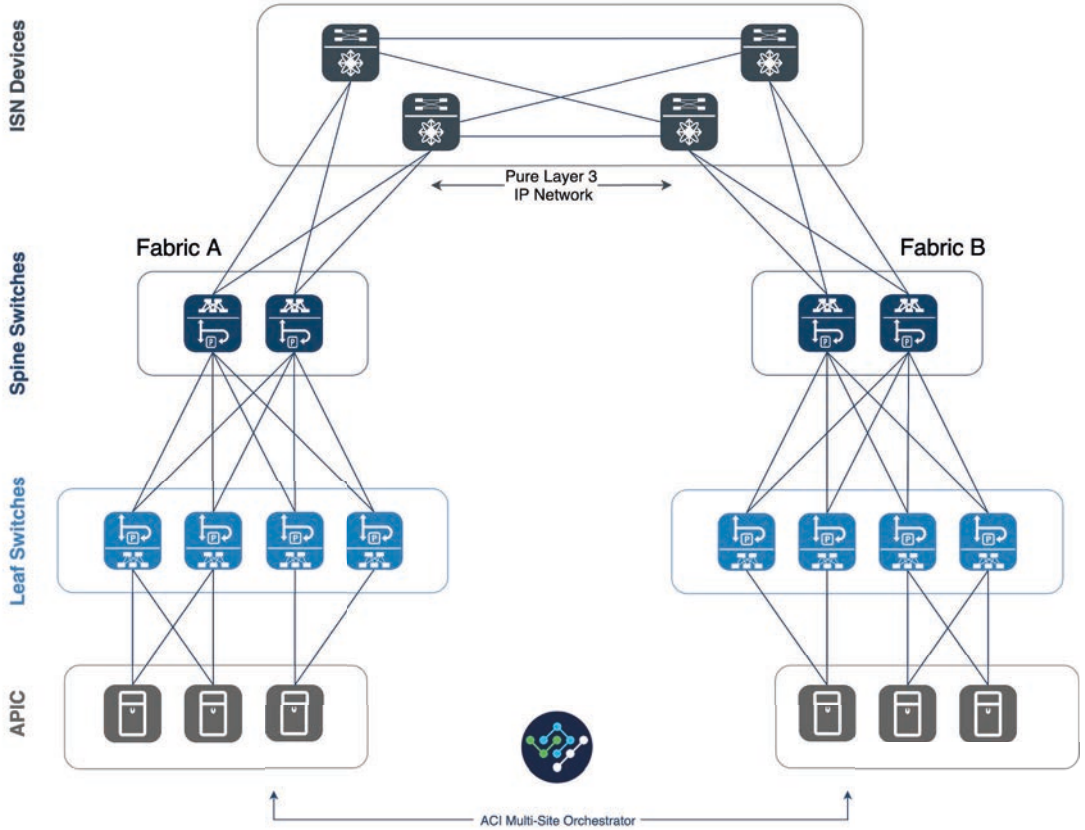
ACI MULTI-POD



ACI DESIGNS

NTS

ACI MULTI-SITE



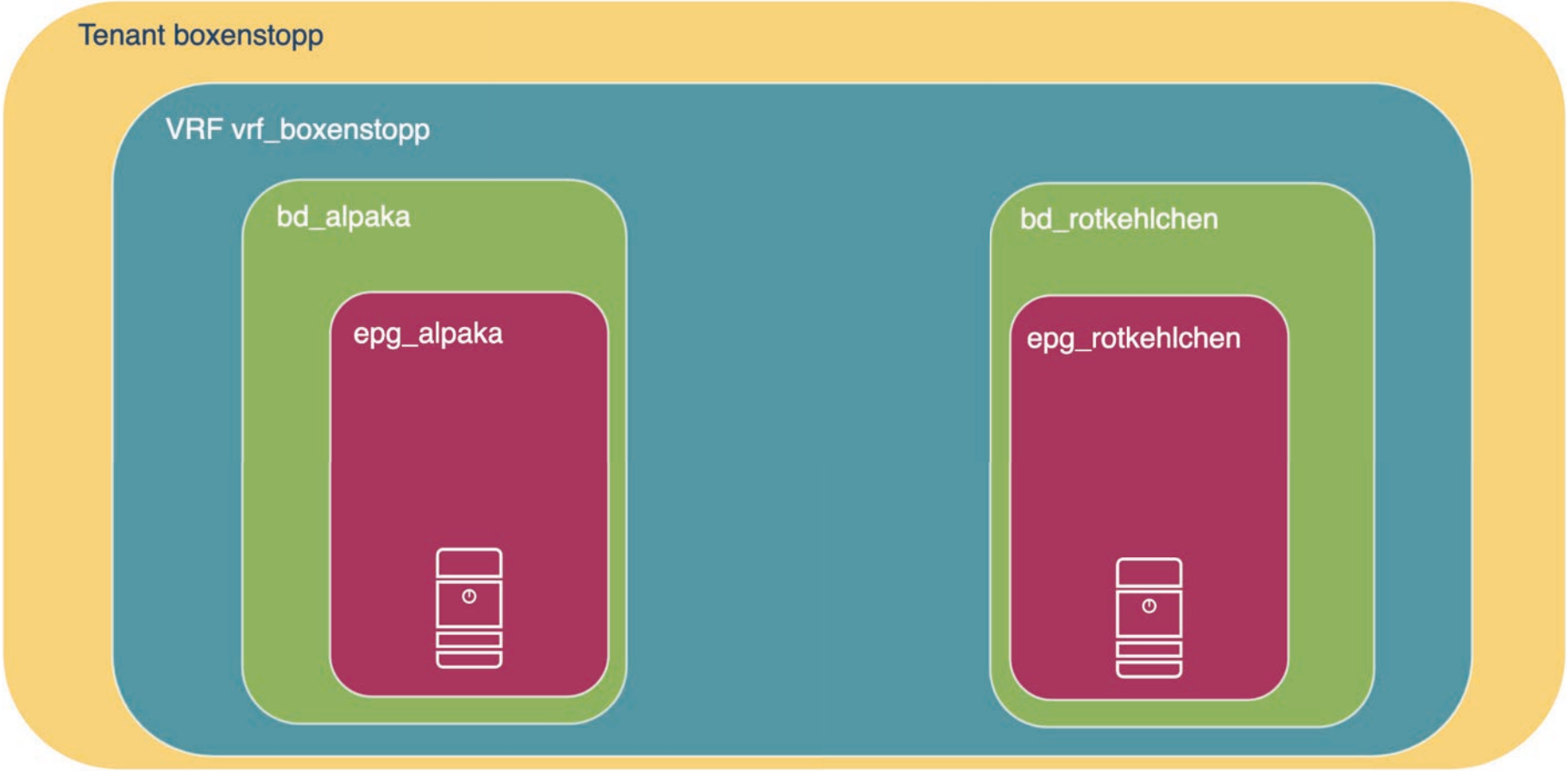
ACI DESIGNS

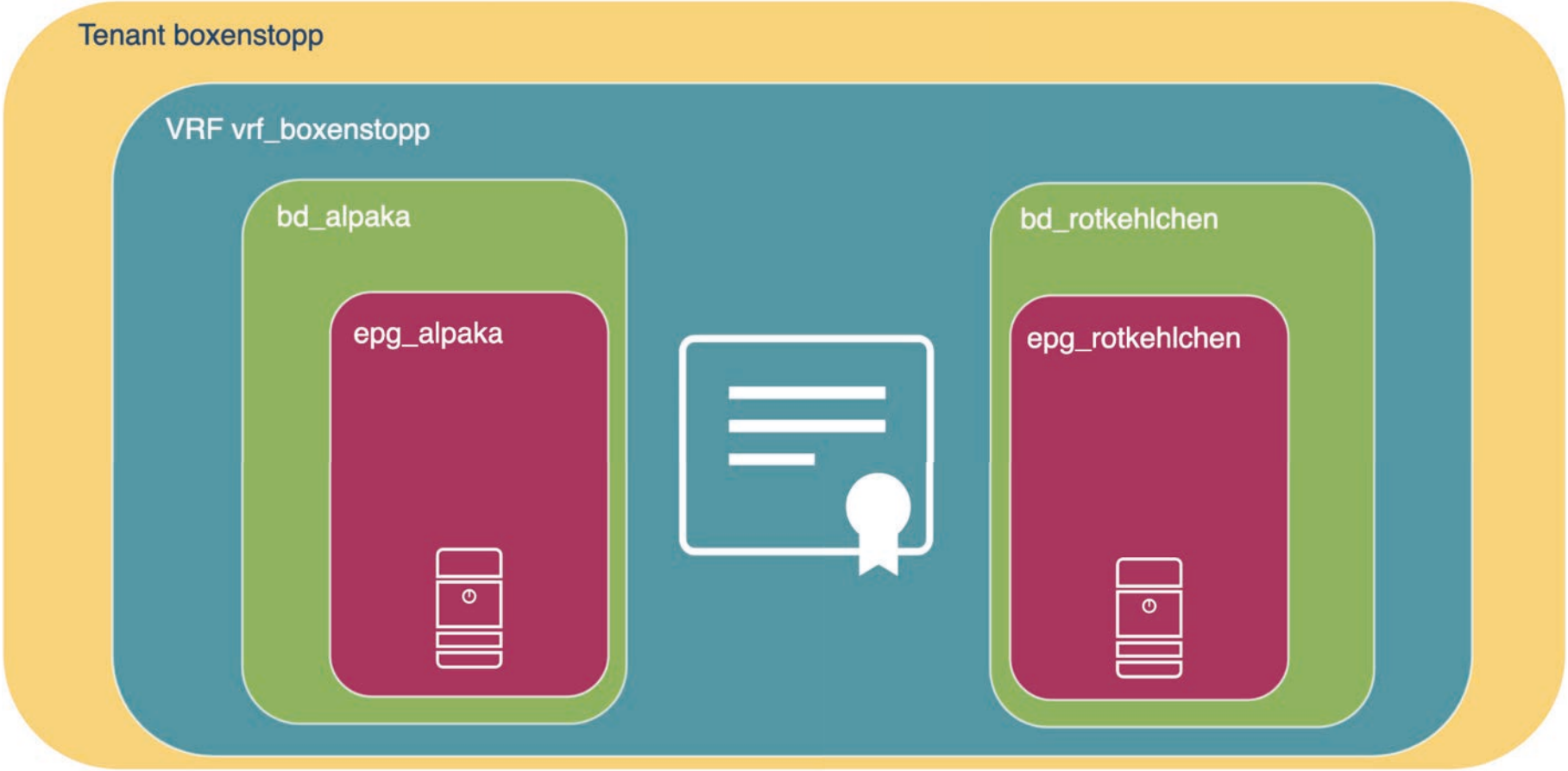
NTS

MULTI-POD oder MULTI-SITE?

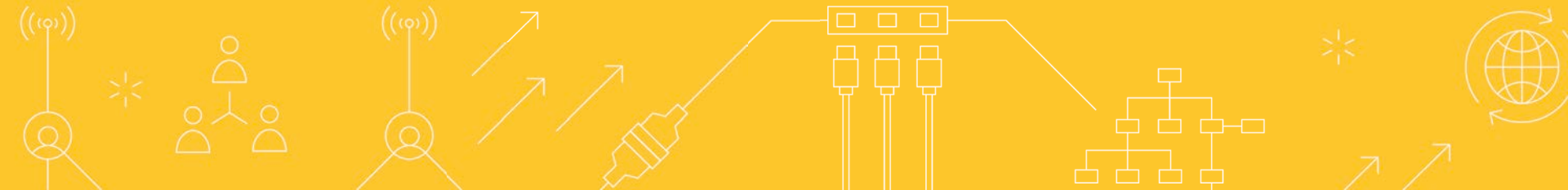
Welches Design ist das richtige für mein Datacenter?


DEMO TIME


Tenant boxenstopp
VRF vrf_boxenstopp
bd_alpaka
epg_alpaka
bd_rotkehlchen
epg_rotkehlchen


Tenant boxenstopp
VRF vrf_boxenstopp
bd_alpaka
epg_alpaka
bd_rotkehlchen
epg_rotkehlchen

HOT TOPICS
FOR CUSTOMERS



HOT TOPICS

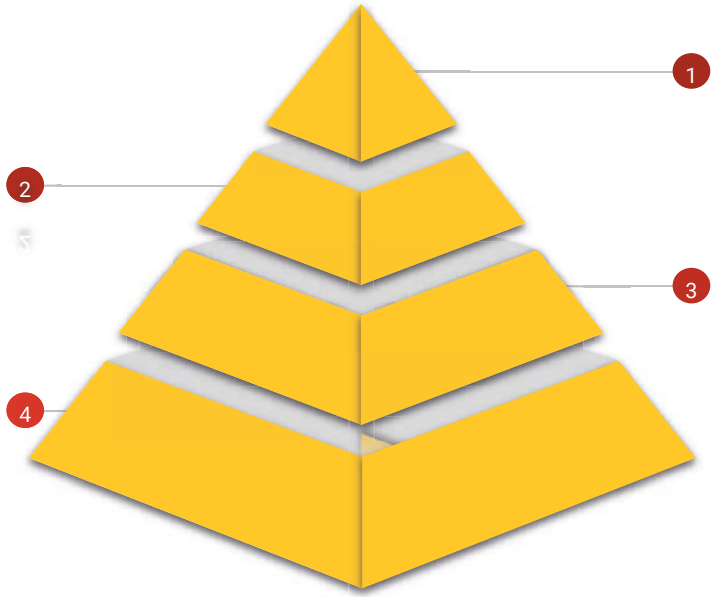
NTS

ZENTRALES MANAGEMENT

Zentrales Management der Fabric über APIC Controller. Von der Hardware bis hin zu den Policies.

MULTI-DOMAIN

Sogenannte pairwise Integration zwischen den Domains SDA, SD-WAN und ACI. Ziel ist eine einheitliche Policy domainübergreifend.



SECURITY

Built-in default Security mit ACI Contracts und Policy Based Redirect.

AUTOMATION

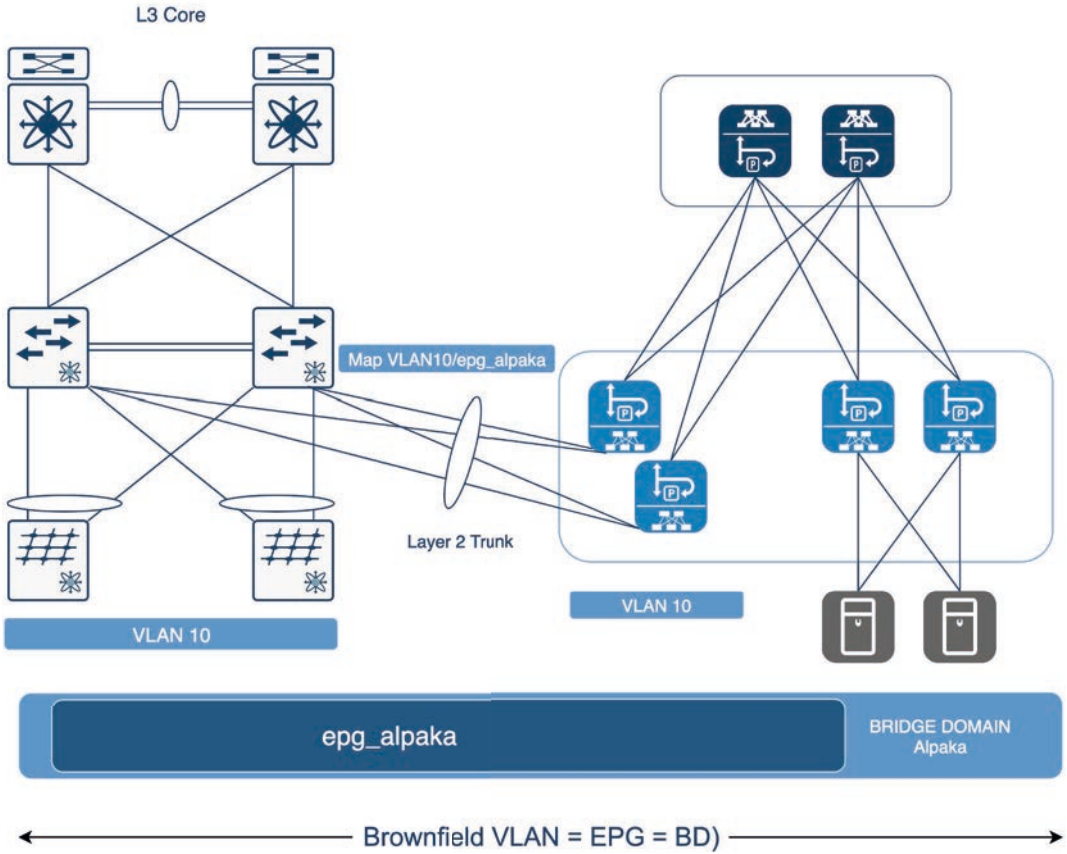
Built-in Automation über APIC Controller. Zusätzliche Möglichkeit der Automation über die ACI API kundenspezifische Use Cases abzubilden.


NTS
ROAD TO
Cisco ACI

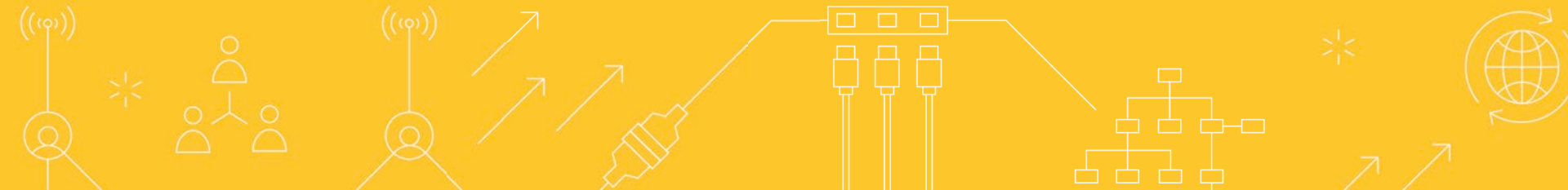
CISCO ACI

NTS

NETWORK CENTRIC



CALL TO ACTION



VIELEN DANK