Software Defined Everything

Wie Software Cisco-Netze verändert

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Das Netzwerk dringt in alle Bereiche vor

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Anwendungen wander in verschiedene Cloud-Services (Multiple Clouds)

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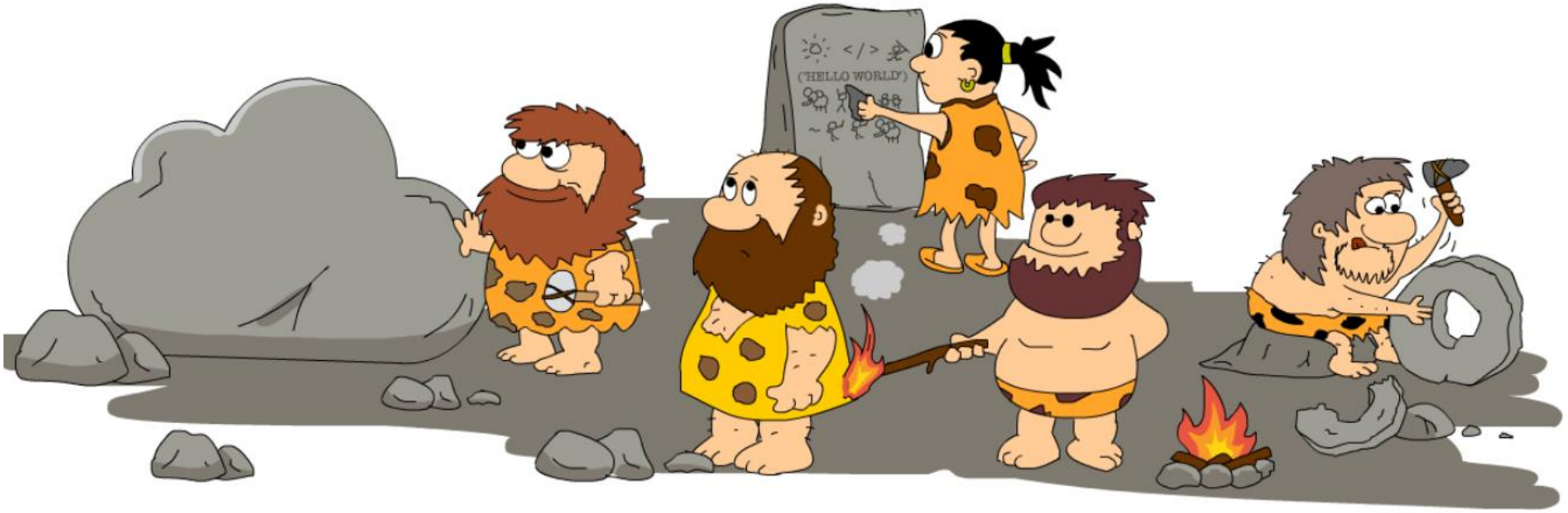
Reise zum Intent-based Networking

The Network. **Intuitive.**
Powered by intent. **Informed by context.**



Networking through the ages...

The OSI Model of Networking…

Please don't ask about this…

L7: Application

L6: Presentation

L5: Session

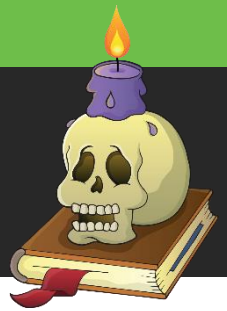
L4: Transport

L3: Network

Oh Yeah… We Got this

L2: Data Link

Black Magic



L1: Physical

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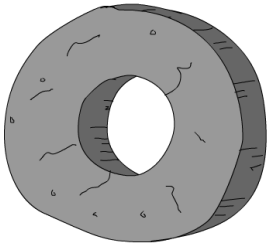

Stone Age

Spanning Tree

VLANs

The Four Ages of Networking…..

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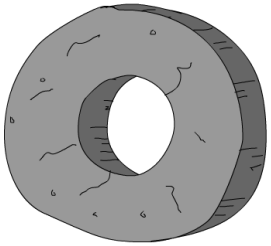

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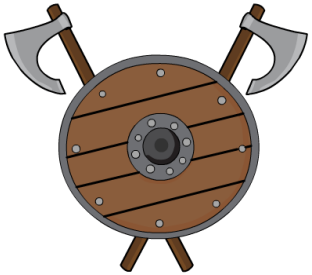

Bronze Age

Routing Protocols

WAN Design

IP-magedon

The Four Ages of Networking…..

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The first step... admitting there is a problem...

Unternehmensnetzwerke sind komplex...

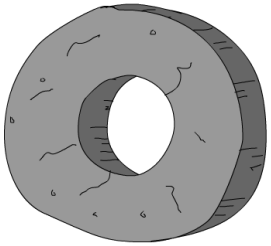
Komplexe VLAN Konstrukte

Zerklüftete Netzwerkbereiche

Richtlinien für LAN, WAN und WLAN sind getrennt

Personalmangel

So what can we do about it?



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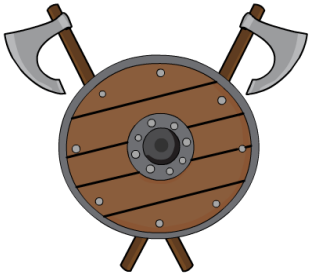

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The Renaissance

SDN

OpenFlow

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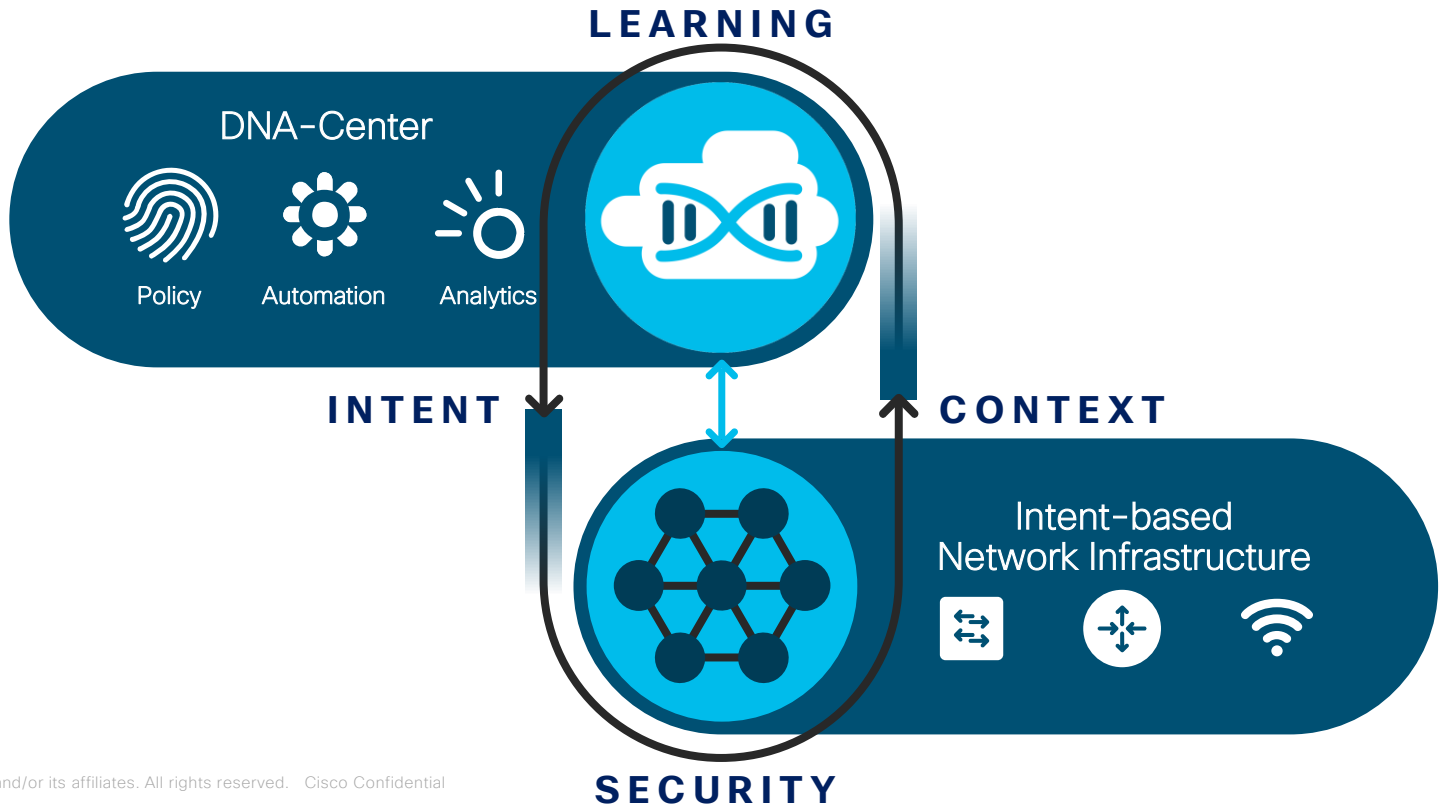

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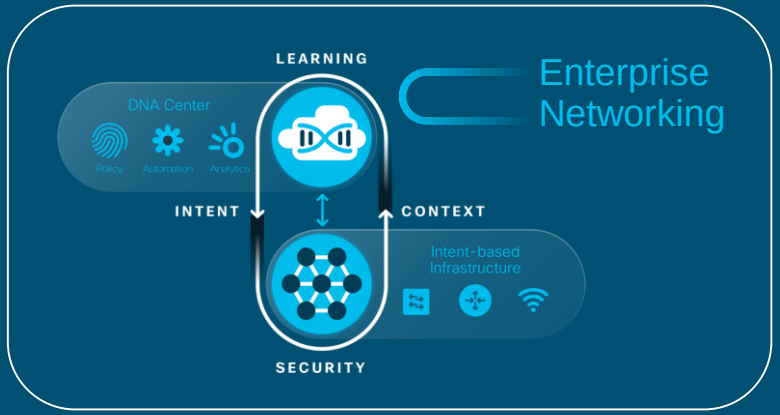

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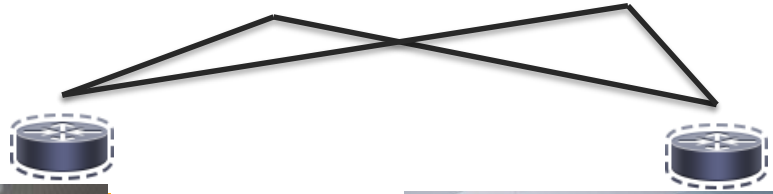
Internet



DNA Center

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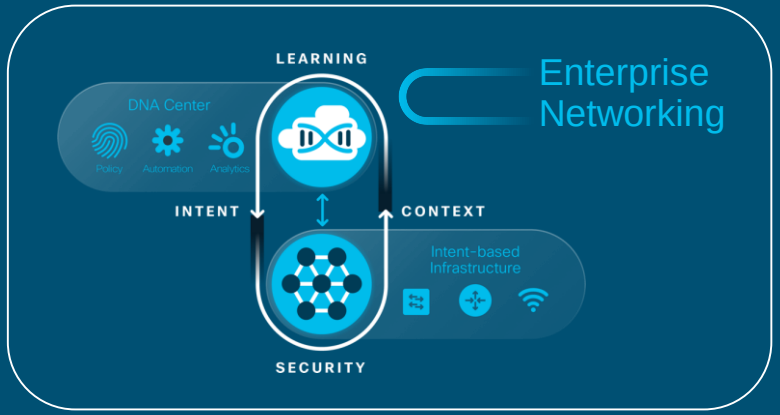

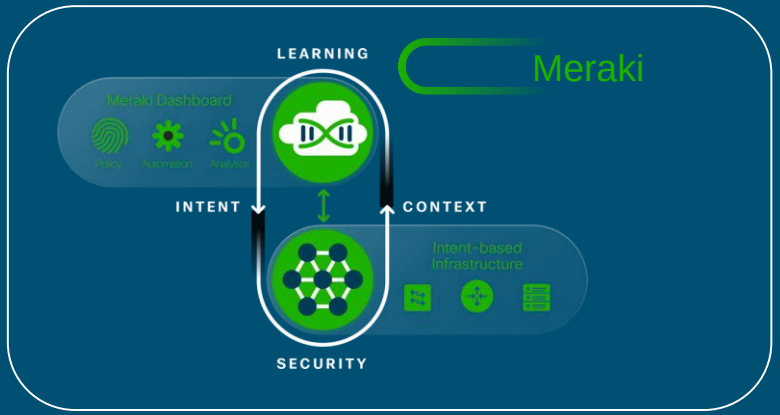

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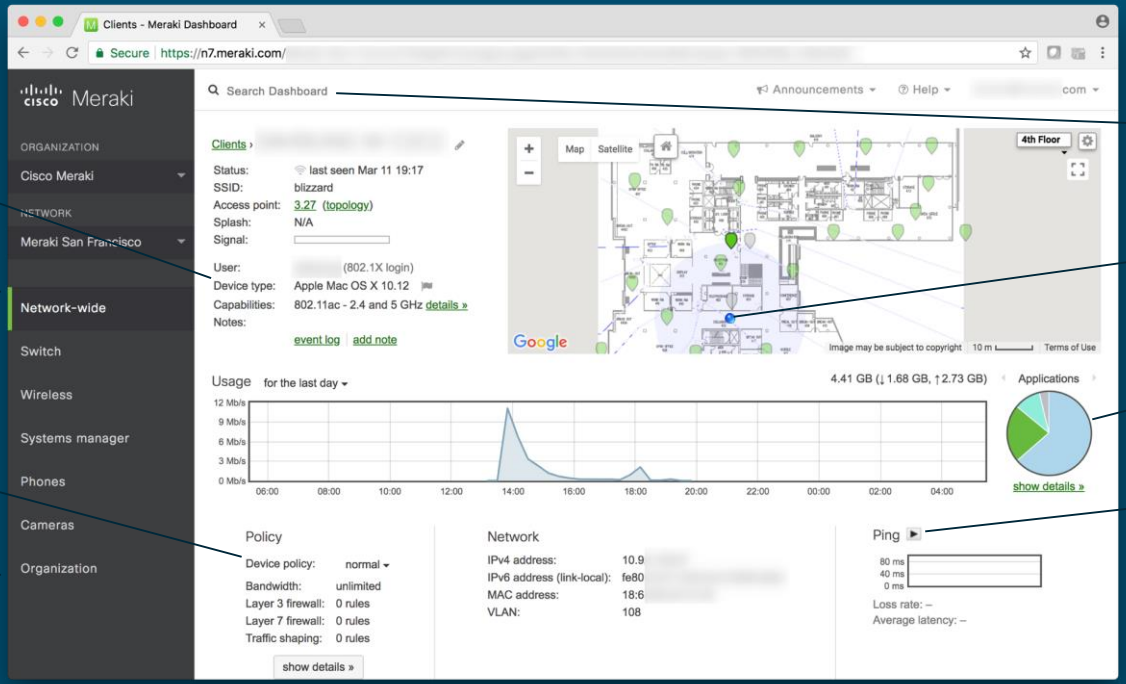
Intuitive Web-Based Dashboard

Client fingerprints

Single pane of glass IT management

Real-time control



Site-wide search

Client location

L7 application visibility

Remote tools

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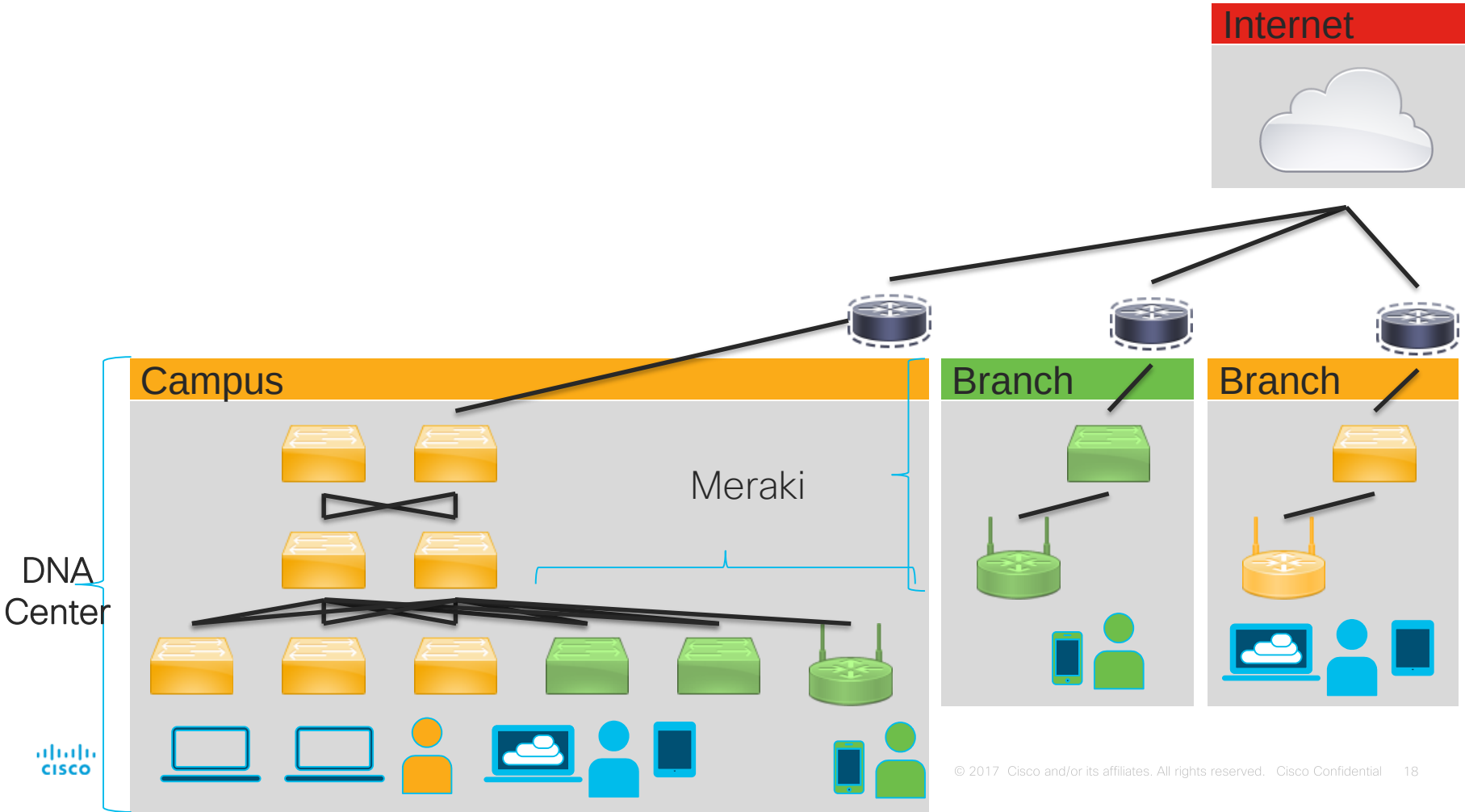

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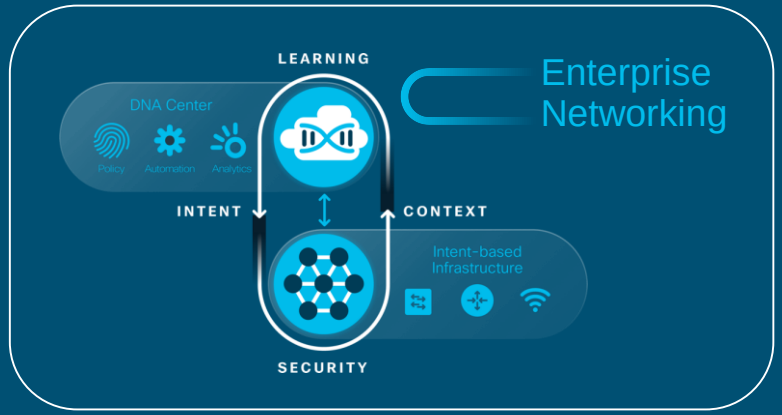

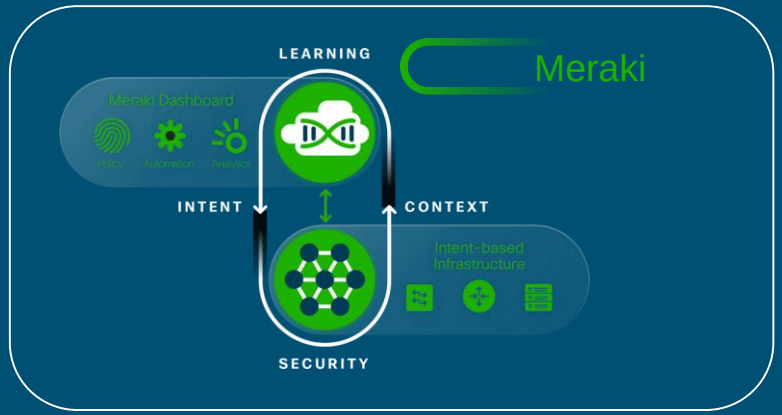

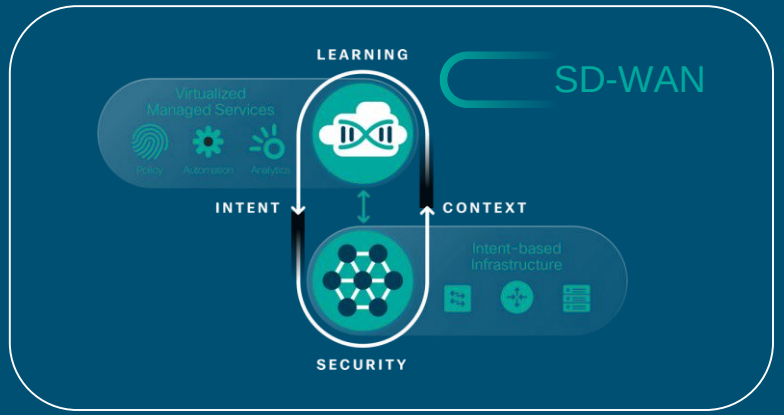

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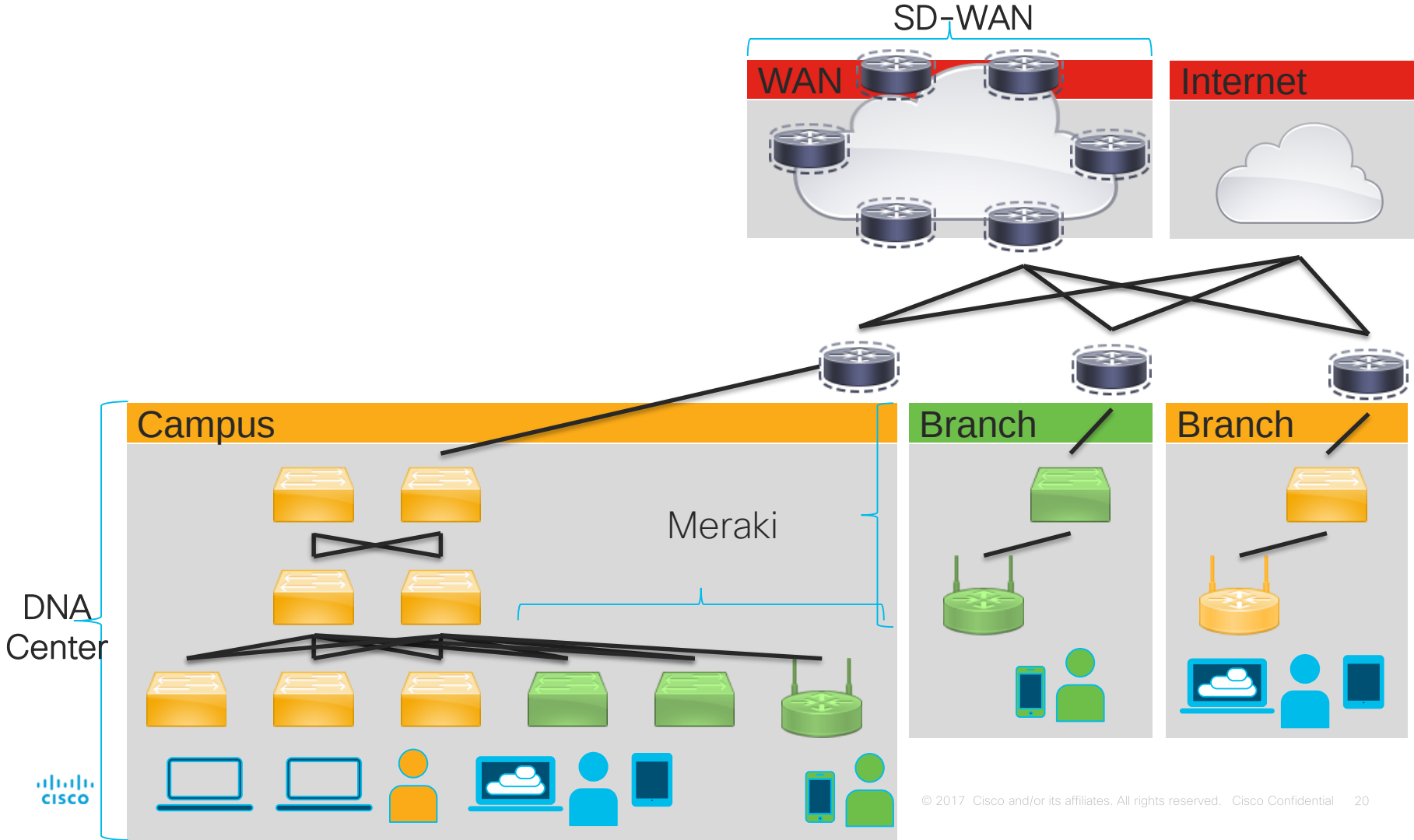

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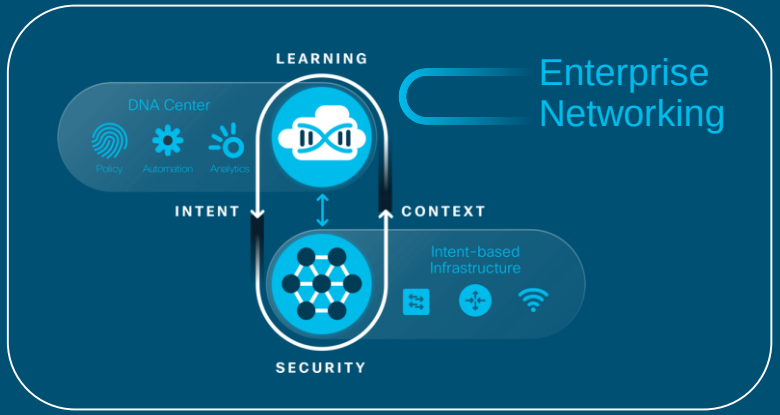

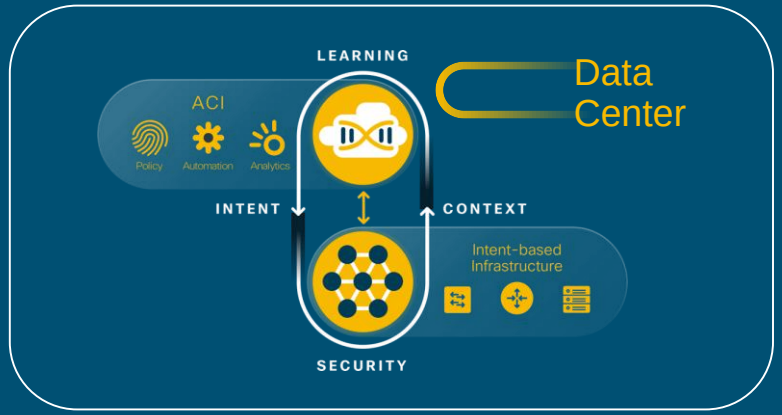

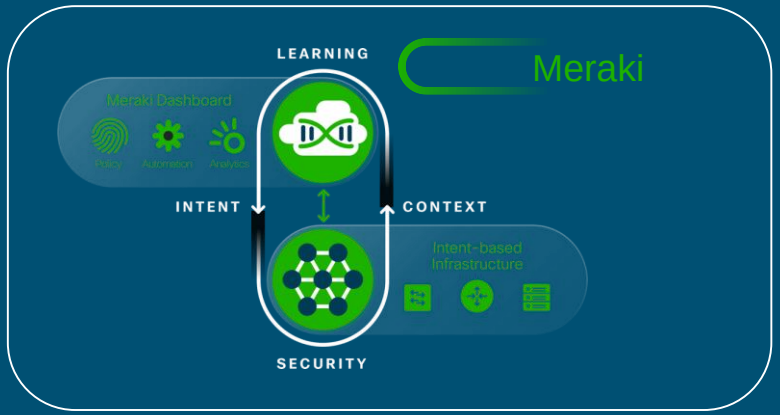

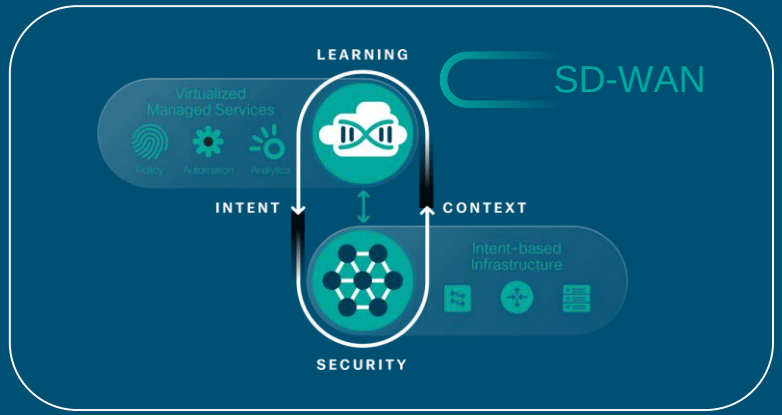

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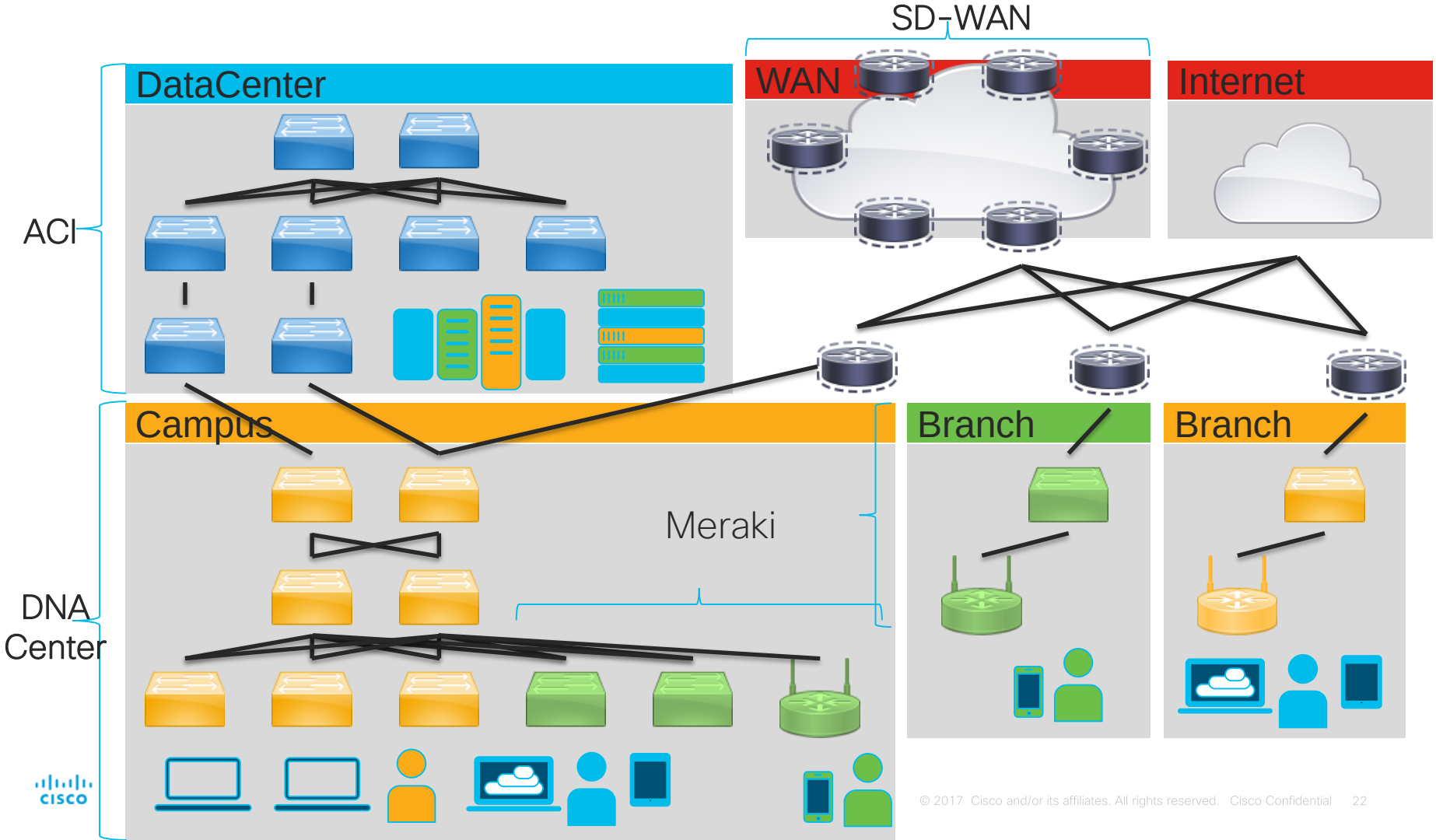

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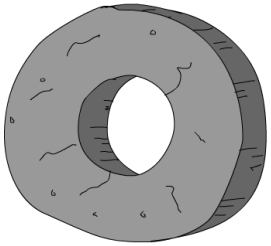
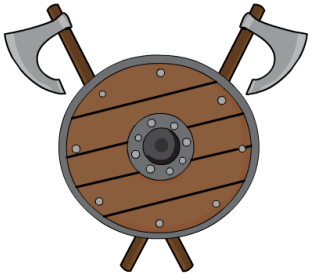
Netzwerkkommunikation – komplexes Ende-zu-Ende Problem



Stone Age

Spanning Tree

VLANs



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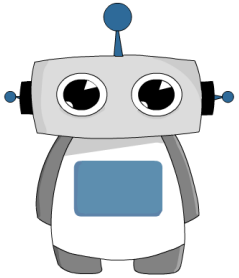

Programmable Age

Cloud

Python

REST / APIs

NETCONF / YANG

“Fabrics”

Network Function Virtualization (NFV)

Containers

DevOps

NetDevOps!

The Four Ages of Networking…..

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Infrastructure as Code… huh?

"**Infrastructure as Code** (IaC) is the process of managing and provisioning computer data centers through machine-readable definition files…"

https://en.wikipedia.org/wiki/Infrastructure_as_Code

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Consider the Network Stakeholders

Network Builders

- Traditional networking teams
- Design, Build, and Maintain the Network
- Responsible for Care and Feeding

Network Consumers

- The users of the network
- Looking to consume network “services”
- The network is a “utility” – It should just work

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But I'm just a router jockey...

Yesterday's Network Engineer

Network Skills

- Spanning-Tree
- Routing Protocols
- QoS
- VPN Design
- VOIP
- Fibre Channel
- Security Policy
- MPLS

Programming Skills

- TCL
- EEM
- Expect Scripts

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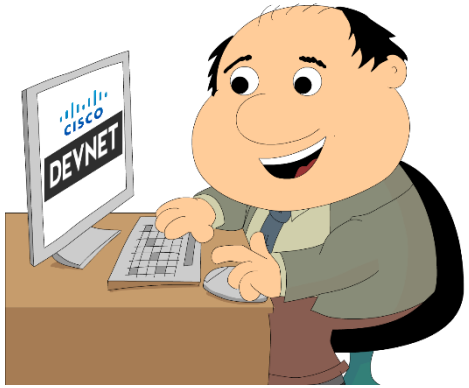
Carl's 3 Step Approach to become a NetDevOps Engineer

Phase 1

- Python
- REST APIs
- JSON/XML
- git/GitHub



Phase 2

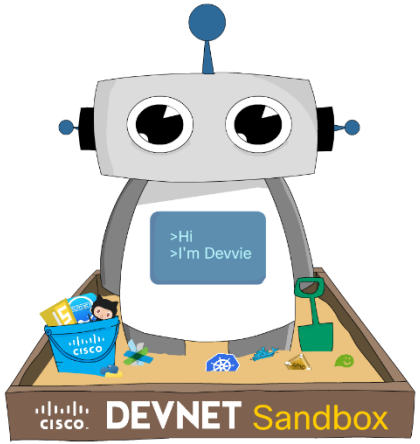
- Linux Skills
- Ansible
- Docker
- NETCONF/YANG

As Needed

- Network Controllers
- IOT Networking
- Cloud Networking
- "DevOps"

Phase 3

- Linux Networking
- Container Networking
- NFV



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