

Data Center Overview - The Road Ahead Infrastructure | Automation | Workloads

Rick Kauffman

HPE Aruba Networking, Technical Enablement Global Technical Marketing Engineer

Before we begin...



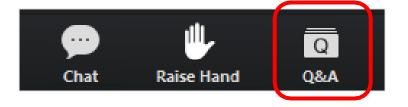
Listen by computer audio or dial-in



All lines are muted during the webinar



 Ask questions by selecting "Q&A" and to report any webinar difficulties





 Webinar is being recorded & will be emailed to all attendees



Partner Technical Webinar Series New HPE Aruba Next-Gen Data Center Solutions

Session 1: Data Center: HPE GreenLake

Monday, March 18th at 9 AM PT / 12 PM ET

Session 2: Data Center: FY24 DCN Overview and Road Ahead

Monday, April 15th at 9 AM PT / 12 PM ET

Session 3: Data Center: Private Cloud Business Addition

Monday, June 5th at 9 AM PT / 12 PM ET

(Click here) to view session recordings for the webinar series

Agenda

- Changing Landscape
- Data Center Architecture
- The whole story
- Distributed Services Switch
- Aruba Fabric Composer
- AMD Policy Services Manager
- HPE GreenLake with Colo

A changing landscape

Co-location providers are designing for 100kw per rack. CPU, GPU, TPU, DPU

Data - 175z

- Storage
- BURA
- Data Lake / Lake House?

To cloud or not to cloud/Hybrid

Security

Artificial Intellegence

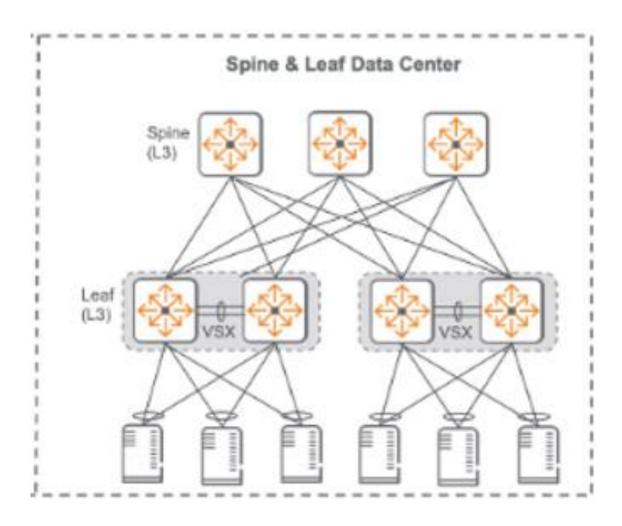
All of this means the network is now more important than ever!



Data Center Network Architecture

Transform The Network - Underlay Network

The spine/leaf rules the day!

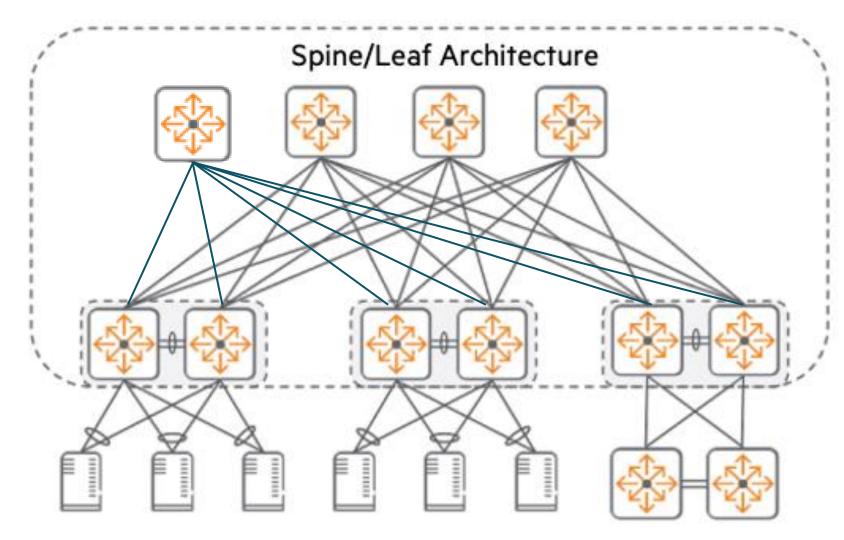




Not the end of the world if I lose one or two along the way

The Spine Leaf

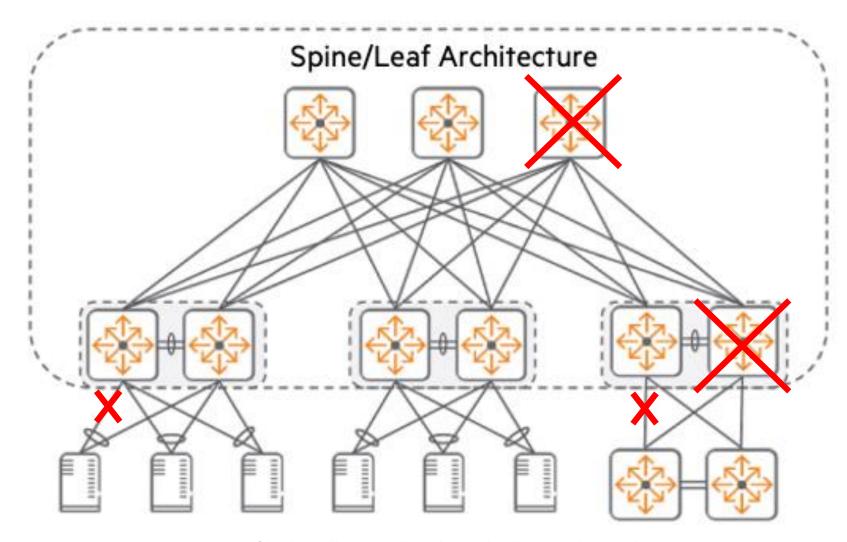
Scalable Network Architecture



Lots of links, all routed with under lay and over lay.

The Spine Leaf

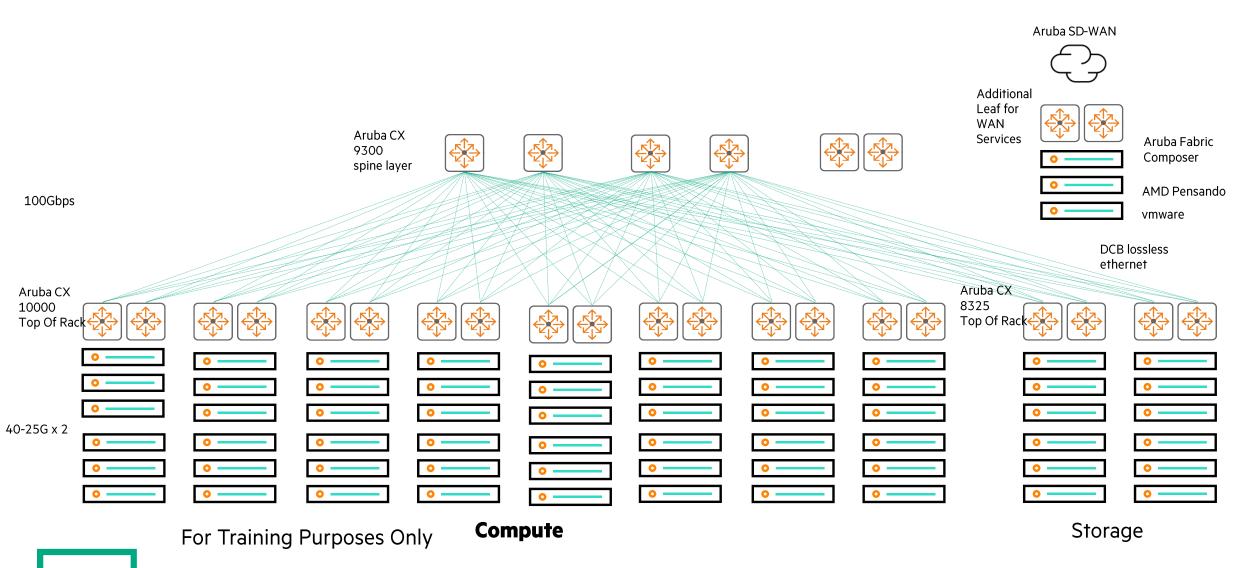
Scalable Network Architecture



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The First Challenge!

ISCSI (ethernet) attached HPE DL360 servers for the Software defined storage



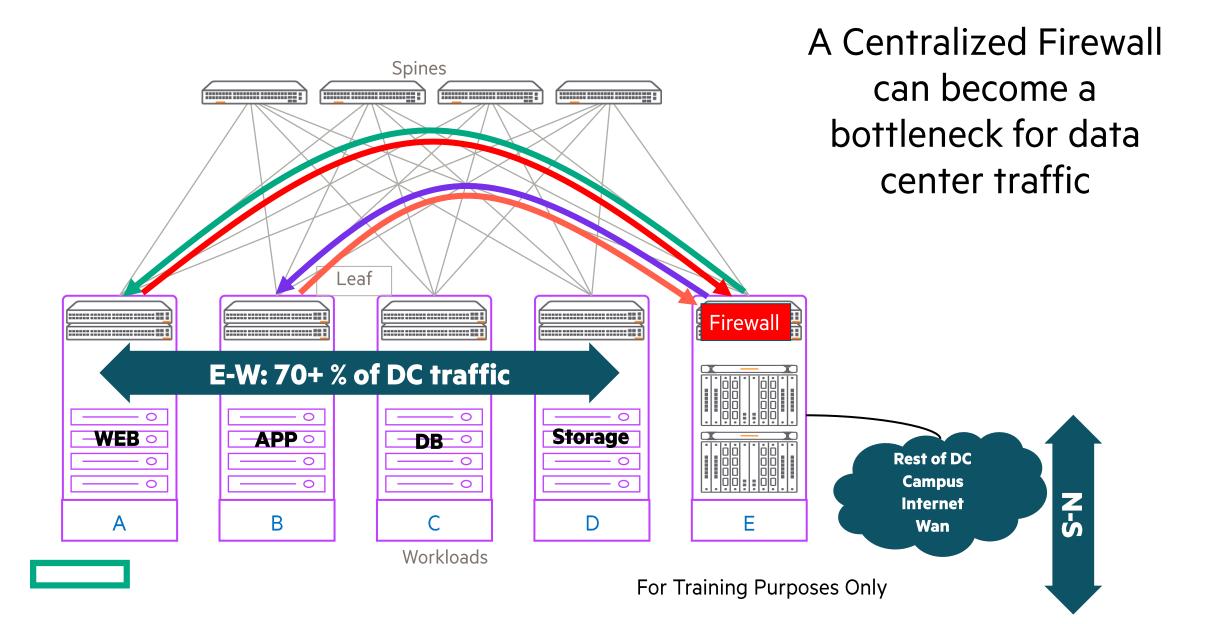
Requirements, 40 1U servers in each rack, 25G. 8 racks compute, 2 racks storage. Automated.

East / West traffic

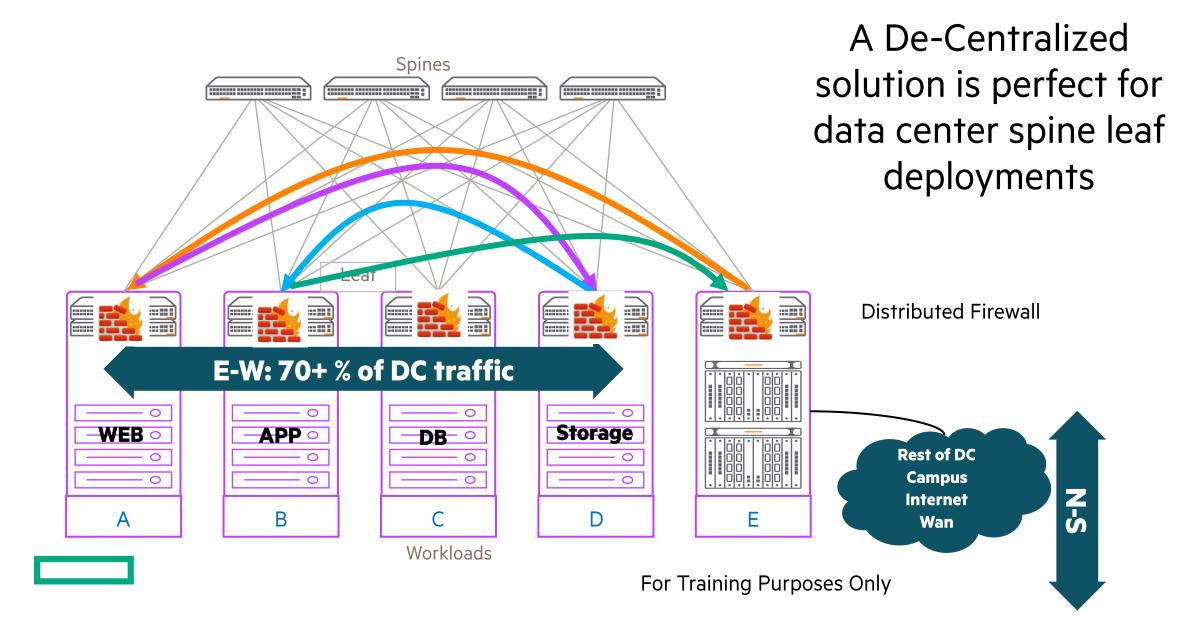
Spines **WEB** 3 –Tier applications **APP** DB Leaf How Do We ----------**Deploy Security?** E-W: 70+ % of DC traffic Storage **WEB** \circ **APP** \circ DB- o **Rest of DC Campus** 0 0 0 N-S Internet В Wan Workloads For Training Purposes Only

A New way to build applications!

Centralized Firewall

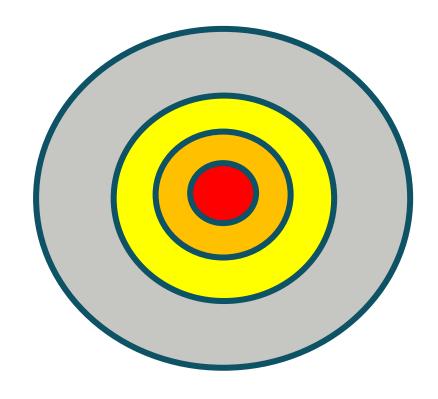


Distributed Firewall



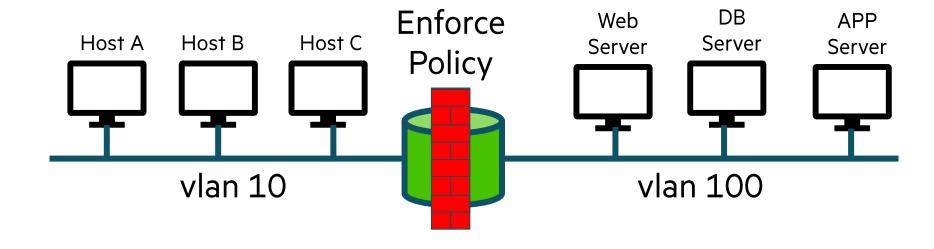
Question?

What's Your Blast Radius?



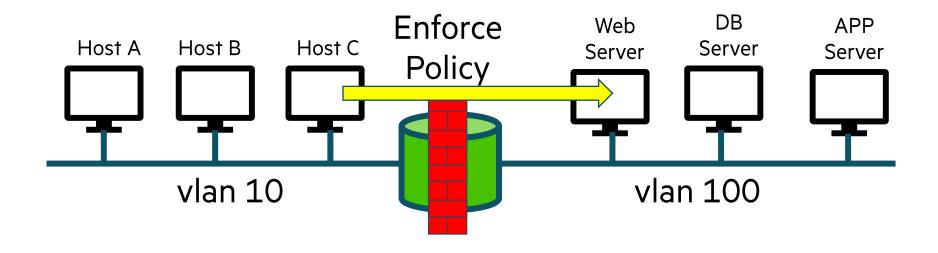


Access Control Lists



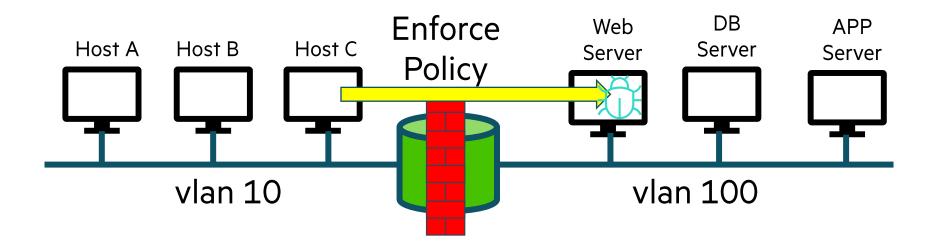
Access Control Lists – Macrosegmentation

Rule
Host C is permitted to Web Server



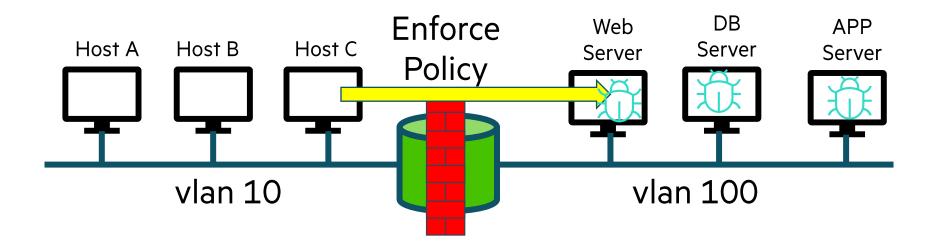
Access Control Lists

Rule Host C is permitted to Web Server



Access Control Lists

Rule Host C is permitted to Web Server



Private vlan

- isolated vlan
- primary/promiscuous vlan

Isolated traffic can only be forwarded out the primary vlan

Traffic flows from isolated to primary and then to the DPU**Vsphere:**

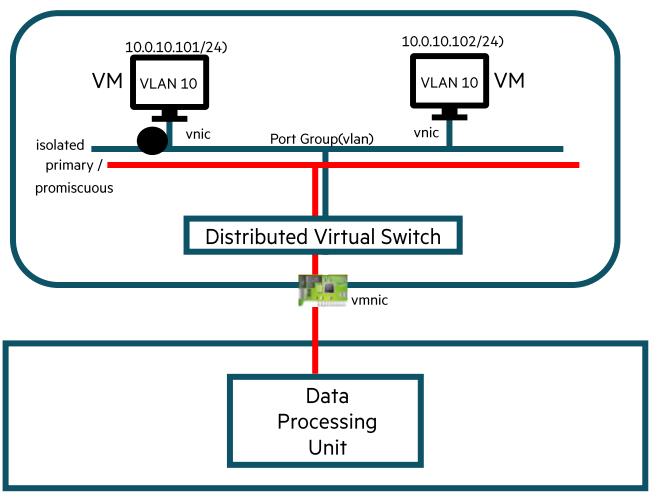
Create DVS

Attach vm's to isolated vlan

Switch:

Configure pylan
Create svi's for routing

Need to create policy to drive traffic to the DPU



HPE Aruba Networking CX10000

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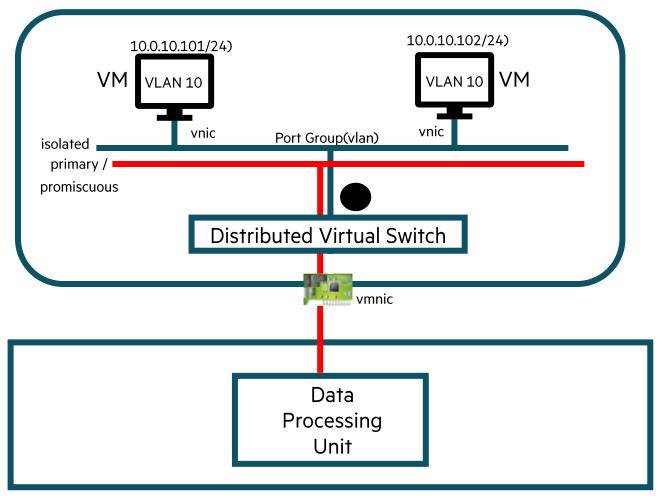
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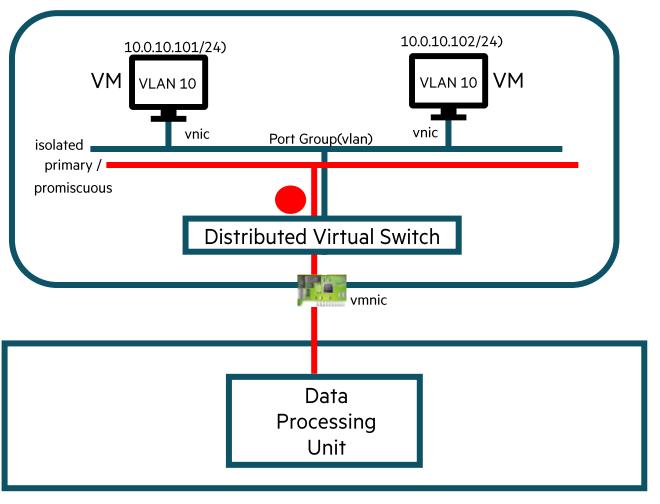
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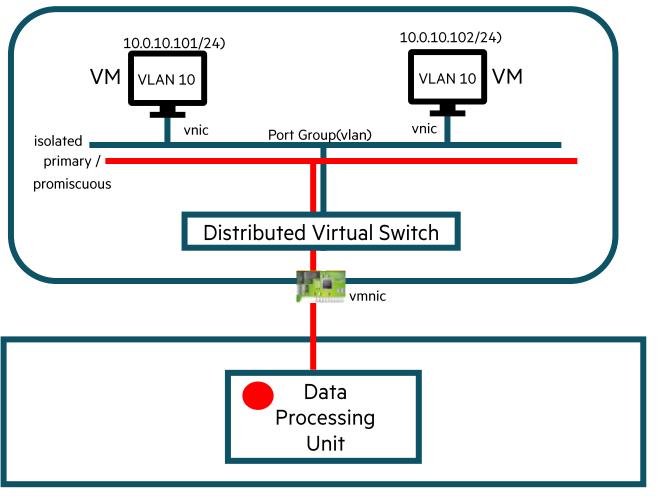
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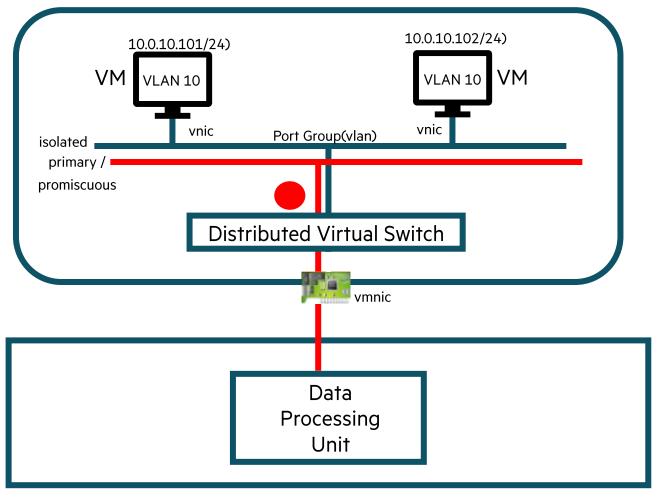
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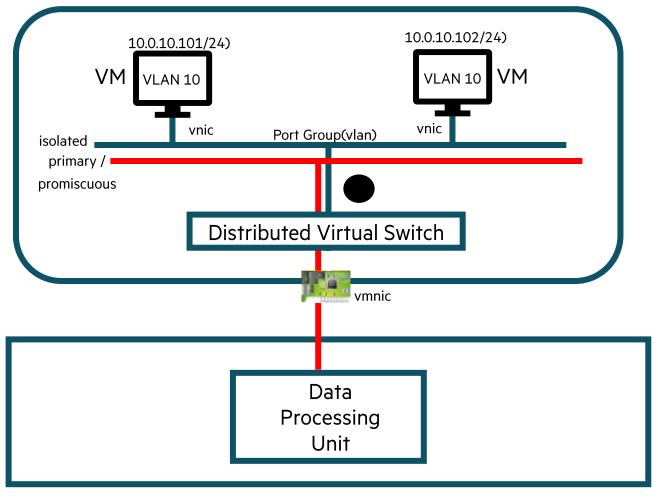
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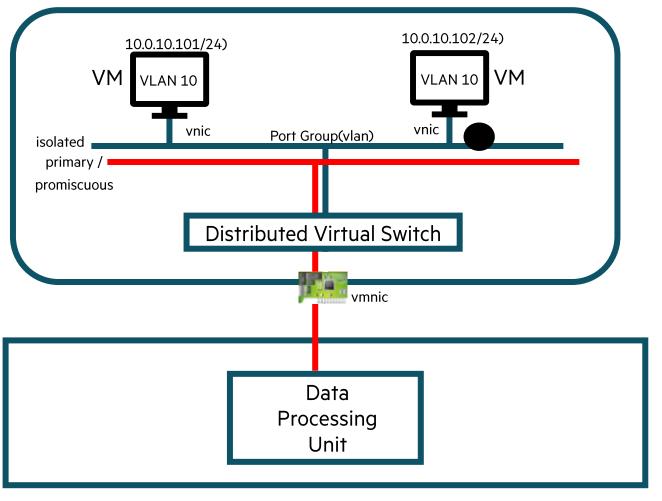
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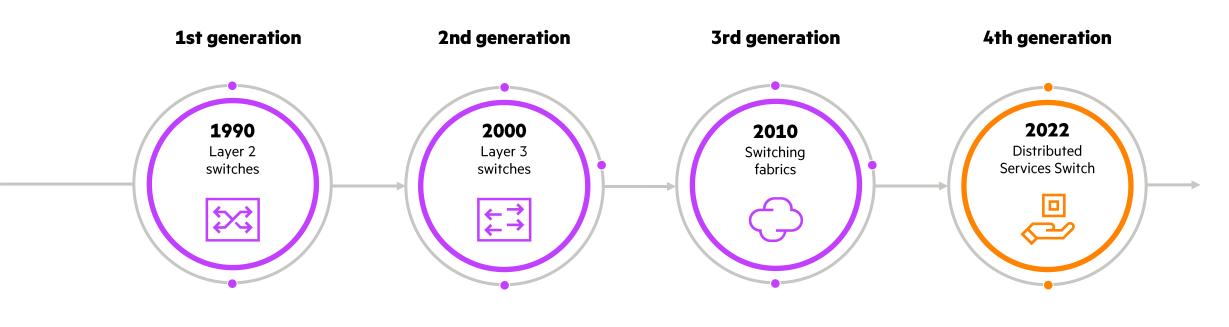
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HPE Aruba Networking CX10000

Distributed Services Switch

Network architecture evolution



Flat networks, spanning tree, protocol agnostic

IP becomes the dominant protocol
L3 switching in hardware
3-tier Core-distribution-access designs
Mostly north/south traffic

Explosion of E/W traffic Spine-leaf underlay / overlay L2 extension and segmentation using VXLAN/VTEPs

Security is hardware appliance or software-agent based

Spine-leaf underlay/overlay

Rich collection of wire rate stateful services No scalability limitations

Security services embedded at the TOR, delivered inline on every port



Aruba CX10K

Distributed Services Switch



Full Network functionality, plus 800G embedded Stateful Services



Firewall



DDOS



Visibility/ Telemetry

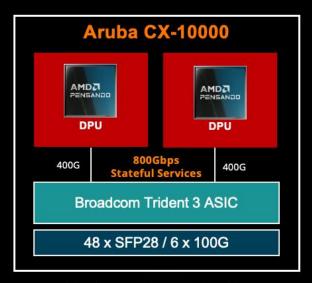


Encryption



NAT



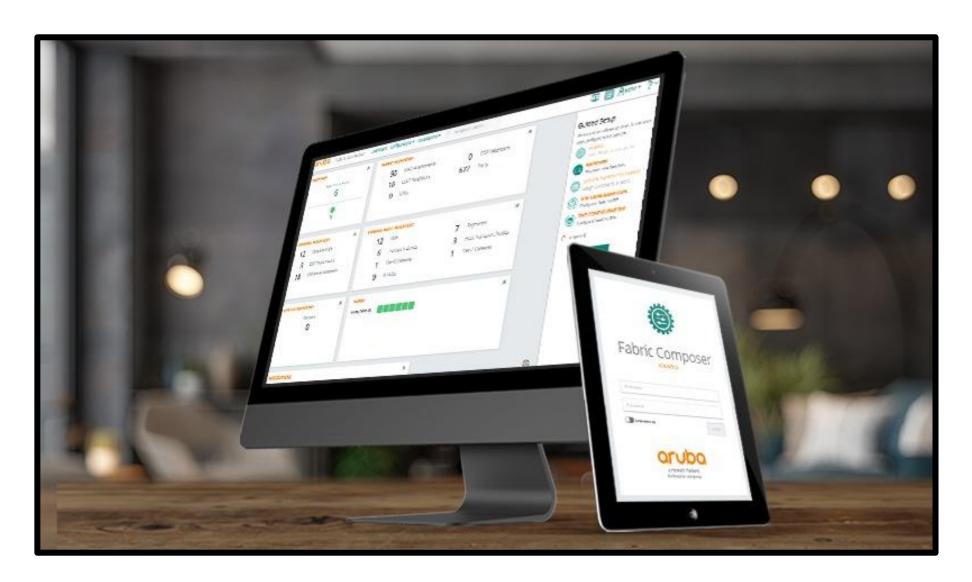


Unified services platform
Broadcom T3 and AMD/Pensando DPU

HPE Aruba Networking Fabric Composer

Aruba Fabric Composer

- Automatic VLAN Provisioning
- Fabric Deployment
- Fabric Automation
- Single API
- Security Policy PSM
- Micro-segmentation



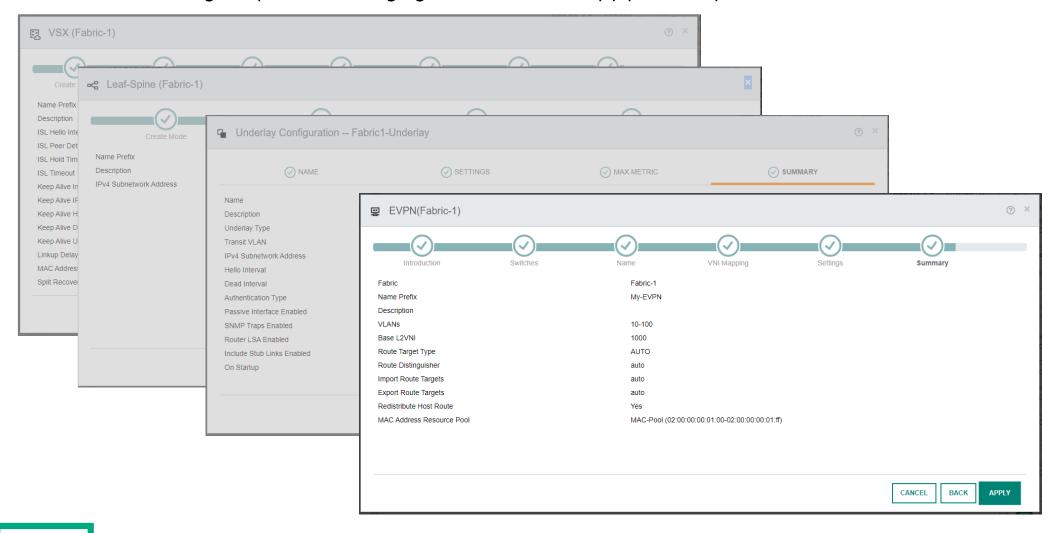


Fabric Workflows for Easy Intent-based Deployments



Automate thousands of CLI commands, deploy in minutes, using best-practices, and error free.

Not ZTP... No config templates, no merging of variables, no copy/past, no spreadsheets...

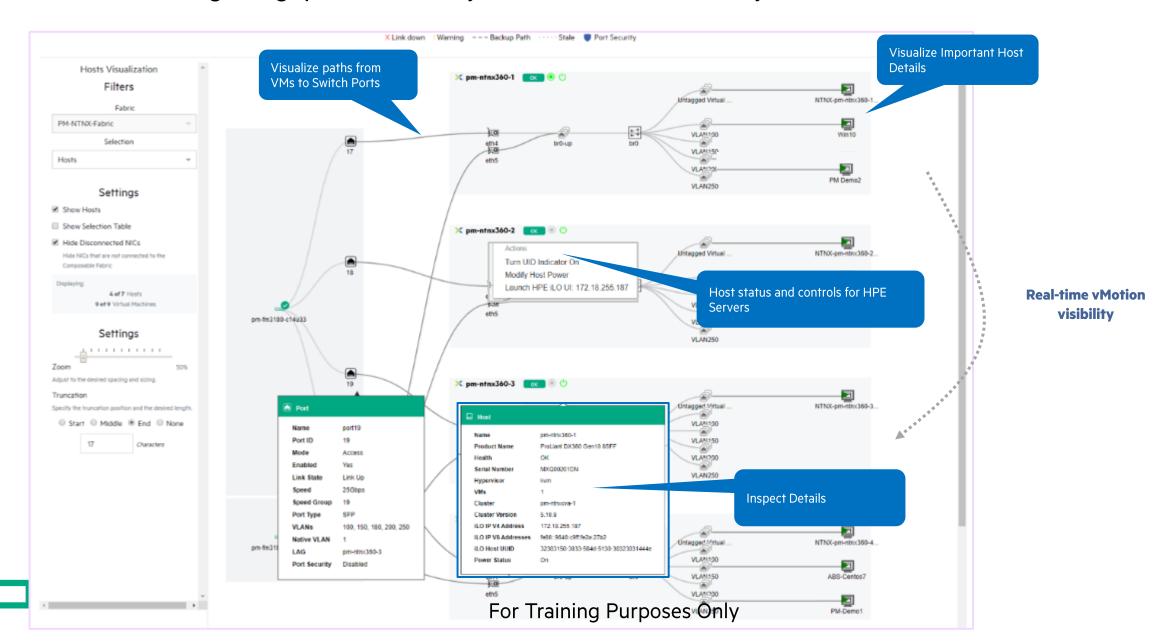




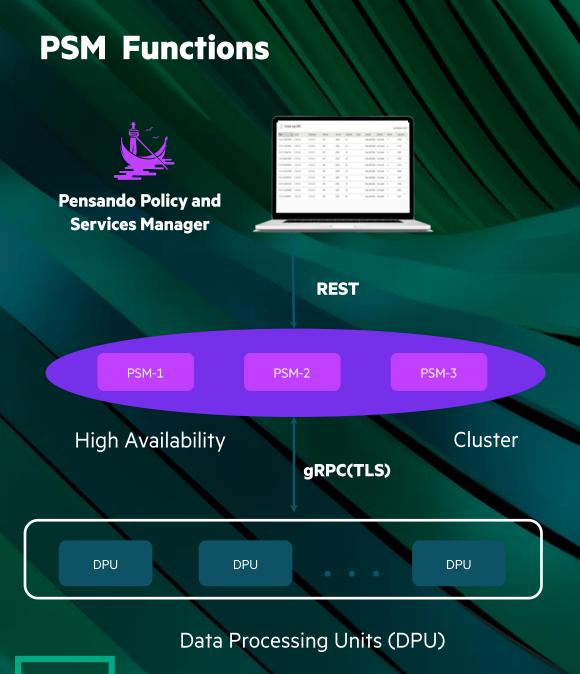
End to End Automation and Visibility

Closing the gap between Physical and Virtual visibility









Management and Security

High Availability, Certificate Management, TLS Communication,
Authn/Authz

Policy & Configuration

Declarative Intent, Distribution, Status Reporting

Configuration Backup, Restore

Observability and Analytics

Health Monitoring, Metrics Aggregation
Flow Logs, Object Relationships, Impact analysis

Operations

Events, Alerts, Troubleshooting, Search, Configuration Lookup, API Watchers



Better Together

Not all data center fabrics are the same. They vary wildly in size and capabilities. They do have one thing in common, they are heavily automated. Tell the complete story, a fully automated, programmable, scalable network that has an awareness of workloads

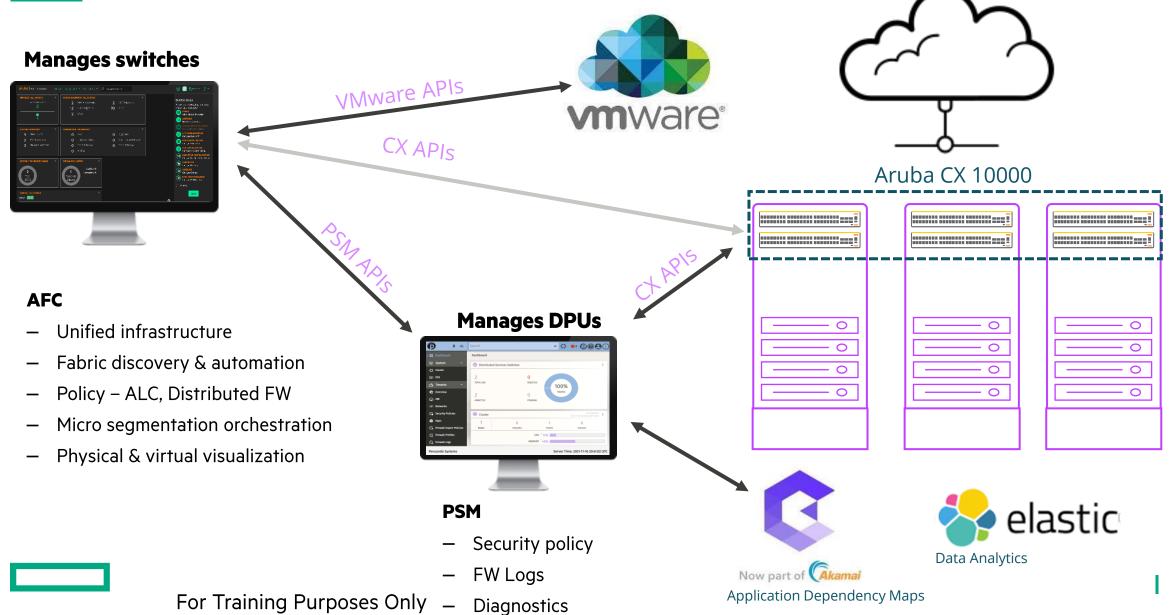
Third Party AFC **INTEGRATIONS**

HPE Aruba Networking Data Center Solution

AUTOMATION

CX10K

Unified Services & Security Policy



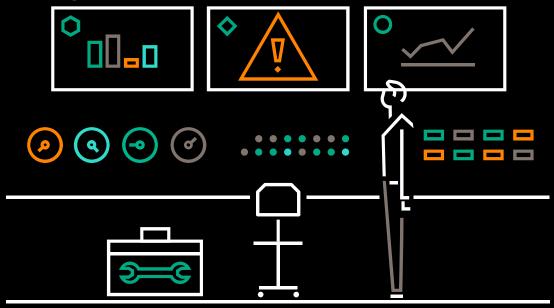
HPE GreenLake with COLO

Optimize the infrastructure

If you are moving your infrastructure "as is" you could be wasting a lot of valuable resources.

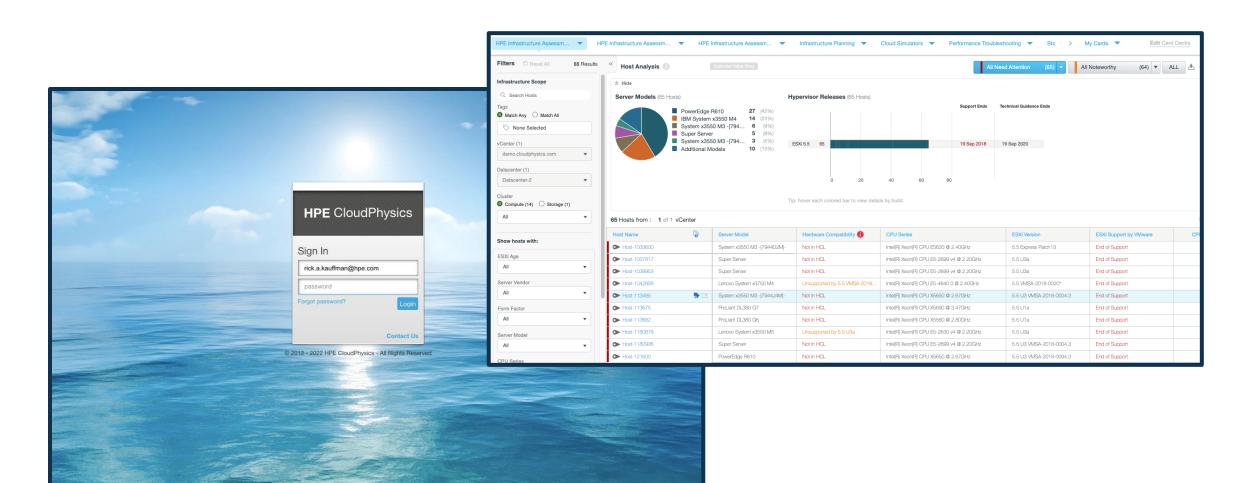
- Right Sized vCPUs/memory/storage
- Current operating systems
- Compatible Hardware

Right sizing resources can result in a great sustainability story...use it!





HPE Cloud Physics



Transform your business, strategically

In March 2022, the SEC proposed a rule – <u>The Enhancement and Standardization of Climate-Related Disclosures for Investors</u> – that would require U.S. publicly traded companies to disclose annually how their businesses are assessing, measuring and managing climate-related financial risks.

55%

of enterprises will replace outdated operational models with cloud-centric models by 2023¹ **75**%

of organizations will implement a data center infrastructure sustainability program by 2027² 35%

decline in enterprise-owned data center capacity by 2027, due to migration to XaaS-based applications²

Only **60%**

of data center infrastructure teams will have **relevant automation and cloud skills** by 2026²

35%

of data center infrastructure will be managed through a cloud-based control plane by 2027²

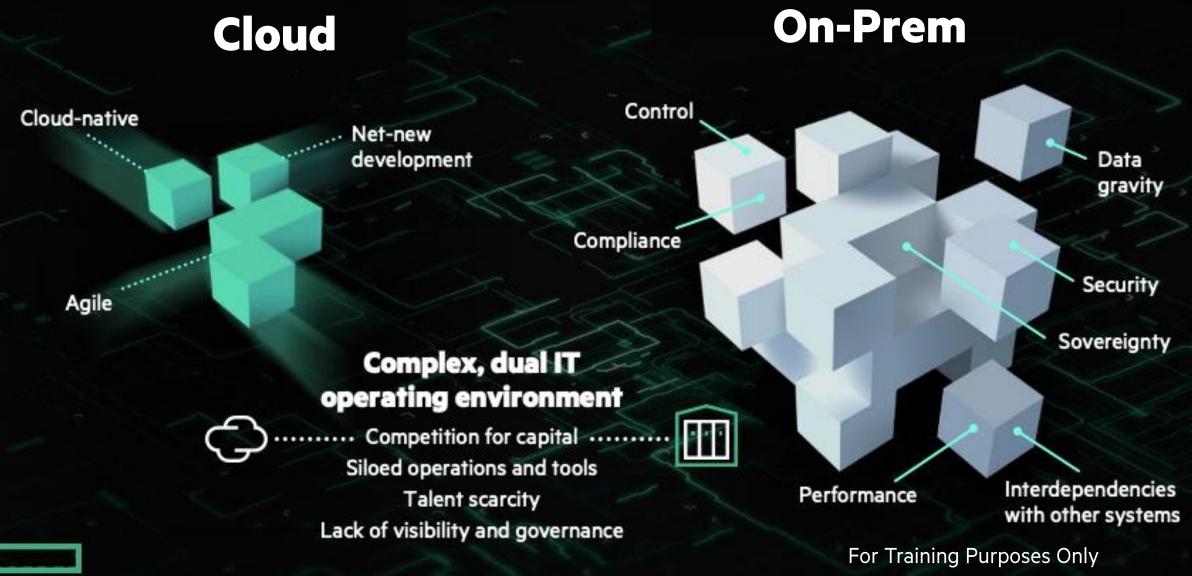
HPE has a proven approach to develop a customized transformation strategy and operating model for our clients.

¹ IDC: FutureScape: Worldwide Cloud 2021 Predictions

² Gartner: Predicts 2023: XaaS Is Transforming Data Center Infrastructure

Why colocation?

Hybrid Cloud



HPE GreenLake the 4th cloud

Public

Amazon

Google

Azure

Private



Cloud Adjacent

The cloud that comes to you

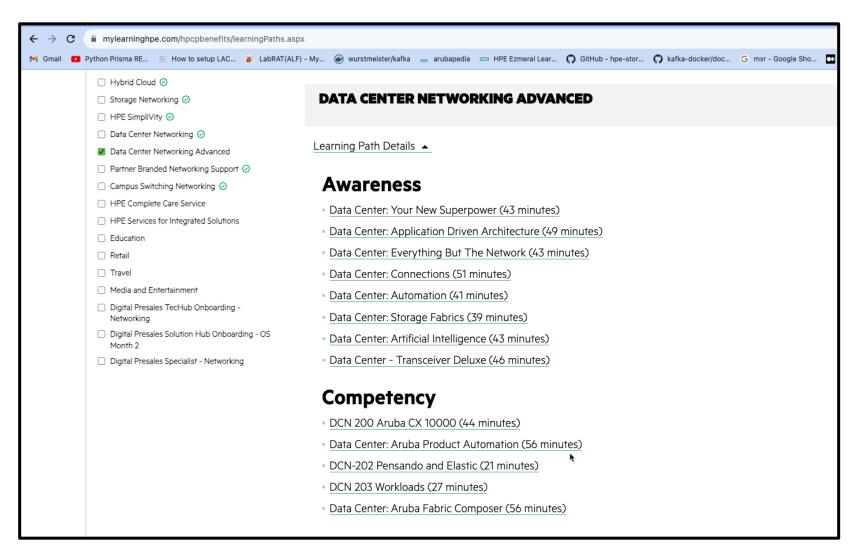
HPE GreenLake Cloud Services, including ML Ops, containers, data protection, VMs, compute and storage

Aruba Data Center Advanced Learning Path

Learning Path Sessions

HPE Tech Pro

techpro.hpe.com



Learning Path Sessions – Proposed additions

400: The Data Center Point of View

Compute, Storage, and HPE Aruba Networking

This session looks at how HPE Compute, Storage, and Networking technologies integrate. A detailed explanation of what networking architectures and solutions can be deployed in support of data center will be a key discussion. Included will be a live demonstration of HPE Greenlake Central, Distributed Services Cloud Console, and Compute Ops Management, showcasing how they can be used for centralized management.

401: Troubleshooting the network pipeline

HPE Aruba Networking's data center solution is made up of several different software applications that are connected to one another. Connected in a software pipeline, so to speak. This session will explore the relationship of the HPE Aruba Fabric Composer and its third-party integrations. It will also include a focus on how to troubleshoot the connectivity between systems and expected settings.

402: Customer data center designs

This session will review HPE Aruba Networking data center network designs and how customers can deploy them. From one data center to the next, requirements for data center designs can be extremely different. Workloads and applications will vary wildly. In this session, attendees will gain awareness in designing HPE Aruba Networking data center networks in support of customer requirements.

403: Deep Dive Rest Automation with the AFC

This session will be a deep dive into automating with the HPE Aruba Fabric Composer RESTful API's. This session will review how to develop a python, flask, and mongodb application that runs in docker containers. The flask app.py file will be created, and each line discussed in detail. Attendees will become knowledgeable in building python-based workflows leveraging the pyafc python binding.



Hands On Workshops

Data Center Networking - Microsegmentation with AFC & CX 10K The Distributed

Services Architecture for data center fabrics provides stateful firewall, DDoS protection, deep visibility, and other network services at the top of rack switch. This solution includes the CX 10000 Switch, Aruba Fabric Composer (AFC), and AMD Pensando Policy and Services Manager (PSM).

3 Hours 23.21

PDF

Data Center

Data Center Networking - Spine/Leaf with AFC & CX 10K The Distributed Services

Architecture is well suited for seamless integration of the spine/leaf topology. The AFC includes guided workflows that walk through the day 1 configuration requirements. In this workshop the attendees will deploy the underlay network, the overlay network and dynamic endpoint groups (EPG). Policies will be created to regulate traffic between the endpoint groups in conjunction with the AMD Pensando PSM and the Data Processing Units (DPU) on the CX 10K.

3 Hours 23.33



Data Center

Proposed Data Center Workshops

HOL TE4.203 Deep Dive Telemetry with PSM and the ELK stack - HOL

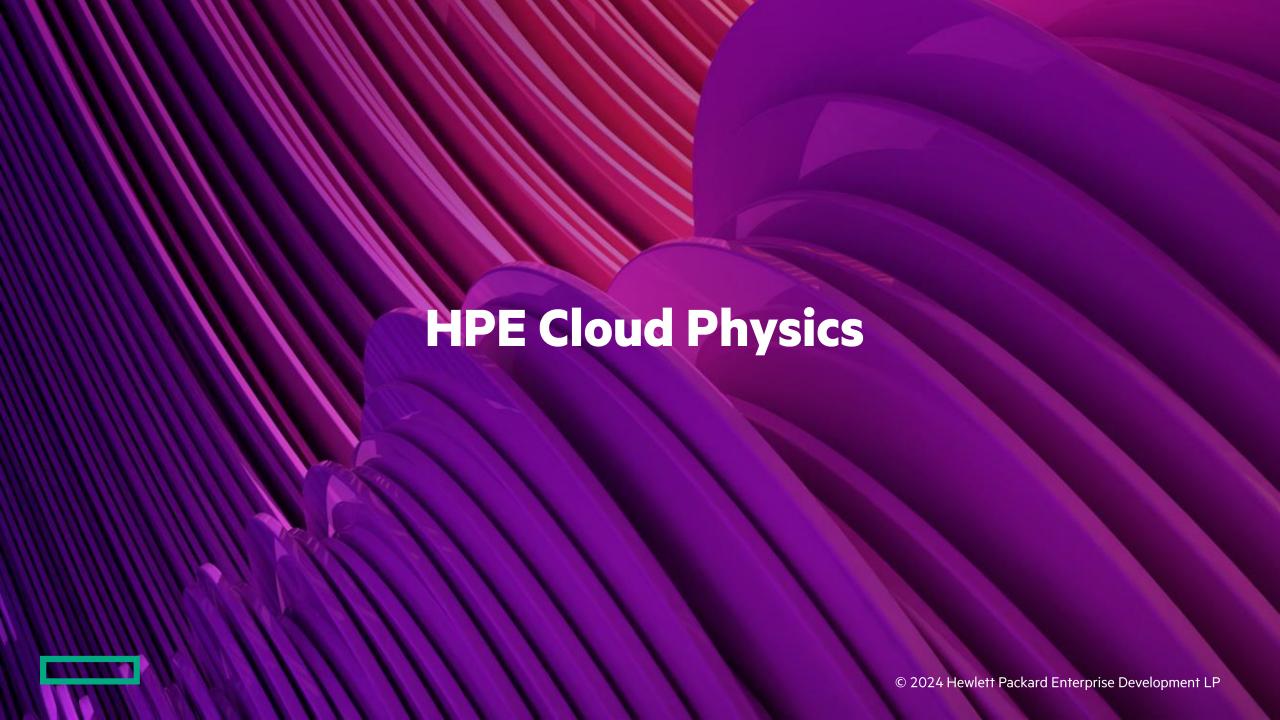
This workshop will guide attendees through the configuration necessary to flow AOS-CX switch information to the AMD Pensando Policy Services Manager, and then into the ELK stack for reporting HPE Aruba Networking CX10000 switch telemetry. Attendees will visualize the switch telemetry in Kibana, an open-source application used for observability.

HOL TE4.204 Deep Dive Automation with AFC - HOL

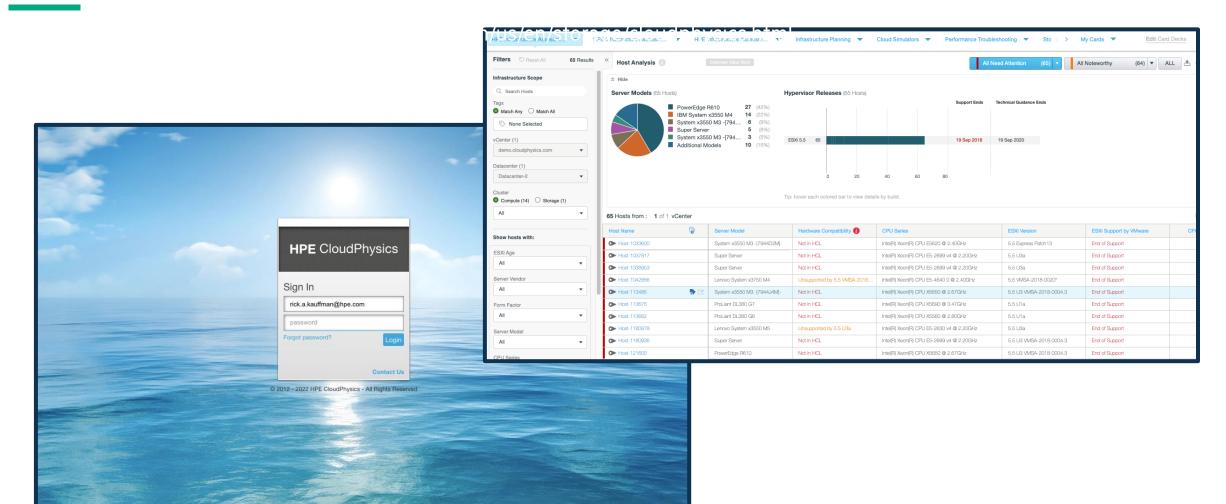
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HOL TE4.205 Deep Dive NAT and IPSec with AFC/PSM - HOL

This workshop will demonstrate how to use a pair of VSX AOS-CX 10K switches and deploy them as a border leaf in support of Network Address Translation and IPsec connections. This is only possible because of the Data Processing Units (DPU) integrated into the CX-10K switch hardware are programmable. This workshop will focus on how to get data communications working between two remote data centers.



HPE Cloud Physics



Cloud Physics Demo

Questions



Reach out to your local Channel SE!

Or

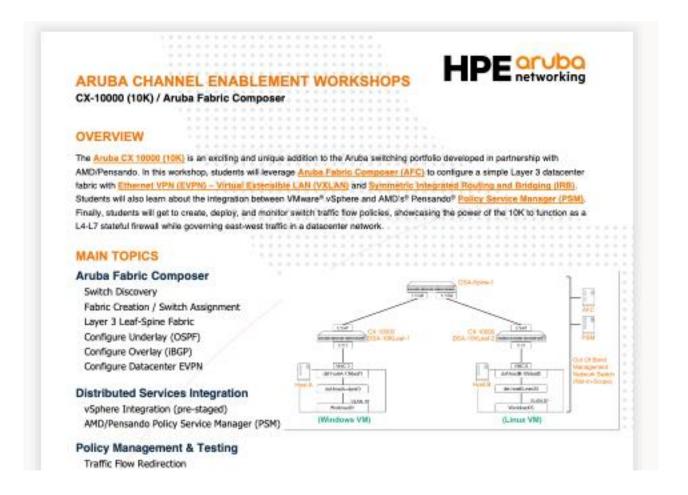
Douglas DiNunzio

Director, Channel Engineering

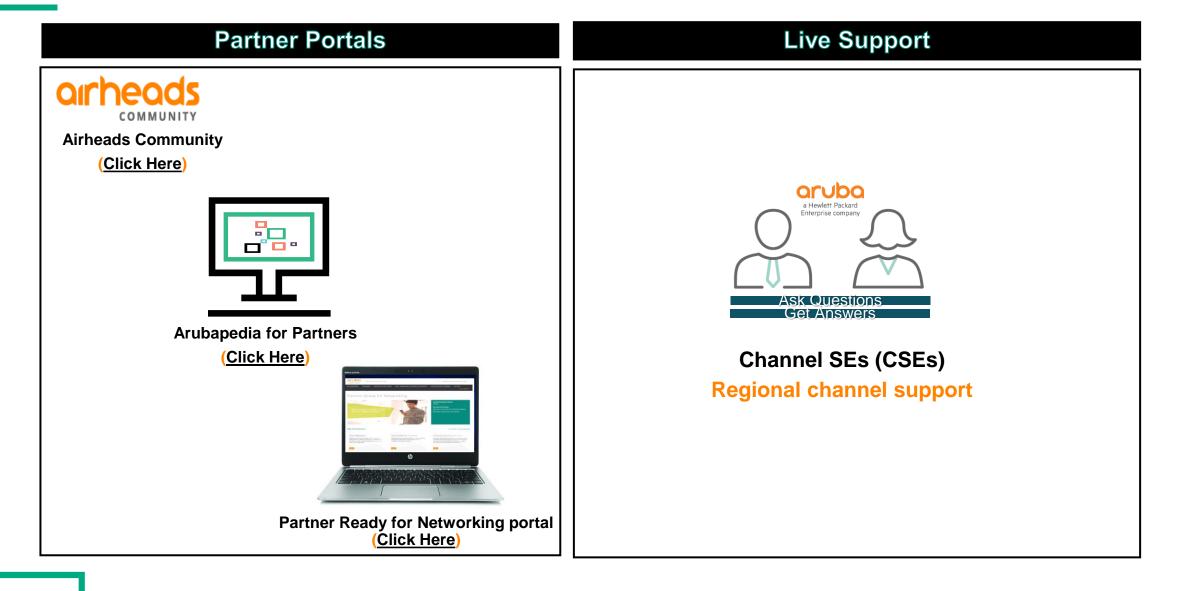
HPE Aruba Networking

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Partner Resources



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Thank you.

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GreenLake.com for more information on the Cloud that comes to YOU!

Guided Tour of GL PCE @ hpe.com/greenlake/demos