



Cloud Backbone

HYBRID CONNECTIVITY

Joe and Rizwan

AGENDA

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AVIATRIX OVERVIEW

Intro

Multicloud Network Architecture

02

CLOUD BACKBONE

03

EDGE

Extend Cloud to the edge

Equinix Edge

04

ENTERPRISE ARCHITECTURES

05

DEMO & LAB

Enterprise Architectures



Enterprise Architecture 1

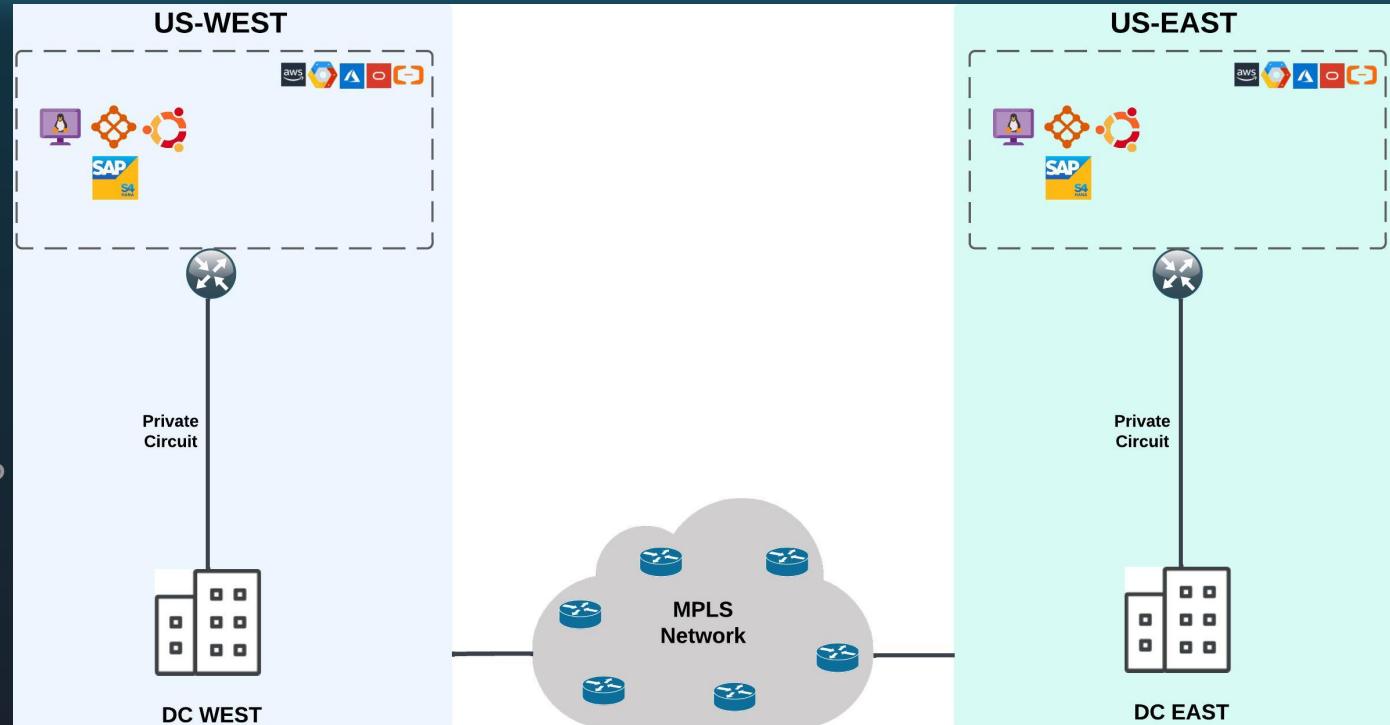
Region to Region



Architecture 1 – Region-to-Region Communication

Suboptimal and Complex Architecture

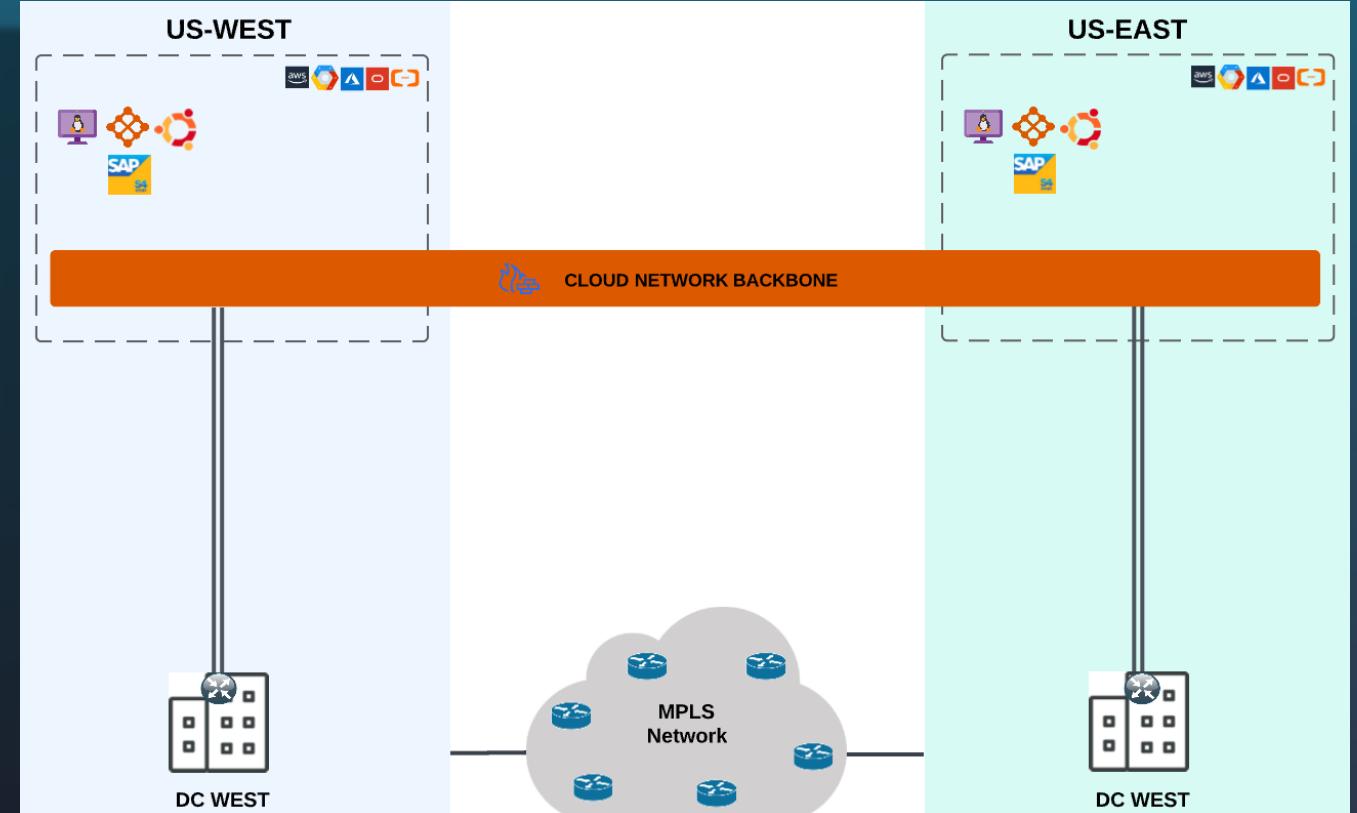
- Inter-region applications experience significant latency
- L7 Service Inspection
- Organizational Boundaries Dependence
 - Network team responsible for the hybrid connectivity (on-ramp)
 - Cloud team responsible for the cloud transit architecture
 - Changes made by either team are not visible to the other team
- Expensive to deploy and maintain high-capacity MPLS and CSP private circuits
- Absence of real-time and historical analytics of cloud network increases MTTR



Architecture 1 – Region-to-Region Communication

Aviatrix Cloud Backbone

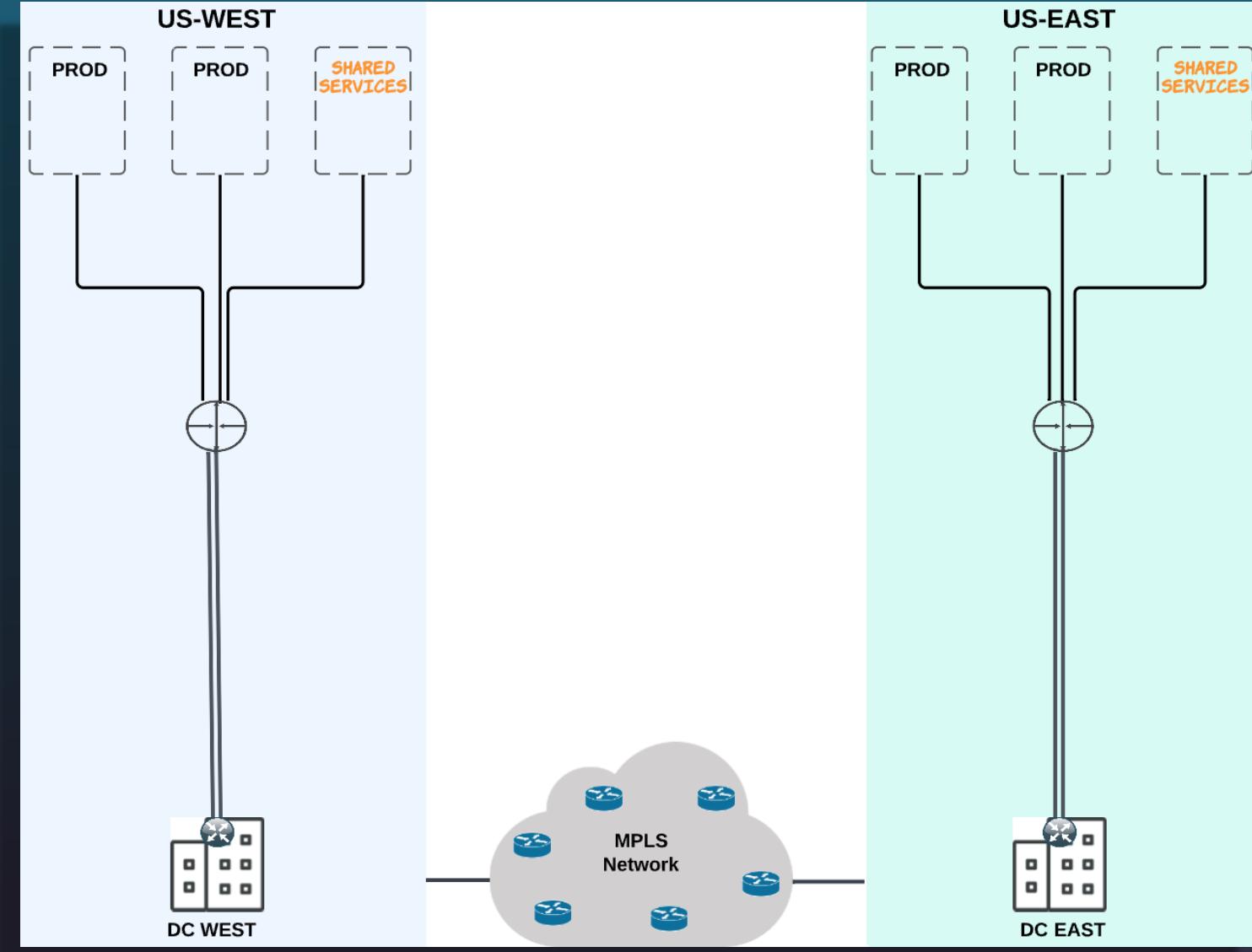
- High-Performance Encrypted Cloud Backbone that eliminates latency challenges
- Full control, independent and traffic engineering capable solution where application data stays within the enterprise network boundary
- Cost-effective enterprise cloud network backbone solution
 - Reduce private WAN circuits usage
 - Eliminate use of expensive native visibility services
 - No need to involve developers to stitch many visibility and troubleshooting tools
- Enterprise-class embedded telemetry, network visibility and troubleshooting tools



Architecture 1 – Region-to-Region Communication

How to Get Started

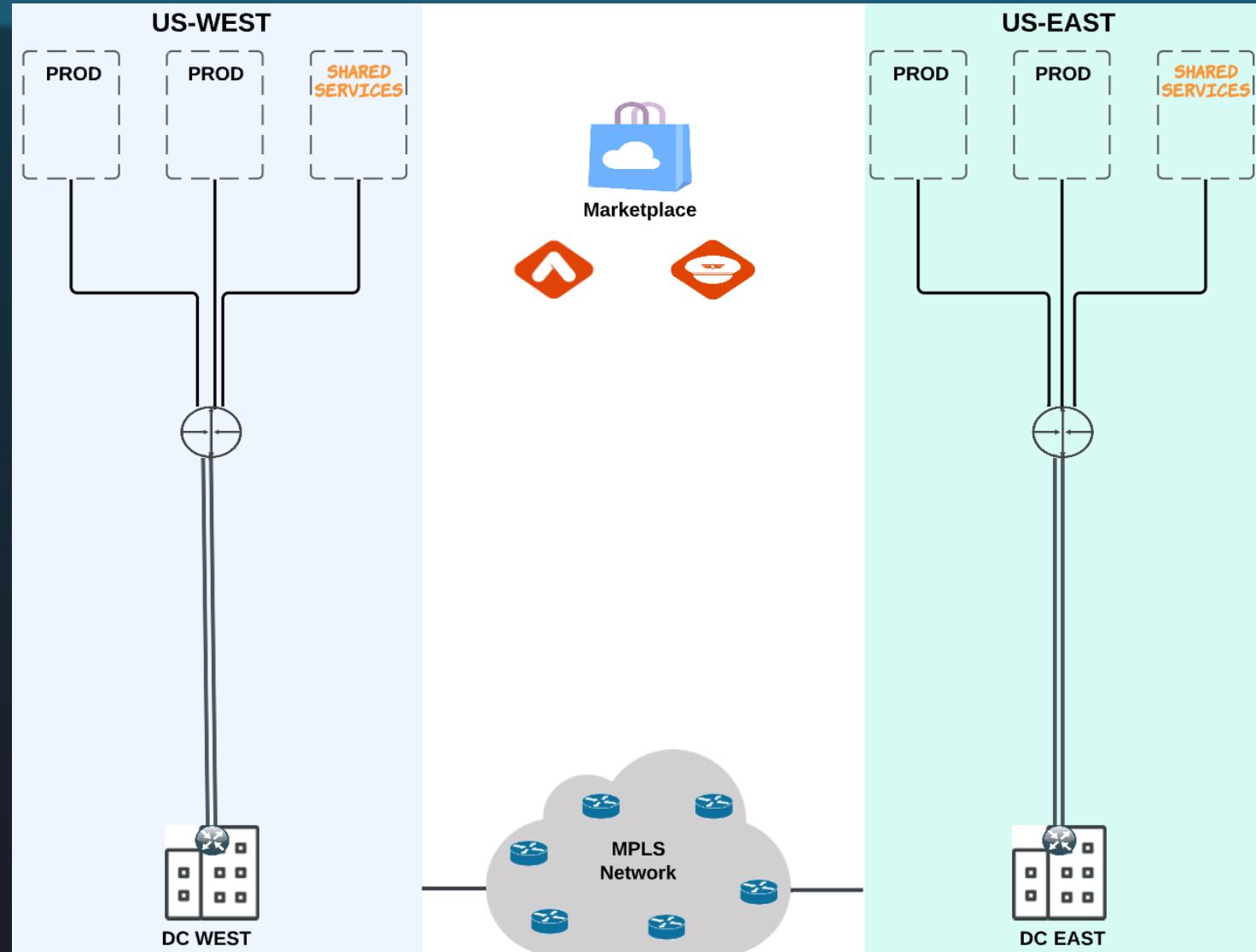
- Zoomed-in Existing Architecture



Architecture 1 – Region-to-Region Communication

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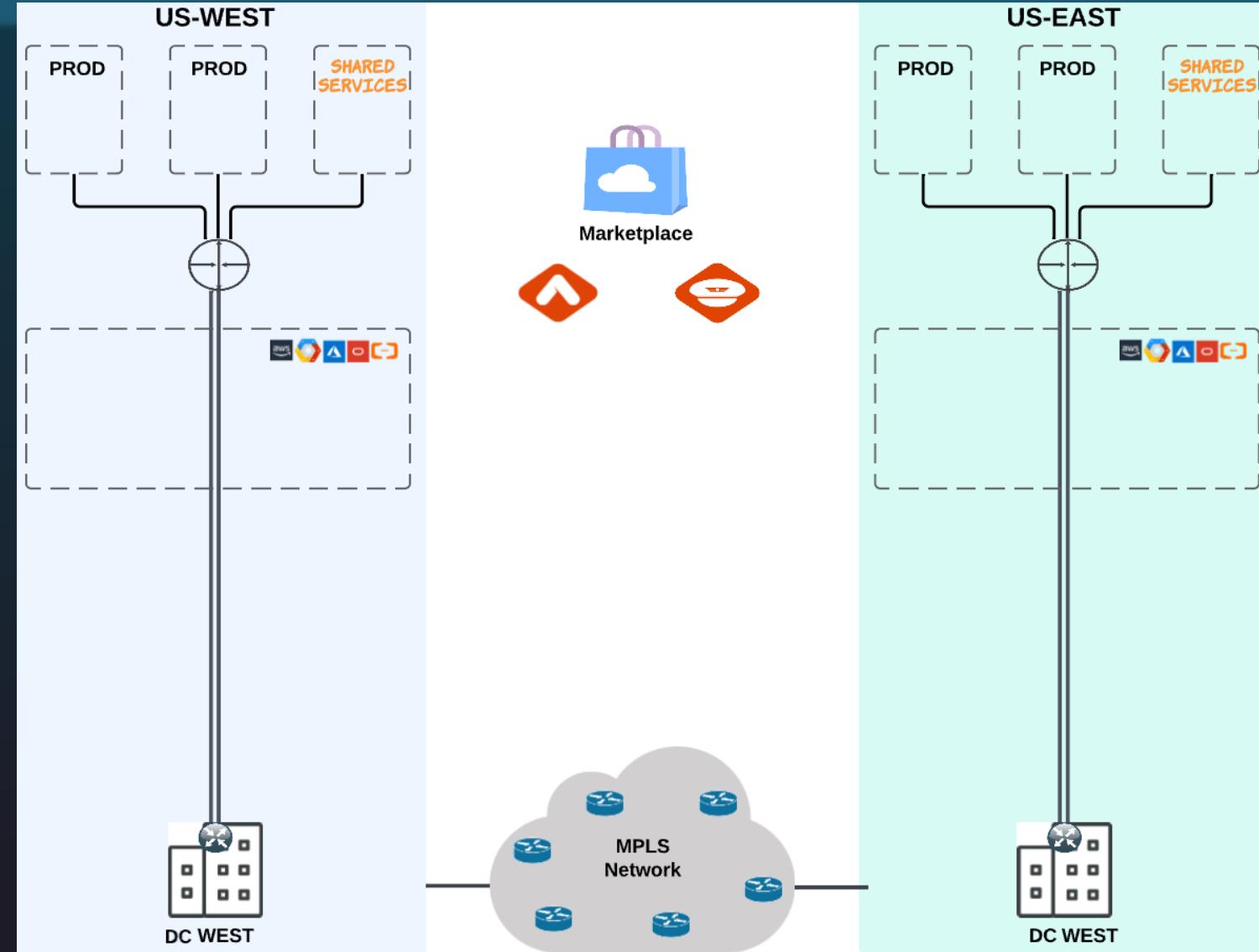
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- Deploy Aviatrix Controller & CoPilot from CSP Marketplace



Architecture 1 – Region-to-Region Communication

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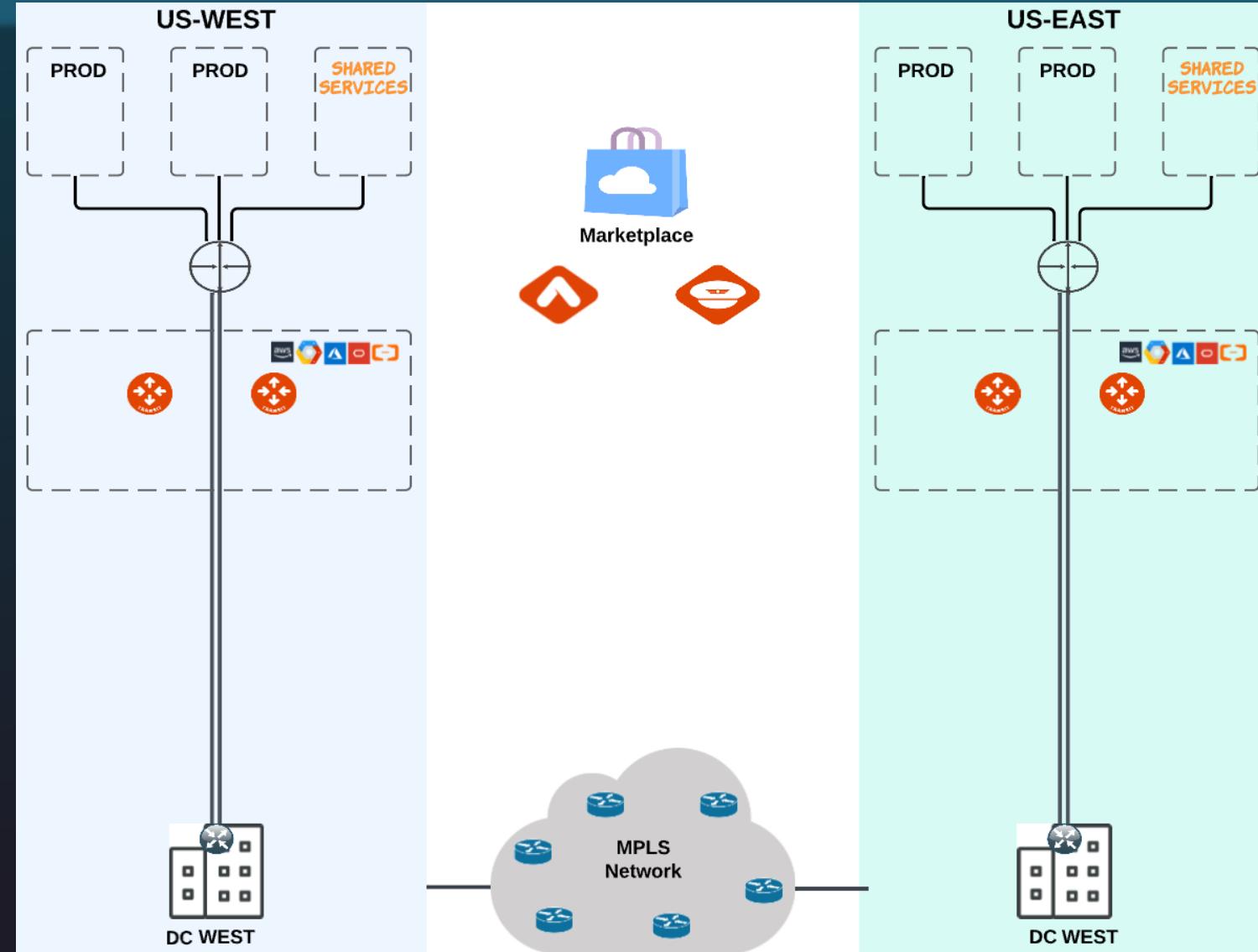
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- Create the following from Aviatrix without changing anything in the existing architecture:
 - Transit VPC/VNET/VCN



Architecture 1 – Region-to-Region Communication

How to Get Started

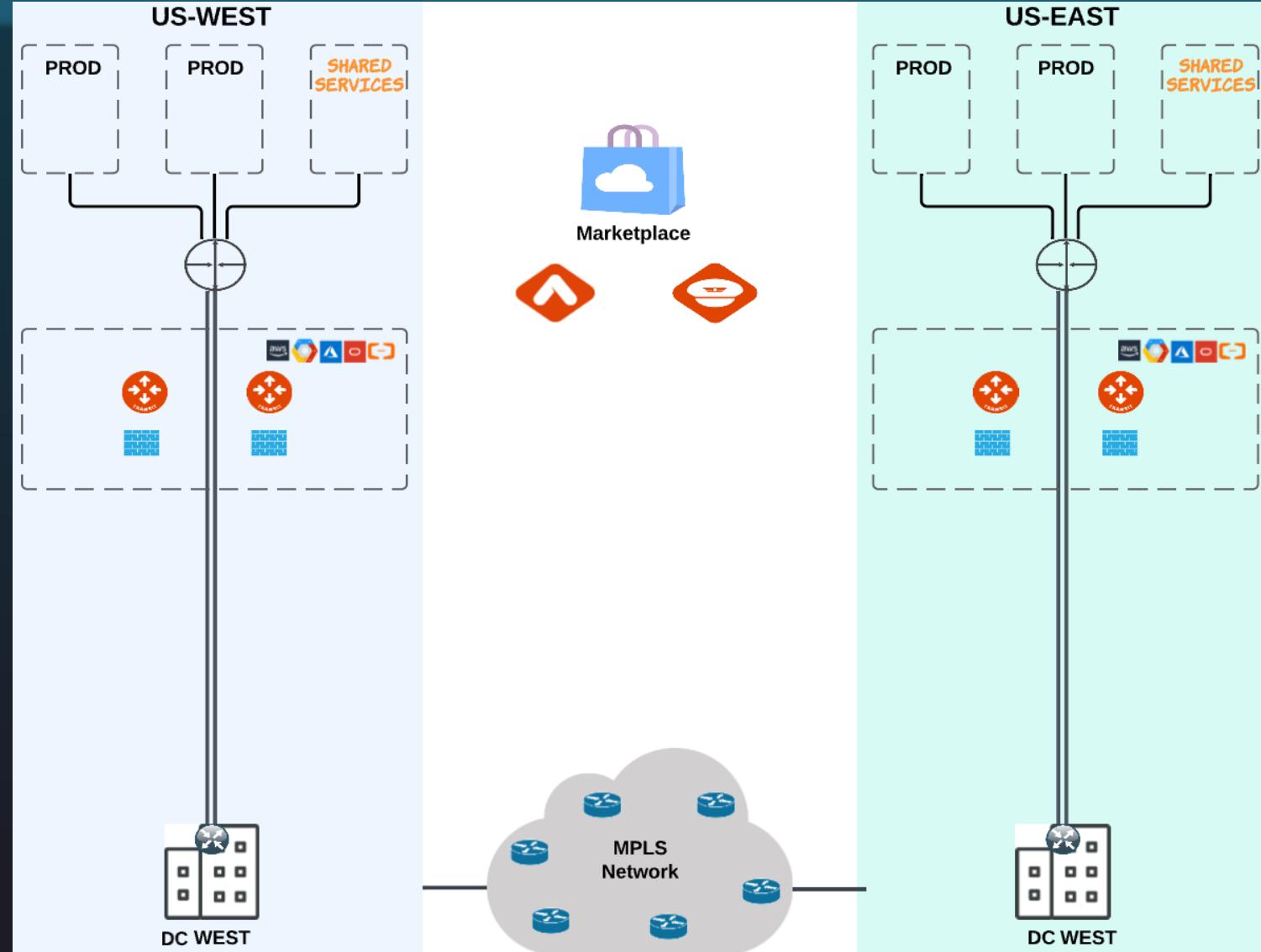
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- Deploy Aviatrix Controller & CoPilot from CSP Marketplace
- Create the following from Aviatrix without changing anything in the existing architecture:
 - Transit VPC/VNET/VCN
 - Aviatrix Transit Gateways



Architecture 1 – Region-to-Region Communication

How to Get Started

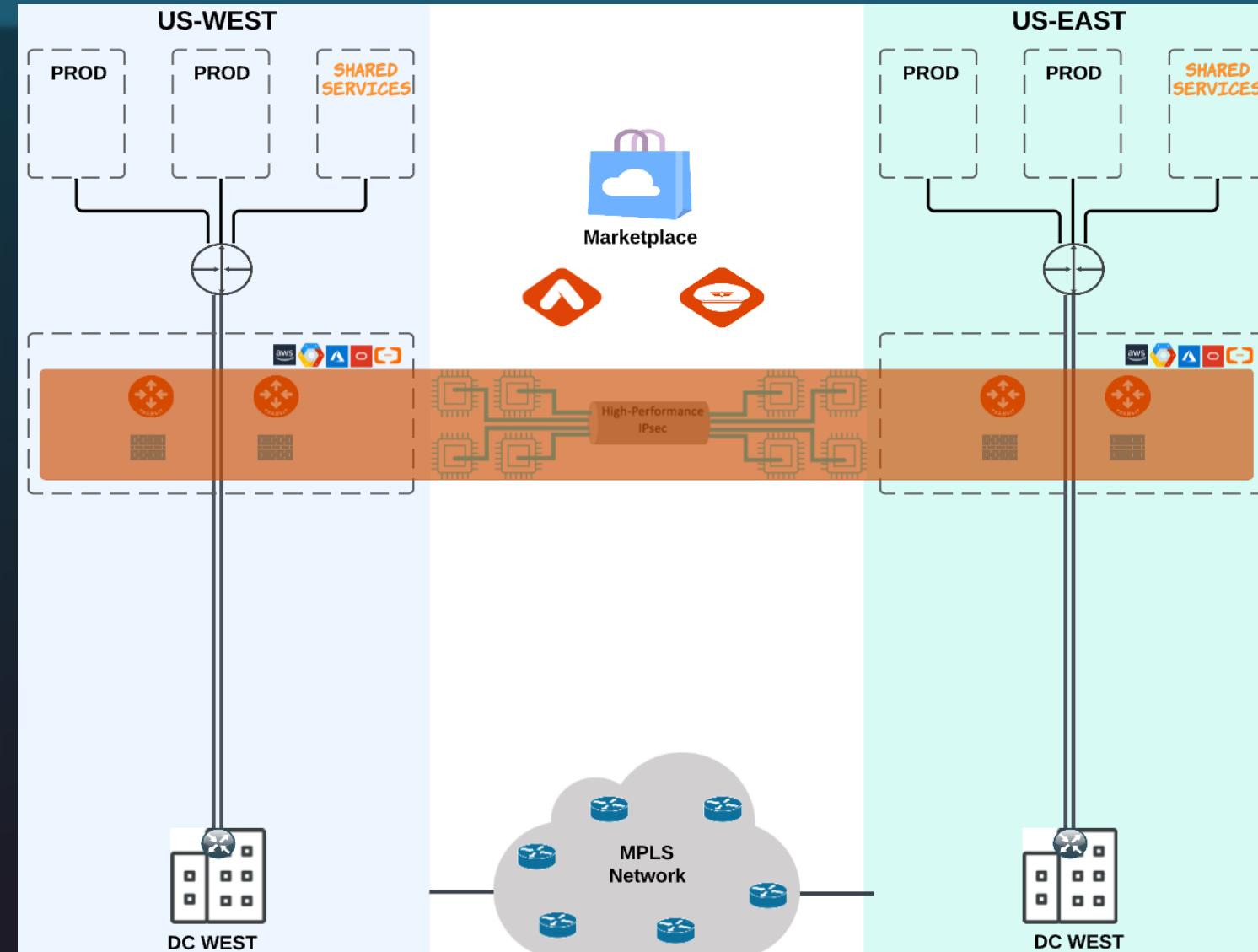
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 - Aviatrix Transit Gateways
 - NGFWs



Architecture 1 – Region-to-Region Communication

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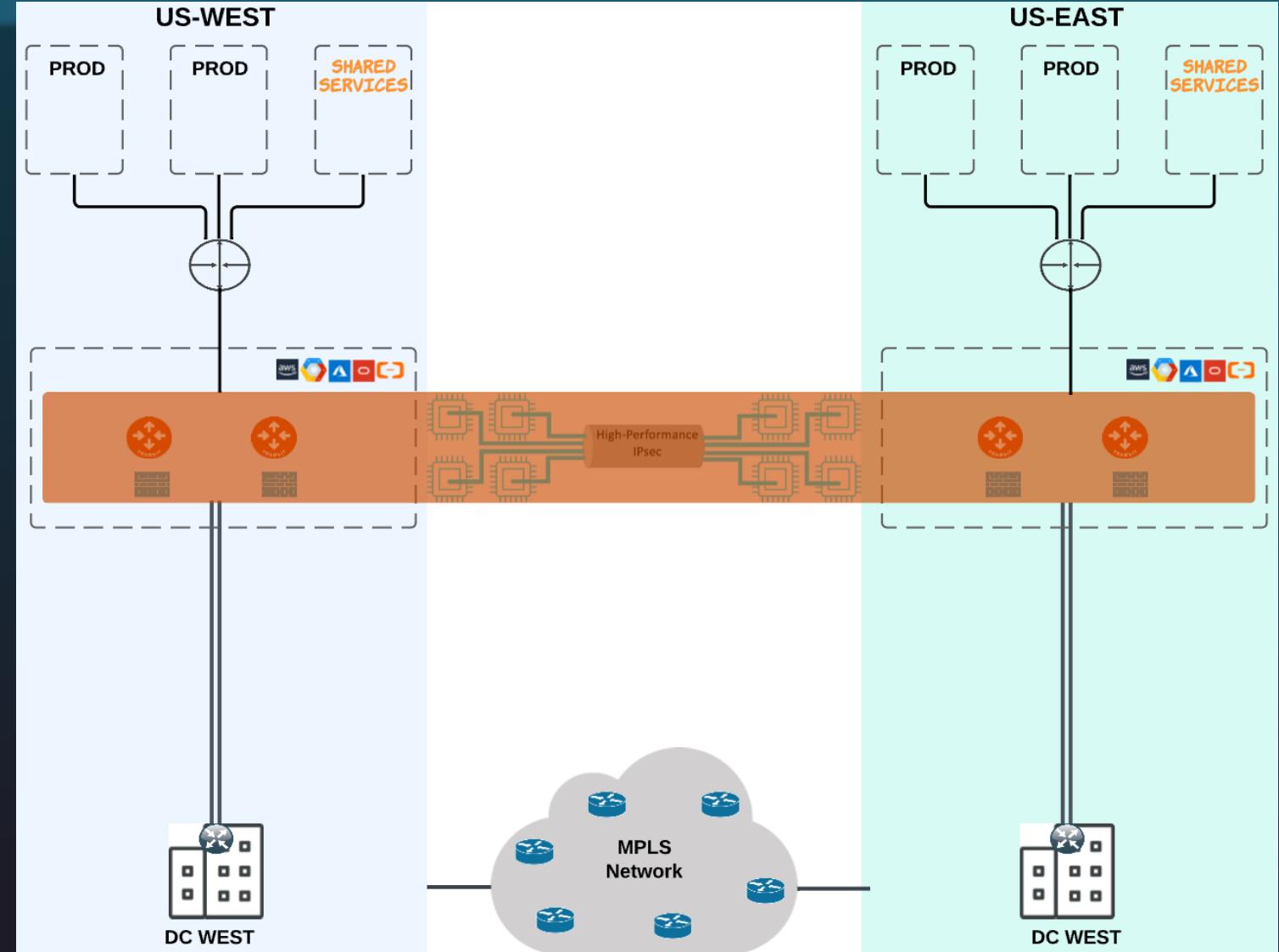
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- Create the following from Aviatrix without changing anything in the existing architecture:
 - Transit VPC/VNET/VCN
 - Aviatrix Transit Gateways
 - NGFWs
 - Deploy Cloud Backbone



Architecture 1 – Region-to-Region Communication

How to Get Started

- Zoomed-in Existing Architecture
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- Create the following from Aviatrix without changing anything in the existing architecture:
 - Transit VPC/VNET/VCN
 - Aviatrix Transit Gateways
 - NGFWs
 - Deploy Cloud Backbone
- Connect the native transit construct to the Cloud Backbone
- Switch the private circuits connectivity from the native transit construct to Cloud Backbone



Enterprise Architecture 2

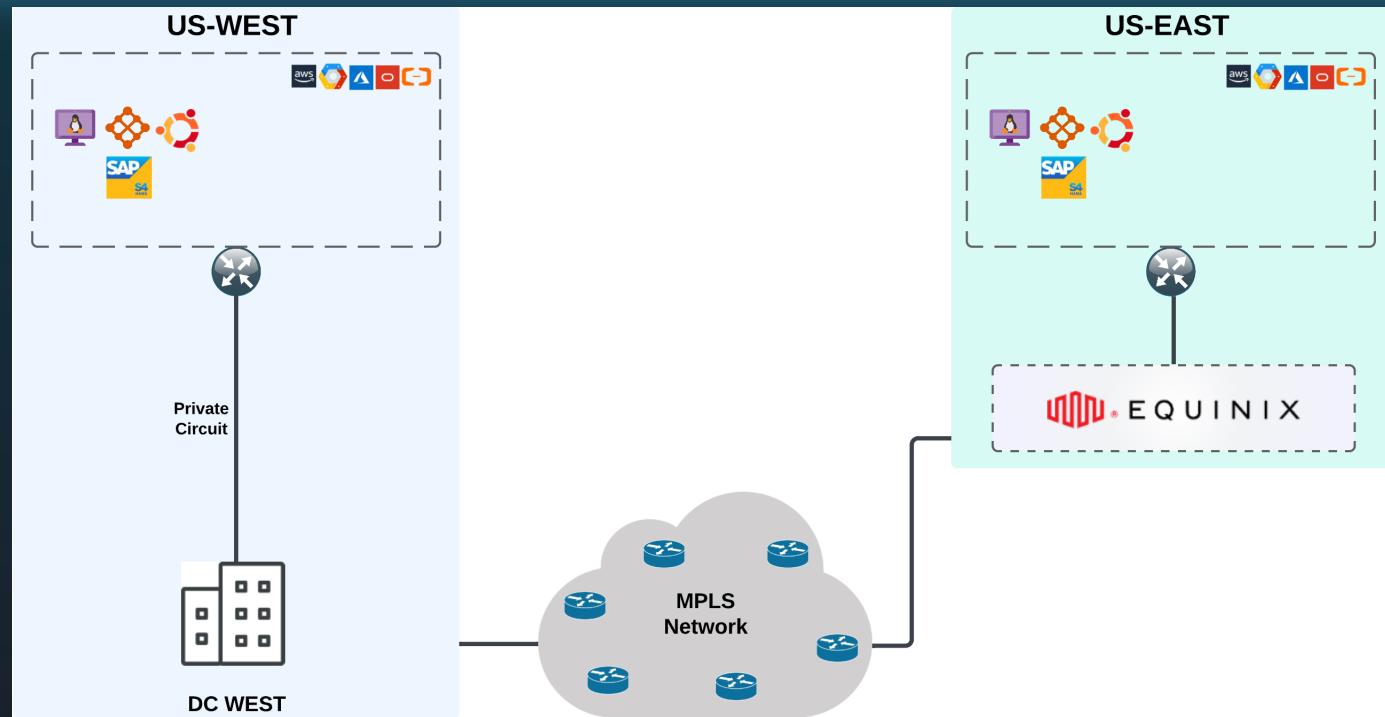
Colo Extension



Architecture 2 – CoLo Extension

Inconsistent and Expensive

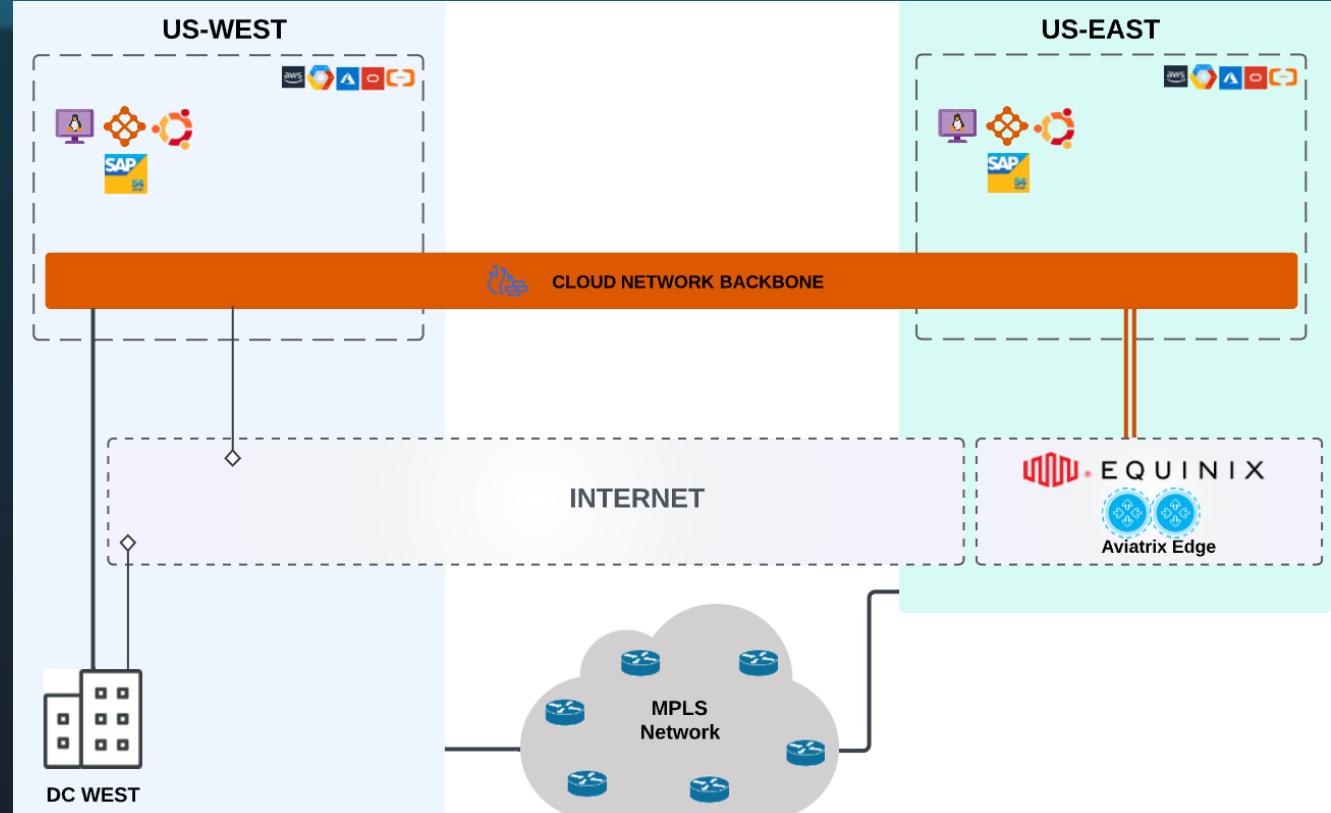
- Business growing in a new region
 - No plans to invest in the DC business
- DC, CoLo and Cloud region's application dependencies
- MPLS to connect Equinix with the DC
- Equinix provides connectivity to East region's applications
- Inter-region applications experience significant latency
- Expensive to deploy and maintain high-capacity MPLS and CSP private circuits



Architecture 2 – CoLo Extension

Aviatrix Cloud Backbone

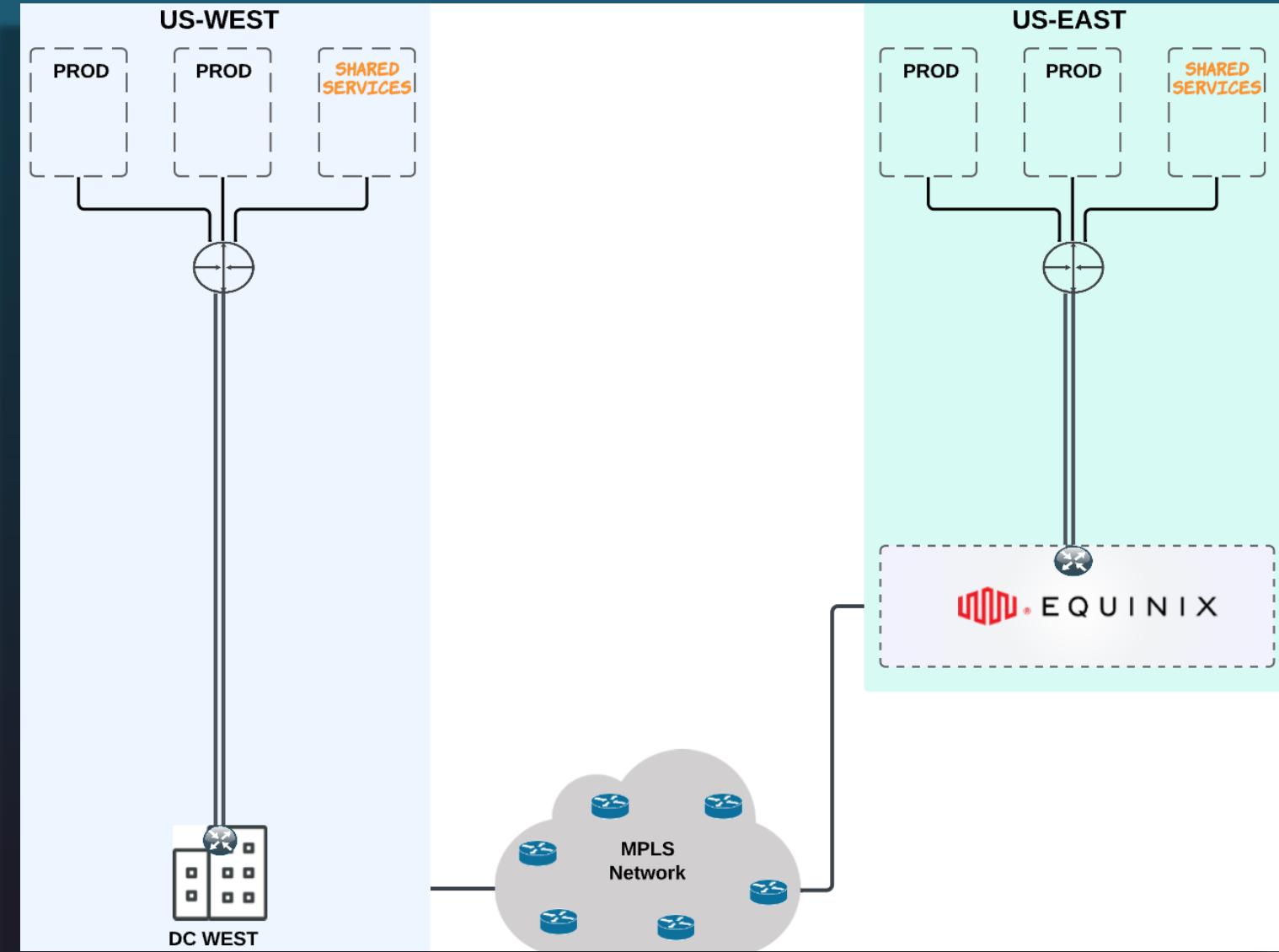
- Common repeatable architecture in the cloud and in the Equinix
- Leveraging CSP's and Equinix underlay to considerably reduce application latency
- No forced traffic backhauling
- Cost-effective enterprise cloud network backbone solution
 - Reduce private WAN circuits usage
 - Eliminate use of expensive native visibility services
 - No need to involve developers to stitch many visibility and troubleshooting tools
- Enterprise-class embedded telemetry, network visibility and troubleshooting tools



Architecture 2 – CoLo Extension

How to Get Started

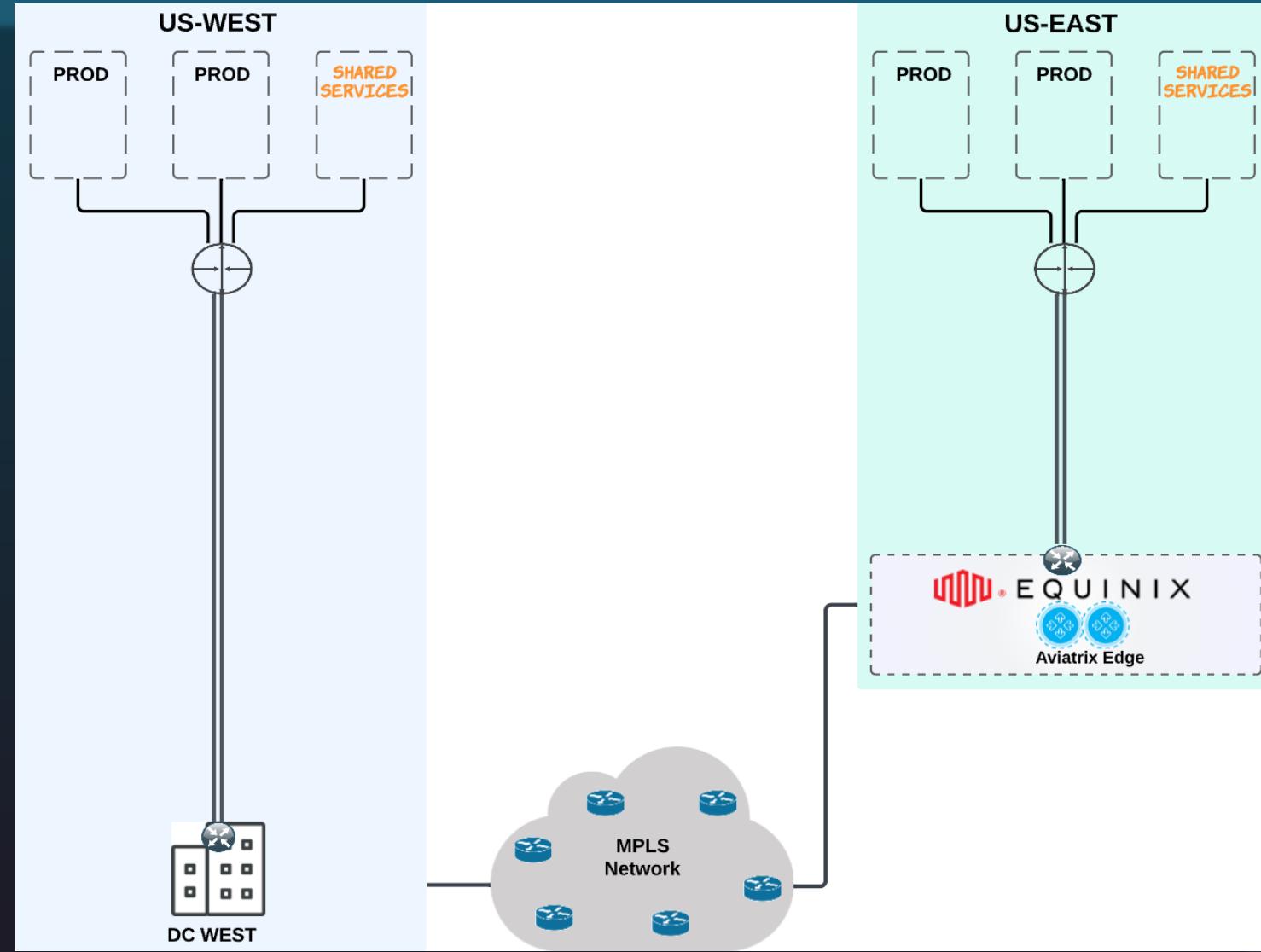
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Architecture 2 – CoLo Extension

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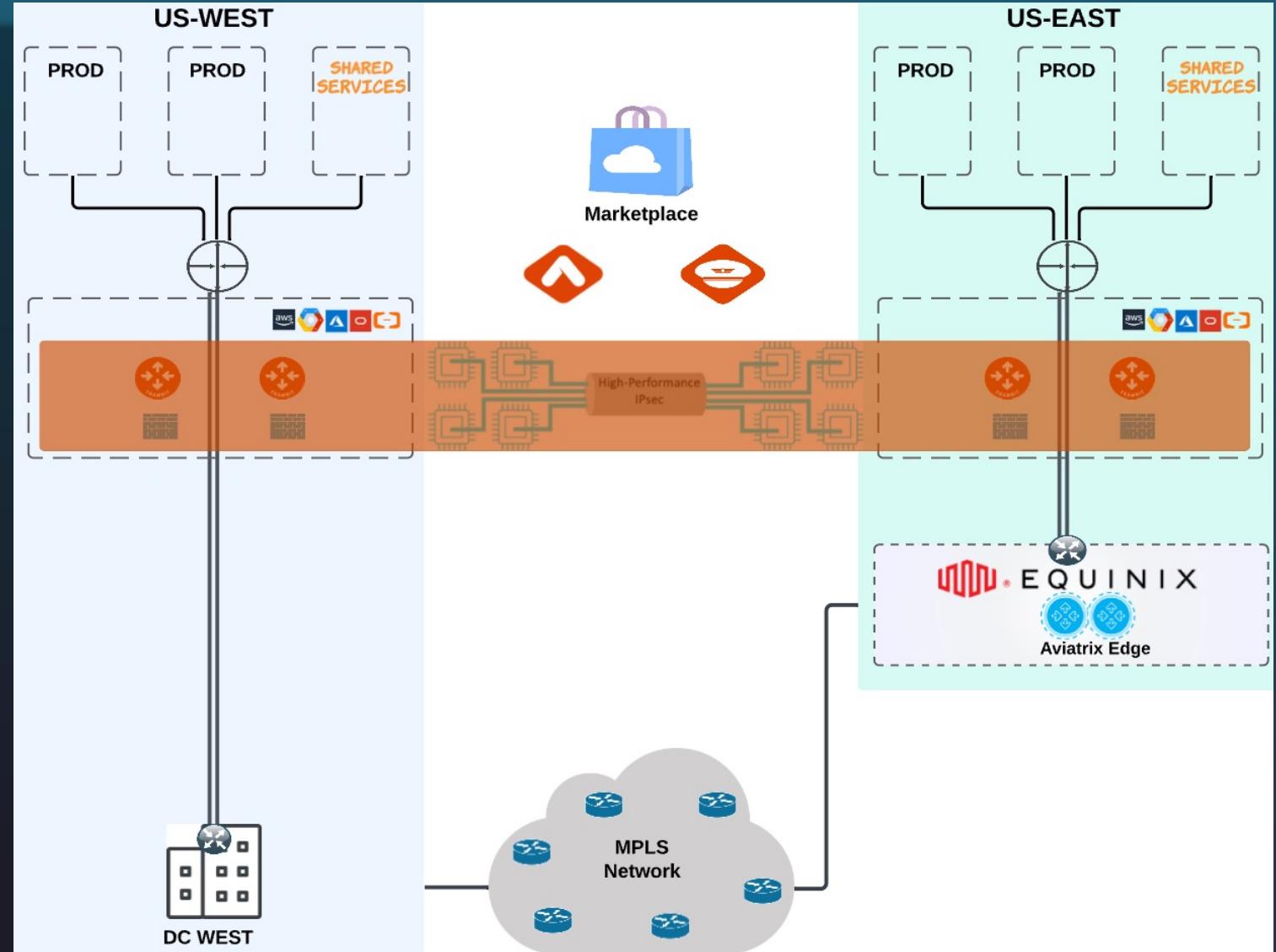
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- Deploy Aviatrix Edge from Equinix marketplace



Architecture 2 – CoLo Extension

How to Get Started

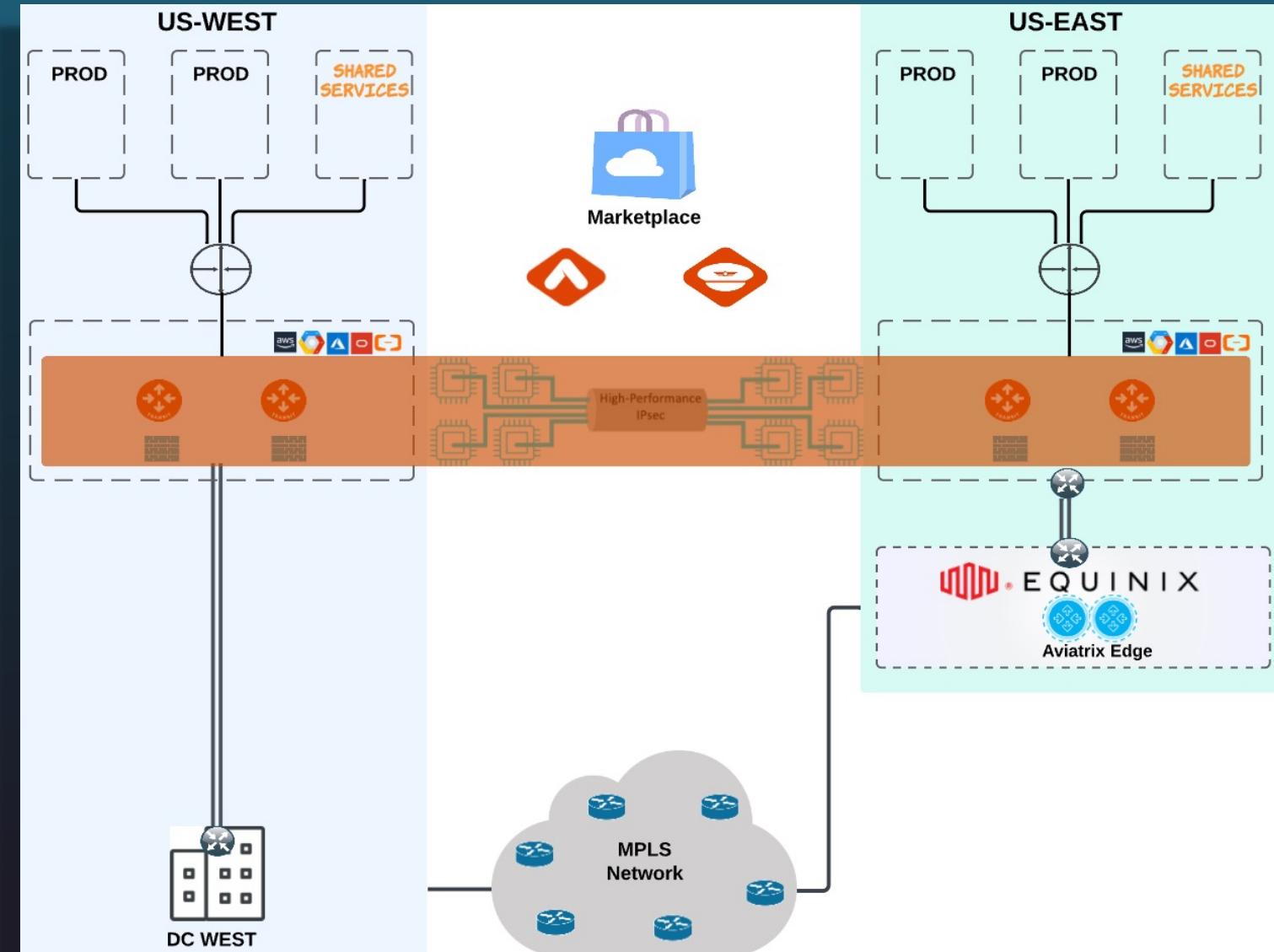
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- Deploy Aviatrix Controller & CoPilot from CSP Marketplace
- Create the following from Aviatrix without changing anything in the existing architecture
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 - Aviatrix Transit GWs
 - Deploy NGFWs
 - Deploy Cloud Backbone



Architecture 2 – CoLo Extension

How to Get Started

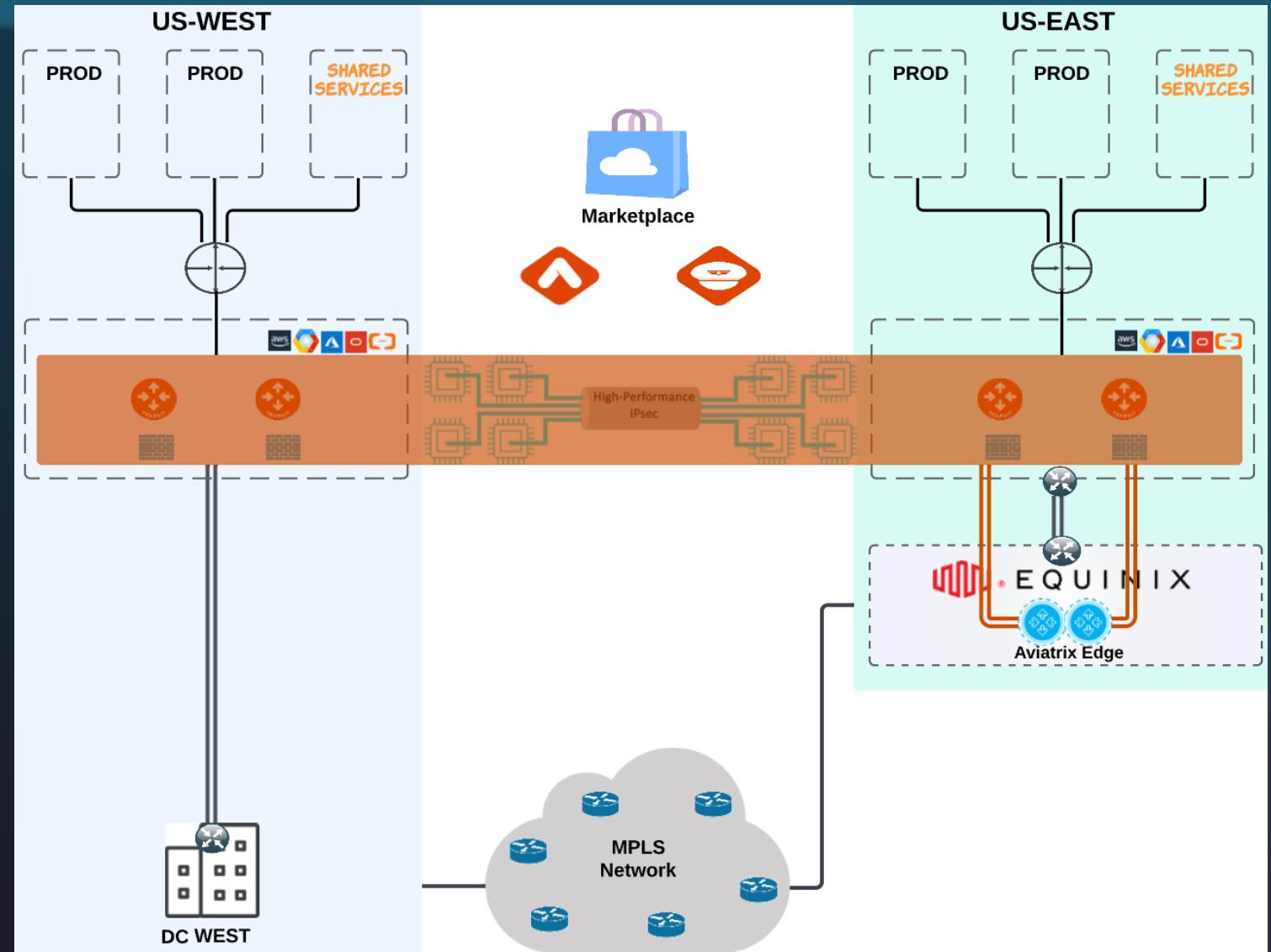
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 - Deploy NGFWs
 - Deploy Cloud Backbone
- Connect the native transit construct to the Cloud Backbone
- Create HPE connectivity between Equinix and Cloud Backbone using Aviatrix Edge



Architecture 2 – CoLo Extension

How to Get Started

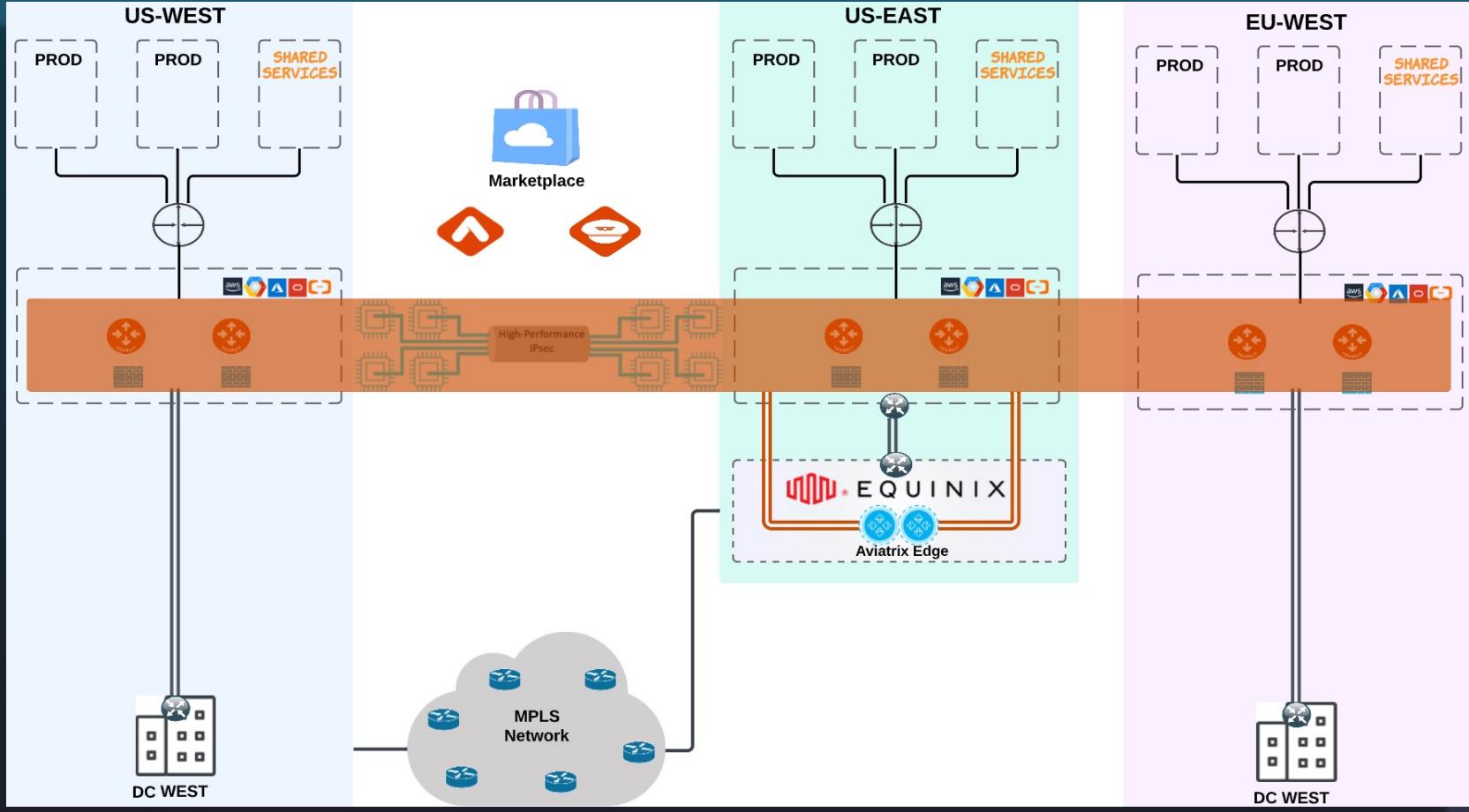
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 - Aviatrix Transit GWs
 - Deploy NGFWs
 - Deploy Cloud Backbone
- Connect the native transit construct to the Cloud Backbone
- Create HPE connectivity between Equinix and Cloud Backbone using Aviatrix Edge
- Switch the private circuits connectivity from the native transit construct to Cloud Backbone



Architecture 2 – CoLo Extension+

How to Get Started

- Zoomed-in Existing Architecture
- Deploy Aviatrix Edge from Equinix marketplace
- Deploy Aviatrix Controller & CoPilot from CSP Marketplace
- Create the following from Aviatrix without changing anything in the existing architecture
 - Transit VPC/VNET/VCN
 - Aviatrix Transit GWs
 - Deploy NGFWs
 - Deploy Cloud Backbone
- Connect the native transit construct to the Cloud Backbone
- Create HPE connectivity between Equinix and Cloud Backbone using Aviatrix Edge
- Switch the private circuits connectivity from the native transit construct to Cloud Backbone
- Extend to any new region



Enterprise Architecture 3

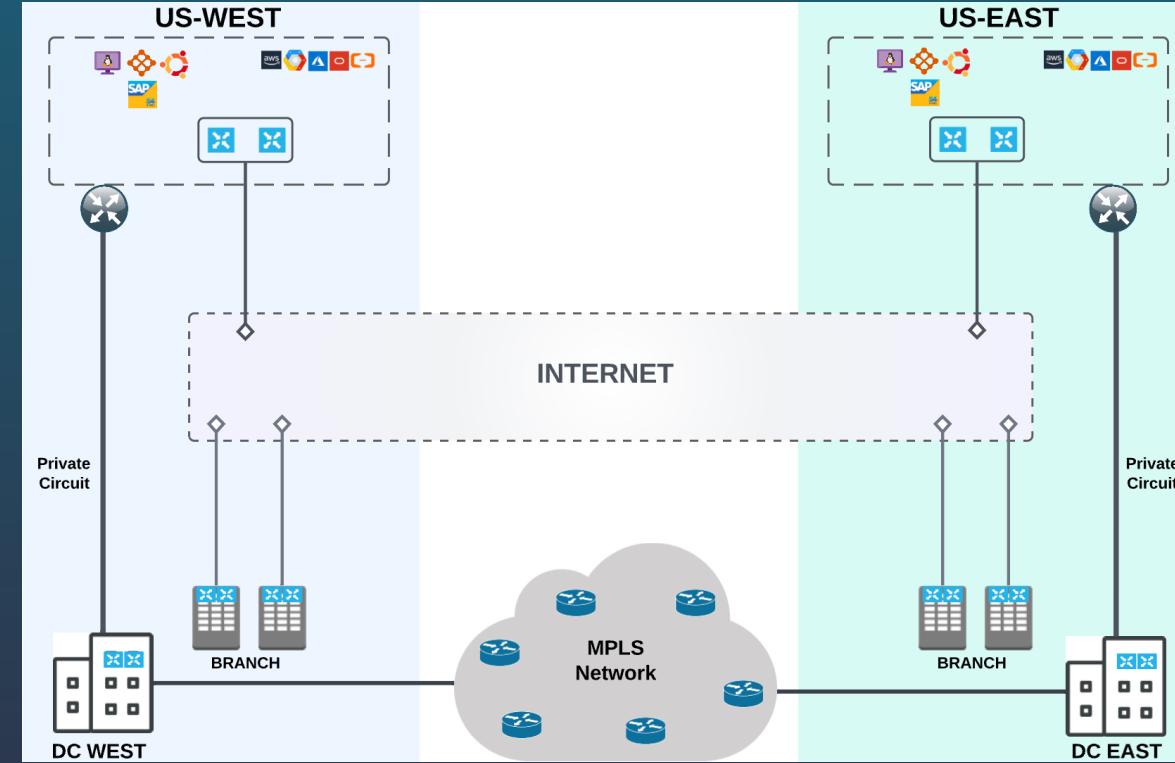
SD-WAN



Architecture 3 – SD-WAN

Inefficient, Challenging and Low Performance Solution

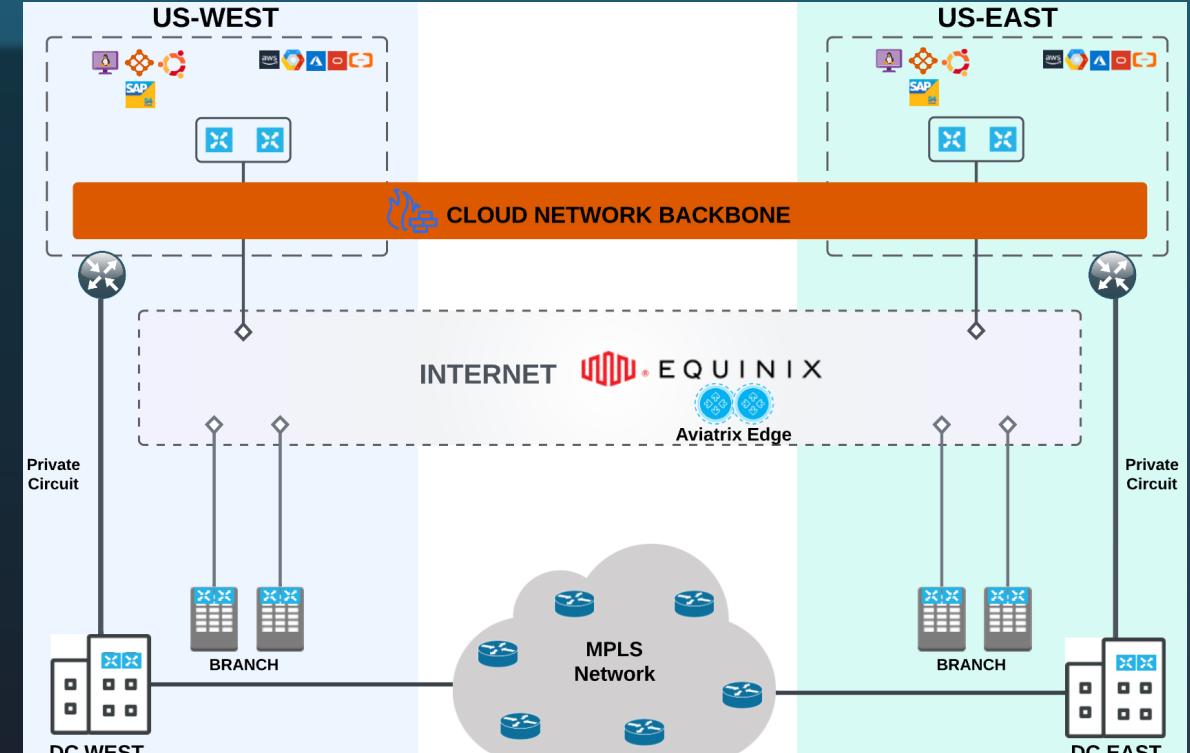
- Expensive solution for utilizing only the fundamental features of SD-WAN
- Difficult to manage and deploy hardware at each physical location
- Only understands on-prem environment
 - Cloud on-ramp solution
- SD-WAN hybrid connectivity solutions lacks high-performance encryption
- Runs into native construct's limitations
- Inefficient day2 operations due to many management stations (one per cloud and on-prem)



Architecture 3 – SD-WAN

Aviatrix Cloud Backbone

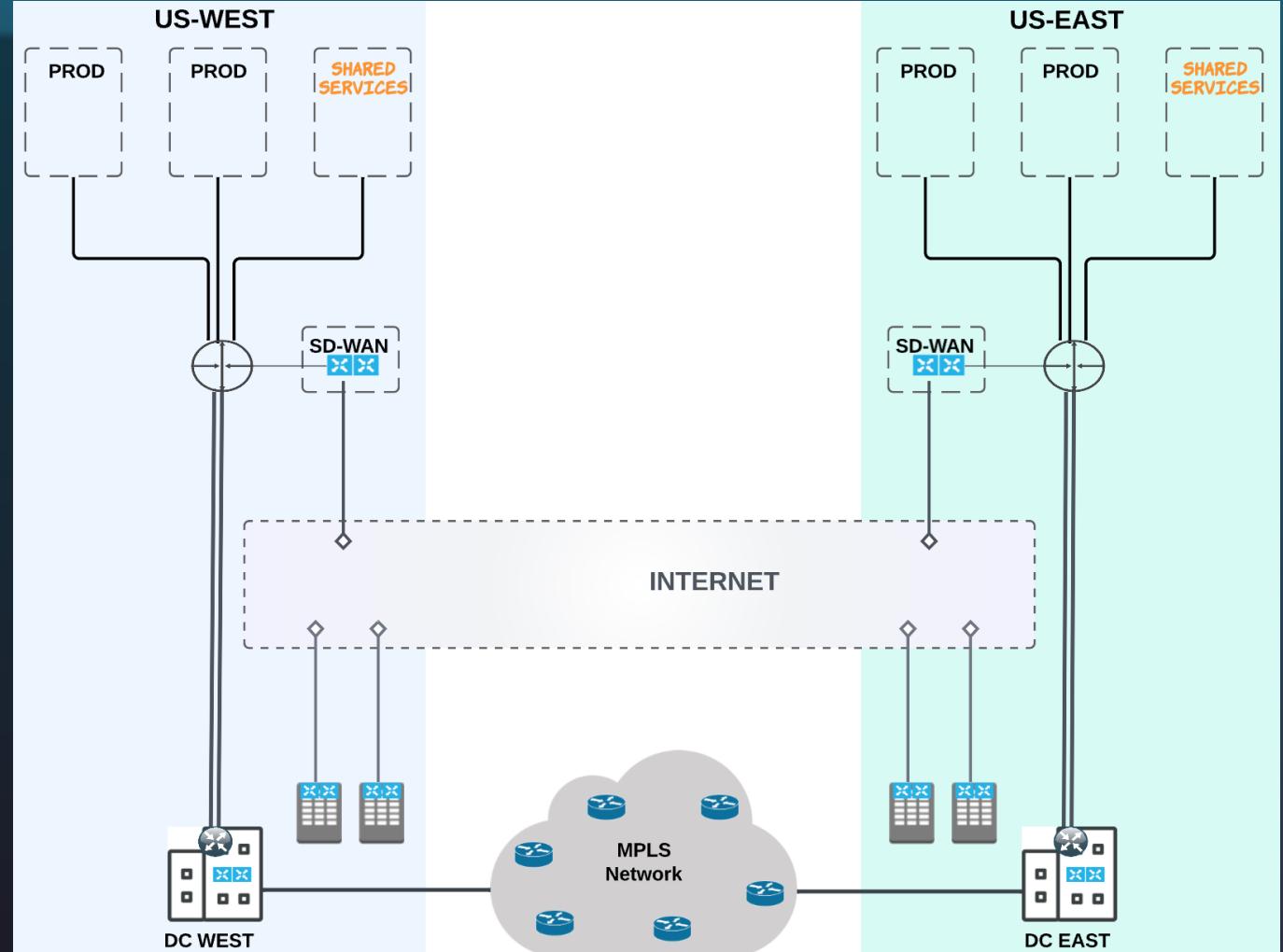
- High-Performance and extremely efficient architecture
- Programmable integration with SD-WAN
- Overcomes native CSP's limitations
- Multicloud native networking and security platform
- Enterprise-class embedded telemetry, network visibility and troubleshooting tools



Architecture 3 – SD-WAN

How to Get Started

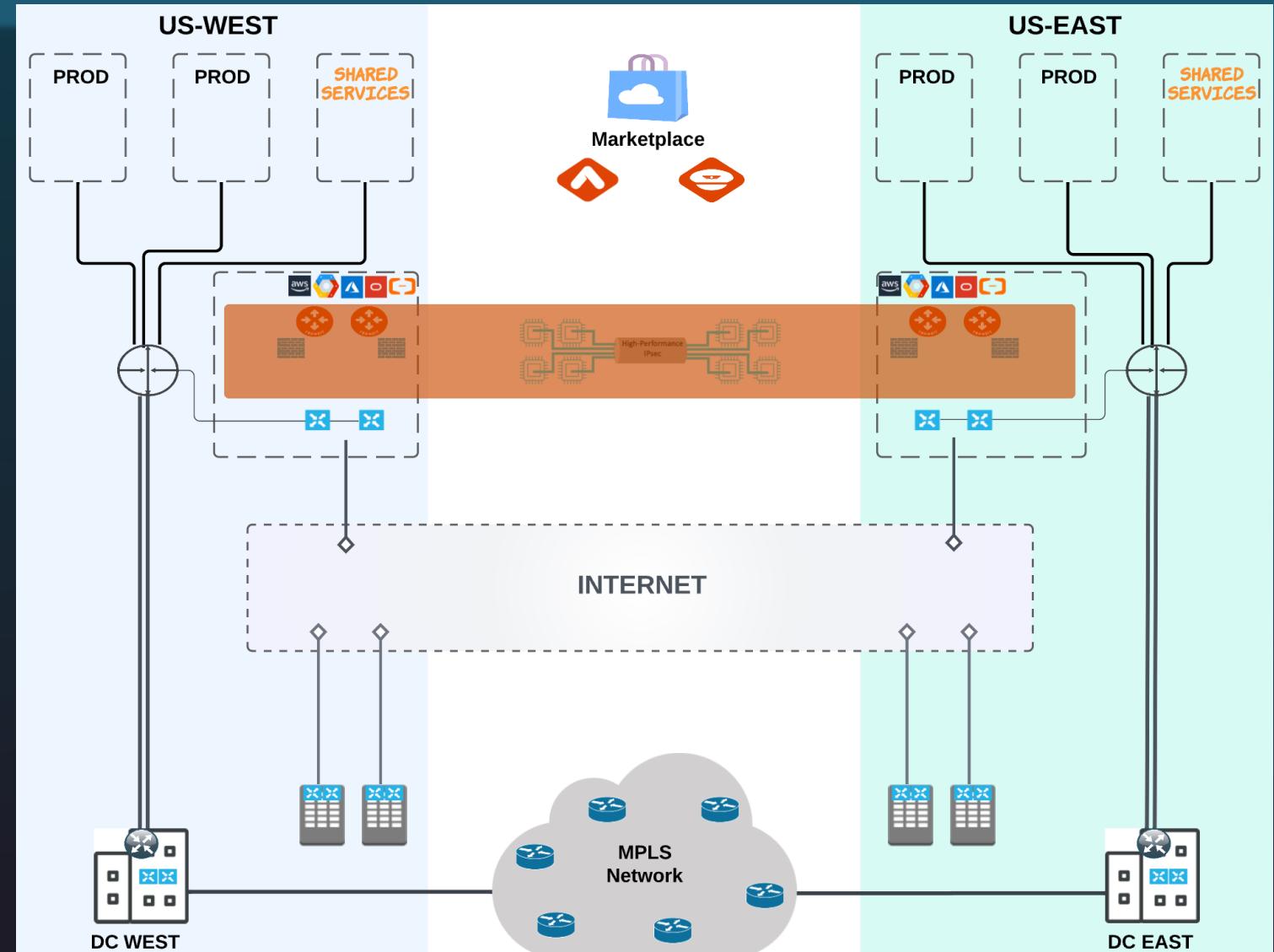
- Zoomed-in Existing Architecture



Architecture 3 – SD-WAN

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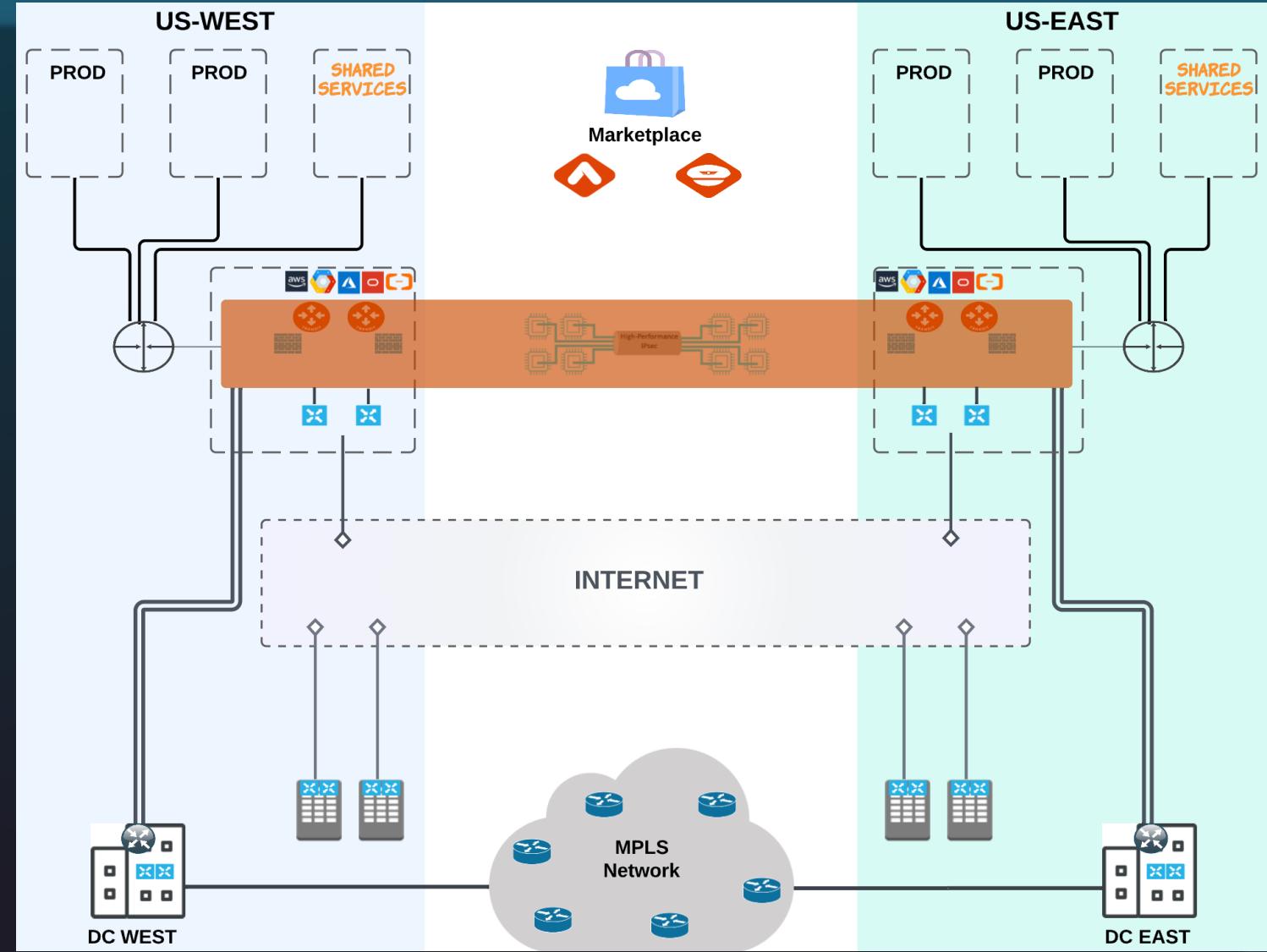
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- Create the following from Aviatrix without changing anything in the existing architecture
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 - Aviatrix Transit GWs
 - Deploy NGFWs
 - Deploy Cloud Backbone



Architecture 3 – SD-WAN

How to Get Started

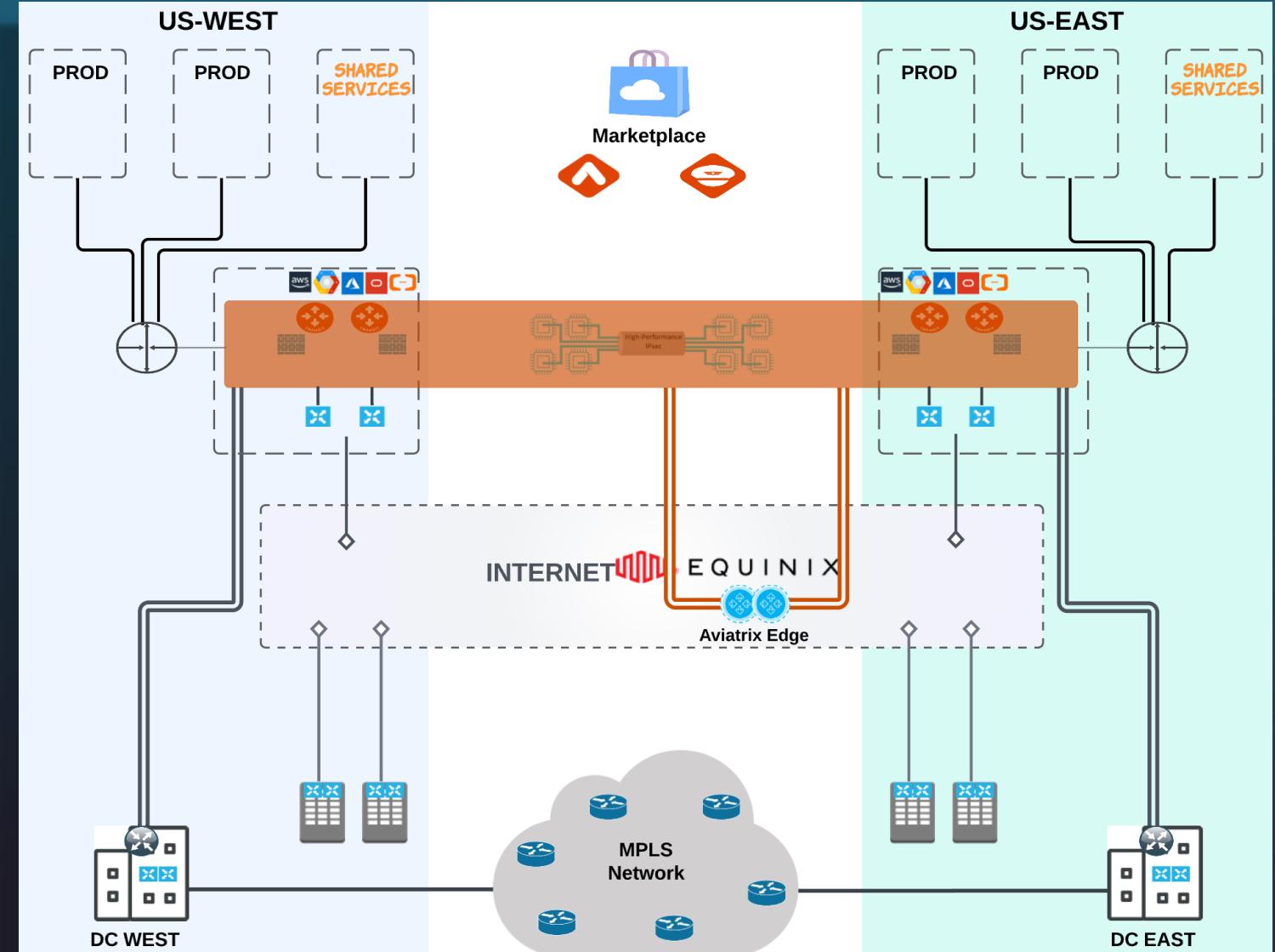
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- Create the following from Aviatrix without changing anything in the existing architecture
 - Transit VPC/VNET/VCN
 - Aviatrix Transit GWs
 - Deploy NGFWs
 - Deploy Cloud Backbone
- Build BGP adjacencies between Cloud Backbone and SD-WAN headend
- Switch native transit connection from SD-WAN to Cloud Backbone (BGP)
- Terminate private hybrid connectivity on Cloud Backbone



Architecture 3 – SD-WAN (Equinix Extension)

How to Get Started

- Zoomed-in Existing Architecture
- Deploy Aviatrix Controller & CoPilot from CSP Marketplace
- Create the following from Aviatrix without changing anything in the existing architecture
 - Transit VPC/VNET/VCN
 - Aviatrix Transit GWs
 - Deploy NGFWs
 - Deploy Cloud Backbone
- Build BGP adjacencies between Cloud Backbone and SD-WAN headend
- Switch native transit connection from SD-WAN to Cloud Backbone (BGP)
- Terminate private hybrid connectivity on Cloud Backbone
- Extend to Equinix



Enterprise Architecture 4

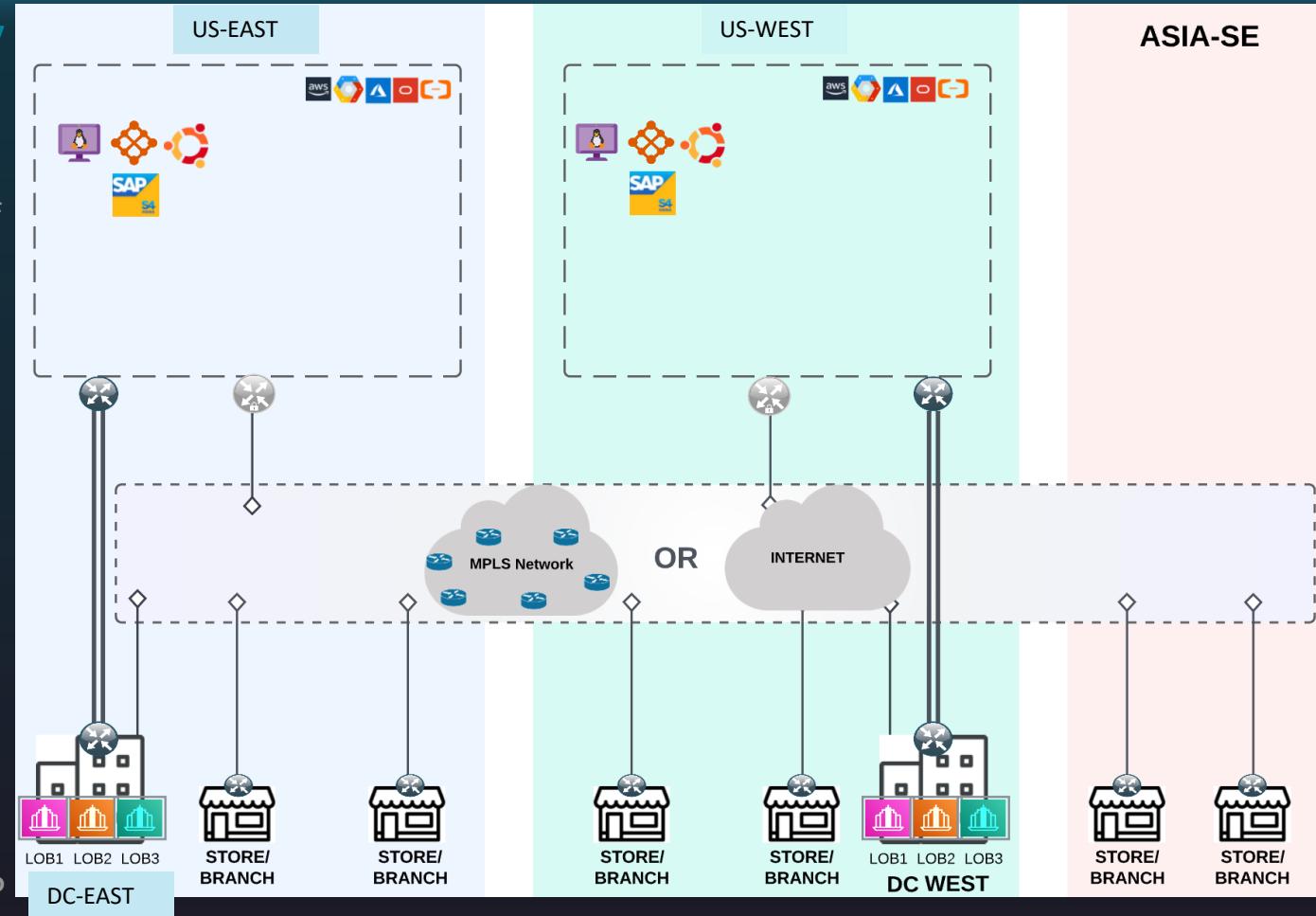
Hybrid Connectivity



Architecture 4 – Hybrid Connectivity

Insecure, Inefficient & Lacks Programmability

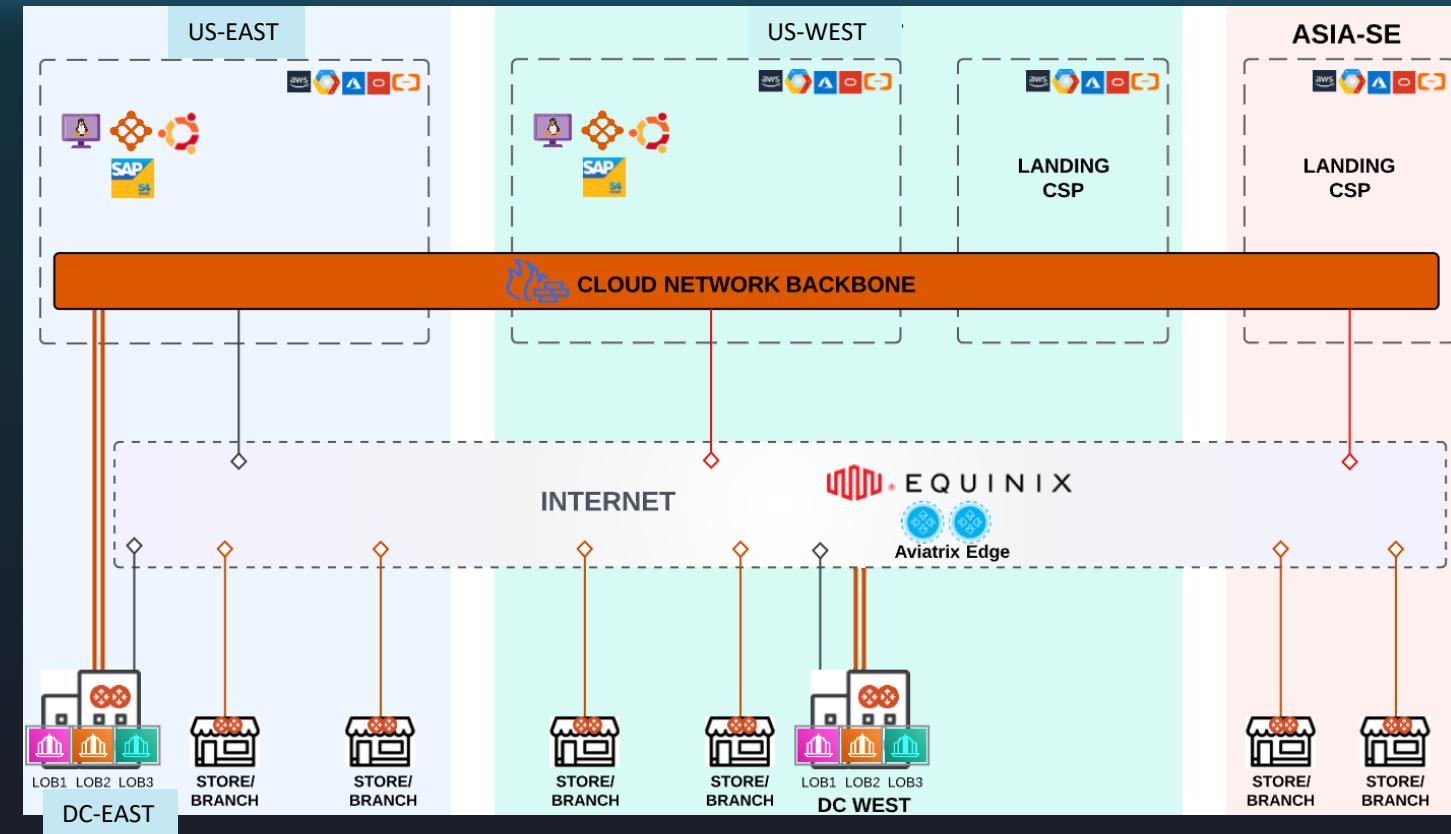
- Native and 3rd party hybrid connectivity solutions lacks Zero Trust Architecture
 - Complex and expensive to achieve segregation between Lines of Businesses (LOBs)
 - Provides either low-performance encryption capabilities or let the traffic pass through unencrypted
 - NextGen FW service insertion
- Cloud-to-OnPrem application latency challenges (remote regions where no applications were deployed)
- Programmability challenges
- Organizational Boundaries Dependence
 - Network team responsible for the hybrid connectivity (on-ramp)
 - Cloud team responsible for the cloud transit architecture
 - Changes made by either team are not visible to the other team
- Expensive to deploy and maintain high-capacity MPLS and CSP private circuits



Architecture 4 – Hybrid Connectivity

Aviatrix Cloud Network Backbone

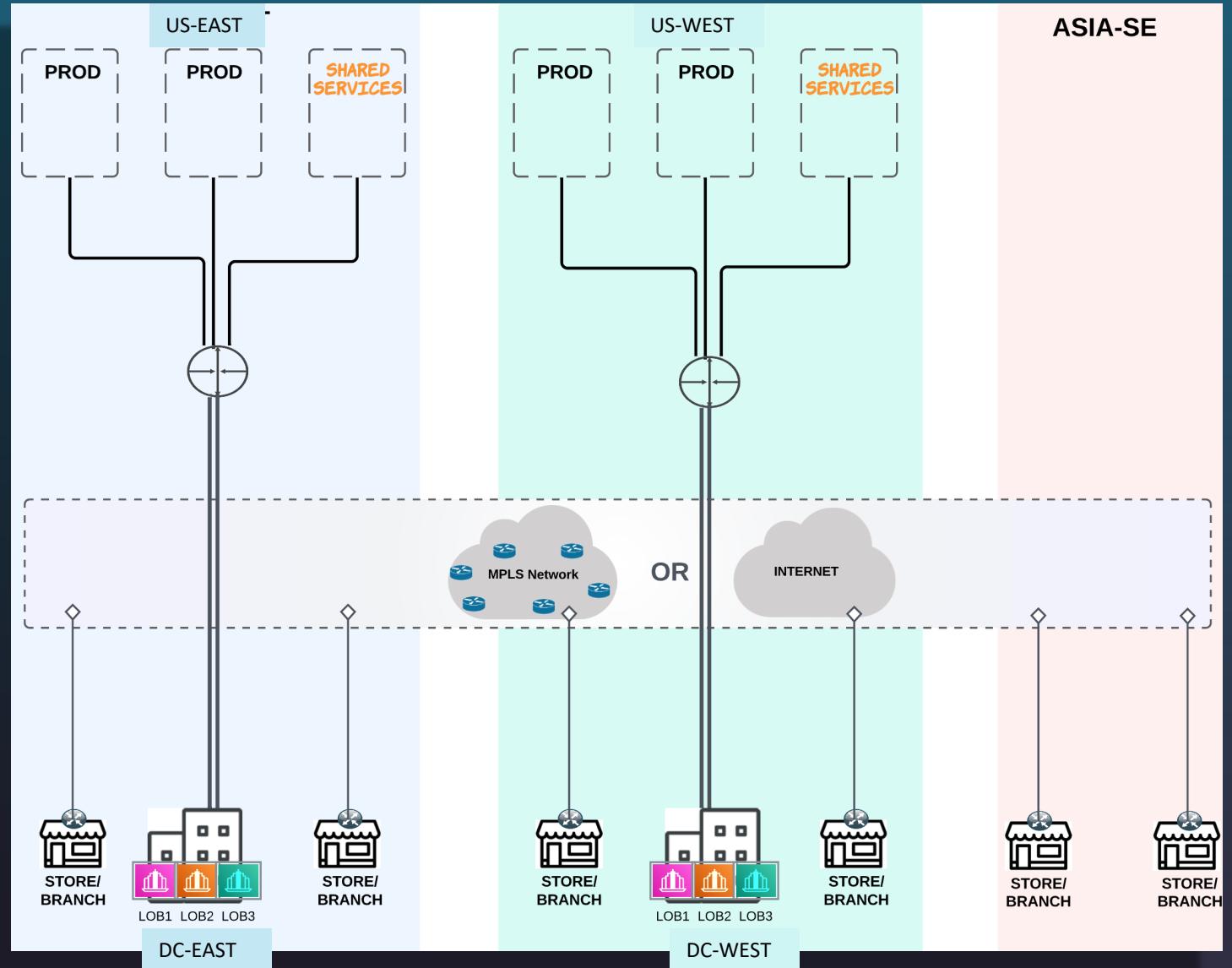
- Zero Trust policy-based security architecture
 - High-performance encrypted inter-region and multicloud connectivity
 - LOBs applications segmentation
 - NexGen FW service in the cloud (No hair-pinning)
- Highly flexible cloud-out solution
 - Utilize landing CSP without deploying applications to overcome latency challenges
- Programmable multicloud and on-prem deployment
 - No need to involve developers to stitch many visibility and troubleshooting tools
- Zero Touch Provisioning
- Cost-effective enterprise cloud network backbone solution
 - Reduce private WAN circuits usage
 - Eliminate use of expensive native visibility services
- Unified management-plane for multicloud and on-prem



Architecture 4 – Hybrid Connectivity

How to Get Started

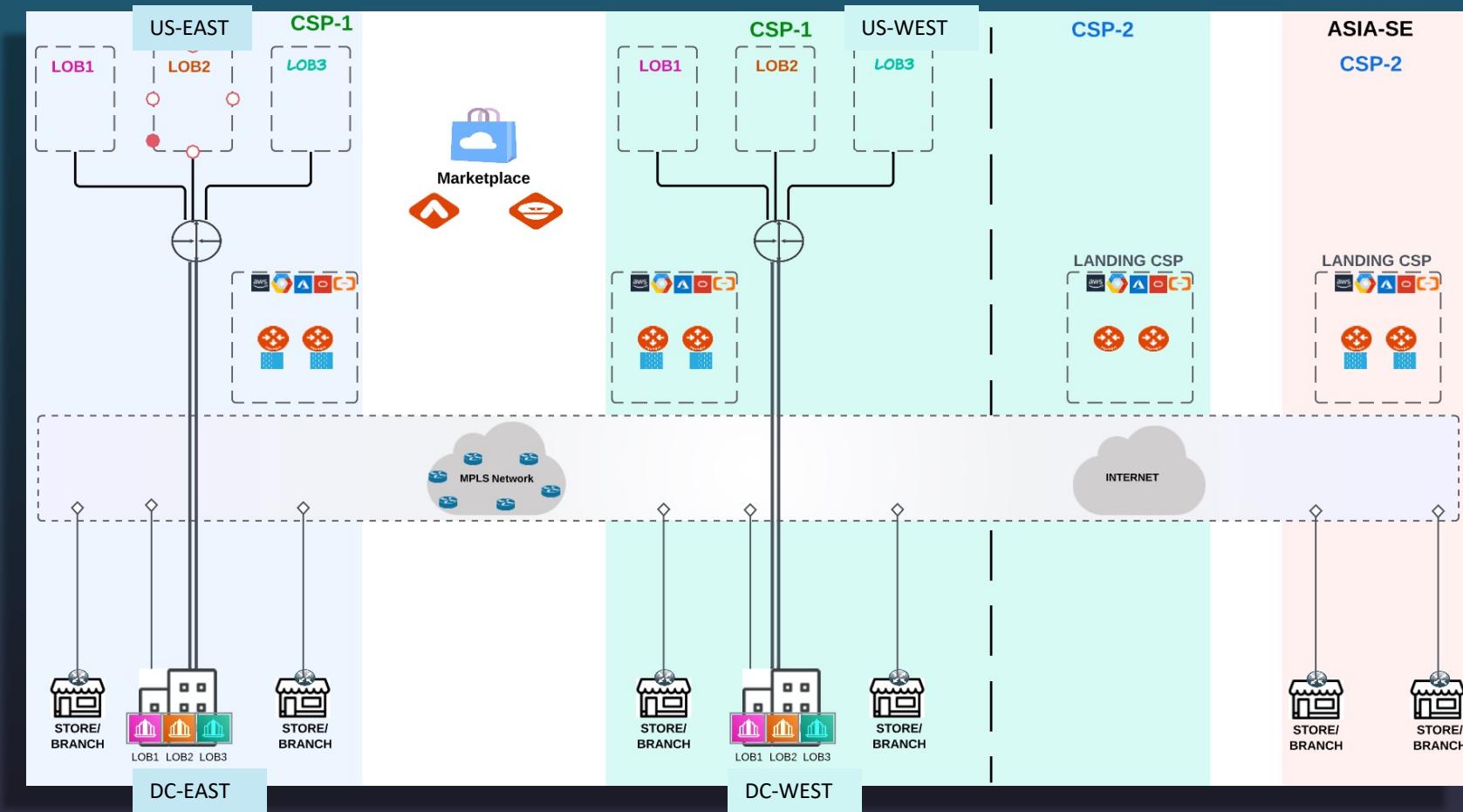
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Architecture 4 – Hybrid Connectivity

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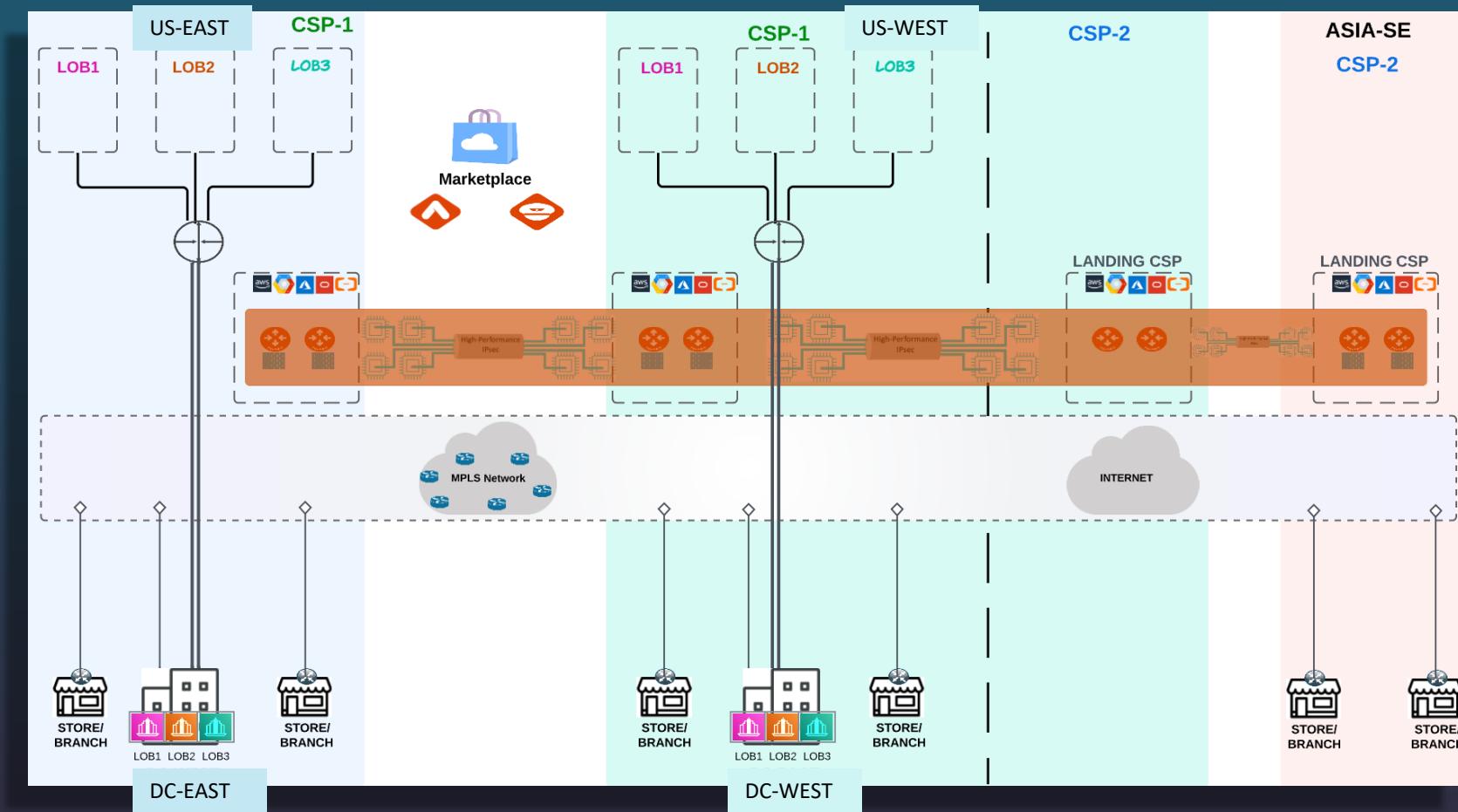
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- Deploy Aviatrix Controller & CoPilot from CSP Marketplace
- Create the following from Aviatrix without changing anything in the existing architecture
 - Transit VPC/VNET/VCN
 - Aviatrix Transit GWs
 - Deploy NGFWs



Architecture 4 – Hybrid Connectivity

How to Get Started

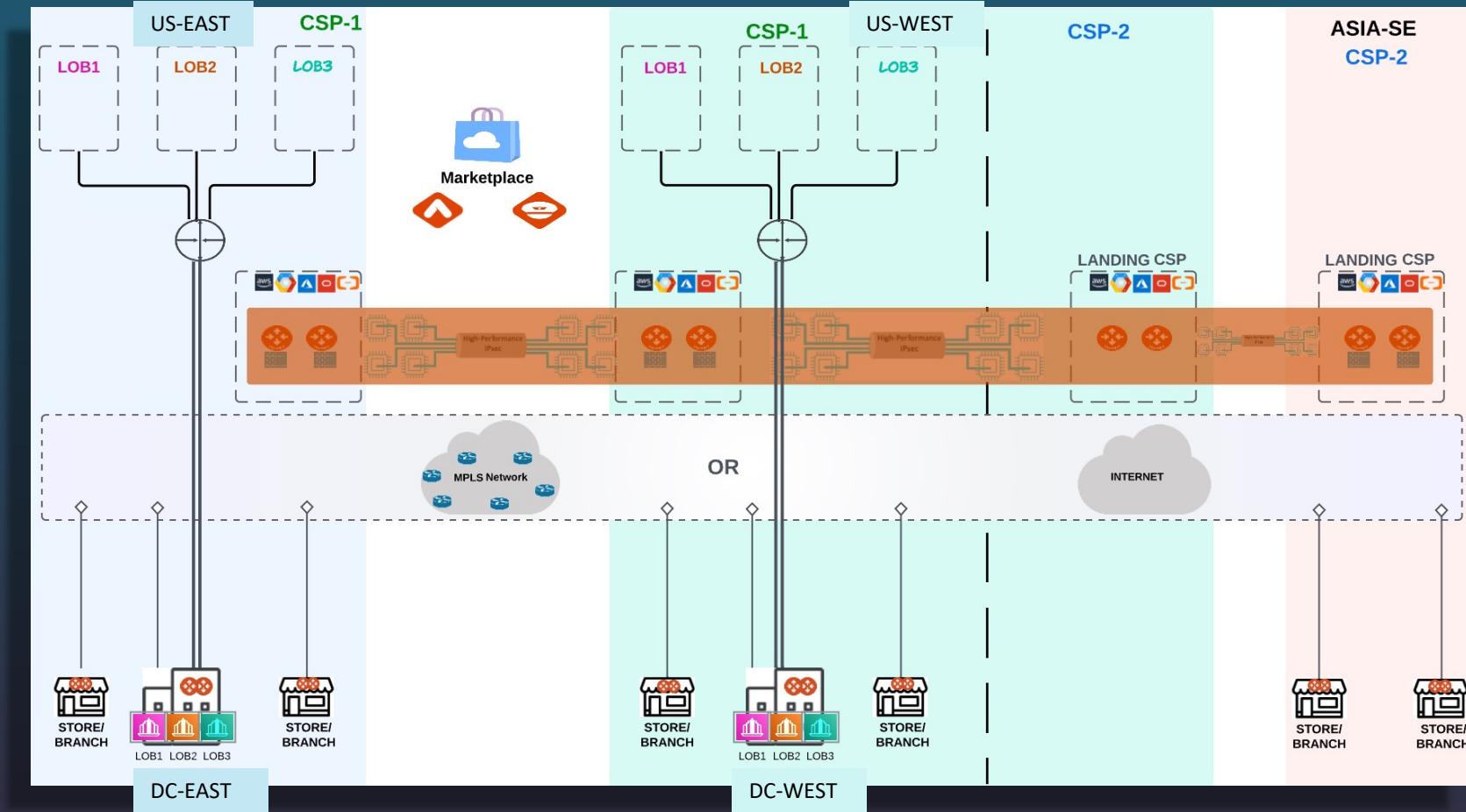
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- Deploy Aviatrix Controller & CoPilot from CSP Marketplace
- Create the following from Aviatrix without changing anything in the existing architecture
 - Transit VPC/VNET/VCN
 - Aviatrix Transit GWs
 - Deploy NGFWs except CSP-2 (landing CSP)
 - Deploy Cloud Backbone



Architecture 4 – Hybrid Connectivity

How to Get Started

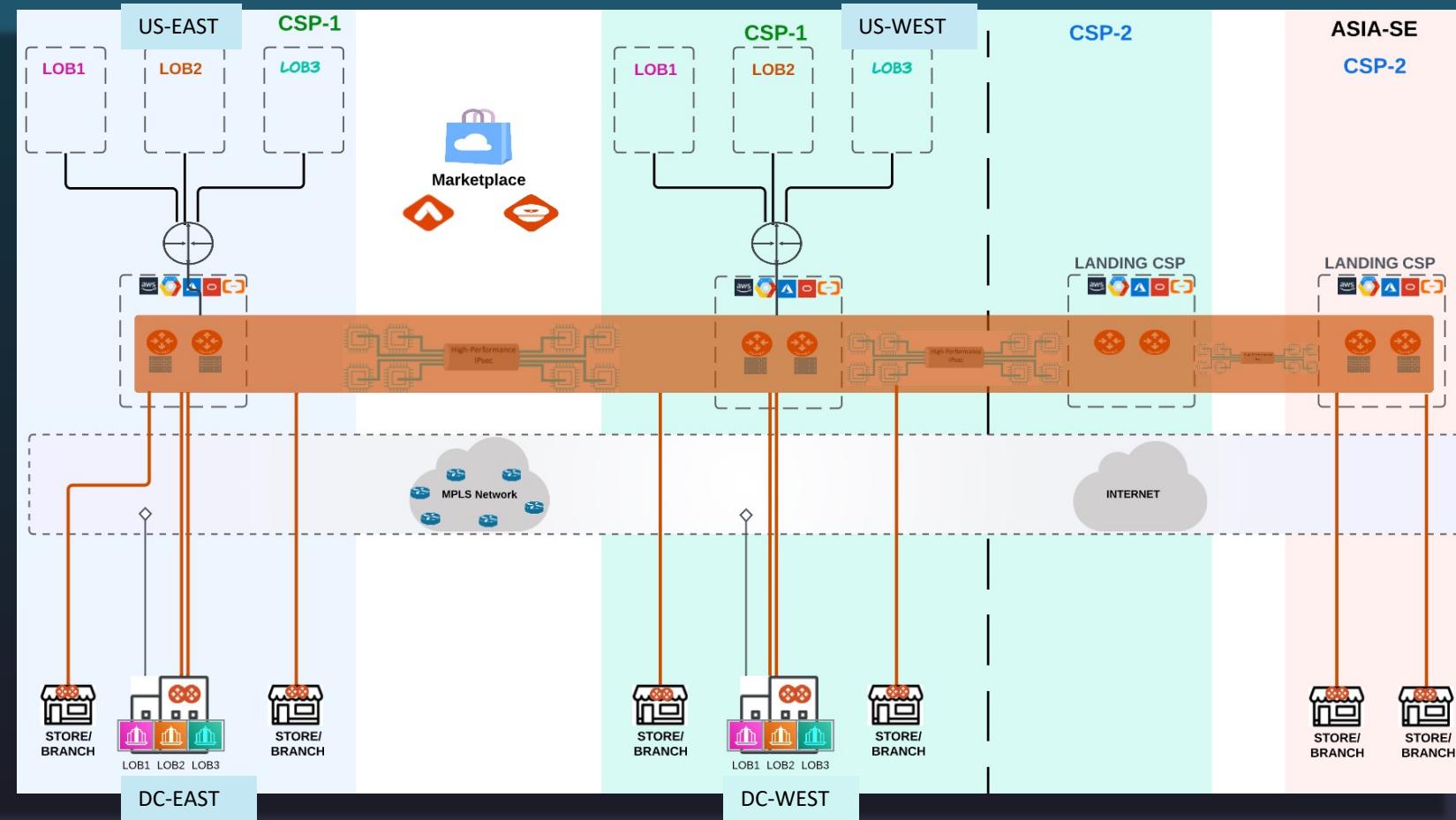
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 - Aviatrix Transit GWs
 - Deploy NGFWs except CSP-2 (landing CSP)
 - Deploy Cloud Backbone
- Deploy Aviatrix Edge in the DC and branches



Architecture 4 – Hybrid Connectivity

How to Get Started

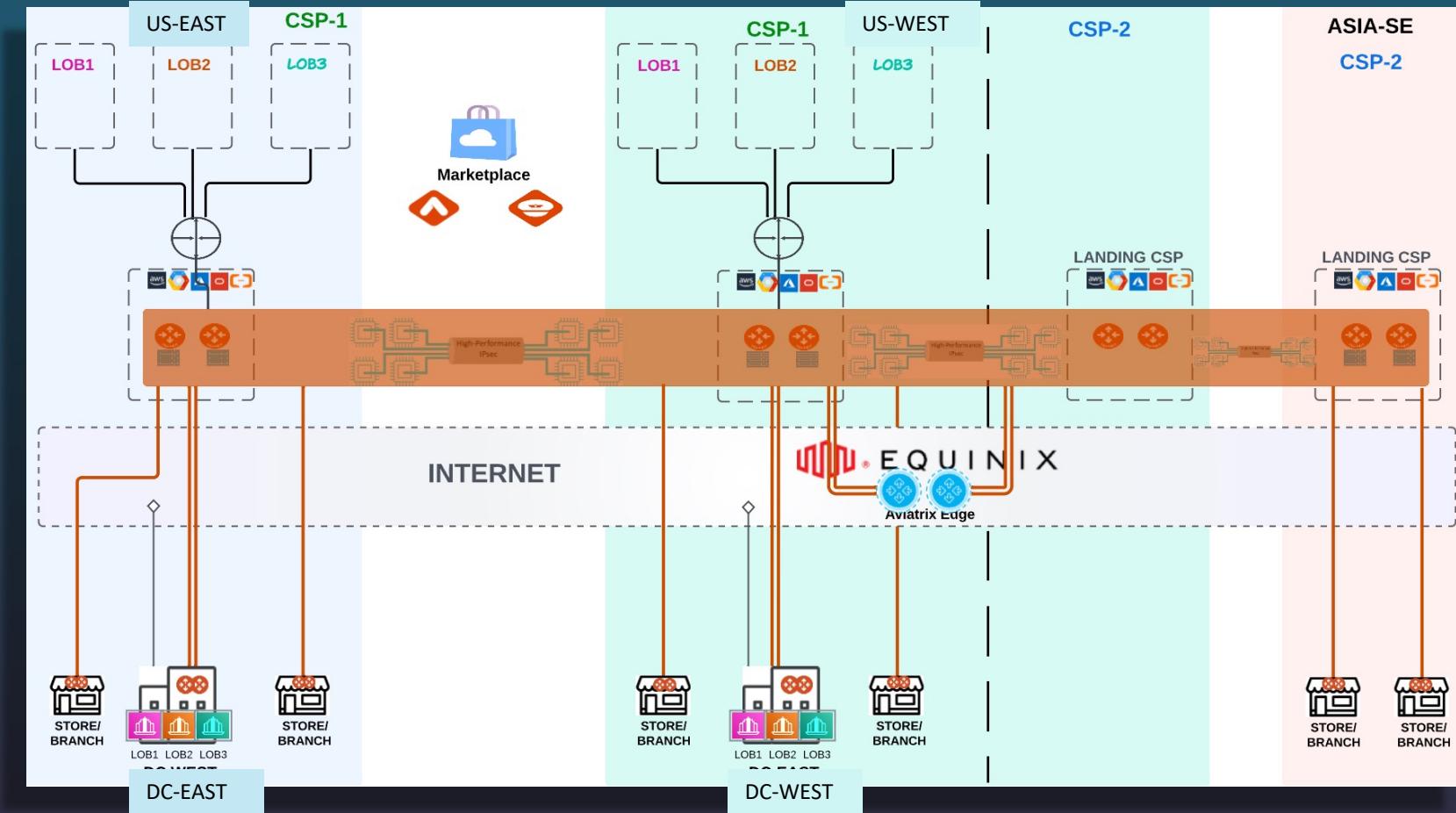
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 - Aviatrix Transit GWs
 - Deploy NGFWs except CSP-2 (landing CSP)
 - Deploy Cloud Backbone
- Deploy Aviatrix Edge in the DC and branches
- Connect the native transit construct to the Cloud Backbone
- Switch the private circuits connectivity from the native transit construct to Cloud Backbone
- Connect branches with the Cloud Backbone using Aviatrix Edge



Architecture 4 – Hybrid Connectivity (Equinix Extension)

How to Get Started

- Zoomed-in Existing Architecture
- Deploy Aviatrix Controller & CoPilot from CSP Marketplace
- Create the following from Aviatrix without changing anything in the existing architecture
 - Transit VPC/VNET/VCN
 - Aviatrix Transit GWS
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 - Deploy Cloud Backbone
- Deploy Aviatrix Edge in the DC and branches
- Connect the native transit construct to the Cloud Backbone
- Switch the private circuits connectivity from the native transit construct to Cloud Backbone
- Connect branches with the Cloud Backbone using Aviatrix Edge
- Create HPE connectivity between Equinix and Cloud Backbone using Aviatrix Edge



Enterprise Architecture 5 MSPs



Architecture 5 – Managed Service Providers (MSPs)

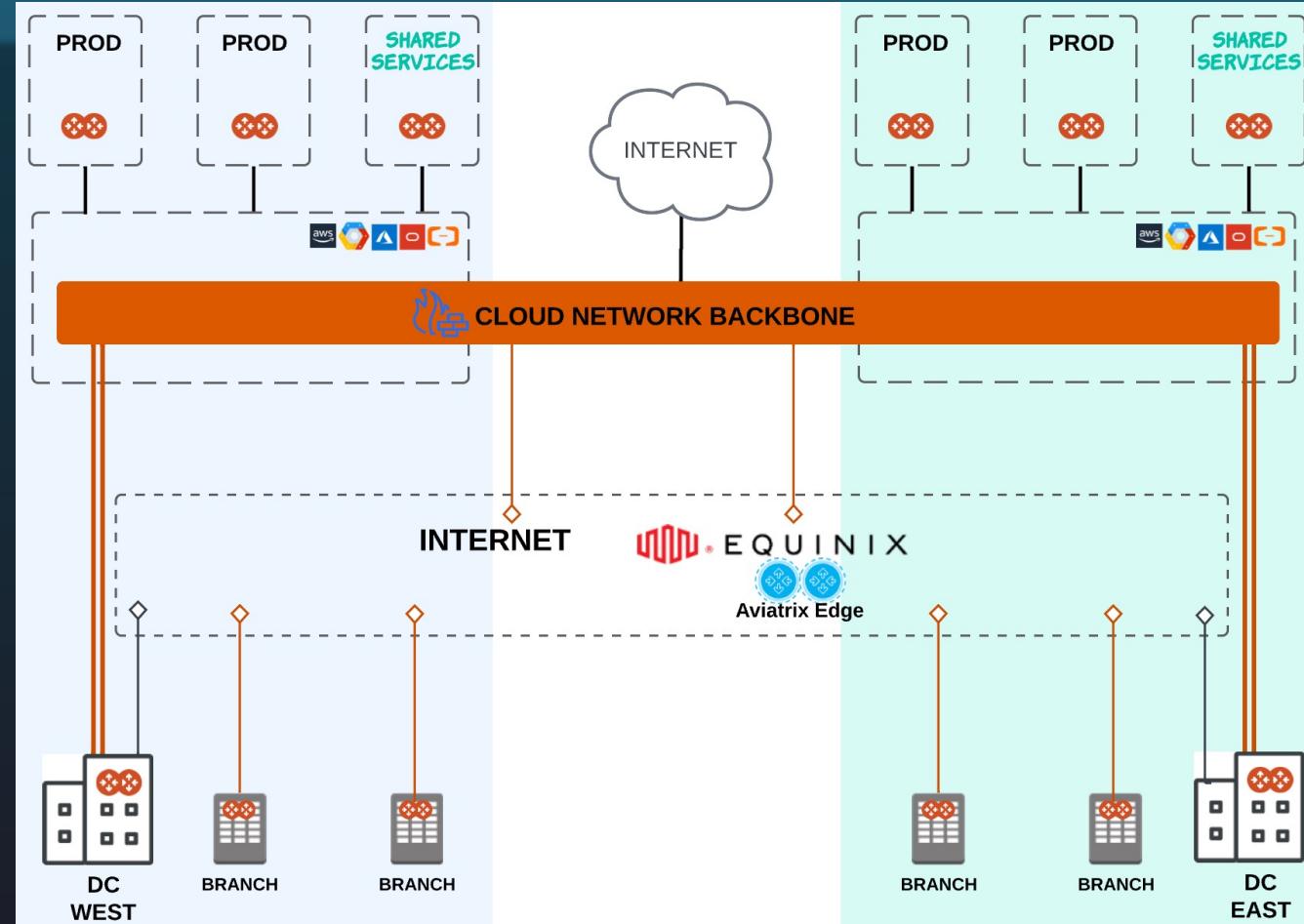
Challenges:

- Slow Digital Transformation
- Locked-in with hardware vendors
 - Challenges in modernization of the solution
 - Solution lacks advanced cloud networking and security infrastructure
- Skills gap challenges
- Customers pushback not to invest in dying technologies
- Hardware staging and deployment delays
- Difficult to maintain multitenancy and segmentation between end-customers and Lines of Businesses (LOBs)
- Inefficient day2 operations due to many management stations (one per cloud and on-prem)

Architecture 5 – Managed Service Providers (MSPs)

Aviatrix Multicloud Network Architecture

- Cutting-edge secure and programmable private cloud network backbone
- Accelerated Digital Transformation
- Multitenancy capable enterprise cloud networking and security solution
- Unified management-plane for multicloud and on-prem



Enterprise Architecture 6

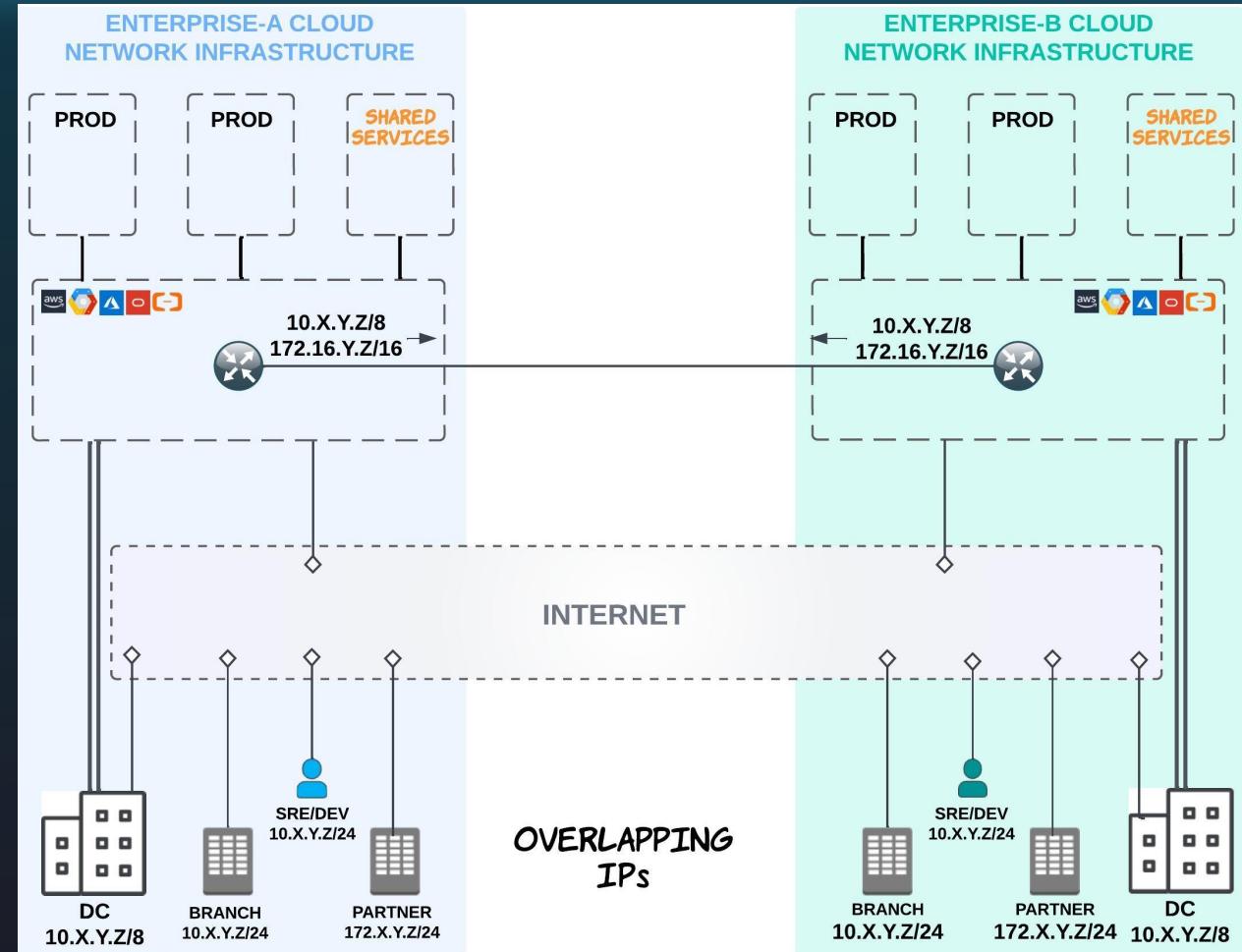
M&As



Architecture 6 – Mergers and Acquisitions

Challenges:

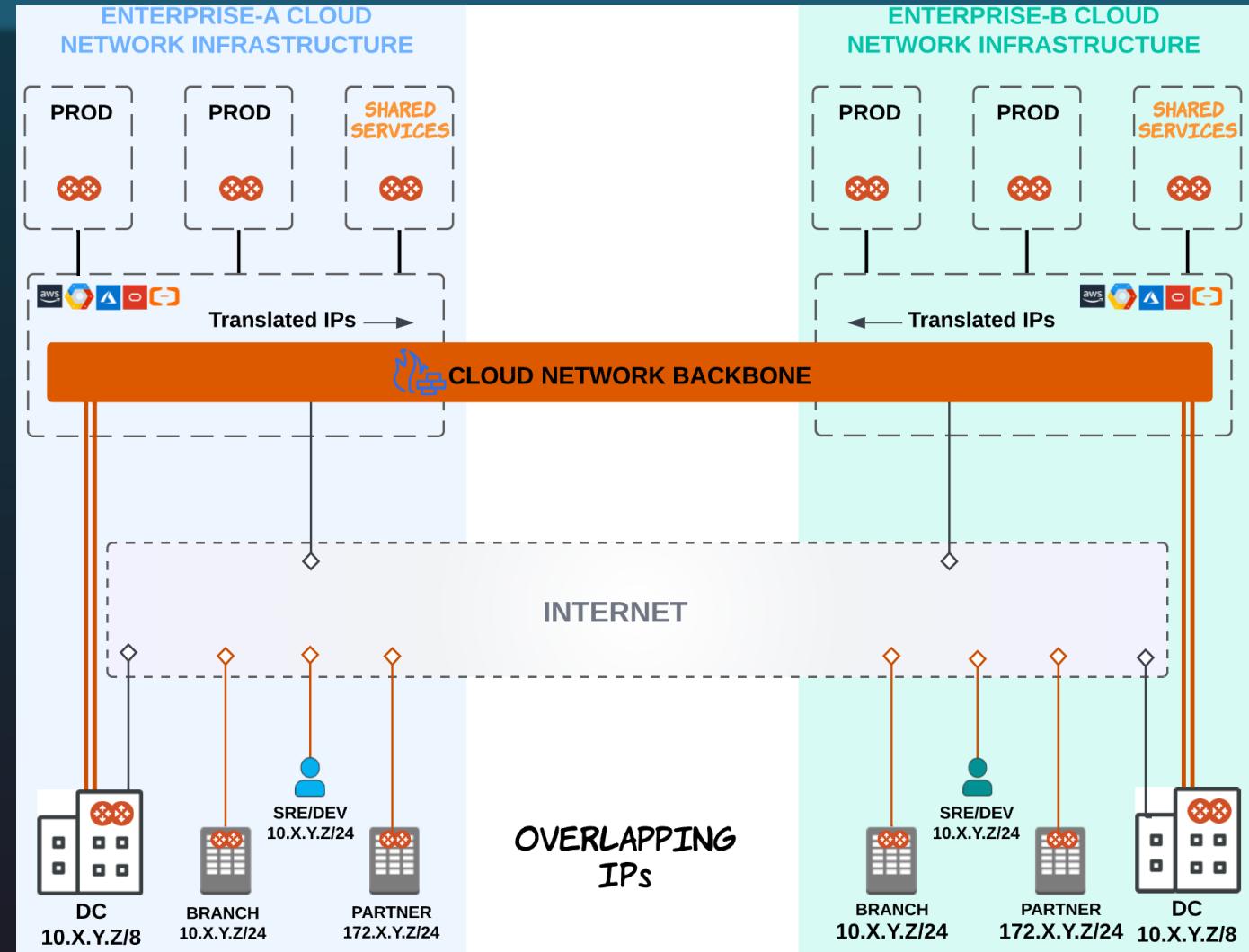
- Difficult to learn a new language and its native constructs (acquired enterprise could be in a different CSP)
- Different Security and Compliance Standards
- Different or no Cloud Network Architecture
- Overlapping IPs with:
 - DCs/Branches/Sites
 - Partners



Architecture 6 – Mergers and Acquisitions

Aviatrix Multicloud Network Architecture

- Common Repeatable Multicloud Network Architecture
- Consistent Security and Compliance Standards
- Overlapping IPs Solution at the Edge



Demo & Lab



2024 Secure Cloud Networking Field Report

Critical insights from over 400 global practitioners

COST AND VISIBILITY ARE THE TOP BARRIERS TO CLOUD.

45% say "visibility and troubleshooting" and "cost controls" are top hurdles to cloud

65% are unsure they're aware of all their company's cloud instances

30% have missed cloud migration deadlines due to networking



40%

still describe their approach to cloud security as "lift and shift"

LEGACY APPROACHES AND LAGGING SKILL SETS ARE CAUSES FOR CLOUD SECURITY CONCERN.



2X

as many cloud network outages were caused by firewalls than cyber attacks in the last year

REALISTIC CLOUD BUDGETS ARE NEEDED, ESPECIALLY AS GenAI INITIATIVES TAKE FLIGHT.

35% have been hit with unexpected cloud networking or security costs

- 30.5% report those unexpected costs were \$100,000+
- 12.4% were \$500,000+

38% say GenAI has not impacted cloud budgets, or has even decreased them



THE CLOUD SKILLS GAP REMAINS STRONG.

3 out of 5 have struggled to hire the necessary candidates to support their cloud initiatives

45% say a lack of in-house skilled employees is the biggest obstacle to cloud

65% of companies are prioritizing cloud training and funding certifications





[Download the 2024 Secure Cloud Networking Field Report](#)

Critical insights from over 400 global cloud, networking, and security practitioners



[Get ACE Certified](#)

The industry's leading multicloud networking training and certification program



[Network with Peers in The Cloud Network Community](#)

Join the community created for cloud networking experts to connect, collaborate, and have fun



[Join a Community Office Hours](#)

Storytelling, demos, collaboration, ask the expert sessions, and more

Aviatrix Certified Engineer

<https://aviatrix.com/ace/>

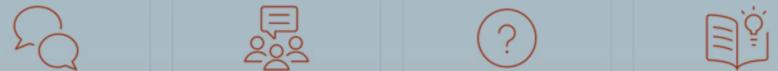
Fast Track learning of networking in major public clouds leveraging enterprise ready architecture of Aviatrix

Associate	Infrastructure as Code	Cloud Operations	Professional	Design Expert
Virtual / Self-paced / In-person	Virtual / In-person	Virtual / In-person	Virtual / In-person	In-person
6 hours	2-4 hours	2 days	3 days	1 day
Cloud Professionals	Network Engineers and Technical Staff	Technical Staff; Operations Team	Network Engineers and Technical Sales	Architects
Intro (101) level of cloud networking for AWS, Azure, GCP, OCI	201/301 level, who will be responsible for deploying network infrastructure at scale	201 level cloud networking, Day 2 Operations	201/301 level cloud networking – Aviatrix Implementation	301/401 level Multicloud networking. Design defense in front of a Panel

Join the ACE Community

<https://community.aviatrix.com/>

Join hands with fellow Network Engineers, help lead transformation in your orgs, and grow your careers





ACE Cloud Backbone and Hybrid Connectivity Training & Certification



Aviatrix Certified Engineer (ACE)
<https://aviatrix.com/ACE>



COMMUNITY
<https://community.aviatrix.com>