May 31 – June 2, Oslo Spektrum

10th anniversary

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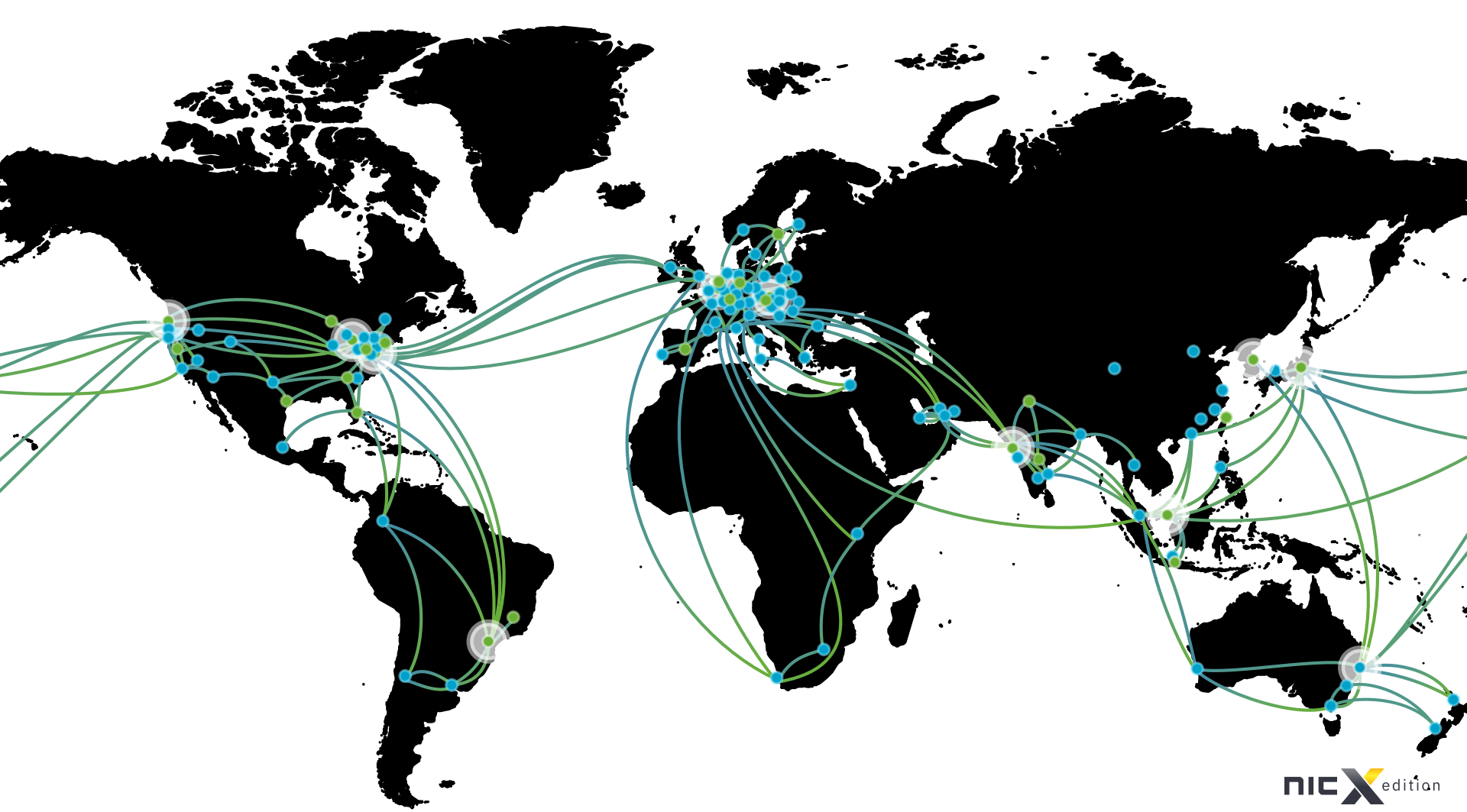
Hybrid Connectivity with Cloud

Networking concepts


nic X edition

Enterprise networks

- Mostly based on physical devices
- Device type and placement determines capabilities
- Typically slow to change
- Segmentation in VLAN’s
- Generally a single IP forwarding domain
- Often static addressing
- Network centric admission and access control

Cloud networks

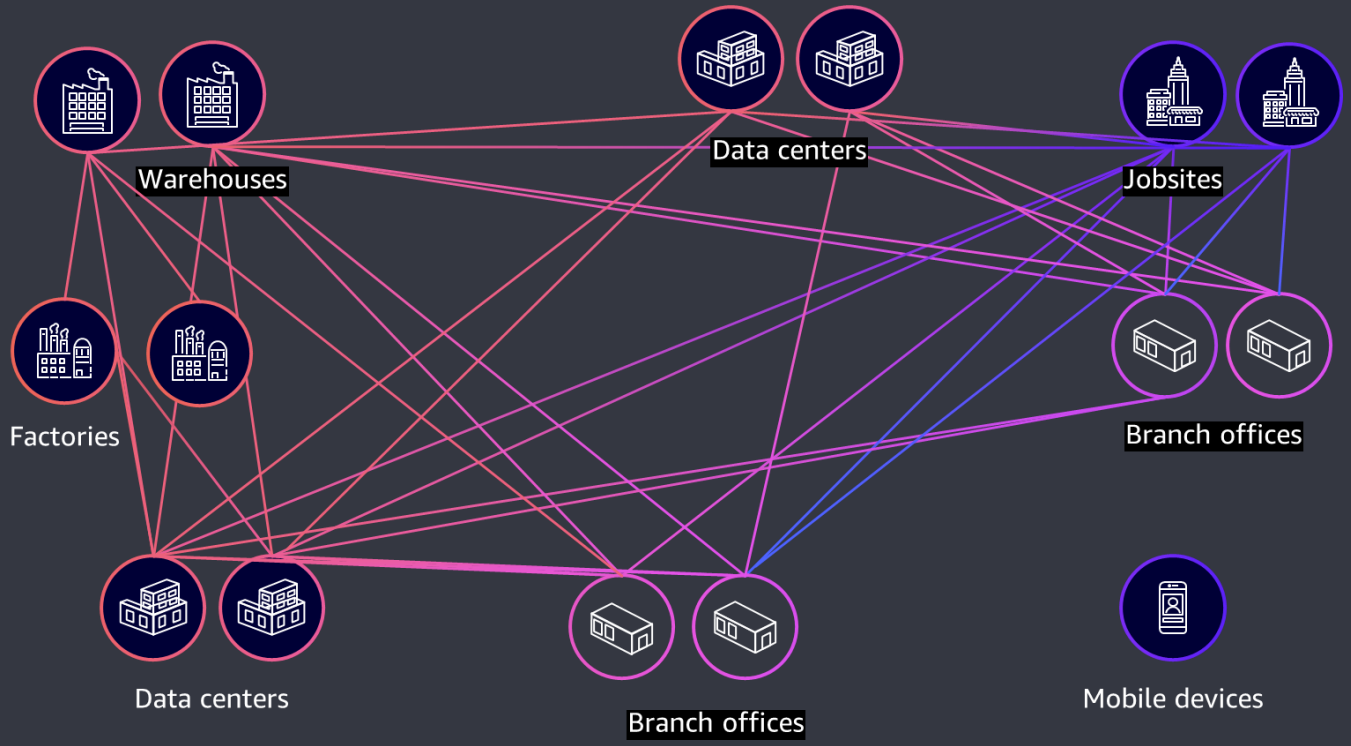
- Software defined networks (VPC)
- Subnets typically correlated with physical locations
- Typically high rate of change
- Dynamic IP addressing
- Application centric admission and access control

How did we get to hybrid networks?

What are hybrid networks?

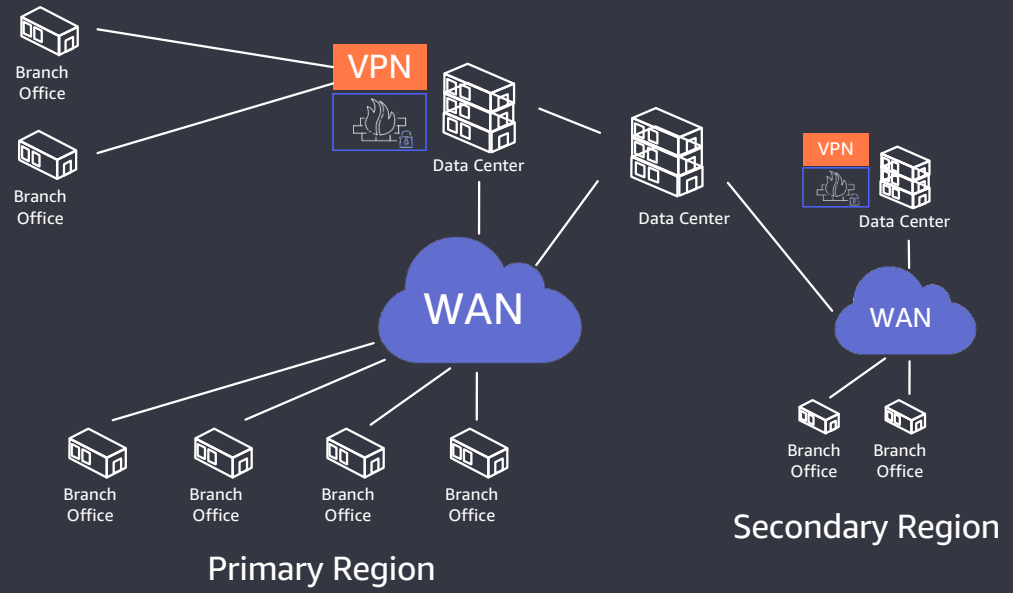
- A network that enables data exchange between
  - cloud services
  - your data centers
  - branch offices
  - remote teams

Traditional enterprise networks are complex



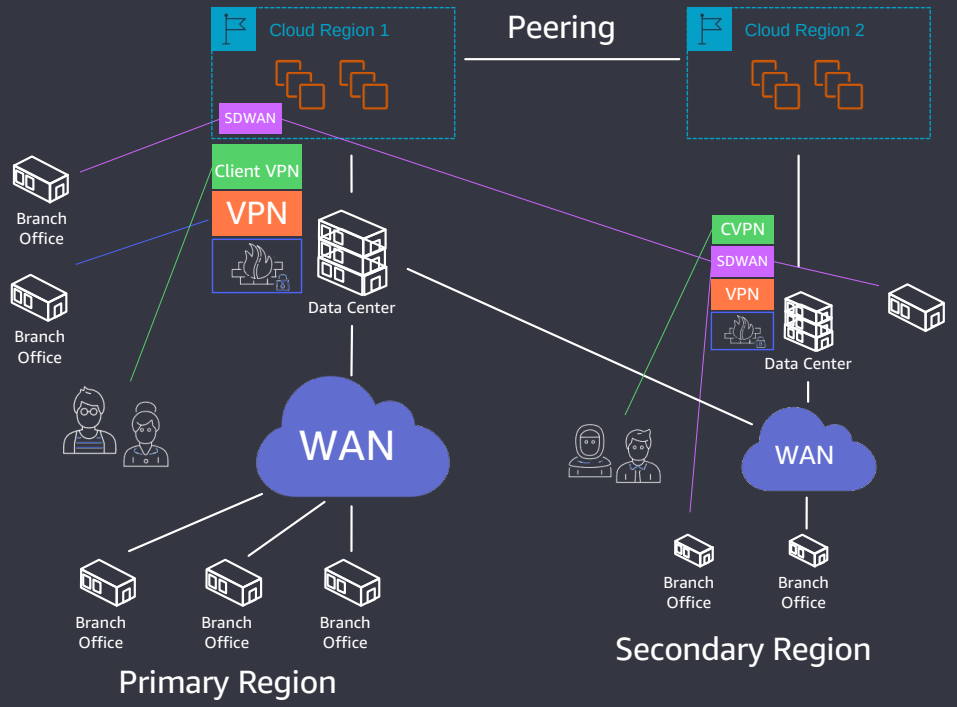
The old corporate WAN

- Traditional technology
  - MPLS & VPN
- Traffic
  - User at sites
  - Apps in data centers
- Making changes
  - New offices can take months
  - New regions take even longer



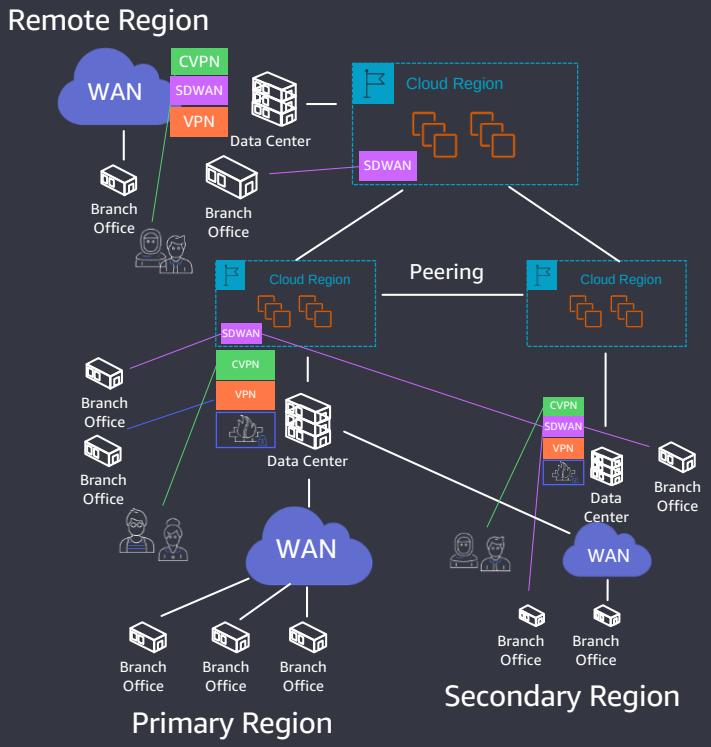
Modern WAN, new challenges

- More software-driven
  - SD-WAN, Cloud, Client VPN
  - Increased security needs
  - Network operations
- Dynamic Traffic
  - Users everywhere
  - Apps in the cloud
  - Network config by developers



Modern WAN, but now global

- More software-driven
  - SD-WAN, Cloud, Client VPN
  - Increased security needs
  - Network operations
- Dynamic Traffic
  - Users everywhere
  - Apps in the cloud
  - Network config by developers
  - Adapt to changing site requirements



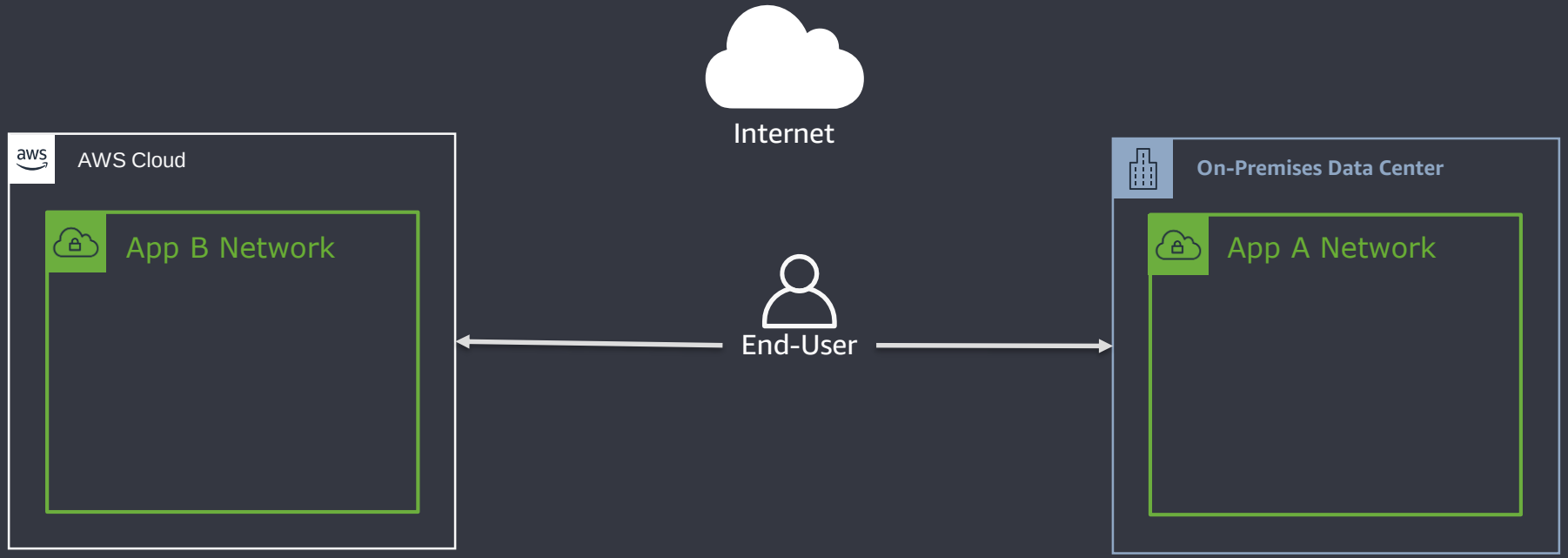
Challenges

- Navigating a patchwork of technologies
- Sourcing hard-to-change connections
- Difficult to segment to improve security
- Hard to manage and monitor
- Mix of legacy and modern networks
- Complexity of overlay networks

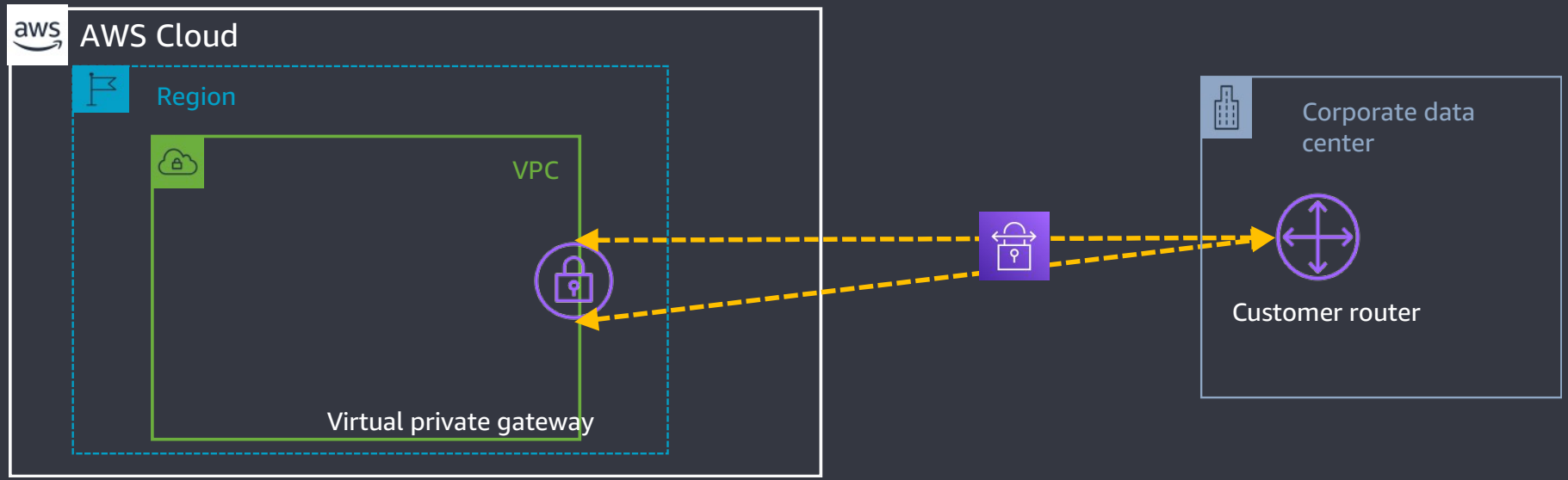
Where do we go from here?

Our vision for the hybrid network

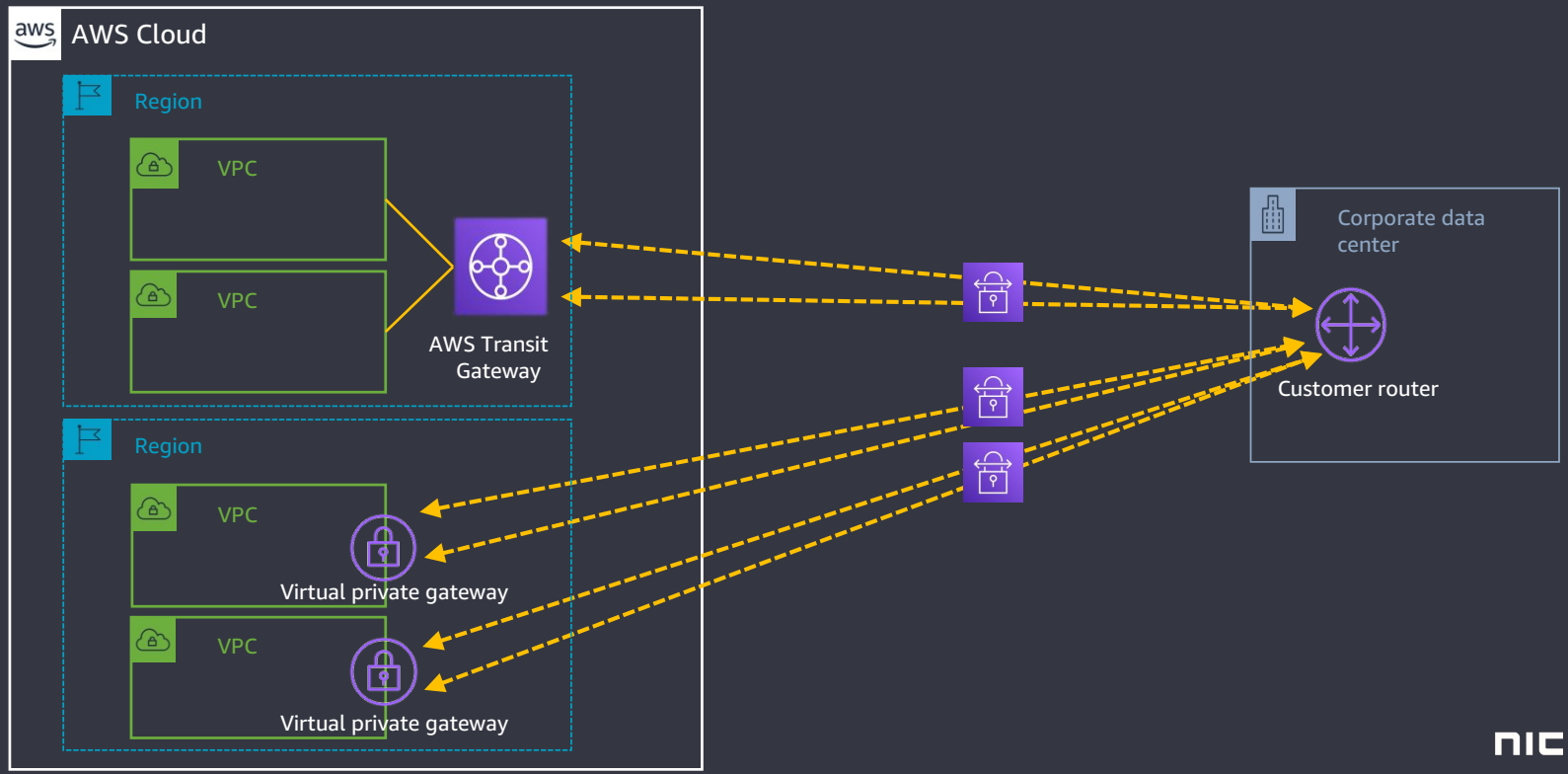
Easiest “Hybrid” Network



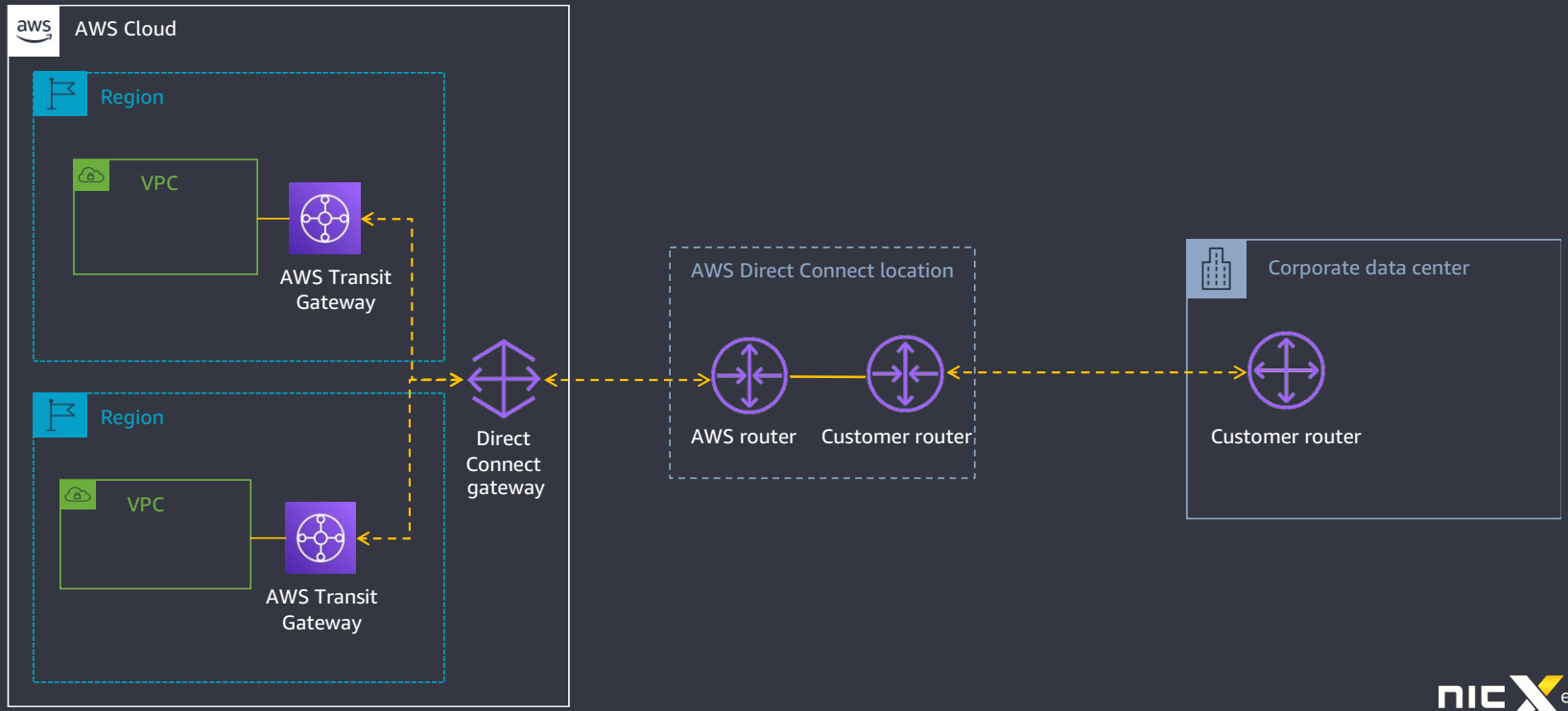
Getting started



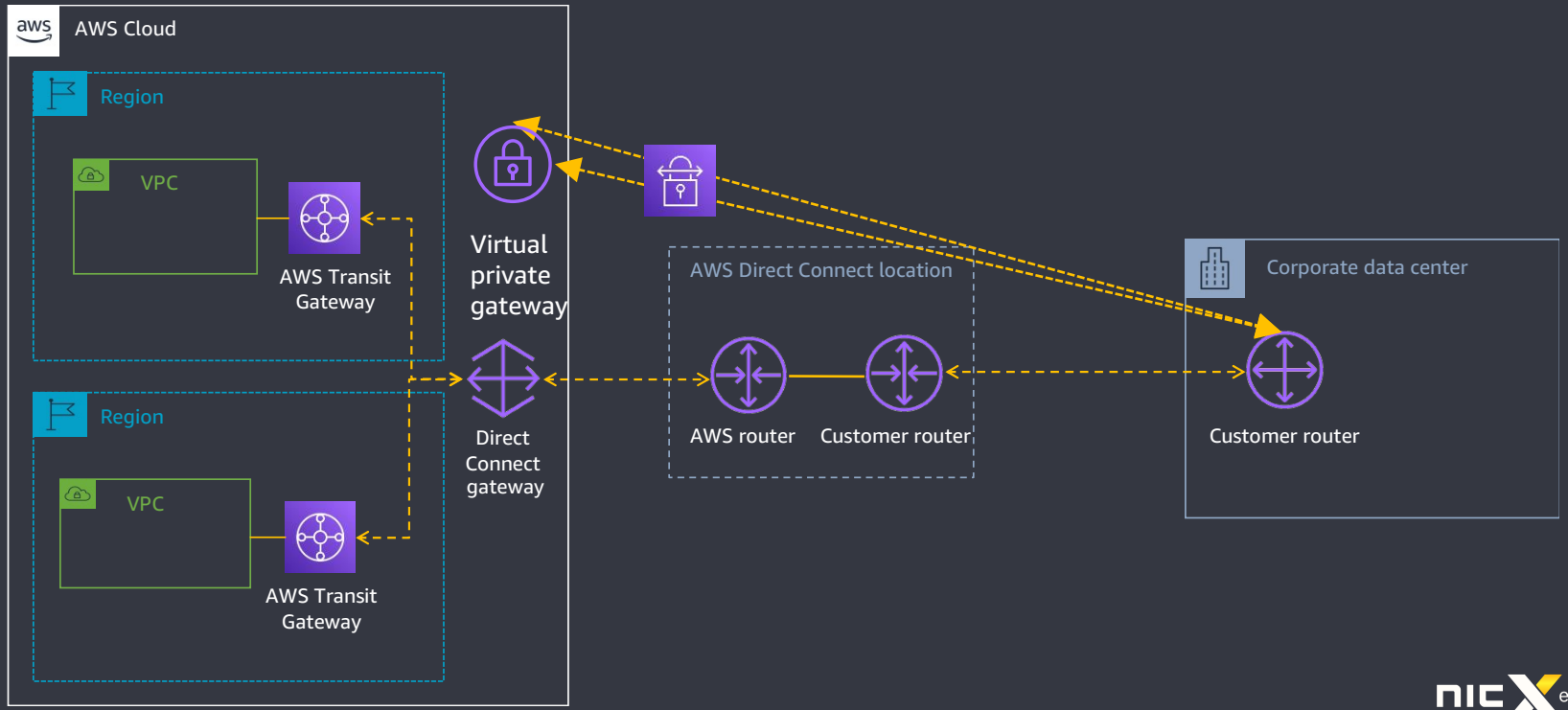
Quickly running into scaling challenges



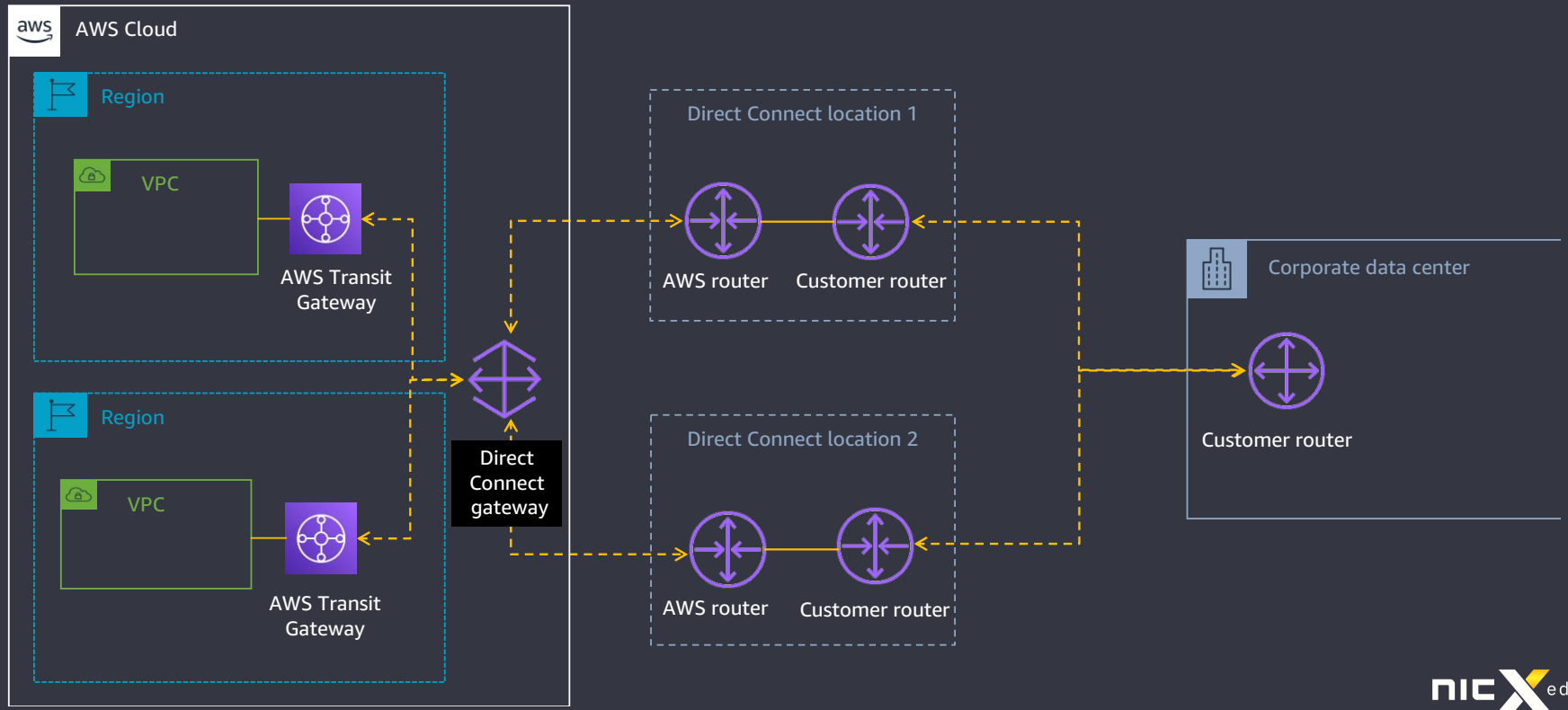
Slowly evolving architectures



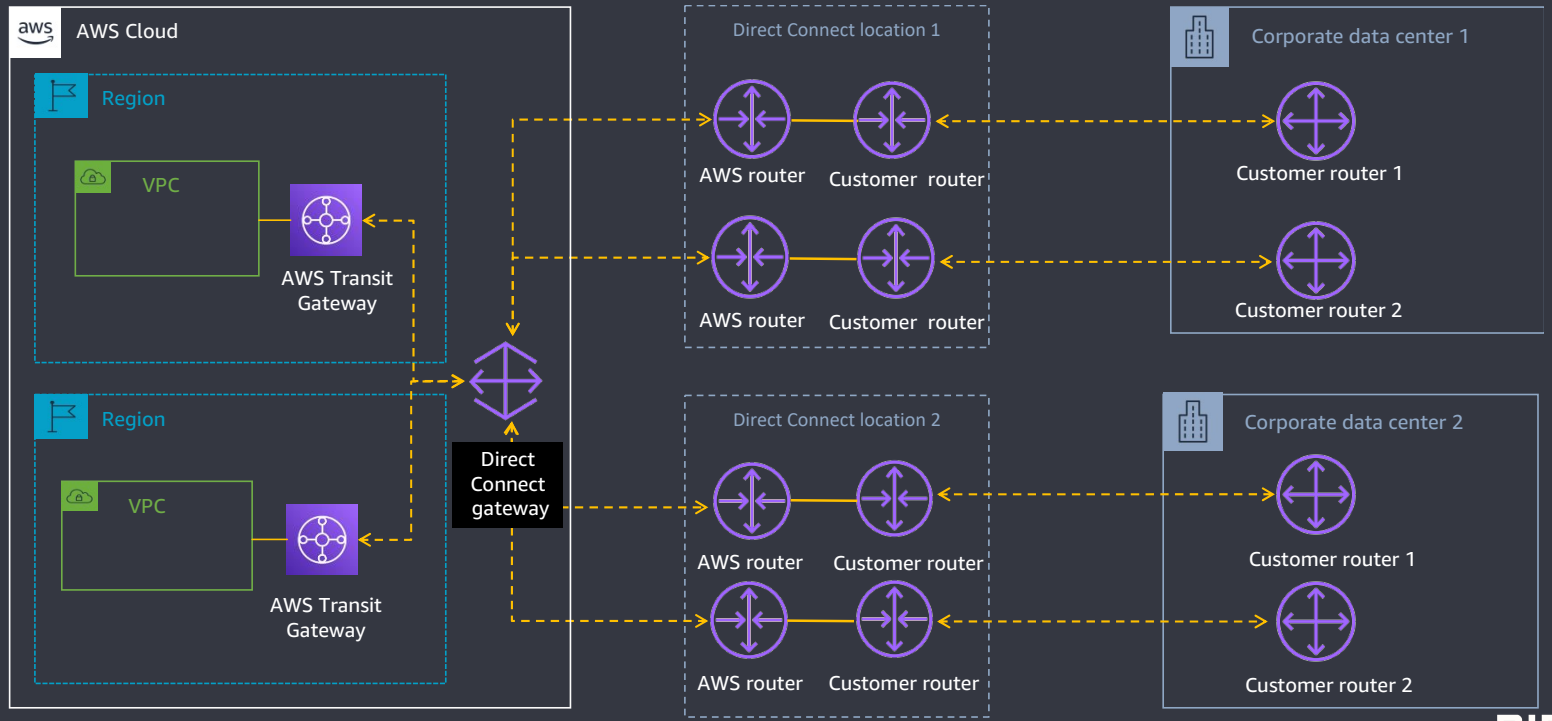
Surviving your first outage



Adding further resilience



Maybe even more resiliency



Common pitfalls

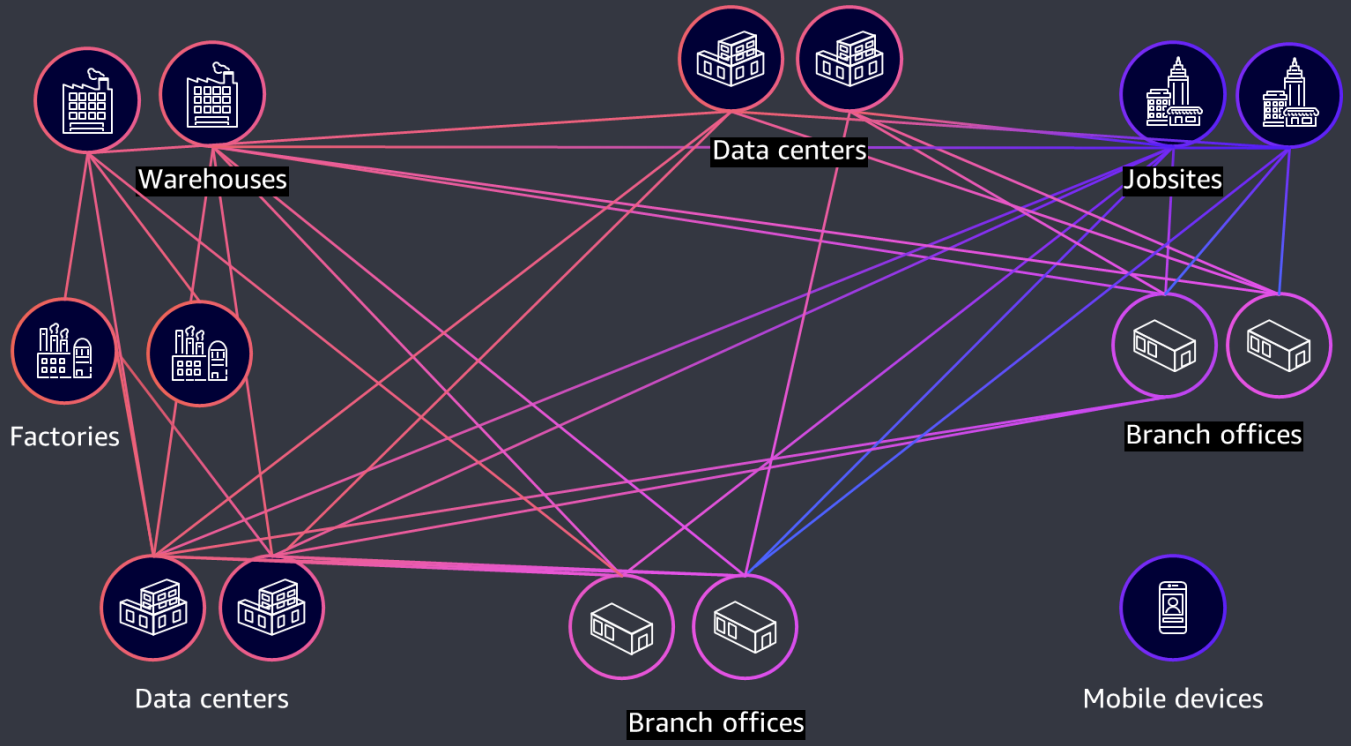
- Mixing resilient direct circuits and VPN to the same location
- Not simplifying the cloud network setup
- Manual configuration instead of automation
- Treating cloud networking as a copy of your on-premises network
- Not being aware of limits in the cloud

Limits in the cloud?!

- Route prefix counts
- Placement on separate devices in the same location
- Availability Zone specific connections
- Need to choose between public and private routing
- Unsupported features (QoS, VLAN etc.)
- Plan for required maintenance
- Cost

Opportunity for improvements

Traditional enterprise networks are messy



How to prevent this mess in the cloud?

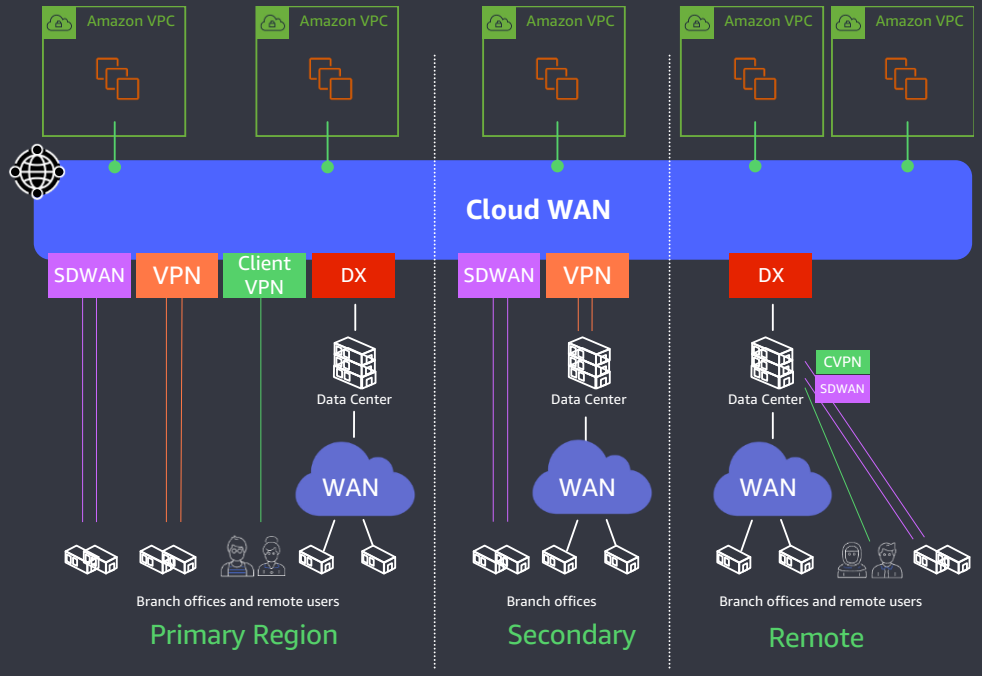
- Develop a **well-defined IP addressing** allocation scheme across your VPCs and on-premises networks and automate the management
- Reduce the risk of **overlapping CIDR ranges** between VPC and on-premises networks by utilizing IPAM tools
- Use **unique ASNs** across your hybrid networks

Build a cloud WAN

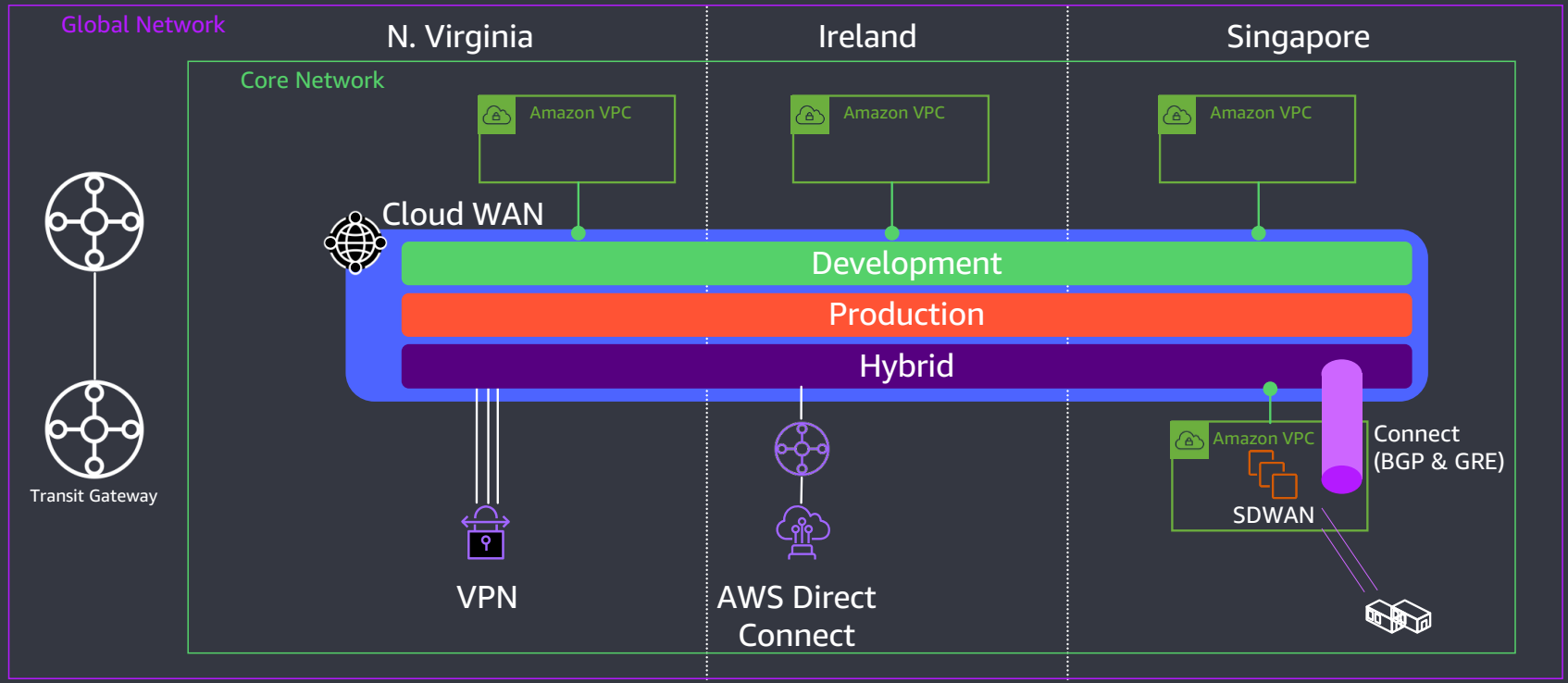
- Use the cloud as a global backbone
- Simplify WAN networking
- Segment traffic with centralized policies
- Use a single vendor solution or choose cloud native solutions
- Automate as much as possible

A Cloud WAN?

- Create connectivity across regions
- Dynamic routing
- Built-in automation
- Single control plane
  - VPCs
  - VPNs
  - SD-WAN
  - Client VPN
  - Firewalls



A Cloud WAN.



Growing vendor ecosystem