AWS NETWORKING SERVICES

Agenda

- Networking Services Overview
- Virtual Private Cloud (VPC)
- VPC Concepts
- VPC Usecases
- VPC Demo
- VPN
- Direct Connect

Networking & Content Delivery

VPC

CloudFront

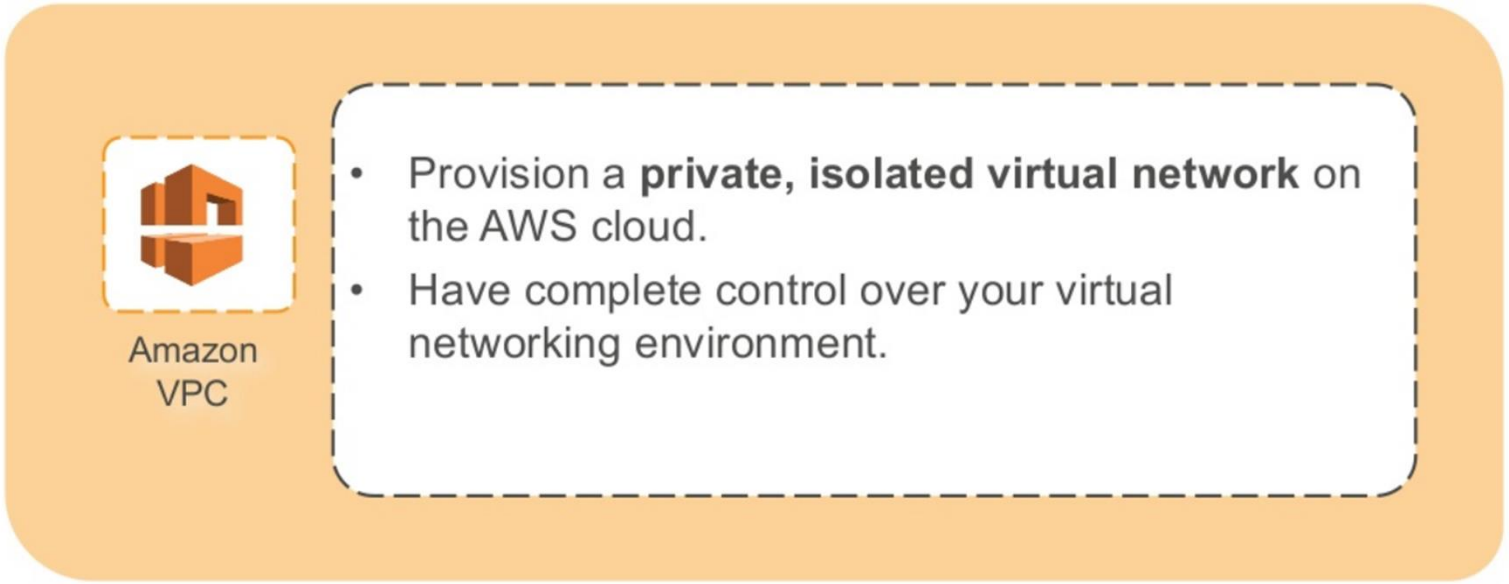
Direct Connect

Route 53

VPC (Virtual Private Cloud)

Amazon VPC Overview

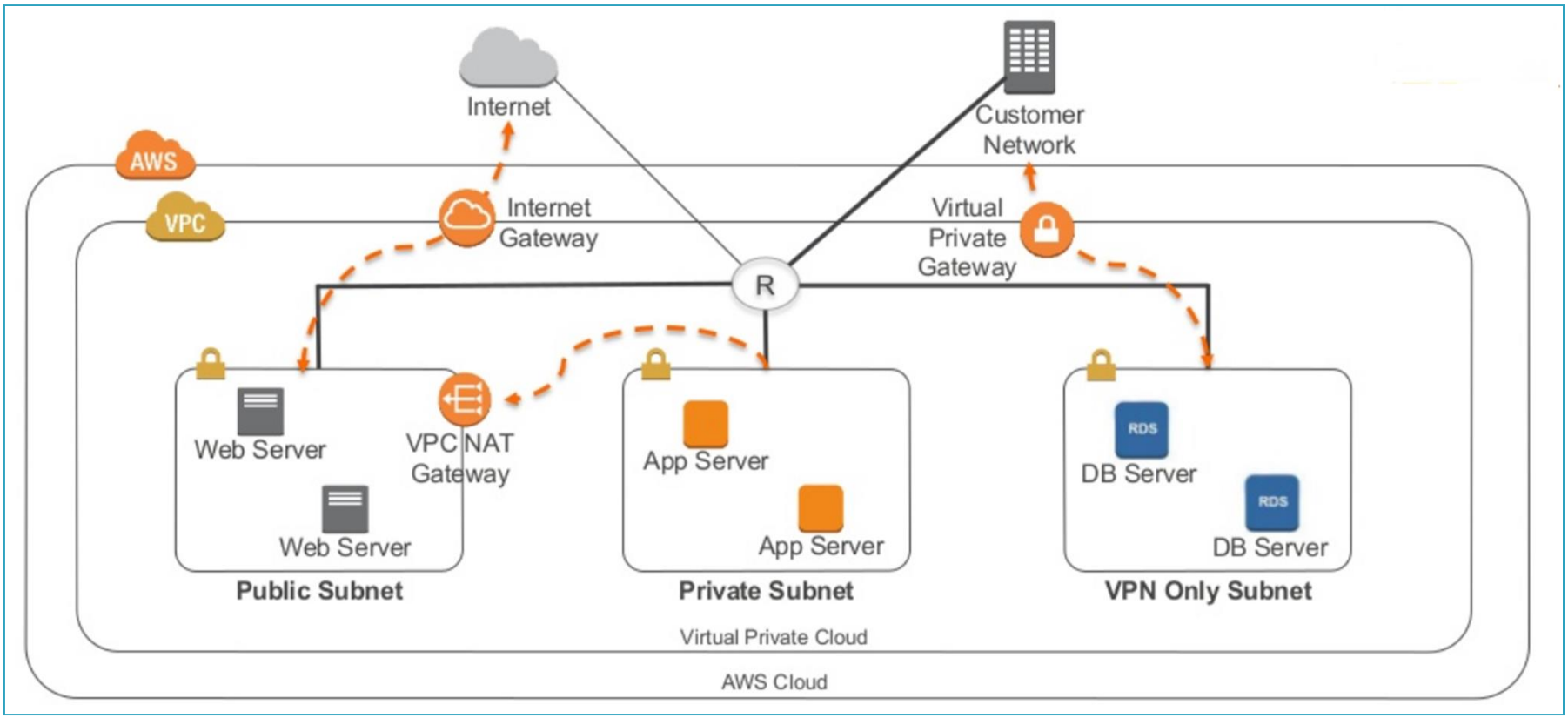
Amazon Virtual Private Cloud (Amazon VPC) provides scalable networking capacity in the Amazon Web Services (AWS) cloud



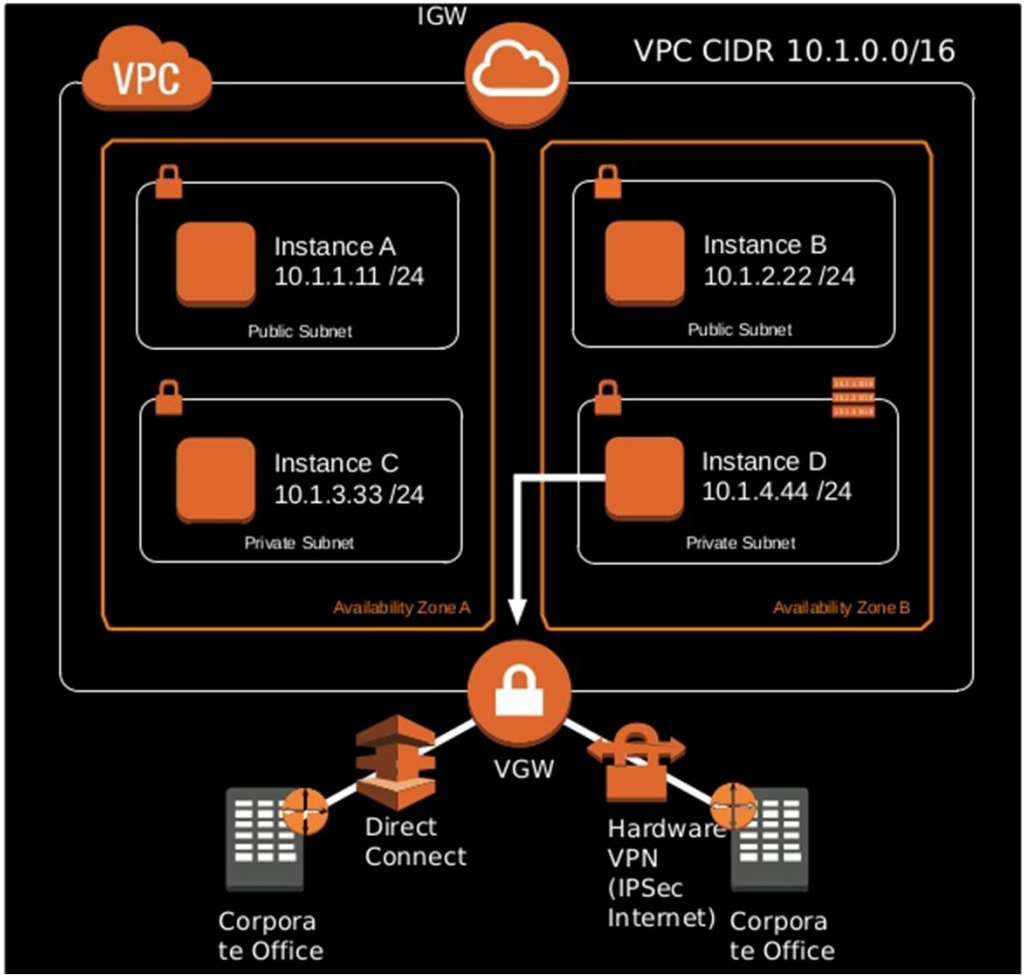
VPCs and Subnets

- A **subnet** defines a range of IP addresses in your VPC.
- You can launch AWS resources into a subnet that you select.
- A **private subnet** should be used for resources that won't be accessible over the Internet.
- A **public subnet** should be used for resources that will be accessed over the Internet.
- Each subnet must reside entirely within one Availability Zone and cannot span zones.

Amazon VPC Example

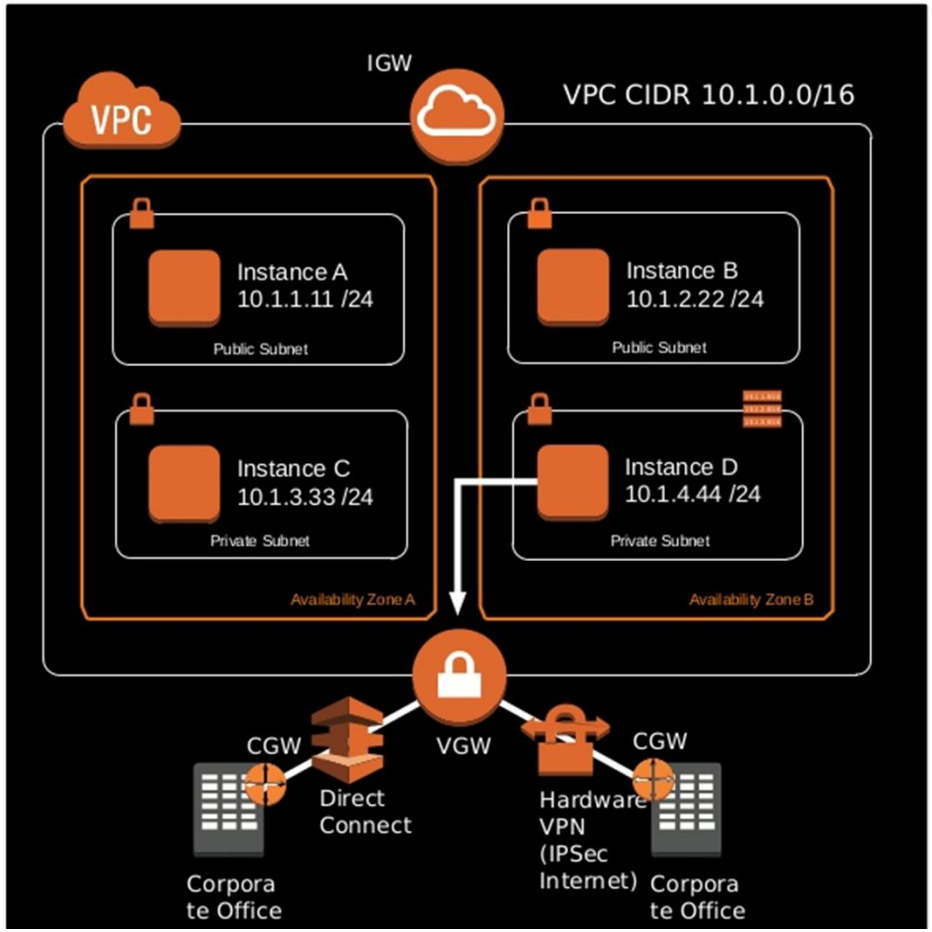


Amazon VPC Example



- Your own private, isolated section of the AWS cloud
- Corporate DC extension into AWS
- Grouping of EC2 instances and other services within a private IP address range i.e. 10.1.0.0/16
- Subnets are local per AZ (layer 3 DC-DC design)
- Failover is via SLB or DNS – no VMotion like failover
- Complete control over networking & security

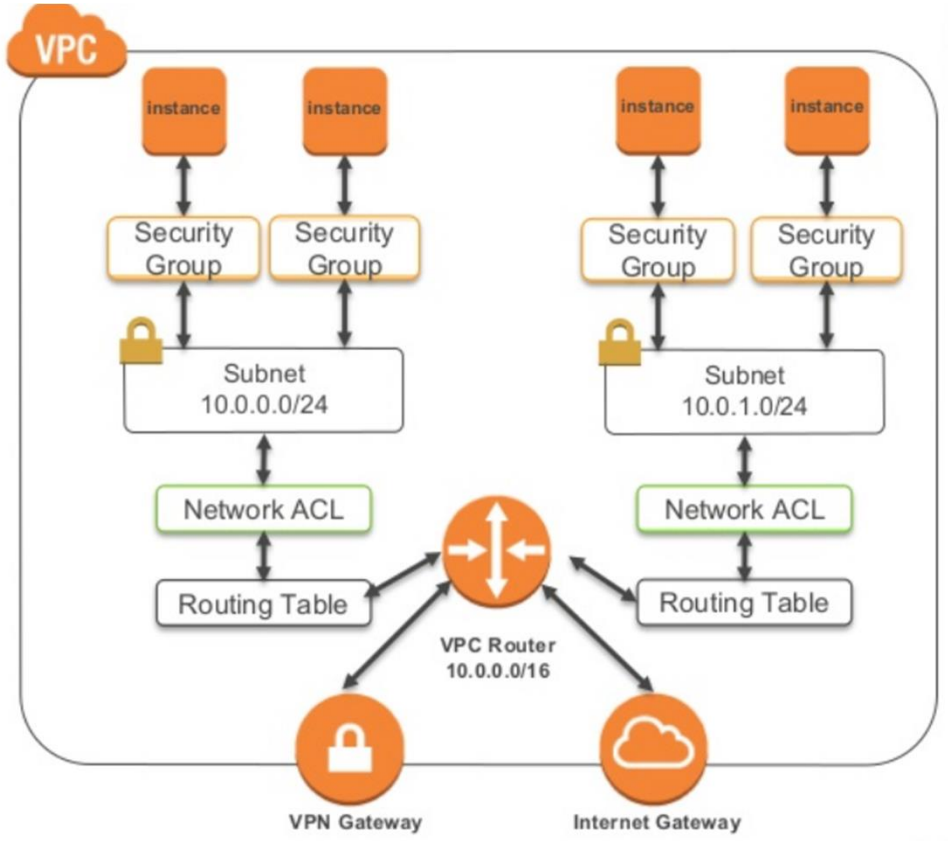
Amazon VPC Example



- IGW - Internet Gateway
- VGW - Virtual Private Gateway
- CGW – Customer Gateway
- Subnets
- Route tables
- Direct Connect
- Hardware VPN
- Security Groups & ACLs

Amazon VPC Security

- Security groups
- Network access control lists (ACLs)
- Key Pairs



VPN (Virtual Private Network)

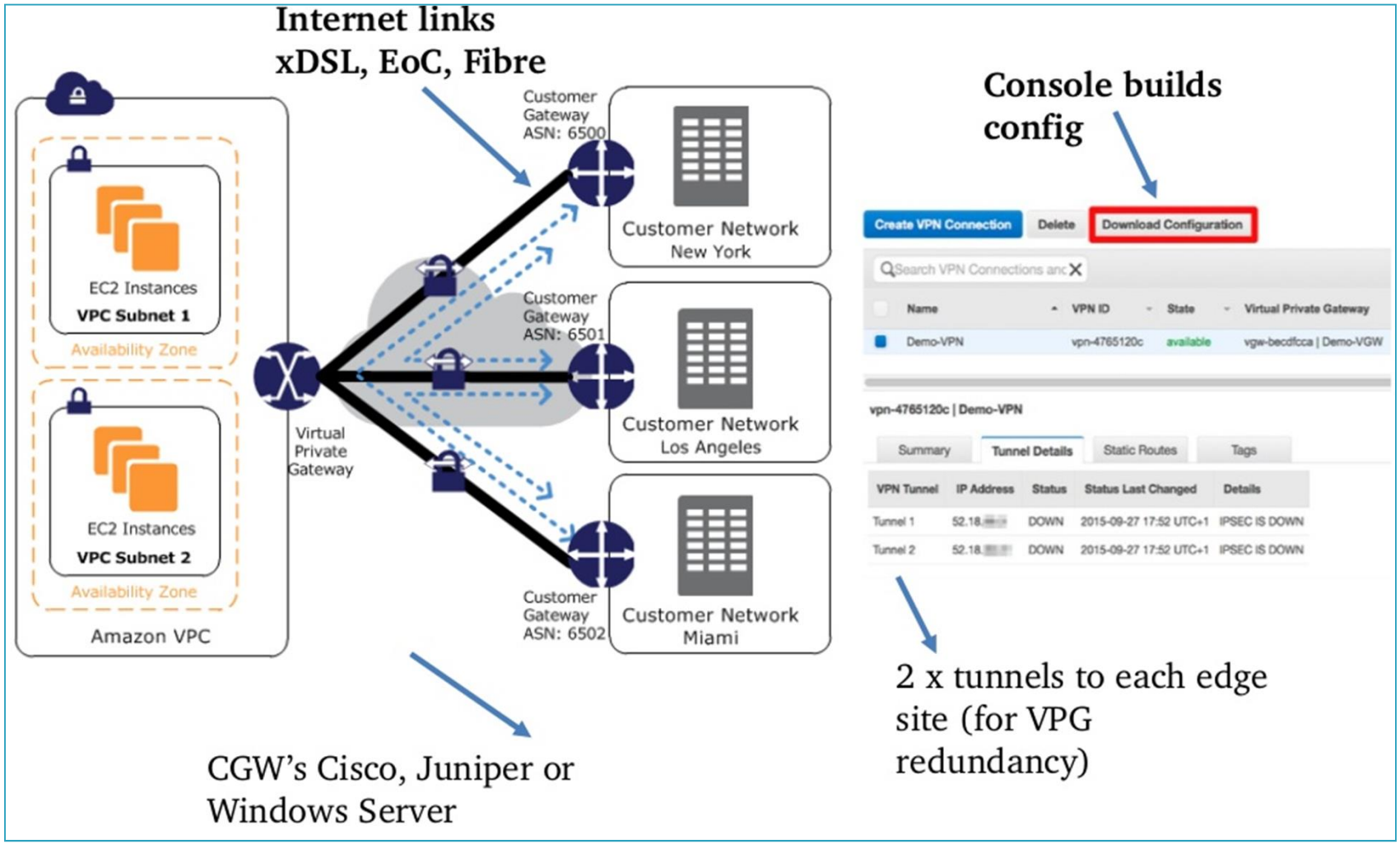
VPN Connections

VPN Connectivity option	Description
AWS Hardware **VPN**	You can create an **IPsec** hardware VPN connection between your VPC and your remote network.
AWS **Direct Connect**	AWS Direct Connect provides a **dedicated private** connection from a remote network to your VPC.
AWS **VPN** CloudHub	You can create multiple **AWS hardware VPN** connections via your VPC to enable communications between various remote networks.
Software **VPN**	You can create a VPN connection to your remote network by using an Amazon EC2 instance in your VPC that's running a **software VPN appliance**.

VPN Connection – IPSec via Internet

- Provides an extension of the onsite corporate network
- Can use your existing private IP addressing 10.x etc
- IPSec tunnel to secure traffic over the Internet (128-bit AES)
- Static or dynamic routing (BGP)
- 2 x termination points per region. Default is a tunnel to each

VPN Connection – IPSec via Internet



Direct Connect

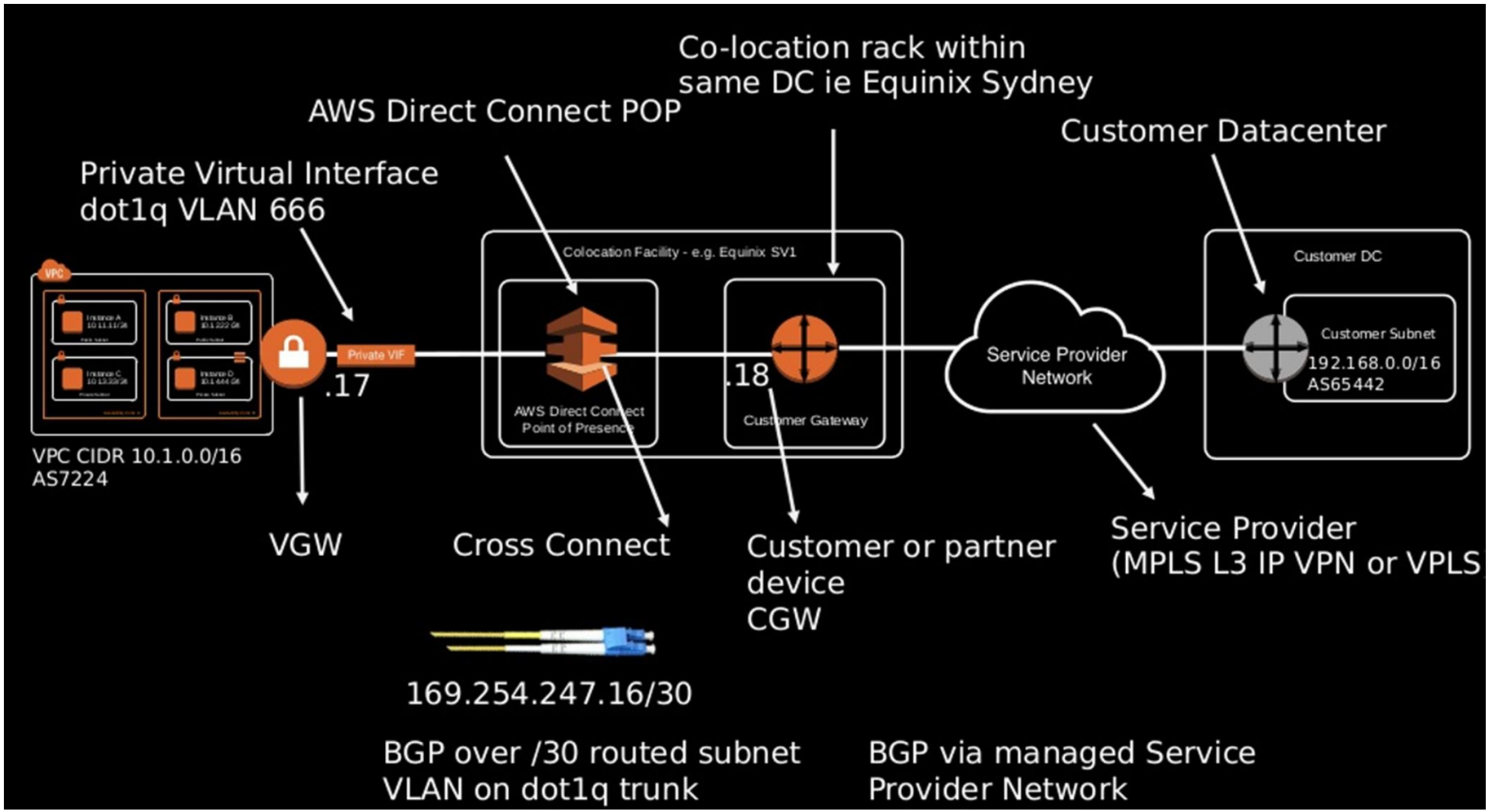
AWS Direct Connect

- High speed, dedicated, private pipe into AWS (VPC)
- Consistent network performance compared to Internet
- Metered outbound traffic (~1/3 cost of Internet)
- 1 or more network connection points per region (Syd x 2)
- Supports redundancy (BGP routing)
- Allows QoS
- End to end support by single network provider

AWS Direct Connect – Benefits

- Reduced network transfer costs (out of AWS)
- Improved & consistent application performance
- Flexible – initial seed data typically very large
- Less downtime - end to end support
- Security and compliance
- Enabler for the Hybrid Cloud Architecture

AWS Direct Connect – Anatomy



BGP

- Border Gateway Protocol
- Needed to implement network redundancy
- Standards based protocol used to connect the global Internet
- Exchanges routes 'prefixes' between 'neighbours'
- Uses AS numbers ie AS 65001

AS_PATH measure of network distance

- Local Preference – means to override AS_PATH locally
- Used by AWS to connect to customers and advertise routes.
  - Direct Connect (mandatory)
  - IPSec VPN (optional)
- Bi-Directional Forwarding Detection (BFD) – speeds up failover to as low a 150ms. Standard BGP can be 180 sec.

AWS CONTENT DELIVERY NETWORK OVERVIEW

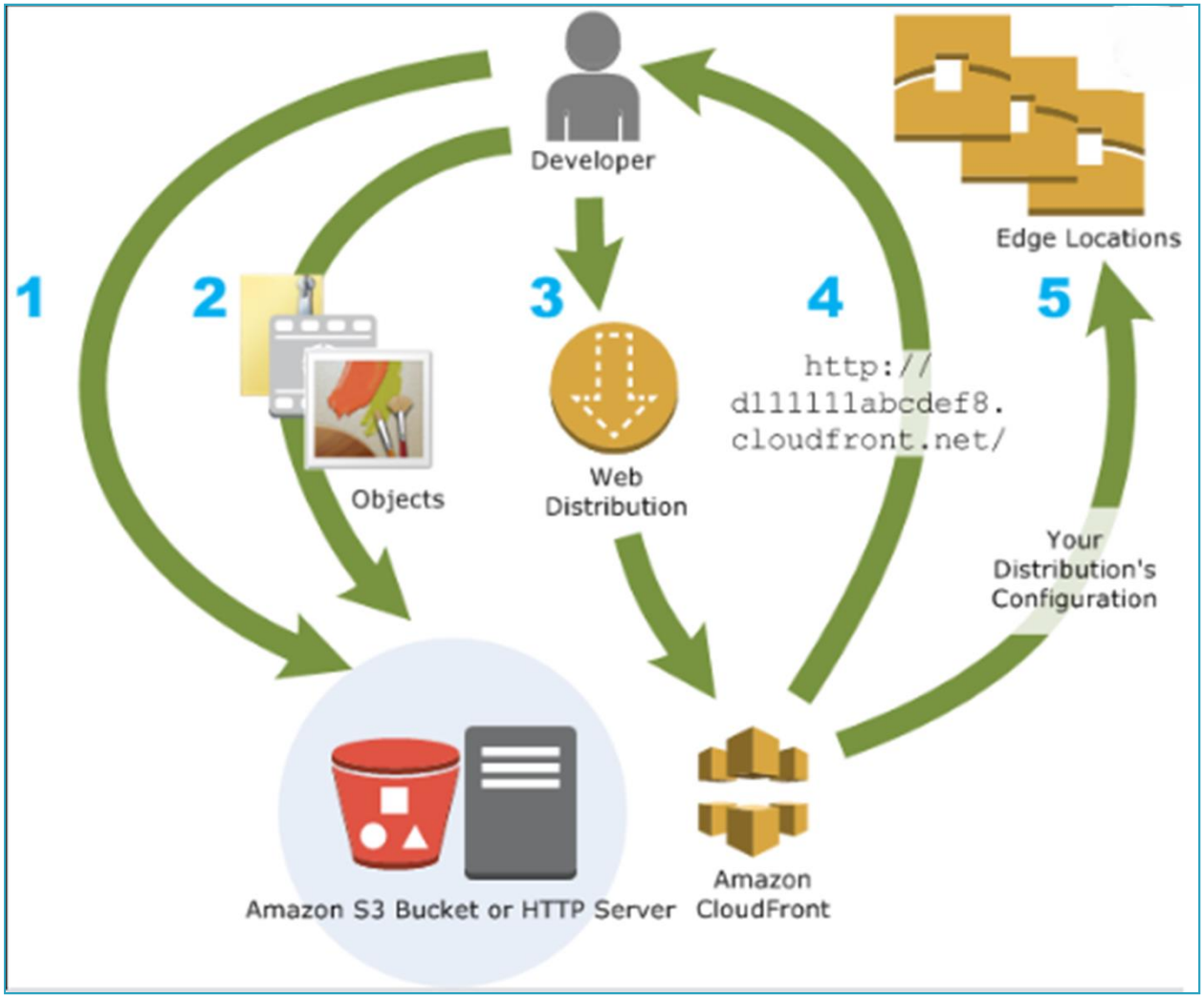
Cloud Front

CloudFront

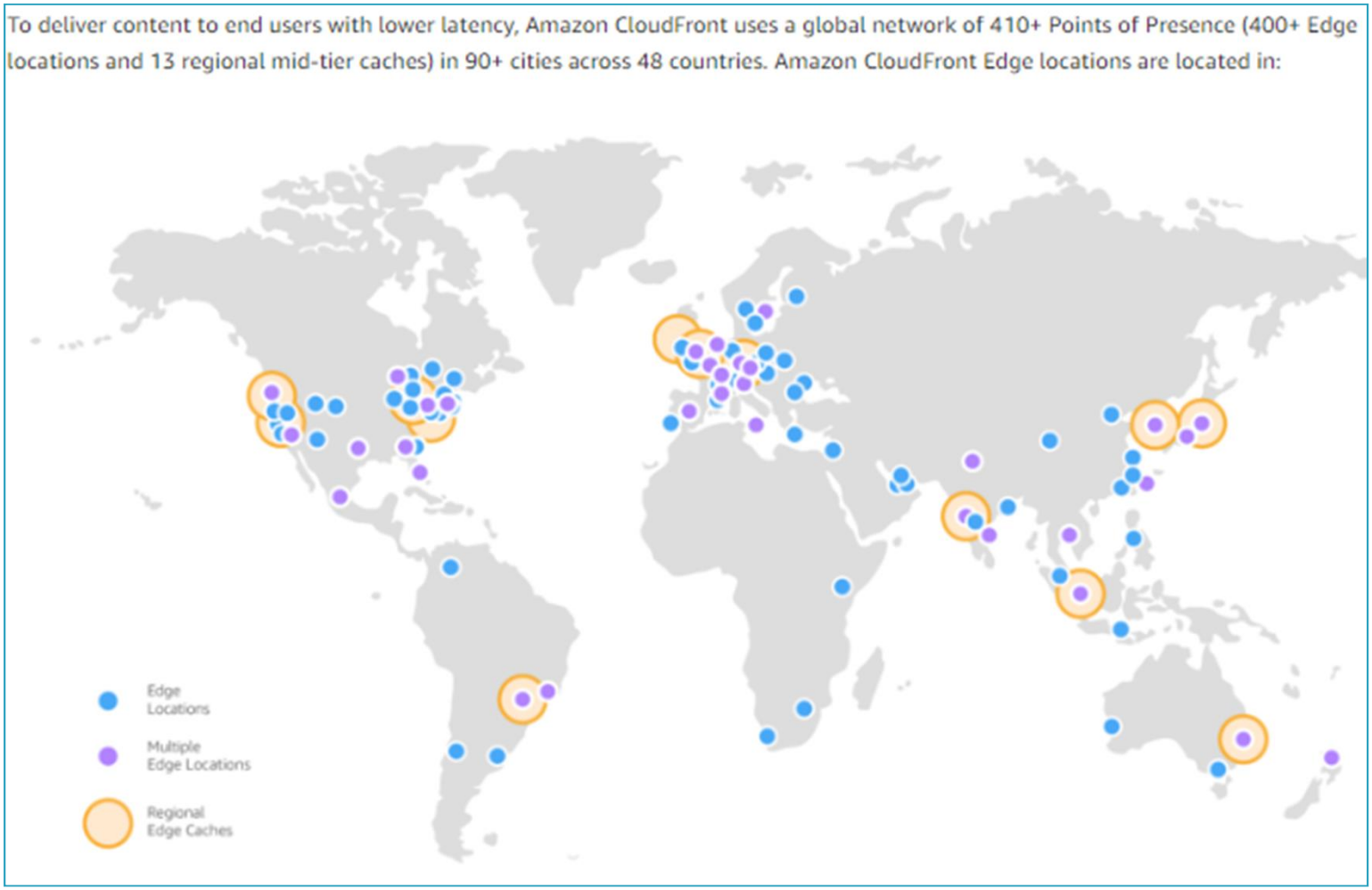
Amazon CloudFront is a fast content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to customers globally with low latency, high transfer speeds, all within a developer-friendly environment.

https://aws.amazon.com/cloudfront

Cloud Front

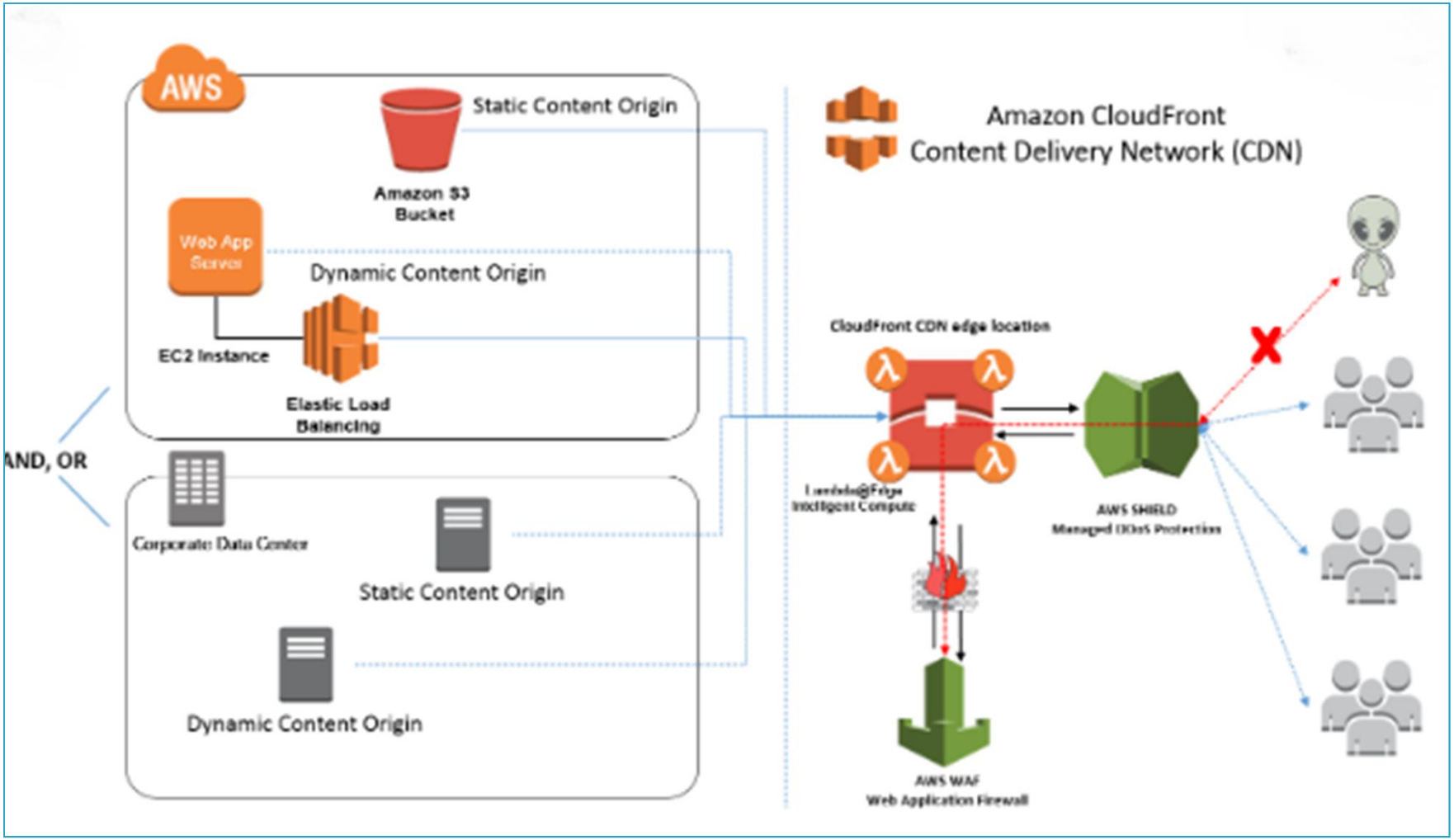

Developer
Edge Locations
1
2
3
4
5
http://
d111111abcdef8.
cloudfront.net/
Objects
Web
Distribution
Your
Distribution's
Configuration
Amazon S3 Bucket or HTTP Server
Amazon
CloudFront

Amazon CloudFront Infrastructure



https://aws.amazon.com/cloudfront/features/

Cloud Front


AWS
Static Content Origin
Amazon S3
Bucket
Web App
Server
Dynamic Content Origin
EC2 Instance
Elastic Load
Balancing
AND, OR
Corporate Data Center
Static Content Origin
Dynamic Content Origin
Amazon CloudFront
Content Delivery Network (CDN)
CloudFront CDN edge location
AWS SHIELD
AWS WAF
Web Application Firewall

Cloud Front – Benefits

1. Improved Performance

Caching

Application Acceleration

2. Security

SSL/TLS Delivery

DDoS Protection

Web Application Firewall

3. Scale & Availability

Global Edge Network

Designed to Scale

Thank You!