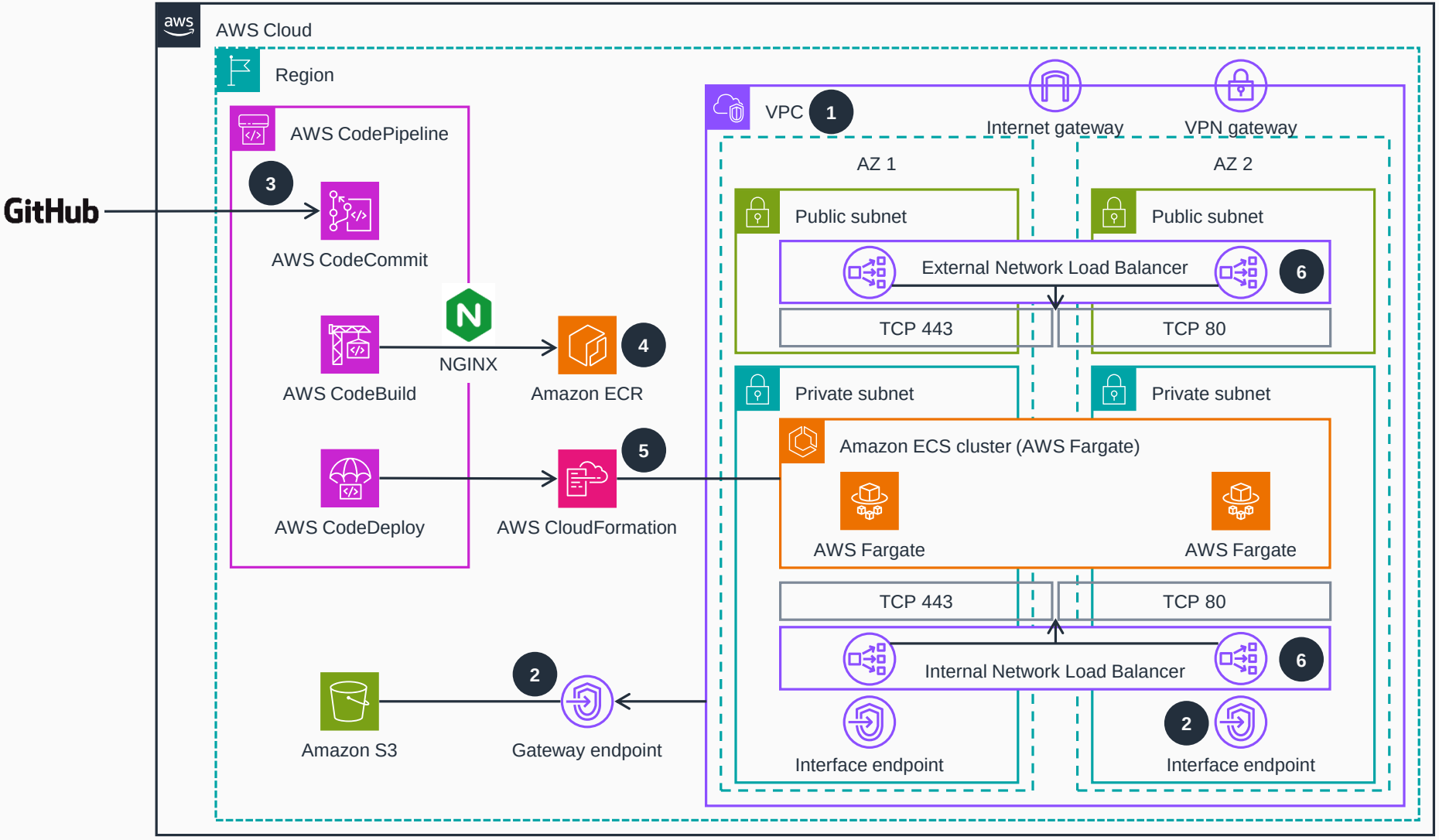
Guidance for External Connectivity to Amazon VPC Lattice

This architecture diagram shows how to configure a proxy in a virtual private cloud (VPC) to connect external services to Amazon VPC Lattice. Slides 2–4 detail three ways to use Amazon VPC Lattice for public, hybrid, or cross-Region access.



1. This Guidance will deploy a virtual private cloud (VPC) in multiple Availability Zones (AZs), with both public and private subnets containing internal and external Network Load Balancers.
2. **AWS PrivateLink** VPC endpoints (interface and gateway) are created to reach AWS services privately.
3. **AWS CodePipeline** orchestrates the build and delivery of this Guidance. The code is pulled from GitHub to an **AWS CodeCommit** repository.
4. **AWS CodeBuild** builds containers that run an open-source version of NGINX. The container image is stored in **Amazon Elastic Container Registry (Amazon ECR)**.
5. The deployment stage in the pipeline uses **AWS CloudFormation** to build an **Amazon Elastic Container Service (Amazon ECS)** cluster, task definition, and service, using **AWS Fargate** as the capacity provider.
6. Four target groups are used to pass traffic to the backend compute solution. Each Network Load Balancer configures two TCP listeners for ports 80 (HTTP) and 443 (HTTPS). The **Amazon ECS** tasks therefore service both internal and external traffic.

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AWS Reference Architecture

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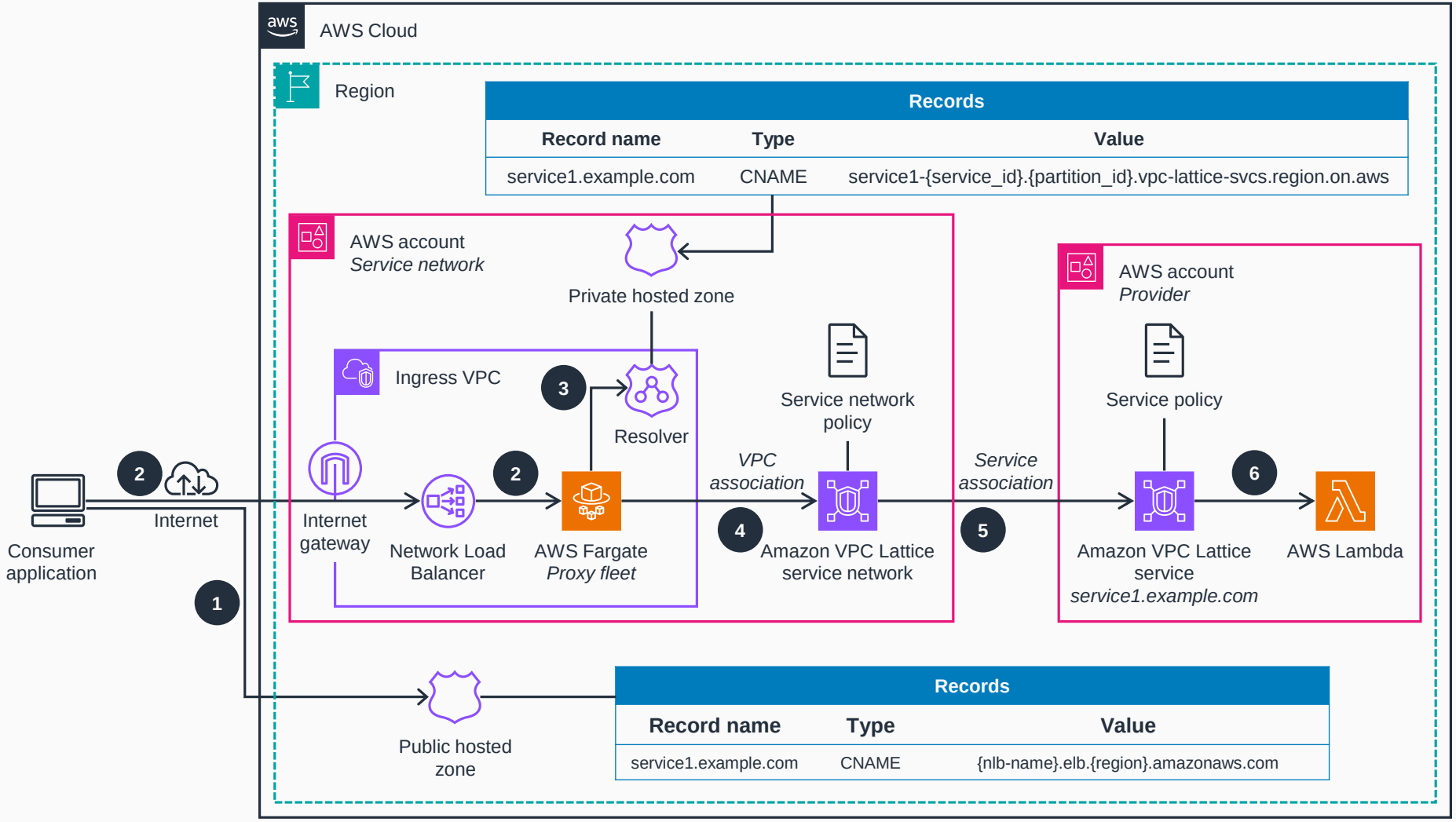
Public access: This architecture diagram shows how placing a proxy solution in an associated VPC enables external consumption of VPC Lattice services by adjusting the DNS resolution.



1. The consumer application located outside AWS tries to resolve service1's domain name publicly. An **Amazon Route 53** public hosted zone resolves to the Network Load Balancer domain name.
2. Traffic is sent to the Network Load Balancer public IPs (obtained after the DNS resolution), and the request is forwarded to the **Fargate** proxy fleet.
3. Inside the ingress VPC, the proxy fleet resolves service1's domain name by using the VPC DNS resolver. A **Route 53** private hosted zone is used to map the custom domain name with the domain name generated by **Amazon VPC Lattice**.
4. The DNS resolution provides **VPC Lattice** with link-local addresses. Traffic is sent using the **VPC Lattice** VPC association.
5. A service policy allows traffic between the AWS service network account and the AWS provider account if there is an association between the **VPC Lattice** service and the **VPC Lattice** service network. This can then be associated with the ingress VPC.
6. This request is redirected to an **AWS Lambda** function.

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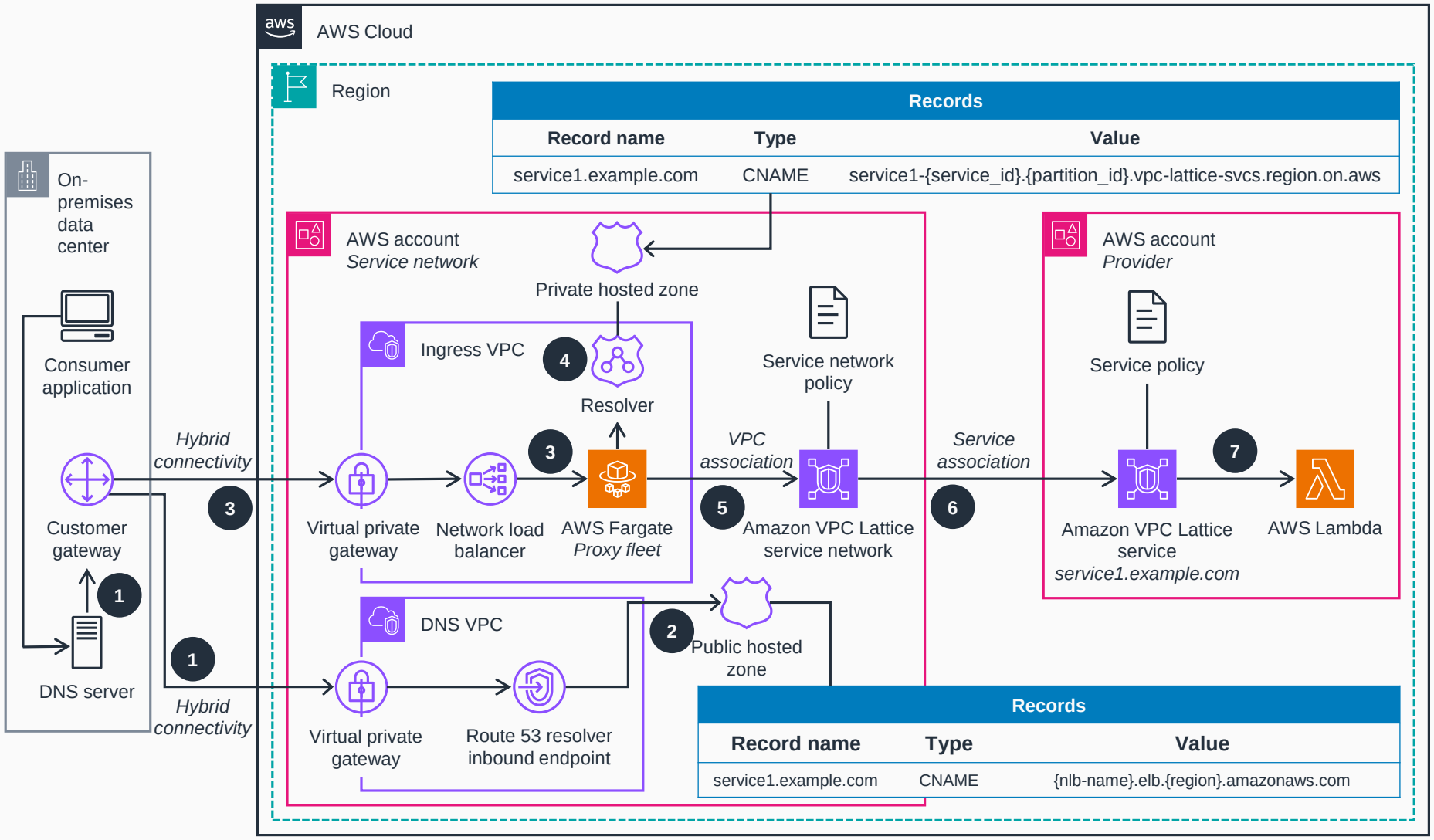
AWS Reference Architecture

Guidance for External Connectivity to Amazon VPC Lattice

Hybrid access: This architecture diagram shows how placing a proxy solution in an associated VPC enables on-premises applications to have external consumption of VPC Lattice services by adjusting the hybrid DNS resolution.



1. The on-premises consumer application tries to resolve service1's domain name locally. The on-premises DNS server forwards the DNS request to a **Route 53** resolver inbound endpoint, located on AWS. You can make use of any hybrid connectivity solution with AWS.
2. The **Route 53** resolver inbound endpoint queries a **Route 53** private hosted zone to resolve the Network Load Balancer domain name.
3. A hybrid connectivity solution can be used for the connectivity between on-premises applications and AWS. Traffic is sent to the Network Load Balancer private IPs (obtained after the DNS resolution), and the request is forwarded to the **Fargate** proxy fleet.
4. Inside the ingress VPC, the proxy fleet resolves service1's domain name by using the VPC DNS resolver. A **Route 53** private hosted zone can be used to map the custom domain name with the domain name generated by **VPC Lattice**.
5. The DNS resolution provides **VPC Lattice** with link-local addresses. Traffic will be sent using the **VPC Lattice** VPC association.
6. A service auth policy allows traffic between the AWS service network account and the AWS provider account if there is an association between the **VPC Lattice** service and the **VPC Lattice** service network. This can then be associated with the ingress VPC.
7. This request is redirected to a **Lambda** function.

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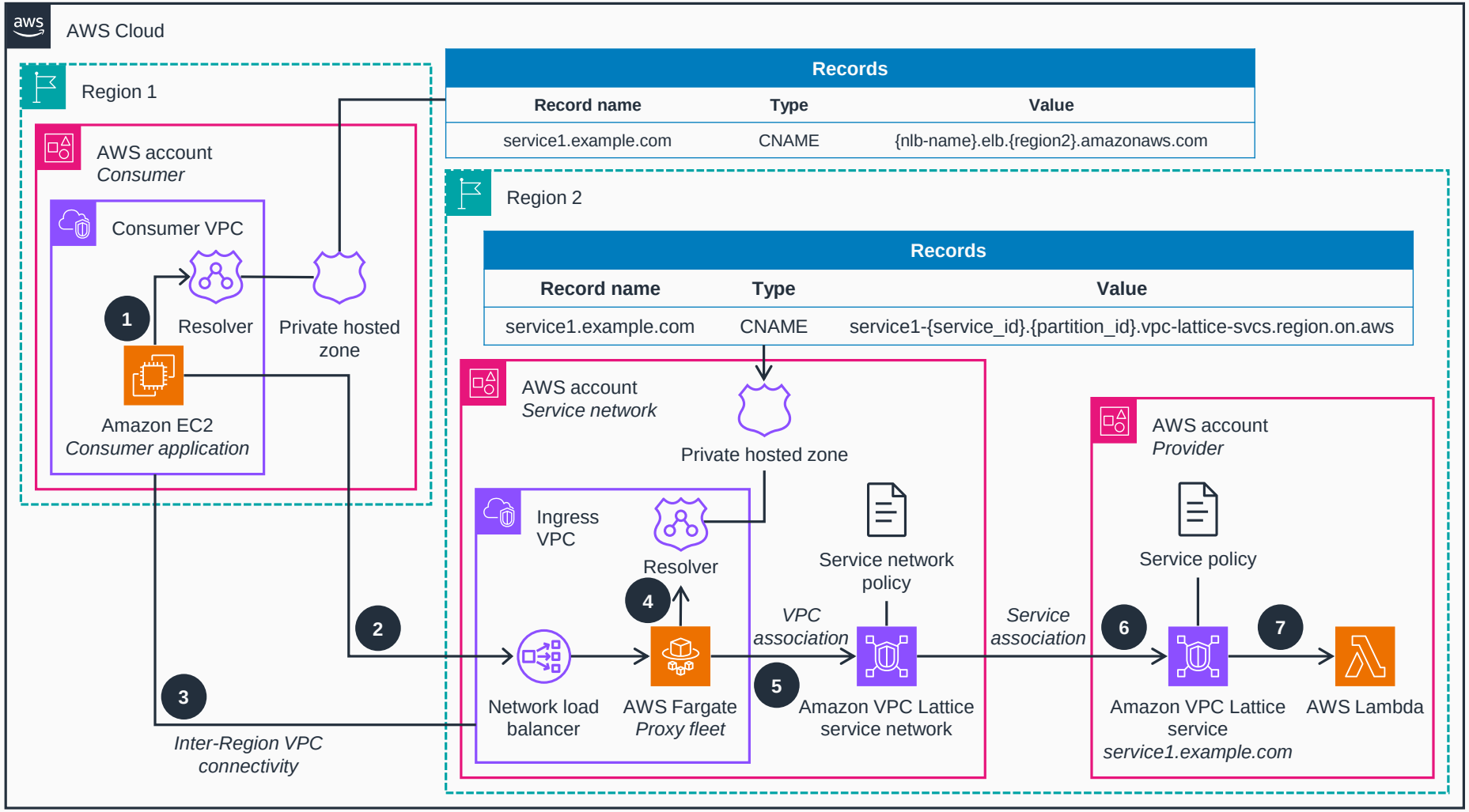
AWS Reference Architecture

Guidance for External Connectivity to Amazon VPC Lattice

Cross-Region access: This architecture diagram shows how placing a proxy solution in an associated VPC enables cross-Region consumption of VPC Lattice services by adjusting the hybrid DNS resolution.



1. Consumer applications in the consumer VPC from AWS Region 1 use their local DNS VPC resolver for service1's domain name resolution by using a **Route 53** private hosted zone.
2. Configure the DNS resolution to point to the proxy solution in the ingress VPC in Region 2.
3. Any inter-Region connectivity option* enables communication between the consumer VPC in Region 1 and the ingress VPC in Region 2.
4. Inside the ingress VPC, the **Fargate** proxy fleet will resolve service1's domain name by using the VPC DNS resolver. A **Route 53** private hosted zone can be used to map the custom domain name to the domain name generated by **VPC Lattice**.
5. DNS resolution will provide **VPC Lattice** with link-local addresses. Traffic will be sent using the **VPC Lattice** VPC association.
6. A service auth policy allows traffic between the AWS service network account and the AWS provider account if there is an association between the **VPC Lattice** service and the **VPC Lattice** service network. This can then be associated with the ingress VPC.
7. This request is redirected to a **Lambda** function.

*You can check the Amazon Virtual Private Cloud Connectivity Options whitepaper for more information about inter-Region connectivity options.

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