



Terraform AWS Infostructure Trustsoft Internship Project

2.5.2025

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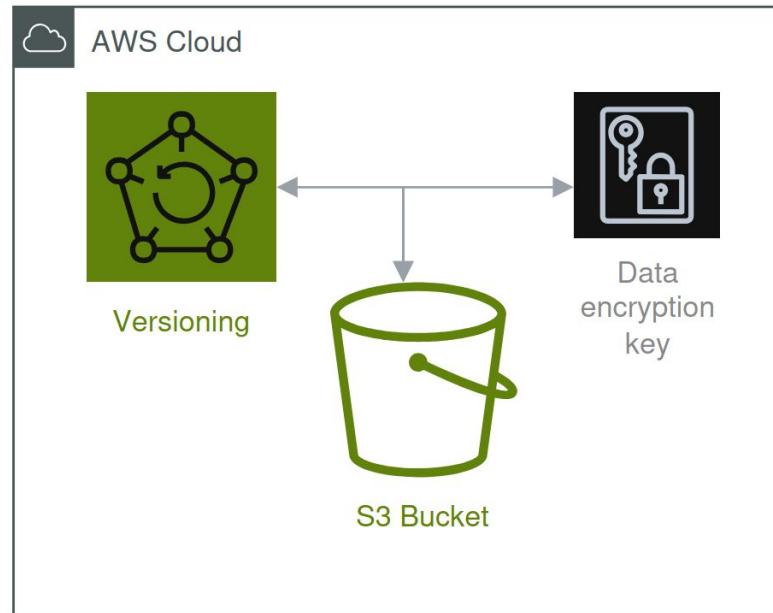


Zurich, Switzerland ● Prague, Czechia ● London, United Kingdom

Agenda

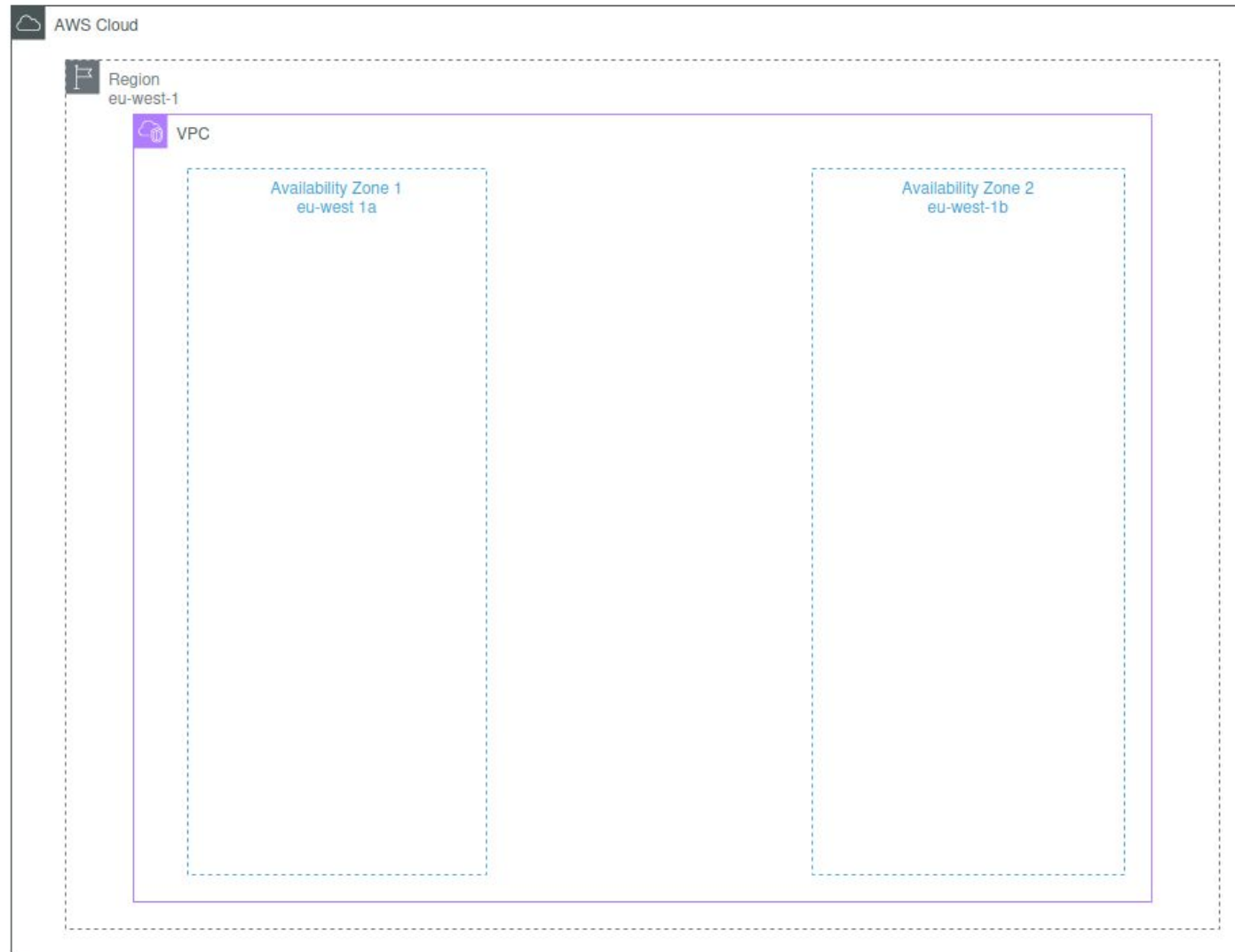
- 1. Diagram**
- 2. IaC**

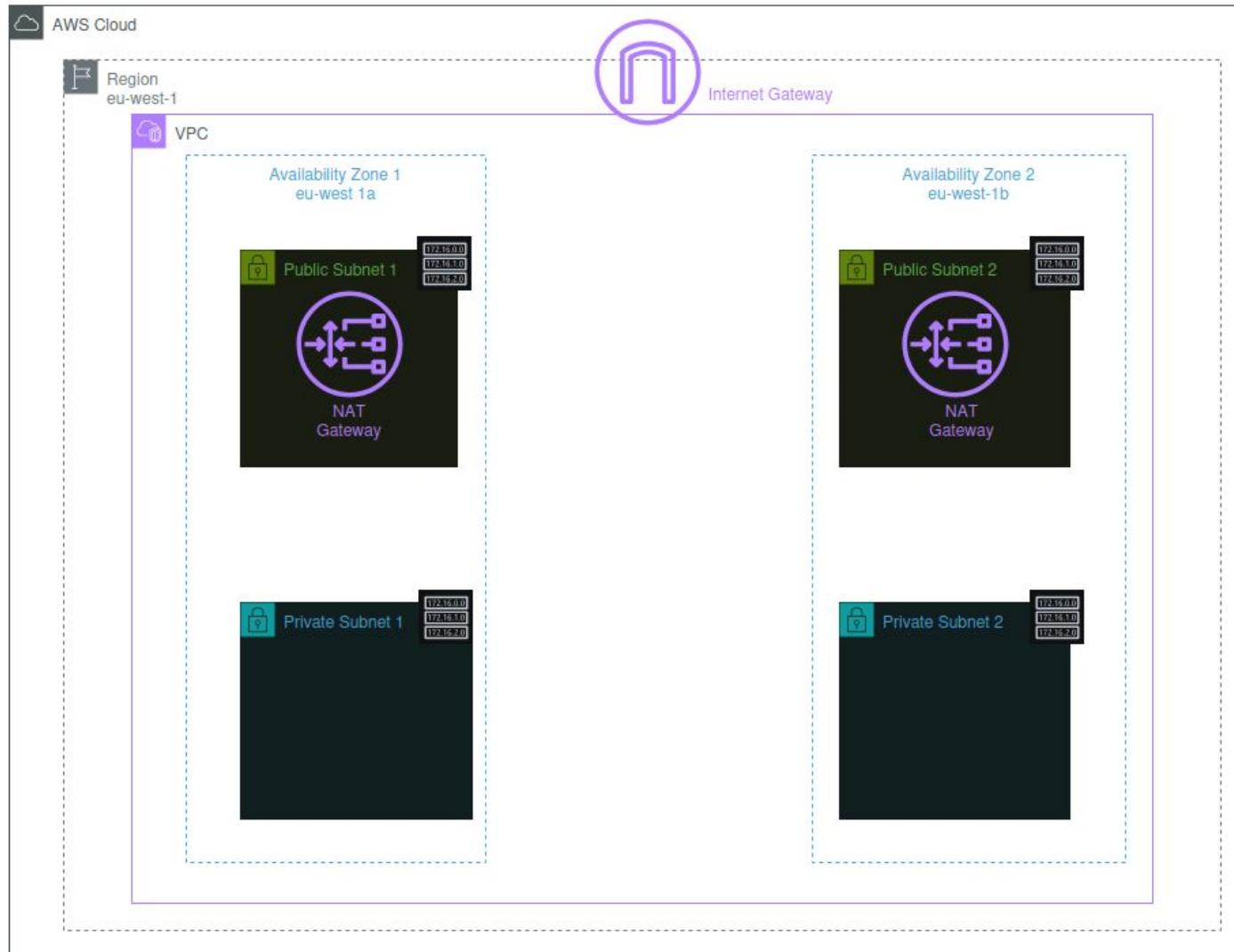
Remote Backend





VPC





1. Public Route Table (public_subnet_rt)

• Associated with:

- public_subnet_1 (AZ-1)
- public_subnet_2 (AZ-2)

• Routes:

Destination	Target	Purpose
0.0.0.0/0	Internet Gateway	Allows inbound Internet traffic to ALB, NAT GWs
local	- (VPC router)	Enables inside-VPC communication

2. Private Route Table AZ-1 (private_subnet_rt_1)

• Associated with:

- private_subnet_1 (AZ-1)

• Routes:

Destination	Target	Purpose
0.0.0.0/0	NAT Gateway 1 (nat_gw_1)	Allows EC2 in private subnet to reach Internet
local	- (VPC router)	Enables inside-VPC communication

3. Private Route Table AZ-2 (private_subnet_rt_2)

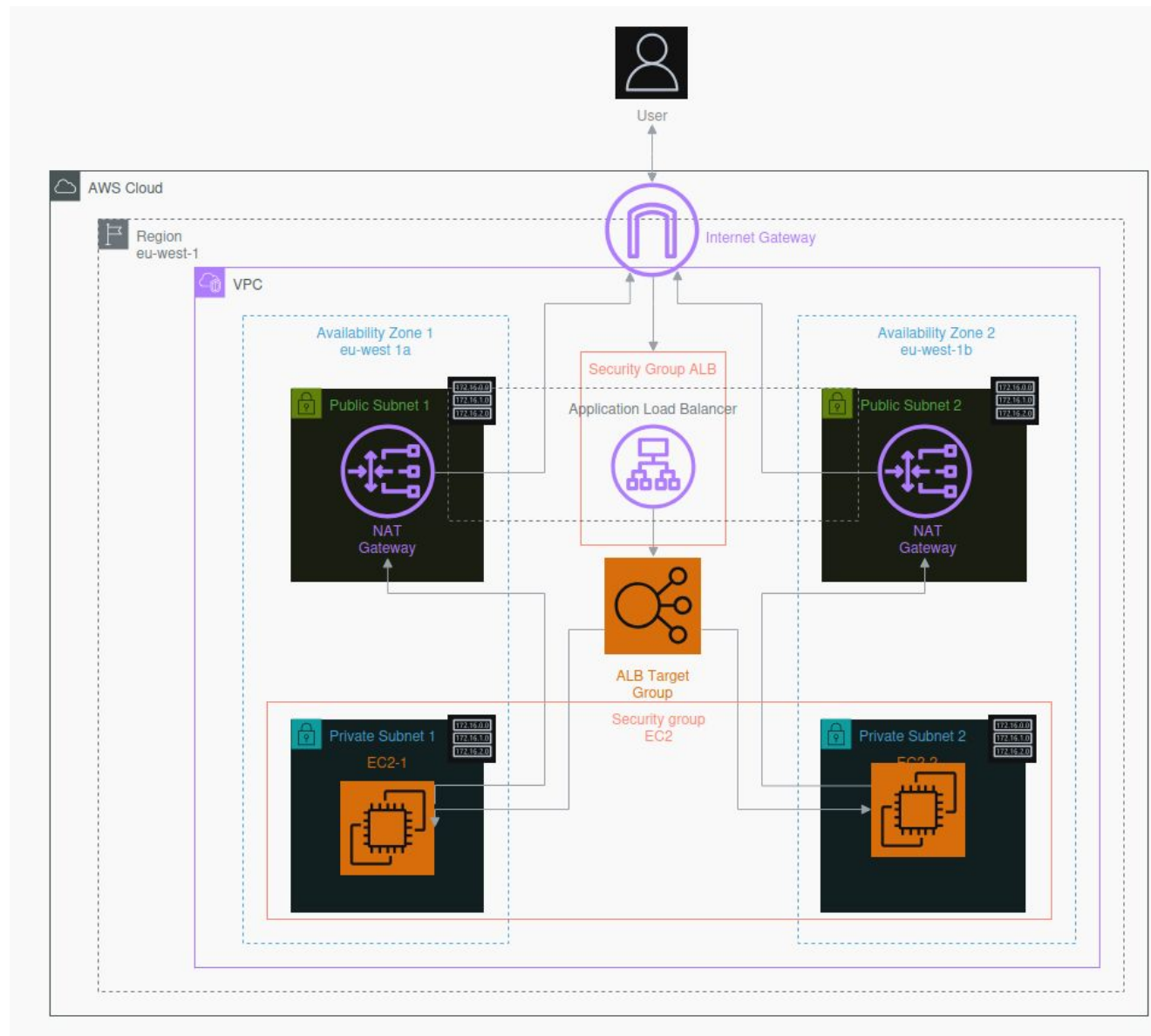
• Associated with:

- private_subnet_2 (AZ-2)

• Routes:

Destination	Target	Purpose
0.0.0.0/0	NAT Gateway 2 (nat_gw_2)	Allows EC2 in private subnet to reach Internet
local	- (VPC router)	Enables inside-VPC communication

Compute & Load-Balancing



Monitoring

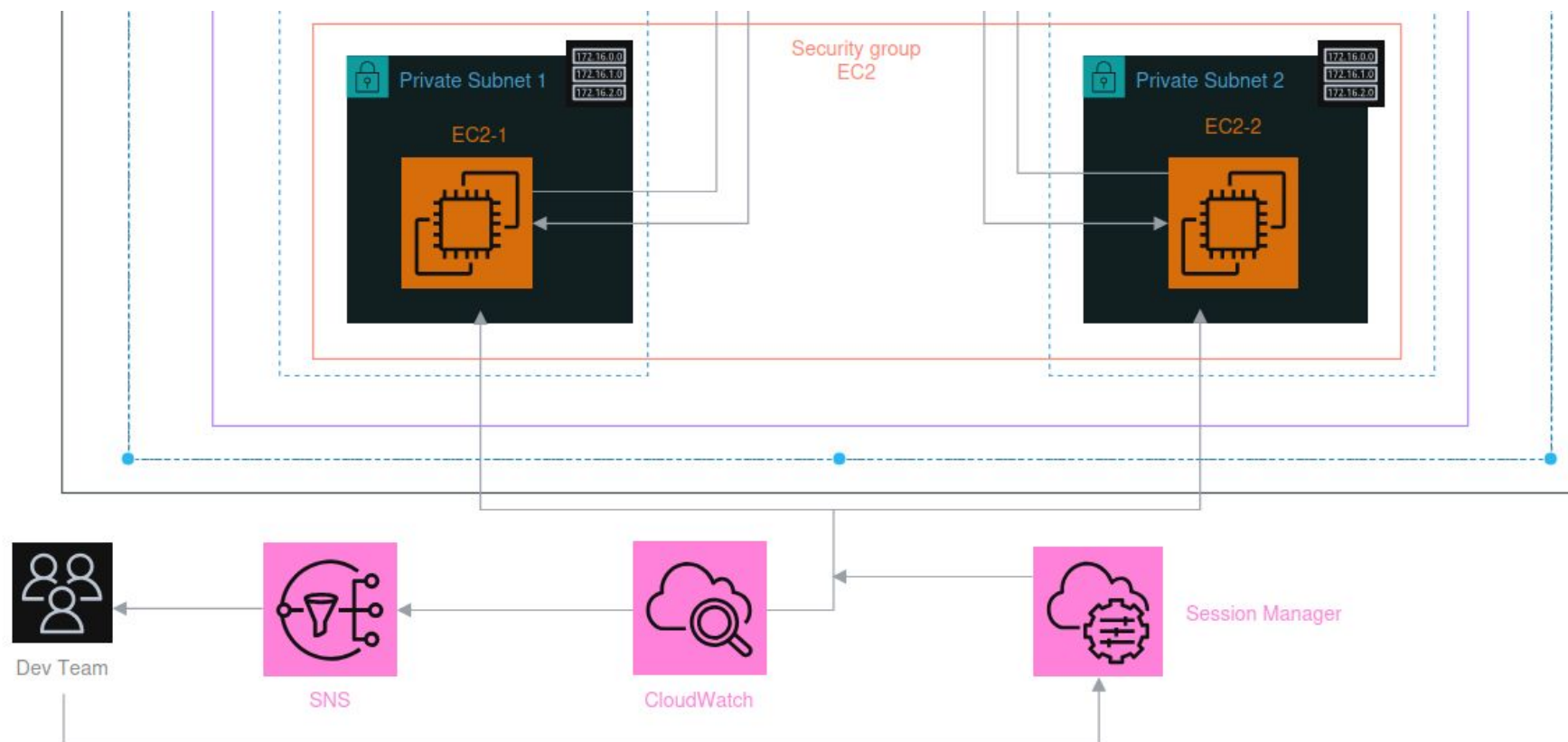
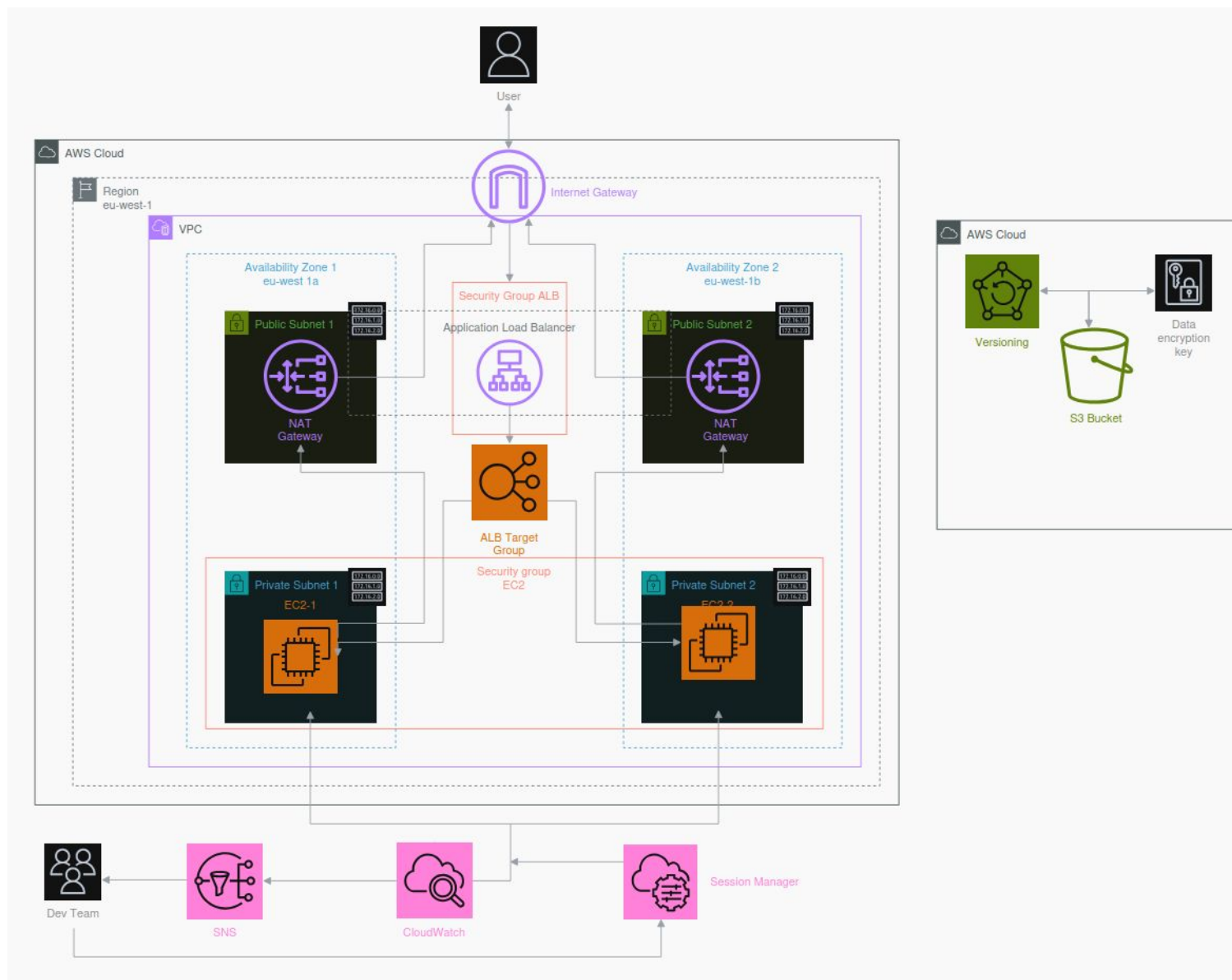


Diagram Overview



Agenda

- 1. Diagram**
- 2. IaC**

```
├── backend.tf           # Remote backend configuration (S3 + DynamoDB)
├── versions.tf          # Terraform & provider version constraints
├── variables.tf         # Root-module input variable definitions
├── outputs.tf           # Root-module outputs that expose module results
├── main.tf              # Calls all child modules
├── bootstrap/
│   └── backend-setup.tf # Create backend infrastructure (S3 bucket, DynamoDB, KMS)
├── modules/             # Reusable modules, each with its own variables/outputs
│   ├── networking/     # Module for VPC, subnets, IGW, NAT, route tables
│   │   ├── main.tf
│   │   ├── variables.tf # Inputs: vpc_cidr, subnet CIDRs, AZs
│   │   └── outputs.tf   # Outputs: vpc_id, subnet IDs, igw_id, nat_gw_ids, rt_ids
│   ├── security/       # Module for security groups (ALB & EC2)
│   │   ├── main.tf
│   │   ├── variables.tf # Inputs: vpc_id, alb_cidr_blocks
│   │   └── outputs.tf   # Outputs: alb_sg_id, ec2_sg_id
│   ├── iam/            # Module for IAM roles & instance profiles
│   │   ├── main.tf
│   │   ├── variables.tf
│   │   └── outputs.tf   # Outputs: role_arn, instance_profile
│   ├── compute/        # Module for EC2 instances
│   │   ├── main.tf
│   │   ├── variables.tf # Inputs: ami_id, instance_type, subnet_ids, SGs, iam_instance_profile, user_data_file
│   │   └── outputs.tf   # Outputs: instance_ids, private_ips
│   ├── alb/            # Module for Application Load Balancer & target group
│   │   ├── main.tf
│   │   ├── variables.tf # Inputs: vpc_id, public_subnet_ids, security_group_id, target_ids
│   │   └── outputs.tf   # Outputs: alb_dns_name, target_group_arn
│   └── monitoring/     # Module for CloudWatch alarms & SNS notifications
│       ├── main.tf
│       ├── variables.tf # Inputs: instance_ids, email_addresses
│       └── outputs.tf   # Outputs: sns_topic_arn
├── scripts/            # Helper scripts and user_data files
└── userdata.sh         # Bootstraps EC2 with Web Server and SSM
```

Outputs

```
alb_dns_name = "lb-internship-maksym-1646098265.eu-west-1.elb.amazonaws.com"
```

```
instance_ips = [  
    "10.0.11.123",  
    "10.0.12.167",  
]
```

Demonstration

Hello from EC2 instance ip-10-0-11-123.eu-west-1.compute.internal

Hello from EC2 instance ip-10-0-12-167.eu-west-1.compute.internal

variables.tf

```
variable "email_addresses" { 1 usage  👤 Maksym Suvorov
  description = "List of email addresses to receive CloudWatch alarm notifications"
  type        = list(string)
  default     = ["maksym.suvorov@trustsoft.eu"]
}
```

Demonstration

☐ ☆ AWS Notifications 46

ALARM: "ec2-1-cpu-utilization-internship-maksym" in EU (Ireland) - You are receiving this email because your Amazon CloudWatch Alarm "ec2-1-cpu-utilization-intern..."

Apr 30

Questions & Answers



Thank you for your attention



Zurich, Switzerland ● Prague, Czechia ● London, United Kingdom