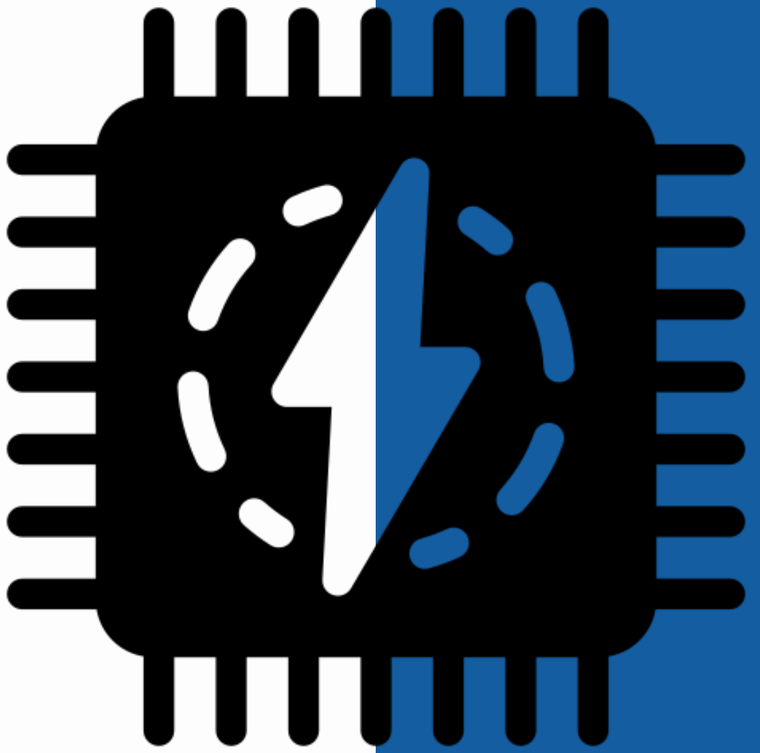
NovaBank: Cloud Migration PoC

Plan



01- BUSINESS CONTEXT & CHALLENGES

Context

- **NovaBank runs on on-premises infrastructure**
- **Increasing need for scalability, availability, and reliability**

Challenges

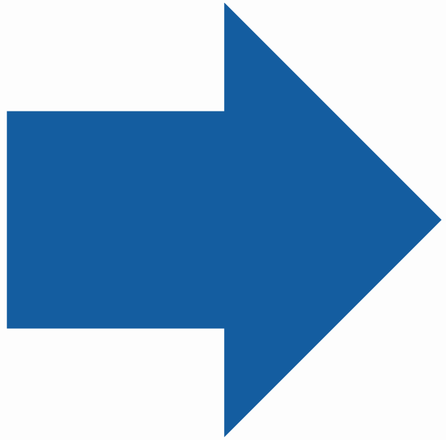
- **Limited scalability and manual operations**
- **High operational effort and slow changes**
- **Limited centralized logging and visibility**

02- OBJECTIVES OF THE POC

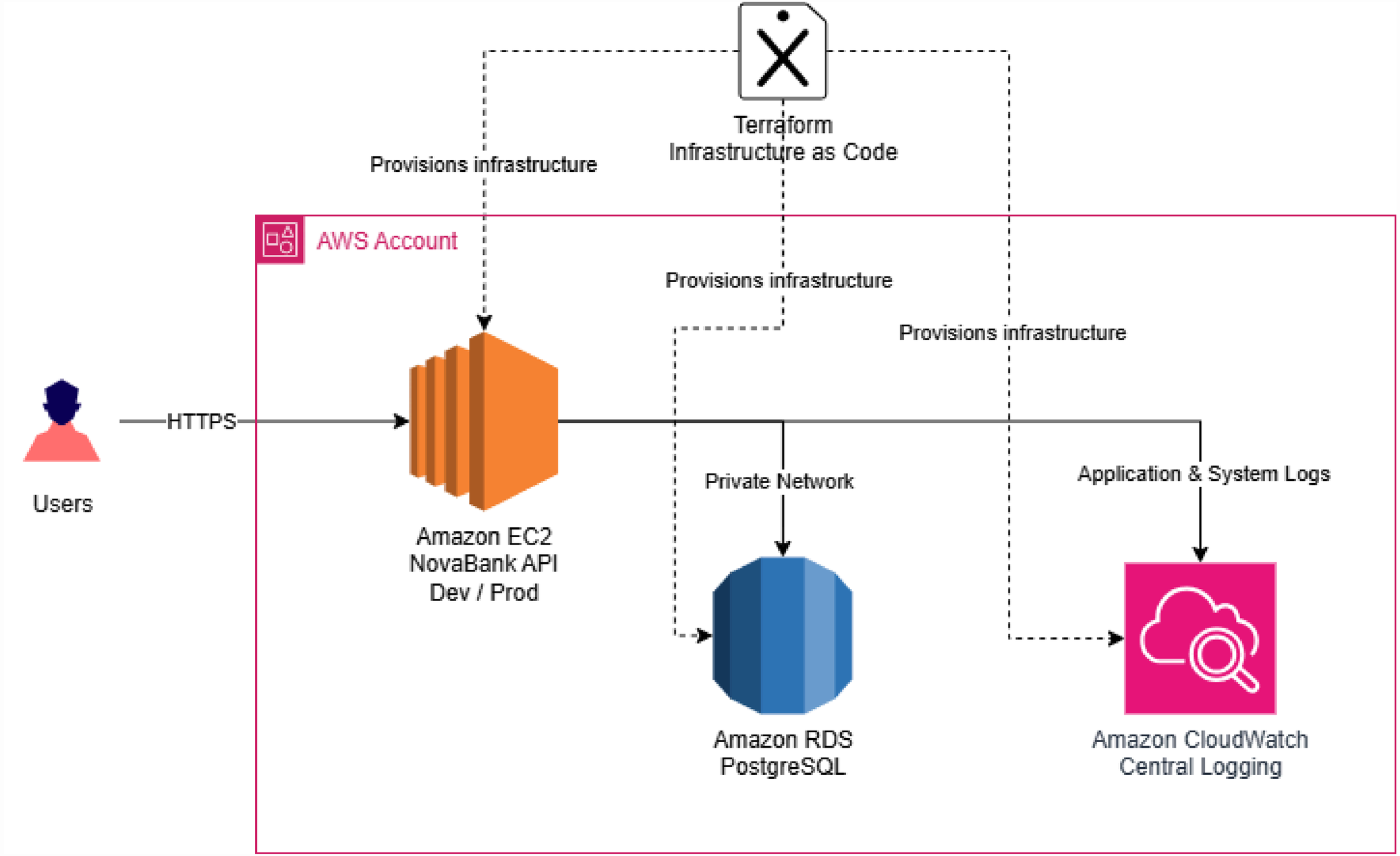
- **Validate AWS as a target platform**
- **Demonstrate IaC using Terraform**
- **Keep architecture simple and auditable**
- **Align with CloudNation 6D approach**

This is not full migration, but a validated first step.

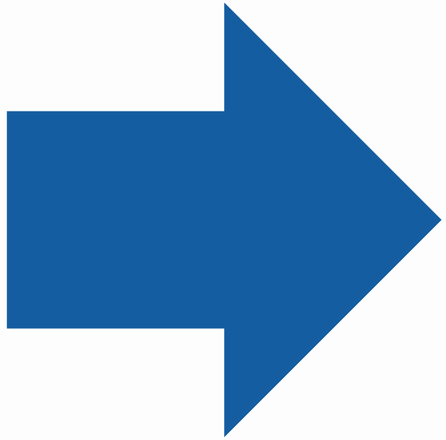
03- CLOUD DIRECTION & STRATEGY



- **AWS as cloud provider**
- **Managed services where possible**
- **Minimal service footprint**
- **Security-first mindset**


Terraform
Infrastructure as Code
Provisions infrastructure
Provisions infrastructure
Provisions infrastructure
AWS Account
Users
HTTPS
Amazon EC2
NovaBank API
Dev / Prod
Private Network
Application & System Logs
Amazon RDS
PostgreSQL
Amazon CloudWatch
Central Logging

04- INFRASTRUCTURE AS CODE (TERRAFORM)



- **Declarative infrastructure**
- **Version-controlled**
- **Reproducible**
- **Auditable**

04- ALIGNMENT WITH CLOUDNATION 6D MODEL

- **Discover – Assess current on-prem setup, constraints, and cloud readiness**
- **Define – Identify migration goals: availability, logging, data persistence**
- **Design – Define target AWS architecture (EC2, RDS, CloudWatch)**
- **Develop – Implement infrastructure using Terraform (IaC)**
- **Deploy – Provision and validate the environment via Terraform CLI**
- **Deliver (Continuous) – Enable monitoring, logging, and future optimization**

05- RISKS & ASSUMPTIONS

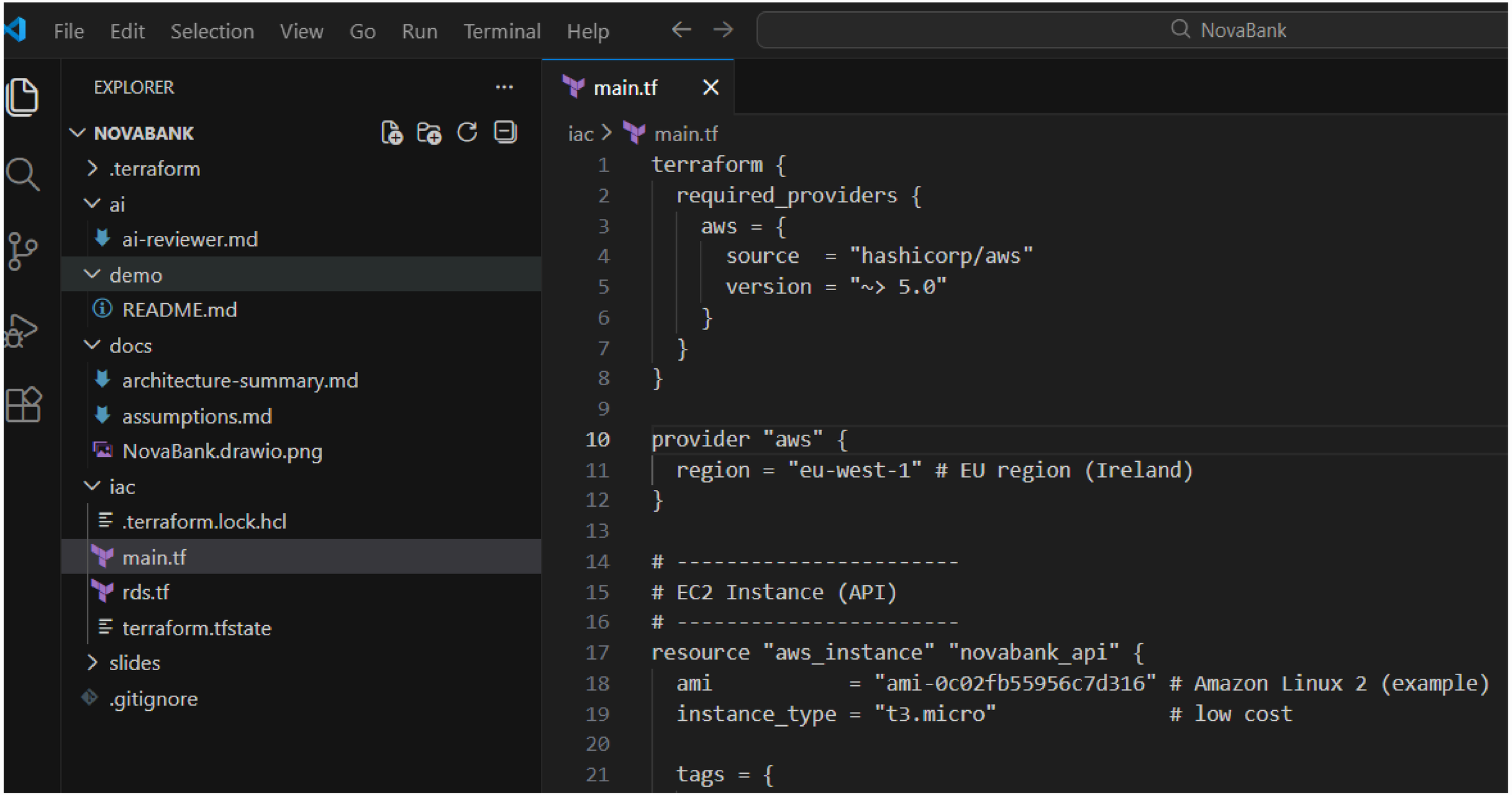
Assumptions

- **Single environment**
- **Non-production workload**
- **Limited security scope**

Risks

- **Cost visibility: Cloud costs must be actively monitored and controlled to avoid unexpected spending as usage scales.**
- **Security expansion needed: Additional security measures (network isolation, encryption policies) are required before moving to production workloads.**

07- DEMO


File Edit Selection View Go Run Terminal Help
NovaBank
EXPLORER
NOVABANK
.terraform
ai
ai-reviewer.md
demo
README.md
docs
architecture-summary.md
assumptions.md
NovaBank.drawio.png
iac
.terraform.lock.hcl
main.tf
rds.tf
terraform.tfstate
slides
.gitignore
main.tf
iac > main.tf
terraform {
required_providers {
aws = {
source = "hashicorp/aws"
version = "~> 5.0"
}
}
}
provider "aws" {
region = "eu-west-1" # EU region (Ireland)
}
# ----------------------
# EC2 Instance (API)
# ----------------------
resource "aws_instance" "novabank_api" {
ami = "ami-0c02fb55956c7d316" # Amazon Linux 2 (example)
instance_type = "t3.micro" # low cost
tags = {

The following commands were executed locally to validate the Infrastructure as Code setup:

- **terraform init**
  Initializes Terraform and downloads required providers.

- **terraform validate**
  Verifies that the Terraform configuration is syntactically correct.

=> Terraform initialized successfully

=> AWS provider loaded

=> Configuration validated with no errors

This confirms that the IaC setup is ready for deployment.

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\User\Desktop\NovaBank> terraform init
Initializing the backend...
Initializing provider plugins...
- Reusing previous version of hashicorp/aws from the dependency lock file
- Using previously-installed hashicorp/aws v5.100.0

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
PS C:\Users\User\Desktop\NovaBank> terraform validate
Success! The configuration is valid.
```

07- AI USAGE – AI IAC REVIEWER

Purpose

- **Use AI as a design-time reviewer to improve Infrastructure as Code quality before deployment.**

How AI Is Used (PoC Scope)

- **Terraform configuration is provided as context to an LLM**
- **AI reviews the setup against cloud best practices**
- **Focus areas: security, tagging, exposure, and observability**

Example Feedback Identified by AI

- **Missing resource tags: Some resources are not labeled, making cost tracking and ownership unclear.**
- **Potential public exposure: Certain components could be accessible from the internet if not restricted.**
- **Limited logging and diagnostics: Not all system activity is visible, which can slow down issue investigation.**

Why No Full Implementation

- **Intentional PoC decision to avoid over-engineering**
- **Demonstrates how AI would be integrated rather than building a production system**
- **Feedback remains advisory; no automated changes applied**

Value

- **Improves design quality early**
- **Reduces human review effort**
- **Fits naturally into future CI/CD pipelines**

08- CONCLUSION

Conclusion

- **A simple, defensible cloud foundation for NovaBank has been defined using AWS**
- **Dev and Prod separation, Infrastructure as Code, and central logging are established**
- **The PoC demonstrates repeatable deployments and a clean starting point without over-engineering**
- **AI can support infrastructure quality through early design reviews**

Next Steps

- **Strengthen security and access controls:** **Add stricter rules about who can access the system, protect data with encryption, and isolate resources so only approved users and services can reach them.**

- **Automate deployments with CI/CD:** **Set up automated pipelines so infrastructure changes are deployed safely and consistently, without manual steps, reducing human error.**

- **Improve monitoring and cost visibility:** **Add alerts and dashboards to quickly detect issues, understand system behavior, and track cloud costs to avoid unexpected spending.**

- **Prepare for controlled production rollout:** **Gradually move from development to production in a planned way, with validation and approval steps, to minimize risk and ensure stability.**

THANK YOU!