## **Step-by-Step: Deploying the HIPAA Free-Tier Application on AWS**

### **🧩 1. Prerequisites**

Make sure you have the following in place before you begin.

#### **🖥️ Local setup**

* **AWS Account** with **Free Tier eligibility** (new or low-usage account).
* **AWS CLI** installed and configured (aws configure) with IAM credentials that have:  
  + AdministratorAccess or sufficient Terraform provisioning rights.
* **Terraform** installed (>= v1.5.0).
* **Existing EC2 Key Pair** in your target region (us-east-1 by default).

Check Terraform:

terraform -version

Check AWS CLI:

aws sts get-caller-identity

### **📂 2. Project Setup**

Unzip the Terraform package you downloaded:

unzip aws\_hipaa\_free\_tier\_package.zip

cd aws\_hipaa\_free\_tier\_package

You should now see:

main.tf

vars.tf

terraform.tfvars

### **⚙️ 3. Configure Variables**

Open terraform.tfvars and adjust:

region = "us-east-1"

key\_name = "your-aws-keypair-name"

ssh\_allowed\_cidr = "YOUR.PUBLIC.IP/32"

alerts\_email = "you@example.com"

💡 **Tip:** Restrict SSH access to your own IP instead of 0.0.0.0/0 for better security.

### **🏗️ 4. Initialize Terraform**

Initialize the working directory to download required providers and modules:

terraform init

You should see something like:

- Downloading hashicorp/aws...

Terraform has been successfully initialized!

### **🔍 5. Validate and Plan**

Validate your syntax and resources:

terraform validate

Then plan the deployment:

terraform plan -out hipaa-plan.out

This shows what Terraform will create:

* VPC, subnets, security groups
* EC2 instance (t3.micro)
* RDS PostgreSQL (db.t3.micro, 20GB)
* S3 bucket (AES256 encrypted)
* CloudWatch + SNS for alerts
* SSM patch management setup

### **🚀 6. Apply the Configuration**

Deploy your environment:

terraform apply "hipaa-plan.out"

You’ll be prompted to confirm — type yes.

Terraform will:

* Provision the networking stack (VPC, subnets, etc.)
* Launch your EC2 and RDS instances
* Create your S3 bucket, CloudWatch alarms, and SNS subscription

⏳ Deployment takes about **5–10 minutes**.

### **📬 7. Confirm SNS Subscription**

You’ll receive an **email from AWS SNS** asking you to confirm your subscription.  
 Click **“Confirm subscription”** to activate alert notifications.

### **🧠 8. Access Your Application**

After apply completes:

terraform output

You’ll get:

* vpc\_id
* app\_instance\_id
* db\_endpoint

Use:

aws ec2 describe-instances --instance-ids <app\_instance\_id> --query 'Reservations[\*].Instances[\*].PublicIpAddress' --output text

→ to find the EC2 public IP for SSH or testing.

SSH in:

ssh -i /path/to/your-key.pem ec2-user@<public-ip>

### **🧹 9. Cleanup (Optional)**

When you’re done and want to avoid charges:

terraform destroy

This tears down all provisioned resources cleanly.

## **🔒 10. Post-Deployment Checklist (HIPAA Prep for Production)**

Even though this setup is free-tier–safe, for actual HIPAA compliance you’ll eventually need to:

| **Requirement** | **AWS Service (Paid)** | **Description** |
| --- | --- | --- |
| **Data Encryption at Rest** | AWS KMS (CMK) | Replace AES256 with CMK for compliance logging. |
| **Intrusion Detection** | GuardDuty | Enable continuous threat monitoring. |
| **Web Protection** | AWS WAF | Protect against SQLi/XSS. |
| **Automated Backups** | AWS Backup | For RDS, EBS, S3 recovery. |
| **Access Logging** | CloudTrail | Enable organization-wide auditing. |

### **✅ You now have:**

* A **fully working HIPAA-ready application baseline** deployed entirely under the **AWS Free Tier**.
* Security essentials (VPC isolation, SSM patching, encrypted S3, monitoring).
* No recurring charges unless you exceed Free Tier limits.