Complete Deployment Guide

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Secure Messaging Application - Terraform Infrastructure as Code

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⚠️ CRITICAL INFORMATION - READ FIRST

Application is Already Deployed

The secure messaging application is **currently live and running**:

- **Production URL:** https://taxplanner.app
- **AWS Region:** us-east-2 (Ohio)
- **Status:** Production Ready ✅
- **Infrastructure:** 100% Terraform-managed
- **Backend State:** S3 bucket `hipaa-poc-tfstate-730543776652`

Before Making Any Changes

⚠️ YOU MUST DESTROY EXISTING INFRASTRUCTURE BEFORE REDEPLOYING

To redeploy or make infrastructure changes, follow this order:

1. **FIRST:** Backup database and data
2. **SECOND:** Destroy existing infrastructure (see Destroying Infrastructure)
3. **THIRD:** Make configuration changes if needed
4. **FOURTH:** Deploy fresh infrastructure using Terraform

DO NOT attempt to deploy without destroying first - this will cause state conflicts and deployment failures.

Infrastructure-as-Code Philosophy

ALL INFRASTRUCTURE AND APPLICATION DEPLOYMENT IS DONE VIA TERRAFORM

✅ **What Terraform manages:** - VPC, subnets, routing, NAT gateway - Application Load Balancer (ALB) with SSL/TLS - EC2 instance (Amazon Linux 2023, t3.small) - Security groups and network ACLs - IAM roles and policies - S3 buckets for backups and state - AWS Secrets Manager for credentials - CloudWatch logs and monitoring - ACM certificates for HTTPS - **Automated Docker deployment** via user_data script - **Application code deployment** (clones from GitHub) - **Environment configuration** (.env from Secrets Manager)

❌ **Do NOT do manually:** - EC2 instance configuration - Security group changes - Application deployment - Docker setup - .env file creation (automated via user_data)

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Infrastructure Overview

What Gets Deployed

When you run `terraform apply`, the following infrastructure is created:

Network Layer: - VPC (10.0.0.0/16) - 2 Public subnets (across 2 AZs) - 2 Private subnets (across 2 AZs) - Internet Gateway - NAT Gateway (for private subnet internet access) - Route tables and associations

Compute Layer: - EC2 instance (t3.small, Amazon Linux 2023) - Private subnet deployment - 30GB encrypted root volume - 10GB encrypted data volume for database - IMDSv2 required for enhanced security

Application Layer: - Docker & Docker Compose (auto-installed) - Application code (cloned from GitHub) - PHP-FPM + Nginx containers - SQLite database on encrypted volume

Load Balancing & SSL: - Application Load Balancer (ALB) - ACM certificate for taxplanner.app - HTTP to HTTPS redirect - Health checks

Security & Secrets: - AWS Secrets Manager (stores credentials) - Security groups (ALB, EC2) - IAM roles and instance profiles - SSM Session Manager access

Storage & Backups: - S3 bucket for database backups - Automated daily backups (2 AM UTC) - Server-side encryption (AES-256)

Monitoring: - CloudWatch Log Groups - Application logs (90-day retention) - Audit logs (365-day retention) - CloudWatch agent on EC2

State Management: - S3 backend (hipaa-poc-tfstate-730543776652) - DynamoDB table for state locking - Encryption at rest

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Prerequisites

Required Tools

1. **Terraform** (>= 1.0)

```
# Install Terraform
wget https://releases.hashicorp.com/terraform/1.6.0/
        terraform_1.6.0_linux_amd64.zip
unzip terraform_1.6.0_linux_amd64.zip
sudo mv terraform /usr/local/bin/
terraform --version
```

2. **AWS CLI** (>= 2.0)

```
# Install AWS CLI
curl "https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip" -o
        "awscliv2.zip"
unzip awscliv2.zip
sudo ./aws/install
aws --version
```

3. **Git**

```
sudo apt-get install git  # Ubuntu/Debian
sudo yum install git      # RHEL/Amazon Linux
```

AWS Account Requirements

- **Account:** Active AWS account
- **Region:** us-east-2 (Ohio)
- **Permissions:** Administrator access or these IAM permissions:
  - EC2 (VPC, Instances, Security Groups, ALB)
  - S3 (Buckets, Objects)
  - IAM (Roles, Policies, Instance Profiles)
  - Secrets Manager
  - CloudWatch Logs
  - ACM (Certificate Manager)
  - DynamoDB (for state locking)

Google OAuth Credentials

1. Go to Google Cloud Console
2. Create/select project
3. Enable Google+ API
4. Create OAuth 2.0 credentials
5. Configure:
    - **Authorized redirect URIs:** `https://taxplanner.app/login.php`
    - Copy Client ID and Client Secret

Local Development with Docker

For local testing before deploying to AWS:

Step 1: Clone Repository

```
git clone https://github.com/appcropolisdevops/awspoc.git
cd awspoc
```

Step 2: Create .env File

```
cat > .env << 'EOF'
# Google OAuth
GOOGLE_CLIENT_ID=your-google-client-id.apps.googleusercontent.com
GOOGLE_CLIENT_SECRET=your-google-client-secret
GOOGLE_REDIRECT_URI=http://localhost:8080/login.php

# App Secret
APP_SECRET=your-random-secret-key-here

# Database
DB_PATH=/var/www/data/app.sqlite

# Database Encryption (optional)
DB_ENCRYPTION_KEY=your-encryption-key-here
EOF
```

Step 3: Run with Docker Compose

```
# Start containers
docker-compose up -d

# View logs
docker-compose logs -f

# Stop containers
docker-compose down
```

Step 4: Access Application

Open browser: http://localhost:8080

AWS Deployment with Terraform

Step 1: Configure AWS Credentials

```
aws configure
```

Enter: - **AWS Access Key ID:** Your access key - **AWS Secret Access Key:** Your secret key - **Default region:** us-east-2 - **Output format:** json

Verify:

```
aws sts get-caller-identity
```

Step 2: Store Secrets in AWS Secrets Manager

IMPORTANT: Secrets must be created BEFORE running Terraform!

```
cd terraform

# Create secrets in Secrets Manager
aws secretsmanager create-secret \
    --name hipaa-poc/app-secrets \
    --region us-east-2 \
    --secret-string '{
      "GOOGLE_CLIENT_ID": "your-google-client-id.apps.googleusercontent.com",
      "GOOGLE_CLIENT_SECRET": "your-google-client-secret",
      "APP_SECRET": "your-random-secret-key-min-32-chars",
      "DB_ENCRYPTION_KEY": "your-db-encryption-key-32-chars"
    }'
```

Generate secure secrets:

```
# Generate APP_SECRET
openssl rand -base64 32

# Generate DB_ENCRYPTION_KEY
openssl rand -base64 32
```

Step 3: Initialize Terraform Backend

FIRST TIME ONLY - Create S3 backend:

```
cd terraform/backend-setup

# Initialize backend setup
terraform init

# Create S3 bucket and DynamoDB table
terraform apply
```

This creates: - S3 bucket: `hipaa-poc-tfstate-730543776652` - DynamoDB table: `hipaa-poc-tfstate-locks`

Step 4: Configure Terraform Variables

Create `terraform/terraform.tfvars`:

```
# AWS Configuration
aws_region = "us-east-2"

# Project Configuration
project_name = "hipaa-poc"
domain_name  = "taxplanner.app"

# EC2 Configuration
instance_type = "t3.small"

# Google OAuth Credentials (from Secrets Manager)
google_client_id     = "your-google-client-id.apps.googleusercontent.com"
google_client_secret = "your-google-client-secret"

# Application Secret
app_secret = "your-app-secret-from-above"

# Network Configuration
vpc_cidr = "10.0.0.0/16"

# SSH Access (optional - SSM Session Manager is preferred)
admin_ip = ""  # Leave empty to use SSM only
```

Security Note: - Never commit `terraform.tfvars` to Git (already in .gitignore) - Use same values as stored in Secrets Manager

Step 5: Initialize Terraform

```
cd terraform

# Download providers and initialize
terraform init

# Validate configuration
terraform validate
```

Step 6: Plan Deployment

```
# Create execution plan
terraform plan -out=tfplan

# Review the plan carefully
```

Review what will be created: - 30+ resources - Estimated costs: ~$50-80/month - t3.small EC2: ~$15/month - ALB: ~$20/month - NAT Gateway: ~$35/month - Data transfer: Variable - Other resources: <$5/month

Step 7: Deploy Complete Application with Terraform

```
# Apply the plan
terraform apply tfplan

# OR apply directly with confirmation
terraform apply
```

Enter `yes` when prompted.

⚡ **IMPORTANT: This deploys the COMPLETE APPLICATION, not just infrastructure!**

Deployment time: 8-12 minutes

What `terraform apply` deploys:

Phase 1: Infrastructure (3-4 minutes) 1. ✅ VPC with public/private subnets 2. ✅ Internet Gateway and NAT Gateway 3. ✅ Route tables and security groups 4. ✅ Application Load Balancer (ALB) 5. ✅ ACM certificate for HTTPS 6. ✅ S3 buckets for backups 7. ✅ IAM roles and policies 8. ✅ CloudWatch log groups 9. ✅ EC2 instance (t3.small, Amazon Linux 2023)

Phase 2: Automated Application Deployment (5-8 minutes)

The EC2 instance automatically runs `user_data.sh` which:

1. ✅ Installs Docker & Docker Compose (2-3 min)
2. ✅ Installs AWS CLI and required tools (1 min)
3. ✅ **Clones your application from GitHub** (30 sec) `bash git clone https://github.com/appcropolisdevops/awspoc.git /app`
4. ✅ **Retrieves secrets from AWS Secrets Manager** (10 sec)
5. ✅ **Creates .env file automatically** (5 sec)
   - Google OAuth credentials
   - App secrets
   - Database configuration
6. ✅ **Installs Composer dependencies** (30 sec) `bash composer install --no-dev --optimize-autoloader`
7. ✅ **BUILDS AND STARTS THE APPLICATION** (2-3 min) `bash docker-compose -f docker-compose.prod.yml up -d --build`
   - Builds PHP-FPM container
   - Builds Nginx container
   - Starts application on port 80
8. ✅ Sets up automated daily database backups to S3 (30 sec)
9. ✅ Configures CloudWatch monitoring and logging (1 min)

✅ **RESULT: Your application is FULLY DEPLOYED and RUNNING!**

After `terraform apply` completes, your application is: - ✅ Running in Docker containers - ✅ Accessible via ALB (after DNS configuration) - ✅ Connected to Secrets Manager for credentials - ✅ Logging to CloudWatch - ✅ Backing up to S3 daily - ✅ Ready for production traffic

You do NOT need to: - ❌ SSH into the server - ❌ Manually install Docker - ❌ Clone the repository - ❌ Create .env files - ❌ Run docker-compose manually - ❌ Configure backups

Everything is 100% automated via Terraform!

Step 8: Review Outputs

```
# View all outputs
terraform output

# Important outputs:
terraform output alb_dns_name              # ALB DNS name
terraform output acm_validation_records    # For DNS validation
terraform output ssm_connect_command       # To connect via SSM
terraform output next_steps                # Post-deployment steps
```

Step 9: Configure DNS

Add CNAME record in your DNS provider:

```
Type: CNAME
Name: taxplanner.app
Value: [alb_dns_name from terraform output]
TTL: 300
```

Step 10: Validate ACM Certificate

Add DNS validation record (from `acm_validation_records` output):

```
Type: CNAME
Name: [from output]
Value: [from output]
TTL: 300
```

Wait for validation (usually 5-10 minutes).

Step 11: Verify Deployment

1. **Check DNS propagation:**

   ```
   dig taxplanner.app
   nslookup taxplanner.app
   ```

2. **Access application:**

   ```
   https://taxplanner.app
   ```

3. **Connect to EC2 via SSM:**

   ```
   aws ssm start-session --target [instance-id] --region us-east-2
   ```

4. **Check Docker containers:**

   ```
   # Inside EC2 via SSM
   sudo docker ps
   sudo docker logs awspoc-php-1
   sudo docker logs awspoc-nginx-1
   ```

5. **Test Google OAuth:**
   - Visit https://taxplanner.app
   - Click “Sign in with Google”

- Verify login works
- Send test message

Destroying Infrastructure

⚠️ WARNING: DATA LOSS

Destroying infrastructure will **permanently delete**: - All EC2 instances and data - Database files (SQLite) - Application files - Log files - Network configuration

ALWAYS backup before destroying!

Step 1: Backup Data

```
# Connect to EC2 via SSM
aws ssm start-session --target [instance-id] --region us-east-2

# Inside EC2, backup database
sudo su -
cd /data/db
sqlite3 app.sqlite ".backup /tmp/backup-$(date +%Y%m%d).sqlite"

# Upload to S3
aws s3 cp /tmp/backup-$(date +%Y%m%d).sqlite \
    s3://hipaa-poc-backups-[account-id]/manual-backups/ \
    --sse AES256

# Exit SSM session
exit
exit
```

Step 2: Download Backups (Optional)

```
# List backups
aws s3 ls s3://hipaa-poc-backups-[account-id]/backups/ --region us-east-2

# Download latest backup
aws s3 cp s3://hipaa-poc-backups-[account-id]/backups/[latest-file] \
    ./backup.sqlite.gz --region us-east-2

# Extract
gunzip backup.sqlite.gz
```

Step 3: Destroy Infrastructure

```
cd terraform

# Preview what will be destroyed
terraform plan -destroy

# Destroy all resources
terraform destroy
```

Review the plan, then type `yes` to confirm.

Destruction time: 5-8 minutes

What gets destroyed: 1. EC2 instance and volumes (data volume NOT deleted by default) 2. Load Balancer 3. VPC and networking 4. Security groups 5. IAM roles 6. S3 buckets (if empty) 7. CloudWatch log groups 8. ACM certificate

What persists: - S3 backend state bucket (manual deletion required) - DynamoDB state lock table - Secrets Manager secrets (manual deletion required) - S3 backup buckets (if configured to retain) - EBS data volume (delete_on_termination = false)

Step 4: Clean Up Backend (Optional)

To completely remove everything:

```
# Delete Secrets Manager secret
aws secretsmanager delete-secret \
    --secret-id hipaa-poc/app-secrets \
    --region us-east-2 \
    --force-delete-without-recovery

# Empty and delete backup bucket
aws s3 rm s3://hipaa-poc-backups-[account-id] --recursive --region us-east-2
aws s3 rb s3://hipaa-poc-backups-[account-id] --region us-east-2

# Empty and delete state bucket
cd backend-setup
terraform destroy  # Destroys S3 and DynamoDB

# Or manually:
aws s3 rm s3://hipaa-poc-tfstate-730543776652 --recursive --region us-east-2
aws s3 rb s3://hipaa-poc-tfstate-730543776652 --region us-east-2
aws dynamodb delete-table --table-name hipaa-poc-tfstate-locks --region us-
        east-2
```

Selective Resource Destruction

To destroy specific resources only:

```
# Destroy only EC2 instance
terraform destroy -target=aws_instance.app

# Destroy ALB only
terraform destroy -target=aws_lb.main

# Remove from state without destroying
terraform state rm aws_instance.app
```

Troubleshooting

Terraform Issues

Issue: “Backend initialization required”

```
# Solution: Initialize Terraform
cd terraform
terraform init
```

Issue: “State lock error”

```
# Solution: Check DynamoDB for locks
aws dynamodb scan --table-name hipaa-poc-tfstate-locks --region us-east-2

# Force unlock (use with caution)
terraform force-unlock [LOCK_ID]
```

Issue: “Resource already exists”

```
# Solution: Import existing resource
terraform import aws_instance.app i-1234567890abcdef0

# Or remove from state
terraform state rm aws_instance.app
```

Issue: “Invalid credentials”

```
# Solution: Reconfigure AWS CLI
aws configure
aws sts get-caller-identity
```

Issue: “State file not found”

```
# Solution: Verify S3 backend exists
aws s3 ls s3://hipaa-poc-tfstate-730543776652 --region us-east-2

# Re-initialize if needed
terraform init -reconfigure
```

Deployment Issues

Issue: “ACM certificate validation pending”

Symptom: Certificate stuck in “Pending validation” status

Solution: 1. Check DNS records are correct 2. Verify CNAME record is propagated: `bash dig [validation-record-name]` 3. Wait up to 30 minutes for DNS propagation 4. Check ACM console for validation status

Issue: “ALB health checks failing”

Symptom: Targets showing unhealthy in ALB

Solution:

```
# Connect to EC2
aws ssm start-session --target [instance-id] --region us-east-2

# Check Docker containers
sudo docker ps
sudo docker logs awspoc-nginx-1
sudo docker logs awspoc-php-1

# Check nginx is listening
sudo netstat -tlnp | grep 80

# Restart containers if needed
cd /app
sudo docker-compose -f docker-compose.prod.yml restart
```

Issue: “Application not accessible”

Symptom: 502 Bad Gateway or timeout

Checklist: 1. Verify DNS is pointing to ALB 2. Check ACM certificate is validated 3. Verify security group allows traffic 4. Check Docker containers are running 5. Review CloudWatch logs: `bash aws logs tail /hipaa-poc/application --follow --region us-east-2`

Application Issues

Issue: “Google OAuth not working”

Solution: 1. Verify redirect URI in Google Console matches exactly: `https://taxplanner.app/login.php` 2. Check secrets in Secrets Manager are correct 3. Verify .env file on EC2: ```bash # Connect via SSM aws ssm start-session –target [instance-id] –region us-east-2

Check .env sudo cat /app/.env ```

Issue: “Database errors”

Solution:

```
# Connect to EC2
aws ssm start-session --target [instance-id] --region us-east-2

# Check data volume is mounted
df -h | grep /data

# Check database file exists
ls -lah /data/db/app.sqlite

# Check permissions
sudo chown -R 1000:1000 /data/db
```

Issue: “Out of disk space”

Solution:

```
# Check disk usage
df -h

# Clean Docker images
sudo docker system prune -a

# Check data volume
du -sh /data/*
```

Connection Issues

Issue: “Cannot connect via SSM”

Solution: 1. Verify SSM agent is running: `bash # On EC2 sudo systemctl status amazon-ssm-agent` 2. Check IAM instance profile has SSM permissions 3. Verify instance is in private subnet with NAT gateway 4. Check security group allows outbound HTTPS

Issue: “SSH not working”

Note: SSH is not configured by default. Use SSM Session Manager instead.

If SSH needed: 1. Add key pair to terraform variables 2. Update security group to allow port 22 3. Use SSM for secure access (recommended)

Quick Reference Commands

Terraform Commands

```
# Initialize
terraform init

# Validate configuration
terraform validate

# Format code
terraform fmt -recursive

# Plan changes
terraform plan
terraform plan -out=tfplan

# Apply changes
terraform apply
terraform apply tfplan
terraform apply -auto-approve

# Destroy infrastructure
terraform destroy
terraform destroy -auto-approve

# View outputs
terraform output
terraform output alb_dns_name

# Show current state
terraform show

# List resources
terraform state list

# Show specific resource
terraform state show aws_instance.app

# Refresh state
terraform refresh

# Import existing resource
terraform import aws_instance.app i-1234567890

# Unlock state
terraform force-unlock [LOCK_ID]
```

AWS CLI Commands

```
# EC2 Commands
aws ec2 describe-instances --region us-east-2
aws ec2 describe-volumes --region us-east-2
aws ssm start-session --target [instance-id] --region us-east-2

# Secrets Manager
aws secretsmanager get-secret-value \
    --secret-id hipaa-poc/app-secrets \
    --region us-east-2

# S3 Commands
aws s3 ls s3://hipaa-poc-backups-[account-id]/ --region us-east-2
aws s3 cp local-file.sql s3://bucket/path/ --region us-east-2

# CloudWatch Logs
aws logs tail /hipaa-poc/application --follow --region us-east-2
aws logs filter-log-events \
    --log-group-name /hipaa-poc/application \
    --region us-east-2

# ACM
aws acm list-certificates --region us-east-2
aws acm describe-certificate --certificate-arn [arn] --region us-east-2

# ALB
aws elbv2 describe-load-balancers --region us-east-2
aws elbv2 describe-target-health \
    --target-group-arn [arn] \
    --region us-east-2
```

Docker Commands (On EC2 via SSM)

```
# View containers
sudo docker ps
sudo docker ps -a

# View logs
sudo docker logs awspoc-php-1
sudo docker logs awspoc-nginx-1
sudo docker logs -f awspoc-php-1  # Follow

# Restart containers
cd /app
sudo docker-compose -f docker-compose.prod.yml restart

# Rebuild and restart
sudo docker-compose -f docker-compose.prod.yml up -d --build

# Stop containers
sudo docker-compose -f docker-compose.prod.yml down

# Clean up
sudo docker system prune -a
```

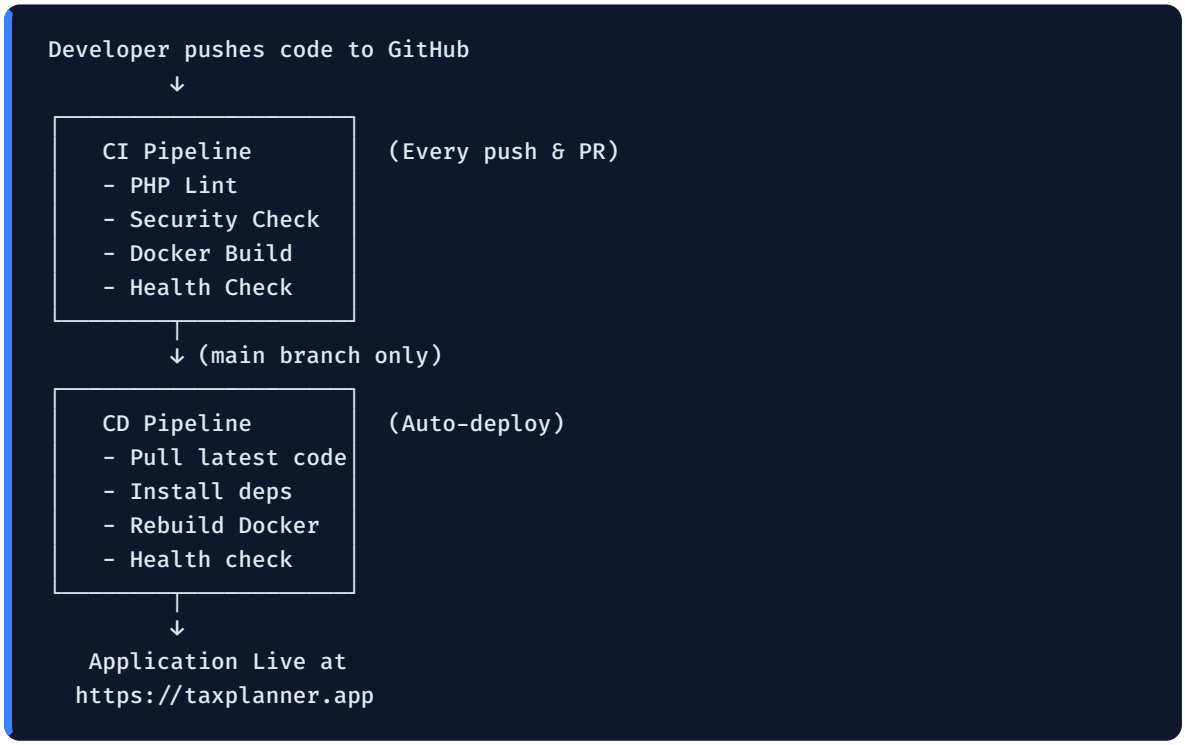
Database Commands (On EC2 via SSM)

```
# Backup database
cd /data/db
sudo sqlite3 app.sqlite ".backup /tmp/backup-$(date +%Y%m%d).sqlite"

# Check database
sudo sqlite3 app.sqlite
.tables
.schema
SELECT COUNT(*) FROM messages;
.quit

# Restore database
sudo cp /data/db/app.sqlite /data/db/app.sqlite.backup
sudo sqlite3 /data/db/app.sqlite < backup.sql
```

CI/CD Pipeline (GitHub Actions)

The project includes automated CI/CD pipelines using GitHub Actions. Every code push is automatically tested, built, and deployed.

Pipeline Overview



Three Pipelines

Pipeline	Trigger	What It Does
CI - Build & Test	Every push/PR	Lint, security check, Docker build, health check
CD - Deploy to AWS	Push to main	Deploys code to EC2 via SSM
Terraform	Changes in terraform/	Plans and applies infrastructure changes

Required GitHub Secrets

Go to **Repository Settings → Secrets and Variables → Actions** and add:

Secret Name	Description	Required
`AWS_ACCESS_KEY_ID`	AWS IAM access key	Yes
`AWS_SECRET_ACCESS_KEY`	AWS IAM secret key	Yes
`EC2_INSTANCE_ID`	EC2 instance ID (e.g., i-0abc123)	Yes
`GOOGLE_CLIENT_ID`	Google OAuth Client ID	Yes
`GOOGLE_CLIENT_SECRET`	Google OAuth Client Secret	Yes

How to Set Up Secrets

```
# Get EC2 Instance ID from Terraform
cd terraform
terraform output ec2_instance_id
```

Then in GitHub: 1. Go to https://github.com/appcropolisdevops/awspoc/settings/secrets/actions 2. Click “New repository secret” 3. Add each secret listed above

CI Pipeline (ci.yml)

Triggers: Every push to `main` / `develop` and every PR

Steps: 1. **PHP Lint** - Checks all PHP files for syntax errors 2. **Security Check** - Scans for hardcoded secrets, verifies .env is not committed 3. **Docker Build** - Builds Docker images and runs containers 4. **Health Check** - Verifies application responds on port 8080

CD Pipeline (deploy.yml)

Triggers: Push to `main` (ignores docs/ and .md changes)

Steps: 1. Runs CI checks first 2. Configures AWS credentials 3. Verifies EC2 instance is running 4. **Deploys via SSM** (no SSH needed): - Pulls latest code from GitHub - Installs Composer dependencies - Rebuilds and restarts Docker containers - Runs health check 5. Outputs deployment summary

Manual Trigger: Go to Actions → CD - Deploy to AWS → Run workflow

Terraform Pipeline (terraform.yml)

Triggers: Changes to `terraform/` files

On Pull Request: - Runs `terraform plan` - Posts plan output as PR comment

On Push to Main: - Runs `terraform apply` automatically

Manual Options: - Plan (preview changes) - Apply (deploy infrastructure) - Destroy (teardown infrastructure)

Deployment Flow

Automatic (recommended):

```
# Make code changes
git add .
git commit -m "Update feature X"
git push origin main
# → CI runs → CD deploys automatically
```

Manual:

```
# Go to GitHub → Actions → CD - Deploy to AWS
# Click "Run workflow" → Select branch → Run
```

Important Notes

Cost Management

Estimated Monthly Costs (us-east-2): - EC2 t3.small: ~$15 - ALB: ~$20 - NAT Gateway: ~$35 - EBS volumes: ~$5 - Data transfer: Variable - S3, CloudWatch: <$5 - **Total: ~$80-100/month**

To reduce costs: - Use t3.micro instead of t3.small - Remove NAT gateway (deploy EC2 in public subnet) - Use VPC endpoints instead of NAT - Enable S3 lifecycle policies

Security Best Practices

1. **Secrets:** Always use Secrets Manager, never hardcode
2. **SSH:** Use SSM Session Manager, disable SSH if possible
3. **Updates:** Regularly update AMI and packages
4. **Backups:** Verify automated backups are working
5. **Monitoring:** Check CloudWatch logs regularly
6. **IAM:** Follow least privilege principle
7. **Encryption:** All data encrypted at rest and in transit

Compliance (HIPAA)

The infrastructure is designed with HIPAA compliance in mind: - ✅ Encryption at rest (EBS, S3) - ✅ Encryption in transit (HTTPS, TLS) - ✅ Audit logging (CloudWatch, 365-day retention) - ✅ Access controls (IAM, Security Groups) - ✅ Data backups (automated daily) - ✅ Network isolation (private subnets)

Note: Full HIPAA compliance requires additional operational procedures, BAA with AWS, and proper data handling policies.

Support Resources

- **Documentation:** `/docs` folder in repository
- **Terraform Docs:** https://registry.terraform.io/providers/hashicorp/aws/latest/docs

- **AWS Support:** https://aws.amazon.com/support
- **Application:** https://taxplanner.app
- **Repository:** https://github.com/appcropolisdevops/awspoc

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Document Version: 2.0 **Last Updated:** February 4, 2026 **Application:** Secure Messaging Platform (taxplanner.app) **AWS Region:** us-east-2 (Ohio) **Infrastructure:** 100% Terraform-managed **DevOps Engineer:** Naeem Dosh **Platform:** Fiverr