# 🚀 **CYPHER Dashboard AWS Deployment Guide**

## **Deployment Overview**

This guide provides step-by-step instructions for deploying the CYPHER Dashboard to your existing AWS infrastructure, specifically targeting your RAS DASH EC2 instance.

### **✅ Current Infrastructure Assessment**

Based on your AWS environment scan, you have excellent infrastructure already in place:

* **AWS Account**: 250467954113 (jharrison user)
* **VPC**: vpc-de10a4b9 (ras\_internal) - 10.100.0.0/16
* **Target Instance**: i-04a41343a3f51559a (RASDASH) - m5.large
* **Database**: rasdash-dev-public (PostgreSQL) - **Already configured!**
* **Domain**: rasdash.dev.com (Route53 hosted zone exists)
* **Security Groups**: Multiple existing groups for RDS and EC2 connectivity

## **🎯 Deployment Strategy**

We’ll deploy CYPHER Dashboard using your existing infrastructure to minimize costs and complexity:

1. **Reuse existing RAS DASH instance** (i-04a41343a3f51559a)
2. **Leverage existing PostgreSQL database** (rasdash-dev-public)
3. **Use existing Route53 domain** (rasdash.dev.com)
4. **Configure security groups** for web traffic
5. **Set up SSL certificates** with Let’s Encrypt

## **📋 Prerequisites**

### **Local Machine Requirements:**

* AWS CLI configured with your credentials
* SSH access to your EC2 instance
* Git (for cloning/updating code)

### **EC2 Instance Requirements:**

* Instance i-04a41343a3f51559a must be running
* SSH key pair access
* Security groups allowing HTTP/HTTPS traffic

## **🚀 Deployment Steps**

### **Step 1: Prepare Local Environment**

1. **Verify AWS CLI access:**

aws sts get-caller-identity

1. **Check instance status:**

aws ec2 describe-instances --instance-ids i-04a41343a3f51559a --query "Reservations[0].Instances[0].State.Name"

1. **Ensure instance is running:**

# If stopped, start the instance  
aws ec2 start-instances --instance-ids i-04a41343a3f51559a

### **Step 2: Run Deployment Preparation Script**

# Make scripts executable (if on Linux/Mac)  
chmod +x scripts/aws-deployment/\*.sh  
  
# Run the deployment preparation script  
./scripts/aws-deployment/deploy-to-rasdash-instance.sh

This script will: - ✅ Verify AWS credentials and permissions - ✅ Check instance status - ✅ Configure security groups for web traffic (ports 80, 443, 3000, 3001) - ✅ Create deployment package with production configuration - ✅ Generate next-step instructions

### **Step 3: Copy Files to EC2 Instance**

# Copy deployment package to instance (replace with actual path from script output)  
scp -r /tmp/cypher-deploy-YYYYMMDD-HHMMSS ec2-user@34.230.172.229:/home/ec2-user/cypher-dashboard  
  
# Or use rsync for better performance  
rsync -avz --exclude='node\_modules' --exclude='.git' \  
 ./ ec2-user@34.230.172.229:/home/ec2-user/cypher-dashboard/

### **Step 4: SSH to Instance and Install**

# SSH to your RAS DASH instance  
ssh ec2-user@34.230.172.229  
  
# Switch to root for installation  
sudo su -  
  
# Navigate to deployment directory  
cd /home/ec2-user/cypher-dashboard  
  
# Run the installation script  
./scripts/aws-deployment/install-on-instance.sh

The installation script will: - ✅ Install Node.js 20.x, Docker, Nginx, PostgreSQL client - ✅ Create application user and directories - ✅ Install application dependencies - ✅ Configure production environment - ✅ Set up Nginx reverse proxy - ✅ Create systemd service - ✅ Test database connection - ✅ Start all services

### **Step 5: Configure DNS**

# Run DNS configuration script (from your local machine)  
./scripts/aws-deployment/configure-dns.sh

This script will: - ✅ Create A record: rasdash.dev.com → 34.230.172.229 - ✅ Create CNAME record: www.rasdash.dev.com → rasdash.dev.com - ✅ Verify DNS propagation - ✅ Test HTTP connectivity

### **Step 6: Configure SSL Certificate**

# SSH back to the instance  
ssh ec2-user@34.230.172.229  
  
# Run SSL configuration (as root)  
sudo ./scripts/aws-deployment/configure-ssl.sh

This script will: - ✅ Install Certbot (Let’s Encrypt client) - ✅ Verify domain accessibility - ✅ Obtain SSL certificate for rasdash.dev.com and www.rasdash.dev.com - ✅ Configure Nginx with SSL - ✅ Set up automatic certificate renewal - ✅ Test HTTPS connectivity

## **🔧 Configuration Details**

### **Environment Configuration**

The deployment uses a production environment file with:

# Database (using your existing RDS)  
DATABASE\_URL=postgresql://rasdashadmin:RasDash2025%24@rasdash-dev-public.cexgrlslydeh.us-east-1.rds.amazonaws.com:5432/rasdashdev01  
  
# Domain  
DOMAIN=rasdash.dev.com  
FRONTEND\_URL=https://rasdash.dev.com  
  
# Security  
NODE\_ENV=production  
JWT\_SECRET=<your-existing-secret>  
ENCRYPTION\_KEY=<your-existing-key>  
  
# API Keys (copied from your existing .env)  
OPENAI\_API\_KEY=<your-key>  
ANTHROPIC\_API\_KEY=<your-key>  
# ... other API keys

### **Service Architecture**

Internet → Route53 (rasdash.dev.com) → EC2 Instance (34.230.172.229)  
 ↓  
 Nginx (80/443)  
 ↓  
 CYPHER Dashboard  
 ↙ ↘  
 API Server Static Files  
 (Port 3001) (React Build)  
 ↓  
 PostgreSQL RDS  
 (rasdash-dev-public)

### **Security Groups Configuration**

The deployment script automatically configures your security groups to allow: - **Port 22**: SSH access - **Port 80**: HTTP traffic - **Port 443**: HTTPS traffic - **Port 3000**: Development access (optional) - **Port 3001**: API access (optional)

## **✅ Verification Steps**

### **1. Service Status Check**

# On the EC2 instance  
sudo systemctl status cypher-dashboard  
sudo systemctl status nginx

### **2. Health Check**

# Test API health  
curl https://rasdash.dev.com/health  
curl https://rasdash.dev.com/api/health  
  
# Test from local machine  
curl -I https://rasdash.dev.com

### **3. Database Connection**

# On the EC2 instance  
cd /opt/cypher-dashboard/api  
sudo -u cypher node -e "  
 require('dotenv').config();  
 const { Pool } = require('pg');  
 const pool = new Pool({ connectionString: process.env.DATABASE\_URL });  
 pool.query('SELECT NOW()', (err, res) => {  
 console.log(err ? 'Error:' + err : 'Success:' + res.rows[0].now);  
 process.exit(0);  
 });  
"

### **4. SSL Certificate Check**

# Check certificate details  
sudo certbot certificates  
  
# Test SSL  
openssl s\_client -servername rasdash.dev.com -connect rasdash.dev.com:443 -brief

## **🔄 Maintenance Commands**

### **Application Management**

# Restart application  
sudo systemctl restart cypher-dashboard  
  
# View logs  
sudo journalctl -u cypher-dashboard -f  
  
# Update application  
cd /opt/cypher-dashboard  
sudo -u cypher git pull  
sudo -u cypher npm install --production  
sudo systemctl restart cypher-dashboard

### **SSL Certificate Management**

# Check certificate status  
sudo certbot certificates  
  
# Manual renewal  
sudo certbot renew  
  
# Test renewal  
sudo certbot renew --dry-run

### **Nginx Management**

# Test configuration  
sudo nginx -t  
  
# Reload configuration  
sudo systemctl reload nginx  
  
# View access logs  
sudo tail -f /var/log/nginx/access.log

## **🚨 Troubleshooting**

### **Common Issues and Solutions**

#### **1. Service Won’t Start**

# Check logs  
sudo journalctl -u cypher-dashboard -n 50  
  
# Check environment file  
sudo cat /opt/cypher-dashboard/api/.env  
  
# Test database connection manually  
cd /opt/cypher-dashboard/api && sudo -u cypher node -e "console.log(process.env.DATABASE\_URL)"

#### **2. SSL Certificate Issues**

# Check domain resolution  
dig rasdash.dev.com  
  
# Test HTTP access first  
curl -I http://rasdash.dev.com  
  
# Check Nginx error logs  
sudo tail -f /var/log/nginx/error.log

#### **3. Database Connection Issues**

# Test from instance  
psql "postgresql://rasdashadmin:RasDash2025\$@rasdash-dev-public.cexgrlslydeh.us-east-1.rds.amazonaws.com:5432/rasdashdev01" -c "SELECT NOW();"  
  
# Check security groups  
aws ec2 describe-security-groups --group-ids <your-sg-id>

## **📊 Cost Optimization**

By using your existing infrastructure, you’re saving approximately: - **EC2 Instance**: $0/month (reusing existing) - **RDS Database**: $0/month (reusing existing) - **Route53 Hosted Zone**: $0/month (reusing existing) - **VPC/Networking**: $0/month (reusing existing)

**Total Monthly Savings**: ~$50-80/month compared to new infrastructure!

## **🎉 Success!**

Once deployment is complete, your CYPHER Dashboard will be accessible at: - **Primary URL**: https://rasdash.dev.com - **Alternative**: https://www.rasdash.dev.com

The application will be running with: - ✅ Production-grade security (HTTPS, security headers) - ✅ Automatic SSL certificate renewal - ✅ High availability (systemd service management) - ✅ Optimized performance (Nginx reverse proxy, gzip compression) - ✅ Comprehensive logging and monitoring