# 🚀 Complete CYPHER EC2 Setup Instructions

## 📋 **One-Command Complete Setup**

Your complete CYPHER environment setup script is ready! This single script includes **ALL** the sudo commands and configurations needed.

## 🎯 **Quick Setup (Recommended)**

### **Step 1: Connect to EC2 Instance**

1. **AWS Console** → **EC2** → **Instances**
2. **Select your instance** → **Connect** → **EC2 Instance Connect**

### **Step 2: Run Complete Setup Script**

# Download and run the complete setup script  
curl -s https://cypher-deployment.s3.amazonaws.com/complete-cypher-setup.sh | bash

**OR download first, then run:**

# Download the script  
wget https://cypher-deployment.s3.amazonaws.com/complete-cypher-setup.sh  
  
# Make it executable  
chmod +x complete-cypher-setup.sh  
  
# Run the complete setup  
./complete-cypher-setup.sh

## 🛠️ **What This Script Does**

### **System Setup:**

* ✅ Updates all system packages
* ✅ Installs Node.js v20.x + npm
* ✅ Installs development tools (git, curl, wget, etc.)
* ✅ Installs Python3 + pip
* ✅ Installs PostgreSQL client

### **Web Server & Process Management:**

* ✅ Installs and configures Nginx
* ✅ Installs PM2 process manager
* ✅ Creates Nginx configuration for CYPHER
* ✅ Sets up PM2 startup scripts

### **Security & Monitoring:**

* ✅ Installs and configures firewall
* ✅ Installs fail2ban (intrusion prevention)
* ✅ Installs SSL tools (Certbot)
* ✅ Installs AWS CloudWatch agent
* ✅ Configures log rotation

### **Application Environment:**

* ✅ Creates application directories (/opt/cypher)
* ✅ Sets proper permissions
* ✅ Creates log directories (/var/log/cypher)

### **Helper Scripts Created:**

* ✅ ~/system-status.sh - Check system status
* ✅ ~/deploy-cypher.sh - Deploy CYPHER application
* ✅ ~/setup-ssl.sh - Set up SSL certificates

## 🎯 **After Setup Completion**

### **Step 1: Configure AWS Credentials**

aws configure

Enter your: - AWS Access Key ID - AWS Secret Access Key - Default region (e.g., us-east-1) - Default output format: json

### **Step 2: Deploy CYPHER Application**

./deploy-cypher.sh

### **Step 3: Check System Status**

./system-status.sh

### **Step 4: Access Your Application**

* **Health Check**: http://YOUR-EC2-IP/health
* **Application**: http://YOUR-EC2-IP/
* **API**: http://YOUR-EC2-IP/api/v1/

## 🔧 **Manual Commands Reference**

If you need to run individual commands, here are the key ones:

### **Service Management:**

# Check service status  
sudo systemctl status nginx  
sudo systemctl status fail2ban  
pm2 status  
  
# Restart services  
sudo systemctl restart nginx  
pm2 restart cypher-api  
  
# View logs  
sudo journalctl -u nginx -f  
pm2 logs cypher-api

### **Application Management:**

# Deploy application  
./deploy-cypher.sh  
  
# Check application health  
curl http://localhost:3001/health  
  
# View PM2 processes  
pm2 list  
pm2 monit

### **Security & Monitoring:**

# Check firewall rules  
sudo firewall-cmd --list-all  
  
# Check fail2ban status  
sudo fail2ban-client status  
  
# System monitoring  
./system-status.sh  
htop

## 🔒 **Optional: SSL Certificate Setup**

To set up HTTPS with a domain name:

# Replace 'your-domain.com' with your actual domain  
./setup-ssl.sh your-domain.com

## 🚨 **Troubleshooting**

### **If setup script fails:**

# Check the error and re-run specific sections  
# The script has error checking and will show which step failed  
  
# Check system logs  
sudo journalctl -f  
  
# Check specific service  
sudo systemctl status service-name

### **If deployment fails:**

# Check PM2 logs  
pm2 logs cypher-api  
  
# Check if Node.js is working  
node --version  
npm --version  
  
# Check if directories exist  
ls -la /opt/cypher/

### **If application not accessible:**

# Check if services are running  
sudo systemctl status nginx  
pm2 status  
  
# Check firewall  
sudo firewall-cmd --list-all  
  
# Check if ports are open  
sudo netstat -tlnp | grep -E ':80|:3001'

## 📊 **Complete Setup Summary**

**Total Installation Time:** ~10-15 minutes

**What You Get:** - ✅ Production-ready Node.js environment - ✅ Nginx web server with reverse proxy - ✅ PM2 process manager - ✅ Security hardening (firewall, fail2ban) - ✅ SSL certificate support - ✅ Monitoring and logging - ✅ Automated deployment scripts

**Next Steps After Setup:** 1. Configure AWS credentials 2. Run deployment script 3. Access your CYPHER application 4. Set up SSL (optional) 5. Configure monitoring (optional)

## 🎉 **Ready to Deploy!**

Your EC2 instance will be completely configured and ready for your CYPHER application with just one command!

**Run this on your EC2 instance:**

curl -s https://cypher-deployment.s3.amazonaws.com/complete-cypher-setup.sh | bash

**Then deploy your app:**

aws configure  
./deploy-cypher.sh

**That’s it! Your CYPHER application will be live!** 🚀