Full Setup Guide: Jenkins, SonarQube, and Nexus on AWS EC2

This guide will help you install **Jenkins**, **SonarQube**, and **Nexus Repository Manager** on separate EC2 instances and link them together for a full PHP CI/CD pipeline.

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1. EC2 Instances Setup

Launch **3 EC2 Instances** (e.g., `t3.medium` or `t3.small`) with Ubuntu 22.04 and the following names:

- `jenkins-server`
- `sonarqube-server`
- `nexus-server`

Open these ports in the security groups:
Instance	Open Ports
Jenkins	22, 8080
SonarQube	22, 9000
Nexus	22, 8081 (UI), 8082 (Docker)

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2. Install Docker and Docker Compose (on All 3 Instances)

```bash
sudo apt update && sudo apt install -y docker.io docker-compose
sudo usermod -aG docker ubuntu
newgrp docker
```

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3. SonarQube Setup (on `sonarqube-server`)

A. Run SonarQube Container

```bash
docker run -d --name sonarqube \
  -p 9000:9000 \
  -e SONAR_ES_BOOTSTRAP_CHECKS_DISABLE=true \
  sonarqube:lts
```

Wait ~2 minutes and visit: `http://<sonarqube-ec2-ip>:9000`
Default credentials: `admin / admin`

B. Generate Token for Jenkins

- Go to **My Account > Security**
- Create token: `sonar-auth`

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4. Nexus Repository Setup (on `nexus-server`)

A. Run Nexus Container

```bash
docker run -d --name nexus \
  -p 8081:8081 -p 8082:8082 \
  sonatype/nexus3
```

Visit: `http://<nexus-ec2-ip>:8081`
Get password from:

```bash
docker exec -it nexus cat /nexus-data/admin.password
```

B. Create Docker Repository

- Login to Nexus UI
- Go to **Repositories > Create Repository**
- Select **docker (hosted)**
- Set name: `docker-local`
- HTTP port: `8082`
- Deployment policy: `Allow Redeploy`

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5. Jenkins Setup (on `jenkins-server`)

A. Install Jenkins

```bash
sudo apt update
sudo apt install -y openjdk-17-jdk
wget -q -O - https://pkg.jenkins.io/debian/jenkins.io.key | sudo tee
/usr/share/keyrings/jenkins-keyring.asc
echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
  https://pkg.jenkins.io/debian binary/ | sudo tee \
  /etc/apt/sources.list.d/jenkins.list
sudo apt update
sudo apt install -y jenkins
sudo systemctl enable jenkins
sudo systemctl start jenkins
```

Access: `http://<jenkins-ec2-ip>:8080`

B. Install Jenkins Plugins

- Git Plugin
- Pipeline
- Docker Pipeline
- SonarQube Scanner
- Nexus Artifact Uploader
- Credentials Binding Plugin

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6. Jenkins Configuration

A. SonarQube

1. Go to **Manage Jenkins > Configure System**
2. Under **SonarQube Servers**:
   - Name: `SonarQube`
   - Server URL: `http://<sonarqube-ec2-ip>:9000`
   - Token: Add as Jenkins Credential (ID: `sonar-auth`)

B. Nexus Docker Registry

1. Go to **Manage Jenkins > Credentials**
2. Add new **Username/Password**:
   - ID: `docker-creds`
   - Username: Nexus login
   - Password: Nexus password

3. Docker push URL: `http://<nexus-ec2-ip>:8082`

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7. Jenkinsfile Pipeline Stages

Include these stages:
- Continues Download
- Continues Integration
- Docker Build
- SonarQube Scan
- Docker Push to Nexus

Use environment variables to link to SonarQube and Nexus hosts.

Now your Jenkins server on EC2 is fully integrated with SonarQube and Nexus, all running on separate AWS EC2 instances.