

Jenkins Controller with 2 Docker Agents (RHEL 10)

Objective:

Set up a Jenkins controller in Docker with two inbound agents for distributed CI/CD builds on RHEL 10.

System Requirements:

- RHEL 10 / Ubuntu 22.04+
- Docker & Docker Compose installed
- Internet connection
- 4 GB RAM minimum

Step 1: Prepare Jenkins Home Directory

```
mkdir -p /home/narendra/Jenkins/jenkins_home
```

```
sudo chown -R 1000:1000 /home/narendra/Jenkins/jenkins_home
```

Step 2: docker-compose.yml (WebSocket-based Agents)

services:

jenkins:

container_name: jenkins

image: jenkins/jenkins:lts

ports:

- "8080:8080"

- "50000:50000"

volumes:

- /home/narendra/Jenkins/jenkins_home:/var/jenkins_home

networks:

- jenkins_net

agent1:

image: jenkins/inbound-agent

container_name: jenkins-agent-1

environment:

- JENKINS_URL=http://jenkins:8080
- JENKINS_AGENT_NAME=agent1
- JENKINS_SECRET=<SECRET_AGENT1>
- JENKINS_WEB_SOCKET=true

depends_on:

- jenkins

networks:

- jenkins_net

agent2:

image: jenkins/inbound-agent

container_name: jenkins-agent-2

environment:

- JENKINS_URL=http://jenkins:8080
- JENKINS_AGENT_NAME=agent2
- JENKINS_SECRET=<SECRET_AGENT2>
- JENKINS_WEB_SOCKET=true

depends_on:

- jenkins

networks:

- jenkins_net

networks:

jenkins_net:

Run setup:

`docker compose up -d`

Step 3: Access Jenkins

Visit <http://localhost:8080>

`docker exec -it jenkins cat /var/jenkins_home/secrets/initialAdminPassword`

Step 4: Configure Agents

Manage Jenkins -> Nodes -> New Node

Launch agent by connecting it to controller

Repeat for agent2

Step 5: Verify

`docker ps`

`docker logs jenkins-agent-1 | grep Connected`

`docker logs jenkins-agent-2 | grep Connected`

Expected output:

INFO: WebSocket connection established

INFO: Connected

INFO: Jenkins agent is ready to receive tasks

Step 6: Test Pipeline

```
pipeline {  
    agent { label 'agent1' }  
    stages {  
        stage('Build') {  
            steps {  
                echo 'Running on agent1'  
                sh 'hostname'  
            }  
        }  
        stage('Test') {  
            agent { label 'agent2' }  
            steps {  
                echo 'Running on agent2'  
                sh 'echo Hello from agent2'  
            }  
        }  
    }  
}
```

Expected output:

Running on agent1

Running on agent2

Finished: SUCCESS

Step 7: Parallel Build Example

```
pipeline {  
    agent none  
  
    stages {  
        stage('Parallel Test') {  
            parallel {  
                stage('Run on agent1') {  
                    agent { label 'agent1' }  
  
                    steps {  
                        echo 'Hello from agent1'  
                        sh 'hostname'  
                    }  
                }  
  
                stage('Run on agent2') {  
                    agent { label 'agent2' }  
  
                    steps {  
                        echo 'Hello from agent2'  
                        sh 'hostname'  
                    }  
                }  
            }  
        }  
    }  
}
```

Troubleshooting:

- Agents offline: Enable WebSocket or check secrets
- TCP error: Set TCP port for inbound agents = 50000
- Jenkins not reachable: Verify jenkins_net network
- Permission denied: `sudo chown -R 1000:1000 /home/narendra/Jenkins/jenkins_home`

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Setup: Jenkins + 2 Docker Agents (RHEL 10)