



Jenkins – Slave Nodes

Jenkins – Master Configuration

- In this session we will look at using additional machines to build jenkins jobs
- The additional machines are needed to reduce work loads and are called **Slaves**
- Go to [Manage Jenkins](#) → [Configure Global Security](#)
- Check '[TCP Port for JNLP Agent](#)' and **Save**
- You can keep a fixed port or randomly generate a port number



Configure Global Security

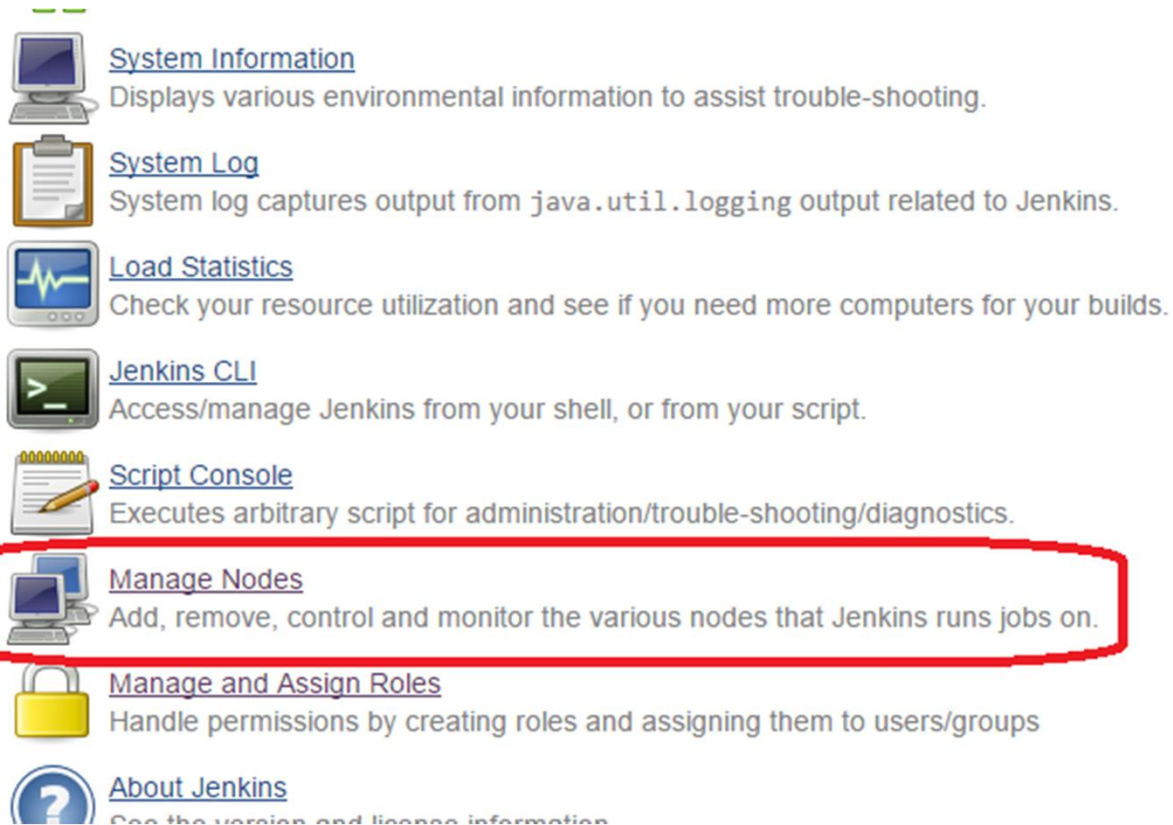
☒ Enable security

TCP port for JNLP agents ☐ Fixed : ☒ Random ☐ Disable

Jenkins uses a TCP port to communicate with agents launched via JNLP. Normally this port is chosen randomly to avoid collisions, but this would make securing the system difficult. If you are not using JNLP agents, it's recommend to disable this TCP port. Alternatively, you can specify the fixed port number so that you can configure your firewall accordingly.

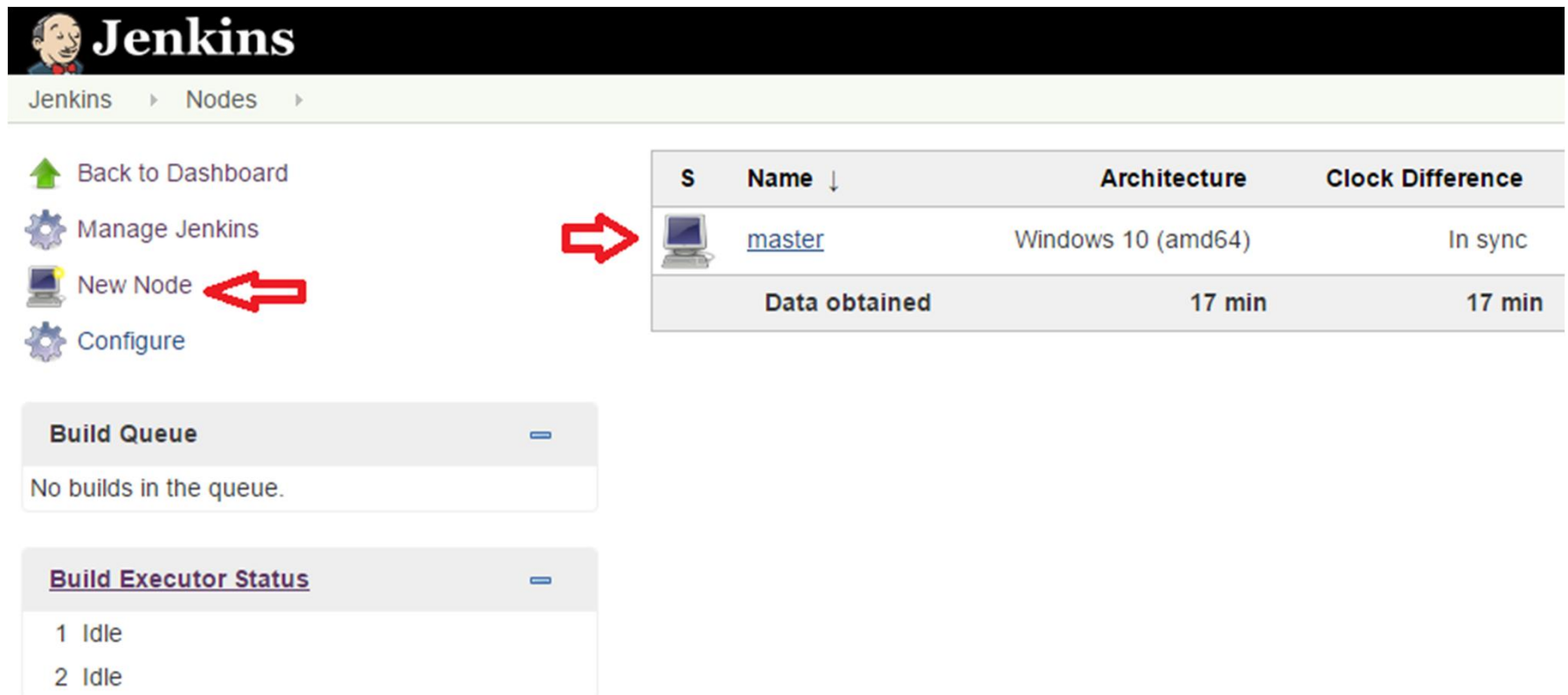
Jenkins – Create Slave Node

- In this exercise, we will utilize another windows machine as Slave
- Lets configure that as slave using [Manage Jenkins](#) → [Manage Nodes](#)




Jenkins – Create Slave Node contd..

- You can see only the master listed here
- Click on '**New Node**' link in Left Menu

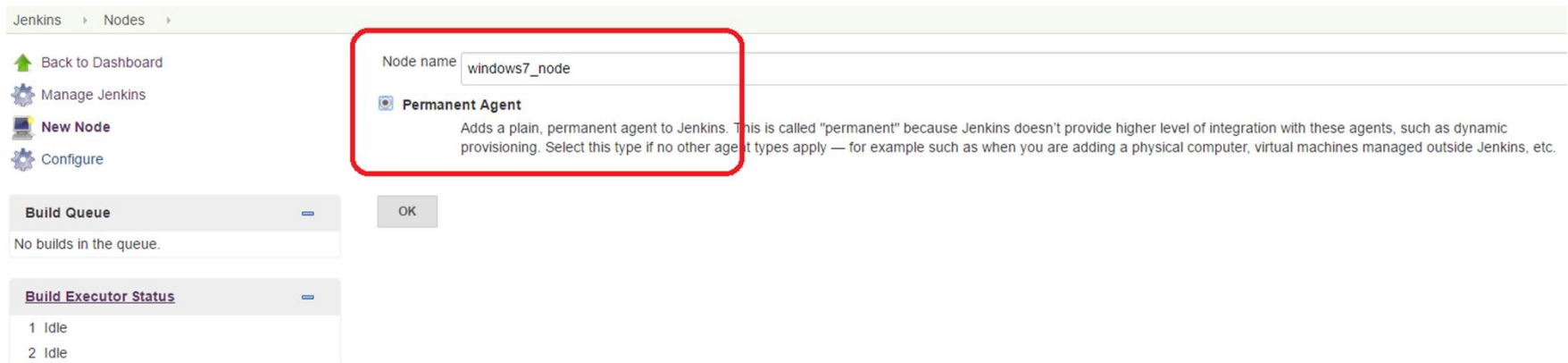


The screenshot shows the Jenkins web interface. At the top, the Jenkins logo and name are displayed. Below the header, a breadcrumb trail shows 'Jenkins' > 'Nodes'. On the left sidebar, there are four links: 'Back to Dashboard', 'Manage Jenkins', 'New Node' (highlighted with a red arrow), and 'Configure'. The main content area displays a table of nodes. The table has four columns: 'S', 'Name', 'Architecture', and 'Clock Difference'. There is one node listed with the name 'master' (linked), architecture 'Windows 10 (amd64)', and clock difference 'In sync'. Below the table, there is a section for 'Build Queue' which states 'No builds in the queue.' and another section for 'Build Executor Status' which shows two idle executors.

S	Name ↓	Architecture	Clock Difference
	master	Windows 10 (amd64)	In sync
Data obtained		17 min	17 min

Jenkins – Create Slave Node contd..

- Provide a meaningful name for the slave node
- Click on 'Permanent Agent' and OK



Jenkins > Nodes >

[Back to Dashboard](#)
[Manage Jenkins](#)
New Node
[Configure](#)

Build Queue [-](#)
No builds in the queue.

Build Executor Status [-](#)
1 Idle
2 Idle

Node name: windows7_node

☒ **Permanent Agent**
Adds a plain, permanent agent to Jenkins. This is called "permanent" because Jenkins doesn't provide higher level of integration with these agents, such as dynamic provisioning. Select this type if no other agent types apply — for example such as when you are adding a physical computer, virtual machines managed outside Jenkins, etc.

OK

Jenkins – Create Slave Node contd..

- Note – You need to create a folder **D:/jenkinsnode** on the **Slave Machine**
- Create a label as **windows_node**
- Launch method will be **Java Web Start**

Name	windows7_node
Description	Windows Build Helper Machine ←
# of executors	1
Remote root directory	D:/jenkinsnode ←
Labels	windows7_node ←
Usage	Only build jobs with label expressions matching this node ←
Launch method	Launch agent via Java Web Start ←
Availability	Keep this agent online as much as possible ←

Node Properties


☐ Environment variables

☐ Tool Locations

Save

Jenkins – Connect to slave

- You can see that the newly created slave node is marked as 'X'
- Indicating that the node is not accessible to master
- We will fix this by trying to connect to the slave node
- Click on the [windows7_node](#)



S	Name ↓	Architecture	Clock Difference	Free Disk Space
	master	Windows 10 (amd64)	In sync	266.14 GB
	windows7_node		N/A	N/A
Data obtained		25 min	25 min	25 min


Jenkins – Connect to slave contd

- You can see that there are multiple options
- 1 -- is a Launch Agent from browser
- 2 -- Run agent from command line
- Lets use the option 2
- You need to have **slave.jar** to be available on Slave Machine
- Click on **slave.jar** and it will be download
- Copy **slave.jar** and also the jnlp url, secret key to slave machine



Agent windows7_node (Windows Build Helper Machine)

Connect agent to Jenkins one of these ways:

-  Launch Launch agent from browser
- Run from agent command line:

```
java -jar slave.jar -jnlpUrl http://localhost:8080/computer/windows7_node/slave-agent.jnlp -secret  
9b553fa8780b3de80bb78a3775280182607a898e187ee6de64446663a0166ad8
```

Projects tied to windows7_node

None

Jenkins – Slave Machine Configuration

- NOTE : These commands are run on Slave Node
- Create a folder `D:/jenkinsnode`
- Copy the `slave.jar` into `D:/jenkinsnode`
- Open a command prompt and navigate to `D:/jenkinsnode` directory
- Execute the command which you copied in previous step
- **NOTE:** Change the url from `localhost` to `IP Address` of Jenkins Master server

```
java -jar slave.jar -jnlpUrl http://<IP Address of Jenkins Master>:8080/computer/windows7_node/slave-agent.jnlp -secret 9b553fa878063de80bb78a3775280182607a898e187ee6de64446663a0166ad8
```

Jenkins – Slave Machine Configuration contd

- In the screen shot below, you can see that the command is run from **D:/jenkinsnode**
- **D:/jenkinsnode** folder also contains **slave.jar**
- The **IP address** of Jenkins Server (Master) has replace '**localhost**'
- Note: This command can be run from anywhere as long as 'slave.jar' is available on Java Class Path

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\User>d:
D:\>cd jenkinsnode
D:\jenkinsnode>dir
Volume in drive D has no label.
Volume Serial Number is 9E75-2F7B

Directory of D:\jenkinsnode

12-05-2017  11:22    <DIR>          .
12-05-2017  11:22    <DIR>          ..
12-05-2017  10:37               719,269 slave.jar
               1 File(s)              719,269 bytes
               2 Dir(s)      171,044,495,360 bytes free

D:\jenkinsnode>java -jar slave.jar -jnlpUrl http://192.168.1.34:8080/computer/windows7_node/slave-agent.jnlp -secret 9b553fa878063de80bb78a3775280182607a898e187ee6de64446663a0166ad8
```

Jenkins – Slave Machine Configuration contd

- The connection should be successful
- Now go back and Check the status of node in Jenkins Server

```
D:\jenkinsnode>java -jar slave.jar -jnlpUrl http://192.168.1.34:8080/computer/windows7_node/slave-agent.jnlp -secret 9b553fa878063de80bb78a3775280182607a898e187ee6de64446663a0166ad8
May 12, 2017 11:31:19 AM hudson.remoting.jnlp.Main createEngine
INFO: Setting up slave: windows7_node
May 12, 2017 11:31:19 AM hudson.remoting.jnlp.Main$CuiListener <init>
INFO: Jenkins agent is running in headless mode.
May 12, 2017 11:31:19 AM hudson.remoting.jnlp.Main$CuiListener status
INFO: Locating server among [http://localhost:8080/, http://192.168.1.34:8080/]
May 12, 2017 11:31:20 AM org.jenkinsci.remoting.engine.JnlpAgentEndpointResolver resolve
INFO: Remoting server accepts the following protocols: [JNLP4-connect, JNLP-connect, Ping, JNLP2-connect]
May 12, 2017 11:31:20 AM hudson.remoting.jnlp.Main$CuiListener status
INFO: Agent discovery successful ←
    Agent address: 192.168.1.34
    Agent port: 64715
    Identity: be:ab:4e:ac:93:88:51:f0:c0:6d:ca:dd:0c:27:2b:c5
May 12, 2017 11:31:20 AM hudson.remoting.jnlp.Main$CuiListener status
INFO: Handshaking
May 12, 2017 11:31:20 AM hudson.remoting.jnlp.Main$CuiListener status
INFO: Connecting to 192.168.1.34:64715
May 12, 2017 11:31:20 AM hudson.remoting.jnlp.Main$CuiListener status
INFO: Trying protocol: JNLP4-connect
May 12, 2017 11:31:33 AM hudson.remoting.jnlp.Main$CuiListener status
INFO: Remote identity confirmed: be:ab:4e:ac:93:88:51:f0:c0:6d:ca:dd:0c:27:2b:c5
May 12, 2017 11:31:33 AM hudson.remoting.jnlp.Main$CuiListener status
INFO: Connected ←
```

Jenkins – Back to Master

- Go to [Manage Jenkins](#) → [Manage Nodes](#)
- You can see that the JNLP agent is successfully running on Slave machine
- Master and Slave are able to communicate
- Next lets configure a simple job to check if remote build is working

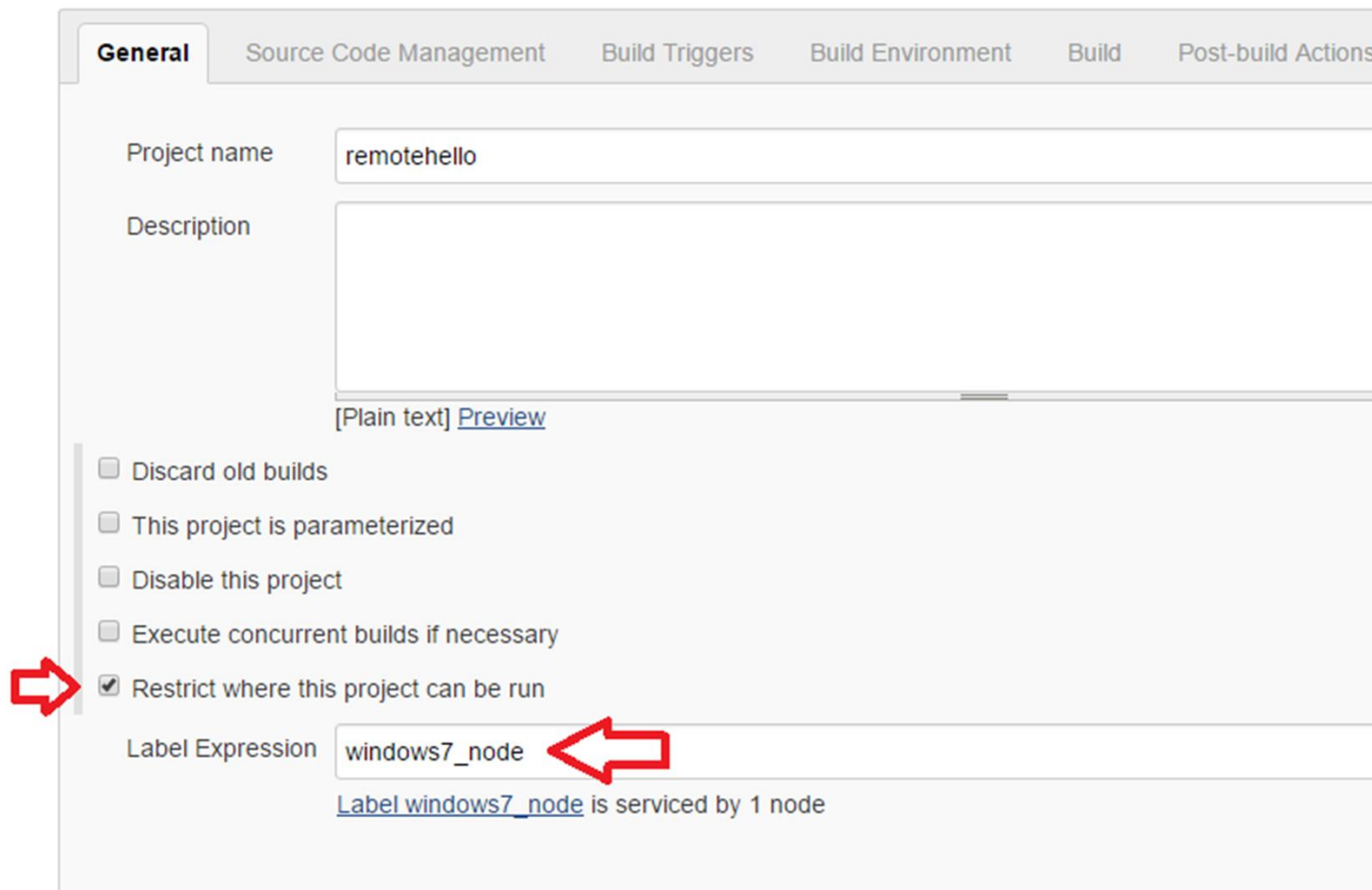
S	Name ↓	Architecture	Clock Difference	Free Disk Space
	master	Windows 10 (amd64)	In sync	265.91 GB
	windows7_node	Windows 7 (x86)	⊖ 8.4 sec ahead	159.30 GB
Data obtained		3 min 37 sec	3 min 37 sec	3 min 39 sec

Jenkins – Create a job

- Lets Create a job and build it on remote slave
- Go to Dashboard → New Item
- Give the name as remotehello and select 'Free Style Project' and OK

Jenkins – Create a job contd

- Click on 'Restrict where this Project can be Run'
- Provide the **Label** of the Slave Machine which was created during Slave machine configuration



The screenshot shows the Jenkins job configuration page for a project named 'remotello'. The 'General' tab is selected. The 'Project name' field is filled with 'remotello'. The 'Description' field is empty. Below the description, there are several checkboxes: 'Discard old builds', 'This project is parameterized', 'Disable this project', 'Execute concurrent builds if necessary', and 'Restrict where this project can be run'. The 'Restrict where this project can be run' checkbox is checked and highlighted with a red arrow. Below this checkbox, the 'Label Expression' field is filled with 'windows7_node' and is also highlighted with a red arrow. Below the 'Label Expression' field, it says 'Label windows7_node is serviced by 1 node'.

General Source Code Management Build Triggers Build Environment Build Post-build Actions

Project name remotello

Description

[Plain text] [Preview](#)

☐ Discard old builds

☐ This project is parameterized

☐ Disable this project

☐ Execute concurrent builds if necessary

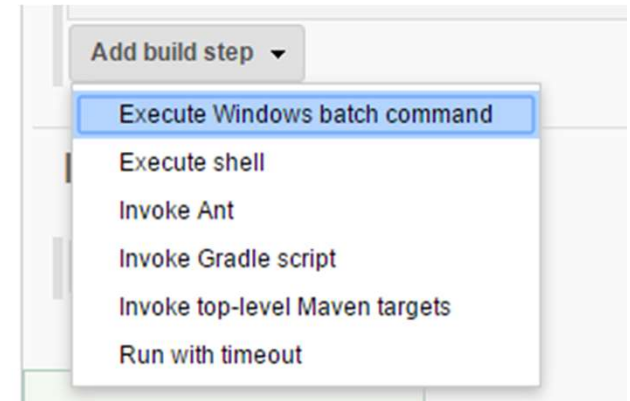
☒ Restrict where this project can be run

Label Expression windows7_node

[Label windows7_node](#) is serviced by 1 node

Jenkins – Create a job contd

- Lets try with a simple build here, Click on **Add Build Step**
- Select **'Execute windows batch command'**
- Just put a simple **echo "Hello"** and **Save**



Build

Execute Windows batch command

Command `echo "Hello from Master"`

[See the list of available environment variables](#)

Advanced...

Jenkins – Build the remote job

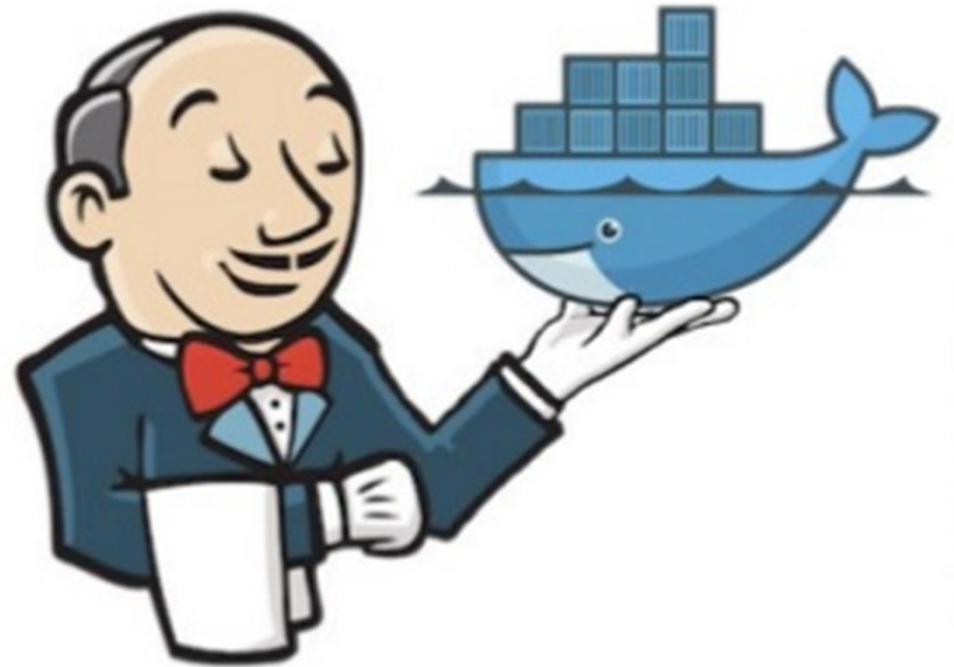
- Build the job and check the Console
- As you can see, the job is built on remote slave node

Console Output

```
Started by user Jenkins Admin  
Building remotely on windows7 in workspace D:/jenkinsnode/workspace/remotehello  
[remotehello] $ cmd /c call C:\Users\User\AppData\Local\Temp\hudson2450421269615980158.bat  
  
D:\jenkinsnode\workspace\remotehello>echo "Hello from Master"  
"Hello from Master"  
  
D:\jenkinsnode\workspace\remotehello>exit 0  
Finished: SUCCESS
```


Jenkins & Docker

- Docker is a Open source container management platform
- Light weight & can bring up any application stack (open source or free to use) within seconds
- Docker Plugin
 - Dynamically provision slaves
 - Run build
 - Tear-down slave
- Slaves in the Cloud



Jenkins & Docker

Jenkins can bring up Slaves (Docker containers) on Demand

- Jenkins can bring up Slaves (Docker containers) on Demand
- Master can only be built on Docker

