

Module 6: Automated and Continuous Deployment

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edureka!

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Module 6 – Automated and Continuous Deployment

Demo: Horizontal scaling of jenkins

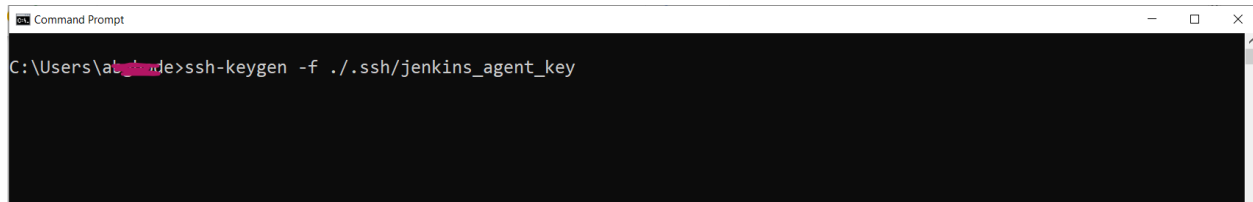
Problem statement: Execute commands to show horizontal scaling of Jenkins

Solution:

Step 1: Please ensure that you have GIT installed in your windows environment.

Command to run on cmd: `ssh-keygen -f ./.ssh/jenkins_agent_key`

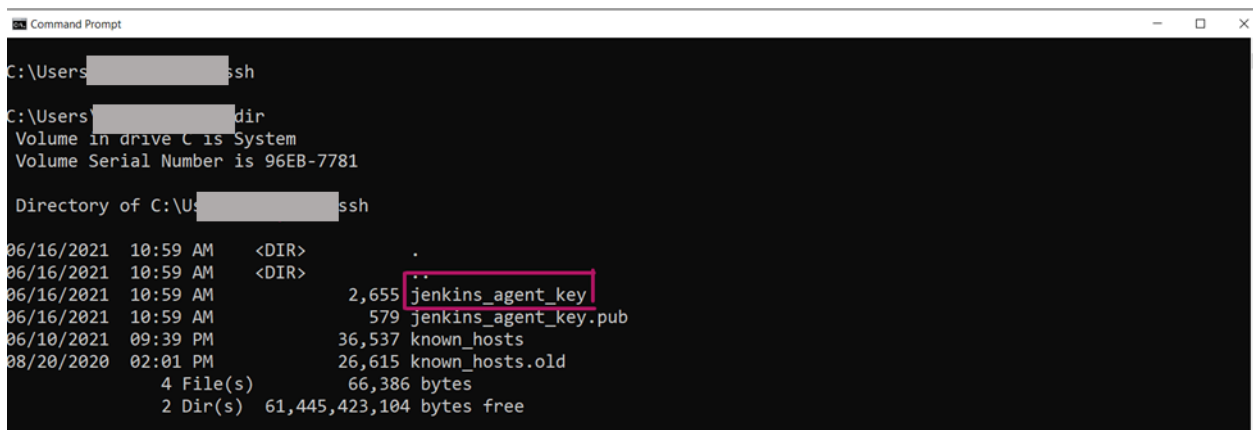
Please run the command in your user directory (`c:\users\<user-name>`)



```
Command Prompt
C:\Users\abg\>ssh-keygen -f ./.ssh/jenkins_agent_key
```

Commands to run: `cd .ssh`

`type jenkins_agent_key`



```
Command Prompt
C:\Users\abg>cd .ssh
C:\Users\abg>dir
Volume in drive C is System
Volume Serial Number is 96EB-7781

Directory of C:\Users\abg\.ssh

06/16/2021  10:59 AM  <DIR>          .
06/16/2021  10:59 AM  <DIR>          ..
06/16/2021  10:59 AM                2,655 jenkins_agent_key
06/16/2021  10:59 AM                579 jenkins_agent_key.pub
06/10/2021  09:39 PM            36,537 known_hosts
08/20/2020  02:01 PM            26,615 known_hosts.old
               4 File(s)              66,386 bytes
               2 Dir(s) 61,445,423,104 bytes free
```

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```
Command Prompt

C:\Users\abghode\.ssh>type jenkins_agent_key
-----BEGIN OPENSSH PRIVATE KEY-----
o3B1bnNzaC1rZXktZjEAAAAACmFlczI1Ni1jdHIAAAAGYmNyeXB0AAAAAGAAAAABA64m9PLS
lga4IDLsS903XQAAAAEAAAAEAAAGXAAAAB3NzaC1yc2EAAAADAQABAAQgQDnksxReqwN
SAPniJOjXittx9ian4lHzbWVh6NJqGxEhmzz1V8VSyCgmK3ynuXYoqgYksqGLT4d0I8RdM
wFDxU1ggfmV2Qci2ZtEJzumKj8j5k4TUzEk1h1b4NiJ56TAiUFDwY8wOetggFviefiF8wp
jGghCeQ01/N8B330Ky7+RXfxy0sn0jJLTdc0TRm2NmXS1f50Rci5X5LxuK6p7x0Rvw10dL
i1xecxsSLAEIjzmLb1Hysh9E+dbGYyTSiJXRNBTRzce+0L/zuTKdq50zH0bV0hdEn0qDus
X0x2gKy/zFyT6S29LsKvxjkEcHcm80iF/Z1hBmGkqqzD4oviLJOqG+RQTu6B27Y5+RpgUr
BuOXQjIkZT+HYYNsKJ764ZBZsZwuts/pRxxh2FIhn0aFY341GANRrie8fAgymx7fkJVimZ
QgD2NPnfnL7UPAG0iV4KF14PJRwfzH1prWBp/EM1paY1YI0czo2c0vg1Kx0P9aGCF5N3p
JyQxp21D3DM9EAAWQMA28ji4X1bFK1wP93sxn/L4ZDiKUu3f+sqj2U3outBDR+YZT/RND
z/NJUMea9aCj7qffqRMjPz0G/omJS1EjsVAAWN5IwZCNhUsPw8U1NBa/MbwjmXe10/p/lz
3CC0Im46udJEiz529EK2KQ5L1U9F1V8Bv7oQmRtDPd+Yxx74YbCnUot0TDVeaNnN+Zk/cu
JZkwApp3R0BRTcdh1+UV5Wu1U+4f0ix7CTF7AjxiGdrU9fZkYvsxfBPBjqe4DY78R+B2yr
HUFwKUILuvndQ/HjKAuDWIC01sBnr+BnDeA86Tr3DZmF0DHyI7GRQDvb10fsA+K+mpW0ZT
rTt10GagxFWJRsqYhc0RBnrerIAFzk2hzZpMvi8M6K91z+Wk4UThjNKG0A4wYFfn/QPtztm
Dtig7b+du4hW3mqE1InNVRkLs0RAw/w+qlqCIk4e1KvmeboM4h10cTN5gpi8sGY7IaCVtL
4FFYX+ts/35DkZrFR1kZ8d9bJ9Tb79jn8IvQNKIPxbnOezBC30nU7HYhGKNqVIIWqNtwr5
ZhWnCP1ZWL86QKc2ZqNYxpscDRJgg1USB6/W9lCAqc5w5Gwad2gNkYt07rP+AAngBfRbcg
yMUA7HQNHq20LxAUx6yYQmpzEvk2DKN1SDe1K10SBTDIOBt7KZvWcFYI+1MHtzDheTVH6Z
7qPbzzJK600XQEUS5E8+t+NEb8godoC/ePzi9oSuus0+5IVpaYcnafvW+Y00iAH6u2T6BTK
JBMZic0vr08qb/WjC5RdHwhTZ7ZM6u0mIJXEKMB5143pSd0ZcxCKA4UuqsdfAI2ifZ2S73
YXcESmQksuSp5vPoRpXRs8gN3dmaxByd6GvxvsJAVYlvB3Npq7q4xQTy901GdZtd1WxoEX
kKKhKerAtybujsjGk1NuXeJQMyP+1mf7MKCuD3xa1A/wrhUpW0B5Gy2kXA9FGkVAHK7aGX
3VuJZLwN11b1L0+n/N0T79a9Qd68dXhAC70Fg2GK5SsQLZo8LCBMTmxsKYfGXdl54xuFjR5w
+682aIwSJ+A4B/IrW1z8WrneM5SiFtVjE0x7/mK6M/tjL0NIzmSA5FbuJl3EVff0AQ5rpS
-----
```

Above set of commands will generate an SSH key pair. Please remember passphrase entered while generating the key pair. We will be using key pair and passphrase in Jenkins configuration.

Step 2: Enable PORT 22 for your windows workstation

Commands to run on cmd: `cd "c:\Program Files\Git\etc\ssh"`

`notepad sshd_config`

We need to edit `/etc/ssh/sshd_config` inside GIT installation directory and enter below line

Port 22.

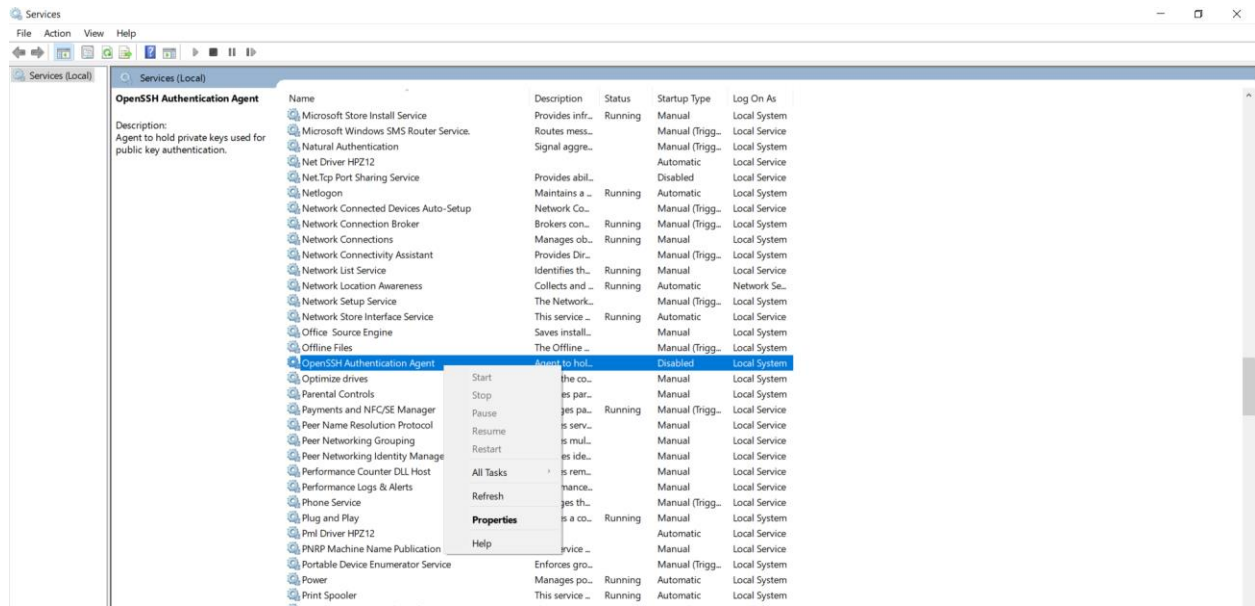
```
Select Command Prompt

c:\Program Files\Git\etc\ssh>notepad sshd_config
```

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Step 3: Please use keyboard shortcut (Windows Key + R) and run services.msc.

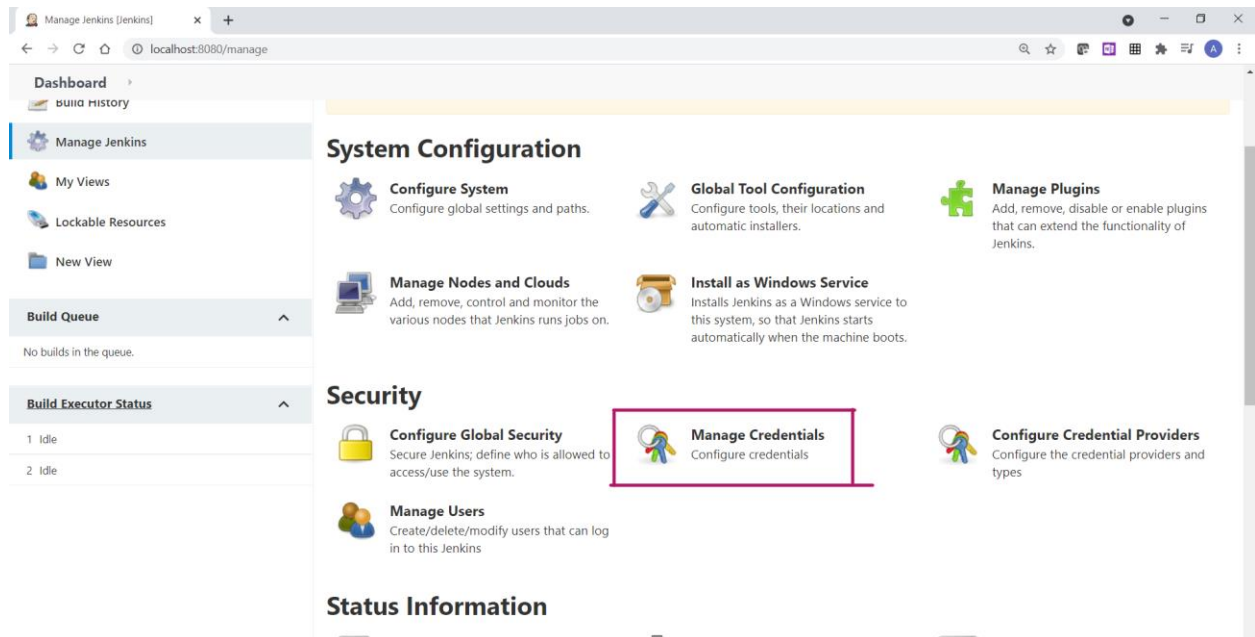
Please restart openssh service by right click and restart.



Step 4: Create Jenkins SSH credentials

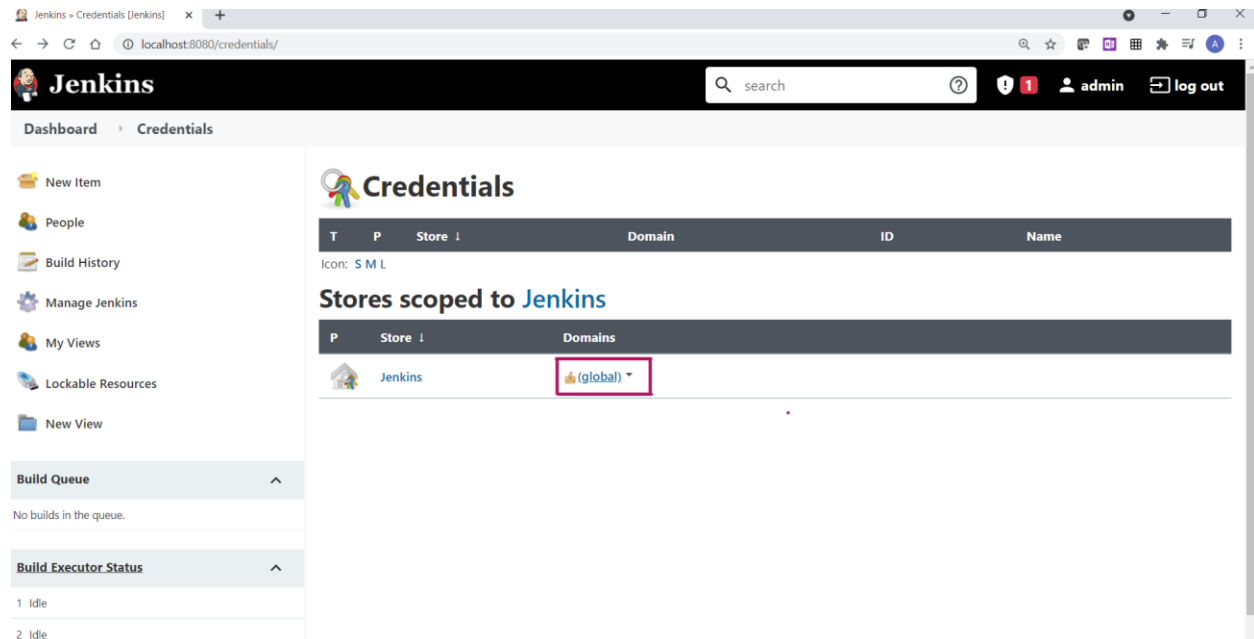
URL to access: <http://localhost:8080/manage>

Click on 'Manage credentials'



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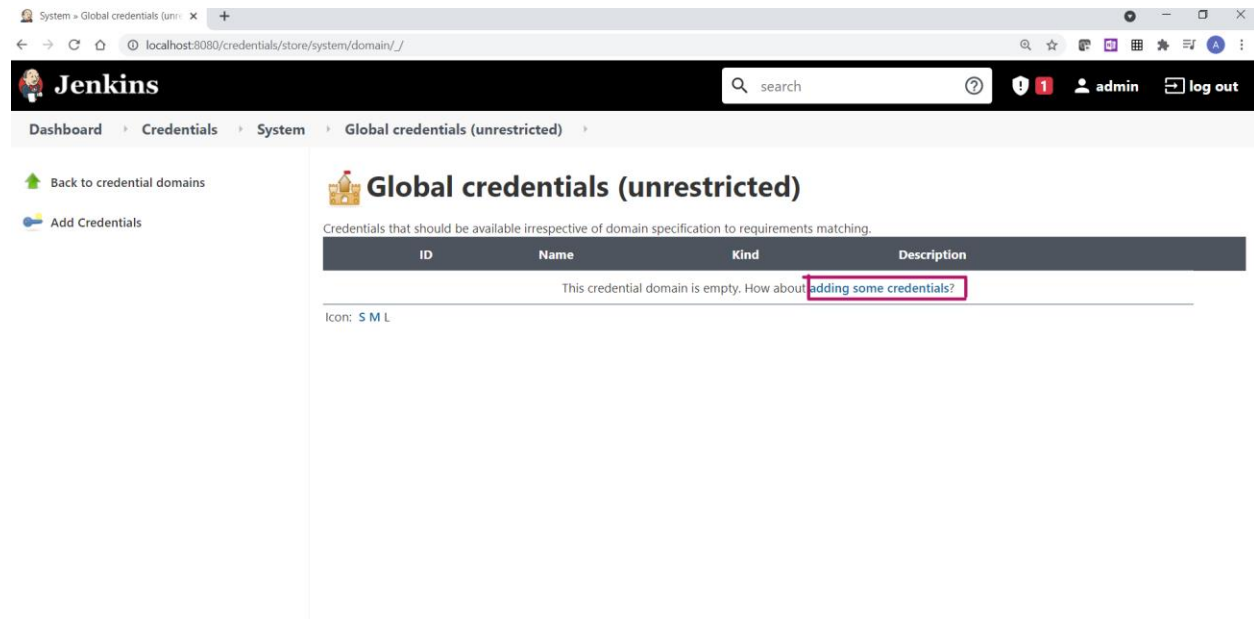
Click on '(global)'



The screenshot shows the Jenkins web interface. The top navigation bar includes the Jenkins logo, a search bar, and user information (admin, log out). The left sidebar contains various navigation links. The main content area is titled 'Credentials' and displays a table of credential stores. The table has columns for 'T', 'P', 'Store', 'Domain', 'ID', and 'Name'. Under the 'Stores scoped to Jenkins' section, there is a table with columns 'P', 'Store', and 'Domains'. A dropdown menu is open for the 'Domains' column, showing '(global)' as the selected option, which is highlighted with a red box.

| T | P | Store | Domain | ID | Name |
|--------------------------|---|---------|----------|----|------|
| Stores scoped to Jenkins | | | | | |
| P | | Store | Domains | | |
| | | Jenkins | (global) | | |

Click on 'Adding some credentials'



The screenshot shows the Jenkins web interface for the 'Global credentials (unrestricted)' page. The top navigation bar is the same as the previous screenshot. The left sidebar includes links for 'Back to credential domains' and 'Add Credentials'. The main content area is titled 'Global credentials (unrestricted)' and contains a message: 'Credentials that should be available irrespective of domain specification to requirements matching.' Below this message is a table with columns 'ID', 'Name', 'Kind', and 'Description'. The table is currently empty, and a message below it states: 'This credential domain is empty. How about adding some credentials?'. The link 'adding some credentials?' is highlighted with a red box.

| ID | Name | Kind | Description |
|---|------|------|-------------|
| This credential domain is empty. How about adding some credentials? | | | |

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Step 5: Adding credentials from Global item

URL to access: http://localhost:8080/credentials/store/system/domain/_/newCredentials

This step is divided into 2 sub steps. Please also look at the next step to complete creation of new credentials.

Press add button in Private key section to insert your private key from c:\Users\<user-name>\.ssh

The screenshot shows the Jenkins 'New Credentials' form. The 'Kind' dropdown is set to 'SSH Username with private key'. The 'Name' field contains 'jenkins'. The 'Description' field contains 'The jenkins ssh key'. The 'Username' field contains 'jenkins'. The 'Private Key' section has 'Enter directly' selected. The 'Key' field contains a long base64-encoded string. The 'Passphrase' field is empty. The 'OK' button is at the bottom.

Kind

SSH Username with private key

Username with password

GitHub App

SSH Username with private key

Secret file

Secret text

Certificate

jenkins

Description

The jenkins ssh key

Username

jenkins

☐ Treat username as secret

Private Key

☒ Enter directly

Key

Enter New Secret Below

Passphrase

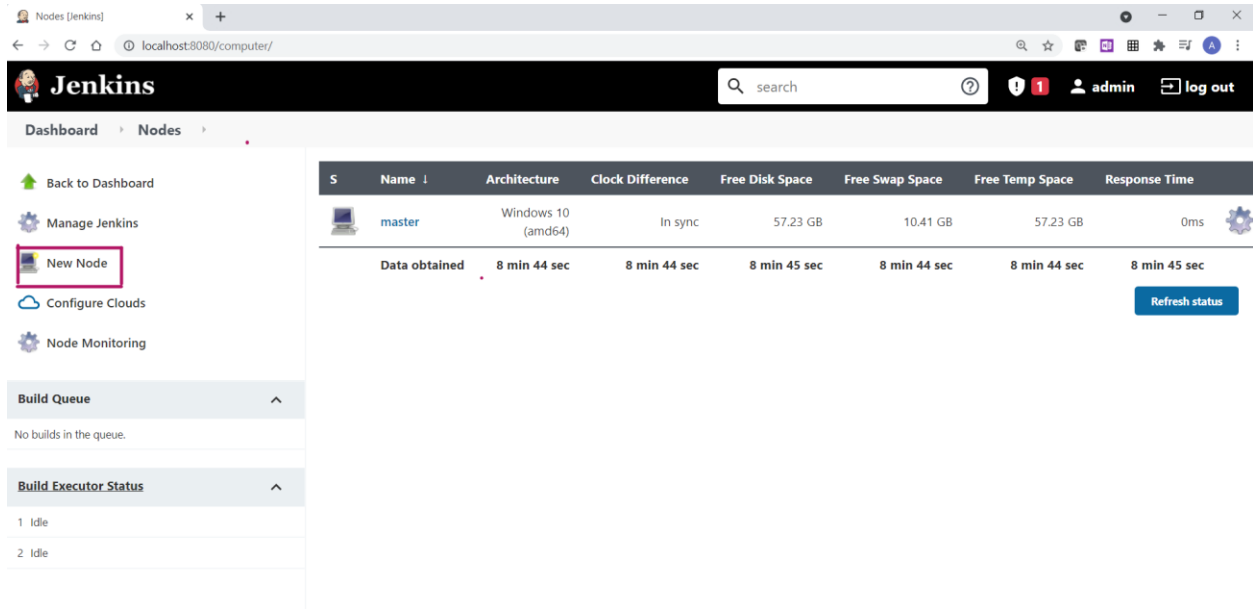
OK

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Step 6: Setting up an agent on Jenkins

URL to access: <http://localhost:8080/computer/>

Click on 'New Node'

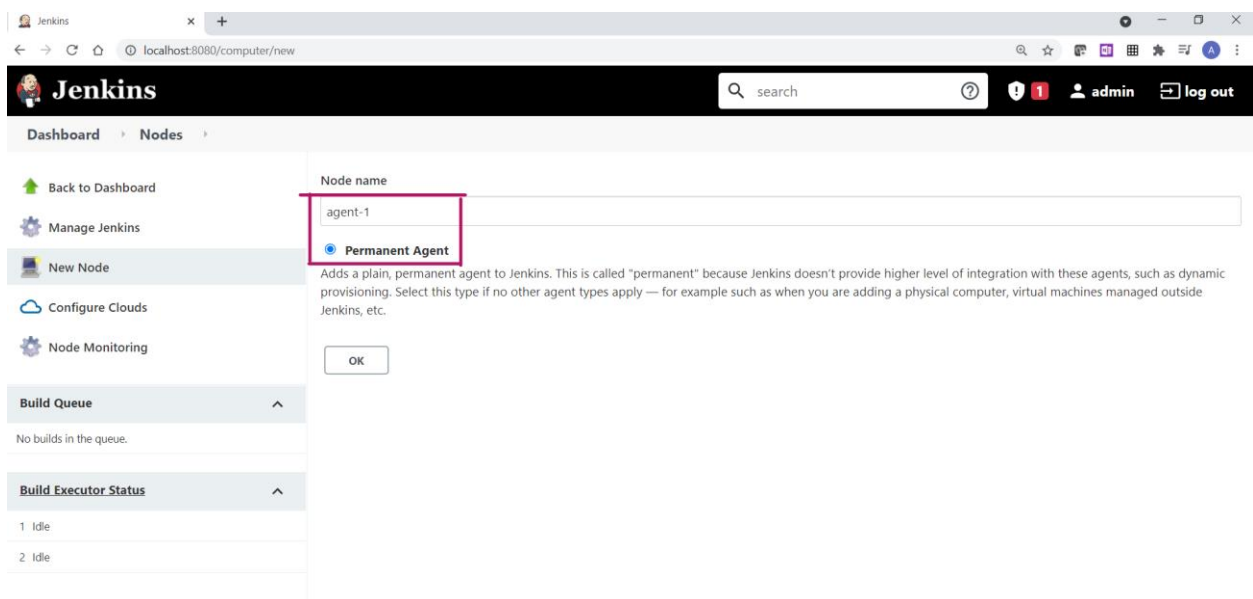


The screenshot shows the Jenkins 'Nodes' page. The left sidebar contains links: 'Back to Dashboard', 'Manage Jenkins', 'New Node' (highlighted with a red box), 'Configure Clouds', and 'Node Monitoring'. The main area displays a table of nodes. The 'master' node is listed with details: Architecture (Windows 10 (amd64)), Clock Difference (In sync), Free Disk Space (57.23 GB), Free Swap Space (10.41 GB), Free Temp Space (57.23 GB), and Response Time (0ms). Below the table, a 'Data obtained' row shows times for various metrics. A 'Refresh status' button is at the bottom right.

| S | Name ↓ | Architecture | Clock Difference | Free Disk Space | Free Swap Space | Free Temp Space | Response Time |
|---|--------|--------------------|------------------|-----------------|-----------------|-----------------|---------------|
| | master | Windows 10 (amd64) | In sync | 57.23 GB | 10.41 GB | 57.23 GB | 0ms |

Data obtained: 8 min 44 sec, 8 min 44 sec, 8 min 45 sec, 8 min 44 sec, 8 min 44 sec, 8 min 45 sec

Refresh status



The screenshot shows the 'New Node' form in Jenkins. The left sidebar is the same as the previous screenshot. The main area has a 'Node name' field with 'agent-1' entered. Below it, the 'Permanent Agent' radio button is selected and highlighted with a red box. A description explains that this adds a plain, permanent agent. An 'OK' button is at the bottom.

Node name: agent-1

☒ 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

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Please enter below details for adding a Jenkins agent

The image consists of two screenshots of the Jenkins web interface, showing the process of adding a new agent.

Top Screenshot: Jenkins 'New Node' Form

The top screenshot shows the 'New Node' form in the Jenkins interface. The form is titled 'Nodes' and includes a sidebar with navigation links: 'Back to Dashboard', 'Manage Jenkins', 'New Node', 'Configure Clouds', and 'Node Monitoring'. The main form fields are:

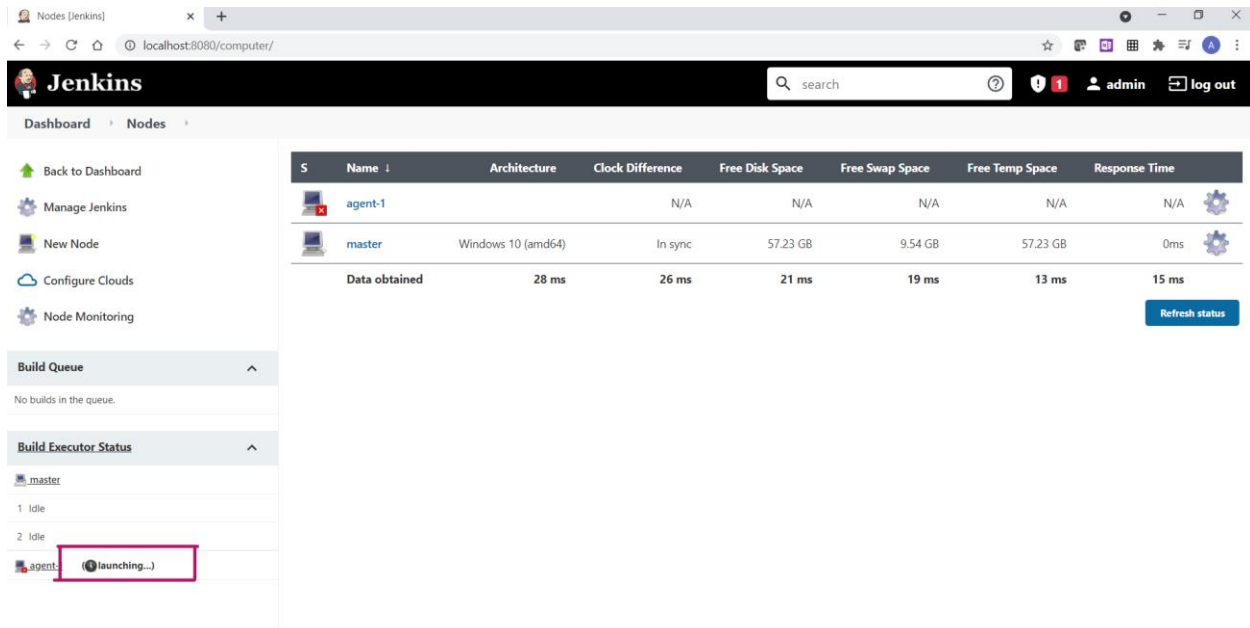
- Name:** 'agent-1' (highlighted with a red box)
- Description:** (empty)
- Number of executors:** '1' (highlighted with a red box)
- Remote root directory:** 'C:\Users\abghode\jenkins' (highlighted with a red box)
- Labels:** 'agent-1' (highlighted with a red box)
- Usage:** (empty)

Bottom Screenshot: Jenkins 'Configure' Form

The bottom screenshot shows the 'Configure' form for the new agent. The form is titled 'Nodes' and includes a sidebar with navigation links: 'Dashboard', 'Nodes', '1 Idle', and '2 Idle'. The main form fields are:

- Usage:** 'Use this node as much as possible' (highlighted with a red box)
- Launch method:** 'Launch agents via SSH' (highlighted with a red box)
- Host:** 'localhost' (highlighted with a red box)
- Credentials:** 'jenkins (The jenkins ssh key)' (highlighted with a red box)
- Host Key Verification Strategy:** 'Manually trusted key Verification Strategy' (highlighted with a red box)
- Require manual verification of initial connection:** (unchecked)
- Availability:** 'Keep this agent online as much as possible' (highlighted with a red box)

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The screenshot shows the Jenkins 'Nodes' page. On the left sidebar, the 'Build Queue' and 'Build Executor Status' sections are visible. In the 'Build Executor Status' section, the 'agent-1' node is highlighted with a red box and labeled '(launched...)'. The main table lists the nodes and their resource usage:

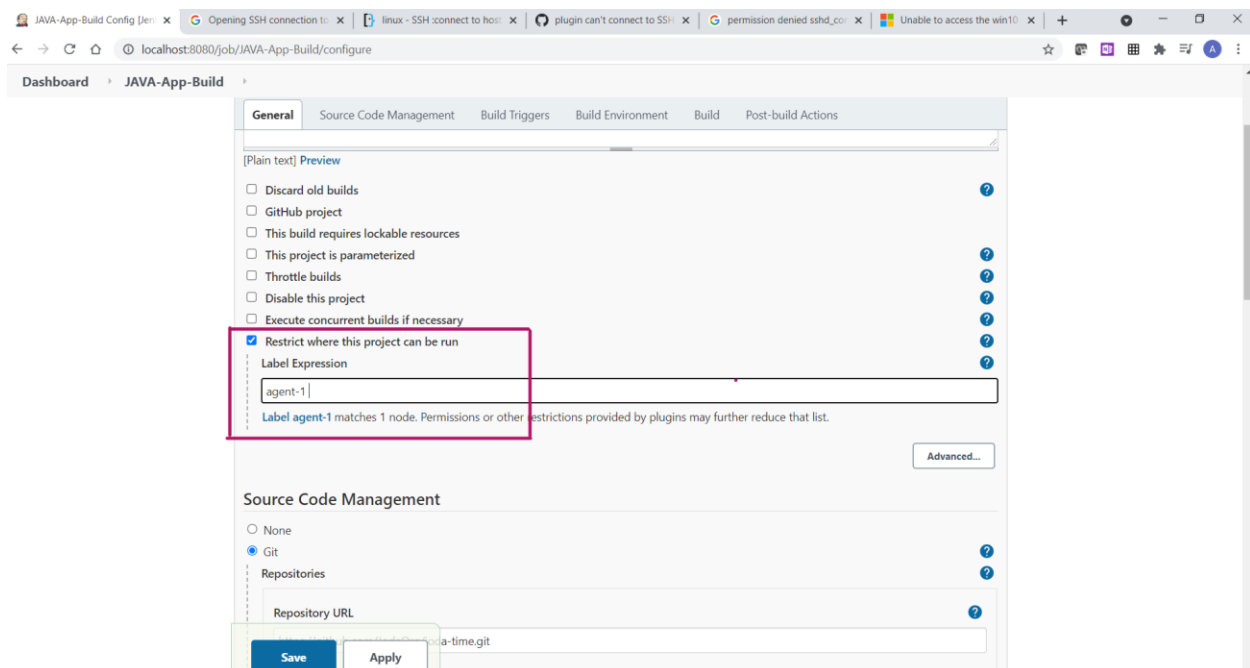
| S | Name | Architecture | Clock Difference | Free Disk Space | Free Swap Space | Free Temp Space | Response Time |
|---------------|---------|--------------------|------------------|-----------------|-----------------|-----------------|---------------|
| | agent-1 | | N/A | N/A | N/A | N/A | N/A |
| | master | Windows 10 (amd64) | In sync | 57.23 GB | 9.54 GB | 57.23 GB | 0ms |
| Data obtained | | | 28 ms | 26 ms | 21 ms | 19 ms | 13 ms |

A 'Refresh status' button is located at the bottom right of the table.

Step 7: Configure an existing freestyle project to build on Jenkins agent

URL to access: <http://localhost:8080/job/JAVA-App-Build/configure>

Please use 'restrict where the project can be run' checkbox and update 'agent-1' label.



The screenshot shows the Jenkins configuration page for the 'JAVA-App-Build' project. The 'General' tab is selected. The 'Restrict where this project can be run' checkbox is checked and highlighted with a red box. Below it, the 'Label Expression' is set to 'agent-1', also highlighted with a red box. The 'Source Code Management' section shows 'Git' as the selected provider. The 'Repository URL' is set to 'https://github.com:sa-time.git'.

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Save and Click on “build now’

The screenshot shows the Jenkins web interface in a browser. The browser's address bar displays 'localhost:8080/job/JAVA-App-Build/'. The Jenkins header includes the logo, a search bar, and user information for 'admin' with a 'log out' link. The left sidebar contains navigation links: 'Back to Dashboard', 'Status', 'Changes', 'Workspace', 'Build Now' (highlighted with a red box), 'Configure', 'Delete Project', and 'Rename'. Below these is the 'Build History' section, which includes a search bar and a table showing a single build (#1) from 'Jun 15, 2021 9:27 AM'. The main content area is titled 'Project JAVA-App-Build' and includes links for 'Workspace', 'Recent Changes', and 'Permalinks'. The 'Permalinks' section lists four links: 'Last build (#1), 1 day 2 hr ago', 'Last stable build (#1), 1 day 2 hr ago', 'Last successful build (#1), 1 day 2 hr ago', and 'Last completed build (#1), 1 day 2 hr ago'. A 'Disable Project' button is located in the top right corner of the main content area.

So now your new build will be executed on Jenkins agent. This build will not use master node.