Development Support: Hudson Master-Slave Configuration

From pitawiki

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Introduction

In order to correctly transition from a Master-only setup to a Master-Slave configuration, individual builds will need to be manually configured to run on multiple Hudson nodes. By default, when a Master-Slave configuration is created, the original projects from the Master will remain building on the Master only. This is a safety feature to insure that no current builds will be broken. Builds must then be edited to have them remain on the master, roam between nodes freely, or move to a slave node. This guide is for setting up a linux master server with various O/S slave nodes.

Setting up a linux master server

The instructions below are for setting up Hudson for the first time. The following required instructions must be done for either new or old setups.

New setup

1. Create a user called "hudson" and assign a home directory and password

```
$ sudo useradd -d /home/hudson -m hudson
$ sudo passwd hudson
```

2. Login as hudson user
3. If JDK is not already installed, unzip jdk1.6.0 to /home/hudson/jdks
4. Download hudson.war from http://hudson-ci.org/
5. Install a webserver (such as tomcat, apache, etc...) and deploy Hudson

6. If you do not want to run Hudson in a separate webserver, use the built-in server Winstone

```
$ java -jar hudson.war
```

Required

1. Verify that OpenSSL and OpenSSH are installed before continuing. If not, install them
2. Create a public key for ssh login to slaves without passwords. Use the default file and no passphrase

```
$ ssh-keygen -t rsa
```

Setting up a linux slave server

The instructions below are for setting up a linux Hudson slave server with remote SSH start. If there is a need for additional configuration options (for separate maven, java, or ant settings) then follow the instructions in bold.

1. Create a user called "hudson" and assign a home directory and password

```
$ sudo useradd -d /home/hudson -m hudson
$ sudo passwd hudson
```

2. Login as hudson user
3. Create folders "ant" and "jdks" in /home/hudson
4. Download and unzip ant into folder "ant"
5. Download and unzip jdk1.6.0 or other versions into folder "jdks"
6. Verify that OpenSSL and OpenSSH are installed before continuing. If not, install them
7. Copy the id_rsa.pub from the Hudson master server:
    a. Setup an FTP connection to the Hudson master server
    b. Locate and transfer the "id_rsa.pub" file from the hidden folder /home/hudson/.ssh/
    c. Copy "id_rsa.pub" to /home/hudson/.ssh/authorized_keys. Create the .ssh directory if it does not exist
    d. Verify the installation of the key by setting up an ssh connection from the master to this slave server. The connection should happen without prompting for a password

To create a manually-configurative slave (for additional maven settings etc...) follow these steps:

8. Copy the hudsonSlave.sh shell file to /home/hudson/hudsonSlave.sh
9. Edit the hudsonSlave.sh shell file with any additional settings, a basic layout has already been provided and contains start, stop, restart, and status functions
10. Extract "slave.jar" from "hudson.war" and move it to /home/hudson/slave.jar

Setting up a windows slave server

The instructions below are for setting up a Windows Hudson slave server. The preferred method is to use the WMI+DCOM option. WMI+DCOM is very similar to the automatic SSH option for Unix slaves, it allows for automatic connection using the administrator login. However, some versions of windows (Windows 7 x64...) may not be compatible. As a backup, a JNLP setup is also described.

> *For a WMI+DCOM setup, the master will have control over its operation. However, it will not be able to run programs that require display interaction (such as GUI tests).*
> *For a JNLP (Java Web Start) setup, the slave will be able to run display interaction. However, the slave.jar cannot be started from the master server, it must be started on the slave server. The workaround for this is attaching the slave.jar startup to a Windows service.*

WMI+DCOM Preperation:

1. Make sure the following TCP connections are allowed in the Windows Firewall settings:
   TCP Port 135 (DCE/RPC Locator Service)
   TCP Port 139 (NetBIOS Session Service)
   TCP Port 445 (Windows Shares)
2. Make sure sharing and security model for local accounts is set to "Classic":
   Start the control panel, go to "Administrative Tools" → "Local Policies" → "Security Options" → "Network access: Sharing and security model for local accounts"
   Change it to "Classic"
3. Start the Control Panel and open "Administrative Tools," then "Services." Locate Remote Registry service and click "Start this service."
4. Make sure that the .NET framework is updated to a recent version
5. Verify that the user that will control Hudson has administrative priveledges

JNLP Setup:

1. Extract the "slave.jar" from the "hudson.war" archive and place it in a hudson directory, C:\hudson \slave.jar
2. Follow section "Creating a new node on the master server" and select the launch method to be JNLP
3. Connect to the master Hudson server in a web browser
4. Navigate to "Manage Hudson" → "Manage Nodes"
5. Click on the corresponding slave
6. Click "Launch" to launch the slave agent from the browser
7. After the Hudson slave agent is launched, click "File" → "Install as Windows Service"
8. Click "OK" on the following two pop-ups
9. Verify the installation of the service by checking the services and locating "Hudson Slave"

Creating a new node on the master server

For any master/slave scenario, the process is the same for adding slave nodes to the master server. The only things that could differ across setups are the unique configuration options for each node.

1. Open a browser and navigate to the Hudson master URL
2. On the left pane, click "Manage Hudson" then click "Manage Nodes" on the following page
3. On the left pane, click "New Node"
4. Enter a name for the node, select "Dumb Slave" then click "OK"
5. Enter the required information, utilize the question mark next to each textbox for detailed descriptions
6. Launch method will vary based on O/S and selected protocol:

Default Linux Slave

Select the launch method to be "Launch slave agents on Unix machines via SSH." This will allow the master server to automatically start and stop the slave server. Configuration settings are changed via the Hudson master web-interface.

Next, enter the host name, then provide the path to the public key file: /home/hudson /.ssh/authorized_keys/id_rsa.pub

Manually-Configurative Linux Slave

Select the launch method to be "Launch slave via execution of command on the Master." This will enable the master server to start the slave server remotely by connecting via SSH to run a shell script on the slave. Configuration settings are added manually to the hudsonSlave.sh script.

Next, enter the launch command. This will be in the following format:

```
ssh slave_server:port sh hudsonSlave.sh start
```

Windows Slave using WMI+DCOM

Select the launch method to be "Let Hudson control this Windows slave as a Windows service" Make sure the "Name" field corresponds to the machine's name. If the slave and master are on the same network and in the same domain, the machine's name might have to be followed by ".local" (for example: windows_slave.local).

Enter the "Administrator user name" as DOMAIN\USER and the corresponding "Password"

Windows Slave using JNLP

Select the launch method to be "Launch slave agents via JNLP"

Shell Script

Below is the code for the hudsonSlave.sh shell script:

```
#!/bin/bash
```

```
# Created by Joshua Rutheiser
# Script is designed to start, stop, restart, and monitor a Hudson slave server
# Date: 5/12/2011
# Revision: 1

ipAddress=$(ifconfig | grep 'inet addr:' | grep -v '127.0.0.1' | cut -d: -f2 | awk
'{print $1}')
hostName=$(hostname)

# Below are the variables that should be changed for this
# specific slave node
javaPath=/home/hudson/jdks/jdk1.6.0_25
antPath=/home/hudson/ant/apache-ant-1.8.2
mavenPath=/home/hudson/maven/

start() {
        echo "Starting the slave agent on $hostName at $ipAddress"
        export JAVA_HOME=$javaPath
        export ANT_HOME=$antPath
        export MAVEN_HOME=$mavenPath
        export PATH=$JAVA_HOME/bin:$ANT_HOME/bin:$MAVEN_HOME/bin:$PATH
        java -jar slave.jar
        echo "Slave agent started..."
}

stop() {
        PID=$(ps -ef | grep 'hudsonSlave.sh' | grep -v 'grep' | awk '{print $2}')
    if [ ! -n "$PID" ]
        then
                echo "Cannot stop Hudson slave because it is not currently running"
        else
                kill $PID
        fi
}

status() {
        numproc=$(ps -ef | grep hudson | grep slave | grep -v grep | awk | wc -l)
        if [ $numproc -gt 0 ]
        then
                echo "Hudson slave is running on $hostName at $ipAddress..."
        else
                echo "Hudson slave is stopped on $hostName at $ipAddress..."
        fi
}

restart() {
        echo "Restarting Hudson slave..."
        stop
        start
}

case "$1" in
start)
        start
        ;;
stop)
        stop
        ;;
status)
        status
        ;;
restart)
        restart
```

```
        ;;
*)
        echo $"Usage: $0 {start|stop|status|restart}"
        exit 1
esac

exit 0
```

Additional References

Build, Please, Mr. Hudson

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Configuring Hudson Continuous Integration Slaves

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- http://wiki.hudson-ci.org/display/HUDSON/Installing+Hudson+as+a+Windows+service

Setting up a Hudson Slave

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User list: Errors connecting to Windows slave

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Windows slaves fail to start via DCOM

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Jrutheis 20:19, 17 May 2011 (UTC)

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