

Ansible:

- * master, no agent
- * playbooks
- * YAML ←

Puppet:

- * master, agent
- * manifests
- * DSL ←

Chef:

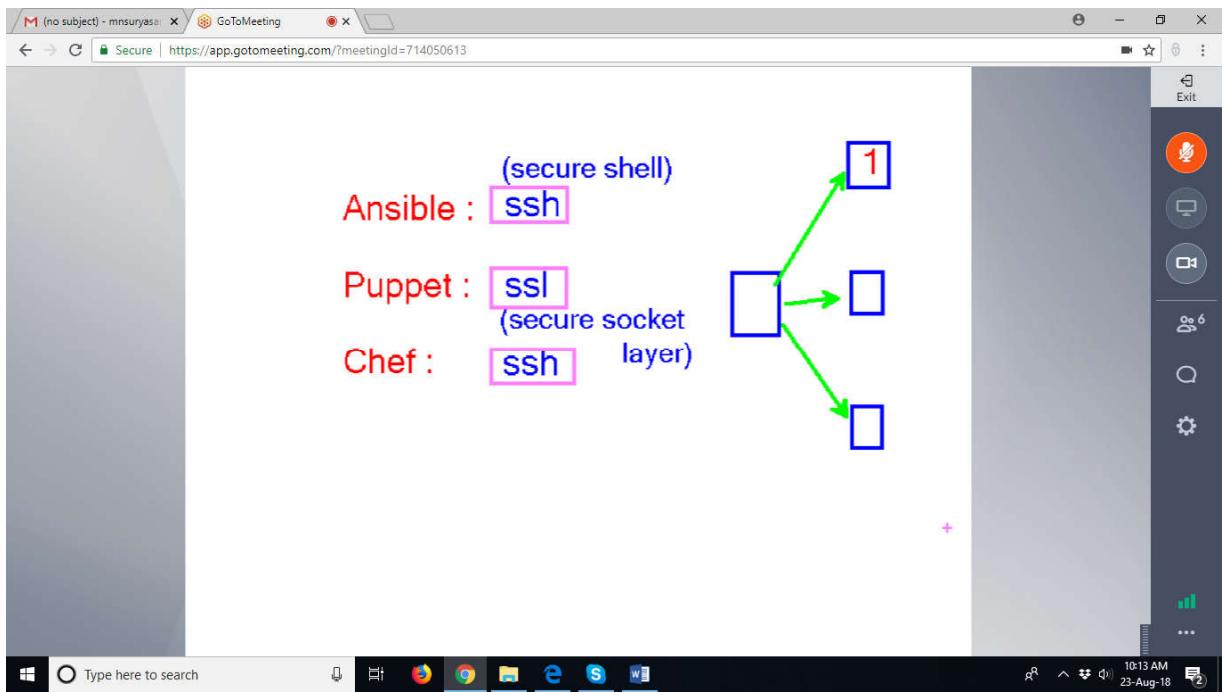
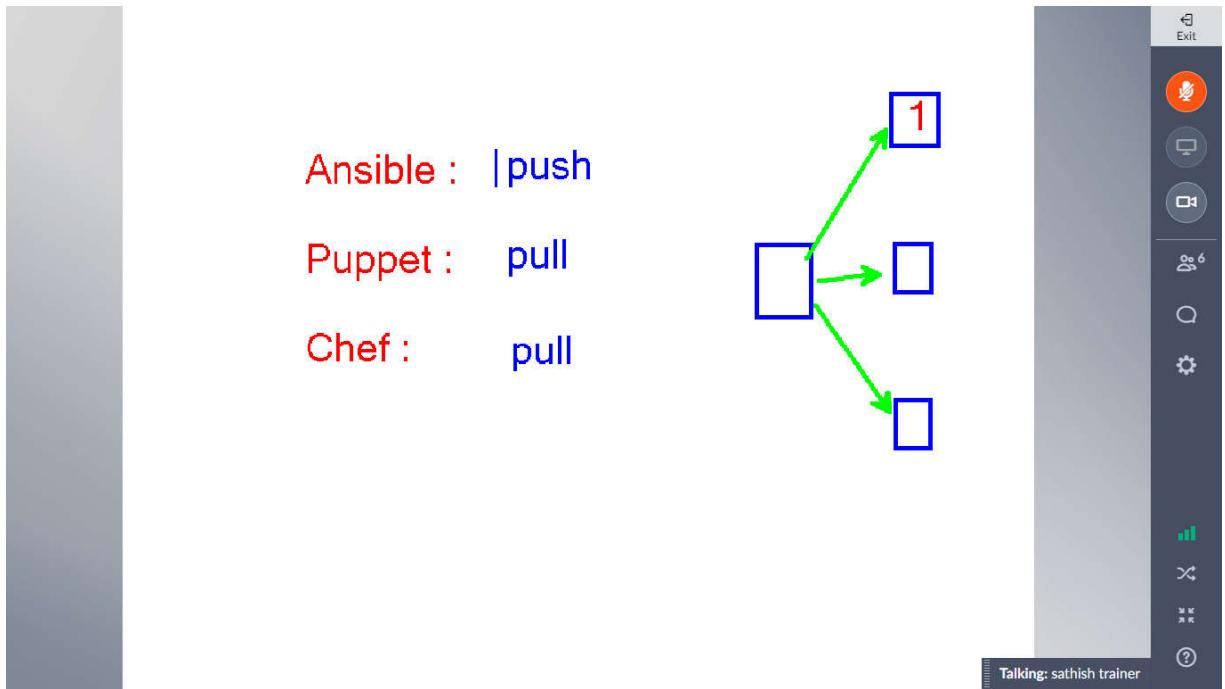
- * server, client, workstation
- * cookbooks
- * RUBY ←

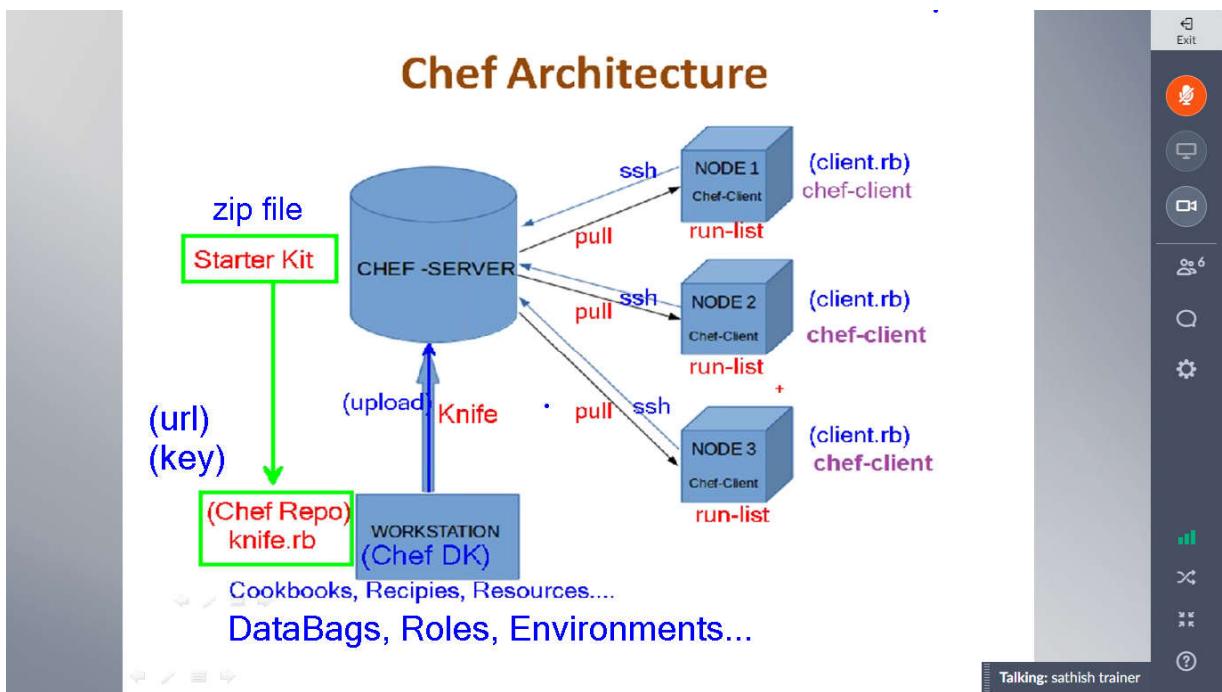
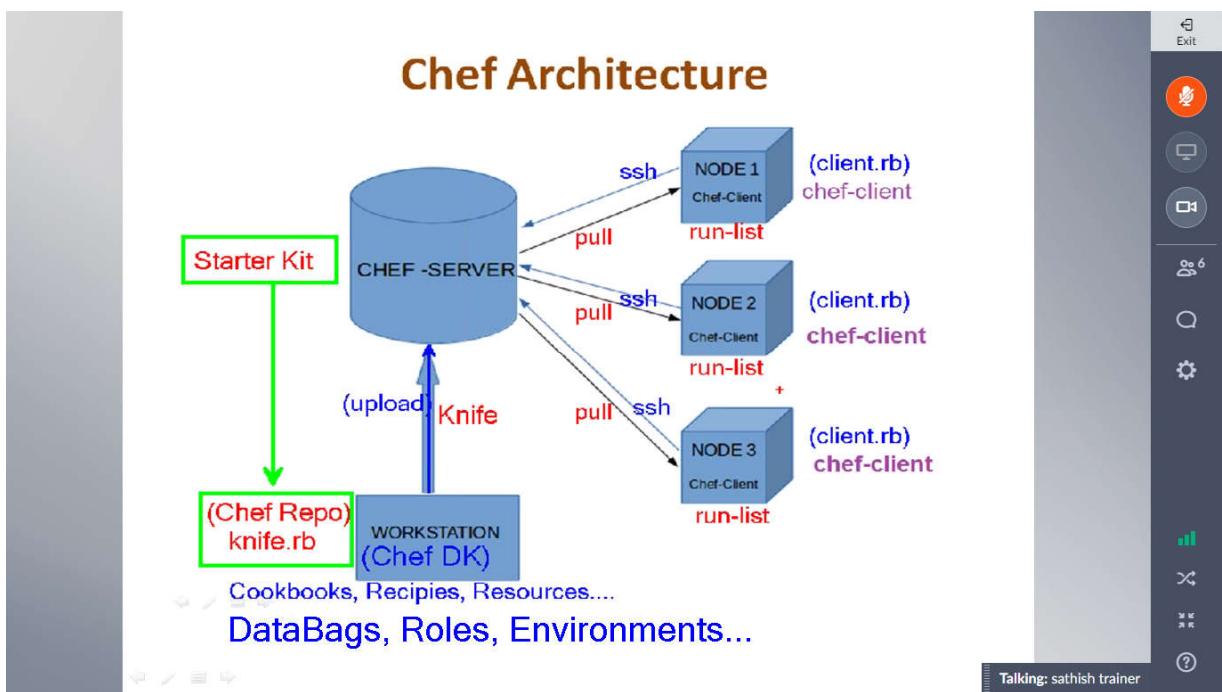
Talking: sathish trainer

What is Chef?

Chef is a configuration management
tool that is written in Ruby . It's capable
of managing both your on premise and
cloud servers with ease.

Chef turns infrastructure in to code.
With chef, you can automate how you
build, deploy, and manage your
infrastructure.



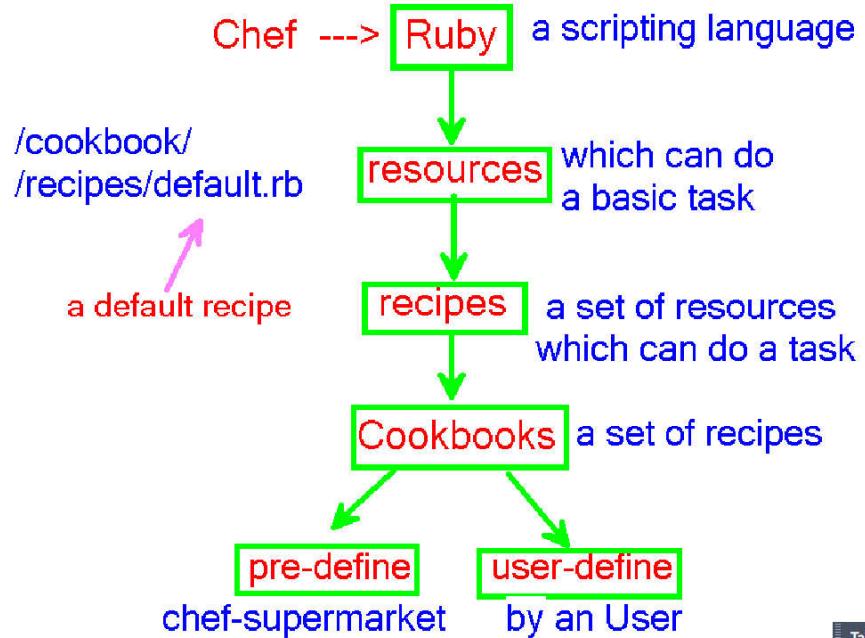


Chef has three core components

Chef Server: This central server holds all configuration data that the nodes will use for configuration.

Workstation: This machine holds all the configuration data that can later be pushed to the central chef server. Several chef command line (knife) utilities will be available in this system, which can be used to interact with nodes, update configurations.

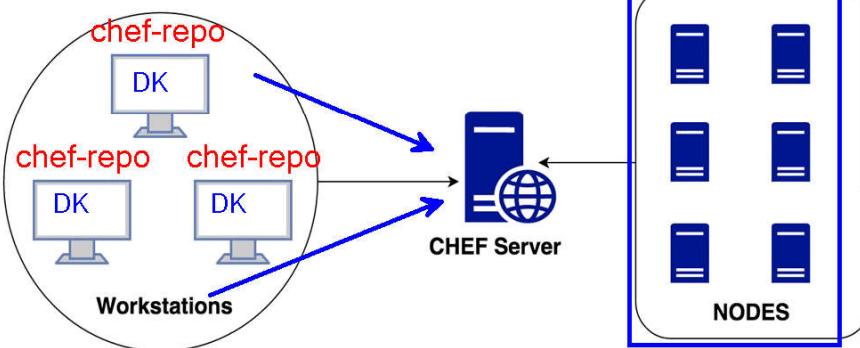
Node: It is a client server/system that will be registered to the central chef server, from where it can pull configuration data that needs to be applied.

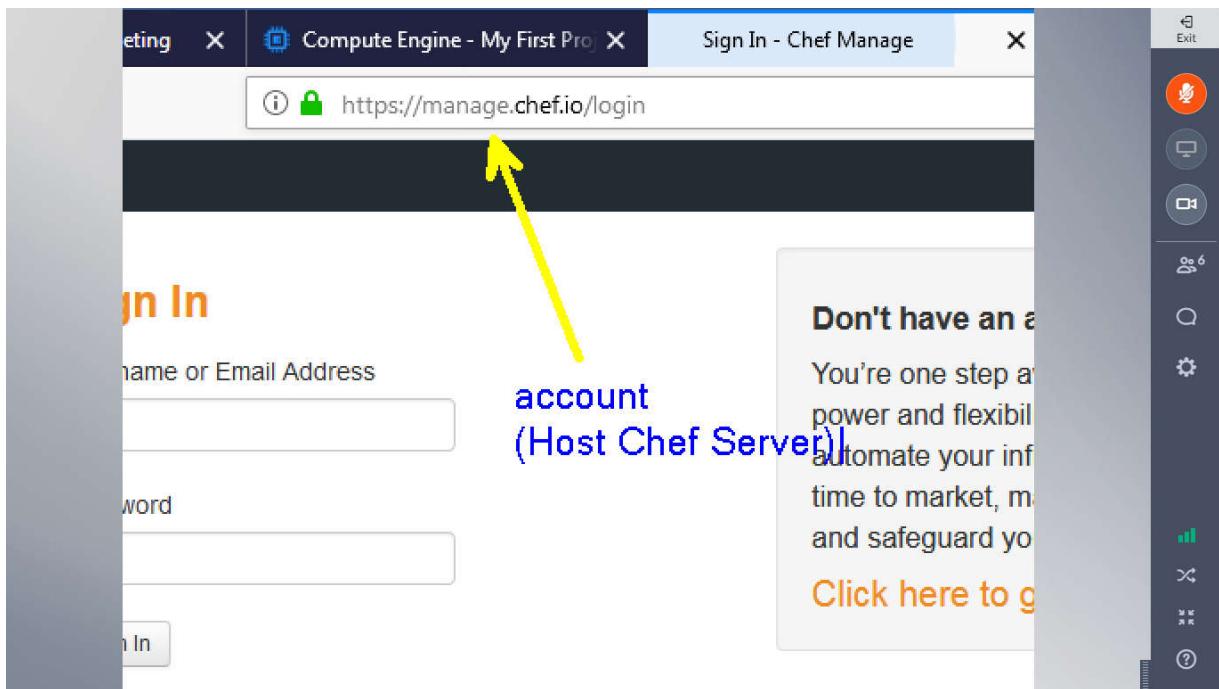


Chef Terminology

- **Recipes:** Fundamental Configuration element with in an Organization
- **Cookbook:** set of Recipes, a cookbook can have a default recipe (default.rb)
- **Chef Client:** Agent that runs locally on the node that is registered with the chef server.

Chef Architecture





M (no subject) - mnsuryasai@DESKTOP-1C9D9F5 | GoToMeeting

Secure | https://app.gotomeeting.com/?meetingId=714050613

Central Chef Server

There are Two different types of chef server available.

- **Open Source Chef:** This is completely free and open source chef, which you can install anywhere.
- **Hosted Chef:** This is paid, where code will manage your central chef server, which you can access/configure using the web interface. This makes you free from the responsibility of managing a central chef server yourself.

Talking: sathish trainer

Chef Terminology

- **Knife:** Command line tool which provides an interface between the **local chef-repo** and **chef-server**
- **Client.rb:** Configuration file for chef –client located at /etc/chef/client.rb on each node
- **Ohai:** Tools used to detect attributes on a node and then provide attributes to chef at the start of every chef-client run
- **Node Object:** Consists of run-list and node attributes that describe of the node



to get node info

Ansible ----> setup

Puppet ---> facter

Chef ---> Ohai



Chef Terminology

- **Chef-Repo:** Located on the workstation and installed with the starter kit, should be synchronized with a version control system and stores Cookbooks, roles, data bags, environments, and configuration files.
- **Indempotence:** Means a recipe can run multiple times on the same system and the results will always be identical and does not change the state of machine / node
-

Chef Workstation Installation

Step-1: download the latest Chef Development Kit

```
#wget  
https://packages.chef.io/files/stable/chefdk/3.1.0/ubuntu/14.04/chefdk\_3.1.0-1\_amd64.deb
```

Step-2: Install ChefDK

```
#sudo dpkg -i chefdk_*.deb
```

Step-3: Remove the install file:

```
#rm chefdk_*.deb
```

Talking: sathish trainer

Step-4: Verify the components of the development kit:

```
#chef verify
```

Step-5: Generate the chef-repo and move into the newly-created directory:

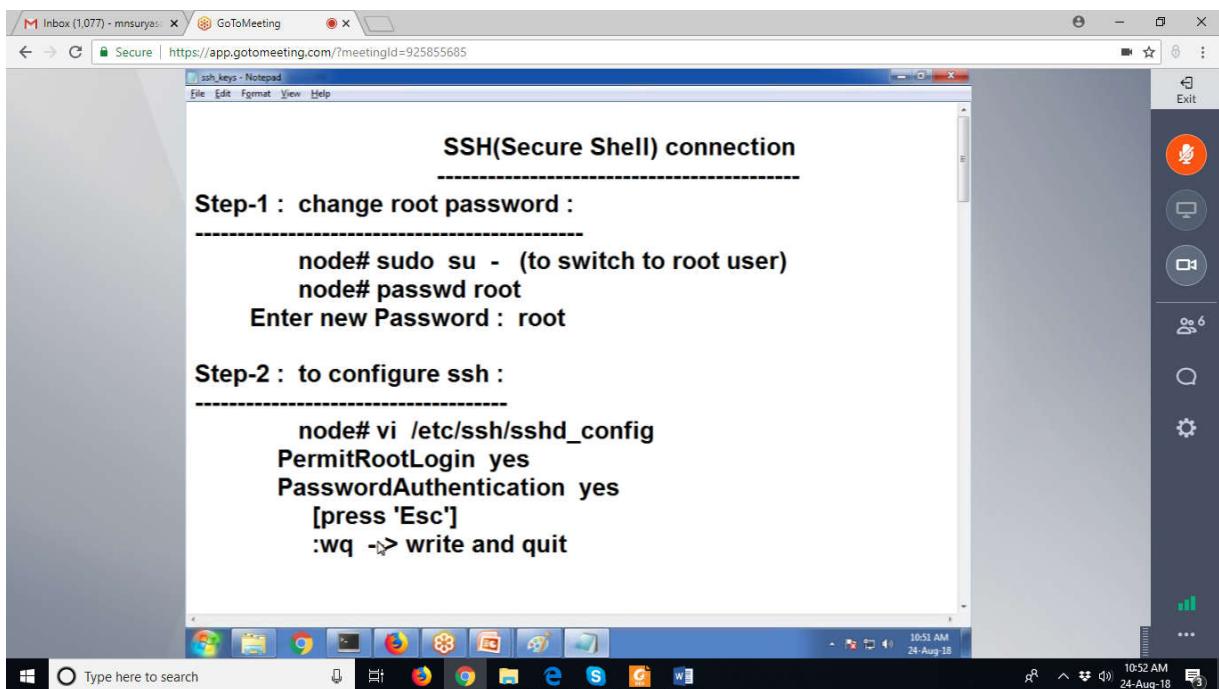
```
#chef generate repo chef-repo (optional)  
(or)
```

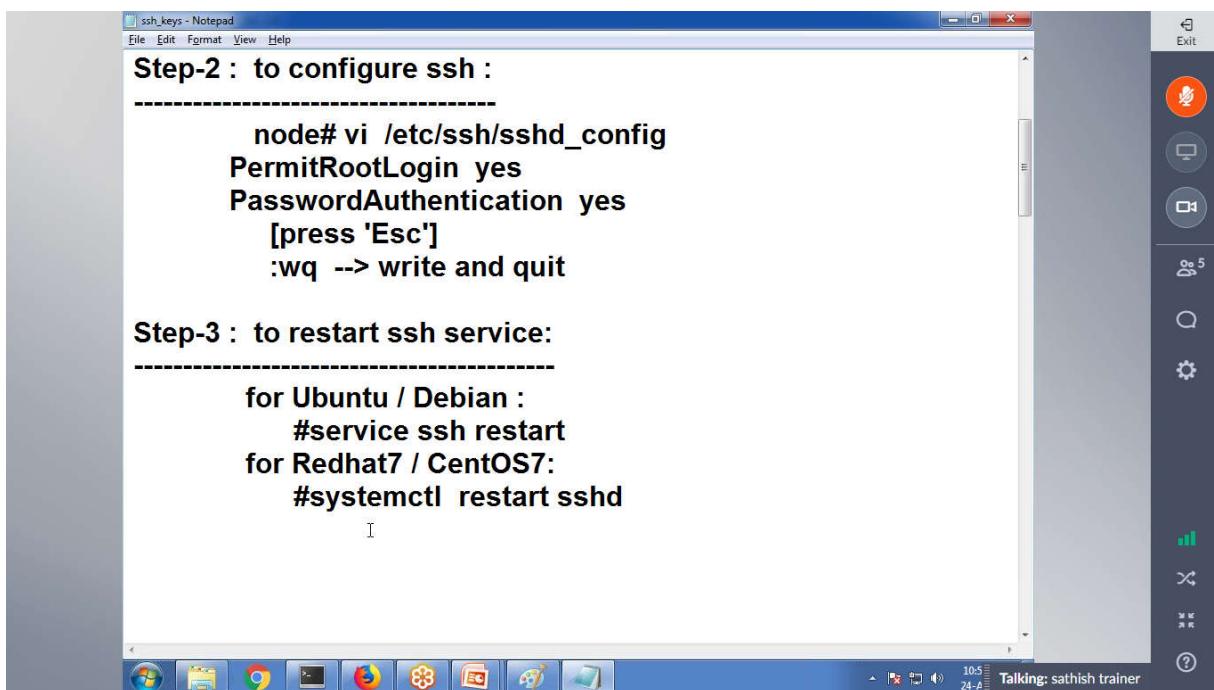
download starter kit (chef-starter.zip) to chef-dk

```
#apt-get install unzip
```

```
#unzip chef-starter.zip
```

```
#cd chef-repo
```



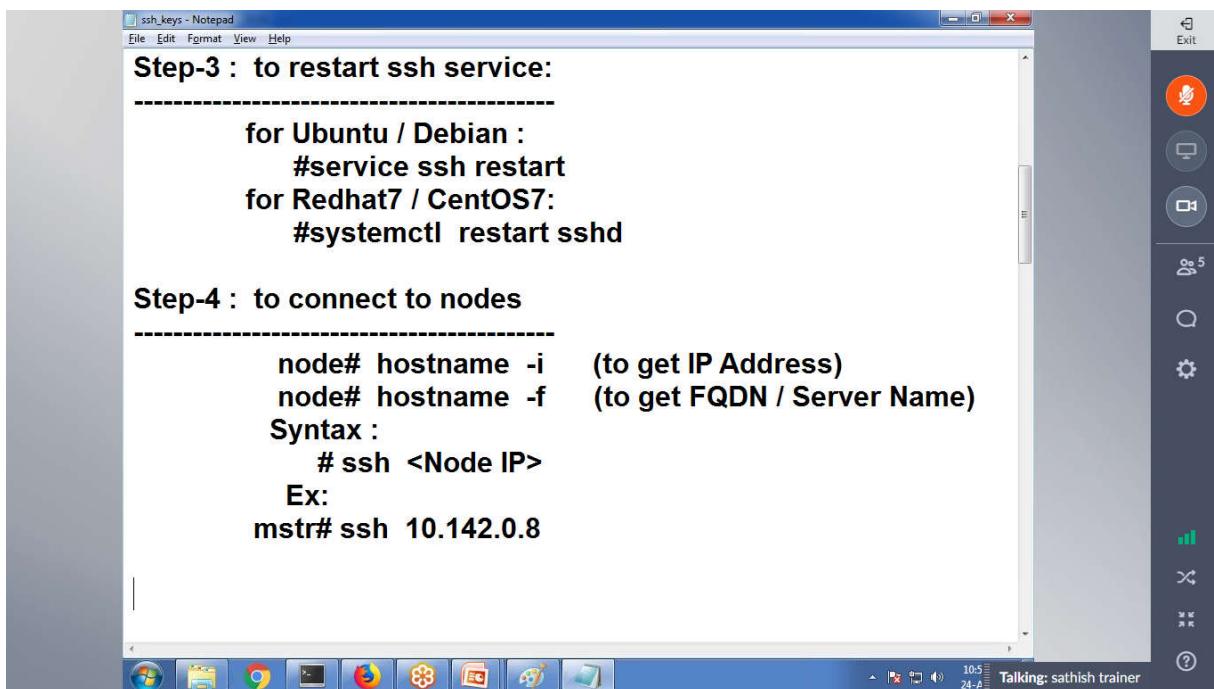


Step-2 : to configure ssh :

```
node# vi /etc/ssh/sshd_config
PermitRootLogin yes
PasswordAuthentication yes
[press 'Esc']
:wq --> write and quit
```

Step-3 : to restart ssh service:

```
for Ubuntu / Debian :
#service ssh restart
for Redhat7 / CentOS7:
#systemctl restart sshd
```

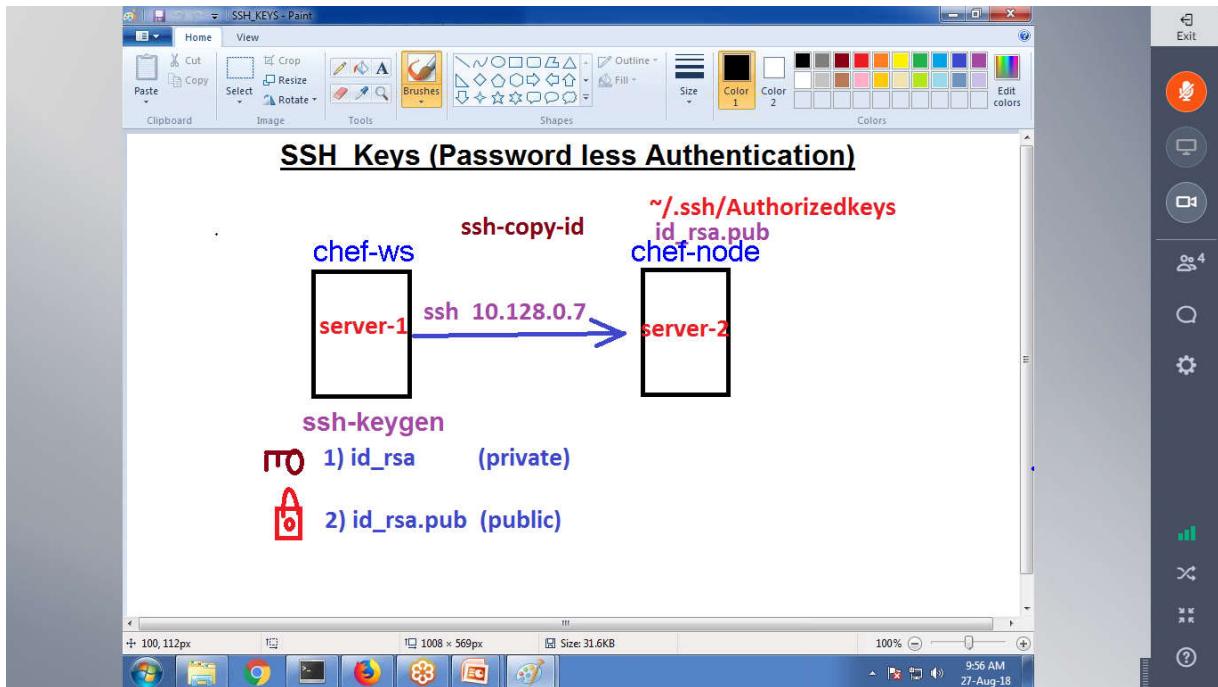


Step-3 : to restart ssh service:

```
for Ubuntu / Debian :
#service ssh restart
for Redhat7 / CentOS7:
#systemctl restart sshd
```

Step-4 : to connect to nodes

```
node# hostname -i      (to get IP Address)
node# hostname -f      (to get FQDN / Server Name)
Syntax :
# ssh <Node IP>
Ex:
mstr# ssh 10.142.0.8
```



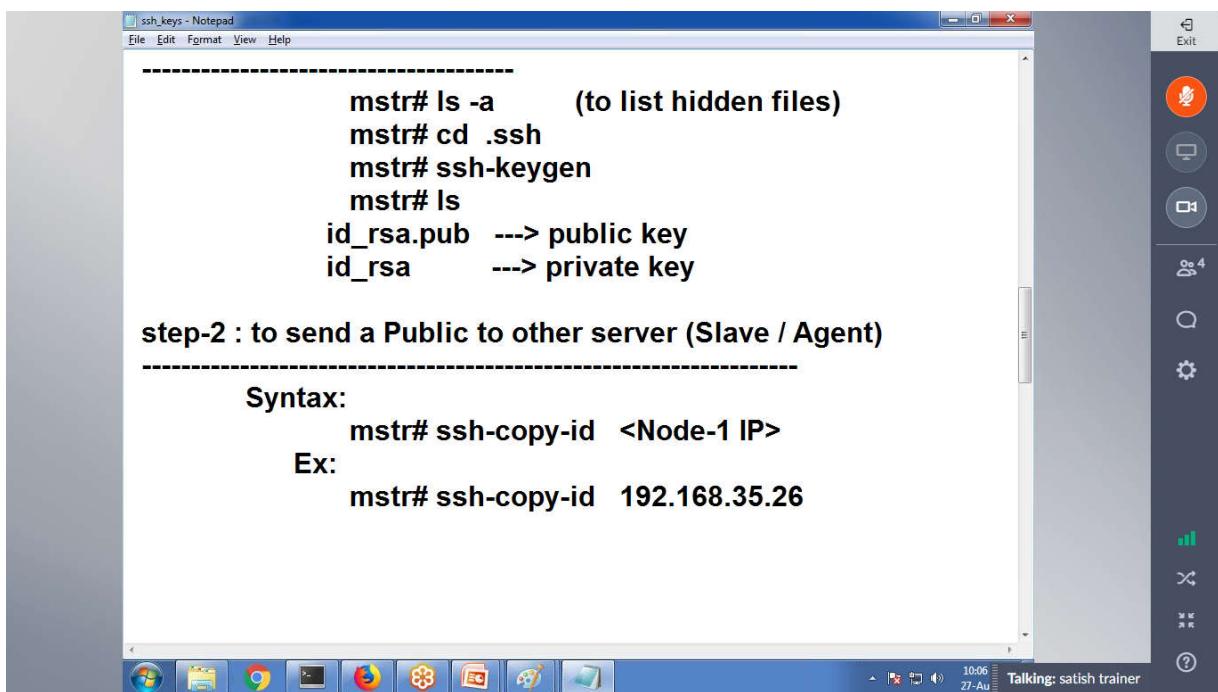
ssh_keys - Notepad

File Edit Format View Help

SSH Keys (Password less Authentication)

step-1 : Generate Key Pair

```
mstr# ls -a      (to list hidden files)
mstr# cd .ssh
mstr# ssh-keygen
mstr# ls
id_rsa.pub  --> public key
id_rsa      --> private key
```



```
mstr# ls -a      (to list hidden files)
mstr# cd .ssh
mstr# ssh-keygen
mstr# ls
id_rsa.pub  --> public key
id_rsa      --> private key
```

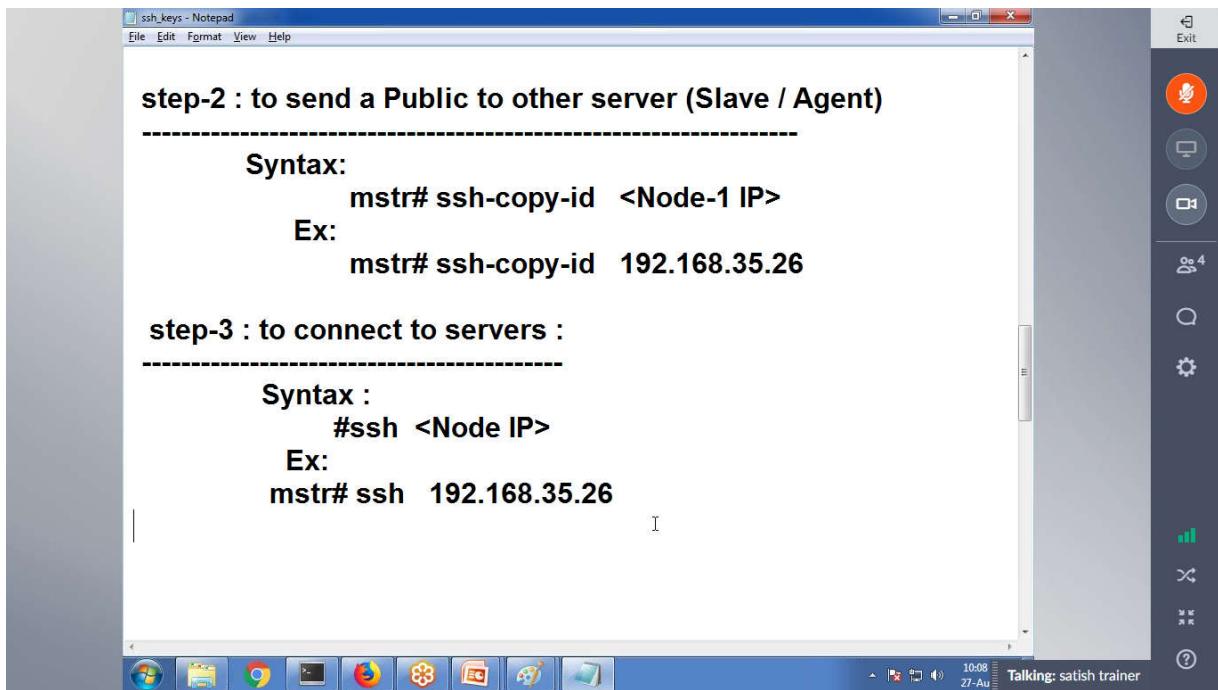
step-2 : to send a Public to other server (Slave / Agent)

Syntax:

```
mstr# ssh-copy-id <Node-1 IP>
```

Ex:

```
mstr# ssh-copy-id 192.168.35.26
```



```
step-2 : to send a Public to other server (Slave / Agent)
```

Syntax:

```
mstr# ssh-copy-id <Node-1 IP>
```

Ex:

```
mstr# ssh-copy-id 192.168.35.26
```

step-3 : to connect to servers :

Syntax :

```
#ssh <Node IP>
```

Ex:

```
mstr# ssh 192.168.35.26
```

```
chefdk# cd chef-repo  
chefdk# knife --version  
chefdk# knife node list  
chefdk# knife help list
```

To Config Chef Client:

Syntax:

```
knife bootstrap <node ip> --sudo -x <user> -P  
<passwd> -N "node name"
```

Ex:

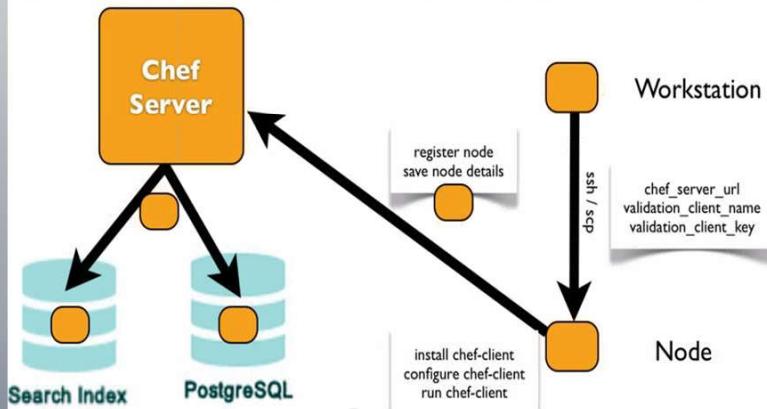
```
chefdk# knife bootstrap 192.168.36.12 -x root -P  
root -N "node1"
```

```
chefdk# knife bootstrap 172.28.128.3 -x root -P root  
-N "node2"
```

Talking: satish trainer

knife bootstrap

```
knife bootstrap HOSTNAME -x root -P PASSWORD -N module2
```



```
14 cd .ssh/
15 ls
16 cat authorized_keys
17 clear
18 cd /etc/chef/
19 ls
20 vi client.rb
21 clear
22 cd
23 ohai
24 clear
25
26 ohai | grep 'platform'
27 clear
28 history
root@chef-nod1:~#
```

The terminal window shows a command-line session. Lines 23 and 26 are highlighted with yellow boxes. A green box highlights the text "Chef ---> Ohai", "Puppet --> Facter", and "Ansible --> setup". The status bar at the bottom left says "Opened session: ConnectBar/35.196.77.84 [SSH]". The status bar at the bottom right says "Talking: satish trainer". The right side of the window has a vertical toolbar with various icons.

Recipes

Configuration files that describe resources and their desired state

Recipes can:

- Install and configure software components
- Manage files (create, delete, copy)
- Deploy applications
- Manage services (start, stop)
- Manage users & groups
- Execute other recipes and more

CooockBooks

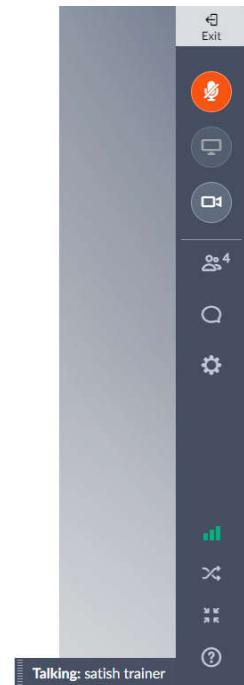
- Recipes are stored in Cookbooks
- Cookbooks contain recipes, templates, files, custom resources,..

To Create a Cookbook:

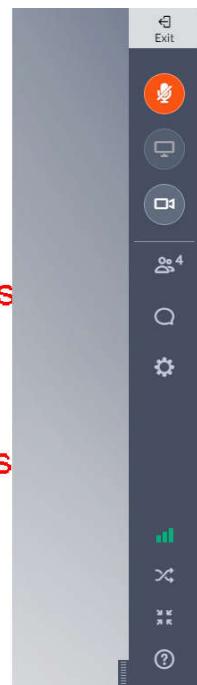
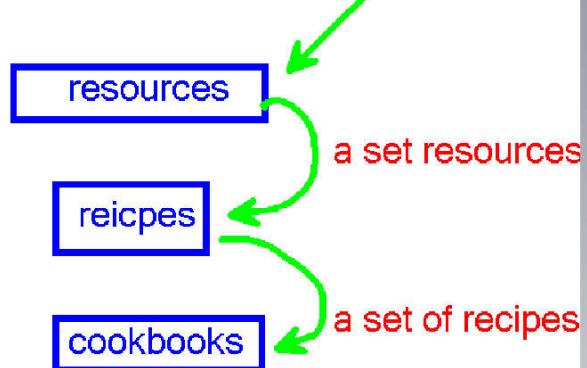
chef generate cookbook <cb Name>

Ex:

chef generate cookbook myapache



Chef ---> RUBY



root@chef-dk:~/chef-repo# vi cookbooks/myapache/recipes/default.rb

```
execute "update" do
  command "apt-get update"
end
apt_package "apache2" do
  action :install
end
service "apache2" do
  action :start
end
root@chef-dk:~/chef-repo#
```

The terminal window shows a terminal session on a Chef development kit (DK) system. The user is editing a recipe file for a cookbook named 'myapache'. The code defines an 'execute' resource to run 'apt-get update', an 'apt_package' resource to install 'apache2', and a 'service' resource to start the 'apache2' service.

SuperPUTTY - 35.196.135.174

```
153 cd ..
154 clear
155 knife cookbook upload myapache
156 knife node show node1
157 clear
158 knife node run list add node1 "recipe[myapache]"
159 knife node show node1
160 clear
161 vi cookbooks/myapache/recipes/default.rb
162 cat cookbooks/myapache/recipes/default.rb
163 history
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
```

The terminal window shows a session in SuperPUTTY. The user has uploaded the 'myapache' cookbook to the Chef server. They then checked the status of node1 and ran a node run list command to assign the 'myapache' recipe to node1. Finally, they viewed and printed the contents of the 'default.rb' recipe file.

SuperPuTTY - 35.237.25.173

File View Tools Help

Protocol SSH Host 35.196.77.84 Login Password Session GOOGLE_SESSION

Commands

35.196.135.174 35.237.25.173 35.196.77.84

```
27 clear
28 history
29 clear
30 chef-client ← @ node
31 clear
32 netstat -lntp
33 clear
34 history
root@chef-nod1:~#
root@chef-nod1:~#
root@chef-nod1:~#
root@chef-nod1:~#
root@chef-nod1:~#
root@chef-nod1:~#
root@chef-nod1:~#
```

Talking: satish trainer

SuperPuTTY - 35.196.77.84

File View Tools Help

Protocol SSH Host 35.196.135.174 Login Password Session GOOGLE_SESSION

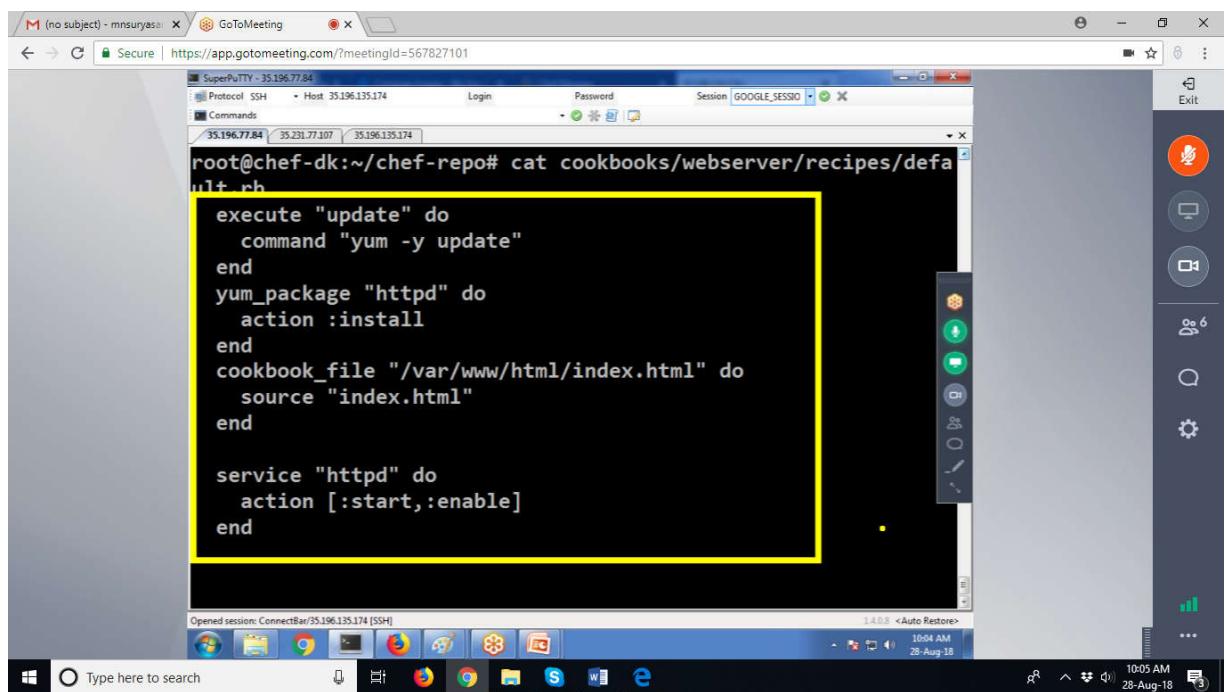
Commands

35.196.77.84 35.231.77.107 35.196.135.174

```
165 cd chef-repo/cookbooks/
166 clear
167 chef generate cookbook webserver
168 ls
169 cd webserver/
170 cleawr
171 clear
172 ls
173 recipes/
174 ls
175 cd recipes
176 clear
177 ls
178 vi default.rb
179 clear
180 cd ..
181 ls
```

Opened session: ConnectBar/35.196.135.174 [SSH] 1.4.0.8 <Auto Restore>

Talking: Devops by my.sathish



M (no subject) - mnsuryasai | GoToMeeting

Secure | https://app.gotomeeting.com/?meetingId=567827101

SuperPutty - 35.196.77.84

Protocol SSH Host 35.196.135.174 Login Password Session GOOGLE_SESSION

Commands

```
root@chef-dk:~/chef-repo# cat cookbooks/webserver/recipes/default.rb
execute "update" do
  command "yum -y update"
end
yum_package "httpd" do
  action :install
end
cookbook_file "/var/www/html/index.html" do
  source "index.html"
end

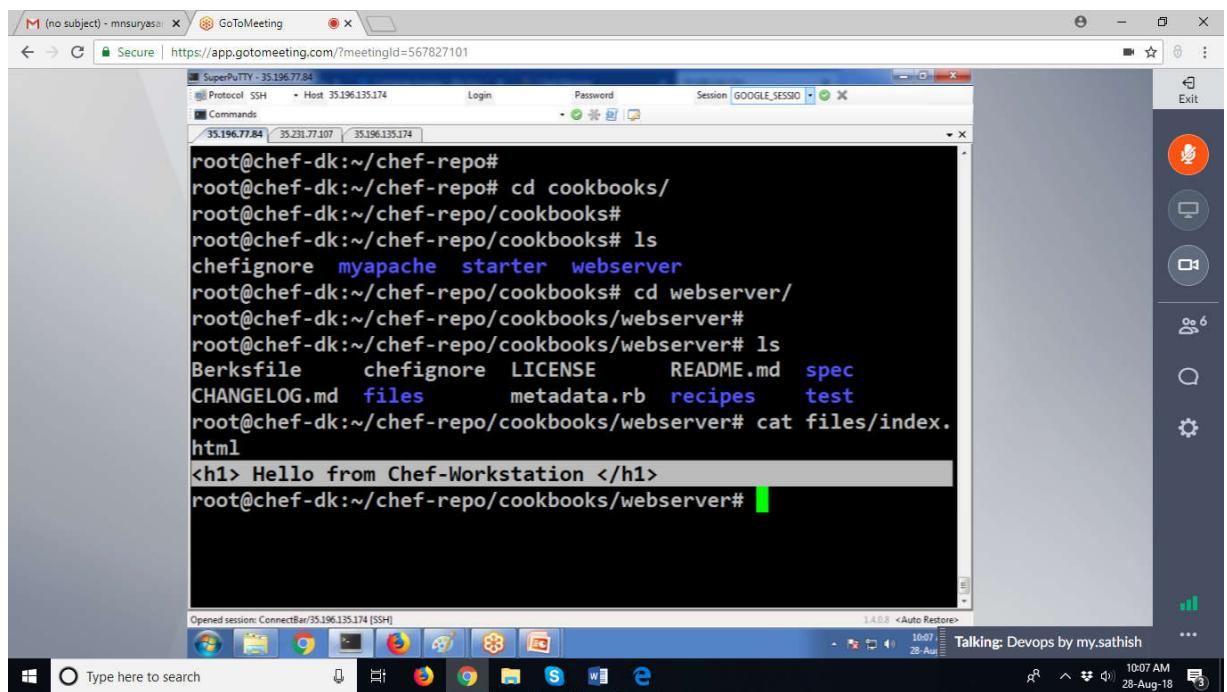
service "httpd" do
  action [:start,:enable]
end
```

Opened session: ConnectBar/35.196.135.174 [SSH]

1.4.0.8 <Auto Restore>

10:04 AM 28-Aug-18

10:05 AM 28-Aug-18



M (no subject) - mnsuryasai | GoToMeeting

Secure | https://app.gotomeeting.com/?meetingId=567827101

SuperPutty - 35.196.77.84

Protocol SSH Host 35.196.135.174 Login Password Session GOOGLE_SESSION

Commands

```
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo# cd cookbooks/
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks# ls
chefignore myapache starter webserver
root@chef-dk:~/chef-repo/cookbooks# cd webserver/
root@chef-dk:~/chef-repo/cookbooks/webserver#
root@chef-dk:~/chef-repo/cookbooks/webserver# ls
Berksfile chefignore LICENSE README.md spec
CHANGELOG.md files metadata.rb recipes test
root@chef-dk:~/chef-repo/cookbooks/webserver# cat files/index.html
<h1> Hello from Chef-Workstation </h1>
root@chef-dk:~/chef-repo/cookbooks/webserver#
```

Opened session: ConnectBar/35.196.135.174 [SSH]

1.4.0.8 <Auto Restore>

10:07 AM 28-Aug-18

Talking: Devops by my.sathish

10:07 AM 28-Aug-18

Create directory “files”.

SuperPutty - 35.196.77.84

Protocol SSH Host 35.196.135.174 Session GOOGLE_SESSION

```
185 vi files/index.html
186 clear
187 ls
188 cd
189 cd /etc/chef/
190 knife cookbook upload webserver
191 knife node run list add node2 "recipe[webserver]"
192 clear
193 knife node show node2
194 clear
195 history
196 clear
197 cat cookbooks/webserver/recipes/default.rb
198 vi cookbooks/webserver/recipes/default.rb
199 clear
200 cat cookbooks/webserver/recipes/default.rb
201 clear
```

to upload cookbook

to assign to node2

Opened session: ConnectBar/35.196.135.174 [SSH] 1.4.0.3 <Auto Restore>

Talking: Devops by my.sathish

```
root@chef-dk:~#
root@chef-dk:~# cat hosts
10.142.0.6
10.142.0.7
root@chef-dk:~# cat demo.sh
for ip in $(cat hosts)
do
    ssh $ip 'chef-client'
    echo -----
done
root@chef-dk:~#
root@chef-dk:~#
root@chef-dk:~#
```

To upload a cookbook to srever:

```
chefdk# knife cookbook upload myapache
```

To add cookbook to node-1's run-list:

```
chefdk# knife node run_list add node1  
"recipe[myapache]"
```

To pull configurations from client:

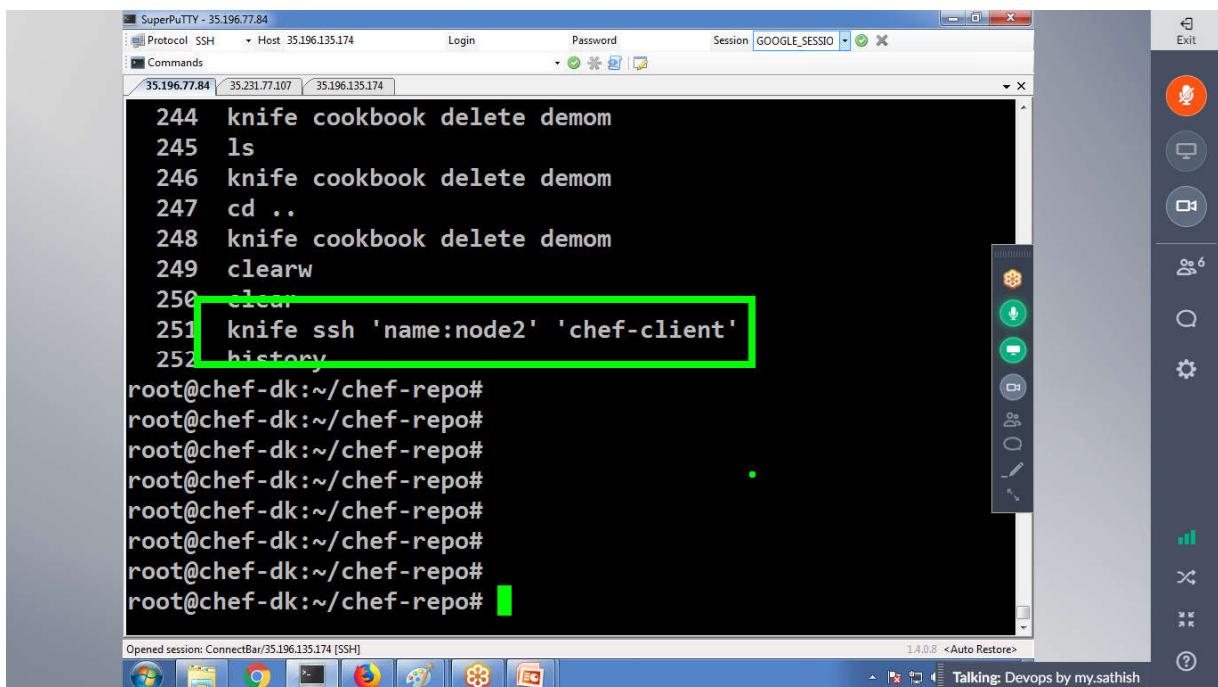
```
chefnode# chef-client
```

To list cookbooks :

```
chefdk# knife cookbook list
```

To delete a cookbook:

```
chefdk# knife cookbook delete myapache
```



The screenshot shows a video player interface with a terminal window. The terminal window is titled "SuperPUTTY - 35.196.77.84" and has tabs for "Protocol SSH", "Host 35.196.135.174", "Session GOOGLE_SESSION", and "Commands". The terminal content is as follows:

```
244 knife cookbook delete demom  
245 ls  
246 knife cookbook delete demom  
247 cd ..  
248 knife cookbook delete demom  
249 clearw  
250 clear  
251 knife ssh 'name:node2' 'chef-client'  
252 history.  
root@chef-dk:~/chef-repo#  
root@chef-dk:~/chef-repo#  
root@chef-dk:~/chef-repo#  
root@chef-dk:~/chef-repo#  
root@chef-dk:~/chef-repo#  
root@chef-dk:~/chef-repo#  
root@chef-dk:~/chef-repo#  
root@chef-dk:~/chef-repo#
```

A green rectangular box highlights the command "knife ssh 'name:node2' 'chef-client'". The status bar at the bottom of the terminal window shows "Opened session: ConnectBar/35.196.135.174 [SSH]" and "14.0.8 <Auto Restore>". The video player interface includes a toolbar with icons for microphone, video, and other controls.

To Pull configuration directly from the workstation to node.

Run the chef-client command from DK:

```
chefdk# knife ssh 'name:node1'  
      'sudo chef-client' -i key
```

```
chefdk# knife node show node1
```

```
chefdk# knife node show node1 -l
```

To List in Json format:

```
chefdk# knife node show node1 -Fj
```

To find the hostname of Node:

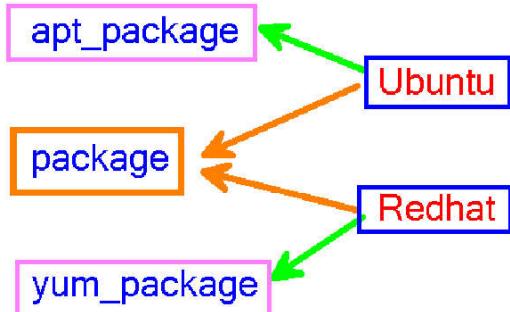
```
chefdk# knife node show node1 -a fqdn
```

tomcat : (App Server)

```
* package: tomcat  
* port    : 8080  
* path    : /var/lib/tomcat/webapps  
* files   : .html , .war ...
```

```
chefdk# vi /chef-
repo/cookbooks/myhttpd/files/default/index.html
<html>
<body>
<h1> Welcome to chef ! </h1>
</body>
</html>
```

```
chefdk# knife cookbook upload myhttpd
chefdk# knife node run_list add node2
  "recipe[myhttpd]"
chefnode# chef-client
chefnode#cd
  /var/chef/cache/cookbooks/myhttpd/recipes/
```



A screenshot of a GoToMeeting video conference interface. In the center is a terminal window titled "SuperPutty - 35.196.77.84". The terminal shows a Chef recipe named "ult.rb" with annotations:

```
ult.rb
execute "update" do
  command "yum -y update"
end
package "java" do
  action :install
end
yum_package "tomcat" do
  action :install
end
cookbook_file "/var/lib/tomcat/webapps/sample.war" do
  source "sample.war"
end
service "tomcat" do
  action [:start,:enable]
end
```

Annotations with arrows point from the right side to specific lines:

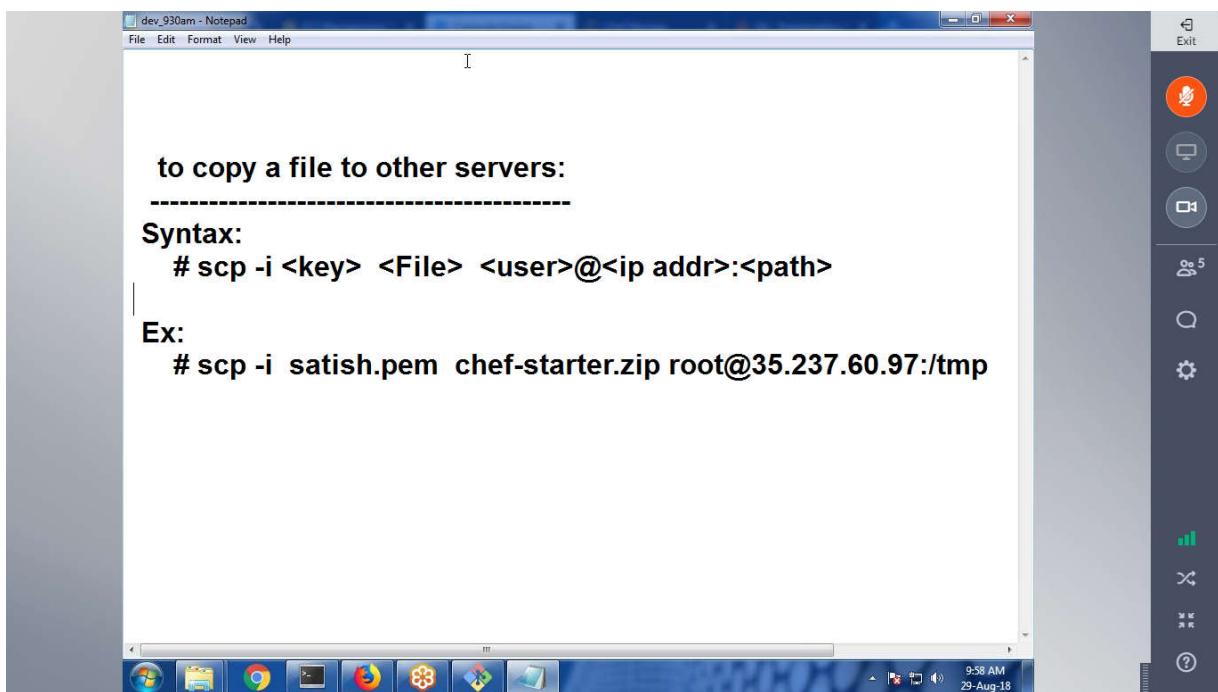
- "to update repo" points to the "command" line in the execute block.
- "to install java" points to the "action :install" line in the package block.
- "to install tomcat" points to the "action :install" line in the yum_package block.
- "to deploy .war file" points to the "source" line in the cookbook_file block.
- "to start service" points to the "action [:start,:enable]" line in the service block.

The terminal window has a green border around the code area. The status bar at the bottom of the terminal window shows "Opened session: ConnectBar/35.196.135.174 [SSH]". The GoToMeeting control panel is visible on the right, and the Windows taskbar at the bottom shows various application icons.

A screenshot of a GoToMeeting video conference interface. In the center is a terminal window titled "35.196.135.174". The terminal shows a Chef command being run:

```
nod2 ~]# to run a specific cookbook in the Run_List
nod2 ~]#
nod2 ~]# chef-client -r "recipe[appserver]"
[Output]
[Output]
```

The command "chef-client -r \"recipe[appserver]\"" is highlighted with a red box. The terminal window has a red border around the command line. The GoToMeeting control panel is visible on the right, and the Windows taskbar at the bottom shows various application icons.



Using Conditionals

Conditionals can be used to dynamically decide whether or not a block of code should be executed based on a variable or an output from a command.

if you want to execute several tasks under a specific condition, you may use any of the standard Ruby conditionals.

.

DEVOPS by SATISH @ Sathya Tech

Ubuntu:

- * data base
- * mysql-server
- * port : 3306

Redhat :

- * mariadb-server
- * port : 3306

```
37.60.97 ✓ 35.196.77.84 ✓ 35.196.135.174
82 clear
83 knife bootstrap 10.142.0.6 -x root -P root -N "
84 clear
85 knife bootstrap 10.142.0.7 -x root -P root -N "
86 clear
87 knife node list
88 cd cookbooks/
89 chef generate cookbook mysql
90 ls
91 cd mysql/
92 cd recipes/
93 vi default.rb
94 clear
95 cd
96 cd chef-repo/
97 knife cookbook upload mysql
```

if node['platform']=='ubuntu' || node['platform']=='debian'
 execute "update" do
 command "apt-get update"
 end
 package "mysql-server" do
 action :install
 end
 service "mysql" do
 action [:start,:enable]
 end
end
if node['platform']=='centos' || node['platform']=='redhat'
 execute "update" do
 command "yum -y update"
 end

Opened session: ConnectBar/35.196.135.174 [SSH] DEVOPS by SATISH @ Sathya lech 1.4.0.8 <Auto Restore>

service "mysql" do
 action [:start,:enable]
end
if node['platform']=='centos' || node['platform']=='redhat'
 execute "update" do
 command "yum -y update"
 end
 package "mariadb-server" do
 action :install
 end
 service "mariadb" do
 action [:start,:enable]
 end
end

Opened session: ConnectBar/35.196.135.174 [SSH] DEVOPS by SATISH @ Sathya lech 1.4.0.8 <Auto Restore>

Using Loops

Loops are typically used to repeat a task using different input values.

For instance, instead of creating 5 tasks for installing 5 different packages, you can create a single task and use a loop to repeat the task with all the different packages you want to install.

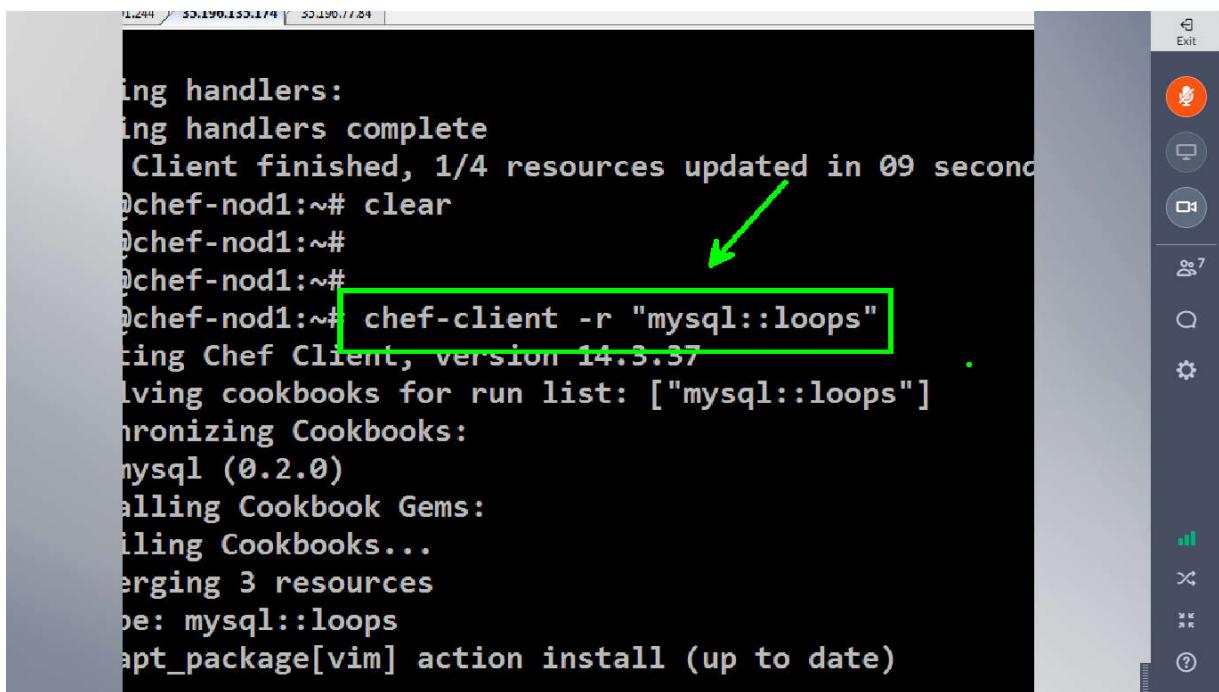
DEVOPS by SATISH @ Sathya Tech

Ex-5:

```
chefdk # knife cookbook create loops
chefdk# vi chef-
repo/cookbooks/loops/recipes/default.rb
['vim', 'git-core', 'curl'].each do |package|
  apt_package package do
    action :install
  end
End
chefdk # knife cookbook upload loops
```

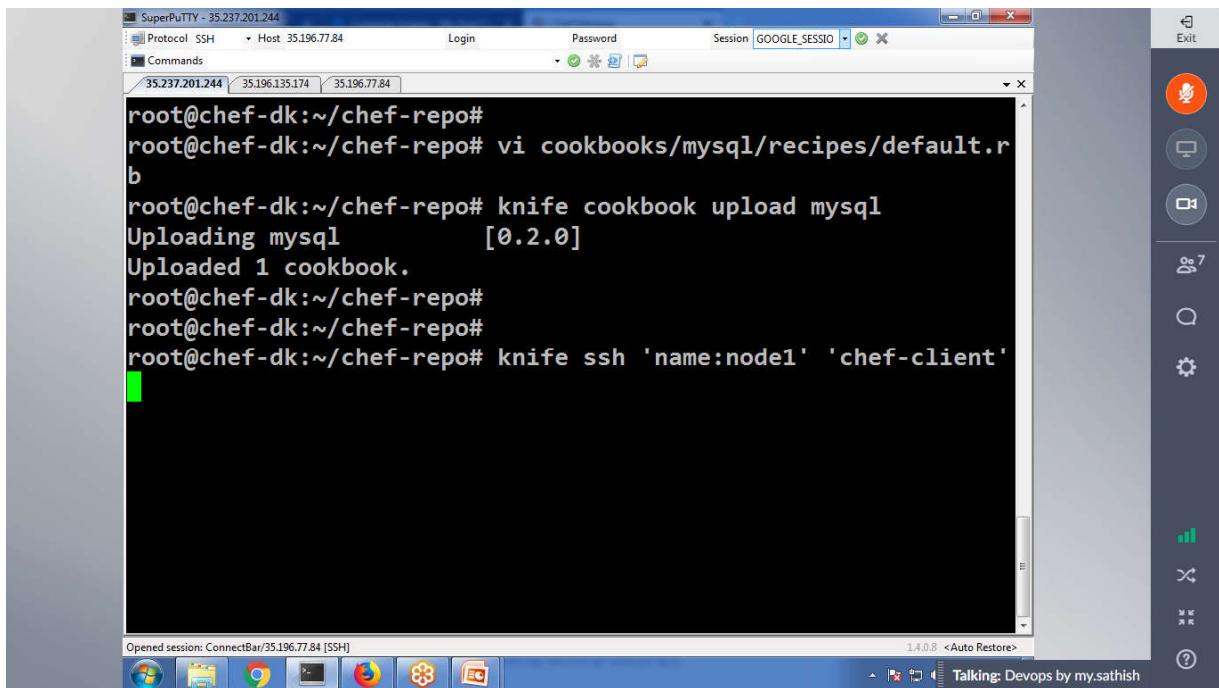
loop variable

Video player



```
ing handlers:  
ing handlers complete  
Client finished, 1/4 resources updated in 09 seconds  
@chef-nod1:~# clear  
@chef-nod1:~#  
@chef-nod1:~#  
@chef-nod1:~# chef-client -r "mysql::loops"  
      ...ing Chef Client, version 14.3.37  
      ...lving cookbooks for run list: ["mysql::loops"]  
      ...ironizing Cookbooks:  
      ... mysql (0.2.0)  
      ...alling Cookbook Gems:  
      ... iling Cookbooks...  
      ...erging 3 resources  
      ...pe: mysql::loops  
      ...apt_package[vim] action install (up to date)
```

To pull one given recipe.



```
SuperPUTTY - 35.237.201.244  
Protocol SSH Host 35.196.77.84 Login Password Session GOOGLE_SESSION  
Commands  
35.237.201.244 35.196.135.174 35.196.77.84  
root@chef-dk:~/chef-repo#  
root@chef-dk:~/chef-repo# vi cookbooks/mysql/recipes/default.r  
b  
root@chef-dk:~/chef-repo# knife cookbook upload mysql  
Uploading mysql [0.2.0]  
Uploaded 1 cookbook.  
root@chef-dk:~/chef-repo#  
root@chef-dk:~/chef-repo#  
root@chef-dk:~/chef-repo# knife ssh 'name:node1' 'chef-client'  
[REDACTED]
```

SuperPutty - 35.237.201.244

Protocol SSH Host 35.196.77.84 Session GOOGLE_SESSION

```
root@chef-dk:~/chef-repo# cat cookbooks/myloops/recipes/default.rb
['nginx','tomcat'].each do |pack|
  yum_package pack do
    action :install
  end
  service pack do
    action :start
  end
end
root@chef-dk:~/chef-repo#
```

Opened session: ConnectBar/35.196.77.84 [SSH] 14.0.3 <Auto Restore>

Talking: Devops by my.sathish

Chef Attributes

- Attributes represent information about your node
- The information can be auto-detected from the node & populated by Ohai (pre-def. attributes)
- You can also set attributes on your node using cookbook recipes & attribute files, roles, environments, etc (user def. attributes)
- All attributes are set on the "node object", and are indexed for search on the server

DEVOPS by SATISH @ Sathya Tech Talking: Devops by my.sathish

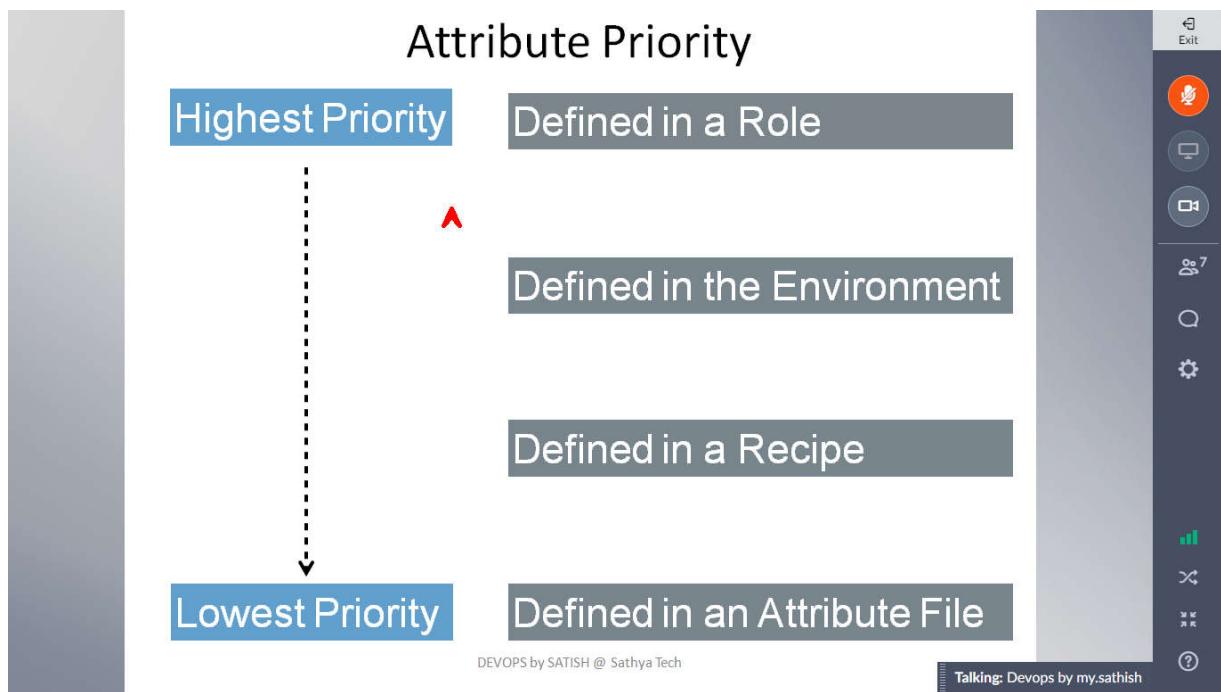
Attributes Sources

Attributes can be set at various levels (in increasing order of precedence)

(high) – Automatically on the node itself (by Ohai)
– In roles
– In environments
– In cookbook recipes a=20
– In cookbook attribute files a=10

(low)

The screenshot shows a GoToMeeting window with a presentation slide. The slide title is 'Attributes Sources'. It contains a bulleted list of levels for setting attributes, from highest to lowest precedence. A blue arrow points downwards from the top level to the bottom level. The bottom level includes red text indicating attribute values: 'a=20' for cookbook recipes and 'a=10' for cookbook attribute files. The GoToMeeting interface includes a sidebar with communication and control icons.



Setting Attributes in Attribute files

Attributes can be set in the cookbook's attributes file
./cookbooks/<cookbook>/attributes/default.rb

Format is syntax:

(attribute name) (attribute value)
`default["apache"]["dir"] = "/etc/apache2"`
`default ["port"] = 8080`

They can also be set directly in Recipes

(precedence) (attribute name) (attribute value)

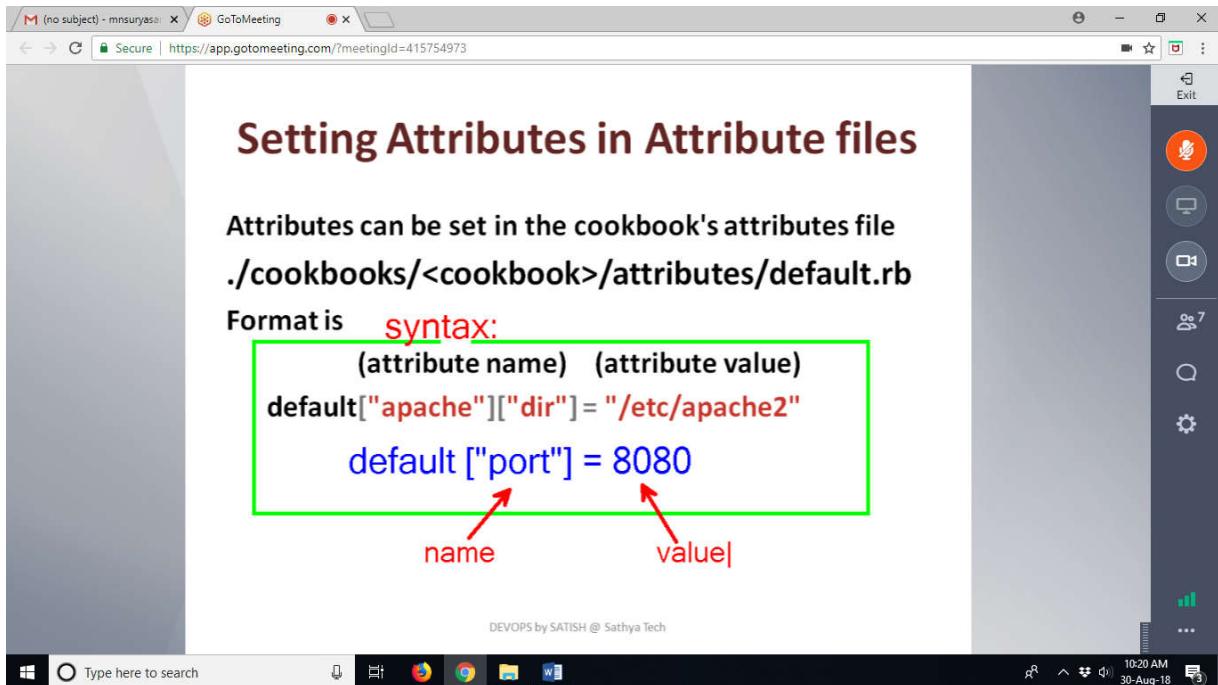
```
node.default["apache"]["dir"] = "/etc/apache2"
```

An attribute value can be an array

```
default["apache"]["listen_ports"] = ["80", "443"]
```

it can be a hash

- `default["apache"]["site1"] = { "port" => 80 }`
 - `default["apache"]["site2"] = { "port" => 81 }`



They can also be set directly in Recipes

(precedence) (attribute name) (attribute value)

```
node.default["apache"]["dir"] = "/etc/apache2"
```

An attribute value can be an array

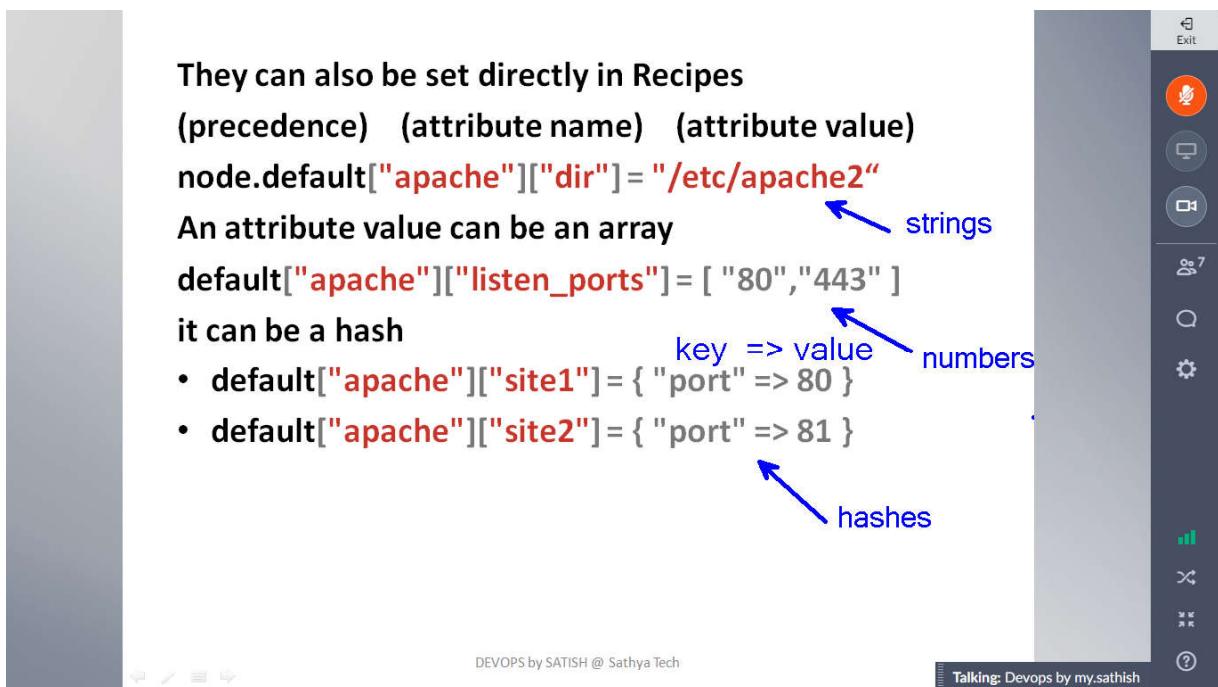
```
default["apache"]["listen_ports"] = ["80", "443"]
```

it can be a hash

- it can be a hash

 - `default["apache"]["site1"] = { "port" => 80 }`
 - `default["apache"]["site2"] = { "port" => 81 }`

key => value numbers



SuperPuTTY - 35.237.201.244

Protocol SSH Host 35.196.77.84 Session GOOGLE_SESSION

Commands

```
root@chef-dk:~/chef-repo/cookbooks/myapcahe/files# ls
index1.html index2.html
root@chef-dk:~/chef-repo/cookbooks/myapcahe/files# cat index1.html
<h1> Hello from INDEX-FILE: 1 </h1>
root@chef-dk:~/chef-repo/cookbooks/myapcahe/files#
root@chef-dk:~/chef-repo/cookbooks/myapcahe/files#
root@chef-dk:~/chef-repo/cookbooks/myapcahe/files# cat index2.html
<h1> Good day from INDEX-FILE: 2 </h1>
root@chef-dk:~/chef-repo/cookbooks/myapcahe/files#
```

Opened session: ConnectBar/35.196.77.84 [SSH] 14.0.8 <Auto Restore>

Talking: Devops by my.sathish

M (no subject) - mnsuryasai GoToMeeting

Secure | https://app.gotomeeting.com/?meetingId=415754973

SuperPuTTY - 35.237.201.244

Protocol SSH Host 35.196.77.84 Session GOOGLE_SESSION

Commands

```
478 cd
479 cd chef-repo/
480 knife cookbook upload myapache
481 cd cookbooks/
482 ls
483 clear
484 cd ..
485 knife cookbook upload myapache
486 knife node run list add node1 "recipe[myapache]"
487 knife node run list remove node1 "recipe[mysql::loops]"
488 knife node show node1
489 clear
490 history
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
```

Opened session: ConnectBar/35.196.77.84 [SSH] 14.0.8 <Auto Restore>

10:34 30-Aug Talking: Devops by my.sathish

Type here to search

SuperPuTTY - 35.237.201.244

Protocol SSH Host 35.196.77.84 Session GOOGLE_SESSION

Commands

```
444 cclear
445 clear
446 cat cookbooks/myloops/recipes/default.rb
447 clear
448 cd cookbooks/
449 ls
450 chef generate cookbook myapcahe
451 cd
452 cd chef-repo/cookbooks/myapcahe/
453 clear
454 ls
455 mkdir files
456 vi files/
457 cd files/
458 clear
459 vi index1.html
460 cp index1.html index2.html
```

Opened session: ConnectBar/35.196.77.84 [SSH] DEVOPS by SATISH @ Sathya lech 1.4.0.8 <Auto Restore>

Talking: Devops by my.sathish

SuperPuTTY - 35.237.201.244

Protocol SSH Host 35.196.77.84 Session GOOGLE_SESSION

Commands

```
444 cclear
445 clear
446 cat cookbooks/myloops/recipes/default.rb
447 clear
448 cd cookbooks/
449 ls
450 chef generate cookbook myapcahe
451 cd
452 cd chef-repo/cookbooks/myapcahe/
453 clear
454 ls
455 mkdir files I
456 vi files/
457 cd files/
458 clear
459 vi index1.html
460 cp index1.html index2.html
```

Opened session: ConnectBar/35.196.77.84 [SSH] Talking: Devops by my.sathish

M (no subject) - mrsuryasai GoToMeeting

Secure | https://app.gotomeeting.com/?meetingId=415754973

SuperPutty - 35.237.201.244

Protocol SSH Host 35.196.77.84 Login Password Session GOOGLE_SESSION Commands

35.237.201.244 35.196.135.174 35.196.77.84

```
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks# cat myapcahe/files/index1.html
<h1> Hello from INDEX-FILE: 1 </h1>
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks# cat myapcahe/files/index2.html
<h1> Good day from INDEX-FILE: 2 </h1>
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
```

Opened session: ConnectBar/35.196.77.84 [SSH] 1.4.0.8 <Auto Restore>

10:42 30-Aug Talking: Devops by my.sathish ...

Windows Taskbar: Type here to search, File Explorer, Firefox, Chrome, File Manager, Word, Excel, Powerpoint, etc.

M (no subject) - mrsuryasai GoToMeeting

Secure | https://app.gotomeeting.com/?meetingId=415754973

SuperPutty - 35.196.77.84

Protocol SSH Host 35.196.77.84 Login Password Session GOOGLE_SESSION Commands

```
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks# history | grep
> ^C
root@chef-dk:~/chef-repo/cookbooks# history | grep
  182  mkdir files
  276  mkdir files
  361  mkdir satish
  455  mkdir files
  469  mkdir attributes
  510  history | grep 'mkdir';
  511  history | grep 'mkdir'
root@chef-dk:~/chef-repo/cookbooks#
```

Opened session: ConnectBar/35.196.77.84 [SSH] 1.4.0.8 <Auto Restore>

DEVOPS by SATISH @ Sathyatech Talking: Devops by my.sathish ...

Windows Taskbar: Type here to search, File Explorer, Firefox, Chrome, File Manager, Word, Excel, Powerpoint, etc.

M (no subject) - mnsuryasai GoToMeeting

Secure | https://app.gotomeeting.com/?meetingId=415754973

SuperPUTTY - 35.237.201.244

Protocol SSH Host 35.196.77.84 Login Password Session GOOGLE_SESSION Commands

35.237.201.244 35.196.135.174 35.196.77.84

```
182 mkdir files
276 mkdir files
361 mkdir satish
455 mkdir files
469 mkdir attributes
510 history | grep 'mkdir';
511 history | grep 'mkdir'
root@chef-dk:~/chef-repo/cookbooks# cat myapcahe/attributes/default.rb

    default["apache"]["indexfile"]="index1.html"
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
```

Opened session: ConnectBar/35.196.77.84 [SSH] DEVOPTS by SATISH @! Sathya Iech 1.4.0.8 <Auto Restore>

Exit Microphone Video Camera Chat 7 Search Settings

Type here to search 10:45 AM 30-Aug-18

M (no subject) - mnsuryasai GoToMeeting

Secure | https://app.gotomeeting.com/?meetingId=415754973

SuperPUTTY - 35.237.201.244

Protocol SSH Host 35.196.77.84 Login Password Session GOOGLE_SESSION Commands

35.237.201.244 35.196.135.174 35.196.77.84

```
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks#
root@chef-dk:~/chef-repo/cookbooks# cat myapcahe/recipes/default.rb

    node.default["apache"]["indexfile"]="index2.html"

    cookbook_file "/var/www/html/index.html" do
        source node["apache"]["indexfile"]
    end

    service "apache2" do
        action :start
    end
root@chef-dk:~/chef-repo/cookbooks#
```

Opened session: ConnectBar/35.196.77.84 [SSH] DEVOPTS by SATISH @! Sathya Iech 1.4.0.8 <Auto Restore>

Talking: Devops by my.sathish Exit Microphone Video Camera Chat 7 Search Settings

Type here to search 10:46 AM 30-Aug-18

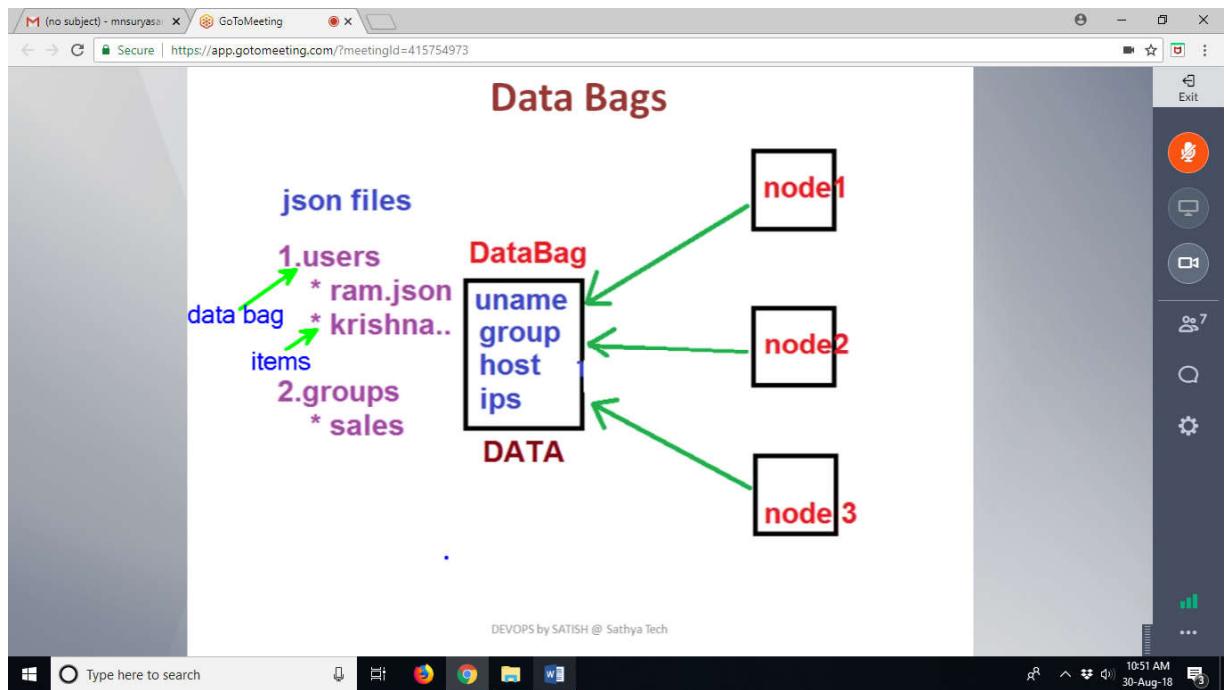
Data Bags

A data bag is a **container** for **items** that represent information about your infrastructure that is not tied to a single node

Examples

- Users
- Groups
- Application Release Information

DEVOPS by SATISH @ Sathya Tech Talking: Devops by my.sathish 10:49 AM 30-Aug-18



What is Databag ?

a databag is a store of data. It's a group of Json files, each being a DataBagItem and containing json converted to a mash to be used in recipes when loaded.

The main purpose of databags is to store common objects (a list of admin users, etc)

A screenshot of a terminal session titled "M (no subject) - mnsuryasai" running on a GoToMeeting platform. The session is secure, connected to https://app.gotomeeting.com/?meetingId=576094877. The terminal window shows a series of Chef knife commands. Lines 520 and 525 are highlighted with yellow boxes and arrows pointing to them from above. Line 526 is highlighted with a green box. The terminal prompt is "root@chef-dk:~/chef-repo#".

```
516 ls
517 knife node list
518 clear
519 ls
520 mkdir data_bags
521 cd data_bags/
522 mkdir users groups
523 ls
524 cd ..
525 knife data_bag create users
526 knife data_bag create groups
527 vi data_bags/users/ram.json
528 clear
529 histroy
530 history
root@chef-dk:~/chef-repo#
```

528 clear
529 histroy
530 history
root@chef-dk:~/chef-repo# cat data_bags/users/ram.json
{
 "id": "ram",
 "comment": "ram raj",
 "uid": "2000",
 "gid": "0",
 "home": "/home/ram",
 "shell": "/bin/bash"
}
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#

Opened session: ConnectBar/104.196.113.160 [SSH]
DEVOPS by SATISH @ Sathya lech *

Protocol SSH Host 104.196.113.160 Login Password Session GOOGLE SESSION
Commands
35.196.135.174 35.237.201.244 104.196.113.160
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo# cat data_bags/users/krishna.json
{
 "id": "krishna",
 "comment": "krishna teja",
 "uid": "2001",
 "gid": "0",
 "home": "/home/krishna",
 "shell": "/bin/bash"
}
root@chef-dk:~/chef-repo#

Talking: Devops by my.sathish

```
506 clear
507 history
508 cat myapcahe/files/index1.html
509 cat myapcahe/files/index2.html
510 history | grep 'mkdir;
511 history | grep 'mkdir'
512 cat myapcahe/attributes/default.rb
513 cat myapcahe/recipes/default.rb
514 clear
515 cd chef-repo/
516 ls
517 knife data_bag list
518 knife data_bag show users
519 knife data_bag from file users krishna.json
520 history
```

root@chef-dk:~/chef-repo#

```
root@chef-dk:~# cd chef-repo/
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo# knife search users "*:*"
2 items found

chef_type: data_bag_item
comment: krishna teja
data_bag: users
gid: 0
home: /home/krishna
id: krishna
shell: /bin/bash
uid: 2001

chef_type: data_bag_item
comment: ram raj
```

Opened session: ConnectBar/104.196.113.160 [SSH]

1.4.0.8 <Auto Restore>

1000 AM 31-Aug-18

M (no subject) - mnsuryasai GoToMeeting

Secure | https://app.gotomeeting.com/?meetingId=576094877

Type here to search

10:02 AM 31-Aug-18 Talking: Devops by my.sathish

A screenshot of a GoToMeeting session showing a terminal window. The terminal window has a title bar 'Commands' and shows a session ID '35.196.335.174'. The terminal content is a series of Chef commands:

```
514 clear
515 knife search users "*;*"
516 cd chef-repo/
517 knife search users "*;*"
518 luar
519 clear
520 knife search users "id:ram"
521 knife search users "id:ram" -a shell
522 history
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
```

The command 'knife search users "id:ram"' and its subsequent execution are highlighted with a green box.

A screenshot of a GoToMeeting session showing a terminal window. The terminal window has a title bar 'Commands' and shows a session ID '35.196.335.174'. The terminal content shows the creation of a data bag and its contents:

```
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo# knife data_bag from file s.json
Updated data_bag_item[groups::sales]
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo# cat data_bags/groups/sales
{
  "id": "sales",
  "gid": 3000,
  "members": ["ram", "krishna"]
}

root@chef-dk:~/chef-repo#
```

The JSON output of the 'cat data_bags/groups/sales' command is highlighted with a green box.

The image shows a screenshot of a Windows desktop during a GoToMeeting video conference. Two SuperPuTTY windows are open, connected to the same host (104.196.113.160) via SSH. The session names are 'GOOGLE_SESSION'.

Session 1 (Top Window):

```
root@chef-dk:~/chef-repo# knife data_bag from file groups sales.json
Updated data_bag_item[groups::sales]
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo# cat data_bags/groups/sales.json
{
  "id": "sales",
  "gid": 3000,
  "members": ["ram", "krishna"]
}

root@chef-dk:~/chef-repo#
```

Session 2 (Bottom Window):

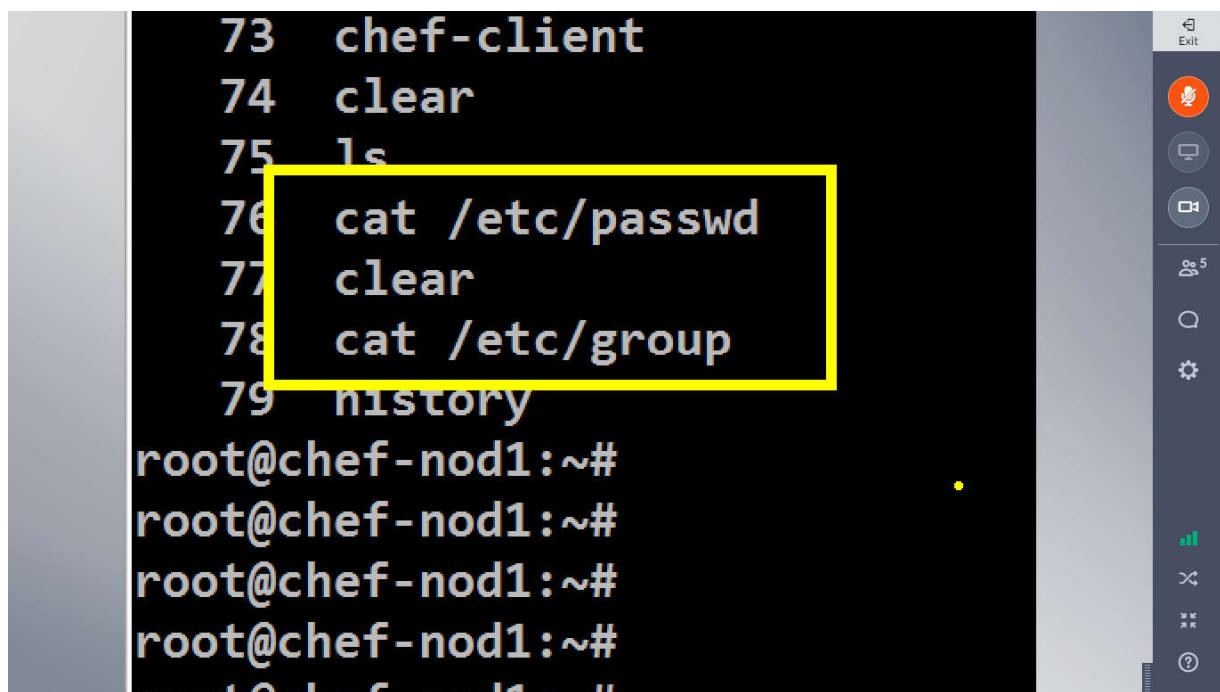
```
"members": ["ram", "krishna"]

root@chef-dk:~/chef-repo# knife search groups "*:*"
1 items found

chef_type: data_bag_item
data_bag: groups
gid: 3000
id: sales
members:
  ram
  krishna

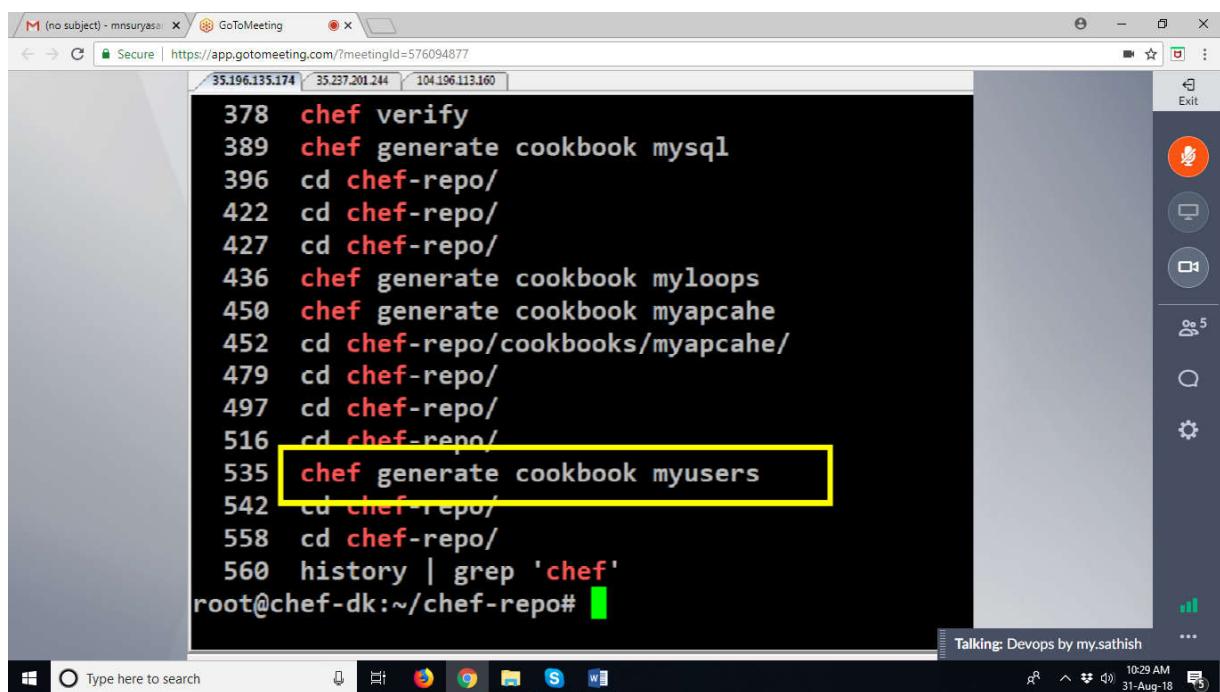
root@chef-dk:~/chef-repo#
```

The desktop taskbar at the bottom shows various icons for common Windows applications like File Explorer, Task View, and the Start button. The system tray indicates the date and time as 10:09 AM on 31-Aug-18.



```
73 chef-client
74 clear
75 ls
76 cat /etc/passwd
77 clear
78 cat /etc/group
79 history
root@chef-nod1:~#
root@chef-nod1:~#
root@chef-nod1:~#
root@chef-nod1:~#
root@chef-nod1:~#
```

Verify the user and group at nodes first before pulling.



```
378 chef verify
389 chef generate cookbook mysql
396 cd chef-repo/
422 cd chef-repo/
427 cd chef-repo/
436 chef generate cookbook myloops
450 chef generate cookbook myapcahe
452 cd chef-repo/cookbooks/myapcahe/
479 cd chef-repo/
497 cd chef-repo/
516 cd chef-repo/
535 chef generate cookbook myusers
542 cd chef-repo/
558 cd chef-repo/
560 history | grep 'chef'
root@chef-dk:~/chef-repo#
```

SuperPUTTY - 35.196.135.174

File View Tools Help

Protocol SSH Host 104.196.113.160 Login Session GOOGLE_SESSION

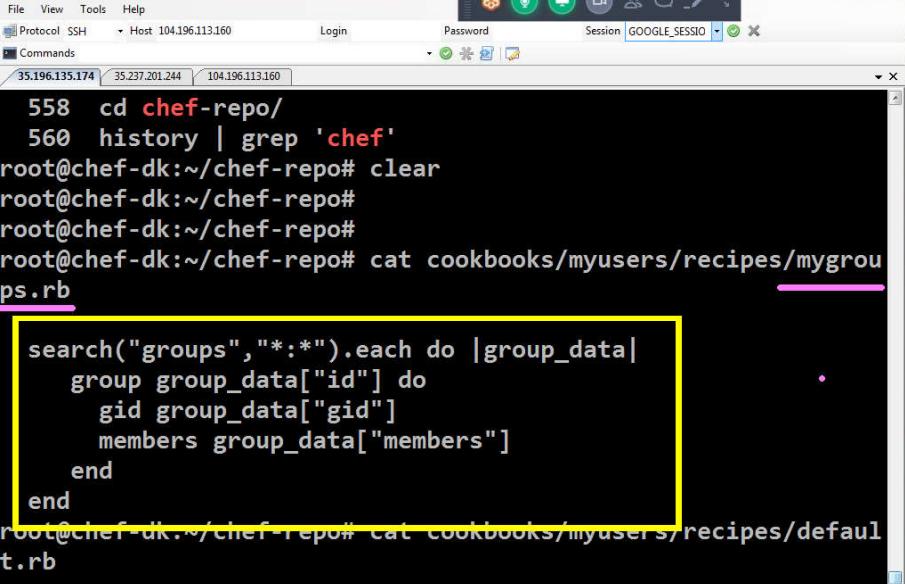
Commands

```
35.196.135.174 35.237.201.244 104.196.113.160
```

```
558 cd chef-repo/
560 history | grep 'chef'
root@chef-dk:~/chef-repo# clear
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo#
root@chef-dk:~/chef-repo# cat cookbooks/myusers/recipes/mygroups.rb
search("groups","*:*").each do |group_data|
  group group_data["id"] do
    gid group_data["gid"]
    members group_data["members"]
  end
end
root@chef-dk:~/chef-repo# cat cookbooks/myusers/recipes/default.rb
```

Opened session: ConnectBar/104.196.113.160 [SSH] 1.4.0.8 <Auto Restore>

Talking: Devops by my.sathish



SuperPUTTY - 35.196.135.174

File View Tools Help

Protocol SSH Host 104.196.113.160 Login Session GOOGLE_SESSION

Commands

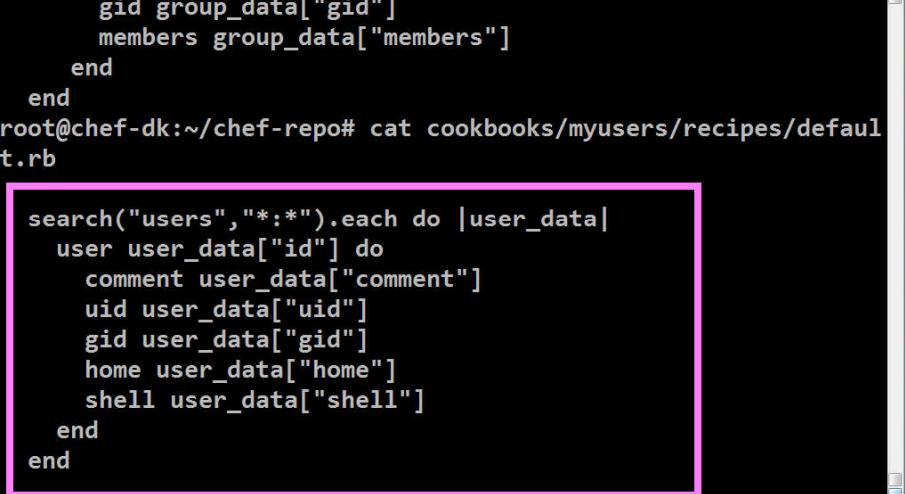
```
35.196.135.174 35.237.201.244 104.196.113.160
```

```
gid group_data["gid"]
members group_data["members"]
end
end
root@chef-dk:~/chef-repo# cat cookbooks/myusers/recipes/default.rb

search("users","*:*").each do |user_data|
  user user_data["id"] do
    comment user_data["comment"]
    uid user_data["uid"]
    gid user_data["gid"]
    home user_data["home"]
    shell user_data["shell"]
  end
end
```

Opened session: ConnectBar/104.196.113.160 [SSH] 1.4.0.8 <Auto Restore>

Talking: Devops by my.sathish



A screenshot of a GoToMeeting video conference. In the center is a PuTTY terminal window titled "SuperPUTTY - 35.196.135.174". The terminal session is connected to host 104.196.113.160 and is titled "GOOGLE_SESSION". The code displayed in the terminal is:

```
search("users", "*:*").each do |user_data|
  user user_data["id"] do
    comment user_data["comment"]
    uid user_data["uid"]
    gid user_data["gid"]
    home user_data["home"]
    shell user_data["shell"]
  end
end

include_recipe "myusers::mygroups"
root@chner-dk:~/chner-repo#
root@chner-dk:~/chef-repo#
root@chner-dk:~/chef-repo#
```

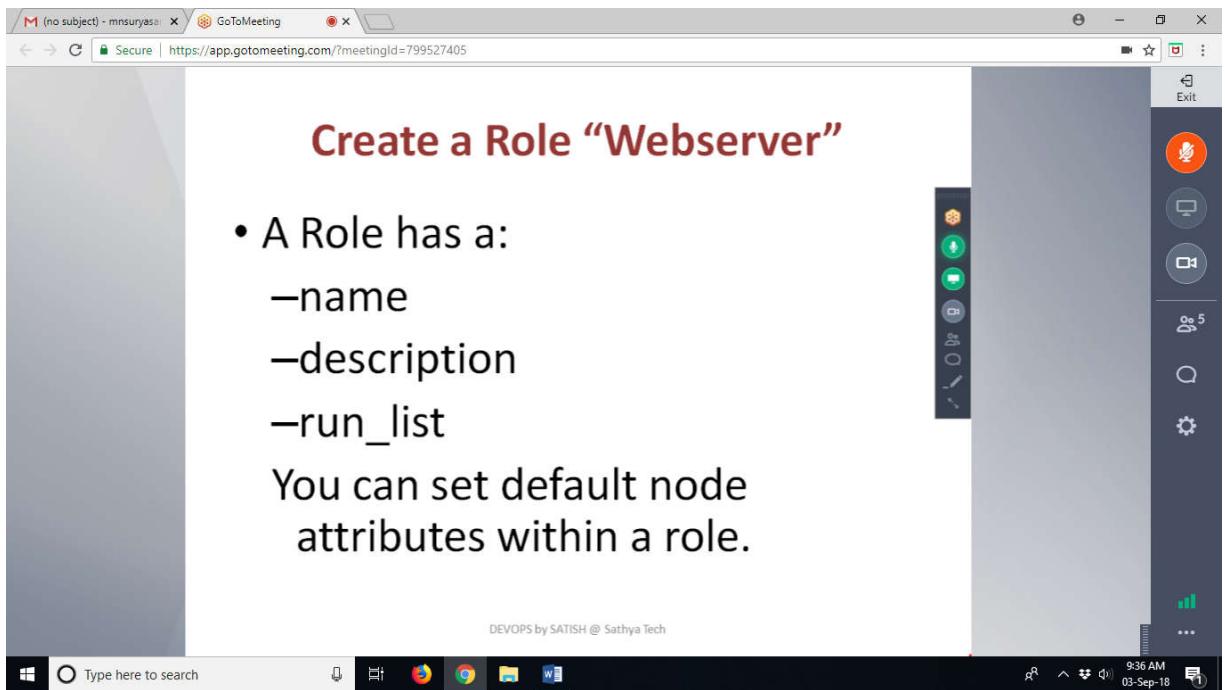
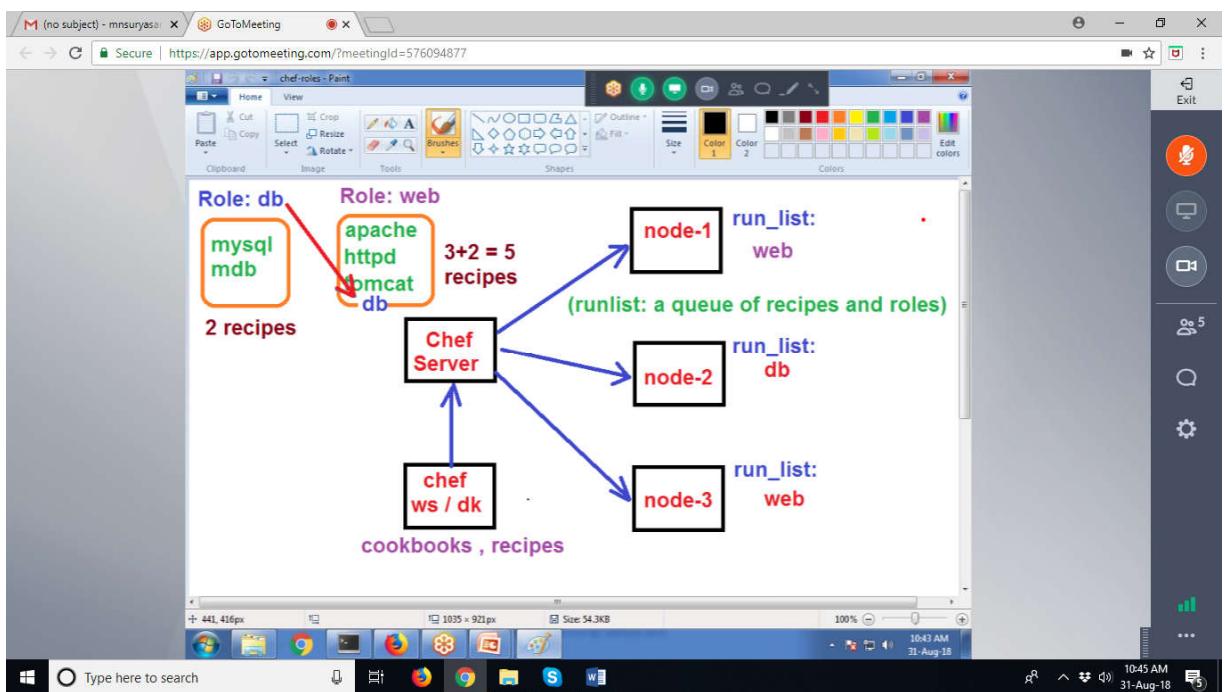
The PuTTY window has a green border around the code area. The GoToMeeting control panel is visible on the right, showing icons for microphone, video, and audio, along with a participant count of 5. The Windows taskbar at the bottom shows various application icons.

What is a Role ?

a Role is a set of Cookbooks / recipes

Roles allow you to conveniently
encapsulate the run lists and attributes
required for a server to "be" what you
already think it is

In practice, Roles make it **easy to**
configure many nodes identically
without repeating yourself each time



M (no subject) - mrsuryasai GoToMeeting

Secure | https://app.gotomeeting.com/?meetingId=799527405

SuperPUTTY - 104.196.114.150

File View Tools Help

Protocol SSH Host 35.227.76.125 Login Password Session GOOGLE_SESSION

Commands

```
root@chef-dk:~/chef-repo/roles# cat webserver.rb
name "webserver"
description "Web Server"
run_list "recipe[myapache]"
default_attributes({
  "apache" => {
    "port" => 80
  }
})

root@chef-dk:~/chef-repo/roles# cat dbserver.rb
name "dbserver"
run_list "recipe:mysql", "recipe[myusers]"
root@chef-dk:~/chef-repo/roles#
```

Opened session: ConnectBar/35.227.76.125 [SSH] 1.4.0.8 <Auto Restore> 9:44 AM 03-Sep-18 9:45 AM 03-Sep-18

Type here to search

Exit

chef roles

SuperPUTTY - 104.196.114.150

File View Tools Help

Protocol SSH Host 35.227.76.125 Login Password Session GOOGLE_SESSION

Commands

```
693 clear
694 vi webserver.rb
695 vi dbserver.rb
696 ls
697 clear
698 knife role from file webserver.rb
699 knife role from file dbserver.rb
700 knife role list
701 knife role show webserver
702 knife role show db server
703 knife role show dbserver
704 clear
705 cat webserver.rb
706 cat dbserver.rb
707 history
root@chef-dk:~/chef-repo/roles#
```

Opened session: ConnectBar/35.227.76.125 [SSH] 1.4.0.8 <Auto Restore> 9:48 AM 03-Sep-18

to create a role|

Secure | https://app.gotomeeting.com/?meetingId=799527405

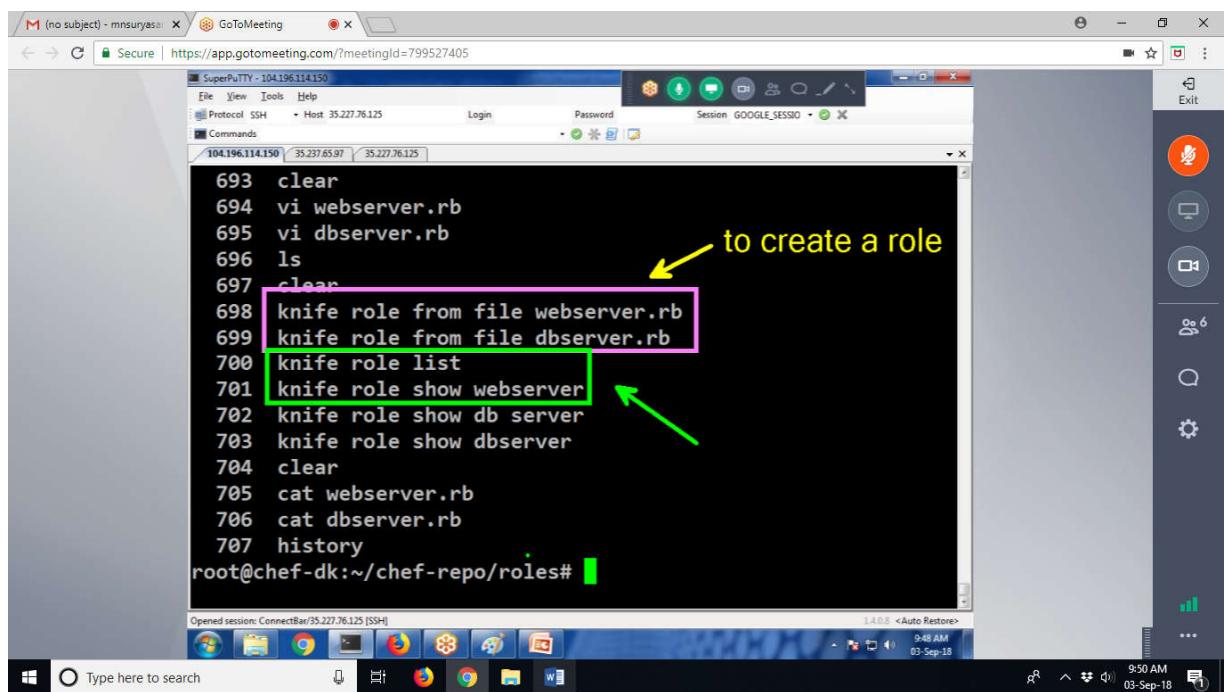
SuperPuTTY - 104.196.114.150

```
File View Tools Help
Protocol SSH Host 35.227.76.125 Login Password Session GOOGLE_SESSION X
Commands 104.196.114.150 35.237.65.97 35.227.76.125 X

693 clear
694 vi webserver.rb
695 vi dbserver.rb
696 ls
697 clear
698 knife role from file webserver.rb
699 knife role from file dbserver.rb
700 knife role list
701 knife role show webserver
702 knife role show db server
703 knife role show dbserver
704 clear
705 cat webserver.rb
706 cat dbserver.rb
707 history
root@chef-dk:~/chef-repo/roles# .
```

Opened session: ConnectBar/35.227.76.125 [SSH] 1.4.0.8 <Auto Restore> 9:48 AM 03-Sep-18 9:50 AM 03-Sep-18

Type here to search

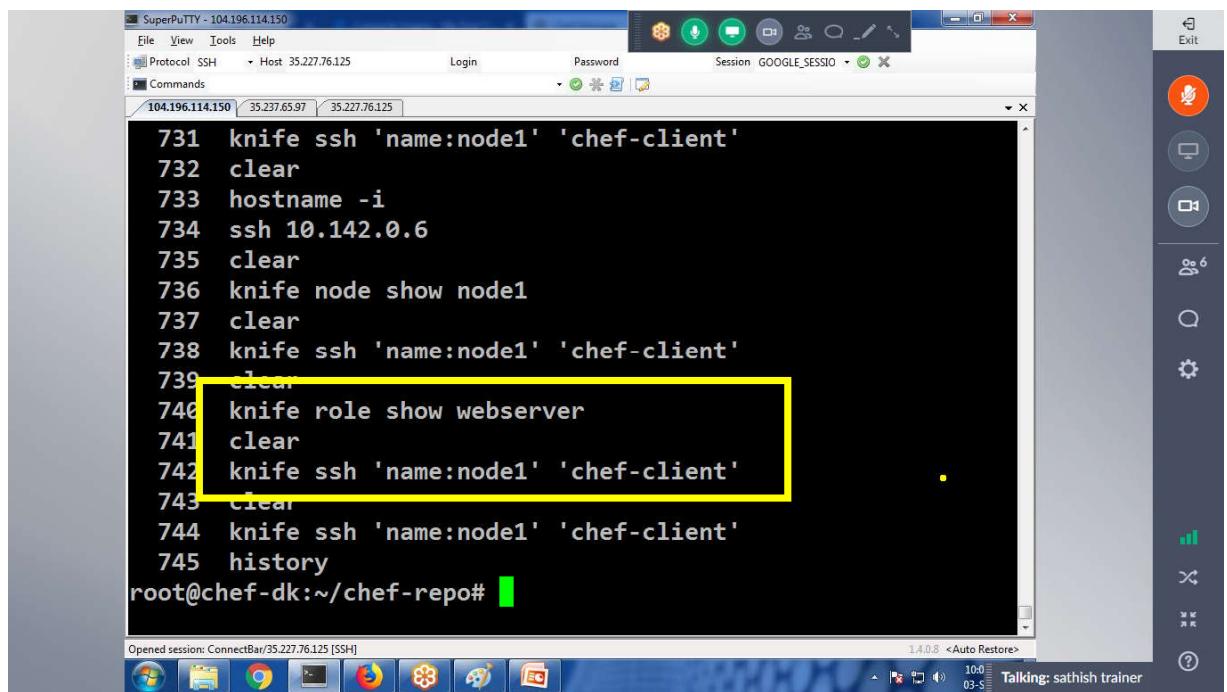


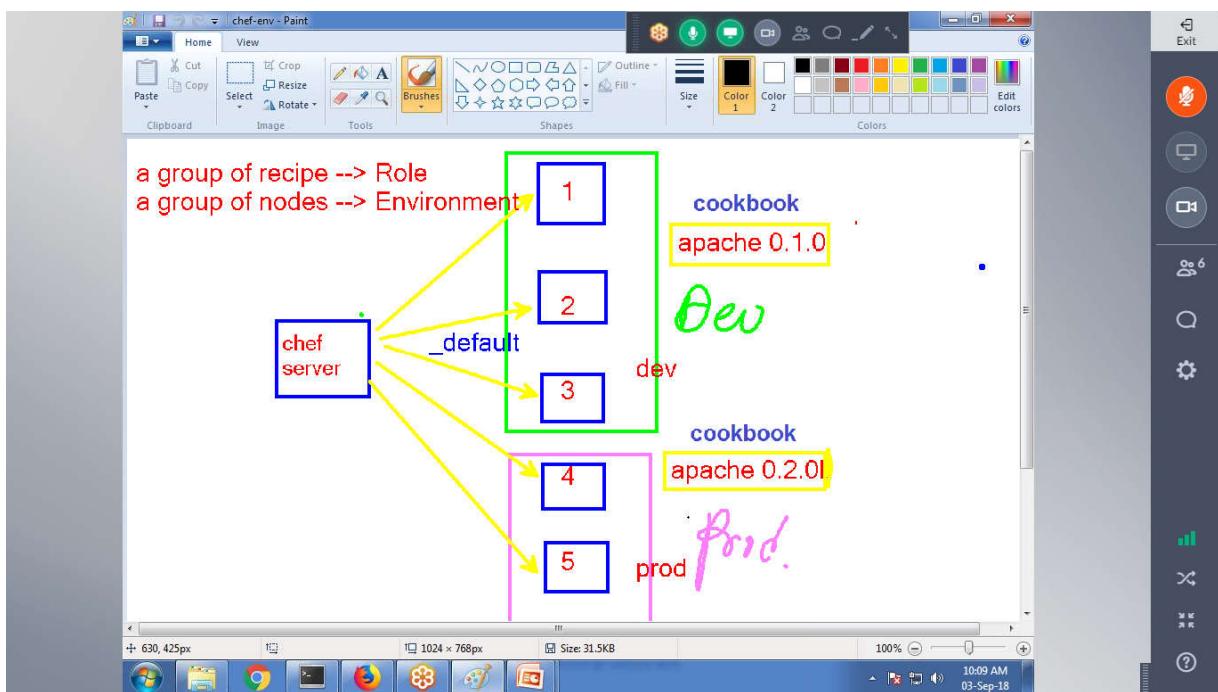
SuperPuTTY - 104.196.114.150

```
File View Tools Help
Protocol SSH Host 35.227.76.125 Login Password Session GOOGLE_SESSION X
Commands 104.196.114.150 35.237.65.97 35.227.76.125 X

731 knife ssh 'name:node1' 'chef-client'
732 clear
733 hostname -i
734 ssh 10.142.0.6
735 clear
736 knife node show node1
737 clear
738 knife ssh 'name:node1' 'chef-client'
739 clear
740 knife role show webserver
741 clear
742 knife ssh 'name:node1' 'chef-client'
743 clear
744 knife ssh 'name:node1' 'chef-client'
745 history
root@chef-dk:~/chef-repo# .
```

Opened session: ConnectBar/35.227.76.125 [SSH] 1.4.0.8 <Auto Restore> Talking: sathish trainer 10:00 03-Sep-18





Chef Environments

- Every Organization starts with a single environment
- Environments reflect your patterns and workflow
 - Development
 - Test
 - Staging
 - Production
 - etc.

What is an environment ?

An environment is a logical group for your nodes, you can follow the dev/QA/PROD as your working envs or you may go by kind of system (web-servers/db-servers) and eventually mix both(Dev_web-servers, Dev_db-server, and so on).

A node can belong to only one environment

DEVOPS by SATISH @ Sathya Tech

Talking: sathish trainer

What is an environment ?

Every Chef organization begins with a single environment called the **_default** environment, which cannot be modified (or deleted).
Additional environments can be created, such as production, staging, testing, and development. Generally, an environment is also associated with one (or more) cookbook versions.

DEVOPS by SATISH @ Sathya Tech

- Environments have names
- Environments have a description
- Environments *can* have one or more cookbook constraints
- = Equal to
- There are other options but equality is the recommended practice.

DEVOPS by SATISH @ Sathya Tech

Exit



Browsing the Supermarket

You can now take several actions to browse the community cookbooks available on the Supermarket site

```
$ knife cookbook site list  
$ knife cookbook site search tomcat7  
$ knife cookbook site show tomcat7  
$ knife cookbook site show tomcat7 0.10.0  
$ knife cookbook site download tomcat7  
$ knife cookbook site install tomcat7
```

DEVOPS by SATISH @ Sathya Tech

Exit



```
985 clear
986 cd cookbooks/
987 knife cookbook site download tomcat7
988 ls
989 knife cookbook site install tomcat7
990 clear
991 knife cookbook list
992 apt-get install git-core -y
993 ls
994 clear
995 git init
996 knife cookbook site install tomcat7
997 clear
998 git add *
999 git commit -m "new code"
1000 clear
```

The screenshot shows a GoToMeeting video call interface. On the right, there is a control panel with various icons for audio, video, and sharing. The main window displays a terminal session and a web browser.

Terminal Session:

```
cookbooks available on the Supermarket site

$ knife cookbook site list
$ knife cookbook site search tomcat7
$ knife cookbook site show tomcat7
$ knife cookbook site show tomcat7 0.10.0
$ knife cookbook site download tomcat7
$ knife cookbook site install tomcat7
```

Web Browser:

M (no subject) - mnsuryasai | GoToMeeting | Airtel 4G Hotspot

Secure | https://app.gotomeeting.com/?meetingId=963329237

DEVOPS by SATISH @ Sathiya Tech

Talking: sathish trainer

9:57 AM 04-Sep-18

