

Workstation Setup

Disable IE Enhanced Security Configuration

Configure Powershell (Enable QuickEdit Mode, Set Height buffer to 9999)

Install Chef <http://www.chef.io/chef/install>

Or on Mac OS X or Linux: \$ curl -L http://www.chef.io/chef/install.sh | sudo bash

Create a new Chef account and download Starter Kit <http://www.chef.io>

(Do not use an existing account. Generating a Starter Kit will re-create your user pem.)

```
PS> cd c:\Users\You\chef-repo
PS> dir
PS> dir .chef
```

View c:\Users\You\chef-repo\.chef\knife.rb

```
current_dir = File.dirname(__FILE__)
log_level      :info
log_location   STDOUT
node_name      "USERNAME"
client_key      "#{current_dir}/USERNAME.pem"
validation_client_name "ORGNAME-validator"
validation_key  "#{current_dir}/ORGNAME-validator.pem"
chef_server_url "https://api.opscode.com/organizations/ORGNAME"
cache_type     'BasicFile'
cache_options( :path =>"#{ENV['HOME']}/.chef/checksums" )
cookbook_path  ["#{current_dir}/../cookbooks"]
```

```
PS> knife --version
PS> knife help list
PS> knife client list
```

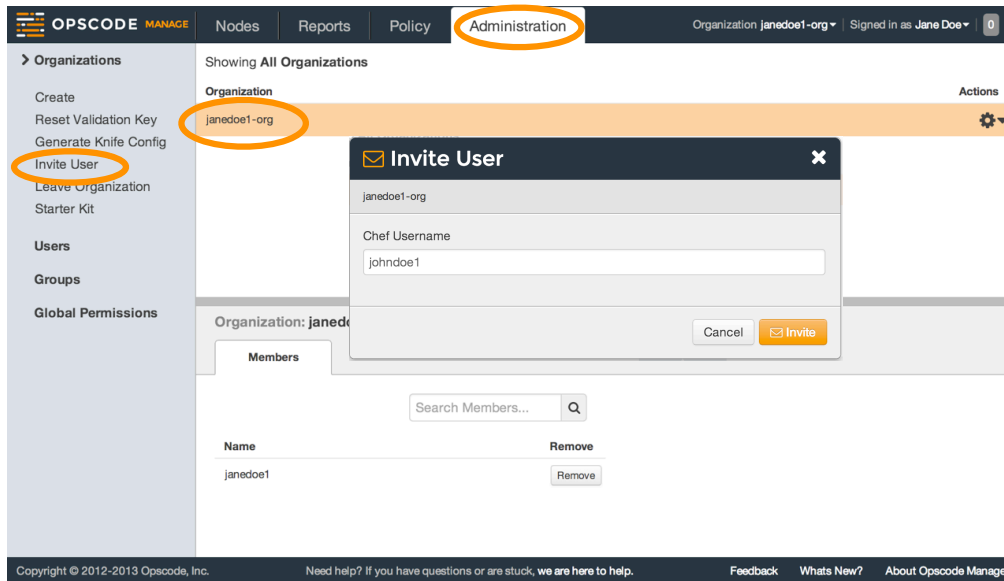
Organization Setup

Click the "Administration" tab,

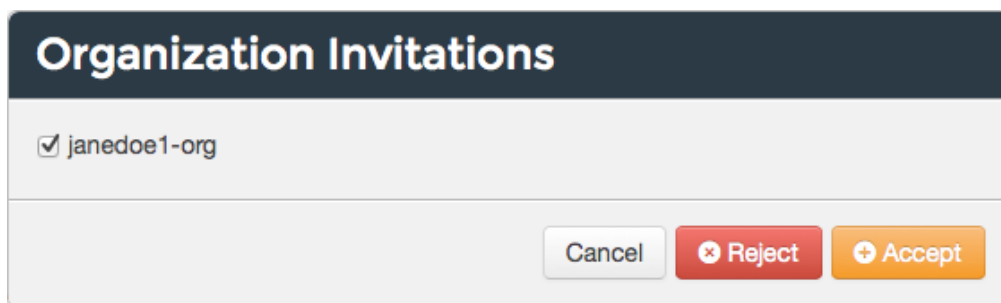
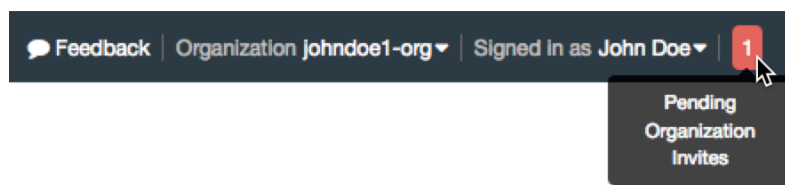
Select the appropriate Organization

Click "Invite User" from the left menu

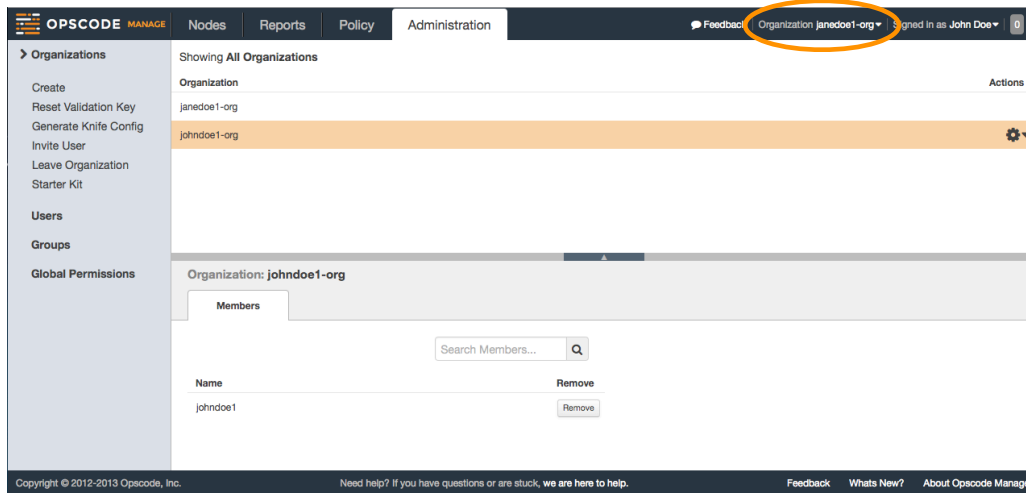
Enter your classmate's 'Chef Username' and click Invite



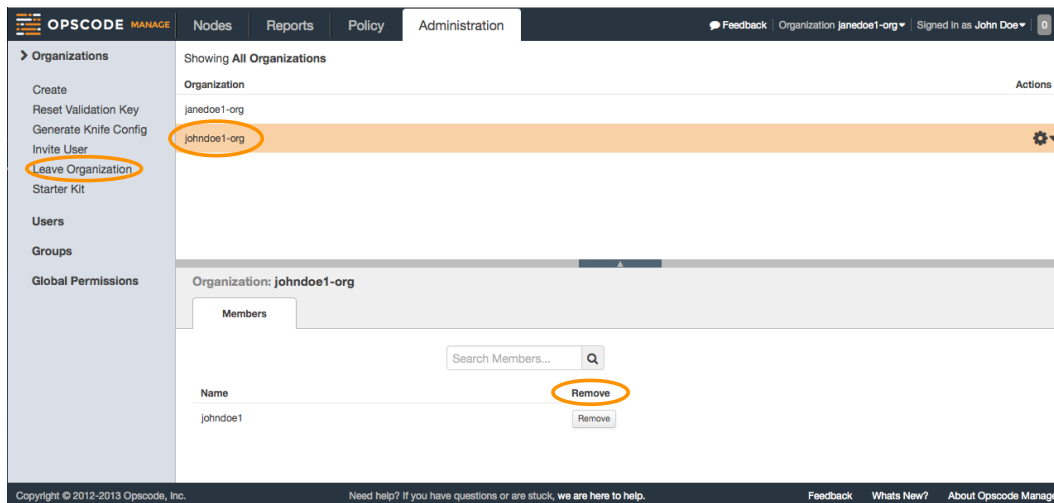
Click the notification, select the Organization and click 'Accept'



Select your classmate's organization from the drop down list and peruse their org



Now either 'Leave Organization' you've been invited into, or remove your classmate from your organization



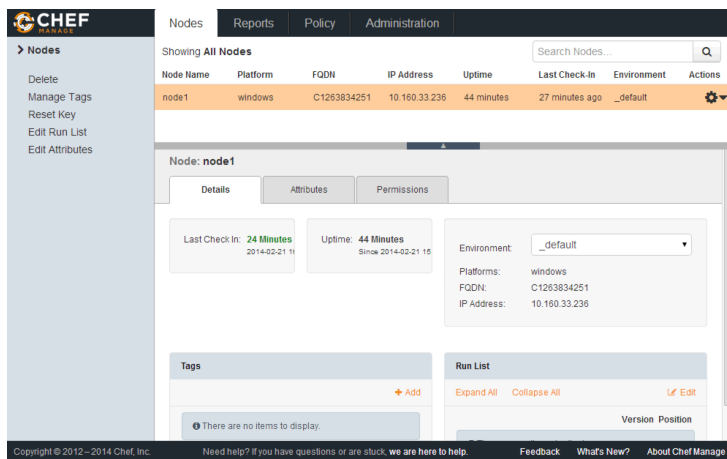
Test Node Setup

```
PS\> gem install knife-windows
PS\> knife bootstrap windows winrm <EXTERNAL_ADDRESS> -x chef -P
chef -N "node1"
```

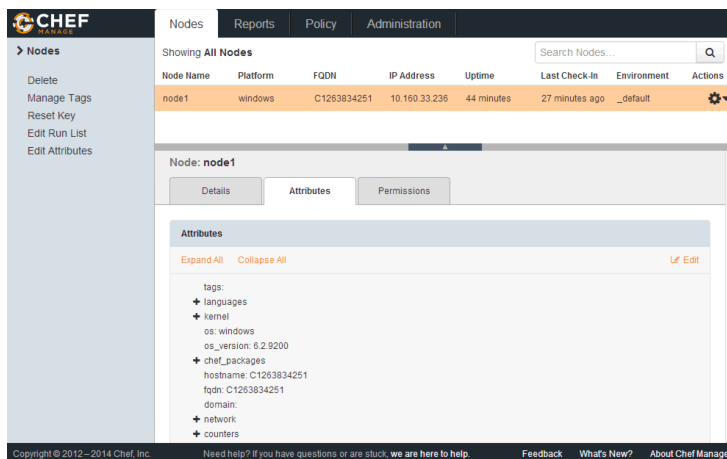
```
rdp <EXTERNAL_ADDRESS>
Open Powershell as Administrator
```

```
remote@PS\> dir c:\chef
remote@PS\> gc c:\chef\client.rb
edit /etc/chef/client.rb
Set log_level to :info
remote@PS\> gc c:\chef\first-boot.json
```

View Node on Chef Server



The screenshot shows the Chef Manage web interface. The top navigation bar includes 'Nodes', 'Reports', 'Policy', and 'Administration'. The left sidebar shows a list of actions for the selected node: Delete, Manage Tags, Reset Key, Edit Run List, and Edit Attributes. The main content area displays a table of nodes with columns: Node Name, Platform, FQDN, IP Address, Uptime, Last Check-In, Environment, and Actions. The table shows one node, 'node1', with platform 'windows', FQDN 'C1263834251', IP Address '10.160.33.236', Uptime '44 minutes', Last Check-In '27 minutes ago', and Environment '_default'. Below the table, the 'Node: node1' details page is shown. It has tabs for 'Details', 'Attributes', and 'Permissions'. The 'Details' tab is active, showing 'Last Check In: 24 Minutes' and 'Uptime: 44 Minutes'. The 'Environment' is set to '_default'. The 'Platforms' section shows 'windows', 'FQDN: C1263834251', and 'IP Address: 10.160.33.236'. The 'Tags' section is empty, and the 'Run List' section shows 'Expand All', 'Collapse All', and 'Edit' buttons.



The screenshot shows the Chef Manage web interface, specifically the 'Node: node1' attributes page. The top navigation bar and left sidebar are the same as in the previous screenshot. The main content area displays the 'Attributes' tab, which shows a list of attributes for the node. The attributes are grouped into sections: 'tags' (with a '+' icon), 'kernel' (with a '+' icon), 'os' (with a '+' icon), 'chef_packages' (with a '+' icon), 'hostname' (with a '+' icon), 'fqdn' (with a '+' icon), 'domain' (with a '+' icon), 'network' (with a '+' icon), and 'counters' (with a '+' icon). The 'tags' section is expanded, showing a list of tags: 'languages', 'kernel', 'os: windows', 'os_version: 6.2.9200', 'chef_packages', 'hostname: C1263834251', 'fqdn: C1263834251', 'domain', 'network', and 'counters'. The 'Expand All' and 'Collapse All' buttons are visible at the top of the attributes list.

Chef Resources and Recipes

```
PS\> knife cookbook create iis_demo
PS\> dir cookbooks\iis_demo
```

```
cookbooks\iis_demo\recipes\default.rb
powershell_script "Install IIS" do
  code "add-windowsfeature Web-Server"
  action :run
end

service "w3svc" do
  action [ :enable, :start ]
end

cookbook_file 'c:\inetpub\wwwroot\Default.htm' do
  source "Default.htm"
  rights :read, "Everyone"
end
```

```
cookbooks\iis_demo\files\default\Default.htm
<html>
<body>
  <h1>Hello, world!</h1>
</body>
</html>
```

```
PS\> knife cookbook upload iis_demo
PS\> knife node run_list add node1 'recipe[iis_demo]'
remote@PS\> chef-client
```

Introducing the Node Object

```
PS\> knife node list
PS\> knife client list
PS\> knife node show node1
remote@PS\> ohai | oh -Paging
PS\> knife node show node1 -l
PS\> knife node show node1 -Fj
PS\> knife node show node1 -a fqdn
PS\> knife search node "*:*" -a fqdn
```

Setting Node Attributes

```
Cookbooks\iis_demo\attributes\default.rb
```

```
default["iis_demo"]["indexfile"] = "Default1.htm"
```

```
cookbooks\iis_demo\files\default\Default1.html
```

```
<html>
  <body>
    <h1>Hello, world!</h1>
    <h2>This is Default1.htm</h2>
    <p>We configured this in the attributes file</p>
  </body>
</html>
```

```
cookbooks\iis_demo\recipes\default.rb
```

```
cookbook_file 'c:\inetpub\wwwroot\Default.htm' do
  source node["iis_demo"]["indexfile"]
  rights :read, "Everyone"
end
```

```
PS\> knife cookbook upload iis_demo
remote@PS\> chef-client
```

```
cookbooks\iis_demo\recipes\default.rb
```

```
node.default["iis_demo"]["indexfile"] = "Default2.htm"
cookbook_file 'c:\inetpub\wwwroot\Default.htm' do
  source node["iis_demo"]["indexfile"]
  rights :read, "Everyone"
end
```

```
cookbooks\iis_demo\files\default\Default2.htm
```

```
<html>
  <body>
    <h1>Hello, world!</h1>
    <h2>This is Default2.htm</h2>
    <p>We configured this in the recipe</p>
  </body>
</html>
```

```
PS\> knife cookbook upload iis_demo
remote@PS\> chef-client
```

```
PS\> knife node show node1 -l | more
```


Attributes, Templates, and Cookbook Dependencies

```
PS> knife cookbook create datacenter
```

```
cookbooks\datacenter\attributes\default.rb
default["datacenter"]["location"] = "china"
```

```
PS> knife cookbook upload datacenter
```

```
PS> knife cookbook create hosts
```

```
cookbooks\hosts\recipes\default.rb
```

```
template "#{ENV['windir']}\\System32\\drivers\\etc\\hosts" do
  source "hosts.erb"
end
```

```
cookbooks\host\templates\default\hosts.erb
```

```
#This file is managed by the server <%= node["fqdn"] %>
<% case node["datacenter"]["location"] -%>
<% when "china" -%>
    0.0.0.0    nytimes.com
<% end -%>
```

```
PS> knife cookbook upload hosts
```

```
PS> knife node run_list add node1 'recipe[hosts]'
remote@PS> chef-client
```

```
\cookbooks\hosts\metadata.rb
```

```
depends          'datacenter'
```

```
PS> knife cookbook upload hosts
```

```
remote@PS> chef-client
```

```
remote@PS> gc C:\Windows\System32\drivers\etc\hosts
```

```
remote@PS> gci C:\chef\backup\Windows\System32\drivers\etc
```

```
PS> knife search node "*:*" -a datacenter
```

```
cookbooks\datacenter\attributes\default.rb
```

```
default["datacenter"]["location"] = "russia"
```

```
PS\> knife cookbook upload datacenter
```

```
remote@PS\> chef-client
```

```
remote@PS\> gc C:\Windows\System32\drivers\etc\hosts
```

```
PS\> knife node show node1 -a datacenter
```

Template Variables, Notifications, and Controlling Idempotency

\cookbooks\iis_demo\metadata.rb

```
name                'iis_demo'
maintainer           'YOUR_COMPANY_NAME'
maintainer_email     'YOUR_EMAIL'
license              'All rights reserved'
description          'Installs/Configures hosts'
long_description     IO.read(File.join(File.dirname(__FILE__),
'README.md'))
version             "0.2.0"
```

\cookbooks\iis_demo\attributes\default.rb

```
default["iis_demo"]["sites"]["clowns"] = { "port" => 80 }
default["iis_demo"]["sites"]["bears"] = { "port" => 81 }
```

cookbooks/iis_demo/recipes/default.rb

(See <https://gist.github.com/ae9187fb8a5fcedc5ee2>)

```
powershell_script "Install IIS" do
  code "add-windowsfeature Web-Server"
  action :run
end

service "w3svc" do
  action [:enable, :start ]
end

powershell_script "disable default site" do
  code 'get-website "Default Web Site*" | where {$_.state -ne
"Stopped"} | Stop-Website'
end

node['iis_demo']['sites'].each do |site_name, site_data|
  site_dir =
  "#{ENV['SYSTEMDRIVE']}\\inetpub\\wwwroot\\#{site_name}"
  directory site_dir

  powershell_script "create app pool for #{site_name}" do
    code "New-WebAppPool #{site_name}"
    not_if "C:\\Windows\\System32\\inetsrv\\appcmd.exe list
apppool #{site_name}"
  end

  powershell_script "new website for #{site_name}" do
    code <<-EOH
      Import-Module WebAdministration
      if (-not(test-path IIS:\\Sites\\#{site_name})){
        $NewWebsiteParams = @Name= '#{site_name}';Port=
#{site_data["port"]};PhysicalPath= '#{site_dir}';ApplicationPool= '#{site_name}'
        New-Website @NewWebsiteParams
      }
      elseif ((Get-WebBinding -Name #{site_name}).bindingInformation -ne
'*:#{site_data["port"]}:') {
        $CurrentBinding = (Get-WebBinding -Name
#{site_name}).bindingInformation
        $BindingParameters = @Name= '#{site_name}';Binding=
$CurrentBinding;PropertyName= 'Port';Value = #{site_data["port"]} }
        Set-WebBinding @BindingParameters
      }
    EOH
  end
end
```

```
        Get-Website -Name #{site_name} | Where {$_.state -like 'Stopped'} | Start-
Website
    EOH
end

    template "#{site_dir}\\Default.htm" do
        source "Default.htm.erb"
        rights :read, "Everyone"
        variables(
            :site_name => site_name,
            :port => site_data['port']
        )
        notifies :restart, "service[w3svc]"
    end
end
```

cookbooks\iis_demo\templates\default\Default.htm.erb

```
<html>
  <body>
    <h2>We love <%= @site_name %></h2>
    <%= node["ipaddress"] %>:<%= @port %>
  </body>
</html>
```

```
PS> knife cookbook upload iis_demo
remote@PS> chef-client
```

Search

```
PS\> knife search node "*:*"
PS\> knife search node "ipaddress:10.*"
PS\> knife search node "*:*" -a ipaddress
PS\> knife search node "ipaddress:10.*" -a ipaddress
PS\> knife search node "ipaddress:10* AND platform:windows"
PS\> knife search node "ipaddress:[10.0.* TO 10.2.*]"
```

cookbooks\iis_demo\recipes\ip-logger.rb

```
search("node","platform:windows").each do |server|
  log "The Windows servers in your organization have the following
  FQDN/IP Addresses:- #{server['fqdn']}/#{server['ipaddress']}"
end
```

```
PS\> knife cookbook upload iis_demo
PS\> knife node run_list add node1 'recipe[iis_demo::ip-logger]'
remote@PS \> chef-client
```

```
PS\> knife node run_list remove node1 'recipe[iis_demo::ip-logger]'
```

Recipe Inclusion, Data Bags, and Search

```
PS\> md data_bags
PS\> md data_bags\users
PS\> knife data_bag create users
```

data_bags\users\bobo.json

```
{
  "id": "bobo",
  "comment": "Bobo T. Clown",
  "password": "iAm@Cl0wN!!!"
}
```

```
PS\> knife data_bag from file users bobo.json
```

data_bags\users\frank.json

```
{
  "id": "frank",
  "comment": "Frank Belson",
  "password": "sP3nC3r4Hire!"
}
```

Use knife to upload the data_bag item 'frank.json' (command hidden)

```
PS\> knife search users "*:*"
PS\> knife search users "comment:bobo" -a id
Create a data_bag called 'groups' (2 commands hidden)
```

data_bags\groups\clowns.json

```
{
  "id": "clowns",
  "members": [ "bobo", "frank" ]
}
```

Use knife to upload the data_bag item 'clowns.json' (command hidden)
Use knife to search the data bag 'groups' (command hidden)
Create a cookbook called 'users' (command hidden)
Edit the 'user' cookbook's default recipe and add the following

```
search(:users, "*:~").each do |user_data|
  user user_data["id"] do
    comment user_data["comment"]
    password user_data["password"]
  end
end
include_recipe "users::groups"
```

cookbooks\users\recipes\groups.rb

```
search(:groups, "*:~").each do |group_data|
  group group_data["id"] do
    members group_data["members"]
  end
end
```

Upload the 'users' cookbook (command hidden)

Add the 'users' cookbook's default receipt to node1's run list (command hidden)

Use rerun 'chef-client' (command hidden)

```
remote@PS\> net users
```

```
remote@PS\> net localgroup
```


Roles

```
PS\> md roles
```

Roles\webserver.rb

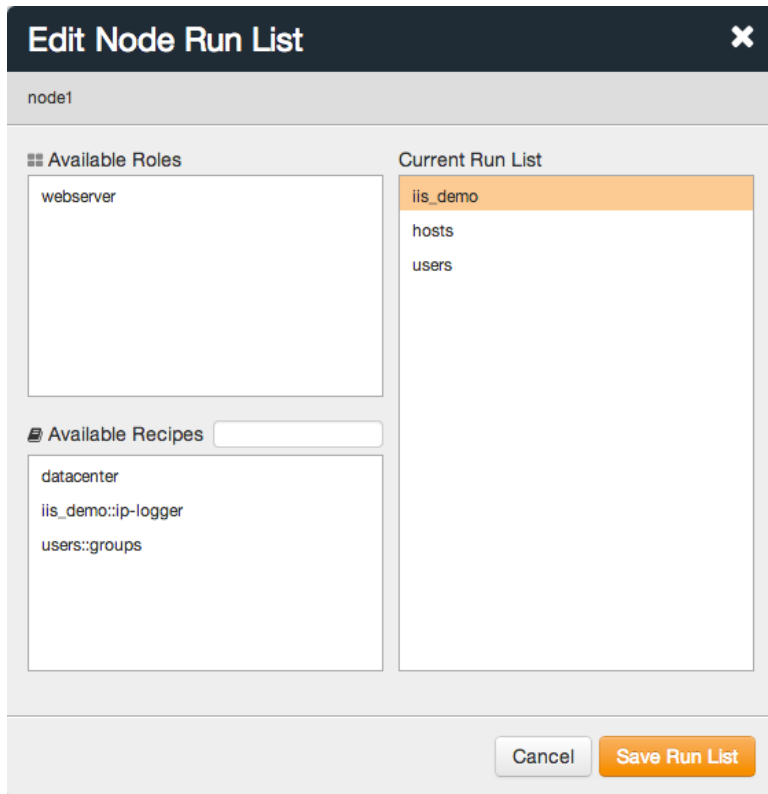
```
name "webserver"
description "Web Server"
run_list "recipe[iis_demo]"
default_attributes({
  "iis_demo " => {
    "sites" => {
      "admin" => {
        "port" => 8000
      }
    }
  }
})
```

```
PS\> knife role from file webserver.rb
```

```
PS\> knife role show webserver
```

Use knife to search for roles that have the iis_demo cookbook's default recipe in its run_list (command hidden)

Replace recipe[iis_demo] with role[webserver] in run list



```
remote@PS\> chef-client
PS\> knife search node "role:webserver" -a iis_demo.sites
```

roles\base.rb

```
name "base"
description "Base Server Role"
run_list "recipe[hosts]", "recipe[users]"
```

Use knife to upload this base role (command hidden)

```
roles\webserver.rb
name "webserver"
description "Web Server"
run_list "role[base]", "recipe[iis_demo]"
default_attributes({
  "iis_demo " => {
    "sites" => {
      "admin" => {
        "port" => 8000
      }
    }
  }
})
```

Use knife to upload this webserver role & rerun chef-client (commands hidden)

Environments

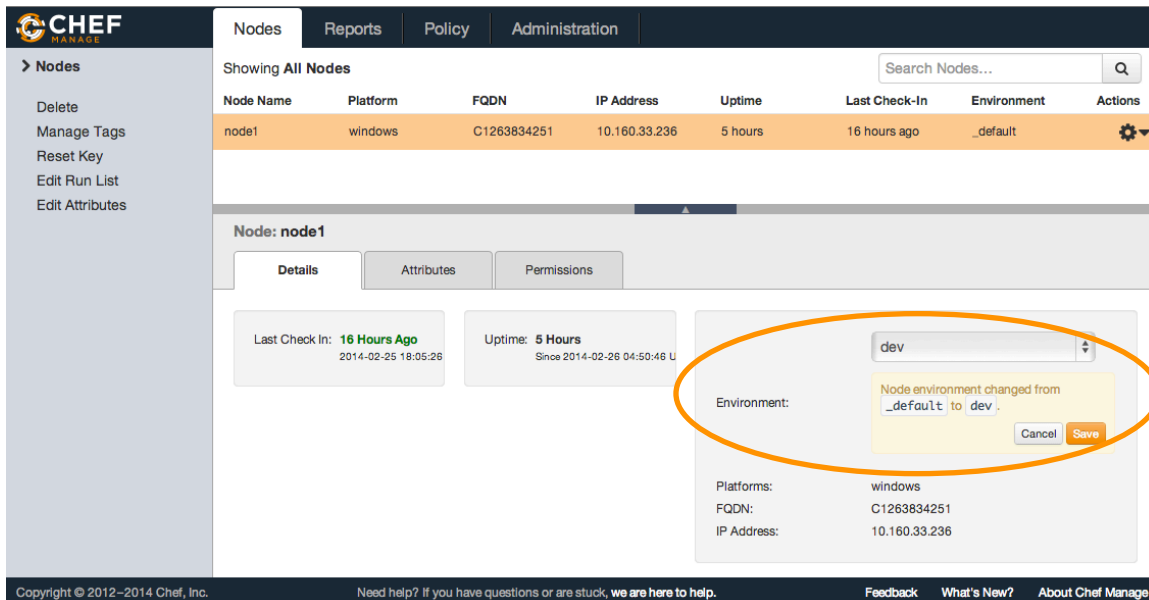
```
PS\> knife cookbook show iis_demo
PS\> knife environment list
PS\> mkdir environments
```

environments\dev.rb

```
name "dev"
description "For developers!"
cookbook "iis_demo", "= 0.2.0"
```

```
PS\> knife environment from file dev.rb
PS\> knife environment show dev
```

Change your node's environment to "dev"



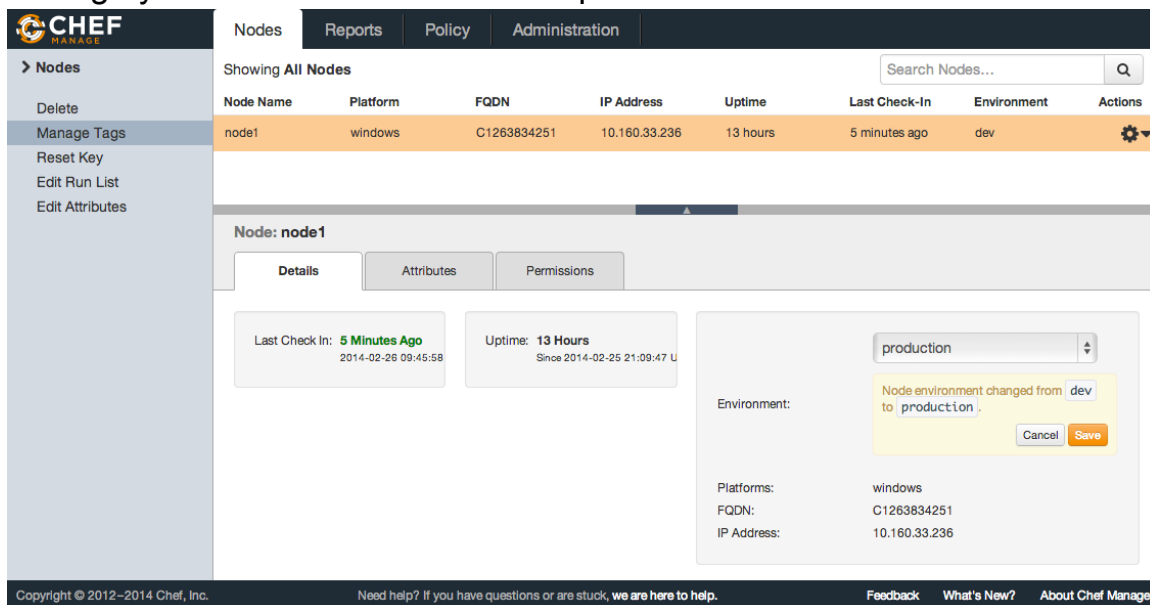
The screenshot shows the Chef Manage web interface. The 'Nodes' tab is selected, and the 'Node: node1' details page is displayed. The 'Environment' dropdown is set to 'dev', and a confirmation message states 'Node environment changed from _default to dev.' The 'Last Check In' is 16 Hours Ago (2014-02-25 18:05:26) and the 'Uptime' is 5 Hours (Since 2014-02-26 04:50:46 U). The 'Platforms' section shows 'windows', 'FQDN: C1263834251', and 'IP Address: 10.160.33.236'.

Rerun chef-client (command hidden)

```
environments\production.rb
name "production"
description "For Prods!"
cookbook "iis_demo", "= 0.1.0"
override_attributes({
  "datacenter" => {
    "location" => "china"
  }
})
```

Use knife to create the production environment (command hidden)

Change your node's environment to "production"



The screenshot shows the Chef Manage web interface. The 'Nodes' tab is selected, displaying a table of nodes. The first node, 'node1', is highlighted. Below the table, the details for 'node1' are shown, including its platform (windows), FQDN (C1263834251), IP Address (10.160.33.236), Uptime (13 hours), and Last Check-In (5 minutes ago). The 'Environment' dropdown is set to 'production', and a confirmation message indicates the environment has been changed from 'dev' to 'production'.

Node Name	Platform	FQDN	IP Address	Uptime	Last Check-In	Environment	Actions
node1	windows	C1263834251	10.160.33.236	13 hours	5 minutes ago	dev	⚙️

Node: node1

Details | Attributes | Permissions

Last Check In: **5 Minutes Ago**
2014-02-26 09:45:58

Uptime: **13 Hours**
Since 2014-02-25 21:09:47 U

Environment: production

Node environment changed from dev to production.

Cancel Save

Platforms: windows
FQDN: C1263834251
IP Address: 10.160.33.236

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Rerun chef-client (command hidden)

environments\production.rb

```
name "production"
description "For Prods!"
cookbook "iis_demo", "= 0.2.0"
override_attributes({
  "datacenter" => {
    "location" => "china"
  }
})
```

Use knife to create the production environment & rerun chef-client (commands hidden)

Using Community Cookbooks

```
PS\> knife cookbook site search chef-client
PS\> knife cookbook site show chef-client
PS\> knife cookbook site download chef-client
PS\> tar -zxvf chef-client*.tar.gz -C cookbooks/
```

cookbooks\chef-client\recipes\delete_validation.rb

```
unless chef_server?
  file Chef::Config[:validation_key] do
    action :delete
    backup false
    only_if { ::File.exists?(Chef::Config[:client_key]) }
  end
end
```

roles\base.rb

```
name "base"
description "Base Server Role"
run_list "recipe[chef-client::delete_validation]", "recipe[hosts]",
"recipe[users]"
```

cookbooks\chef-client\recipes\default.rb

```
include_recipe "chef-client::service"
```

cookbooks\chef-client\recipes\service.rb

```
supported_init_styles = [
  'arch',
  'bluepill',
  'bsd',
  'daemontools',
  'init',
  'launchd',
  'runit',
  'smf',
  'upstart',
  'winsw'
]
init_style = node["chef-client"]["init_style"]

# Services moved to recipes
if supported_init_styles.include? init_style
  include_recipe "chef-client::#{init_style}_service"
else
  log "Could not determine service init style, manual intervention
  required to start up the chef-client service."
end
```

Use knife to upload the 'chef-client' cookbook (command hidden)

Use knife to download the 'cron' cookbook (command hidden)

untar the 'cron' cookbook into the cookbooks directory (command hidden)

Use knife to upload the 'cron' cookbook (command hidden)

Use knife to upload the 'chef-client' cookbook (command hidden)

Use knife to download the 'logrotate' cookbook (command hidden)

untar the 'logrotate' cookbook into the cookbooks directory (command hidden)

Use knife to upload the 'logrotate' cookbook (command hidden)

Use knife to upload the 'chef-client' cookbook (command hidden)

roles\base.rb

```
name "base"
description "Base Server Role"
run_list "recipe[chef-client::delete_validation]",
"recipe[chef-client]", "recipe[hosts]", "recipe[users]"
```

Use knife to upload 'base' role and rerun chef-client (command hidden)

```
remote@PS\> get-service chef*
```