

Workstation Setup

Windows:-

- Start > All Programs > Administrative Tools > Server Manager > 'Configure IE ESC' > Disable IE Enhanced Security Configuration
- Turn off Enabled Protected mode in IE (IE Options --> Tools --> Uncheck "Enable Protected mode")
- Configure Powershell (Enable QuickEdit Mode, Set Height buffer to 9999)

Install Chef <http://www.getchef.com/chef/install>

Or on Mac OS X or Linux:

```
$ curl -L http://www.opscode.com/chef/install.sh | sudo bash
```

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

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

```
PS\> cd c:\Users\You\chef-repo
PS\> knife --version
PS\> knife help list
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 help list
PS\> knife client list
```

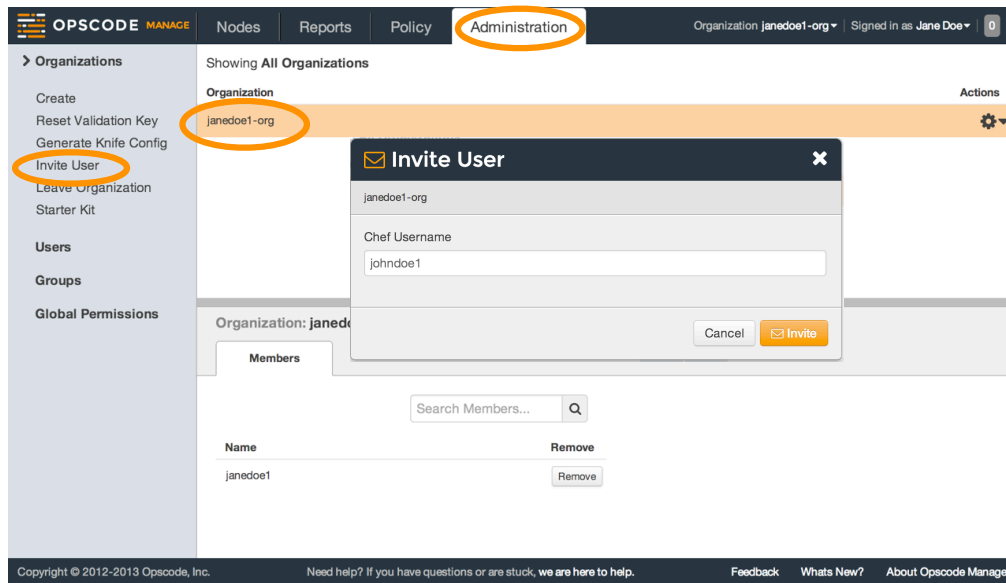
Organization Setup

Click the "Administration" tab,

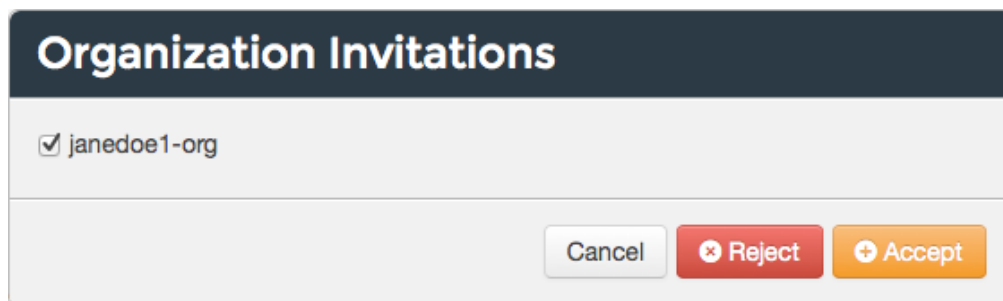
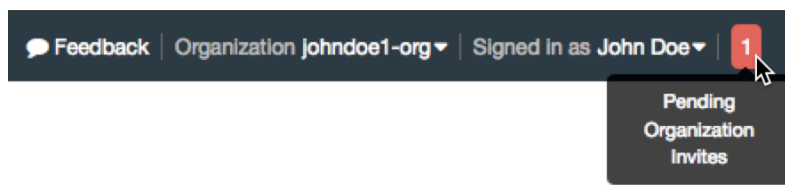
Select the appropriate Organization

Click "Invite User" from the left menu

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

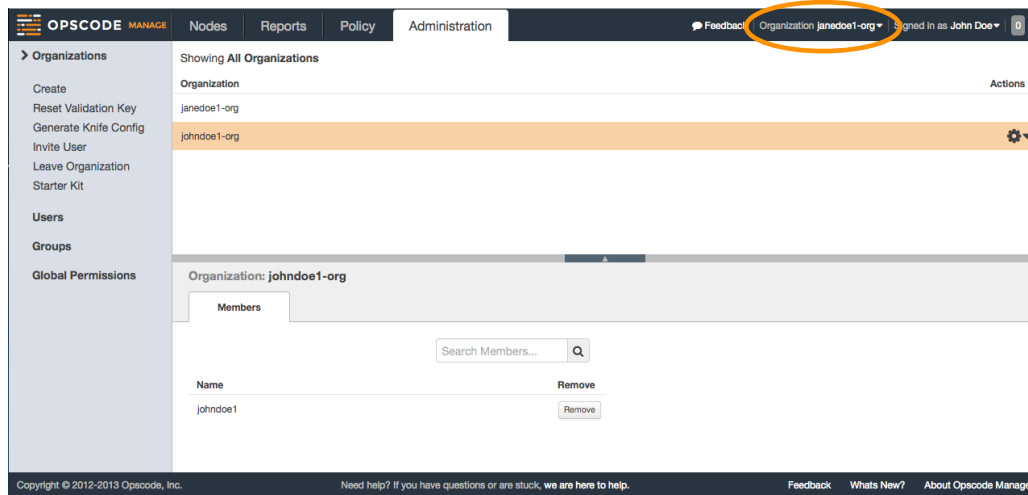


Click the notification, select the Organization and click 'Accept'

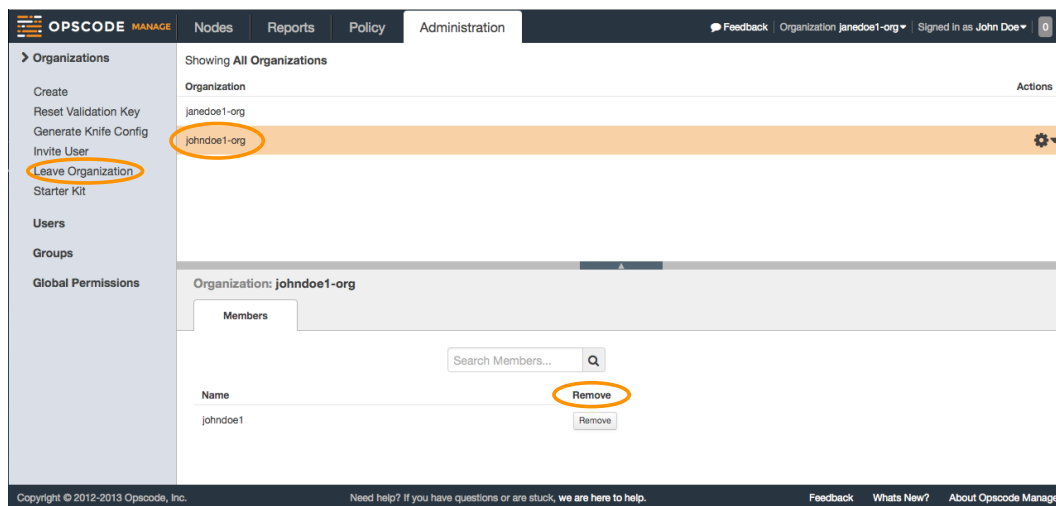


Select your classmate's organization from the drop down list and peruse their org

Chef Fundamentals – Windows



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



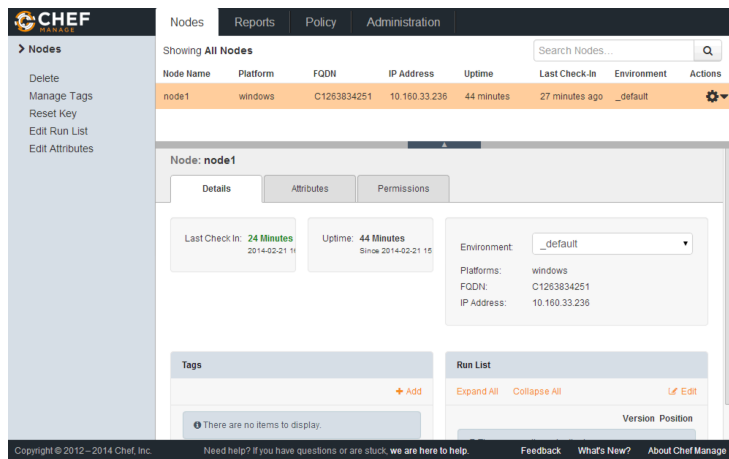
Test Node Setup

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

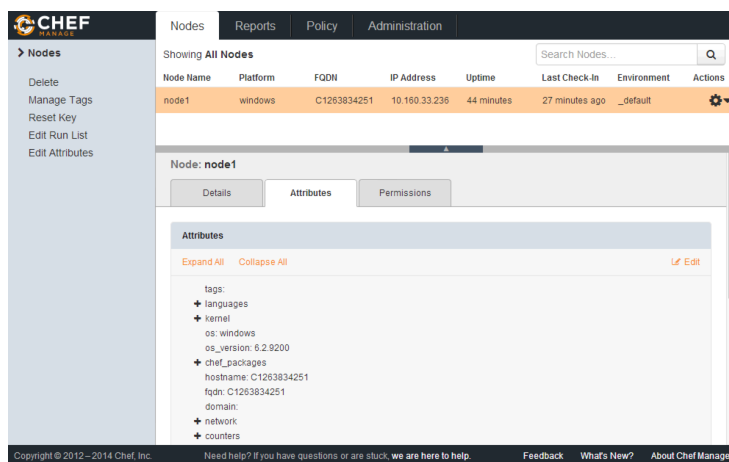
```
rdp <EXTERNAL_ADDRESS>
Open Powershell as Administrator
```

```
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 Server web interface. The top navigation bar includes 'Nodes', 'Reports', 'Policy', and 'Administration'. The left sidebar has a 'Nodes' section with links like 'Delete', 'Manage Tags', 'Reset Key', 'Edit Run List', and 'Edit Attributes'. The main content area shows a table of nodes with columns: Node Name, Platform, FQDN, IP Address, Uptime, Last Check-In, Environment, and Actions. Below the table, the 'Node: node1' details are shown, including 'Last Check In: 24 Minutes', 'Uptime: 44 Minutes', 'Environment: _default', 'Platforms: windows', 'FQDN: C1263834251', and 'IP Address: 10.160.33.236'. There are also sections for 'Tags' and 'Run List'.



This screenshot shows the 'Attributes' tab for 'Node: node1'. It displays a list of attributes with expand/collapse icons and an edit link. The attributes listed are: languages, kernel, os (windows), os_version (6.2.9200), chef_packages, hostname (C1263834251), fqdn (C1263834251), domain, network, and counters.

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
  action :run
  code "add-windowsfeature Web-Server"
end
```

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

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

```
cookbooks\iis_demo\templates\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::default]'
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.erb"
```

cookbooks\iis_demo\templates\default\Default1.htm.erb

```
<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

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

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

```
<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"
```

Chef Fundamentals – Windows

```
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>)

Chef Fundamentals – Windows

```
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
    }
  end
end
```

Chef Fundamentals – Windows

```
        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"
```

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 T. Clown" -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

Chef Fundamentals – Windows

```
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

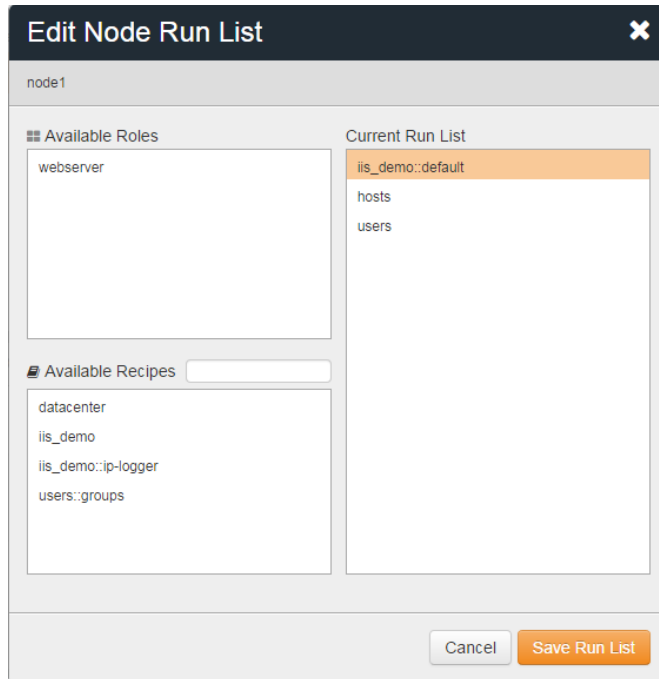
```
name "webserver"
description "Web Server"
run_list "recipe[iis_demo]"
default_attributes({
  "iis_demo " => {
    "sites" => {
      "admin" => {
        "port" => 8000
      }
    }
  }
})
```

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

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

```
PS\> knife search role "run_list:recipe\[iis_demo\]"
```

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\webserver.rb

```
name "webserver"
description "Web Server"
run_list "recipe[iis_demo]"
default_attributes({
  "iis_demo" => {
    "sites" => {
      "admin" => {
        "port" => 8000
      },
      "bears" => {
        "port" => 8081
      }
    }
  }
})
```

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

```
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

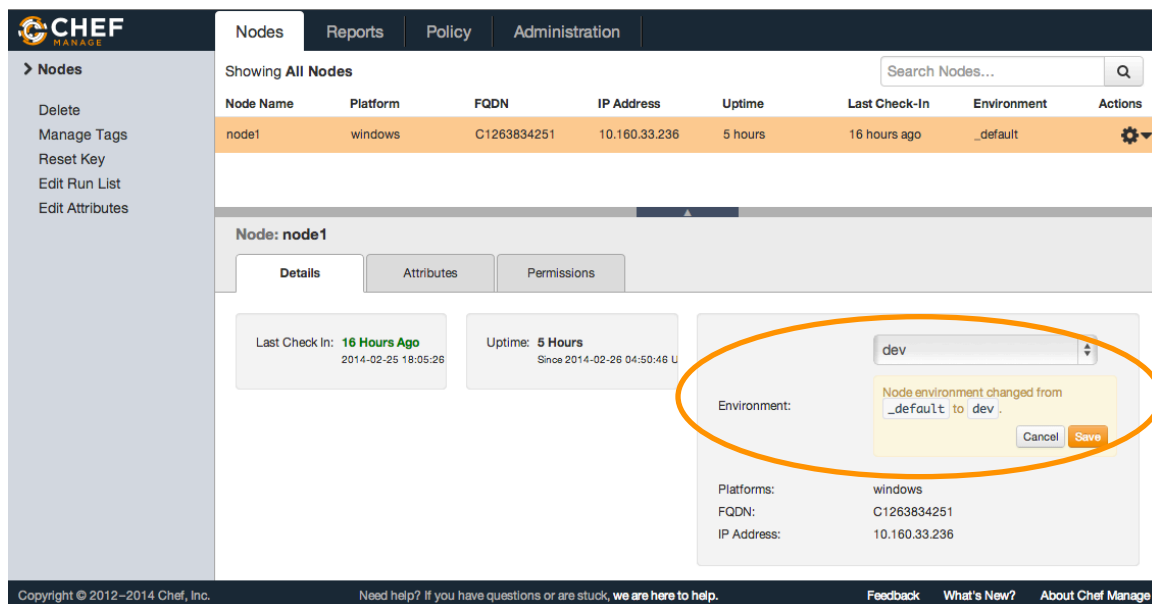
```
PS\> knife cookbook show iis_demo
PS\> knife environment list
PS\> mkdir environments
```

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'.

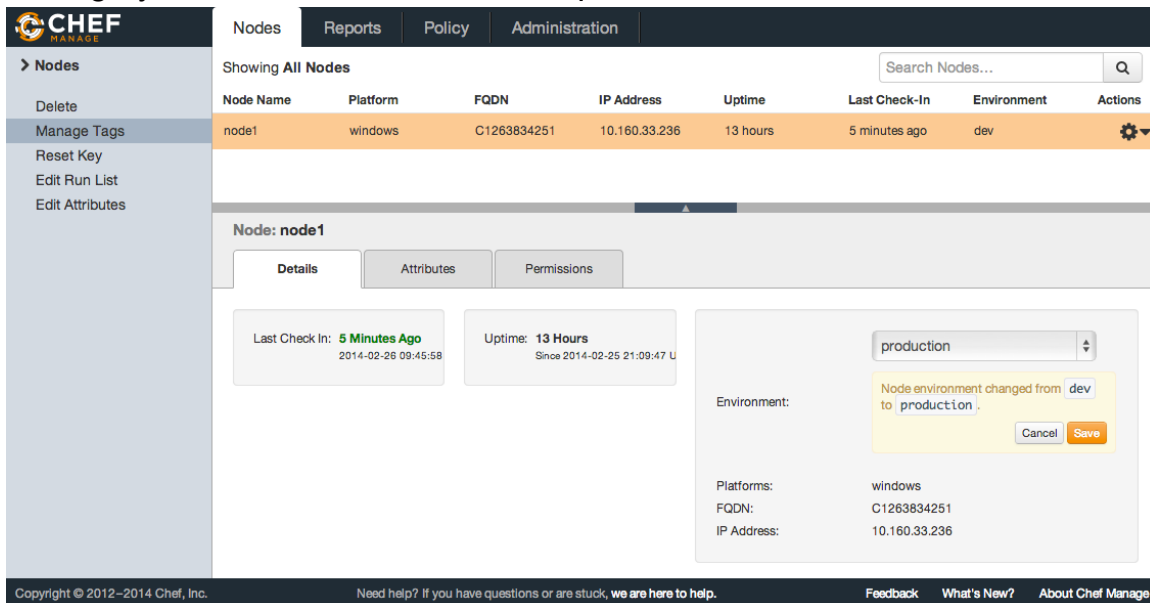
Rerun chef-client (command hidden)

environments\production.rb

Chef Fundamentals – Windows

```
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. On the left is a sidebar with navigation links: Nodes, Delete, Manage Tags, Reset Key, Edit Run List, and Edit Attributes. The main content area has tabs for Nodes, Reports, Policy, and Administration. Under the 'Nodes' tab, it says 'Showing All Nodes' and provides a search bar. Below this is a table of nodes with columns: Node Name, Platform, FQDN, IP Address, Uptime, Last Check-In, Environment, and Actions. The table contains one entry for 'node1' with platform 'windows', FQDN 'C1263834251', IP '10.160.33.236', uptime '13 hours', last check-in '5 minutes ago', and environment 'dev'. Below the table, there's a section for 'Node: node1' with tabs for Details, Attributes, and Permissions. The 'Details' tab is active, showing 'Last Check In: 5 Minutes Ago' and 'Uptime: 13 Hours'. On the right, there's a form to change the environment. The current environment is 'dev', and it's being changed to 'production'. A confirmation message says 'Node environment changed from dev to production'. There are 'Cancel' and 'Save' buttons. Below this, it lists the node's details: Platforms: windows, FQDN: C1263834251, IP Address: 10.160.33.236. The footer contains copyright information and links for feedback, new news, and about Chef Manage.

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 download the 'windows' cookbook (command hidden)

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

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

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

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

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

Use knife to upload the 'windows' 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*
```