Configuring Chef client service on AIX

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I installed Chef Client on an AIX server and added it to my Chef Server. The „normal" mode of operations for Chef is that Chef client runs on regular basis, polls Chef server, downloads run-lists and required configurations and performs the tasks on the node, where it runs.

After the installation, I've made, I can run the client manually from the command line by calling chef-client:

```
root@delta# chef-client
```

But sorry, I am not a fan to sit the whole day before a console and to start chef-client manually every hour or so.

The easiest way to start chef-client regularly and without an operator is to make an entry in crontab, something like:

```
root@delta# crontab -e  55 3,7,11,15,19,23 * * * /usr/bin/chef-client >/dev/console 2>&1
```

It is also possible to start chef-client in a daemon mode:

```
root@delta# chef-client -d -i 1800 -s 300
```

The option **-i** specifies an interval in seconds, how often chef-client polls its Chef Server. The option **-s** is to define splay - chef-client will choose a random number between 0 and splay seconds and add it to the interval. With this settings (-i 1800 -s 300) chef-client will poll its Chef Server every 30-35 minutes.

One can write a startup script and add it into /etc/rc.d/rc2.d or just make an entry in /etc/inittab to start the service with the system.

There is a third way - the Chef way. Chef authors have prepared a special cookbook with all required tasks to automate startup of chef-client. The cookbook is called chef-client and is known to work on AIX. IBM has checked it and published a document on [Advanced Technical Support site](#). This is what I'd like to test.

But first I have to find the cookbook and download it. I use the command knife on my Chef Server for it:

```
chef$ knife cookbook site search chef-
client  ...  chef-client:    cookbook:              https://supermarket.chef.io
/api/v1/cookbooks/chef-client    cookbook_description: Manages client.rb confi
guration and chef-client service    cookbook_maintainer:  chef     cookbook_nam
e:        chef-client  ...
```

Here it is:

```
chef$ knife cookbook site show chef-client
  average_rating:  category:           Other   created_at:          2010-12-16T2
3:00:45.000Z  deprecated:        false  description:        Manages client.rb
 configuration and chef-client service   external_url:       http://github.com/
opscode-cookbooks/chef-client  foodcritic_failure: false   issues_url:  latest_
version:       https://supermarket.chef.io/api/v1/cookbooks/chef-client/versions
/4.3.2  maintainer:         chef  ...  name:               chef-client  source
_url:        http://github.com/opscode-cookbooks/chef-client  up_for_adoption
:  updated_at:          2015-11-05T17:21:41.356Z  versions:      https://supermar
ket.chef.io/api/v1/cookbooks/chef-client/versions/4.3.2  ...
```

Let's try to download it:

```
chef$
knife cookbook site download chef-
client   Downloading chef-client from Supermarket at version 4.3.2 to /chef-rep
o/chef-client-4.3.2.tar.gz  Cookbook saved: /chef-repo/chef-
client-4.3.2.tar.gz
```

The next step is to extract it and to upload to the Chef Server:

```
chef$ tar xzf chef-
client-4.3.2.tar.gz -C cookbooks    chef$ knife cookbook upload chef-
client --cookbook-path cookbooks     Uploading chef-client [4.3.2]  ERROR: Coo
kbook chef-client depends on cookbooks which are not currently  ERROR: being u
ploaded and cannot be found on the server.  ERROR: The missing cookbook(s) are
: 'cron' version '>= 1.2.0', 'logrotate' version '>= 1.2.0', 'windows' version
 '~> 1.37'
```

Oops. Something went wrong. We have to install dependencies for the cookbook. The same procedure, as for chef-client cookbook:

```
chef$ knife cookbook site download cron
  Downloading cron from Supermarket at version 1.7.2 to /chef-
re
po/c
ron-1.7.
2.tar.gz  Cookbo
ok saved: /chef-
repo/cron-1.7.2.tar.gz  chef$
knife cookbook site download logrotate
  Downloading logrotate from Supermarket at version 1.9.2 to /chef-repo/logrot
ate
-1.9.2
.tar.gz  Coo
kbook saved: /chef-
repo/logrotate-1.9.2.tar.gz  chef$
knife cookbook site download windows
  Downloading windows from Supermarket at version 1.38.4 to /chef-repo/windows
-1.38.
4.tar.gz  Co
okbook saved: /chef-
repo/windows-1.38.4.tar.gz  chef$
tar xzf cron-1.7.2.tar.gz -C cookbooks/  chef$
tar xzf logrotate-1.9.2.tar.gz -C
cookbooks/  chef$
tar xzf windows-1.38.4.tar.gz -C co
okbooks/  chef$
knife cookbook upload cron
 --cookbook-path cookbooks
  Uploading cron
        [1.7.2]  Uploaded 1 coo
kbook.  chef$
knife cookbook upload
 logrotate --cookbook-path cookbooks
  Uploading lo
grotate       [1.9.2]  Upload
```

```
ed 1 cookbook.  chef$
knife cookbook upload w
indows --cookbook-path cookbooks
  Uploading windows        [1.38.4]  ERROR: Cookbook windows depends on cookbo
oks which are not currently  ERROR: being uploaded and cannot be found on the
server.  ERROR: The missing cookbook(s) are: 'chef_handler' version '>= 0.0.0'
```

Windows make problems as usual. Download and install one more dependency.

```
chef$
knife cookbook site download chef_han
dler  Downloading chef_handler from Supermarket at version 1.2.0 to /chef-repo
/chef_handler-1.2.0.tar.gz  Cookbook saved: /chef-
repo/chef_handler-1.2.0.tar.gz  chef$
tar xzf chef_handler-1.2.0.tar.
gz -C cookbooks/  chef$ knife cookbook upload chef_handler --cookbook-
path cookbooks  Uploading chef_handler   [1.2.0]  Uploaded 1 cookbook.
```

Now everything runs well:

```
chef$
knife cookbook upload w
indows --cookbook-path cookbooks
  Uploading w
indows        [1.38.4]  Up
loaded 1 cookbook.  chef$ knife cookbook upload chef-client --cookbook-
path cookbooks  Uploading chef-client   [4.3.2]  Uploaded 1 cookbook.
```

We've installed the cookbook, now we can try to use it on our AIX server. There are several recipes in it and several attributes, which affect these recipes. I don't plan to change any attributes now, because I think the default behavior is quite good for the test, but I plan to use 2 recipes from the cookbook.

The first recipe **delete_validation** removes the file /etc/chef/validation.pem. It is a validation certificate, which was used previously to register and authorize the Chef Client on the Chef Server. We don't need it anymore, because after the registration we received our own certificate from the server.

The second recipe is the **default** one, which installs a service on AIX, running chef-client.

Let's add them:

```
chef$ knife node run_list add delta.enfence.net "recipe[chef-
client::delete_validation]"  delta.enfence.net:    run_list: recipe[chef-
client::delete_validation]   chef$
knife node run_
list add delta.enfence.net "re
cipe[chef-client]"  delta.enfence.net:    run_list:      recipe[chef-
client::delete_validation]      recipe[chef-client]
```

After adding the recipes to the run-list we can start chef-client on the AIX side to converge the configuration:

```
root@delta # chef-client
  [2015-12-15T22:48:55+01:00] WARN: Please install an English UTF-8 locale for
 Chef to use, falling back to C locale and disabling UTF-8 support.  Starting
Chef Client, version 12.5.1  resolving cookbooks for run list: ["chef-client::
delete_validation", "chef-client"] Synchronizing Cookbooks:   - chef-client
(4.3.2)   - cron (1.7.2)   - logrotate (1.9.2)     ========================
======================================================   Error Syncing Cook
books:    ================================================================
===========       Unexpected Error:   ----------------    ThreadError: can't
 create Thread: Resource temporarily unavailable     Running handlers: [20
15-12-15T22:49:25+01:00] ERROR: Running exception handlers    Running handlers
 complete  [2015-12-15T22:49:25+01:00] ERROR: Exception handlers complete   C
hef Client failed. 0 resources updated in 16 seconds  [2015-12-15T22:49:25+01:
00] ERROR: Failed to post reporting data to server (can't create Thread: Resou
rce temporarily unavailable) [2015-12-15T22:49:25+01:00] FATAL: Stacktrace du
mped to /var/chef/cache/chef-stacktrace.out  [2015-12-15T22:49:25+01:00] ERROR
: can't create Thread: Resource temporarily unavailable  [2015-12-15T22:49:26+
01:00] FATAL: Chef::Exceptions::ChildConvergeError: Chef run process exited un
successfully (exit code 1)
```

Something went obviously wrong. After a little bit googling I've found a [bug report](#) and a notice in [Release Notes](#), that I have to change 2 parameters and to reboot AIX:

```
root@delta #
chsec -f /etc/security/lim
its -s default -a "rss=-1"  root@delta #
```

```
chsec -f /etc/secur
ity/limits -s default -a "nofiles=50000"  root@delta # shutdown -Fr
```

I really don't think that it is a good idea to change limits for all users. I run chef-client under only one user - root. May be if I'd run some other recipes, they'd run under other users and require these parameters too. I am not sure. Even bigger problem for me is to reboot a server. If I had some production server, where I need to install chef-client, I really-really-really don't want to reboot it. Some servers have downtime only once per year. That's why I tried first to set up these parameters only for user root and as usual - logoff/login to make them active.

```
root@delta # chuser rss=-1 nofiles=50000 root
```

Unfortunately it didn't help. Then I did what Chef suggests - changed the default values and rebooted the server. It didn't help either - I received ThreadError again.

Then I changed two more attributes for root and logged off/in to activate them:

```
root@delta # chuser stack=-1 data=-1 root
```

It helped. I didn't see the error anymore.

```
root@delta # chef-client
  [2015-12-15T22:57:11+01:00] WARN: Please install an English UTF-8 locale for
 Chef to use, falling back to C locale and disabling UTF-8 support.  Starting
Chef Client, version 12.5.1  resolving cookbooks for run list: ["chef-client::
delete_validation", "chef-client"] Synchronizing Cookbooks:   - chef-client
(4.3.2)    - cron (1.7.2)    - logrotate (1.9.2)    - windows (1.38.4)    - ch
ef_handler (1.2.0) Compiling Cookbooks...  Converging 9 resources  Recipe: ch
ef-client::delete_validation    * file[/etc/chef/validation.pem] action delete
      - delete file /etc/chef/validation.pem  Recipe: chef-client::src_service
    * directory[/var/run/chef] action create      - create new directory /var/
run/chef     - change owner from '' to 'root'     - change group from '' to
'system'    * directory[/var/spool/chef] action create     - create new direc
tory /var/spool/chef     - change owner from '' to 'root'      - change group
```

from '' to 'system'   * directory[/var/lib/chef] action create   - create new directory /var/lib/chef   - change owner from '' to 'root'   - change group from '' to 'system'   * directory[/var/adm/chef] action create - create new directory /var/adm/chef   - change mode from '' to '0755'   - change owner from '' to 'root'   - change group from '' to 'system'   * directory[/etc/chef] action create (up to date)   * execute[install chef in SRC] action run   - execute mkssys -s chef -p /usr/bin/chef-client -u root -S -n 15 -f 9 -o /var/adm/chef/client.log -e /var/adm/chef/client.log -a '-i 1 800 -s 300'   * execute[enable chef] action run   - execute mkitab 'chef:2 :once:/usr/bin/startsrc -s chef > /dev/console 2>&1'   * service[chef] action start   - start service service[chef]   Running handlers: Running handlers complete Chef Client finished, 8/9 resources updated in 15 seconds

As you can see from the output the recipe created some directories and made a standard AIX service for chef-client. It also added an entry to /etc/inittab to start the service, and started it.

```
root@delta # lsitab chef
  ch
ef:2:onc
e:/usr/bin/start
src -s chef > /dev/console 2>&1
 root@delta # lssrc -s chef
  Subsystem         Group          PID         Status    chef
           3145906       a
ctive  root@delta # ps -ef | grep chef
    root 3145906 1900758   0 22:57:32     -  0:08 /opt/chef/embedded/bin/ru
by
```

I also checked the log file in /var/adm/chef:

```
root@delta # cd /var/adm/chef   root@delta # ls -l   total 8   -rwxr-xr-
x
 1 root
   system
   144 Dec 15 22:57 client.log
 root@delta # tail client.log
  [2015-12-15T22:57:33+01:00] WARN: Please install an English UTF-8 locale for
 Chef to use, falling back to C locale and disabling UTF-8 support.
```

At this point I was really annoyed by the message about the absent locale and decided to install it. No, I didn't do it using AIX cookbook, I just installed it manually.

```
root@delta # lslpp -Lqc bos.loc.utf.EN_US
  bos.loc.utf.EN_US:bos.loc.utf.EN_US:7.1.4.0: : :C: :Base System Locale UTF C
ode Set - U. S. English : : : : : : :0:0:/:1543
```