Network Management and Monitoring

Cacti command line tools

Notes:

* Commands preceded with "$" imply that you should execute the command as a general user - not as root.
* Commands preceded with "#" imply that you should be working as root.
* Commands with more specific command lines (e.g. "RTR-GW>" or "mysql>") imply that you are executing commands on remote equipment, or within another program.

As you have noticed, adding devices to Cacti via the user interface can take
quite some time, as for each device you will have:

- add the device, filling out the description, hostname, SNMP community
- pick the interfaces or resources to be monitored (graphed)
- create the graph tree enty
- add the graphs to the graph tree.

There are plugins to automate this, such as the aptly named "autom8":
http://docs.cacti.net/plugin:autom8

But if you wanted to add many devices in one pass, you would want to use something more efficient.

Luckily, Cacti has command line tools for this:

http://www.cacti.net/downloads/docs/html/scripts.html

The commands provided are:

add_data_query.php
add_device.php
add_graphs.php
add_graph_template.php
add_perms.php
add_tree.php

On Ubuntu, these are located under /usr/share/cacti/cli

The three commands we'll be focusing on are:

add_device.php
add_graphs.php
add_tree.php

They are individually documented here:

http://www.cacti.net/downloads/docs/html/cli_add_device.html
http://www.cacti.net/downloads/docs/html/cli_add_graphs.html
http://www.cacti.net/downloads/docs/html/cli_add_tree.html

The way it works, is that we will use the three commands in sequence, to:

- Add a device
- Create graphs for the device we've added
- Add these graphs to a tree

Below is a walkthrough of adding a device and some graphs using these commands.
Read through, and proceed to the exercise at the end.

1. Adding a device

```
$ sudo ./add_device.php | less
```

You will see a lot of help output. You can page through it to look at all the options. So we know what we will put for:

```
--description   => the description of the host, say "backbone router" or
                   "rtrX.ws.nsrc.org" - but that is up to you to decide
--ip            => the ip or hostname - we recommend hostname! - of the
device

--version       => SNMP version (2)
--comunity      => the SNMP community. By default, Cacti will try 'public',
                   although you can pre-configure other communities in the
                   Cacti user interface
```

We're missing two informations:

- What availability method (PING or SNMP) to check if the device is "up" ?
  from the options listed in the output of the command, we can see:

```
      --avail        pingsnmp, [ping][none, snmp, pingsnmp]
```

  We will use the "snmp" availability test.

- The Template: is it a Cisco, a Linux host, a generic SNMP device ?

  For this, we use the --list-host-templates command, which will tell us which type of device Template is supported:

```
$ sudo ./add_device.php  --list-host-templates
```

```
Valid Host Templates: (id, name)
0   None
1   Generic SNMP-enabled Host
3   ucd/net SNMP Host
4   Karlnet Wireless Bridge
5   Cisco Router
6   Netware 4/5 Server
7   Windows 2000/XP Host
8   Local Linux Machine
```

From the above, we can see that Cisco Router is template id number 5.

Let's build our command line. If we are in group 7, we'd want to add, for example, router 7, which has IP address 10.0.7.254 and 10.10.0.7. Let's use IP 10.10.7.254 - if you have already created this device in Cacti, you may want to pick another device.

```
$ sudo ./add_device.php --description="rtr7.ws.nsrc.org" --ip=10.10.7.254 \
  --template=5 --avail=snmp --version=2 --community=NetManage
```

You should see output similar to this:

```
  Adding rtr7.ws.nsrc.org (10.10.7.254) as "Cisco Router" using SNMP v2
with
    community "NetManage"
  Success - new device-id: (2)
```

Note the device-id "2". This is Cacti's internal reference for this device. You don't need to write it down.

Now, verify in the Web UI that the device has indeed been added:

Console -> Management -> Devices

2. Adding graphs

This is the most complicated part of the operation, but once you understand the steps involved, it will be easier to repeat for other hosts.

First, let's run the add_graphs.php commands without any options to see what
it expects from us:

```
$ sudo ./add_graphs.php | less
```

[...]

Notice the options --host-id, --graph-type, --graph-template-id options.

We already know the host-id from the previous section - if you don't remember
it, don't worry, we'll get to it below.

Graph type (--graph-type) is is either cg or ds. 'cg' is used for absolute values such as gauge readings (CPU temperature, fan speed, ...), while 'ds' is used for interface counters etc. (Data Sources). We are using 'ds' type graphs for interfaces (--graph-type=ds)

Also pay attention in particular to the "List Options" section, as we will be
using this quite a bit to find out what SNMP data we want to query:

```
List Options:

 --list-hosts
 --list-graph-templates [--host-template-id=[ID]]
 --list-input-fields --graph-template-id=[ID]
 --list-snmp-queries
 --list-query-types  --snmp-query-id [ID]
 --list-snmp-fields  --host-id=[ID] [--snmp-query-id=[ID]]
 --list-snmp-values  --host-id=[ID] [--snmp-query-id=[ID]] --snmp-
field=[Field]
```

A very useful command is the "--list-hosts" options, that we'll use to see which hosts are available, as we'll also need to get the host-id.

Let's use this to fetch the host-id for the host you added in the previous section:

```
$ sudo ./add_graphs.php --list-hosts

Known Hosts: (id, hostname, template, description)
1   127.0.0.1   8   Localhost
2   10.10.7.254 5   rtr7.ws.nsrc.org
```

In this case, the host-id of rtr7 is '2'.

Is this enough to build our command ? Not yet. We still need to specify the
following:

"graph template id" (--graph-template-id)
"snmp query id" (--snmp-query-id)
"snmp field" (--snmp-field)
"snmp value" (--snmp-value)

* Find the graph template id

To find out which graph templates are available, use the --list-graph-templates
option:

```
$ sudo ./add_graphs.php --list-graph-templates
```

In the output, there are several options we could be interested in:

```
[...]

2   Interface - Traffic (bits/sec)
18  Cisco - CPU Usage
22  Interface - Errors/Discards
23  Interface - Unicast Packets
24  Interface - Non-Unicast Packets
25  Interface - Traffic (bytes/sec)
```

We're really interested in creating bits/sec graphs at this point, so that's
graph template no. 2

* Find out what types of SNMP queries are possible:

```
$ sudo ./add_graphs.php --list-snmp-queries

Known SNMP Queries:(id, name)
1   SNMP - Interface Statistics
2   ucd/net -  Get Monitored Partitions
3   Karlnet - Wireless Bridge Statistics
4   Netware - Get Available Volumes
6   Unix - Get Mounted Partitions
7   Netware - Get Processor Information
8   SNMP - Get Mounted Partitions
9   SNMP - Get Processor Information
```

Here, we are interested in the SNMP Interface statistics, therefore, --snmp-query-id=1 is what we are looking for.

* Find the valid SNMP query type

Ok, but what kind of data do we want to graph ? Find out using the query types possible for snmp-query-type 1 (SNMP - Interface Statistics):

```
$ sudo ./add_graphs.php --snmp-query-id=1 --list-query-types

Known SNMP Query Types: (id, name)
2   In/Out Errors/Discarded Packets
3   In/Out Non-Unicast Packets
4   In/Out Unicast Packets
```

```
9   In/Out Bytes (64-bit Counters)
13  In/Out Bits
14  In/Out Bits (64-bit Counters)
16  In/Out Bytes
20  In/Out Bits with 95th Percentile
21  In/Out Bits with Total Bandwidth
22  In/Out Bytes with Total Bandwidth

Let's graph Ib/Out Bits (64-bit Counters) - that is # 14. This is
option "--snmp-query-type-id"

* Find which interfaces to graph on this host

We need to tell Cacti *which* which interfaces we will be creating
graphs for on our device, using the two options of the add_graphs.php
command "--snmp-field" and "--snmp-value"

$ sudo ./add_graphs.php --host-id=2 --list-snmp-fields

Known SNMP Fields for host-id 2: (name)
ifAlias
ifDescr
ifHighSpeed
ifHwAddr
ifIndex
ifIP
ifName
ifOperStatus
ifSpeed
ifType

We're only really interested in interfaces of type ethernet, therefore
we'll
use the "ifType" SNMP field to narrow down our search.

To find out how to specify the "ethernet" type...:

$ sudo ./add_graphs.php --host-id=2 --snmp-field=ifType --list-snmp-values

Known values for ifType for host 3: (name)
ethernetCsmacd(6)
other(1)

ethernet is type 6...

Wow!

The final command:
```

```
$ sudo ./add_graphs.php --host-id=2 --snmp-query-id=1 --snmp-query-type-
id=14 \
  --snmp-field=ifType --snmp-value=6 --graph-template-id=2 --graph-type=ds
```

You should see something similar to this:

```
Graph Added - graph-id: (5) - data-source-ids: (8, 8)
Graph Added - graph-id: (6) - data-source-ids: (9, 9)
```

... why two Graphs ? One for each interface if this is your Cisco router.

Check in the Web UI that the graphs have been create (Devices -> select your host -> Graph List)