Zbxapi and Zabcon

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- •http://trac.red-tux.net
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API & Zabcon

- Introduced in Zabbix 1.8.0
- Based on JSON-RPC v 2.0 over HTTP
- Not RESTful
- Provides a somewhat raw interface to the internal data structures
- API calls are made to the Frontend, not the Zabbix server process
- API calls mimic Frontend activities

Sounds interesting what do I need to know?

- URL used to access the api:
  <Server URL>/api_jsonrpc.php
  Example:
  http://myserver.example.com/zabbix/api_jsonrpc.php
- A valid Zabbix user is required for all API calls
  - Often referred to as the "API User"
  - Must be a member of a User group which has the API Access permission enabled
  - API Users are Zabbix users with the ability to perform API calls
- The latest documentation is online:
  http://www.zabbix.com/documentation/1.8/api
  http://www.zabbix.com/documentation/2.0/manual/appendix/api/api
- The forum is a great resource.

My API User is configured, now what?

- Use of a Zabbix API library can make things easier
  - Not required, the brave use Curl and Wget.
- API calls are divided into namespaces
  - Namespace.call
    - user.get, host.get etc
- Every API function requires a valid session ID.
  - Except user.login, which is used to generate the session ID.
- Basic API Call/Layout:

```
{
  "jsonrpc":"2.0",
  "method":”Function”,
  "params":{ “Name”:”Value” },
  "auth":”SessionID”,
  "id":<Incrementing Number>
}
```

- Order is not important, content is

Show me the data! (Login)

The next few slides will show the steps needed to show all of the hosts on a system.

The login:

```
{
"auth":null,"method":"user.login",
"id":0,"jsonrpc":"2.0",
"params":{"password":"apitest","user":"apitest"}
}
```

Result:

```
{
"jsonrpc":"2.0",
"result":"ef1118f0c916f8c49d10913c31ba804c",
"id":0
}
```

Using an interface library must be easier...

Enter ZbxAPI, a library written in Ruby for interfacing with Zabbix.

- Written in Ruby
- Designed to support multiple servers without needing to create new classes (ActiveRecord)

```
    zbxserver1=ZabbixAPI.new(“http://zabbix.example.com”)
    zbxserver2=ZabbixAPI.new(“http://zabbix2.example.com”)
```

- Supports proxy servers (http proxy servers)

API & Zabcon

Let's see an example session in irb:

```
>> require "rubygems"
>> require "zbxapi"
>> zbx=ZabbixAPI.new(
   "http://zabbix.example.com”).set_proxy(
   "localhost",3128).login("apitest","apitest")

=> #<ZabbixAPI:0x1024d3f98 @password="apitest", @major=1,
@auth="b17352bbe578b34cfdd26d7373219701", @orig_url="http://zabbix-
back.colo.red-tux.net/zabbix", @user_name="apitest", @id=2,
@returntype=:result, @objects={:host=>#<Host:0x1024c1c30
@server=#<ZabbixAPI:0x1024d3f98 ...>>, :usermacro=>#<UserMacro:0x1024c20e0
@server=#<ZabbixAPI:0x1024d3f98 ...>>, :hostgroup=>#<HostGroup:0x1024c2a40
@server=#<ZabbixAPI:0x1024d3f98 ...>>, :history=>#<History:0x1024c1f50
... (Some lines truncated for space)
 @server=#<ZabbixAPI:0x1024d3f98 ...>>, :graph=>#<Graph:0x1024c2400
@server=#<ZabbixAPI:0x1024d3f98 ...>>, :trigger=>#<Trigger:0x1024c2270
@server=#<ZabbixAPI:0x1024d3f98 ...>>, :template=>#<Template:0x1024c28b0
@server=#<ZabbixAPI:0x1024d3f98 ...>>}, @verify_ssl=true,
@proxy_server={:port=>3128, :user=>nil, :address=>"localhost",
:password=>nil}, @minor=3, @url=#<URI::HTTP:0x1024d3c50 URL:http://zabbix-
back.colo.red-tux.net/zabbix/api_jsonrpc.php>>
>>
```

API & Zabcon

What happens if we pull a host list?

```
>> zbx.host.get({"output"=>"extend"})

=> [{"snmp_errors_from"=>"0", "ipmi_port"=>"623", "outbytes"=>"0",
"proxy_hostid"=>"0", "maintenance_status"=>"0", "ipmi_password"=>"",
"ipmi_privilege"=>"2", "ipmi_disable_until"=>"0", "available"=>"1",
"maintenances"=>[{"maintenanceid"=>"0"}], "ipmi_error"=>"",
"maintenanceid"=>"0", "useipmi"=>"0", "port"=>"10050", "useip"=>"1",
"ipmi_errors_from"=>"0", "maintenance_from"=>"0", "ipmi_ip"=>"",
... (Some lines truncated)
"ipmi_errors_from"=>"0", "maintenance_from"=>"0", "ipmi_ip"=>"",
"hostid"=>"10066", "ipmi_available"=>"0", "disable_until"=>"0",
"ip"=>"192.168.1.1", "maintenance_type"=>"0", "ipmi_authtype"=>"-1",
"inbytes"=>"0", "lastaccess"=>"0", "host"=>"SSG-20 McLean", "snmp_error"=>"",
"ipmi_username"=>"", "status"=>"0", "dns"=>"", "snmp_available"=>"1",
"snmp_disable_until"=>"0", "errors_from"=>"0", "error"=>""}]
```

What is this mess? It looks like an overgrown array of hashes...

It is!

In PHP, Arrays are Hashes and vice versa...

Let's see if we can clean that up:

```
>> zbx.host.get({"output"=>"extend"}).each{|i|
     i.delete_if{|k,v}
       (["hostid","available","status","ip","dns","host"]&[k]).empty?
     }
   }[0..2]

=> [{"available"=>"1", "hostid"=>"10017", "ip"=>"127.0.0.1", "host"=>"Zabbix
server", "status"=>"0", "dns"=>""},
{"available"=>"1", "hostid"=>"10047", "ip"=>"192.168.1.5", "host"=>"Admin",
"status"=>"0", "dns"=>""},
{"available"=>"0", "hostid"=>"10049", "ip"=>"192.168.1.5", "host"=>"SSG-20",
"status"=>"0", "dns"=>""}]
```

API & Zabcon

Zabcon is intended to be an easier way.

- Name is a derivation of “Zabbix Console”
  - Started in late 2009
  - Latest version 0.0.392 (New release coming soon)
- Website: http://trac.red-tux.net
- Written in Ruby
  - Requires at least 1.8.6
  - Presently there are some issues with Ruby 1.9
- Can accept commands from standard input
  - One person used Zabcon inside a script to import data into Zabbix
    - One user was able to import about 1,000 hots in a matter of minutes.
- Users can create their own custom Zabcon commands
- Easiest way to install is from Rubygems

```
# gem install zabcon
```

  - Installation and update of dependencies is managed by Rubygems.
  - Some dependencies may require a compiler and the Ruby development libraries

API & Zabcon

What are some changes from last year?

- •Multiple servers are supported in the configuration file
- •Session information is cached to speed re-connection speed inside scripts.
- •New custom commands
  - get graph
  - xml export
  - show triggers

Let's see that get host example with Zabcon

```
$ zabcon.rb
Unable to find a default configuration file
i386-linux
Welcome to Zabcon.  Build Number: 326
Use the command 'help' to get help on commands
 -> login http://192.168.166.10 apitest apitest
http://192.168.166.10 connected
API Version: 1.3
 +> get host
Host result set
+--------+----------+-----+-----------+
| hostid | host     | dns | ip        |
+--------+----------+-----+-----------+
| 10047  | test     |     | 127.0.0.1 |
| 10064  | Lua 2    |     | 0.0.0.0   |
| 10067  | new test |     | 127.0.0.1 |
+--------+----------+-----+-----------+
3 rows total
 +>
```

API & Zabcon

That's nice do I really need to log in every time?

- Zabcon can load host and user information from a configuration file
  - Multiple hosts are supported
- Default behavior is to load the config file upon startup
  - ./zabcon.conf and ~/zabcon.conf are searched in that order
  - Sample config file: zabcon.conf.default can be found in your system's Rubygems directory

```
 $ gem which zabcon
/usr/lib/ruby/gems/1.8/gems/zabcon-0.0.332/./zabcon.rb
```

  - Using the above information the sample config file would be found at :

```
/usr/lib/ruby/gems/1.8/gems/zabcon-0.0.332/zabcon.conf.default
```

Example configuration file

```
server=http://127.0.0.1
username=apitest
password=apitest

server[local][server]=http://192.168.1.5
server[local][username]=apitest
server[local][password]=apitest

server[colo][server]=http://zabbix.example.com
server[colo][username]=apitest
server[colo][password]=apitest
server[colo][proxy_server]=localhost
server[colo][proxy_port]=3128

server[q1x][server]=http://q1x.example.com
server[q1x][username]=user
server[q1x][password]=Z4bb1xR0x!

#default_server=colo
```

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API & Zabcon

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Let's try that again, with more information:

```
$ ./usefromsvn.sh -S colo
Using locally found gem, no version guarantees.
universal-darwin10.0
Attempting to use previous key
 connected
API Version: 1.3
Loading custom commands from custom_commands/zabbix_get_graph.rb
Loading custom commands from custom_commands/zabbix_show_trigger.rb
Loading custom commands from custom_commands/zabbix_xml_export.rb
Welcome to Zabcon.  Build Number: 394
Use the command 'help' to get help on commands
 +> get host show=[hostid,host,dns,ip,available,status] limit=3
Host result set
+--------+---------------+-----+----------------+-----------+--------+
| hostid | host          | dns | ip             | available | status |
+--------+---------------+-----+----------------+-----------+--------+
| 10017  | Zabbix server |     | 127.0.0.1      | 1         | 0      |
| 10047  | Admin         |     | 192.168.1.5    | 1         | 0      |
| 10049  | SSG-20        |     | 192.168.1.1    | 0         | 0      |
+--------+---------------+-----+----------------+-----------+--------+
3 rows total
 +>
```

Ok that's cool but what if I want to disable a host from a script?

```
$ echo "get host show=hostid,host,dns,ip,status" | zabcon.rb
hostid,host,dns,ip,status
10047,test,,127.0.0.1,0
10064,Lua 2,,0.0.0.0,0
10067,new test,,127.0.0.1,0

$  echo "update host hostid=10047 status=1" | zabcon.rb

$ echo "get host show=hostid,host,dns,ip,status" | zabcon.rb
hostid,host,dns,ip,status
10047,test,,127.0.0.1,1
10064,Lua 2,,0.0.0.0,0
10067,new test,,127.0.0.1,0
```

Accessing the API directly

- Right now, Zabcon does not have a command for every possible API call.
- “raw api” allows direct access to the api.

```
 +> raw api history.get itemids=[22163] time_from=1317367232
time_to=1317367262 output=extend
Raw_api result set
+------------+--------+------------+
| clock      | itemid | value      |
+------------+--------+------------+
| 1317367283 | 22163  | 1317367283 |
| 1317367343 | 22163  | 1317367343 |
...
| 1317367943 | 22163  | 1317367943 |
| 1317368003 | 22163  | 1317368003 |
+------------+--------+------------+
13 rows total
```

API & Zabcon

Custom commands

- End users can create their own Zabcon commands to suit their own unique needs
- The command “help commands” will be updated with the new commands
- Zabcon.conf file determines the location of the custom commands file
- Custom commands file is only parsed on Zabcon startup.

```
ZabconCommand.add_command "custom" do
  set_method do |params|
    server.connection.raw_api("user.get",{})
  end
  set_help_tag :none
  set_flag :print_output
end
```

```
+> custom
 result set
+---------+
| userid |
+---------+
| 1      |
| 2      |
+---------+
2 rows total
```

Time for me to stop talking

- API is JSON-RPC based
  - Allows for a nearly complete interface for modifying Zabbix
- API calls are made to the Web fronend
- Zabcon allows you to easily call the Zabbix API form the command line or scripts
  - Help from more developers and testers is always appreciated (hint hint)

Website:
http://trac.red-tux.net
Email list:
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