Lua Plugin for Zabbix

Andrew Nelson

- RHCE, Zabbix Certified Specialist
- Active in the Zabbix community for approximately 7 years
- Nelsonab in the Zabbix forums.
- Creator of Zabcon, the Zabbix console.
  http://trac.red-tux.net
- Red Hat Consultant

- Because I am crazy
  - For some reason I enjoy hacking at the server code
  - I enjoy reading uncommented code....
  - I'm a consultant, not a developer
    - My roots are in programming
- I saw a need to extend Zabbix functionality via a scripting language
  - Ruby, Python, and Lua were considered
    - Linking with Ruby and Python required a lot of overhead
    - Lua is simple
  - Retrieving and manipulating values from within Zabbix is faster than external scripts

- Provide a means to extend the functionality of various parts of Zabbix without needing to recompile Zabbix.
  - Long term goals are still in flux
    - Ability to create triggers from Lua functions
    - Ability to include output of Lua functions in Macros
      - Would require adding Lua support to the PHP frontend
    - Modify macro values from Lua scripts
      - May not be possible using the current codebase
- Inclusion into Zabbix
  - There is interest from the Zabbix team
    - 2.2 would seem like the earliest likely candidate.
  - Don't try to reinvent the wheel, if there is an existing Zabbix function, use it.

What you can do...

- Try the patch
  - Test it out, give feedback
- Get involved
  - Join me in hacking the code and adding new features
    - PHP and C programmers are needed
- Discuss the patch in the forums.
  - Community interest can influence inclusion

- Lua is a lightweight scripting language
  - First appeared in 1993
  - Designed by Roberto Lerusalimschy
- A few programs that use Lua
  - World of Warcraft
  - Wireshark
  - Lighthttpd
  - Awesome Window manager

"Lua in a slide or two"

- Lua is
  - Interpreted
  - Case sensitive
  - Small
    - Source code is 860K in size, Lua interpreter compiled is 153K
- Lua has
  - Only 21 reserved words
  - 26 Symbols, aka operators
    - -- Comment
    - .. Concatenate
    - # Length operator
- Dynamically typed
  - Mostly centered around Strings, Boolean, and numbers (represented as 64bit floating point numbers)

"Lua in a slide or two"

- Variable Assignments
  - myvar = 5
  - myvar = "value"
- Function definition

```
function x(y)
  return y+1
end
```

- Function calls

```
myvar=x(6)
```

- Arrays

```
myvar[5]=1
```

Let's put it all together

```
function factorial(x)
   if x<1 then
      return 1
   else
      return x * factorial(x-1)
   end
end

result = factorial(6)

print ("The result is: "..result)
```

Will print the following:
The result is 720

I want it, where do I get it?

- Main repository:
  - http://svn.red-tux.net/trunk/lua
- Current version:
  - 1.8.5
  - http://trac.red-tux.net/wiki/lua
- Source tarball for Zabbix is also required
- Each patch is specific to each version of Zabbix.

Ok I have the patch, now what?

Untar zabbix:

```
> tar -zxvf zabbix-1.8.5.tar.gz
```

Apply the patch

```
> cd zabbix-1.8.5
> patch -p0 <../1.8.5-p1-lua.patch
```

Configure Zabbix

```
> configure --enable-server --with-mysql --with-lua
--with-snmp --with-curl
```

Compile

```
> make
```

Install

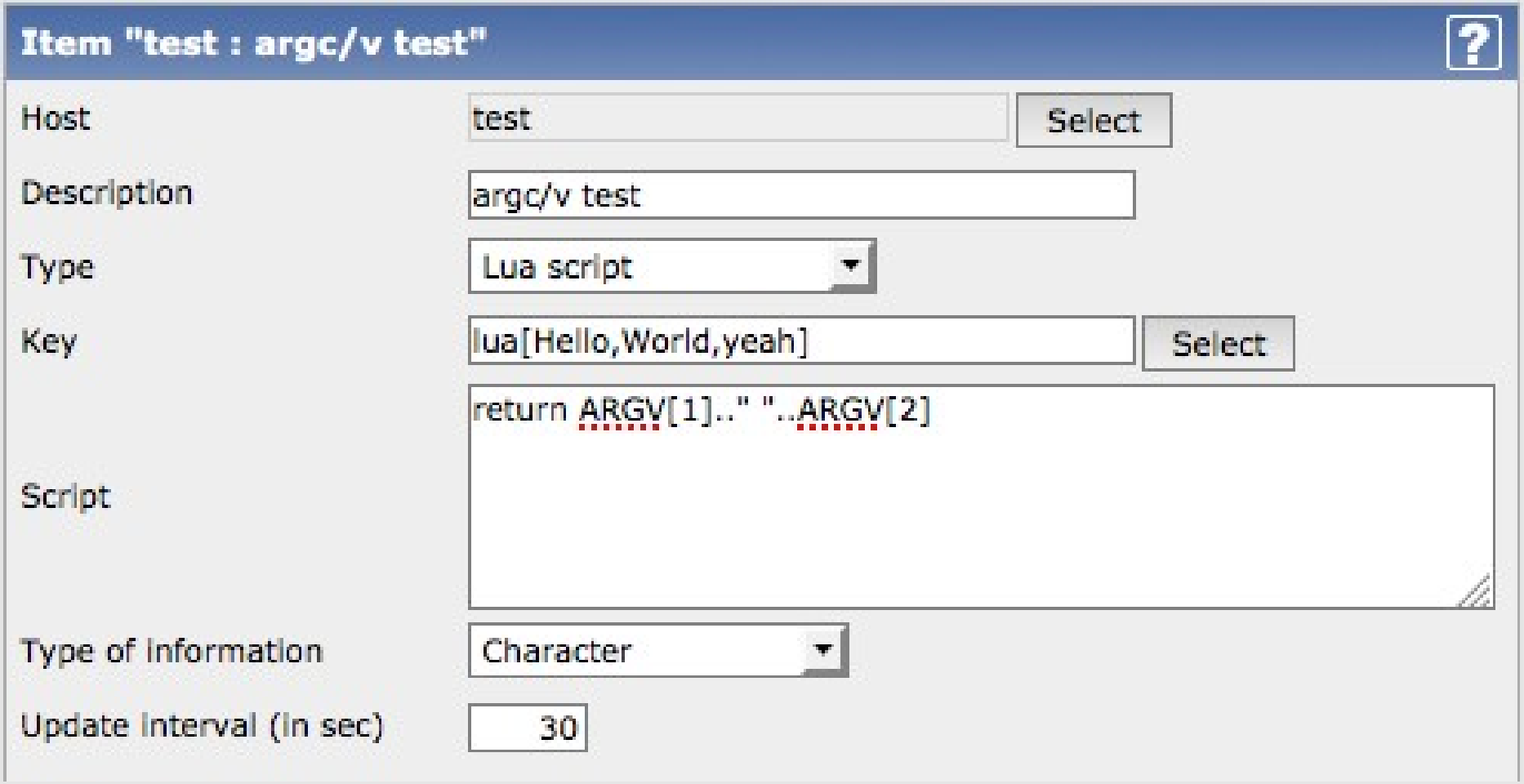
```
> sudo make install
```

Run

```
> sudo su -
# zabbix_server
```

Let's make our first Lua item

Our “Hello World”!



Let's make our first Lua item

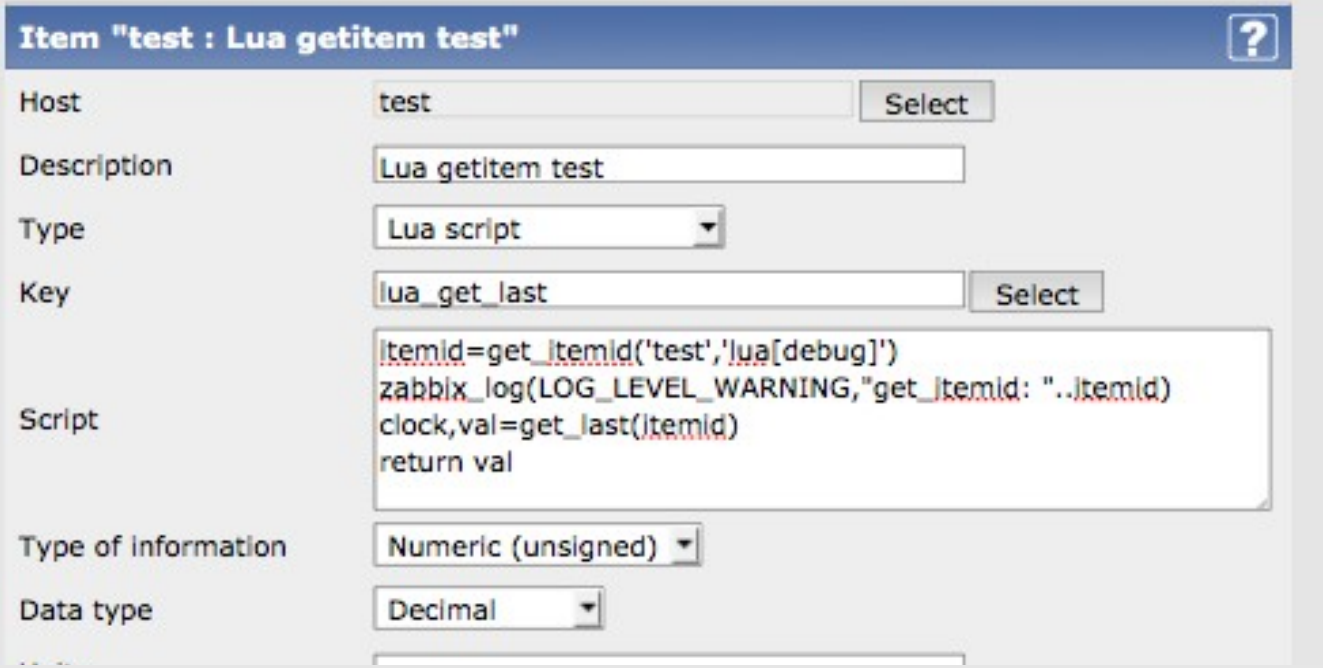
Our “Hello World”!

Timestamp	Value
2011.Sep.30 08:27:59	Hello World
2011.Sep.30 08:27:29	Hello World
2011.Sep.30 08:26:59	Hello World
2011.Sep.30 08:26:29	Hello World
2011.Sep.30 08:25:59	Hello World

That's a nice toy, but can it actually do something?

Let's retrieve the value of another item

```
itemid=get_itemid('test','lua[debug]')
zabbix_log(LOG_LEVEL_WARNING,"get_itemid: "..itemid)
clock,val=get_last(itemid)
return val
```



Timestamp	Value
2011.Sep.30 08:36:24	4
2011.Sep.30 08:35:54	4
2011.Sep.30 08:35:24	4
2011.Sep.30 08:34:54	4
2011.Sep.30 08:34:24	4

The current list of Zabbix functions

```
zabbix_log (level,text)
(time) now()
(clock, value) get_last(itemid, nodeid=0)
(itemid) get_itemid (host,key)
```

A note about error messages
All Lua errors from lua functions are logged in the Zabbix Server log with a logging level of Warning.

Small is powerful

- The current feature list may be small...
  - One person has already put the patch into production in their environment
    - It was being used to perform some linear algebra equations on monitored items.
  - Can be used as a seed for triggers
    - Triggers can't branch

Tomorrow it will be better...

- The next features are already in the works
  - Median value over a time span
  - Item values from previous time values
  - Creating a library of Lua functions using the Zabbix frontend
    - Lua functions are meant to eventually be used in various parts of Zabbix
      - Use as a function within Lua Items.
      - Trigger
      - Macros
  - Next version will likely be for 1.8.6
- The end goal is inclusion