Lua FreeSWITCH Dbh

About

The FreeSWITCH Database Handler (freeswitch.Dbh) allows you to connect to databases from your Lua script. The advantage of this method is that it makes use of connection pooling provided by FreeSWITCH which gives a nice increase in speed when compared to creating a new TCP connection for each LuaSQL env:connect().

Here are some examples for using freeswitch.Dbh in a mod_lua script.

Example Dialplan App

Here is a simple way to get a few variables from your db and set them as channel variables:

Assume you have a table did_users in your db with only 2 columns: did and user with a unique key over both.

XML Dialplan

```xml
dbh Dialplan Example

<extension name="map_did_to_user" continue="true">
  <condition field="destination_number" expression="^(\+|00)(\d+)$">
    <action inline="true" application="lua" data="map_did_to_user.lua $2"/>
  </condition>
</extension>

<extension name="if_user_then">
  <condition field="${user}" expression="...
```

Note that the lua script must be run inline, so that the retrieved channel variables are available immediately.

Lua Script

```plaintext
Map DID to user

-- map_did_to_user.lua
-- takes DID as first argument

local did = argv[1]

local dbh = freeswitch.Dbh("odbc://datasourcename:username:password")

local function set_session_variables(row)
  -- Sets session variables with the same names as the columns from the database
  for key, val in pairs(row) do
    if session then
      session:setVariable(key, val)
    end
    freeswitch.consoleLog("DEBUG", string.format("set(%s=%s)\n", key, val))
  end
end
end
assert(dbh:connected())

local sql_query = "SELECT user FROM did_users WHERE did = " .. did
assert(dbh:query(sql_query, set_session_variables))
```
The script checks if a session is available. If it is, the key/value will be set as a channel variable. The result will always be printed to your console in the debug level.

**Example User Directory XML**

The following script is a simple way to use an SQL query to generate User Directory XML on the fly inside FreeSWITCH.

It's assumed you have a table named `users` in your database containing the following columns: `domain`, `id`, `mailbox`, `number`, `alias`, `password`, `dial-string` and `user_context` (all `varchar`).

**Lua Configuration**

You can enable sending XML directory lookups through Lua by adding the following lines to your `lua.conf.xml`:

```xml
<param name="xml-handler-script" value="gen_dir_user_xml.lua"/>
<param name="xml-handler-bindings" value="directory"/>
```

**Lua Script**

Based on the mailing list: [http://lists.freeswitch.org/pipermail/freeswitch-users/2012-January/079296.html](http://lists.freeswitch.org/pipermail/freeswitch-users/2012-January/079296.html) there are problems with Voicemail Inject when using Lua to serve configs (as well as personal experience), I will elaborate on this more in depth - Destreyf
MySQL Example

```lua
-- gen_dir_user_xml.lua
-- example script for generating user directory XML
-- comment the following line for production:
freeswitch.consoleLog("notice", "Debug from gen_dir_user_xml.lua, provided params:
" .. params:serialize() .. "\n")
local req_domain = params:getHeader("domain")
local req_key    = params:getHeader("key")
local req_user   = params:getHeader("user")
assert (req_domain and req_key and req_user,
"This example script only supports generating directory xml for a single user !\n")
local dbh = freeswitch.Dbh("odbc://datasourcename:username:password")
if dbh:connected() == false then
    freeswitch.consoleLog("notice", "gen_dir_user_xml.lua cannot connect to database" .. dsn .. "\n")
    return
end
-- it's probably wise to sanitize input to avoid SQL injections !
local my_query = string.format("select * from users where domain = '%s' and %s='%s' limit 1",
    req_domain, req_key, req_user)
assert (dbh:query(my_query, function(u) -- there will be only 0 or 1 iteration (limit 1)
    XML_STRING = [[<?xml version="1.0" encoding="UTF-8" standalone="no"?>
    <document type="freeswitch/xml">
    <section name="directory">
        <domain name=""] .. u.domain .. "]
        <user id=""] .. u.id .. "]
            <mailbox=""] .. u.mailbox .. "]
                <cidr=""] .. u.cidr .. "]
                    <number-alias=""] .. u['number-alias'] .. "]
            </user>
        </domain>
    </section>
    </document>]]
-- comment the following line for production:
freeswitch.consoleLog("notice", "Debug from gen_dir_user_xml.lua, generated XML:
" .. XML_STRING .. "\n")
end)
```

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Note that the query in the example is formatted for MySQL; use double-quotes (") instead of backticks (`) for PostgreSQL.

**db_connect.lua rewrite**

Chapter 7 of the FreeSWITCH book explains a db_connect.lua script. This is a rewrite not using LuaSQL. I used a simple MS-Access database (freeswitch.accdb) to test the script.

```lua
-- db_connect.lua
-- Connects to a database using freeswitch.Dbh connection pooling, checks PIN, reads balance
-- A hangup function makes the code a bit cleaner
local dbh = freeswitch.Dbh("odbc://datasourcename:username:password")
local row = {}
function hangup_call ()
    session:streamFile("ivr/ivr-thank_you.wav")
    session:sleep(250)
    session:streamFile("voicemail/vm-goodbye.wav")
    session:hangup()
end

if dbh:connected() == false then
    freeswitch.consoleLog("notice", "gen_dir_user_xml.lua cannot connect to database" .. dsn .. "\n")
    hangup_call()
end

-- Set invalid entry file
invalid = "ivr/ivr-that_was_an_invalid_entry.wav"

-- Greet caller
session:answer()
session:streamFile("ivr/ivr-hello.wav")
tries = 0

while (tries < 3) do
    -- Collect account number
    acct = session:playAndGetDigits(3, 5, 3, 7000, "#", "phrase:enter_message_number", invalid, ".+"
    if (acct) then
        -- Pull account from database -> assumes that acct is unique
        my_query = "select * from users where acct = " .. acct
        assert(dbh:query(my_query, function(qrow)
            for key, val in pairs(qrow) do
                row[key] = val
            end
        end))
    end

    -- Confirm that we received the record
    if (row.pin == nil) then
        -- We have an account, now collect PIN and check
        tries = 0
        while (tries < 3) do
            pin = session:playAndGetDigits(3, 5, 3, 7000, "#", "ivr/ivr-please_enter_pin_followed_by_pound.wav", invalid, ".+"
            if (row.pin == pin) then
                user_repeat = true
                while(user_repeat == true) do
                    session:streamFile("voicemail/vm-you_have.wav")
                    session:sleep(200)
                    session:say(row.balance, "en", "currency", "pronounced")
                    session:sleep(200)
                    -- "to repeat these options, please press 1"
                    digits = session:playAndGetDigits(1,1,3,7000,"#",
                        "file_string://ivr/ivr-to_repeat_these_options.wav!ivr/ivr-please.wav!voicemail/vm-press.wav!digits/1.wav",
                        invalid,"\d+")
                    -- repeat y/n
                    freeswitch.consoleLog("INFO","User entered " .. digits .. "\n")
                    if (digits == "1") then
                        user_repeat = true
                    else
                        hangup_call()
                        break
                    end
                end
            else
                -- Caller entered wrong PIN
                session:streamFile("ivr/ivr-that_was_an_invalid_entry.wav")
                tries = tries + 1;
            end
        end
    end
    if (tries > 2) then
        -- Too many failed attempts to enter PIN
        session:streamFile("voicemail/vm-abort.wav")
        hangup_call()
        break
    end
end
else
    -- We did not find this account
    session:streamFile(invalid)
    tries = tries + 1;
end
end -- while (tries < 3)

if (tries > 2) then
    session:streamFile("voicemail/vm-abort.wav")
    hangup_call()
end

See Also

Lua Database