

VChannel

Library version: RENAT 0.1.14
Library scope: test suite
Named arguments: supported

Introduction

A basic library that provides Terminal connection to routers/hosts

VChannel is a core RENAT library that maintains input/output to nodes with an attached virtual terminal. It encapsulates the SSH/Telnet connections behind and provides common usage of access and execute commands to the nodes. Each channel instance has its own log file and a virtual terminal.

Table of Contents

- [Device, Node and Channel](#)
- [Connections](#)
- [Shortcuts](#)
- [Keywords](#)

Device, Node and Channel

RENAT has 3 types of connection target. Device, Node and Channel.

Device

Each device stands for a real physical box that has its own IP address and is defined in the master file `device.yaml`. Users do not directly use `device` in keywords.

Node

Node is a logical instance of a `device`. It could stand for a logical instance of a router or just a virtual terminal to the router. Nodes were defined in `local.yaml` of the test case. Several nodes could point to a same device.

Channel

Each channel holds a session to a node. Each channel has its own log file and a virtual terminal. Any command used by `Cmd`, `Write` or `Read` will be logged to the log file. Each channel is identified by a name when it is created with `Connect` keyword and is released with `Close` keyword.

Notes: multi sessions to a same device could be done with predefined multi nodes to same device in the `local.yaml` file or by using multi `Connect` with different `name`.

Connections

The library provides a channel to a target node. Each channel is attached with a virtual terminal. Input and output to the node are made through this virtual terminal. This will help to provide the output looks like the output when operator is using the real terminal.

When keywords `Read`, `Write`, `Cmd` are used, if the connection is not available anymore, the system will try to reconnect to the host with the information provided in the 1st connect. It will try `max_retry_for_connect` times and wait for `interval_between_retry` seconds between retries. The values of `max_retry_for_connect` and `interval_between_retry` are defined in `./config/config.yaml`

Usually when RENAT could not make the connections to the target, the system will raise an exception. But if the `ignore_dead_node` is defined as `yes` in the current active `local.yaml`, the system will ignore the dead node, remove it from the global variable `LOCAL[node]` and `NODE` and keep running the test.

Shortcuts

Broadcast Write With Tag · **C**hange Log · **C**hange Prompt · **C**lose · **C**lose All · **C**md · **C**md And Wait For · **C**md And Wait For Regex · **C**md More · **C**md Yesno · **C**onnect · **C**onnect All · **C**urrent Prompt · **E**xec File · **F**lush All · **G**et Channel · **G**et Channels · **G**et Current Channel · **G**et Current Name · **G**et Ip · **L**og · **R**ead · **R**econnect · **S**et Log Separator · **S**nap · **S**nap Diff · **S**tart Screen Mode · **S**top Screen Mode · **S**witch · **W**rite

Keywords

Keyword	Arguments	Documentation
Broadcast Write With Tag	<code>cmd</code> , <code>*tag_list</code>	Broadcasts <code>cmd</code> to all channels
Change Log	<code>log_file</code> , <code>mode=w</code>	Stops current log file and create a new log file. Default <code>mode</code> is <code>w</code> which overwrite the existed logs. Change to <code>a</code> or <code>a+</code> to append the current existed log files. Every log from that point will be saved to the new log file. Return old log filename
Change Prompt	<code>str_prompt</code>	Changes the current prompt of the channel Returns previous prompt. User should change the prompt <code>before</code> execute the new command that expects to see new prompt.

		<div>Example:</div> <table><tr><td>Router.Switch</td><td>vmx11</td><td></td></tr><tr><td>\${prompt}=</td><td>VChannel.Change Prompt</td><td>%</td></tr><tr><td>VChannel.Cmd</td><td>start shell</td><td></td></tr><tr><td>VChannel.Cmd</td><td>ls</td><td></td></tr><tr><td>VChannel.Change Prompt</td><td>\${prompt}</td><td></td></tr><tr><td>Vchannel.Cmd</td><td>exit</td><td></td></tr></table>	Router. Switch	vmx11		\${prompt}=	VChannel. Change Prompt	%	VChannel. Cmd	start shell		VChannel. Cmd	ls		VChannel. Change Prompt	\${prompt}		Vchannel. Cmd	exit	
Router. Switch	vmx11																			
\${prompt}=	VChannel. Change Prompt	%																		
VChannel. Cmd	start shell																			
VChannel. Cmd	ls																			
VChannel. Change Prompt	\${prompt}																			
Vchannel. Cmd	exit																			
Close	msg=, with_time=False, mark=***	<div>Closes current connection and returns the active channel name</div> <div>msg is the last message is written to each device's log</div>																		
Close All	msg=, with_time=False, mark=***	<div>Closes all current sessions and flush out all log files.</div> <div>msg is the last message the is written to each device's log.</div> <div>Current node name was reset to None</div>																		
Cmd	command=, prompt=None, timeout=None, error_on_timeout=True, remove_prompt=False, match_err= (unknown command./syntax error, expecting <command>.)	<div>Executes a command and wait until for the prompt.</div> <div>This is a blocking keyword. Execution of the test case will be postponed until the prompt appears.</div> <div>If prompt is a null string (default), its value is defined in the ./config/template.yaml. Otherwise, it is a regular expression for a temporarily prompt for this command only.</div> <div>timeout is the timeout for this Cmd. If timeout is not define, the local vchannel/cmd-timeout or global vchannel/cmd-timeout will be used.</div> <div>The keyword returns error when the output matches the match_err and the default config value cmd-auto-check is True</div> <div>When remove_prompt is \${TRUE}, the last line (usually the prompt line) will be remove from the return value. But still in this case, the log information is unchanged.</div> <div>Output will be automatically logged to the channel current log file.</div> <div>See Common for details about the config files.</div> <div>Sample:</div> <table><tr><td>Router.Cmd</td><td>version</td><td></td><td></td></tr><tr><td>Router.Cmd</td><td>reload</td><td>prompt=[yes/no];\${SPACE}</td><td># reload a Cisco router</td></tr><tr><td>Router.Cmd</td><td>no</td><td>prompt=[confirm]</td><td>[is escaped twice</td></tr><tr><td>Router.Write</td><td></td><td></td><td></td></tr></table>	Router.Cmd	version			Router.Cmd	reload	prompt=[yes/no];\${SPACE}	# reload a Cisco router	Router.Cmd	no	prompt=[confirm]	[is escaped twice	Router.Write					
Router.Cmd	version																			
Router.Cmd	reload	prompt=[yes/no];\${SPACE}	# reload a Cisco router																	
Router.Cmd	no	prompt=[confirm]	[is escaped twice																	
Router.Write																				
Cmd And Wait For	command, keyword, interval=30s, max_num=10, error_with_max_num=True	<div>Execute a command and expect keyword occurs in the output. If not wait for interval and repeat the process again</div> <div>After max_num, if error_with_max_num is True then the keyword will fail. Otherwise the test continues.</div>																		
Cmd And Wait For Regex	command, pattern, interval=30s, max_num=10, error_with_max_num=True	<div>Execute a command and expect pattern occurs in the output. If not wait for interval and repeat the process again</div> <div>When the keyword contains not: at the beginning, the matching logic is reversed.</div> <div>After max_num, if error_with_max_num is True then the keyword will fail. Otherwise the test continues.</div>																		
Cmd More	cmd=, wait_prompt=.*---(more.*)---, press_key=, prompt=None	<div>Execute a command and press press_key when wait_prompt is displayed until the prompt</div>																		
Cmd Yesno	cmd, ans=yes, question=? [yes,no], timeout=5s	<div>Executes a cmd, waits for question and answers that by ans</div>																		
Connect	node, name, log_file, timeout=20m, w=80, h=32, mode=w	<div>Connects to the node and create a VChannel instance</div> <div>Login information is automatically extracted from yaml configuration. By defaultt a virtual terminal (vty100) with size 80x64 is attached to this channel.</div> <div>If a login was successful, VChannel will create a log file name log_file for the connection in the current result folder of the test case. This log file will contain any command input/output executed on this channel.</div> <div>Multi sessions to the same node could be open with different names. Use Switch to change the current active session by its name</div> <div>Examples:</div> <table><tr><td>Connect</td><td>vmx11</td><td>vmx11</td><td>vmx11.log</td><td></td><td></td></tr><tr><td>Connect</td><td>vmx11</td><td>vmx11</td><td>vmx11.log</td><td>80</td><td>64</td></tr></table> <div>See Common for more detail about the yaml config files.</div>	Connect	vmx11	vmx11	vmx11.log			Connect	vmx11	vmx11	vmx11.log	80	64						
Connect	vmx11	vmx11	vmx11.log																	
Connect	vmx11	vmx11	vmx11.log	80	64															
Connect All	prefix=	<div>Connects to all nodes that are defined in active local.yaml.</div>																		

		<p>A prefix <code>prefix</code> was appended to the alias name of the connection. A new log file by <code><alias>.log</code> was automatically created.</p> <p>See <i>Common</i> for more detail about active <code>local.yaml</code></p>						
Current Prompt		Return current prompt						
Exec File	<code>file_name</code> , <code>vars=</code> , <code>comment=#</code> , <code>step=False</code> , <code>mode=cmd</code> , <code>str_error=syntax,error</code>	<p>Executes commands listed in <code>file_name</code> Lines started with <code>comment</code> character is considered as comments</p> <p>Parameters:</p> <ul style="list-style-type: none"> ▪ <code>file_name</code> is a file located inside the <code>config</code> folder of the test case ▪ <code>mode</code>: could be <code>cmd</code> or <code>write</code> which define that if the cmd is executed by <code>VChannel.Cmd</code> or <code>VChannel.Write</code> ▪ if <code>step</code> is <code>True</code> , after every command the output is checked against an error list. And if a match is found, execution will be stopped. Error list is defined by <code>str_err</code> , that contains multiple regular expressions separated by a comma. Default value of <code>str_err</code> is <code>error</code> ▪ <code>vars</code> are additional variables in format <code>var1=value1,var2=value2</code> <p>The command file could be written in Jinja2 format. Default usable variables are <code>LOCAL</code> and <code>GLOBAL</code> which are identical to <code>Common.LOCAL</code> and <code>Common.GLOBAL</code> . More variables could be supplied to the template by <code>vars</code> .</p> <p>A sample for command list with Jinja2 template:</p> <pre>show interface {{ LOCAL['extra']['line1'] }} show interface {{ LOCAL['extra']['line2'] }} {% for i in range(2) %} show interface et-0/0/{{ i }} {% endfor %}</pre> <p>Examples:</p> <table border="1"> <tr> <td>Router.<i>Exec File</i></td><td><code>cmd.lst</code></td><td></td></tr> <tr> <td>Router.<i>Exec File</i></td><td><code>step=\${TRUE}</code></td><td><code>str_error=syntax,error</code></td></tr> </table> <p>Note: Comment in the middle of the line is not supported For example if comment is <code>"# "</code></p> <pre># this is comment line <-- this line will be ignored ## this is not an comment line, and will be entered to the router cli,</pre> <p>but the router might ignore this</p> <p><code>step</code> is ignored in <i>write</i> mode</p>	Router. <i>Exec File</i>	<code>cmd.lst</code>		Router. <i>Exec File</i>	<code>step=\${TRUE}</code>	<code>str_error=syntax,error</code>
Router. <i>Exec File</i>	<code>cmd.lst</code>							
Router. <i>Exec File</i>	<code>step=\${TRUE}</code>	<code>str_error=syntax,error</code>						
Flush All		Flushes all remain data into the logger						
Get Channel	<code>name</code>	Returns a channel by its <code>name</code>						
Get Channels		Returns all current vchannel instances						
Get Current Channel		Returns the current active channel						
Get Current Name		Returns the current active channel's name						
Get Ip		<p>Returns the IP address of current node Examples:</p> <pre>\$(router_ip)= Router.<i>Get IP</i></pre>						
Log	<code>msg</code>	Writes the log message <code>msg</code> to current log file of the channel						
Read	<code>silence=False</code>	<p>Returns the current output of the virtual terminal and automatically logs to file.</p> <p>In <code>normal mode</code> this will return the unread output only, not all the content of the screen.</p>						
Reconnect	<code>name</code>	<p>Reconnects to the <code>name</code> node using existed information</p> <p>The only difference is that the mode of the log file is set to <code>`a+`</code> by default</p>						
Set Log Separator	<code>sep=</code>	Set a separator between the log of <code>read</code> , <code>write</code> or <code>cmd</code> keywords						
Snap	<code>name</code> , <code>*cmd_list</code>	<p>Remembers the result of a list of command defined by <code>cmd_list</code></p> <p>Use this keyword with <i>Snap.Diff</i> to get the difference between the command's result. The a new snapshot will override the previous result.</p> <p>Each snap is identified by its <code>name</code></p>						
Snap Diff	<code>name</code>	Executes the command that have been executed before by <code>name</code> snapshot and return the difference.						

		Difference is in <code>context diff</code> format
Start Screen Mode		<p>Starts the <code>screen mode</code>.</p> <p>In the <code>screen mode</code>, the output is just the same with the real terminal. It means that any real-time application likes <code>top</code> will be captured as-is. Consecutive <code>read</code> from this VChannel instance may produce redundancy output.</p>
Stop Screen Mode		<p>Stops the <code>screen mode</code> and returns to normal mode</p> <p>In <code>screen mode</code>, <code>Write</code> does not return any thing and no output is logged. In <code>normal mode</code>, escape sequences are not processed by the virtual terminal.</p>
Switch	<code>name</code>	<p>Switches the current active channel to <code>name</code>. There only one active channel at any time</p> <p>Returns the current <code>channel_id</code>, <code>local_channel_id</code> and the output of current terminal.</p> <p>Notes: There is no assurance that the output of previous <code>Write</code> command will be in the retur output because keywords like <code>Logger.Log All</code> will update every channels.</p> <p>Examples:</p> <pre>VChannel.Switch vmx12</pre>
Write	<code>str_cmd=</code> , <code>str_wait=0s</code> , <code>start_screen_mode=False</code>	<p>Sends <code>str_cmd</code> to the target node and return after <code>str_wait</code> time.</p> <p>If <code>start_screen_mode</code> is <code>True</code>, the channel will be shifted to <code>Screen Mode</code>. Default value of <code>screen_mode</code> is <code>False</code>.</p> <p>In <code>normal mode</code>, a <code>new line</code> char will be added automatically to the <code>str_cmd</code> and the command return the output it could get at that time from the terminal and also logs that to the log file.</p> <p>In <code>screen Mode</code>, if it is necessary you need to add the <code>new line</code> char by your own and the ouput is not be logged or returned from the keyword.</p> <p>Parameters:</p> <ul style="list-style-type: none"> ■ <code>str_cmd</code>: the command ■ <code>str_wait</code>: time to wait after apply the command ■ <code>start_screen_mode</code>: whether start the <code>screen mode</code> right after writes the command <p>Special input likes <code>Ctrl-C</code> etc. could be used with global variable <code>\$(CTRL-<char>)</code></p> <p>Returns the output after writing the command the the channel.</p> <p>When <code>str_wait</code> is not <code>0s</code>, the keyword <code>read</code> and <code>return</code> the output after waiting <code>str_wait</code>. Otherwise, the keyword return without any output.</p> <p>Notes: This is a non-blocking command.</p> <p>Examples:</p> <pre>VChannel.Write monitor interface traffic start_screen_mode=\${TRUE} VChannel.Write \${CTRL_C} # simulates Ctrl-C</pre>

Altogether 30 keywords.

Generated by [Libdoc](#) on 2019-03-31 15:26:34.

