

ARI



Automated Network Validation

Agenda

- Meaning of automated network validation
- Why automated network validation
- How to do automated network validation
- Use cases
- Demo screenshots

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Meaning of automated network validation



Meaning of automated network validation

Make sure that:

- Network is connected as intended
- Network design behaves as expected
- Deployed services behave as intended
- Automated SLA reporting

A = ?





Why automated network validation



Why automated network validation

Automated provisioning should make no errors, right? In a perfect world, yes, but consider:

- Quality of automation
- Bad input to automation
- Workflow may be divided with unresolved dependencies
- The unpredictable local loop





Quality of automation

- What automation framework is used
- All or parts of workflow automated
- Different organisations have different automation maturity





Bad input to automation

- Automation never is better than the source of truth
- Manual input of data from source of truth
- With automated input of data from source of truth, the data in source of truth could have been manually inserted





Workflow may be divided with unresolved dependencies

Workflow steps may all be automated or some are manual. The workflow design decides whether a workflow can continue with or without all steps being resolved.





The unpredictable local loop

- Messy cable arrangements
- Bad patching
- Bad documentation
- 3rd party delivery
- Misunderstandings
- etc etc etc









Why is Ansible not enough?

- No state between playbook runs
- Not reacting to state or events on a device
- Not for parsing unstructured data
- Correlation of data between devices to create an action





Why is scripting to much?

- Is flexible but cumbersome for easy tasks
- Time and amount of code
- Who will maintain?





So why invent, reuse!

Several frameworks exist, but for this preso and demo screenshots, Robot framework is used.



Robot is

- Open source and maintained as such
- Written in python, want to contribute? -

Robot

- Can access devices with different protocols Can do interaction with device
- Can parse data from devices to pass on to reporting Can correlate data for conditional actions
- And more









Use cases



- Ping full mesh between all PEs
- Ping full mesh inside all VRFs between all PEs
- Ping FW from all clients/CE in all VRFs
- All clients/CE ping all client/CE in all VRFs

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Demo screenshots



Demo screenshots

Many modules are available on howto connect to the device. In this case SSH.

Since SSH was used to connect to the device, any command available on the device can be used.

Result can be screen scraped which makes it very easy to customize what is a good result of the test

Good ways to add documentation both in the code aswell as in the result output and result putput HTML files



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Demo Screenshots

Ping full mesh inside all VRFs between all Result of documentation in the output makes it easy to read whats being done

Easy to follow what is a good or bad result

L	J-S	
_	witch	
	witch.Test Sw0420A-Switch	
-	ing Test 1 - sw0420a to sw0420b VRF GREEN :: Test ping - sw0420a	PASS
	ing Test 2 - sw0420a to sw0422a VRF GREEN :: Test ping - sw0420a	PASS
	ing Test 3 - sw0420a to sw0422b VRF GREEN :: Test ping - sw0420a	PASS
	ing Test 4 <u>- sw04202 to sw0520a</u> VRF GREEN :: Test ping - sw0420a	PASS
	ing Test 5 - sw0420a to sw0520b VRF GREEN :: Test ping - sw0420a	PASS
	ing Test 6 - sw0420a to sw0522a VRF GREEN :: Test ping - sw0420a	PASS
	ing Test 7 - sw0420a to sw0522b VRF GREEN :: Test ping - sw0420a	PASS
	ing Test 8 — sw0420a to sw0420b VRF RED :: Test ping — sw0420a to	PASS
	ing Test 9 — sw0420a to sw0422a VRF RED :: Test ping — sw0420a to	PASS
	ing Test 10 - sw0420a to sw0422b VRF RED :: Test ping - sw0420a t	PASS
	ing Test 11 - sw0420a to sw0520a VRF RED :: Test ping - sw0420a t	PASS
	ing Test 12 - sw0420a to sw0520b VRF RED :: Test ping - sw0420a t	PASS
	ing Test 13 - sw0420a to sw0522a VRF RED :: Test ping - sw0420a t	PASS
	ing Test 14 - sw0420a to sw0522b VRF RED :: Test ping - sw0420a t	PASS
	witch.Test Sw0420A-Switch 4 tests, 14 passed, 0 failed	PASS



Demo screenshots

Nice HTML output with clickable links to drill down

Easy to export as hardcopy or PDF reports

Searchable

Test	Sw0522B-Switch Report						202302	Generated 09 12:38:56 UTC+01:00 22 days 2 hours ago
Summ	ary Information							
Status: Start Tim End Tim Elapsed Log File:	All tests passed 20230209 12:38:42.443 e: 20230209 12:38:56.963 Time: 00:00:14.520 log.html							
Test S	tatistics							
All Tests	Total Statistics \$	Total	Pass	Fa	il ÷	Skip ≑ 0	Elapsed \$ 00:00:10	Pass / Fail / Skip
No Tags	Statistics by Tag \$	Total	Pass	≑ Fa	il ¢	Skip \$	Elapsed \$	Pass / Fail / Skip
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Test D	etails							
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Test:				j 🔪				
Include: Exclude:								
	Search Clear Help							



Demo screenshots

Log in HTML format with info about test steps, failures etc

Tests clickable to drill down

Easy to see pass/fail result

Direct links to code for tests to followup more in detail what was tested'

Tests can expanded to get more detail in what was done and why test was failed or passed

Test Statistics						202303	03 15:30:41 UTC+01:00 2 minutes 2 seconds ago
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How test DC4-WEB3-host		12	10	2	0	00:00:19	
Host test DC5-WEB11-host		12	6	6	0	00:00:19	
Host.test DC5-WEB12-host		12	10	2	0	00:00:19	-
Host.test DC5-WEB13-host		12	10	2	0	00:00:19	-
Status. 72	tests total, 56 passed, 16 faile	d, 0 skippe	đ				
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Thank you!

