



AchaA NetAuto

Network Automation Solutions Volume-1

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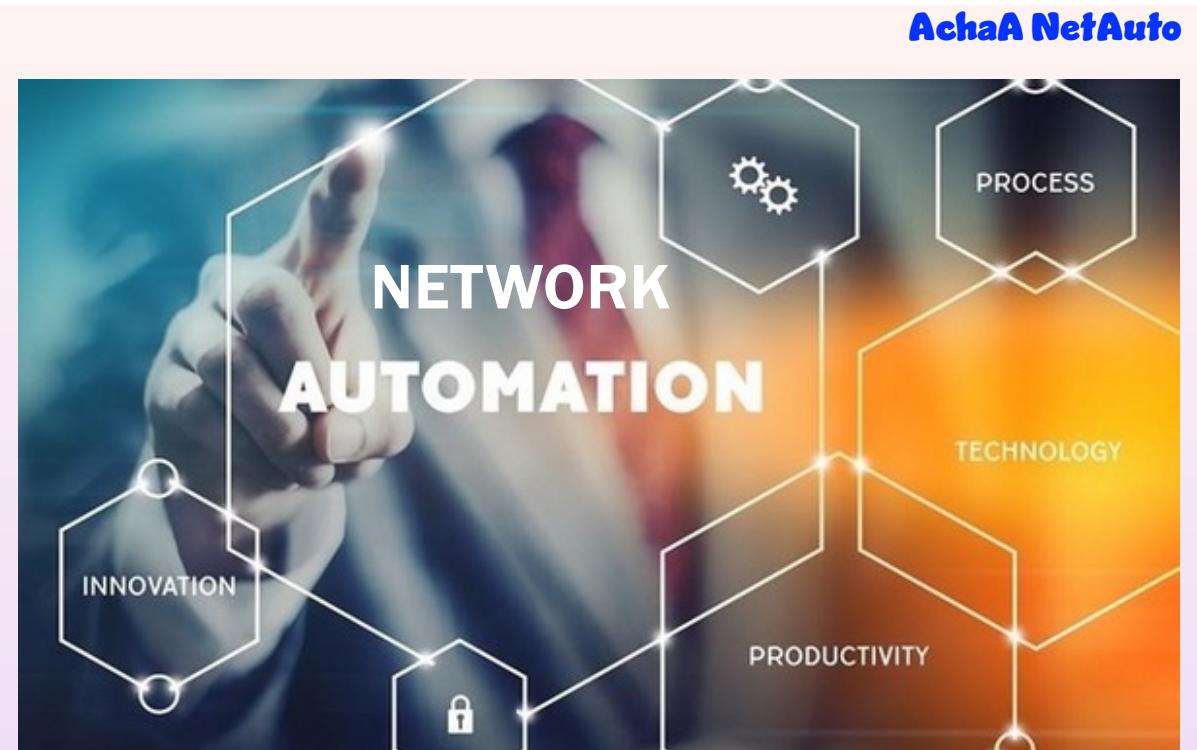
AchaA NetAuto

Cisco pyATS
Network Test & Automation Solution

Author :

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What is pyATS?

pyATS - Python Automated Test Systems is a Python3 based test automation infrastructure. It is developed as the next-generation Cisco mainstream automation infrastructure, is compatible to existing tooling & infrastructure, and is officially endorsed by Cisco executive team.

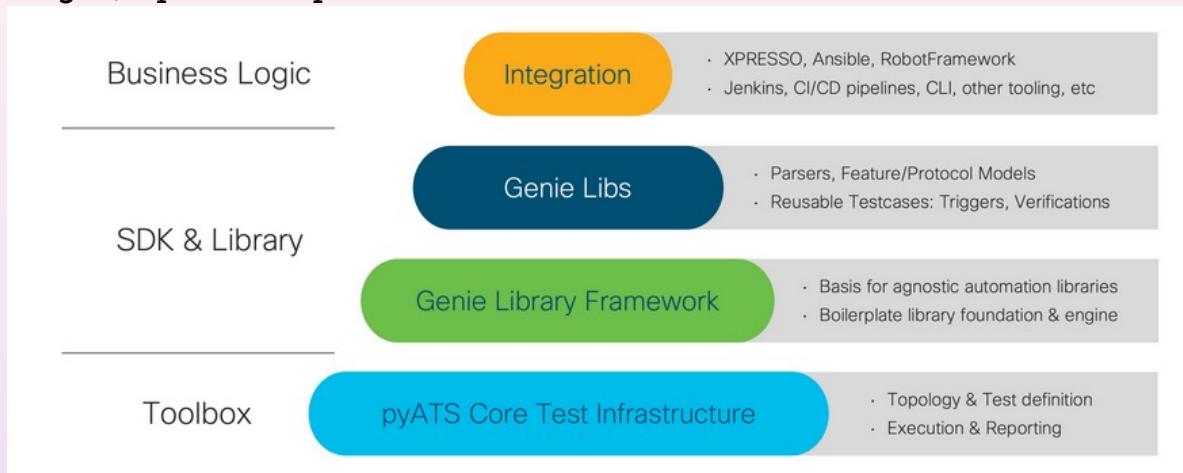
pyATS is 100% fully developed and implemented using Python and is designed to be usable *independent* of any other existing infrastructures. It is engineered to be suitable for Agile, rapid development iterations, with the ability to handle a wide variety of testing scenarios and requirements, from white-box unit-testing, to black-box, feature, performance/scale testing & beyond.

Reference : <https://developer.cisco.com/docs/pyats>



pyATS

pyATS is the core test framework foundation for this ecosystem. It specializes in data-driven and reusable testing, and is engineered for Agile, rapid development iterations.



Genie

Genie and its components how network engineers perform testing and scripting. It comes out of the box with all the bits needed for Network Test Automation, meaning that network engineers and NetDevOps can be productive day one with Genie's readily available and model-driven libraries. Genie has components such as parsers and other methods which allow us to work with networking devices and build our tests around it.

Genie builds on pyATS to provide:

- a simple command line interface (no Python knowledge needed)
- a pool of reusable test cases
- a Pythonic library for more complex scripting



pyATS Hands-on

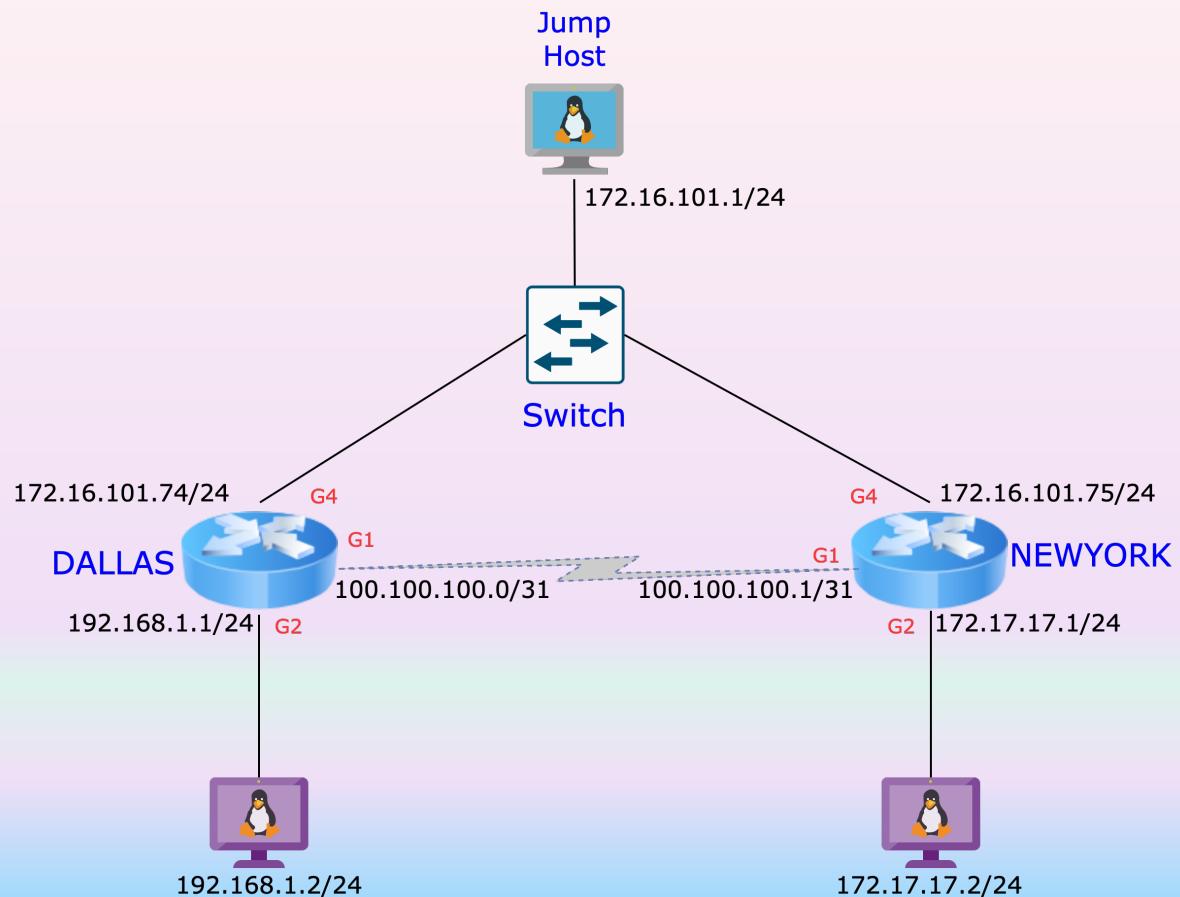
- ✓ **pyATS Installation**
- ✓ **Creating Testbed file**
- ✓ **Running pyATS CLI Commands**

**Latest copy of presentations, configurations, outputs and reports are maintained in github repository.
<https://github.com/achaanetatuo/pyats>



Lab Network Diagram

AchaA NetAuto



pyATS Installation

pyATS currently supports Python v3.7.x, v3.8.x, v3.9.x and v3.10.x, and is tested to work on the following platforms:

- Linux (tested with CentOS, RHEL, Ubuntu, Alpine)
- Mac OSX (10.13+)

Step 1: Install pyATS (Mac OS)

```
% pip install --upgrade 'pyats[full]'
```

Step 3: Update pyATS version

```
% pyats version update
Checking your current environment... (...) Uninstalling
existing packages... Installing new packages... Done!
Enjoy!
```

Step 2: Verify pyATS version

```
% pyats version check
```

```
You are currently running pyATS version: 22.10
Python: 3.10.5 [64bit]
```

Package	Version
genie	22.10
genie.libs.clean	22.10
genie.libs.conf	22.10
genie.libs.filetransferutils	22.10
genie.libs.health	22.10
genie.libs.ops	22.10
genie.libs.parser	22.10
genie.libs.robot	22.10
genie.libs.sdk	22.10.1
genie.telemetry	22.10
genie.trafficgen	22.10
pyats	22.10
pyats.aerreport	22.10
pyats.aetest	22.10
pyats.async	22.10
pyats.connections	22.10
pyats.contrib	22.10
pyats.datastructures	22.10
pyats.easypy	22.10
pyats.kleenex	22.10
pyats.log	22.10
pyats.reporter	22.10
pyats.results	22.10
pyats.robot	22.10
pyats.tcl	22.10
pyats.topology	22.10
pyats.utils	22.10
unicon	22.10
unicon.plugins	22.10
yang.connector	22.10

Reference : <https://developer.cisco.com/docs/pyats/api/>



Creating Pyats Testbed File

```
pyats create testbed interactive --out tb_chan.yaml
```

```
% pyats create testbed interactive --out tb_chan.yaml
Start creating Testbed yaml file ...
Do all of the devices have the same username? [y/n] y
Common Username: achaaa
```

```
Do all of the devices have the same default password? [y/n] y
Common Default Password (leave blank if you want to enter on demand):
```

```
Do all of the devices have the same enable password? [y/n] y
Common Enable Password (leave blank if you want to enter on demand):
```

```
Device hostname: DALLAS
  IP (ip, or ip:port): 172.16.101.62
  Protocol (ssh, telnet, ...): ssh
  OS (iosxr, iosxe, ios, nxos, linux, ...): iosxe
More devices to add ? [y/n] n
Testbed file generated:
tb_chan.yaml
```

```
% cat tb_chan.yaml
devices:
  DALLAS :
    connections:
      cli:
        ip: 172.16.101.62
        protocol: ssh
    credentials:
      default:
        password: '%ASK{}'
        username: achaaa
      enable:
        password: '%ASK{}'
  os: iosxe
  type: iosxe
```

Reference: https://pubhub.devnetcloud.com/media/genie-docs/docs/clean/user_guide/writing_a_clean/index.html



Example Yaml Files

AchaA NetAuto

Directly connected devices ask password

```
% cat tb_chan.yaml
devices:
  DALLAS:
    connections:
      cli:
        ip: 172.16.101.62
        protocol: ssh
    credentials:
      default:
        password: '%ASK{}'
        username: achaan
      enable:
        password: '%ASK{}'
    os: iosxe
    type: iosxe

  NEWYORK:
    connections:
      cli:
        ip: 172.16.101.63
        protocol: ssh
    credentials:
      default:
        password: '%ASK{}'
        username: achaan
      enable:
        password: '%ASK{}'
    os: iosxe
    type: iosxe
```

Store userid and password in environment file

```
% cat pyats.env
export PYATS_DEVICE_USERNAME=achaa
export PYATS_DEVICE_PASSWORD= achaan12345
export PYATS_DEVICE_ENABLE= achaan12345
```

Directly connected Devices using environment file

```
% cat tb_chan_env.yaml
testbed:
  name: AchaA Robot
  credentials:
    default:
      username: '%ENV{PYATS_DEVICE_USERNAME}'
      password: '%ENV{PYATS_DEVICE_PASSWORD}'
    enable:
      password: '%ENV{PYATS_DEVICE_PASSWORD}'
    line:
      password: '%ENV{PYATS_DEVICE_PASSWORD}'

devices:
  DALLAS:
    alias: DAL
    connections:
      ssh:
        ip: 172.16.101.62
        protocol: ssh
    custom:
      abstraction:
        order:
          - os
          - platform
    os: iosxe
    platform: iosxe
    type: CSR1000V

  NEWYORK:
    alias: NY
    connections:
      ssh:
        ip: 172.16.101.63
        protocol: ssh
    custom:
      abstraction:
        order:
          - os
          - platform
    os: iosxe
    platform: iosxe
    type: CSR1000V
```



Example Yaml Files

Store userid and password
in environment file

```
% cat pyats.env
export PYATS_DEVICE_USERNAME=achaa
export PYATS_DEVICE_PASSWORD=achaa12345
export PYATS_DEVICE_ENABLE=achaa12345
export PYATS_LINUX_USERNAME=achaa
export PYATS_LINUX_PASSWORD=achaa12345
```

Devices connected via Jump host uses environment file

AchaA NetAuto

```
testbed:
  name: AchaA Robot
  credentials:
    default:
      username: '%ENV{PYATS_DEVICE_USERNAME}'
      password: '%ENV{PYATS_DEVICE_PASSWORD}'
    enable:
      password: '%ENV{PYATS_DEVICE_PASSWORD}'
    line:
      password: '%ENV{PYATS_DEVICE_PASSWORD}'
    servers:
      username: '%ENV{PYATS_LINUX_USERNAME}'
      password: '%ENV{PYATS_LINUX_PASSWORD}'
    devices:
      DALLAS:
        alias: DAL
        connections:
          ssh:
            ip: 172.16.101.74
            protocol: ssh
            proxy: jump_host
            custom:
            abstraction:
            order:
              - os
              - platform
            os: iosxe
            platform: iosxe
            type: CSR1000V
      NEWYORK:
        alias: NY
        connections:
          ssh:
            ip: 172.16.101.75
            protocol: ssh
            proxy: jump_host
            custom:
            abstraction:
            order:
              - os
              - platform
            os: iosxe
            platform: iosxe
            type: CSR1000V
```

Cont....

```
jump_host:
  connections:
    cli:
      ip: 172.16.101.1
      port: 22
      protocol: ssh
      credentials:
        default:
          username: achaa
          os: linux
          type: linux
```



Pyats Genie Command Line

Genie CLI is the easiest way to start with Genie. No need any automation or Python knowledge. As long as Genie is installed, you can interact with the Genie libraries with a Linux command.

Here's what you can do:

- 1.Parse show command into structured output
- 2.Learn whole device feature into structured output
- 3.Compare structured output taken at different time
- 4.Genie shell to load the testbed file and/or pickle file.
- 5.Run Genie Harness without any jobfile

Refernce: <https://developer.cisco.com/docs/genie-docs/>



Pyats Genie Command Line

Modules

```
pyats learn config --testbed-file tb-jump.yaml --output today  
pyats learn interface --testbed-file tb-jump.yaml --output today  
pyats learn interface --testbed-file tb-jump.yaml --output today --device DAL  
pyats learn interface bgp ospf --testbed-file tb-jump.yaml --output int_bgp_ospf --device DAL
```

Parse

```
pyats parse "show version" --testbed-file tb-jump.yaml --output version  
pyats parse "show version" --testbed-file tb-jump.yaml --output version_noparse --raw
```

Compare

```
pyats diff data_10_21_2022_NY_int date_10_22_2022_NY_int --output diff_NY_int
```

More Genie functions or commands

```
'clean', 'create', 'develop', 'diff', 'dnac', 'learn', 'logs', 'parse', 'run', 'secret', 'shell',  
'undevelop', 'validate', 'version'
```

Refernce: <https://pubhub.devnetcloud.com/media/genie-docs/docs/solutions/index.html>



Pyats Robot Framework

- Overview
- Installation
- Keyword vs. Library architecture
- Basic Syntax, Command-line usage, I/O

Network Automation with ROBOT Framework

Device connectivity

Invoking parsers and profiling feature operational status

Output/state comparisons Integration with Traffic Generators

Recommended tool for code editing : Microsoft Virtual Studio

Download link: <https://visualstudio.microsoft.com/downloads/>



Pyats Robot Framework

Overview

Robot Framework is generic Python/Java test automation framework that focuses on acceptance test automation by through English-like keyword-driven test approach.

Robot Framework support has been added through the optional robot sub-package under Genie.libs namespace. This enables RobotFramework users to leverage key aspects of Genie without having to reinvent the wheel. Robot Framework libraries have also been added for [pyATS](#) and [Unicon](#).

- ✓ Open-Source
- ✓ Generic Test Automation Infrastructure, for TDD/A-TDD
- ✓ Uses keyword-driven approach to define test actions & testcases
- ✓ Test capabilities are extended by test libraries
- ✓ Anyone can create new higher-level keywords from existing ones
- ✓ OS/Application independent, based on Python
- ✓ Generates XML and HTML report

Installation

Robot Framework support is an optional component under Genie. To use it, you must install this package explicitly:

```
pip install --upgrade genie.libs.robot
```



Pyats Robot Framework

Features

- Genie Triggers and converting results to Robot
- Genie Verifications and converting results to Robot
- Execute Genie Ops object to learn about a feature
- Metaparser support (Can re-use any existing parser)
- Custom verify functions, such as:
 - ❖ Verify x amount of bgp routes on a device
 - ❖ Verify x amount of up interfaces on a device
- Genie configure to configure interfaces.
- Genie Profile to capture the snapshots using Genie models
- Genie Compare snapshots to get a results.
- Genie Device API support, all API functions can be used as a keyword, simply replace the '_' to a space and put it in your .robot file with the arguments. Make sure to
`import genie.libs.robot.GenieRobotApis` as a library.

Reference : <https://pubhub.devnetcloud.com/media/genie-docs/docs/userguide/robot/index.html>



Pyats Robot Framework Section

```
*** Settings ***
Library String ] → Importing test libraries, resource
and variable files

*** Variables ***
${MESSAGE}= "Hello World" ] → Define local script variables

*** Test Cases ***
Hello World Testcase
  Log To Console ${MESSAGE}
  LogUpper ${MESSAGE} ] → Defines testcases from keywords

*** Keywords ***
LogUpper
  [Arguments] ${TEXT}
  ${lowercase}= Convert To Uppercase ${TEXT}
  Log To Console ${lowercase} ] → Creating local high-level keywords

*** Comments ***
Everything here is for your eyes only ] → Text-comments, ignored by framework
```



Pyats Robot Framework Section

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```
# example
** Settings ***
Library      OperatingSystem
Library      ats.robot.pyATSRobot
Library      genie.libs.robot.GenieRobot
Library      genie.libs.robot.GenieRobotApis
Library      unicon.robot.UniconRobot
```

Example

```
*** Variables ***
# Defining variables that can be used elsewhere in the test data.
# Can also be driven as dash argument at runtime
```

```
 ${testbed}    tb-jump.yaml
 ${ip_address} 169.61.54.100
 ${PTS}        /Users/xyz
```

```
*** Test Cases ***
# Creating test cases from available keywords.
```

```
Connect
  use testbed "${testbed}"
  connect to devices "AccessRouter01"
```

```
Configure and Collect interface information
  configure "interface lo9999\r shut\r" on device "AccessRouter01"
  ${output}=  execute "show ip interface brief" on device "AccessRouter01"
  #configure "no interface lo9999" on device "AccessRouter01"
```

```
Disconnect
  disconnect from all devices
```

Importing Libraries

Calling Variables

Connecting devices

Using features to configure and gathering output from devices

Disconnecting devices



Pyats Robot Framework – Execute Running Configuration

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Robot config file (show_run.robot)

```
# Show Running Configuration
** Settings ***
Library      OperatingSystem
Library      ats.robot.pyATSRobot
Library      genie.libs.robot.GenieRobot
Library      genie.libs.robot.GenieRobotApis
Library      unicon.robot.UniconRobot

*** Variables ***
# Defining variables that can be used elsewhere in the test data.
# Can also be driven as dash argument at runtime

${testbed}    tb-jump.yaml

*** Test Cases ***
# Creating test cases from available keywords.

Connect
    use testbed "${testbed}"
    connect to devices "DAL"
    connect to devices "NY"

# Dallas Running Configuration
DAL Running Configuration
    execute "show running-config" on device "DAL"

# Newyork Running Configuration
NY Running Configuration
    execute "show running-config" on device "NY"

# Disconnect from all the devices
Disconnect
    disconnect from all devices
```

Robot config file execution and output

```
Mac-Pro-641 robot % robot show_run.robot
=====
Show Run
=====
Connect | PASS |
DAL Running Configuration | PASS |
NY Running Configuration | PASS |
Disconnect | PASS |
Show Run
4 tests, 4 passed, 0 failed
=====
Output: /Users/Mac-Pro-641/myfolder/autolearn/robot/output.xml
Log:   /Users/Mac-Pro-641/myfolder/autolearn/robot/log.html
Report: /Users/Mac-Pro-641/myfolder/autolearn/robot/report.html
```

Consolidated Ouput log file log.html

Log: /Users/Mac-Pro-641/myfolder/autolearn/robot/log.html

Opening log.html

Mac-Pro-641 robot % open log.html

<https://github.com/achaanetatuo/pyats/tree/main/robot-config>



Report - Execute Running Configuration (Report Log)

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Consolidated Report file “log.html”

/Users/Mac-Pro-641/myfolder/autolearn/robot/log.html

Opening “log.html”

Mac-Pro-641 robot % open log.html

Show Run Log

Generated
2021/23 11:45:40 UTC-05:00
3 days 0 hours ago

Test Statistics

	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip
All Tests	4	4	0	0	00:00:37	<div style="width: 100%; background-color: #2e6b2e;"></div>
Statistics by Tag	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip
No Tags						
Statistics by Suite	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip
Show Run	4	4	0	0	00:00:40	<div style="width: 100%; background-color: #2e6b2e;"></div>

Test Execution Log

- **SUITE**: Show Run 00:00:39.914
- Full Name: Show Run
- Source: /Users/chandranath/myfolder/autolearn/robot/show_run.robot
- Start / End / Elapsed: 2021/23 11:45:00.710 / 2021/23 11:45:40.624 / 00:00:39.914
- Status: 4 tests total, 4 passed, 0 failed, 0 skipped
- + **TEST** Connect 00:00:13.783
- + **TEST** DAL Running Configuration 00:00:00.704
- + **TEST** NY Running Configuration 00:00:00.931
- + **TEST** Disconnect 00:00:22.042

REPORT

Test Execution Log

- **SUITE**: Show Run 00:00:39.914
- Full Name: Show Run
- Source: /Users/chandranath/myfolder/autolearn/robot/show_run.robot
- Start / End / Elapsed: 2021/23 11:45:00.710 / 2021/23 11:45:40.624 / 00:00:39.914
- Status: 4 tests total, 4 passed, 0 failed, 0 skipped
- + **TEST** Connect 00:00:13.783
- + **TEST** DAL Running Configuration 00:00:00.704
- + **TEST** NY Running Configuration 00:00:00.931
- + **TEST** Disconnect 00:00:22.042

```

KEYWORD unknownRobot.execute "show running-config" on device "DAL"
Documentation: Execute command on a specific device. "device" name KEYWORD unicorn.robot.UniconRobot.execute
Start / End / Elapsed: 2021/23 11:45:16.945 / 2021/23 11:45:17.648 / 00: 00:00.704
Status: PASS
11:45:16.945 INFO Executing command show running-config on device "DAL" [PASS]
11:45:17.629 INFO 2022-12-23 11:45:17,108: UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show running-config' +++
show running-config
Building configuration...
Current configuration : 8500 bytes
!
! Last configuration change at 21:45:03 UTC Fri Dec 23 2022 by achaan
!
version 17.3
service timestamps debug datetime msec
service timestamps log datetime msec
service ntp-timeouts
platform eth0 utilization monitor load 40
platform punt-keepalive disable-kernel-core
platform console serial
!
hostname DALLAS
!
boot-start-marker
boot-end-marker
!
!
vrf definition cust10_pepsi
description customer10 project-pepsi
rd 65000:10
```

```

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log](https://github.com/achaanetatuo/pyats/blob/main/report_log)

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log/1\\_show\\_run.html](https://github.com/achaanetatuo/pyats/blob/main/report_log/1_show_run.html)



# Pyats Robot Framework – View Interface Information and Status

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```
Show Interface Configuration
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test
data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
#${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Dallas Interface Configuration
DAL Interface Configuration
 execute "show ip interface brief" on device "DAL"
 execute "show Interface GigabitEthernet1" on device "DAL"

Newyork Interface Configuration
NY Interface Configuration
 execute "show ip interface brief" on device "NY"
 execute "show Interface GigabitEthernet1" on device "NY"

Disconnect from all the devices
Disconnect
 disconnect from all devices
```

```
Mac-Pro-641 robot % robot show_interface.robot
=====
Show Interface
=====
Connect | PASS |
DAL Interface Configuration | PASS |
NY Interface Configuration | PASS |
Disconnect | PASS |
Show Interface | PASS |
4 tests, 4 passed, 0 failed
=====
Output: /Users/Mac-Pro-641/myfolder/autolearn/robot/output.xml
Log: /Users/Mac-Pro-641/myfolder/autolearn/robot/log.html
Report: /Users/Mac-Pro-641/myfolder/autolearn/robot/report.html
Mac-Pro-641 robot %
```



# Report - View Interface Information and Status

AchaA NetAuto

## Test Statistics

REPORT

| Total Statistics         |  | Total | Pass | Fail | Skip | Elapsed  | Pass / Fail / Skip                                                        |
|--------------------------|--|-------|------|------|------|----------|---------------------------------------------------------------------------|
| All Tests                |  | 4     | 4    | 0    | 0    | 00:00:37 | <div style="width: 100%; background-color: #2e6b2e; height: 10px;"></div> |
| <b>Statistics by Tag</b> |  |       |      |      |      |          |                                                                           |
| No Tags                  |  |       |      |      |      |          | <div style="width: 0%; background-color: #cccccc; height: 10px;"></div>   |
| Show Interface           |  | 4     | 4    | 0    | 0    | 00:00:39 | <div style="width: 100%; background-color: #2e6b2e; height: 10px;"></div> |

## Test Execution Log

|                                                                                                 |                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| - [SUITE] Show Interface                                                                        | 00:00:38.536                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Full Name:                                                                                      | Show Interface                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Source:                                                                                         | /Users/chandanath/myfolder/autolearn/robot/show_interface.robot                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Start / End / Elapsed:                                                                          | 20221223 13:16:20.712 / 20221223 13:16:59.248 / 00:00:38.536                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Status:                                                                                         | 4 tests total, 4 passed, 0 failed, 0 skipped                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| + [TEST] Connect                                                                                | 00:00:13.291                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| - [TEST] DAL Interface Configuration                                                            | 00:00:00.835                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Full Name:                                                                                      | Show Interface.DAL Interface Configuration                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Start / End / Elapsed:                                                                          | 20221223 13:16:35.493 / 20221223 13:16:36.328 / 00:00:00.835                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Status:                                                                                         | PASS                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| - [KEYWORD] unicorn.robot.UniconRobot.execute "show ip interface brief" on device "DAL"         | 00:00:00.432                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Documentation:                                                                                  | Execute command on a specific device. "device" name is the name of the device from the testbed file |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Start / End / Elapsed:                                                                          | 20221223 13:16:35.493 / 20221223 13:16:35.925 / 00:00:00.432                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 13:16:35.494                                                                                    | [INFO]                                                                                              | Executing command show ip interface brief on device DAL alias None                                                                                                                                                                                                                                                                                                                                                                              |
| 13:16:35.924                                                                                    | [INFO]                                                                                              | 2022-12-23 13:16:35,677: \$UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show ip interface brief' +++<br>show ip interface brief<br>Interface IP-Address OK? Method Status Protocol<br>GigabitEthernet1 100.100.100.0 YES manual up<br>GigabitEthernet2 192.168.1.1 YES manual up<br>GigabitEthernet3 173.16.101.150 YES manual up<br>GigabitEthernet4 172.16.101.74 YES manual up<br>Loopback10 10.1.1.0 YES manual up<br>DALLAS# |
| - [KEYWORD] unicorn.robot.UniconRobot.execute "show interface GigabitEthernet1" on device "DAL" | 00:00:00.403                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Documentation:                                                                                  | Execute command on a specific device. "device" name is the name of the device from the testbed file |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Start / End / Elapsed:                                                                          | 20221223 13:16:35.925 / 20221223 13:16:36.328 / 00:00:00.403                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 13:16:35.928                                                                                    | [INFO]                                                                                              | Executing command show Interface GigabitEthernet1 on device DAL alias None                                                                                                                                                                                                                                                                                                                                                                      |
| 13:16:36.327                                                                                    | [INFO]                                                                                              | 2022-12-23 13:16:36,085: \$UNICON-TINFO: +++ DALLAS with via 'ssh': executing command 'show Interface GigabitEthernet1' +++                                                                                                                                                                                                                                                                                                                     |

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log/2\\_show\\_interface.html](https://github.com/achaanetatuo/pyats/blob/main/report_log/2_show_interface.html)



## Pyats Robot Framework – View Routing Table

AchaA NetAuto

```
View Routing Table
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Dallas Routing Table
DAL Routing Table
execute "show ip route" on device "DAL"

Newyork Routing Table
NY Routing Table
execute "show ip route" on device "NY"

Disconnect from all the devices
Disconnect
disconnect from all devices
```

```
Mac-Pro-641 robot % robot show_route.robot
=====
Show Route
=====
Connect | PASS |
DAL Routing Table | PASS |
NY Routing Table | PASS |
Disconnect | PASS |
Show Route | PASS |
4 tests, 4 passed, 0 failed
=====
Output: /Users/Mac-Pro-641/myfolder/autolearn/robot/output.xml
Log: /Users/Mac-Pro-641/myfolder/autolearn/robot/log.html
Report: /Users/Mac-Pro-641/myfolder/autolearn/robot/report.html
```



# Report - View Routing Table

AchaA NetAuto

## Test Execution Log

REPORT

|                                                                                                                             |              |
|-----------------------------------------------------------------------------------------------------------------------------|--------------|
| - [SUITE] Show Route                                                                                                        | 00:00:42.335 |
| Full Name: Show Route                                                                                                       |              |
| Source: /Users/chandranath/myfolder/autolearn/robot/show_route.robot                                                        |              |
| Start / End / Elapsed: 20221223 13:45:354 / 20221223 13:46:39.689 / 00:00:42.335                                            |              |
| Status: 4 tests total, 4 passed, 0 failed, 0 skipped                                                                        |              |
| + [TEST] Connect                                                                                                            | 00:00:15.813 |
| + [TEST] DAL Routing Table                                                                                                  | 00:00:00.514 |
| - [TEST] NY Routing Table                                                                                                   | 00:00:00.521 |
| Full Name: Show Route.NY Routing Table                                                                                      |              |
| Start / End / Elapsed: 20221223 13:46:17.121 / 20221223 13:46:17.642 / 00:00:00.521                                         |              |
| Status: PASS                                                                                                                |              |
| - [KEYWORD] unicron.robot.UniconRobot.execute "show ip route" on device "NY"                                                | 00:00:00.520 |
| Documentation: Execute command on a specific device. "device" name is the name of the device from the testbed file          |              |
| Start / End / Elapsed: 20221223 13:46:17.122 / 20221223 13:46:17.642 / 00:00:00.520                                         |              |
| 13:46:17.123 [INFO] Executing command show ip route on device NY alias None                                                 |              |
| 13:46:17.642 [INFO] 2022-12-23 13:46:17,294: %UNICON-INFO: +++ NEWORK with via 'ssh': executing command 'show ip route' +++ |              |
| show ip route                                                                                                               |              |
| Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP                                                   |              |
| D - EIGRP, E - EIGRP external, O - OSPF, IA - OSPF inter area                                                               |              |
| N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2, m - OMP                                                     |              |
| E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP                                                               |              |
| n - NAT, N1 - NAT inside, No - NAT outside, N2 - NAT DIA                                                                    |              |
| i - IS-IS, si - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2                                                       |              |
| ia - IS-IS inter area, * - candidate default, U - per-user static route                                                     |              |
| H - NHRP, G - NHRP registered, g - NHRP registration summary                                                                |              |
| o - ODR, P - periodic downloaded static route, l - LISI                                                                     |              |
| a - application route                                                                                                       |              |
| + - replicated route, % - next hop override, p - overrides from PfR                                                         |              |
| & - replicated local route overrides by connected                                                                           |              |
| Gateway of last resort is not set                                                                                           |              |
| 172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks                                                                     |              |
| C 172.16.101.0/24 is directly connected, GigabitEthernet4                                                                   |              |
| L 172.16.101.75/32 is directly connected, GigabitEthernet4                                                                  |              |
| NEWORK#                                                                                                                     |              |
| + [TEST] Disconnect                                                                                                         | 00:00:22.044 |

[https://github.com/achaanetatu/pyats/blob/main/report\\_log/3\\_show\\_route.html](https://github.com/achaanetatu/pyats/blob/main/report_log/3_show_route.html)



# Pyats Robot Framework – Parsing IP Route

AchaA NetAuto

```
Parse Show IP Route
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.metaparser
Library genie.libs.parser
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Parse Route output
${output} = parse "show ip route vrf cust20_pepsi" on device "NY"
Log ${output}

Disconnect from all the devices
Disconnect
disconnect from all devices
```

```
Mac-Pro-641 robot % robot show_route_parsh.robot
=====
Show Route Parsh
=====
Connect | PASS |
Parse Route output | PASS |
Disconnect | PASS |
Show Route Parsh | PASS |
3 tests, 3 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```



# Report – Parsing IP Route

AchaA NetAuto

| Time/Name:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Show route / device area route output                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | REPORT       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Start / End / Elapsed:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20221226 12:12:25.973 / 20221226 12:12:27.819 / 00:00:01.846 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| Status:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>PASS</b>                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 00:00:01.844 |
| <b>KEYWORD</b> \${output} = genie.libs.robot.GenieRobot.parse "show ip route vrf cust20_pepsi" on device "NY"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| Documentation:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Call any 'metaparser' parser and parse the device output.    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| Start / End / Elapsed:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20221226 12:12:25.974 / 20221226 12:12:27.818 / 00:00:01.844 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| 12:12:27.817                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>INFO</b>                                                  | 2022-12-26 12:12:27,534: %UNICON-INFO: +++ NEWORK with via 'ssh': executing command 'show ip route vrf cust20_pepsi' +++         show ip route vrf cust20_pepsi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| Routing Table: cust20_pepsi<br>Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP<br>D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area<br>N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2<br>E1 - OSPF external type 1, E2 - OSPF external type 2, m - OSPF<br>n - NAT, N1 - NAT inside, No - NAT outside, Nd - NAT DIA<br>i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2<br>ia - IS-IS inter area, * - candidate default, U - per-user static route<br>H - NHRP, G - NHRP registered, g - NHRP registration summary<br>o - ODR, P - periodic downloaded static route, l - LISP<br>a - application route<br>+ - replicated route, % - next hop override, p - overrides from PfR<br>& - replicated local route overrides by connected |                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| Gateway of last resort is not set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| 10.0.0.0/32 is subnetted, 2 subnets<br>S 10.1.1.0 [1/0] via 100.100.100.0<br>C 10.1.1.1 is directly connected, Loopback20<br>90.0.0.0/32 is subnetted, 1 subnets<br>S 90.1.1.0 [1/0] via 100.100.100.0<br>100.0.0.0/8 is variably subnetted, 2 subnets, 2 masks<br>C 100.100.100.0/31 is directly connected, GigabitEthernet1<br>L 100.100.100.1/32 is directly connected, GigabitEthernet1<br>172.17.0.0/16 is variably subnetted, 2 subnets, 2 masks<br>C 172.17.17.0/24 is directly connected, GigabitEthernet2<br>L 172.17.17.1/32 is directly connected, GigabitEthernet2<br>B 192.168.1.0/24 [20/0] via 10.1.1.0, 23:42:33<br>NEWORK#                                                                                                                                                                    |                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| 12:12:27.818                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>INFO</b>                                                  | \${output} = ('vrf': {'cust20_pepsi': {'address_family': {'ipv4': {'routes': {'10.1.1.0/32': {'active': True, 'metric': 0, 'route_preference': 1, 'source_protocol_codes': 'S', 'source_proto...}}}}}})                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |
| <b>KEYWORD</b> BuiltIn.Log \${output}                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 00:00:00.001 |
| Documentation:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Logs the given message with the given level.                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| Start / End / Elapsed:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20221226 12:12:27.818 / 20221226 12:12:27.819 / 00:00:00.001 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| 12:12:27.819                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>INFO</b>                                                  | {'vrf': {'cust20_pepsi': {'address_family': {'ipv4': {'routes': {'10.1.1.0/32': {'active': True, 'metric': 0, 'route_preference': 1, 'source_protocol_codes': 'S', 'source_protocol': 'static', 'next_hop': {'next_hop_list': {1: {'index': 1, 'next_hop': '100.100.100.0'}}}, '10.1.1.1/32': {'route': '10.1.1.1/32', 'active': True, 'metric': 0, 'route_preference': 1, 'source_protocol_codes': 'C', 'source_protocol': 'connected', 'next_hop': {'outgoing_interface': 'Loopback20', 'next_hop': 'Loopback20'}, '90.1.1.1.0/32': {'route': '90.1.1.0/32', 'active': True, 'metric': 0, 'route_preference': 1, 'source_protocol_codes': 'S', 'source_protocol': 'static', 'next_hop': {'next_hop_list': {1: {'index': 1, 'next_hop': '100.100.100.0'}}}, '100.100.100.0/31': {'route': '100.100.100.0/31', 'active': True, 'metric': 0, 'route_preference': 1, 'source_protocol_codes': 'S', 'source_protocol': 'static', 'next_hop': {'next_hop_list': {1: {'index': 1, 'next_hop': '100.100.100.0'}}}}, '100.100.100.1/32': {'route': '100.100.100.1/32', 'active': True, 'metric': 0, 'route_preference': 1, 'source_protocol_codes': 'L', 'source_protocol': 'local', 'next_hop': {'outgoing_interface': 'GigabitEthernet1', 'outgoing_interface': 'GigabitEthernet1'}, '172.17.17.0/24': {'route': '172.17.17.0/24', 'active': True, 'metric': 0, 'route_preference': 1, 'source_protocol_codes': 'C', 'source_protocol': 'connected', 'next_hop': {'outgoing_interface': 'GigabitEthernet2', 'outgoing_interface': 'GigabitEthernet2'}, '172.17.17.1/32': {'route': '172.17.17.1/32', 'active': True, 'metric': 0, 'route_preference': 1, 'source_protocol_codes': 'C', 'source_protocol': 'connected', 'next_hop': {'outgoing_interface': 'GigabitEthernet2', 'outgoing_interface': 'GigabitEthernet2'}}}}}}}} |              |

[https://github.com/achaanetauto/pyats/blob/main/report\\_log/4\\_show\\_route\\_parse.html](https://github.com/achaanetauto/pyats/blob/main/report_log/4_show_route_parse.html)



# Pyats Robot Framework – Parsing and Filtering

AchaA NetAuto

```
Parse and Filter IP Route
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.metaparser
Library genie.libs.parser
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Parse and Filter Route output

${output} = parse "show ip route vrf cust20_pepsi" on device "NY"
Log ${output}
${output2} = Dq query data=${output} filters=contains('bgp').get_values('routes')
Log ${output2}

Disconnect from all the devices
Disconnect
disconnect from all devices
```

```
-Mac-Pro-641 robot % robot route_parse_filter.robot
=====
Route Parsh Filter
=====
Connect | PASS |
Parse and Filter Route output | PASS |
Disconnect | PASS |
Route Parsh Filter | PASS |
3 tests, 3 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```



# Report – Parsing and Filtering

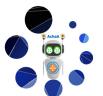
AchaA NetAuto

## Test Execution Log

REPORT

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| - SUITE                | Route Parsh Filter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 00:00:40.819 |
| Full Name:             | Route Parsh Filter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |
| Source:                | /Users/chandanath/myfolder/autolearn/robot/route_persh_filter.robot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |
| Start / End / Elapsed: | 20221226 12:29:10.057 / 20221226 12:29:50.876 / 00:00:40.819                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
| Status:                | 3 tests total, 3 passed, 0 failed, 0 skipped                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
| + TEST                 | Connect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 00:00:14.159 |
| - TEST                 | Parse and Filter Route output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 00:00:01.968 |
| Full Name:             | Route Parsh Filter.Parse and Filter Route output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |
| Start / End / Elapsed: | 20221226 12:29:26.863 / 20221226 12:29:28.831 / 00:00:01.968                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
| Status:                | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |
| + KEYWORD              | \${output}= genelib.robot.GenieRobot.parse "show ip route vrf cust20_pepsi" on device "NY"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 00:00:01.956 |
| - KEYWORD              | BuiltIn.Log \${output}                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 00:00:00.005 |
| Documentation:         | Logs the given message with the given level.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
| Start / End / Elapsed: | 20221226 12:29:28.821 / 20221226 12:29:28.826 / 00:00:00.005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
| 12:29:28.822           | INFO { 'vrf': { 'cust20_pepsi': { 'address_family': { 'ipv4': { 'routes': { '10.1.1.0/32': { 'route': '10.1.1.0/32', 'active': True, 'metric': 0, 'route_preference': 1, 'source_protocol_codes': 'S', 'source_protocol': 'static', 'next_hop': { 'next_hop_list': { 1: { 'index': 1, 'next_hop': '100.100.100.0' } } }, '10.1.1.1/32': { 'route': '10.1.1.1/32', 'active': True, 'source_protocol_codes': 'C', 'source_protocol': 'connected', 'next_hop': { 'outgoing_interface': { 'Loopback20': { 'outgoing_interface': 'Loopback20' } } }, '90.1.1.0/32': { 'route': '90.1.1.0/32', 'active': True, 'metric': 0, 'route_preference': 1, 'source_protocol_codes': 'S', 'source_protocol': 'static', 'next_hop': { 'next_hop_list': { 1: { 'index': 1, 'next_hop': '100.100.100.0' } } }, '100.100.100.0/31': { 'route': '100.100.100.0/31', 'active': True, 'source_protocol_codes': 'C', 'source_protocol': 'connected', 'next_hop': { 'outgoing_interface': { 'GigabitEthernet1': { 'outgoing_interface': 'GigabitEthernet1' } } }, '100.100.100.1/32': { 'route': '100.100.100.1/32', 'active': True, 'source_protocol_codes': 'L', 'source_protocol': 'local', 'next_hop': { 'outgoing_interface': { 'GigabitEthernet1': { 'outgoing_interface': 'GigabitEthernet1' } } }, '172.17.17.0/24': { 'route': '172.17.17.0/24', 'active': True, 'source_protocol_codes': 'C', 'source_protocol': 'connected', 'next_hop': { 'outgoing_interface': { 'GigabitEthernet2': { 'outgoing_interface': 'GigabitEthernet2' } } } }, '172.17.17.1/32': { 'route': '172.17.17.1/32', 'active': True, 'source_protocol_codes': 'I', 'source_protocol': 'local', 'next_hop': { 'outgoing_interface': { 'GigabitEthernet2': { 'outgoing_interface': 'GigabitEthernet2' } } } }, '192.168.1.0/24': { 'route': '192.168.1.0/24', 'active': True, 'metric': 0, 'route_preference': 20, 'source_protocol_codes': 'B', 'source_protocol': 'bgp', 'next_hop': { 'next_hop_list': { 1: { 'index': 1, 'next_hop': '10.1.1.0', 'updated': '23:59:34' } } } } } } } } | 00:00:00.003 |
| - KEYWORD              | \${output2}= genelib.robot.GenieRobot.dq query data=\${output}, filters=contains(bgp).get_values(routes)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 00:00:00.003 |
| Documentation:         | Search dictionary using Dq filters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |
| Start / End / Elapsed: | 20221226 12:29:28.827 / 20221226 12:29:28.830 / 00:00:00.003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
| 12:29:28.830           | INFO \${output2} = [ '192.168.1.0/24' ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 00:00:00.000 |
| - KEYWORD              | BuiltIn.Log \${output2}                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 00:00:00.000 |
| Documentation:         | Logs the given message with the given level.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
| Start / End / Elapsed: | 20221226 12:29:28.830 / 20221226 12:29:28.830 / 00:00:00.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
| 12:29:28.830           | INFO [ '192.168.1.0/24' ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 00:00:22.043 |
| + TEST                 | Disconnect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log/5\\_route\\_persh\\_filter.html](https://github.com/achaanetatuo/pyats/blob/main/report_log/5_route_persh_filter.html)



# Pyats Robot Framework – Modify Interface Settings

AchaA NetAuto

```
View Shut and Unshut Interface
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.metaparser
Library genie.libs.parser
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Shutdown NY Interface GigabitEthernet1
shut interface interface=GigabitEthernet1
verify interface config shutdown interface=GigabitEthernet1
 device=NY
 device=NY

Unshutdown NY Interface GigabitEthernet1
unshut interface interface=GigabitEthernet1
verify interface config shutdown interface=GigabitEthernet1
 device=NY
 device=NY

Disconnect from all the devices
Disconnect
disconnect from all devices
```

```
Mac-Pro-641 robot % robot Modify_interface.robot
=====
Modify interface
=====
Connect | PASS |
Shutdown NY Interface GigabitEthernet1 | PASS |
Unshutdown NY Interface GigabitEthernet1 | PASS |
Disconnect | PASS |
Modify interface | PASS |
4 tests, 4 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```



# Report – Modify Interface Settings

AchaA NetAuto

| TEST NAME              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | TEST CASE | REPORT       |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------|
| Source:                | /Users/chandranath/myfolder/autolearn/robot/Modify_interface.robot                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |              |
| Start / End / Elapsed: | 20221224 22:38:16.161 / 20221224 22:39:59.487 / 00:01:43.326                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |              |
| Status:                | 4 tests total, 4 passed, 0 failed, 0 skipped                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |              |
| + TEST                 | Connect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           | 00:00:14.217 |
| - TEST                 | Shutdown NY Interface GigabitEthernet1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           | 00:00:02.501 |
| Full Name:             | Modify interface.Shutdown NY Interface GigabitEthernet1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |              |
| Start / End / Elapsed: | 20221224 22:38:33.117 / 20221224 22:38:35.618 / 00:00:02.501                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |              |
| Status:                | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |              |
| - KEYWORD              | genie.libs.robot.GenieRobotApis.Shut Interface interface=GigabitEthernet1, device=NY                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           | 00:00:02.013 |
| Documentation:         | Checkout this url for detailed doc on this keyword:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |              |
| Start / End / Elapsed: | 20221224 22:38:33.117 / 20221224 22:38:35.130 / 00:00:02.013                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |              |
| 22:38:35.130 INFO      | 2022-12-24 22:38:34,146: *UNICON-INFO: +++ NEWYORK with via 'ssh': configure +++ config term<br>Enter configuration commands, one per line. End with CNTL/Z.<br>NEWYORK(config)#interface GigabitEthernet1<br>NEWYORK(config-if)#shutdown<br>NEWYORK(config-if)#end<br>NEWYORK#                                                                                                                                                                                                                                                            |           |              |
| - KEYWORD              | genie.libs.robot.GenieRobotApis.Verify Interface Config Shutdown interface=GigabitEthernet1, device=NY                                                                                                                                                                                                                                                                                                                                                                                                                                     |           | 00:00:00.487 |
| Documentation:         | Checkout this url for detailed doc on this keyword:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |              |
| Start / End / Elapsed: | 20221224 22:38:35.131 / 20221224 22:38:35.618 / 00:00:00.487                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |              |
| 22:38:35.132 INFO      | Starting a timeout with maximum time of 60 seconds with interval of 10 seconds, Test case will fail after the maximum time set                                                                                                                                                                                                                                                                                                                                                                                                             |           |              |
| 22:38:35.617 INFO      | 2022-12-24 22:38:35,305: *UNICON-INFO: +++ NEWYORK with via 'ssh': executing command 'show run interface GigabitEthernet1' +++<br>show run interface GigabitEthernet1<br>Building configuration...<br><br>Current configuration : 243 bytes<br>!<br>interface GigabitEthernet1<br>description uplink_to_r1<br>vrf forwarding cust20_pepsi<br>ip address 100.100.100.1 255.255.255.254<br>no ip redirects<br>no ip unreachables<br>no ip proxy-arp<br>shutdown<br>negotiation auto<br>no mop enabled<br>no mop sysid<br>end<br><br>NEWYORK# |           |              |

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log/6\\_Modify\\_interface.html](https://github.com/achaanetatuo/pyats/blob/main/report_log/6_Modify_interface.html)



# Pyats Robot Framework – Configure New Static Route

AchaNetAuto

```

View Remove and Add Static Route
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.metaparser
Library genie.libs.parser
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
 use testbed "${testbed}"
 connect to devices "DAL"
 connect to devices "NY"

Remove Static Route
 execute "show ip route vrf cust20_pepsi" on device "NY"
 configure "no ip route vrf cust20_pepsi 10.1.1.0 255.255.255.255
100.100.100.0" on device "NY"
 Sleep 10
 execute "show ip route vrf cust20_pepsi" on device "NY"

Add Static Route
 configure "ip route vrf cust20_pepsi 10.1.1.0 255.255.255.255
100.100.100.0" on device "NY"
 Sleep 10
 execute "show ip route vrf cust20_pepsi" on device "NY"

Disconnect from all the devices
Disconnect
 disconnect from all devices

```

```

Mac-Pro-641 robot % robot config_static_route.robot
=====
Config Static Route
=====
Connect | PASS |
Remove Static Route | PASS |
Add Static Route | PASS |
Disconnect | PASS |
Config Static Route | PASS |
4 tests, 4 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html

```



# Report – Configure New Static Route

AchaA NetAuto

| TEST Add Static Route  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | REPORT       |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Full Name:             | Config Static Route.Add Static Route                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 00:00:00.000 |
| Start / End / Elapsed: | 20221224 22:52:06.473 / 20221224 22:52:18.047 / 00:00:11.574                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |
| Status:                | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |
| - KEYWORD              | unicorn.robot.UniconRobot.configure "ip route vrf cust20_pepsi 10.1.1.0 255.255.255.255 100.100.100.0" on device "NY"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 00:00:01.120 |
| Documentation:         | Configure a device with the configuration provided.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| Start / End / Elapsed: | 20221224 22:52:06.474 / 20221224 22:52:07.594 / 00:00:01.120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |
| 22:52:06.475 INFO      | Configuring ip route vrf cust20_pepsi 10.1.1.0 255.255.255.255 100.100.100.0 on device NY alias None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |
| 22:52:07.594 INFO      | 2022-12-24 22:52:06,475: #UNICON-INFO: +++ NEWYORK with via 'ssh': configure +++ config term Enter configuration commands, one per line. End with CNTL/Z.<br>NEWYORK(config)#ip route vrf cust20_pepsi 10.1.1.0 255.255.255.255 100.100.100.0<br>NEWYORK(config)#end<br>NEWYORK#                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |
| + KEYWORD              | Builtin.Sleep 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 00:00:10.002 |
| - KEYWORD              | unicorn.robot.UniconRobot.execute "show ip route vrf cust20_pepsi" on device "NY"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 00:00:00.449 |
| Documentation:         | Execute command on a specific device. "device" name is the name of the device from the testbed file                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| Start / End / Elapsed: | 20221224 22:52:17.598 / 20221224 22:52:18.047 / 00:00:00.449                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |
| 22:52:17.599 INFO      | Executing command show ip route vrf cust20_pepsi on device NY alias None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |
| 22:52:18.047 INFO      | 2022-12-24 22:52:17,772: #UNICON-INFO: +++ NEWYORK with via 'ssh': executing command 'show ip route vrf cust20_pepsi' +++ show ip route vrf cust20_pepsi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |
|                        | Routing Table: cust20_pepsi<br>Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP<br>D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area<br>N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2<br>E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP<br>n - NAT, N1 - NAT inside, N0 - NAT outside, Nd - NAT DIA<br>i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2<br>ia - IS-IS inter area, * - candidate default, U - per-user static route<br>H - NHRP, G - NHRP registered, g - NHRP registration summary<br>o - ODR, P - periodic downloaded static route, l - LISP<br>a - application route<br>+ - replicated route, % - next hop override, p - overrides from PfR<br>& - replicated local route overrides by connected |              |
|                        | Gateway of last resort is not set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |
| S                      | 10.0.0.0/32 is subnetted, 2 subnets<br>S  10.1.1.0 [1/0] via 100.100.100.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |
| C                      | 10.1.1.1 is directly connected, Loopback20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |
| C                      | 100.0.0.0/8 is variably subnetted, 2 subnets, 2 masks<br>C  100.100.100.0/31 is directly connected, GigabitEthernet1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |
| L                      | 100.100.100.1/32 is directly connected, GigabitEthernet1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |
| C                      | 172.17.0.0/16 is variably subnetted, 2 subnets, 2 masks<br>C  172.17.17.0/24 is directly connected, GigabitEthernet2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |
| L                      | 172.17.17.1/32 is directly connected, GigabitEthernet2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
| B                      | 192.168.1.0/24 [20/0] via 10.1.1.0, 00:00:05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |
|                        | NEWYORK#                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log/7\\_config\\_static\\_route.html](https://github.com/achaanetatuo/pyats/blob/main/report_log/7_config_static_route.html)



# Pyats Robot Framework – Shut and Unshut BGP Peer

AchaA NetAuto

```
Shut and unshut BGP Peer
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.metaparser
Library genie.libs.parser
Library genie.libs.robot.GenieRobotApis
Library unicorn.robot.UnicornRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
@{bgpshut} 10.1.1.0
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Shut BGP Peer
execute "show ip route vrf cust20_pepsi" on device "NY"
execute "show run | sec bgp" on device "NY"
configure shut bgp neighbors bgp_as=65010 address_family=ipv4 vrf=cust20_pepsi device=NY neighbors=@{bgpshut}
execute "show run | sec bgp" on device "NY"
Sleep 10
execute "show ip route vrf cust20_pepsi" on device "NY"

UnShutdown BGP Peer
configure shut bgp neighbors bgp_as=65010 address_family=ipv4 vrf=cust20_pepsi device=NY neighbors=@{bgpshut}
noshut=True
execute "show run | sec bgp" on device "NY"
Sleep 10
execute "show ip route vrf cust20_pepsi" on device "NY"

Disconnect from all the devices
Disconnect
disconnect from all devices
```

Mac-Pro-641 robot % robot shut\_bgp\_peer.robot

| Shut Bgp Peer       |      |
|---------------------|------|
| Connect             | PASS |
| Shut BGP Peer       | PASS |
| UnShutdown BGP Peer | PASS |
| Disconnect          | PASS |
| Shut Bgp Peer       | PASS |

4 tests, 4 passed, 0 failed

Output: /Users/chandranath/myfolder/autolearn/robot/output.xml  
Log: /Users/chandranath/myfolder/autolearn/robot/log.html  
Report: /Users/chandranath/myfolder/autolearn/robot/report.html

→ \*\*Sleep used to wait for certain seconds before run next command



# Report – Shut and Unshut BGP Peer

AchaA NetAuto

| TEST                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | REPORT       |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Full Name:             | Shut Bgp Peer.Shut BGP Peer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 00:00:00.694 |
| Start / End / Elapsed: | 20221224 23:05:51.544 / 20221224 23:06:06.139 / 00:00:14.595                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 00:00:00.741 |
| Status:                | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 00:00:02.058 |
| + KEYWORD              | unicorn.robot.UniconRobot.execute "show ip route vrf cust20_pepsi" on device "NY"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 00:00:00.694 |
| + KEYWORD              | unicorn.robot.UniconRobot.execute "show run   sec bgp" on device "NY"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 00:00:00.741 |
| - KEYWORD              | genie.libs.robot.GenieRobotApis.Configure Shut Bgp Neighbors bgp_as=65010, address_family=ipv4, vrf=cust20_pepsi, device=NY, neighbors=@{bgpshut}                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 00:00:02.058 |
| Documentation:         | Checkout this url for detailed doc on this keyword:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| Start / End / Elapsed: | 20221224 23:05:52.981 / 20221224 23:05:55.039 / 00:00:02.058                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |
| 23:05:53.953           | INFO Shutting down router bgp neighbors ['10.1.1.0']                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |
| 23:05:55.038           | INFO 2022-12-24 23:05:53,953: %UNICON-INFO: +++ NEWYORK with via 'ssh': configure +++ config term Enter configuration commands, one per line. End with CNTL/Z.<br>NEWYORK(config)#router bgp 65010<br>NEWYORK(config-router)#address-family ipv4 vrf cust20_pepsi<br>NEWYORK(config-router-af)#neighbor 10.1.1.0 shutdown<br>NEWYORK(config-router-af)#end<br>NEWYORK#                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |
| - KEYWORD              | unicorn.robot.UniconRobot.execute "show run   sec bgp" on device "NY"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 00:00:00.639 |
| Documentation:         | Execute command on a specific device. "device" name is the name of the device from the testbed file                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
| Start / End / Elapsed: | 20221224 23:05:55.039 / 20221224 23:05:55.678 / 00:00:00.639                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |
| 23:05:55.040           | INFO Executing command show run   sec bgp on device NY alias None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| 23:05:55.678           | INFO 2022-12-24 23:05:55,216: %UNICON-INFO: +++ NEWYORK with via 'ssh': executing command 'show run   sec bgp' +++<br>show run   sec bgp<br>router bgp 65010<br>bgp router-id 10.1.1.1<br>bgp asnotation dot<br>bgp log-neighbor-changes<br>no bgp default ipv4-unicast<br>timers bgp 5 15<br>!<br>address-family ipv4<br>exit-address-family<br>!<br>address-family ipv4 vrf cust20_pepsi<br>network 172.17.17.0 mask 255.255.255.0<br>neighbor cust-10 peer-group<br>neighbor cust-10 remote-as 65000<br>neighbor cust-10 description ** Customer 10 BGP Peer **<br>neighbor cust-10 ebgp-multipath 2<br>neighbor cust-10 password bgi123<br>neighbor cust-10 update-source Loopback20<br>neighbor 10.1.1.0 peer-group cust-10<br>neighbor 10.1.1.0 description ** Customer 10 BGP Peer **<br>neighbor 10.1.1.0 shutdown<br>neighbor 10.1.1.0 activate<br>exit-address-family<br>NEWYORK# |              |
|                        | KEYWORD BuiltIn.Sleep [PASS]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |

[https://github.com/achaanetauto/pyats/blob/main/report\\_log/8\\_shut\\_bgp\\_peer.html](https://github.com/achaanetauto/pyats/blob/main/report_log/8_shut_bgp_peer.html)



# Pyats Robot Framework – Configure BGP

AchaA NetAuto

```
Configure BGP Peer
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.metaparser
Library genie.libs.parser
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

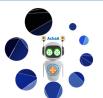
*** Test Cases ***
Creating test cases from available keywords.

Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Configure New BGP Peer
execute "show run | sec bgp" on device "DAL"
configure "router bgp 65000\r address-family ipv4 vrf cust60\r neighbor cust-0060
peer-group\r neighbor cust-0060 remote-as 65060 " on device "DAL"
configure "router bgp 65000\r address-family ipv4 vrf cust60\r neighbor cust-0060
ebgp-multipath 2\r neighbor cust-0060 password bgp123 " on device "DAL"
configure "router bgp 65000\r address-family ipv4 vrf cust60\r neighbor 10.1.1.16
peer-group cust-0060\r neighbor 10.1.1.16 activate " on device "DAL"
configure "router bgp 65000\r address-family ipv4 vrf cust60\r neighbor 10.1.1.16
description ** cust-0060-bgp-a ** " on device "DAL"
execute "show run | sec bgp" on device "DAL"

Disconnect from all the devices
Disconnect
disconnect from all devices
```

```
Mac-Pro-641 robot % robot config_bgp.robot
=====
Config Bgp
=====
Connect | PASS |
Configure New BGP Peer | PASS |
Disconnect | PASS |
Config Bgp | PASS |
3 tests, 3 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```



# Report – Configure BGP

AchaA NetAuto

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                         | REPORT       |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| + <b>KEYWORD</b>       | unicorn.robot.UniconRobot.execute "show run   sec bgp" on device "DAL"                                                                                                                                                                                                                                                                                                                                                                  | 00:00:01.159 |
| - <b>KEYWORD</b>       | unicorn.robot.UniconRobot.configure "router bgp 65000\r address-family ipv4 vrf cust60\r neighbor cust-0060 peer-group\r neighbor cust-0060 remote-as 65060 " on device "DAL"                                                                                                                                                                                                                                                           | 00:00:01.367 |
| Documentation:         | Configure a device with the configuration provided.                                                                                                                                                                                                                                                                                                                                                                                     |              |
| Start / End / Elapsed: | 20221225 10:29:36.456 / 20221225 10:29:37.615 / 00:00:01.159                                                                                                                                                                                                                                                                                                                                                                            |              |
| 10:29:36.457           | INFO Configuring router bgp 65000<br>address-family ipv4 vrf cust60<br>neighbor cust-0060 peer-group<br>neighbor cust-0060 remote-as 65060 on device DAL alias None                                                                                                                                                                                                                                                                     |              |
| 10:29:37.615           | INFO 2022-12-25 10:29:36,457: %UNICON-INFO: +++ DALLAS with via 'ssh': configure +++ config term<br>Enter configuration commands, one per line. End with CNTL/Z.<br>DALLAS(config)#router bgp 65000<br>DALLAS(config-router)# address-family ipv4 vrf cust60<br>DALLAS(config-router-af)# neighbor cust-0060 peer-group<br>DALLAS(config-router-af)# neighbor cust-0060 remote-as 65060<br>DALLAS(config-router-af)#end<br>DALLAS#      |              |
| - <b>KEYWORD</b>       | unicorn.robot.UniconRobot.configure "router bgp 65000\r address-family ipv4 vrf cust60\r neighbor cust-0060 ebgp-multihop 2\r neighbor cust-0060 password bgp123" on device "DAL"                                                                                                                                                                                                                                                       | 00:00:01.367 |
| Documentation:         | Configure a device with the configuration provided.                                                                                                                                                                                                                                                                                                                                                                                     |              |
| Start / End / Elapsed: | 20221225 10:29:37.615 / 20221225 10:29:38.982 / 00:00:01.367                                                                                                                                                                                                                                                                                                                                                                            |              |
| 10:29:37.616           | INFO Configuring router bgp 65000<br>address-family ipv4 vrf cust60<br>neighbor cust-0060 ebgp-multihop 2<br>neighbor cust-0060 password bgp123 on device DAL alias None                                                                                                                                                                                                                                                                |              |
| 10:29:38.982           | INFO 2022-12-25 10:29:37,616: %UNICON-INFO: +++ DALLAS with via 'ssh': configure +++ config term<br>Enter configuration commands, one per line. End with CNTL/Z.<br>DALLAS(config)#router bgp 65000<br>DALLAS(config-router)# address-family ipv4 vrf cust60<br>DALLAS(config-router-af)# neighbor cust-0060 ebgp-multihop 2<br>DALLAS(config-router-af)# neighbor cust-0060 password bgp123<br>DALLAS(config-router-af)#end<br>DALLAS# |              |
| - <b>KEYWORD</b>       | unicorn.robot.UniconRobot.configure "router bgp 65000\r address-family ipv4 vrf cust60\r neighbor 10.1.1.16 peer-group cust-0060\r neighbor 10.1.1.16 activate" on device "DAL"                                                                                                                                                                                                                                                         | 00:00:01.305 |
| Documentation:         | Configure a device with the configuration provided.                                                                                                                                                                                                                                                                                                                                                                                     |              |
| Start / End / Elapsed: | 20221225 10:29:38.983 / 20221225 10:29:40.288 / 00:00:01.305                                                                                                                                                                                                                                                                                                                                                                            |              |
| 10:29:38.985           | INFO Configuring router bgp 65000<br>address-family ipv4 vrf cust60<br>neighbor 10.1.1.16 peer-group cust-0060<br>neighbor 10.1.1.16 activate on device DAL alias None                                                                                                                                                                                                                                                                  |              |
| 10:29:40.287           | INFO 2022-12-25 10:29:38,985: %UNICON-INFO: +++ DALLAS with via 'ssh': configure +++ config term<br>Enter configuration commands, one per line. End with CNTL/Z.<br>DALLAS(config)#router bgp 65000<br>DALLAS(config-router)# address-family ipv4 vrf cust60<br>DALLAS(config-router-af)# neighbor 10.1.1.16 peer-group cust-0060<br>DALLAS(config-router-af)# neighbor 10.1.1.16 activate<br>DALLAS(config-router-af)#end<br>DALLAS#   |              |

[https://github.com/achaanetatu/pynats/blob/main/report\\_log/9\\_config\\_bgp.html](https://github.com/achaanetatu/pynats/blob/main/report_log/9_config_bgp.html)



# Pyats Robot Framework – Verify BGP

AchaA NetAuto

```
Verify BGP
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.metaparser
Library genie.libs.parser
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Verify BGP Information
verify count "2" "bgp routes" on device "NY"
verify count "1" "bgp neighbors" on device "NY"

Disconnect from all the devices
Disconnect
disconnect from all devices
```

```
Mac-Pro-641 robot % robot verify_bgp.robot
=====
Verify Bgp
=====
Connect | PASS |
Verify BGP Information | PASS |
Disconnect | PASS |
Verify Bgp | PASS |
3 tests, 3 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```



# Report – Verify BGP

AchaA NetAuto

```

2022-12-26 11:44:24,000: *UNICON-INFO: +++ NEWORK with via 'ssh': executing command 'show bgp all neighbors i BGP neighbor' +++
show bgp all neighbors 10.1.1.0 routes
For address family: VPNv4 Unicast
BGP table version is 15, local router ID is 10.1.1.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
 r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
 x best-external, a additional-path, c RIB-compressed,
 t secondary path, L long-lived-stale,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

 Network Next Hop Metric LocPrf Weight Path
Route Distinguisher: 65010:20 (default for vrf cust20_pepsi)
*|> 192.168.1.0 10.1.1.0 0 0 65000 i

Total number of prefixes 1
NEWORK#

2022-12-26 11:44:25,015: *UNICON-INFO: +++ NEWORK with via 'ssh': executing command 'show bgp all neighbors | i BGP neighbor' +++
show bgp all neighbors | i BGP neighbor
BGP neighbor is 10.1.1.0, vrf cust20_pepsi, remote AS 65000, external link
 External BGP neighbor may be up to 2 hops away.
 External BGP neighbor NOT configured for connected checks (multi-hop no-disable-connected-check)
NEWORK#

2022-12-26 11:44:25,495: *UNICON-INFO: +++ NEWORK with via 'ssh': executing command 'show bgp all neighbors 10.1.1.0 received-routes' +++
show bgp all neighbors 10.1.1.0 received-routes
For address family: VPNv4 Unicast
 * Inbound soft reconfiguration not enabled on 10.1.1.0 (cust20_pepsi)
NEWORK#

2022-12-26 11:44:25,926: *UNICON-INFO: +++ NEWORK with via 'ssh': executing command 'show bgp all neighbors | i BGP neighbor' +++
show bgp all neighbors | i BGP neighbor
BGP neighbor is 10.1.1.0, vrf cust20_pepsi, remote AS 65000, external link
 External BGP neighbor may be up to 2 hops away.
 External BGP neighbor NOT configured for connected checks (multi-hop no-disable-connected-check)
NEWORK#

[-] KEYWORD genie.libs.robot.GenieRobot.verify_count "1" "bgp neighbors" on device "NY"
Documentation: Verify that a specific number of <...> is <...> on a device.
Start / End / Elapsed: 20221226 11:44:26.189 / 20221226 11:44:34.072 / 00:00:07.883
00:00:07.883
11:44:27.468 [INFO] Could not learn <class 'genie.libs.parser.iosxe.show_bgp.ShowIpBgpTemplatePeerSession'>
Show Command: show ip bgp template peer-session
Parser Output is empty
11:44:27.878 [INFO] Could not learn <class 'genie.libs.parser.iosxe.show_bgp.ShowIpBgpTemplatePeerPolicy'>
Show Command: show ip bgp template peer-policy
Parser Output is empty
11:44:29.227 [INFO] Could not learn <class 'genie.libs.parser.iosxe.show_bgp.ShowIpBgpAllDampeningParameters'>
Show Command: show ip bgp all dampening parameters
Parser Output is empty
11:44:30.239 [INFO] Could not learn <class 'genie.libs.parser.iosxe.show_bgp.ShowBgpAllNeighborsPolicy'>
Show Command: show bgp all neighbors 10.1.1.0 policy
Parser Output is empty
11:44:34.062 [INFO] Could not learn <class 'genie.libs.parser.iosxe.show_bgp.ShowBgpAllNeighborsReceivedRoutes'>
Show Command: show bgp all neighbors 10.1.1.0 received-routes
Parser Output is empty

```

[https://github.com/achaanetauto/pyats/blob/main/report\\_log/10\\_verify\\_bgp.html](https://github.com/achaanetauto/pyats/blob/main/report_log/10_verify_bgp.html)



# Pyats Robot Framework – Load and Save Configuration

AchaA NetAuto

```
Load and Save Configuration
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.metaparser
Library genie.libs.parser
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${CONFIG} /Users/Mac-Pro-641/myfolder/autolearn/robot/loopback600.cfg
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.
```

```
Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"
```

```
Load and Save Configuration
${configuration}= get file ${CONFIG}
configure "${configuration}" on device "DAL"
${output}= execute "write" on device "DAL"
execute "show run interface loopback600 " on device "DAL"
```

```
Disconnect from all the devices
Disconnect
disconnect from all devices
```

```
Mac-Pro-641 robot % robot load_config.robot
=====
Load Config
=====
Connect
PASS
Load and Save Configuration
PASS

Disconnect
PASS
Load Config
3 tests, 3 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```

## loopback600.cfg

```
interface Loopback600
description customer-600
vrf forwarding cust600
ip address 10.1.1.160 255.255.255.255
no shutdown
```



# Report – Load and Save Configuration

AchaA NetAuto

| TEST Load and Save Configuration |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | REPORT       |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Full Name:                       | 11 Load Config.Load and Save Configuration                                                                                                                                                                                                                                                                                                                                                                                                                             | 00:00:00.000 |
| Start / End / Elapsed:           | 20221227 14:13:58.086 / 20221227 14:14:02.331 / 00:00:04.245                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| Status:                          | PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |
| - KEYWORD                        | \$(configuration) = OperatingSystem.Get File \${CONFIG}                                                                                                                                                                                                                                                                                                                                                                                                                | 00:00:00.001 |
| Documentation:                   | Returns the contents of a specified file.                                                                                                                                                                                                                                                                                                                                                                                                                              |              |
| Start / End / Elapsed:           | 20221227 14:13:58.086 / 20221227 14:13:58.087 / 00:00:00.001                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| 14:13:58.087                     | INFO Getting file '/Users/chandranath/myfolder/autolearn/robot/loopback600.cfg'.                                                                                                                                                                                                                                                                                                                                                                                       |              |
| 14:13:58.087                     | INFO \$(configuration) = interface Loopback600<br>description customer-600<br>vrf forwarding cust600<br>ip address 10.1.1.160 255.255.255.255<br>no shutdown                                                                                                                                                                                                                                                                                                           |              |
| - KEYWORD                        | unicorn.robot.UniconRobot.configure "\${configuration}" on device "DAL"                                                                                                                                                                                                                                                                                                                                                                                                | 00:00:01.168 |
| Documentation:                   | Configure a device with the configuration provided.                                                                                                                                                                                                                                                                                                                                                                                                                    |              |
| Start / End / Elapsed:           | 20221227 14:13:58.087 / 20221227 14:13:59.255 / 00:00:01.168                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| 14:13:58.088                     | INFO Configuring interface Loopback600<br>description customer-600<br>vrf forwarding cust600<br>ip address 10.1.1.160 255.255.255.255<br>no shutdown on device DAL alias None                                                                                                                                                                                                                                                                                          |              |
| 14:13:59.255                     | INFO 2022-12-27 14:13:58,088: %UNICON-INFO: +++ DALLAS with via 'ssh': configure +++ config term<br>Enter configuration commands, one per line. End with CNTL/Z.<br>DALLAS(config)#interface Loopback600<br>DALLAS(config-if)# description customer-600<br>DALLAS(config-if)# vrf forwarding cust600<br>* VRF cust600 not configured<br>DALLAS(config-if)# ip address 10.1.1.160 255.255.255.255<br>DALLAS(config-if)# no shutdown<br>DALLAS(config-if)#end<br>DALLAS# |              |
| - KEYWORD                        | \$(output)= unicorn.robot.UniconRobot.execute "write" on device "DAL"                                                                                                                                                                                                                                                                                                                                                                                                  | 00:00:02.594 |
| Documentation:                   | Execute command on a specific device. "device" name is the name of the device from the testbed file                                                                                                                                                                                                                                                                                                                                                                    |              |
| Start / End / Elapsed:           | 20221227 14:13:59.255 / 20221227 14:14:01.849 / 00:00:02.594                                                                                                                                                                                                                                                                                                                                                                                                           |              |
| 14:13:59.256                     | INFO Executing command write on device DAL alias None                                                                                                                                                                                                                                                                                                                                                                                                                  |              |
| 14:14:01.849                     | INFO 2022-12-27 14:13:59,431: %UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'write' +++ write<br>Building configuration...<br>[OK]<br>DALLAS#                                                                                                                                                                                                                                                                                                             |              |
| 14:14:01.849                     | INFO \$(output) = Building configuration...<br>[OK]                                                                                                                                                                                                                                                                                                                                                                                                                    |              |
| - KEYWORD                        | unicorn.robot.UniconRobot.execute "show run interface loopback600" on device "DAL"                                                                                                                                                                                                                                                                                                                                                                                     | 00:00:00.481 |
| Documentation:                   | Execute command on a specific device. "device" name is the name of the device from the testbed file                                                                                                                                                                                                                                                                                                                                                                    |              |
| Start / End / Elapsed:           | 20221227 14:14:01.850 / 20221227 14:14:02.301 / 00:00:00.481                                                                                                                                                                                                                                                                                                                                                                                                           |              |

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log/11\\_load\\_config.html](https://github.com/achaanetatuo/pyats/blob/main/report_log/11_load_config.html)



## Pyats Robot Framework – Genie Models

Genie Models contains a list of possible commands for specific operation. You can store an output in a file and compare pre and post changes of your device's configuration.

Example :

- config
- bgp
- acl
- routing
- static\_routing
- arp
- interface
- etc....

Refernce: <https://pubhub.devnetcloud.com/media/genie-feature-browser/docs/#/models>



# Pyats Robot Framework – Configuration Model

AchaA NetAuto

```
Show Running Configuration
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.
```

```
Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"
```

```
Dallas Model Configuration
DAL Running Configuration
 Profile the system for "config" on devices "DAL" as "./DAL_base_config"

Newyork Model Configuration
NY Running Configuration
 Profile the system for "config" on devices "DAL" as "./NY_base_config"

Disconnect from all the devices
Disconnect
 disconnect from all devices
```

```
Mac-Pro-641 robot % robot model_config.robot
=====
Model Config
=====
Connect | PASS |

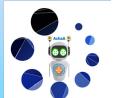
DAL Running Configuration | PASS |

NY Running Configuration | PASS |

Disconnect | PASS |

Model Config
4 tests, 4 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```

**\*\*Profile keyword is used to run pyATS models.**



# Report – Configuration Model

AchaA NetAuto

REPORT  
00:00:00.811

- TEST DAL Running Configuration

Full Name: Model Config.DAL Running Configuration

Start / End / Elapsed: 20221225 11:11:42.346 / 20221225 11:11:43.157 / 00:00:00.811

Status: PASS

- KEYWORD genie.libs.robot.GenieRobot.Profile the system for "config" on devices "DAL" as "./DAL\_base\_config"

Documentation: Profile system as per the provided features on the devices

Start / End / Elapsed: 20221225 11:11:42.347 / 20221225 11:11:43.156 / 00:00:00.809

```
11:11:42.347 INFO Start learning device configuration
11:11:43.155 INFO Saved system profile as file: /Users/chandanath/myfolder/autolearn/robot/.DAL_base_config_DAL_config_pts.json
11:11:43.156 INFO 2022-12-25 11:11:42,519: %UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show running-config' +++
show running-config
Building configuration...
Current configuration : 9288 bytes
!
! Last configuration change at 21:11:23 UTC Sun Dec 25 2022 by acha
!
version 17.3
service timestamps debug datetime msec
service timestamps log datetime msec
service call-home
platform qfp utilization monitor load 80
platform punt-keepalive disable-kernel-core
platform console serial
!
hostname DALLAS
!
boot-start-marker
boot-end-marker
!
!
vrf definition cust10_pepsi
description customer10 project-pepsi
rd 65000:10
route-target export 65000:10
route-target import 65000:10
!
address-family ipv4
exit-address-family
!
vrf definition cust60
description customer-60
rd 65000:60
route-target export 65000:60
route-target import 65000:60
!
address-family ipv4
exit-address-family
!
```

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log/12\\_Model\\_config.html](https://github.com/achaanetatuo/pyats/blob/main/report_log/12_Model_config.html)



# Pyats Robot Framework – Routing Model

AchaA NetAuto

```
Routing Model
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.
```

```
Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Dallas Model Routing
DAL Model Routing
 Profile the system for "routing" on devices "DAL" as "./DAL_base_config"

Newyork Model Routing
NY Model Routing
 Profile the system for "routing" on devices "DAL" as "./NY_base_config"

Disconnect from all the devices
Disconnect
 disconnect from all devices
```

```
Mac-Pro-641 robot % robot model_routing.robot
=====
Model Routing
=====
Connect | PASS |

DAL Model Routing | PASS |

NY Model Routing | PASS |

Disconnect | PASS |

Model Routing | PASS |
4 tests, 4 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```



# Report – Routing Model

AchaA NetAuto

TEST DAL Model Routing REPORT 00:00:03.575

Full Name: 13 Model Routing.DAL Model Routing  
Start / End / Elapsed: 20221227 22:56:35.915 / 20221227 22:56:39.490 / 00:00:03.575  
Status: PASS

KEYWORD genie.libs.robot.GenieRobot.Profile the system for "routing" on devices "DAL" as "./DAL\_base\_config" 00:00:03.574

Documentation: Profile system as per the provided features on the devices  
Start / End / Elapsed: 20221227 22:56:35.916 / 20221227 22:56:39.490 / 00:00:03.574

```
22:56:35.916 INFO Start learning feature routing
22:56:39.447 INFO Could not learn <class 'genie.libs.parser.iosxe.show_routing.ShowIpv6RouteDistributor'>
Parser Output is empty
22:56:39.448 INFO +=====
22:56:39.448 INFO | Commands for learning feature 'Routing'
22:56:39.448 INFO +=====
22:56:39.448 INFO | - Parsed commands
22:56:39.449 INFO |
22:56:39.449 INFO | cmd: <class 'genie.libs.parser.iosxe.show_vrf>ShowVrfDetail'>
22:56:39.449 INFO | cmd: <class 'genie.libs.parser.iosxe.show_routing>ShowIpRouteDistributor'>, arguments: {'vrf':'cust10_pepsi'}
22:56:39.449 INFO | cmd: <class 'genie.libs.parser.iosxe.show_routing>ShowIpRouteDistributor'>, arguments: {'vrf':'cust60'}
22:56:39.449 INFO | cmd: <class 'genie.libs.parser.iosxe.show_routing>ShowIpRouteDistributor'>, arguments: {'vrf':'mgmt_vrf'}
22:56:39.449 INFO | cmd: <class 'genie.libs.parser.iosxe.show_routing>ShowIpRouteDistributor'>, arguments: {'vrf':''}
22:56:39.450 INFO | - Commands with empty output
22:56:39.450 INFO |
22:56:39.450 INFO | cmd: <class 'genie.libs.parser.iosxe.show_routing>ShowIpv6RouteDistributor'>, arguments: {'vrf':''}
22:56:39.450 INFO |
22:56:39.489 INFO Saved system profile as file: /Users/chandranath/myfolder/autolearn/robot./DAL_base_config_DAL_routing_pts.json
22:56:39.489 INFO 2022-12-27 22:56:36,929: %UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show vrf detail' ===+
show vrf detail
VRF cust10_pepsi (VRF Id = 1); default RD 65000:10; default VPNID <not set>
 Description: customer10 project-pepsi
 New CLI format, supports multiple address-families
 Flags: 0x180C
 Interfaces:
 G1 G12 Lo10
 Address family ipv4 unicast (Table ID = 0x1):
 Flags: 0x0
 Export VPN route-target communities
 RT:65000:10
 Import VPN route-target communities
 RT:65000:10
 No import route-map
 No global export route-map
 No external route-map
```

[https://github.com/achaanetauto/pyats/blob/main/report\\_log/13\\_model\\_routing.html](https://github.com/achaanetauto/pyats/blob/main/report_log/13_model_routing.html)



# Pyats Robot Framework – BGP Model

AchaA NetAuto

```
BGP Model
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Dallas Model BGP
DAL Model BGP
Profile the system for "bgp" on devices "DAL" as "./DAL_base_config"

Newyork Model BGP
NY Model BGP
Profile the system for "bgp" on devices "DAL" as "./NY_base_config"

Disconnect from all the devices
Disconnect
disconnect from all devices
```

```
Mac-Pro-641 robot % robot model_bgp.robot
=====
Model Bgp
=====
Connect | PASS |

DAL Model BGP | PASS |

NY Model BGP | PASS |

Disconnect | PASS |

Model Bgp
4 tests, 4 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```



# Report – BGP Model

AchaA NetAuto

```
11:21:26.543 INFO | cmd: <class 'genie.libs.parser.iosxe.show_bgp.ShowBgpAllNeighborsReceivedRoutes'>, arguments: {'address_family': '', 'neighbor': '10.1.1.1'} |
11:21:26.546 INFO | cmd: <class 'genie.libs.parser.iosxe.show_bgp.ShowBgpAllNeighborsReceivedRoutes'>, arguments: {'address_family': '', 'neighbor': '10.1.1.16'} |
11:21:26.546 INFO =====
11:21:26.594 INFO Saved system profile as file: /Users/chandranath/myfolder/autolearn/robot/.DAL_base_config_DAL_bgp_pts.json
11:21:26.595 INFO 2022-12-25 11:21:15,728: #UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show bgp all summary' ===+
show bgp all summary
For address family: VPNv4 Unicast
BGP router identifier 10.1.1.0, local AS number 65000
BGP table version is 11, main routing table version 11
2 network entries using 512 bytes of memory
2 path entries using 272 bytes of memory
3/2 BGP path/bestpath attribute entries using 912 bytes of memory
1 BGP AS-PATH entries using 24 bytes of memory
1 BGP extended community entries using 24 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 1744 total bytes of memory
BGP activity 3/1 prefixes, 6/4 paths, scan interval 60 secs
2 networks peaked at 07:50:25 Dec 25 2022 UTC (13:30:40.433 ago)

Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd
10.1.1.1 4 65010 8619 8619 11 0 0 12:15:07 1
10.1.1.16 4 65060 0 0 1 0 0 never Idle
DALLAS#

2022-12-25 11:21:16,140: #UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show ip bgp template peer-session' ===+
show ip bgp template peer-session
No templates configured

DALLAS#

2022-12-25 11:21:16,606: #UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show ip bgp template peer-policy' ===+
show ip bgp template peer-policy
No templates configured

DALLAS#

2022-12-25 11:21:17,079: #UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show vrf detail | inc \'(VRF\' ===+
show vrf detail | inc \'(VRF
VRF cust10 pepsi (VRF Id = 1); default RD 65000:10; default VPNID <not set>
VRF cust60 (VRF Id = 4); default RD 65000:60; default VPNID <not set>
VRF mgmt_vrf (VRF Id = 2); default RD 65000:500; default VPNID <not set>
DALLAS#

2022-12-25 11:21:17,520: #UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show bgp all cluster-ids' ===+
show bgp all cluster-ids
Global cluster-id: 10.1.1.0 (configured: 0.0.0.0)
BGP client-to-client reflection: Configured Used
 all (inter-cluster and intra-cluster): ENABLED
 intra-cluster: ENABLED ENABLED

List of cluster-ids:
Cluster-id #neighbors C2C-rfl-CPG C2C-rfl-USR
```

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log/14\\_model\\_bgp.html](https://github.com/achaanetatuo/pyats/blob/main/report_log/14_model_bgp.html)



# Pyats Robot Framework – Compare Configuration Model

AchaA NetAuto

```

Compare Config Models
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
 use testbed "${testbed}"
 connect to devices "DAL"
 connect to devices "NY"

Dallas Compare Configuration
DAL Current Running Configuration
 Profile the system for "config" on devices "DAL" as "./DAL_current_config"
DAL Change Configuration
 configure "ip route vrf cust10_pepsi 90.1.1.0 255.255.255.255 100.100.100.1" on device
 "DAL"
DAL New Running Configuration
 Profile the system for "config" on devices "DAL" as "./DAL_new_config"
Compare Current and New Snapshots Dallas
 Compare profile "./DAL_current_config" with "./DAL_new_config" on devices "DAL"

Disconnect from all the devices
Disconnect
 disconnect from all devices

```

```

Mac-Pro-641 robot % robot model_compare_config.robot
=====
Model Compare Config
=====
Connect | PASS |
DAL Current Running Configuration | PASS |
DAL Change Configuration | PASS |
DAL New Running Configuration | PASS |
Compare Current and New Snapshots Dallas | FAIL |

Comparison between ./DAL_current_config and ./DAL_new_config is different for
feature 'config' for device:

'DAL'
+ip route vrf cust10_pepsi 90.1.1.0 255.255.255.255 100.100.100.1

Disconnect | PASS |
=====
Model Compare Config | FAIL |
6 tests, 5 passed, 1 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html

```

**\*\*FAIL** means there is a difference between the configurations.



# Report – Compare Configuration Model

AchaA NetAuto

No tags

REPORT

| Statistics by Suite  | Total | Pass | Fail | Skip | Elapsed  | Pass / Fail / Skip                                                                                                                                      |
|----------------------|-------|------|------|------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model Compare Config | 6     | 5    | 1    | 0    | 00:00:40 | <div style="width: 83.33%; background-color: #2e7131; height: 10px;"></div> <div style="width: 16.67%; background-color: #dc3545; height: 10px;"></div> |

### Test Execution Log

- SUITE Model Compare Config 00:00:39.695
  - Full Name: Model Compare Config
  - Source: /Users/chandranath/myfolder/autolearn/robot/model\_compare\_config.robot
  - Start / End / Elapsed: 20221225 12:36:05.823 / 20221225 12:36:45.518 / 00:00:39.695
  - Status: 6 tests total, 5 passed, 1 failed, 0 skipped
    - + TEST Connect 00:00:13.657
    - + TEST DAL Current Running Configuration 00:00:00.799
    - + TEST DAL Change Configuration 00:00:00.769
    - + TEST DAL New Running Configuration 00:00:00.813
  - TEST Compare Current and New Snapshots Dallas 00:00:00.015
    - Full Name: Model Compare Config.Compare Current and New Snapshots Dallas
    - Start / End / Elapsed: 20221225 12:36:23.461 / 20221225 12:36:23.476 / 00:00:00.015
    - Status: FAIL
    - Message:

```

Comparison between ./DAL_current_config and ./DAL_new_config is different for feature 'config' for device:

'DAL'
+ip route vrf cust10_pepsi 90.1.1.0 255.255.255.255 100.100.100.1
```
  - KEYWORD genie.libs.robot.GenieRobot.Compare profile "/DAL\_current\_config" with "/DAL\_new\_config" on devices "DAL" 00:00:00.014
    - Documentation: Compare system profiles taken as snapshots during the run
    - Start / End / Elapsed: 20221225 12:36:23.462 / 20221225 12:36:23.476 / 00:00:00.014
    - 12:36:23.469 FAIL
      - \*\*\*\*\*  
Comparison between ./DAL\_current\_config and ./DAL\_new\_config is different for feature 'config' for device:  
  
'DAL'  
+ip route vrf cust10\_pepsi 90.1.1.0 255.255.255.255 100.100.100.1

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log/15\\_model\\_compare\\_config.html](https://github.com/achaanetatuo/pyats/blob/main/report_log/15_model_compare_config.html)



# Pyats Robot Framework – Compare Interface Model

AchaA NetAuto

```
Compare Interface Models
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

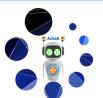
*** Variables ***
Defining variables that can be used elsewhere in the test data.
${testbed} tb-jump.yaml
${CONFIG} /Users/chandranath/myfolder/autolearn/robot/loopback7777.cfg
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
 use testbed "${testbed}"
 connect to devices "DAL"

Dallas Compare Configuration
DAL Current Running Configuration
 Profile the system for "interface" on devices "DAL" as
 "./DAL_current_interface"
DAL Change Configuration
 ${configuration}= get file ${CONFIG}
 configure "${configuration}" on device "DAL"
 ${output}= execute "write" on device "DAL"
 execute "show run interface loopback7777" on device "DAL"
DAL New Running Configuration
 Profile the system for "interface" on devices "DAL" as
 "./DAL_new_interface"
Compare Current and New Snapshots Dallas
 Compare profile "./DAL_current_interface" with "./DAL_new_interface" on
 devices "DAL"

Disconnect from all the devices
Disconnect
 disconnect from all devices
```



# Pyats Robot Framework – Compare Interface Model - CLI Output

AchaA NetAuto

```
chandranath@Chandranaths-Mac-Pro-641 robot % robot model_compare_interface.robot
=====
Model Compare Interface
=====
Connect | PASS |
DAL Current Running Configuration | PASS |
DAL Change Configuration | PASS |
DAL New Running Configuration | PASS |
=====
```

```
Compare Current and New Snapshots Dallas | FAIL |

Comparison between ./DAL_current_interface and ./DAL_new_interface is different for feature
'interface' for device:

'DAL'
 info:
 + Loopback7777:
 + bandwidth: 8000000
 + counters:
 + in_broadcast_pkts: 0
 + in_crc_errors: 0
 + in_errors: 0
 + in_multicast_pkts: 0
 + in_octets: 0
 + in_pkts: 0
 + last_clear: never
 + out_broadcast_pkts: 0
 + out_errors: 0
 + out_multicast_pkts: 0
 [Message content over the limit has been removed.]
 + in_rate_pkts: 0
 + load_interval: 300
 + out_rate: 0
 + out_rate_pkts: 0
 + delay: 5000
 + description: customer-7777
 + enabled: True
 + encapsulation:
 + encapsulation: loopback
 + ipv4:
 + 10.77.77.77/32:
 + ip: 10.77.77.77
 + prefix_length: 32
 + secondary: False
 + mtu: 1514
 + oper_status: up
 + port_channel:
 + port_channel_member: False
 + switchport_enable: False
 + type: Loopback

Disconnect | PASS |
=====
Model Compare Interface | FAIL |
6 tests, 5 passed, 1 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```



# Report – Compare Interface Model - Report

AchaA NetAuto

| TEST                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Compare Current and New Interfaces Details in Dallas                                                            | 00:00:00.013 | REPORT |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------|--------|
| Full Name:             | 16 Model Compare Interface.Compare Current and New Interfaces Details in Dallas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                 |              |        |
| Start / End / Elapsed: | 20221227 23:02:27.931 / 20221227 23:02:27.946 / 00:00:00.015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                 |              |        |
| Status:                | FAIL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                 |              |        |
| Message:               | *****<br>Comparison between ./DAL_current_interface and ./DAL_new_interface is different for feature 'interface' for device:<br><br>'DAL'<br>info:<br>+ Loopback7777:<br>+ bandwidth: 8000000<br>+ counters:<br>+ in_broadcast_pkts: 0<br>+ in_crc_errors: 0<br>+ in_errors: 0<br>+ in_multicast_pkts: 0<br>+ in_octets: 0<br>+ in_pkts: 0<br>+ last_clear: never<br>+ out_broadcast_pkts: 0<br>+ out_errors: 0<br>+ out_multicast_pkts: 0<br>[ Message content over the limit has been removed. ]<br>+ in_rate_pkts: 0<br>+ load_interval: 300<br>+ out_rate: 0<br>+ out_rate_pkts: 0<br>+ delay: 5000<br>+ description: customer-7777<br>+ enabled: True<br>+ encapsulation:<br>+ encapsulation: loopback<br>+ ipv4:<br>+ 10.77.77.77/32:<br>+ ip: 10.77.77.77<br>+ prefix_length: 32<br>+ secondary: False<br>+ mtu: 1514<br>+ oper_status: up<br>+ port_channel:<br>+ port_channel_member: False<br>+ switchport_enable: False<br>+ type: Loopback |                                                                                                                 |              |        |
| KEYWORD                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | genie.libs.robot.GenieRobot.Compare profile "/DAL_current_interface" with "/DAL_new_interface" on devices "DAL" | 00:00:00.013 |        |
| Documentation:         | Compare system profiles taken as snapshots during the run                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                 |              |        |
| Start / End / Elapsed: | 20221227 23:02:27.932 / 20221227 23:02:27.945 / 00:00:00.013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                 |              |        |
| 23:02:27.941           | FAIL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                 |              |        |

[https://github.com/achaanetatuu/pyats/blob/main/report\\_log/16\\_model\\_compare\\_interface.html](https://github.com/achaanetatuu/pyats/blob/main/report_log/16_model_compare_interface.html)



# Pyats Robot Framework – Interface/ARP Model

AchaA NetAuto

```
Interface and ARP Model
** Settings ***
Library OperatingSystem
Library ats.robot.pyATSRobot
Library genie.libs.robot.GenieRobot
Library genie.libs.robot.GenieRobotApis
Library unicon.robot.UniconRobot

*** Variables ***
Defining variables that can be used elsewhere in the test data.
Can also be driven as dash argument at runtime

${testbed} tb-jump.yaml
${PTS} /path/file

*** Test Cases ***
Creating test cases from available keywords.

Connect
use testbed "${testbed}"
connect to devices "DAL"
connect to devices "NY"

Dallas Model Interface and ARP
DAL Model Interface and ARP
 Profile the system for "interface;arp" on devices "DAL" as
 "./DAL_base_int_config"

Newyork Model Interface and ARP
NY Model Interface and ARP
 Profile the system for "interface;arp" on devices "DAL" as
 "./NY_base_int_config"

Disconnect from all the devices
Disconnect
 disconnect from all devices
```

```
Mac-Pro-641 robot % robot model_interface_arp.robot
=====
Model Interface Arp

Connect | PASS |
DAL Model Interface and ARP | PASS |
NY Model Interface and ARP | PASS |
Disconnect | PASS |
Model Interface Arp
4 tests, 4 passed, 0 failed
=====
Output: /Users/chandranath/myfolder/autolearn/robot/output.xml
Log: /Users/chandranath/myfolder/autolearn/robot/log.html
Report: /Users/chandranath/myfolder/autolearn/robot/report.html
```



# Report – Interface/ARP Model

AchaA NetAuto

REPORT

```
23:05:08.866 INFO | cmd: <class 'genie.libs.parser.iosxe.show_arp.ShowIpArp'>
23:05:08.868 INFO | cmd: <class 'genie.libs.parser.iosxe.show_vrf>ShowVrf'>
23:05:08.868 INFO | cmd: <class 'genie.libs.parser.iosxe.show_arp.ShowIpArp'>, arguments: {'vrf': 'mgmt_vrf'}
23:05:08.868 INFO | cmd: <class 'genie.libs.parser.iosxe.show_arp.ShowIpArp'>, arguments: {'vrf': 'cust10_pepsi'}
23:05:08.868 INFO | cmd: <class 'genie.libs.parser.iosxe.show_interface>ShowInterface'>
23:05:08.868 INFO | cmd: <class 'genie.libs.parser.iosxe.show_arp>ShowIpArpSummary'>
23:05:08.869 INFO | cmd: <class 'genie.libs.parser.iosxe.show_arp>ShowIpTraffic'>
23:05:08.869 INFO | =====
23:05:08.869 INFO | - Commands with empty output
23:05:08.869 INFO | -----
23:05:08.869 INFO | cmd: <class 'genie.libs.parser.iosxe.show_arp>ShowIpArp'>, arguments: {'vrf': 'cust60'}
23:05:08.870 INFO | =====
23:05:08.912 INFO Saved system profile as file: /Users/chandanath/myfolder/autolearn/robot/.DAL_base_int_config_DAL_arp_pts.json
23:05:08.912 INFO 2022-12-27 23:05:03,421: %UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show vrf' +++
show vrf
 Name Default RD Protocols Interfaces
 cust10_pepsi 65000:10 ipv4 Gi1
 Gi2
 Lo10
 cust60 65000:60 ipv4 Lo60
 mgmt_vrf 65000:500 ipv4 Gi3
DALLAS#

2022-12-27 23:05:03,834: %UNICON-INFO: +++ DALLAS with via 'ssh': executing command 'show interfaces' +++
show interfaces
GigabitEthernet1 is up, line protocol is up
 Hardware is CSR vNIC, address is 5254.0011.39f9 (bia 5254.0011.39f9)
 Description: uplink_to_r2
 Internet address is 100.100.100.0/31
 MTU 1500 bytes, BW 1000000 Kbit/sec, DLY 10 usec,
 reliability 255/255, txload 1/255, rxload 1/255
 Encapsulation ARPA, loopback not set
 Keepalive set (10 sec)
 Full Duplex, 1000Mbps, link type is auto, media type is Virtual
 output flow-control is unsupported, input flow-control is unsupported
 ARP type: ARPA, ARP Timeout 04:00:00
 Last input 00:00:02, output 00:00:02, output hang never
 Last clearing of "show interface" counters never
 Input queue: 0/375/0/0 (size/max/drops/flushes); Total output drops: 0
 Queueing strategy: fifo
 Output queue: 0/40 (size/max)
 5 minute input rate 0 bits/sec, 0 packets/sec
 5 minute output rate 0 bits/sec, 0 packets/sec
 98177 packets input, 8244211 bytes, 0 no buffer
 Received 0 broadcasts (0 IP multicasts)
 0 runts, 0 giants, 0 throttles
 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
 0 watchdog, 0 multicast, 0 pause input
 94863 packets output, 8000862 bytes, 0 underruns
```

[https://github.com/achaanetatuo/pyats/blob/main/report\\_log/17\\_model\\_interface\\_arp.html](https://github.com/achaanetatuo/pyats/blob/main/report_log/17_model_interface_arp.html)



# Backup Slides

## Резервни доклади





# **Network Automation Solutions**

## **Volume-2**

### **Coming Soon ...**

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# Network Automation Tools

AchaA NetAuto

