A ROUTER CONFIGURATION CHECKING SYSTEM
DEBASMITA HAZRA
SID: 103150595

Project Description:

This project checks the existing configuration against a pre-defined configuration. This role can also be on the basis of service that the router is supporting as in if a router is part (role) of RIP scheme, its startup configuration will be different from router which is running OSPF.
The role based nature of the project allows the user to only run the compliance test but only the network admin can run the test in addition to viewing the existing users, adding/deleting users and exiting the application.

1. Foremost, the graphic user interface for the router compliance test is called using **welcome.py** file and the **TKinter** module.

Fig1: Compliance checker user interface

2. **login.py** file creates the interface to enquire the login credentials of both the network admin and the users.

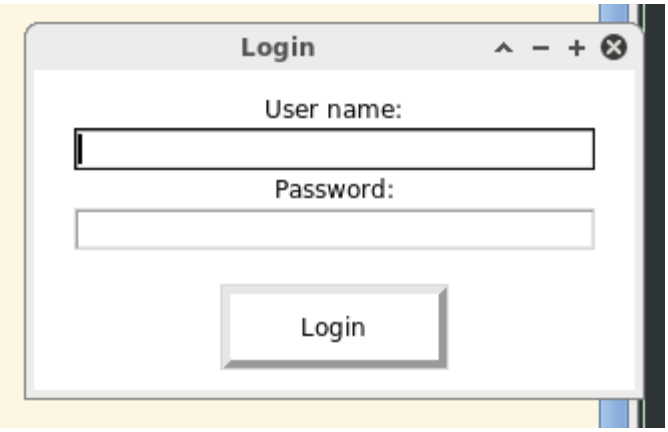

Fig 2: Login credentials enquiry

3. **database_creator.py** validates the login credentials and displays the options corresponding to the user and the network admin using the **eg.py** file. It returns the message "incorrect credentials" on entering data not in the login database.

```
admin debasmita
************  Welcome to Admin Console  *****************

Welcome Admin :debasmita

 1. View Existing Users
 2. Add  New Users
 3. Delete Existing Users
 4. View Available Templates
 5. Start Compliance Check
 6. Exit to Login again
 Enter your choice :
```

Fig 3(a): Options for admin

```
user titli
*************  Welcome to User Console  *****************

Welcome User :titli

1.Start Compliance Check
2.Exit to Login again
 Enter your choice :
```

Fig 3(b): Options for user

```
None
Incorrect Credentials
```

Fig 3(c): Output returned on entering incorrect credentials

4. The **initiate.py** file runs the router compliance test and returns the action test list. This list has the flags corresponding to each of the routers; 0 corresponds to an non-compliant router and 1 corresponds to a compliant router. The **1st value, 2nd value and 3rd value** correspond to the **1st, 3rd and 2nd router respectively.**

```
 Enter your choice : 1
Enter IP or X for proceeding:198.51.100.3
Enter IP or X for proceeding:198.51.100.4
Enter IP or X for proceeding:198.51.100.5
Enter IP or X for proceeding:X
{'198.51.100.3': 1, '198.51.100.5': '2', '198.51.100.4': '2'}
3
2
equal
{'198.51.100.3': 1, '198.51.100.5': '2', '198.51.100.4': 1}
3
1
equal
not equal
{'198.51.100.3': 1, '198.51.100.5': 0, '198.51.100.4': 1}
3
0
Take topology loop
Action Set[1, 0, 1]
```

Fig 4: Final action set showing flags of routers

If the action set is not [1,1,1], the SLA violation is displayed using the red circle.

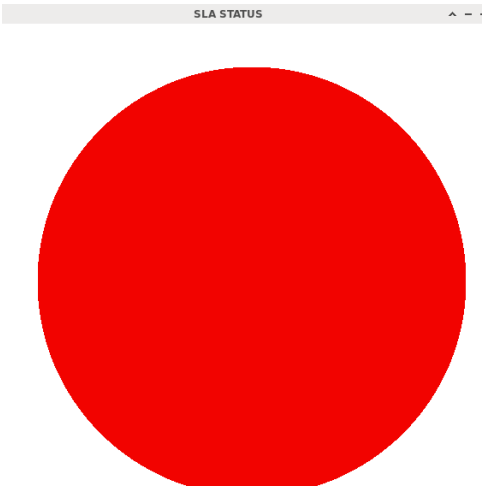

Fig 5 (a): SLA violation indication

If the action set is [1,1,1], the SLA violation is displayed using the green circle.

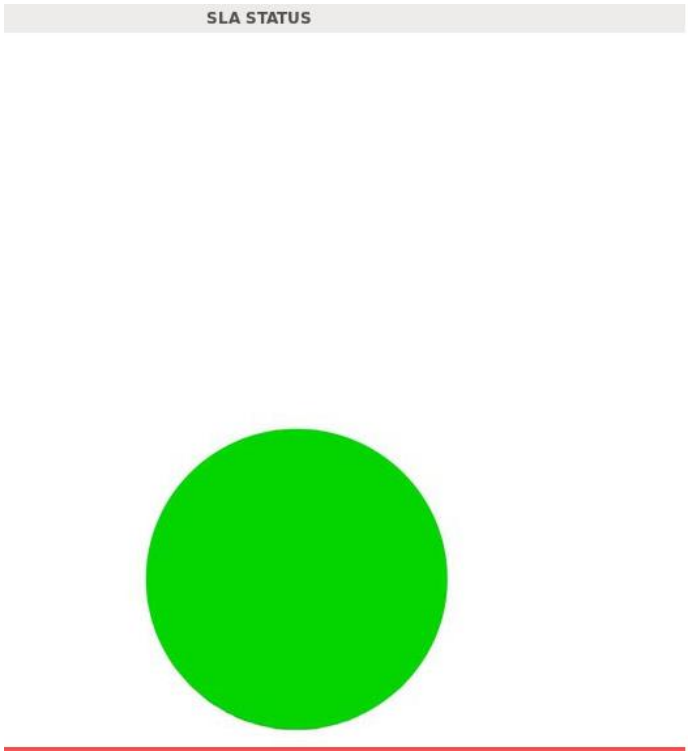

Fig 5(b) SLA compliance indication

5. The networkx graph is also created using the **initiate.py** file. Each router is labelled with its management IP. The green routers are the compliant routers and the red routers are the non-compliant routers.

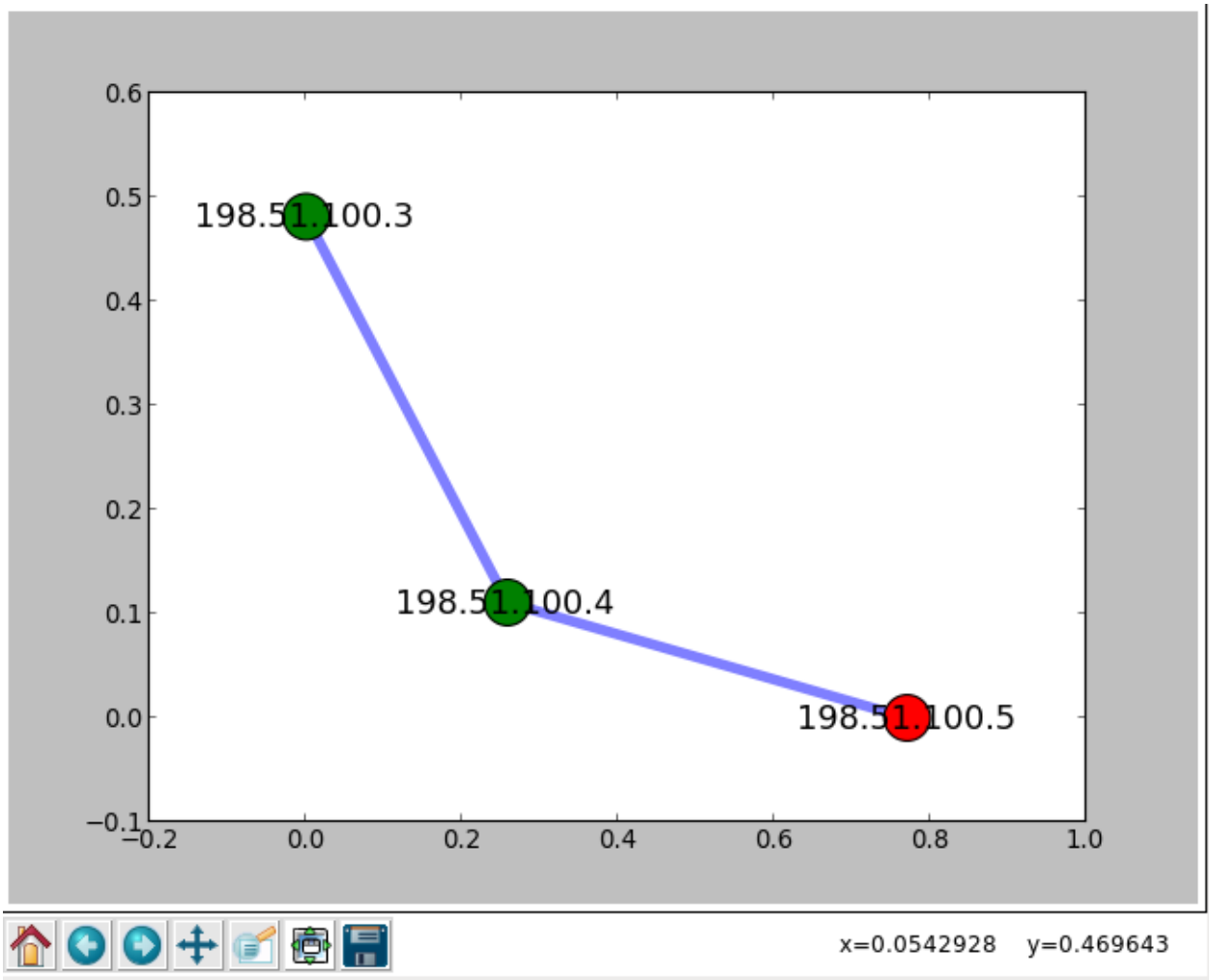

Fig 6(a): Networkx graph showing the compliant and non-compliant routers in green and red respectively

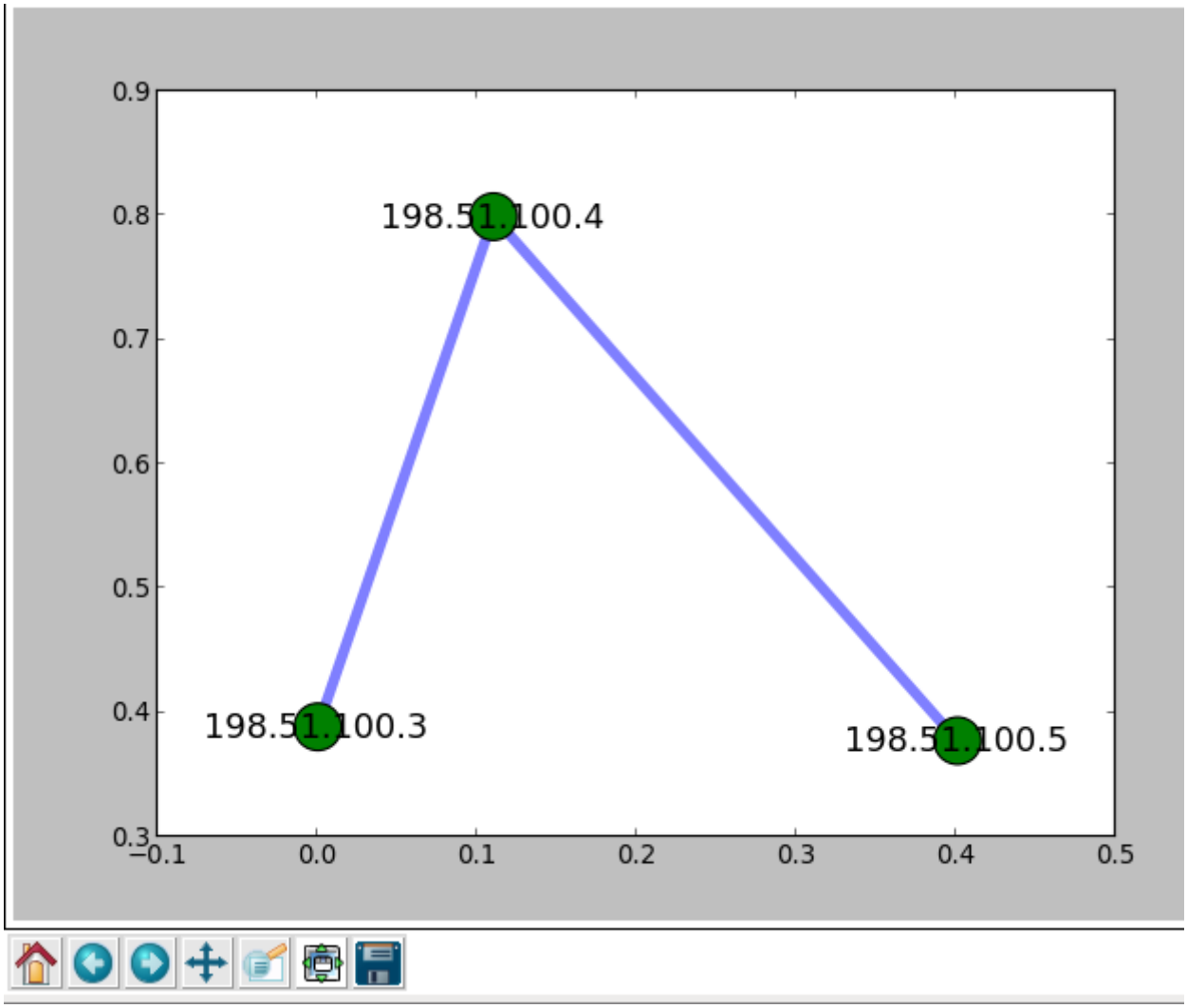

Fig 6(b): Networkx graph showing all the compliant routers in green

6. The **twilio.py** module sends text message to the network admin describing SLA compliance and SLA violation. In case of violation, the message identifies the non-compliant router and also mentions the details of the configuration mismatch.

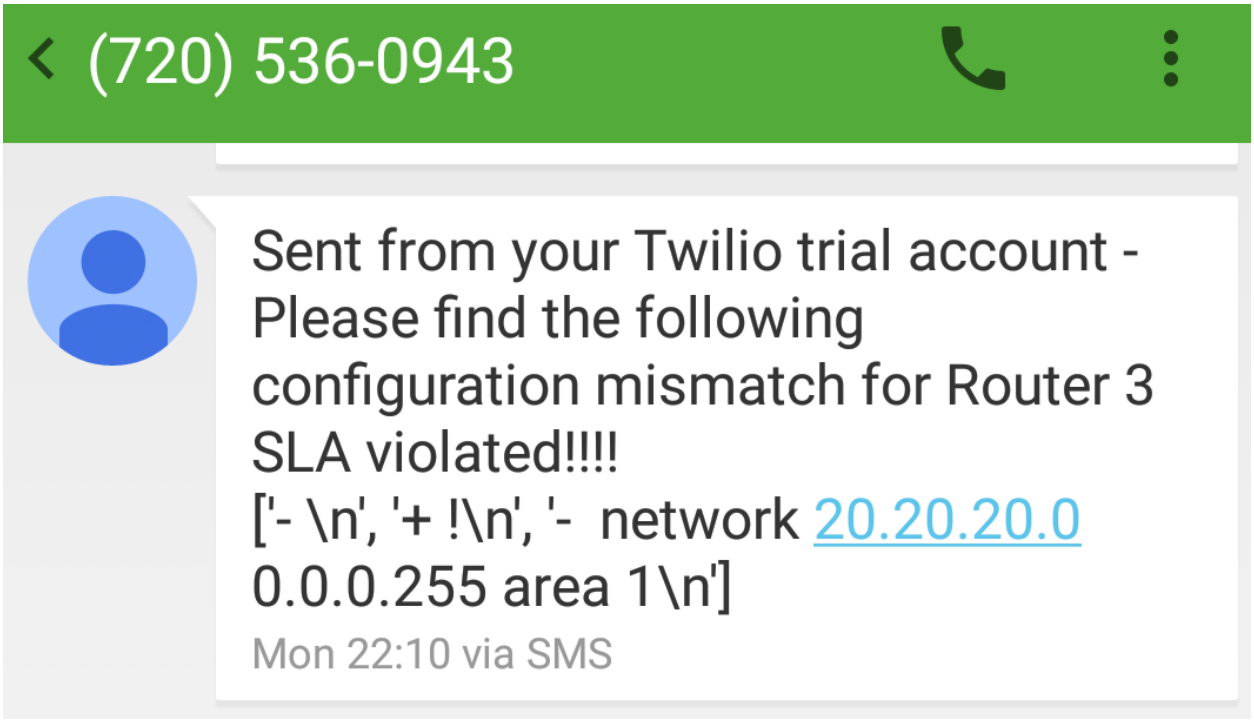

Fig 7(a): Text message for SLA Violation

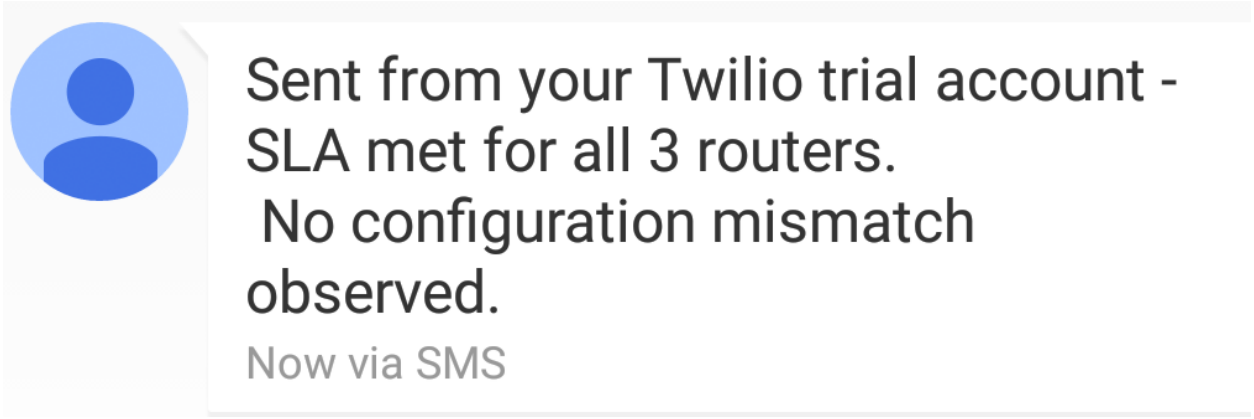

Fig 7(b): Text message for SLA compliance

7. The **initiate.py** module sends e-mail to the network admin describing SLA compliance and SLA violation. In case of violation, the message identifies the non-compliant router and also mentions the details of the configuration mismatch. It also sends the networkx graph as an attachment.

deha0322rosa6650@gmail.com

to me

Please find the following configuration mismatch for Router 3
SLA violated!!!!
['- \n', '+ !\n', '- network 20.20.20.0 0.0.0.255 area 1\n']

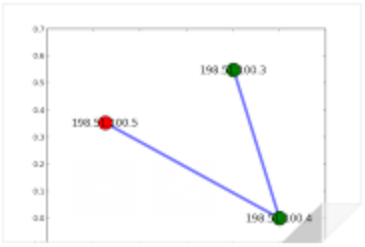

Fig 8(a): Mail for SLA Violation with attached graph

deha0322rosa6650@gmail.com

to me

SLA met for all 3 routers.
No configuration mismatch observed.

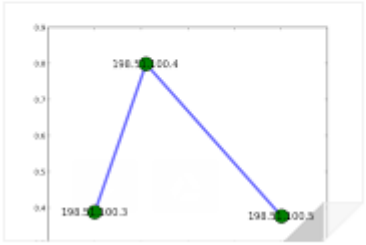

Fig 8(b) Mail for SLA Compliance with attached graph