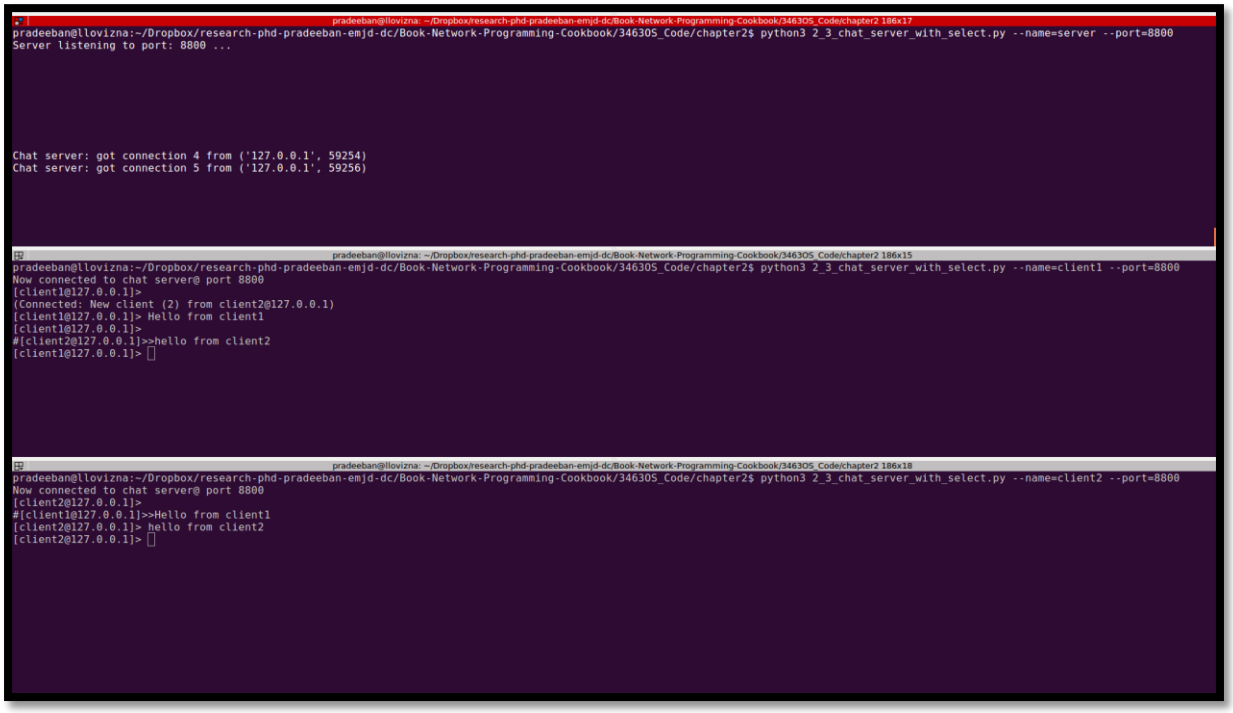
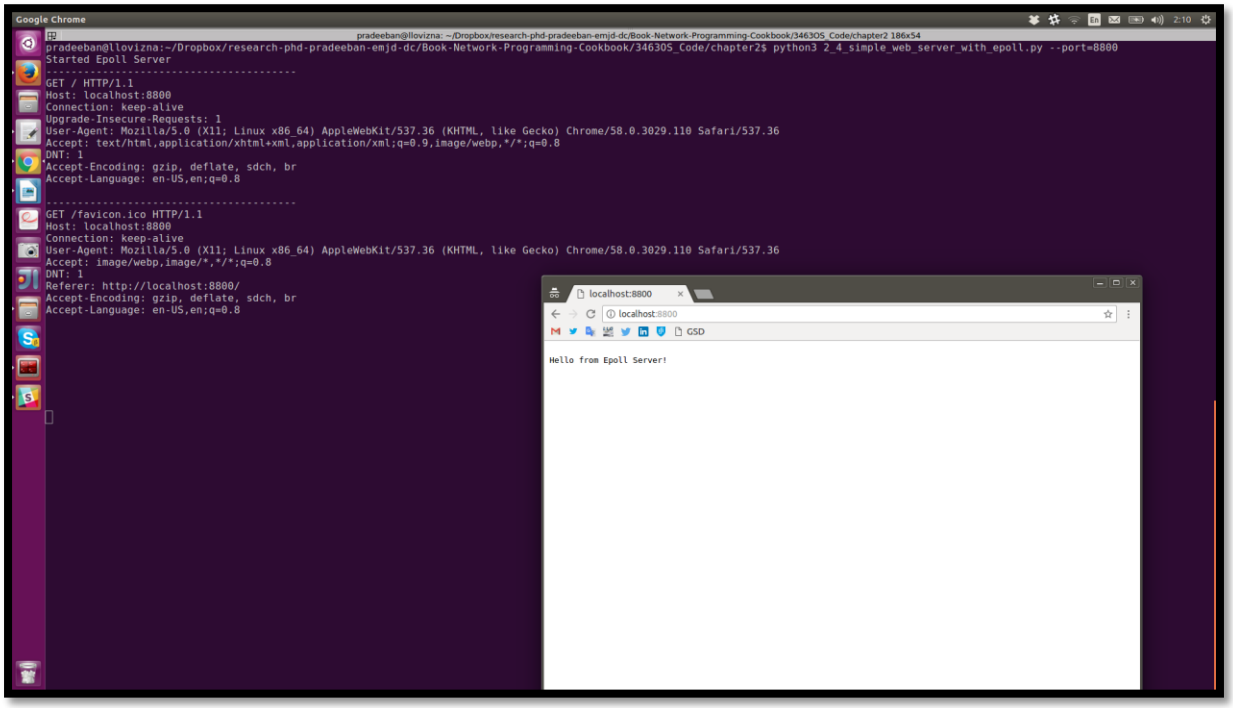
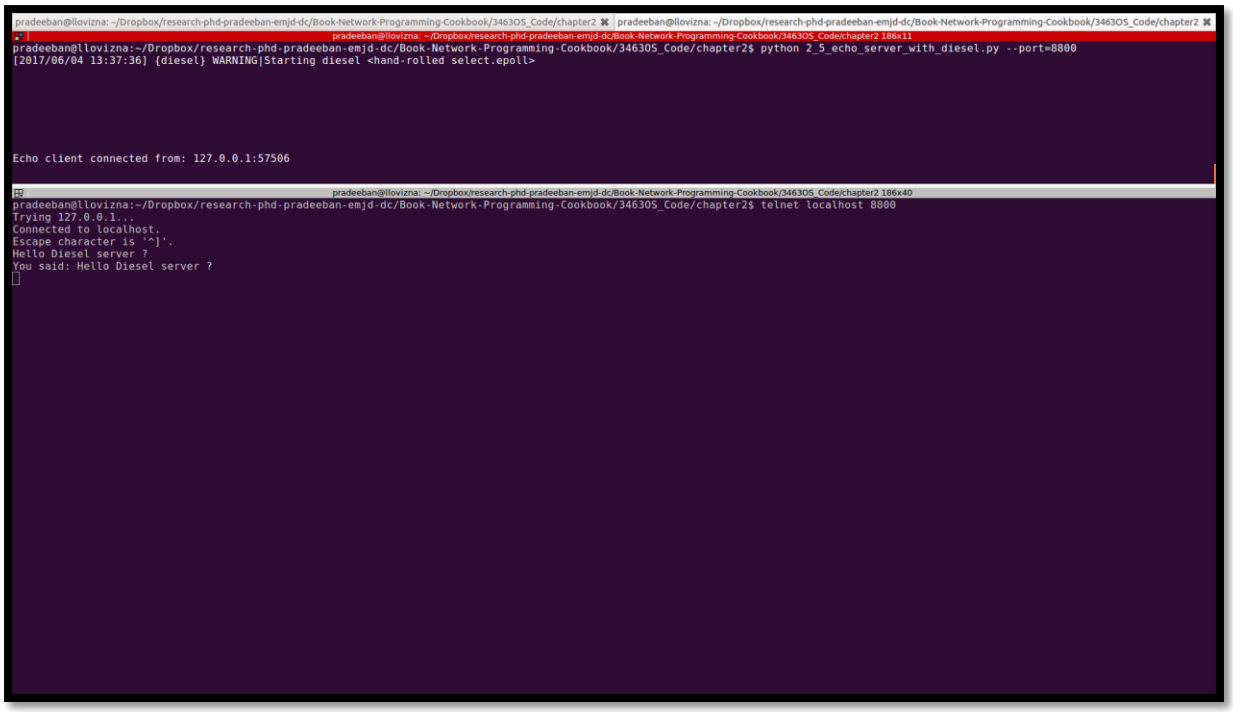
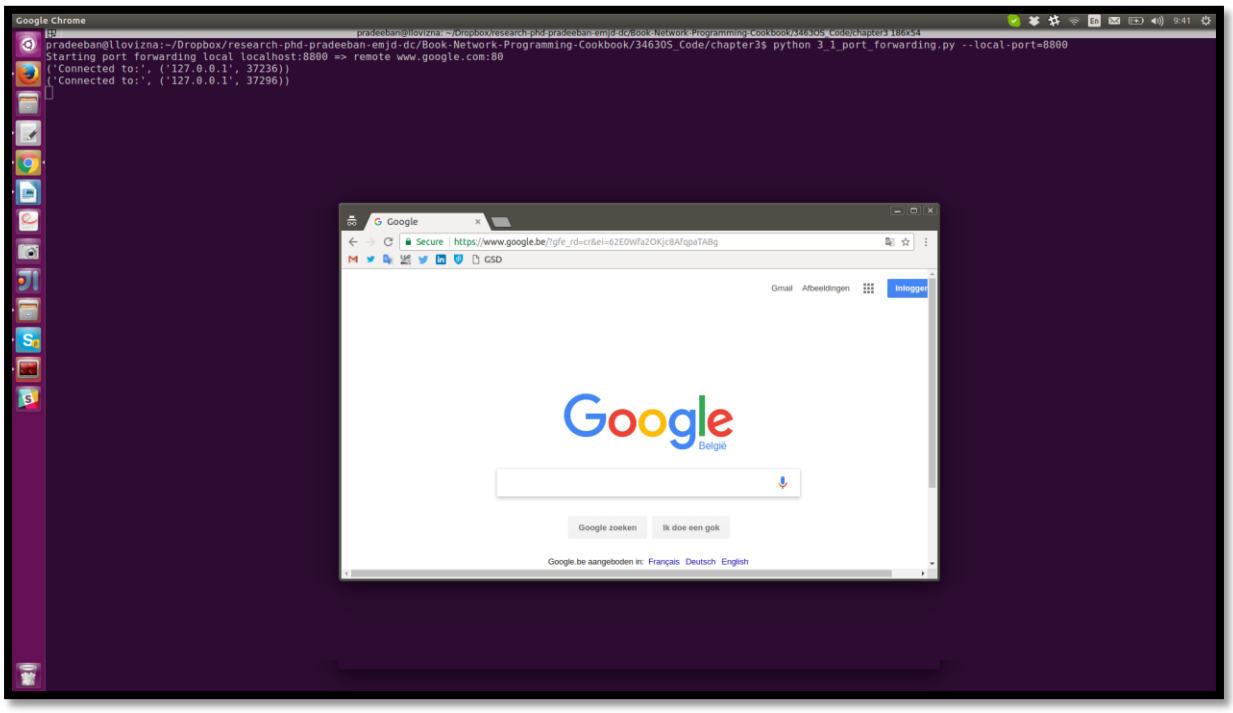
Chapter 2: Multiplexing Socket I/O for Better Performance

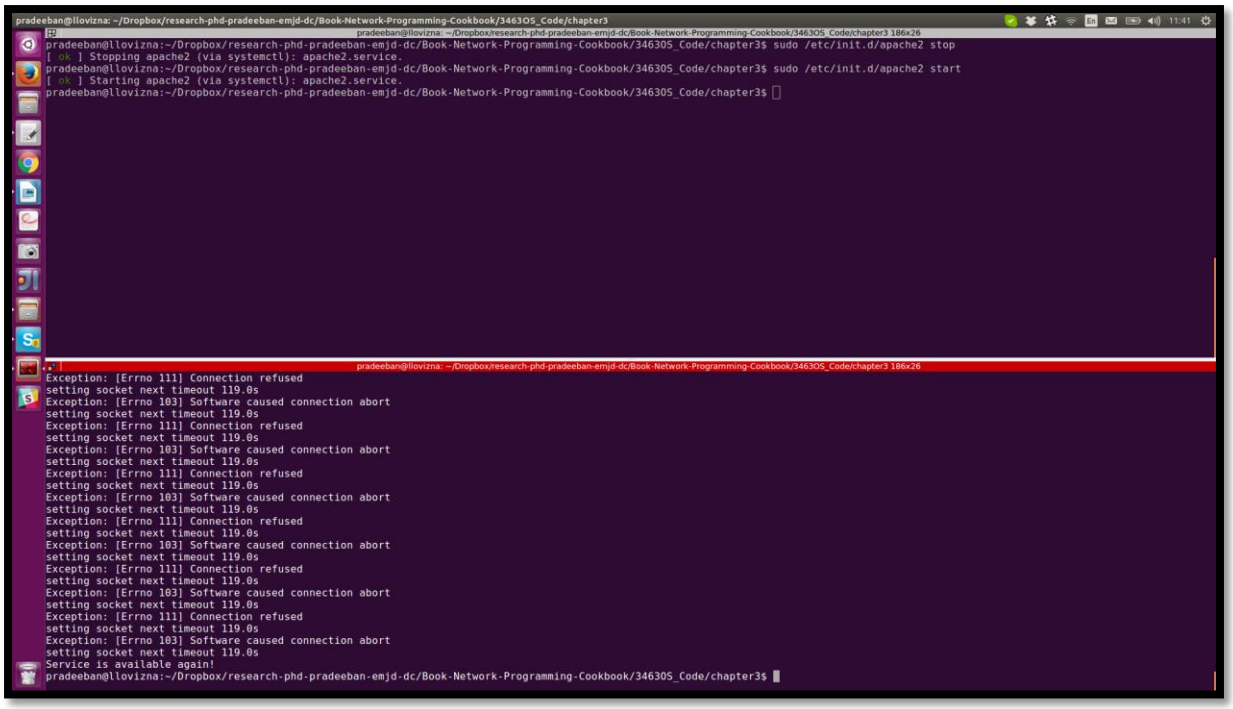


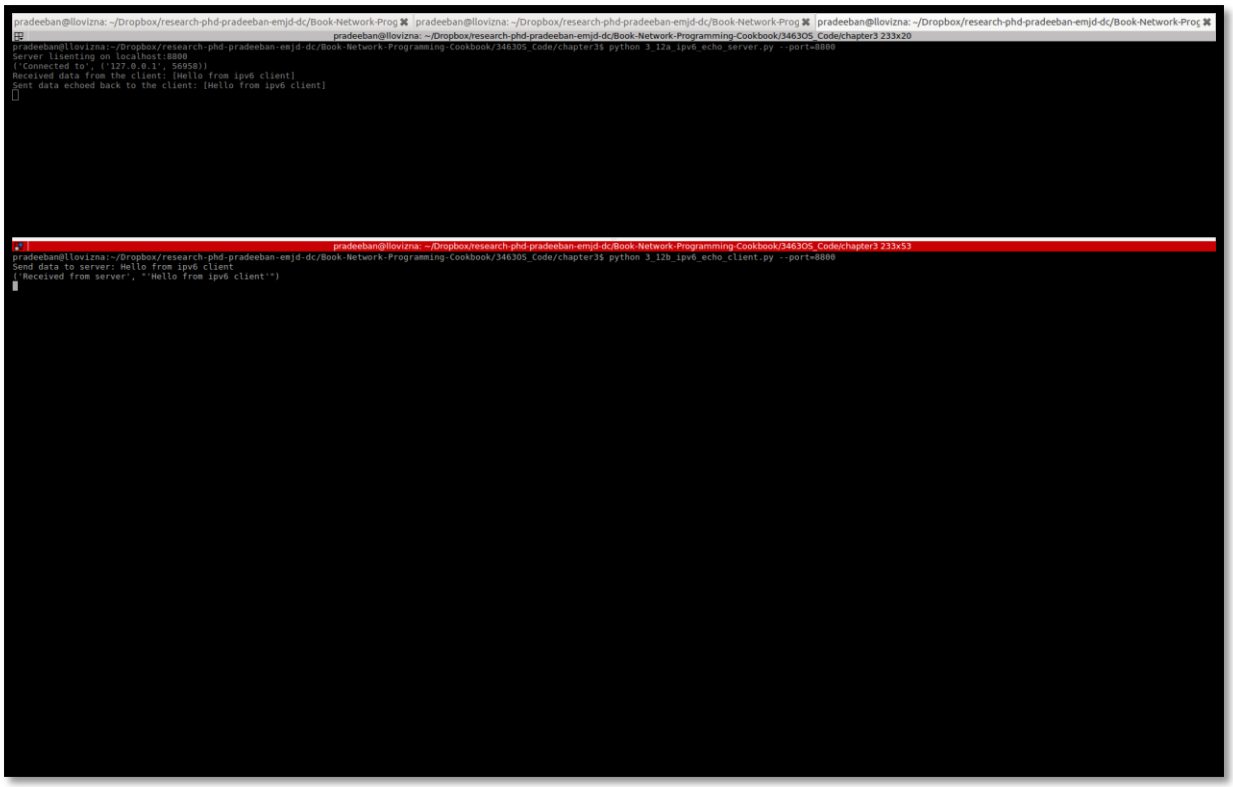



pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter2
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter2
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter2 186x11
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter2$ python 2_5_echo_server_with_diesel.py --port=8800
[2017/06/04 13:37:36] {diesel} WARNING|Starting diesel <hand-rolled select.epoll>
Echo client connected from: 127.0.0.1:57506
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter2 186x40
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter2$ telnet localhost 8800
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
Hello Diesel server ?
You said: Hello Diesel server ?

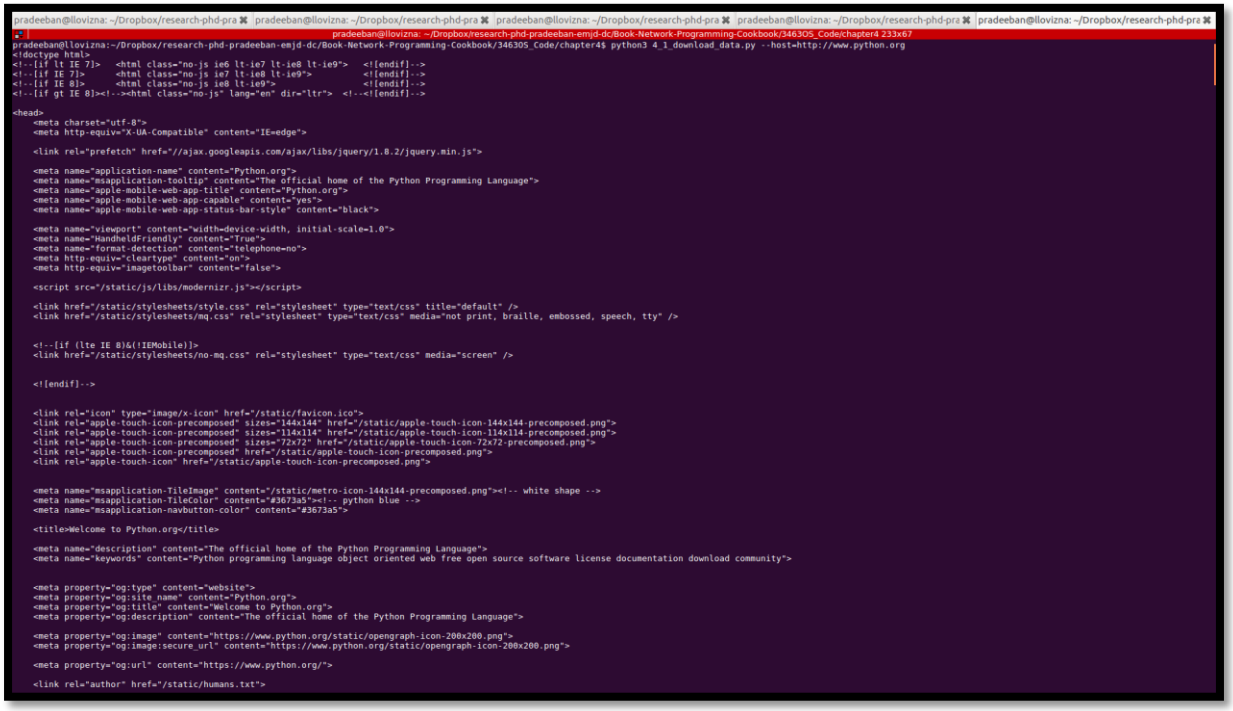
Chapter 3: IPv6, Unix Domain Sockets, and Network Interfaces

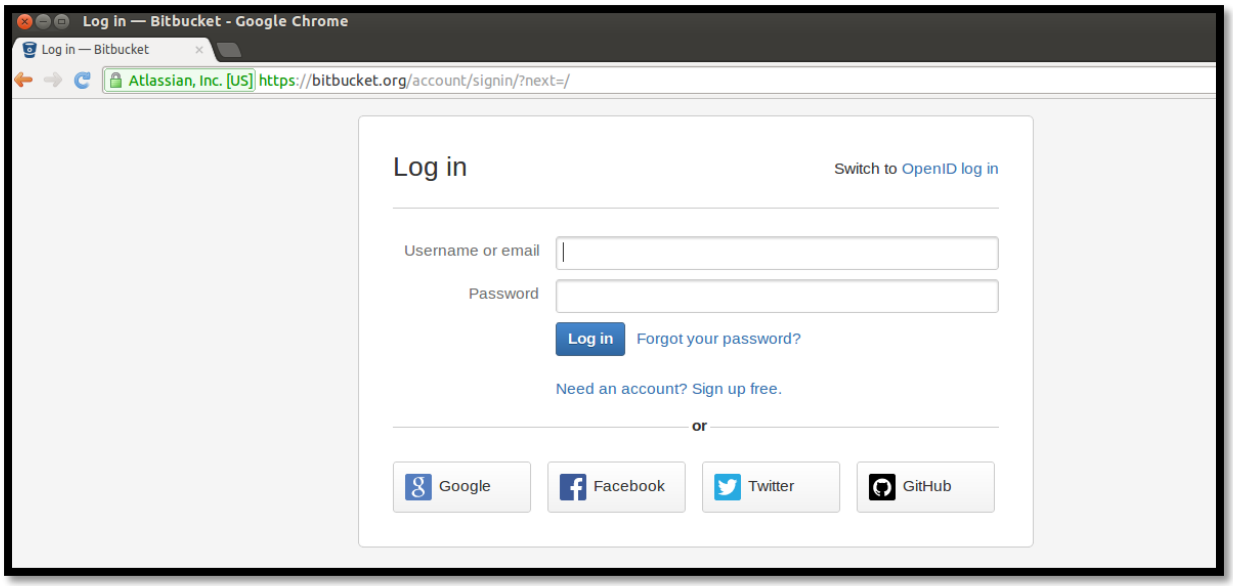


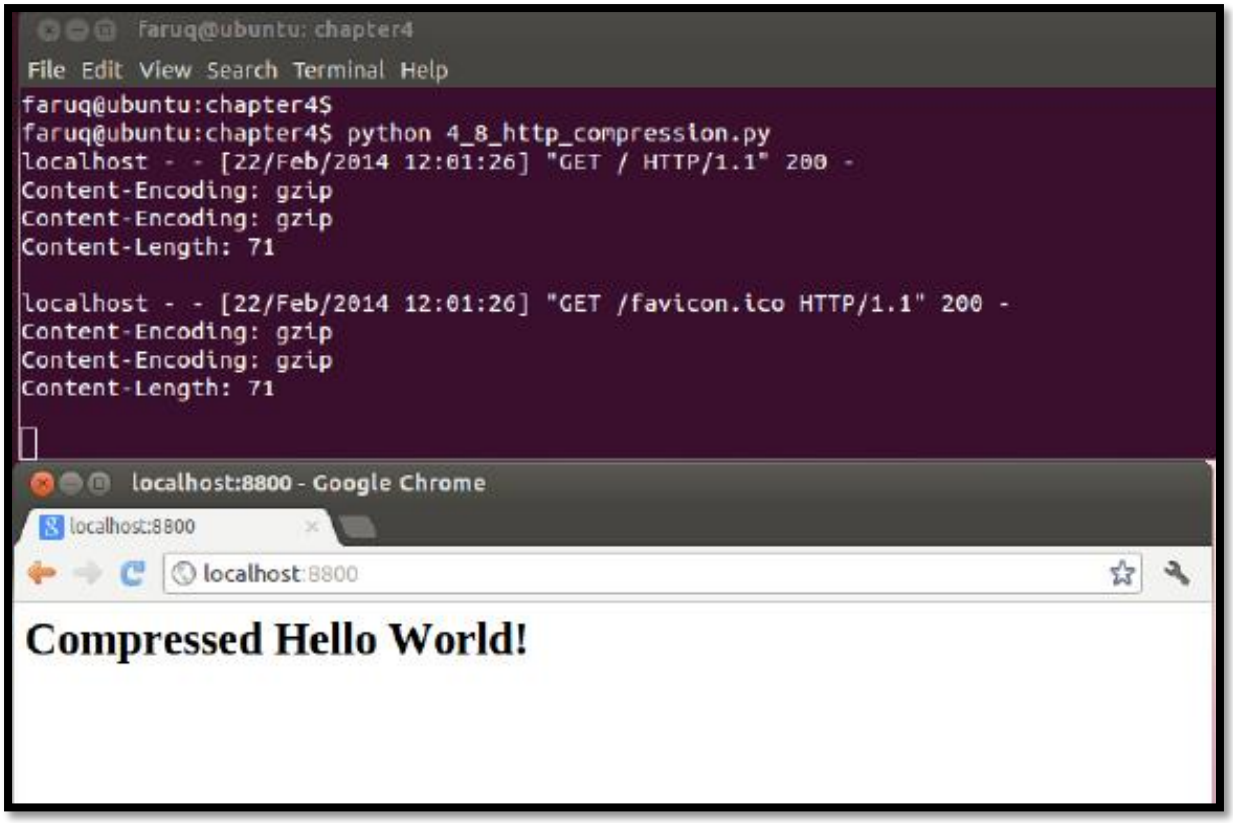


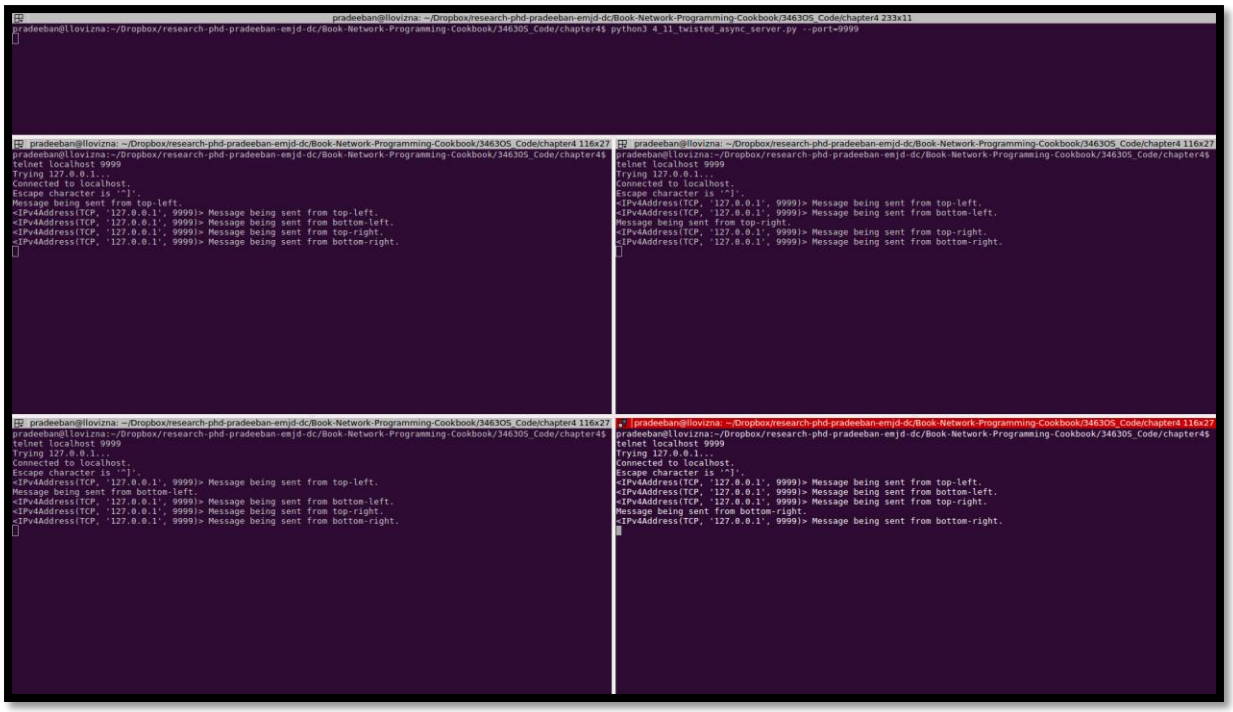

pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Prog
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Prog
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Prog
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter3 233x20
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter3$ python 3_12a_ipv6_echo_server.py --port=8800
Server listening on localhost:8800
('Connected to', ('127.0.0.1', 56958))
Received data from the client: [Hello from ipv6 client]
Sent data echoed back to the client: [Hello from ipv6 client]
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter3 233x53
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter3$ python 3_12b_ipv6_echo_client.py --port=8800
Send data to server: Hello from ipv6 client
('Received from server', "'Hello from ipv6 client'")

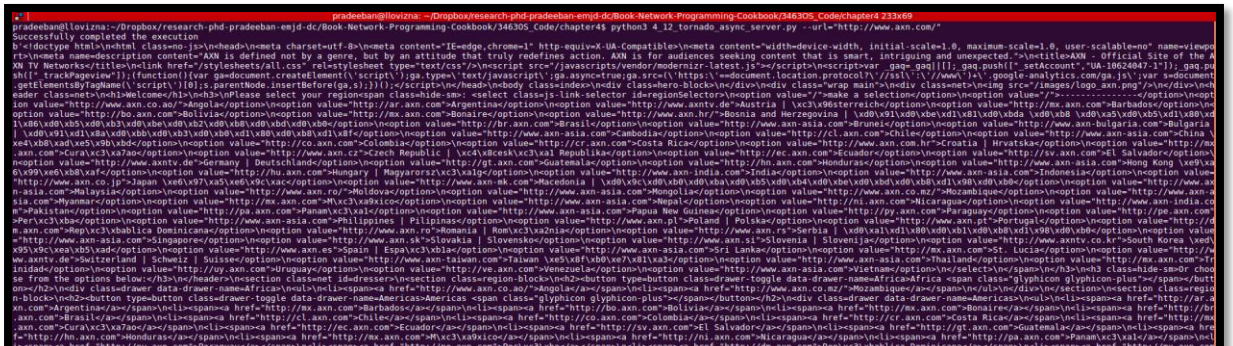
Chapter 4: Programming with HTTP for the Internet

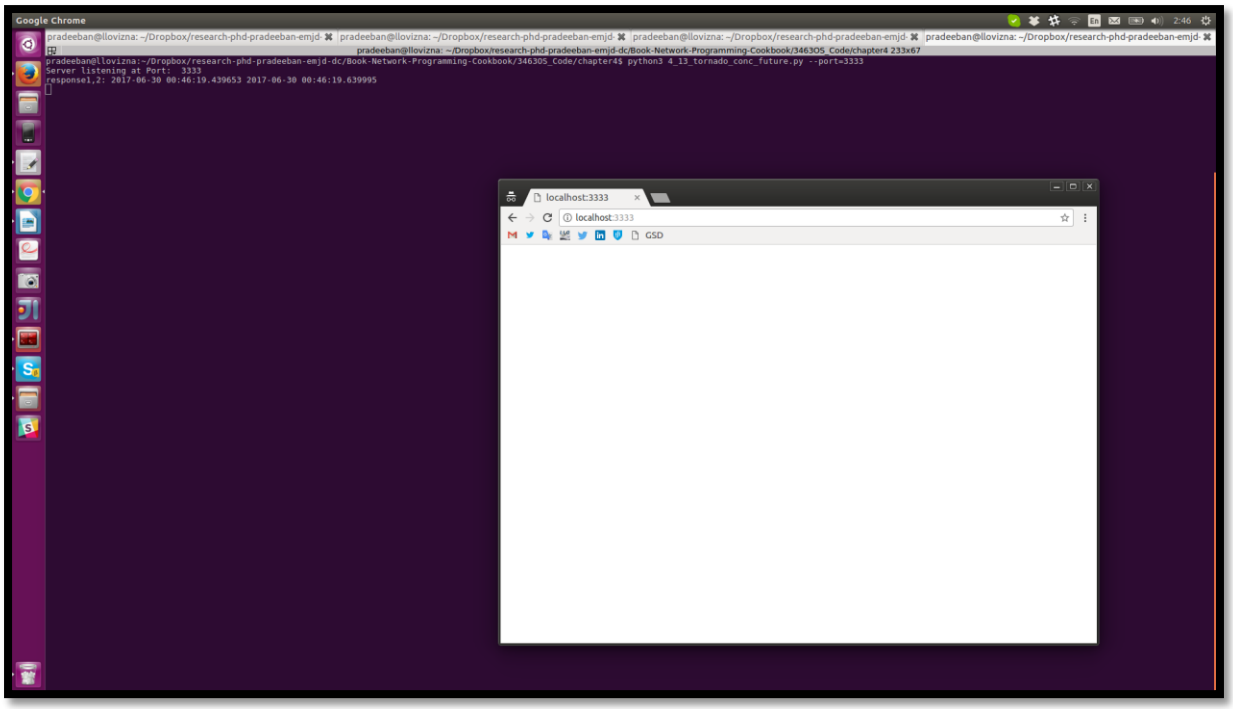



Log in — Bitbucket - Google Chrome
Log in — Bitbucket
Atlassian, Inc. [US] https://bitbucket.org/account/signin/?next=/
Log in
Switch to OpenID log in
Username or email
Password
Log in
Forgot your password?
Need an account? Sign up free.
or
Google
Facebook
Twitter
GitHub

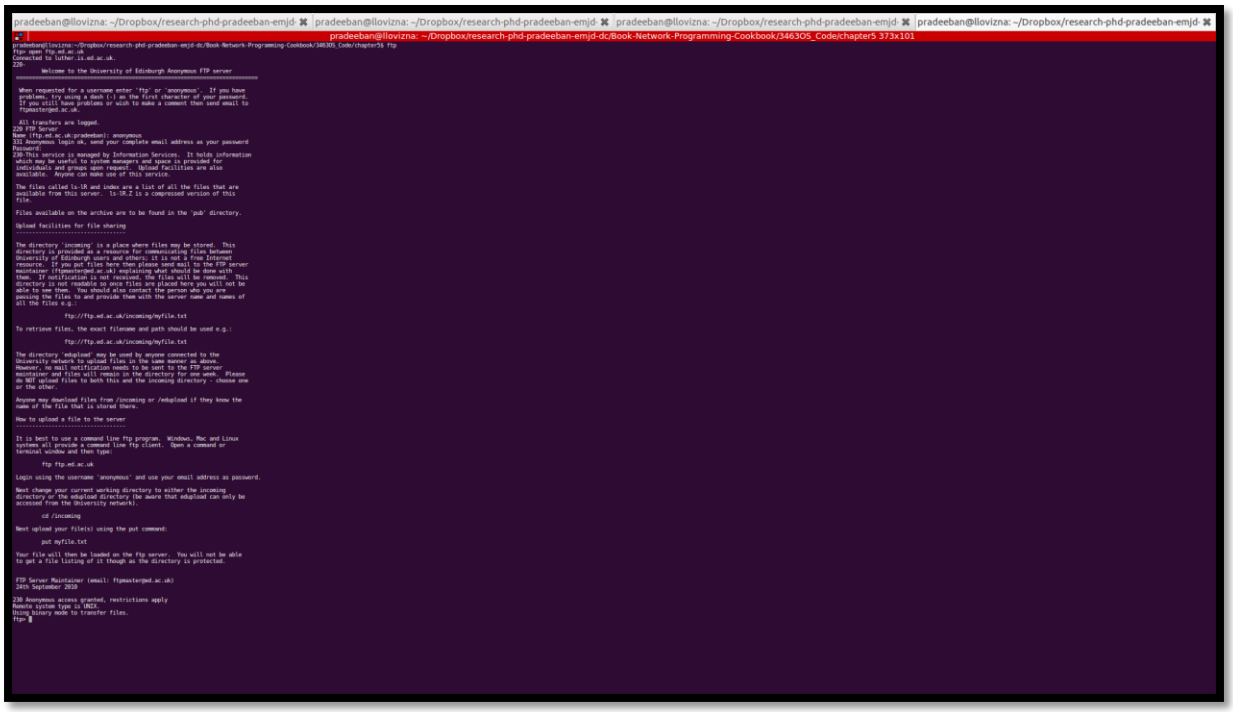

faruq@ubuntu: chapter4
File Edit View Search Terminal Help
faruq@ubuntu:chapter4$
faruq@ubuntu:chapter4$ python 4_8_http_compression.py
localhost - - [22/Feb/2014 12:01:26] "GET / HTTP/1.1" 200 -
Content-Encoding: gzip
Content-Encoding: gzip
Content-Length: 71
localhost - - [22/Feb/2014 12:01:26] "GET /favicon.ico HTTP/1.1" 200 -
Content-Encoding: gzip
Content-Encoding: gzip
Content-Length: 71
localhost:8800 - Google Chrome
localhost:8800
localhost:8800
Compressed Hello World!

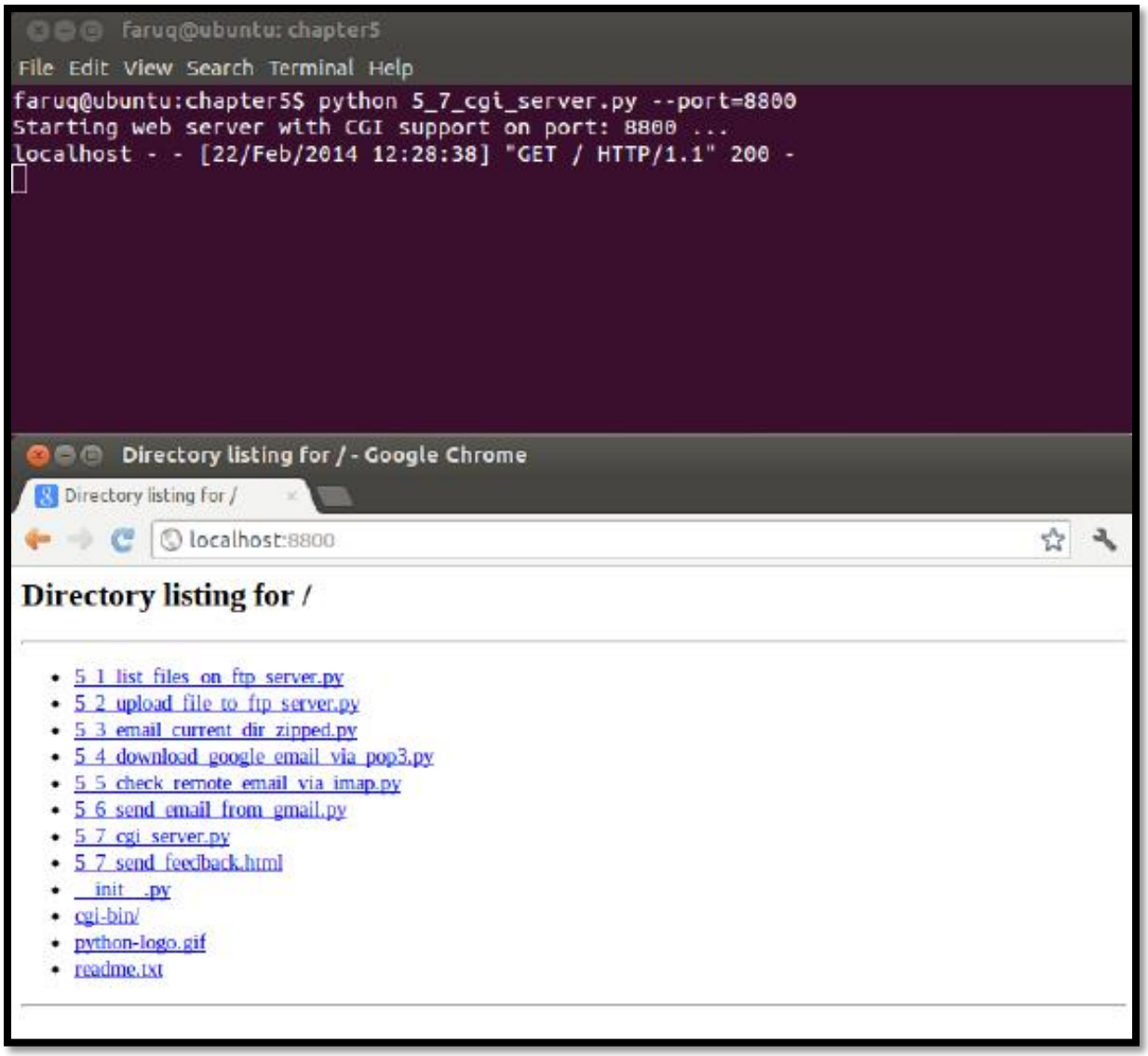

pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4 233x11
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4$ python3 4_11_twisted_async_server.py --port=9999
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4 116x27
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4$
telnet localhost 9999
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
Message being sent from top-left.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from top-left.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from bottom-left.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from top-right.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from bottom-right.
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4 116x27
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4$
telnet localhost 9999
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from top-left.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from bottom-left.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from top-right.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from bottom-right.
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4 116x27
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4$
telnet localhost 9999
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from top-left.
Message being sent from bottom-left.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from bottom-left.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from top-right.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from bottom-right.
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4 116x27
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4$
telnet localhost 9999
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from top-left.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from bottom-left.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from top-right.
Message being sent from bottom-right.
<IPv4Address(TCP, '127.0.0.1', 9999)> Message being sent from bottom-right.

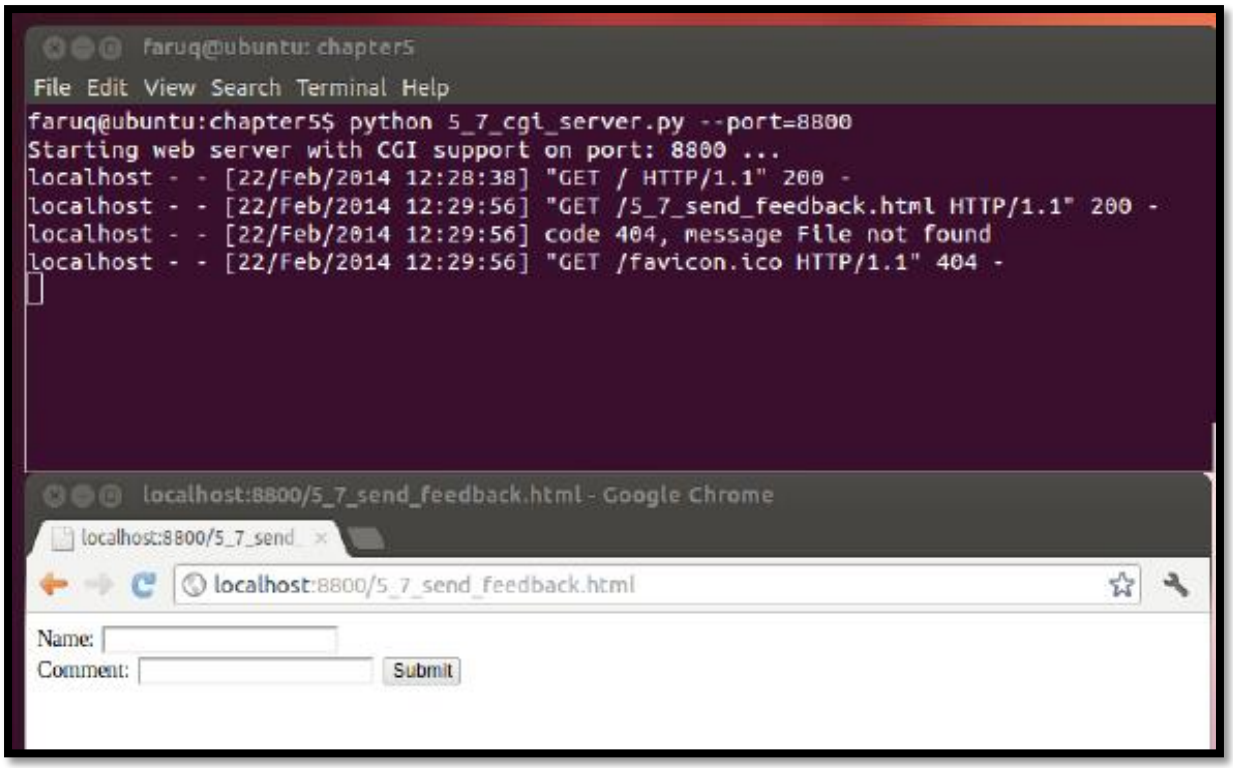

pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4 233x69
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4$ python3 4_12_tornado_async_server.py --url="http://www.axn.com/"
Successfully completed the execution


Google Chrome
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4 233x67
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter4$ python3 4_13_tornado_conc_future.py --port=3333
Server listening at Port: 3333
response1,2: 2017-06-30 00:46:19.439653 2017-06-30 00:46:19.639995
localhost:3333
GSD

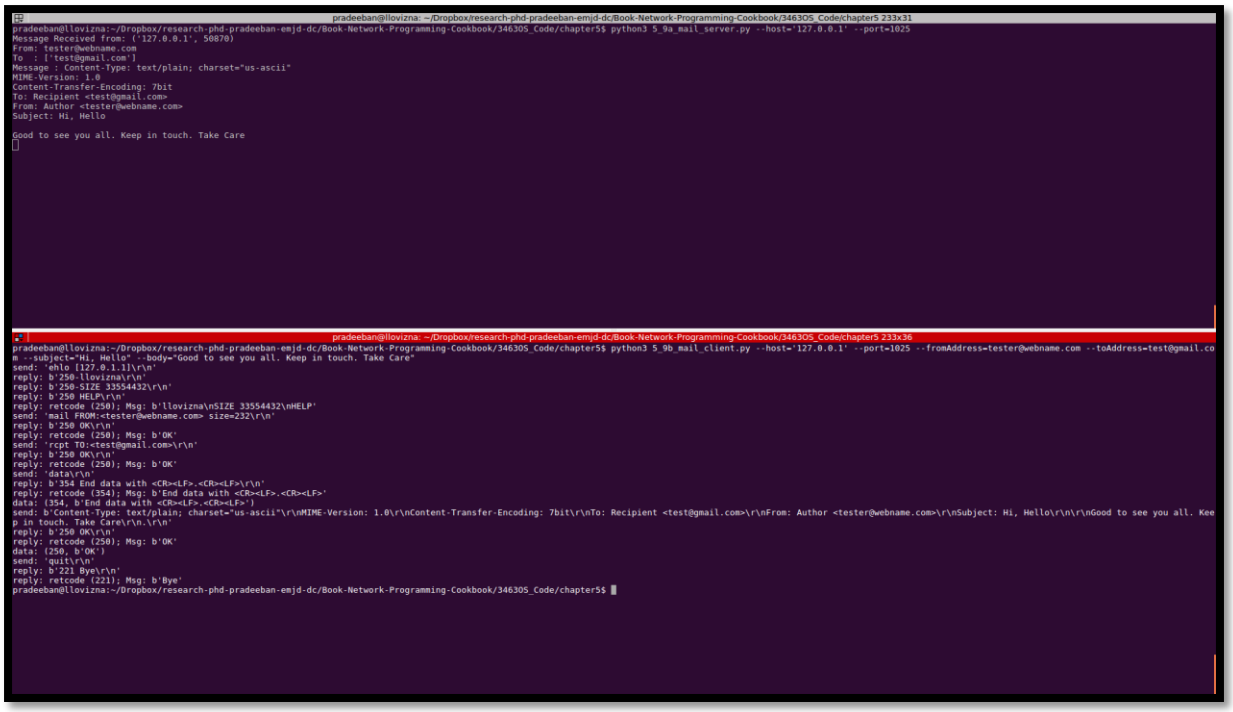
Chapter 5: Email Protocols, FTP, and CGI Programming

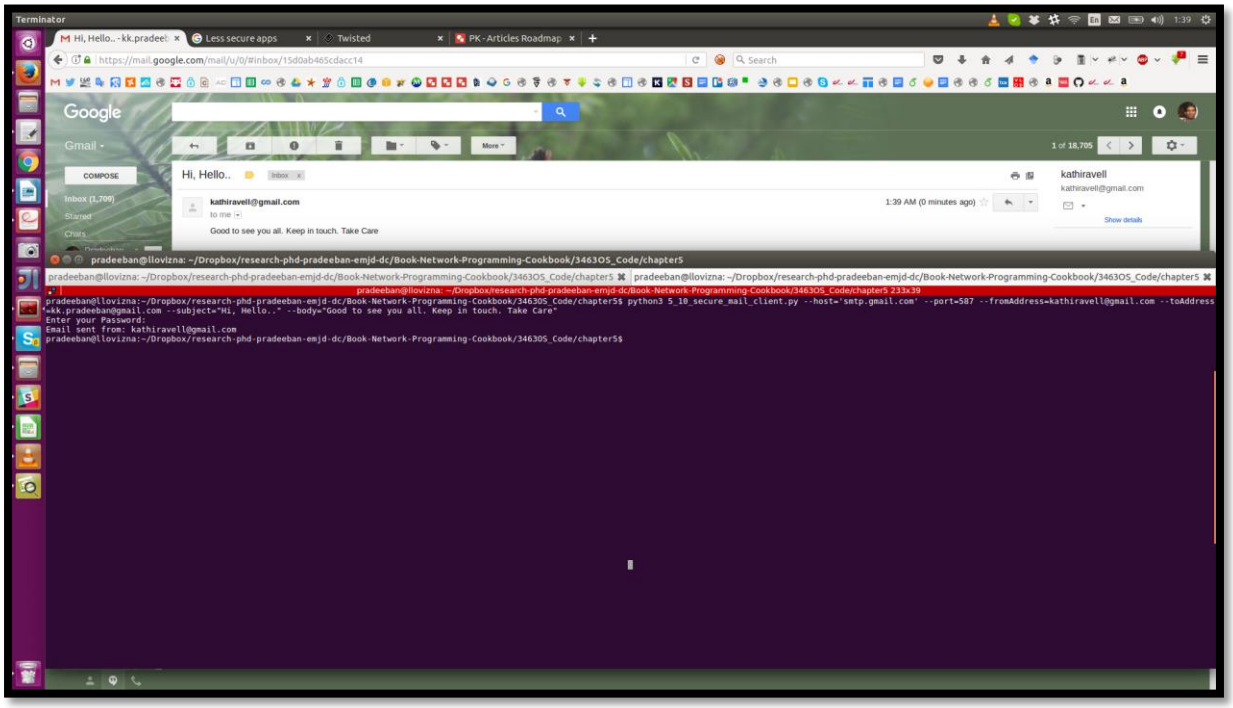



faruq@ubuntu: chapter5
File Edit View Search Terminal Help
faruq@ubuntu:chapter5$ python 5_7_cgi_server.py --port=8800
Starting web server with CGI support on port: 8800 ...
localhost - - [22/Feb/2014 12:28:38] "GET / HTTP/1.1" 200 -
Directory listing for / - Google Chrome
Directory listing for /
localhost:8800
Directory listing for /
5_1_list_files_on_ftp_server.py
5_2_upload_file_to_ftp_server.py
5_3_email_current_dir_zipped.py
5_4_download_google_email_via_pop3.py
5_5_check_remote_email_via_imap.py
5_6_send_email_from_gmail.py
5_7_cgi_server.py
5_7_send_feedback.html
__init__.py
cgi-bin/
python-logo.gif
readme.txt

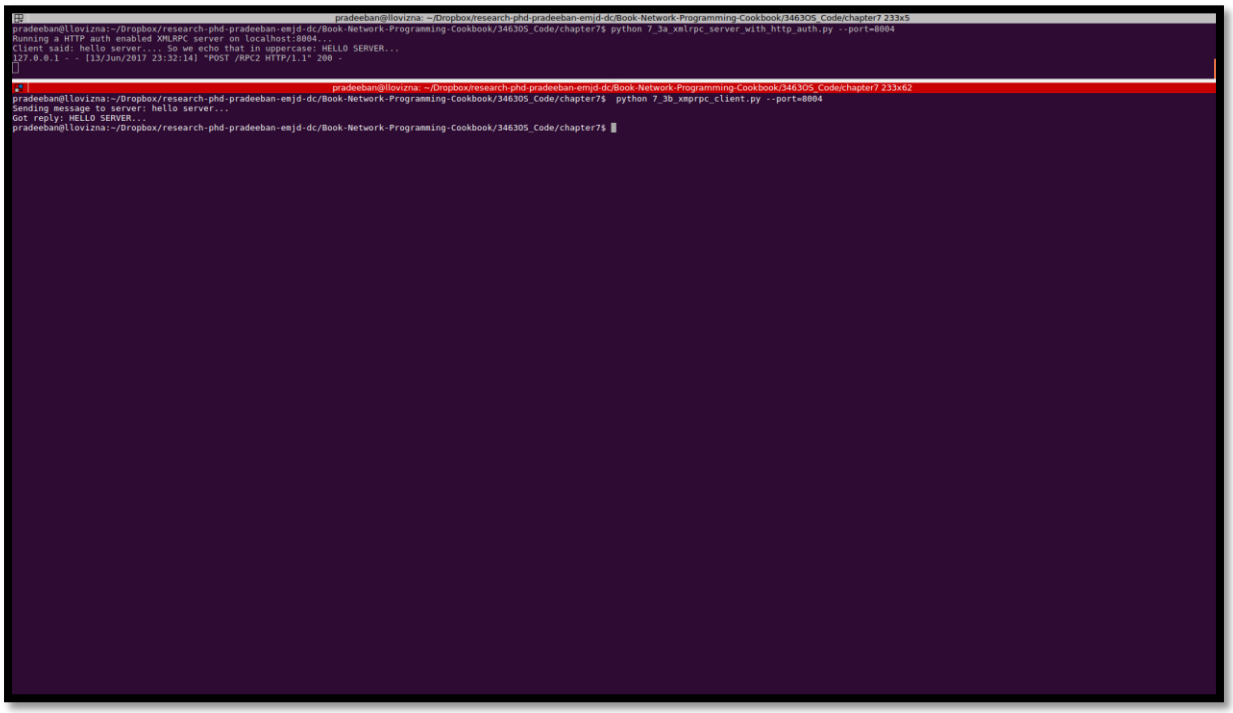

faruq@ubuntu: chapter5
File Edit View Search Terminal Help
faruq@ubuntu:chapter5$ python 5_7_cgi_server.py --port=8800
Starting web server with CGI support on port: 8800 ...
localhost - - [22/Feb/2014 12:28:38] "GET / HTTP/1.1" 200 -
localhost - - [22/Feb/2014 12:29:56] "GET /5_7_send_feedback.html HTTP/1.1" 200 -
localhost - - [22/Feb/2014 12:29:56] code 404, message File not found
localhost - - [22/Feb/2014 12:29:56] "GET /favicon.ico HTTP/1.1" 404 -
localhost:8800/5_7_send_feedback.html - Google Chrome
localhost:8800/5_7_send
localhost:8800/5_7_send_feedback.html
Name:
Comment:
Submit

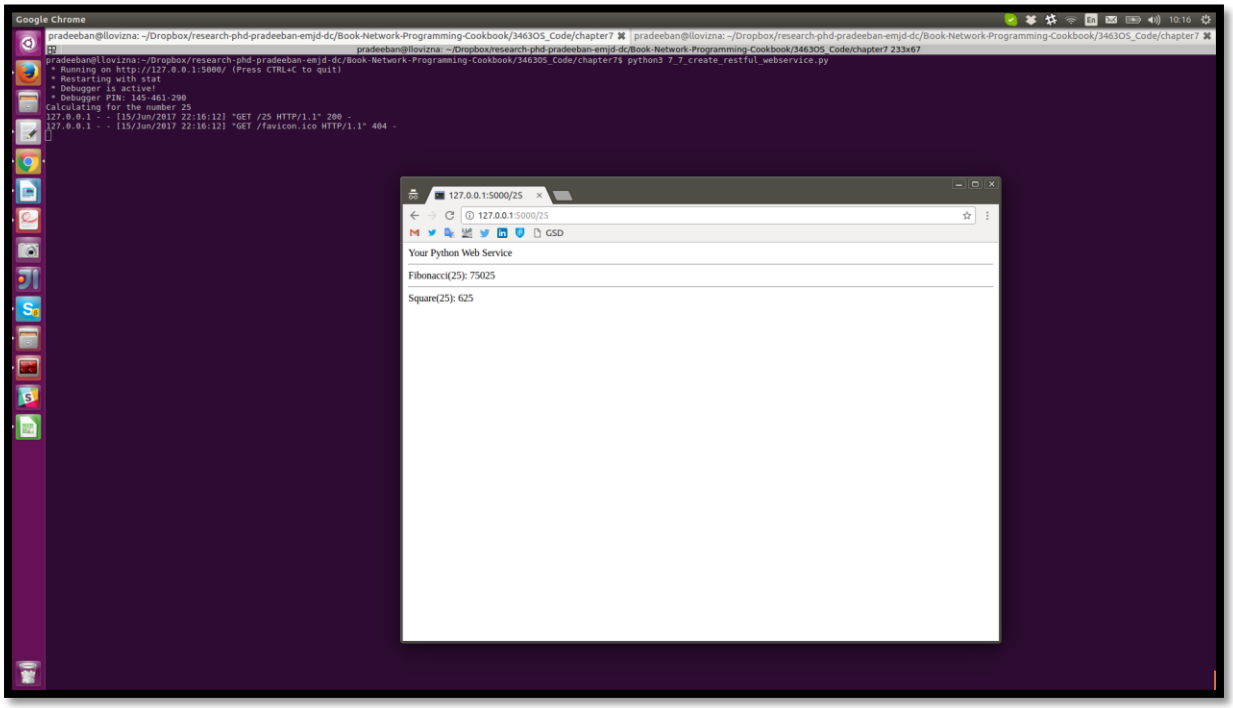
CGI Program Example - Google Chrome
CGI Program Example
localhost:8800/cgi-bin/5_7_get_feedback.py
User1 sends a comment: Comment1

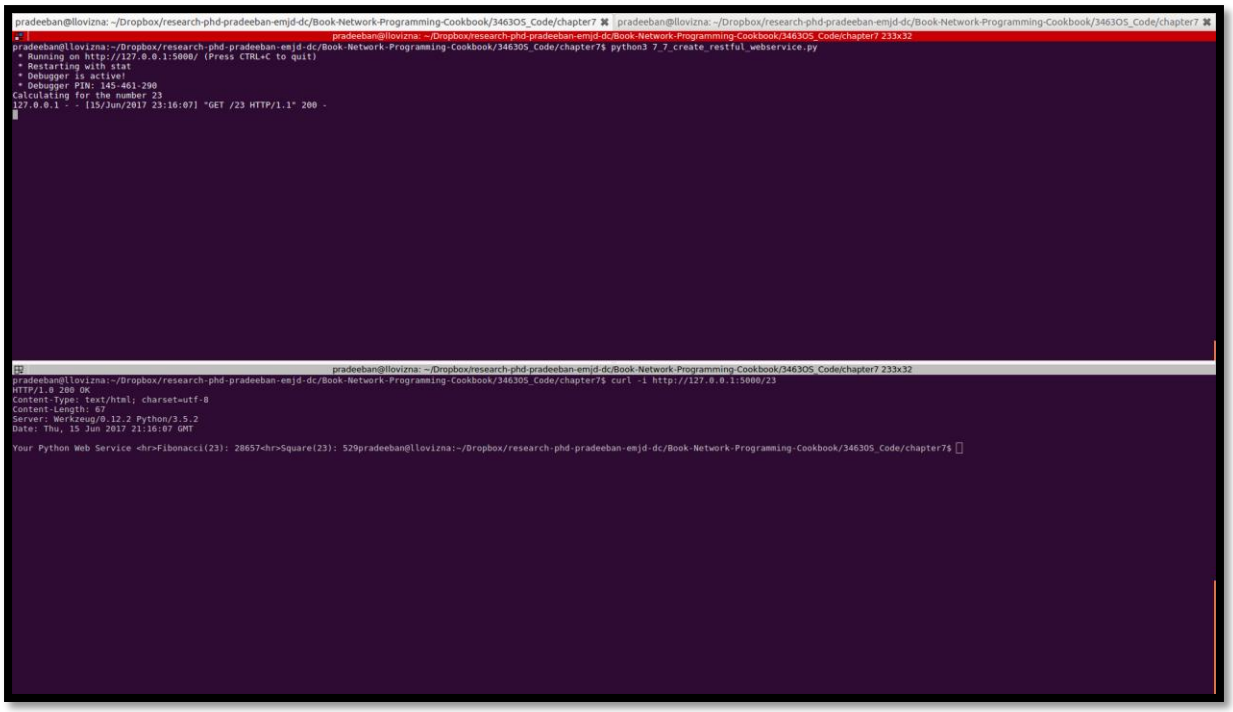

pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter5 233x31
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter5$ python3 5_9a_mail_server.py --host='127.0.0.1' --port=1025
Message Received from: ('127.0.0.1', 50870)
From: tester@webname.com
To : ['test@gmail.com']
Message : Content-Type: text/plain; charset="us-ascii"
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit
To: Recipient <test@gmail.com>
From: Author <tester@webname.com>
Subject: Hi, Hello
Good to see you all. Keep in touch. Take Care
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter5 233x36
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter5$ python3 5_9b_mail_client.py --host='127.0.0.1' --port=1025 --fromAddress=tester@webname.com --toAddress=test@gmail.com --subject="Hi, Hello" --body="Good to see you all. Keep in touch. Take Care"
send: 'ehlo [127.0.1.1]\r\n'
reply: b'250-llovizna\r\n'
reply: b'250-SIZE 33554432\r\n'
reply: b'250 HELP\r\n'
reply: retcode (250); Msg: b'llovizna\nSIZE 33554432\nHELP'
send: 'mail FROM:<tester@webname.com> size=232\r\n'
reply: b'250 OK\r\n'
reply: retcode (250); Msg: b'OK'
send: 'rcpt TO:<test@gmail.com>\r\n'
reply: b'250 OK\r\n'
reply: retcode (250); Msg: b'OK'
send: 'data\r\n'
reply: b'354 End data with <CR><LF>.<CR><LF>\r\n'
reply: retcode (354); Msg: b'End data with <CR><LF>.<CR><LF>'
data: (354, b'End data with <CR><LF>.<CR><LF>')
send: b'Content-Type: text/plain; charset="us-ascii"\r\nMIME-Version: 1.0\r\nContent-Transfer-Encoding: 7bit\r\nTo: Recipient <test@gmail.com>\r\nFrom: Author <tester@webname.com>\r\nSubject: Hi, Hello\r\n\r\nGood to see you all. Keep in touch. Take Care\r\n.\r\n'
reply: b'250 OK\r\n'
reply: retcode (250); Msg: b'OK'
data: (250, b'OK')
send: 'quit\r\n'
reply: b'221 Bye\r\n'
reply: retcode (221); Msg: b'Bye'
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter5$


Terminator
Hi, Hello..-kk.pradeeb
Less secure apps
Twisted
PK-Articles Roadmap
https://mail.google.com/mail/u/0/#inbox/15d0ab465cdacc14
Google
Gmail
COMPOSE
Inbox (1,709)
Starred
Chats
Hi, Hello..
kathiravell@gmail.com
to me
Good to see you all. Keep in touch. Take Care
1:39 AM (0 minutes ago)
kathiravell
kathiravell@gmail.com
Show details
1 of 18,705
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter5
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter5
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter5 233x39
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter5$ python3 5_10_secure_mail_client.py --host='smtp.gmail.com' --port=587 --fromAddress=kathiravell@gmail.com --toAddress=kk.pradeeban@gmail.com --subject="Hi, Hello.." --body="Good to see you all. Keep in touch. Take Care"
Enter your Password:
Email sent from: kathiravell@gmail.com
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter5$

Chapter 7: Working with Web Services – XML-RPC, SOAP, and REST






pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter7
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter7
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter7 233x32
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter7$ python3 7_7_create_restful_webservice.py
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 145-461-290
Calculating for the number 23
127.0.0.1 - - [15/Jun/2017 23:16:07] "GET /23 HTTP/1.1" 200 -
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter7 233x32
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter7$ curl -i http://127.0.0.1:5000/23
HTTP/1.0 200 OK
Content-Type: text/html; charset=utf-8
Content-Length: 67
Server: Werkzeug/0.12.2 Python/3.5.2
Date: Thu, 15 Jun 2017 21:16:07 GMT
Your Python Web Service <hr>Fibonacci(23): 28657<hr>Square(23): 529pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter7$

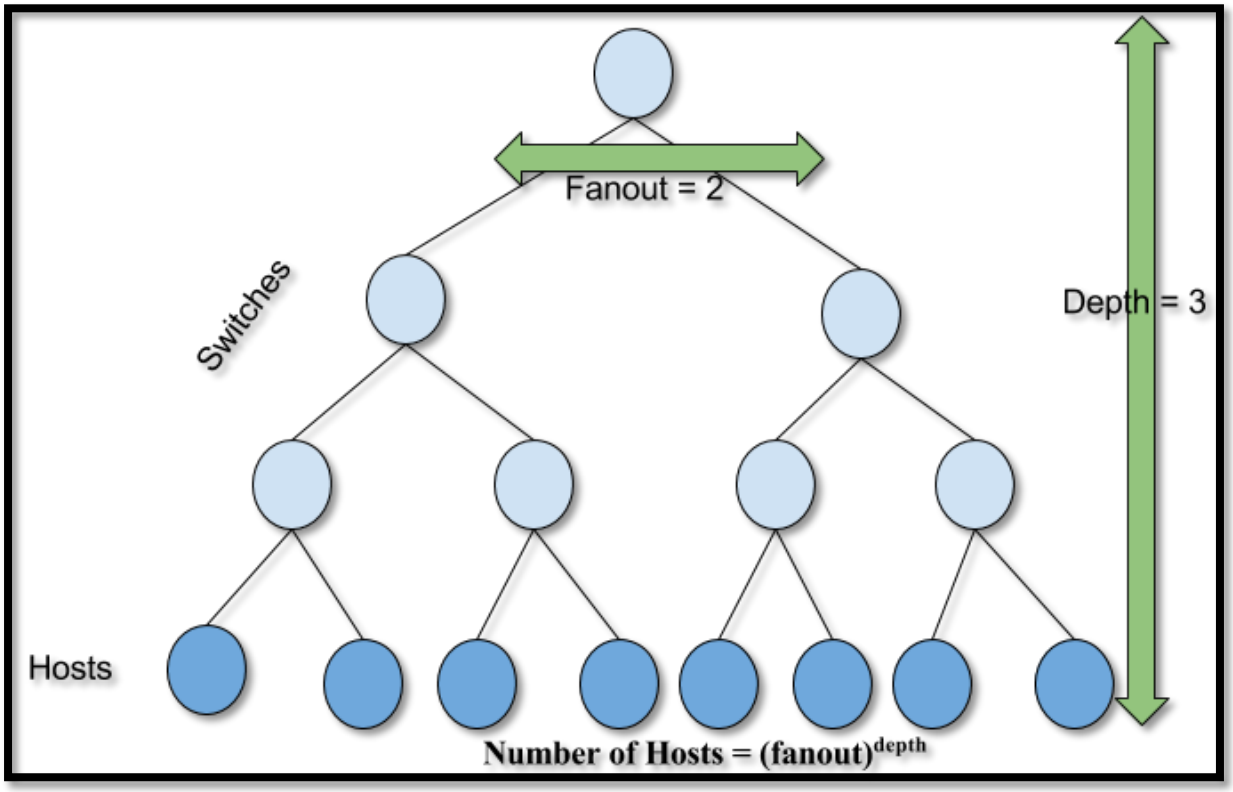
Chapter 8: Network Monitoring and Security

Chapter 9: Network Modeling

```
pradeeban@llovizna: ~/programs/ns-allinone-3.26/ns-3.26 165x48
pradeeban@llovizna:~/programs/ns-allinone-3.26/ns-3.26$ ./waf --run bench-simulator
Waf: Entering directory `/home/pradeeban/programs/ns-allinone-3.26/ns-3.26/build'
Waf: Leaving directory `/home/pradeeban/programs/ns-allinone-3.26/ns-3.26/build'
Build commands will be stored in build/compile_commands.json
'build' finished successfully (1.567s)
ns3.26-bench-simulator-debug:
ns3.26-bench-simulator-debug: scheduler: ns3::MapScheduler
ns3.26-bench-simulator-debug: population: 100000
ns3.26-bench-simulator-debug: total events: 1000000
ns3.26-bench-simulator-debug: runs: 1
ns3.26-bench-simulator-debug: using default exponential distribution

Run #       Inititialization:                   Simulation:
            Time (s)    Rate (ev/s) Per (s/ev)  Time (s)    Rate (ev/s) Per (s/ev)
----------- ----------- ----------- ----------- ----------- ----------- -----------
(prime)     1.54        64935.1     1.54e-05    4.27        234192      4.27e-06
0           0.32        312500      3.2e-06     4.08        245098      4.08e-06

pradeeban@llovizna:~/programs/ns-allinone-3.26/ns-3.26$
```



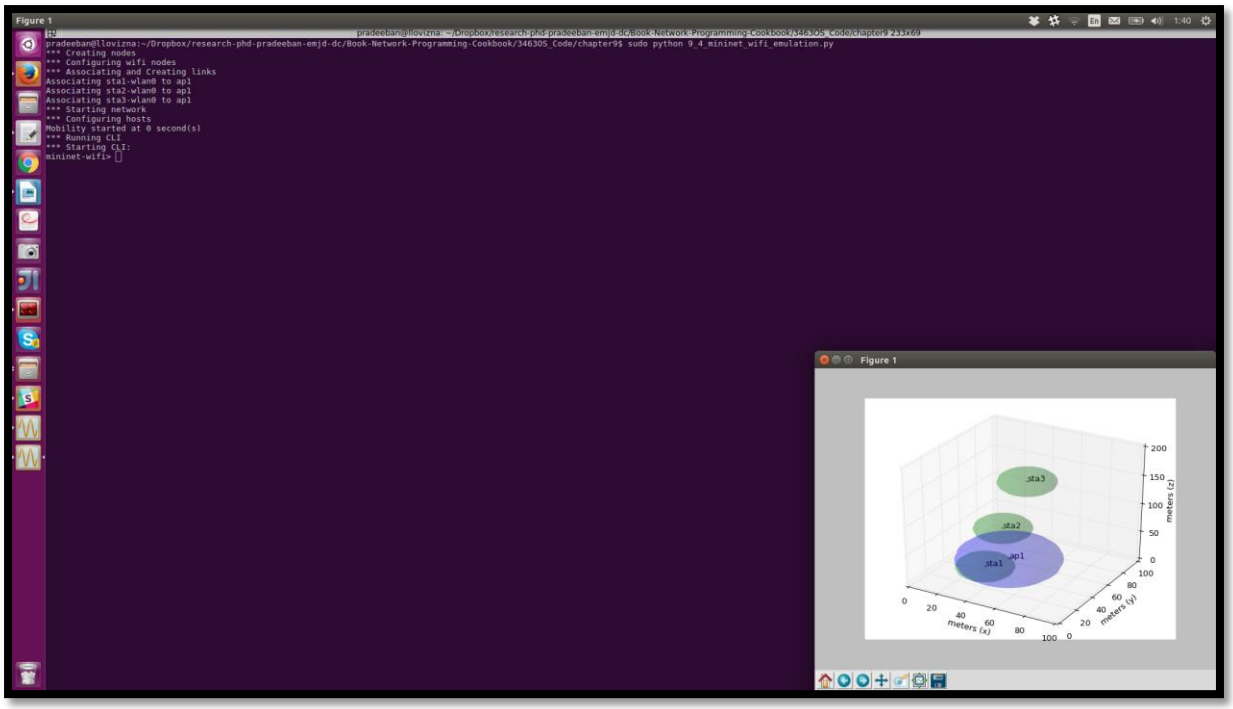


Figure 1
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/346305_Code/chapter9 233x69
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/346305_Code/chapter9$ sudo python 9_4_mininet_wifi_emulation.py
*** Creating nodes
*** Configuring wifi nodes
*** Associating and Creating links
Associating sta1-wlan0 to ap1
Associating sta2-wlan0 to ap1
Associating sta3-wlan0 to ap1
*** Starting network
*** Configuring hosts
Mobility started at 0 second(s)
*** Running CLI
*** Starting CLI:
mininet-wifi>
Figure 1
sta3
sta2
ap1
sta1
meters (x)
meters (y)
meters (z)

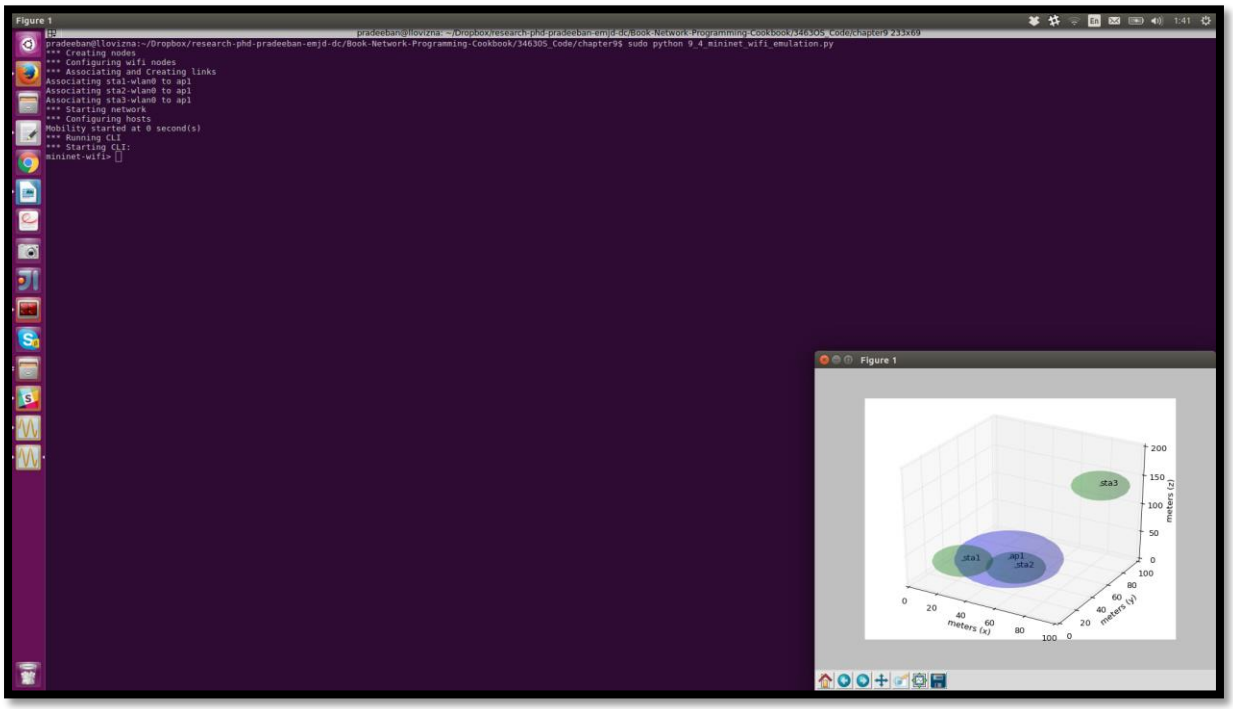
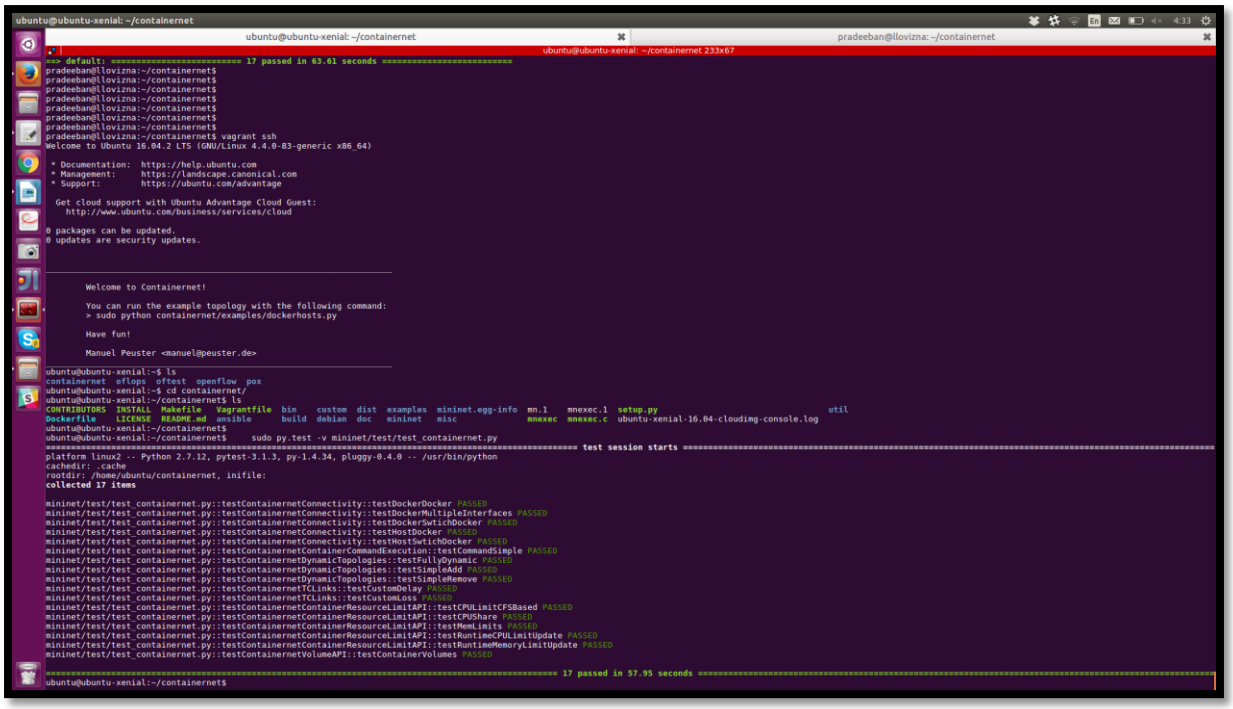
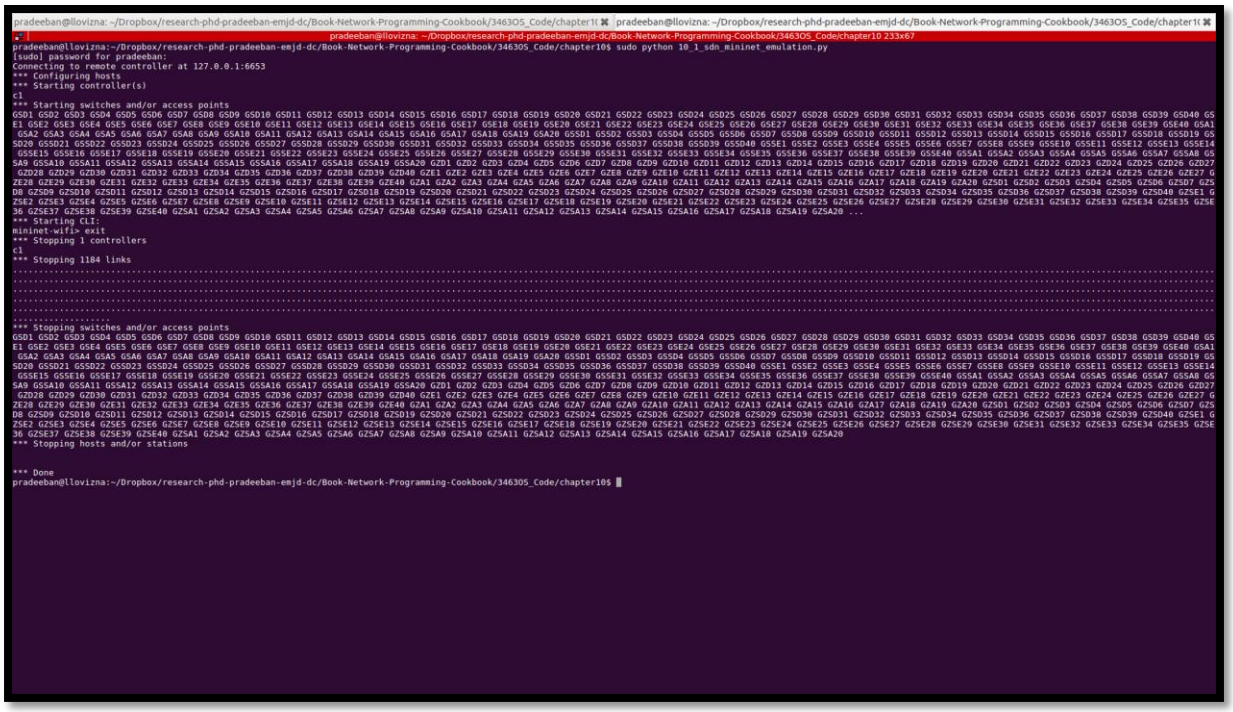
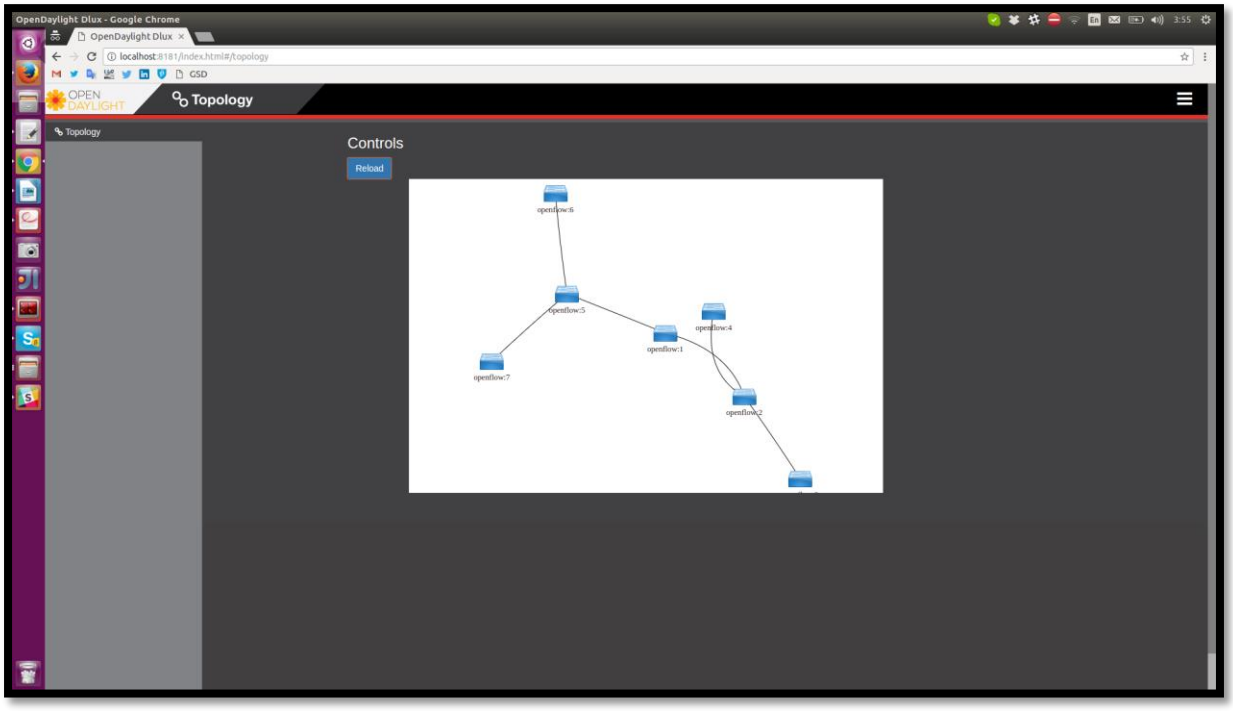


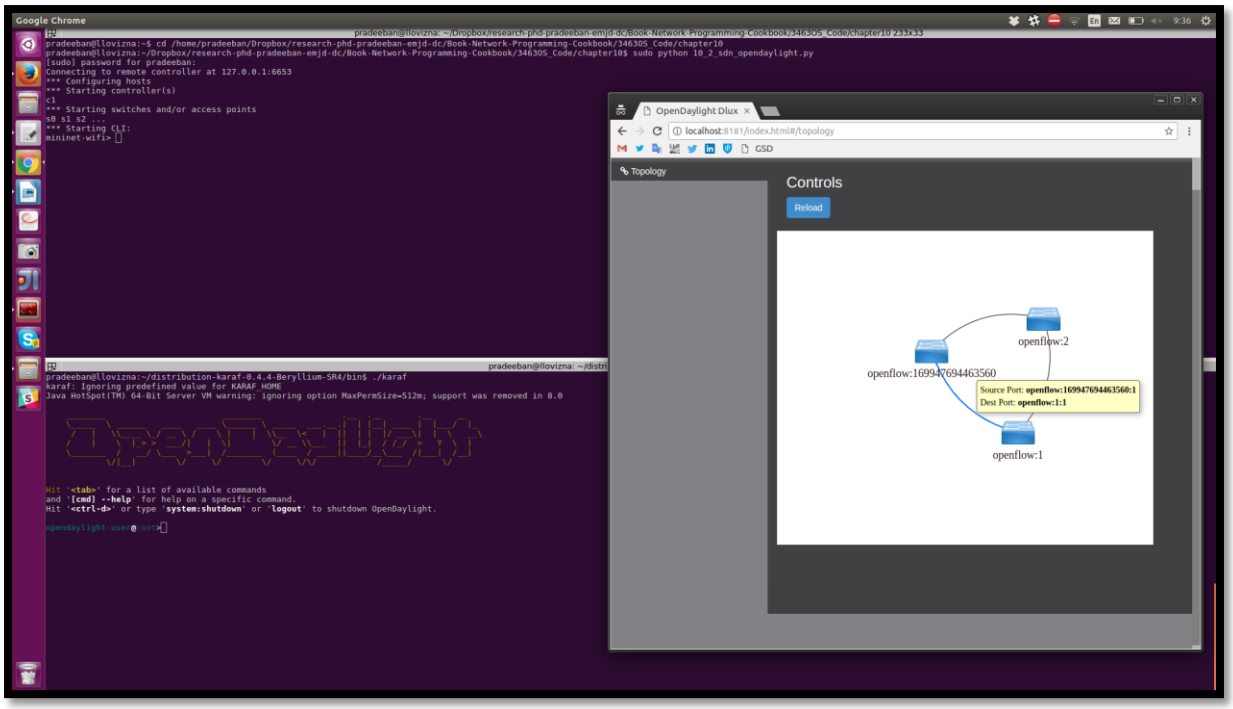
Figure 1
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/346305_Code/chapter9 233x69
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/346305_Code/chapter9$ sudo python 9_4_mininet_wifi_emulation.py
*** Creating nodes
*** Configuring wifi nodes
*** Associating and Creating links
Associating sta1-wlan0 to ap1
Associating sta2-wlan0 to ap1
Associating sta3-wlan0 to ap1
*** Starting network
*** Configuring hosts
Mobility started at 0 second(s)
*** Running CLI
*** Starting CLI:
mininet-wifi>
Figure 1
sta3
sta1
ap1
sta2
meters (x)
meters (y)
meters (z)

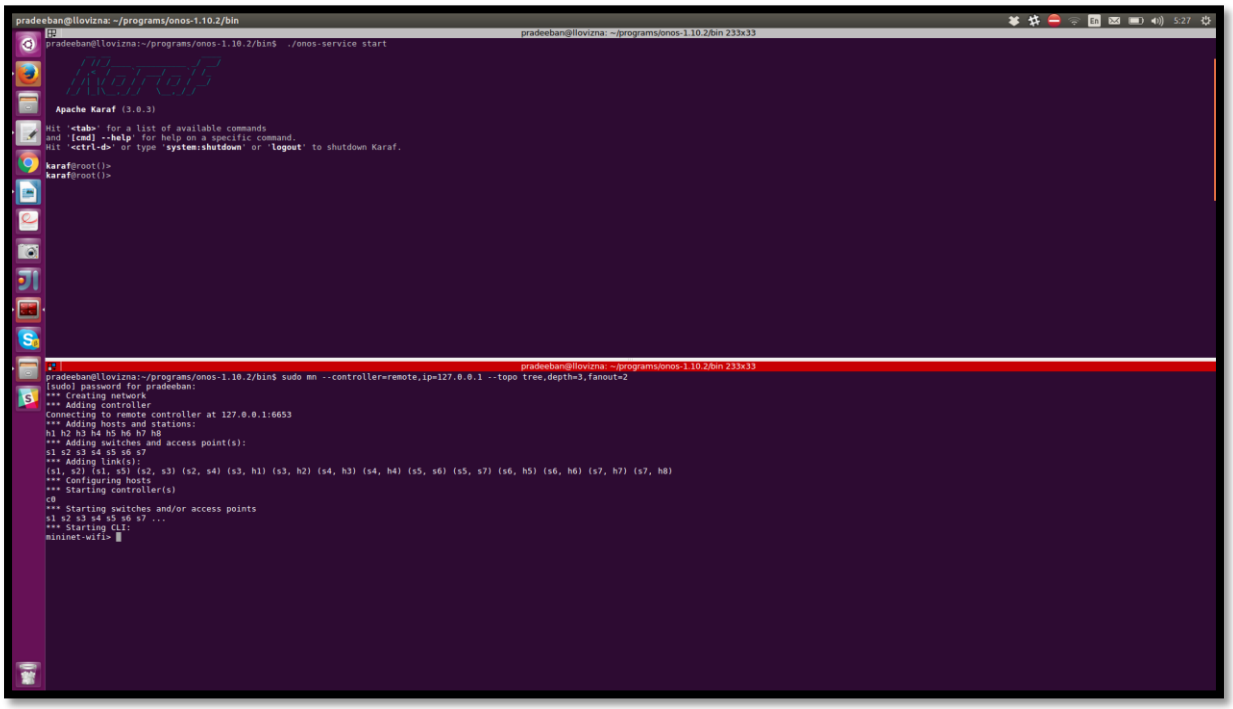

ubuntu@ubuntu-xenial: ~/containernet
ubuntu@ubuntu-xenial: ~/containernet
pradeeban@llovizna: ~/containernet
ubuntu@ubuntu-xenial: ~/containernet 233x67
==> default: ========== 17 passed in 63.61 seconds ==========
pradeeban@llovizna:~/containernet$
pradeeban@llovizna:~/containernet$
pradeeban@llovizna:~/containernet$
pradeeban@llovizna:~/containernet$
pradeeban@llovizna:~/containernet$
pradeeban@llovizna:~/containernet$
pradeeban@llovizna:~/containernet$ vagrant ssh
Welcome to Ubuntu 16.04.2 LTS (GNU/Linux 4.4.0-83-generic x86_64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/advantage
Get cloud support with Ubuntu Advantage Cloud Guest:
http://www.ubuntu.com/business/services/cloud
0 packages can be updated.
0 updates are security updates.
Welcome to Containernet!
You can run the example topology with the following command:
> sudo python containernet/examples/dockerhosts.py
Have fun!
Manuel Peuster <manuel@peuster.de>
ubuntu@ubuntu-xenial:~$ ls
containernet oflops oftest openflow pox
ubuntu@ubuntu-xenial:~$ cd containernet/
ubuntu@ubuntu-xenial:~/containernet$ ls
CONTRIBUTORS INSTALL Makefile Vagrantfile bin custom dist examples mininet.egg-info mn.1 mnexec.1 setup.py util
Dockerfile LICENSE README.md ansible build debian doc mininet misc mnexec mnexec.c ubuntu-xenial-16.04-cloudimg-console.log
ubuntu@ubuntu-xenial:~/containernet$
ubuntu@ubuntu-xenial:~/containernet$ sudo py.test -v mininet/test/test_containernet.py
test session starts
platform linux2 -- Python 2.7.12, pytest-3.1.3, py-1.4.34, pluggy-0.4.0 -- /usr/bin/python
cachedir: .cache
rootdir: /home/ubuntu/containernet, inifile:
collected 17 items
mininet/test/test_containernet.py::testContainernetConnectivity::testDockerDocker PASSED
mininet/test/test_containernet.py::testContainernetConnectivity::testDockerMultipleInterfaces PASSED
mininet/test/test_containernet.py::testContainernetConnectivity::testDockerSwtichDocker PASSED
mininet/test/test_containernet.py::testContainernetConnectivity::testHostDocker PASSED
mininet/test/test_containernet.py::testContainernetConnectivity::testHostSwtichDocker PASSED
mininet/test/test_containernet.py::testContainernetContainerCommandExecution::testCommandSimple PASSED
mininet/test/test_containernet.py::testContainernetDynamicTopologies::testFullyDynamic PASSED
mininet/test/test_containernet.py::testContainernetDynamicTopologies::testSimpleAdd PASSED
mininet/test/test_containernet.py::testContainernetDynamicTopologies::testSimpleRemove PASSED
mininet/test/test_containernet.py::testContainernetTCLinks::testCustomDelay PASSED
mininet/test/test_containernet.py::testContainernetTCLinks::testCustomLoss PASSED
mininet/test/test_containernet.py::testContainernetContainerResourceLimitAPI::testCPULimitCFSBased PASSED
mininet/test/test_containernet.py::testContainernetContainerResourceLimitAPI::testCPUShare PASSED
mininet/test/test_containernet.py::testContainernetContainerResourceLimitAPI::testMemLimits PASSED
mininet/test/test_containernet.py::testContainernetContainerResourceLimitAPI::testRuntimeCPULimitUpdate PASSED
mininet/test/test_containernet.py::testContainernetContainerResourceLimitAPI::testRuntimeMemoryLimitUpdate PASSED
mininet/test/test_containernet.py::testContainernetVolumeAPI::testContainerVolumes PASSED
========== 17 passed in 57.95 seconds ==========
ubuntu@ubuntu-xenial:~/containernet$

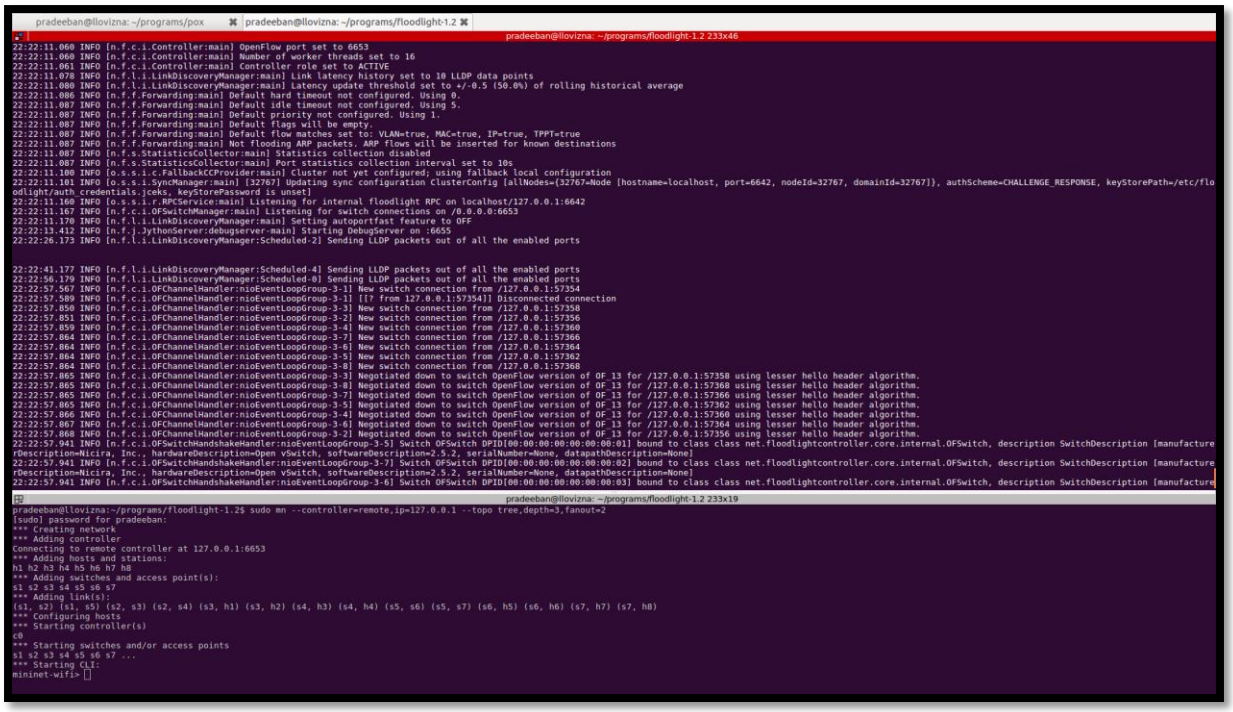
Chapter 10: Getting Started with SDN

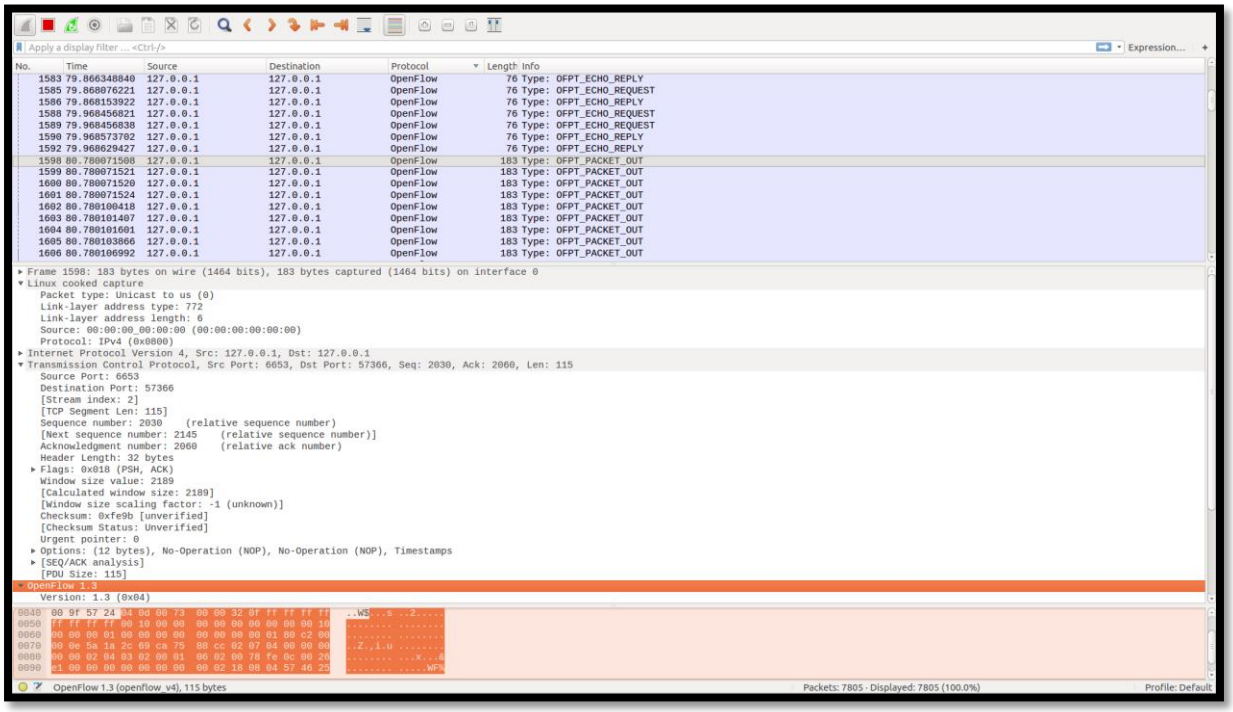


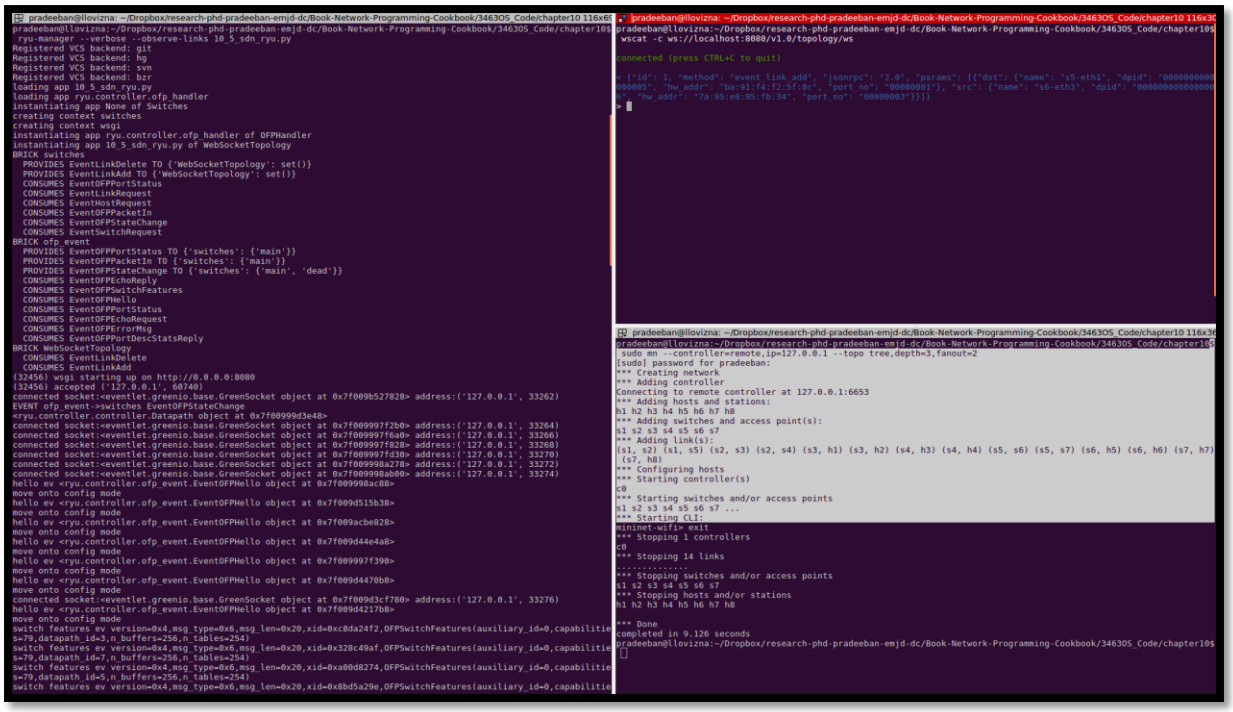



Google Chrome
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/346305_Code/chapter10 233x33
pradeeban@llovizna:~$ cd /home/pradeeban/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/346305_Code/chapter10
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/346305_Code/chapter10$ sudo python 10_2_sdn_opendaylight.py
[sudo] password for pradeeban:
Connecting to remote controller at 127.0.0.1:6653
*** Configuring hosts
*** Starting controller(s)
c1
*** Starting switches and/or access points
s0 s1 s2 ...
*** Starting CLI:
mininet-wifi>
pradeeban@llovizna: ~/distri
pradeeban@llovizna:~/distribution-karaf-0.4.4-Beryllium-SR4/bin$ ./karaf
karaf: Ignoring predefined value for KARAF_HOME
Java HotSpot(TM) 64-Bit Server VM warning: ignoring option MaxPermSize=512m; support was removed in 8.0
Hit '<tab>' for a list of available commands
and '[cmd] --help' for help on a specific command.
Hit '<ctrl-d>' or type 'system:shutdown' or 'logout' to shutdown OpenDaylight.
opendaylight-user@root>
OpenDaylight Dlux
localhost:8181/index.html#/topology
GSD
Topology
Controls
Reload
openflow:2
openflow:169947694463560
Source Port: openflow:169947694463560:1
Dest Port: openflow:1:1
openflow:1

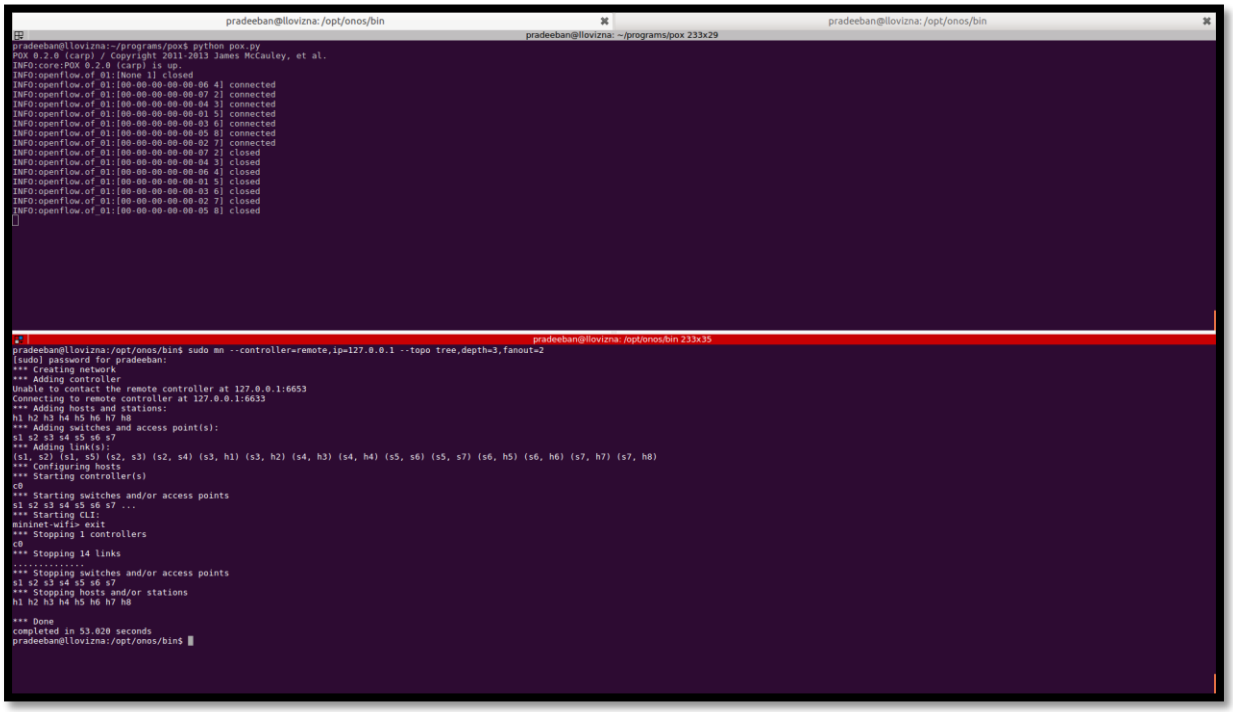

pradeeban@llovizna: ~/programs/onos-1.10.2/bin
pradeeban@llovizna: ~/programs/onos-1.10.2/bin 233x33
pradeeban@llovizna:~/programs/onos-1.10.2/bin$ ./onos-service start
Apache Karaf (3.0.3)
Hit '<tab>' for a list of available commands
and '[cmd] --help' for help on a specific command.
Hit '<ctrl-d>' or type 'system:shutdown' or 'logout' to shutdown Karaf.
karaf@root()>
karaf@root()>
pradeeban@llovizna: ~/programs/onos-1.10.2/bin 233x33
pradeeban@llovizna:~/programs/onos-1.10.2/bin$ sudo mn --controller=remote,ip=127.0.0.1 --topo tree,depth=3,fanout=2
[sudo] password for pradeeban:
*** Creating network
*** Adding controller
Connecting to remote controller at 127.0.0.1:6653
*** Adding hosts and stations:
h1 h2 h3 h4 h5 h6 h7 h8
*** Adding switches and access point(s):
s1 s2 s3 s4 s5 s6 s7
*** Adding link(s):
(s1, s2) (s1, s5) (s2, s3) (s2, s4) (s3, h1) (s3, h2) (s4, h3) (s4, h4) (s5, s6) (s5, s7) (s6, h5) (s6, h6) (s7, h7) (s7, h8)
*** Configuring hosts
*** Starting controller(s)
c0
*** Starting switches and/or access points
s1 s2 s3 s4 s5 s6 s7 ...
*** Starting CLI:
mininet-wifi>


pradeeban@llovizna: ~/programs/pox
pradeeban@llovizna: ~/programs/floodlight-1.2
pradeeban@llovizna: ~/programs/floodlight-1.2 233x46
22:22:11.060 INFO [n.f.c.i.Controller:main] OpenFlow port set to 6653
22:22:11.060 INFO [n.f.c.i.Controller:main] Number of worker threads set to 16
22:22:11.061 INFO [n.f.c.i.Controller:main] Controller role set to ACTIVE
22:22:11.078 INFO [n.f.l.i.LinkDiscoveryManager:main] Link latency history set to 10 LLDP data points
22:22:11.080 INFO [n.f.l.i.LinkDiscoveryManager:main] Latency update threshold set to +/-0.5 (50.0%) of rolling historical average
22:22:11.086 INFO [n.f.f.Forwarding:main] Default hard timeout not configured. Using 0.
22:22:11.087 INFO [n.f.f.Forwarding:main] Default idle timeout not configured. Using 5.
22:22:11.087 INFO [n.f.f.Forwarding:main] Default priority not configured. Using 1.
22:22:11.087 INFO [n.f.f.Forwarding:main] Default flags will be empty.
22:22:11.087 INFO [n.f.f.Forwarding:main] Default flow matches set to: VLAN=true, MAC=true, IP=true, TPPT=true
22:22:11.087 INFO [n.f.f.Forwarding:main] Not flooding ARP packets. ARP flows will be inserted for known destinations
22:22:11.087 INFO [n.f.s.StatisticsCollector:main] Statistics collection disabled
22:22:11.087 INFO [n.f.s.StatisticsCollector:main] Port statistics collection interval set to 10s
22:22:11.100 INFO [o.s.s.i.c.FallbackCCProvider:main] Cluster not yet configured; using fallback local configuration
22:22:11.101 INFO [o.s.s.i.SyncManager:main] [32767] Updating sync configuration ClusterConfig [allNodes={32767=Node [hostname=localhost, port=6642, nodeId=32767, domainId=32767]}, authScheme=CHALLENGE_RESPONSE, keyStorePath=/etc/floodlight/auth_credentials.jceks, keyStorePassword is unset]
22:22:11.160 INFO [o.s.s.i.r.RPCService:main] Listening for internal floodlight RPC on localhost/127.0.0.1:6642
22:22:11.167 INFO [n.f.c.i.OFSwitchManager:main] Listening for switch connections on /0.0.0.0:6653
22:22:13.170 INFO [n.f.l.i.LinkDiscoveryManager:main] Setting autoportfast feature to OFF
22:22:13.412 INFO [n.f.j.JythonServer:debugserver-main] Starting DebugServer on :6655
22:22:26.173 INFO [n.f.l.i.LinkDiscoveryManager:Scheduled-2] Sending LLDP packets out of all the enabled ports
22:22:41.177 INFO [n.f.l.i.LinkDiscoveryManager:Scheduled-4] Sending LLDP packets out of all the enabled ports
22:22:56.179 INFO [n.f.l.i.LinkDiscoveryManager:Scheduled-0] Sending LLDP packets out of all the enabled ports
22:22:57.567 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-1] New switch connection from /127.0.0.1:57354
22:22:57.589 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-1] [[? from 127.0.0.1:57354]] Disconnected connection
22:22:57.850 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-3] New switch connection from /127.0.0.1:57358
22:22:57.851 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-2] New switch connection from /127.0.0.1:57356
22:22:57.859 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-4] New switch connection from /127.0.0.1:57360
22:22:57.864 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-7] New switch connection from /127.0.0.1:57366
22:22:57.864 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-6] New switch connection from /127.0.0.1:57364
22:22:57.864 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-5] New switch connection from /127.0.0.1:57362
22:22:57.864 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-8] New switch connection from /127.0.0.1:57368
22:22:57.865 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-3] Negotiated down to switch OpenFlow version of OF_13 for /127.0.0.1:57358
22:22:57.865 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-8] Negotiated down to switch OpenFlow version of OF_13 for /127.0.0.1:57368 using lesser hello header algorithm.
22:22:57.865 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-7] Negotiated down to switch OpenFlow version of OF_13 for /127.0.0.1:57366 using lesser hello header algorithm.
22:22:57.865 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-5] Negotiated down to switch OpenFlow version of OF_13 for /127.0.0.1:57362 using lesser hello header algorithm.
22:22:57.866 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-4] Negotiated down to switch OpenFlow version of OF_13 for /127.0.0.1:57360 using lesser hello header algorithm.
22:22:57.867 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-6] Negotiated down to switch OpenFlow version of OF_13 for /127.0.0.1:57364 using lesser hello header algorithm.
22:22:57.868 INFO [n.f.c.i.OFChannelHandler:nioEventLoopGroup-3-2] Negotiated down to switch OpenFlow version of OF_13 for /127.0.0.1:57356 using lesser hello header algorithm.
22:22:57.941 INFO [n.f.c.i.OFSwitchHandshakeHandler:nioEventLoopGroup-3-5] Switch OFSwitch DPID[00:00:00:00:00:00:00:01] bound to class class net.floodlightcontroller.core.internal.OFSwitch, description SwitchDescription [manufacturerDescription=Nicira, Inc., hardwareDescription=Open vSwitch, softwareDescription=2.5.2, serialNumber=None, datapathDescription=None]
22:22:57.941 INFO [n.f.c.i.OFSwitchHandshakeHandler:nioEventLoopGroup-3-7] Switch OFSwitch DPID[00:00:00:00:00:00:00:02] bound to class class net.floodlightcontroller.core.internal.OFSwitch, description SwitchDescription [manufacturerDescription=Nicira, Inc., hardwareDescription=Open vSwitch, softwareDescription=2.5.2, serialNumber=None, datapathDescription=None]
22:22:57.941 INFO [n.f.c.i.OFSwitchHandshakeHandler:nioEventLoopGroup-3-6] Switch OFSwitch DPID[00:00:00:00:00:00:00:03] bound to class class net.floodlightcontroller.core.internal.OFSwitch, description SwitchDescription [manufacture
pradeeban@llovizna: ~/programs/floodlight-1.2 233x19
pradeeban@llovizna:~/programs/floodlight-1.2$ sudo mn --controller=remote,ip=127.0.0.1 --topo tree,depth=3,fanout=2
[sudo] password for pradeeban:
*** Creating network
*** Adding controller
Connecting to remote controller at 127.0.0.1:6653
*** Adding hosts and stations:
h1 h2 h3 h4 h5 h6 h7 h8
*** Adding switches and access point(s):
s1 s2 s3 s4 s5 s6 s7
*** Adding link(s):
(s1, s2) (s1, s5) (s2, s3) (s2, s4) (s3, h1) (s3, h2) (s4, h3) (s4, h4) (s5, s6) (s5, s7) (s6, h5) (s6, h6) (s7, h7) (s7, h8)
*** Configuring hosts
*** Starting controller(s)
c0
*** Starting switches and/or access points
s1 s2 s3 s4 s5 s6 s7 ...
*** Starting CLI:
mininet-wifi>

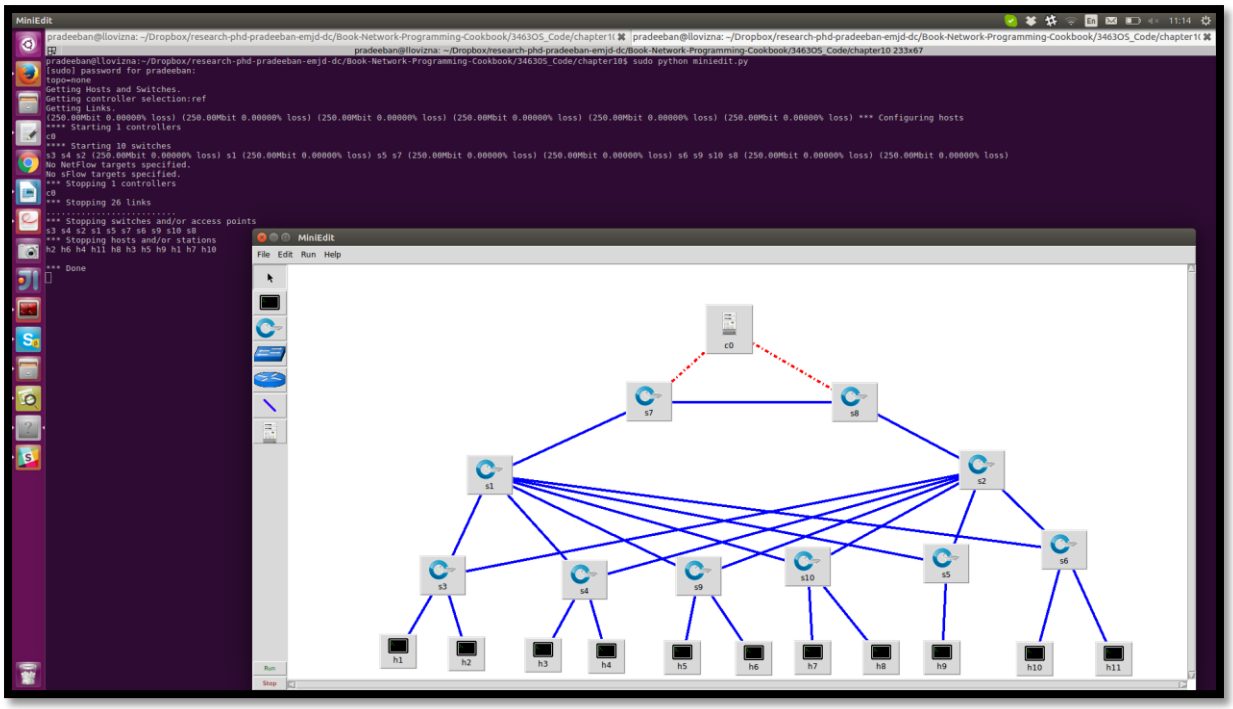

Apply a display filter ... <Ctrl-/>
Expression...
No. Time Source Destination Protocol Length Info
1583 79.866348840 127.0.0.1 127.0.0.1 OpenFlow 76 Type: OFPT_ECHO_REPLY
1585 79.868076221 127.0.0.1 127.0.0.1 OpenFlow 76 Type: OFPT_ECHO_REQUEST
1586 79.868153922 127.0.0.1 127.0.0.1 OpenFlow 76 Type: OFPT_ECHO_REPLY
1588 79.968456821 127.0.0.1 127.0.0.1 OpenFlow 76 Type: OFPT_ECHO_REQUEST
1589 79.968456838 127.0.0.1 127.0.0.1 OpenFlow 76 Type: OFPT_ECHO_REQUEST
1590 79.968573702 127.0.0.1 127.0.0.1 OpenFlow 76 Type: OFPT_ECHO_REPLY
1592 79.968629427 127.0.0.1 127.0.0.1 OpenFlow 76 Type: OFPT_ECHO_REPLY
1598 80.780071508 127.0.0.1 127.0.0.1 OpenFlow 183 Type: OFPT_PACKET_OUT
1599 80.780071521 127.0.0.1 127.0.0.1 OpenFlow 183 Type: OFPT_PACKET_OUT
1600 80.780071520 127.0.0.1 127.0.0.1 OpenFlow 183 Type: OFPT_PACKET_OUT
1601 80.780071524 127.0.0.1 127.0.0.1 OpenFlow 183 Type: OFPT_PACKET_OUT
1602 80.780100418 127.0.0.1 127.0.0.1 OpenFlow 183 Type: OFPT_PACKET_OUT
1603 80.780101407 127.0.0.1 127.0.0.1 OpenFlow 183 Type: OFPT_PACKET_OUT
1604 80.780101601 127.0.0.1 127.0.0.1 OpenFlow 183 Type: OFPT_PACKET_OUT
1605 80.780103866 127.0.0.1 127.0.0.1 OpenFlow 183 Type: OFPT_PACKET_OUT
1606 80.780106992 127.0.0.1 127.0.0.1 OpenFlow 183 Type: OFPT_PACKET_OUT
Frame 1598: 183 bytes on wire (1464 bits), 183 bytes captured (1464 bits) on interface 0
Linux cooked capture
Packet type: Unicast to us (0)
Link-layer address type: 772
Link-layer address length: 6
Source: 00:00:00_00:00:00 (00:00:00:00:00:00)
Protocol: IPv4 (0x0800)
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
Transmission Control Protocol, Src Port: 6653, Dst Port: 57366, Seq: 2030, Ack: 2060, Len: 115
Source Port: 6653
Destination Port: 57366
[Stream index: 2]
[TCP Segment Len: 115]
Sequence number: 2030 (relative sequence number)
[Next sequence number: 2145 (relative sequence number)]
Acknowledgment number: 2060 (relative ack number)
Header Length: 32 bytes
Flags: 0x018 (PSH, ACK)
Window size value: 2189
[Calculated window size: 2189]
[Window size scaling factor: -1 (unknown)]
Checksum: 0xfe9b [unverified]
[Checksum Status: Unverified]
Urgent pointer: 0
Options: (12 bytes), No-Operation (NOP), No-Operation (NOP), Timestamps
[SEQ/ACK analysis]
[PDU Size: 115]
OpenFlow 1.3
Version: 1.3 (0x04)
0040 00 9f 57 24 04 0d 00 73 00 00 32 0f ff ff ff ff ..W$...s ..2.....
0050 ff ff ff ff 00 10 00 00 00 00 00 00 00 00 00 00 ....
0060 00 00 00 01 00 00 00 00 00 00 00 01 80 c2 00 ....
0070 00 0e 5a 1a 2c 69 ca 75 88 cc 02 07 04 00 00 00 ..Z.,i.u ....
0080 00 00 02 04 03 02 00 01 00 02 00 70 fe 9c 00 20 ....p...
0090 e1 00 00 00 00 00 00 00 00 02 18 08 04 57 46 25 ....WF%
OpenFlow 1.3 (openflow_v4), 115 bytes
Packets: 7805 · Displayed: 7805 (100.0%)
Profile: Default


pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter10 116x65
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter10$ ryu-manager --verbose --observe-links 10_5_sdn_ryu.py
Registered VCS backend: git
Registered VCS backend: hg
Registered VCS backend: svn
Registered VCS backend: bzr
loading app 10_5_sdn_ryu.py
loading app ryu.controller.ofp_handler
instantiating app None of Switches
creating context switches
creating context wsgi
instantiating app ryu.controller.ofp_handler of OFPHandler
instantiating app 10_5_sdn_ryu.py of WebSocketTopology
BRICK switches
PROVIDES EventLinkDelete TO {'WebSocketTopology': set()}
PROVIDES EventLinkAdd TO {'WebSocketTopology': set()}
CONSUMES EventOFPPortStatus
CONSUMES EventLinkRequest
CONSUMES EventHostRequest
CONSUMES EventOFPPacketIn
CONSUMES EventOFPStateChange
CONSUMES EventSwitchRequest
BRICK ofp_event
PROVIDES EventOFPPortStatus TO {'switches': {'main'}}
PROVIDES EventOFPPacketIn TO {'switches': {'main'}}
PROVIDES EventOFPStateChange TO {'switches': {'main', 'dead'}}
CONSUMES EventOFPEchoReply
CONSUMES EventOFPSwitchFeatures
CONSUMES EventOFPHello
CONSUMES EventOFPPortStatus
CONSUMES EventOFPEchoRequest
CONSUMES EventOFPErrorMsg
CONSUMES EventOFPPortDescStatsReply
BRICK WebSocketTopology
CONSUMES EventLinkDelete
CONSUMES EventLinkAdd
(32456) wsgi starting up on http://0.0.0.0:8080
(32456) accepted ('127.0.0.1', 60740)
connected socket:<eventlet.greenio.base.GreenSocket object at 0x7f009b527828> address:('127.0.0.1', 33262)
EVENT ofp_event->switches EventOFPStateChange
<ryu.controller.controller.Datapath object at 0x7f00999d3e48>
connected socket:<eventlet.greenio.base.GreenSocket object at 0x7f009997f2b0> address:('127.0.0.1', 33264)
connected socket:<eventlet.greenio.base.GreenSocket object at 0x7f009997f6a0> address:('127.0.0.1', 33266)
connected socket:<eventlet.greenio.base.GreenSocket object at 0x7f009997f828> address:('127.0.0.1', 33268)
connected socket:<eventlet.greenio.base.GreenSocket object at 0x7f009997fd30> address:('127.0.0.1', 33270)
connected socket:<eventlet.greenio.base.GreenSocket object at 0x7f009998a278> address:('127.0.0.1', 33272)
connected socket:<eventlet.greenio.base.GreenSocket object at 0x7f009998ab00> address:('127.0.0.1', 33274)
hello ev <ryu.controller.ofp_event.EventOFPHello object at 0x7f009998ac88>
move onto config mode
hello ev <ryu.controller.ofp_event.EventOFPHello object at 0x7f009d515b38>
move onto config mode
hello ev <ryu.controller.ofp_event.EventOFPHello object at 0x7f009acbe828>
move onto config mode
hello ev <ryu.controller.ofp_event.EventOFPHello object at 0x7f009d44e4a8>
move onto config mode
hello ev <ryu.controller.ofp_event.EventOFPHello object at 0x7f009997f390>
move onto config mode
hello ev <ryu.controller.ofp_event.EventOFPHello object at 0x7f009d4470b8>
move onto config mode
connected socket:<eventlet.greenio.base.GreenSocket object at 0x7f009d3cf780> address:('127.0.0.1', 33276)
hello ev <ryu.controller.ofp_event.EventOFPHello object at 0x7f009d4217b8>
move onto config mode
switch features ev version=0x4,msg_type=0x6,msg_len=0x20,xid=0xc8da24f2,OFPSwitchFeatures(auxiliary_id=0,capabilities=79,datapath_id=3,n_buffers=256,n_tables=254)
switch features ev version=0x4,msg_type=0x6,msg_len=0x20,xid=0x328c49af,OFPSwitchFeatures(auxiliary_id=0,capabilities=79,datapath_id=7,n_buffers=256,n_tables=254)
switch features ev version=0x4,msg_type=0x6,msg_len=0x20,xid=0xa00d8274,OFPSwitchFeatures(auxiliary_id=0,capabilities=79,datapath_id=5,n_buffers=256,n_tables=254)
switch features ev version=0x4,msg_type=0x6,msg_len=0x20,xid=0x8bd5a29e,OFPSwitchFeatures(auxiliary_id=0,capabilities
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter10 116x30
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter10$ wscat -c ws://localhost:8080/v1.0/topology/ws
connected (press CTRL+C to quit)
< {"id": 1, "method": "event_link_add", "jsonrpc": "2.0", "params": [{"dst": {"name": "s5-eth1", "dpid": "000000000000000
000005", "hw_addr": "ba:91:f4:f2:5f:0c", "port_no": "00000001"}, "src": {"name": "s6-eth3", "dpid": "000000000000000
6", "hw_addr": "7a:95:e0:95:fb:34", "port_no": "00000003"}}]}
>
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter10 116x30
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter10$ sudo mn --controller=remote,ip=127.0.0.1 --topo tree,depth=3,fanout=2
[sudo] password for pradeeban:
*** Creating network
*** Adding controller
Connecting to remote controller at 127.0.0.1:6653
*** Adding hosts and stations:
h1 h2 h3 h4 h5 h6 h7 h8
*** Adding switches and access point(s):
s1 s2 s3 s4 s5 s6 s7
*** Adding link(s):
(s1, s2) (s1, s5) (s2, s3) (s2, s4) (s3, h1) (s3, h2) (s4, h3) (s4, h4) (s5, s6) (s5, s7) (s6, h5) (s6, h6) (s7, h7) (s7, h8)
*** Configuring hosts
*** Starting controller(s)
c0
*** Starting switches and/or access points
s1 s2 s3 s4 s5 s6 s7 ...
*** Starting CLI:
mininet-wifi> exit
*** Stopping 1 controllers
c0
*** Stopping 14 links
....
*** Stopping switches and/or access points
s1 s2 s3 s4 s5 s6 s7
*** Stopping hosts and/or stations
h1 h2 h3 h4 h5 h6 h7 h8

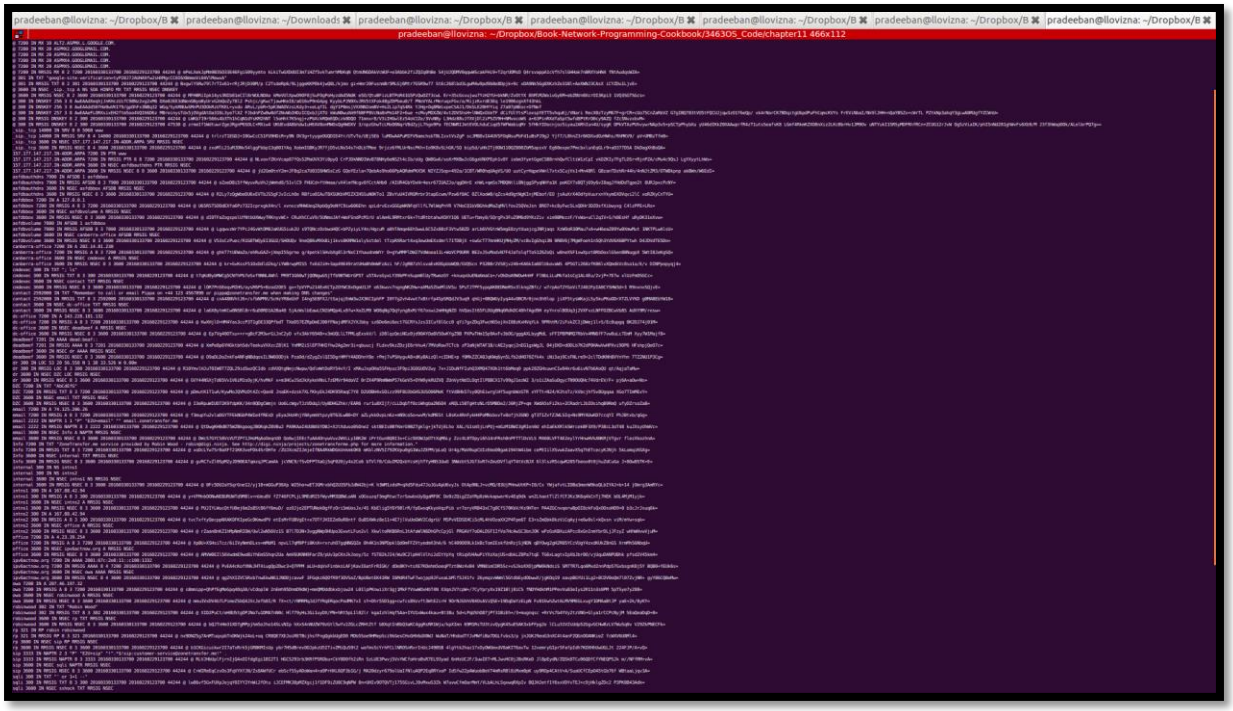
*** Done
completed in 9.126 seconds
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter10$

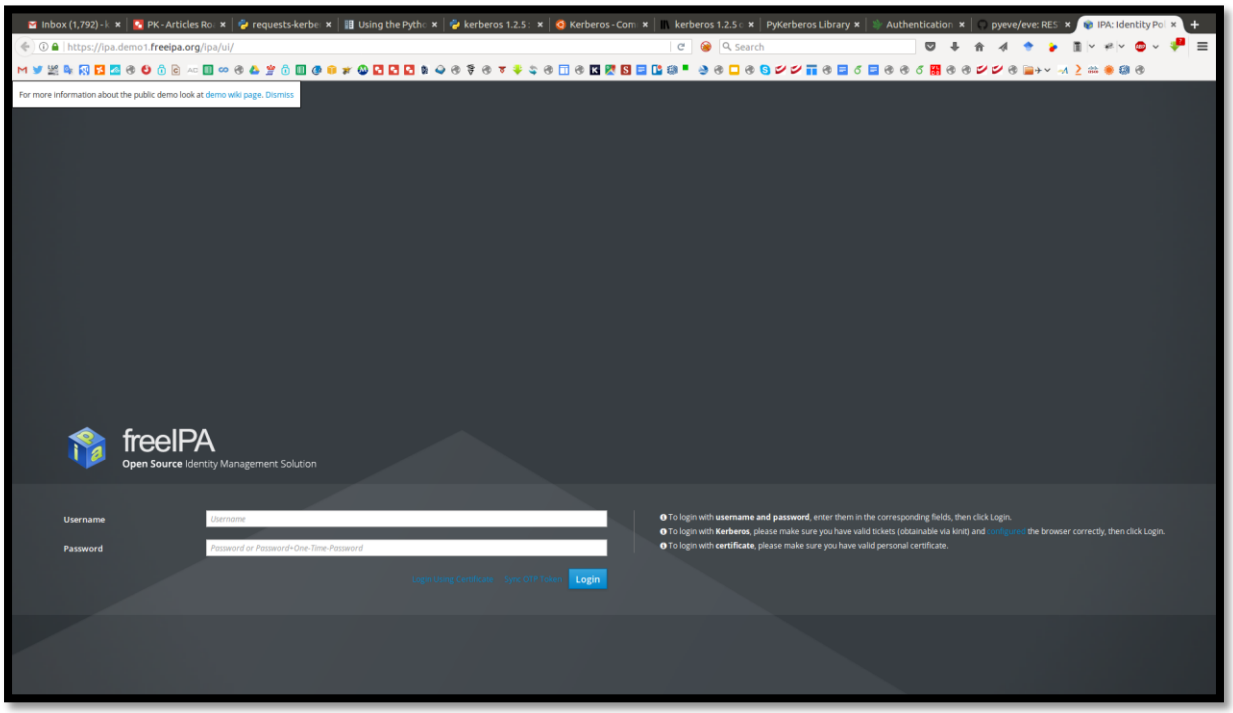

pradeeban@llovizna: /opt/onos/bin
pradeeban@llovizna: /opt/onos/bin
pradeeban@llovizna: ~/programs/pox 233x29
pradeeban@llovizna:~/programs/pox$ python pox.py
POX 0.2.0 (carp) / Copyright 2011-2013 James McCauley, et al.
INFO:core:POX 0.2.0 (carp) is up.
INFO:openflow.of_01:[None 1] closed
INFO:openflow.of_01:[00-00-00-00-00-06 4] connected
INFO:openflow.of_01:[00-00-00-00-00-07 2] connected
INFO:openflow.of_01:[00-00-00-00-00-04 3] connected
INFO:openflow.of_01:[00-00-00-00-00-01 5] connected
INFO:openflow.of_01:[00-00-00-00-00-03 6] connected
INFO:openflow.of_01:[00-00-00-00-00-05 8] connected
INFO:openflow.of_01:[00-00-00-00-00-02 7] connected
INFO:openflow.of_01:[00-00-00-00-00-07 2] closed
INFO:openflow.of_01:[00-00-00-00-00-04 3] closed
INFO:openflow.of_01:[00-00-00-00-00-06 4] closed
INFO:openflow.of_01:[00-00-00-00-00-01 5] closed
INFO:openflow.of_01:[00-00-00-00-00-03 6] closed
INFO:openflow.of_01:[00-00-00-00-00-02 7] closed
INFO:openflow.of_01:[00-00-00-00-00-05 8] closed
pradeeban@llovizna: /opt/onos/bin 233x35
pradeeban@llovizna:/opt/onos/bin$ sudo mn --controller=remote,ip=127.0.0.1 --topo tree,depth=3,fanout=2
[sudo] password for pradeeban:
*** Creating network
*** Adding controller
Unable to contact the remote controller at 127.0.0.1:6653
Connecting to remote controller at 127.0.0.1:6633
*** Adding hosts and stations:
h1 h2 h3 h4 h5 h6 h7 h8
*** Adding switches and access point(s):
s1 s2 s3 s4 s5 s6 s7
*** Adding link(s):
(s1, s2) (s1, s5) (s2, s3) (s2, s4) (s3, h1) (s3, h2) (s4, h3) (s4, h4) (s5, s6) (s5, s7) (s6, h5) (s6, h6) (s7, h7) (s7, h8)
*** Configuring hosts
*** Starting controller(s)
c0
*** Starting switches and/or access points
s1 s2 s3 s4 s5 s6 s7 ...
*** Starting CLI:
mininet-wifi> exit
*** Stopping 1 controllers
c0
*** Stopping 14 links
....
*** Stopping switches and/or access points
s1 s2 s3 s4 s5 s6 s7
*** Stopping hosts and/or stations
h1 h2 h3 h4 h5 h6 h7 h8

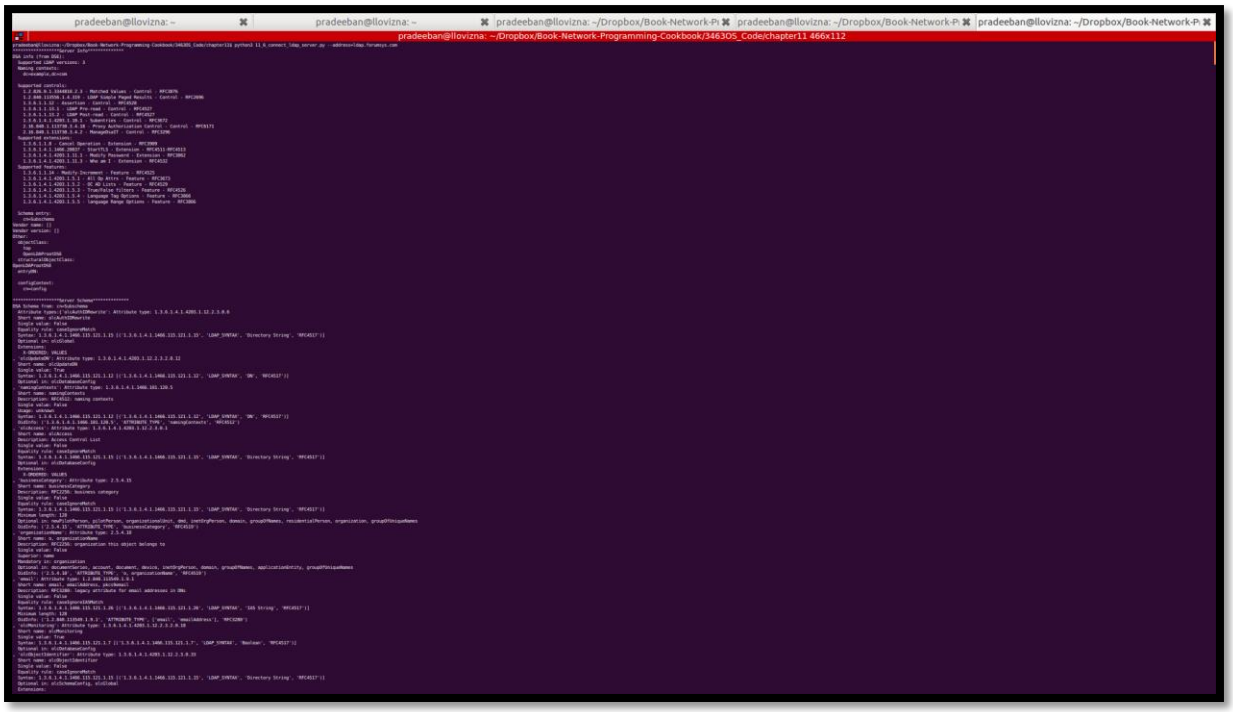
*** Done
completed in 53.020 seconds
pradeeban@llovizna:/opt/onos/bin$

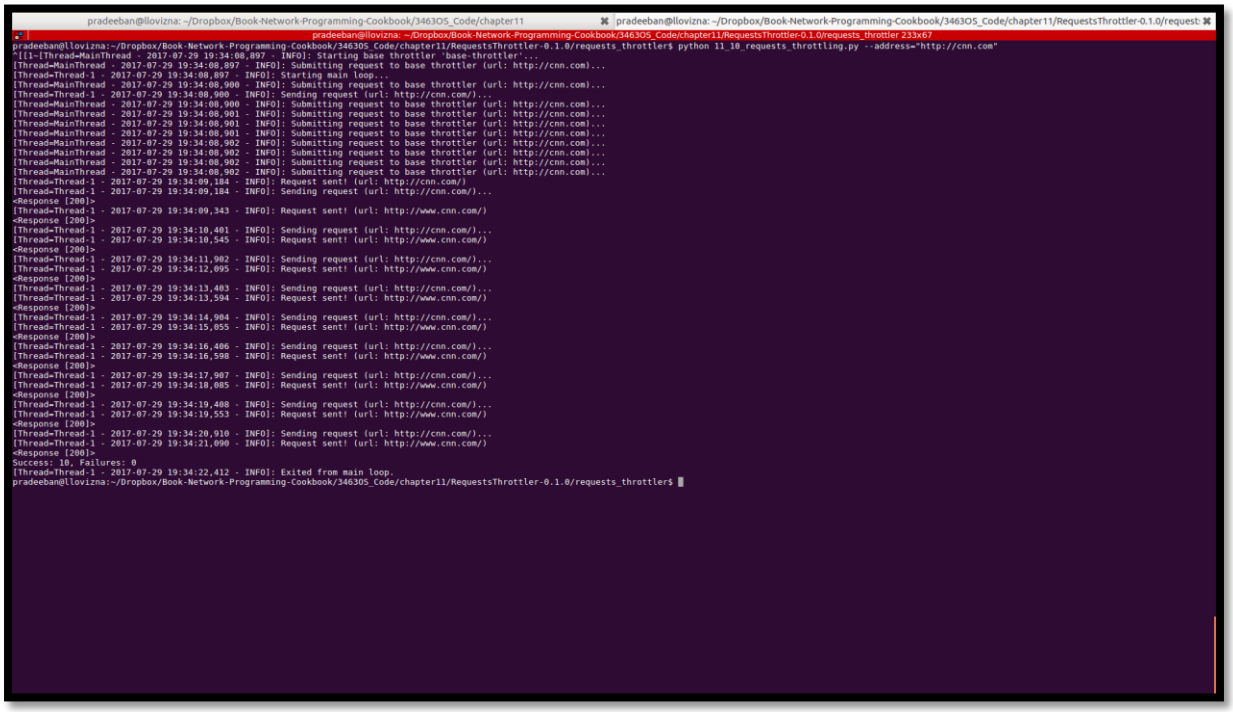

MiniEdit
pradeeban@llovizna: ~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter10 233x67
pradeeban@llovizna:~/Dropbox/research-phd-pradeeban-emjd-dc/Book-Network-Programming-Cookbook/3463OS_Code/chapter10$ sudo python miniedit.py
[sudo] password for pradeeban:
topo=none
Getting Hosts and Switches.
Getting controller selection:ref
Getting Links.
(250.00Mbit 0.00000% loss) (250.00Mbit 0.00000% loss) (250.00Mbit 0.00000% loss) (250.00Mbit 0.00000% loss) (250.00Mbit 0.00000% loss) *** Configuring hosts
**** Starting 1 controllers
c0
**** Starting 10 switches
s3 s4 s2 (250.00Mbit 0.00000% loss) s1 (250.00Mbit 0.00000% loss) s5 s7 (250.00Mbit 0.00000% loss) (250.00Mbit 0.00000% loss) s6 s9 s10 s8 (250.00Mbit 0.00000% loss) (250.00Mbit 0.00000% loss)
No NetFlow targets specified.
No sFlow targets specified.
*** Stopping 1 controllers
c0
*** Stopping 26 links
....
*** Stopping switches and/or access points
s3 s4 s2 s1 s5 s7 s6 s9 s10 s8
*** Stopping hosts and/or stations
h2 h6 h4 h11 h8 h3 h5 h9 h1 h7 h10
*** Done
MiniEdit
File Edit Run Help
c0
s7
s8
s1
s2
s3
s4
s9
s10
s5
s6
h1
h2
h3
h4
h5
h6
h7
h8
h9
h10
h11
Run
Stop

Chapter 11: Authentication, Authorization, and Accounting (AAA)

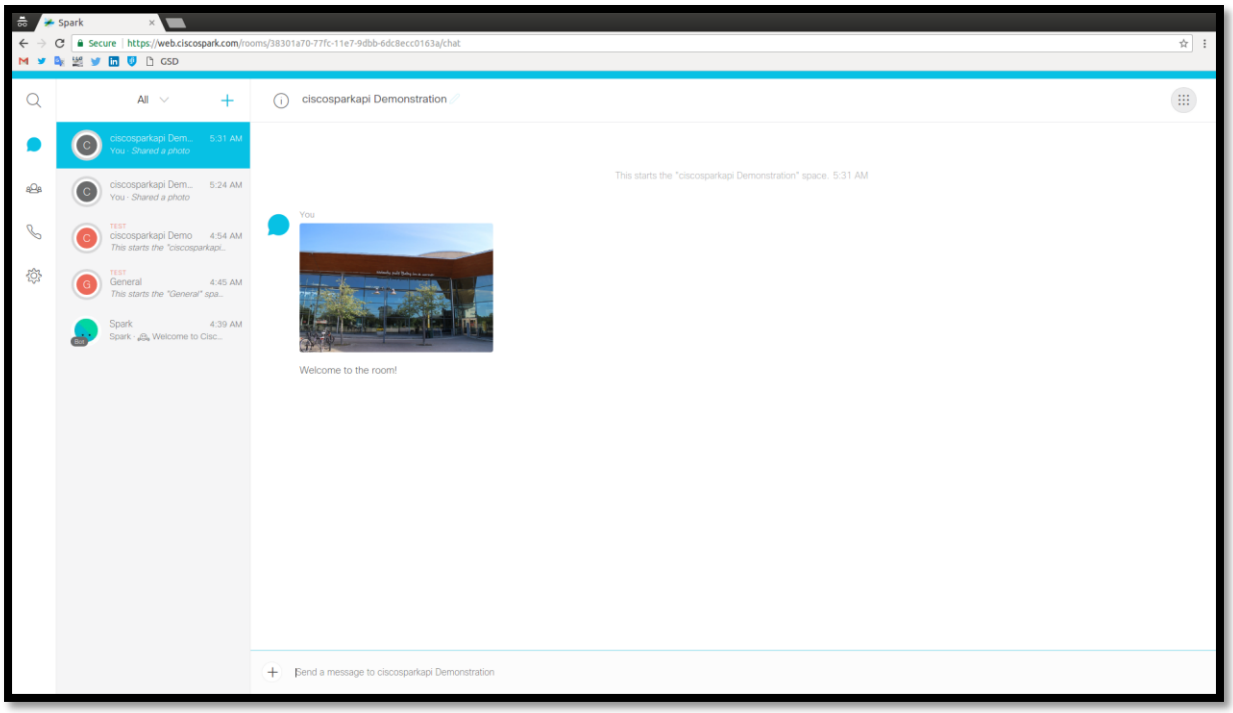


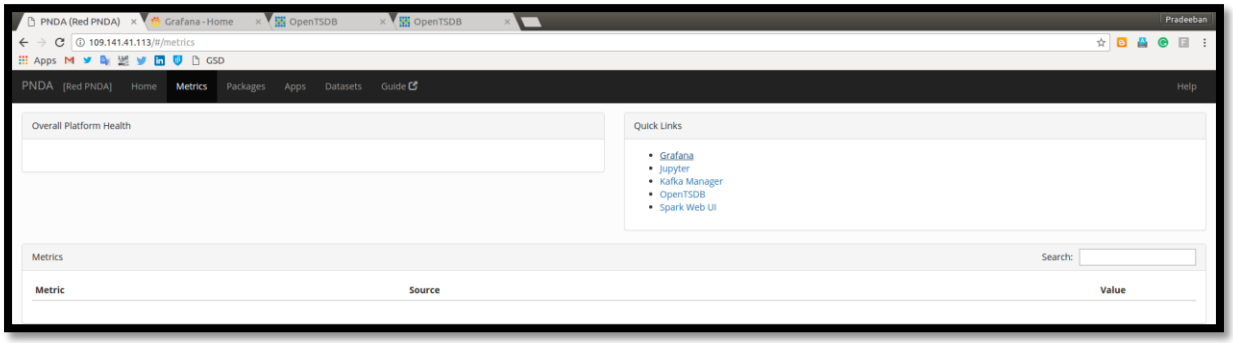


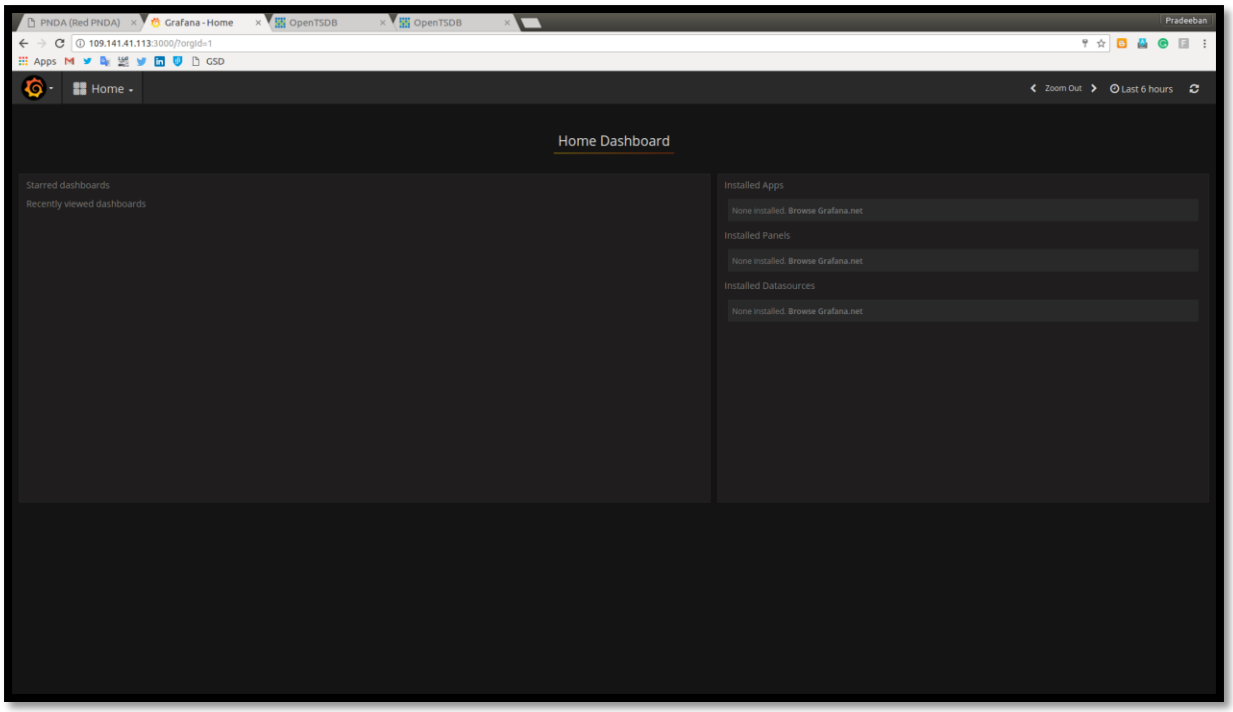

pradeeban@llovizna: ~
pradeeban@llovizna: ~
pradeeban@llovizna: ~/Dropbox/Book-Network-Pr
pradeeban@llovizna: ~/Dropbox/Book-Network-Pr
pradeeban@llovizna: ~/Dropbox/Book-Network-Pr
pradeeban@llovizna: ~/Dropbox/Book-Network-Programming-Cookbook/3463OS_Code/chapter11 466x112

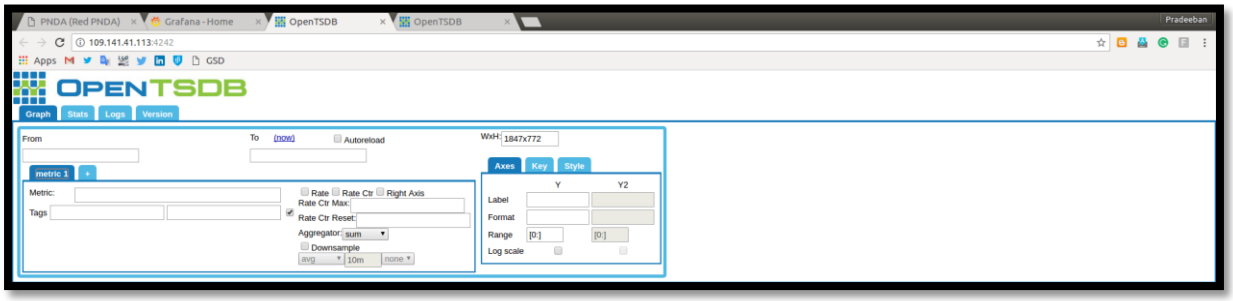

pradeeban@llovizna: ~/Dropbox/Book-Network-Programming-Cookbook/3463OS_Code/chapter11
pradeeban@llovizna: ~/Dropbox/Book-Network-Programming-Cookbook/3463OS_Code/chapter11/RequestsThrottler-0.1.0/request:
pradeeban@llovizna: ~/Dropbox/Book-Network-Programming-Cookbook/3463OS_Code/chapter11/RequestsThrottler-0.1.0/requests_throttler 233x67

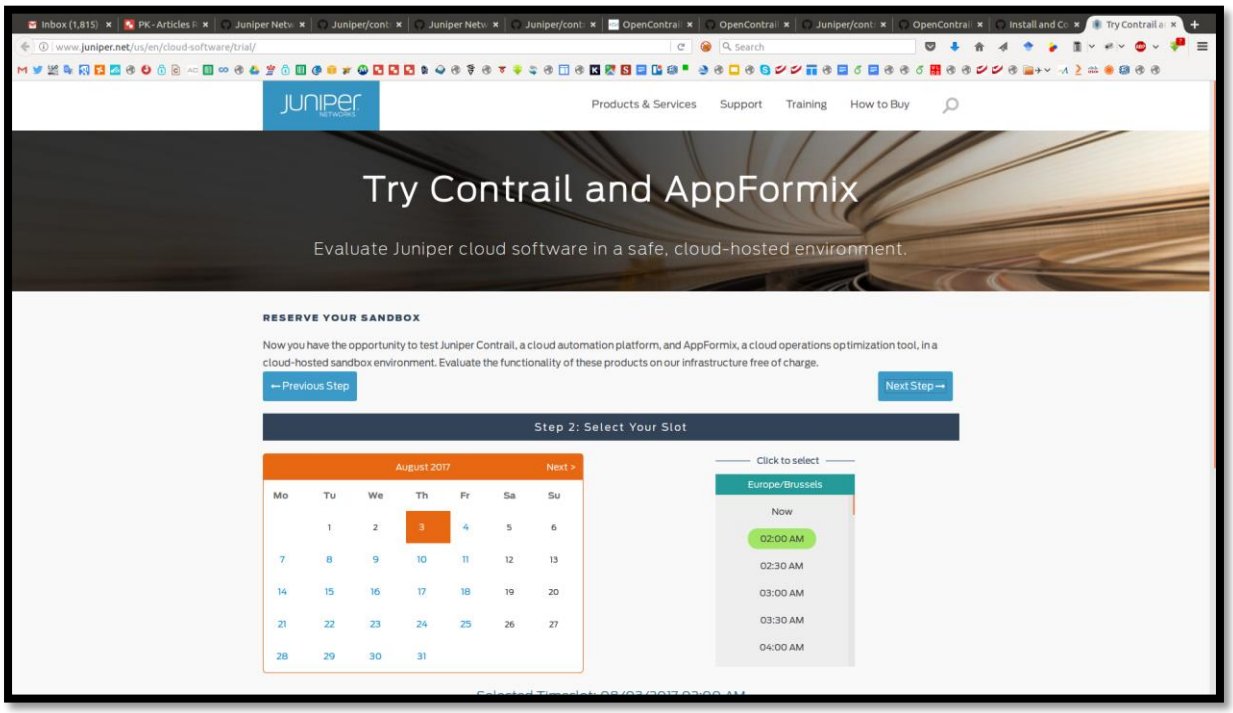
Chapter 12: Open and Proprietary Networking Solutions

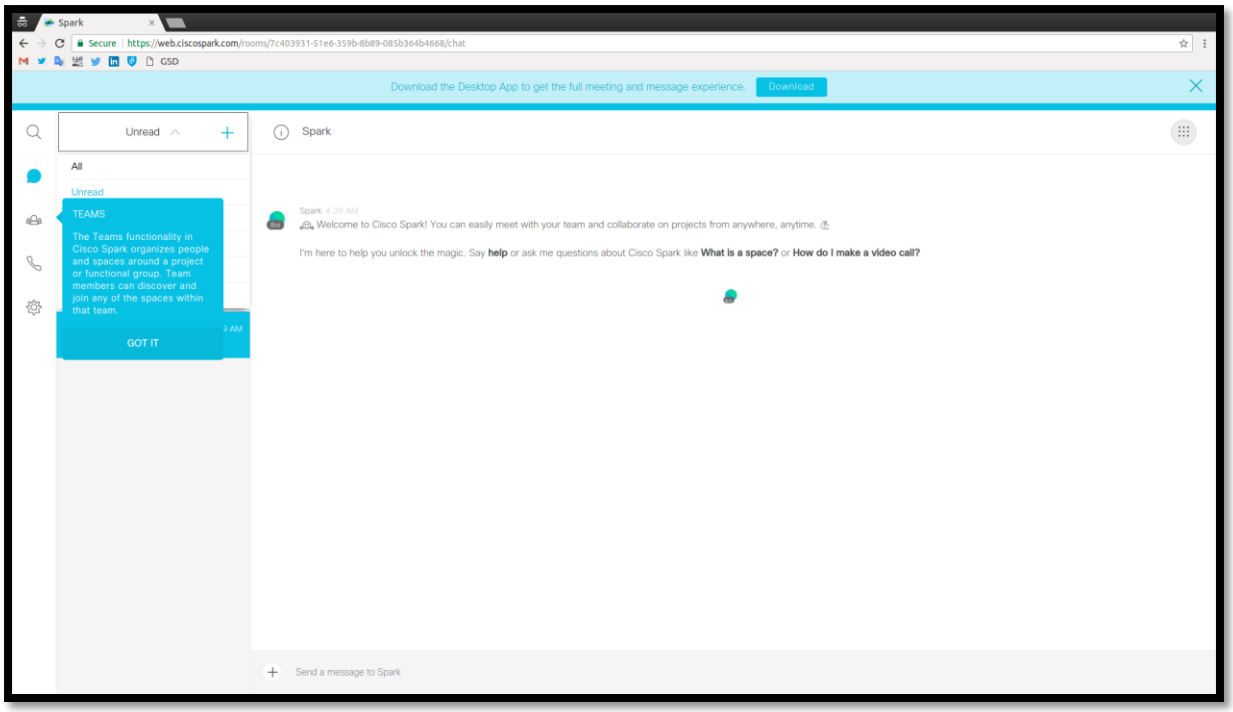


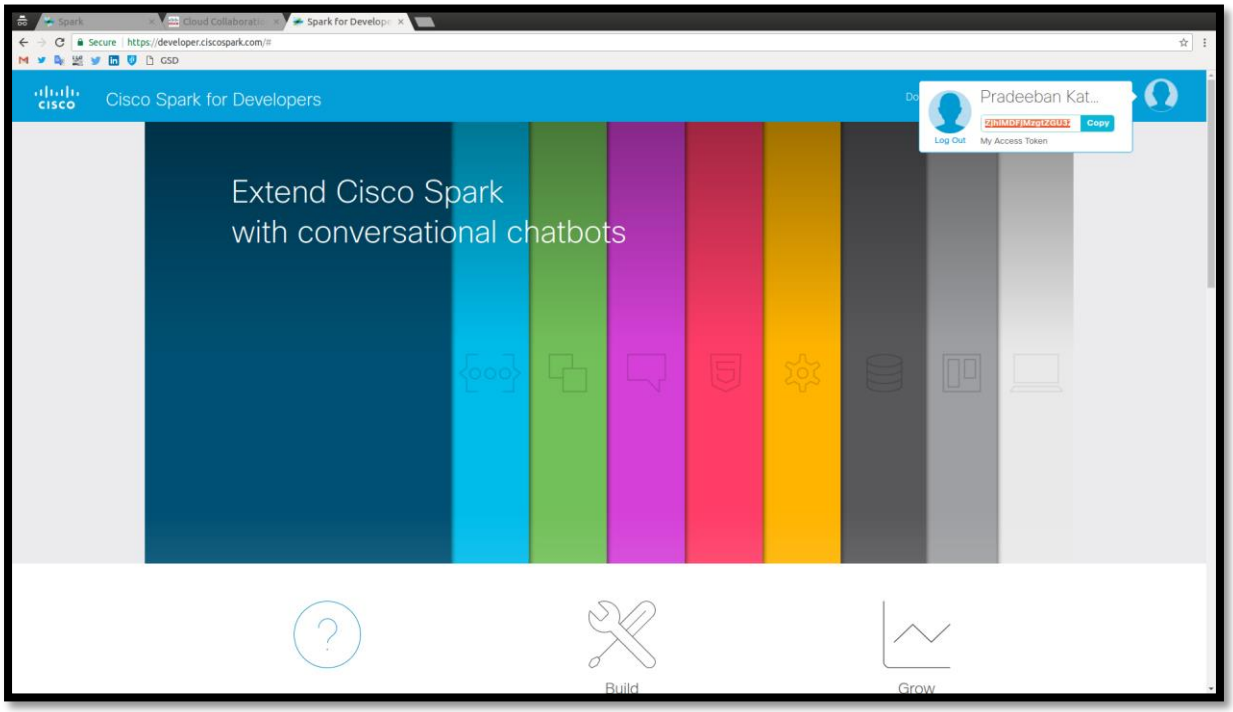


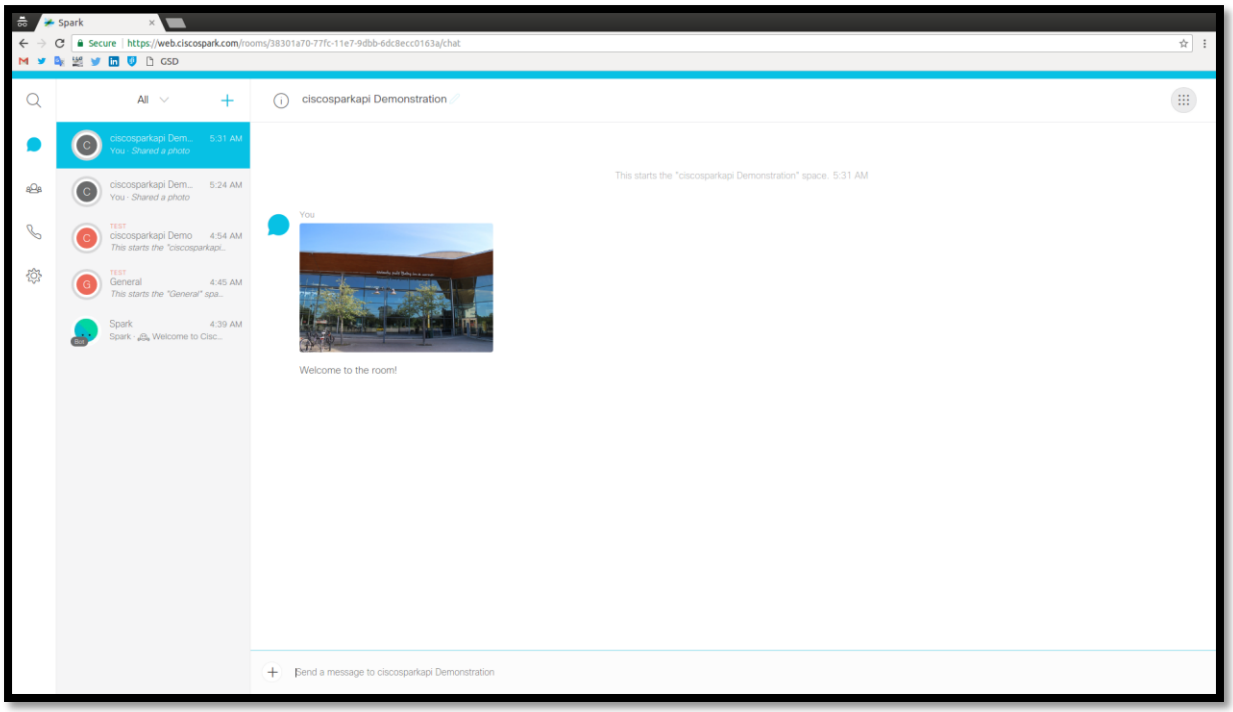

PNDA (Red PNDA)
Grafana - Home
OpenTSDB
OpenTSDB
Pradeeban
109.141.41.113:3000/?orgId=1
Apps
GSD
Home
Zoom Out
Last 6 hours
Home Dashboard
Starred dashboards
Recently viewed dashboards
Installed Apps
None installed. Browse Grafana.net
Installed Panels
None installed. Browse Grafana.net
Installed Datasources
None installed. Browse Grafana.net


PNDA (Red PNDA)
Grafana - Home
OpenTSDB
OpenTSDB
Pradeeban
109.141.41.113:4242
Apps
GSD
OPENTSDB
Graph
Stats
Logs
Version
From
To
(now)
Autoreload
WxH:
1847x772
metric 1
Axes
Key
Style
Metric:
Tags
Rate
Rate Ctr
Right Axis
Rate Ctr Max:
Rate Ctr Reset:
Aggregator:
sum
Downsample
avg
10m
none
Y
Y2
Label
Format
Range
[0:]
[0:]
Log scale

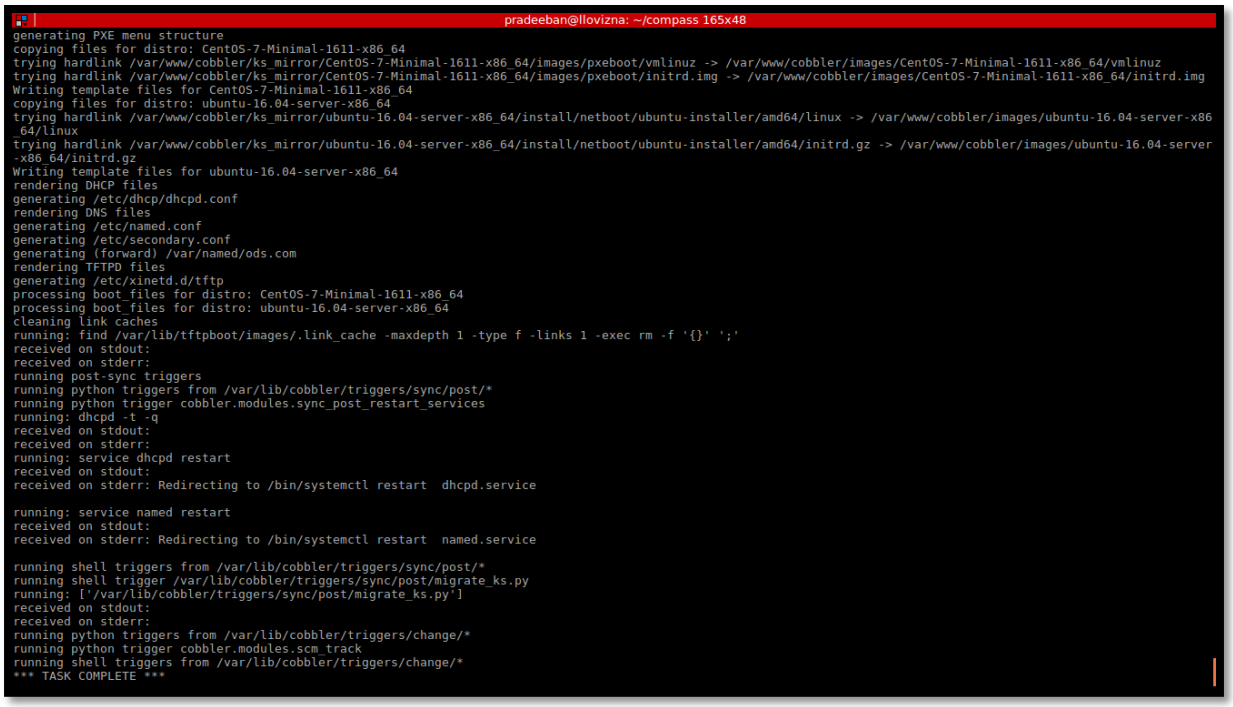

Inbox (1,815)
PK - Articles F
Juniper Netw
Juniper/cont
OpenContrail
Install and Co
Try Contrail a
www.juniper.net/us/en/cloud-software/trial/
Search
JUNIPER
NETWORKS
Products & Services
Support
Training
How to Buy
Try Contrail and AppFormix
Evaluate Juniper cloud software in a safe, cloud-hosted environment.
RESERVE YOUR SANDBOX
Now you have the opportunity to test Juniper Contrail, a cloud automation platform, and AppFormix, a cloud operations optimization tool, in a cloud-hosted sandbox environment. Evaluate the functionality of these products on our infrastructure free of charge.
←Previous Step
Next Step→
Step 2: Select Your Slot
August 2017
Next >
Mo
Tu
We
Th
Fr
Sa
Su
Click to select
Europe/Brussels
Now
02:00 AM
02:30 AM
03:00 AM
03:30 AM
04:00 AM

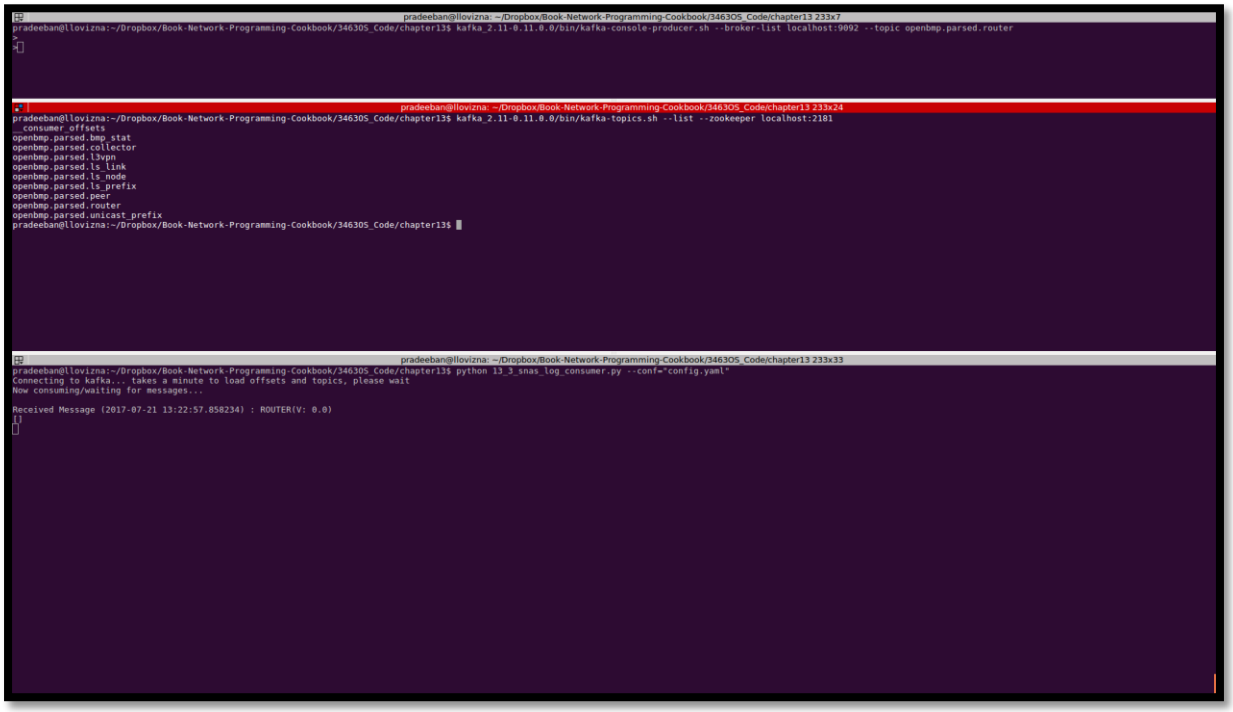

Spark
Secure | https://web.ciscospark.com/rooms/7c403931-51e6-359b-8b89-085b364b4668/chat
GSD
Download the Desktop App to get the full meeting and message experience.
Download
Unread
All
Unread
TEAMS
The Teams functionality in Cisco Spark organizes people and spaces around a project or functional group. Team members can discover and join any of the spaces within that team.
GOT IT
Spark
Spark 4:39 AM
Welcome to Cisco Spark! You can easily meet with your team and collaborate on projects from anywhere, anytime.
I'm here to help you unlock the magic. Say help or ask me questions about Cisco Spark like What is a space? or How do I make a video call?
Send a message to Spark

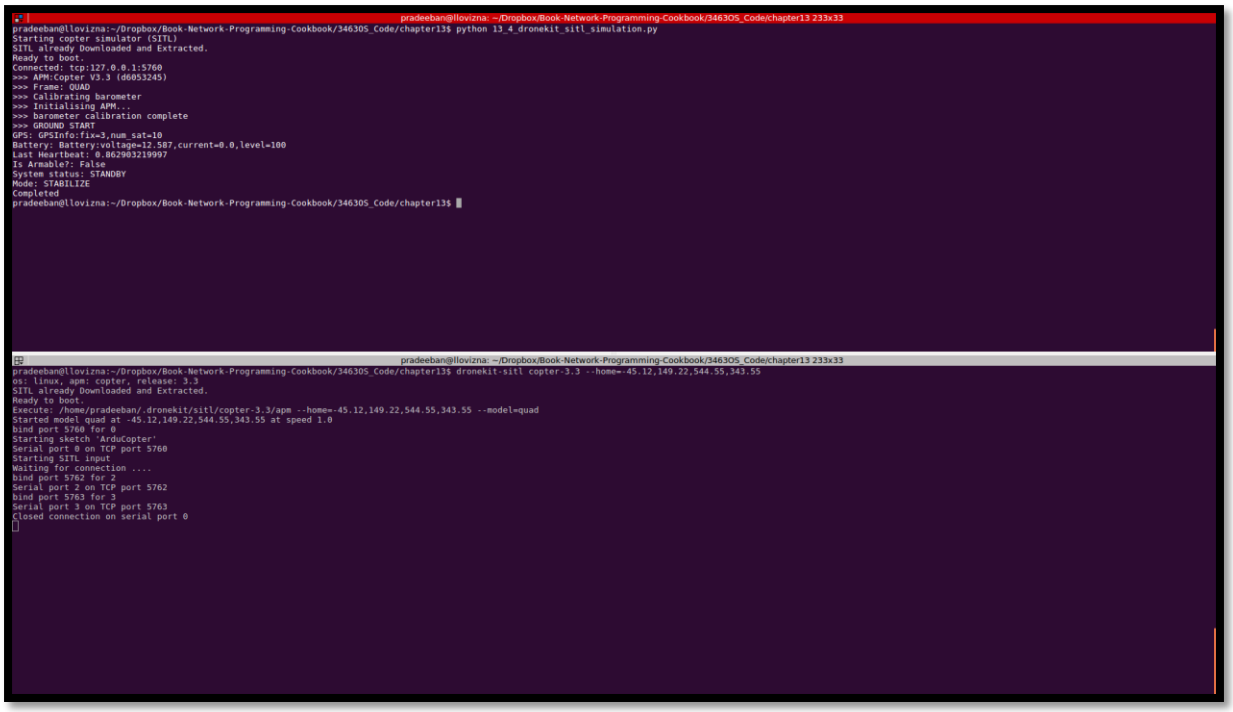

Secure | https://developer.ciscospark.com/#
GSD
Cisco Spark for Developers
Pradeeban Kat...
Copy
Log Out
My Access Token
Extend Cisco Spark
with conversational chatbots
Build
Grow

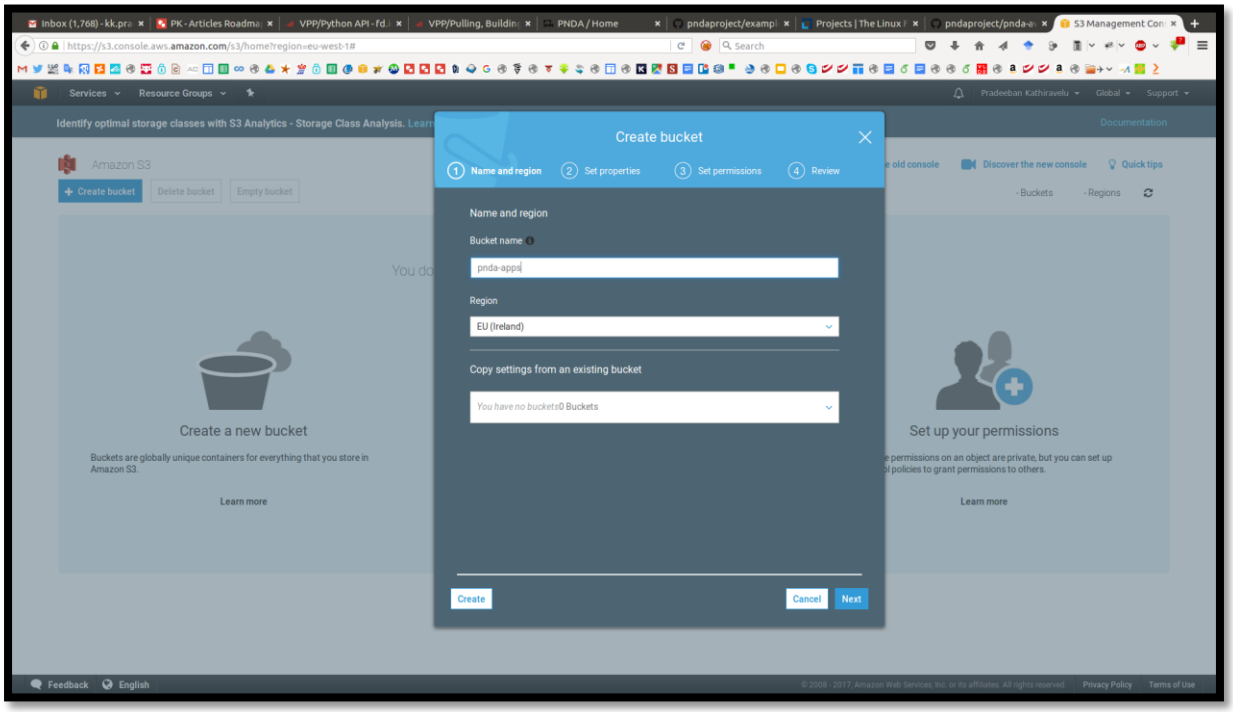

Spark
Secure | https://web.ciscospark.com/rooms/38301a70-77fc-11e7-9dbb-6dc8ecc0163a/chat
GSD
All
ciscosparkapi Dem... 5:31 AM
You · Shared a photo
ciscosparkapi Dem... 5:24 AM
You · Shared a photo
TEST
ciscosparkapi Demo 4:54 AM
This starts the "ciscosparkapi...
TEST
General 4:45 AM
This starts the "General" spa...
Spark 4:39 AM
Spark · Welcome to Cisc...
ciscosparkapi Demonstration
This starts the "ciscosparkapi Demonstration" space. 5:31 AM
You
Welcome to the room!
Send a message to ciscosparkapi Demonstration

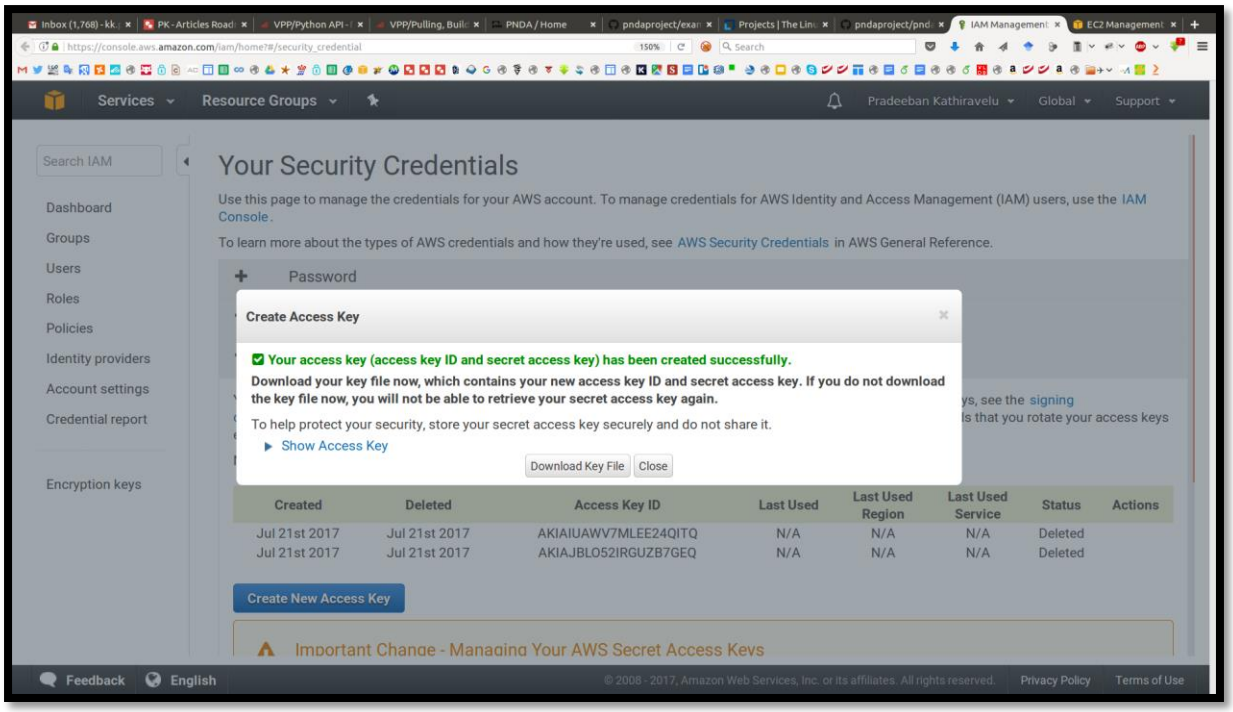
Chapter 13: NFV and Orchestration – A Larger Ecosystem






pradeeban@llovizna: ~/Dropbox/Book-Network-Programming-Cookbook/3463OS_Code/chapter13 233x33
pradeeban@llovizna:~/Dropbox/Book-Network-Programming-Cookbook/3463OS_Code/chapter13$ python 13_4_dronekit_sitl_simulation.py
Starting copter simulator (SITL)
SITL already Downloaded and Extracted.
Ready to boot.
Connected: tcp:127.0.0.1:5760
>>> APM:Copter V3.3 (d6053245)
>>> Frame: QUAD
>>> Calibrating barometer
>>> Initialising APM...
>>> barometer calibration complete
>>> GROUND START
GPS: GPSInfo:fix=3,num_sat=10
Battery: Battery:voltage=12.587,current=0.0,level=100
Last Heartbeat: 0.862903219997
Is Armable?: False
System status: STANDBY
Mode: STABILIZE
Completed
pradeeban@llovizna:~/Dropbox/Book-Network-Programming-Cookbook/3463OS_Code/chapter13$
pradeeban@llovizna: ~/Dropbox/Book-Network-Programming-Cookbook/3463OS_Code/chapter13 233x33
pradeeban@llovizna:~/Dropbox/Book-Network-Programming-Cookbook/3463OS_Code/chapter13$ dronekit-sitl copter-3.3 --home=-45.12,149.22,544.55,343.55
os: linux, apm: copter, release: 3.3
SITL already Downloaded and Extracted.
Ready to boot.
Execute: /home/pradeeban/.dronekit/sitl/copter-3.3/apm --home=-45.12,149.22,544.55,343.55 --model=quad
Started model quad at -45.12,149.22,544.55,343.55 at speed 1.0
bind port 5760 for 0
Starting sketch 'ArduCopter'
Serial port 0 on TCP port 5760
Starting SITL input
Waiting for connection ....
bind port 5762 for 2
Serial port 2 on TCP port 5762
bind port 5763 for 3
Serial port 3 on TCP port 5763
Closed connection on serial port 0


Create bucket
Name and region
Set properties
Set permissions
Review
Name and region
Bucket name
pnda-apps
Region
EU (Ireland)
Copy settings from an existing bucket
You have no buckets 0 Buckets
Create
Cancel
Next
Create a new bucket
Buckets are globally unique containers for everything that you store in Amazon S3.
Learn more
Set up your permissions
Learn more
Amazon S3
Create bucket
Delete bucket
Empty bucket
Identify optimal storage classes with S3 Analytics - Storage Class Analysis.
Documentation
Feedback
English


Services
Resource Groups
Pradeeban Kathiravelu
Global
Support
Search IAM
Dashboard
Groups
Users
Roles
Policies
Identity providers
Account settings
Credential report
Encryption keys
Your Security Credentials
Use this page to manage the credentials for your AWS account. To manage credentials for AWS Identity and Access Management (IAM) users, use the IAM Console.
To learn more about the types of AWS credentials and how they're used, see AWS Security Credentials in AWS General Reference.
Password
Create Access Key
Your access key (access key ID and secret access key) has been created successfully.
Download your key file now, which contains your new access key ID and secret access key. If you do not download the key file now, you will not be able to retrieve your secret access key again.
To help protect your security, store your secret access key securely and do not share it.
Show Access Key
Download Key File
Close
Created
Deleted
Access Key ID
Last Used
Last Used Region
Last Used Service
Status
Actions
Jul 21st 2017
Jul 21st 2017
AKIAIUAWV7MLEE24QITQ
N/A
N/A
N/A
Deleted
Jul 21st 2017
Jul 21st 2017
AKIAJBLO52IRGUZB7GEQ
N/A
N/A
N/A
Deleted
Create New Access Key
Important Change - Managing Your AWS Secret Access Keys
Feedback
English
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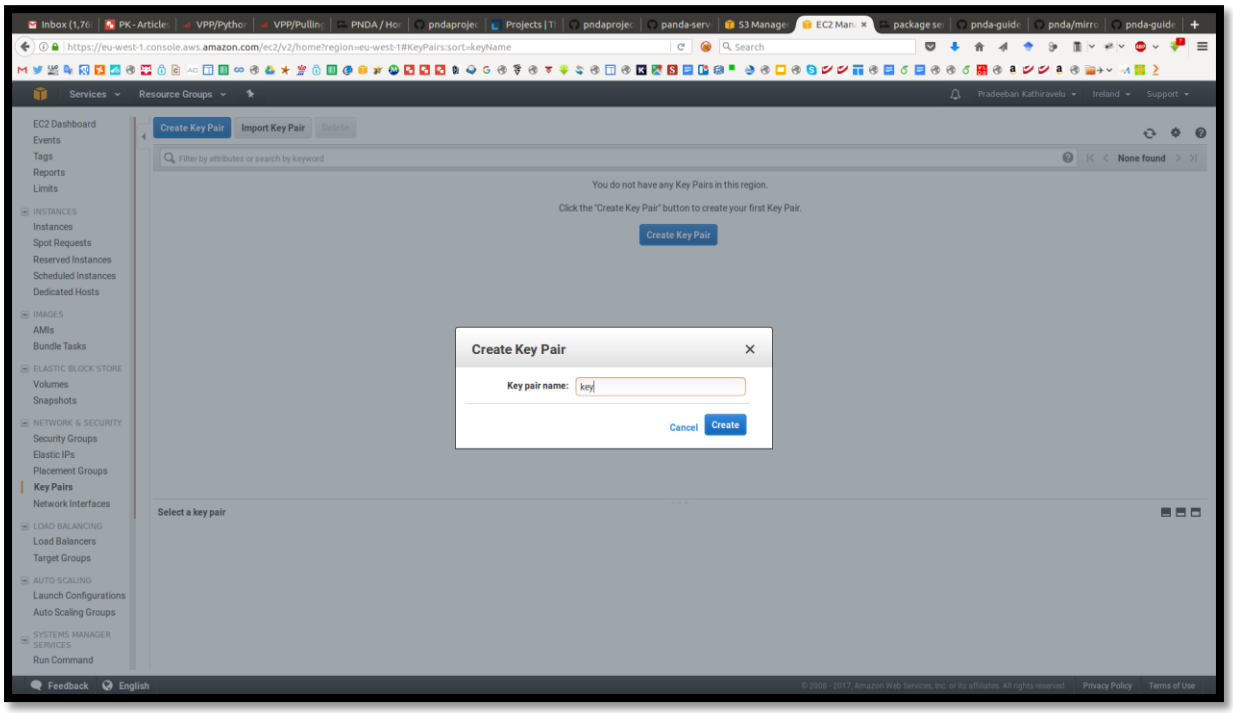
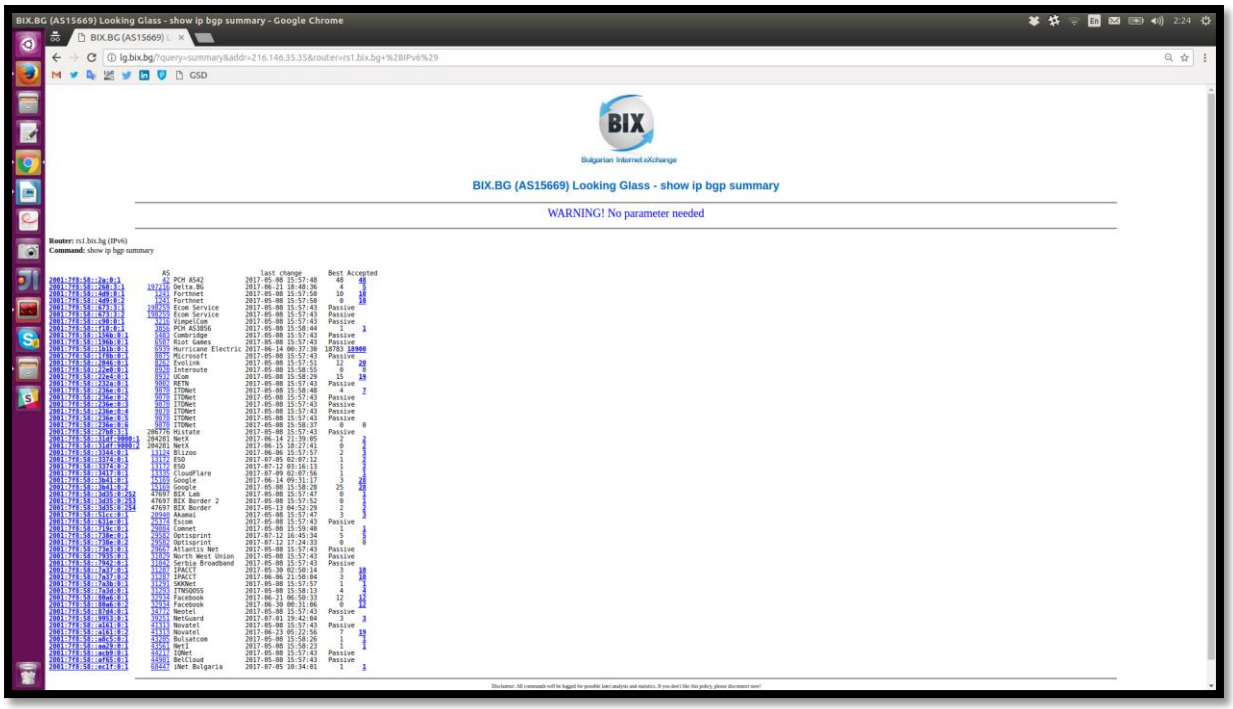

Services
Resource Groups
Pradeeban Kathiravelu
Ireland
Support
EC2 Dashboard
Events
Tags
Reports
Limits
INSTANCES
Instances
Spot Requests
Reserved Instances
Scheduled Instances
Dedicated Hosts
IMAGES
AMIs
Bundle Tasks
ELASTIC BLOCK STORE
Volumes
Snapshots
NETWORK & SECURITY
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
LOAD BALANCING
Load Balancers
Target Groups
AUTO SCALING
Launch Configurations
Auto Scaling Groups
SYSTEMS MANAGER SERVICES
Run Command
Create Key Pair
Import Key Pair
Delete
None found
You do not have any Key Pairs in this region.
Click the "Create Key Pair" button to create your first Key Pair.
Create Key Pair
Create Key Pair
Key pair name:
key
Cancel
Create
Select a key pair
Feedback
English
Privacy Policy
Terms of Use

Chapter 14: Programming the Internet