

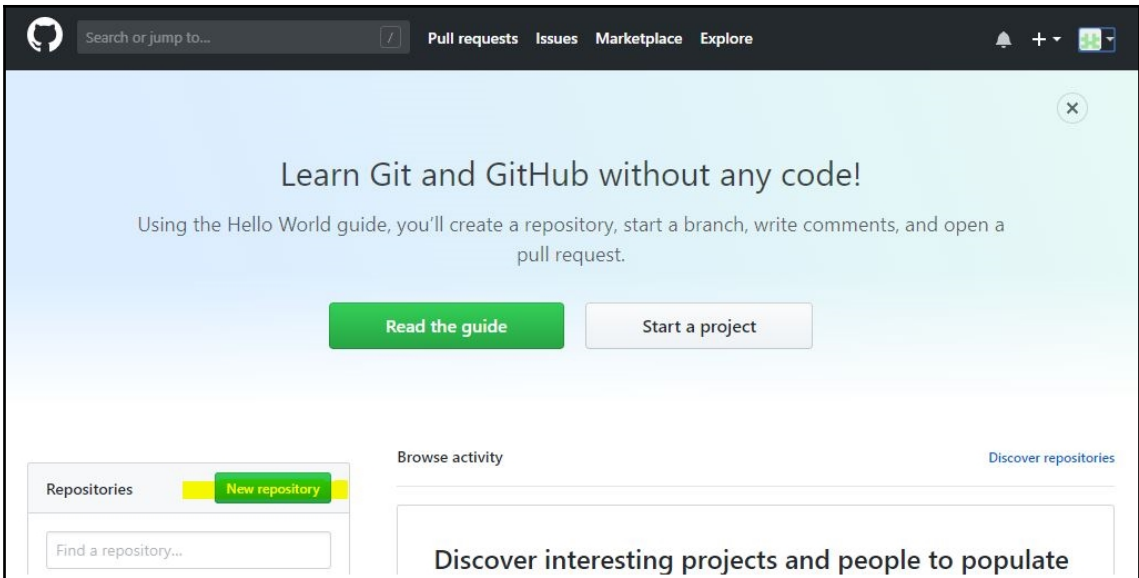
Chapter 1: Fundamental Concepts of Network Automation

```
Directory of C:\gdrive\book2\github\edition2\chapter1

13-Nov-18  08:26 AM      <DIR>          .
13-Nov-18  08:26 AM      <DIR>          ..
12-Nov-18  02:24 PM              384 api_invoke_ps.ps1
11-Nov-18  10:20 PM              851 credential_hidings.py
13-Nov-18  08:26 AM              442 file_handling.py
12-Nov-18  02:33 PM              216 get_process_powershell.ps1
11-Nov-18  09:16 PM              700 ipaddress_validate.py
11-Nov-18  09:25 PM              183 ipaddress_validate_socket.py
12-Nov-18  09:52 AM             620 jsonapi_example.py
13-Nov-18  08:27 AM              16 myrecord.csv
12-Nov-18  11:03 AM              571 regex_timeextract.py
11-Nov-18  08:40 PM              584 sample1.py
11-Nov-18  09:59 PM              271 switch_case_config.py
12-Nov-18  09:56 PM          4,166 use_case.py
                12 File(s)          9,004 bytes
                2 Dir(s)  343,789,043,712 bytes free

C:\gdrive\book2\github\edition2\chapter1>more myrecord.csv
abhishek,10,US


C:\gdrive\book2\github\edition2\chapter1>
```



Create a new repository

A repository contains all the files for your project, including the revision history.

Owner

 pnaedition2 ▾

Repository name

/ mytest ✓

Great repository names are short and memorable. Need inspiration? How about [musical-waddle](#).

Description (optional)

This is a test repository



Public

Anyone can see this repository. You choose who can commit.



Private

You choose who can see and commit to this repository.



Initialize this repository with a README

This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: None ▾

Add a license: None ▾



Create repository

📄 pnaedition2 / mytest

👁 Watch 0

★ Star 0

🍴 Fork 0

🔗 Code

🔔 Issues 0

🔀 Pull requests 0

📁 Projects 0

📖 Wiki

📊 Insights

⚙ Settings

Quick setup — if you've done this kind of thing before

📄 Set up in Desktop

 or

HTTPS

SSH

https://github.com/pnaedition2/mytest.git

📄

Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

...or create a new repository on the command line

```
echo "# mytest" >> README.md
git init
git add README.md
git commit -m "first commit"
git remote add origin https://github.com/pnaedition2/mytest.git
git push -u origin master
```

📄

...or push an existing repository from the command line

```
git remote add origin https://github.com/pnaedition2/mytest.git
git push -u origin master
```

📄

📄 pnaedition2 / mytest

👁 Watch 0

★ Star 0

🍴 Fork 0

🔗 Code

🔔 Issues 0

🔀 Pull requests 0

📁 Projects 0

📖 Wiki

📊 Insights

⚙ Settings

This is a test repository

Edit

Manage topics

📄 1 commit

🌿 1 branch

📦 0 releases

👤 0 contributors

Branch: master ▾

New pull request

Create new file

Upload files

Find file

Clone or download ▾

👤 Abhishek Ratan this is a test checkin Latest commit abe263d 4 minutes ago

📄 myfirstcodecheckin.py this is a test checkin 4 minutes ago

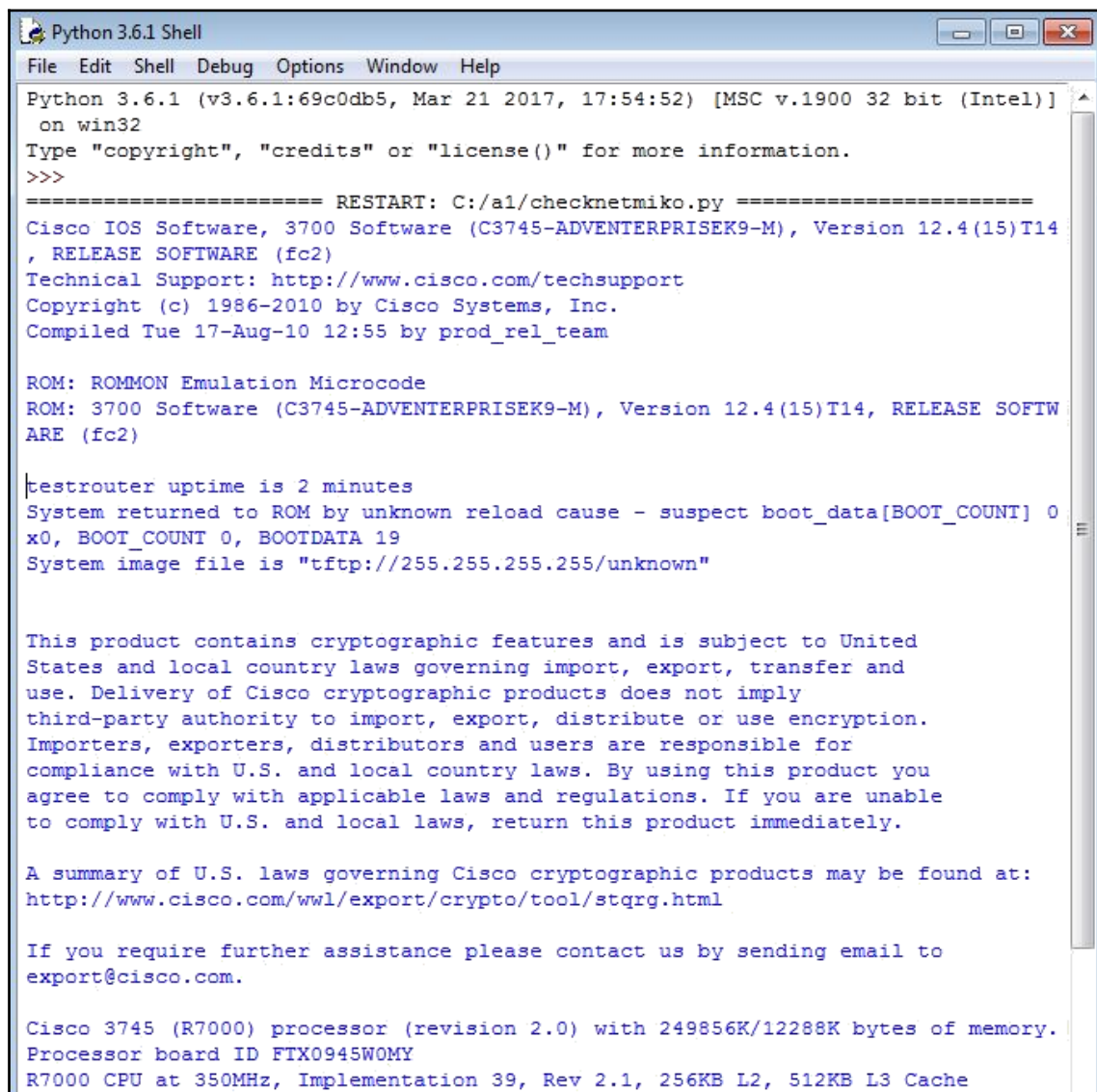
Help people interested in this repository understand your project by adding a README.

Add a README

Directory of C:\gdrive\book2\github\edition2\chapter1

```
13-Nov-18 08:44 AM <DIR> .
13-Nov-18 08:44 AM <DIR> ..
12-Nov-18 02:24 PM      384 api_invoke_ps.ps1
11-Nov-18 10:20 PM     851 credential_hidings.py
13-Nov-18 08:26 AM     442 file_handling.py
12-Nov-18 02:33 PM     216 get_process_powershell.ps1
11-Nov-18 09:16 PM     700 ipaddress_validate.py
11-Nov-18 09:25 PM     183 ipaddress_validate_socket.py
12-Nov-18 09:52 AM     620 jsonapi_example.py
13-Nov-18 08:27 AM       16 myrecord.csv
12-Nov-18 11:03 AM     571 regex_timeextract.py
11-Nov-18 08:40 PM     584 sample1.py
11-Nov-18 09:59 PM     271 switch_case_config.py
13-Nov-18 10:56 AM       94 usecase_creds.txt
13-Nov-18 08:37 AM    4,166 use_case1.py
13-Nov-18 10:51 AM    4,677 use_case2.py
      14 File(s)      13,775 bytes
       2 Dir(s)  343,757,619,200 bytes free
```

Chapter 2: Python Automation for Network Engineers



```
Python 3.6.1 Shell
File Edit Shell Debug Options Window Help
Python 3.6.1 (v3.6.1:69c0db5, Mar 21 2017, 17:54:52) [MSC v.1900 32 bit (Intel)]
on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/a1/checknetmiko.py =====
Cisco IOS Software, 3700 Software (C3745-ADVENTERPRISEK9-M), Version 12.4(15)T14
, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2010 by Cisco Systems, Inc.
Compiled Tue 17-Aug-10 12:55 by prod_rel_team

ROM: ROMMON Emulation Microcode
ROM: 3700 Software (C3745-ADVENTERPRISEK9-M), Version 12.4(15)T14, RELEASE SOFTW
ARE (fc2)

|testrouter uptime is 2 minutes
System returned to ROM by unknown reload cause - suspect boot_data[BOOT_COUNT] 0
x0, BOOT_COUNT 0, BOOTDATA 19
System image file is "tftp://255.255.255.255/unknown"

This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco 3745 (R7000) processor (revision 2.0) with 249856K/12288K bytes of memory.
Processor board ID FTX0945W0MY
R7000 CPU at 350MHz, Implementation 39, Rev 2.1, 256KB L2, 512KB L3 Cache
```

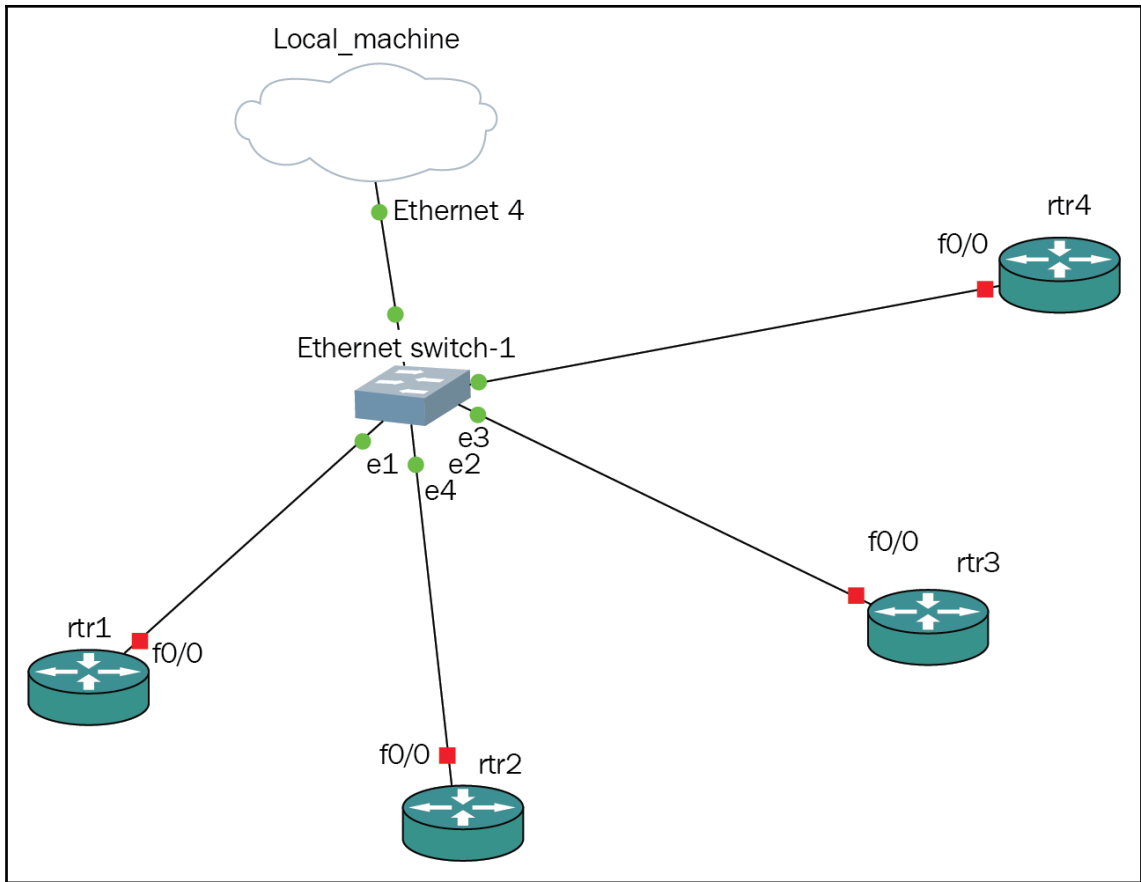
```
Python 3.6.1 Shell
File Edit Shell Debug Options Window Help
Python 3.6.1 (v3.6.1:69c0db5, Mar 21 2017, 17:54:52) [MSC v.1900 32 bit (Intel)]
on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/a1/checknetmiko.py =====
Before config push
Building configuration...

Current configuration : 102 bytes
!
interface FastEthernet0/0
 ip address 192.168.255.249 255.255.255.252
 duplex auto
 speed auto
end

After config push
Building configuration...

Current configuration : 123 bytes
!
interface FastEthernet0/0
 description my test
 ip address 192.168.255.249 255.255.255.252
 duplex auto
 speed auto
end

>>>
```



```
== RESTART: C:/gdrive/book2/github/edition2/python_automation/multiping.py ==
server is up 192.168.20.1
server is up 192.168.20.2
server is up 192.168.20.3
server is up 192.168.20.4
>>>
```

```
rtr1 uptime is 16 minutes
rtr2 uptime is 11 minutes
rtr3 uptime is 13 minutes
rtr4 uptime is 10 minutes
>>> |
```

```
RESTART: C:/gdrive/book2/github/edition2/python_automation/config_syslog.py
*****
Performing validation for : rtr1

Syslog is configured and reachable
Logging set for informational logs

Loopback interface status:
Lo30                                up                up                "rtr1 loopback interface"
*****

*****
Performing validation for : rtr2

Syslog is configured and reachable
Logging set for informational logs

Loopback interface status:
Lo30                                up                up                "rtr2 loopback interface"
*****

*****
Performing validation for : rtr3

Syslog is configured and reachable
Logging set for informational logs

Loopback interface status:
Lo30                                up                up                "rtr3 loopback interface"
*****

*****
Performing validation for : rtr4

Syslog is configured and reachable
Logging set for informational logs

Loopback interface status:
Lo30                                up                up                "rtr4 loopback interface"
*****
```

```
RESTART: C:/gdrive/book2/github/edition2/python_automation/config_syslog_file.py
Showing contents for generated config files....
```

```
Showing contents of rtr1
logging host 192.168.20.5 transport tcp port 514
logging trap 6
interface loopback 30
description "rtr1 loopback interface"
```

```
Showing contents of rtr2
logging host 192.168.20.5 transport tcp port 514
logging trap 6
interface loopback 30
description "rtr2 loopback interface"
```

```
Showing contents of rtr3
logging host 192.168.20.5 transport tcp port 514
logging trap 6
interface loopback 30
description "rtr3 loopback interface"
```

```
Showing contents of rtr4
logging host 192.168.20.5 transport tcp port 514
logging trap 6
interface loopback 30
description "rtr4 loopback interface"
```

```
>>>
```

```
Fetching stats for... 192.168.20.1
Cisco IOS Software, 3700 Software (C3745-ADVENTERPRISEK9-M), Version 12.4(15)T14, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2010 by Cisco Systems, Inc.
Compiled Tue 17-Aug-10 12:55 by prod_rel_team
```

```
Fetching stats for... 192.168.20.2
Cisco IOS Software, 3600 Software (C3660-A3JK9S-M), Version 12.4(19), RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Fri 29-Feb-08 23:47 by prod_rel_team
>>>
```

```

Fetching stats for... 192.168.20.1
SNMPv2-SMI::mib-2.2.2.1.2.1 = Interface Name: FastEthernet1/0
SNMPv2-SMI::mib-2.2.2.1.2.2 = Interface Name: FastEthernet0/0
SNMPv2-SMI::mib-2.2.2.1.2.3 = Interface Name: Serial0/0
SNMPv2-SMI::mib-2.2.2.1.2.4 = Interface Name: FastEthernet0/1
SNMPv2-SMI::mib-2.2.2.1.2.5 = Interface Name: Serial0/1
SNMPv2-SMI::mib-2.2.2.1.2.6 = Interface Name: Serial0/2
SNMPv2-SMI::mib-2.2.2.1.2.7 = Interface Name: Serial2/0
SNMPv2-SMI::mib-2.2.2.1.2.8 = Interface Name: Serial2/1
SNMPv2-SMI::mib-2.2.2.1.2.9 = Interface Name: Serial2/2
SNMPv2-SMI::mib-2.2.2.1.2.10 = Interface Name: Serial2/3
SNMPv2-SMI::mib-2.2.2.1.2.12 = Interface Name: Null0
SNMPv2-SMI::mib-2.2.2.1.2.16 = Interface Name: Loopback0
SNMPv2-SMI::mib-2.2.2.1.2.17 = Interface Name: Loopback30

Fetching stats for... 192.168.20.2
SNMPv2-SMI::mib-2.2.2.1.2.1 = Interface Name: FastEthernet0/0
SNMPv2-SMI::mib-2.2.2.1.2.2 = Interface Name: FastEthernet0/1
SNMPv2-SMI::mib-2.2.2.1.2.3 = Interface Name: Ethernet1/0
SNMPv2-SMI::mib-2.2.2.1.2.4 = Interface Name: Ethernet1/1
SNMPv2-SMI::mib-2.2.2.1.2.5 = Interface Name: Ethernet1/2
SNMPv2-SMI::mib-2.2.2.1.2.6 = Interface Name: Ethernet1/3
SNMPv2-SMI::mib-2.2.2.1.2.8 = Interface Name: Null0
SNMPv2-SMI::mib-2.2.2.1.2.9 = Interface Name: Loopback30
>>>

```

```

Hostname for IP 192.168.20.1 is rtr1
Hostname for IP 192.168.20.2 is rtr2
Hostname for IP 192.168.20.3 is rtr3
Hostname for IP 192.168.20.4 is rtr4

Total execution time:
0:00:26.844389
>>>

```

```

Hostname for IP 192.168.20.4 is rtr4
Hostname for IP 192.168.20.2 is rtr2
Hostname for IP 192.168.20.3 is rtr3
Hostname for IP 192.168.20.1 is rtr1
Total execution time:
0:00:07.969298
>>>

```

```
Python 3.6.1 Shell
File Edit Shell Debug Options Window Help
Python 3.6.1 (v3.6.1:69c0db5, Mar 21 2017, 17:54:52) [MSC v.1900 32 bit (Intel)]
on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/a1/checksample.py =====
Trunk enabled on fa0/1
Trunk enabled on fa1/0
Trunk enabled on fa2/1
Trunk enabled on te3/1
>>>
```

```
Python 3.6.1 Shell
File Edit Shell Debug Options Window Help
Python 3.6.1 (v3.6.1:69c0db5, Mar 21 2017, 17:54:52) [MSC v.1900 32 bit (Intel)]
on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/a1/checksample.py =====
Trunk enabled on fa0/1
Trunk enabled on fa1/0
Trunk enabled on fa2/1
>>>
```

```
For IP 192.168.20.2 interface Loopback45 is NOT present
For IP 192.168.20.3 interface Loopback45 is NOT present
For IP 192.168.20.4 interface Loopback45 is NOT present

For IP 192.168.20.1 interface Loopback45 is NOT present
>>>
```

```
For IP 192.168.20.1 interface Serial0/1 is present
For IP 192.168.20.2 interface Serial0/1 is NOT present
For IP 192.168.20.4 interface Serial0/1 is NOT present

For IP 192.168.20.3 interface Serial0/1 is present

>>>
```



```
RESTART: C:/gdrive/book2/github/edition2/python_automation/usecase_loopback.py
```

```
For IP 192.168.20.1 interface Loopback45 is NOT present. Pushing the config
```

```
For IP 192.168.20.3 interface Loopback45 is NOT present. Pushing the config
```

```
For IP 192.168.20.4 interface Loopback45 is NOT present. Pushing the config
```

```
Configuring router 192.168.20.1 now...
```

```
Configuring router 192.168.20.3 now...
```

```
Configuring router 192.168.20.4 now...
```

```
For IP 192.168.20.2 interface Loopback45 is NOT present. Pushing the config
```

```
Configuring router 192.168.20.2 now...
```

```
For IP 192.168.20.4 interface Loopback45 is present
```

```
For IP 192.168.20.2 interface Loopback45 is present
```

```
For IP 192.168.20.1 interface Loopback45 is present
```

```
For IP 192.168.20.3 interface Loopback45 is present
```

```
>>>
```

```
RESTART: C:/gdrive/book2/github/edition2/python_automation/usecase_updatedescription.py
```

```
MIB: 1.3.6.1.2.1.31.1.1.1.18.18 , Interface info: Loopback45 test interface created
```

```
MIB: 1.3.6.1.2.1.2.2.1.2.18 , Interface info: Loopback45
```

```
MIB: 1.3.6.1.2.1.31.1.1.1.1.18 , Interface info: Lo45
```

```
IP address of the device: 192.168.20.1
```

```
Updating the config on 192.168.20.1
```

```
MIB: 1.3.6.1.2.1.31.1.1.1.18.18 , Interface info: Loopback45 Mgmt loopback interface
```

```
MIB: 1.3.6.1.2.1.2.2.1.2.18 , Interface info: Loopback45
```

```
MIB: 1.3.6.1.2.1.31.1.1.1.1.18 , Interface info: Lo45
```

```
IP address of the device: 192.168.20.1
```

```
>>>
```

Chapter 3: Ansible and Network Templatizations

```
✓ abhishek@ubuntutest: ~  
abhishek@ubuntutest:~$ ansible  
Usage: ansible <host-pattern> [options]  
  
Define and run a single task 'playbook' against a set of hosts  
  
Options:  
-a MODULE_ARGS, --args=MODULE_ARGS  
    module arguments  
--ask-vault-pass      ask for vault password  
-B SECONDS, --background=SECONDS  
    run asynchronously, failing after X seconds  
    (default=N/A)  
-C, --check           don't make any changes; instead, try to predict some  
    of the changes that may occur  
-D, --diff            when changing (small) files and templates, show the  
    differences in those files; works great with --check  
-e EXTRA_VARS, --extra-vars=EXTRA_VARS  
    set additional variables as key=value or YAML/JSON, if  
    filename prepend with @  
-f FORKS, --forks=FORKS  
    specify number of parallel processes to use  
    (default=5)  
-h, --help            show this help message and exit  
-i INVENTORY, --inventory=INVENTORY, --inventory-file=INVENTORY  
    specify inventory host path  
    (default=[u'/etc/ansible/hosts']) or comma separated  
    host list. --inventory-file is deprecated  
-l SUBSET, --limit=SUBSET  
    further limit selected hosts to an additional pattern  
--list-hosts          outputs a list of matching hosts; does not execute  
    anything else  
-m MODULE_NAME, --module-name=MODULE_NAME  
    module name to execute (default=command)  
-M MODULE_PATH, --module-path=MODULE_PATH  
    prepend colon-separated path(s) to module library  
    (default=[u'/home/abhishek/.ansible/plugins/modules',  
    u'/usr/share/ansible/plugins/modules'])  
--new-vault-id=NEW_VAULT_ID  
    the new vault identity to use for rekey  
--new-vault-password-file=NEW_VAULT_PASSWORD_FILES  
    new vault password file for rekey  
-o, --one-line        condense output  
-P POLL_INTERVAL, --poll=POLL_INTERVAL  
    set the poll interval if using -B (default=15)  
--syntax-check        perform a syntax check on the playbook, but do not  
    execute it  
-t TREE, --tree=TREE  log output to this directory
```

✓ abhishek@ubuntutest: ~

```
abhishek@ubuntutest:~$ ansible localhost -m setup |more
127.0.0.1 | SUCCESS => {
  "ansible_facts": {
    "ansible_all_ipv4_addresses": [
      "172.31.33.197"
    ],
    "ansible_all_ipv6_addresses": [
      "fe80::8a8:51ff:fe0b:6f06"
    ],
    "ansible_apparmor": {
      "status": "enabled"
    },
    "ansible_architecture": "x86_64",
    "ansible_bios_date": "02/16/2017",
    "ansible_bios_version": "4.2.amazon",
    "ansible_cmdline": {
      "BOOT_IMAGE": "/boot/vmlinuz-4.4.0-1035-aws",
      "console": "ttyS0",
      "ro": true,
      "root": "UUID=3e13556e-d28d-407b-bcc6-97160eafebe1"
    },
    "ansible_date_time": {
      "date": "2017-10-10",
      "day": "10",
      "epoch": "1507611083",
      "hour": "04",
      "iso8601": "2017-10-10T04:51:23Z",
      "iso8601_basic": "20171010T045123181202",
      "iso8601_basic_short": "20171010T045123",
      "iso8601_micro": "2017-10-10T04:51:23.181276Z",
      "minute": "51",
      "month": "10",
      "second": "23",
      "time": "04:51:23",
      "tz": "UTC",
      "tz_offset": "+0000",
      "weekday": "Tuesday",
      "weekday_number": "2",
      "weeknumber": "41",
      "year": "2017"
    },
    "ansible_default_ipv4": {
      "address": "172.31.33.197",
      "alias": "eth0",
      "broadcast": "172.31.47.255",
      "gateway": "172.31.32.1",
      "interface": "eth0",
      "macaddress": "0a:a8:51:0b:6f:06",
      "mtu": 9001,
      "netmask": "255.255.240.0",
      "network": "172.31.32.0",
      "type": "ether"
    },
    "ansible_default_ipv6": {},
    "ansible_device_links": {
      "ids": {},
      "labels": {
        "xvda1": [
          "cloudimg-rootfs"
        ]
      }
    }
  }
}
```

```

PLAY [Checking] *****

TASK [run ping for the host] *****
ok: [test1]
ok: [test3]
ok: [test4]
ok: [test5]

TASK [Debug registered variables] *****
ok: [test1] => {
  "trace_result": {
    "changed": false,
    "failed": false,
    "stdout": [
      "Type escape sequence to abort.\nSending 1, 100-byte ICMP Echoes to 8.8.8.8, timeout is 2 seconds:\n!\n\nSuccess rate is 100 percent (1/1), round-trip min/avg/max = 17/17/17 ms"
    ],
    "stdout_lines": [
      "Type escape sequence to abort.",
      "Sending 1, 100-byte ICMP Echoes to 8.8.8.8, timeout is 2 seconds:",
      "!",
      "Success rate is 100 percent (1/1), round-trip min/avg/max = 17/17/17 ms"
    ]
  }
}
ok: [test3] => {
  "trace_result": {
    "changed": false,
    "failed": false,
    "stdout": [
      "Type escape sequence to abort.\nSending 1, 100-byte ICMP Echoes to 8.8.8.8, timeout is 2 seconds:\n!\n\nSuccess rate is 100 percent (1/1), round-trip min/avg/max = 3/3/3 ms"
    ],
    "stdout_lines": [
      "Type escape sequence to abort.",
      "Sending 1, 100-byte ICMP Echoes to 8.8.8.8, timeout is 2 seconds:",
      "!",
      "Success rate is 100 percent (1/1), round-trip min/avg/max = 3/3/3 ms"
    ]
  }
}

```

```

PLAY [Run ping commands] *****

TASK [run ping to every other host] *****
ok: [test1] => (item={'value': u'1.1.1.1', 'key': u'dns3'})
ok: [test1] => (item={'value': u'8.8.8.8', 'key': u'dns2'})
ok: [test3] => (item={'value': u'1.1.1.1', 'key': u'dns3'})
ok: [test1] => (item={'value': u'4.2.2.2', 'key': u'dns1'})
ok: [test4] => (item={'value': u'1.1.1.1', 'key': u'dns3'})
ok: [test3] => (item={'value': u'8.8.8.8', 'key': u'dns2'})
ok: [test4] => (item={'value': u'8.8.8.8', 'key': u'dns2'})
ok: [test1] => (item={'value': u'8.8.8.4', 'key': u'dns4'})
ok: [test3] => (item={'value': u'4.2.2.2', 'key': u'dns1'})
ok: [test4] => (item={'value': u'4.2.2.2', 'key': u'dns1'})
ok: [test5] => (item={'value': u'1.1.1.1', 'key': u'dns3'})
ok: [test3] => (item={'value': u'8.8.8.4', 'key': u'dns4'})
ok: [test5] => (item={'value': u'8.8.8.8', 'key': u'dns2'})
ok: [test4] => (item={'value': u'8.8.8.4', 'key': u'dns4'})
ok: [test5] => (item={'value': u'4.2.2.2', 'key': u'dns1'})
ok: [test5] => (item={'value': u'8.8.8.4', 'key': u'dns4'})

TASK [Check ping failure] *****

```

```

0-byte ICMP Echoes to 8.8.8.4, timeout is 2 seconds:\n.\nSuccess rate is 0 percent (0/1)", "stdout_lines": [{"Type escape sequence
rcent (0/1)"}]], "msg": "Ping not responding [[u'Type escape sequence to abort.', u'Sending 1, 100-byte ICMP Echoes to 8.8.8.4, time
skipping: [test4] => (item={ 'ansible_parsed': True, 'ansible_item_result': True, 'ansible_no_log': False, u'stdout': [u'Type esc
is 100 percent (1/1), round-trip min/avg/max = 1/1/1 ms}], u'changed': False, 'failed': False, 'item': {'key': u'dns1', 'value': u'
.2.2' repeat 1'}, u'interval': 1, u'retries': 10, u'auth_pass': None, u'wait_for': None, u'host': None, u'ssh_keyfile': None, u't
ne, u'host': None, u'timeout': None, u'password': None, u'port': None, u'password': None, u'port': None, u'match': u'all'}], u'std
seconds': u'!', u'Success rate is 100 percent (1/1), round-trip min/avg/max = 1/1/1 ms']]], 'ansible_ignore_errors': None, 'ansi
failed: [test5] (item={ 'ansible_parsed': True, 'ansible_item_result': True, 'ansible_no_log': False, u'stdout': [u'Type escape s
percent (0/1)'], u'changed': False, 'failed': False, 'item': {'key': u'dns4', 'value': u'8.8.8.4'}, u'invocation': {u'module_args':
les': 10, u'auth_pass': None, u'wait_for': None, u'host': None, u'ssh_keyfile': None, u'timeout': None, u'provider': {u'username':
sword': None, u'port': None, u'password': None, u'port': None, u'match': u'all'}], u'stdout_lines': [{"u'Type escape sequence to ab
ent (0/1)"}]], 'ansible_ignore_errors': None, 'ansible_item_label': {'key': u'dns4', 'value': u'8.8.8.4'}) => ("changed": false,
null, "commands": ["ping \"8.8.8.4\" repeat 1"], "host": null, "interval": 1, "match": "all", "password": null, "port": null, "pro
: null, "timeout": null, "username": null, "retries": 10, "ssh_keyfile": null, "timeout": null, "username": null, "wait_for": null
0-byte ICMP Echoes to 8.8.8.4, timeout is 2 seconds:\n.\nSuccess rate is 0 percent (0/1)", "stdout_lines": [{"Type escape sequence
rcent (0/1)"}]], "msg": "Ping not responding [[u'Type escape sequence to abort.', u'Sending 1, 100-byte ICMP Echoes to 8.8.8.4, time
Failed: [test4] (item={ 'ansible_parsed': True, 'ansible_item_result': True, 'ansible_no_log': False, u'stdout': [u'Type escape s
percent (0/1)'], u'changed': False, 'failed': False, 'item': {'key': u'dns4', 'value': u'8.8.8.4'}, u'invocation': {u'module_args':
les': 10, u'auth_pass': None, u'wait_for': None, u'host': None, u'ssh_keyfile': None, u'timeout': None, u'provider': {u'username':
sword': None, u'port': None, u'password': None, u'port': None, u'match': u'all'}], u'stdout_lines': [{"u'Type escape sequence to ab
ent (0/1)"}]], 'ansible_ignore_errors': None, 'ansible_item_label': {'key': u'dns4', 'value': u'8.8.8.4'}) => ("changed": false,
null, "commands": ["ping \"8.8.8.4\" repeat 1"], "host": null, "interval": 1, "match": "all", "password": null, "port": null, "pro
: null, "timeout": null, "username": null, "retries": 10, "ssh_keyfile": null, "timeout": null, "username": null, "wait_for": null
0-byte ICMP Echoes to 8.8.8.4, timeout is 2 seconds:\n.\nSuccess rate is 0 percent (0/1)", "stdout_lines": [{"Type escape sequence
rcent (0/1)"}]], "msg": "Ping not responding [[u'Type escape sequence to abort.', u'Sending 1, 100-byte ICMP Echoes to 8.8.8.4, time
to retry, use: --limit

PLAY RECAP *****
test1                : ok=1    changed=0    unreachable=0    failed=1
test3                : ok=1    changed=0    unreachable=0    failed=1
test4                : ok=1    changed=0    unreachable=0    failed=1
test5                : ok=1    changed=0    unreachable=0    failed=1

-sh-4.2$

```

```

-sh-4.2$ ansible-playbook -i inventory checklist.yml -k
SSH password:

PLAY [Run ping commands] *****

TASK [run ping to every other host] *****
ok: [test1] => (item=None)
ok: [test1] => (item=None)
ok: [test3] => (item=None)
ok: [test1] => (item=None)
ok: [test4] => (item=None)
ok: [test3] => (item=None)
ok: [test4] => (item=None)
ok: [test1] => (item=None)
ok: [test1]
ok: [test3] => (item=None)
ok: [test4] => (item=None)
ok: [test5] => (item=None)
ok: [test4] => (item=None)
ok: [test4]
ok: [test3] => (item=None)
ok: [test3]
ok: [test5] => (item=None)
ok: [test5] => (item=None)
ok: [test5] => (item=None)
ok: [test5]

TASK [Check ping failure] *****
skipping: [test1] => (item=None)
skipping: [test3] => (item=None)
skipping: [test1] => (item=None)
skipping: [test5] => (item=None)
skipping: [test3] => (item=None)
skipping: [test1] => (item=None)
skipping: [test5] => (item=None)
skipping: [test4] => (item=None)
skipping: [test3] => (item=None)
skipping: [test5] => (item=None)
skipping: [test4] => (item=None)
failed: [test1] (item=None) => ("censored": "the output has been hidden due to the fact that 'no_log: true' was specified for this result", "changed": false)
fatal: [test1]: FAILED! => ("censored": "the output has been hidden due to the fact that 'no_log: true' was specified for this result", "changed": false)
skipping: [test4] => (item=None)
failed: [test3] (item=None) => ("censored": "the output has been hidden due to the fact that 'no_log: true' was specified for this result", "changed": false)

```



```

-sh-4.2$ ansible-playbook -i inventory checktemplate.yml -c local -k
SSH password:

PLAY [generate configs] *****

TASK [Ansible config generation] *****
changed: [test4]
changed: [test3]
changed: [test1]
changed: [test5]

PLAY RECAP *****
test1                : ok=1    changed=1    unreachable=0    failed=0
test3                : ok=1    changed=1    unreachable=0    failed=0
test4                : ok=1    changed=1    unreachable=0    failed=0
test5                : ok=1    changed=1    unreachable=0    failed=0

-sh-4.2$ █

```

```

-sh-4.2$ dir *.txt
test1.txt  test3.txt  test4.txt  test5.txt
-sh-4.2$ more test1.txt
interface Loopback 99
description "This is switch mgmt for device test1"
-sh-4.2$ more test3.txt
interface Loopback 99
description "This is switch mgmt for device test3"
-sh-4.2$ more test4.txt
interface Loopback 99
description "This is switch mgmt for device test4"
-sh-4.2$ more test5.txt
interface Loopback 99
description "This is switch mgmt for device test5"
-sh-4.2$
-sh-4.2$ █

```

```

-sh-4.2$ python checkpython.py

PLAY [generate configs] *****

TASK [Ansible config generation] *****
changed: [test5]
changed: [test1]
changed: [test4]
changed: [test3]

PLAY RECAP *****
test1      : ok=1    changed=1    unreachable=0    failed=0
test3      : ok=1    changed=1    unreachable=0    failed=0
test4      : ok=1    changed=1    unreachable=0    failed=0
test5      : ok=1    changed=1    unreachable=0    failed=0

0
-sh-4.2$ █

```

```

sh-4.2$ dir *.txt
est1.txt  test3.txt  test4.txt  test5.txt
sh-4.2$ more test1.txt
nterface Loopback 99
escription "This is switch mgmt for device test1"
sh-4.2$ more test3.txt
nterface Loopback 99
escription "This is switch mgmt for device test3"
sh-4.2$ more test4.txt
nterface Loopback 99
escription "This is switch mgmt for device test4"
sh-4.2$ more test5.txt
nterface Loopback 99
escription "This is switch mgmt for device test5"
sh-4.2$
sh-4.2$ █

```

```
-sh-4.2$ python checkpythonnew.py
```

```
PLAY [mypythoncheck] *****
```

```
TASK [debug] *****
```

```
ok: [test1] => {  
    "msg": "test1"  
}
```

```
ok: [test3] => {  
    "msg": "test3"  
}
```

```
ok: [test5] => {  
    "msg": "test5"  
}
```

```
ok: [test4] => {  
    "msg": "test4"  
}
```

```
-sh-4.2$
```

```
-sh-4.2$
```


splunkenterprise

App: Search & Reporting ▾

Administrator ▾Messages ▾Settings ▾Activity ▾Help ▾Find 🔍

SearchDatasetsReportsAlertsDashboards

> Search & Reporting

Search

Last 24 hours 🔍

No Event Sampling ▾

Verbose Mode ▾

How to Search

If you are not familiar with the search features, or want to learn more, see one of the following resources.

[Documentation 📖](#)[Tutorial 📖](#)

What to Search

263 Events
INDEXED

23 days ago
EARLIEST EVENT


13 days ago
LATEST EVENT

[Data Summary](#)

New Search

Save As ▾ Close

sourcetype=cisco_syslog | stats count(type) by type

Last 24 hours ▾ 

✓ 6 events (11/26/18 2:30:00.000 PM to 11/27/18 3:19:57.000 PM) No Event Sampling ▾

Job ▾ || ▢ ↻ 🗑️ ⬇️

🔊 Verbose Mode ▾

Events (6) Patterns **Statistics (2)** Visualization

20 Per Page ▾ ↗️ Format Preview ▾

| type ▾ ↗️ | count(type) ▾ ↗️ |
|---------------------|------------------|
| %LINEPROTO-5-UPDOWN | 1 |
| %SYS-5-CONFIG_I | 5 |

Save As Close

Last 24 hours ▾

Job Verbose Mode

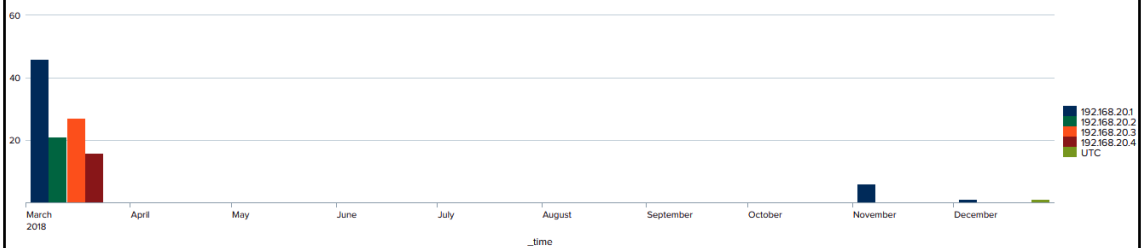
20 Per Page ▾ / Format Preview ▾

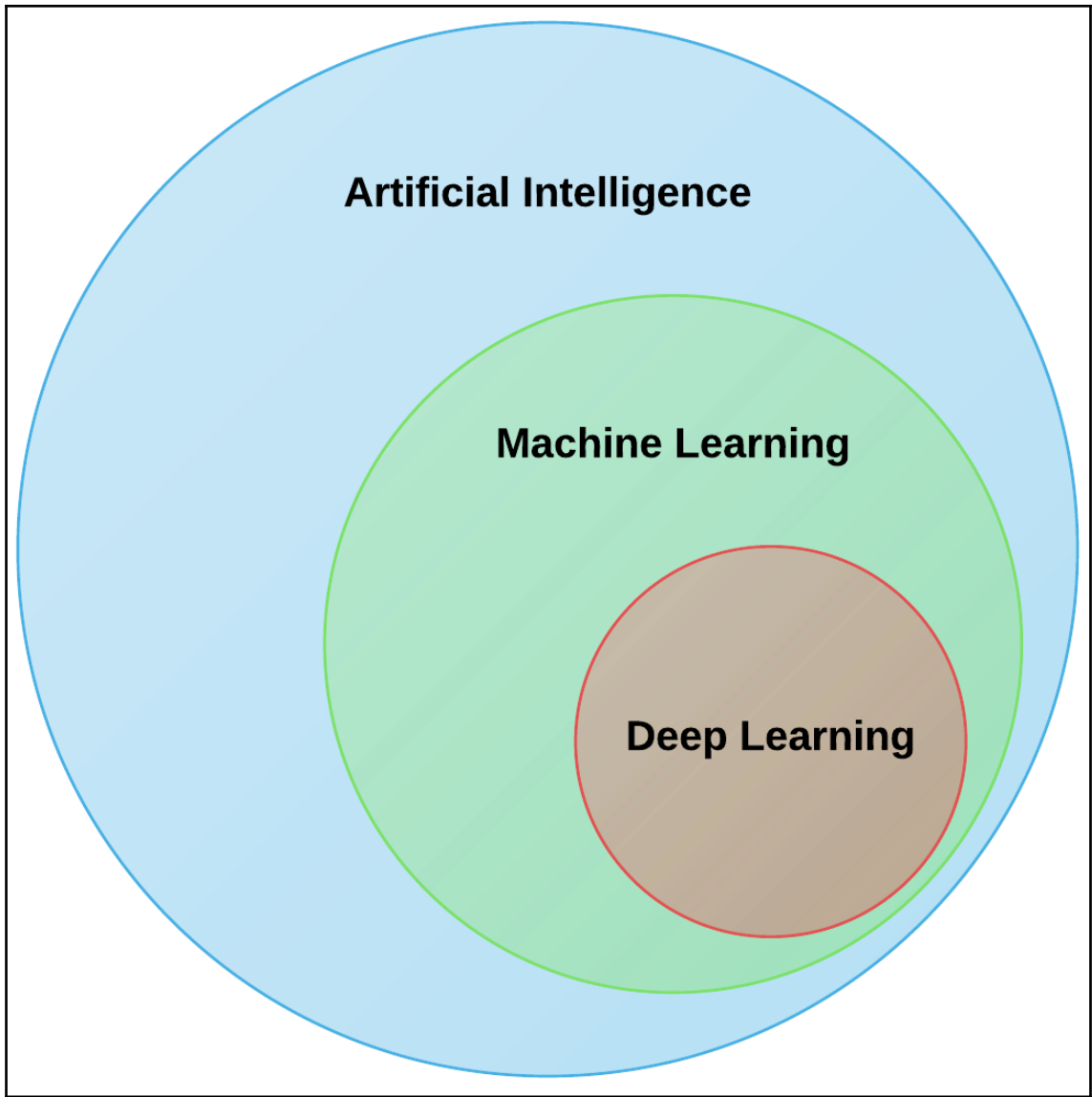
| _time ↕ | host ↕ | count(host) ↕ |
|-------------------------|--------------|---------------|
| 2018-11-26 20:52:24.403 | 192.168.20.1 | 1 |
| 2018-11-26 20:53:37.579 | 192.168.20.1 | 1 |
| 2018-11-26 21:07:51.095 | 192.168.20.1 | 1 |

All time ▾

Job ▾ || ■ ↻ 🖨 ⬇️ 🗨 Verbose Mode ▾

Column Chart Format Trellis





```
= RESTART: C:\gdrive\book2\github\edition2\aiops\simple_linear_regression.py =
Years of Experience in CSV...
[[ 1.1]
 [ 1.3]
 [ 1.5]
 [ 2. ]
 [ 2.2]
 [ 2.9]
 [ 3. ]
 [ 3.2]
 [ 3.2]
 [ 3.7]
 [ 3.9]
 [ 4. ]
 [ 4. ]
 [ 4.1]
 [ 4.5]
 [ 4.9]
 [ 5.1]
 [ 5.3]
 [ 5.9]
 [ 6. ]
 [ 6.8]
 [ 7.1]
 [ 7.9]
 [ 8.2]
 [ 8.7]
 [ 9. ]
 [ 9.5]
 [ 9.6]
 [10.3]
 [10.5]]
Salary based upon of Experience in CSV...
[ 39343.  46205.  37731.  43525.  39891.  56642.  60150.  54445.  64445.
  57189.  63218.  55794.  56957.  57081.  61111.  67938.  66029.  83088.
  81363.  93940.  91738.  98273. 101302. 113812. 109431. 105582. 116969.
 112635. 122391. 121872.]
>>>
```



Figure 1



```

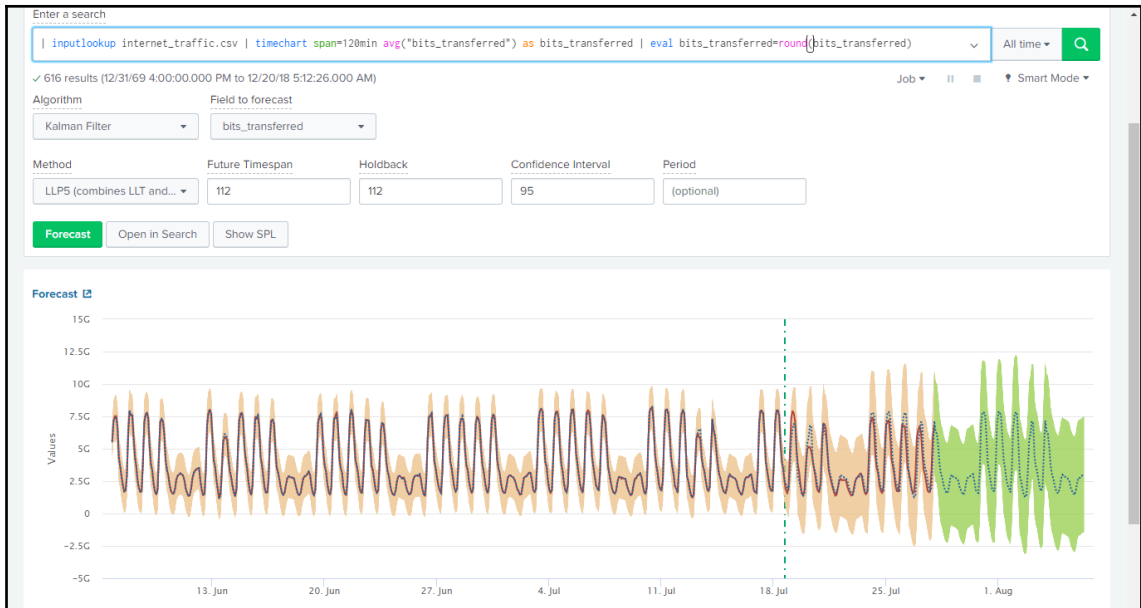
[ 4. ]
[ 4.1]
[ 4.5]
[ 4.9]
[ 5.1]
[ 5.3]
[ 5.9]
[ 6. ]
[ 6.8]
[ 7.1]
[ 7.9]
[ 8.2]
[ 8.7]
[ 9. ]
[ 9.5]
[ 9.6]
[10.3]
[10.5]]
Salary based upon of Experience in CSV...
[ 39343.  46205.  37731.  43525.  39891.  56642.  60150.  54445.  64445.
  57189.  63218.  55794.  56957.  57081.  61111.  67938.  66029.  83088.
  81363.  93940.  91738.  98273. 101302. 113812. 109431. 105582. 116969.
 112635. 122391. 121872.]

Predicted salary for 15 years of experience:
[166714.91691537]

Predicted salary for 25 years of experience:
[260975.30460612]

Predicted salary for 13 years of experience:
[147862.83937722]
>>> |

```



```
rtr1(config)#interface loopback 45
rtr1(config-if)#shut
rtr1(config-if)#exit
rtr1(config)#exit
rtr1#
Dec 4 19:50:16.887: %SYS-5-CONFIG_I: Configured from console by console
Dec 4 19:50:17.047: %LINK-5-CHANGED: Interface Loopback45, changed state to administratively down
rtr1#
Dec 4 19:50:18.047: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback45, changed state to down
rtr1#
```

New Search

Save As Close

"Interface Loopback45, changed state to administratively down" | stats count(host) as total by host

Last 15 minutes

✓ 1 event (12/4/18 7:36:53.000 PM to 12/4/18 7:51:53.000 PM) No Event Sampling

Job II III

Events (1) Patterns **Statistics (1)** Visualization

20 Per Page Format Preview

| host | total |
|--------------|-------|
| 192.168.20.1 | 1 |

Save As Alert



Settings

Title Loopback 45 is down

Description Loopback 45 went down

Permissions

Private

Shared in App

Alert type

Scheduled

Real-time

Run on Cron Schedule ▼

Time Range

Last 15 minutes ►

Cron Expression

`*/5 * * * *`

e.g. `00 18 ***` (every day at 6PM). [Learn More](#)

Save As Alert

To

prashant@gmail.com

Priority

Normal

Subject

Splunk Alert: \$name\$

Message

The alert condition for '\$name\$' was triggered.
Issue with \$result.host\$

Include

☒ Link to Alert

☒ Link to Results

☐ Search String

☒ Inline

Table

☐ Trigger Condition

☐ Attach CSV

☐ Trigger Time

☒ Attach PDF

Comma separated list of email addresses.
[Show CC and BCC](#)

The email subject, recipients and message can include tokens that insert text based on the results of the search.
[Learn More](#)

Cancel

Save

Loopback 45 is down

Loopback 45 went down

Enabled: Yes. [Disable](#)

App: search

Permissions: Private. Owned by abhishekratan. [Edit](#)

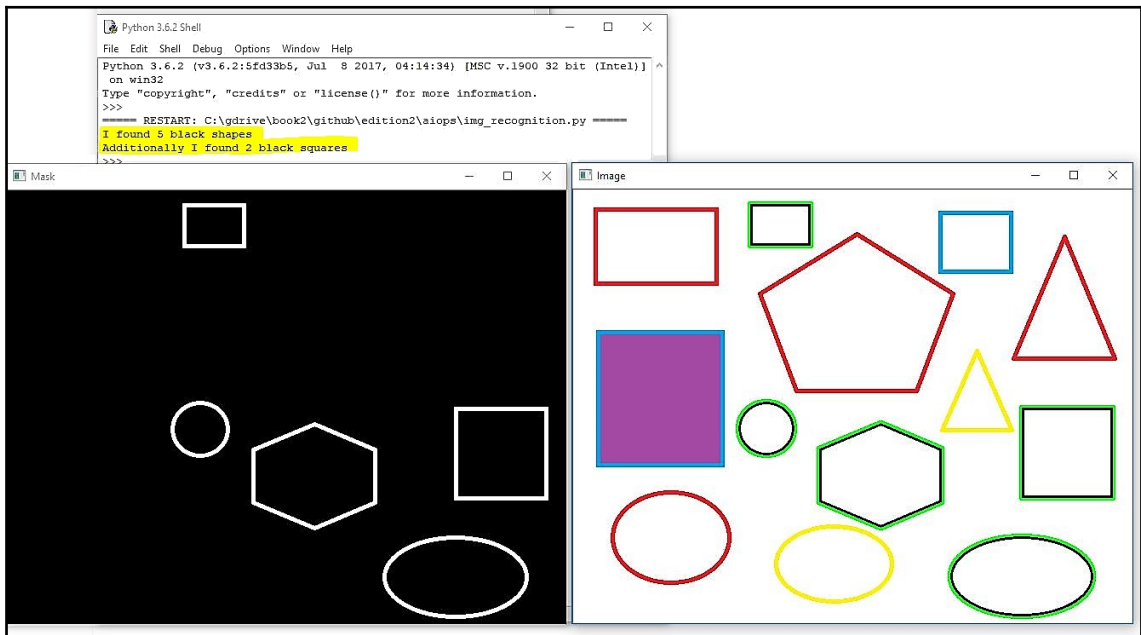
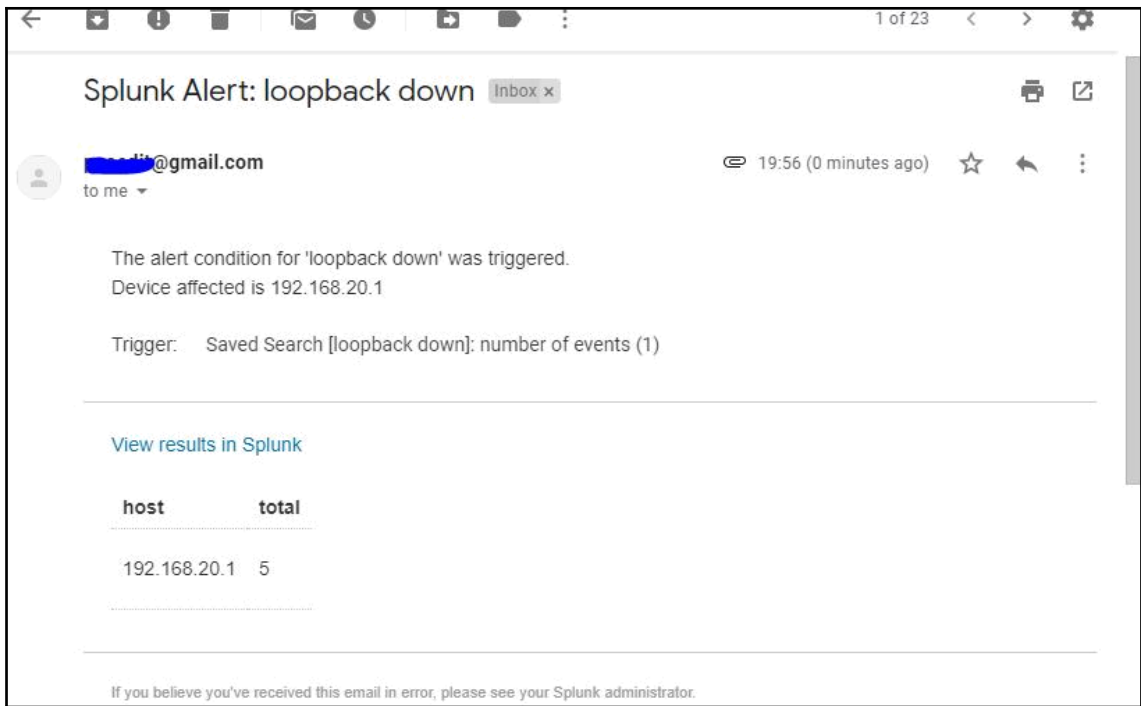
Modified: Dec 4, 2018 7:56:18 PM

Alert Type: Scheduled. Cron Schedule. [Edit](#)

Trigger Condition: .. Number of Results is > 0, [Edit](#)

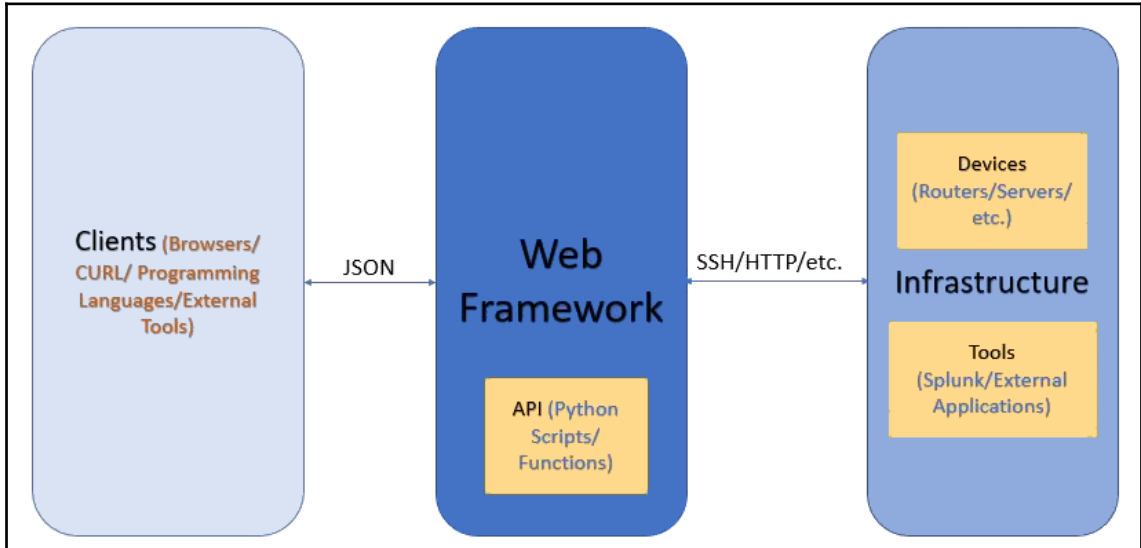
Actions: 1 Action [Edit](#)

☒ Send email



```
RESTART: C:/gdrive/book2/github/edition2/aiops/simple_linear_regression_employee.py
Name: Emp1 , Exp: 5 , Current Salary: 56642 , Predicted Salary: 72454 , Status: UnderPaid
Name: Emp2 , Exp: 8 , Current Salary: 81363 , Predicted Salary: 100732 , Status: UnderPaid
Name: Emp3 , Exp: 9 , Current Salary: 105582 , Predicted Salary: 110158 , Status: UnderPaid
Name: Emp4 , Exp: 13 , Current Salary: 122391 , Predicted Salary: 147862 , Status: UnderPaid
Name: Emp5 , Exp: 1 , Current Salary: 46205 , Predicted Salary: 34750 , Status: OverPaid
Name: Emp6 , Exp: 3 , Current Salary: 83088 , Predicted Salary: 53602 , Status: OverPaid
Name: Emp7 , Exp: 2 , Current Salary: 113812 , Predicted Salary: 44176 , Status: OverPaid
Name: Emp8 , Exp: 3 , Current Salary: 105582 , Predicted Salary: 53602 , Status: OverPaid
Name: Emp9 , Exp: 20 , Current Salary: 55794 , Predicted Salary: 213845 , Status: UnderPaid
Name: Emp10 , Exp: 1 , Current Salary: 46205 , Predicted Salary: 34750 , Status: OverPaid
>>> |
```

Chapter 5: Web Framework for Automation Triggers



```
...pi-auth — -bash    .../code — -bash    ...loads — -bash ...
ubuntu@ip-10-10-10-10: ~$ cd ~/api/code$ gunicorn main:app
[2018-12-03 14:36:05 +0000] [11138] [INFO] Starting gunicorn 19.9.0
[2018-12-03 14:36:05 +0000] [11138] [INFO] Listening at: http://127.0.0.1:8000 (
11138)
[2018-12-03 14:36:05 +0000] [11138] [INFO] Using worker: sync
[2018-12-03 14:36:05 +0000] [11141] [INFO] Booting worker with pid: 11141
```

```
← → ↻ 🏠 🌐 localhost:8000/test|
{"response": "This is my first API!!!", "status": "200 OK"}
```

```
ubuntu@ip-172-31-23-138:~/api/code$ gunicorn main:app
[2018-12-03 14:36:05 +0000] [11138] [INFO] Starting gunicorn 19.9.0
[2018-12-03 14:36:05 +0000] [11138] [INFO] Listening at: http://127.0.0.1:8000 (
11138)
[2018-12-03 14:36:05 +0000] [11138] [INFO] Using worker: sync
[2018-12-03 14:36:05 +0000] [11141] [INFO] Booting worker with pid: 11141
```

```
ubuntu@ip-172-31-23-138:~/api/code$ gunicorn main:app -w 4 -k gevent
[2018-12-03 14:57:55 +0000] [11261] [INFO] Starting gunicorn 19.9.0
[2018-12-03 14:57:55 +0000] [11261] [INFO] Listening at: http://127.0.0.1:8000 (
11261)
[2018-12-03 14:57:55 +0000] [11261] [INFO] Using worker: gevent
[2018-12-03 14:57:55 +0000] [11264] [INFO] Booting worker with pid: 11264
[2018-12-03 14:57:55 +0000] [11265] [INFO] Booting worker with pid: 11265
[2018-12-03 14:57:55 +0000] [11266] [INFO] Booting worker with pid: 11266
[2018-12-03 14:57:55 +0000] [11267] [INFO] Booting worker with pid: 11267
```

```
{'result': [{'router_name': 'rtr2'}, {'router_name': 'rtr3'}, {'router_name': 'rtr4'}]}
>>>
```

```
Scenario 1: Provide INCORRECT username and password combination to generate token
{"username": "abhishek", "password": "testpass123"}
Incorrect Username/Password

Scenario 2: Provide Correct username and password combination to generate token
{"username": "John", "password": "testpass"}
{'token': 'rpXS2rtXaq2V0jqH$WNC2NCjHJe3BmMy.Wylq7eubA52Yj7UhCkDTQqv6nCM'}
>>>
```

```

Scenario 1: Validating incorrect token ....
{"token":"rpXS2rtGGGGGaq2V0jqH$WNC2NCjHJe3BmMy.Wylq7eubA52Yj7UhCkDTQqv6nCM"}
Token does not exist

Scenario 2: Validating right token...
{"token":"rpXS2rtXaq2V0jqH$WNC2NCjHJe3BmMy.Wylq7eubA52Yj7UhCkDTQqv6nCM"}
Hello John!
>>>

```

```

== RESTART: C:/gdrive/book2/github/edition2/web_framework/python_example.py ==
YWJoaXNoZWtbOllwYXNzd29yZA==
{'username': 'abhishek', 'password': 'password'}
>>> |

```

```

PS C:\>
PS C:\>
YWJoaXNoZWtbOllwYXNzd29yZA==
@{username=abhishek; password=password}

```

```

$ curl -X POST http://127.0.0.1:5000/encode --data '{"encode":"abhishek[:]password"}'
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total   Spent    Left     Speed
100    76    100    44    100    32     94     68  --:--:-- --:--:-- --:--:--   162{"encoded": " YWJoaXNoZWtbOllwYXNzd29yZA="}

```

```

$ curl -X POST http://127.0.0.1:5000/decode --data '{"decode":"YWJoaXNoZWtbOllwYXNzd29yZA="}'
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total   Spent    Left     Speed
100    89    100    48    100    41     96     82  --:--:-- --:--:-- --:--:--   178{"username": "abhishek", "password": "password"}

```

POST

http://192.168.1.101:8080/encode

Params

Send

AuthorizationHeaders (1)BodyPre-request ScriptTests

form-data

x-www-form-urlencoded

raw

binary

Text

1

{ "encode": "abhishek[:]password" }

BodyCookiesHeaders (5)Test ResultsStatus: 200 OK

PrettyRawPreview

JSON

1

{

2

"encoded": " YWJoaXNoZWtbO1lwYXNkd29yZA=="

3

}

POST

http://192.168.1.101:8080/decode

Params

Send

AuthorizationHeaders (1)BodyPre-request ScriptTests

form-data

x-www-form-urlencoded

raw

binary

Text

1

{ "decode": "YWJoaXNoZWtbO1lwYXNkd29yZA==" }

BodyCookiesHeaders (5)Test ResultsStatus: 200 OK

PrettyRawPreview

JSON

1

{

2

"username": "abhishek",

3

"password": "password"

4

}

< Your Skills

checksplunk

Build

Test

Distribution

Certification

Analytics

English (US)

Save Model

Build Model

CUSTOM

Interaction Model

Invocation

Intents (6)

+ Add

splunkintent

status

Built-In Intents (5)

AMAZON.FallbackIntent

AMAZON.CancelIntent

Invocation

Users say a skill's invocation name to begin an interaction with a particular custom skill. For example, if the invocation name is "daily horoscopes", users can say:

User: Alexa, ask daily horoscopes for the horoscope for Gemini

Skill Invocation Name ⓘ

check splunk

CUSTOM

Interaction Model

Invocation

Intents (6)

+ Add

splunkintent

status

Built-In Intents (5)

AMAZON.FallbackIntent

AMAZON.CancelIntent

AMAZON.HelpIntent

AMAZON.StopIntent

Intents / splunkintent

Sample Utterances (6) ⓘ

Bulk Edit

Export

What might a user say to invoke this intent?

On which routers the management interface is {status}

Routers on which management interface is {status}

On which routers is the management interface is {status}

On which routers is the management loopback is {status}

Routers on which management loopback is {status}

splunkintent

status

Built-In Intents (5)

AMAZON.FallbackIntent

AMAZON.CancelIntent

AMAZON.HelpIntent

AMAZON.StopIntent

AMAZON.NavigateHomeIntent

Slot Types (1)

status

JSON Editor

Interfaces

Endpoint

Enter a new value for this slot type

| VALUE | ID (OPTIONAL) | SYNONYMS (OPTIONAL) | |
|-------|---------------|---------------------|---|
| down | Enter ID | Add synonym | + |
| up | Enter ID | Add synonym | + |

1 – 2 of 2

Slots Using (status)

| SLOT NAME | INTENT |
|-----------|--------------|
| status | splunkintent |

Interaction Model

Invocation

Intents (6)

splunkintent

status

Built-In Intents (5)

AMAZON.FallbackIntent

AMAZON.CancelIntent

AMAZON.HelpIntent

AMAZON.StopIntent

AMAZON.NavigateHomeIntent

Slot Types (1)

status

JSON Editor

Endpoint

The Endpoint will receive POST requests when a user interacts with your Alexa Skill. The request body contains parameters that your service can use to perform logic and generate a JSON-formatted response. Learn more about AWS Lambda endpoints [here](#). You can host your own HTTPS web service endpoint as long as the service meets the requirements described [here](#).

Service Endpoint Type

Select how you will host your skill's service endpoint.

AWS Lambda ARN

(Recommended)

Your Skill ID

amzn1.ask.skill.64cd4256-6b9e-4a50-ae75-fc7cfd21648

Copy to Clipboard

Default Region

(Required)

arn:aws:lambda:us-east-1:925143330:lambda:function:ask-checksplunk

North America

(Optional)

arn:aws:lambda:us-east-1:<aws_account_id>:function:<lambda_name>



Test is enabled for this skill



Alexa Simulator

Manual JSON

Voice & Tone

English (US) ▾

Type or click and hold the mic



open check splunk



Welcome to Splunk Center!, What would you like to do today?

on which routers is management interface down



rtr1 is identified with status as down.

on which routers is management interface up



Routers with status as up are: rtr2,rtr3, and rtr4.

alexas developer console

< Your Skills

checksplunk

Build

Test

Distribution

Certification


Analytics

Skill Preview

English (US)

Privacy & Compliance

Availability



English (US) Store Preview

Tell us how your skill should appear to English (US) customers.

Public Name * ?

checksplunk

11/50 characters

One Sentence Description * ?

Enter a short description (160 character maximum) about your skill...

0/160 characters

Detailed Description * ?

Search

Datasets

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Search & Reporting

New Search

Save As

Close

index="main" earliest=0 | where interface_name="Loopback45" | dedup interface_name,router_name | where interface_status!="up" | stats values(interface_name) values(interface_status) by router_name | table router_name

Last 24 hours

✓ 1 event (12/19/18 7:30:00.000 PM to 12/20/18 7:39:51.000 PM)

No Event Sampling

Job

Verbose Mode

Events (1)

Patterns

Statistics (1)

Visualization

20 Per Page

Format

Preview

router_name

rttr

Search

Datasets

Reports

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Search & Reporting

New Search

Save AsClose

index="main" earliest=0 | where interface_name="Loopback45" | dedup interface_name,router_name | where interface_status="up" | stats values(interface_name) values(interface_status) by router_name | table router_name

Last 24 hours

3 events (12/19/18 7:30:00.000 PM to 12/20/18 7:40:34.000 PM)No Event Sampling

Job

Verbose Mode

Events (3)PatternsStatistics (3)Visualization

20 Per PageFormatPreview

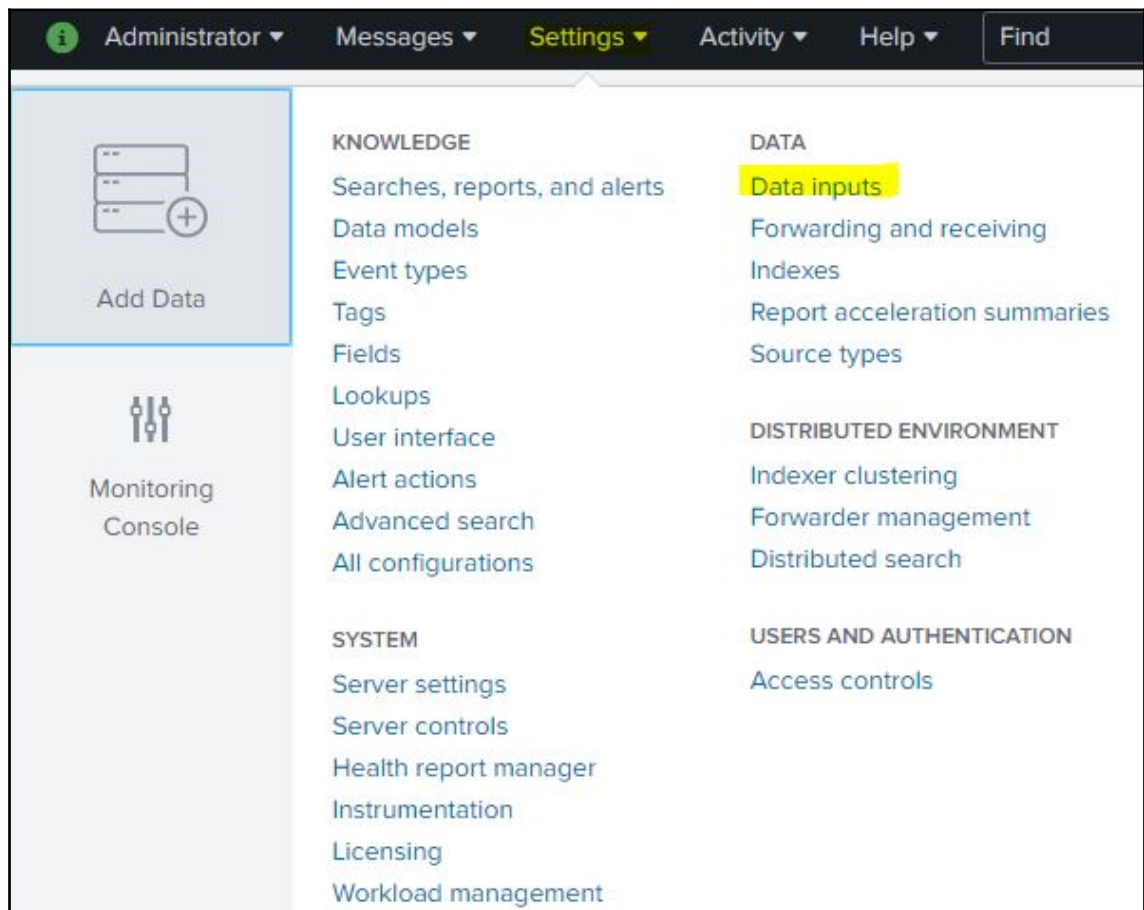
router_name

rtr2

rtr3

rtr4

Chapter 6: Continual Integration



splunk>enterpriseApps

AdministratorMessagesSettingsActivityHelpFind

Add Data

Select Source

Input Settings

Review

Done

< Back

Next >

Local Event Logs

Collect event logs from this machine.

Remote Event Logs

Collect event logs from remote hosts. Note: this uses WMI and requires a domain account.

Files & Directories

Upload a file, index a local file, or monitor an entire directory.

HTTP Event Collector

Configure tokens that clients can use to send data over HTTP or HTTPS.

TCP / UDP

Configure the Splunk platform to listen on a network port.

Local Performance Monitoring

Collect performance data from this machine.

Remote Performance Monitoring

Collect performance and event information from remote hosts. Requires domain credentials.

Configure this instance to monitor files and directories for data. To monitor all objects in a directory, select the directory. The Splunk platform monitors and assigns a single source type to all objects within the directory. This might cause problems if there are different object types or data sources in the directory. To assign multiple source types to objects in the same directory, configure individual data inputs for those objects. [Learn More](#)

File or Directory ?

c:\splunklogs

Browse

On Windows: c:\apache\apache.error.log or \\hostname\apache\apache.error.log. On Unix: /var/log or /mnt/www01/var/log.

Whitelist ?

optional

Blacklist ?

optional

FAQ

> What kinds of files can the Splunk platform index?

> I can't access the file that I want to index. Why?

> How do I get remote data onto my Splunk platform instance?

> Can I monitor changes to files in addition to their content?

Input Settings

Optionally set additional input parameters for this data input as follows:

Source type

The source type is one of the default fields that the Splunk platform assigns to all incoming data. It tells the Splunk platform what kind of data you've got, so that the Splunk platform can format the data intelligently during indexing. And it's a way to categorize your data, so that you can search it easily.

Automatic Select New

App context

Application contexts are folders within a Splunk platform instance that contain configurations for a specific use case or domain of data. App contexts improve manageability of input and source type definitions. The Splunk platform loads all app contexts based on precedence rules. [Learn More](#)

App Context

Apps Browser (appsbrowser) ▼

Host

When the Splunk platform indexes data, each event receives a "host" value. The host value should be the name of the machine from which the event originates. The type of input you choose determines the available configuration options. [Learn More](#)

- ☒ Constant value
- ☐ Regular expression on path
- ☐ Segment in path

Host field value

bookedition2

Index

The Splunk platform stores incoming data as events in the selected index. Consider using a "sandbox" index as a destination if you have problems determining a source type for your data. A sandbox index lets you troubleshoot your configuration without impacting production indexes. You can always change this setting later. [Learn More](#)

Index Default ▼ Create a new index

Data Summary

Hosts (1)

Sources (1)

Sourcetypes (1)

filter

| Source | | Count | Last Update |
|--|--|-------|------------------------|
| C:\splunklogs\network_device_stats_details.txt | | 21 | 12/6/18 3:10:03.000 AM |

New Search

source="c:\splunklogs\network_device_stats_details.txt"

All time

✓ 263 events (before 12/20/18 7:49:53.000 PM) No Event Sampling

Job

Verbose Mode

Events (263) Patterns Statistics Visualization

Format Timeline Zoom Out Zoom to Selection Deselect 1 day per column

List Format 20 Per Page

< Hide Fields

All Fields

SELECTED FIELDS

a host 1

a source 1

a sourcetype 2

INTERESTING FIELDS

bandwidth 4

CRC 1

date_hour 4

date_mday 3

date_minute 7

date_month 2

date_second 7

date_wday 3

> 12/7/18 9:09:38.000 PM

2018-12-07 15:39:38,router_name=rtr1,interface_name=Loopback45,interface_description=this is a incorrect value,interface_status=administratively down,line_protocol=down,ip_address=1.1.1.1/24,input_errors=0,CRC=0,output_errors=0,interface_resets=0,relia bility=255,txload=1,rxload=1,bandwidth=8000000,input_queue_drops=0,output_queue_drops=0

host = bookedition2 source = C:\splunklogs\network_device_stats_details.txt sourcetype = network_device_stats_details-too_small

> 12/7/18 9:09:38.000 PM

2018-12-07 15:39:38,router_name=rtr1,interface_name=Loopback30,interface_description=Printer,interface_status=up,line_protocol=up,ip_address=NULL,input_errors=0,CRC=0,output_errors=0,interface_resets=0,reliability=255,txload=1,rxload=1,bandwidth=8000000, input_queue_drops=0,output_queue_drops=0

host = bookedition2 source = C:\splunklogs\network_device_stats_details.txt sourcetype = network_device_stats_details-too_small

> 12/7/18 9:09:38.000 PM

2018-12-07 15:39:38,router_name=rtr1,interface_name=Loopback0,interface_description=NULL,interface_status=up,line_protocol=up, ip_address=NULL,input_errors=0,CRC=0,output_errors=0,interface_resets=0,reliability=255,txload=1,rxload=1,bandwidth=8000000,in put_queue_drops=0,output_queue_drops=0

host = bookedition2 source = C:\splunklogs\network_device_stats_details.txt sourcetype = network_device_stats_details-too_small

Search Datasets Reports Alerts Dashboards

Search & Re

New Search

index="main" | where interface_name="Loopback45" | dedup interface_name,router_name | stats values(interface_name) values(interface_status) by router_name

All time

✓ 4 events (before 12/20/18 7:51:52.000 PM) No Event Sampling

Job

Verbose M

Events (4) Patterns Statistics (4) Visualization

20 Per Page Format Preview

| router_name | values(interface_name) | values(interface_status) |
|-------------|------------------------|--------------------------|
| rtr1 | Loopback45 | up |
| rtr2 | Loopback45 | up |
| rtr3 | Loopback45 | up |
| rtr4 | Loopback45 | up |

| Task Scheduler | | | | |
|------------------------|---------|---|----------------------|----------------------|
| File Action View Help | | | | |
| Task Scheduler (Local) | | | | |
| Task Scheduler Library | | | | |
| Name | Status | Triggers | Next Run Time | Last Run Time |
| Adobe Acro... | Queued | Multiple triggers defined | 9/16/2017 1:00:00 PM | 9/15/2017 8:50:48 PM |
| fff | Ready | At 4:19 PM every day | 9/16/2017 4:19:26 PM | 9/15/2017 4:19:25 PM |
| OneDrive St... | Ready | At 4:00 AM on 5/1/1992 - After triggered, repeat every 1.00:00:00 indefinitely. | 9/16/2017 7:10:40 AM | 9/15/2017 1:55:26 PM |
| PMTask | Ready | When computer is idle | 9/15/2017 4:06:54 PM | |
| RtHDVBg_D... | Running | At log on of any user | | 9/4/2017 8:34:09 AM |
| RtHDVBg_LE... | Running | At log on of any user | | 9/4/2017 8:34:09 AM |
| RTKCPL | Running | At log on of any user | | 9/4/2017 8:34:09 AM |

Create Basic Task Wizard

Create a Basic Task

Create a Basic Task

Trigger

Action

Finish

Use this wizard to quickly schedule a common task. For more advanced options or settings such as multiple task actions or triggers, use the Create Task command in the Actions pane.

Name:

checktask

Description:


This is to test python execution

< Back

Next >

Cancel

Create Basic Task Wizard

 Task Trigger

Create a Basic Task

Trigger

One Time

Action

Finish

When do you want the task to start?

☐ Daily

☐ Weekly

☐ Monthly

☒ One time

☐ When the computer starts

☐ When I log on


☐ When a specific event is logged

< Back

Next >

Cancel

Create Basic Task Wizard

 Start a Program

Create a Basic Task

Trigger

One Time

Action

Start a Program

Finish

Program/script:

C:\Python\Python36-32\python.exe

Browse...

Add arguments (optional):

"c:\a1\testpython.py"

Start in (optional):

< Back

Next >

Cancel

Create Basic Task Wizard

Summary

Create a Basic Task

Trigger

One Time

Action

Start a Program

Finish

Name:

checktask

Description:

This is to test python execution

Trigger:

One time; At 10:11 PM on 9/15/2017

Action:

Start a program; C:\Python\Python36-32\python.exe "c:\a1\testpython.py"

☐ Open the Properties dialog for this task when I click Finish

When you click Finish, the new task will be created and added to your Windows schedule.

< Back

Finish

Cancel

Search

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Search & Reporting

New Search

index="main" | where interface_name="Loopback45" | dedup interface_name,router_name | stats values(interface_name) values(interface_status) by router_name

All time

Q

✓ 4 events (before 12/20/18 7:52:41.000 PM) No Event Sampling

Job

Verbose Mode

Events (4)

Patterns

Statistics (4)

Visualization

20 Per Page

Format

Preview

| router_name | values(interface_name) | values(interface_status) |
|-------------|------------------------|--------------------------|
| rtr1 | Loopback45 | administratively down |
| rtr2 | Loopback45 | up |
| rtr3 | Loopback45 | up |
| rtr4 | Loopback45 | up |

```
{'rtr1': '192.168.20.1', 'rtr2': '192.168.20.2', 'rtr3': '192.168.20.3', 'rtr4': '192.168.20.4'}

Issue found in rtr1
Remediation in progress....
Remediation succeeded. Interface is now back to normal
>>>
```

[Search](#)
[Datasets](#)
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[Alerts](#)
[Dashboards](#)

New Search

index="main"
| where interface_name="Loopback45"
| dedup interface_name,router_name
| stats values(interface_name) values(interface_status) by router_name

All time

✓ 4 events (before 12/20/18 7:54:06.000 PM)
No Event Sampling

Job
|||

Verbose Mode

Events (4)
Patterns
Statistics (4)
Visualization

20 Per Page
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Preview

| router_name | values(interface_name) | values(interface_status) |
|-------------|------------------------|--------------------------|
| rtr1 | Loopback45 | up |
| rtr2 | Loopback45 | up |
| rtr3 | Loopback45 | up |
| rtr4 | Loopback45 | up |

```
rtr1#show running-config interface loopback 30
Building configuration...

Current configuration : 162 bytes
!
interface Loopback30
 description Printer
 no ip address
 rate-limit input 16000 1514 2000 conform-action transmit exceed-action transmit
 keepalive 23500
end

rtr1#show run
rtr1#show running-config inter
rtr1#show running-config interface loo
rtr1#show running-config interface loopback 45
Building configuration...

Current configuration : 128 bytes
!
interface Loopback45
 description this is a incorrect value
 ip address 1.1.1.1 255.255.255.0
 shutdown
 keepalive 20000
end

rtr1#
```

```
RESTART: C:/gdrive/book2/github/edition2/continual_integration/custom_port_audit.py
```

```
Validating for IP address 192.168.20.1
```

```
['Loopback30']
```

```
+ [switchport access vlan]
```

```
+ [switchport mode access]
```

+ [spanning-tree portfast]

```
*ignore [no ip address]
```

```
- [rate-limit input 16000 1514 2000 conform-action transmit exceed-action transmit]
```

```
- [keepalive 23500]
```

```
['Loopback45']
```

- + [description Security]

```
+ [switchport access vlan]
```

```
+ [switchport mode access]
```

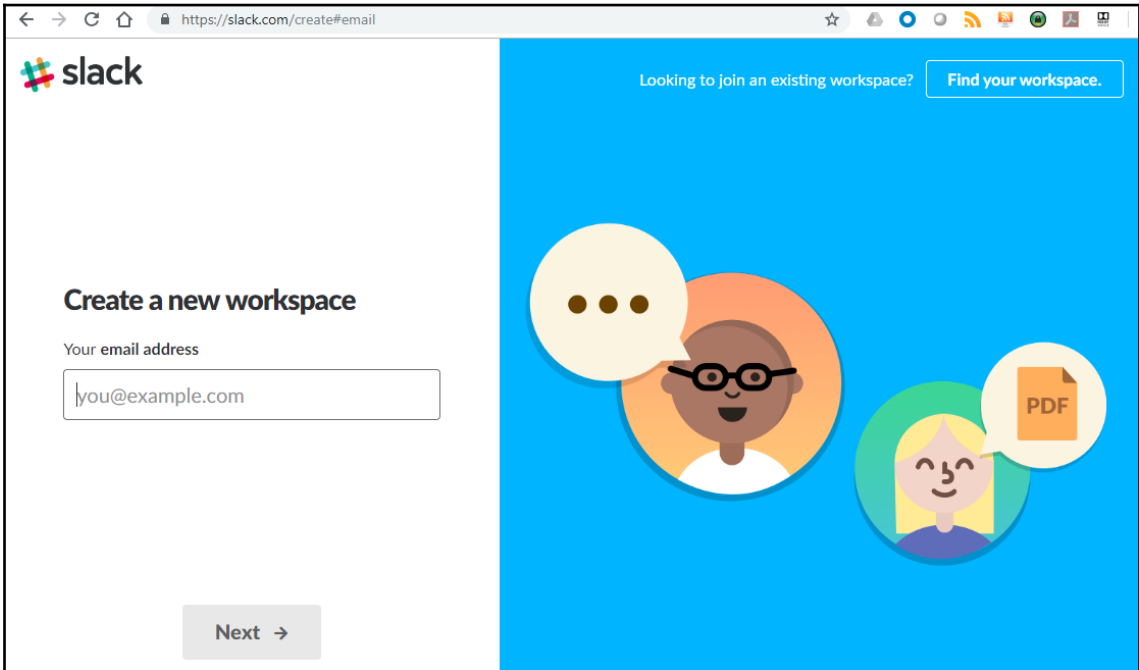
+ [spanning-tree portfast]

```
- [description this is a incorrect value]
```

```
*ignore [ip address 1.1.1.1 255.255.255.0]
```

```
*ignore [shutdown]
```

```
- [keepalive 20000]
```



Start here

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[Best practices](#)
[App blueprints](#)

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[Internal integrations](#)
[Incoming webhooks](#)
[Slash commands](#)
[Building bots](#)
[Dialogs](#)
[Shared Channels](#)
[Enterprise Grid](#)
[Legacy: Workspace apps](#)

Your Apps

[Create New App](#)

| App Name | Workspace | Distribution Status |
|---|-----------|---------------------|
|  mybot | pna | Not distributed |

Don't see an app you're looking for? [Sign in to another workspace.](#)

← → ↺ 🏠

https://api.slack.com/apps/AEDME3ETZ/general?

☆ 🔔 ⚙️ 🌐

Settings

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Interactive Components

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Building Apps for Slack

Create an app that's just for your workspace (or build one that can be used by any workspace) by following the steps below.

Add features and functionality

Choose and configure the tools you'll need to create your app (or review all [our documentation](#)).

Incoming Webhooks

Post messages from external sources into Slack.

Interactive Components

Add buttons to your app's messages, and create an interactive experience for users.

Slash Commands

Allow users to perform app actions by typing commands in Slack.

Event Subscriptions

Make it easy for your app to respond to activity in Slack.

Bots

Add a bot to allow users to exchange messages with your app.

Permissions

Configure permissions to allow your app to interact with the Slack API.

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Enable Events

On

Your app can subscribe to be notified of events in Slack (for example, when a user adds a reaction or creates a file) at a URL you choose. [Learn more.](#)

Request URL Verified

http://[REDACTED]slack

Change

We'll send HTTP POST requests to this URL when events occur. As soon as you enter a URL, we'll send a request with a `challenge` parameter, and your endpoint must respond with the challenge value. [Learn more.](#)

Subscribe to Workspace Events

To subscribe to an event, your app must have access to the related [OAuth permission scope](#).

| Event Name | Description | Required Scope |
|--------------------------------|-------------|----------------|
| No events added yet. | | |
| <div>Add Workspace Event</div> | | |

Subscribe to Bot Events

Bot users can subscribe to events related to the channels and conversations they're part of.

| Event Name | Description | |
|------------------|---|--|
| app.mention | Subscribe to only the message events that mention your app or bot | |
| message.channels | A message was posted to a | |

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Install App to Your Team

Install your app to your Slack workspace to test your app and generate the tokens you need to interact with the Slack API. You will be asked to authorize this app after clicking **Install App to Workspace**.

Install App to Workspace

Channels

general

random

test2

testing

Direct Messages

slackbot

abhishekratan (you)

Apps

mytestbot

Save your account and start

To see what teamwork is like in Slack, take a moment to save teammates to join your

Save Your Account

encode --help

Slack API Tester APP 3:49 PM

encode/decode <encoded_string>

abhishekratan 3:49 PM

encode abhishek[:]password123

Slack API Tester APP 3:49 PM

Encoded string: YWJoaXNoZWtbOl1wYXNzd29yZDEyMw==

abhishekratan 3:49 PM

decode YWJoaXNoZWtbOl1wYXNzd29yZDEyMw==

Slack API Tester APP 3:49 PM

<username> abhishek <password> password123

Apps

mytestbot

abhishekratan 3:51 PM

On which routers the management interface is down

Slack API Tester APP 3:51 PM

rtr1

abhishekratan 3:51 PM

On which routers the management interface is up

Slack API Tester APP 3:51 PM

rtr3 rtr4 rtr2

```
RESTART: C:/gdrive/book2/github/edition2/continual_integration/solarwinds.py
10.195.240.1
>>> |
```

Warning (from warnings module):

File "C:\python\lib\site-packages\urllib3\connectionpool.py", line 858

InsecureRequestWarning)

InsecureRequestWarning: Unverified HTTPS request is being made. Adding certificate verification is strongly advised. See: <https://urllib3.readthedocs.io/en/latest/advanced-usage.html#ssl-warnings>

10.195.240.1

>>> |

| 192.168.20.3 (rtr3_preferred) x | | | | | 192.168.20.1 (rtr1_preferred) x | | | | |
|---|--|--|--|--|---|--|--|--|--|
| rtr3# | | | | | rtr1#show ip int brief | | | | |
| rtr3#show ip int br | | | | | Interface | | | | |
| rtr3#show ip int brief | | | | | IP-Address OK? Method Status | | | | |
| Interface | | | | | Protocol | | | | |
| tocol | | | | | FastEthernet0/0 | | | | |
| FastEthernet0/0 | | | | | 192.168.20.1 YES NVRAM up | | | | |
| Serial0/0 | | | | | Serial0/0 | | | | |
| n | | | | | unassigned YES NVRAM administrative | | | | |
| FastEthernet0/1 | | | | | FastEthernet0/1 | | | | |
| n | | | | | unassigned YES NVRAM administrative | | | | |
| Serial0/1 | | | | | Serial0/1 | | | | |
| n | | | | | unassigned YES NVRAM administrative | | | | |
| Serial0/2 | | | | | Serial0/2 | | | | |
| n | | | | | unassigned YES NVRAM administrative | | | | |
| FastEthernet1/0 | | | | | FastEthernet1/0 | | | | |
| n | | | | | unassigned YES NVRAM administrative | | | | |
| Serial2/0 | | | | | Serial2/0 | | | | |
| n | | | | | unassigned YES NVRAM administrative | | | | |
| Serial2/1 | | | | | Serial2/1 | | | | |
| n | | | | | unassigned YES NVRAM administrative | | | | |
| Serial2/2 | | | | | Serial2/2 | | | | |
| n | | | | | unassigned YES NVRAM administrative | | | | |
| Serial2/3 | | | | | Serial2/3 | | | | |
| n | | | | | unassigned YES NVRAM administrative | | | | |
| Loopback30 | | | | | Loopback0 | | | | |
| Loopback45 | | | | | Loopback30 | | | | |
| rtr3#ping 192.168.20.1 | | | | | Loopback45 | | | | |
| Type escape sequence to abort. | | | | | 1.1.1.1 YES NVRAM administrative | | | | |
| Sending 5, 100-byte ICMP Echos to 192.168.20.1, timeout is 2 seconds: | | | | | rtr1#ping 192.168.20.3 | | | | |
| !!!! | | | | | Type escape sequence to abort. | | | | |
| Success rate is 100 percent (5/5), round-trip min/avg/max = 20/29/44 ms | | | | | Sending 5, 100-byte ICMP Echos to 192.168.20.3, timeout is 2 seconds: | | | | |
| rtr3# | | | | | !!!! | | | | |
| | | | | | Success rate is 100 percent (5/5), round-trip min/avg/max = 16/24/48 | | | | |
| | | | | | rtr1# | | | | |

```
>>>
RESTART: C:/gdrive/book2/github/edition2/continual_integration/ospf_push.py
config term
Enter configuration commands, one per line. End with CNTL/Z.
rtr1(config)#
rtr1(config)#router ospf 1
rtr1(config-router)#network 192.168.20.0 0.0.0.255 area 0
rtr1(config-router)#
rtr1(config-router)#end
rtr1#
Building configuration...
[OK]
config term
Enter configuration commands, one per line. End with CNTL/Z.
rtr3(config)#
rtr3(config)#router ospf 1
rtr3(config-router)#network 192.168.20.0 0.0.0.255 area 0
rtr3(config-router)#
rtr3(config-router)#end
rtr3#
Building configuration...
[OK]
Now sleeping for 10 seconds....
On router 192.168.20.1 neighborship is full
On router 192.168.20.3 neighborship is full
>>> |
```

```
>>>
RESTART: C:/gdrive/book2/github/edition2/continual_integration/asn_number.py
AS info for hostname :microsoft.com
8075
MICROSOFT-CORP-MSN-AS-BLOCK - Microsoft Corporation, US
AS info for IP : 216.58.192.14
15169
GOOGLE - Google LLC, US
>>>
```

```
RESTART: C:/gdrive/book2/github/edition2/continual_integration/ipv6_validation.py
Correct IPv4 IP 8.8.8.8
Correct IPv6 IP 2001:0db8:85a3:0000:0000:8a2e:0370:7334
wrong IPv4 IP 192.178.263.22
wrong IPv6 IP 2001:0db8:85a3:0000:0000:8a2f
>>>
```