Managing Cisco UCS with the Python SDK

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DEVWKS-2060

Agenda

- Introduction – Managing Cisco UCS with the Python SDK
- Installation Overview
- Connect / Query / Filter / Dump XML
- Get Help / Variable Inspection / Metadata
- Configure / Transactions
- Compare / Sync / Code Generation
- Conclusion
- Code – https://github.com/dsoper2/DEVWKS-2060

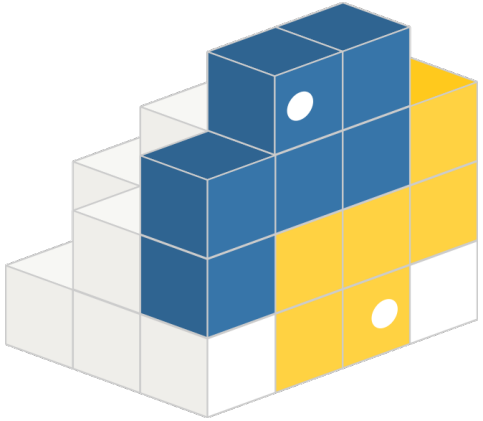
Installation

You make security **possible**

Cisco UCS Python SDKs

- Hosted on GitHub (File Issues, submit PRs)
  - UCS Manager SDK
    - Source – https://github.com/CiscoUcs/ucsmsdk
    - Samples – https://github.com/CiscoUcs/ucsmsdk_samples
    - Documents – https://CiscoUcs.github.io/ucsmsdk_docs
  - UCS IMC SDK
    - Source – https://github.com/CiscoUcs/imcsdk
    - Documents – https://ciscoucs.github.io/imcsdk_docs
  - UCS Central Python SDK
    - Source – https://github.com/CiscoUcs/ucscentralsdk

Cisco UCS Python SDKs – Install



- Install Python 2.7.X or 3.7.X OR BOTH!
  - pip – Preferred Installer Program (package manager)
    - Installs latest “Release” from https://pypi.python.org/pypi

      pip install ucsmsdk
  - git –clone the lab repo
    - Latest example source code from https://github.com/dsoper2/DEVWKS-2060

      git clone https://github.com/dsoper2/DEVWKS-2060.git

      cd DEVWKS-2060
    - Repo uses public UCSPEs by default, if needed change UCSM ips:
      - sed -i -e 's/13.58.22.56/198.18.133.91/g' *.py
      - sed -i -e 's/18.217.19.216/198.18.134.249/g' *.py

Connect
Query
Filter
Dump XML

You make the power of data **possible**

Connect / Query / Dump XML

ex-01.py

DEVWKS-2060 ▸ ex-01.py ▸ ...

```
1   """
2   ex-01.py
3   """
4
5   from ucsmsdk.ucshandle import UcsHandle
6   handle = UcsHandle("198.18.133.91","admin","password")
7   handle.login()
8
9   handle.cookie
10
11  blades = handle.query_classid("ComputeBlade")
12  len(blades)
13
14  for blade in blades:
15      print blade.dn, blade.serial, blade.model
16
17  handle.set_dump_xml()
18  blades = handle.query_classid("ComputeBlade")
19  handle.unset_dump_xml()
```

Query - Filter

ex-02.py

DEVWKS-2060 ▸ ex-02.py ▸ ...

```
1   """
2   ex-02.py
3   """
4
5   filter_exp='(model,"UCSB-B200-M4")'
6   blades = handle.query_classid("ComputeBlade",filter_str=filter_exp)
7   len(blades)
8
9   filter_exp='(model,"UCSB-B200-M4", type="eq")'
10  blades = handle.query_classid("ComputeBlade",filter_str=filter_exp)
11  len(blades)
12
13  filter_exp='(model,"UCSB-B200-M4", type="ne")'
14  blades = handle.query_classid("ComputeBlade",filter_str=filter_exp)
15  len(blades)
16
17  filter_exp='(model,"ucsB-B200-m4", flag="I")'
18  blades = handle.query_classid("ComputeBlade",filter_str=filter_exp)
19  len(blades)
20
21  for blade in blades:
22      print blade.dn, blade.model
```

Query – Returns

ex-03.py

DEVWKS-2060 ▸ ex-03.py ▸ ...

```
"""
    ex-03.py
"""

# List of Objects Returned
blades = handle.query_classid("ComputeBlade")

# Single Object Returned
blade_by_dn = handle.query_dn("sys/chassis-1/blade-2")
print blade_by_dn

# Dictionary of Object Lists Returned
blades_and_chassis = handle.query_classids("ComputeBlade","EquipmentChassis")
print blades_and_chassis

print blades_and_chassis['ComputeBlade']
for blade in blades_and_chassis['ComputeBlade']:
    print blade.dn

# Dictionary of Objects Returned
blade_and_chassis = handle.query_dns("sys/chassis-1/blade-1","sys/chassis-2")
print blade_and_chassis
print blade_and_chassis['sys/chassis-3/blade-1'].dn
```

Get Help
Variable Inspection
Metadata

You make multicloud **possible**

Cisco live!

Get Help / Variable Inspection / Metadata

ex-04.py

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```
1   """
2   ex-04.py
3   """
4
5   vars(handle)
6   dir(UcsHandle)
7   help(UcsHandle)
8
9   from ucsmsdk.ucscoreutils import get_meta_info
10  meta = get_meta_info(class_id="FabricVlan")
11  print meta
12
13  meta = get_meta_info(class_id="FabricVlan", include_prop=False, show_tree=False)
14  print meta
15
16  meta = get_meta_info(class_id="FabricVlan", include_prop=False, show_tree=True)
17  print meta
```

Configure Transactions

You make networking **possible**

Configure

ex-05.py

DEVWKS-2060 ▸ ex-05.py ▸ ...

```
1  """
2      ex-05.py
3  """
4
5  from ucsmsdk.ucshandle import UcsHandle
6  from ucsmsdk.mometa.fabric.FabricVlan import FabricVlan
7  handle = UcsHandle("198.18.133.91", "admin", "password")
8  handle.login()
9
10 fabric_lan_cloud = handle.query_classid("FabricLanCloud")
11 vlan = FabricVlan(parent_mo_or_dn=fabric_lan_cloud[0],
12         name="vlan100",
13         id="100")
14
15 handle.add_mo(vlan)
16 handle.commit()
17 handle.logout()
```

Transactions

ex-06.py

DEVWKS-2060 ▸ ex-06.py ▸ ...

```
1  """
2      ex-06.py
3  """
4
5  from ucsmsdk.ucshandle import UcsHandle
6  from ucsmsdk.mometa.fabric.FabricVlan import FabricVlan
7  handle = UcsHandle("198.18.133.91", "admin", "password")
8  handle.login()
9
10 fabric_lan_cloud = handle.query_classid("FabricLanCloud")
11 vlans = ['200','300', '400', '500']
12
13 for vlan in vlans:
14     vlan = FabricVlan(parent_mo_or_dn=fabric_lan_cloud[0],
15                       name="vlan" + vlan,
16                       id=vlan)
17
18     handle.add_mo(vlan)
19
20 handle.commit()
21 handle.logout()
```

Compare / Sync

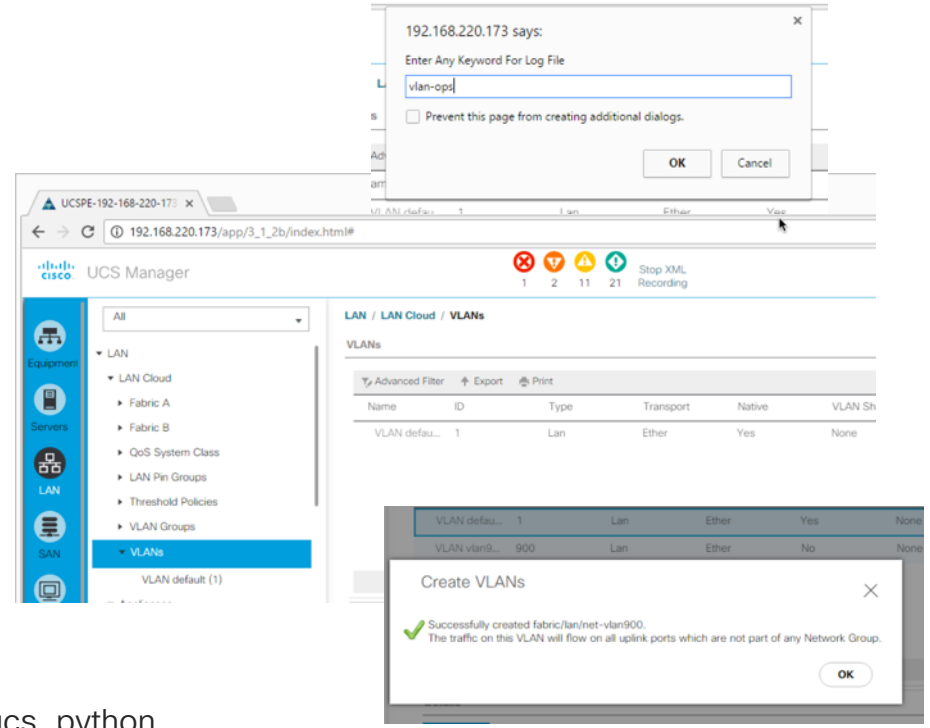
ex-07.py

DEVWKS-2060 ▸ ex-07.py ▸ ...

```
1  """
2  ex-07.py
3  """
4
5  from ucsmsdk.ucshandle import UcsHandle
6  from ucsmsdk.utils import comparesyncmo
7  source_ucs=UcsHandle("198.18.133.91", "admin", "password")
8  target_ucs=UcsHandle("198.18.134.249", "admin", "password")
9  source_ucs.login()
10 target_ucs.login()
11
12 source_ucs_vlans=source_ucs.query_classid("fabricVlan")
13 target_ucs_vlans=target_ucs.query_classid("fabricVlan")
14
15 difference_vlans=comparesyncmo.compare_ucs_mo(target_ucs_vlans, source_ucs_vlans)
16
17 # print the difference to the console
18 comparesyncmo.write_mo_diff(difference_vlans)
19
20 comparesyncmo.sync_ucs_mo(target_ucs, difference_vlans, delete_not_present=True)
21
22 source_ucs.logout()
23 target_ucs.logout()
24
```

Code Generation

1. control-option/alt-q (MAC)
   Ctrl-Alt-q (Windows)
2. Click Record XML
3. Do Configuration
4. Click Stop XML Recording
5. Download XML file
6. Feed XML file to UCS Python SDK conversion method




```
from ucsmsdk.utils.converttopython import convert_to_ucs_python
# Windows
convert_to_ucs_python(xml=True, literal_path="Z:\\Downloads\\vlan-ops_xmlReq.log")
# Linux
convert_to_ucs_python(xml=True, literal_path="/Users/demouser/Downloads/vlan-ops_xmlReq.log")
```

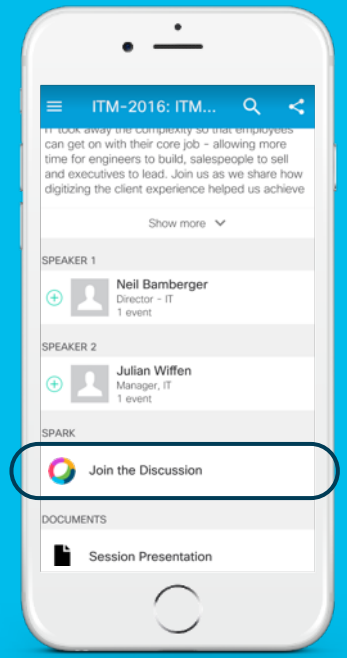
Cisco DevNet Code Exchange

Share your code

Build your developer cred

Get your code in front of the DevNet Community

developer.cisco.com/codeexchange



cs.co/ciscolivebot#DEVWKS-2060

Cisco Webex Teams

Questions?

Use Cisco Webex Teams (formerly Cisco Spark) to chat with the speaker after the session

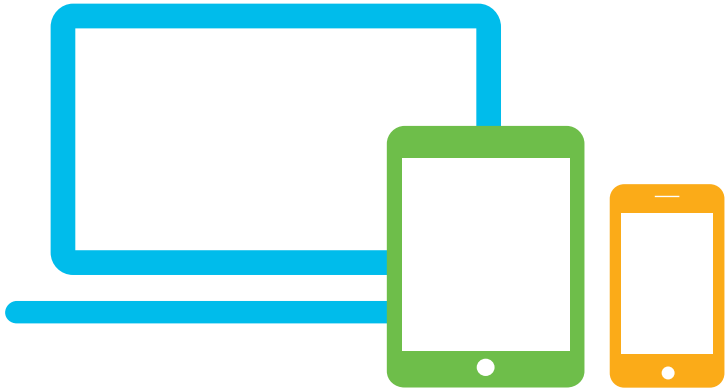
How

1. Find this session in the Cisco Events Mobile App
2. Click “Join the Discussion”
3. Install Webex Teams or go directly to the team space
4. Enter messages/questions in the team space

Complete your online session survey

- Please complete your Online Session Survey after each session
- Complete 4 Session Surveys & the Overall Conference Survey (available from Thursday) to receive your Cisco Live T-shirt
- All surveys can be completed via the Cisco Events Mobile App or the Communication Stations

Don’t forget: Cisco Live sessions will be available for viewing on demand after the event at ciscolive.cisco.com



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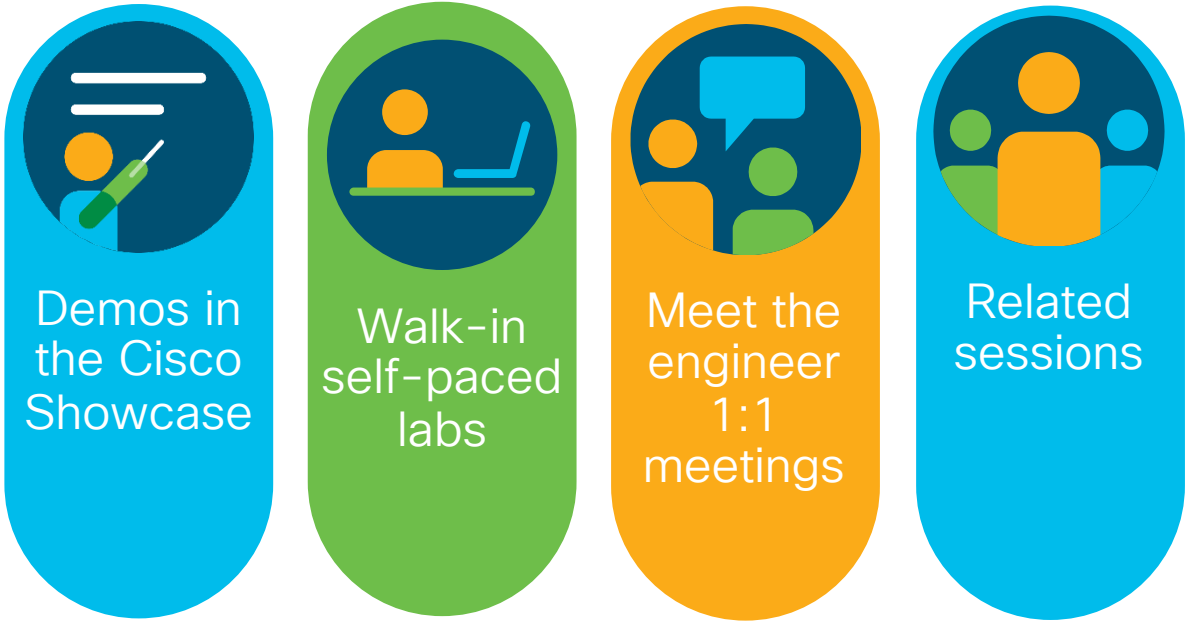

Thank you