Managing Cisco UCS with the Python SDK

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DEVWKS-2060

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Agenda

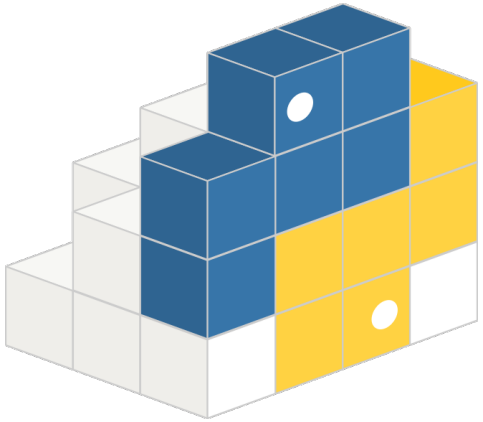
- Introduction – Managing Cisco UCS with the Python SDK
- Installation Overview
- Connect / Query / Filter / Dump XML
- Get Help / Variable Inspection / Metadata
- Configure / Transactions
- Compare / Sync / Code Generation
- Conclusion
- Code – https://github.com/dsoper2/DEVWKS-2060

UCS Python SDK

Cisco UCS Python SDKs

- Hosted on Github
  - UCS Manager SDK
    - Source – https://github.com/CiscoUcs/ucsmsdk
    - Samples – https://github.com/CiscoUcs/ucsmsdk_sample
    - 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

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

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```
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

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```
"""
    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

Get Help / Variable Inspection / Metadata

ex-04.py

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```
"""
ex-04.py
"""

vars(handle)
dir(UcsHandle)
help(UcsHandle)

from ucsmsdk.ucscoreutils import get_meta_info
meta = get_meta_info(class_id="FabricVlan")
print meta

meta = get_meta_info(class_id="FabricVlan", include_prop=False, show_tree=False)
print meta

meta = get_meta_info(class_id="FabricVlan", include_prop=False, show_tree=True)
print meta
```


Configure Transactions

Configure

ex-05.py

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```
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

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```
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

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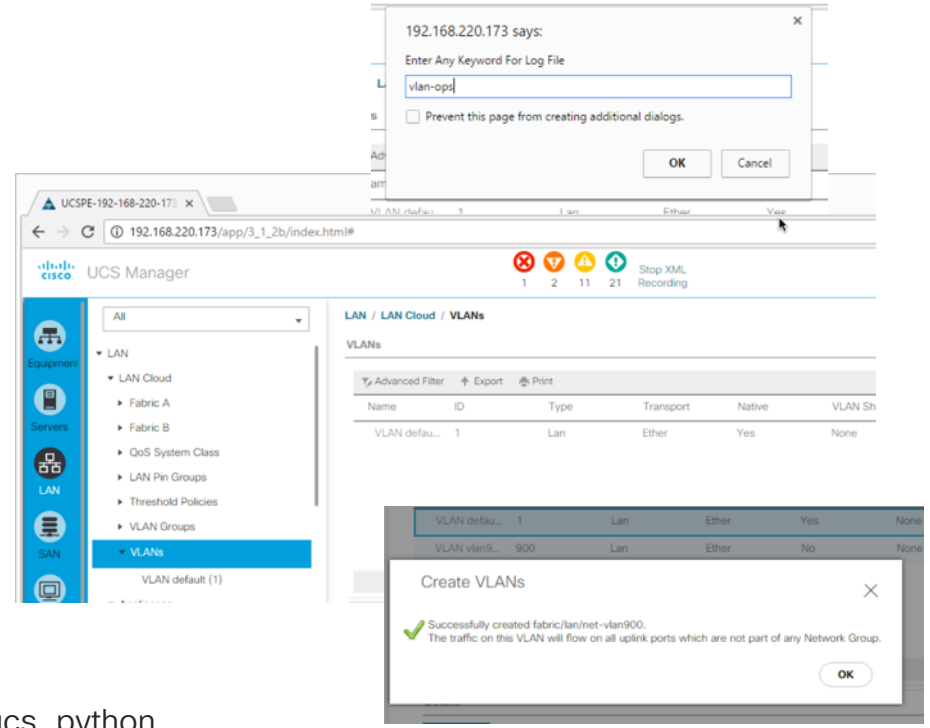
```
1  """
2  ex-07.py
3  """
4
5  from ucsmsdk.ucshandle import UcsHandle
6  from ucsmsdk.utils import comparesyncmo
7  source_ucs=UcsHandle("198.18.133.91", "admin", "password")
8  target_ucs=UcsHandle("198.18.134.249", "admin", "password")
9  source_ucs.login()
10 target_ucs.login()
11
12 source_ucs_vlans=source_ucs.query_classid("fabricVlan")
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")
```

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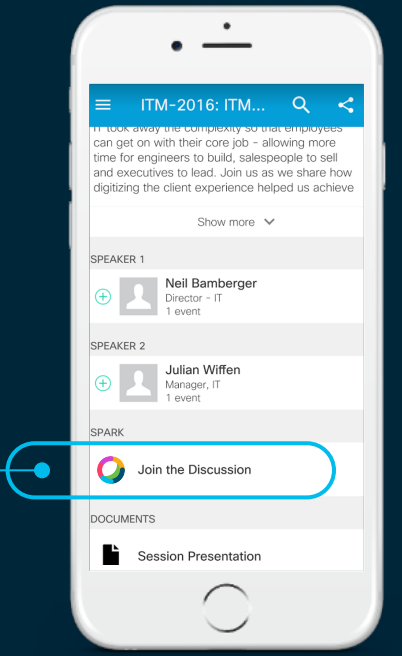

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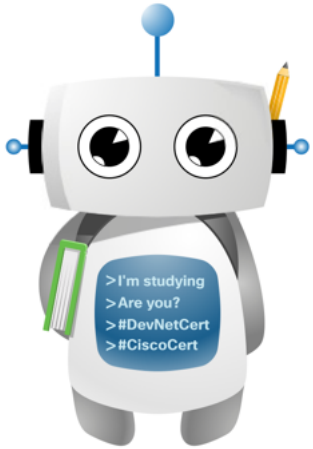

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Thank you

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