



Universidad Tecnológica
del Norte de Guanajuato
Organismo Público Descentralizado del Gobierno del Estado

Facultad de: *Infraestructura de Redes Digitales*

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Matrícula: *1221100627*

Materia:

Programación de Redes

Nombre de la Actividad:

2.7 Lab - NETCONF wPython List Capabilities

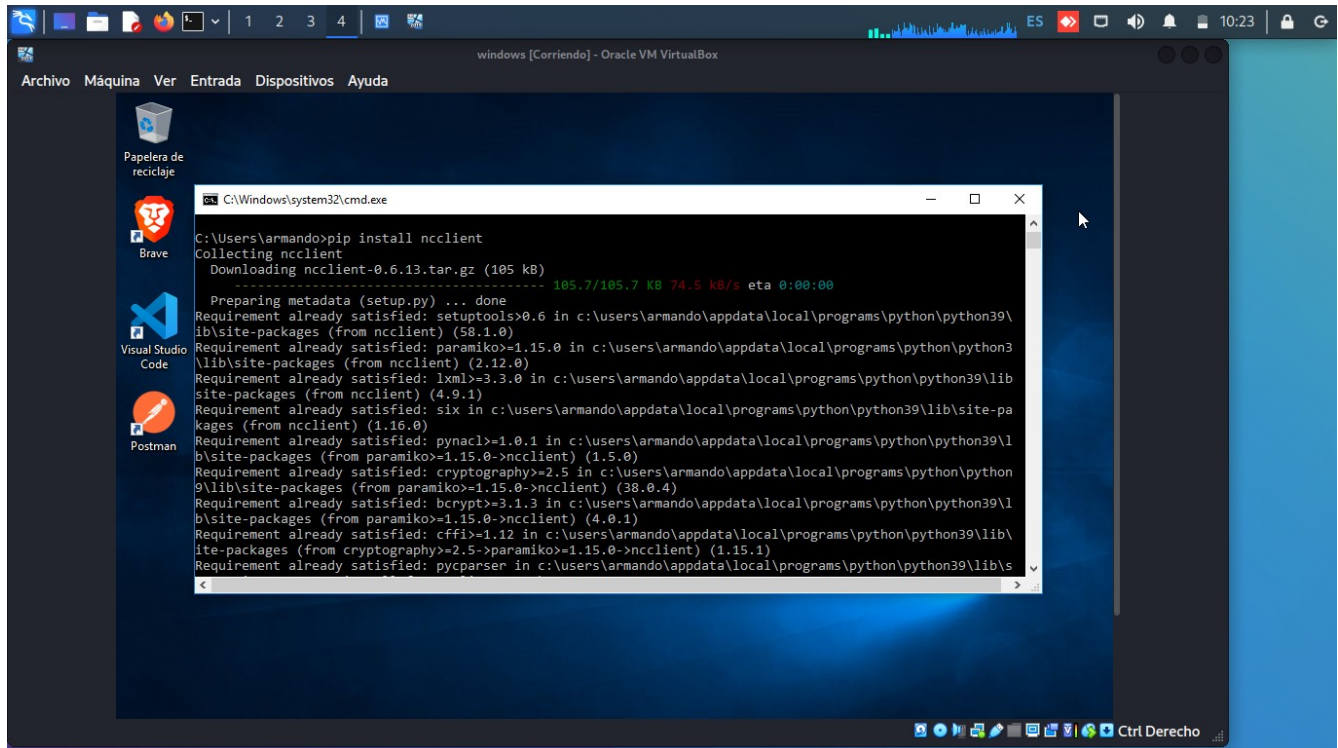
Profesor:

Barron Rodríguez Gabriel

Lugar y Fecha de Presentación: *Dolores Hidalgo C.I.N.*; hoy *6* de *Diciembre* del
2022

Parte 1. Instala el modulo de Python ncclient.

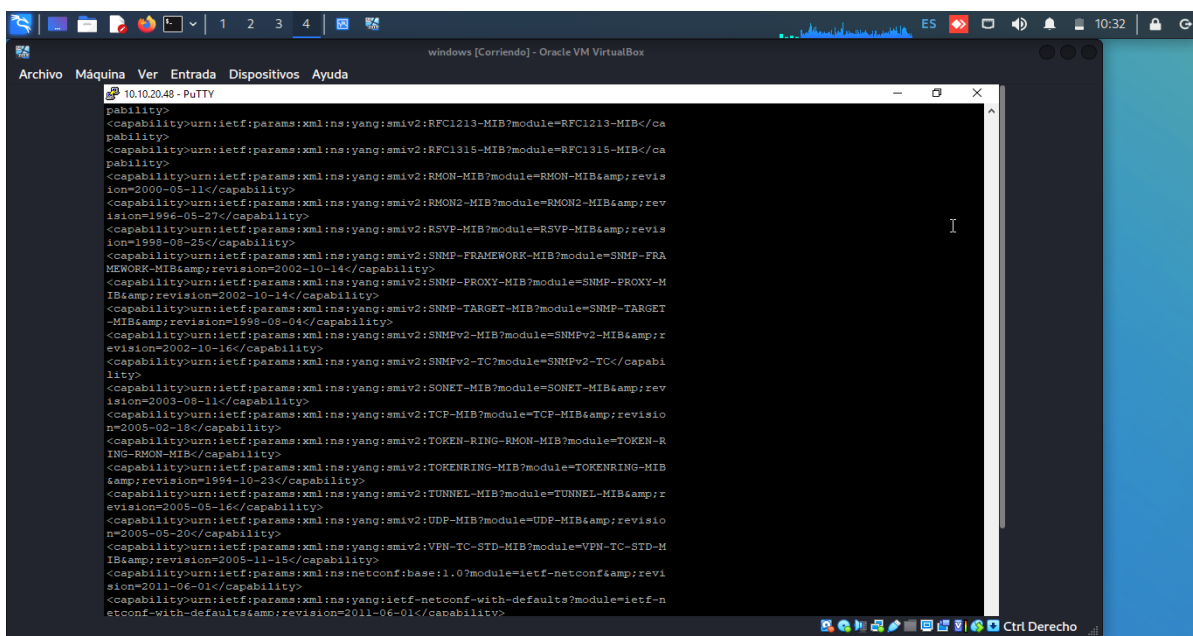
Paso 1. Usa pip para instalar ncclient.



```
C:\Users\armando>pip install ncclient
Collecting ncclient
  Downloading ncclient-0.6.13.tar.gz (105 kB)
    ----- 105.7/105.7 KB 74.5 kB/s eta 0:00:00
  Preparing metadata (setup.py) ... done
Requirement already satisfied: setuptools>=0.6 in c:\users\armando\appdata\local\programs\python\python39\lib\site-packages (from ncclient) (58.1.0)
Requirement already satisfied: paramiko>=1.15.0 in c:\users\armando\appdata\local\programs\python\python39\lib\site-packages (from ncclient) (2.12.0)
Requirement already satisfied: lxml>=3.3.0 in c:\users\armando\appdata\local\programs\python\python39\lib\site-packages (from ncclient) (4.9.1)
Requirement already satisfied: six in c:\users\armando\appdata\local\programs\python\python39\lib\site-packages (from ncclient) (1.16.0)
Requirement already satisfied: pynacl>=1.0.1 in c:\users\armando\appdata\local\programs\python\python39\lib\site-packages (from paramiko>=1.15.0->ncclient) (1.5.0)
Requirement already satisfied: cryptography>=2.5 in c:\users\armando\appdata\local\programs\python\python39\lib\site-packages (from paramiko>=1.15.0->ncclient) (38.0.4)
Requirement already satisfied: bcrypt>=3.1.3 in c:\users\armando\appdata\local\programs\python\python39\lib\site-packages (from paramiko>=1.15.0->ncclient) (4.0.1)
Requirement already satisfied: cffi>=1.12 in c:\users\armando\appdata\local\programs\python\python39\lib\site-packages (from cryptography>=2.5->paramiko>=1.15.0->ncclient) (1.15.1)
Requirement already satisfied: pycparser in c:\users\armando\appdata\local\programs\python\python39\lib\site-packages (from cffi>=1.12->cryptography>=2.5->paramiko>=1.15.0->ncclient) (2.21.0)
```

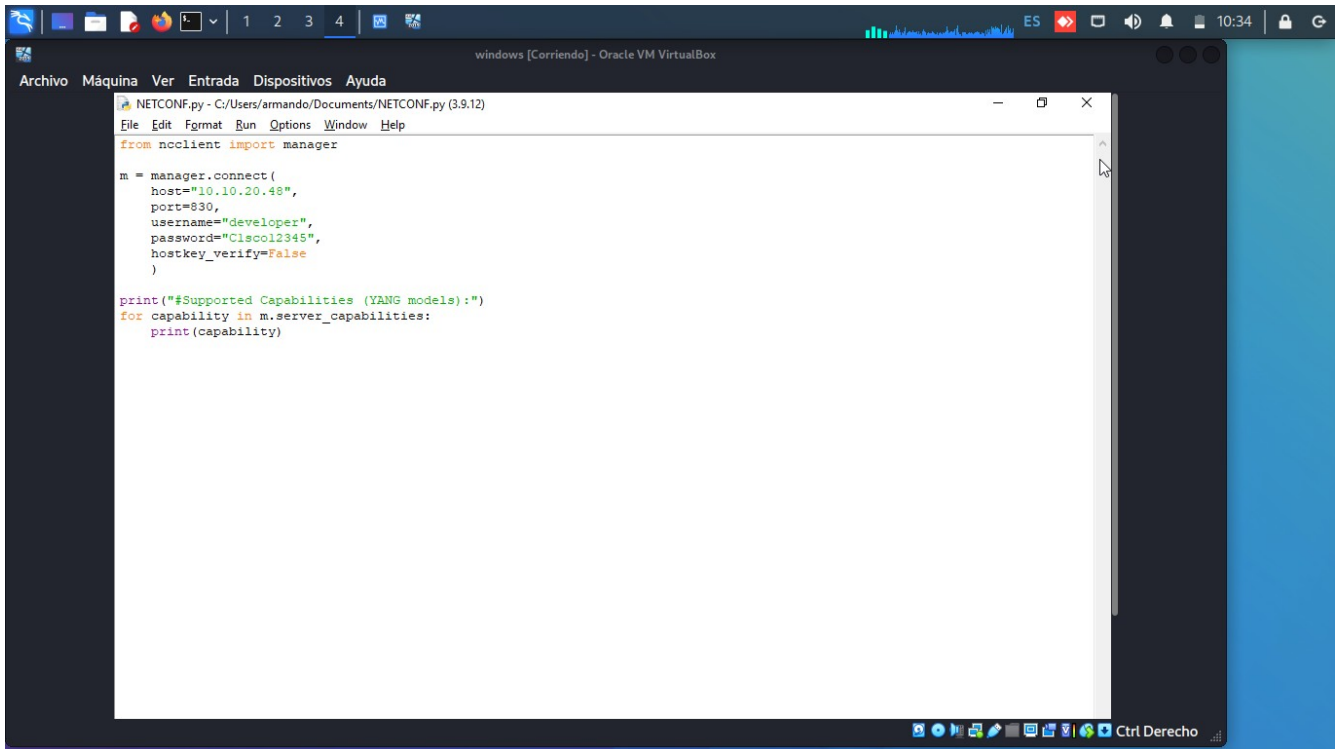
Parte 2. Conectate al IOS XE's NETCONF service using ncclient.

Paso 2. Conectate al IOS XE's NETCONF servicio usando ncclient.



```
10.10.20.48 - PuTTY
<capabilities>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:RFC1213-MIB?module=RFC1213-MIB</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:RFC1315-MIB?module=RFC1315-MIB</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:RMON-MIB?module=RMON-MIB&revision=2000-05-11</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:RMON2-MIB?module=RMON2-MIB&revision=1996-05-27</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:RSVP-MIB?module=RSVP-MIB&revision=1998-08-25</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:SNMP-FRAMEWORK-MIB?module=SNMP-FRAMEWORK-MIB&revision=2002-10-14</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:SNMP-PROXY-MIB?module=SNMP-PROXY-MIB&revision=2002-10-14</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:SNMP-TARGET-MIB?module=SNMP-TARGET-MIB&revision=1998-08-04</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:SNMPv2-MIB?module=SNMPv2-MIB&revision=2002-10-16</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:SNMPv2-TC?module=SNMPv2-TC</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:SONET-MIB?module=SONET-MIB&revision=2003-08-11</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:TCP-MIB?module=TCP-MIB&revision=2005-02-18</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:TOKEN-RING-RMON-MIB?module=TOKEN-RING-RMON-MIB</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:TOKENRING-MIB?module=TOKENRING-MIB&revision=1994-10-23</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:TUNNEL-MIB?module=TUNNEL-MIB&revision=2005-05-16</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:UDP-MIB?module=UDP-MIB&revision=2005-05-20</capability>
  <capability>urn:ietf:params:xml:ns:yang:smiv2:VPN-TC-STD-MIB?module=VPN-TC-STD-MIB&revision=2005-11-15</capability>
  <capability>urn:ietf:params:xml:ns:yang:ietf-netconf:base:1.0?module=ietf-netconf&revision=2011-06-01</capability>
  <capability>urn:ietf:params:xml:ns:yang:ietf-netconf-with-defaults?module=ietf-netconf-with-defaults&revision=2011-06-01</capability>
</capabilities>
```

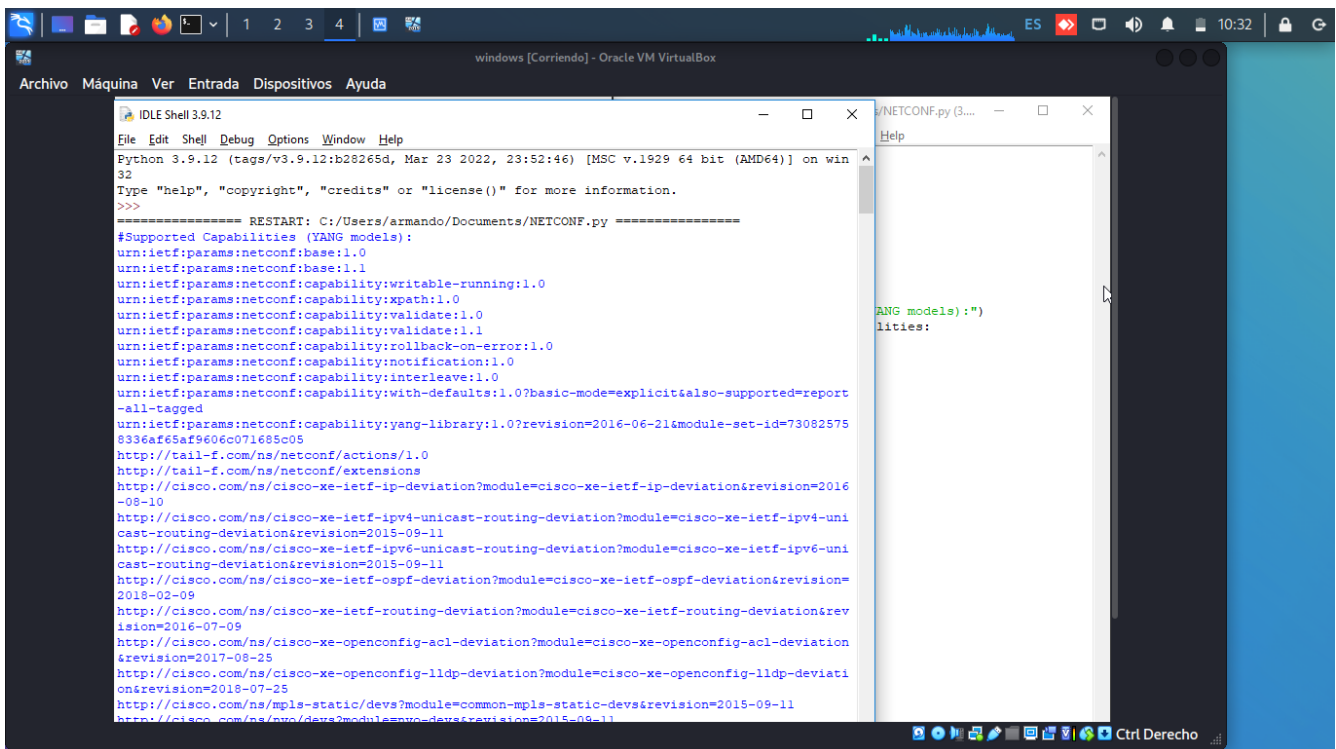
Paso 3.- Lista las capabilities del IOS XE's soportadas por el modelo YANG.



```
NETCONF.py - C:/Users/armando/Documents/NETCONF.py (3.9.12)
File Edit Format Run Options Window Help
from ncclient import manager

m = manager.connect(
    host="10.10.20.48",
    port=830,
    username="developer",
    password="Cisco12345",
    hostkey_verify=False
)

print("#Supported Capabilities (YANG models):")
for capability in m.server_capabilities:
    print(capability)
```



```
IDLE Shell 3.9.12
File Edit Shell Debug Options Window Help
Python 3.9.12 (tags/v3.9.12:b28265d, Mar 23 2022, 23:52:46) [MSC v.1929 64 bit (AMD64)] on win
32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/armando/Documents/NETCONF.py =====
#Supported Capabilities (YANG models):
urn:ietf:params:netconf:base:1.0
urn:ietf:params:netconf:base:1.1
urn:ietf:params:netconf:capability:writable-running:1.0
urn:ietf:params:netconf:capability:xpath:1.0
urn:ietf:params:netconf:capability:validate:1.0
urn:ietf:params:netconf:capability:validate:1.1
urn:ietf:params:netconf:capability:rollback-on-error:1.0
urn:ietf:params:netconf:capability:notification:1.0
urn:ietf:params:netconf:capability:interleave:1.0
urn:ietf:params:netconf:capability:with-defaults:1.0?basic-mode=explicit&also-supported=report
-all-tagged
urn:ietf:params:netconf:capability:yang-library:1.0?revision=2016-06-21&module-set-id=73082575
8336af65af9e06c071695c05
http://tail-f.com/ns/netconf/actions/1.0
http://tail-f.com/ns/netconf/extensions
http://cisco.com/ns/cisco-xe-ietf-ip-deviation?module=cisco-xe-ietf-ip-deviation&revision=2016
-08-10
http://cisco.com/ns/cisco-xe-ietf-ipv4-unicast-routing-deviation?module=cisco-xe-ietf-ipv4-uni
cast-routing-deviation&revision=2015-09-11
http://cisco.com/ns/cisco-xe-ietf-ipv6-unicast-routing-deviation?module=cisco-xe-ietf-ipv6-uni
cast-routing-deviation&revision=2015-09-11
http://cisco.com/ns/cisco-xe-ietf-ospf-deviation?module=cisco-xe-ietf-ospf-deviation&revision=
2018-02-09
http://cisco.com/ns/cisco-xe-ietf-routing-deviation?module=cisco-xe-ietf-routing-deviation&rev
ision=2016-07-09
http://cisco.com/ns/cisco-xe-openconfig-acl-deviation?module=cisco-xe-openconfig-acl-deviati
on&revision=2017-08-25
http://cisco.com/ns/cisco-xe-openconfig-lldp-deviation?module=cisco-xe-openconfig-lldp-deviati
on&revision=2018-07-25
http://cisco.com/ns/mpls-static/devs?module=common-mpls-static-devs&revision=2015-09-11
http://cisco.com/ns/mpls-static/devs?module=common-mpls-static-devs&revision=2015-09-11
```

