



**Universidad Tecnológica
del Norte de Guanajuato**

Organismo Público Descentralizado del Gobierno del Estado

“Educación y progreso para la vida”

Tecnologías de la información área infraestructura
de redes digitales.

Programación de Redes

Profesor: Barrón Rodríguez Gabriel

Unidad 3

Laboratorio Introduction Model Driven Programmability

GIR0541

Monserrat orduña Basaldua

Fecha:07/12/2023

- **¿Qué es la programabilidad basada en modelos?** Es un enfoque de desarrollo de software y gestión de redes en el que se utiliza la representación abstracta de un sistema, conocida como modelo, para describir su estructura, comportamiento y relaciones **¿Por qué se desarrolló?** El IETF desarrolló NETCONF y YANG para ofrecer un protocolo estándar y un lenguaje de modelado de datos para la gestión de redes programáticas.
- **¿Qué propósito proporcionan los nuevos protocolos y estándares de YANG, NETCONF y RESTCONF?** NETCONF proporciona una interfaz programática que aborda muchos de los desafíos de SNMP, independientemente del protocolo de transporte que se utilice (es decir, NETCONF, RESTCONF o gRPC), los modelos de datos YANG definen las API y son los mismos.
- **¿SNMP va a desaparecer?** No ya que los modelos SNMP y MIB hacen un buen trabajo de monitoreo y las MIB SNMP son información de configuración y estado, pero están representadas de una manera que no es adecuada para la configuración.
- **¿Qué tiene que ver YANG con esto?** En que yang es un protocolo muy utilizado
- **Diferencias entre el lenguaje YANG, los modelos de datos YANG y los datos YANG.** El lenguaje YANG es el lenguaje de modelado de datos utilizado para definir los modelos de datos YANG, mientras que los modelos de datos YANG definen los datos de configuración y estado, las notificaciones y los RPC que se utilizan en los dispositivos de red
- **¿Qué es un modelo de datos?** Un modelo de datos es un método bien comprendido y acordado para describir "algo". Como ejemplo, consideremos este sencillo "modelo de datos" para una persona
- **¿Qué es OpenConfig?** Es una iniciativa de código abierto que busca proporcionar modelos de datos YANG estandarizados y vendor-neutral para la configuración y gestión de dispositivos de red.

Paso 3. Evidenciar configuración de YANG (no se te olvide evidencia con perfil de alumnado)

The image displays two sequential screenshots of a web browser window showing the Cisco DevNet Learning Labs Center. The browser's address bar shows the URL: <https://developer.cisco.com/learning/tracks/EN-Networking-v0/intro-device-level-interfaces/intro-yang/set-up-yang...>.

Top Screenshot: The page title is "Set Up YANG Code Examples". It includes a "Talk to us" button. The text states: "Python 3.x is already installed. Verify the installation of Python by running command `python --version` in terminal." Below this, a code block shows the command `python --version` and the expected output: `Python 3.9.7`.

Bottom Screenshot: The page title is "Set Up YANG Code Examples". It includes a "Talk to us" button. The text states: "Now you can get a copy of the code examples." Below this, a code block shows the commands: `cd ~/src` and `git clone https://github.com/CiscoDevNet/dne-dna-code.git`. The next section is titled "Create a Python 3 virtual environment and activate it". Below this, a code block shows the commands: `python -m venv venv` and `source venv/bin/activate`.

Both screenshots show a Windows taskbar at the bottom with the search bar and various application icons. A user profile overlay is visible on the right side of the browser window, showing the name "Personal", email "ordunamonse28@gmail.com", and a Microsoft Rewards balance of 131 puntos.

Set Up YANG Code Examples - In x

https://developer.cisco.com/learning/tracks/EN-Networking-v0/intro-device-level-interfaces/intro-yang/set-up-yan...

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Enter... > Introduction to Mod... > Introducing Y... 116 mins

python -m venv venv
source venv/bin/activate

Change to the sub directory for this module.

cd ~/src/dne-dna-code/intro-mdp

Install the Lab requirements.

pip install -r requirements.txt

Deactivate the virtual environment when you are done with it. For

Search ... Editor

Terminal

```
developer:src > git clone https://github.com/CiscoDevNet/dne-dna-code.git
Cloning into 'dne-dna-code'...
remote: Enumerating objects: 1619, done.
remote: Counting objects: 100% (91/91), done.
remote: Compressing objects: 100% (69/69), done.
remote: Total 1619 (delta 37), reused 60 (delta 20), pack-reused 1528
Receiving objects: 100% (1619/1619), 2.54 MiB | 1.88 MiB/s, done.
Resolving deltas: 100% (789/789), done.
developer:src > python -m venv venv
developer:src > source venv/bin/activate
(venv) developer:src > cd ~/src/dne-dna-code/intro-mdp
(venv) developer:intro-mdp > |
```

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Set Up YANG Code Examples - In x

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Enter... > Introduction to Mod... > Introducing Y... 116 mins

Change to the sub directory for this module.

cd ~/src/dne-dna-code/intro-mdp

Install the Lab requirements.

pip install -r requirements.txt

Deactivate the virtual environment when you are done with it. For example:

deactivate

Next >

Terminal

```
Collecting pynacl==1.5
  Downloading PyNaCl-1.5.0-cp36-abi3-musllinux_1_1_x86_64.whl (1.1 MB)
  1.1/1.1 MB 230.0 MB/s eta 0:00:00
Collecting cffi==1.12
  Downloading cffi-1.16.0-cp310-cp310-musllinux_1_1_x86_64.whl (465 kB)
  465.0/465.0 kB 238.9 MB/s eta 0:00:00
Collecting pycparser
  Downloading pycparser-2.21-py2.py3-none-any.whl (118 kB)
  118.0/118.0 kB 215.9 MB/s eta 0:00:00
Installing collected packages: xmldict, urllib3, pyang, idna, chardet, six, pyyaml, pypser, lxml, future, certifi, bcrypt, requests, toolbelt, pynacl, cryptography
```

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Paso 4. Evidenciar Exploración con Modelos YANG

Exploring YANG Models with pyang

https://developer.cisco.com/learning/tracks/EN-Networking-v0/intro-device-level-interfaces/intro-yang/exploring-yang

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Enterpri... > Introduction to Model Driven ... > Introducing YANG D...

YANG validator, converter, and code generator written in Python. Use this tool to look at a few basic YANG Models.

Look at YANG Models

1. Open a terminal and change to the root of the code samples repository.
2. Change into the directory for this Lab.

```
cd ~/src/dne-dna-code/intro-mdp/yang/
```

3. Within the directory, there is a folder that is named as `models` contain several YANG Models from the IETF, OpenConfig, and Cisco.

```
ls models
```

Search ...

Editor

Terminal2

```
developer:src > cd ~/src/dne-dna-code/intro-mdp/yang/
developer:yang > ls models
Cisco-IOS-XE-ethernet.yang
Cisco-IOS-XE-features.yang
Cisco-IOS-XE-interface-common.yang
Cisco-IOS-XE-interfaces-oper.yang
Cisco-IOS-XE-interfaces.yang
Cisco-IOS-XE-ip.yang
Cisco-IOS-XE-native.yang
Cisco-IOS-XE-types.yang
cisco-gigabitmodel.txt
cisco-xe-ietf-ip-deviation.yang
```

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Exploring YANG Models with pyang

https://developer.cisco.com/learning/tracks/EN-Networking-v0/intro-device-level-interfaces/intro-yang/exploring-yang

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definitions are long and descriptive (as you'd expect and want). As a consumer of YANG models, working in the native YANG is thankfully unnecessary.

► Partial YANG File Contents

6. Install `pyang`.

```
pip install pyang
```

7. The `pyang` module can generate representations of a YANG model. Run the following command to generate a clear-text tree view of the model.

```
cd ~/src/dne-dna-code/intro-mdp/yang/models
pyang -f tree ietf-interfaces.yang
```

Search ...

Editor

Terminal2

```
developer:yang > cd ~/src/dne-dna-code/intro-mdp/yang/models
developer:models > pip install pyang
Defaulting to user installation because normal site-packages is not writeable
Collecting pyang
  Downloading pyang-2.6.0-py2.py3-none-any.whl (594 kB)
    594.1/594.1 kB 44.4 MB/s eta 0:00:00
Collecting lxml (from pyang)
  Downloading lxml-4.9.3-cp310-cp310-musllinux_1_1_x86_64.whl (7.7 MB)
    7.7/7.7 MB 109.4 MB/s eta 0:00:00
Installing collected packages: lxml, pyang
Successfully installed lxml-4.9.3 pyang-2.6.0
developer:models > |
```

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Exploring YANG Models with pyang

https://developer.cisco.com/learning/tracks/EN-Networking-v0/intro-device-level-interfaces/intro-yang/exploring-yang

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- The module `ietf-interfaces` provides two "containers":
 - `interfaces`
 - `interfaces-state`
- Within each "container", there is a "list" called "interface".
 - You can identify a single instance of an interface by a unique "key" of `[name]`.
- Every "leaf" attribute (for example, name, description, type) has the following details:
 - Either read-write (`rw`) or read-only (`ro`).
 - Some are optional (?).
 - Explicitly defined data types.

9. Included OpenConfig YANG model for "interfaces" in the `models\` directory. Look at it and compare what you see to the IETF version.

```
cd ~/src/dne-dna-code/intro-mdp/yang/models
pyang -f tree openconfig-interfaces.yang
```

Next >

Search ...

1

Terminal 2

```
Successfully installed lxml-4.9.3 pyang-2.6.0
developer:models > cd ~/src/dne-dna-code/intro-mdp/yang/models
developer:models > pyang -f tree ietf-interfaces.yang
ietf-interfaces.yang:6: error: module "ietf-yang-types" not found in search path
module: ietf-interfaces
+--rw interfaces
+--rw interface* [name]
+--rw name string
+--rw description? string
+--rw type identityref
+--rw enabled? boolean
+--rw link-up-down-troop-enable? enumeration {if-mib?}
```

Next >

Search ...

1

Terminal 2

```
developer:models > cd ~/src/dne-dna-code/intro-mdp/yang/models
developer:models > pyang -f tree openconfig-interfaces.yang
openconfig-interfaces.yang:13: error: module "openconfig-extensions" not found in search path
module: openconfig-interfaces
+--rw interfaces
+--rw interface* [name]
+--rw name -> ../config/name
+--rw config
+--rw type identityref
+--rw mtu? uint16
+--rw name? string
```

Next >

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Exploring Network Device Data

https://developer.cisco.com/learning/tracks/EN-Networking-v0/intro-device-level-interfaces/intro-yang/exploring-n...

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Enterpri... > Introduction to Model Driven ... > Introducing YANG D...

In the next Lab, you can learn about NETCONF and making connections. For now, explore the XML data that is returned during the transaction.

Investigate NETCONF XML Data

1. Open a terminal and change to the root of the `intro-mdp` code samples repository.
2. Change into the `intro-mdp/yang` directory for this Lab.

```
cd ~/src/dne-dna-code/intro-mdp/yang/
```

3. Open the file `example-ietf-interfaces-data.xml` in a text editor such as the embedded one in the browser or `cat` in the embedded terminal.

Terminal3

```
developer:src > cd ~/src/dne-dna-code/intro-mdp/yang/
developer:yang > cat example-ietf-interfaces-data.xml
<interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
  <interface>
    <name>GigabitEthernet1</name>
    <description>DONT'T TOUCH ME</description>
    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmac
dk</type>
    <enabled>true</enabled>
    <ipv4 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
      <address>
        <ip>10.10.10.10</ip>
        <netmask>255.255.255.0</netmask>
      </address>
    </ipv4>
    <ipv6 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
    </interface>
  </interface>
</interfaces>
```

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Exploring Network Device Data

https://developer.cisco.com/learning/tracks/EN-Networking-v0/intro-device-level-interfaces/intro-yang/exploring-n...

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```
<interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
  <interface>
    <name>GigabitEthernet2</name>
    <description>WAN Interface</description>
    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmac
dk</type>
    <enabled>true</enabled>
    <ipv4 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
      <address>
        <ip>172.16.12.1</ip>
        <netmask>255.255.255.0</netmask>
      </address>
    </ipv4>
    <ipv6 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
    </interface>
  </interface>
</interfaces>
```

4. Now recognize the YANG model elements represented:

Terminal3

```
<interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
  <interface>
    <name>GigabitEthernet1</name>
    <description>DONT'T TOUCH ME</description>
    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmac
dk</type>
    <enabled>true</enabled>
    <ipv4 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
      <address>
        <ip>10.10.10.10</ip>
        <netmask>255.255.255.0</netmask>
      </address>
    </ipv4>
    <ipv6 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
    </interface>
  </interface>
  <interface>
    <name>GigabitEthernet2</name>
    <description>WAN Interface</description>
    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmac
dk</type>
    <enabled>true</enabled>
    <ipv4 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
      <address>
        <ip>172.16.12.1</ip>
        <netmask>255.255.255.0</netmask>
      </address>
    </ipv4>
    <ipv6 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
    </interface>
  </interface>
</interfaces>
```

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Paso 5. Evidenciar Exploración Modelos de Datos YANG con NETCONF

The image consists of two screenshots showing a web browser window displaying a Cisco DevNet Learning Labs page and a Windows command prompt window.

Top Screenshot:

- The browser window shows the "Introduction to Model Driven Network" page. It includes a section titled "XE router using SSH:" with a code block showing the SSH command: `ssh -oHostKeyAlgorithms=+ssh-dss develo`. Below this, it states: "The `-oHostKeyAlgorithms=+ssh-dss` parameter enables the SSH key algorithm needed, and `-p 830` specifies the port the NETCONF agent is listening on."
- The Windows command prompt shows the following commands and output:

```
C:\Users\usuario>ssh -oHostKeyAlgorithms=+ssh-dss develo
per@sandbox-iosxe-recomm-1.cisco.com -p 830 -s netconf
kex_exchange_identification: read: Connection reset
Connection reset by 131.226.217.149 port 830

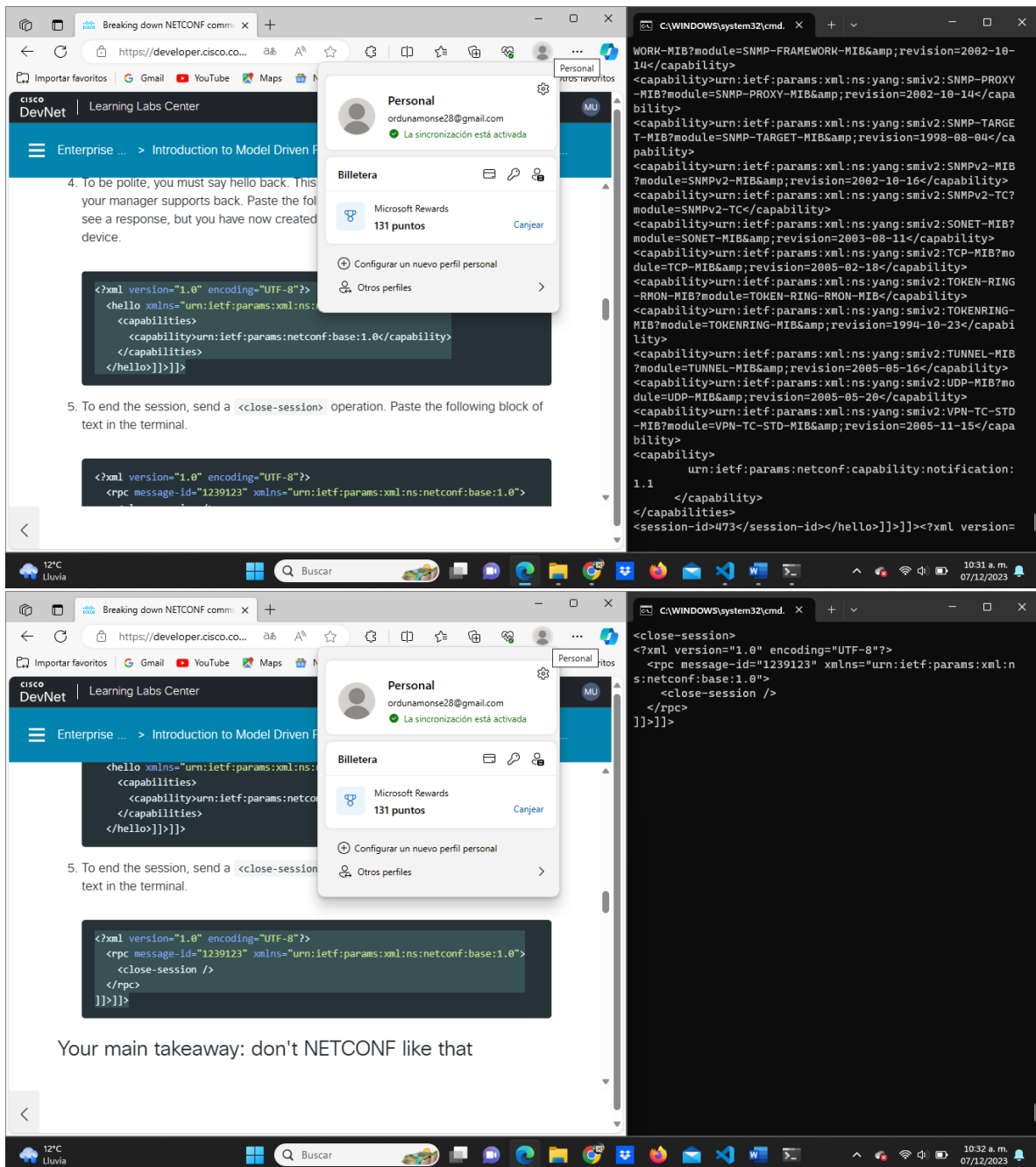
C:\Users\usuario>ssh -oHostKeyAlgorithms=+ssh-dss develo
per@sandbox-iosxe-recomm-1.cisco.com -p 830 -s netconf
kex_exchange_identification: read: Connection reset
Connection reset by 131.226.217.149 port 830

C:\Users\usuario>ssh -oHostKeyAlgorithms=+ssh-dss admin@
sandbox-iosxe-recomm-1.cisco.com -p 830 -s netconf
kex_exchange_identification: read: Connection reset
Connection reset by 131.226.217.149 port 830

C:\Users\usuario>ssh -oHostKeyAlgorithms=+ssh-dss admin@
sandbox-iosxe-latest-1.cisco.com -p 830 -s netconf
The authenticity of host '[sandbox-iosxe-latest-1.cisco.
com]:830 ([131.226.217.143]:830)' can't be established.
RSA key fingerprint is SHA256:5tBWPZzMIAXbGNo9GSsqdGpc
8rOVZ9oSwt0xft4/s.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fi
ngerprint])? yes
Warning: Permanently added '[sandbox-iosxe-latest-1.cisc
o.com]:830' (RSA) to the list of known hosts.
admin@sandbox-iosxe-latest-1.cisco.com's password:
```

Bottom Screenshot:

- The browser window shows the same page, but the code block now displays the output of the SSH command: `<hello xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">`.
- The Windows command prompt shows the output of the NETCONF agent, displaying a list of capabilities in XML format, including `SNMP-FRAMEWORK-MIB`, `SNMP-PROXY-MIB`, `SNMP-TARGET-MIB`, `SNMPv2-MIB`, `SONET-MIB`, `TCP-MIB`, `TOKEN-RING-MIB`, `TUNNEL-MIB`, `UDP-MIB`, and `VPN-TC-MIB`.



Desde este laboratorio ya no permite seguir con la ejecución de comandos por lo que ya los sandbox a utilizar ya no se encuentran disponibles.

Paso 6. Evidenciar Exploración Modelos de Datos YANG con RESTCONF

The screenshot shows a Windows desktop environment. On the left, a web browser window displays the Cisco DevNet 'Exploring IOS XE YANG RESTCONF' page. The page includes a navigation bar, a title, and a list of objectives. On the right, a Windows PowerShell terminal window is open, showing the execution of several commands: 'python --version', 'git --version', and 'git clone https://github.com/CiscoDevNet/dne-dna-code'. The terminal output shows the versions of Python (3.12.0) and Git (2.40.1.windows.1), and the progress of cloning the repository.

Web Browser Content:

Exploring IOS XE YANG RESTCONF

So you want a REST API for the network? Well RESTCONF is your tool then. Checkout how YANG models become URLs with RESTCONF, and learn all there is to know about CRUD! You will explore RESTCONF with basic API calls and with Python!

Objectives

1. Understand the RESTCONF Protocol Stack.
2. Explore the relationship between YANG models and RESTCONF API calls.
3. Learn how to make RESTCONF requests with POSTMAN and with Python.

PowerShell Terminal Content:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. Todos los derechos reservados.

Instale la versión más reciente de PowerShell para obtener nuevas características y mejoras. https://aka.ms/PSWindows

PS C:\Users\usuario> python --version
Python 3.12.0

PS C:\Users\usuario> git --version
git version 2.40.1.windows.1

PS C:\Users\usuario> git version 2.33.0.windows.2
git version 2.40.1.windows.1

PS C:\Users\usuario> git clone https://github.com/CiscoDevNet/dne-dna-code
Cloning into 'dne-dna-code'...
remote: Enumerating objects: 1619, done.
remote: Counting objects: 100% (91/91), done.
remote: Compressing objects: 100% (69/69), done.
Receiving objects: 22% (357/1619), 532.00 KiB | 951.00
Receiving objects: 23% (373/1619), 532.00 KiB | 951.00
Receiving objects: 24% (389/1619), 532.00 KiB | 951.00
Receiving objects: 25% (405/1619), 532.00 KiB | 951.00
Receiving objects: 26% (421/1619), 532.00 KiB | 951.00
Receiving objects: 27% (438/1619), 532.00 KiB | 951.00
Receiving objects: 28% (454/1619), 532.00 KiB | 951.00
Receiving objects: 29% (470/1619), 532.00 KiB | 951.00
Receiving objects: 30% (486/1619), 532.00 KiB | 951.00
Receiving objects: 30% (489/1619), 532.00 KiB | 951.00
Receiving objects: 31% (502/1619), 532.00 KiB | 951.00
Receiving objects: 32% (519/1619), 1.25 MiB | 1.16 MiB/
Receiving objects: 33% (535/1619), 1.25 MiB | 1.16 MiB/
Receiving objects: 34% (551/1619), 1.25 MiB | 1.16 MiB/
```

Introduction - Exploring IOS XE

https://developer.cisco.co...

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Enterprise ... > Introduction to Model Driven P...

Note: The output may differ if you are u...

Clone the repository and chang...

- Clone the GitHub repository.

```
git clone https://github.com/CiscoDevNet/dne-dna-code
```

- Change to the directory `intro-mdp` for this module.

```
cd intro-mdp
```

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Receiving objects: 74% (1199/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 75% (1215/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 76% (1231/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 77% (1247/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 78% (1263/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 79% (1280/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 80% (1296/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 81% (1312/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 82% (1328/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 83% (1344/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 84% (1360/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 85% (1377/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 86% (1393/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 87% (1409/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 88% (1425/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 89% (1441/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 90% (1458/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 91% (1474/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 92% (1490/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 93% (1506/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 94% (1522/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 95% (1539/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 96% (1555/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 97% (1571/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 98% (1587/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 99% (1603/1619), 1.93 MiB | 1.22 MiB
remote: Total 1619 (delta 37), reused 60 (delta 28), pack-reused 1528
Receiving objects: 99% (1606/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 100% (1619/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 100% (1619/1619), 2.54 MiB | 1.26 MiB /s, done.
Resolving deltas: 100% (789/789), done.
PS C:\Users\usuario>

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10:44 a. m. 07/12/2023

Introduction - Exploring IOS XE

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Enterprise ... > Introduction to Model Driven P...

- Clone the GitHub repository.

```
git clone https://github.com/CiscoDevNet/...
```

- Change to the directory `intro-mdp` for this module.

```
cd intro-mdp
```

Install Postman

- Install [Postman](#)

Note: Postman is an API platform for building and using APIs. Postman

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Receiving objects: 99% (1603/1619), 1.93 MiB | 1.22 MiB
remote: Total 1619 (delta 37), reused 60 (delta 20), pac
k-reused 1528Receiving objects: 99% (1606/1619), 1.93 M
iB | 1.22 MiB
Receiving objects: 100% (1619/1619), 1.93 MiB | 1.22 MiB
Receiving objects: 100% (1619/1619), 2.54 MiB | 1.26 MiB
/s, done.
Resolving deltas: 100% (789/789), done.
PS C:\Users\usuario> cd intro-mdp
cd : No se encuentra la ruta de acceso
'C:\Users\usuario\intro-mdp' porque no existe.
En línea: 1 Carácter: 1
+ cd intro-mdp
+ ~~~~~
+ CategoryInfo : ObjectNotFound: (C:\User
s\usuario\intro-mdp:String) [Set-Location], ItemNo
tFoundException
+ FullyQualifiedErrorId : PathNotFound,Microsoft.P
owerShell.Commands.SetLocationCommand

PS C:\Users\usuario> mkdir intro-mdp

Directorio: C:\Users\usuario

Mode LastWriteTime Length Name
---- -
d----- 07/12/2023 10:47 a. m. intro
 -mdp

PS C:\Users\usuario> cd intro-mdp
PS C:\Users\usuario\intro-mdp>

Step 2: "GETing" Started with Po...

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Enterprise ... > Introduction to Mo...

```
GET Read ietf-yang-library
```

- 3. Select the `GET Read ietf-yang-library` RESTCONF request retrieves i... supported by the device. Expl...
- URL: `https://{(host)}:{(port)}/restconf/data/ietf-yang-library:modules-state`
- Method: `GET`
- Authorization: `Basic auth`
- Headers:
 - Accept: `application/yang-data+json`
- 4. Send the request and verify the status code returned is `200 OK`. In the response body, you see the list of models supported.

Serial Output

Next >

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POST Ad GET Nev PUT New R

No Environment

RESTCONF / New Request

Save

GET

https://{(host)}:{(port)}/restconf/data/ietf-yang...

Send

Params

Auth

Host

User-Agent

Accept

Accept-Encoding

Connection

Accept

Key

Value

Description

Body

<calculated when req...

Pre-req.

PostmanRuntime/7.35.0

Tests

Settings

Response

Could not send request

Error: Port should be >= 0 and < 65536. Received {(port)}

View in Console

Postbot

Runner

Step 3: Walking Through Autom...

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Enterpris... > Introduction to Mod...

Headers:

Content-Type: appli

Body:

```
{  "ietf-interfaces:interface": {    "name": "Loopback100",    "description": "Added with RESTCONF",    "type": "iana-if-type:softwareLoopback",    "enabled": true,    "ietf-ip:ipv4": {      "address": [        {          "ip": "172.16.100.1",          "netmask": "255.255.255.0"        }      ]    }  }}
```

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POST Ad

POST No

PUT New B

No Environment

RESTCONF / New Request

Save

Send

POST

https://(10.10.20.48):(221)/restconf/data/ietf-interfaces:interfaces

Params

Auth

Headers (10)

Body

Pre-req

Tests

Settings

none

This request does not have a body

Response

Could not send request

Error: Port should be >= 0 and < 65536. Received (221)

View in Console

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Headers:

Content-Type: a

Body:

```
{  "ietf-interfaces:interface": {    "name": "GigabitEthernet2",    "description": "Configured by RESTCONF",    "type": "iana-if-type:ethernetCsmacd",    "enabled": true,    "ietf-ip:ipv4": {      "address": [        {          "ip": "10.255.255.1",          "netmask": "255.255.255.0"        }      ]    }  }}
```

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PUT Nev

PUT New R

No Environment

RESTCONF / New Request

Save

Send

PUT

https://(10.10.20.48):(221)/restconf/data/ietf-interfaces:interfaces

Params

Auth

Headers (10)

Body

Pre-req

Tests

Settings

User-Agent

PostmanRuntime/7.35.0

Accept

Accept-Encoding

gzip, deflate, br

Connection

keep-alive

Accept

application/yang-data...

Content-Type

application/yang-data...

Key

Value

Description

Response

Could not send request

Error: Port should be >= 0 and < 65536. Received (221)

View in Console

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Step 3: Walking Through Automate

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Enterprise... > Introduction to Mod...

Deleting from the Conf

Now let's see how we can delete...

1. Select the DELETE Delete Loopback RESTCONF request deletes a Loopback interface on the device using the ietf-interfaces model. Explore the details of the request in Postman.

- URI: `https://{{host}}:{{port}}/restconf/data/ietf-interfaces:interfaces/interface=Loopback100` If you created a different loopback interface number, change the URI.
- Method: DELETE
- Authorization: Basic username/password
- Headers:
 - Accept: application/yang-data...

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RESTCONF / New Request

DELETE `https://(10.10.20.48):(22)/restconf/data/ietf...` Send

Params Auth Headers (9) Body Pre-req. Tests Settings

<input checked="" type="checkbox"/>	User-Agent	PostmanRuntime/7.35.0
<input checked="" type="checkbox"/>	Accept	*
<input checked="" type="checkbox"/>	Accept-Encoding	gzip, deflate, br
<input checked="" type="checkbox"/>	Connection	keep-alive
<input checked="" type="checkbox"/>	Accept	application/yang-data...
<input checked="" type="checkbox"/>	Content-Type	application/yang-data...

Response

Could not send request

Error: Port should be >= 0 and < 65536. Received (22). View in Console

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Step 3: Walking Through Automate

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We've seen how to view and upda

1. Select the POST IOS XE Save C This RESTCONF request send included in a native data model.

- URI: `https://{{host}}:{{port}}/restconf/operations/cisco-ia:save-config/`
- Method: POST
- Authorization: Basic username/password
- Headers:
 - Content-Type: application/yang-data+json

- 2. Send the request and verify that the status code returned is 200 OK. The body of the response should have a very encouraging message!

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RESTCONF / New Request

POST `https://(10.10.20.48):(22)/restconf/data/ietf...` Send

Params Auth Headers (10) Body Pre-req. Tests Settings

<input checked="" type="checkbox"/>	Accept	*
<input checked="" type="checkbox"/>	Accept-Encoding	gzip, deflate, br
<input checked="" type="checkbox"/>	Connection	keep-alive
<input type="checkbox"/>	Accept	application/yang-data...
<input checked="" type="checkbox"/>	Content-Type	application/yang-data...

Response

Could not send request

Error: Port should be >= 0 and < 65536. Received (22). View in Console

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Module Overview - YANG Suite

https://developer.cisco.com/learning/tracks/EN-Networking-v0/yang-suite/

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< YANG Suite

Module Overview

Introduction to YANG Suite

Exploring YANG Suite

Enterprise Networking > YANG Suite

YANG Suite

Explore YANG models using the YANG Suite GUI. Create and send simple a device. Then, create a new subscription to send CPU metrics telemetry

Completed

Retake this module

(Last visited: Introduction to YANG Suite)

This learning module includes:

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