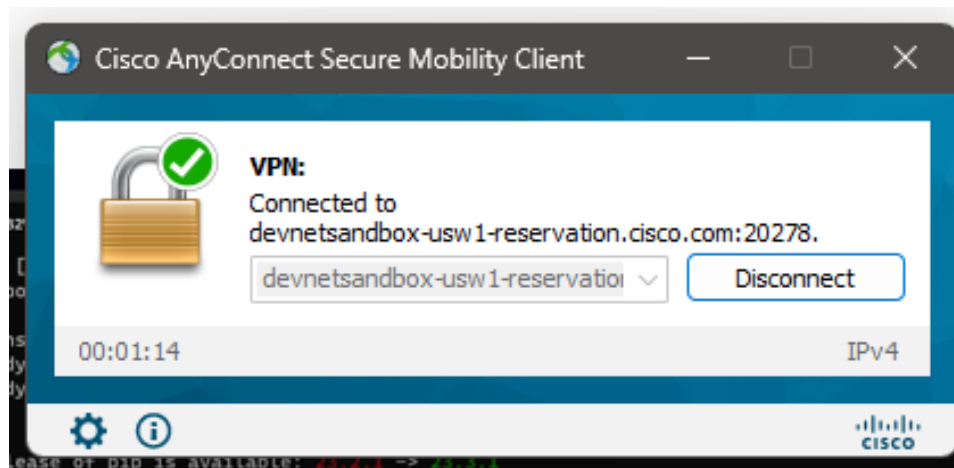


Lab 2.3 – Explore YANG Models Using the pyang Tool

Sharon Michelle Olvera Ibarra



```
C:\WINDOWS\system32\cmd. X + v
Microsoft Windows [Versión 10.0.22621.2715]
(c) Microsoft Corporation. Todos los derechos reservados.

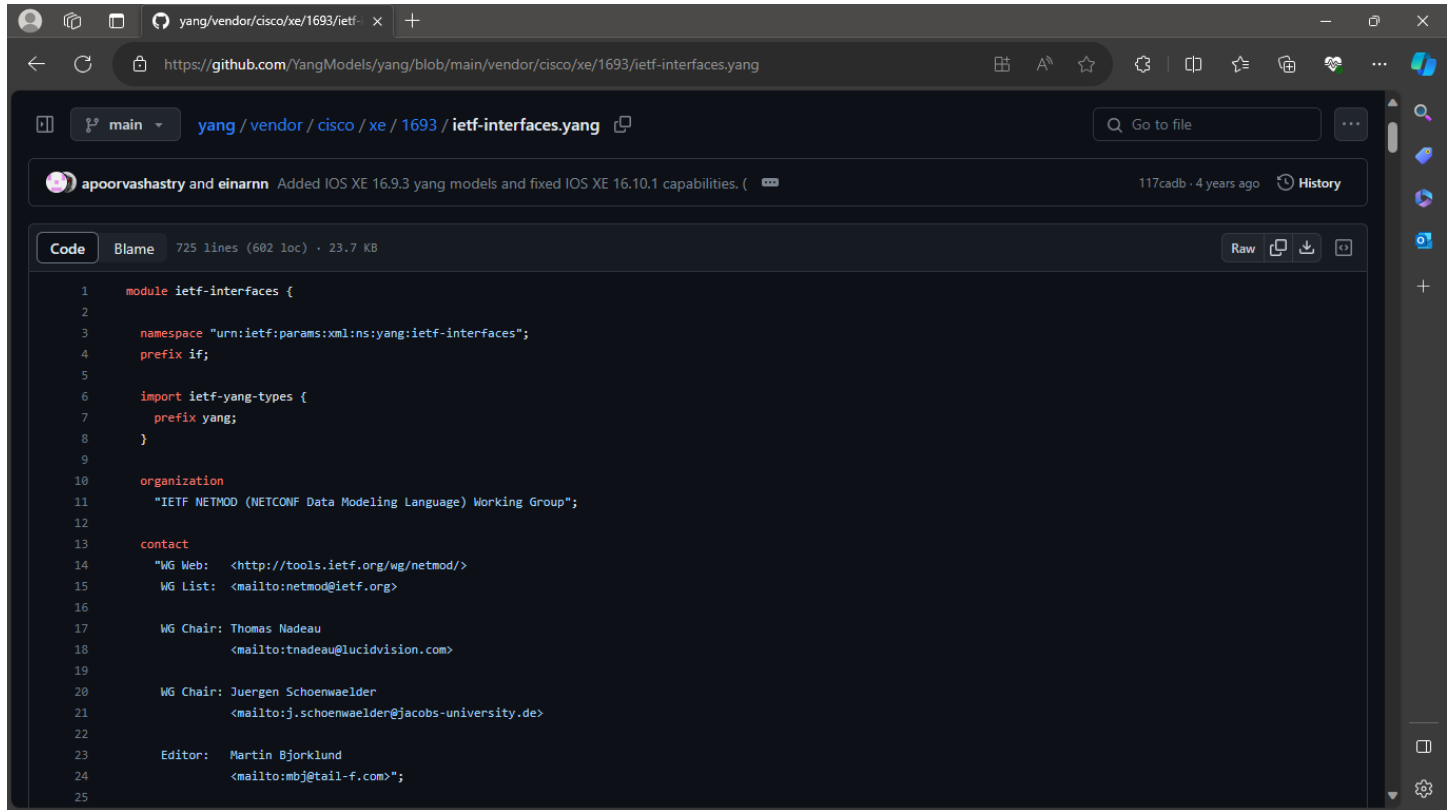
C:\Users\HP>pip install --no-binary pyang pyang
Requirement already satisfied: pyang in c:\users\hp\appdata\local\programs\python\python312\lib\site-packages (2.6.0)
Requirement already satisfied: lxml in c:\users\hp\appdata\local\programs\python\python312\lib\site-packages (from pyang) (4.9.3)

[notice] A new release of pip is available: 23.2.1 -> 23.3.1
[notice] To update, run: C:\Users\HP\AppData\Local\Programs\Python\Python312\python.exe -m pip install --upgrade pip

C:\Users\HP>pyang -v
pyang 2.6.0

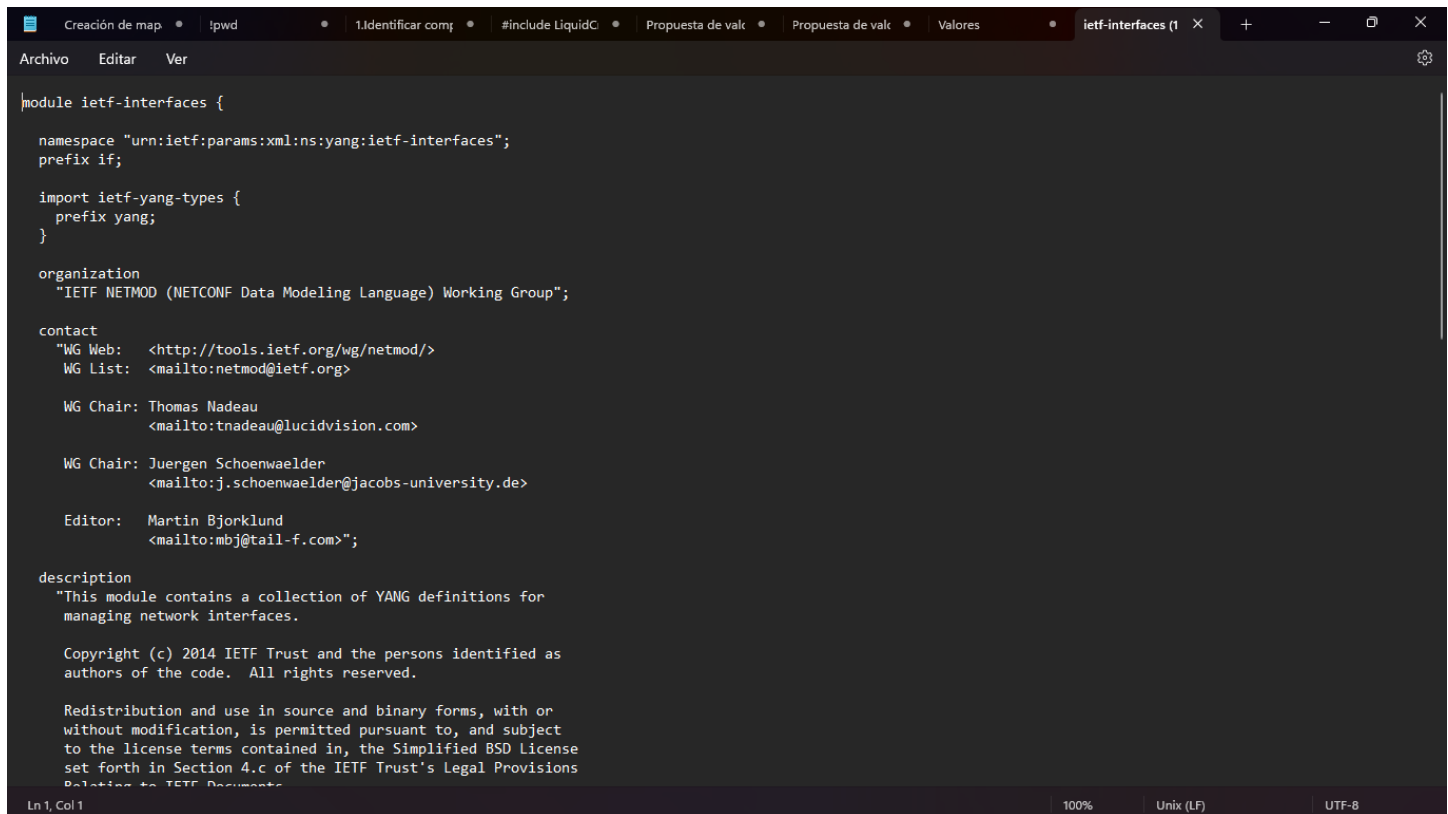
C:\Users\HP>
```

Olvera Sharon Michelle Olvera



The screenshot shows a GitHub web interface for the file `ietf-interfaces.yang` in the `yang/vendor/cisco/xe/1693` directory. The repository is owned by `YangModels`. A commit by `apoorvashty and einarnn` is highlighted, dated 4 years ago. The file is 725 lines long. The code is displayed in a dark theme with syntax highlighting. The code defines a YANG module for network interfaces, including namespace declarations, imports, and organizational information.

```
1 module ietf-interfaces {
2
3     namespace "urn:ietf:params:xml:ns:yang:ietf-interfaces";
4     prefix if;
5
6     import ietf-yang-types {
7         prefix yang;
8     }
9
10    organization
11        "IETF NETMOD (NETCONF Data Modeling Language) Working Group";
12
13    contact
14        "WG Web: <http://tools.ietf.org/wg/netmod/>
15        WG List: <mailto:netmod@ietf.org>
16
17        WG Chair: Thomas Nadeau
18            <mailto:tnadeau@lucidvision.com>
19
20        WG Chair: Juergen Schoenwaelder
21            <mailto:j.schoenwaelder@jacobs-university.de>
22
23        Editor: Martin Bjorklund
24            <mailto:mbj@tail-f.com>";
25
```



The screenshot shows a code editor with the same content as the GitHub page. The editor has a dark theme and a menu bar with options like 'Archivo', 'Editar', and 'Ver'. The code is identical to the one in the GitHub screenshot, but it includes a `description` block and a `copyright` notice at the bottom.

```
module ietf-interfaces {

    namespace "urn:ietf:params:xml:ns:yang:ietf-interfaces";
    prefix if;

    import ietf-yang-types {
        prefix yang;
    }

    organization
        "IETF NETMOD (NETCONF Data Modeling Language) Working Group";

    contact
        "WG Web: <http://tools.ietf.org/wg/netmod/>
        WG List: <mailto:netmod@ietf.org>

        WG Chair: Thomas Nadeau
            <mailto:tnadeau@lucidvision.com>

        WG Chair: Juergen Schoenwaelder
            <mailto:j.schoenwaelder@jacobs-university.de>

        Editor: Martin Bjorklund
            <mailto:mbj@tail-f.com>";

    description
        "This module contains a collection of YANG definitions for
        managing network interfaces."

    Copyright (c) 2014 IETF Trust and the persons identified as
    authors of the code. All rights reserved.

    Redistribution and use in source and binary forms, with or
    without modification, is permitted pursuant to, and subject
    to the license terms contained in, the Simplified BSD license
    set forth in Section 4.c of the IETF Trust's Legal Provisions
    Relating to IETF Documents
```

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```
C:\WINDOWS\system32\cmd. X + v
Microsoft Windows [Versión 10.0.22621.2715]
(c) Microsoft Corporation. Todos los derechos reservados.

C:\Users\HP>cd Desktop

C:\Users\HP\Desktop>dir *.yang
El volumen de la unidad C es Windows
El número de serie del volumen es: B496-F6F6

Directorio de C:\Users\HP\Desktop

27/11/2023  10:16 a. m.          24,248 ietf-interfaces.yang
             1 archivos          24,248 bytes
             0 dirs  34,872,213,504 bytes libres

C:\Users\HP\Desktop>
```

```
C:\WINDOWS\system32\cmd. X + v
C:\Users\HP\Desktop>pyang -f tree ietf-interfaces.yang
module: ietf-interfaces
+--rw interfaces
|   +--rw interface* [name]
|   |   +--rw name                string
|   |   +--rw description?        string
|   |   +--rw type                identityref
|   |   +--rw enabled?            boolean
|   |   +--rw link-up-down-trap-enable? enumeration {if-mib}?
|   +--ro interfaces-state
|   |   +--ro interface* [name]
|   |   |   +--ro name                string
|   |   |   +--ro type                identityref
|   |   |   +--ro admin-status        enumeration {if-mib}?
|   |   |   +--ro oper-status         enumeration
|   |   |   +--ro last-change?        yang:date-and-time
|   |   |   +--ro if-index            int32 {if-mib}?
|   |   |   +--ro phys-address?       yang:phys-address
|   |   |   +--ro higher-layer-if*    interface-state-ref
|   |   |   +--ro lower-layer-if*    interface-state-ref
|   |   |   +--ro speed?              yang:gauge64
|   |   +--ro statistics
|   |   |   +--ro discontinuity-time  yang:date-and-time
|   |   |   +--ro in-octets?          yang:counter64
|   |   |   +--ro in-unicast-pkts?    yang:counter64
|   |   |   +--ro in-broadcast-pkts?  yang:counter64
|   |   |   +--ro in-multicast-pkts?  yang:counter64
|   |   |   +--ro in-discards?        yang:counter32
|   |   |   +--ro in-errors?          yang:counter32
|   |   |   +--ro in-unknown-protos?  yang:counter32
|   |   |   +--ro out-octets?         yang:counter64
|   |   |   +--ro out-unicast-pkts?   yang:counter64
|   |   |   +--ro out-broadcast-pkts? yang:counter64
|   |   |   +--ro out-multicast-pkts? yang:counter64
|   |   |   +--ro out-discards?       yang:counter32
```

- d. Are there any “read only” operation data in the Cisco-IOS-XE-cdp.yang model? No, todos los datos estan indicados como datos de configuración.
- e. Is there any other YANG model that includes operational CDP data? Si, esta el archive Cisco-IOS-XE-cdp-oper.yang

The screenshot shows a web browser displaying a GitHub repository. The address bar shows the URL: <https://github.com/YangModels/yang/blob/main/vendor/cisco/xe/1693/Cisco-IOS-XE-cdp-oper.yang>. The left sidebar shows a file explorer with a list of files under the 'main' branch. The file 'Cisco-IOS-XE-cdp-oper.yang' is selected. The main content area shows the YANG model code for 'Cisco-IOS-XE-cdp-oper'. The code is displayed in a dark theme with line numbers on the left. The code includes a module definition, version, namespace, prefix, imports, and contact information for Cisco Systems, Inc.

yang / vendor / cisco / xe / 1693 / Cisco-IOS-XE-cdp-oper.yang

apoorvashastry and einarnn Added IOS XE 16.9.3 yang models and fixed IOS XE 16.10.1 capabilities. (117cadb · 4 years ago) History

Code Blame 426 lines (409 loc) · 11.6 KB

```
1 module Cisco-IOS-XE-cdp-oper {
2   yang-version 1;
3   namespace "http://cisco.com/ns/yang/Cisco-IOS-XE-cdp-oper";
4   prefix cdp-ios-xe-oper;
5
6   import ietf-inet-types {
7     prefix inet;
8   }
9
10  organization
11    "Cisco Systems, Inc.";
12  contact
13    "Cisco Systems, Inc.
14     Customer Service
15
16     Postal: 170 W Tasman Drive
17     San Jose, CA 95134
18
19     Tel: +1 800 553-NETS
20
21     E-mail: cs-yang@cisco.com";
22  description
23    "This module contains a collection of YANG definitions
24    for monitoring of Cisco CDP operational information.
25    Copyright (c) 2016-2017 by Cisco Systems, Inc.
```