



You make **possible**



API Metadata

Why You Should Care!

John McDonough – DevNet Developer Advocate
@johnamcdonough

DEVLIT-4012

CISCO *Live!*

Barcelona | January 27-31, 2020



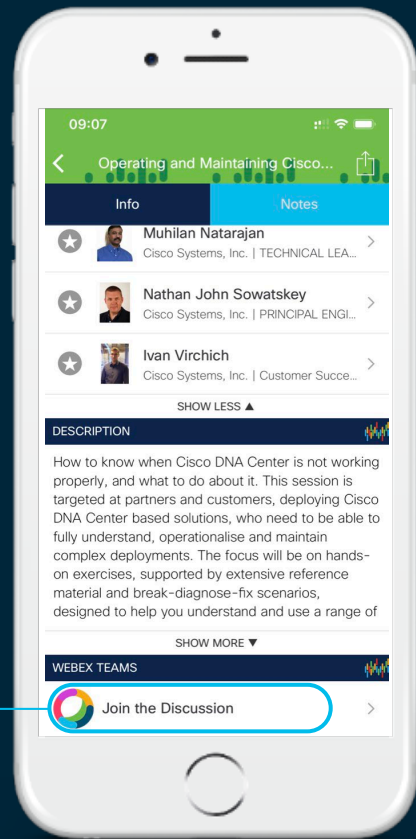
Cisco Webex Teams

Questions?

Use Cisco Webex Teams 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



Agenda

- DEVLIT-4012 - API Metadata Why You Should Care!
- What is API Metadata?
- Does Every API have Metadata?
- Why do I care about API Metadata?
- What can I do with API Metadata?
- Conclusion

What is API Metadata?

What is Metadata

- Metadata is

"data that provides information about other data"

In other words, it is "data about data"

Wikipedia - Metadata

Ownership / Location / Description / Longevity / Constraints

More...

What is Metadata



Sat, Dec 28, 2019 · 9:48 AM

LOCATION



 Sparta, NJ
41.087, -74.607

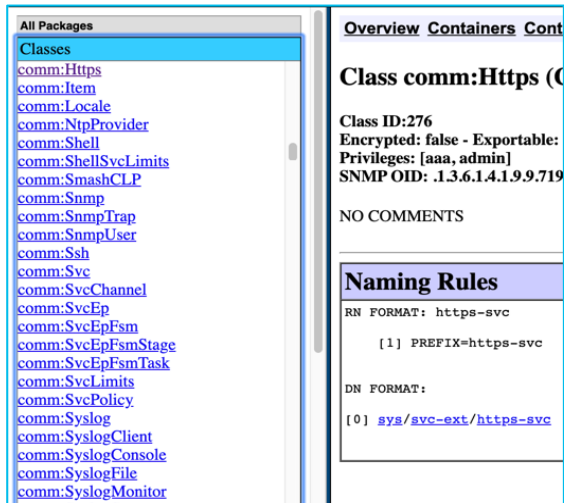
DETAILS

 IMG_4922.HEIC
12.2MP 3024 x 4032 1.7 MB

 iPhone XR
f/1.8 1/30 4.25mm ISO640

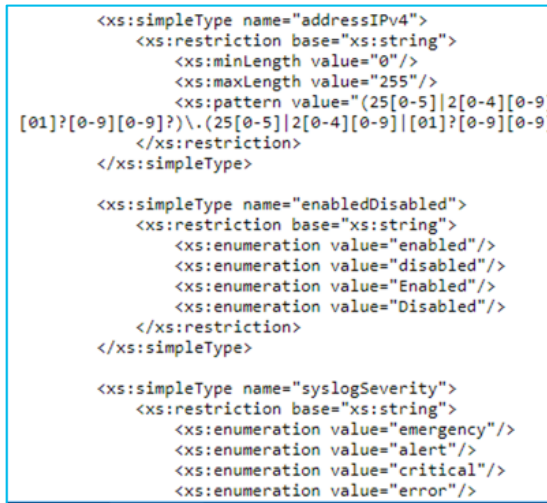
What is API Metadata?

- Docs



The screenshot shows the Cisco API documentation interface. On the left, under 'All Packages', there is a list of classes including `comm:Https`, `comm:Item`, `comm:Locale`, `comm:NtpProvider`, `comm:Shell`, `comm:ShellSvcLimits`, `comm:SmashCLP`, `comm:Snmp`, `comm:SnmpTrap`, `comm:SnmpUser`, `comm:Ssh`, `comm:Svc`, `comm:SvcChannel`, `comm:SvcEp`, `comm:SvcEpFsm`, `comm:SvcEpFsmStage`, `comm:SvcEpFsmTask`, `comm:SvcLimits`, `comm:SvcPolicy`, `comm:Syslog`, `comm:SyslogClient`, `comm:SyslogConsole`, `comm:SyslogFile`, and `comm:SyslogMonitor`. On the right, the 'Overview Containers Cont' tab is selected, showing details for the 'Class comm:Https (C'. It includes the Class ID (276), encryption status (false), exportability (true), privileges (aaa, admin), and SNMP OID (.1.3.6.1.4.1.9.9.719). It also states 'NO COMMENTS'. Below this, the 'Naming Rules' section shows the RN FORMAT as 'https-svc' and the DN FORMAT as '[0] `sys/svc-ext/https-svc`'.

- Schema

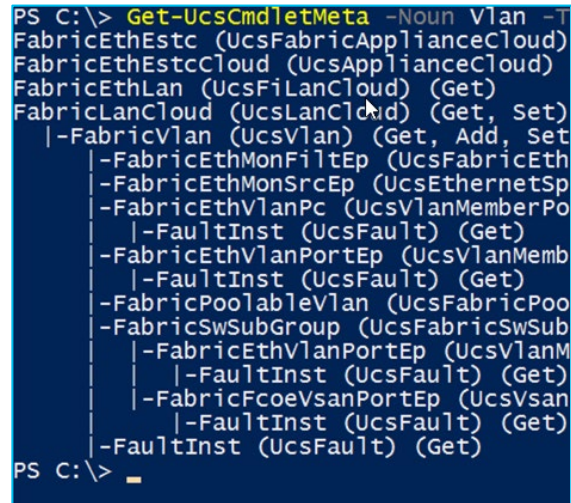


```
<xs:simpleType name="addressIPv4">
  <xs:restriction base="xs:string">
    <xs:minLength value="0"/>
    <xs:maxLength value="255"/>
    <xs:pattern value="(25[0-5]|2[0-4][0-9]
[01]?[0-9][0-9]?)\. (25[0-5]|2[0-4][0-9]|[01]?[0-9][0-9]
)</xs:restriction>
  </xs:simpleType>

<xs:simpleType name="enabledDisabled">
  <xs:restriction base="xs:string">
    <xs:enumeration value="enabled"/>
    <xs:enumeration value="disabled"/>
    <xs:enumeration value="Enabled"/>
    <xs:enumeration value="Disabled"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="syslogSeverity">
  <xs:restriction base="xs:string">
    <xs:enumeration value="emergency"/>
    <xs:enumeration value="alert"/>
    <xs:enumeration value="critical"/>
    <xs:enumeration value="error"/>
```

- Embedded



```
PS C:\> Get-UcsCmdletMeta -Noun Vlan -T
FabricEthEstc (UcsFabricApplianceCloud)
FabricEthEstcCloud (UcsApplianceCloud)
FabricEthLan (UcsFiLanCloud) (Get)
FabricLanCloud (UcsLanCloud) (Get, Set)
|-FabricVlan (UcsVlan) (Get, Add, Set)
  |-FabricEthMonFiltEp (UcsFabricEth
  |-FabricEthMonSrcEp (UcsEthernetSp
  |-FabricEthVlanPc (UcsVlanMemberPo
    |-FaultInst (UcsFault) (Get)
  |-FabricEthVlanPortEp (UcsVlanMemb
    |-FaultInst (UcsFault) (Get)
  |-FabricPoolableVlan (UcsFabricPoo
  |-FabricSwSubGroup (UcsFabricSwSub
    |-FabricEthVlanPortEp (UcsVlanM
      |-FaultInst (UcsFault) (Get)
    |-FabricFcoeVsanPortEp (UcsVsan
      |-FaultInst (UcsFault) (Get)
  |-FaultInst (UcsFault) (Get)
PS C:\>
```




Examples

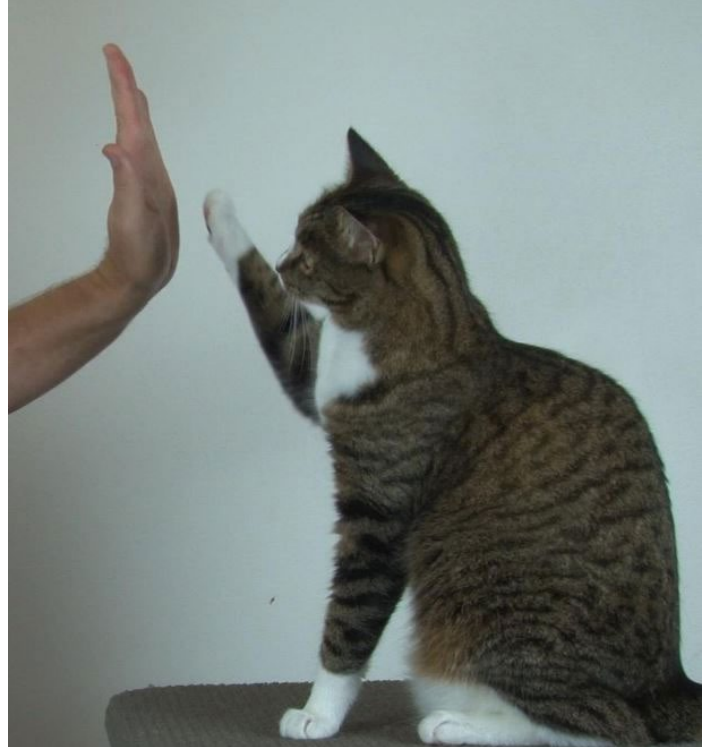
Does Every API Have Metadata?

Does Every API Have Metadata?

~~No~~ Yesn't

Does Every API Have Metadata?

- Ok Maybe there is some bit of Metadata
 - Docs
 - Examples
 - Webpage with object format
- Better APIs have Metadata Sources
 - Schema
 - Interactive API Docs
 - The Code Itself





Examples

Why do I care
about Metadata?

Why do I care about Metadata?

- Understand the API
- Dynamic Programming
- Less Code (maybe not)
- Better Code (probably)



Why Do I Care?

What Can I do with API Metadata?

What Can I do with API Metadata?

Understand the API

```
Administrator: Windows PowerShell
PS C:\>
PS C:\>
PS C:\> Get-UcsCmdletMeta -Noun Vlan

ClassId                : FabricVlan
Noun                   : UcsVlan
Verb                   : Get, Add, Set, Remove
PipelineClassId        : {FabricEthEstc, FabricEthEstcCloud, FabricEthLan, FabricLanCloud}
LimitScopePipelineClassId : {FabricEthEstcCloud, FabricLanCloud}
MoMeta                 : Cisco.Ucs.Core.UcsMoMeta

PS C:\> Get-UcsCmdletMeta -Noun Vlan -Tree
FabricEthEstc (UcsFabricApplianceCloud) (Get)
FabricEthEstcCloud (UcsApplianceCloud) (Get)
FabricEthLan (UcsFilerCloud) (Get)
FabricLanCloud (UcsLanCloud) (Get, Set)
|-FabricVlan (UcsVlan) (Get, Add, Set, Remove)
|   |-FabricEthMonFiltEp (UcsFabricEthMonFiltEp) (Get)
|   |-FabricEthMonSrcEp (UcsEthernetSpanSource) (Get, Add, Set, Remove)
|   |-FabricEthVlanPc (UcsVlanMemberPortChannel) (Get, Add, Set, Remove)
|   |   |-FaultInst (UcsFault) (Get)
|   |-FabricEthVlanPortEp (UcsVlanMemberPort) (Get, Add, Set, Remove)
|   |   |-FaultInst (UcsFault) (Get)
|   |-FabricPoolableVlan (UcsFabricPoolableVlan) (None)
|   |-FabricSwSubGroup (UcsFabricSwSubGroup) (None)
|   |   |-FabricEthVlanPortEp (UcsVlanMemberPort) (Get, Add, Set, Remove)
|   |   |   |-FaultInst (UcsFault) (Get)
|   |   |-FabricFcoeVsanPortEp (UcsVsanMemberFcoePort) (Get, Add, Set, Remove)
|   |       |-FaultInst (UcsFault) (Get)
|   |-FaultInst (UcsFault) (Get)
PS C:\>
```

What Can I do with API Metadata?

Dynamic Programming

```
Import-Module Cisco.UCSManager

# Get the Metadata
$mo_meta = Get-UcsCmdletMeta -Noun vlan

# Extract the Allowed Vlan Name pattern
$vlan_name_pattern = $mo_meta.MoMeta.PropertyMeta | `
    Where-Object{$_ .Name -eq "Name"} | `
    ForEach-Object{$_ .Restriction.Pattern}

# Extract the Allowed Vlan Ids
$vlan_id_ranges = $mo_meta.MoMeta.PropertyMeta | `
    Where-Object{$_ .Name -eq "Id"} | `
    ForEach-Object{$_ .Restriction.Range}

" `n"
"Vlan Name and Id Restrictions"
"Vlan Name Pattern: " + $vlan_name_pattern
"Vlan Id Allowed Range: " + $vlan_id_ranges
```

What Can I do with API Metadata?

Dynamic Programming

```
"Entered Vlan Name and Id"
"Entered Vlan Name: " + $vlanName
"Entered Vlan Name Length: " + $vlanName.Length
"Entered Vlan Id: " + $vlanId

if ($vlanName -notmatch "^"+$vlan_name_pattern+"$") {
    throw "$vlanName is not a valid Vlan Name - enter a name that matches this regular expression " + $vlan_name_pattern
}

# Empty array
$vlan_ids = @()

# Check for allowed Vlan Id build a list of valid ids and check if id is in list
foreach($vlan_id_range in $vlan_id_ranges) {
    $vlan_id_range
    $vlan_ids += $([int]$vlan_id_range.Split('-')[0]..[int]$vlan_id_range.Split('-')[1])
}

if ($vlanId -notin $vlan_ids) {
    throw "$vlanId is not a valid Vlan Id - enter an Id that is in the allowed range " + $vlan_id_ranges
}
```

Conclusion

Got Questions? Come find me!

 jomcdono@cisco.com

 @johnamcdonough

 <http://github.com/movinalot>

 @CiscoDevNet

 facebook.com/ciscocodevnet

 <http://github.com/CiscoDevNet>



Complete your online session survey



- Please complete your session survey after each session. Your feedback is very important.
- Complete a minimum of 4 session surveys and the Overall Conference survey (starting on Thursday) to receive your Cisco Live t-shirt.
- All surveys can be taken in the Cisco Events Mobile App or by logging in to the Content Catalog on ciscolive.com/emea.

Cisco Live sessions will be available for viewing on demand after the event at ciscolive.com.

Continue your education



Demos in the
Cisco Showcase



Walk-In Labs



Meet the Engineer
1:1 meetings



Related sessions



Thank you





You make **possible**