Interface IP Configuration Requirements

- Resource Summary for IP Interface
- Interface Resources
- Interface State
- Interface Statistics

### Resource Summary for IP Interface

<table>
<thead>
<tr>
<th>Resource</th>
<th>URL (BaseURL)</th>
<th>HTTP Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td>/api/v1/interfaces</td>
<td>GET Y, POST Y, PUT N, DELETE N</td>
</tr>
<tr>
<td></td>
<td>/api/v1/interfaces/{if-id}¹</td>
<td>GET Y, POST N, PUT Y, DELETE Y*</td>
</tr>
<tr>
<td>Interface Statistics</td>
<td>/api/v1/interfaces/{if-id}/statistics</td>
<td>GET Y, POST Y, PUT N, DELETE N</td>
</tr>
<tr>
<td>Interface State</td>
<td>/api/v1/interfaces/{if-id}/state</td>
<td>GET Y, POST N, PUT Y, DELETE N</td>
</tr>
</tbody>
</table>

¹. {if-id} = Interface ID returned from the REST API used to create the interface.
# Interface Resources

## History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOS XE 3.10</td>
<td>Introduced for the CSR1000V platform</td>
</tr>
<tr>
<td>IOS XE 3.11</td>
<td>Added the following properties:</td>
</tr>
<tr>
<td></td>
<td>• icmp-redirects</td>
</tr>
<tr>
<td></td>
<td>• icmp-unreachable</td>
</tr>
<tr>
<td></td>
<td>• proxy-arp</td>
</tr>
<tr>
<td></td>
<td>• verify-unicast-source</td>
</tr>
<tr>
<td></td>
<td>• subinterface-vlan (includes sub-properties described below)</td>
</tr>
<tr>
<td>IOS XE 3.13</td>
<td>Enhanced interface API for BDI support: Added a new interface type: &quot;bdi&quot;</td>
</tr>
<tr>
<td>IOS XE 3.14</td>
<td>Introduced for ASR1001-X and ASR1002-X platforms</td>
</tr>
</tbody>
</table>

## Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Type</th>
<th>Required for POST and PUT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>Not applicable</td>
<td>Object type. Has the fixed value &quot;object#interface&quot;</td>
</tr>
<tr>
<td>type</td>
<td>string</td>
<td>Mandatory</td>
<td>Interface type. Read-only</td>
</tr>
<tr>
<td>if-name</td>
<td>string</td>
<td>Mandatory</td>
<td>Interface name. Note that the name follows the usual IOS slot/port convention.</td>
</tr>
<tr>
<td>description</td>
<td>string</td>
<td>Optional</td>
<td>Interface Description</td>
</tr>
<tr>
<td>ip-address</td>
<td>ip-address</td>
<td>Mandatory</td>
<td>IP address in the format x.x.x.x</td>
</tr>
<tr>
<td>subnet-mask</td>
<td>ipsubnet</td>
<td>Mandatory</td>
<td>Subnet mask in the format x.x.x.x</td>
</tr>
<tr>
<td>nat-direction</td>
<td>string</td>
<td>Mandatory</td>
<td>Indicates if the interface is viewed as &quot;inside&quot; or &quot;outside&quot; from NAT point of view.</td>
</tr>
<tr>
<td>icmp-redirects</td>
<td>boolean</td>
<td>Optional</td>
<td>ICMP Redirects</td>
</tr>
<tr>
<td>icmp-unreachable</td>
<td>boolean</td>
<td>Optional</td>
<td>ICMP Unreachable</td>
</tr>
<tr>
<td>proxy-arp</td>
<td>boolean</td>
<td>Optional</td>
<td>Proxy Arp, enabled or disabled</td>
</tr>
<tr>
<td>verify-unicast-source</td>
<td>boolean</td>
<td>Optional</td>
<td>Unicast Source Address Verification enabled or disabled</td>
</tr>
</tbody>
</table>
# Interface Resources

## JSON Representation

```
{
    "if-name": "string",
    "type": "string",
    "ip-address": "string",
    "subnet-mask": "string",
    "description": "string",
    "nat-direction": "string",
    "icmp-redirects": "boolean",
    "icmp-unreachable": "boolean",
    "proxy-arp": "boolean",
    "verify-unicast-source": "boolean",
    "subinterface-vlan": {
        "encap-type": "string",
        "vlan-id": "number",
        "encapsulated-vlan": "string",
    },
}
```

## Property Details

<table>
<thead>
<tr>
<th>Property</th>
<th>Type</th>
<th>Required for POST and PUT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>subinterface-vlan</td>
<td>object</td>
<td>Optional</td>
<td>This property is only used by a sub-interface; a full interface does not have this property. Includes three sub-properties: encap-type, vlan-id, encapsulated-vlan</td>
</tr>
<tr>
<td>encap-type</td>
<td>string</td>
<td>Optional</td>
<td>(sub-property of subinterface-vlan) Possible values: • DOT1Q • QINQ</td>
</tr>
<tr>
<td>vlan-id</td>
<td>number</td>
<td>Mandatory</td>
<td>(sub-property of subinterface-vlan) vlan-id. Possible values: 1 to 4094</td>
</tr>
<tr>
<td>encapsulated-vlan</td>
<td>string</td>
<td>Optional</td>
<td>(sub-property of subinterface-vlan) Used in QINQ subinterface configuration to specify the second vlan-id. Possible values: are 1 to 4094 as a numerical string.</td>
</tr>
</tbody>
</table>
Examples Demonstrating Use of Interface ID

Examples Using Interface ID

Resource URI

<table>
<thead>
<tr>
<th>Verb</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>[GET PUT]</td>
<td>/api/v1/interfaces/{if-id}</td>
</tr>
</tbody>
</table>

Example 1: Creating a Loopback Interface

The following example is for a logical Ethernet network interface, and creates a loopback interface.

```json
{
    "type": "{string}",
    "if-name": "{interface-name}",
    "description": "loopback",
    "ip-address": "170.15.15.11",
    "subnet-mask": "255.255.255.0",
    "nat-direction": ""
}
```

Note

POST /api/v1/ is available only for loopback. Cisco IOS XE 3.10 does not support POST /api/v1/ on a sub-interface.

Example 2: Retrieving an Interface

JSON Request

GET /api/v1/gigabitEthernet1
Accept: application/json

JSON Response

200 OK
Content-Type: application/json

```json
{
    "kind" : "object#",
    "type" : "ethernet",
    "if-name" : "gigabitEthernet1",
    "description" : "outside",
    "ip-address" : "172.15.15.15",
    "subnet-mask" : "255.255.254.0",
    "nat-direction" : "outside",
    "icmp-redirects" : true,
    "icmp-unreachable" : true,
    "proxy-arp" : true,
    "verify-unicast-source": true
}
```
Example 3: Modifying an Interface

**JSON Request**

PUT /api/v1/gigabitEthernet1
Content-Type: application/json

{
  "type" : "ethernet",
  "if-name" : "gigabitEthernet1",
  "description" : "outside",
  "ip-address" : "172.15.15.16",
  "subnet-mask" : "255.255.254.0",
  "nat-direction" : "outside",
  "icmp-redirects" : true,
  "icmp-unreachable" : true,
  "proxy-arp" : true,
  "verify-unicast-source" : true
}

**JSON Response**

204 No Content

Examples Without Interface ID

**Resource URI**

<table>
<thead>
<tr>
<th>Verb</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>[GET POST]</td>
<td>/api/v1/interfaces</td>
</tr>
</tbody>
</table>

**Example: GET**

**JSON Request**

GET /api/v1/interfaces
Accept: application/json

**JSON Response**

200 OK
Content-Type: application/json

{  
  "kind" : "collection#interface",
  "items": [  
    {  
      "kind" : "object#",
      "type" : "ethernet",
      "if-name" : "gigabitEthernet1",
      "description" : "outside",
      "ip-address" : "172.15.15.15",
      "subnet-mask" : "255.255.254.0",
      "nat-direction" : "outside",
      "icmp-redirects" : true,
      "icmp-unreachable" : true,
    }
  ]
}
"proxy-arp" : true,
"verify-unicast-source" : true
}
]

Example: POST

JSON Request

POST /api/v1/
Content-Type: application/json

{
    "type" : "loopback",
    "if-name" : "loopback1",
    "description" : "outside",
    "ip-address" : "172.15.15.16",
    "subnet-mask" : "255.255.254.0",
    "nat-direction" : "outside",
    "icmp-redirects" : true,
    "icmp-unreachable" : true,
    "proxy-arp" : true,
    "verify-unicast-source" : true
}

JSON Response

201 Created
Location: https://host/api/v1/interfaces/loopback1

Retrieve Interface Details

Resource URI

<table>
<thead>
<tr>
<th>Verb</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET</td>
<td>/api/v1/interfaces/{if-id}</td>
</tr>
</tbody>
</table>

Example 1: Retrieve Interface Details

JSON Request

GET /api/v1/interfaces/gigabitEthernet1
Accept: application/json

JSON Response

200 OK

Content-Type: application/json

{  
    "kind" : "object#interface",
    "type" : "ethernet",
    "if-name" : "gigabitEthernet1",
    "description" : "outside interface",
    "ip-address" : "172.15.15.15",
}
Chapter 7  Interface IP Configuration Requirements

Example 2: Retrieve Sub-interface Details

Note
Available in Cisco IOS XE 3.11 and later

JSON Request
GET /api/v1/interfaces/GigabitEthernet2.23
Accept: application/json

JSON Response
200 OK
Content-Type: application/json

{
    "kind": "object#interface",
    "description": "",
    "if-name": "GigabitEthernet2.23",
    "proxy-arp": true,
    "subnet-mask": "255.255.255.0",
    "icmp-unreachable": true,
    "nat-direction": "",
    "icmp-redirects": true,
    "ip-address": "22.10.10.23",
    "subinterface-vlan": {
        "vlan-id": 23,
        "encap-type": "DOT1Q"
    },
    "type": "ethernet",
    "verify-unicast-source": false
}

Retrieve All Interfaces and Details

Resource URI

<table>
<thead>
<tr>
<th>Verb</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET</td>
<td>/api/v1/interfaces</td>
</tr>
</tbody>
</table>

Properties for Retrieve All

<table>
<thead>
<tr>
<th>Property</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>Object type. Has fixed value &quot;collection#interface&quot;</td>
</tr>
<tr>
<td>items</td>
<td>array</td>
<td>Array of interface objects</td>
</tr>
</tbody>
</table>
Example

**JSON Request**

GET /api/v1/interfaces

Accept: application/json

**JSON Response**

```
200 OK

Content-Type: application/json

{
  "kind": "collection#interface",
  "items": [
    {
      "kind": "object#interface",
      "type": "ethernet",
      "if-name": "gigabitEthernet1",
      "description": "management interface",
      "ip-address": "129.10.10.10",
      "subnet-mask": "255.255.254.0"
    },
    {
      "kind": "object#interface",
      "type": "ethernet",
      "if-name": "gigabitEthernet2",
      "description": "outside interface",
      "ip-address": "172.15.15.15",
      "subnet-mask": "255.255.254.0",
      "nat-direction": "outside"
    },
    {
      "kind": "object#interface",
      "type": "ethernet",
      "if-name": "gigabitEthernet3",
      "description": "inside interface",
      "ip-address": "10.10.10.15",
      "subnet-mask": "255.255.254.0",
      "nat-direction": "inside"
    }
  ]
}
```

**Modify an Interface Configuration**

**Resource URI**

<table>
<thead>
<tr>
<th>Verb</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUT</td>
<td>/api/v1/interfaces/{if-id}</td>
</tr>
</tbody>
</table>
Example 1: Changing the IP-address from 172.15.15.15 to 172.15.15.16

**JSON Request**

PUT /api/v1/interfaces/gigabitEthernet1

Content-Type: application/json

```
{
    "type"          : "ethernet",
    "if-name"       : "gigabitEthernet1",
    "description"   : "outside interface",
    "ip-address"    : "172.15.15.16",
    "subnet-mask"   : "255.255.254.0",
    "nat-direction" : "outside"
}
```

**JSON Response**

204 No Content

Example 2: Modify VLAN IDs (Example Includes Sub-interface Property)

**JSON Request**

PUT /api/v1/interfaces/GigabitEthernet2.23

Content-Type: application/json

```
{
    "subinterface-vlan": {"vlan-id":230},
    "if-name": "GigabitEthernet2.23",
    "subnet-mask": "255.255.255.0",
    "ip-address": "22.10.10.23",
    "type": "ethernet"
}
```

**JSON Response**

204 No Content

Create an Interface

Enables:

- Creating a loopback or sub-interface and IP address
  - The loopback or sub-interface cannot be on the same network as a physical interface.
  - After a loopback interface is configured, a router-id can be generated from it.
- Changing properties of a physical interface

If the if-name in the HTTP POST body has a dash (for example, myintf-0), the API controller code would add another dash to the if-name to make an if-id (for example, myintf--0). The if-name with one dash should be passed to the 1-P API calls.

**Resource URI**

<table>
<thead>
<tr>
<th>Verb</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>POST</td>
<td>/api/v1/interfaces</td>
</tr>
</tbody>
</table>
Example 1: Create a Loopback Interface

JSON Request
POST /api/v1/interfaces
Accept: application/json

Content-Type: application/json

```
{
  "type": "loopback",
  "if-name": "loopback11",
  "description": "loopback",
  "ip-address": "170.15.15.11",
  "subnet-mask": "255.255.255.0",
  "nat-direction": ""
}
```

JSON Response: Returning the Interface ID
201 Created
Location: http://host/api/v1/interfaces/loopback11_ifid

Example 2: Create a Sub-interface

Note
Available in Cisco IOS XE 3.11 and later

JSON Request
POST /api/v1/interfaces
Content-Type: application/json

```
{
  "subinterface-vlan": {"vlan-id":23},
  "if-name": "GigabitEthernet2.23",
  "subnet-mask": "255.255.255.0",
  "ip-address": "22.10.10.23",
  "type": "ethernet"
}
```

JSON Response
201 Created
Location: https://host/api/v1/interfaces/GigabitEthernet2.23

Delete an Interface

Resource URI

<table>
<thead>
<tr>
<th>Verb</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELETE</td>
<td>/api/v1/interfaces/{if-id}</td>
</tr>
</tbody>
</table>
Example 1: Delete an Interface

**JSON Request**
DELETE /api/v1/interfaces/11

**JSON Response**
204 No Content

Example 2: Delete a Sub-interface

**Note**
Available in Cisco IOS XE 3.11 and later

**JSON Request**
DELETE /api/v1/interfaces/GigabitEthernet2.23

**JSON Response**
204 No Content

## Interface State

### History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOS XE 3.10</td>
<td>Introduced for the CSR1000V platform</td>
</tr>
<tr>
<td>IOS XE 3.14</td>
<td>Introduced for ASR1001-X and ASR1002-X platforms</td>
</tr>
</tbody>
</table>

### Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Type</th>
<th>Required for POST and PUT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>Not applicable</td>
<td>Object type. Has the fixed value &quot;object#interface-state&quot;</td>
</tr>
<tr>
<td>if-name</td>
<td>string</td>
<td>Mandatory</td>
<td>Interface Name. Read-only</td>
</tr>
<tr>
<td>enabled</td>
<td>boolean</td>
<td>Mandatory</td>
<td>Enables (up) or Disables (down) interface</td>
</tr>
</tbody>
</table>
# Retrieve Interface State

## Resource URI

<table>
<thead>
<tr>
<th>Verb</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET</td>
<td>/api/v1/interfaces/{if-id}/state</td>
</tr>
</tbody>
</table>

## Example

**JSON Request**

GET /api/v1/interfaces/gigabitEthernet1/state

Accept: application/json

**JSON Response**

200 OK

Content-Type: application/json
Accept: application/json

```
{
    "kind"    : "object#interface-state",
    "if-name" : "gigabitEthernet1",
    "enabled" : true
}
```

# Bring an Interface Up or Down

## Resource URI

<table>
<thead>
<tr>
<th>Verb</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUT</td>
<td>/api/v1/interfaces/{if-id}/state</td>
</tr>
</tbody>
</table>

## Example: "no shut" GigabitEthernet1

**JSON Request**

PUT /api/v1/interfaces/gigabitEthernet1/state

Content-Type: application/json
Accept: application/json

```
{
    "if-name" : "gigabitEthernet1",
    "enabled" : true
}
```
## Interface Statistics

### History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>IOS XE 3.14</td>
<td>Introduced for ASR1001-X and ASR1002-X platforms</td>
</tr>
</tbody>
</table>

### Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>Object type. Has the fixed value &quot;object#interface-statistics&quot;</td>
</tr>
<tr>
<td>if-name</td>
<td>string</td>
<td>Interface Name. Read-only</td>
</tr>
<tr>
<td>in-errors</td>
<td>number</td>
<td>Sum of all input related errors</td>
</tr>
<tr>
<td>in-packet-drops</td>
<td>number</td>
<td>Input packet drop count is caused when the input queue is full.</td>
</tr>
<tr>
<td>in-current-packets</td>
<td>number</td>
<td>Total packets received since the last reset of statistics</td>
</tr>
<tr>
<td>in-packet-rate-bps</td>
<td>number</td>
<td>Input packet receive rate in bytes per second</td>
</tr>
<tr>
<td>in-packet-rate-pps</td>
<td>number</td>
<td>Input packet receive rate in packets per second</td>
</tr>
<tr>
<td>out-errors</td>
<td>number</td>
<td>Sum of all output related errors</td>
</tr>
<tr>
<td>out-packet-drops</td>
<td>number</td>
<td>Output packet drop count is caused when the output queue is full.</td>
</tr>
<tr>
<td>out-current-packets</td>
<td>number</td>
<td>Total packets transmitted since the last statistics</td>
</tr>
<tr>
<td>out-packet-rate-bps</td>
<td>number</td>
<td>Output packet transmit rate in bytes per second</td>
</tr>
<tr>
<td>out-packet-rate-pps</td>
<td>number</td>
<td>Output packet transmit rate in packets per second</td>
</tr>
</tbody>
</table>

### Retrieve Interface Statistics

#### Resource URI

<table>
<thead>
<tr>
<th>Verb</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>GET</td>
<td>/api/v1/interfaces/{if-id}/statistics</td>
</tr>
</tbody>
</table>
Example

**JSON Request**
GET /api/v1/interfaces/gigabitEthernet1/statistics

Accept: application/json

**JSON Response**
200 OK
Content-Type: application/json

```json
{
    "kind" : "object#interface-statistics",
    "if-name" : "gigabitEthernet1",
    "in-errors" : 0,
    "in-packet-drops" : 0,
    "in-current-packets" : 17,
    "in-packet-rate-bps" : 0,
    "in-packet-rate-pps" : 0,
    "out-errors" : 0,
    "out-packet-drops" : 0,
    "out-current-packets" : 0,
    "out-packet-rate-bps" : 0,
    "out-packet-rate-pps" : 0
}
```

Clear Interface Statistics

This resource also supports clearing of interface statistics by doing a POST on the resource with the following request message. See Resource specific operations for more details & examples.

Example

**JSON Request**
POST /api/v1/interfaces/statistics

Content-Type: application/json
Accept: application/json

```json
{
    "action" : "clear"
}
```

**JSON Response**
204 No Content