



Network Address Translation (NAT)

- [Resource Summary for NAT](#)
- [NAT Pool Resource](#)
- [Static NAT Rule Resource](#)
- [Dynamic NAT Rule Resource](#)
- [NAT Translations Resource](#)

Resource Summary for NAT

The attribute “pat” (port address translation) in the REST API is equivalent to the Cisco IOS NAT term “overload”.

Resource	URL (BaseURL)	HTTP Method			
		GET	POST	PUT	DELETE
NAT pool	/api/v1/nat-svc/pool	Y	Y	N	N
	/api/v1/nat-svc/pool/{nat-pool-id}	Y	N	Y	Y
Static NAT	/api/v1/nat-svc/static	Y	Y	N	N
	/api/v1/nat-svc/static/{nat-rule-id}	Y	N	Y	Y
Dynamic NAT	/api/v1/nat-svc/dynamic	Y	Y	N	N
	/api/v1/nat-svc/dynamic/{nat-rule-id}	Y	N	Y	Y
NAT translations	/api/v1/nat-svc/translations	Y	Y	N	N

NAT Pool Resource

A NAT Pool models a pool of global IP addresses used during dynamic NAT translation.

History

Release	Modification
IOS XE 3.10	Introduced for the CSR1000V platform
IOS XE 3.14	Introduced for ASR1001-X and ASR1002-X platforms

Properties

Property	Type	Required for POST and PUT	Description
nat-pool-id	string	Mandatory	Unique NAT pool name.
start-ip-address	string	Mandatory	First IP address of public IP address range in the format x.x.x.x
end-ip-address	string	Mandatory	Last IP address of public IP address range in the format x.x.x.x
prefix-length	number	Mandatory	IP Address prefix length

Retrieve a NAT Pool

Resource URI

Verb	URI
GET	/api/v1/nat-svc/pool/{nat-pool-id}

Properties for Retrieve

Property	Type	Description
kind	string	Object type. Always “object#nat-pool”
nat-pool-id	string	Unique NAT pool name.
start-ip-address	string	First IP address of public IP address range in the format x.x.x.x
end-ip-address	string	Last IP address of public IP address range in the format x.x.x.x
prefix-length	number	IP Address prefix length

Example

JSON Request

```
GET /api/v1/nat-svc/pool/marketing-nat-pool
```

```
Accept: application/json
```

JSON Response

```
200 ok
```

```
Content-type: application/json
```

```
{
  "kind": "object#nat-pool"
  "nat-pool-id": "marketing-nat-pool",
  "start-ip-address": "172.16.10.1",
  "end-ip-address": "172.16.10.63",
  "prefix-length": 24
}
```

Retrieve All NAT Pools

Resource URI

Verb	URI
GET	/api/v1/nat-svc/pool

Properties for Retrieve All

Property	Type	Description
kind	string	Object type. Always “collection#nat-pool”
items	array	Collection of NAT pools.
nat-pool-id	string	Unique NAT pool name.
start-ip-address	string	First IP address of public IP address range in the format x.x.x.x
end-ip-address	string	Last IP address of public IP address range in the format x.x.x.x
prefix-length	number	IP Address prefix length

Example

JSON Request

```
GET /api/v1/nat-svc/pool
Accept: application/json
```

JSON Response

```
200 ok
```

```
Content-type: application/json
```

```
{
  "kind": "collection#nat-pool"
  "items": [
```

```

    {
      "kind": "object#nat-pool",
      "nat-pool-id": "marketing",
      "start-ip-address": "172.16.10.1",
      "end-ip-address": "172.16.10.63",
      "prefix-length": 24
    },
    {
      "kind": "object#nat-pool",
      "nat-pool-id": "engineering",
      "start-ip-address": "172.16.10.63",
      "end-ip-address": "172.16.10.100",
      "prefix-length": 24
    }
  ]

```

Modify a NAT Pool

When updating the NAT pool, the old pool is deleted and a new NAT pool is created with the same pool-id, using new parameters.

Resource URI

Verb	URI
PUT	/api/v1/nat-svc/pool/{nat-pool-id}

Example

JSON Request

```
PUT /api/v1/nat-svc/pool/marketing-nat-pool
```

```
Accept: application/json
Content-type: application/json
```

```

{
  "nat-pool-id": "marketing-nat-pool",
  "start-ip-address": "172.16.10.1",
  "end-ip-address": "172.16.10.57",
  "prefix-length": 24
}

```

JSON Response

```
204 No Content
```

Delete a NAT Pool

Resource URI

Verb	URI
DELETE	/api/v1/nat-svc/pool/{nat-pool-id}

Example

JSON Request

```
DELETE /api/v1/nat-svc/pool/marketing-nat-pool
Accept: application/json
```

JSON Response

```
204 No Content
```

Create a NAT Pool

Resource URI

Verb	URI
POST	/api/v1/nat-svc/pool

Example

JSON Request

```
POST /api/v1/nat-svc/pool
Content-type: application/json
Accept: application/json
```

```
{
  "nat-pool-id": "marketing-nat-pool",
  "start-ip-address": "172.16.10.1",
  "end-ip-address": "172.16.10.63",
  "prefix-length": 24
}
```

JSON Response

```
201 Created
Location: http://host/api/v1/nat-svc/pool/marketing-nat-pool
```

Static NAT Rule Resource

A static NAT resource models static address translation where there is a one-to-one mapping between local and global IP addresses.

There are three types of one-to-one mapping NAT: static NAT, port static NAT, and network static NAT.

History

Release	Modification
IOS XE 3.10	Introduced for the CSR1000V platform
IOS XE 3.14	Introduced for ASR1001-X and ASR1002-X platforms

Properties

Property	Type	Description
kind	string	Object type. Always “nat-static-rule”
nat-rule-id	string	Unique NAT rule id
mode	string	Indicates the source/destination IP field and the direction of traffic to apply NAT to. Allowed values are: “inside-source” and “outside-source”. <ul style="list-style-type: none"> “inside-source” refers to translating the source IP address for packets that enter the router from the inside interface, or to translating the destination address for packets that enter the router from the outside interface. “outside-source” refers to translating the source IP address for packets that enter the router through the outside interface, or to translating the destination IP address of packets that enter the router from the inside interface. “mode” is optional for ip-network-mapping as the mode can only be “inside-source”.
ip-mapping	object	Specifies IP address based static NAT mapping. Mutually exclusive with ip-port-mapping and network-nat-mapping
ip-mapping-local-ip	ipaddress	Local IP address assigned to host on the inside network. Specified in the format x.x.x.x
ip-mapping-global-ip	ipaddress	Establishes the globally unique IP address of an inside host as it appears to outside world. Specified in the x.x.x.x format
ip-port-mapping	object	Specifies IP address based static NAT mapping. Mutually exclusive with ip-port-mapping and network-nat-mapping.
ip-port-mapping-local-ip	ipaddress	Local IP address assigned to host on the inside network. Specified in the format x.x.x.x
ip-port-mapping-global-ip	ipaddress	Establishes the globally unique IP address of an inside host as it appears to outside world. Specified in the x.x.x.x format
ip-port-mapping-protocol	ipaddress	Protocol used. One of “TCP” or “UDP”. If protocol is not used, this property can be absent.

Property	Type	Description
ip-port-mapping-local-port	number	Local IP address assigned to host on the inside network. Specified in the format x.x.x.x
ip-port-mapping-global-port	number	Global TCP/UDP port in the range 1-65535. Mandatory when local-port is used
ip-network-mapping	object	Specifies the subnet/network based static NAT translation
ip-network-mapping-local-network	string	Specifies the local subnet translation.
ip-network-mapping-global-network	string	Specifies the global subnet translations.
ip-network-mapping-mask	string	Specifies the IP network mask to be used with subnet translations.

Retrieve a Static NAT Rule

Resource URI

Verb	URI
GET	/api/v1/nat-svc/static/{nat-pool-id}

Example

JSON Request

```
GET /api/v1/nat-svc/static/eng-nat
Accept: application/json
```

JSON Response of a Static NAT

```
200 OK

Content-Type: application/json
{
  "kind": "object#nat-static-rule",
  "nat-rule-id" : "eng-nat",
  "mode": "inside-source",
  "ip-mapping": {
    "local-ip" : "172.16.50.8",
    "global-ip" : "172.16.10.8"
  }
}
```

JSON Response of a Port Static NAT Rule

```
200 OK

Content-Type: application/json
{
  "kind": "object#nat-static-rule",
  "nat-rule-id" : "eng-nat",
  "mode": "inside-source",
  "ip-port-mapping":{
```

```

    "protocol":      "tcp",
    "local-ip" :    "172.16.10.8",
    "local-port":   8080,
    "global-ip" :   "172.16.10.8",
    "global-port":  80
  }
}

```

JSON Response of a Network Static NAT

200 OK

```

Content-Type: application/json
{
  "kind":      "object#nat-static-rule",
  "nat-rule-id" :  "eng-nat",
  "mode":      "outside-source",
  "ip-network-mapping":{
    "local-network": "10.10.10.0",
    "global-network": "172.19.32.0",
    "mask": "255.255.255.0"
  }
}

```

Retrieve All Static NAT Rules

Resource URI

Verb	URI
GET	/api/v1/nat-svc/static

Properties for Retrieve All

Property	Type	Required for POST and PUT	Description
kind	string	Not applicable	Object type. Always "collection#nat-static-rule"
items	array	Mandatory	Collection of static NAT rules with objects of type "object#nat-static-rule"
nat-rule-id	string	Mandatory	Unique NAT rule id

Property	Type	Required for POST and PUT	Description
mode	string	Mandatory	Indicates the source/destination IP field and the direction of traffic to apply NAT to. Allowed values are: “inside-source” and “outside-source”. “inside-source” refers to translating source address for packets that enter router through inside . “outside-source” refers to translating source address for packets that enter router through outside.
ip-mapping	object	Mandatory	Specifies IP address based static NAT mapping. Mutually exclusive with ip-port-mapping and network-nat-mapping.
ip-mapping-local-ip	ipaddress	Mandatory	Local IP address assigned to host on the inside network. Specified in the format x.x.x.x.
ip-mapping-global-ip	ipaddress	Mandatory	Establishes the globally unique IP address of an inside host as it appears to outside world. Specified in the x.x.x.x format.
ip-port-mapping	object	Mandatory	Specifies IP address based static NAT mapping. Mutually exclusive with ip-port-mapping and network-nat-mapping.
ip-port-mapping-local-ip	ipaddress	Mandatory	Local IP address assigned to host on the inside network. Specified in the format x.x.x.x
ip-port-mapping-global-ip	ipaddress	Mandatory	Establishes the globally unique IP address of an inside host as it appears to outside world. Specified in the x.x.x.x format
ip-port-mapping-protocol	ipaddress	Mandatory	Protocol used. One of “TCP” or “UDP”. If protocol is not used, this property can be absent.
ip-port-mapping-local-port	number	Mandatory	Local IP address assigned to host on the inside network. Specified in the format x.x.x.x
ip-port-mapping-global-port	number	Mandatory when local-port is used	Global TCP/UDP port in the range 1-65535.
ip-network-mapping	object	Mandatory	Specifies the subnet/network based static NAT translation
ip-network-mapping-local-network	string	Mandatory	Specifies the local subnet translation.

Property	Type	Required for POST and PUT	Description
ip-network-mapping-global-network	N/A	Mandatory	Specifies the global subnet translations.
ip-network-mapping-mask	string	Mandatory	Specifies the IP network mask to be used with subnet translations.

JSON Representation

```
{
  "kind": "object#nat-static-rule",
  "nat-rule-id" : "{string}",
  "mode": "{string}",
  "ip-mapping": {
    "local-ip" : "{ipaddress}",
    "global-ip" : "{ipaddress}"
  },
  "ip-port-mapping":{
    "protocol" : "{string}",

    "local-ip" : "{ipaddress}",
    "local-port": {number},

    "global-ip" : "{ipaddress}",
    "global-port": {number}
  },

  "ip-network-mapping":{
    "local-network": "{string}",
    "global-network": "{string}",
    "mask": "{string}"
  }
}
```

Example

JSON Request

```
GET /api/v1/nat-svc/static
Accept: application/json
```

JSON Response

```
200 ok

Content-type: application/json

{
  "kind": "collection#nat-static-rule,
  "items": [
    {
      "kind": "object#nat-static-rule",
      "nat-rule-id" : "eng-nat",
      "mode": "inside-source",
      "ip-mapping": {
        "local-ip" : "172.16.50.8",
        "global-ip": "172.15.15.1"
      }
    }
  ]
}
```

```

    },
    {
      "kind":          "object#nat-static-rule",
      "nat-rule-id" :  "doc-nat",
      "mode":          "inside-source",
      "ip-port-mapping":{
        "protocol": "tcp",
        "local-ip" : "172.16.10.7",
        "local-port": 8080,
        "global-ip" : "172.16.10.8",
        "global-port":80
      }
    },
    {
      "kind":          "object#nat-static-rule",
      "nat-rule-id" :  "finance-nat",
      "mode":          "outside-source",
      "ip-network-mapping":{
        "local-network": "10.10.20.0",
        "global-network": "172.19.32.0",
        "mask": "255.255.255.0"
      }
    }
  ]
}

```

Modify a Static NAT Rule

Resource URI

Verb	URI
PUT	/api/v1/nat-svc/static/{nat-pool-id}

Example Request of a Static NAT Rule

JSON Request

```
PUT /api/v1/nat-svc/static/eng-nat
```

```
Content-type: application/json
```

```
Accept: application/json
```

```

{
  "nat-rule-id" :  "eng-nat",
  "mode":          "inside-source",
  "ip-mapping": {
    "local-ip" :      "172.16.50.8",
    "global-ip" :     "172.15.15.1"
  }
}

```

Example Request of a Port Static NAT Rule

JSON Request

```

{
  "kind":          "object#nat-static-rule",

```

```

"nat-rule-id" : "doc-nat",
"mode":       "inside-source",
"ip-port-mapping": {
  "protocol":  "tcp",
  "local-ip" : "172.16.10.7",
  "local-port": 8080,
  "global-ip" : "172.16.10.8",
  "global-port": 80
}
}

```

Example Request of a Network Static NAT

JSON Request

```

{
  "kind": "object#nat-static-rule",
  "nat-rule-id" : "finance-nat",
  "mode": "outside-source",
  "ip-network-mapping": {
    "local-network": "10.10.20.0",
    "global-network": "172.19.32.0",
    "mask": "255.255.255.0"
  }
}

```

JSON Response

204 No Content

Delete a Static NAT Rule

Resource URI

Verb	URI
DELETE	/api/v1/nat-svc/static/{nat-pool-id}

Example

JSON Request

```

DELETE /api/v1/nat-svc/static/marketing-nat-pool
Accept: application/json

```

JSON Response

204 No Content

Create a Static NAT Rule

Resource URI

Verb	URI
POST	/api/v1/nat-svc/static

Example Request of a Static NAT Rule

JSON Request

```
POST /api/v1/nat-svc/static

Content-type: application/json
Accept: application/json

{
  "nat-rule-id" : "eng-nat",
  "mode": "inside-source",
  "ip-mapping": {
    "local-ip" : "172.16.50.8",
    "global-ip" : "172.15.15.1"
  }
}
```

Example Request of a Port Static NAT Rule

JSON Request

```
POST /api/v1/nat-svc/static

Content-type: application/json
Accept: application/json

{
  "nat-rule-id" : "doc-nat",
  "mode": "inside-source",
  "ip-port-mapping":{
    "protocol": "tcp",
    "local-ip" : "172.16.10.7",
    "local-port": 8080,
    "global-ip" : "172.16.10.8",
    "global-port": 80
  }
}
```

Example Request of a Network Static NAT

JSON Request

```
POST /api/v1/nat-svc/static

Content-type: application/json
Accept: application/json

{
  "nat-rule-id" : "finance-nat",
  "mode": "outside-source",
}
```

```

    "ip-network-mapping":{
      "local-network": "10.10.20.0",
      "global-network": "172.19.32.0",
      "mask": "255.255.255.0"
    }
  }
}

```

JSON Response

201 Created

Location: <http://host/api/v1/nat-svc/static/finance-nat>

Dynamic NAT Rule Resource

Packets with source and/or destination addresses that pass the access list are dynamically translated using global addresses from the named pool.

History

Release	Modification
IOS XE 3.10	Introduced for the CSR1000V platform
IOS XE 3.14	Introduced for ASR1001-X and ASR1002-X platforms

Properties

Property	Type	Required for POST and PUT	Description
kind	string	Mandatory	Object type. Always "object#nat-dynamic-rule"
nat-rule-id	string	Mandatory	Unique NAT rule id
mode	string	Mandatory	Indicates the source/destination IP field and the direction of traffic to apply NAT to. Allowed values are: "inside-source" and "outside-source" & "inside-destination" "inside-source" refers to translating source address for packets that enter router through inside . "outside-source" refers to translating source address for packets that enter router through outside . "inside-destination" refers to translating destination address for packets that enter router through inside

Property	Type	Required for POST and PUT	Description
acl-id	name	Mandatory	ACL resource id that defines the ACL for this dynamic NAT
nat-pool-id	string	Mandatory	NAT pool to use. Refers to the NAT pool resource id.
pat-enabled	boolean	Optional	Specifies if Port Address translation to be enabled.

JSON Representation

```
{
  "kind": "object#nat-dynamic-rule",
  "nat-rule-id" : "{string}",
  "mode": "{string}",
  "acl-id" : {number},
  "nat-pool-id" : "{string}",
  "pat-enabled": {boolean}
}
```

Retrieve a Dynamic NAT Rule

Resource URI

Verb	URI
GET	/api/v1/nat-svc/dynamic/{nat-rule-id}

Example

JSON Request

```
GET /api/v1/nat-svc/dynamic/dyn-nat
Accept: application/json
```

JSON Response

```
200 ok

Content-type: application/json

{
  "kind" : "object#nat-dynamic-rule"
  "nat-rule-id" : "dyn-nat",
  "mode" : "outside-source",
  "acl-id" : "natacl",
  "nat-pool-id" : "nat-pool",
  "pat-enabled" : false
}
```

Retrieve All Dynamic NAT Rules

Resource URI

Verb	URI
GET	/api/v1/nat-svc/dynamic

Properties for Retrieve All

Property	Type	Required for POST and PUT	Description
kind	string	Mandatory	Object type. Always "collection#nat-dynamic-rule"
items	array	Mandatory	Collection of nat-dynamic-rule objects
nat-rule-id	string	Mandatory	Unique NAT rule id
mode	string	Mandatory	Indicates the source/destination IP field and the direction of traffic to apply NAT to. Allowed values are: "inside-source" and "outside-source" & "inside-destination" "inside-source" refers to translating source address for packets that enter router through inside . "outside-source" refers to translating source address for packets that enter router through outside . "inside-destination" refers to translating destination address for packets that enter router through inside
acl-id	name	Mandatory	ACL resource id that defines the ACL for this dynamic NAT
nat-pool-id	string	Mandatory	NAT pool to use. Refers to the NAT pool resource id.
pat-enabled	boolean	Optional	Specifies if Port Address translation to be enabled.

JSON Representation

```
{
  "kind" : "collection#nat-dynamic-rule"
  "items" :
    [
      {dynamic nat rule json object}+
    ]
}
```


Example

JSON Request

```
GET /api/v1/nat-svc/dynamic
Accept: application/json
```

JSON Response

```
200 OK
```

```
Content-type: application/json
```

```
{
  "kind": "collection#nat-dynamic-rule",
  "items": [
    {
      "kind": "object#nat-dynamic-rule",
      "nat-rule-id" : "dyn-nat1",
      "mode": "outside-source",
      "acl-id" : "eng-acl",
      "nat-pool-id" : "nat-pool",
      "pat-enabled": true
    },
    {
      "kind": "object#nat-dynamic-rule",
      "nat-rule-id" : "dyn-nat2",
      "mode": "outside-source",
      "acl-id" : "mktg-acl",
      "nat-pool-id" : "natPool",
      "pat-enabled": false
    }
  ]
}
```

JSON Response

```
204 No Content
```

Modify a Dynamic NAT Rule

Resource URI

Verb	URI
PUT	/api/v1/nat-svc/dynamic/{nat-rule-id}

Example

JSON Request

```
PUT /api/v1/nat-svc/dynamic/dyn-nat
```

```
Content-type: application/json
Accept: application/json
```

```
{
  "nat-rule-id" : "dyn-nat",
  "mode":       "outside-source",
  "acl-id" :    "natacl",
  "nat-pool-id" : "nat-pool",
  "pat-enabled": true
}
```

JSON Response

204 No Content

Delete a Dynamic NAT Rule

Resource URI

Verb	URI
DELETE	/api/v1/nat-svc/dynamic/{nat-rule-id}

Example**JSON Request**

```
DELETE /api/v1/nat-svc/dynamic/dyn-nat
Accept: application/json
```

JSON Response

204 No Content

Create a Dynamic NAT Rule

Resource URI

Verb	URI
POST	/api/v1/nat-svc/dynamic

Example

JSON Request

```
POST /api/v1/nat-svc/dynamic
```

```
Accept: application/json
```

```
Content-type: application/json
```

```
{
  "nat-rule-id" :      "dyn-nat1",
  "mode":           "outside-source",
  "acl-id" :        "qa-acl",
  "nat-pool-id" :    "nat-pool",
  "pat-enabled":     true
}
```

JSON Response

```
201 Created
```

```
Location: http://host/api/v1/nat-svc/dynamic/dyn-nat-1
```

NAT Translations Resource

NAT Translation resource represents the active NAT translations.

This resource supports only:

- Retrieve all NAT translations: All relevant properties are shown in the tables below.
- Clear all NAT translations: Uses the POST operation and an **action** property described in [Clear All NAT Translations](#) , page 15-21.

History

Release	Modification
IOS XE 3.10	Introduced for the CSR1000V platform
IOS XE 3.14	Introduced for ASR1001-X and ASR1002-X platforms

Properties

Property	Type	Description
kind	string	Object type. Always “collection#nat-translation”
items []	array	Collection of NAT translation objects

Property	Type	Description
kind	string	Object type. Always “object#nat-translation”
protocol	string	Protocol of the port identifying the address.

Property	Type	Description
inside-global-address	ipaddress	The legitimate IP address that represents one or more inside local IP addresses to the outside world.
inside-local-address	ipaddress	The IP address assigned to a host on the inside network
inside-global-port	number	The port identifying the inside global address.
inside-local-port	number	The port identifying the inside local address
outside-local-address	ipaddress	IP address of an outside host as it appears to the inside network
outside-global-address	ipaddress	The port identifying the outside local address.
outside-local-port	number	The port identifying the outside local address.
outside-global-port	number	The port identifying the outside global address.

JSON Representation

```
{
  "kind": "collection#nat-translation"
  "items": [
    {
      "kind" : "object#nat-translation",
      "protocol" : "{string}",
      "inside-global-address" : "{ipaddress}",
      "inside-global-port" : {number},
      "inside-local-address" : "{ipaddress}",
      "inside-local-port" : {number},
      "outside-global-address" : "{ipaddress}",
      "outside-global-port" : {number},
      "outside-local-address" : "{ipaddress}",
      "outside-local-port" : {number}
    }
  ]
}
```

Retrieve All NAT Translations

Resource URI

Verb	URI
GET	/api/v1/nat-svc/translations

Example

JSON Request

```
GET /api/v1/nat-svc/translations
Accept: application/json
```

JSON Response

200 ok

Content-type: application/json

```
{
  "kind": "collection#nat-translation",
  "items": [
    {
      "kind": "object#nat-translation",
      "protocol": "TCP",
      "inside-global-address" : "172.16.223.288",
      "inside-global-port" : 0,
      "inside-local-address" : "192.168.1.95",
      "inside-local-port" : 0,
      "outside-global-address" : "",
      "outside-global-port" : 0,
      "outside-local-address" : "",
      "outside-local-port" : 0
    },
    {
      "kind": "object#nat-translation",
      "protocol": "TCP",
      "inside-global-address" : "172.16.233.209",
      "inside-global-port" : 11012,
      "inside-local-address" : "192.168.1.89",
      "inside-local-port" : 11012,
      "outside-global-address" : "172.16.1.220",
      "outside-global-port" : 23,
      "outside-local-address" : "172.16.1.220",
      "outside-local-port" : 23
    }
  ]
}
```

Clear All NAT Translations

The NAT translations resource supports the clearing of active translations and all automatic bindings on the router. Use POST as shown below.

**Note**

The **action** property is applicable only for this operation.

Properties for the POST Operation

Property	Type	Required for POST and PUT	Description
action	string	Mandatory	“clear” Clears active translations and automatic bindings on the router.

Example

JSON Request

```
POST /api/v1/nat-svc/translations
Accept: application/json
```

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

JSON Response

```
204 No Content
```