



NX-API Developer Sandbox

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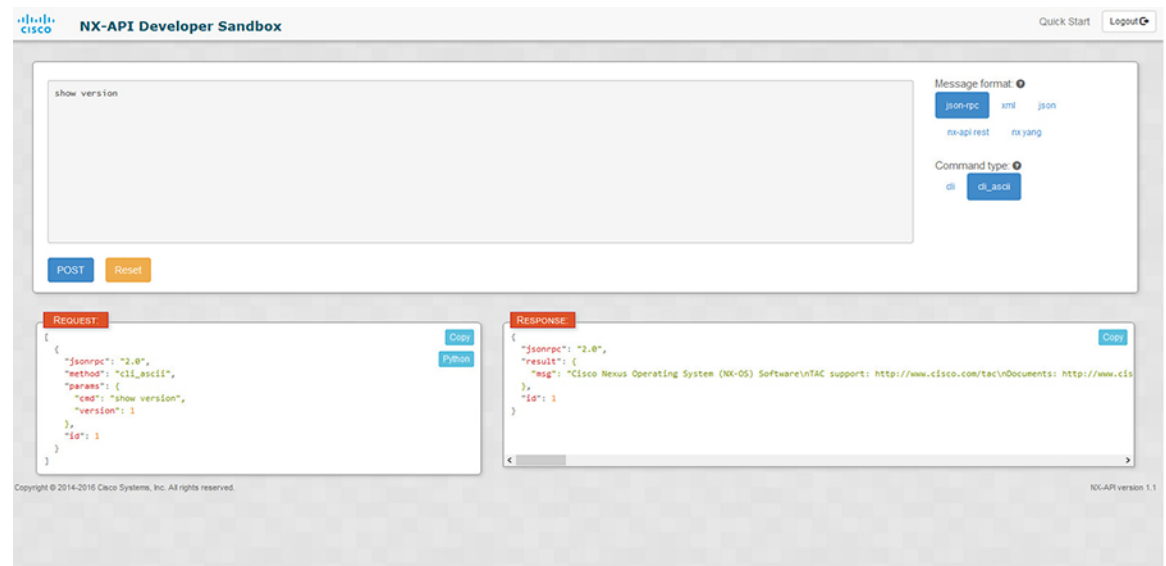
NX-API Developer Sandbox: NX-OS Releases Prior to 9.2(2)

About the NX-API Developer Sandbox

The NX-API Developer Sandbox is a web form hosted on the switch. It translates NX-OS CLI commands into equivalent XML or JSON payloads, and converts NX-API REST payloads into their CLI equivalents.

The web form is a single screen with three panes — Command (top pane), Request, and Response — as shown in the figure.

Figure 1: NX-API Developer Sandbox with Example Request and Output Response



Controls in the Command pane allow you to choose a message format for a supported API, such as NX-API REST, and a command type, such as XML or JSON. The available command type options vary depending on the selected message format.

When you type or paste one or more CLI commands into the Command pane, the web form converts the commands into an API payload, checking for configuration errors, and displays the resulting payload in the Request pane. If you then choose to post the payload directly from the Sandbox to the switch, using the POST button in the Command pane, the Response pane displays the API response.

Conversely, when you type an NX-API REST designated name (DN) and payload into the Command pane and select the **nx-api rest** Message format and the **model** Command type, Developer Sandbox checks the payload for configuration errors, then the Response pane displays the equivalent CLIs.

Guidelines and Limitations

Following are the guidelines and limitations for the Developer Sandbox:

- Clicking **POST** in the Sandbox commits the command to the switch, which can result in a configuration or state change.
- Some feature configuration commands are not available until their associated feature has been enabled.

Configuring the Message Format and Command Type

The **Message Format** and **Command Type** are configured in the upper right corner of the Command pane (the top pane). For **Message Format**, choose the format of the API protocol that you want to use. The Developer Sandbox supports the following API protocols:

Table 1: NX-OS API Protocols

Protocol	Description
json-rpc	A standard lightweight remote procedure call (RPC) protocol that can be used to deliver NX-OS CLI commands in a JSON payload. The JSON-RPC 2.0 specification is outlined by jsonrpc.org .
xml	Cisco NX-API proprietary protocol for delivering NX-OS CLI or bash commands in an XML payload.
json	Cisco NX-API proprietary protocol for delivering NX-OS CLI or bash commands in a JSON payload.
nx-api rest	Cisco NX-API proprietary protocol for manipulating and reading managed objects (MOs) and their properties in the internal NX-OS data management engine (DME) model. For more information about the Cisco Nexus 3000 and 9000 Series NX-API REST SDK, see https://developer.cisco.com/site/cisco-nexus-nx-api-references/ .
nx yang	The YANG ("Yet Another Next Generation") data modeling language for configuration and state data.

When the **Message Format** has been chosen, a set of **Command Type** options are presented just below the **Message Format** control. The **Command Type** setting can constrain the input CLI and can determine the **Request** and **Response** format. The options vary depending on the **Message Format** selection. For each **Message Format**, the following table describes the **Command Type** options:

Table 2: Command Types

Message format	Command type
json-rpc	<ul style="list-style-type: none"> cli — show or configuration commands cli-ascii — show or configuration commands, output without formatting
xml	<ul style="list-style-type: none"> cli_show — show commands. If the command does not support XML output, an error message will be returned. cli_show_ascii — show commands, output without formatting cli_conf — configuration commands. Interactive configuration commands are not supported. bash — bash commands. Most non-interactive bash commands are supported. <p>Note The bash shell must be enabled in the switch.</p>
json	<ul style="list-style-type: none"> cli_show — show commands. If the command does not support XML output, an error message will be returned. cli_show_ascii — show commands, output without formatting cli_conf — configuration commands. Interactive configuration commands are not supported. bash — bash commands. Most non-interactive bash commands are supported. <p>Note The bash shell must be enabled in the switch.</p>
nx-api rest	<ul style="list-style-type: none"> cli — configuration commands model — DN and corresponding payload.
nx yang	<ul style="list-style-type: none"> json — JSON structure is used for payload xml — XML structure is used for payload

Output Chunking

In order to handle large show command output, some NX-API message formats support output chunking for show commands. In this case, an **Enable chunk mode** checkbox appears below the **Command Type** control along with a session ID (**SID**) type-in box.

When chunking is enabled, the response is sent in multiple "chunks," with the first chunk sent in the immediate command response. In order to retrieve the next chunk of the response message, you must send an NX-API request with **SID** set to the session ID of the previous response message.

Using the Developer Sandbox

Using the Developer Sandbox to Convert CLI Commands to Payloads



Tip Online help is available by clicking **Quick Start** in the upper right corner of the Sandbox window. Additional details, such as response codes and security methods, can be found in the NX-API CLI chapter. Only configuration commands are supported.

Procedure

- Step 1** Configure the **Message Format** and **Command Type** for the API protocol you want to use. For detailed instructions, see [Configuring the Message Format and Command Type, on page 2](#).
- Step 2** Type or paste NX-OS CLI configuration commands, one command per line, into the text entry box in the top pane. You can erase the contents of the text entry box (and the **Request** and **Response** panes) by clicking **Reset** at the bottom of the top pane.

Enter CLI commands here, one command per line.

Message format: json-rpc xml json
 nx-api rest nx yang

Command type: cli model

Convert Reset

CLI Copy

ERROR Copy

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Step 3 Click the **Convert** at the bottom of the top pane.

If the CLI commands contain no configuration errors, the payload appears in the **Request** pane. If errors are present, a descriptive error message appears in the **Response** pane.

The screenshot shows the NX-API Developer Sandbox interface. At the top, there is a header with the Cisco logo and the text "NX-API Developer Sandbox". On the right side of the header, there are links for "Quick Start" and "Logout".

The main content area is divided into several sections:

- Request pane:** Contains a JSON payload:


```
api/mo/sys.json
{
  "topSystem": {
    "attributes": {
      "name": "REST2CLI"
    }
  }
}
```
- Message format:** A dropdown menu with options: json-rpc, xml, json, nx-api rest (selected), and nx.yang.
- Command type:** A dropdown menu with options: cli and model (selected).
- Buttons:** "Convert" (blue) and "Reset" (orange) buttons are located below the Request pane.
- Response pane:** Labeled "CLI:" in a red header, it contains the output: "hostname REST2CLI". A "Copy" button is visible in the top right corner.
- Error pane:** Labeled "ERROR:" in a red header, it is currently empty. A "Copy" button is visible in the top right corner.

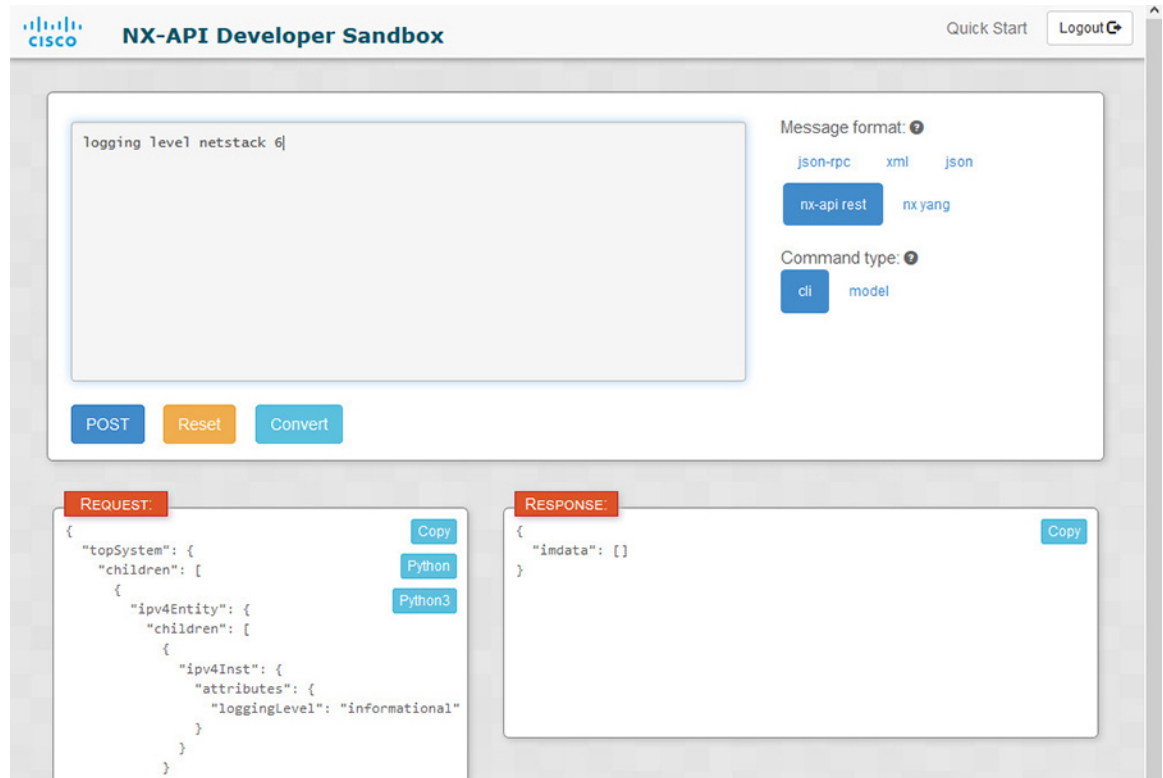
At the bottom of the interface, there is a status bar with the text "Waiting for bam.nr-data.net...".

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Step 4 When a valid payload is present in the **Request** pane, you can click **POST** to send the payload as an API call to the switch.

The response from the switch appears in the **Response** pane.

Warning Clicking **POST** commits the command to the switch, which can result in a configuration or state change.



- Step 5** You can copy the contents of the **Request** or **Response** pane to the clipboard by clicking **Copy** in the pane.
- Step 6** You can obtain a Python implementation of the request on the clipboard by clicking **Python** in the **Request** pane.

NX-API Developer Sandbox: NX-OS Release 9.2(2) and Later

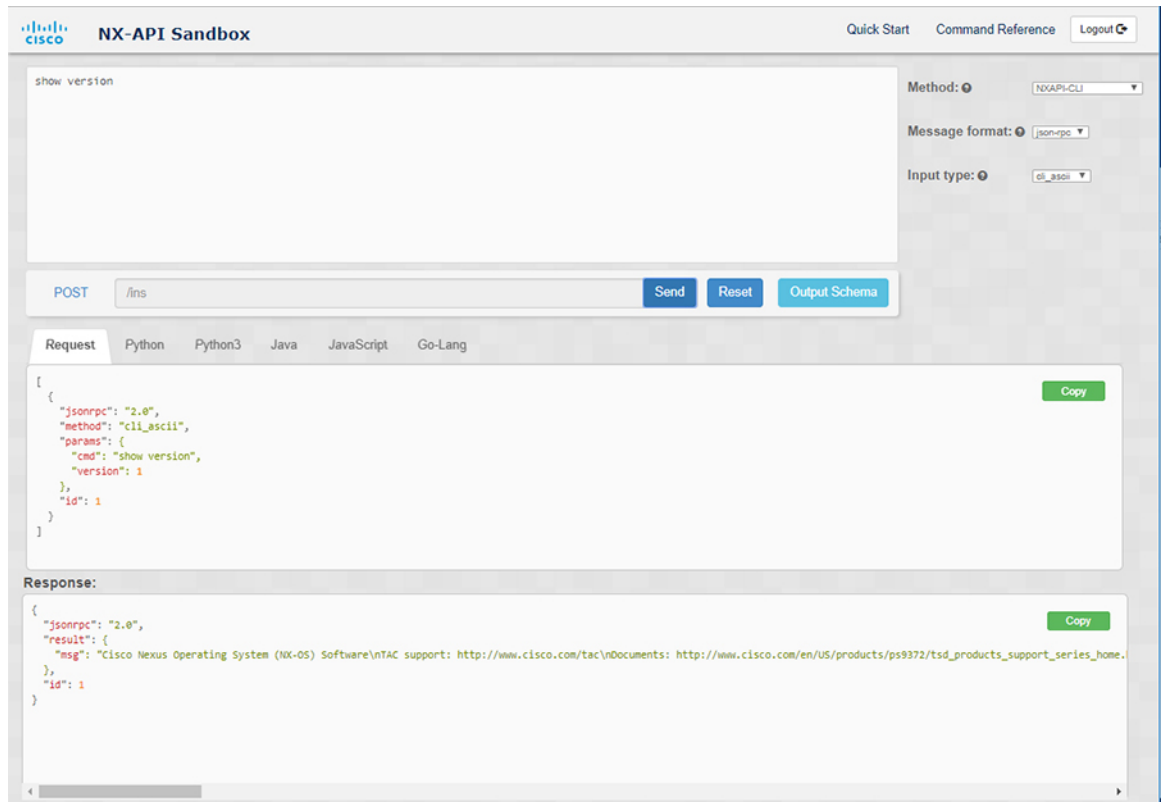
About the NX-API Developer Sandbox

The Cisco NX-API Developer Sandbox is a web form hosted on the switch. It translates NX-OS CLI commands into equivalent XML or JSON payloads and converts NX-API REST payloads into their CLI equivalents.

The web form is a single screen with three panes — Command (top pane), Request (middle pane), and Response (bottom pane) — as shown in the figure below. The designated name (DN) field is located between the Command and Request panes (seen in the figure below located between the **POST** and **Send** options).

The Request pane also has a series of tabs. Each tab represents a different language: **Python**, **Python3**, **Java**, **JavaScript**, and **Go-Lang**. Each tab enables you to view the request in the respective language. For example, after converting CLI commands into an XML or JSON payload, click the **Python** tab to view the request in Python, which you can use to create scripts.

Figure 2: NX-API Developer Sandbox with Example Request and Output Response



Controls in the Command pane enable you to choose a supported API, such as NX-API REST, an input type, such as model (payload) or CLI, and a message format, such as XML or JSON. The available options vary depending on the chosen method.

When you choose the NX-API REST (DME) method, type or paste one or more CLI commands into the Command pane, and click **Convert**, the web form converts the commands into a REST API payload, checking for configuration errors, and displays the resulting payload in the Request pane. If you then choose to post the payload directly from the sandbox to the switch (by choosing the **POST** option and clicking **SEND**), the Response pane displays the API response. For more information, see [Using the Developer Sandbox to Convert CLI Commands to REST Payloads, on page 11](#)

Conversely, the Cisco NX-API Developer Sandbox checks the payload for configuration errors then displays the equivalent CLIs in the Response pane. For more information, see [Using the Developer Sandbox to Convert from REST Payloads to CLI Commands, on page 14](#)

Guidelines and Limitations

Following are the guidelines and limitations for the Developer Sandbox:

- Clicking **Send** in the Sandbox commits the command to the switch, which can result in a configuration or state change.
- Some feature configuration commands are not available until their associated feature has been enabled.

- Using Sandbox to convert with DN is supported only for finding the DN of a CLI config. Any other workflow, for example, using DME to convert DN for CLI configuration commands is not supported.
- The Command pane (the top pane) supports a maximum of 10,000 individual lines of input.

Configuring the Message Format and Input Type

The **Method**, **Message format**, and **Input type** are configured in the upper right corner of the Command pane (the top pane). For **Method**, choose the format of the API protocol that you want to use. The Cisco NX-API Developer Sandbox supports the following API protocols:

Table 3. NX-OS API Protocols

Protocol	Description
NXAPI-CLI	Cisco NX-API proprietary protocol for delivering NX-OS CLI or bash commands in an XML or a JSON payload.
NXAPI-REST (DME)	<p>Cisco NX-API proprietary protocol for manipulating and reading managed objects (MOs) and their properties in the internal NX-OS data management engine (DME) model. The NXAPI-REST (DME) protocol displays a drop-down list that enables you to choose from the following methods:</p> <ul style="list-style-type: none"> • POST • GET • PUT • DELETE <p>For more information about the Cisco Nexus 3000 and 9000 Series NX-API REST SDK, see https://developer.cisco.com/site/cisco-nexus-nx-api-references/.</p>
RESTCONF (Yang)	<p>The YANG ("Yet Another Next Generation") data modeling language for configuration and state data.</p> <p>The RESTCONF (Yang) protocol displays a drop-down list that enables you to choose from the following methods:</p> <ul style="list-style-type: none"> • POST • GET • PUT • PATCH • DELETE

When you choose the **Method**, a set of **Message format** or **Input type** options are displayed in a drop-down list. The **Message format** can constrain the input CLI and determine the **Request** and **Response** format. The options vary depending on the **Method** you choose.

The following table describes the **Input/Command type** options for each **Message format**:

Table 4: Command Types

Method	Message format	Input/Command type
NXAPI-CLI	json-rpc	<ul style="list-style-type: none"> cli — show or configuration commands cli-ascii — show or configuration commands, output without formatting cli-array — show commands. Similar to cli, but with cli_array, data is returned as a list of one element, or an array, within square brackets, [].
NXAPI-CLI	xml	<ul style="list-style-type: none"> cli_show — show commands. If the command does not support XML output, an error message will be returned. cli_show_ascii — show commands, output without formatting cli_conf — configuration commands. Interactive configuration commands are not supported. bash — bash commands. Most non-interactive bash commands are supported. <p>Note The bash shell must be enabled in the switch.</p>
NXAPI-CLI	json	<ul style="list-style-type: none"> cli_show — show commands. If the command does not support XML output, an error message will be returned. cli_show_array — show commands. Similar to cli_show, but with cli_show_array, data is returned as a list of one element, or an array, within square brackets []. cli_show_ascii — show commands, output without formatting cli_conf — configuration commands. Interactive configuration commands are not supported. bash — bash commands. Most non-interactive bash commands are supported. <p>Note The bash shell must be enabled in the switch.</p>
NXAPI-REST (DME)		<ul style="list-style-type: none"> cli — CLI to model conversion model — Model to CLI conversion.

Method	Message format	Input/Command type
RESTCONF (Yang)	<ul style="list-style-type: none"> • json — JSON structure is used for payload • xml — XML structure is used for payload 	

Output Chunking

In order to handle large show command output, some NX-API message formats support output chunking for show commands. In this case, an **Enable chunk mode** check box appears below the **Command Type** control along with a session ID (**SID**) type-in box.

When chunking is enabled, the response is sent in multiple "chunks," with the first chunk sent in the immediate command response. In order to retrieve the next chunk of the response message, you must send an NX-API request with **SID** set to the session ID of the previous response message.

Using the Developer Sandbox

You can use the Cisco NX-API Developer Sandbox to make multiple conversions, including the following:

Using the Developer Sandbox to Convert CLI Commands to REST Payloads



Tip

- Online help is available by clicking the help icons (?) next to the field names located in the upper-right corner of the Cisco NX-API Developer Sandbox window.
- For additional details, such as response codes and security methods, see the *NX-API CLI* chapter.
- Only configuration commands are supported.

The Cisco NX-API Developer Sandbox enables you to convert CLI commands to REST payloads.

Procedure

- Step 1** Click the **Method** drop-down list and choose **NXAPI-REST (DME)**.
The **Input** type drop-down list appears.
- Step 2** Click the **Input** type drop-down list and choose **cli**.
- Step 3** Type or paste NX-OS CLI configuration commands, one command per line, into the text entry box in the top pane.
You can erase the contents of the text entry box (and the **Request** and **Response** panes) by clicking **Reset** at the bottom of the top pane.

Enter DME payload here.

Method: NX-API-REST (DME)

Input type: model

/api/mo/sys.json

Send Reset Convert

Request Python Python3 Java JavaScript Go-Lang

Copy

Response:

Copy

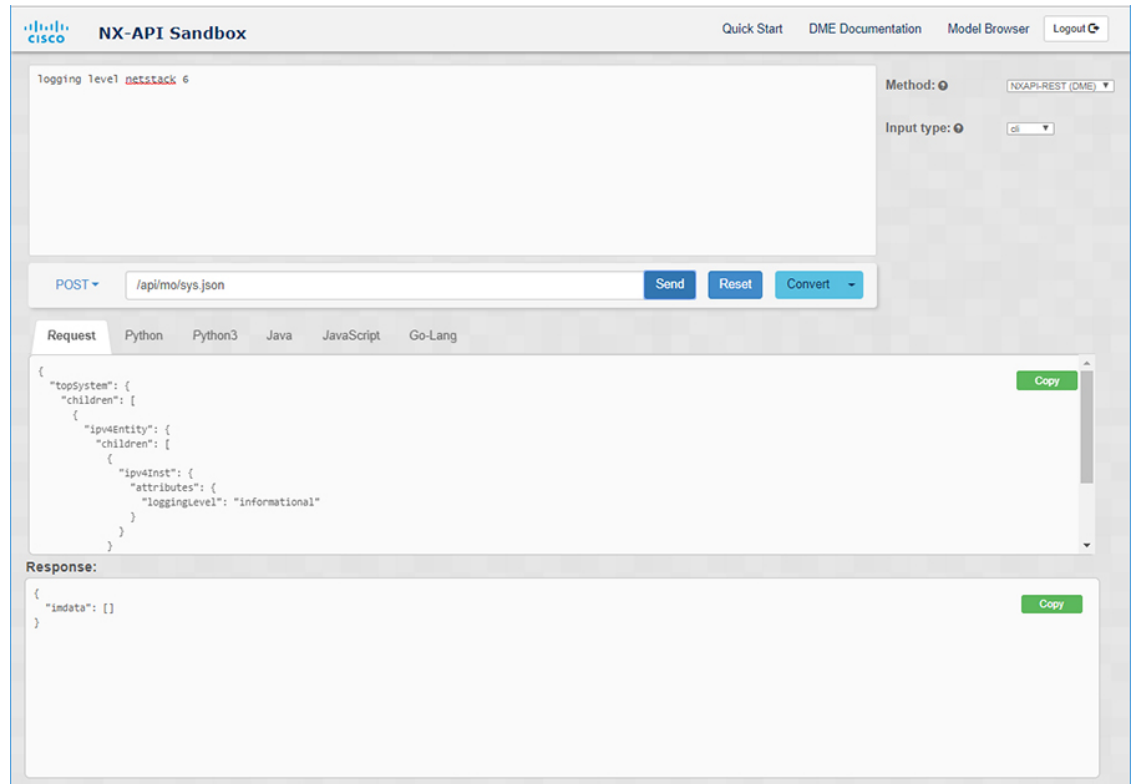
Step 4 Click **Convert**.

If the CLI commands contain no configuration errors, the payload appears in the **Request** pane. If errors are present, a descriptive error message appears in the **Response** pane.

Step 5 (Optional) To send a valid payload as an API call to the switch, click **Send**.

The response from the switch appears in the **Response** pane.

Warning Clicking **Send** commits the command to the switch, which can result in a configuration or state change.



Step 6 (Optional) To obtain the DN for an MO in the payload:

- a. From the **Request** pane, choose **POST**.
- b. Click the **Convert** drop-down list and choose **Convert (with DN)**.

The payload appears with with a **dn** field that contains the DN that corresponds to each MO in the payload.

Step 7 (Optional) To overwrite the current configuration with a new configuration:

- a. Click the **Convert** drop-down list and choose **Convert (for Replace)**. The **Request** pane displays a payload with a **status** field set to **replace**.
- b. From the **Request** pane, choose **POST**.
- c. Click **Send**.

The current configuration is replaced with the posted configuration. For example, if you start with the following configuration:

```
interface eth1/2
  description test
  mtu 1501
```

Then use **Convert (for Replace)** to POST the following configuration:

```
interface eth1/2
  description testForcr
```

The `mtu` configuration is removed and only the new description (`testForcr`) is present under the interface. This change is confirmed when entering **show running-config**.

Step 8 (Optional) To copy the contents of a pane, such as the **Request** or **Response** pane, click **Copy**. The contents of the respective pane is copied to the clipboard.

Step 9 (Optional) To convert the request into an of the formats listed below, click on the appropriate tab in the **Request** pane:

- **Python**
- **Python3**
- **Java**
- **JavaScript**
- **Go-Lang**

Using the Developer Sandbox to Convert from REST Payloads to CLI Commands

The Cisco NX-API Developer Sandbox enables you to convert REST payloads to corresponding CLI commands. This option is only available for the NXAPI-REST (DME) method.



Tip

- Online help is available by clicking help icons (?) next to the Cisco NX-API Developer Sandbox field names. Click a help icon get information about the respective field.

For additional details, such as response codes and security methods, see the chapter *NX-API CLI*.

- The top-right corner of the Cisco NX-API Developer Sandbox contains links for additional information. The links that appear depend on the **Method** you choose. The links that appear for the NXAPI-REST (DME) method:

- **NX-API References**—Enables you to access additional NX-API documentation.
- **DME Documentation**—Enables you to access the NX-API DME Model Reference page.
- **Model Browser**—Enables you to access Visore, the Model Browser. Note that you might have to manually enter the IP address for your switch to access the Visore page:

`https://management-ip-address/visore.html`.

Procedure

Step 1 Click the **Method** drop-down list and choose **NXAPI-REST (DME)**.

Example:

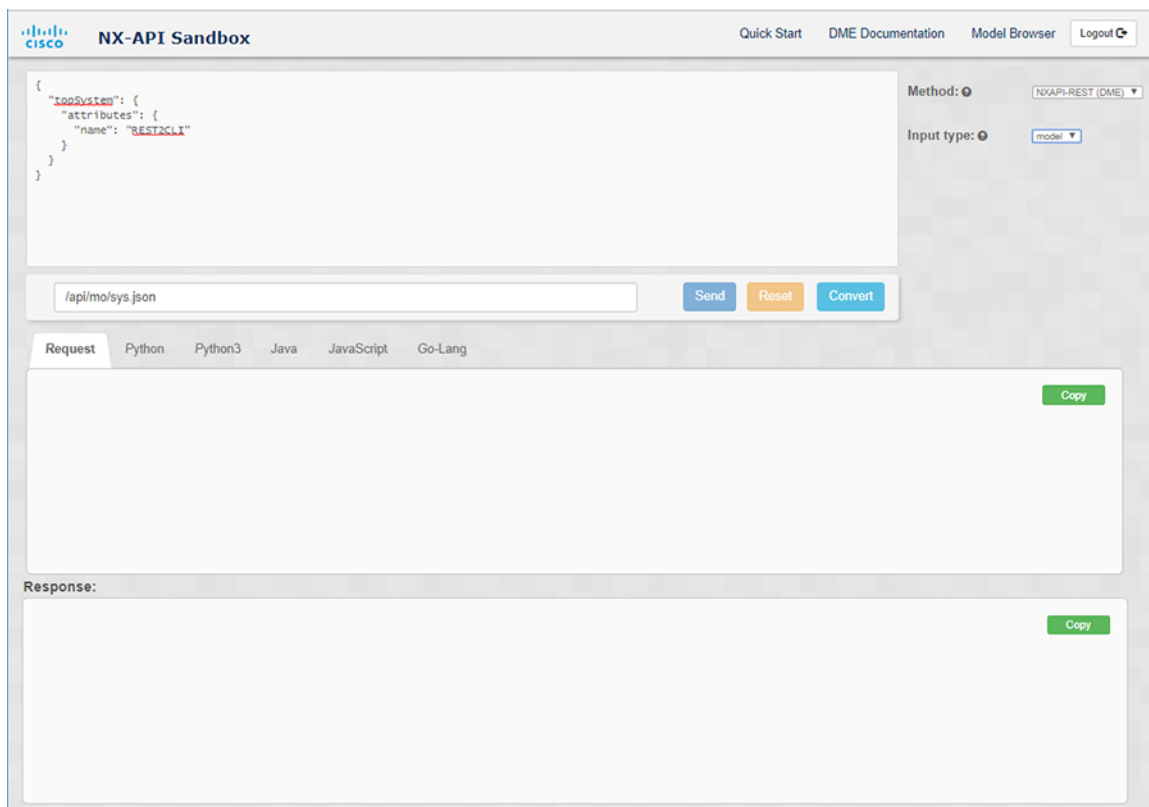
The screenshot shows the NX-API Sandbox interface. At the top, there is a header with the Cisco logo and the text "NX-API Sandbox". To the right of the header are links for "Quick Start", "DME Documentation", "Model Browser", and "Logout". Below the header is a large text area for entering the DME payload. To the right of this area are two dropdown menus: "Method" set to "NX-API-REST (DME)" and "Input type" set to "model". Below these is a text input field containing the DN "/api/mo/sys.json". To the right of this field are three buttons: "Send", "Reset", and "Convert". Below the input field is a tabbed interface with tabs for "Request", "Python", "Python3", "Java", "JavaScript", and "Go-Lang". The "Request" tab is active, showing a large empty text area with a "Copy" button in the top right corner. Below the "Request" tab is a "Response:" section, also with a large empty text area and a "Copy" button in the top right corner.

- Step 2** Click the **Input Type** drop-down list and choose **model**.
- Step 3** Enter the designated name (DN) that corresponds to the payload in the field above the Request pane.
- Step 4** Enter the payload in the Command pane.
- Step 5** Click **Convert**.

Example:

For this example, the DN is `/api/mo/sys.json` and the NX-API REST payload is:

```
{
  "topSystem": {
    "attributes": {
      "name": "REST2CLI"
    }
  }
}
```



When you click on the **Convert** button, the CLI equivalent appears in the **CLI** pane as shown in the following image.

The screenshot displays the Cisco NX-API Sandbox interface. At the top left is the Cisco logo and the text "NX-API Sandbox". On the top right, there are navigation links: "Quick Start", "DME Documentation", "Model Browser", and "Logout".

The main area contains a code editor with a REST payload:


```
{
  "topSystem": {
    "attributes": {
      "name": "REST2CLI"
    }
  }
}
```

To the right of the code editor, there are two dropdown menus: "Method:" set to "NX-API-REST (DME)" and "Input type:" set to "model".

Below the code editor is a text input field containing the path "/api/mo/sys.json". To its right are three buttons: "Send" (blue), "Reset" (orange), and "Convert" (blue).

Underneath the input field is a tabbed interface with tabs for "Request", "Python", "Python3", "Java", "JavaScript", and "Go-Lang". The "Request" tab is active, showing the converted CLI command: "hostname REST2CLI". A green "Copy" button is located to the right of the command.

Below the request tab is a section labeled "Response:" with a large empty text area and a green "Copy" button on the right.

Note The Cisco NX-API Developer Sandbox cannot convert all payloads into equivalent CLIs, even if the sandbox converted the CLIs to NX-API REST payloads. The following is a list of possible sources of error that can prevent a payload from completely converting to CLI commands:

Table 5: Sources of REST2CLI Errors

Payload Issue	Result
<p>The payload contains an attribute that does not exist in the MO.</p> <p>Example:</p> <pre>api/mo/sys.json { "topSystem": { "children": [{ "interfaceEntity": { "children": [{ "l1PhysIf": { "attributes": { "id": "eth1/1", "fakeattribute": "totallyFake" } } }] } }] } }</pre>	<p>The Error pane will return an error related to the attribute.</p> <p>Example:</p> <p>CLI</p> <p>Error unknown attribute 'fakeattribute' in element 'l1PhysIf'</p>
<p>The payload includes MOs that aren't yet supported for conversion:</p> <p>Example:</p> <pre>api/mo/sys.json { "topSystem": { "children": [{ "dhcpEntity": { "children": [{ "dhcpInst": { "attributes": { "SnoopingEnabled": "yes" } } }] } }] } }</pre>	<p>The Error Pane will return an error related to the unsupported MO.</p> <p>Example:</p> <p>CLI</p> <p>Error The entire subtree of "sys/dhcp" is not converted.</p>

Using the Developer Sandbox to Convert from RESTCONF to json or XML

**Tip**

- Online help is available by clicking the help icon (?) in the upper-right corner of the Cisco NX-API Developer Sandbox window.
- Click on the **Yang Documentation** link in the upper right corner of the Sandbox window to go to the Model Driven Programmability with Yang page.
- Click on the **Yang Models** link in the upper right corner of the Sandbox window to access the YangModels GitHub site.

Procedure

Step 1 Click the **Method** drop-down list and choose **RESTCONF (Yang)**.

Example:

The screenshot displays the Cisco NX-API Developer Sandbox interface. At the top, there are navigation links for 'Quick Start', 'Yang Documentation', 'Yang Models', and 'Logout'. The main area is divided into several sections. On the right, there are dropdown menus for 'Method' (set to 'RESTCONF (Yang)') and 'Message format' (set to 'json'). Below these are buttons for 'Send', 'Reset', and 'Convert'. The 'Request' section is active, showing a text entry box with the URL 'restconf/data/Cisco-NX-OS-device:System/' and a 'Copy' button. The 'Response' section is also visible with a 'Copy' button.

Step 2 Click **Message format** and choose either **json** or **xml**.

Step 3 Enter a command in the text entry box in the top pane.

Step 4 Choose a message format.

Step 5 Click **Convert**.

Example:

For this example, the command is **logging level netstack 6** and the message format is json:

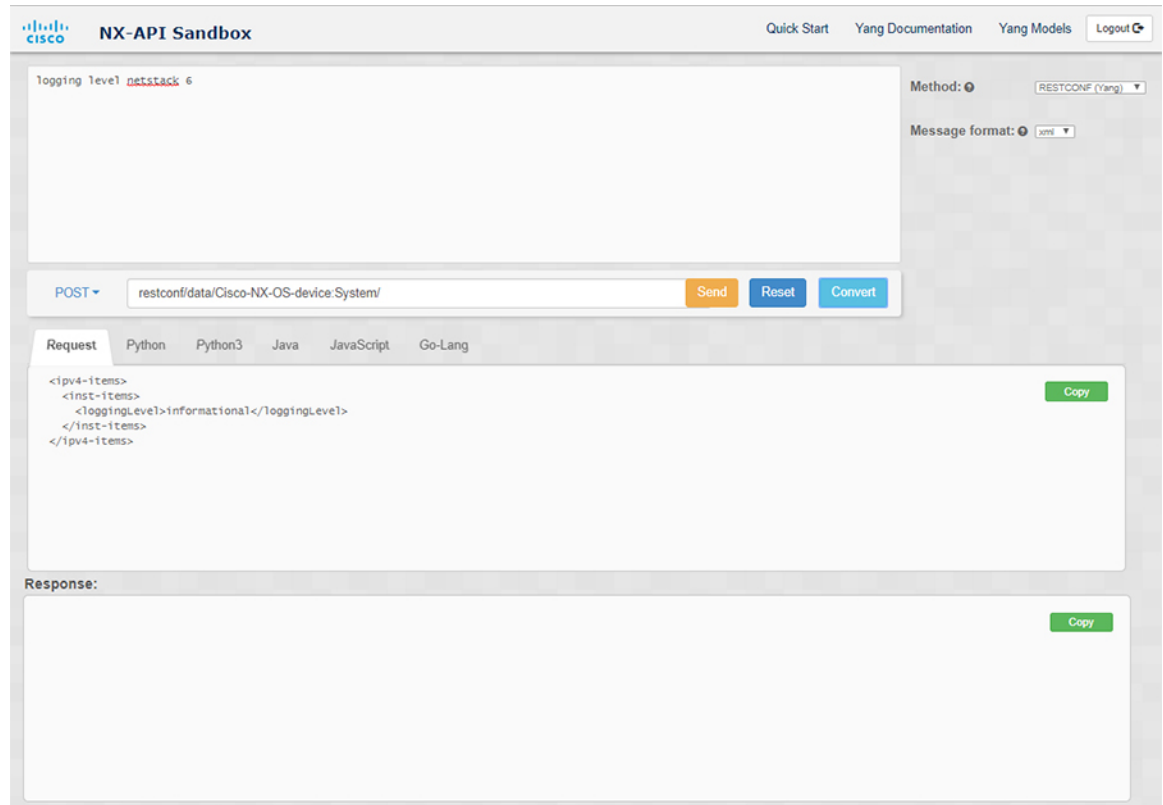
The screenshot displays the NX-API Developer Sandbox interface. At the top, the Cisco logo and 'NX-API Sandbox' are visible, along with navigation links for 'Quick Start', 'Yang Documentation', 'Yang Models', and 'Logout'. The main workspace contains a text area with the command 'logging level netstack 6'. To the right, the 'Method' is set to 'RESTCONF (Yang)' and the 'Message format' is set to 'json'. Below the text area, a 'POST' request is shown for the endpoint 'restconf/data/Cisco-NX-OS-device:System/'. There are 'Send', 'Reset', and 'Convert' buttons. Underneath, a 'Request' tab is active, showing a JSON payload:


```
{
  "ipv4-items": {
    "inst-items": {
      "loggingLevel": "informational"
    }
  }
}
```

 A 'Copy' button is next to the JSON. Below the request, a 'Response' section is empty, with a 'Copy' button.

Example:

For this example, the command is **logging level netstack 6** and the message format is xml:



The screenshot shows the NX-API Sandbox interface. At the top, there is a header with the Cisco logo and the text "NX-API Sandbox". To the right of the header are links for "Quick Start", "Yang Documentation", "Yang Models", and a "Logout" button. The main area is divided into two sections. The top section contains a text input field with the text "logging level **netstack** 6". To the right of this field are two dropdown menus: "Method:" set to "RESTCONF (Yang)" and "Message format:" set to "xml". Below the input field is a "POST" dropdown menu, a text input field containing "restconf/data/Cisco-NX-OS-device:System/", and three buttons: "Send" (orange), "Reset" (blue), and "Convert" (blue). Below this is a "Request" tab, which is currently selected. It shows a tabbed interface with "Request" (selected), "Python", "Python3", "Java", "JavaScript", and "Go-Lang". The "Request" tab displays the following XML content:

```
<ipv4-items>
<inst-items>
  <loggingLevel>informational</loggingLevel>
</inst-items>
</ipv4-items>
```

 To the right of the XML content is a green "Copy" button. Below the "Request" tab is a "Response:" section, which is currently empty. To the right of the response area is another green "Copy" button.

Step 6 You can also convert the request into the following formats by clicking on the appropriate tab in the **Request** pane:

- Python
- Python3
- Java
- JavaScript
- Go-Lang

Note The Java-generated script does not work if you choose the PATCH option from the drop-down menu in the area above the Request tab. This is a known limitation with Java and is expected behavior.

