RTS NMOS Proxy

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en Application Note

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1 Introduction

RNP (RTS NMOS Proxy) installs directly on a network PC and provides NMOS capability to RTS OMNEO devices.
RNP is an entity that implements NMOS protocols and presents itself as an NMOS node. RNP acts as a proxy between RTS OMNEO-based devices and non-RTS NMOS third party products, such as NMOS explorers, NMOS nodes, and NMOS controllers.

Notice!
Only RTS ST2110 capable devices support the RNP proxy.

IS-04	Discovery and registration	IS-04 is a uniform mechanism for newly connected media devices to join into a running system.	Broadcast Controllers can identify and manage new devices through automated workflows.
IS-05	Device connection management	IS-05 is a uniform mechanism for connected media devices (particularly ST2110 devices to integrate with Broadcast Controllers for stream connection purposes.	Broadcast Controllers can integrate IS-05 devices through a common method, without requiring any special drivers for stream connection management.
IS-08	Audio channel mapping	IS-08 is a uniform mechanism for broadcast controllers to query and manage the mapping of audio channels between the internal parts of a device and the incoming / outgoing multichannel audio streams.	This capability allows users to manage audio channels through a control system in a uniform manner without the need to develop custom drivers for every different device.

Table 1.1: Supported NMOS Specifications

System requirement
– Windows 10 or higher

Device firmware requirement
– ODIN v1.8.0
– OMS v1.2.0
– OMI/OKI v6.9.0
– OEI-2 v2.8.0
– KP-Series v2.8.0

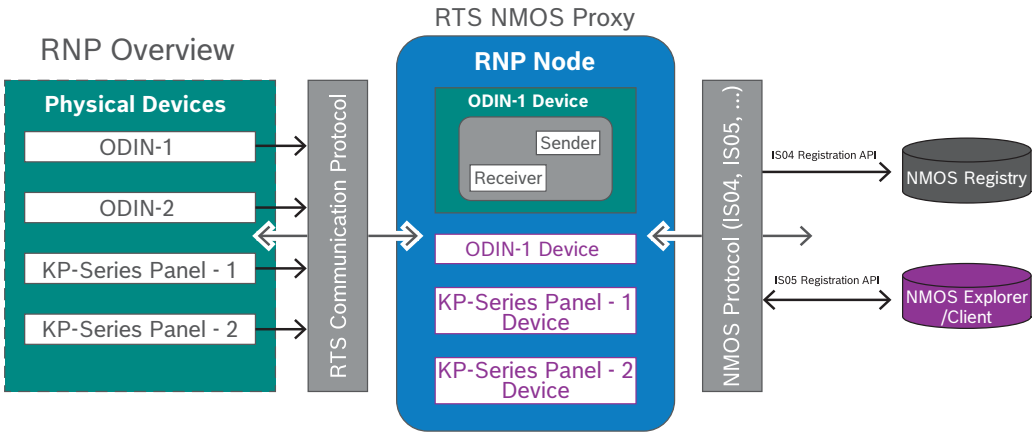
Application software requirement
– AZedit v5.8.4
– IPedit v3.9.4
– RTS NMOS Proxy v1.5.3

2 RNP (RTS NMOS proxy) overview

For more information on NMOS, see https://specs.amwa.tv/nmos/.

Considerations

- An RNP node must host more than one device. The number of the devices in the system determines the maximum number of devices that a RNP can host or the hardware capacity (memory, CPU) on which RNP is running.
- Mapping physical devices and the virtual devices in an RNP node is one to one. In other words, if there are three physical ODIN's on the network, there will be three virtual ODIN's in the RNP node.
- It is possible to map a device to multiple RNP nodes. This means that multiple RNP nodes can host the same ODIN as a virtual device. In such cases, all the RNP nodes that have the same ODIN as virtual device must have the same status and states with respect to the connections. All the instances virtual device must be synched to the same physical device.



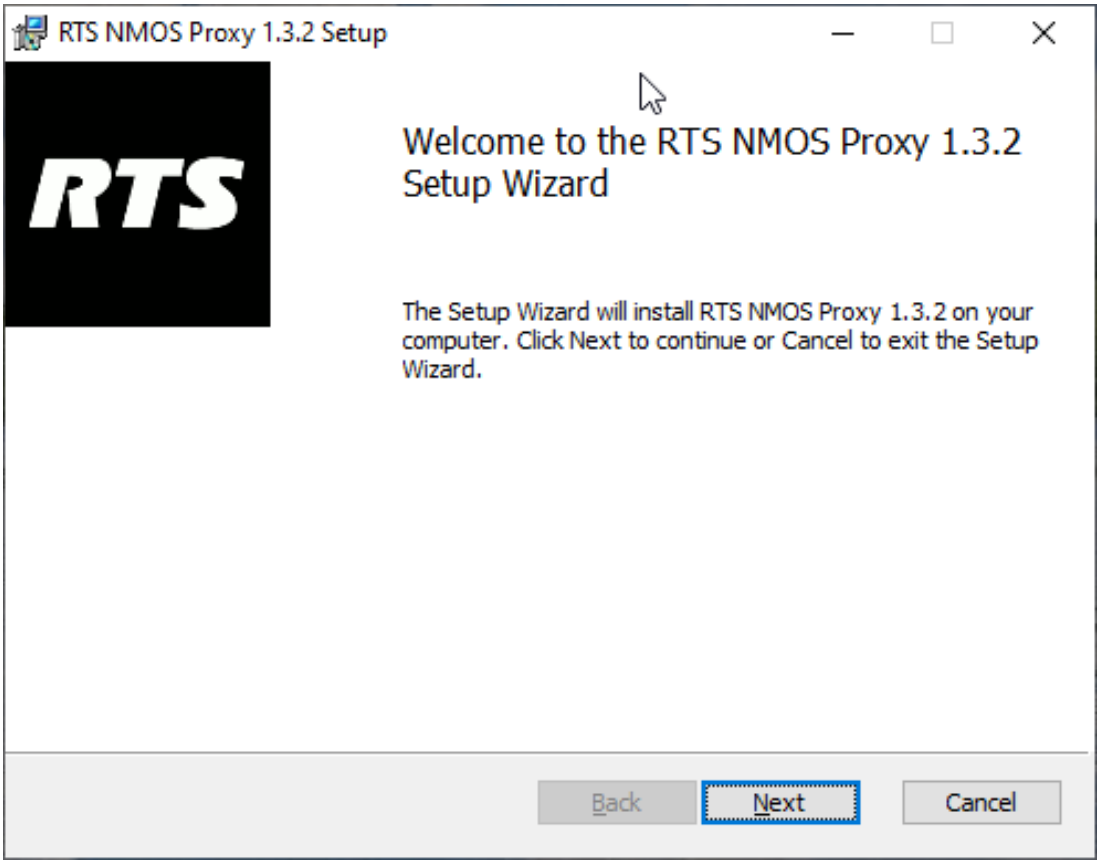
3 Installation

Before you install:

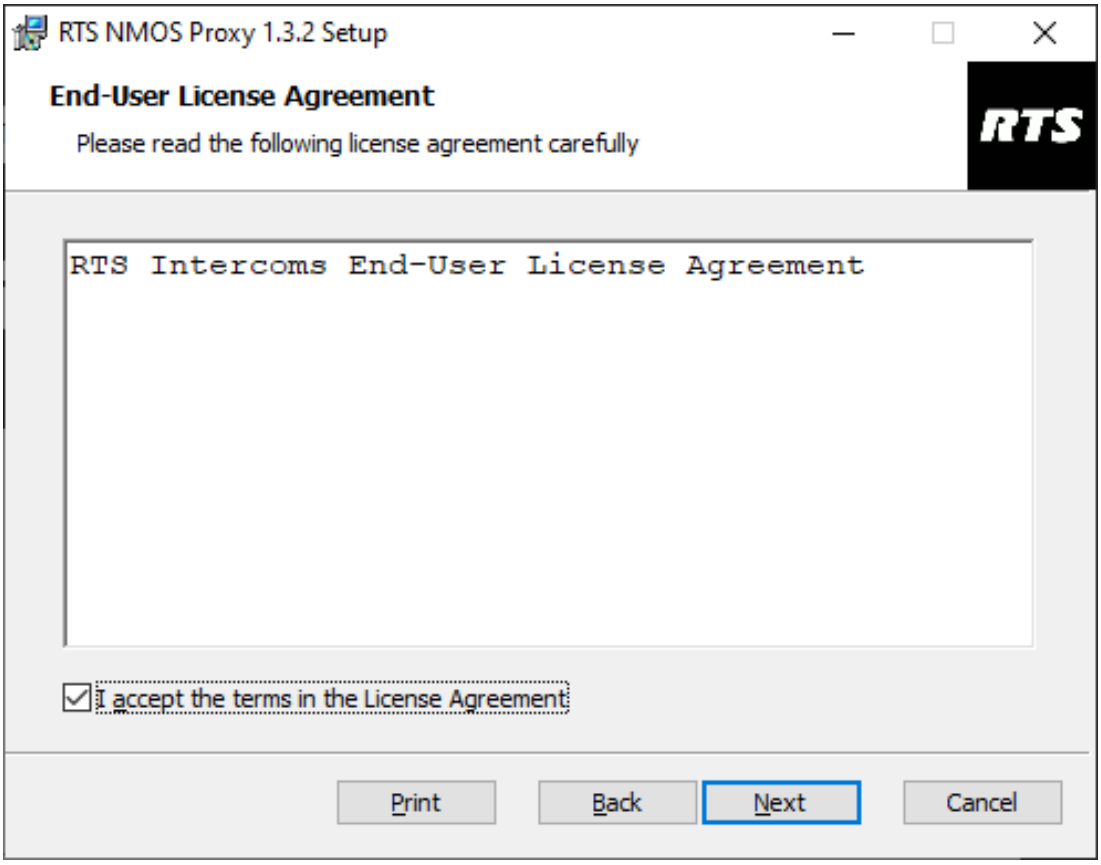
- Download the RTS NMOS Proxy from https://products.rtsintercoms.com/na/en/downloads-library.
- Verify Bonjour is running on the computer

To **install the RTS NMOS Proxy and RNP user interface**, do the following:

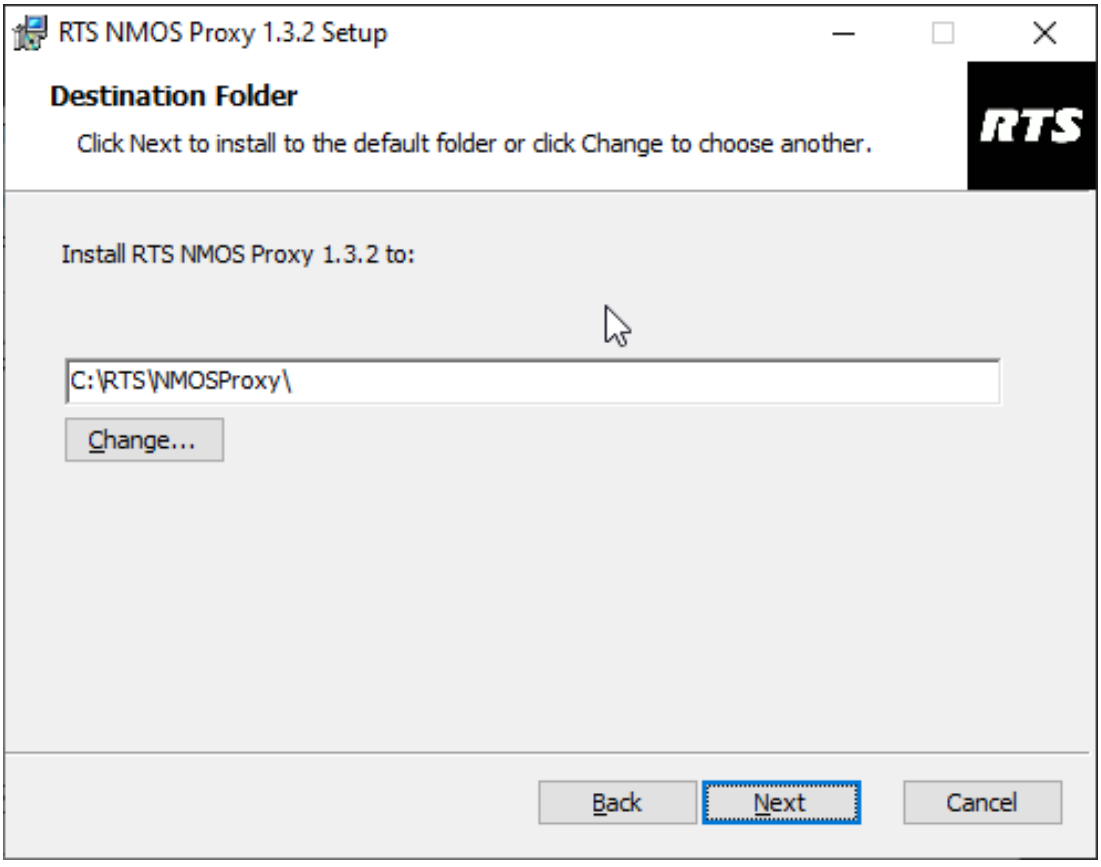
1. Double-click **rts-nmos-proxy.exe**.
   The install wizard begins.
2. Click **Next**.



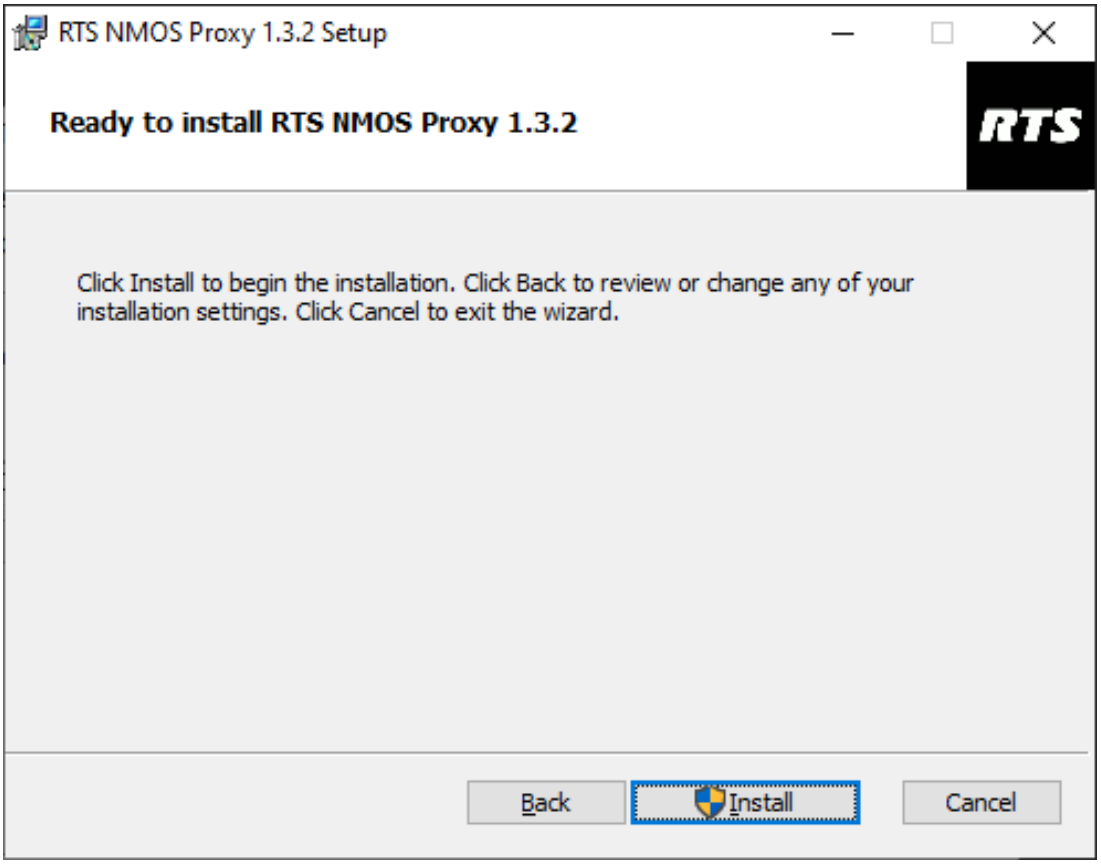
3. Accept the **terms** in the License Agreement and click **Next**.



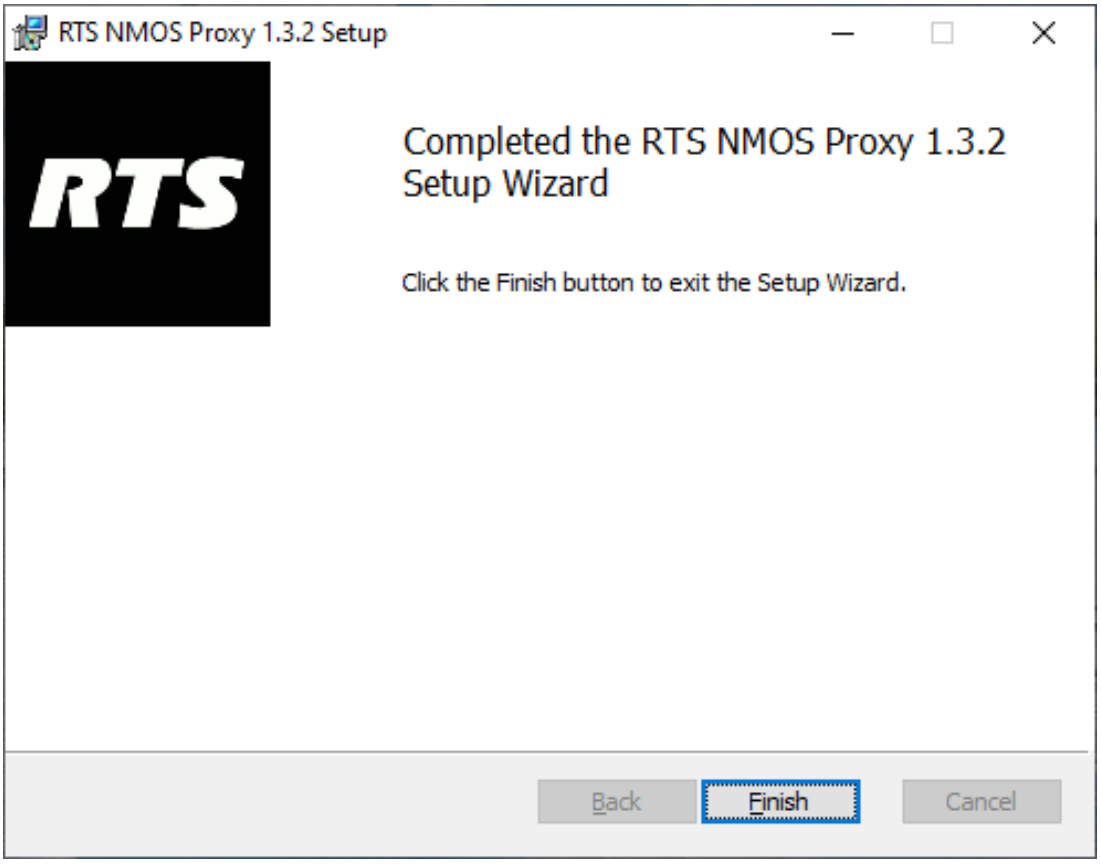
4. Click **Next**.



5. Click **Install**.



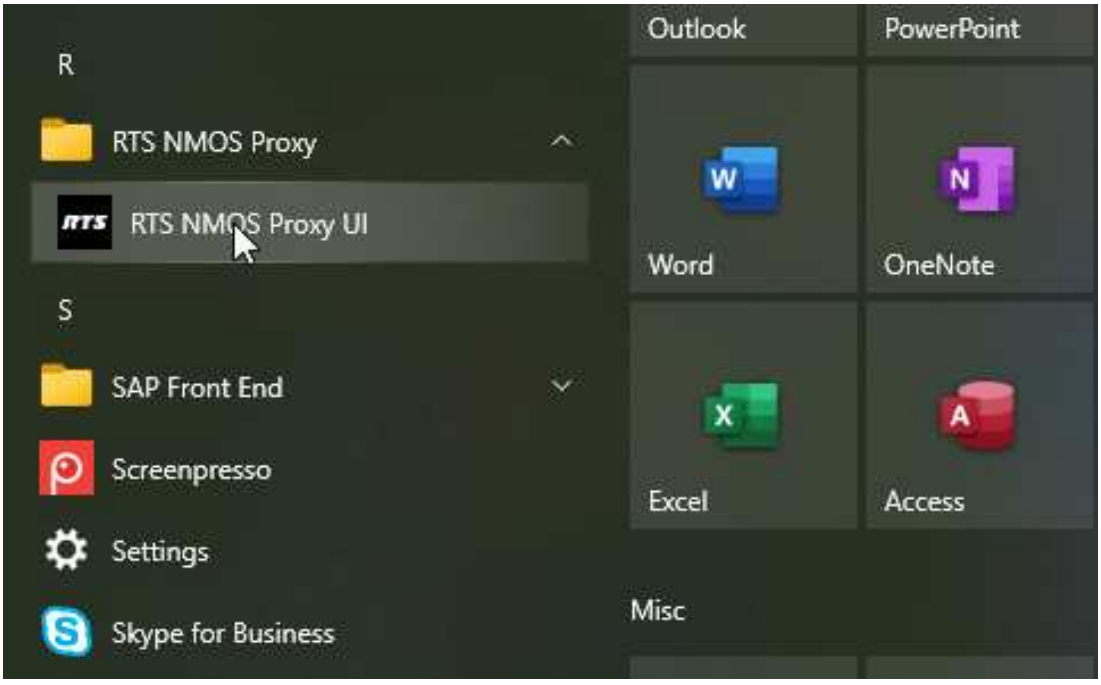
6. Click **Finish**.
   The installation is complete.



Notice!
RTS-NMOS proxy service is running once the installation is complete.

To **launch the RTS NMOS Proxy UI**, do the following:

1. From the Start menu, click the **RTS NMOS Proxy UI option**.
   The application launches.



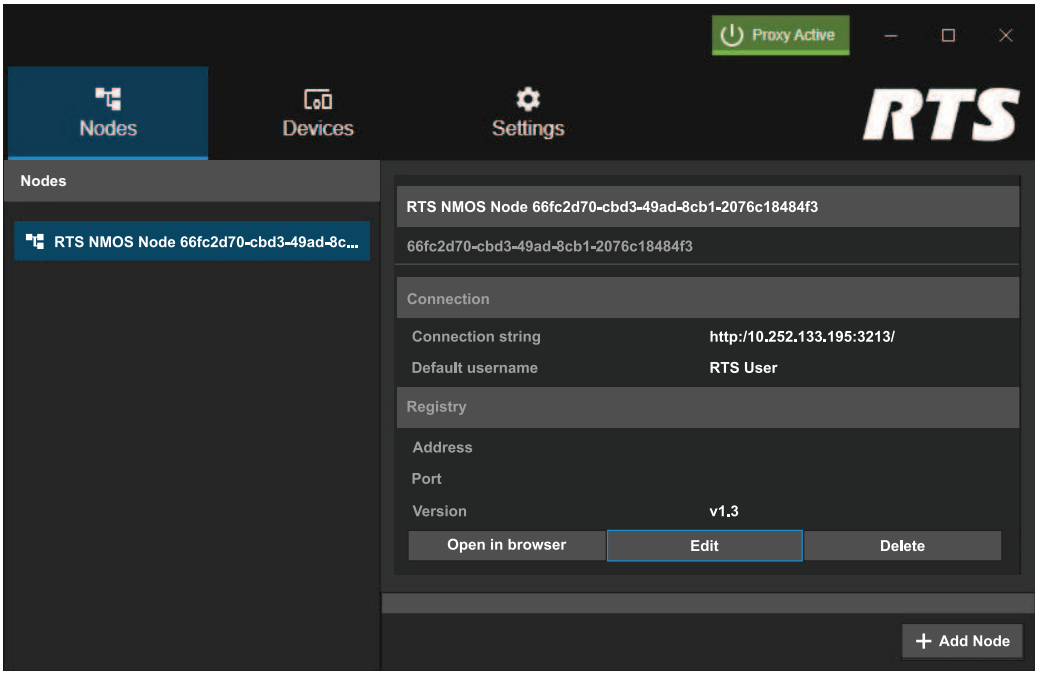
4 RNP (RTS NMOS proxy) - User Interface

There are three main screens in the user interface:

- Nodes
- Devices
- Settings

4.1 Nodes

Use the Nodes screen to see existing nodes, create new nodes, and delete nodes no longer needed. You can add more than 50 nodes from this screen.
By default, RTS NMOS Node exists upon initial launch of the RNP application.



Nodes column

Use the **Nodes** column to view the different nodes in the application.

Registration panel

The **Registration Panel** displays registry information for the selected node.
The **Connection** section shows the connection string (http://<ipaddress> port).
The **Default username** displays the username the node uses to connect with RTS OMNEO products.
The **Registry** section shows the information for the external NMOS Registry if it exists on the network. The RNP node uses this the Registry information to register itself.

Open in browser button

- Click the **Open in browser** button to open the existing RNP node and its details in a browser.

Edit button

- Click the **Edit** button to edit the current node.

Delete button

- Click the **Delete** button to delete the selected node.

4.1.1 Open in browser

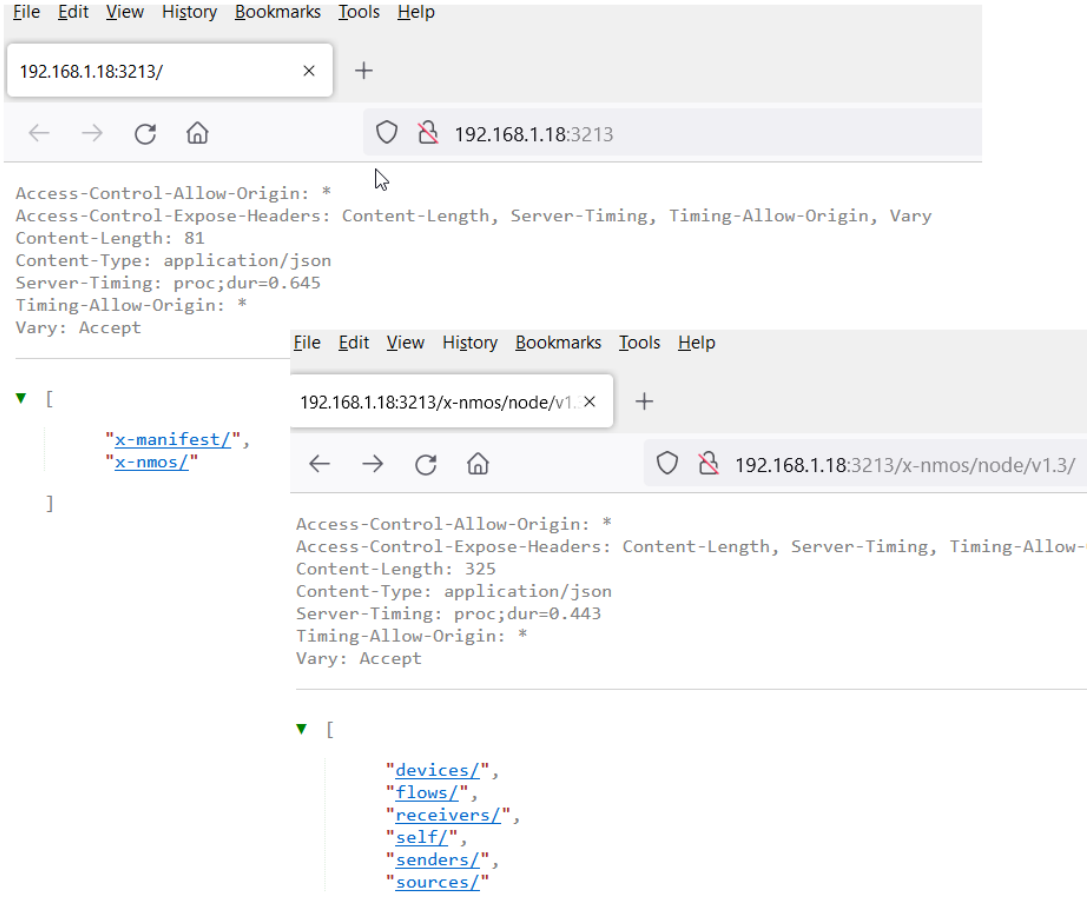
Use the **Open in browser** button to display the ISO4, IS05, and IS08 JSON schema for a node in a browser (Firefox, Chrome, etc).

From the x-nmos page:

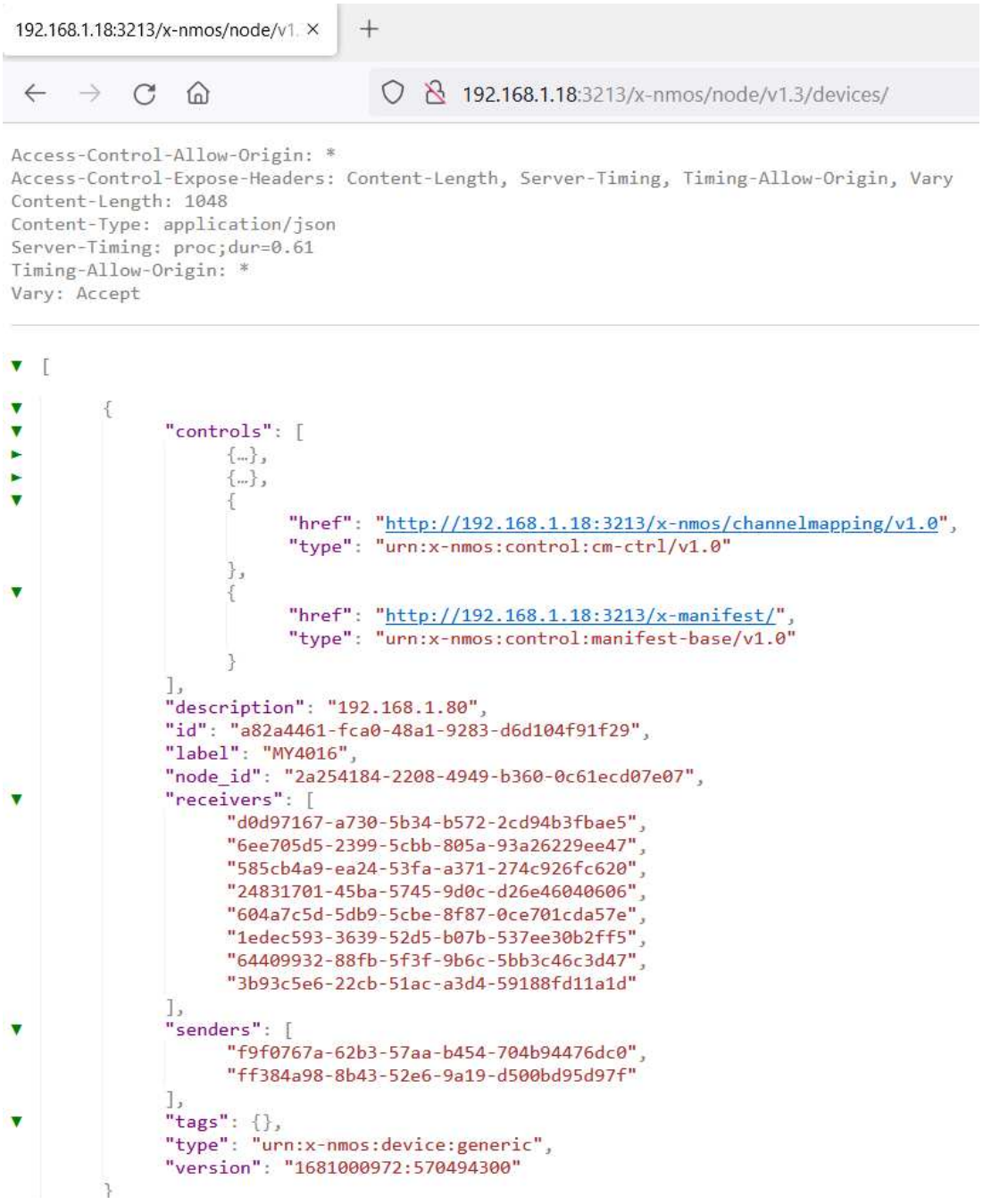
- devices/
- flows/
- receivers/
- self/
- senders/
- sources/

Notice!

You can also access this information from any browser outside of the RNP application by entering the Connection string found on the Nodes screen and then add /x-nmos.



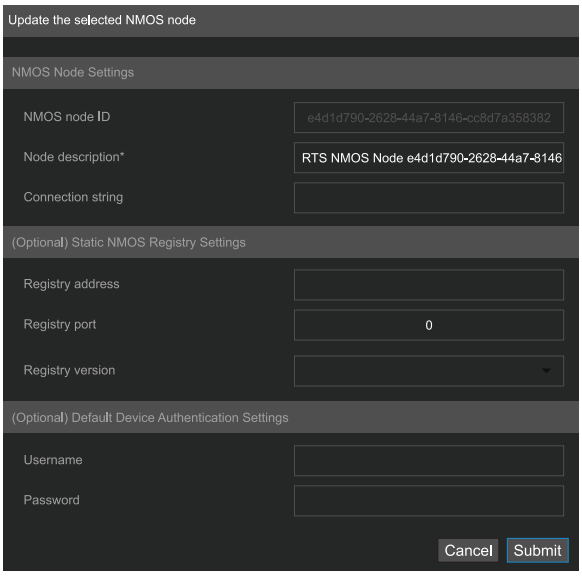
This KP-4016 devices example shows all the receivers and senders in the node.



4.1.2 Edit node

To **edit the node**, do the following:

1. Select the **NMOS node** you want to edit.
2. Click the **Edit** button.
   The Update the selected NMOS node screen opens.

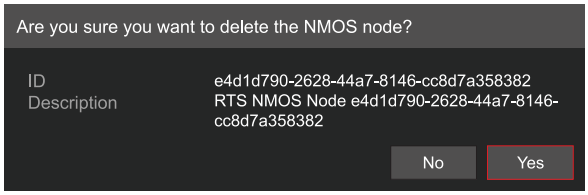


3. Make the necessary **modifications**.
4. Click **Submit**.
   The Update the selected NMOS node screen closes.

4.1.3 Delete node

To **delete an NMOS node**, do the following:

1. Select the **NMOS node** you want to delete.
2. Click the **Delete** button.
   A confirmation message appears.



3. Click **Yes** to delete the node.

4.2 Devices

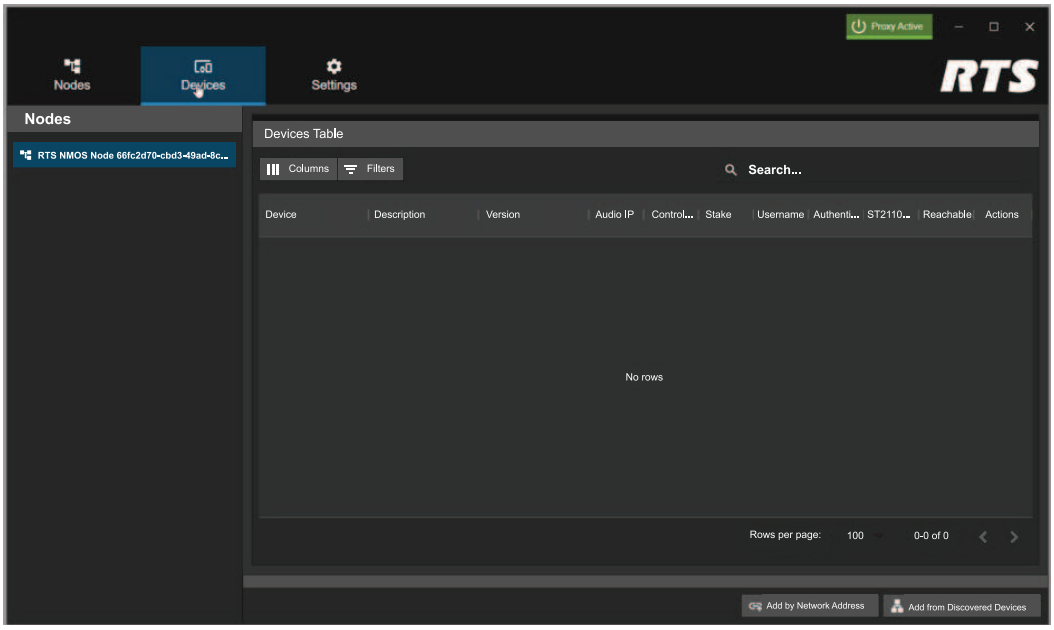
Use the **Devices** screen to view a list of devices in a node, to see device status and to add devices to a node. Once devices are added to a node, they are discoverable and connections are available.
For more information on creating RTS NMOS nodes, see *Nodes, page 10*.

Columns on this page show:

- Device name
- Description
- Version of the device
- MAC address of the device
- Audio IP Address
- Controller IP Address
- Device state
- User name
- Authentication status

– ST2110 capability status
– Reachable status
– Action

Depending on what you want to see on this page, you can hide or show specific columns. Click the Columns button to customize this screen to your preferences.



There are two methods to add devices to NMOS nodes:

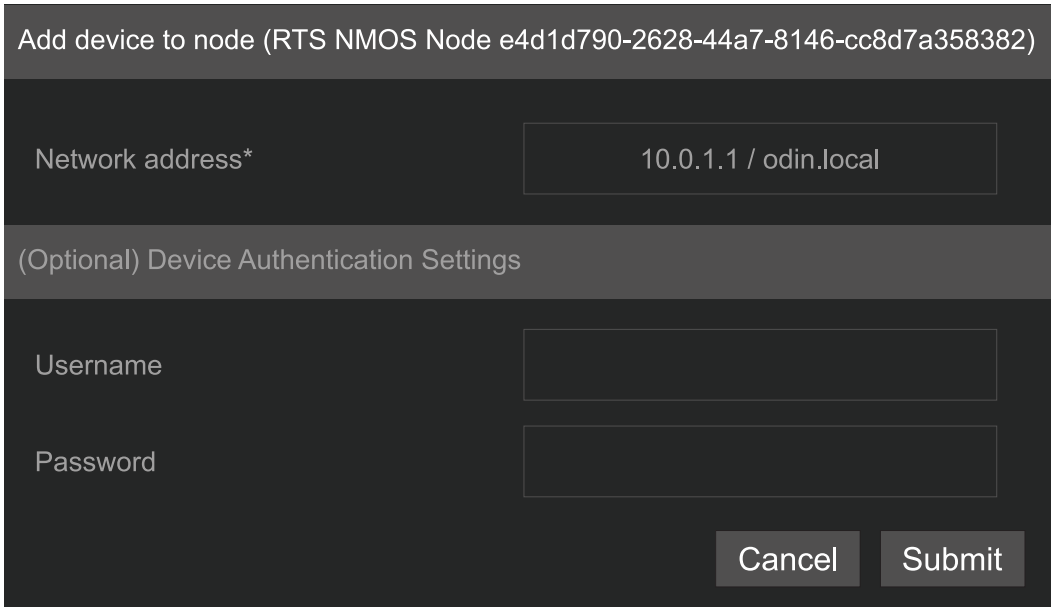
– Add by Network Address
– Add from Discovered Devices

4.2.1 Add by network address

Use the **Add by network address screen** to add devices individually.

To **add a device**, do the following:

1. Navigate to the **Devices screen**.
2. Select the **node** to which you want to add the device.
3. Click **Add by Network Address**.
   The Add device to node screen opens.



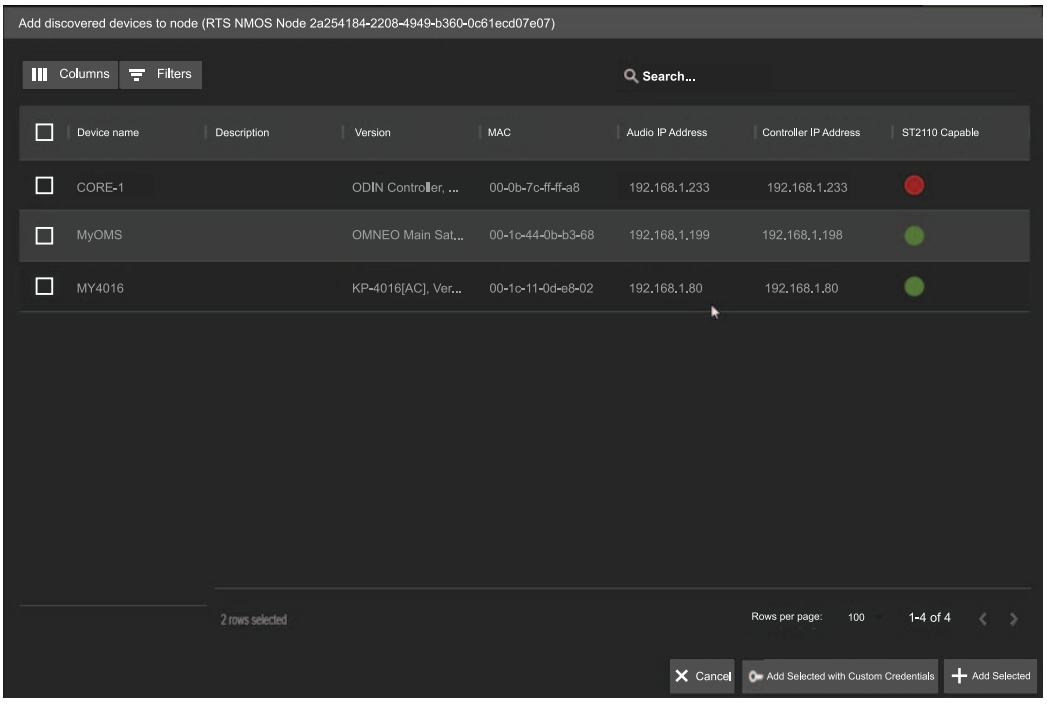
4. Enter the **Network address** of the device you want to add.
5. (Optional) Enter a **username** for authentication.
6. (Optional) Enter a **password** for authentication.
7. Click **Submit**.

4.2.2 Add from discovered devices

The **Add from discovered devices** screen shows a list of devices found on the network that are NMOS capable.

To **select devices you want to add to the node**, do the following:

1. Navigate to the **Devices screen**.
2. Select the **node** to which you want to add devices.
3. Click **Add from Discovered Devices**.
   The Add discovered devices to node screen opens.

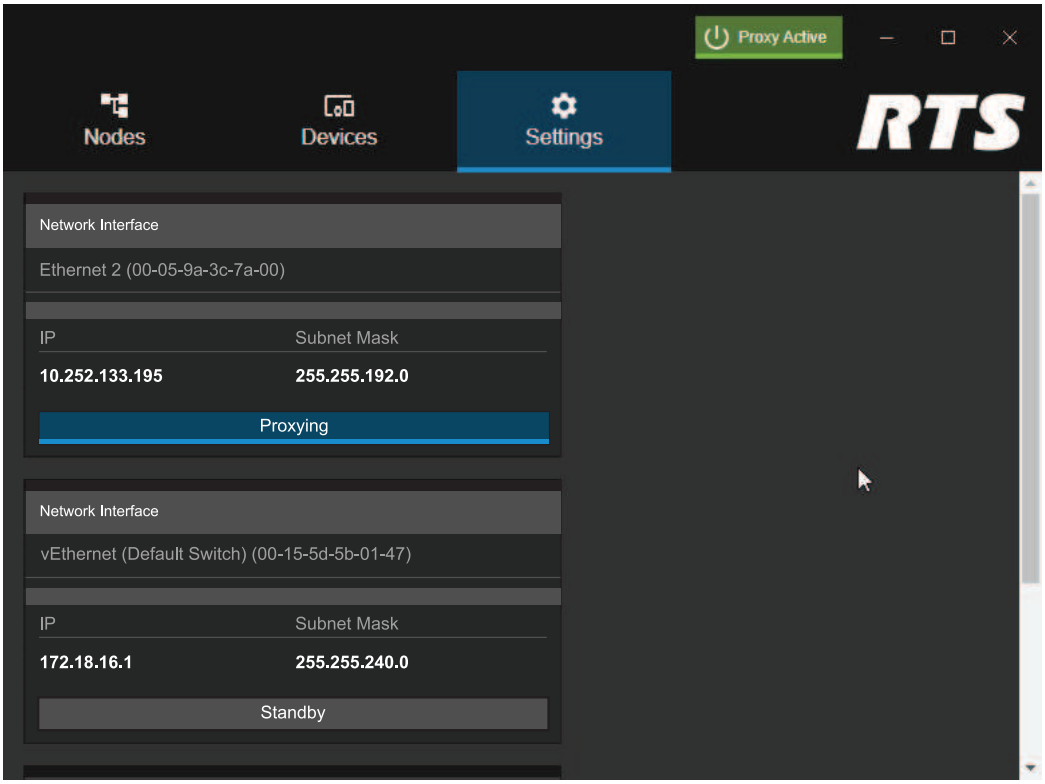


4. Select the **checkbox** next to the devices you want to add to the node.
5. Click **Add Selected**.
   The selected devices display in the node.

4.3 Settings

Use the Settings screen to see all the network interfaces available on the network and the network interface settings on which NMOS node is active.

Notice!
Nodes automatically register on every network interface. Having two active network interfaces on the same computer produces duplicate results on the Devices screen. Be sure to set one Network Interface to Standby to give accurate results.



To **change the status of the network interface**, do the following:

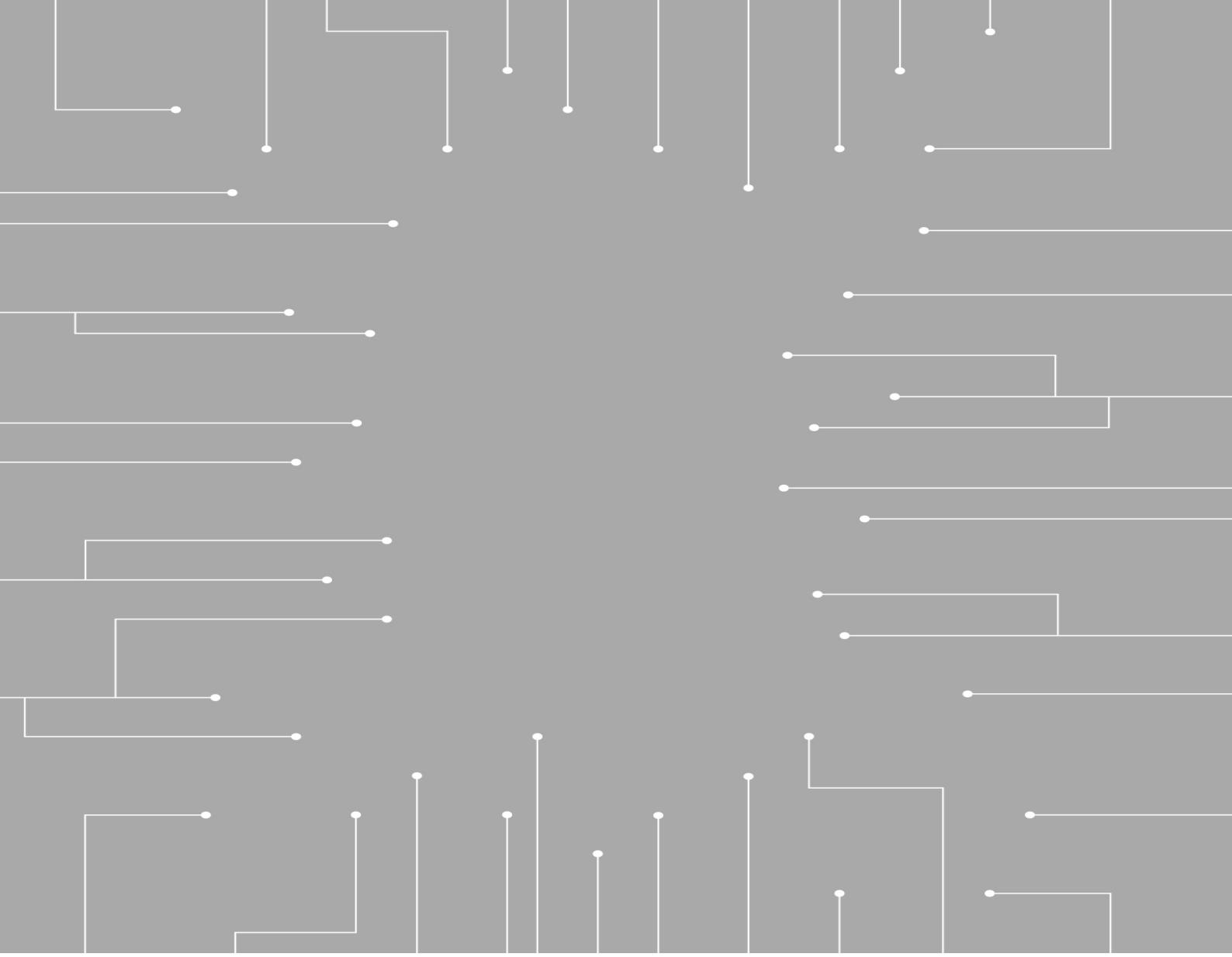
- Click the **Proxying/Standby** button.
  The state toggles to the opposite current state.

5 Frequently Asked Questions

1. What platform supports RNP?
   - Windows 10 and higher
   - Plans for MacOS and Linux support in the future
2. What protocols does RNP support?
   - NMOS IS-04
   - NMOS IS-05
   - NMOS IS-08
3. Do I need to upgrade the firmware?
   - Yes, an upgrade is necessary for the device to recognize the NMOS proxy.
   - See *Introduction, page 4* for firmware requirements.
4. Which RTS devices support NMOS proxy?
   - Devices must support ST2110. Currently, ODIN, KP-Series, OMI, OMS, OKI, and OEI-2 are ST2110 capable. DBP and DSPK support will be available once ST2110 capability is added.
5. How many nodes can I create?
   - Currently, the limit is 64 nodes.
6. Can nodes communicate with each other?
   - Nodes are independent from other nodes. Nodes can share devices, if needed. If Nodes share devices, the device information (status, configuration) is synchronous.
7. What if I shut down the UI or the proxy?
   - Devices maintain previous configurations and audio routes.
8. How do customers use RNP?
   - RNP is a user interface that serves as a proxy to the NMOS protocols that presents itself as an NMOS note. RNP acts as a proxy between RTS OMNEO based devices and non-RTS NMOS third party utilities, such as NMOS explorers, NMOS nodes, and NMOS controllers.
9. Where can I get the third-party NMOS utilities?
   - NMOS is an evolving standard, there are examples on the NMOS website, under NMOS solutions.
   - Using an in-house scripting solution is also an option.
10. Does RTS have plans to develop NMOS registry or NMOS explorer?
    - Not at this time.

6 OSS

1.	NMOS cpp	http://www.apache.org/licenses/LICENSE-2.0	https://github.com/sony/nmos-cpp
2.	boost/1.80.0	Boost Software License -version 1.0 - August 17th, 2003	
3.	bzip2/1.Y.Z	(specific license, requires license texts)	
4.	libbacktrace/cci.20210118	(# Copyright (C) 2012-2016 Free Software Foundation, Inc.)	
5.	zlib/1.Y.Z	(specific license, requires license texts)	
6.	cpprestsdk/2.10.18	The MIT License (MIT)	
7.	websocketpp/0.8.2	combination of free to use licenses, but require license texts	
8.	openssl/1.1.1	specific open ssl license	
9.	json-schema-validator/2.2.0	The MIT License (MIT)	
10.	nlohmann_json/3.11.2	The MIT License (MIT)	
11.	zlib/1.2.13	(specific license, requires license texts)	



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