

## Icon-5066 Evaluation Guide

---

Configuring R3.1 release of Isode's Icon-5066 Server on Windows and Linux Platforms for use with applications requiring a single STANAG 5066 node or multiple STANAG 5066 nodes.

## Contents

Introduction .....	3
Objectives .....	3
Using Isode Support .....	4
Preparing the Server Environment .....	5
Naming the Server .....	5
Install the Isode Software .....	5
Activating the Isode Products .....	7
Adding & Configuring Nodes .....	11
Adding Node 1 .....	11
Configuring Node 1 .....	13
Adding & Configuring Node 2 and 3 .....	20
Enabling the Nodes .....	21
Configuring and Starting MoRaSky .....	23
Testing the Configuration with the S5066 Console .....	27
Start the S5066 Console .....	27
Configure the S5066 Console .....	27
Testing with the S5066 Console .....	29
What Next? .....	32
Whitepapers .....	32
Copyright .....	33

## Introduction

This guide is intended to give the reader basic information on how to configure Isode's Icon-5066 Server Product. Icon-5066 is a STANAG 5066 Server that can support multiple STANAG 5066 nodes on a single server.

Supporting multiple nodes on a single server is very helpful in lab environments, which this guide is aimed at. In a live environment it is likely that different nodes will be on different networks and locations, as such in this scenario an Icon-5066 Server will be required for each node.

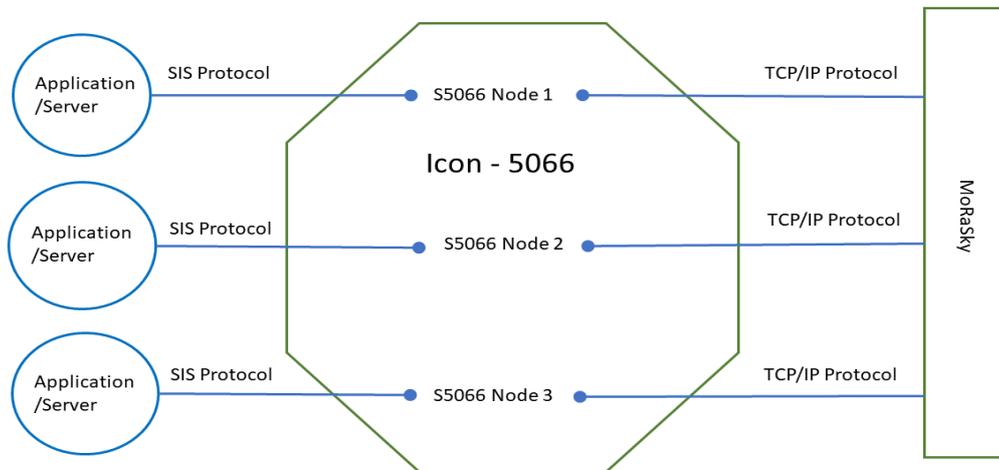
More information on Icon-5066 can be found at [www.isode.com/product/stanag-5066-server/](http://www.isode.com/product/stanag-5066-server/)

## Objectives

In this guide you will be shown how to configure three STANAG 5066 nodes that are connected to Isode's Modem Radio Sky Simulator (MoRaSky) in a Wireless Token Ring configuration. It should be noted that this is not designed to configure Icon-5066 for your requirements but merely give you experience of configuring Nodes and Devices.

The diagram below gives an overview of this setup.

*System Overview*



By the end of this guide you will have:

1. Installed the Icon-5066 server software and started the Icon-5066 Services
2. Used the web based user interface to configure S5066 Node 1, S5066 Node 2 and S5066 Node 3 that are connected to each other via a local Isode MoRaSky instance.
3. Connected the S5066 Console GUI to S5066 Node 1, S5066 Node 2 and S5066 Node 3 to test data throughput and chat.

For the purposes of this evaluation we have assumed this is a "clean" installation of Icon-5066 on to a physical or virtual machine. If you have previously installed Icon-5066 on the hardware or VM you are using for this evaluation, please make sure you have completely uninstalled that version before proceeding.

## Using Isode Support

You will be given access to Isode support resources when carrying out your evaluation. Any queries you have during your evaluation should be sent to [isode.support@isode.com](mailto:isode.support@isode.com). Please note that access to the Self-Service Portal for web-based ticket submission and tracking is not available to evaluators.

## Preparing the Server Environment

You should visit <https://www.isode.com/support/platform-support/> to discover which operating systems are supported for Isode evaluations.

### Naming the Server

Make the machine name : ICON5066SERVER

Make the primary dns suffix for the server HEADQUARTERS.NET

Alternatively, you may use your own names or add dns entries in a dns server or hosts file.

### Install the Isode Software

Follow the instructions in the release notes for the appropriate platform for the products. For this guide, the following products were used:

Icon-5066 3.1V3

M-Switch 19.0V21

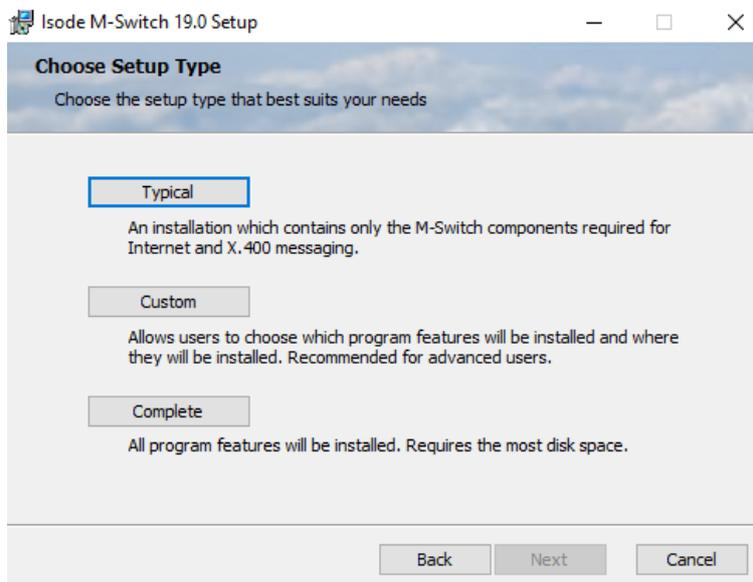
MAS 1.1 (Optional, see Product Activation later in this document)

On Windows, select the default install options when executing the installer for Icon-5066 and MAS.

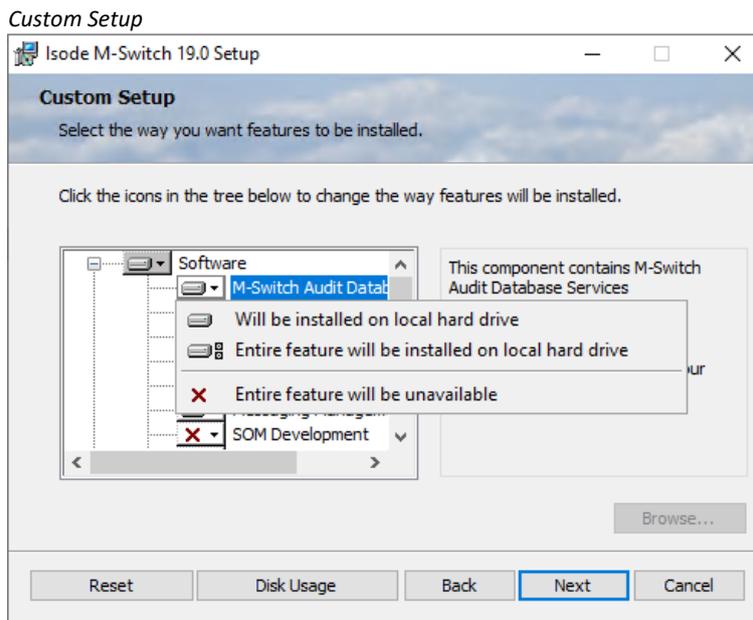
Remember to install an appropriate java runtime engine (refer to product release notes) and in a Windows environment the visual c++ redistributable package.

Start the M-Switch installer and, when asked for a Setup Type, choose [Custom]

#### Custom M-Switch Installation



In the **Custom Setup** screen disable all of the features except for “Messaging Graphical Tools” and “Messaging Management Tools” by selecting, for every other option, the “Entire Feature will be unavailable” option.



Click “Next” on this screen and “Install” on the next. On the “Completed” screen click “Finish”.

On Linux, install all the RPMs with the command:

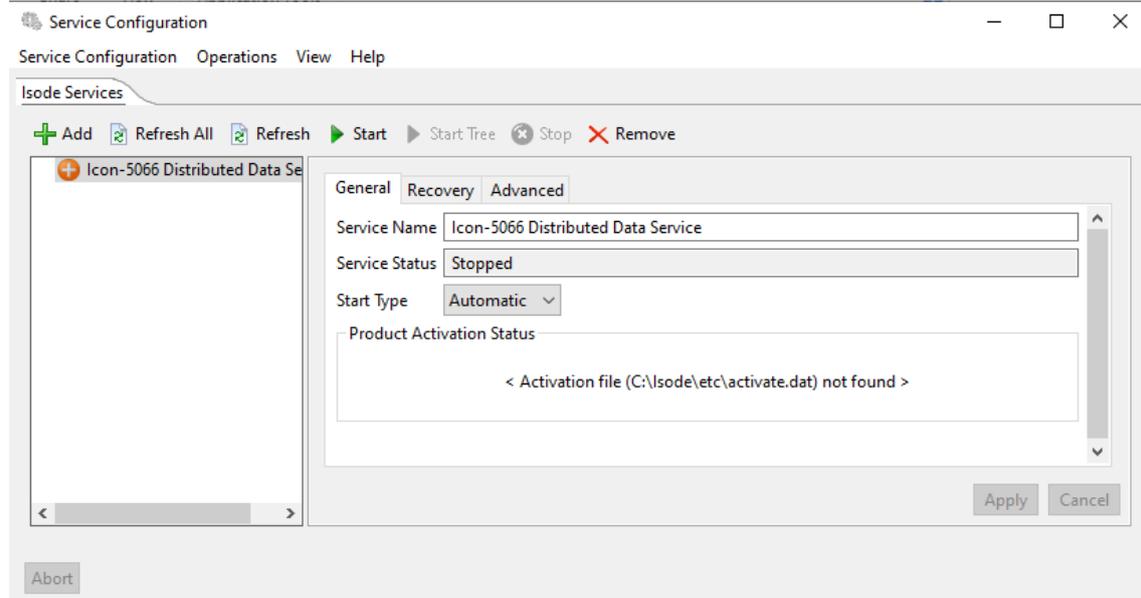
```
# sudo rpm -i ISD*.rpm
```

Please use a supported web browser as documented in the product release notes.

## Activating the Isode Products

Isode Products are typically Activated using the Isode Messaging Activation Server (MAS). Some Isode Products, such as Icon-5066 also support local Product Activation. If you are installing other Isode Products such as M-Switch, M-Vault, M-Box etc on the same server as Icon-5066 we recommend using MAS and you should refer to the MAS Evaluation Guide for how to do that. For this Guide we will use the Local Product Activation in Icon-5066. You will need to start Icon-5066 first. For Windows this is done using the Isode Services Configuration Tool.

### Isode Service Configuration – Icon-5066



Start the Service

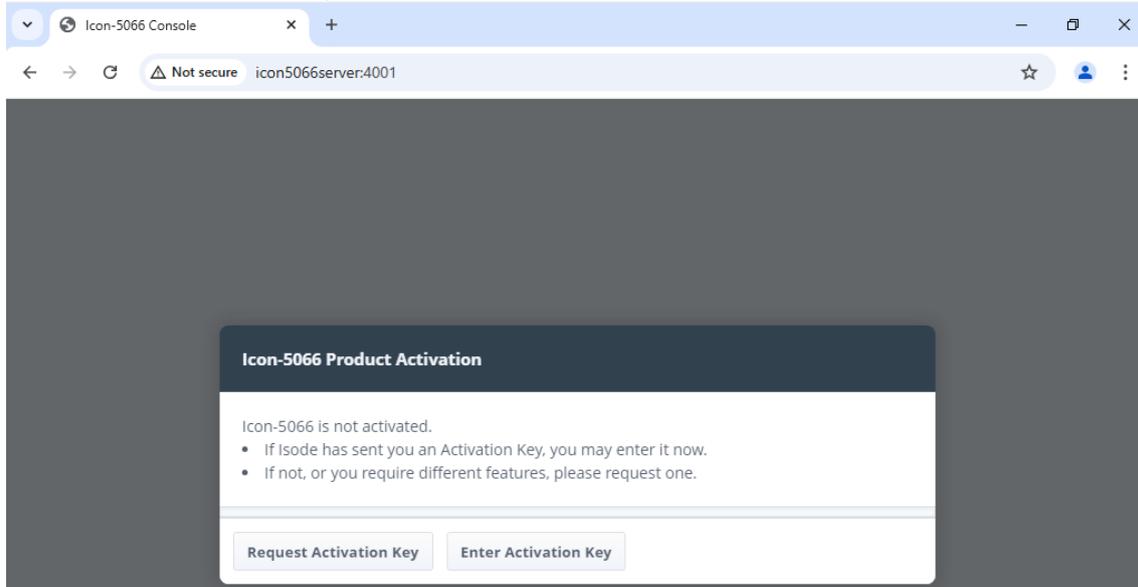
On Linux use the command line below.

```
# sudo systemctl start isode.icon.ddsd
```

To Activate Icon-5066 point your browser to the URL below.

<http://icon5066server:4001>

## Icon-5066 Product Activation Step 1



Click Request Activation Key.

## Icon-5066 Product Activation Step 2

A screenshot of a web browser window showing a "Product Activation" dialog box. The dialog has a title bar with "Product Activation" and a close button. Below the title bar, there is a text prompt: "Please provide a reference identifying this Icon-5066 server, which will be displayed as part of the product activation information." Below this prompt is a text input field labeled "Reference:" containing the text "Icon-5066 Evaluation". At the bottom of the dialog are two buttons: "Generate Activation Request" and "Back".

Enter a "Reference" and Click "Generate Activation Request".

*Icon-5066 Product Activation Step 3*

**Product Activation** ×

Please send the following Activation Request code to the Isode Product Activation Service [support@isode.com](mailto:support@isode.com), explaining your requirements for this server.

```
ZmVhdHvyZT0iSWNvbi01MDY2IiBjdXN0b21lci1yZWY9Ikljb24tNTA2NiBFdmFsdWF0aW9uIiBob3N0aWQ9I1VVSUQ7MjU0NWVmOTgxMDM4ZmVmY2U4YzlhMzNjMDg1MwY2YjMyMTF1ZmM2NmY1YTkwODViYW44NTgwMDAyZjd1Nzg2MzBiYTgzYTc4MmI0MzdiZDc2MGI4ZDVjNDBjMGE2ZmQ4NTBkNTdmZjExMjM0YzUzMTc1OWYwMGJiNjNmYmZkZDci
```

Back

Copy the Activation Request using the icon on the bottom left corner and send it to [isode.support@isode.com](mailto:isode.support@isode.com) noting that this is for an Icon-5066 Evaluation. Isode Support will then send a Product Activation Key. When they have done this click the “Back” button.

*Icon-5066 Product Activation Step 4*

**Icon-5066 Product Activation**

Icon-5066 is not activated.

- If Isode has sent you an Activation Key, you may enter it now.
- If not, or you require different features, please request one.

Request Activation Key

Enter Activation Key

Click “Enter Activation Key”

## Icon-5066 Product Activation Step 5

**Product Activation**✕

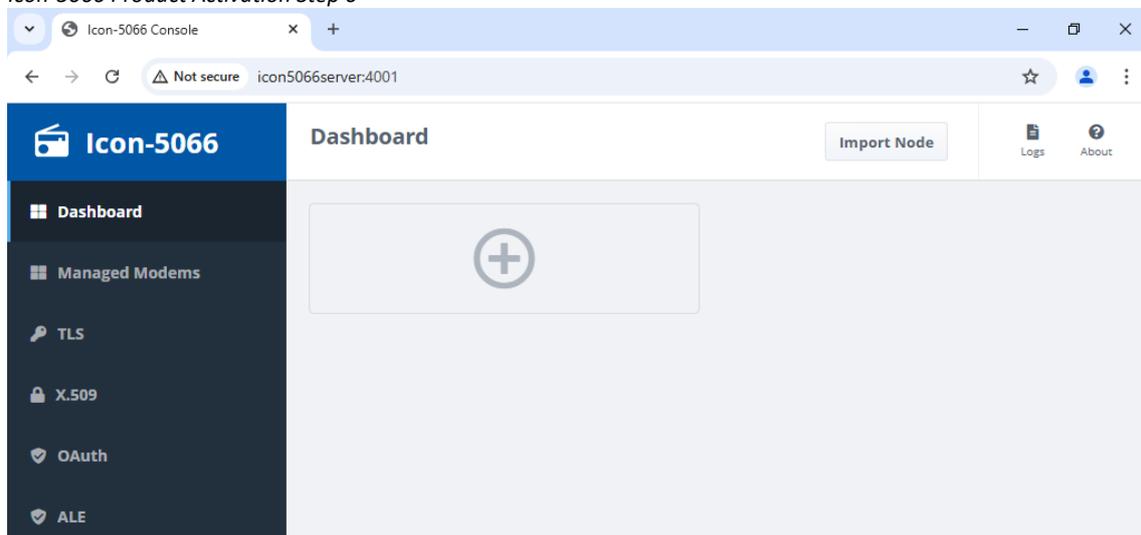
Please input the Activation Key provided by the Isode Product Activation Service for Icon-5066.

```
JlCj0iSW50iIBjdXN0b21lci1yZWY9IkV2YWwgR3VpZGVzIHVwZGF0ZSlgY3VzdG9tZXItbmFtZT0iSXNvZGUgLSBhbnRlIgpzaWduPSJNRVIDSVFEcktucnhuMldKY1cwNzIEMjZiZDY1blpOZTRhenI2YUg5NkhYU3FXNEJ4QUloQUx6VkZoSmhvY2tWRUdCeWplQ05kSjFyN043cmI0SExYWndwY3Z5TVQzcEoiCg==
```

[Activate](#)[Back](#)

Paste in the Activation Key Sent by Isode Support and Click the “Activate” button. If there are no errors you will be presented with the Icon-5066 Initial Configuration Screen.

## Icon-5066 Product Activation Step 6



## Adding & Configuring Nodes

The Icon-5066 Server can support multiple S5066 Nodes (on separate ports) on a single server. These nodes are configured using the **Icon-5066 Console**, a Web-based management tool. In this section we're going to add 3 Nodes.

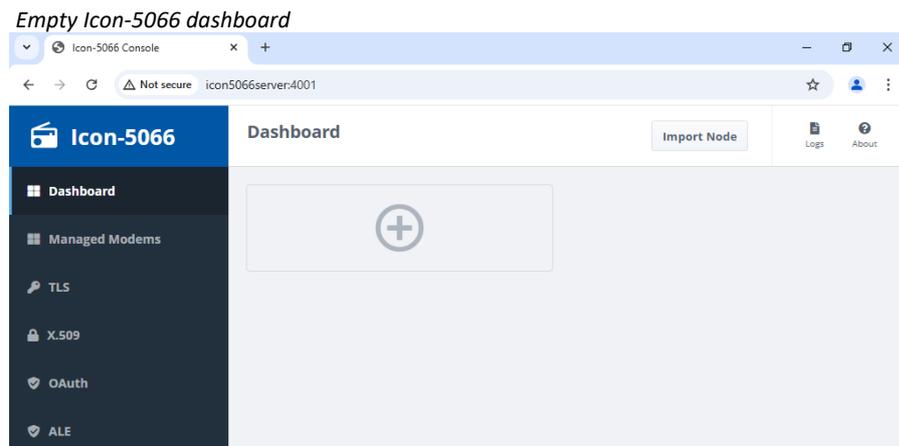
---

*In this guide we're going to configure nodes to use Isode's MoRaSky (Modem Radio Sky), a software tool provided by Isode to help test Isode HF products. MoRaSky provides a service equivalent to HF modems connected to Radios and operating over the Ionosphere. It enables sophisticated testing of Icon-5066 and the applications it supports, without use of hardware or over the air transmission.*

*If your intention is to use physical modems in place of MoRaSky, please consult Icon-5066 Administration Guide in conjunction with this section.*

---

Launch the Icon-5066 console by launching a web browser and entering `http://myserver.hostname:4001`



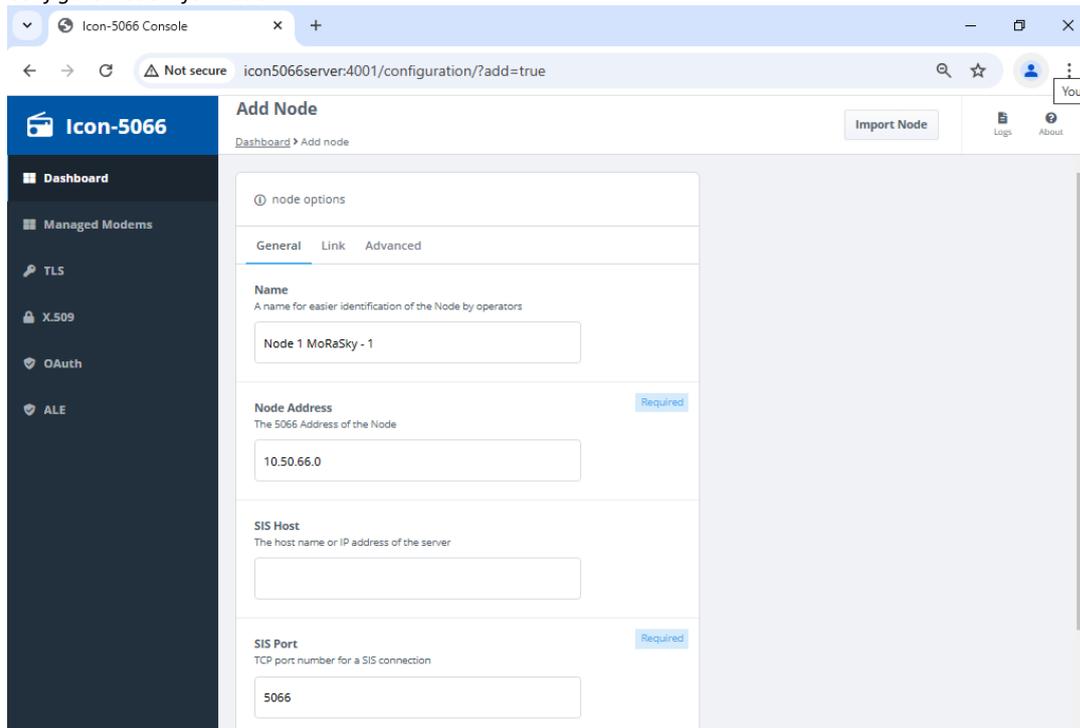
### Adding Node 1

Click the “+” Button.

In the “Add Node” dialogue, enter the following information :

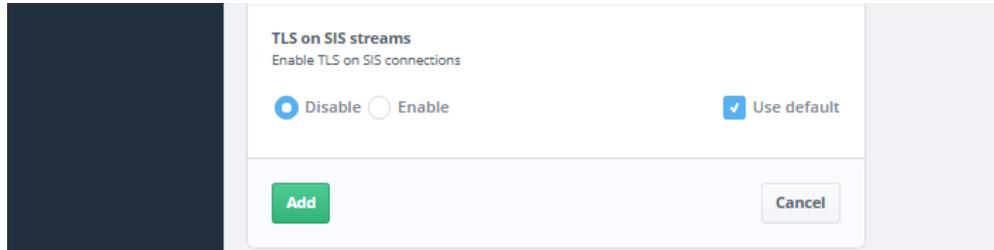
- Enter a Friendly Name for **Name**, we will use "Node 1 MoRaSky - 1"
- Enter the **Node Address** (typically 10.50.66.0 for the first node). Node addresses must be unique and are similar to IPv4 syntax, but the first octet has max value of 15. The choice for demos is arbitrary, but live deployments have rules for international allocation.
- Enter the **SIS Host** (the hostname of your Icon-5066 Server), this is optional and if left blank Icon-5066 will listen on all IP Addresses. If your server has multiple IP Addresses and you want each node to listen on a specific IP Address then you should enter the IP Address or hostname here.
- Enter the **SIS Port**, 5066 is the standard port for this protocol but if you are configuring multiple nodes on the same server you will need different Ports for each node.
- The remaining fields can be left with their default values.

## Configure Node information



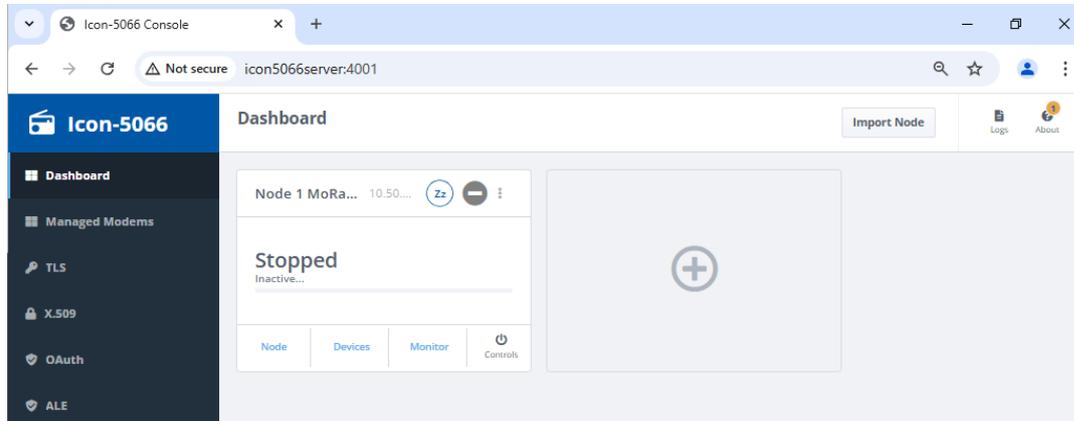
Then Scroll to the bottom

## Add New Node



and Click "Add". You should get a notification that the Node was successfully added. Then Click on "Dashboard".

## Dashboard



## Configuring Node 1

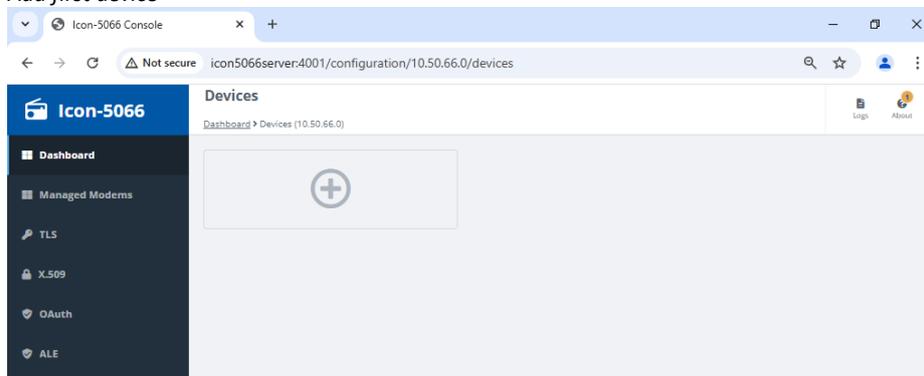
Each node consists of a core configuration together with a number of devices that are used by, or control the behaviour of, the S5066 node. Each working node configuration must define the following set of mandatory devices.

- **Modem** device that defines how to communicate with the underlying modem (simulated or real).
- **Rate Change** device controls the rate at which data can be sent to the modem.
- **Transmission Control** device controls the pattern of data transmission.

From the dashboard, select “Devices” for the Node you have just created.

In this evaluation we will be using the MoRaSky GUI to create a clear channel, 3 Radio configuration using Waveform 5069, Bandwidth 24, 38400 bps and small Interleaver.

### Add first device



Click the “+” button.

### Choose a new device

#### Choose new device:

ALE Device
EOT Engine
Modem
Monitoring
Rate Change
RX-end Handler
Receive Modem
Transmission Control
Transmit Modem

Next...      Cancel

Select “Modem” and Click “Next...”.

## Choose Device Driver

Choose new device driver:

codan
data_only
leonardo
loop
<b>morasky</b>
rapidm
thales

Select the “morasky” modem and click “Select”.

## Configure Modem ip address

 **Icon-5066**

### Add Device

[Dashboard](#) > [Devices \(10.50.66.0\)](#) > Add Device

- Dashboard
- Managed Modems
- TLS
- X.509
- OAuth
- ALE

**Morasky modem simulator driver**

**IP address** Required  
RAP1 interface IP address. [More...](#)

**Port number**  
RAP1 interface port number

  Use default

**Streaming configuration**  
'clock' is fine for half-duplex communication, but risks und... [More...](#)

  Use default

**Serial driver configuration**  
If not specified, then the driver will send and receive data ... [More...](#)

Enter 127.0.0.1 for the IP Address, all other values are default, and scroll to the bottom.

*Add the modem*

**Driver respawning configuration**  
 In the event that a driver fails it may be restarted (respaw... [More...](#))

`delay=2 max_mem=10000 max_cb=1000`  Use default

**Add** **Cancel**

Click “Add”, you will get a Notification that the device has been added. Then from the top menu.

*Select Devices*

**Icon-5066** Modem (morasky) [Delete device...](#) [Logs](#) [About](#)

[Dashboard](#) > [Devices \(10.50.66.0\)](#) > Modem (morasky)

Click “Devices”.

*Modem device added*

**Icon-5066** **Devices** [Logs](#) [About](#)

[Dashboard](#) > [Devices \(10.50.66.0\)](#)

**Modem morasky**

✓ Device configuration looks valid

14% 1 of 7 parameters using custom values

[Configure](#)

Click the “+” Button.

*Select rate change device*

**Choose new device:**

- ALE Device
- EOT Engine
- Monitoring
- Rate Change**
- RX-end Handler
- Receive Modem
- Transmission Control
- Transmit Modem

**Next...** **Cancel**

Select “Rate Change” and Click “Next...”.

### Select fixed driver

Select “fixed” and Click “Select”.

### Select a waveform

From the “Waveform” drop-down select wf=5069 bw=24 bps=38400 ilv=S”. All other values are default. Then scroll to the bottom.

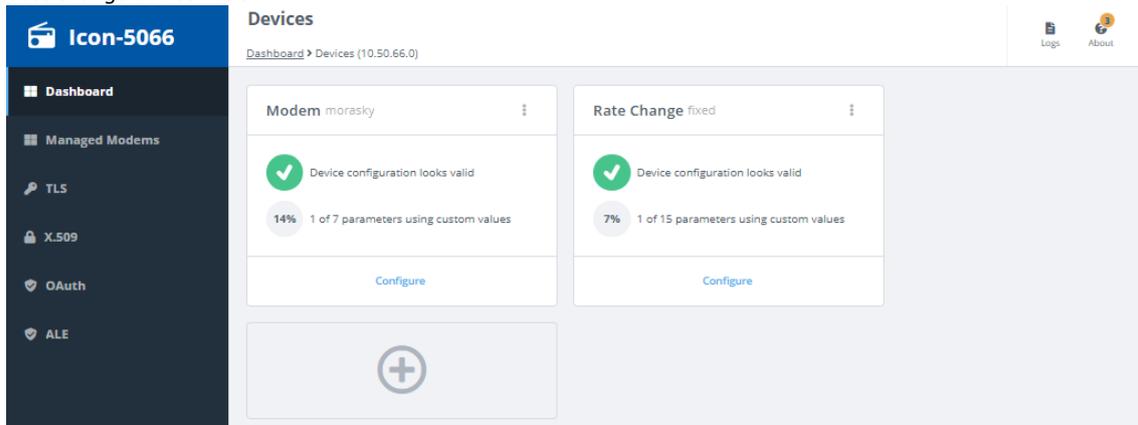
### Add the Fixed rate change device

Click “Add”, you will get a Notification that the device has been added. Then from the top menu.

### Select Devices

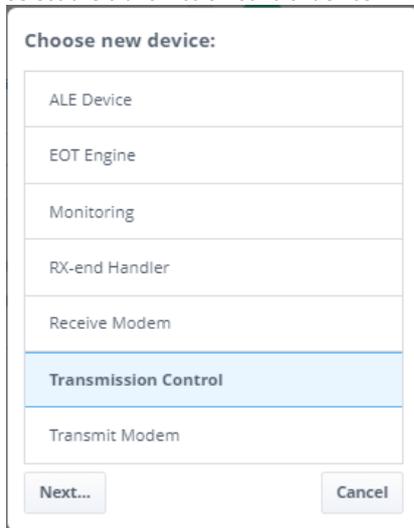
Click “Devices”.

*Rate change device added*



Click the “+” Button.

*Select the transmission control device*



Select “Transmission Control” and Click “Next...”.

### Select wtrp transmission control

**Choose new device driver:**

- ale\_121
- bc\_cont
- bc\_gaps
- csma
- notx
- si\_cont
- si\_gaps
- wtrp**

Select Back...

Select “wtrp” and Click “Select”.

### Configure and add WTRP

**Icon-5066** Add Device

Dashboard > Devices (10.50.66.0) > Add Device

WTRP

Seconds to wait for modem to drop RX-active after EOT  
This is for recovery from unexpected modem behaviour, o... More...

10  Use default

Seconds to wait before aborting transmission (both Rx and Tx)  
This is for recovery from unexpected modem behaviour

150  Use default

Add Cancel

Leave the default values and Click “Add”, you will get a Notification that the device has been added. Then from the top menu.

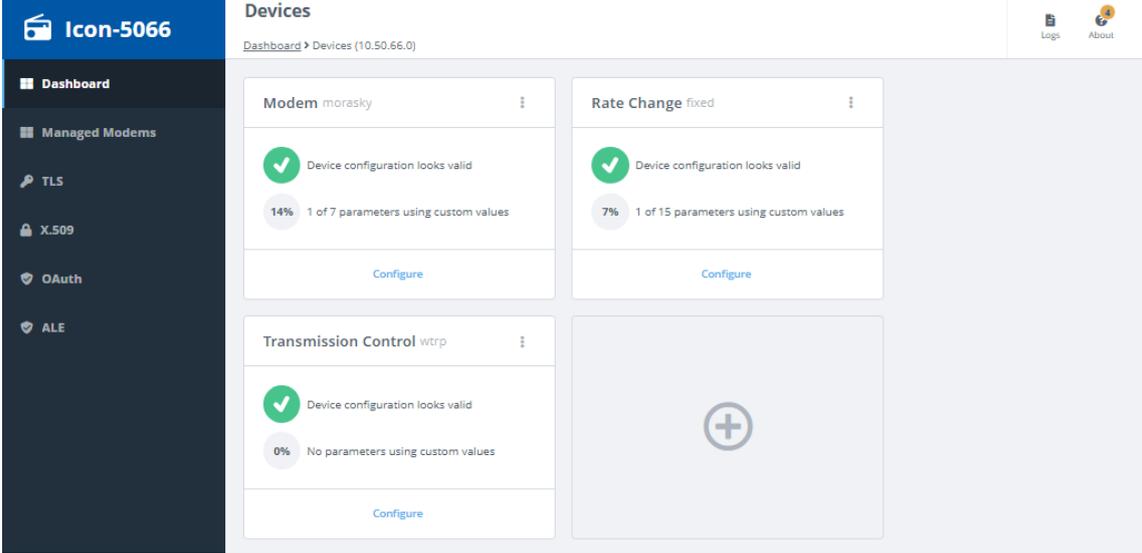
### Select Devices

**Icon-5066** Transmission Control (wtrp)

Dashboard > **Devices (10.50.66.0)** > Transmission Control (wtrp)

Delete device... Logs About

Transmission control device added

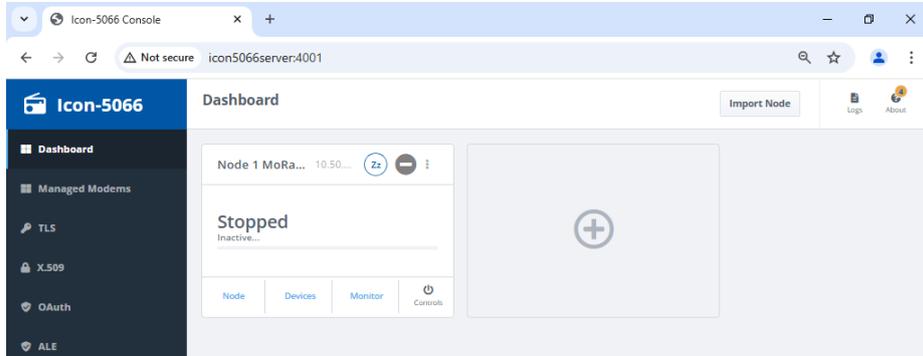


You have now completed configuration of Node 1.

## Adding & Configuring Node 2 and 3

From the “Dashboard”.

### Dashboard

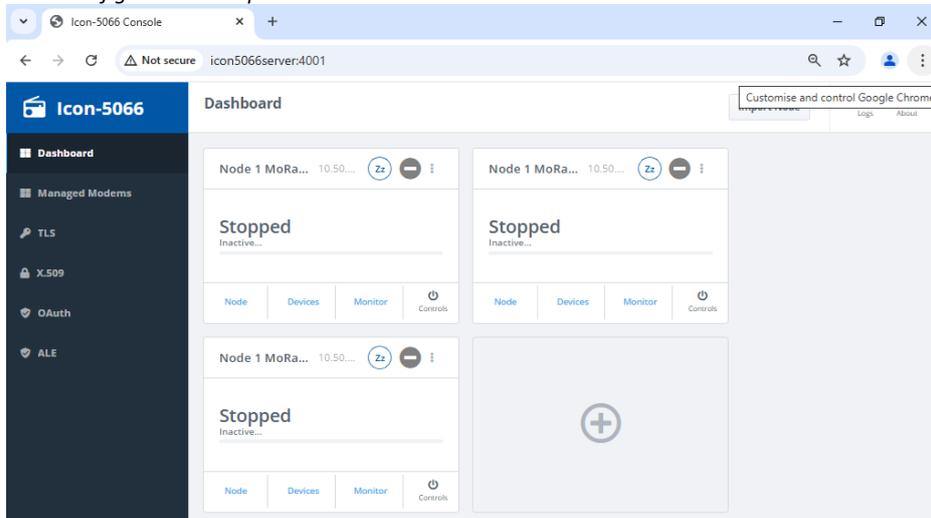


Use the “+” Button to Add and configure Node 2 and 3 in the same way as Node 1 but using the following parameters:

- Node 2 Name : Node 2 MoRaSky - 2
- Node 2 Address: 10.50.66.1
- Node 2 Port: 6066
- Node 2 MoRaSky Port: 58002
- Node 3 Name : Node 3 MoRaSky - 3
- Node 3 Address: 10.50.66.2
- Node 3 Port: 7066
- Node 3 MoRaSky Port: 58003

At the end of this process, Icon-5066 Console Dashboard should display 3 Nodes as below :

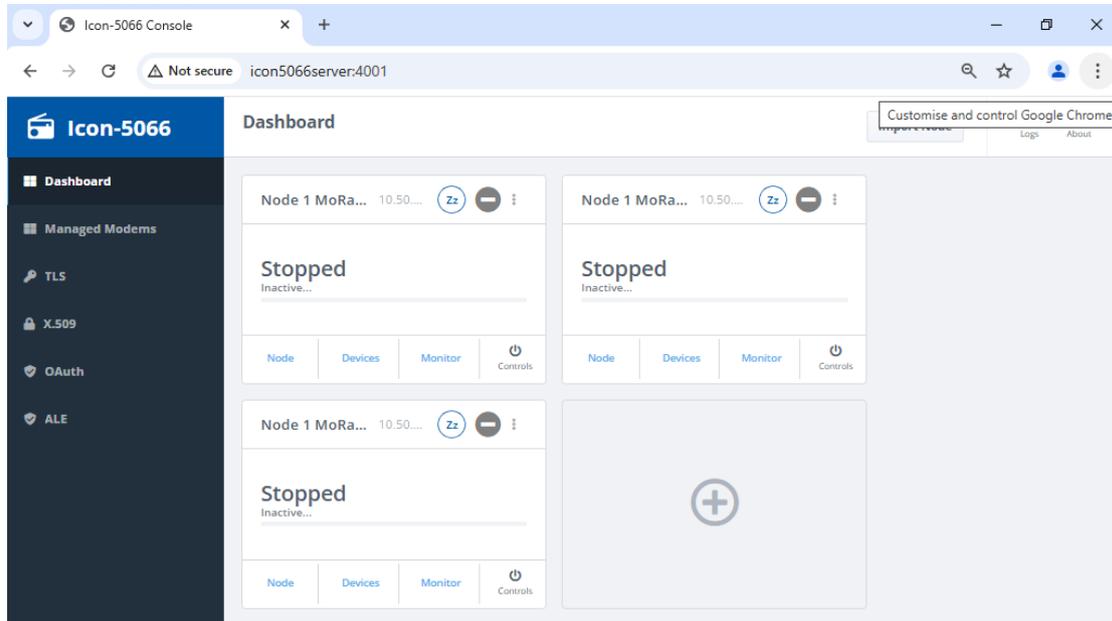
### Node Configuration Complete



## Enabling the Nodes

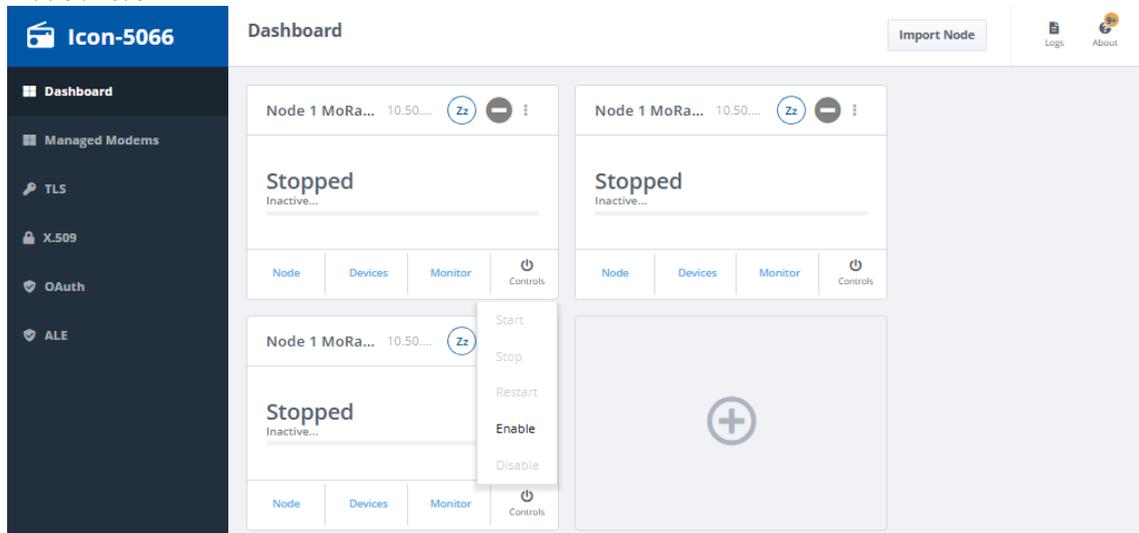
Select “Dashboard”. Each node should be displayed on the dashboard:

### Nodes to be enabled



Press the “Controls” button in the “Node 1 MoRaSky – 1” pane and on the dropdown, select “Enable”

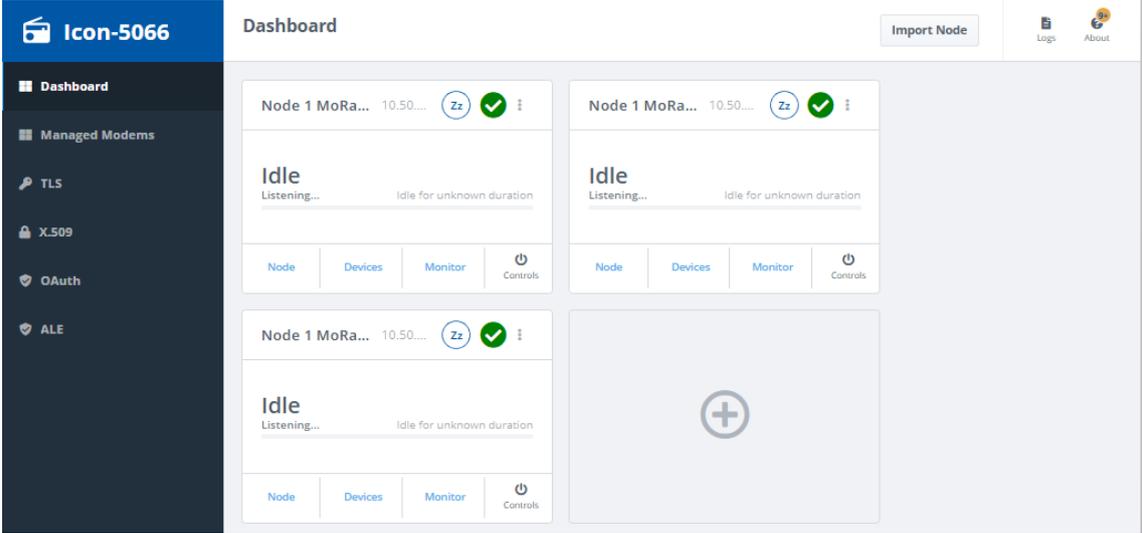
### Enable a node



Repeat for nodes 2 and 3.

A green tick should now indicate each node has been enabled:

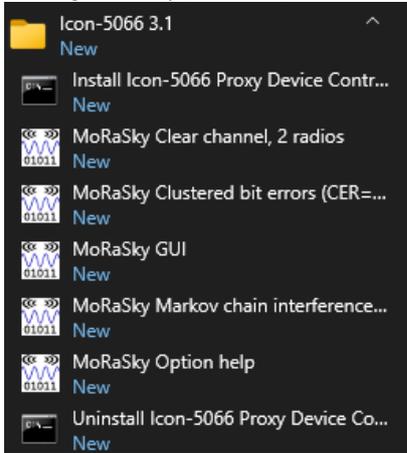
Enabled nodes



## Configuring and Starting MoRaSky

On Windows open the MoRaSky GUI from the Windows Start menu

### Starting MoRaSky (Windows)

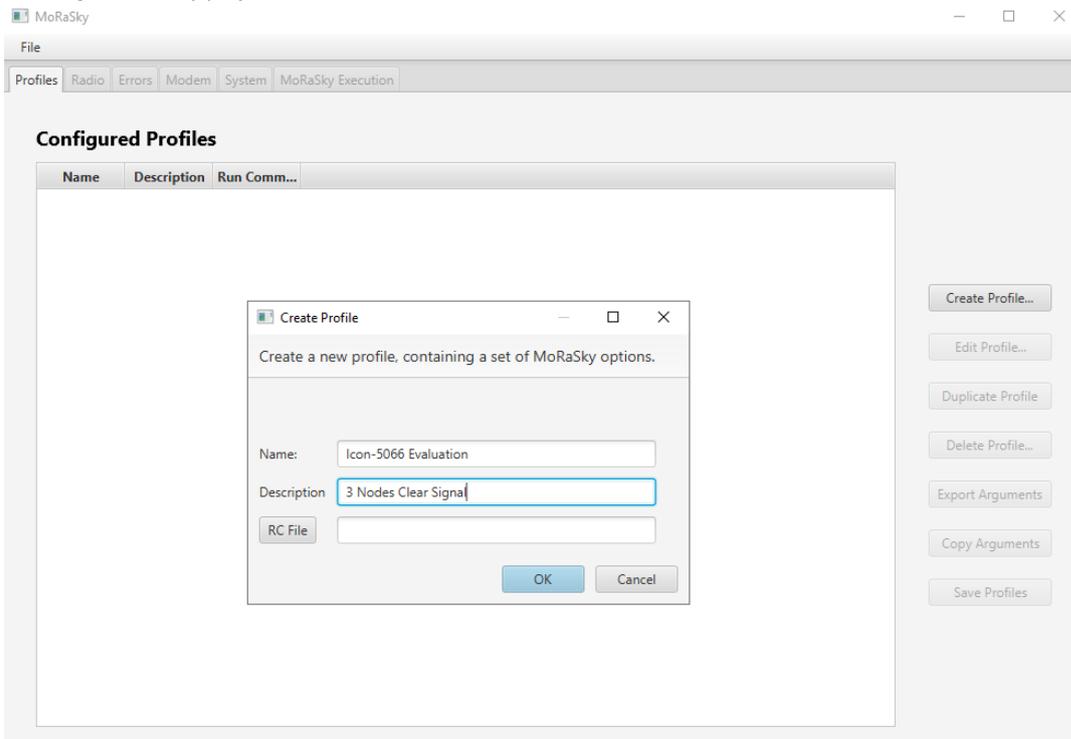


On Linux start the MoRaSky GUI by :

```
# /opt/isode/sbin/moraskyGUI
```

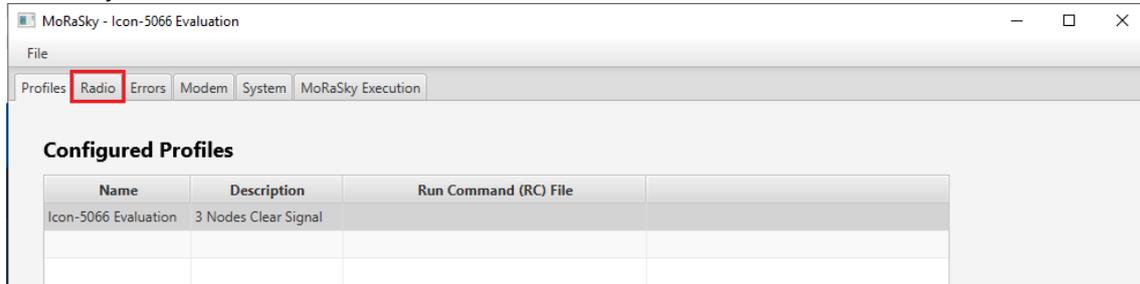
Press “Create Profile ...”, provide a profile name and description and press “OK”.

### Creating a MoRaSky profile



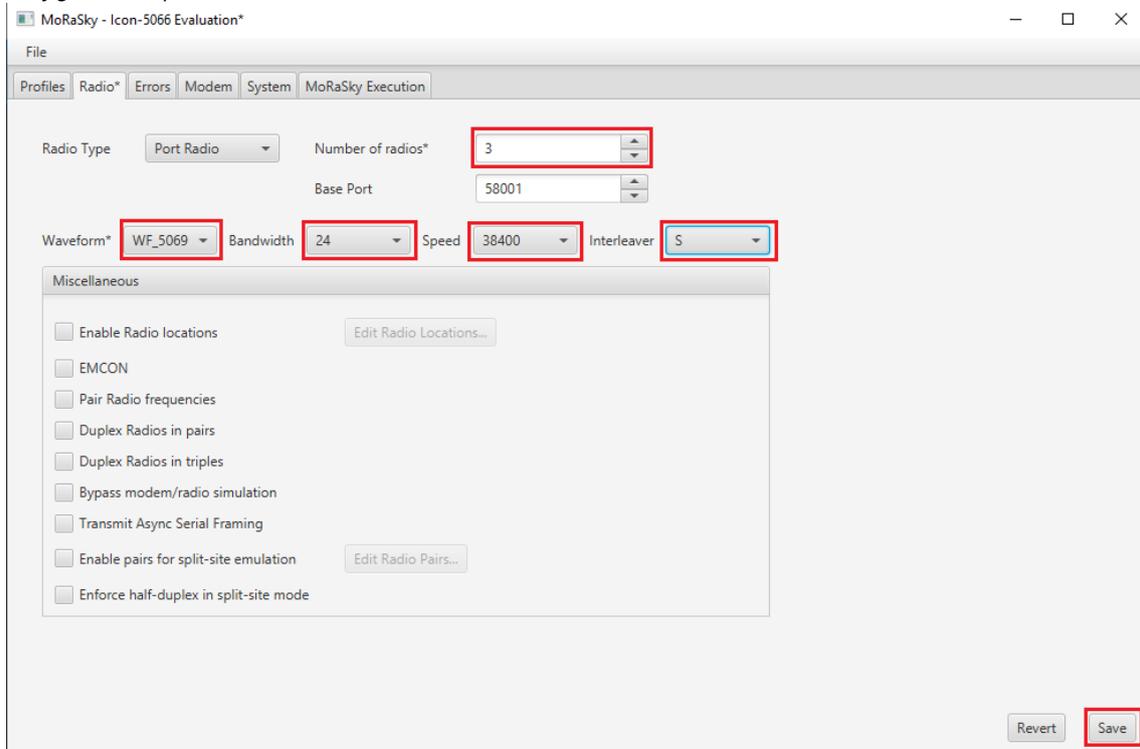
Select “Radio” tab :

*Location of radio tab*



Increase the number of radios to “3”, change the waveform to “WF\_5069”, set the bandwidth to 24, the speed to “38400”, the Interleaver to “S” and press “Save”.

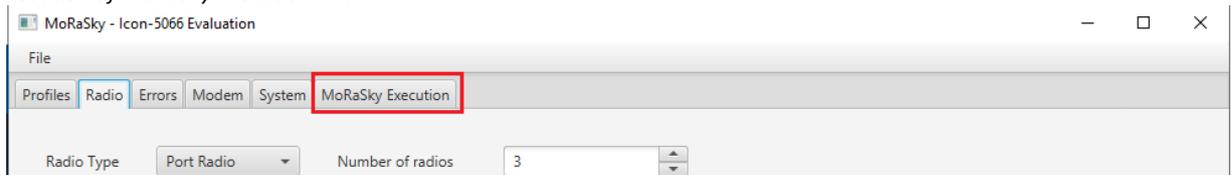
*Configure radio parameters*



Acknowledge the “Profiles Saved” information dialogue.

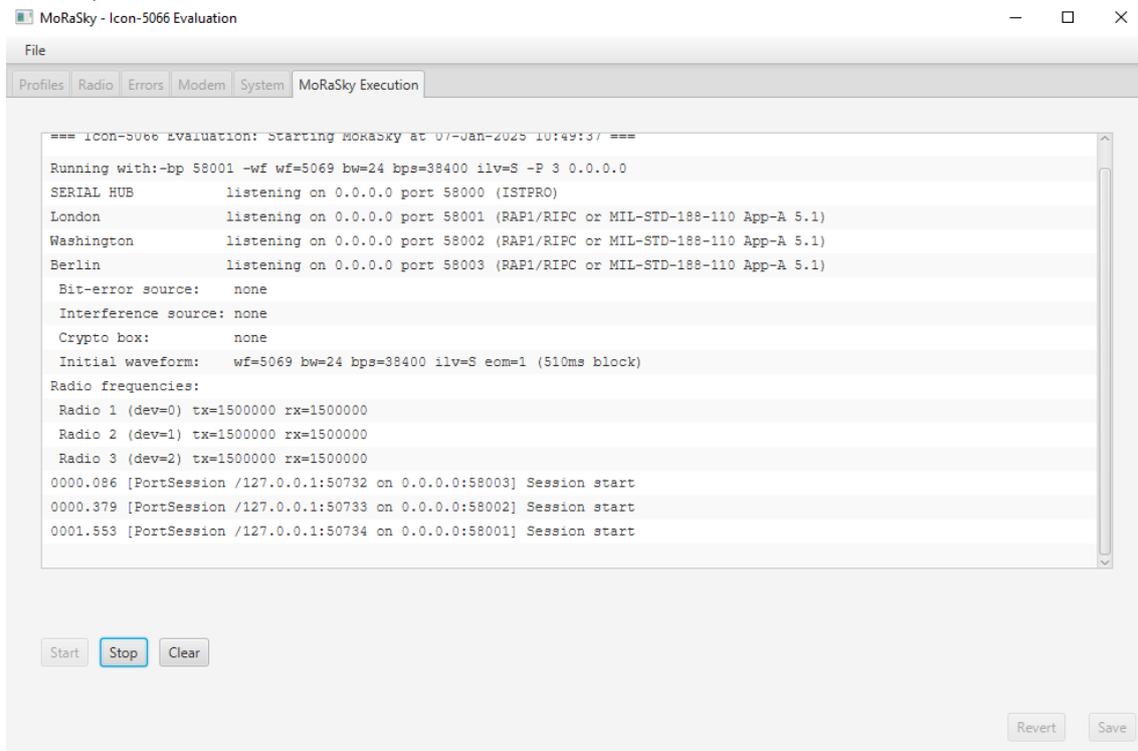
Select the MoRaSky Execution Tab

*Location of MoRaSky Execution Tab*



Press “Start” and note MoRaSky listening on ports 58000 – 58003.

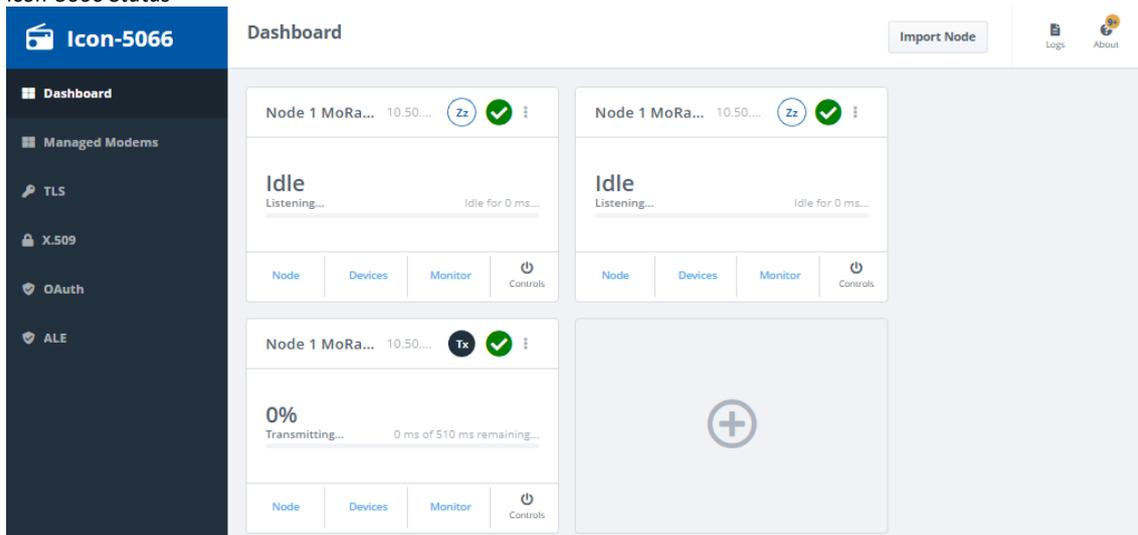
### MoRaSkyExecution



You will also note that the nodes have automatically connected to MoRaSky.

In the Icon-5066 Console, select “Dashboard” and all three nodes should appear.

### Icon-5066 Status



The nodes will start transmitting and receiving to create the “Token Ring”

Press “Monitor” under “Node 1 MoRaSky” to see a description of the node status including the current state of the “Wireless Token Ring”.

Node 1 Status

The screenshot displays the 'Node 1 Status' dashboard for 'Node 1 MoRaSky - 1 (10.50.66.0)'. The interface includes a sidebar with navigation options like 'Dashboard', 'Managed Modems', 'TLS', 'X.509', 'OAuth', and 'ALE'. The main content area is divided into several sections:

- Current status:** Shows 'Rx' with a green checkmark. It includes a table for Modem (Speed: n/a, Interleaver: n/a, Waveform: n/a), ALE (Not connected, Bandwidth: n/a, Setup time: n/a, Attempts: n/a), and Radio (Frequency: n/a, Power: -11 dBm, PA type: n/a). It also features a 'Device health' section with a 40% error rate gauge and a 'Recent activity (10s)' table.
- Wireless Token Ring Monitoring (MON):** A diagram showing a circular token ring between nodes 10.50.66.0 (local node), 10.50.66.1, and 10.50.66.2. A legend indicates that a solid blue arrow represents 'Token transferred' and a dotted red arrow represents 'Token transfer pending'.
- Previous receive (Rx) and Previous transmit (Tx):** Both sections show a speed of 38400 bps and an interleaver of 'short'.

It may take a short amount of time for the “Wireless Token Ring” to appear exactly as in the above image.

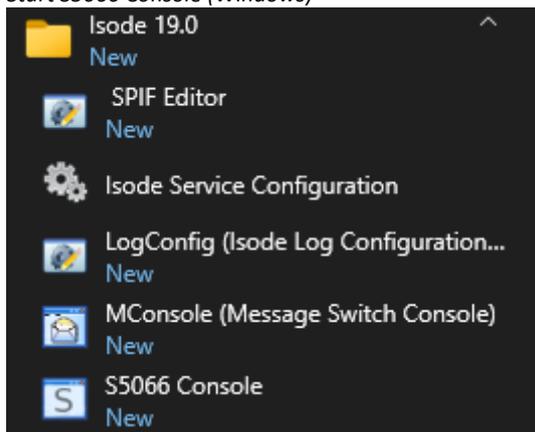
## Testing the Configuration with the S5066 Console

To test that the three nodes connect, we're going to use the S5066 Console, which is installed as during the installation of Isode's M-Switch at the start of this document.

### Start the S5066 Console

Start the S5066 Console on Windows by selecting it from the menu

*Start S5066 Console (Windows)*



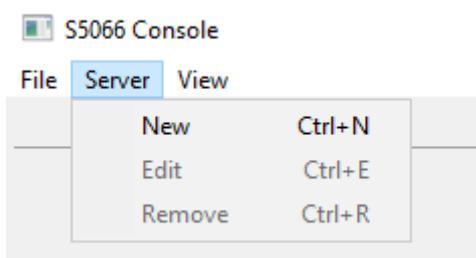
To start S5066 Console on Linux, run the command:

```
# /opt/isode/bin/s5066console
```

### Configure the S5066 Console

From the main S5066 Console screen select "Server > New".

*Add new Server*



In the **New S5066 Server** screen enter the following details:

- Friendly Name: Icon 5066 Node 1
- Hostname: localhost
- Port: 5066

Tick the "Auto-discover" Checkbox and then click [OK].

## Configuring Node 1 in S5066 Console

New S5066 Server
✕

Friendly name:	<input type="text" value="Icon 5066 Node 1"/>
Hostname:	<input type="text" value="localhost"/>
Port:	<input type="text" value="5066"/>
Broadcast address:	<input type="text" value="31"/> <input type="text" value="255"/> <input type="text" value="255"/> <input type="text" value="255"/>
Auto-discover:	<input checked="" type="checkbox"/>
Throughput test PDU size:	<input type="text" value="500"/>
Bind timeout (milliseconds):	<input type="text" value="1000"/>
Rank:	<input type="text" value="0"/>
Transmission mode:	<input type="text" value="ARQ"/> <input type="text" value="Ignore"/> <input checked="" type="text" value="ARQ"/> <input type="text" value="Broadcast"/>
Data delivery confirmation:	<input type="text" value="Node confirmation"/> <input type="text" value="No confirmation"/> <input checked="" type="text" value="Node confirmation"/> <input type="text" value="Client confirmation"/>
Delivery order:	<input type="text" value="As they arrive"/> <input type="text" value="In order"/> <input checked="" type="text" value="As they arrive"/>
Extended field:	<input type="text" value="Not extended"/> <input type="text" value="Extended"/> <input checked="" type="text" value="Not extended"/>
Number of retries:	<input type="text" value="0"/>

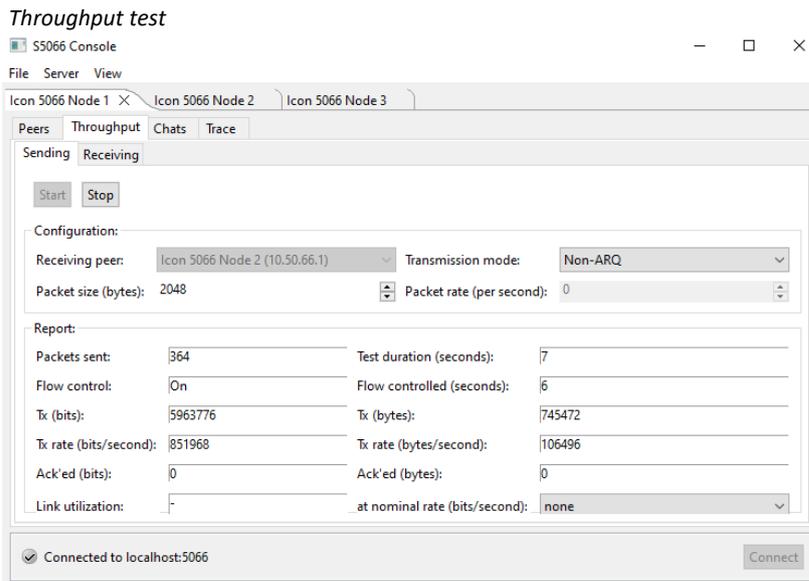
Now repeat this New Server process for Node 2 and 3, using the details that follow:

- Friendly Name: Icon 5066 Node 2
- Hostname: localhost
- Port: 6066
  
- Friendly Name: Icon 5066 Node 3
- Hostname: localhost
- Port: 7066



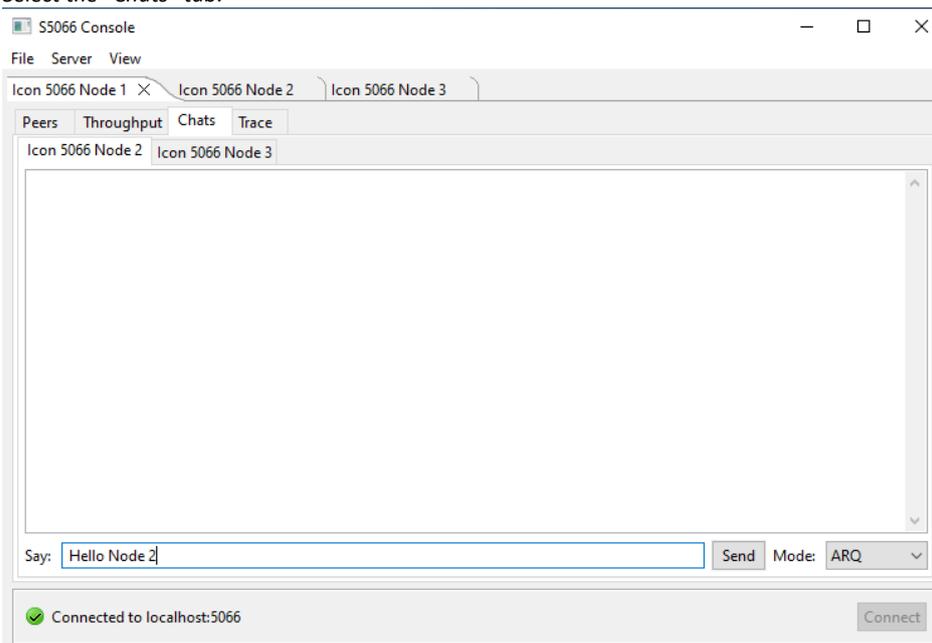
Changing to Icon 5066 Node 3 tab and clicking “Discover” will result in the “Icon5066 Node 3” tab showing “Icon 5066 Node 2” and the remaining two tabs showing “Icon 5066 Node3”. Now each node in the S5066 Console has the ability to communicate with the other two nodes.

You may like to show that the connectivity exists by running a throughput test. Select a node (in image – Icon 5066 Node 1) , select the “Throughput” sub tab, pick a “receiving peer” in the dropdown and click “Start”. The GUI reports pertinent link statistics.



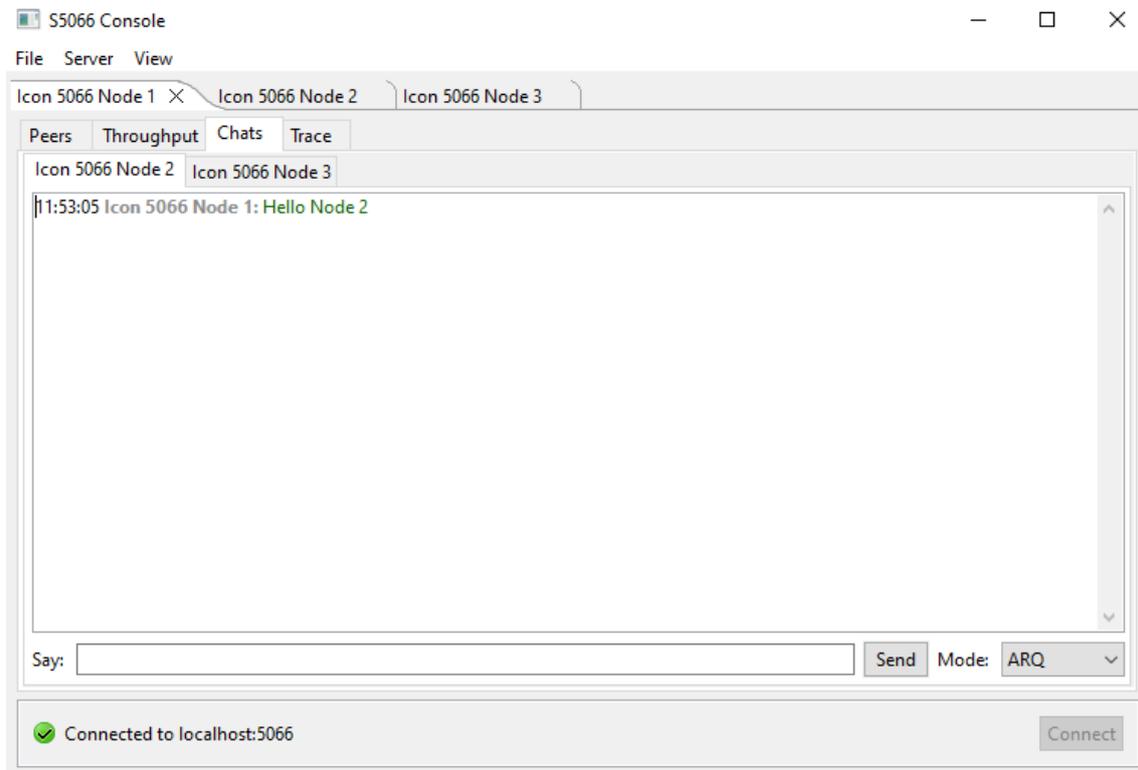
You may also like to use the operator chat functionality to message between nodes.

Select the “Chats” tab.

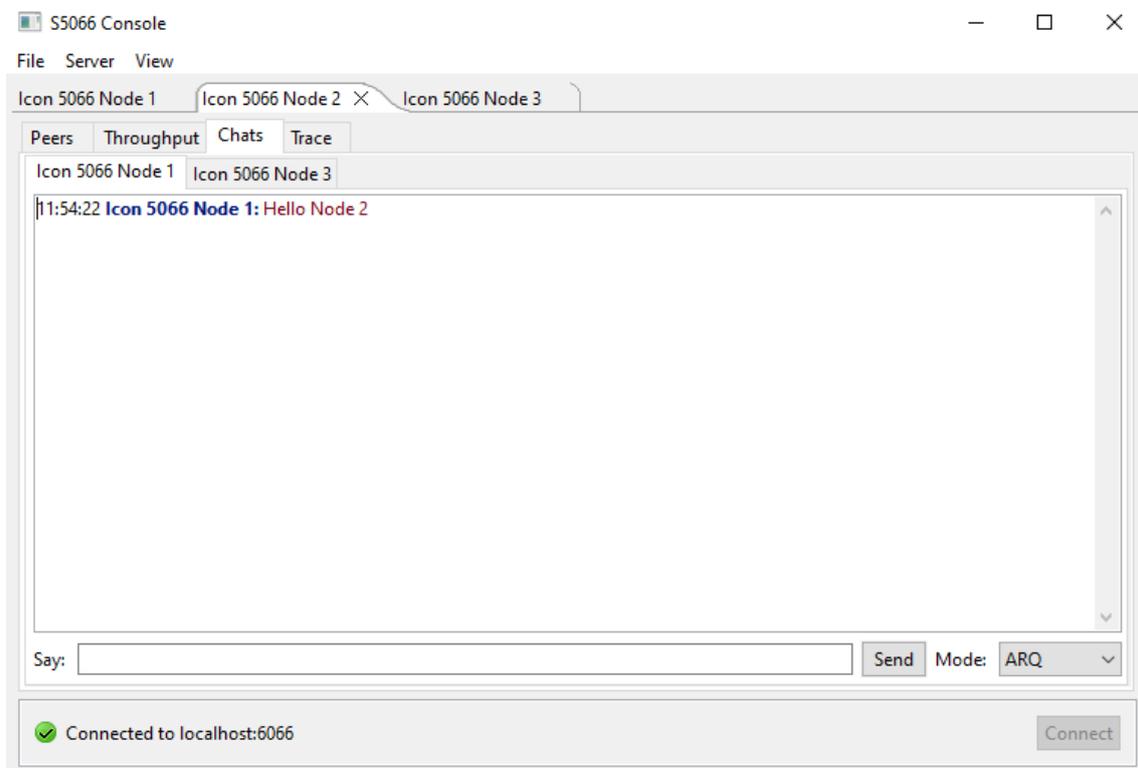


Type your message in the “say” box and press “Send”.

## Send Operator Chat Message from Node 1



## Receive Operator Chat Message at Node 2



## What Next?

More information on Icon-5066 can be found on the Isode website at <https://www.isode.com/product/stanag-5066-server/>.

## Whitepapers

Isode regularly publishes whitepapers on technical and market topics related to its products. A full list of these can be found at <https://www.isode.com/whitepapers/>.

## Copyright

The Isode Logo and Isode are trade and service marks of Isode Limited.

All products and services mentioned in this document are identified by the trademarks or service marks of their respective companies or organizations, and Isode Limited disclaims any responsibility for specifying which marks are owned by which companies or organizations.

Isode software is © copyright Isode Limited 2002-2025, All rights reserved.

Isode software is a compilation of software of which Isode Limited is either the copyright holder or licensee. Acquisition and use of this software and related materials for any purpose requires a written licence agreement from Isode Limited, or a written licence from an organization licensed by Isode Limited to grant such a licence.

This manual is © copyright Isode Limited 2025.