Isode

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

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.

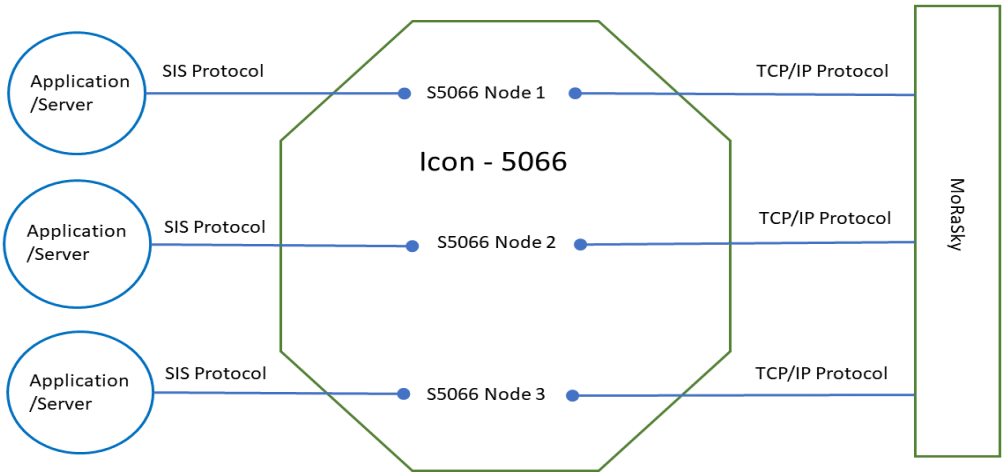
More information on Icon-5066 can be found at *www.isode.com/product/stanag-5066-server/*

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*. 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:

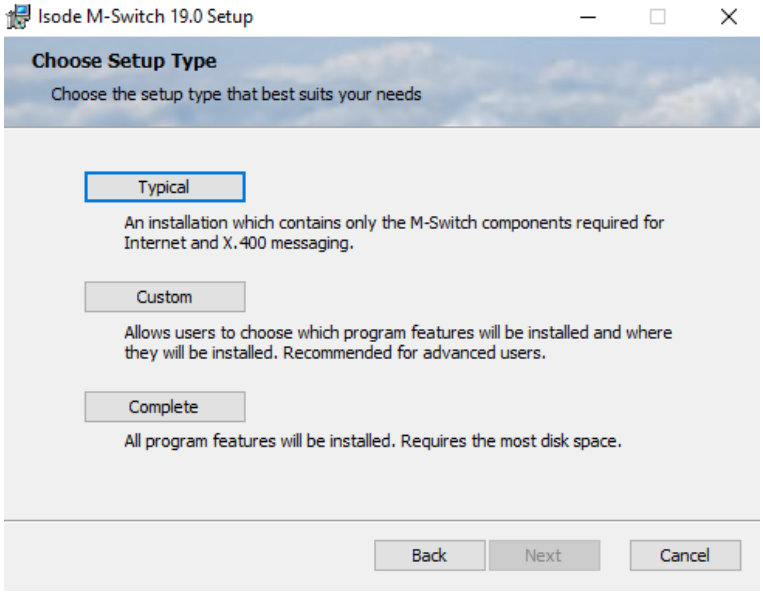
Icon-5066 3.1v3
M-Switch 19.0v21
MAS 1.1 (Optional, see Product Activation later in this document)

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.

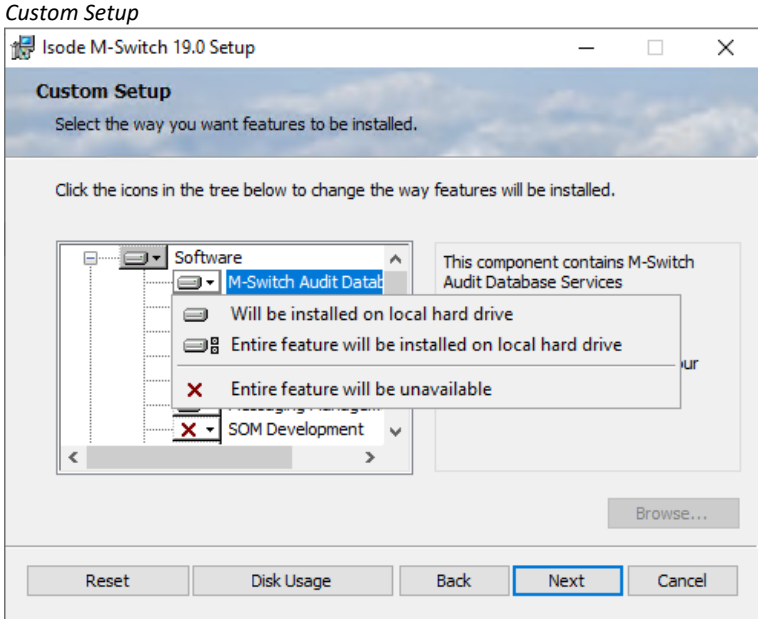
Start the M-Switch installer and, when asked for a Setup Type, choose [Custom]

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.

Custom Setup



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:

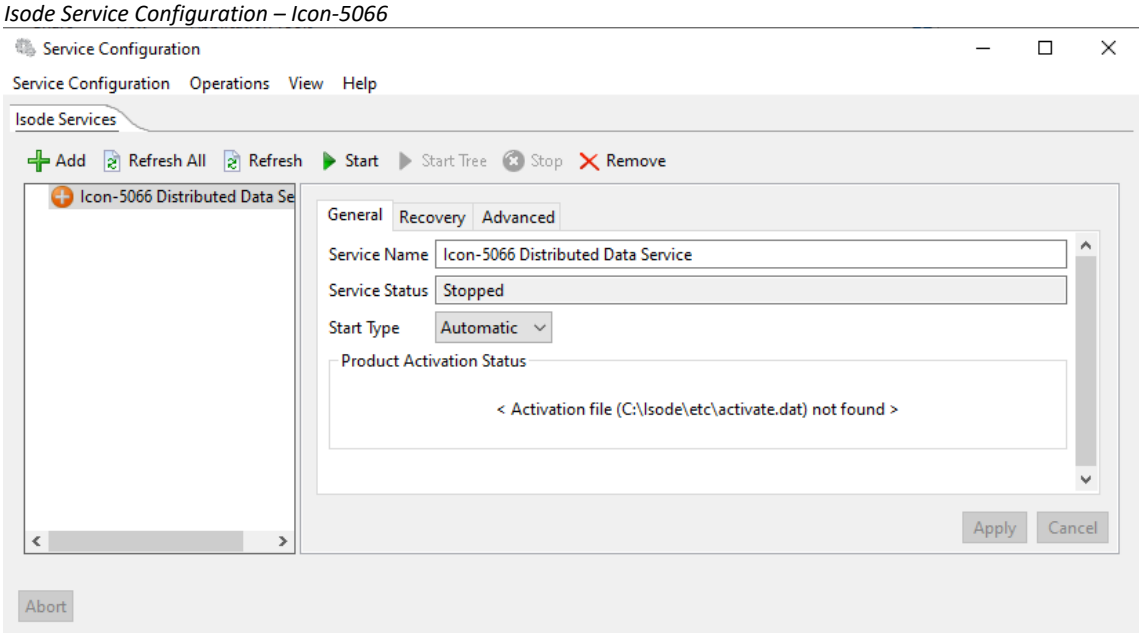
```
# sudo rpm -i ISD*.rpm
```

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

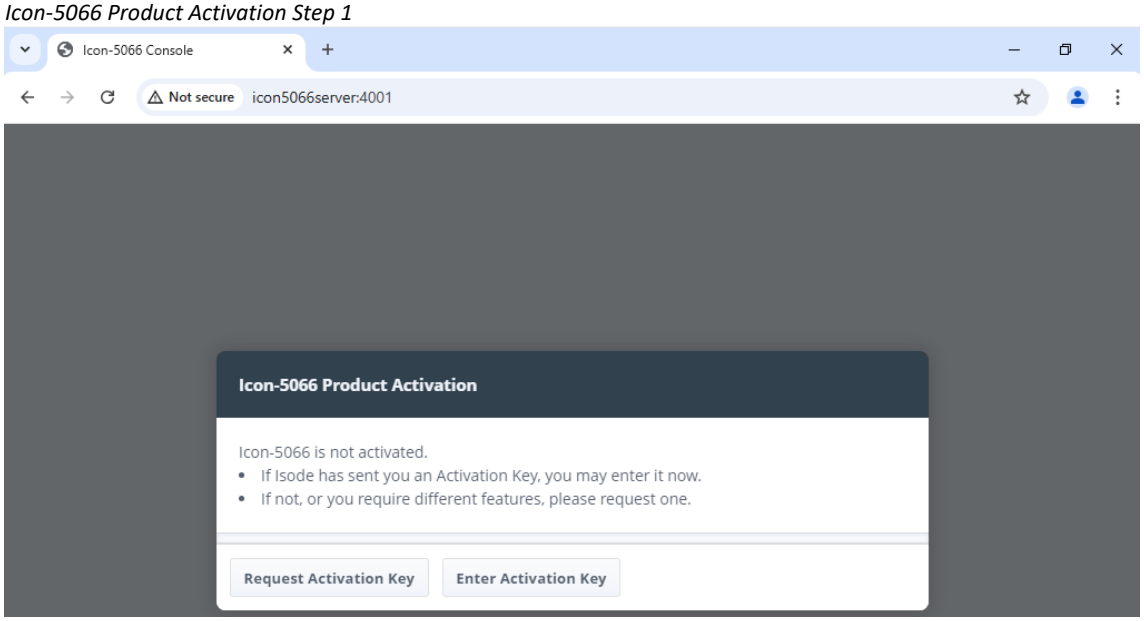
On Linux use the command line below.

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

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

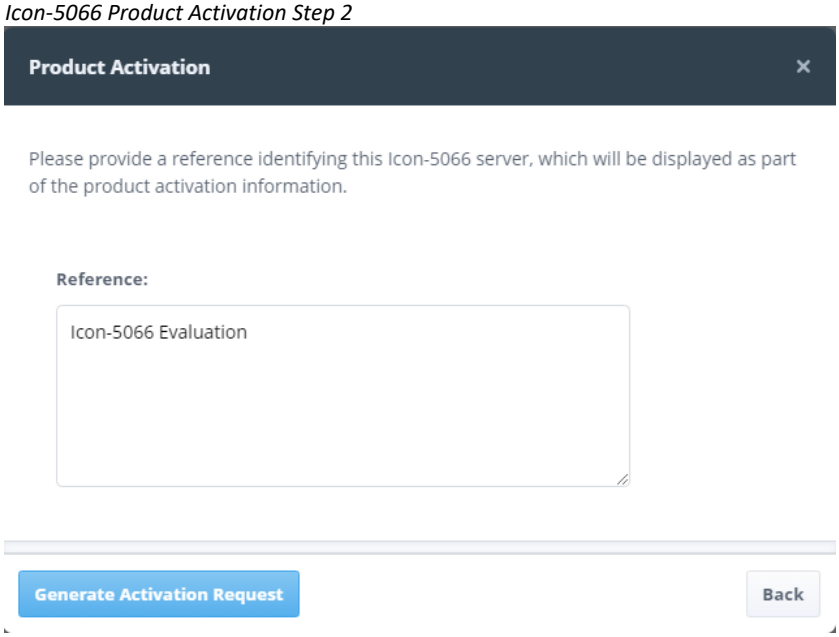
http://icon5066server:4001

Icon-5066 Product Activation Step 1



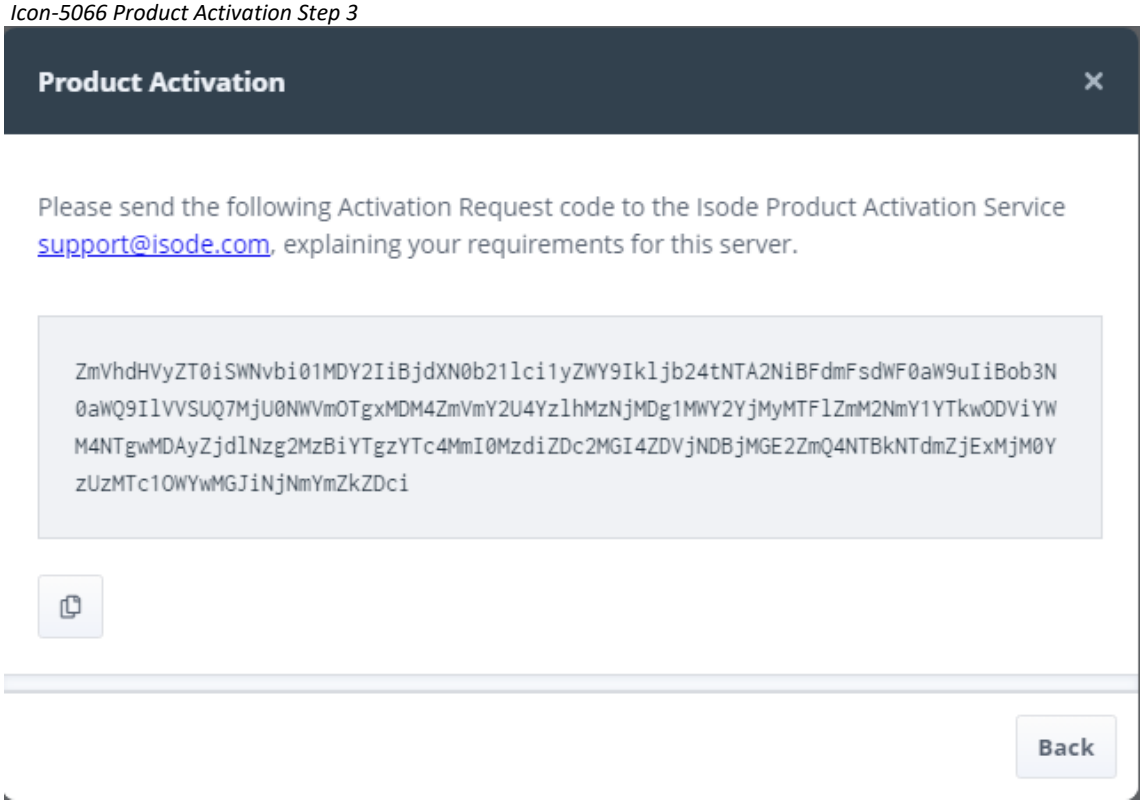
Click Request Activation Key.

Icon-5066 Product Activation Step 2



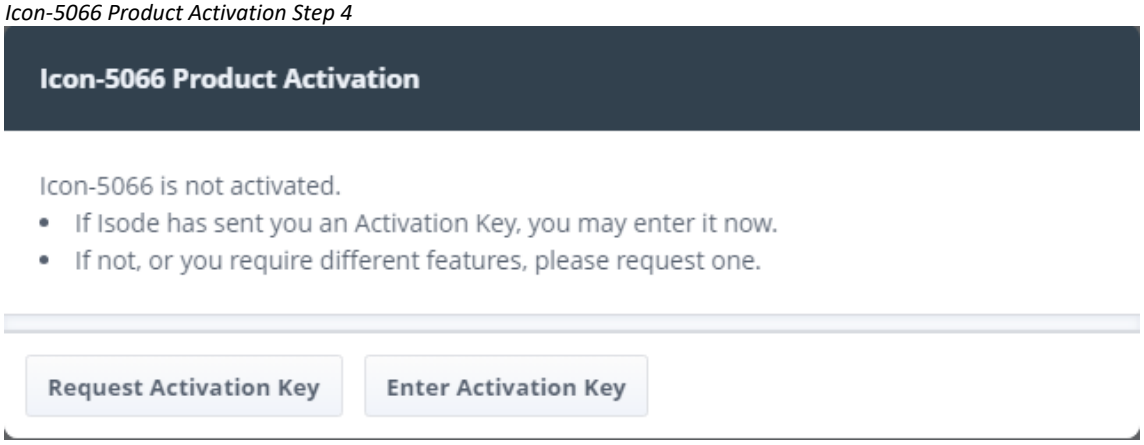
Enter a “Reference” and Click “Generate Activation Request”.

Icon-5066 Product Activation Step 3



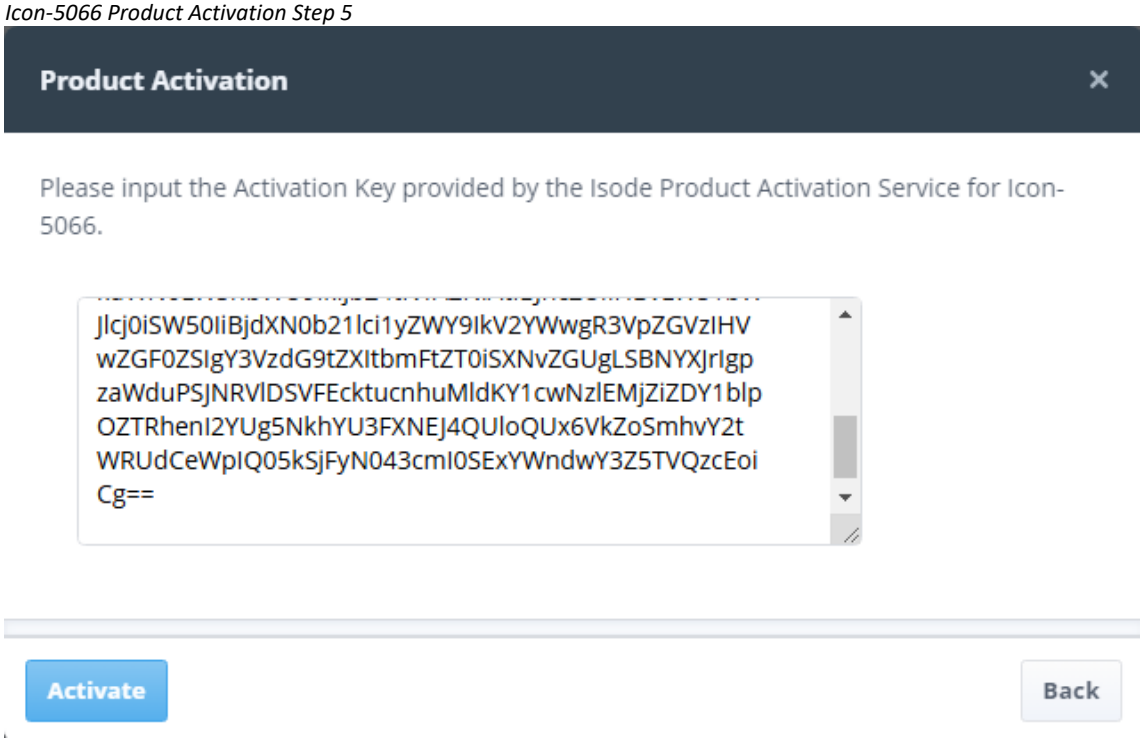
Copy the Activation Request using the icon on the bottom left corner and send it to isode.support@isode.com noting that this is for an Icon-5066 Evaluation. Isode Support will then send a Product Activation Key. When they have done this click the “Back” button.

Icon-5066 Product Activation Step 4



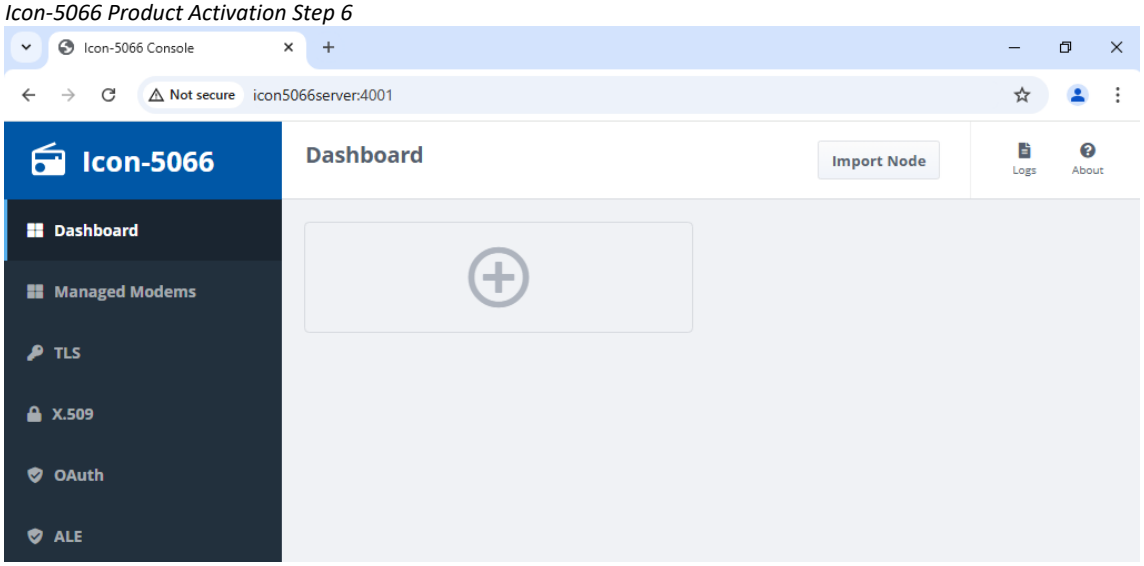
Click “Enter Activation Key”

Icon-5066 Product Activation Step 5



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

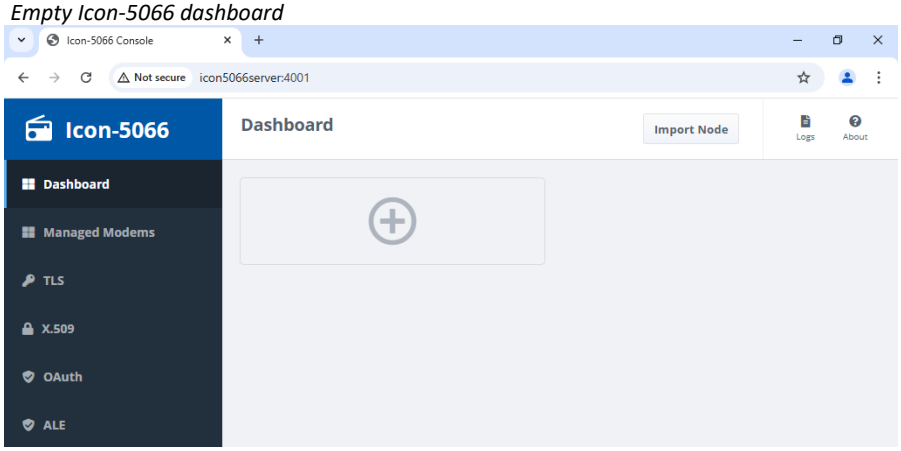
The Icon-5066 Server can support multiple S5066 Nodes (on separate ports) on a single server. These nodes are configured using the **Icon-5066 Console**, a Web-based management tool. In this section we're going to add 3 Nodes.

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*

Empty Icon-5066 dashboard



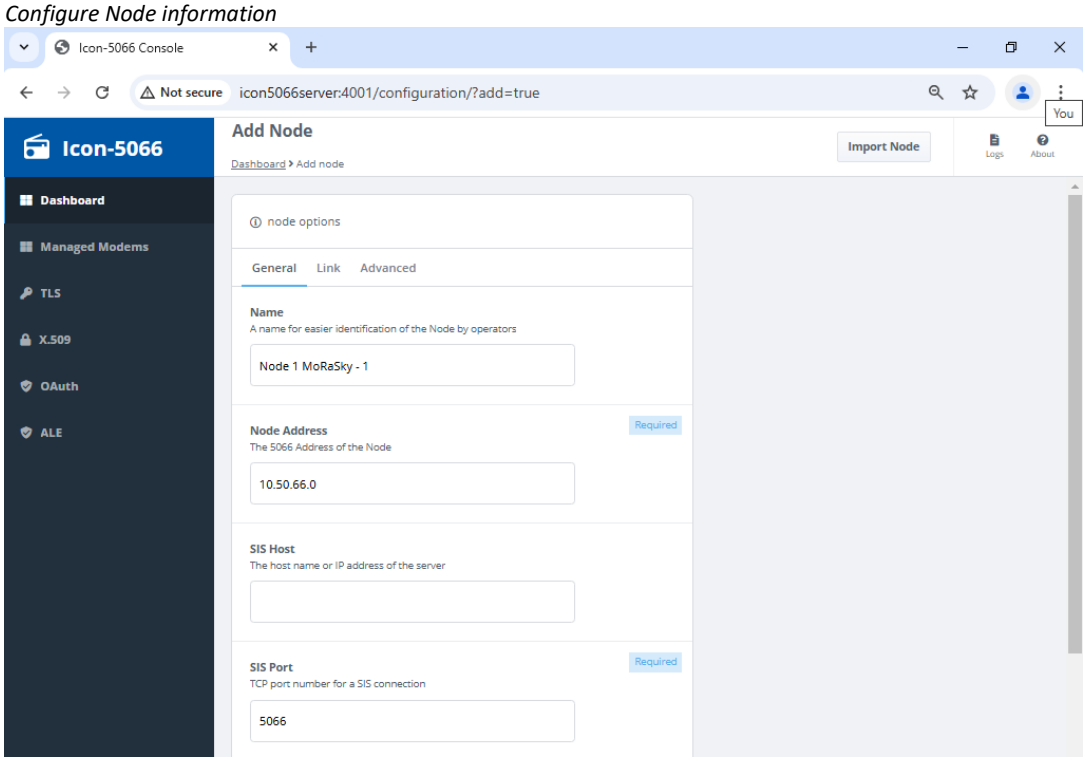
Adding Node 1

Click the "+" Button.

In the "Add Node" dialogue, enter the following information :

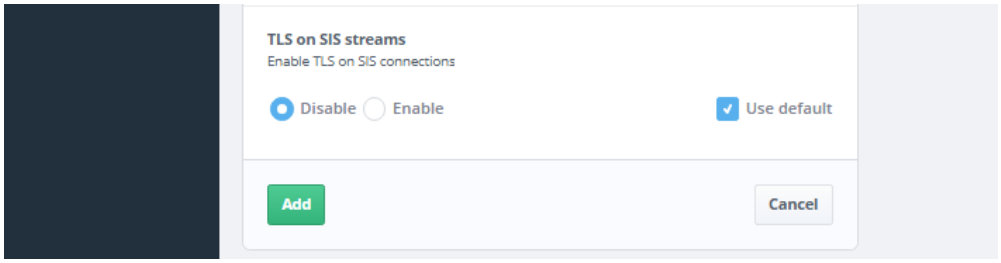
- Enter a Friendly Name for **Name**, we will use "Node 1 MoRaSky - 1"
- Enter the **Node Address** (typically 10.50.66.0 for the first node). Node addresses must be unique and are similar to IPv4 syntax, but the first octet has max value of 15. The choice for demos is arbitrary, but live deployments 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



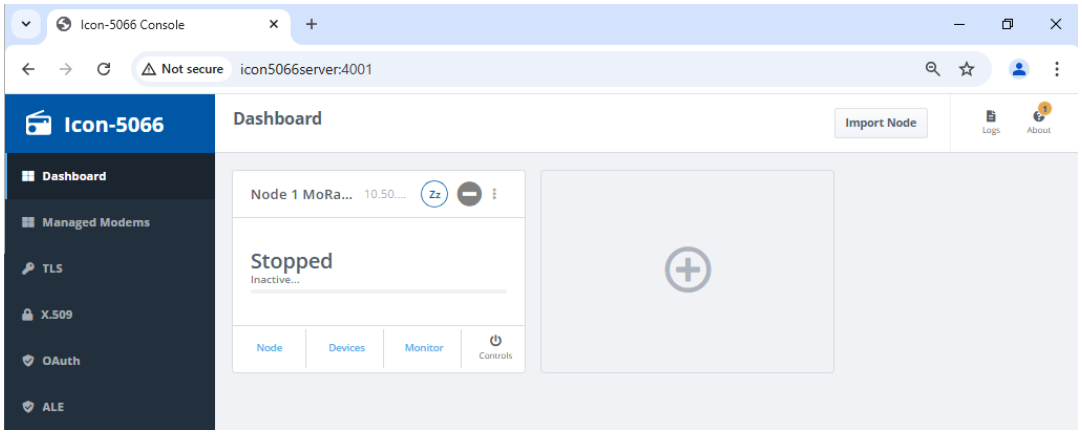
Then Scroll to the bottom

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

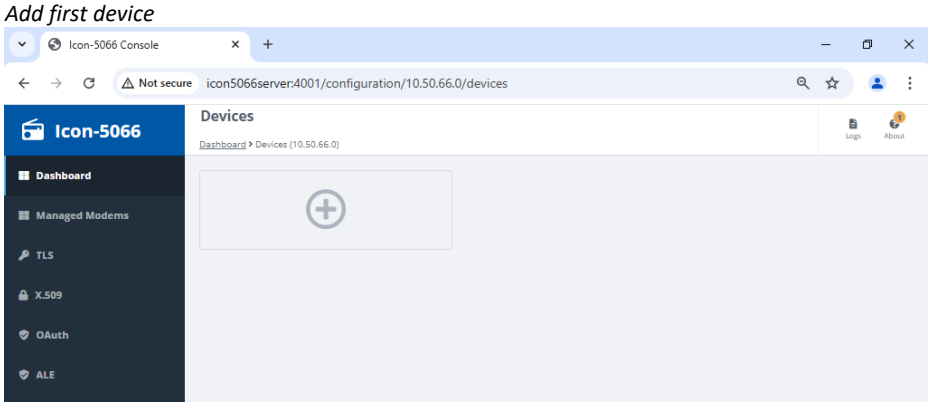
Each node consists of a core configuration together with a number of devices that are used by, or control the behaviour of, the S5066 node. Each working node configuration must define the following set of mandatory devices.

- **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.

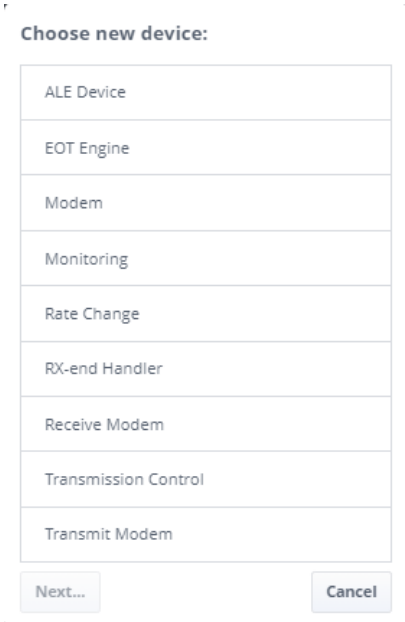
In this evaluation we will be using the MoRaSky GUI to create a clear channel, 3 Radio configuration using Waveform 5069, Bandwidth 24, 38400 bps and small Interleaver.

Add first device



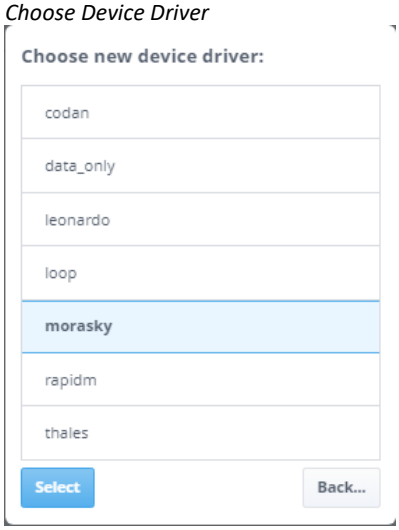
Click the "+" button.

Choose a new device



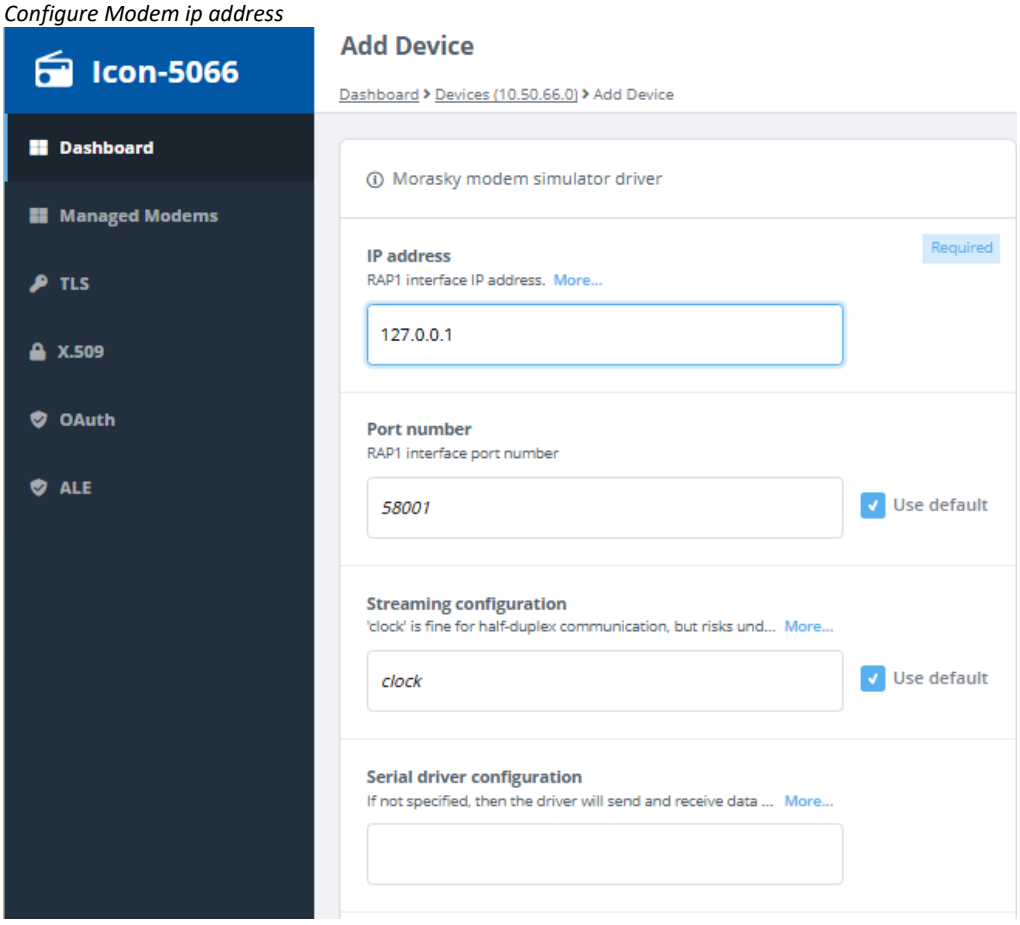
Select "Modem" and Click "Next...".

Choose Device Driver



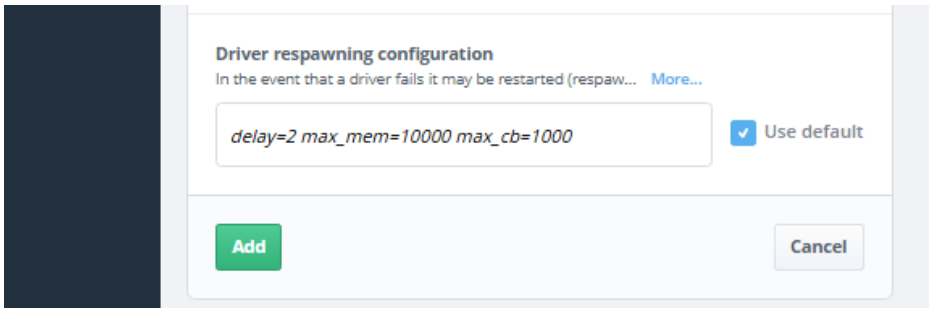
Select the “morasky” modem and click “Select”.

Configure Modem ip address



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

Add the modem

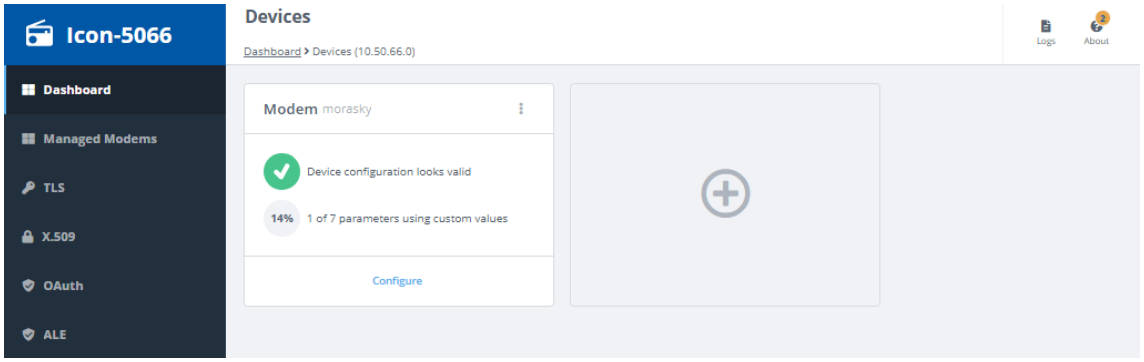


Click “Add”, you will get a Notification that the device has been added. Then from the top menu.

Select Devices

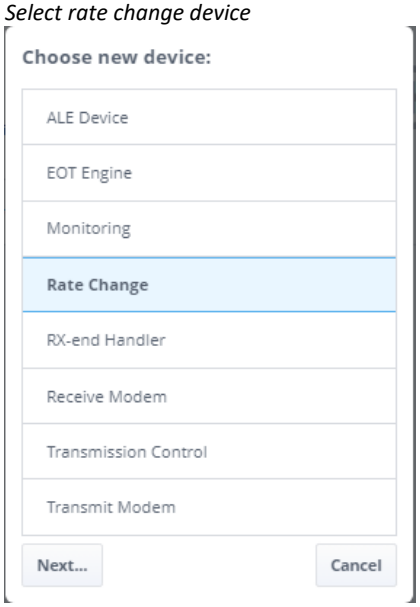
Click “Devices”.

Modem device added



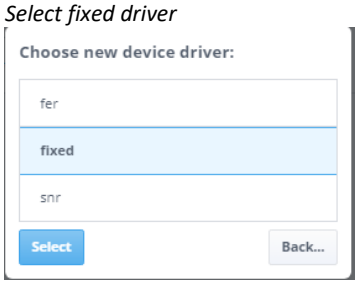
Click the “+” Button.

Select rate change device



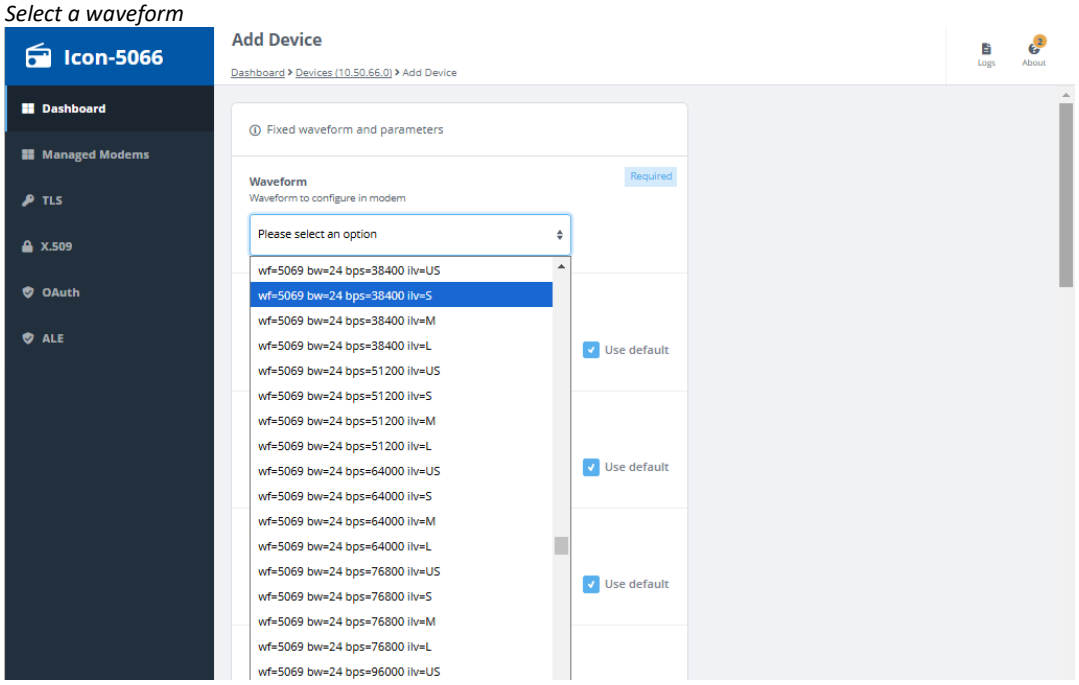
Select “Rate Change” and Click “Next...”.

Select fixed driver



Select “fixed” and Click “Select”.

Select a waveform

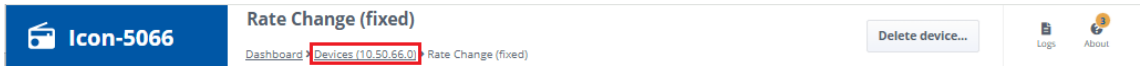


From the “Waveform” drop-down select wf=5069 bw=24 bps=38400 ilv=S”. All other values are default. Then scroll to the bottom.

Add the Fixed rate change device

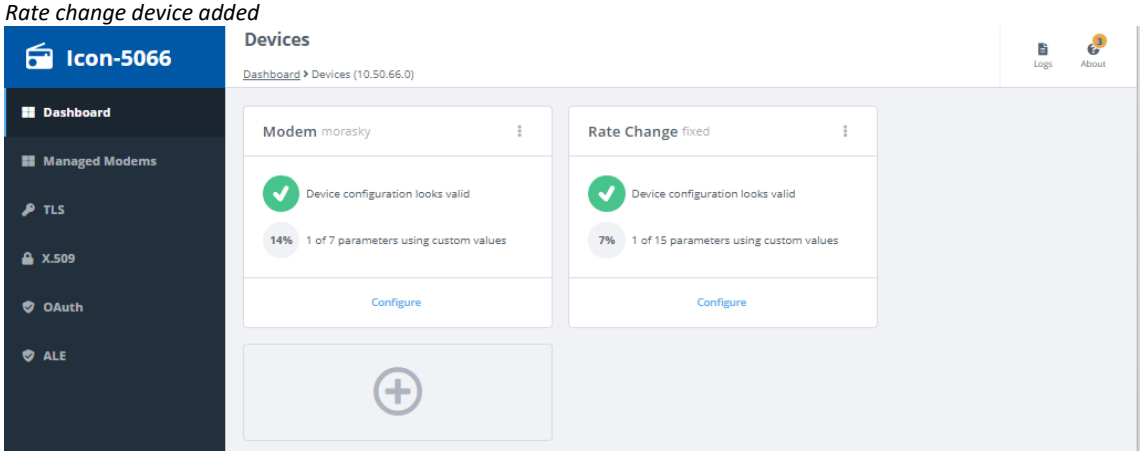
Click “Add”, you will get a Notification that the device has been added. Then from the top menu.

Select Devices



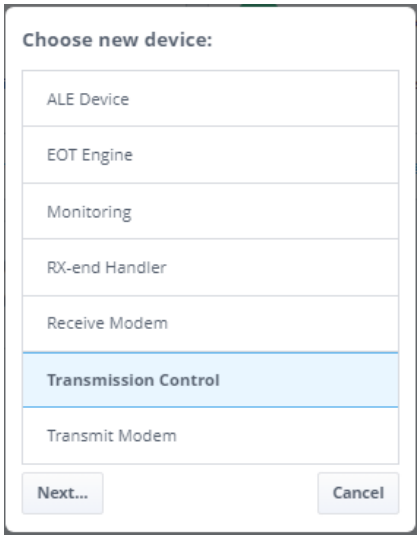
Click “Devices”.

Rate change device added



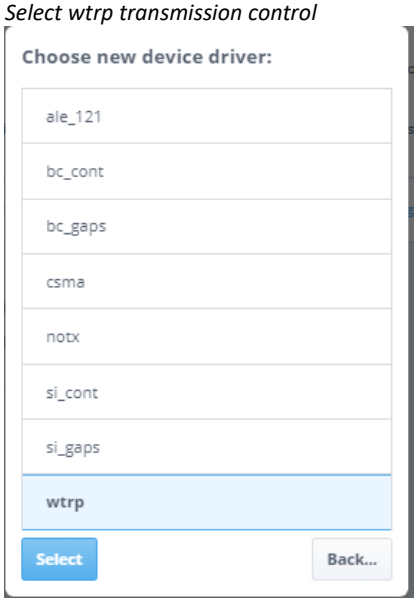
Click the "+" Button.

Select the transmission control device



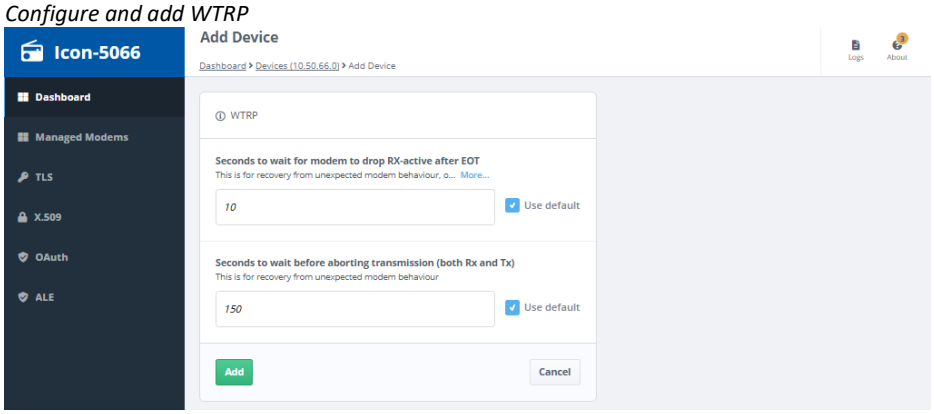
Select "Transmission Control" and Click "Next...".

Select wtrp transmission control



Select “wtrp” and Click “Select”.

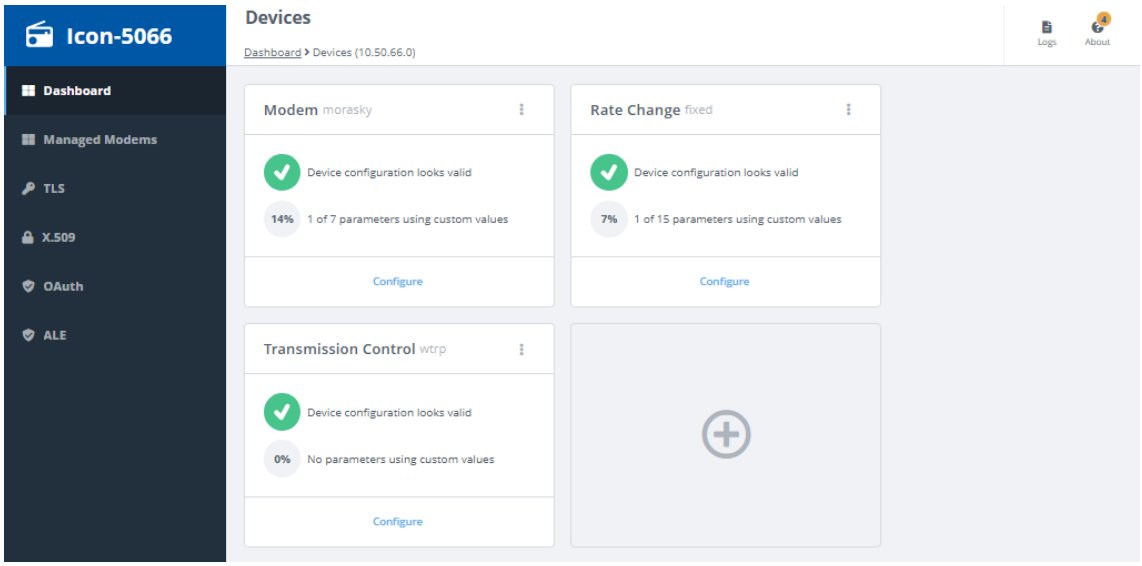
Configure and add WTRP



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

Transmission control device added

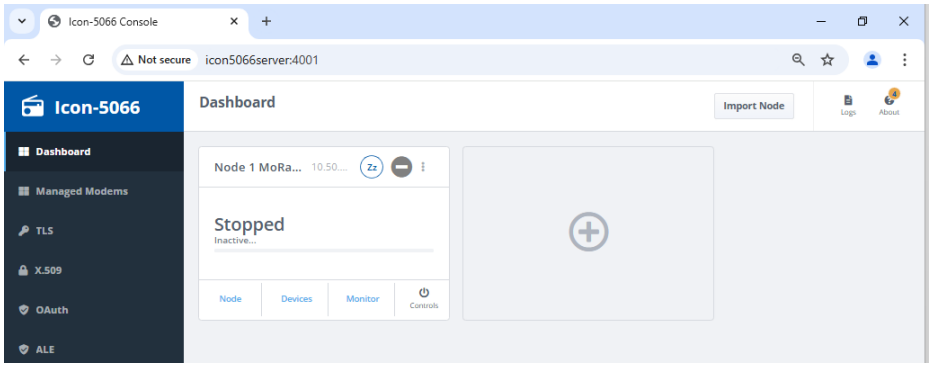


You have now completed configuration of Node 1.

Adding & Configuring Node 2 and 3

From the “Dashboard”.

Dashboard



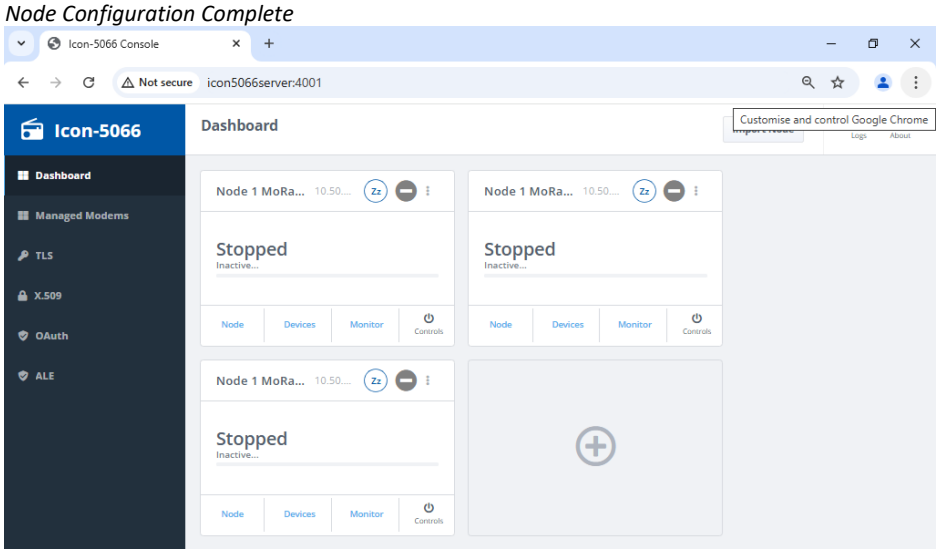
Use the “+” Button to Add and configure Node 2 and 3 in the same way as Node 1 but using the following parameters:

- 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 :

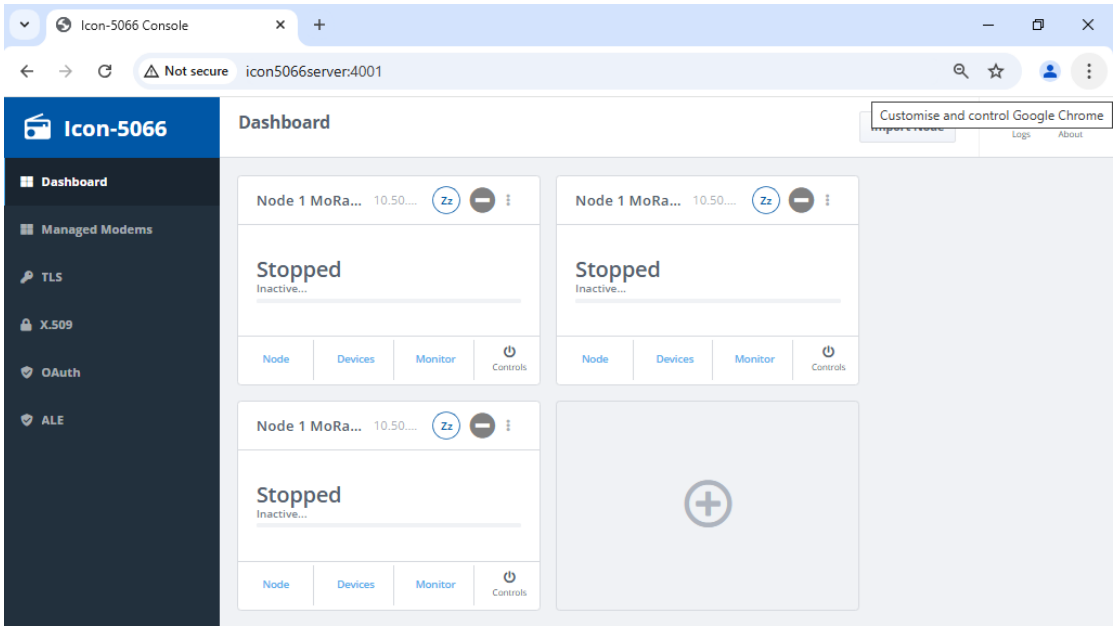
Node Configuration Complete



Enabling the Nodes

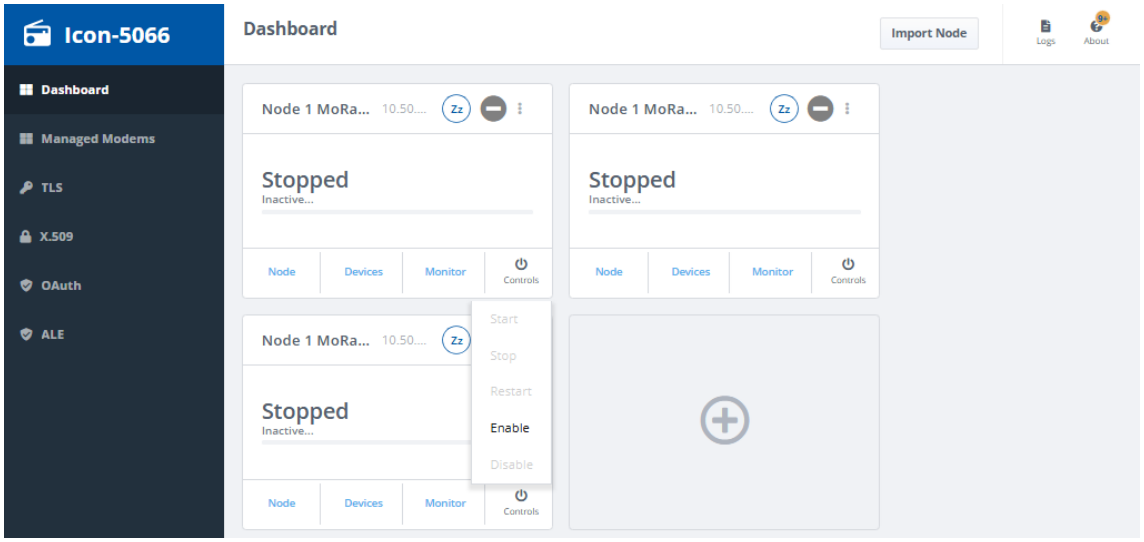
Select “Dashboard”. Each node should be displayed on the dashboard:

Nodes to be enabled



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

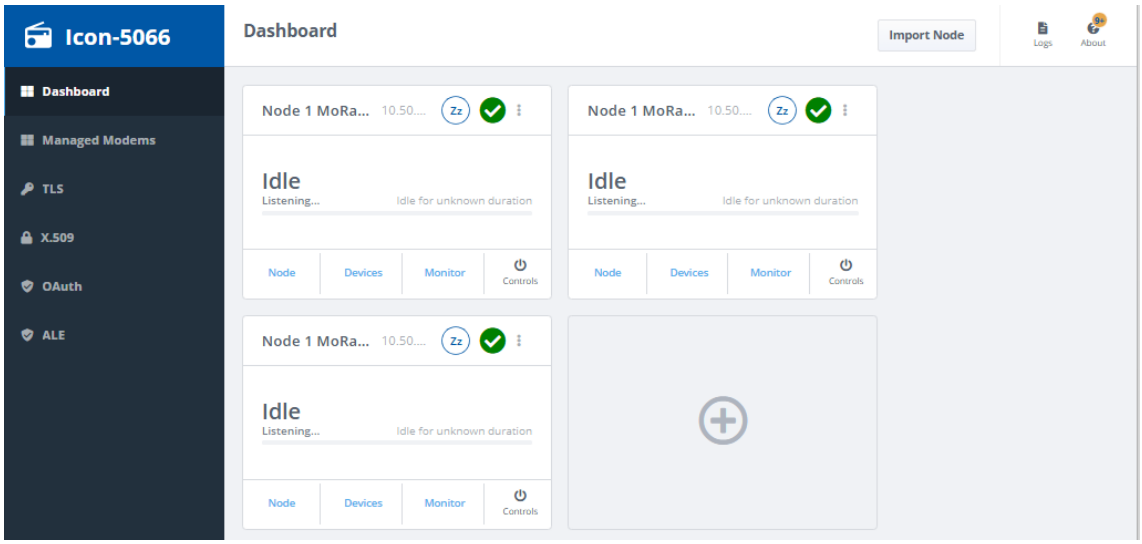
Enable a node



Repeat for nodes 2 and 3.

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

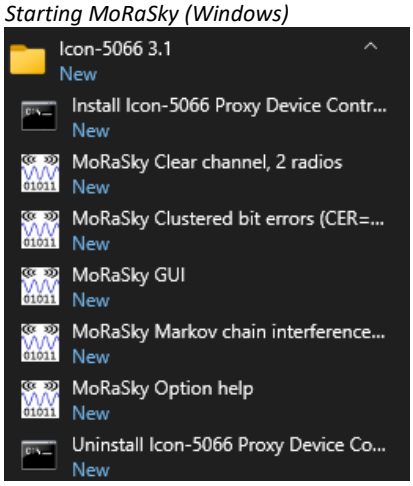
Enabled nodes



Configuring and Starting MoRaSky

On Windows open the MoRaSky GUI from the Windows Start menu

Starting MoRaSky (Windows)

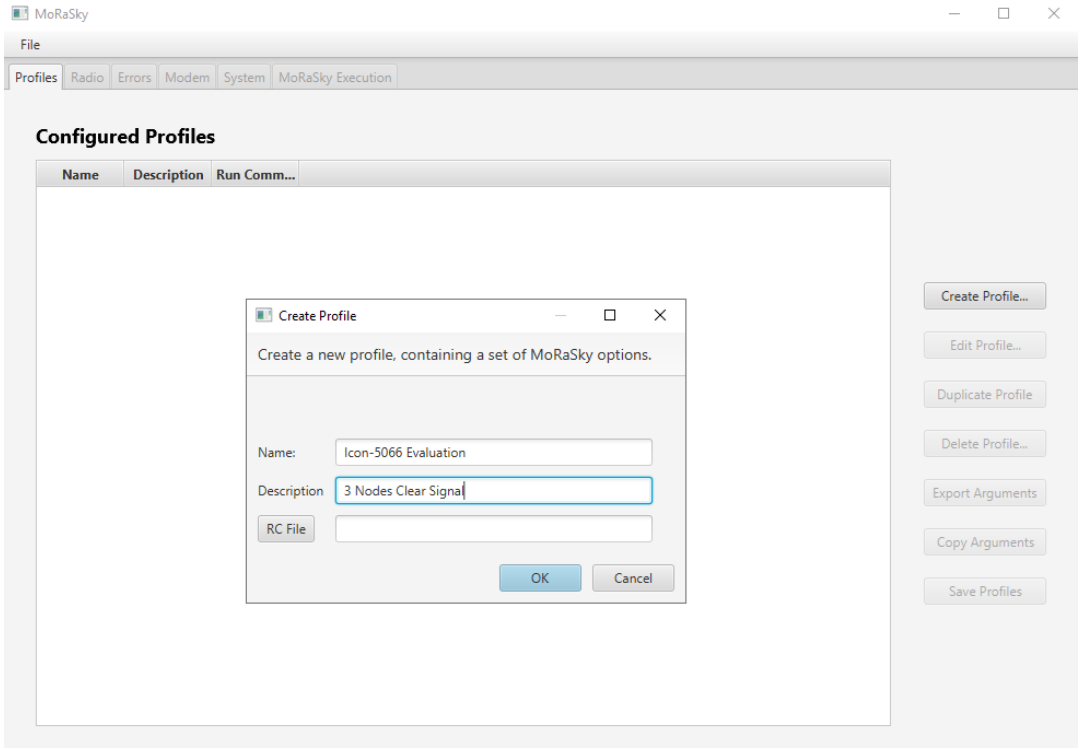


On Linux start the MoRaSky GUI by :

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

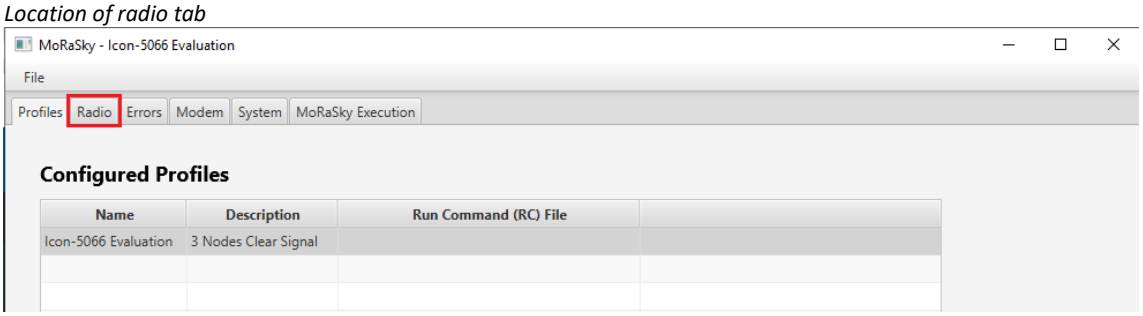
Press “Create Profile ...”, provide a profile name and description and press “OK”.

Creating a MoRaSky profile



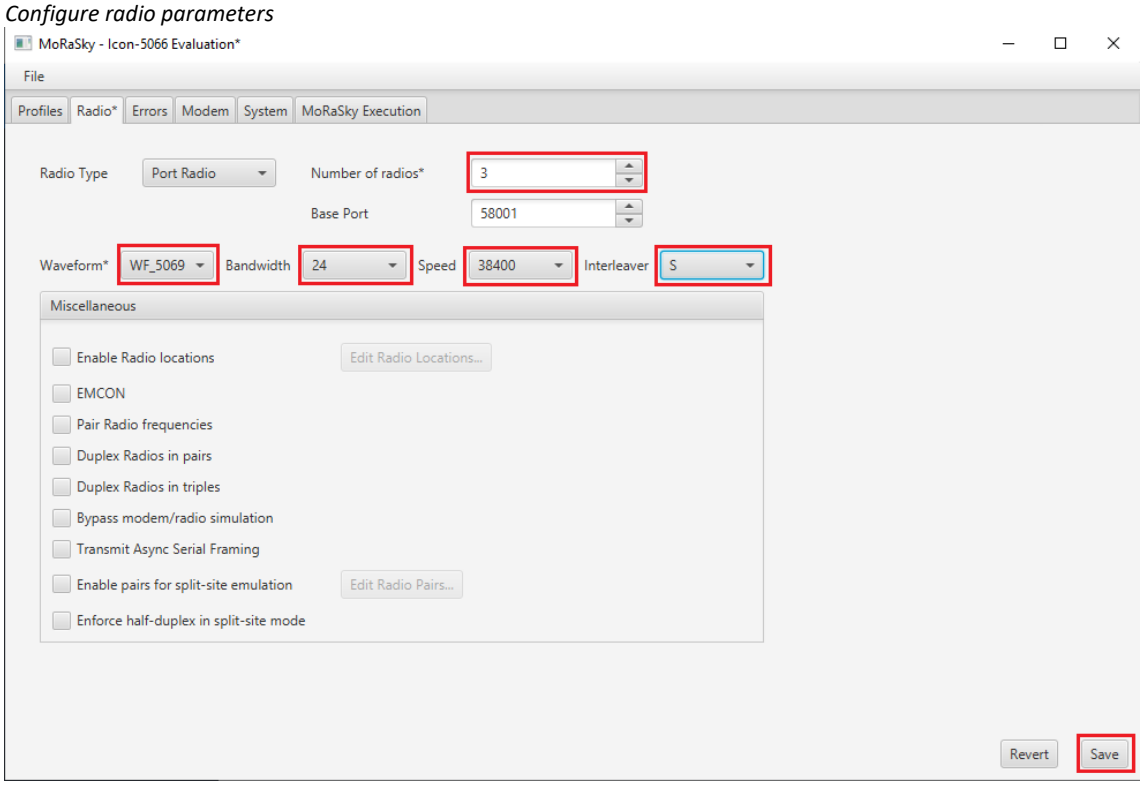
Select “Radio” tab :

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”.

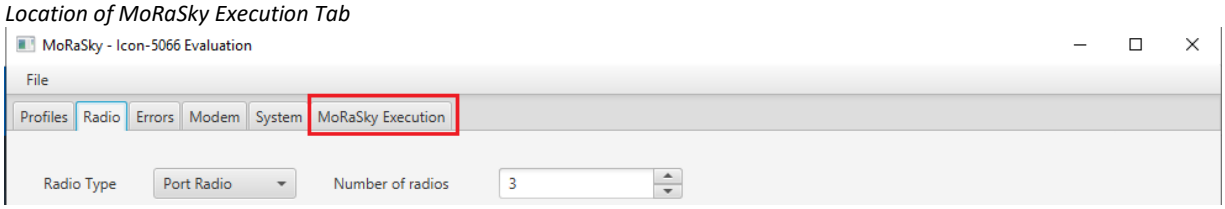
Configure radio parameters



Acknowledge the “Profiles Saved” information dialogue.

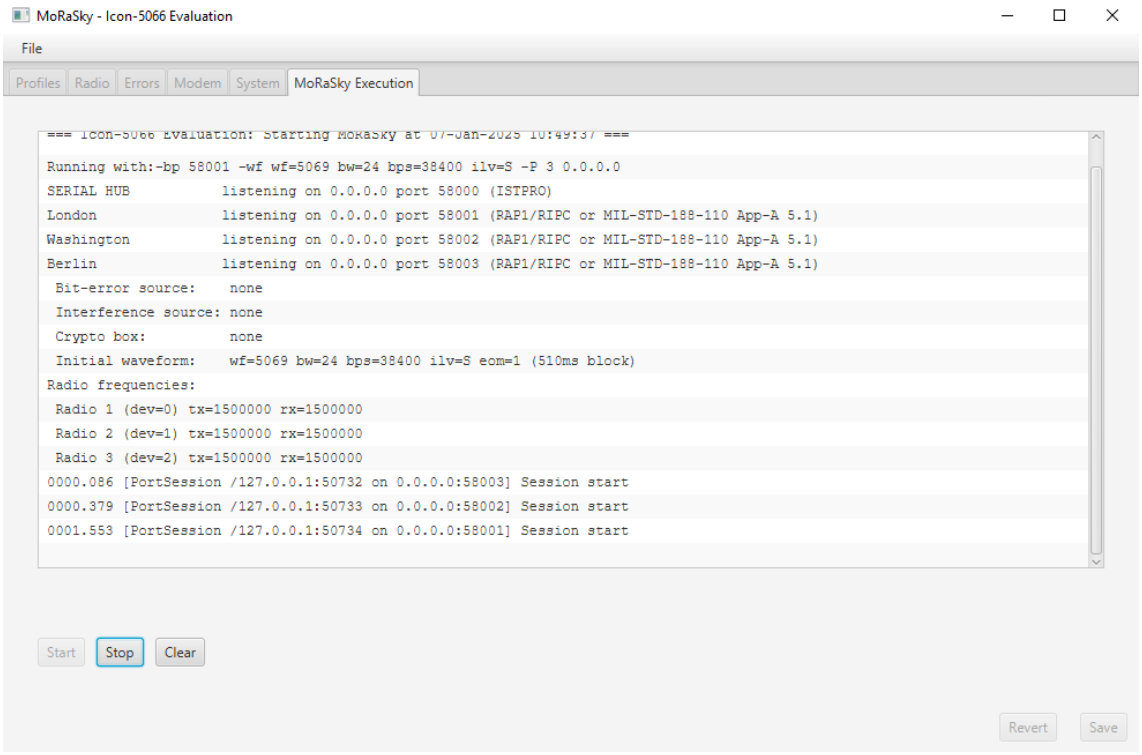
Select the MoRaSky Execution Tab

Location of MoRaSky Execution Tab



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

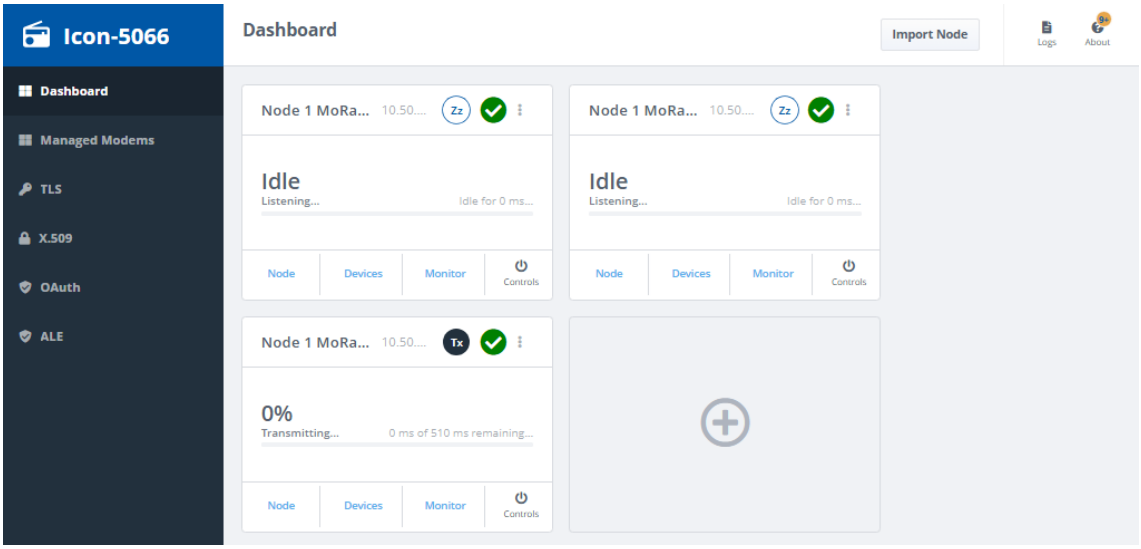
MoRaSkyExecution



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.

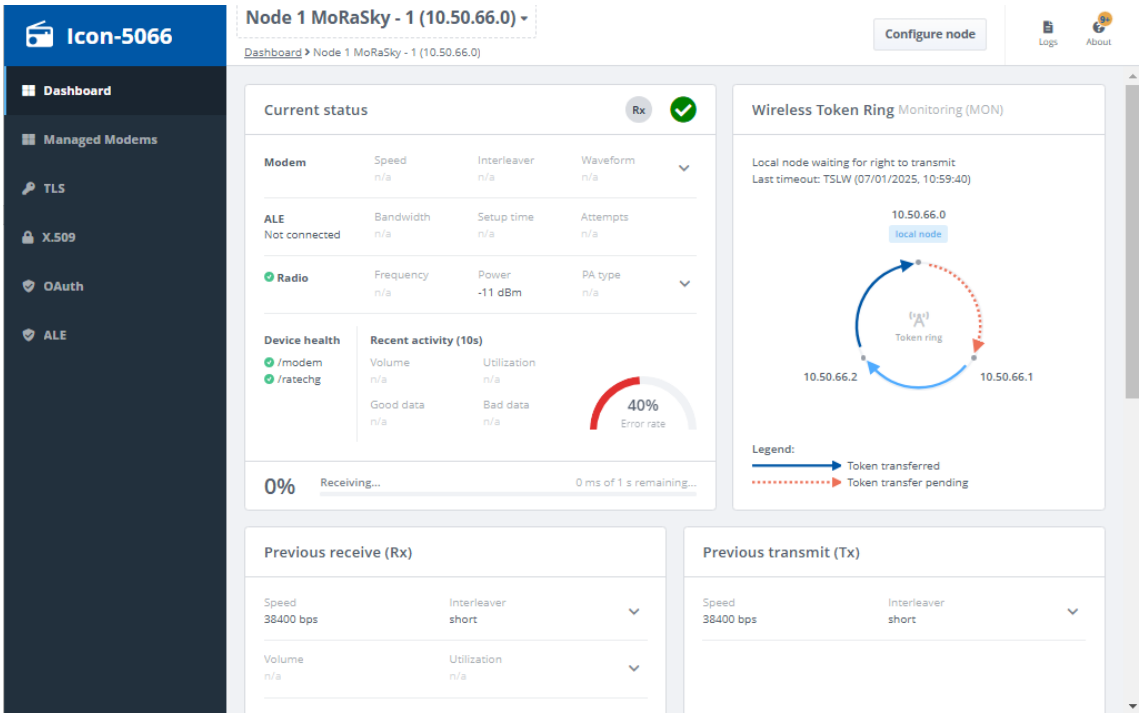
Icon-5066 Status



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



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

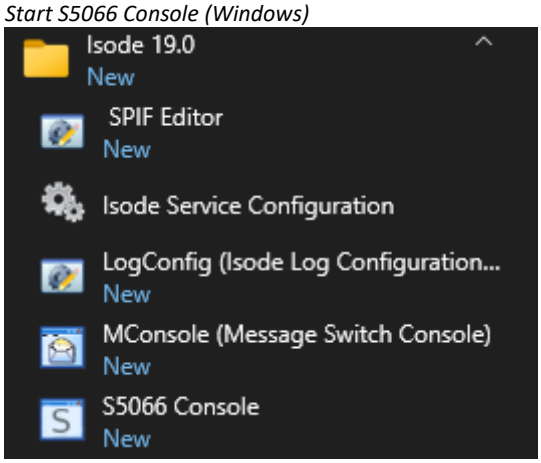
Testing the Configuration with the S5066 Console

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)



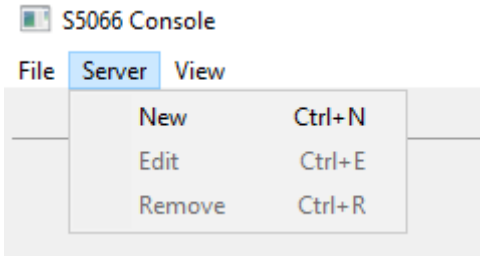
To start S5066 Console on Linux, run the command:

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

Configure the S5066 Console

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

Add new Server

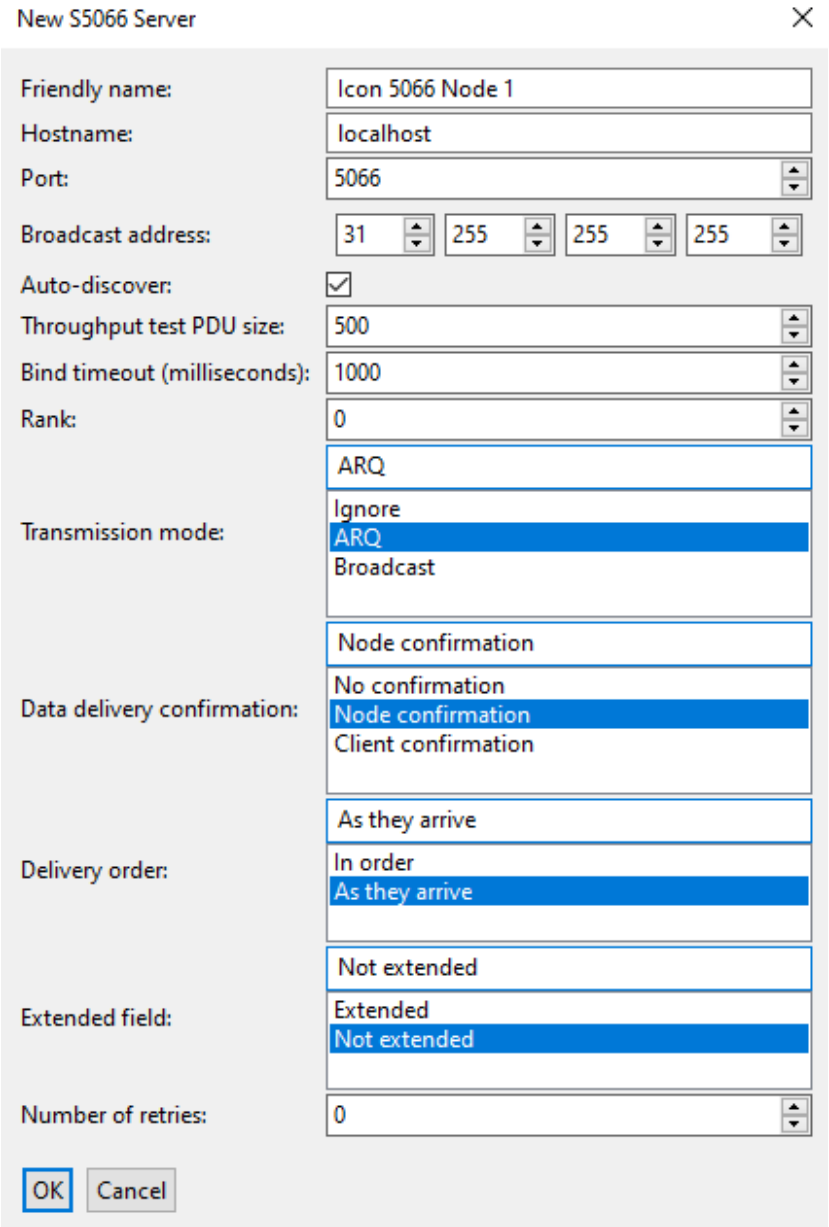


In the **New S5066 Server** screen enter the following details:

- 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



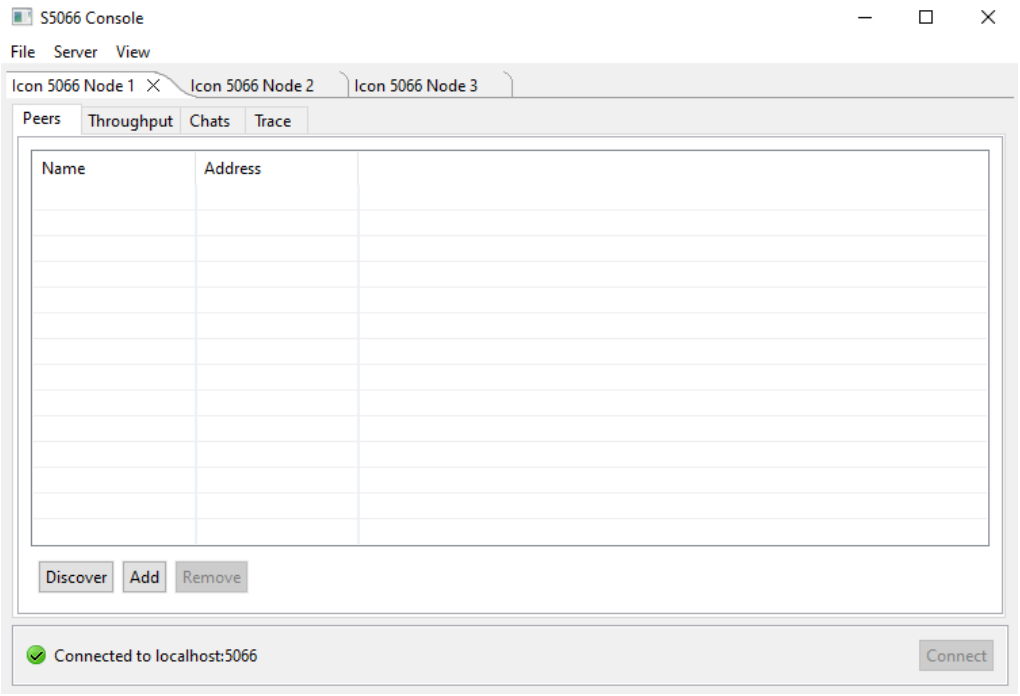
Now repeat this New Server process for Node 2 and 3, using the details that follow:

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

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

The three nodes will now appear as separate tabs in the S5066 Console.

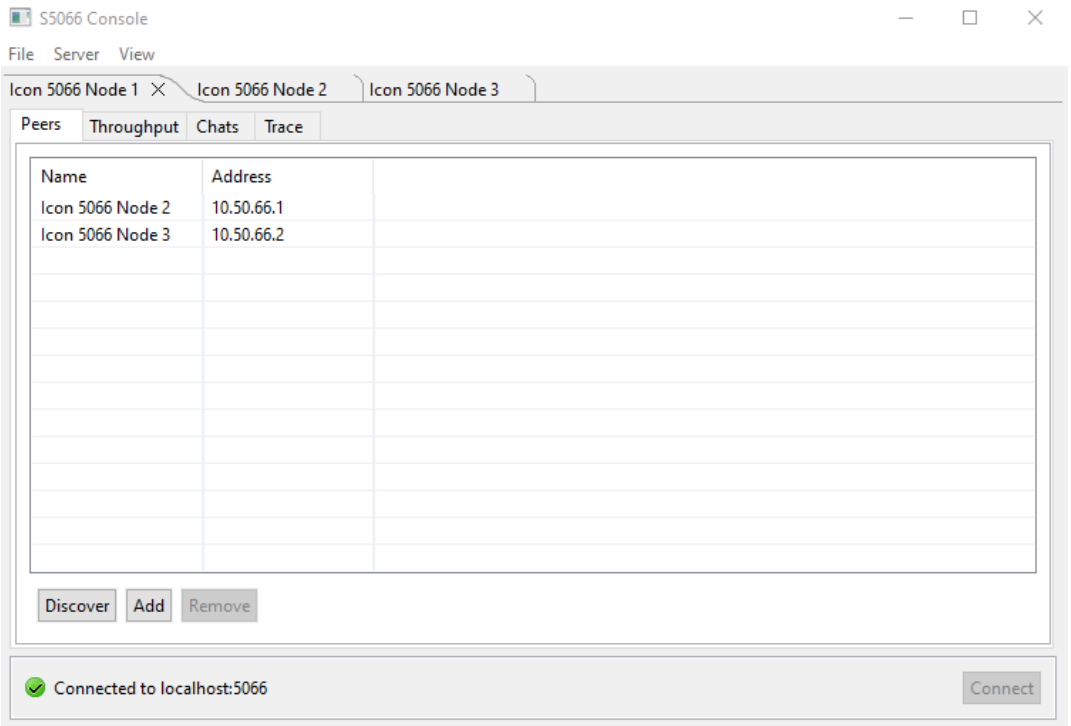
All Nodes in S5066 Console



Testing with the S5066 Console

Clicking "**Discover**" on the Node 1 tab will allow you to see Icon 5066 Node 2 and Icon 5066 Node 3 on the Icon 5066 Node 1 tab and Icon5066 Node 1 on the Node 2 and Node 3 tabs.

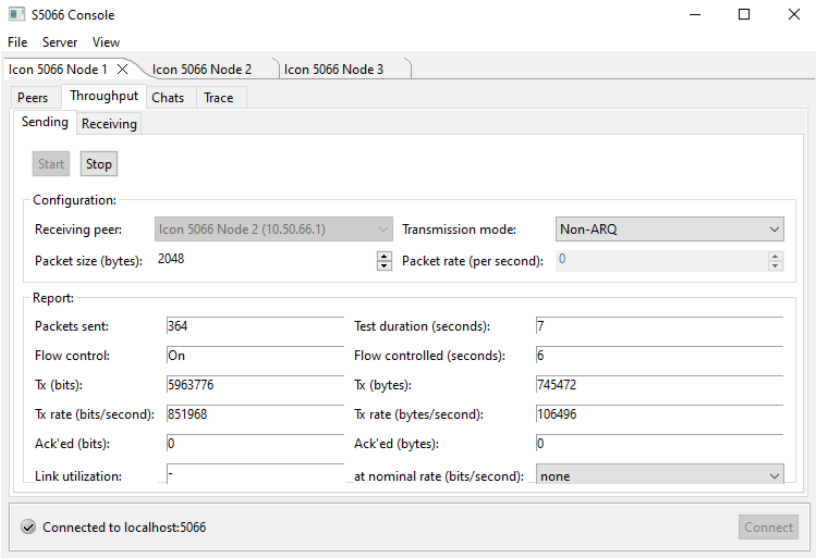
Discover Peers



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.

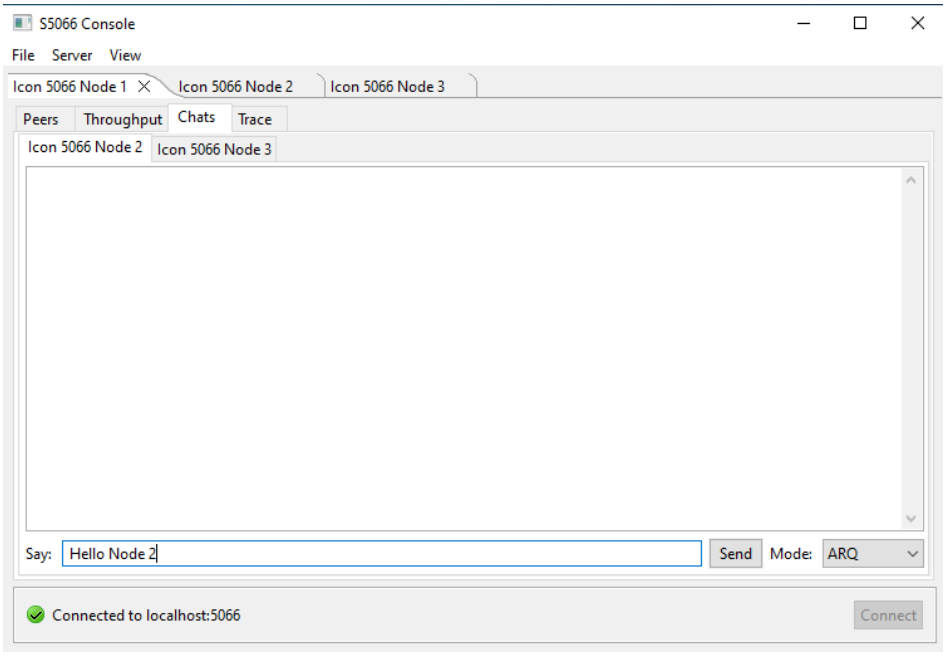
You may like to show that the connectivity exists by running a throughput test. Select a node (in image – Icon 5066 Node 1) , select the “Throughput” sub tab, pick a “receiving peer” in the dropdown and click “Start”. The GUI reports pertinent link statistics.

Throughput test



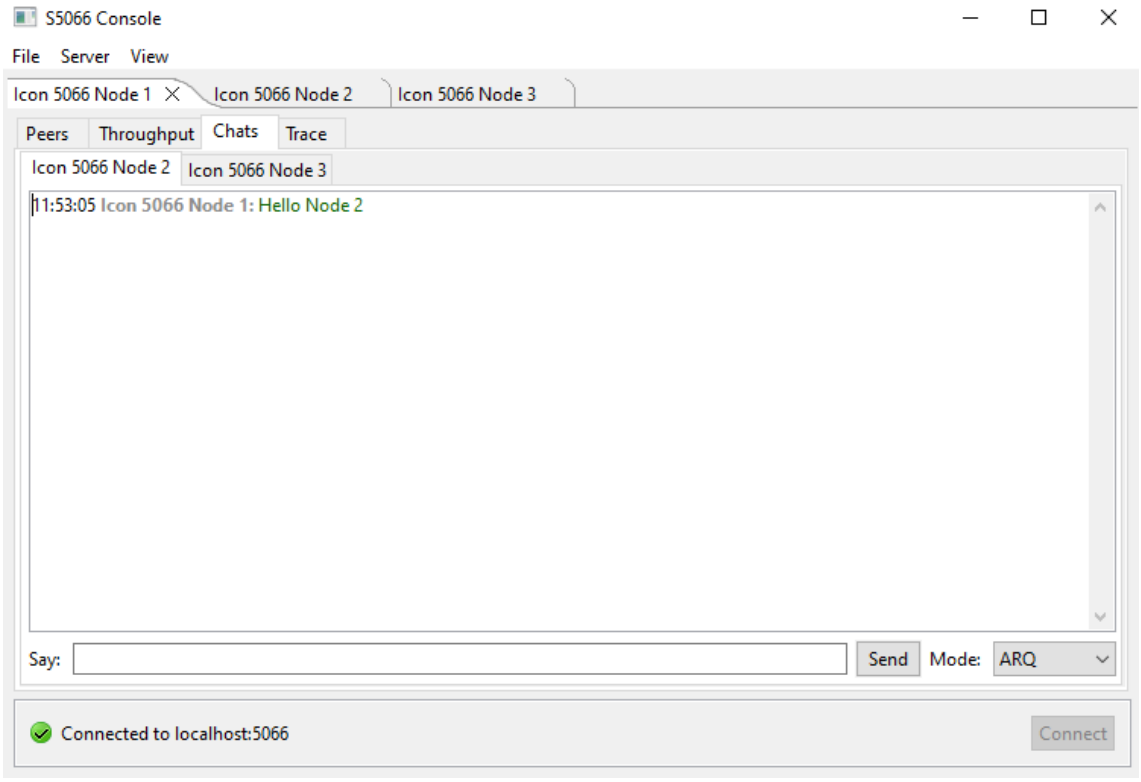
You may also like to use the operator chat functionality to message between nodes.

Select the “Chats” tab.

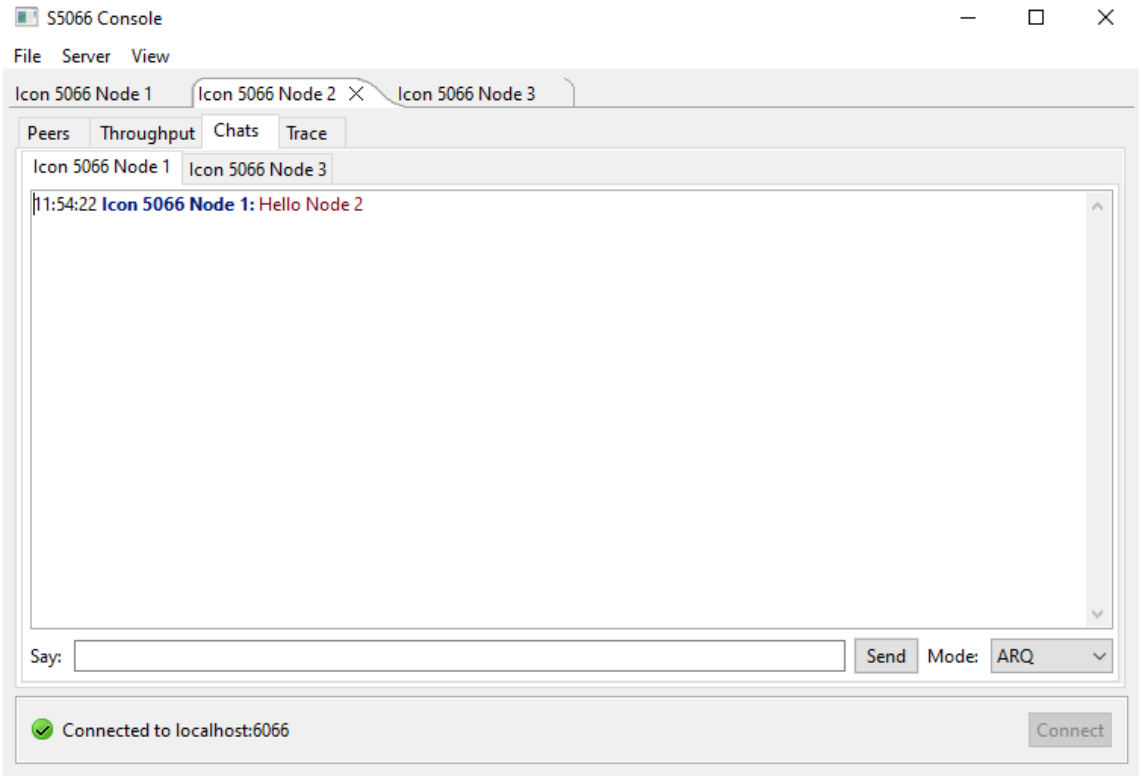


Type your message in the “say” box and press “Send”.

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