ProSoft TECHNOLOGY

Technical Note

Setup RadioLinx OPC Server

RLXIB-IHW Industrial Hotspot 802.11abg

Introduction

This document gives the details of the setup for the RadioLinx OPC Server.

For the architecture of this implementation, the following equipment is required:

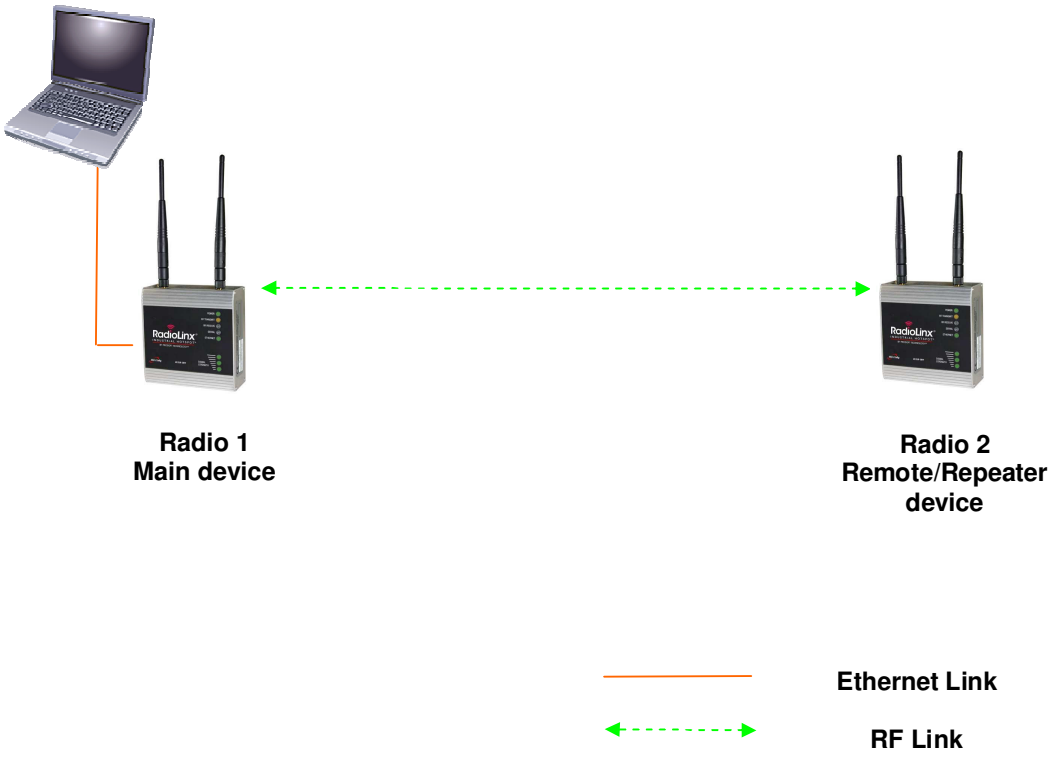
- 2 modules RLXIB-IHW-E
- A laptop or PC with Ethernet and wireless capability and containing the following software:
  1. RLX-IH Browser version 3.004
  2. ProSoft OPC Server version 1.1.4
  3. FactoryTalk View Studio OPC Client version 5.00.00 from Rockwell Automation
- 1 Ethernet Switch (required to perform a wired communication test)

Rockwell Automation Encompass™ Product Partner Global

RadioLinx®

Author: NBlond
Date: February 09

Architecture



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Procedure

Note:
If your PC is not connected to a DHCP server or directly connected via Ethernet to the radio module, **DO NOT FORGET TO ASSIGN A FIXED IP ADDRESS** to the PC Ethernet card.

Here are the basic steps needed to establish communications:

A. Setting of the Main Radio

A.1. Install RadioLinx IH browser:

Download RLX-IH Browser from:
http://www.prosoft-technology.com/content/download/12739/165690/file

Then install the Browser on your PC.

A.2. Plug the cables to the RLXIB-IHW:

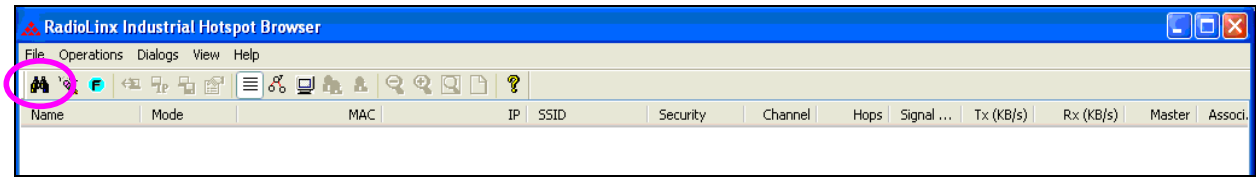
From left to right: Power connector, serial port and Ethernet port.

Plug the power cable.
For Ethernet connection:

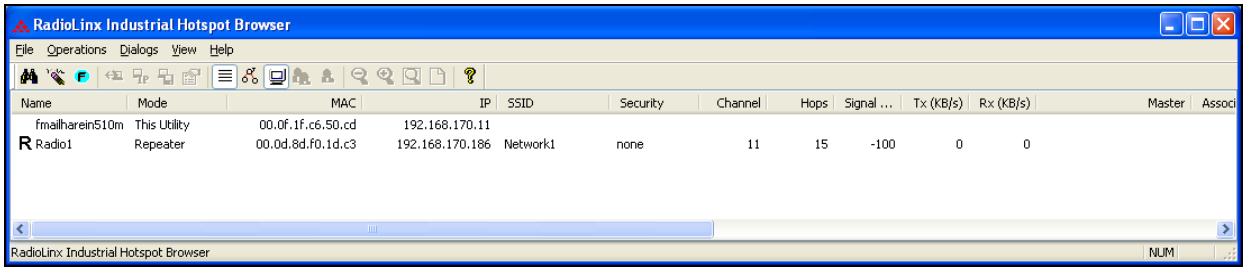
- If you are connecting to the radio through an Ethernet hub or switch, use the gray (straight-through) cable.
- If you are connecting to the radio directly from your PC without going through an Ethernet hub or switch, you must use the red (crossover) cable.

A.3. Launch RadioLinx IH browser:

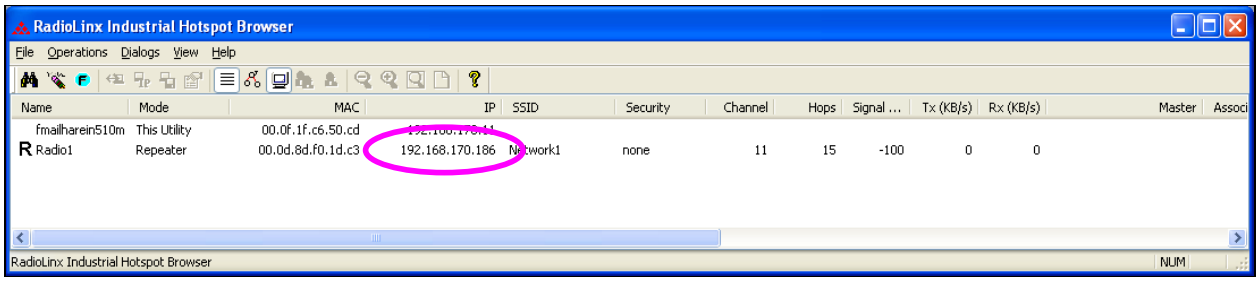
Click on the binocular:



The radio appears:

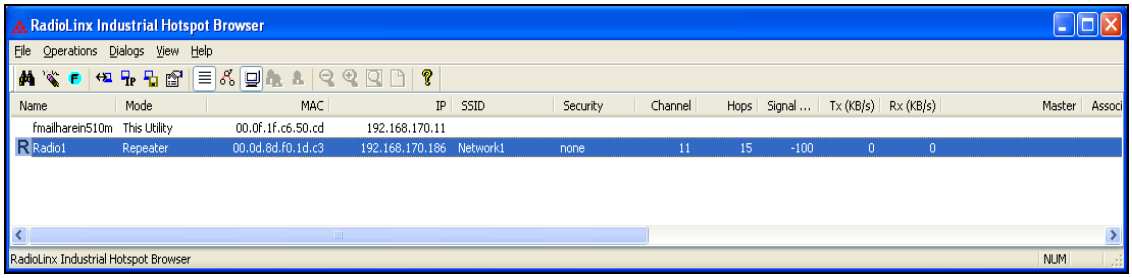


At this point the setting of the radio is the factory default.
If the radio is connected to a network with a DHCP server, the radio may already have an IP address assigned to it.

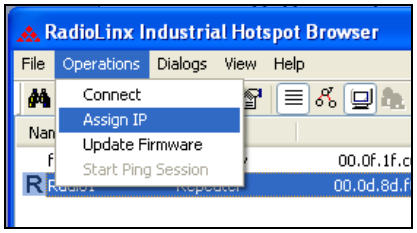


If no IP address appears:

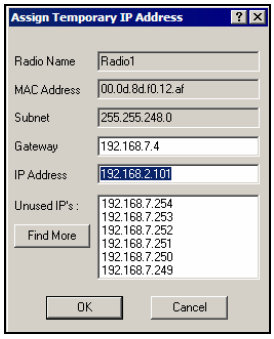
- Select the Radio on the list



- Then from Operations menu, select Assign IP



- The following window is displayed:

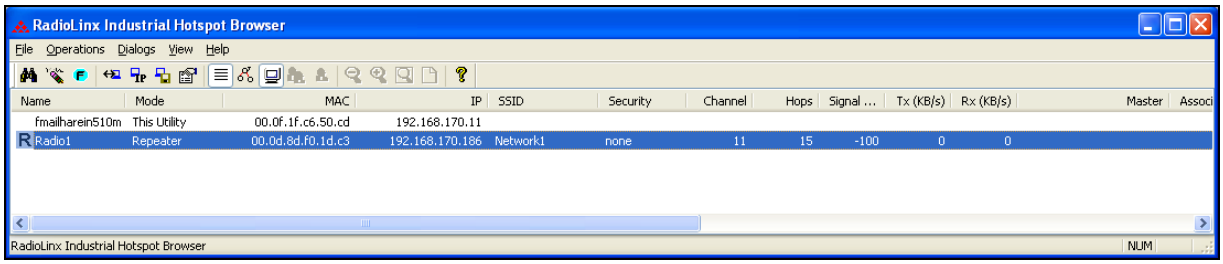


- Click OK to accept the temporary IP address, subnet mask, and default gateway.

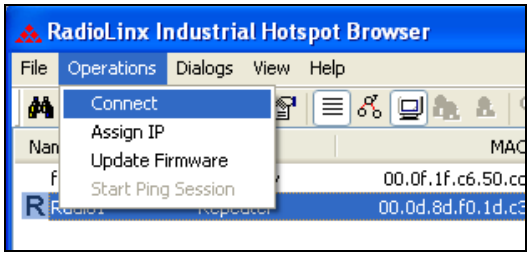
Now a temporary IP address is assigned to the RLXIB-IHW-E module.

A.4. Go online with the RLXIB-IHW-E for configuration:

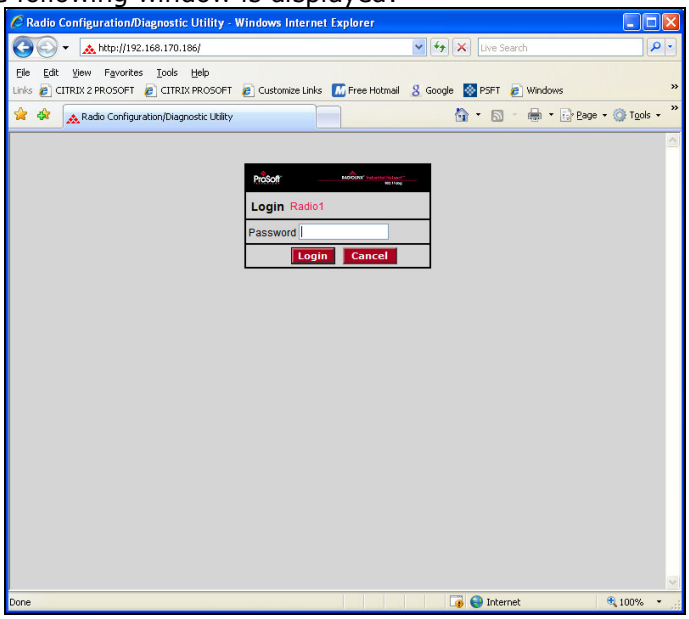
To go online to the RLXIB-IHW for configuration (or diagnostics), from the Browser select the Radio1:



Select the Connect option in Operation menu.

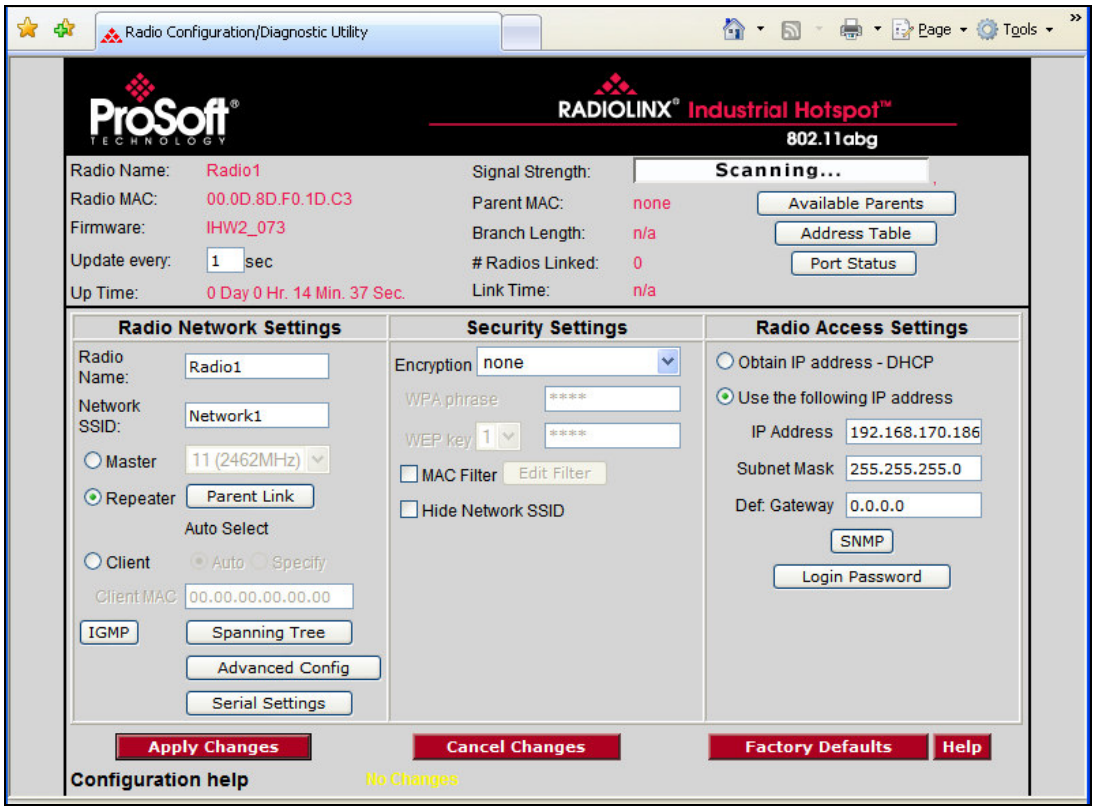


The following window is displayed:



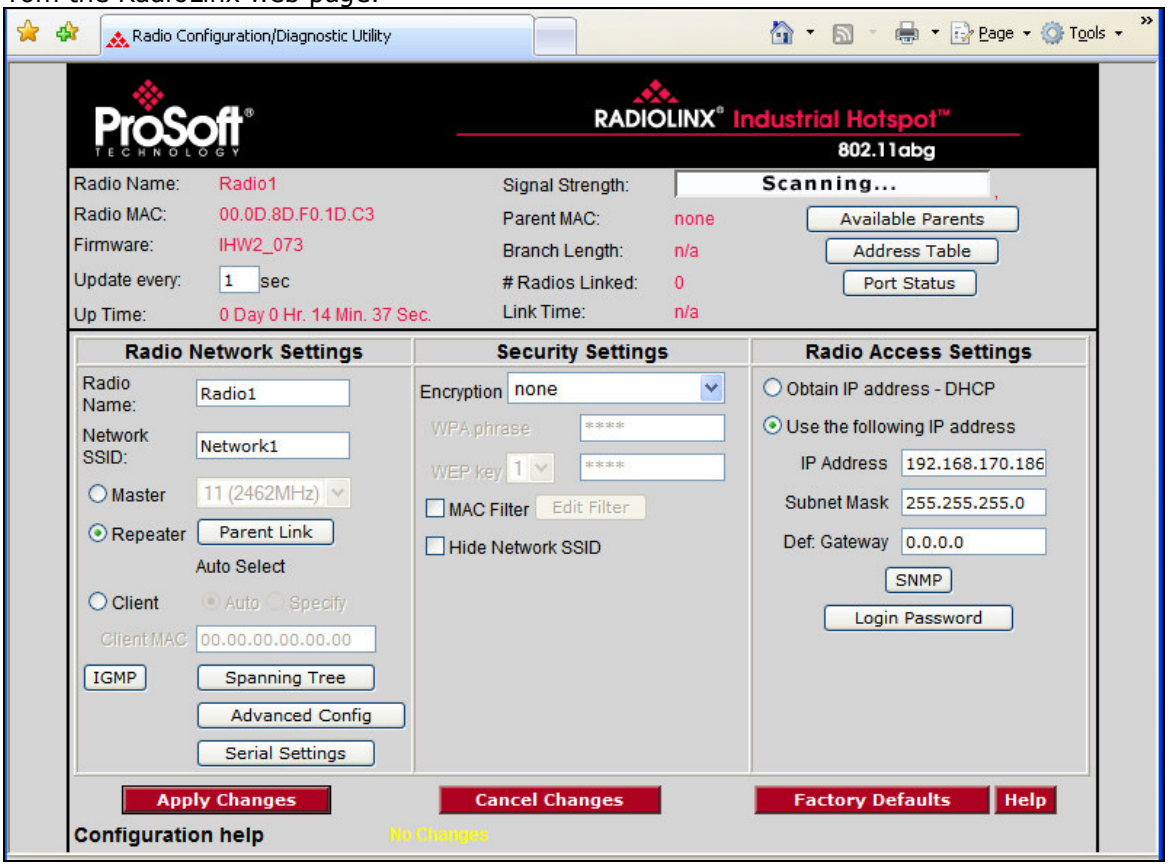
Enter your password to log in to the radio and then press **Login**.
The default **password** is password (lower case).

The RLWIB-IHW-E configuration is protected by a login password.
The default **password** is password (lower case).
To prevent unauthorized access to the radio configuration, you should change the default password when you have finished your configuration.
The following window is displayed:

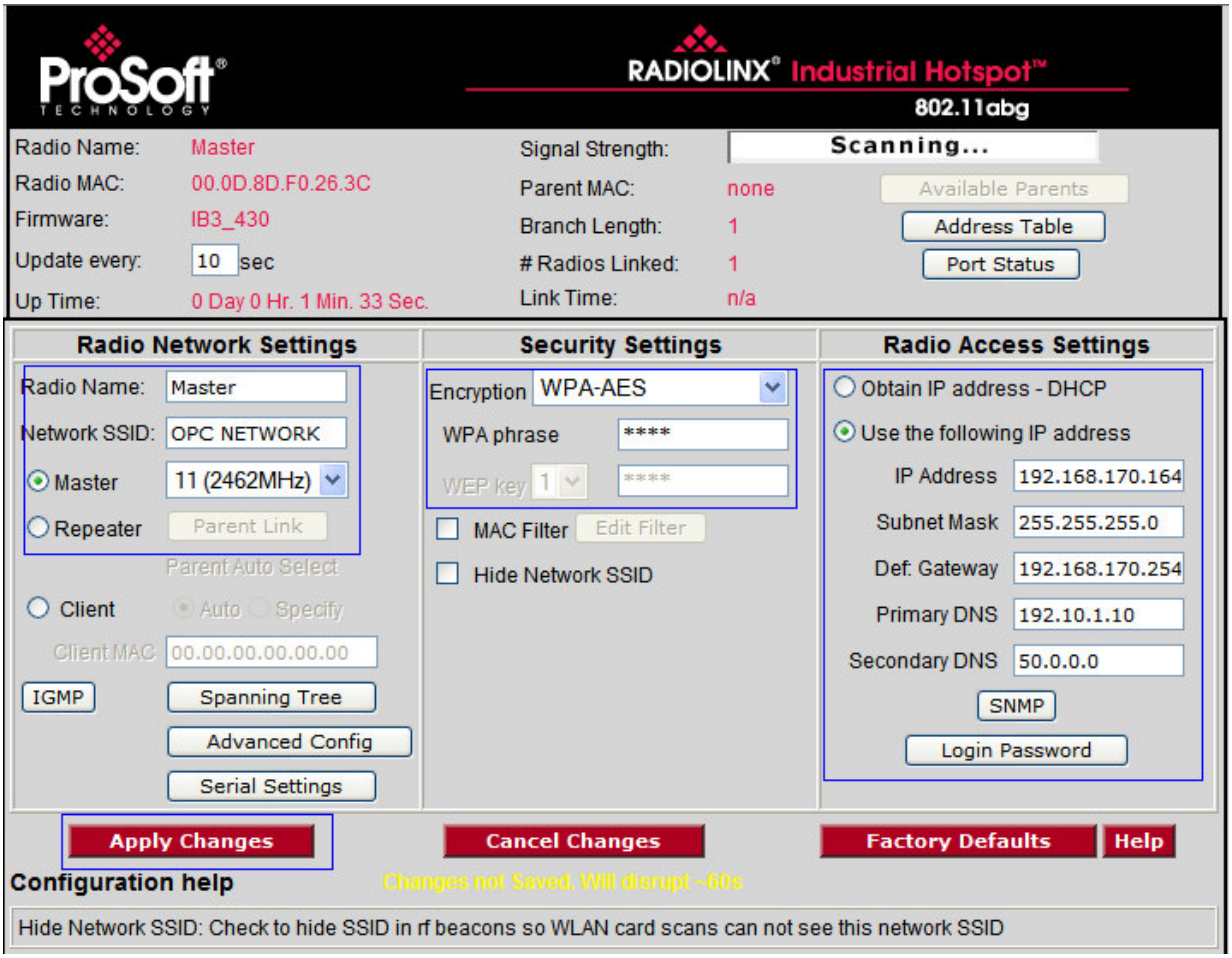


A.5. Set up the Main RLXIB-IHW-E – Master mode:

The master is the "root" or top-level radio in a network.
You must have at least one master radio per network.
For redundancy, you can assign more than one master to the network.
From the RadioLinx web page:

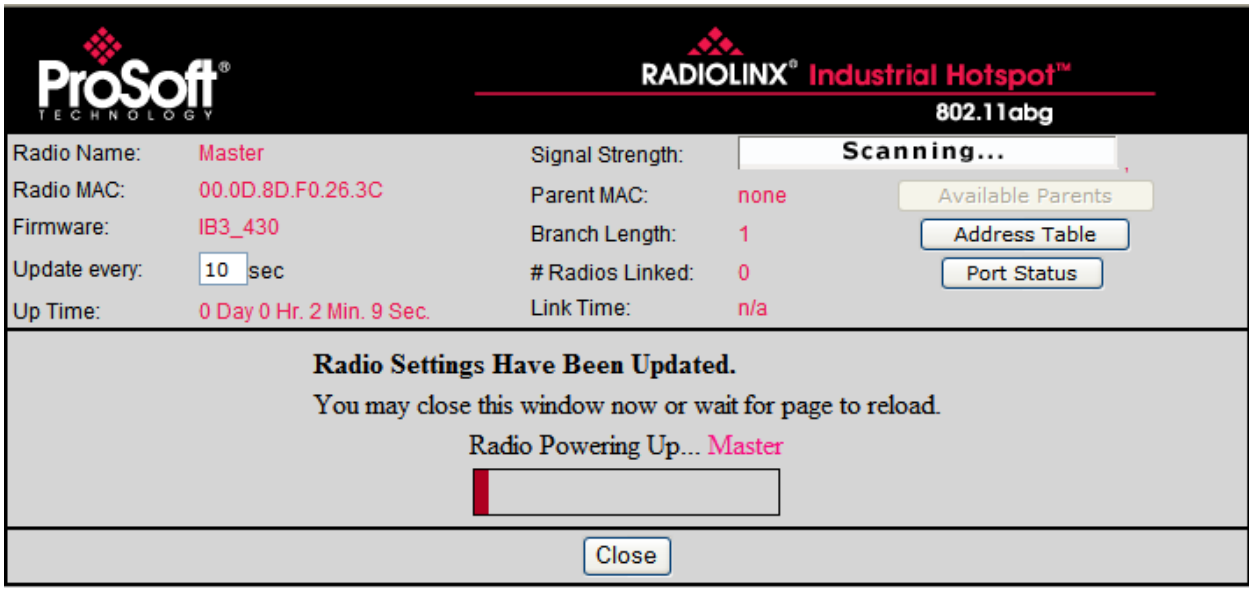


- Change the name of the radio to **Master**
- Change the SSID name to **OPC NETWORK**
- Select **Master** and leave the channel per default (11)
- Encryption chose **WPA-AES** and enter the path phrase: **012345678**
- Enter the IP Address: **192.168.170.164**

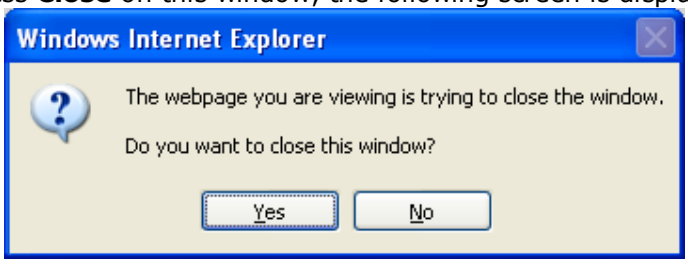


Now the new settings are ready, press **Apply Changes** to valid them.

The RLXIB-IHW-E reboot:



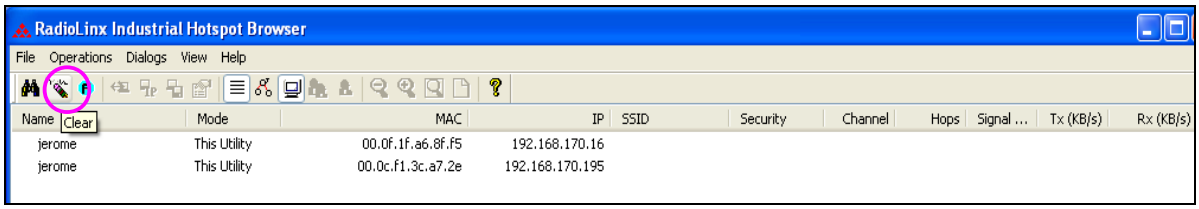
Press **Close** on this window, the following screen is displayed:



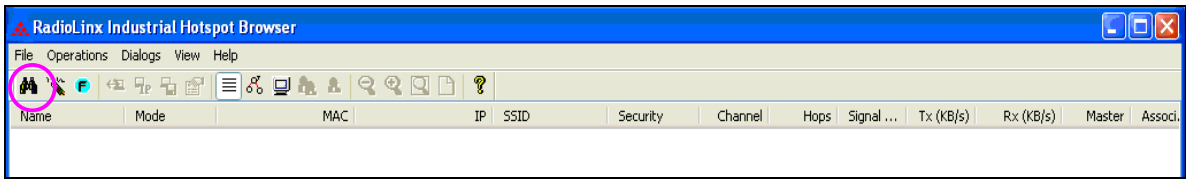
Press **Yes**.

A.6. Settings verification:

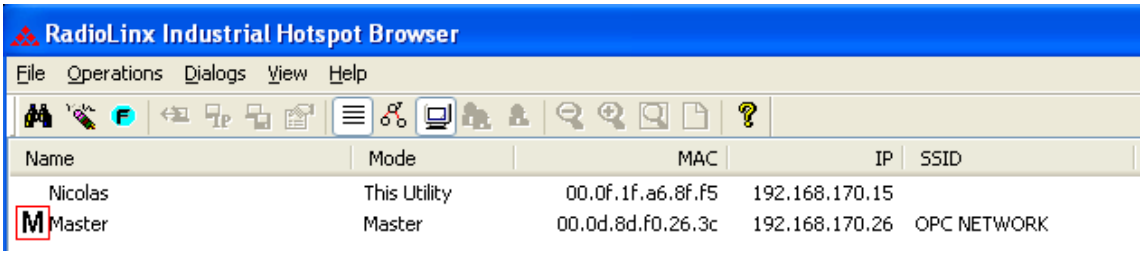
- Select **Clear** to delete the current radio list



- Select the **binocular** to refresh the screen and get an update radio list



- When configured the name of the radio is preceded by an M (for Master) in the RLX-IH Browser.



The setting of the Master radio is complete.

- Disconnect the Ethernet cable from the radio.

B. Setting of the Remote/Repeater radio

B.1. Plug the cables to the RLXIB-IHW:

From left to right: Power connector, serial port and Ethernet port.

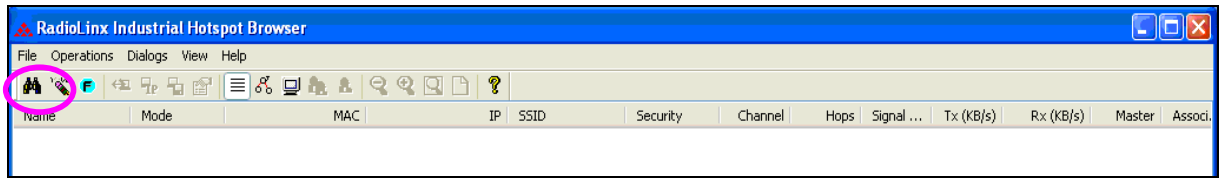
Plug the power cable.

For Ethernet connection:

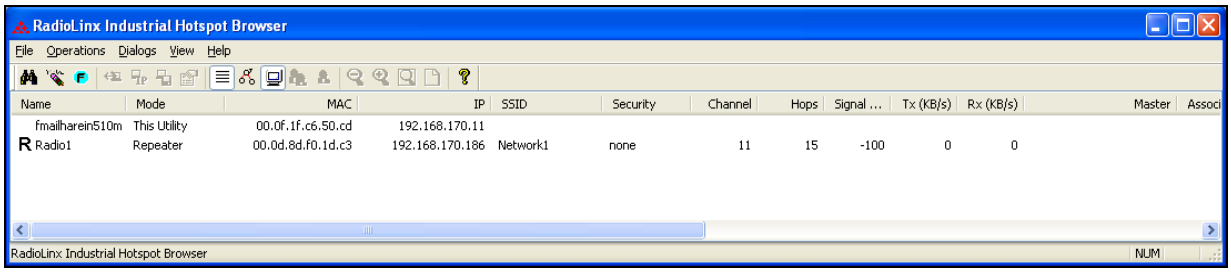
- If you are connecting to the radio through an Ethernet hub or switch, use the gray (straight-through) cable.
- If you are connecting to the radio directly from your PC without going through an Ethernet hub or switch, you must use the red (crossover) cable.

B.2. Launch RadioLinx IH browser:

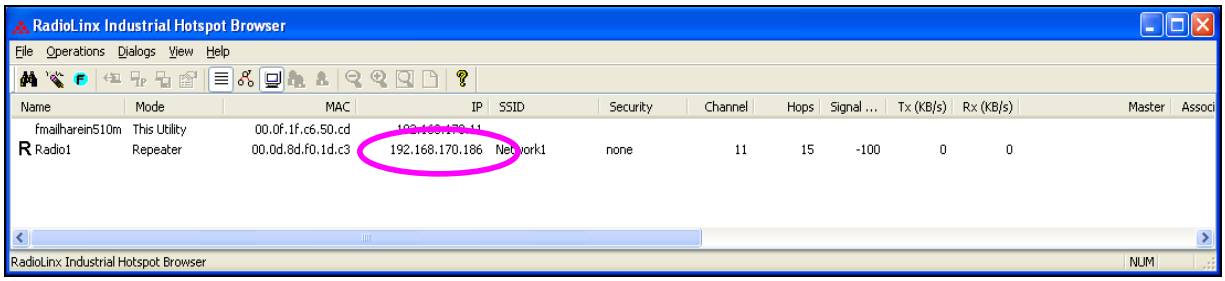
Click on the binocular:



The radio appears:

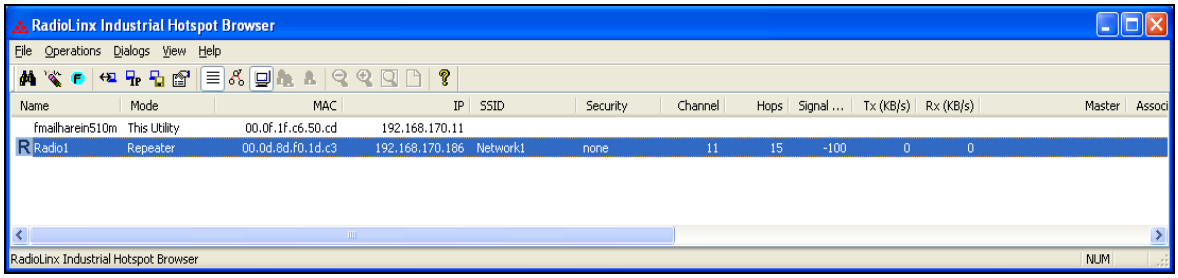


At this point the setting of the radio is the factory default.
If the radio is connected to a network with a DHCP server, the radio may already have an IP address assigned to it.

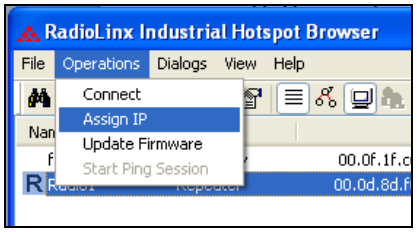


If no IP address appears:

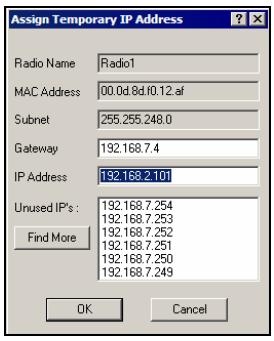
- Select the Radio on the list



- Then from Operations menu, select Assign IP



- The following window is displayed:

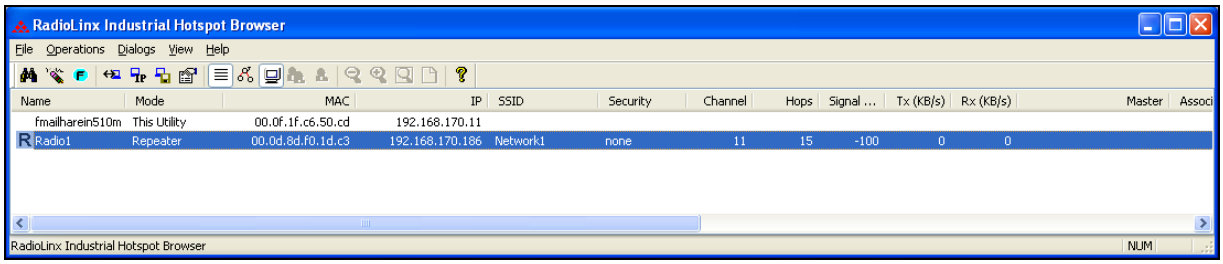


- Click OK to accept the temporary IP address, subnet mask, and default gateway.

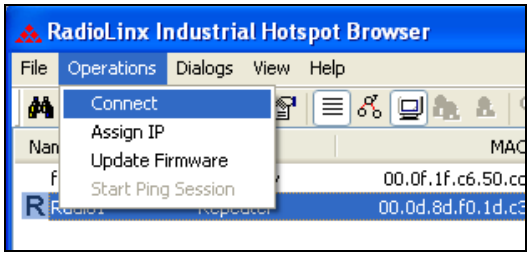
Now a temporary IP address is assigned to the RLXIB-IHW-E module.

B.3. Go online with the RLXIB-IHW-E for configuration:

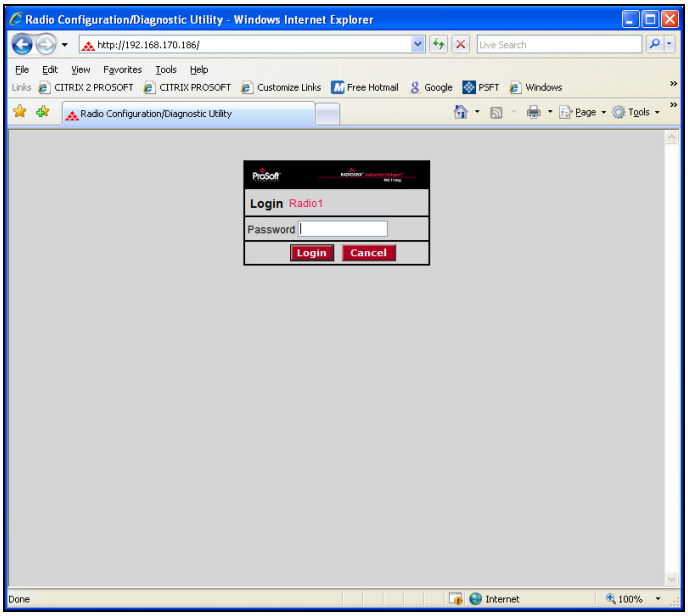
To go online to the RLXIB-IHW for configuration (or diagnostics), from the Browser select the Radio1:



Select the Connect option in Operation menu.

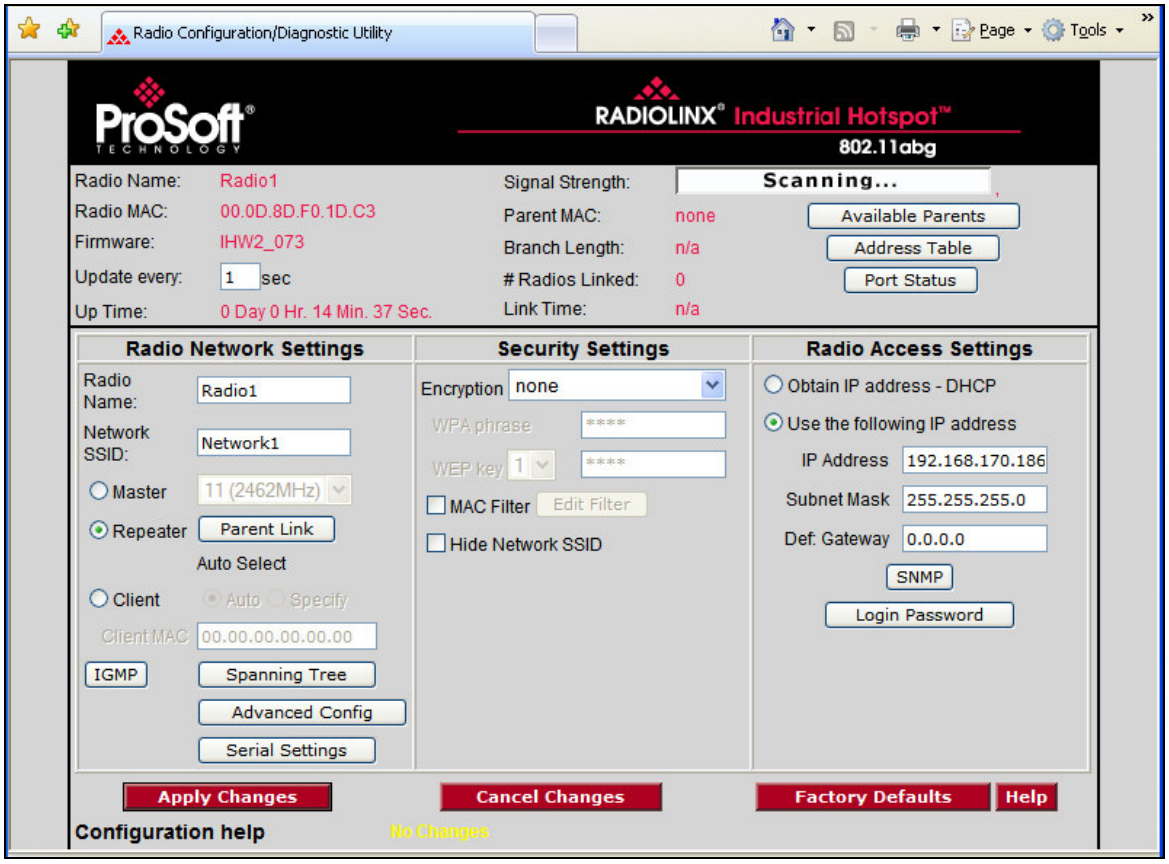


The following window is displayed:



Enter your password to log in to the radio and then press **Login**.
The default **password** is password (lower case).

The RLWIB-IHW-E configuration is protected by a login password.
The default **password** is password (lower case).
To prevent unauthorized access to the radio configuration, you should change the default password when you have finished your configuration.
The following window is displayed:



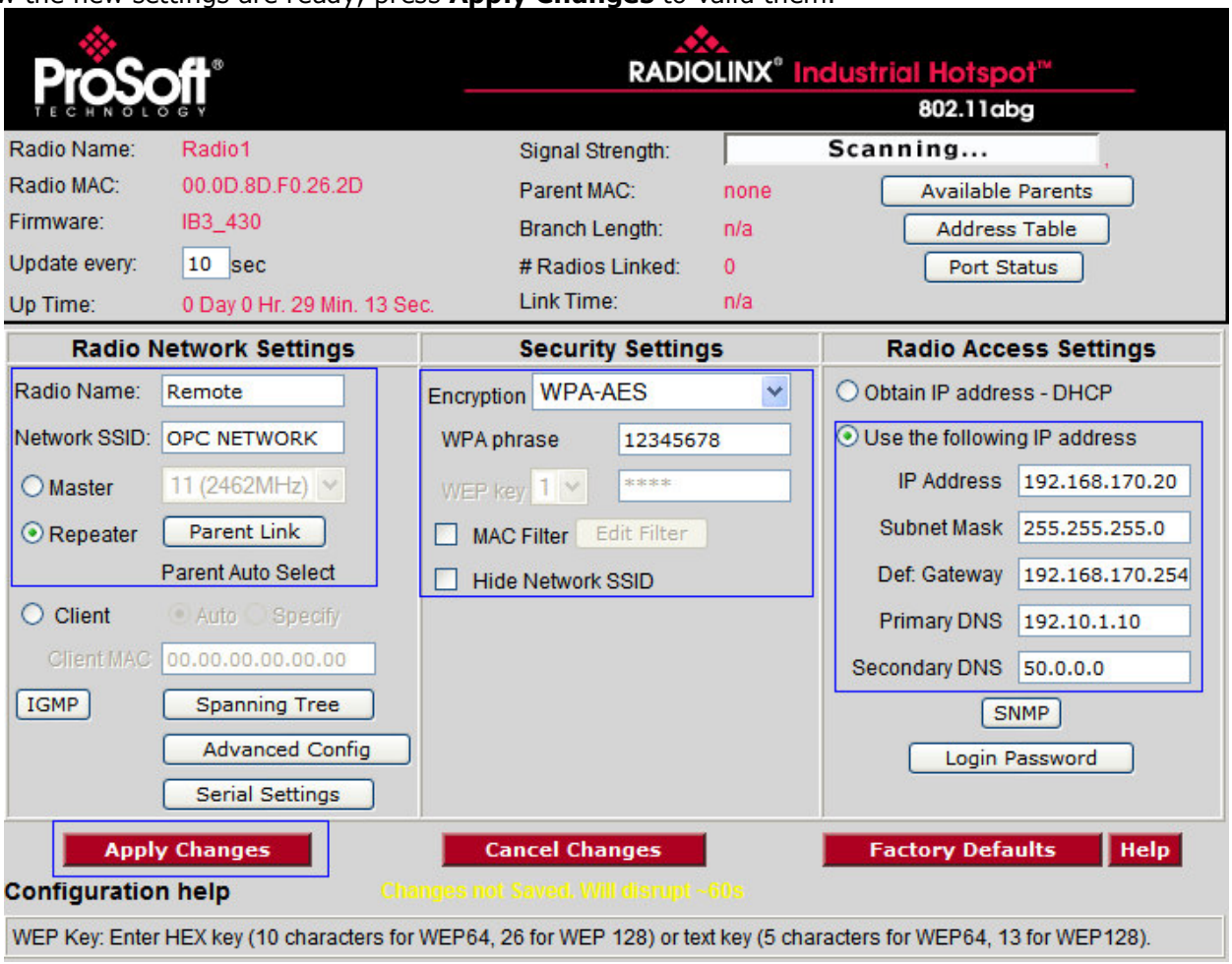
B.4. Set up the Remote/Repeater RLXIB-IHW-E – Repeater mode:

A RLXIB-IHW-E Remote/Repeater connects automatically to the best available parent radio on the network.

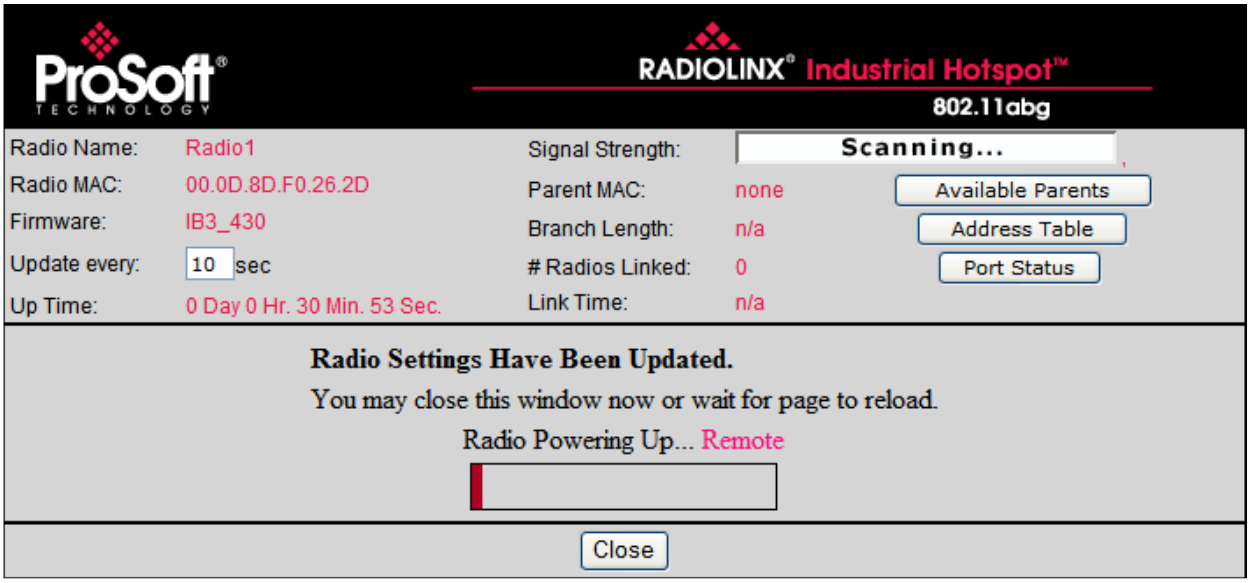
- Change the name of the radio to **Remote**
- Change the SSID name to **OPC NETWORK**
- Select **Repeater**.
- Encryption chose **WPA-AES** and enter the path phrase: **012345678**
- Enter the IP Address **192.168.170.174**

Important: The Network SSID and WPA phrase are case sensitive.
Use **exactly** the same combination of upper case and lower case letters you entered for the RLXIB-IHW-E Main device, otherwise the Repeater radio will not be able to connect to the Master radio

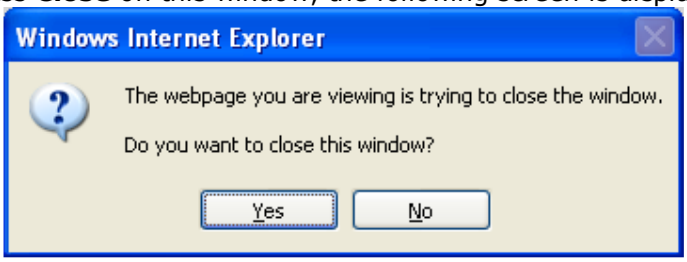
Now the new settings are ready, press **Apply Changes** to valid them.



The RLX-IHW-E reboots:



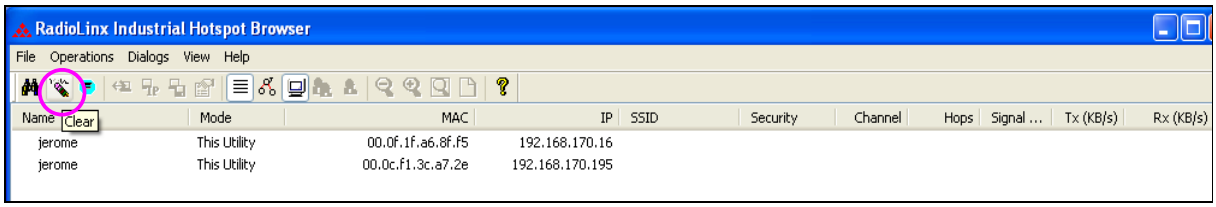
Press **Close** on this window, the following screen is displayed:



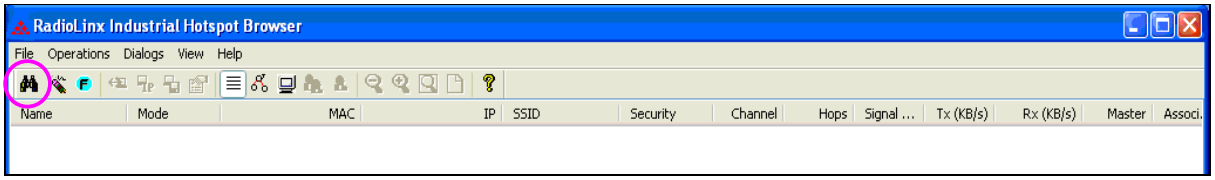
Press **Yes**.

B.5. Settings verification:

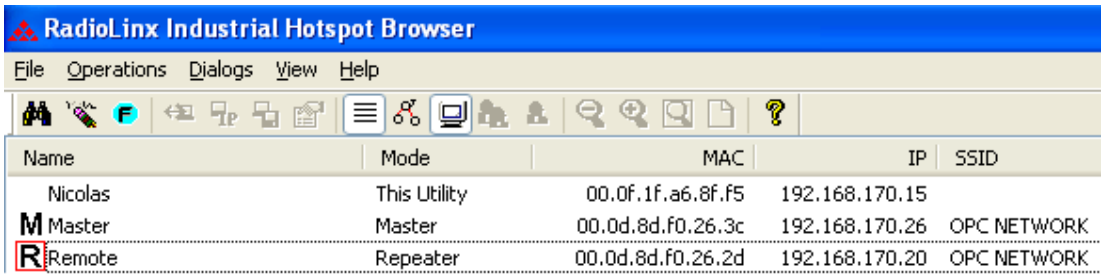
- Select **Clear** to delete the current radio list



- Select the **binocular** to refresh the screen and get an update radio list



- When configured the name of the radio is preceded by an R (for Repeater) in the RLX-IH Browser.



The setting of the Repeater radio is complete.

C. RadioLinx OPC Server

C.1. Requirements:

C.1.1. Windows XP SP2:

The installation of the RadioLinx OPC Server Software will not work unless you have Windows XP Service Pack 2, or Windows Vista installed on your system.
To verify your operating system on your computer you have to right click on **My Computer** icon and then select **Properties/General**.

C.1.2. .NET Framework:

The RadioLinx OPC Server Software requires the .NET Framework 2.0 and .NET Framework 3.0 software installed on your PC in order for it to run properly.

During the installation of the RadioLinx OPC Server the installation program checks your system for these components.
If your system does not contain these components, the following message will appear:

If the above message does not appear, your system already contains the required files.

C.2. Installations:

C.2.1. RadioLinx OPC Server:

The RadioLinx OPC Server Software is available on our web site at the following link:
http://www.prosoft-technology.com/content/view/full/11315

1. Click on RadioLinx OPC Server Software for Windows XP and Vista and choose "Save" to download the software to a temp drive on your PC.
2. Unzip the file (RadioLinx_OPC_Server_1_1_4.zip).
3. Click on the **ServerInstaller_1_1_7.msi** icon to start the installation.
4. Accept the License Agreements.

If your system does not contain the .NET Framework 2.0 and .NET Framework 3.0 components, the following message appears:

If this is the case, you must download the .NET 3.0 Framework files to your system using the following procedure.

C.2.2. .NET Framework:

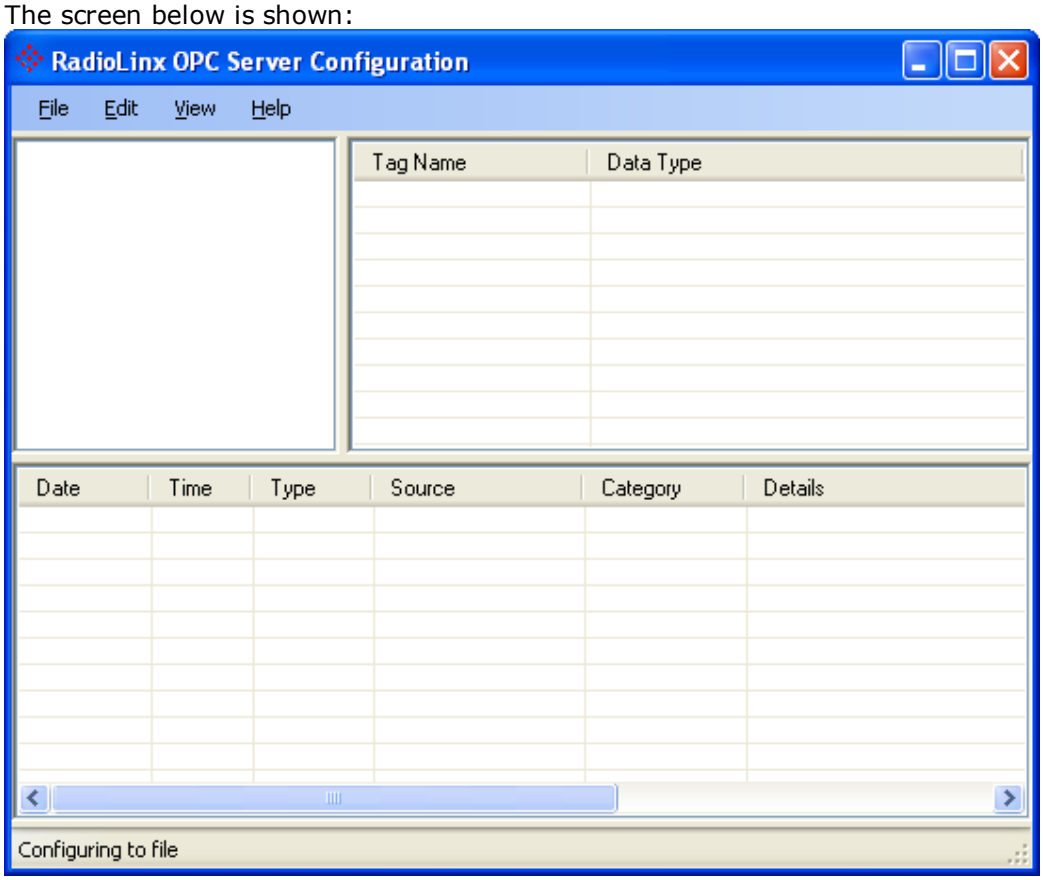
The .NET Framework for Windows XP components could be downloaded from our web site at the following link:
http://www.prosoft-technology.com/content/view/full/11315

1. Click **.NET Framework for Windows XP** (Contact ProSoft Technical Support if your machine is using Windows NT).
2. Choose "Save" to download the zip file to the same directory where you downloaded the RadioLinx OPC Server software.
3. Unzip the files (NETFRAMEWORK.zip).
4. Launch **Dotnetfx3.exe** under NETFX30.
5. Run the RadioLinx OPC Server setup file again by launching **ServerInstaller_1_1_4.msi**.
6. Follow the prompts to complete the installation.

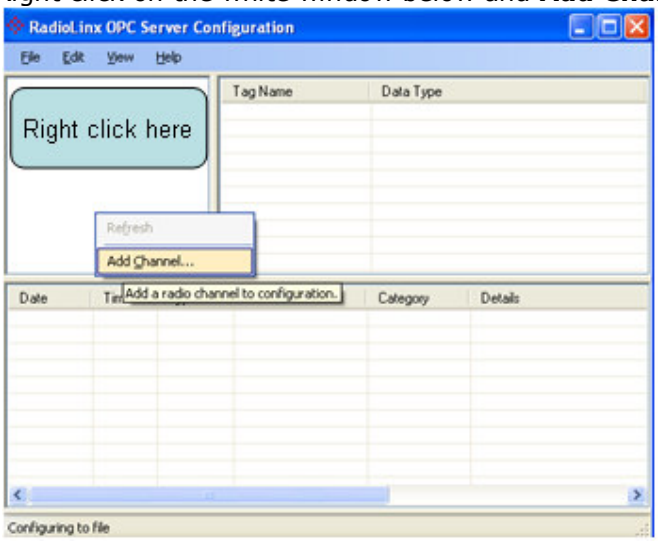
C.3. Configuration:

C.3.1. Configuration of the Master modules into the OPC Server:

Launch **RadioLinx OPC Configuration Tool**
The screen below is shown:



Right click on the white window below and **Add Channel**:

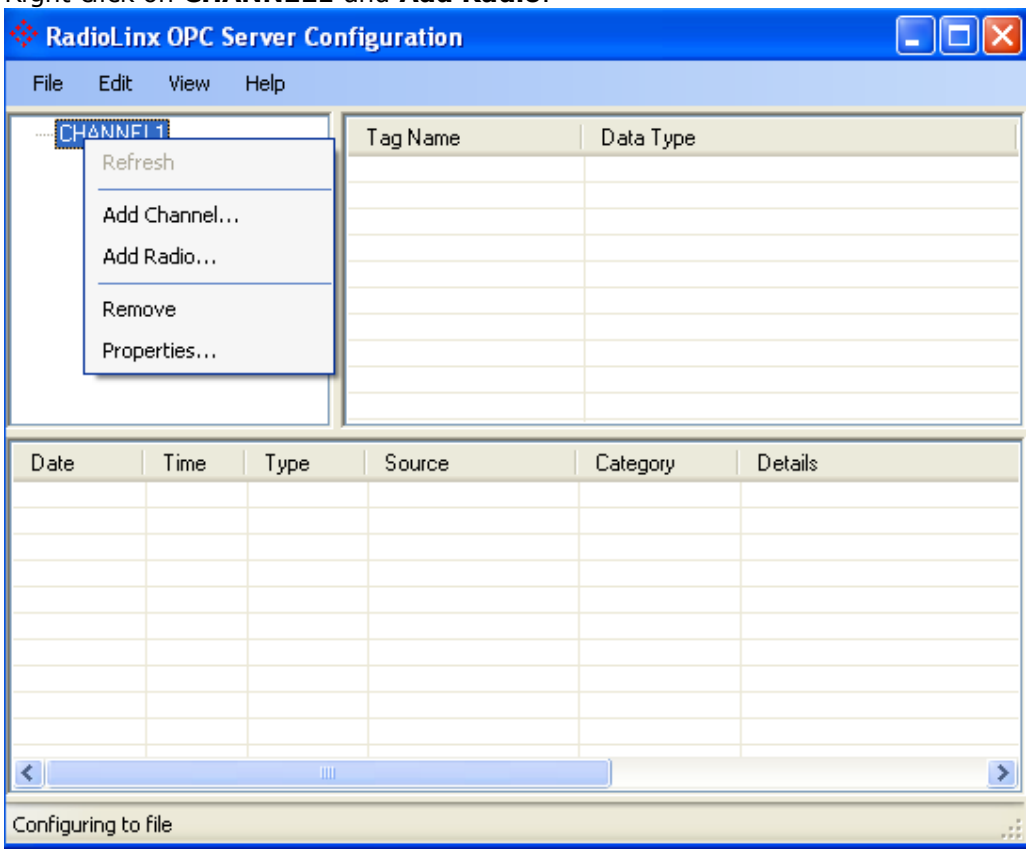


We will create the channel **"CHANNEL1"**.
The type of the **CHANNEL1** will be **RLX-IH** (or RLXIB-IHW)

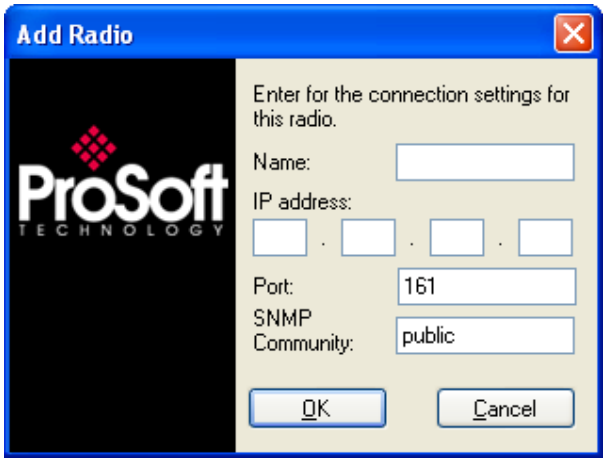
Click on **Next**

Click on **OK**

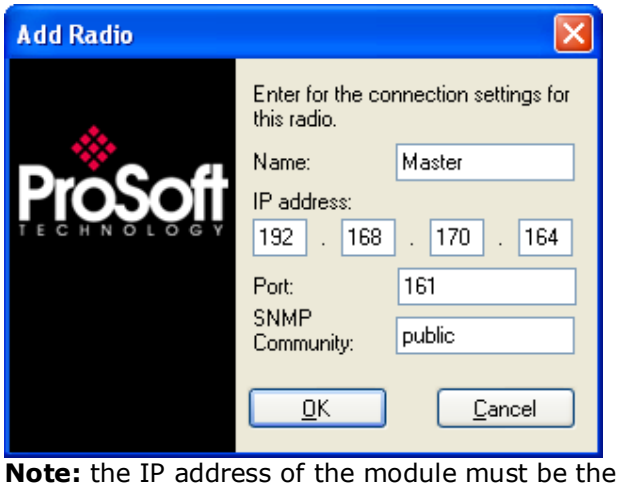
Now we will add the Master module.
Right click on **CHANNEL1** and **Add Radio**.



The screen below is shown:



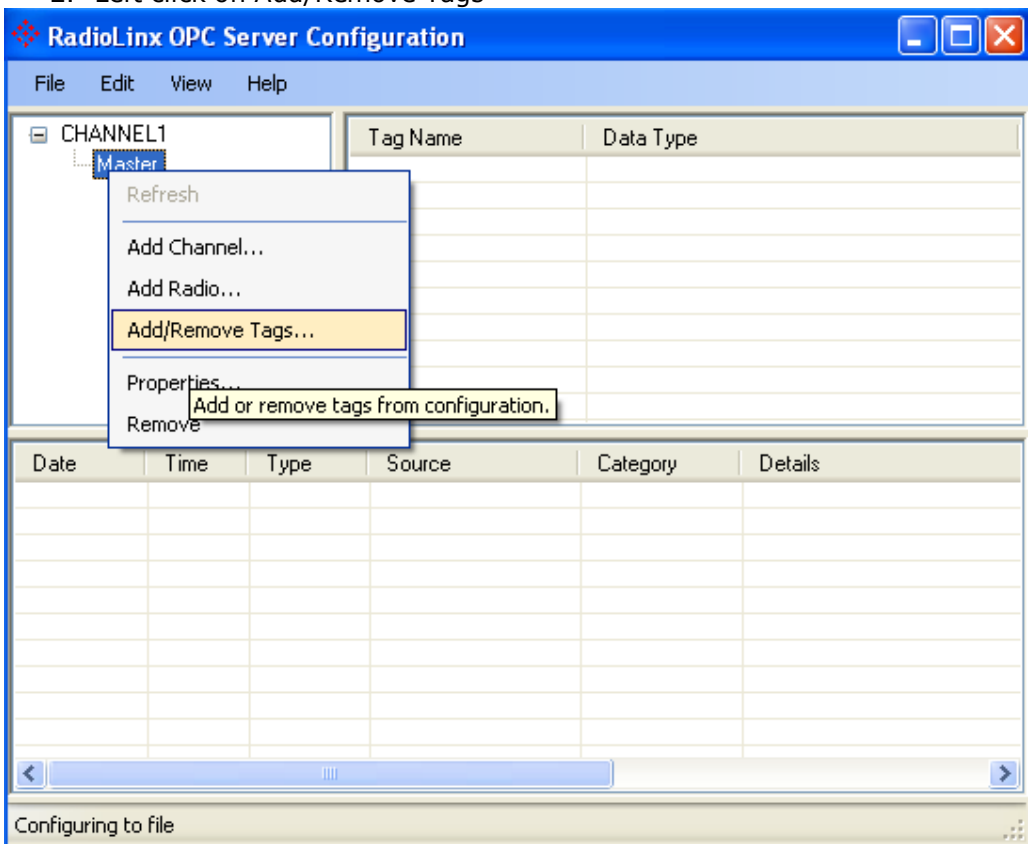
We will create the Master Radio.
You will fill in the screen with the parameters below:
Name: Master
IP address: 192.168.170.164
Port: 161 (leave setting per default)
SNMP Community: public (leave setting per default)



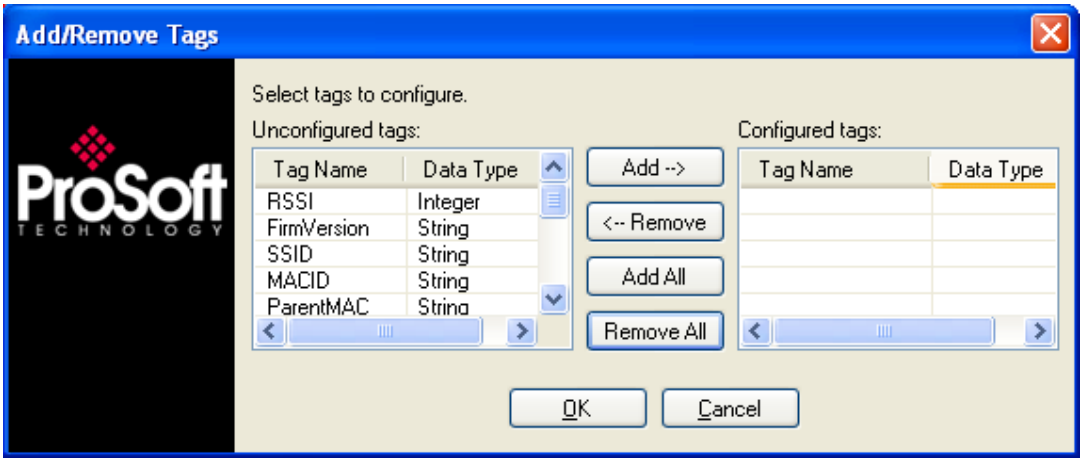
Note: the IP address of the module must be the same as the IP address set into the RLXIB-IHW Master modules.

After creating the Master module, we will add the tags needed to be monitored.

1. Right click on the Master radio
2. Left click on Add/Remove Tags

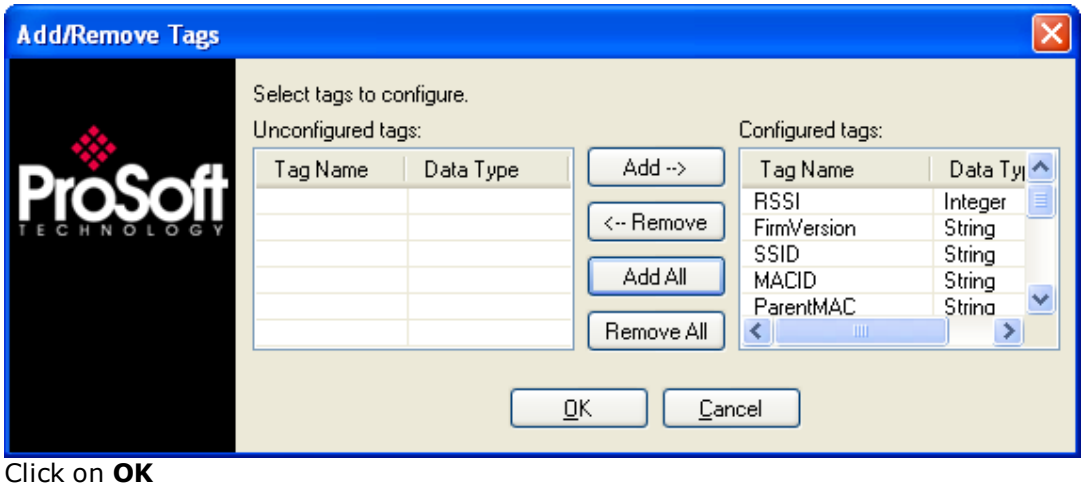


The screen below is shown:



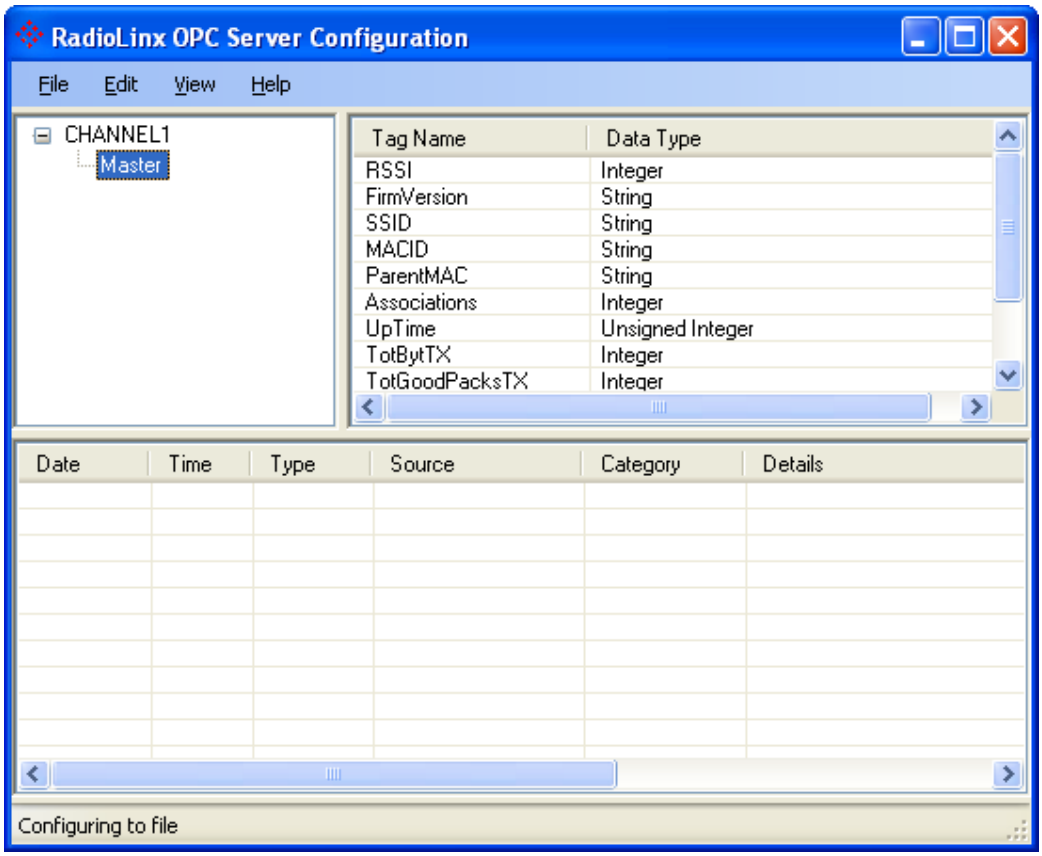
For this application we will add all the tags available into the RadioLinx OPC server.

Click on **Add All** to add all the tags available.



Click on **OK**

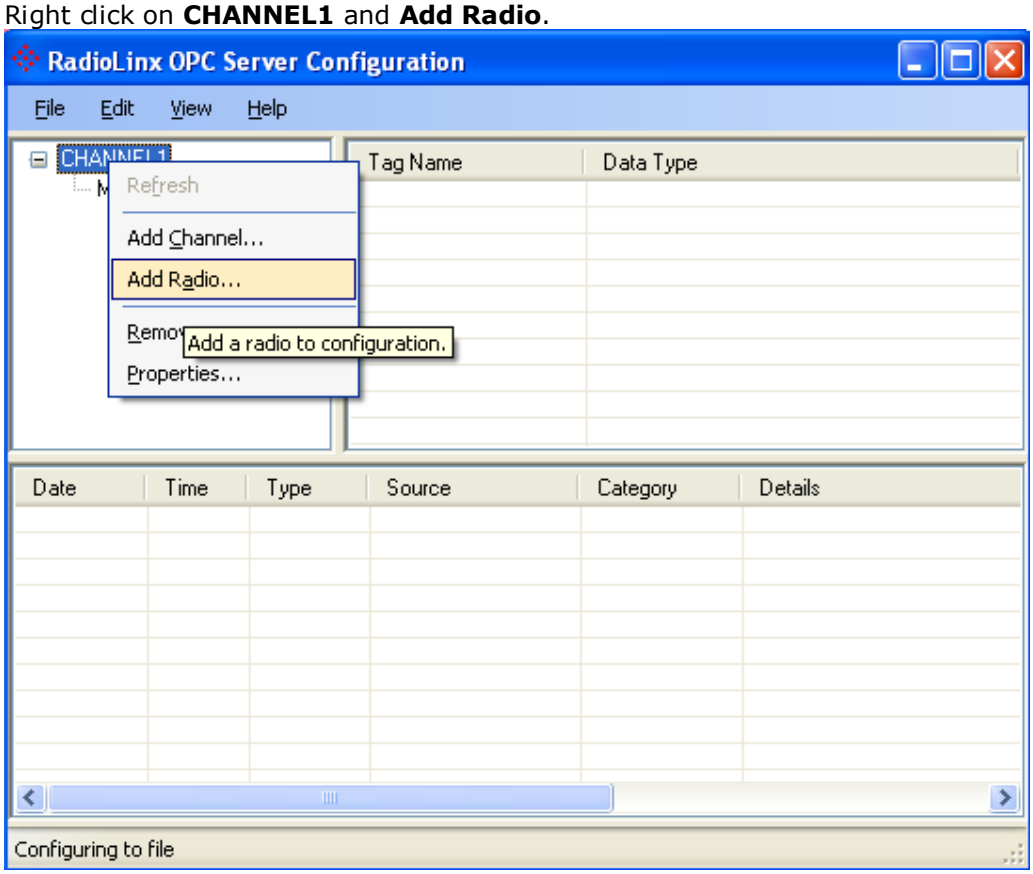
The screen below is shown:



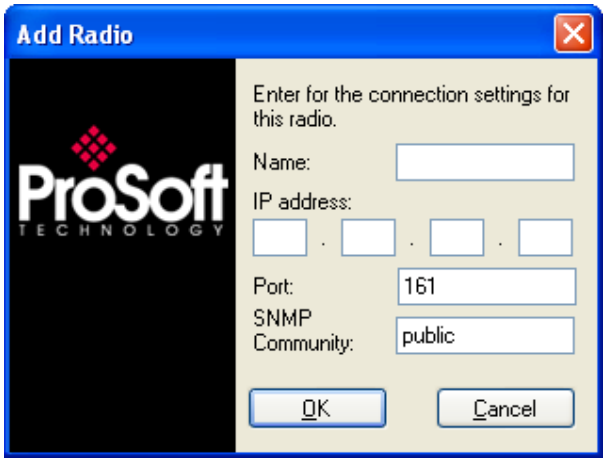
We will follow the same step to create the remote module

C.3.2. Configuration of the Remote modules into the OPC Server:

Now we will add the Remote modules.
Right click on **CHANNEL1** and **Add Radio**.



The screen below is shown:



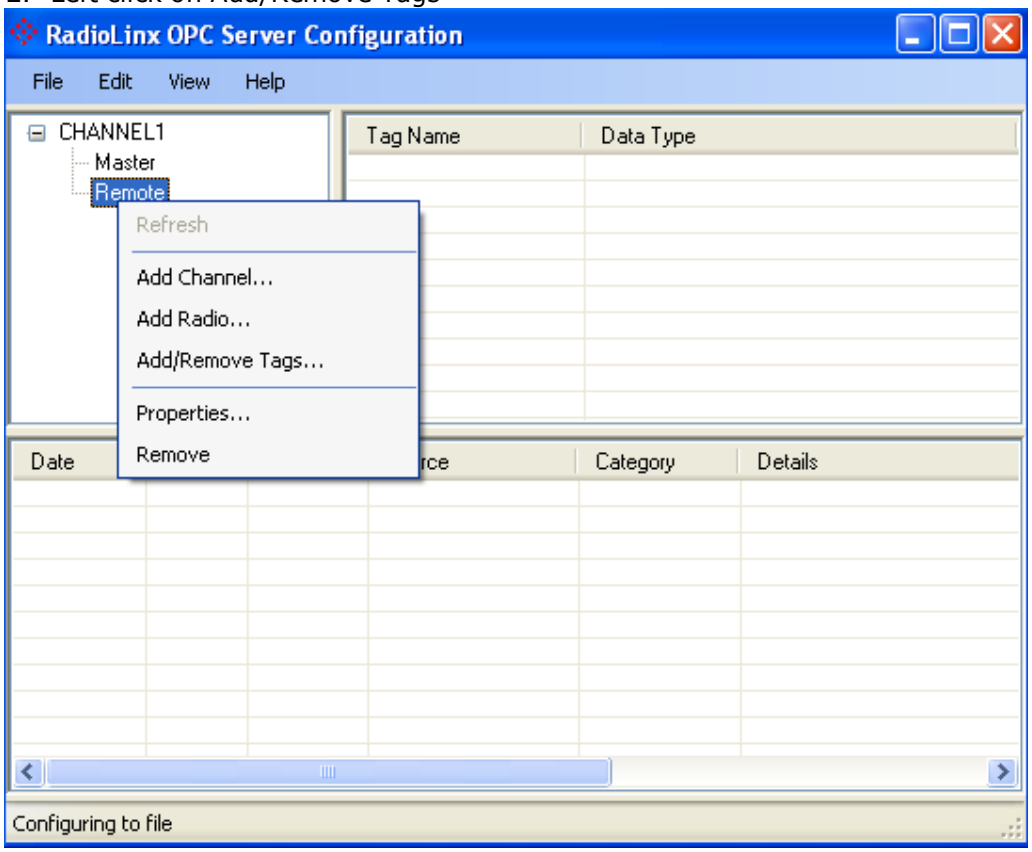
We will create the Remote Radio.
You will fill in the screen with the parameters below:
Name: Remote
IP address: 192.168.170.174
Port: 161 (leave setting per default)
SNMP Community: public (leave setting per default)

Click on **OK**

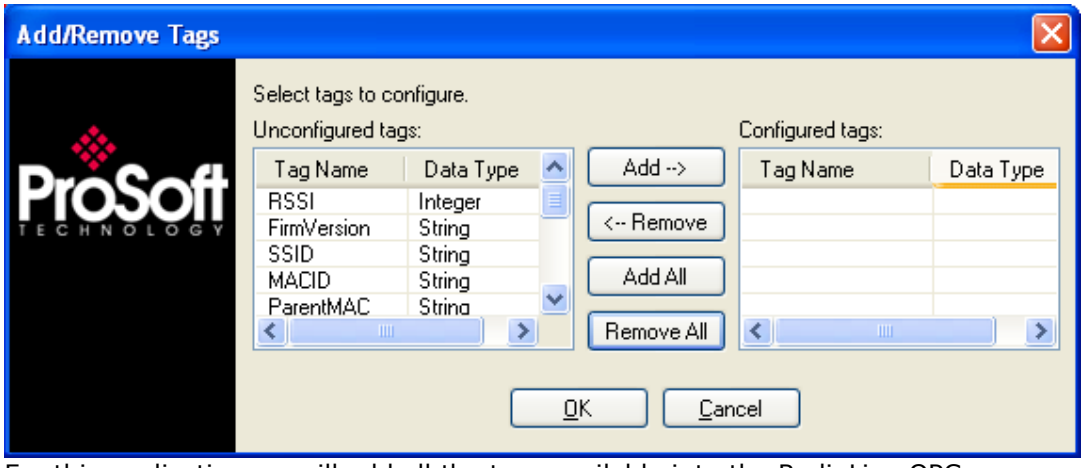
Note: the IP address of the module must be the same as the IP address set into the RLXIB-IHW Remote modules.

After creating the Remote modules, we will add the tags needed to be monitored.

1. Right click on the Remote radio
2. Left click on Add/Remove Tags

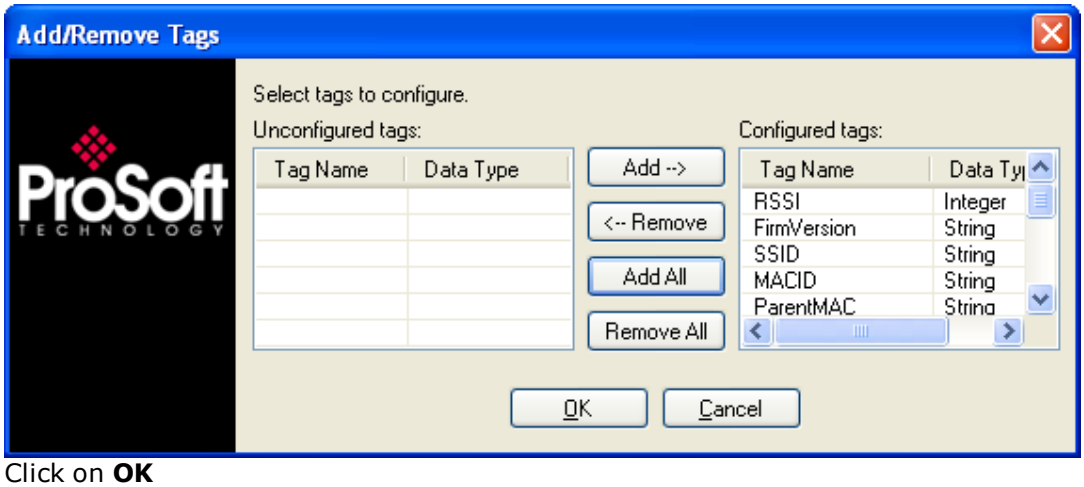


The screen below is shown:



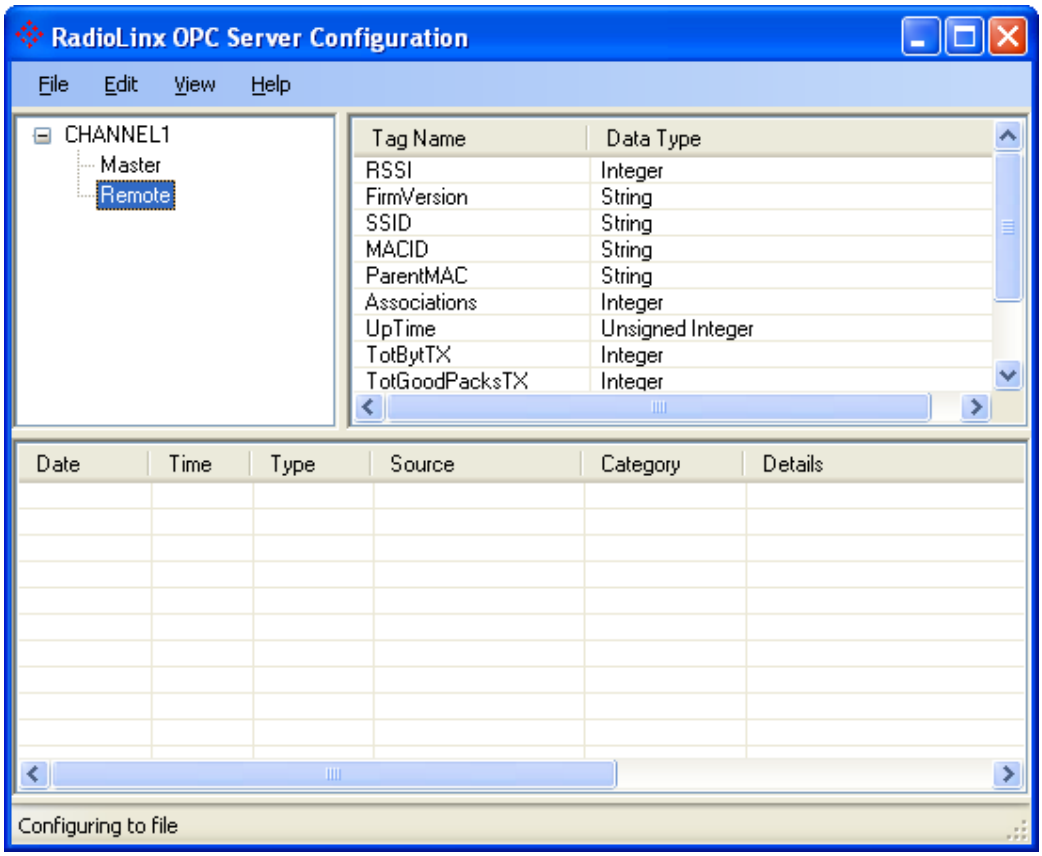
For this application we will add all the tags available into the RadioLinx OPC server.

Click on **Add All** to add all the tags available.



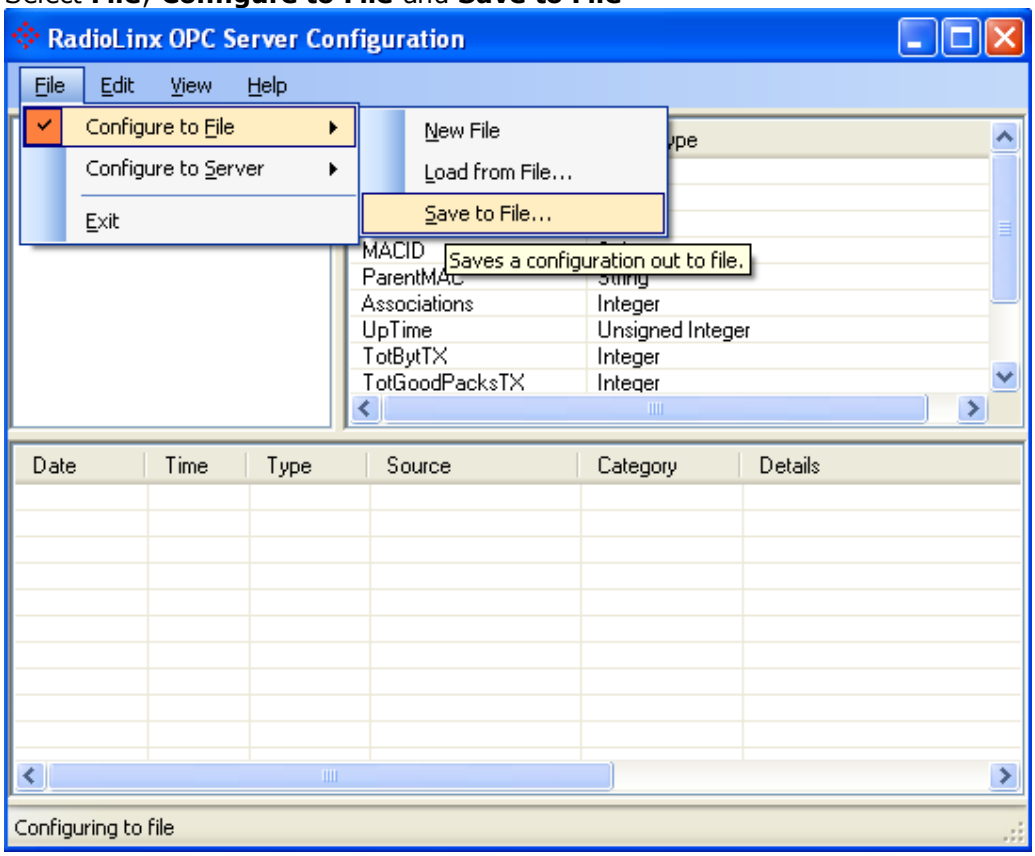
Click on **OK**

The screen below is shown:

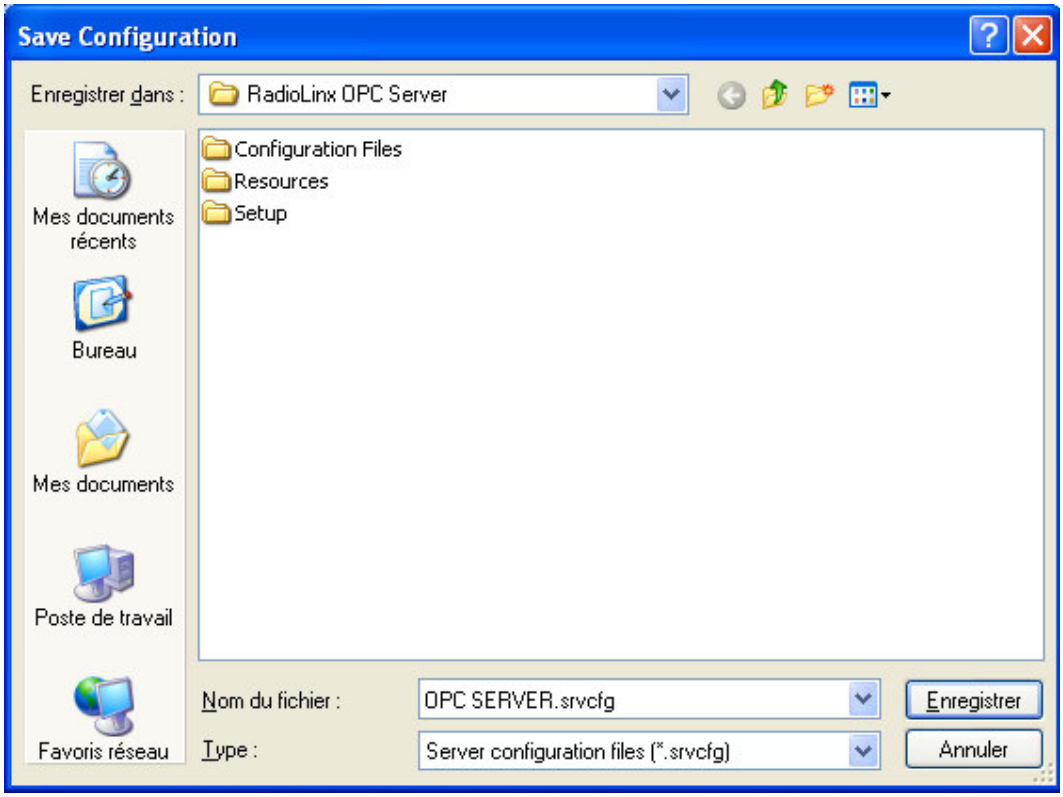


Now the configuration of the OPC Server is complete.

Select **File**; **Configure to File** and **Save to File**



The screen below is showed:



Enter the file name: **OPC SERVER.srvcfg** and click on **Enregistrer (Save)**
Close the **RadioLinx OPC Server Configuration**.

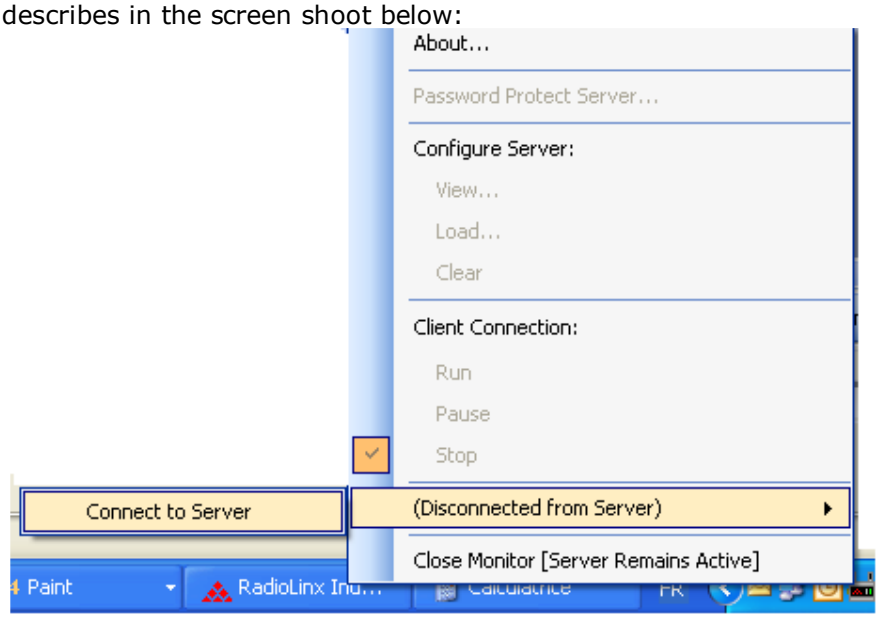
C.3.3. Connect the OPC Server to the radios:

Now we will follow a procedure to ensure that the OPC server is able to establish the communication with the RLXIB-IHW modules.

Right click on the **RadioLinx OPC Monitor** icon.

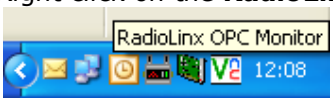
If the **RadioLinx OPC Monitor** did not appear launch **RadioLinx OPC Monitor** and right click on the icon.

Move the mouse on **Disconnected from Server** and click on **Connect to Server** as describes in the screen shoot below:

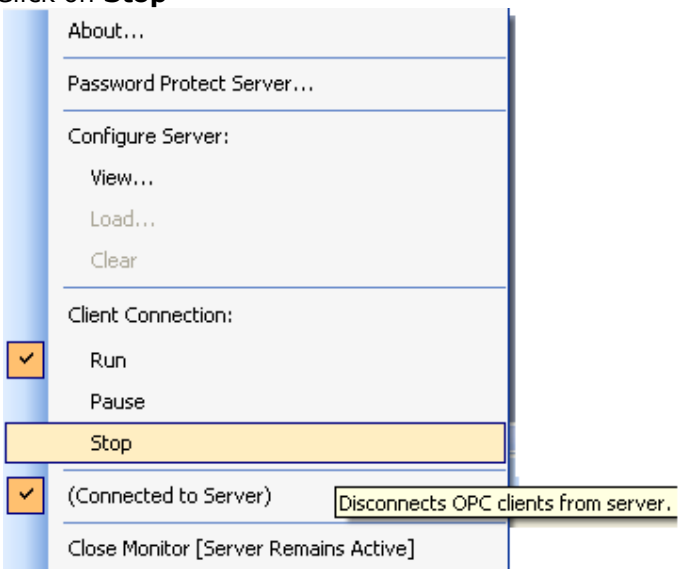


We will load the configuration file into the OPC Server.
To be loaded the OPC server need to be stopped.

Right click on the **RadioLinx OPC Monitor** icon.



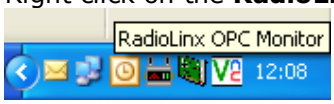
Click on **Stop**



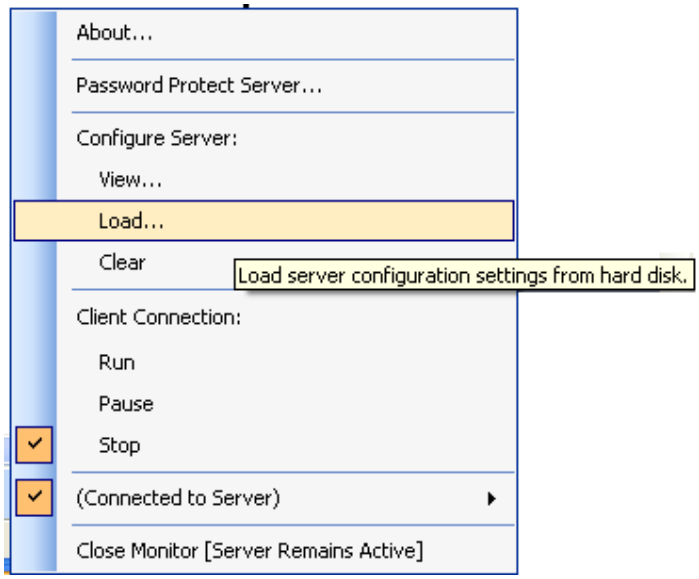
The screen below is shown:

Click on **Oui (Yes)**

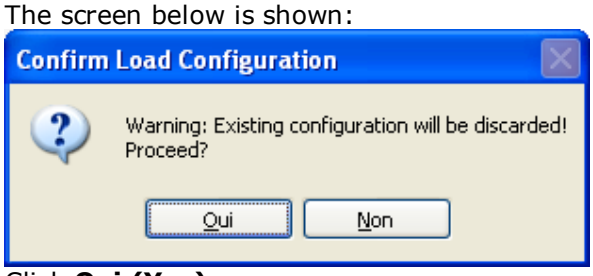
Right click on the **RadioLinx OPC Monitor** icon.



Click on **Load**

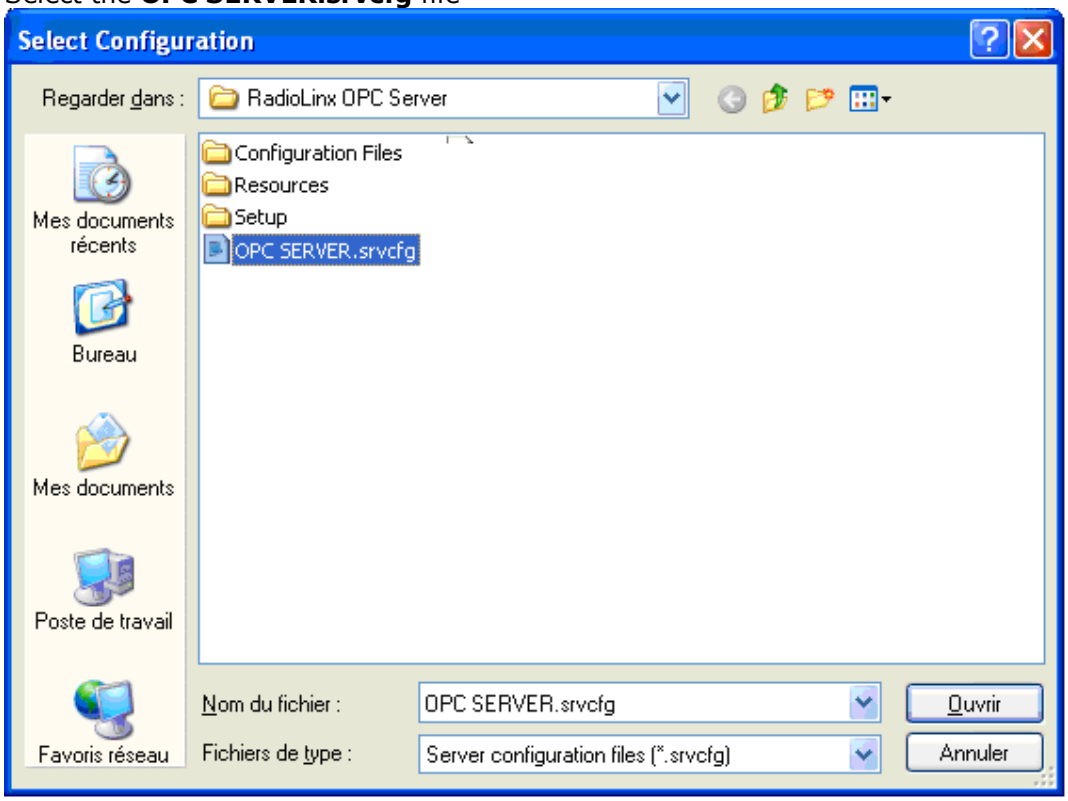


The screen below is shown:



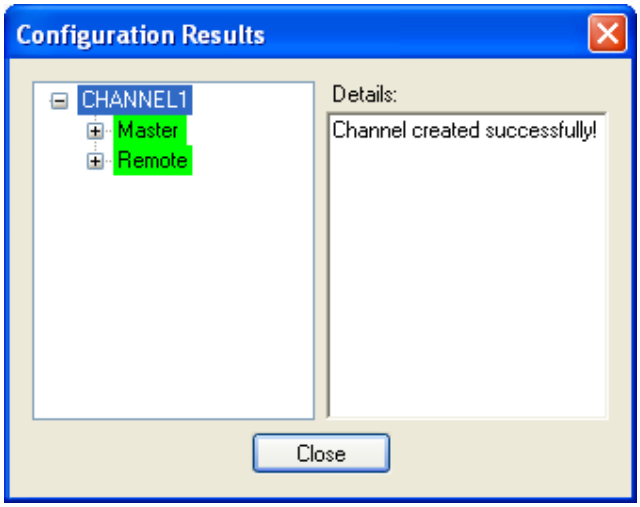
Click **Oui (Yes)**

Select the **OPC SERVER.srvcfg** file



Click on **Ouvrir (Open)**

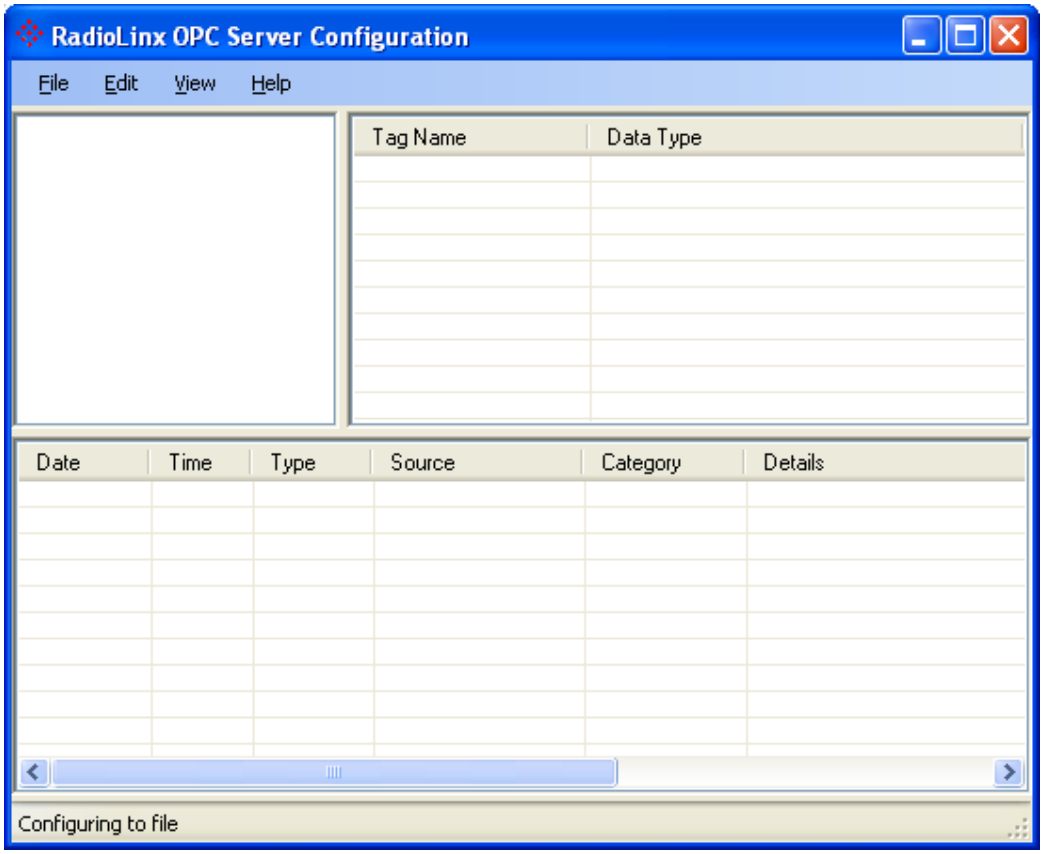
The screen below is shown.



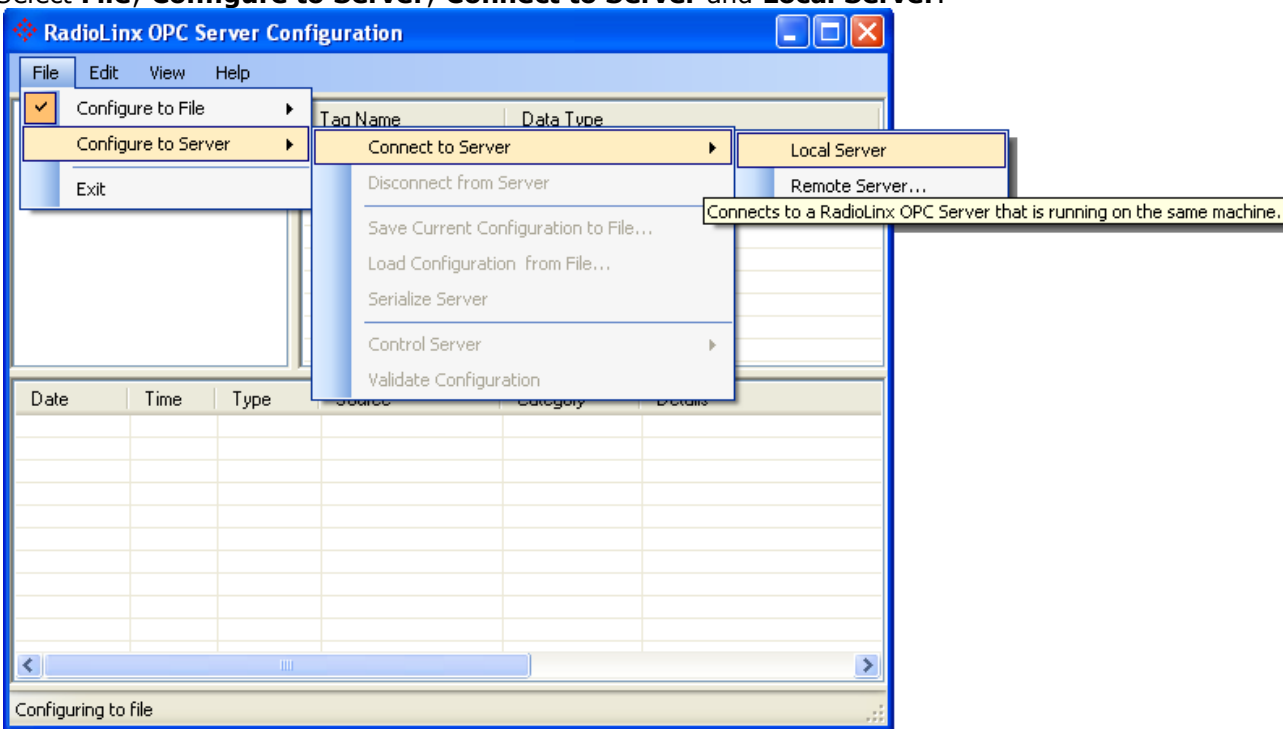
Click on **Close**

Now the OPC Server is correctly configured.
We will check if the OPC Server is able to establish the communication with the module.

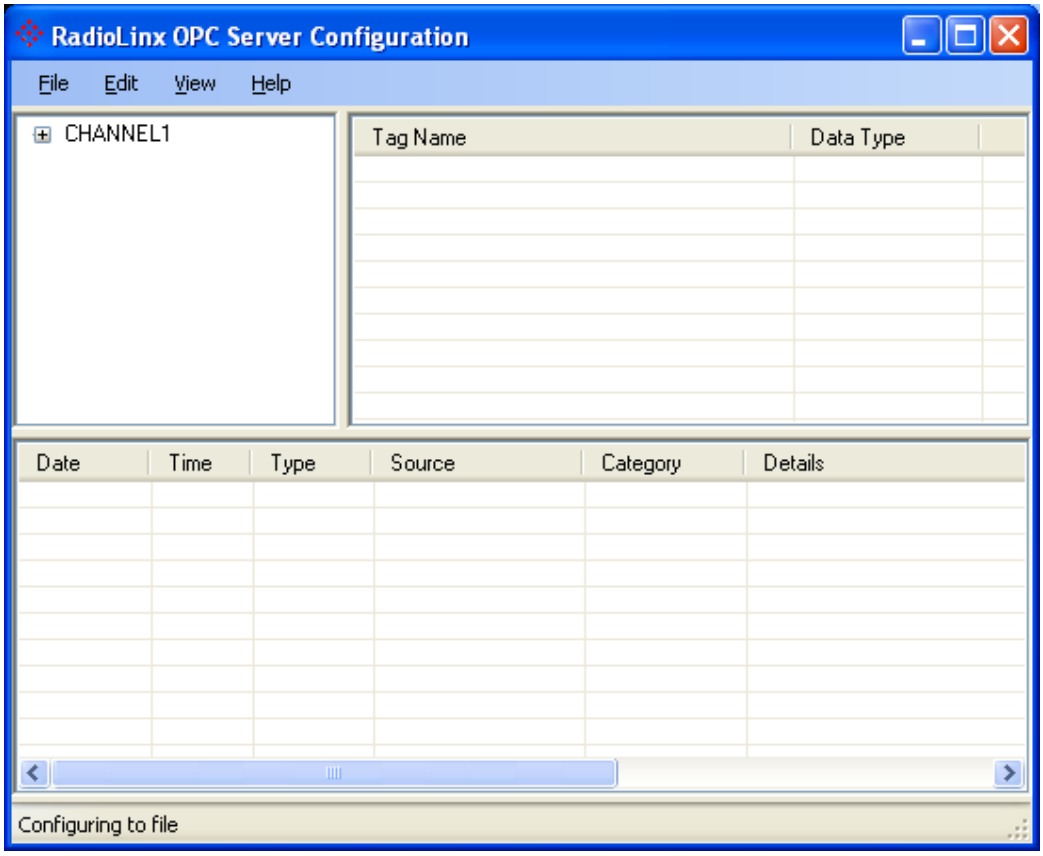
Double click on the OPC Server icon or launch the **RadioLinx OPC Configuration Tool**.
The screen below is shown



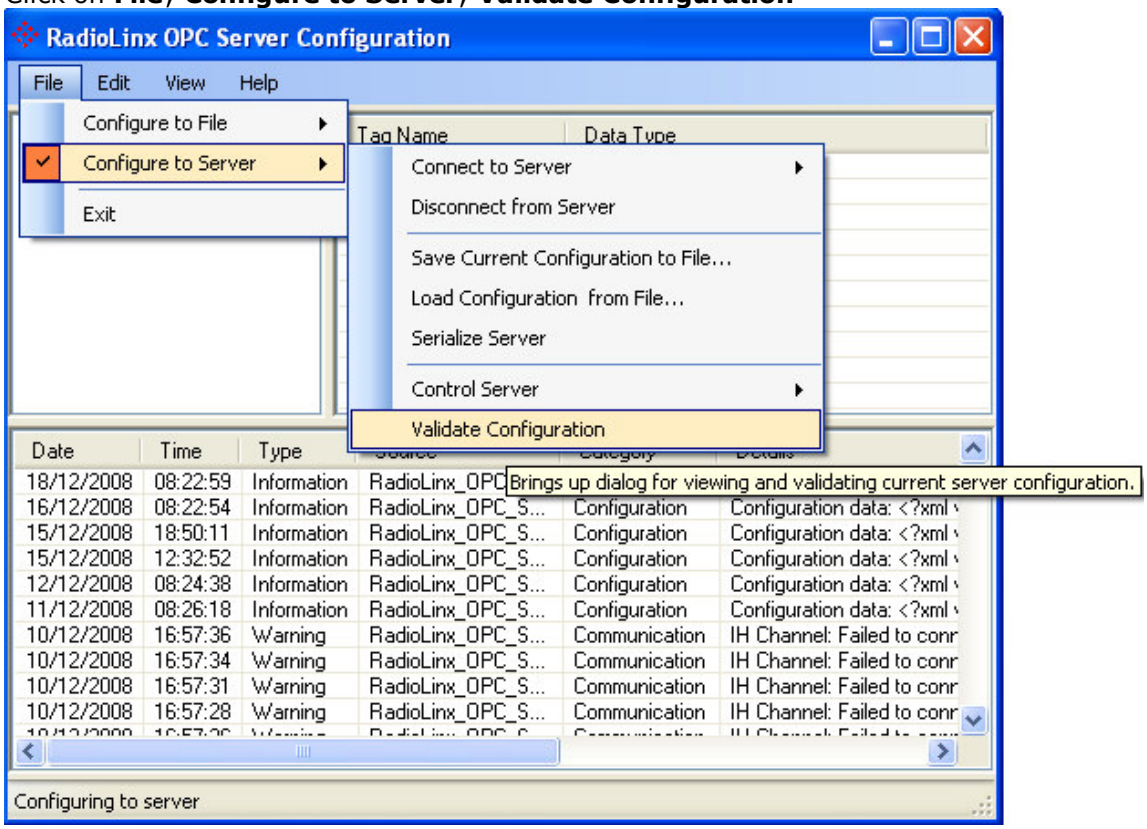
Connect the RadioLinx OPC Server Configuration Software to the OPC Server. Select **File**; **Configure to Server**; **Connect to Server** and **Local Server**.



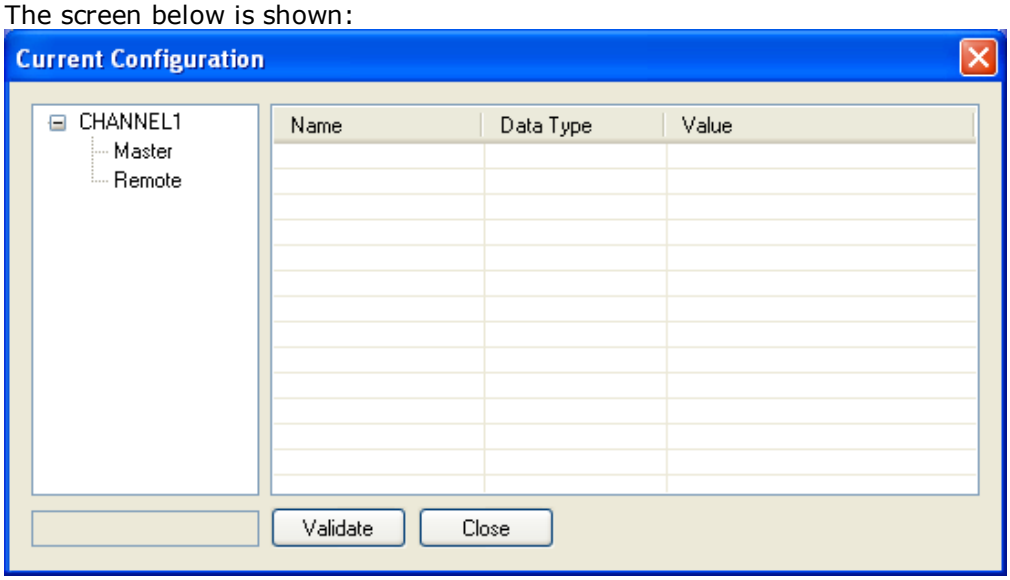
The screen below is shown:



Click on **File**; **Configure to Server**; **Validate Configuration**

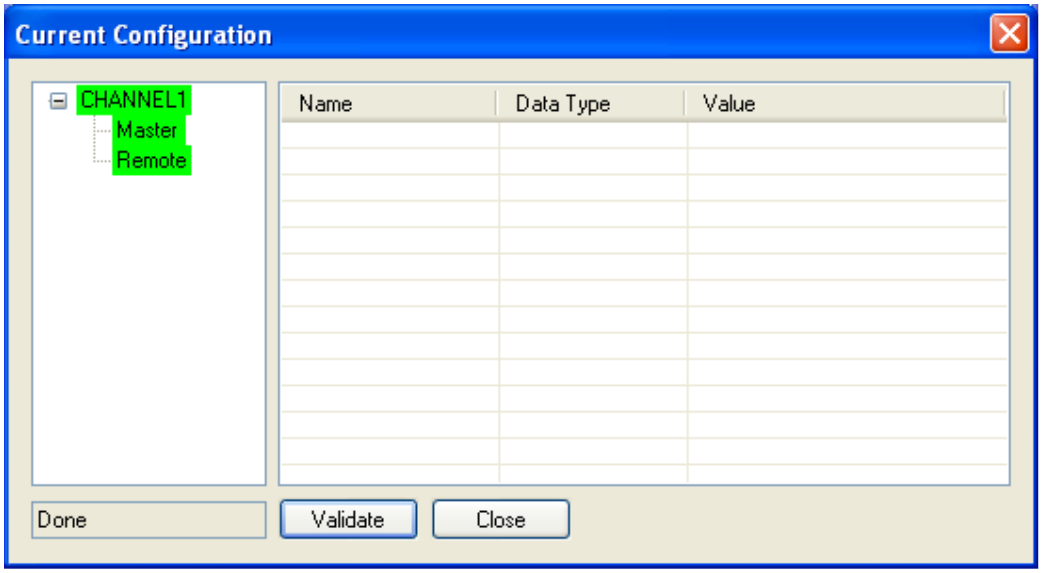


The screen below is shown:

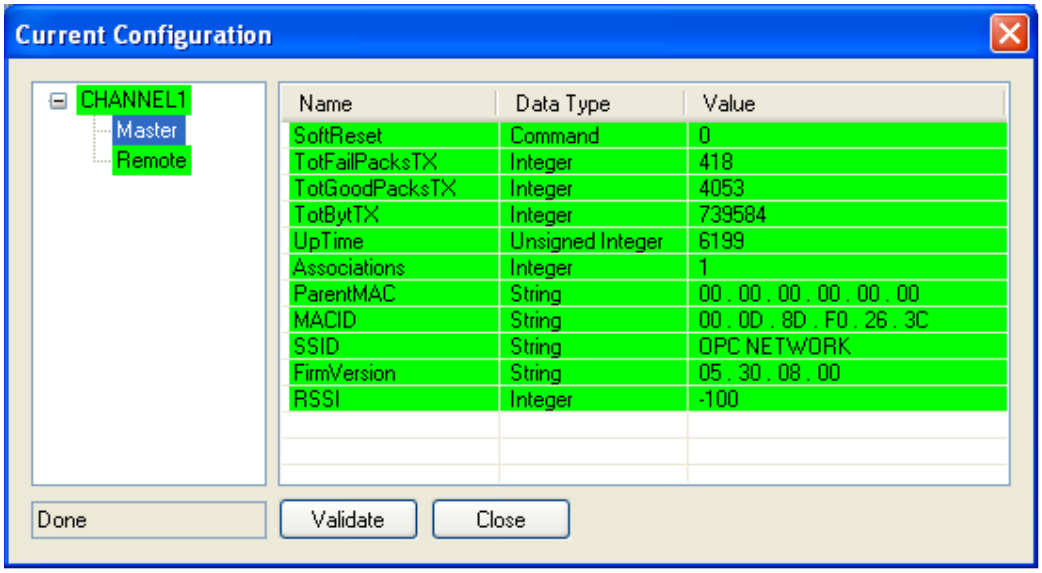


Click on **Validate**

The screen below is shown:

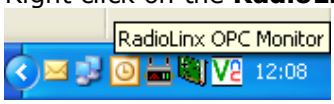


The OPC Server is able to find the data into the module:

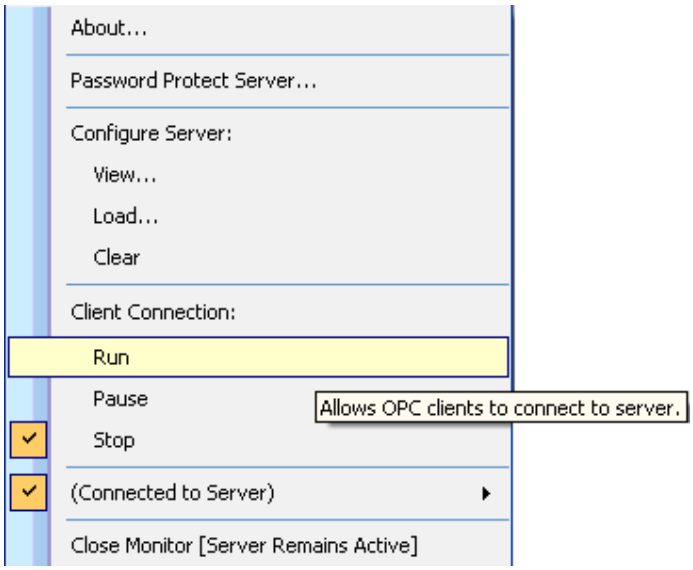


The configuration of the OPC Server is done.
Click on **Close**

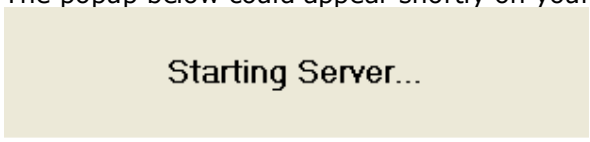
Right click on the **RadioLinx OPC Monitor** icon.



Click on **Run** to run the OPC Server:



The popup below could appear shortly on your computer:



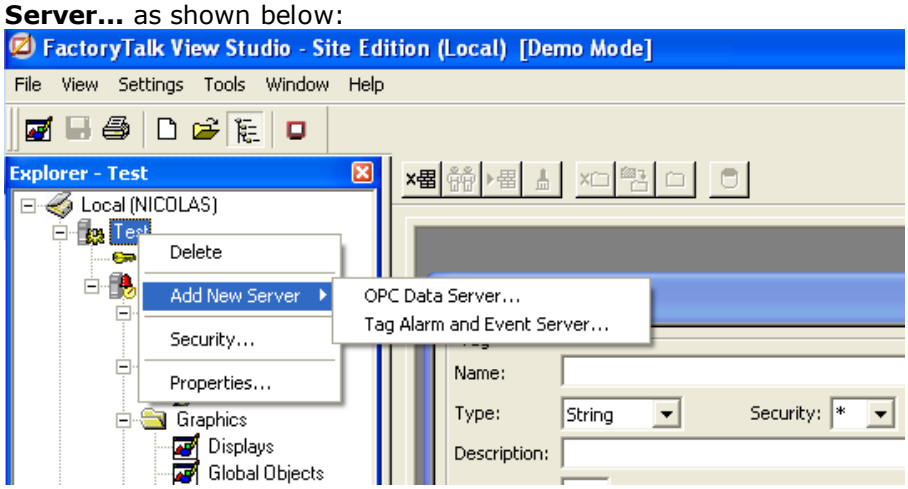
D. FactoryTalk View Studio OPC Client

D.1. Installation:

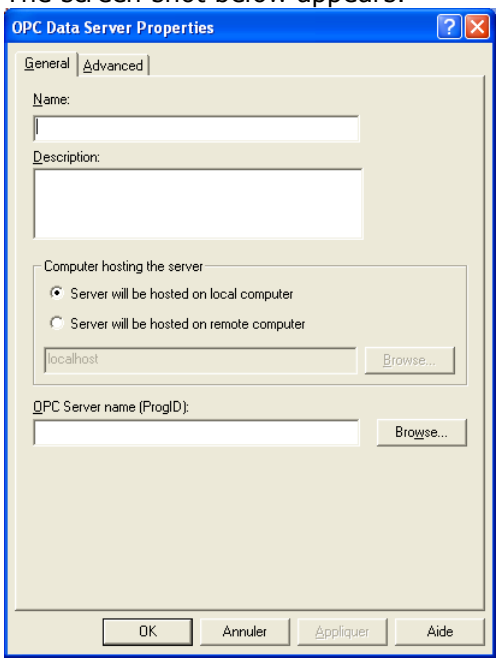
Launch the **setup.exe** under RSView\SE\5.00.00

D.2. Configuration:

Launch **FactoryTalk View Studio**.
Into your OPC Client create a new OPC Data Server.
To do this right click on **Test,** move the mouse on **Add New Server** and click on **OPC Data Server...** as shown below:

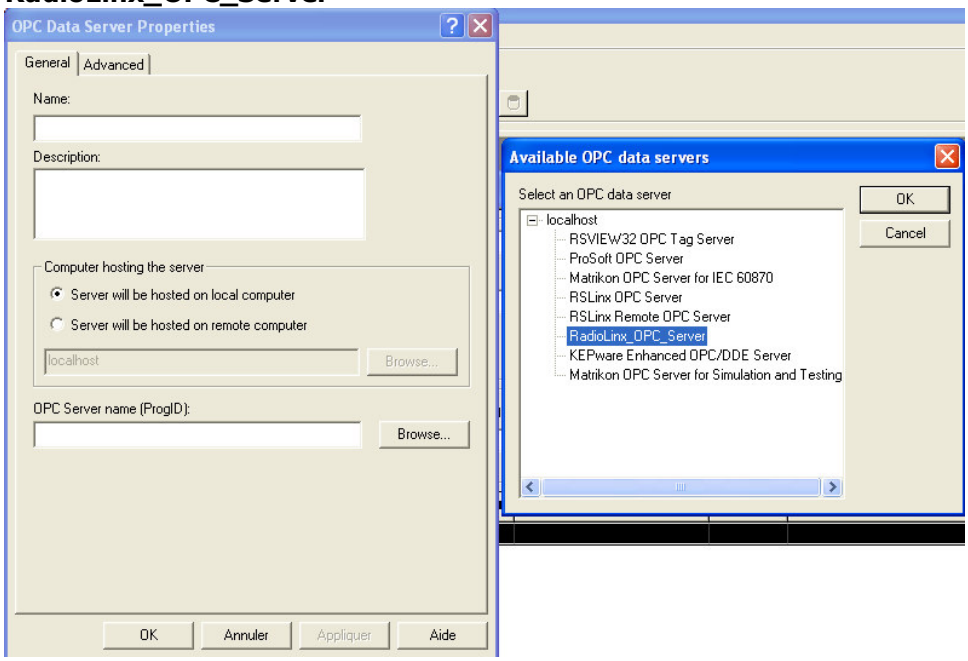


The screen shot below appears:



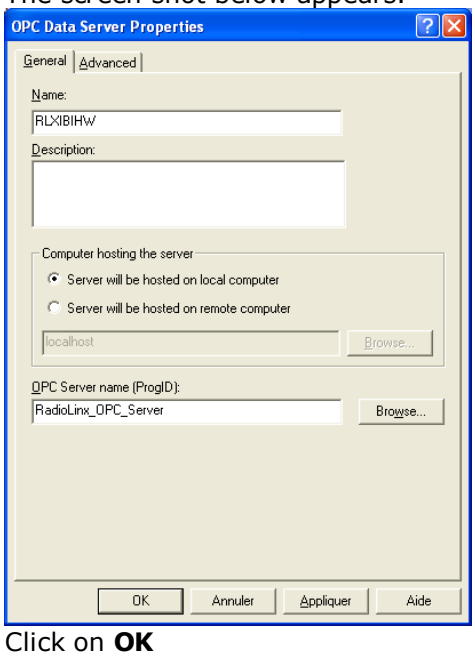
Into the **OPC Data Server Properties** enter the name of the Server in the **Name** field (**RLXIBIHW** for example).

Click on **Browse...** to select the **OPC Server name (ProgID)** and choose **RadioLinx_OPC_Server**



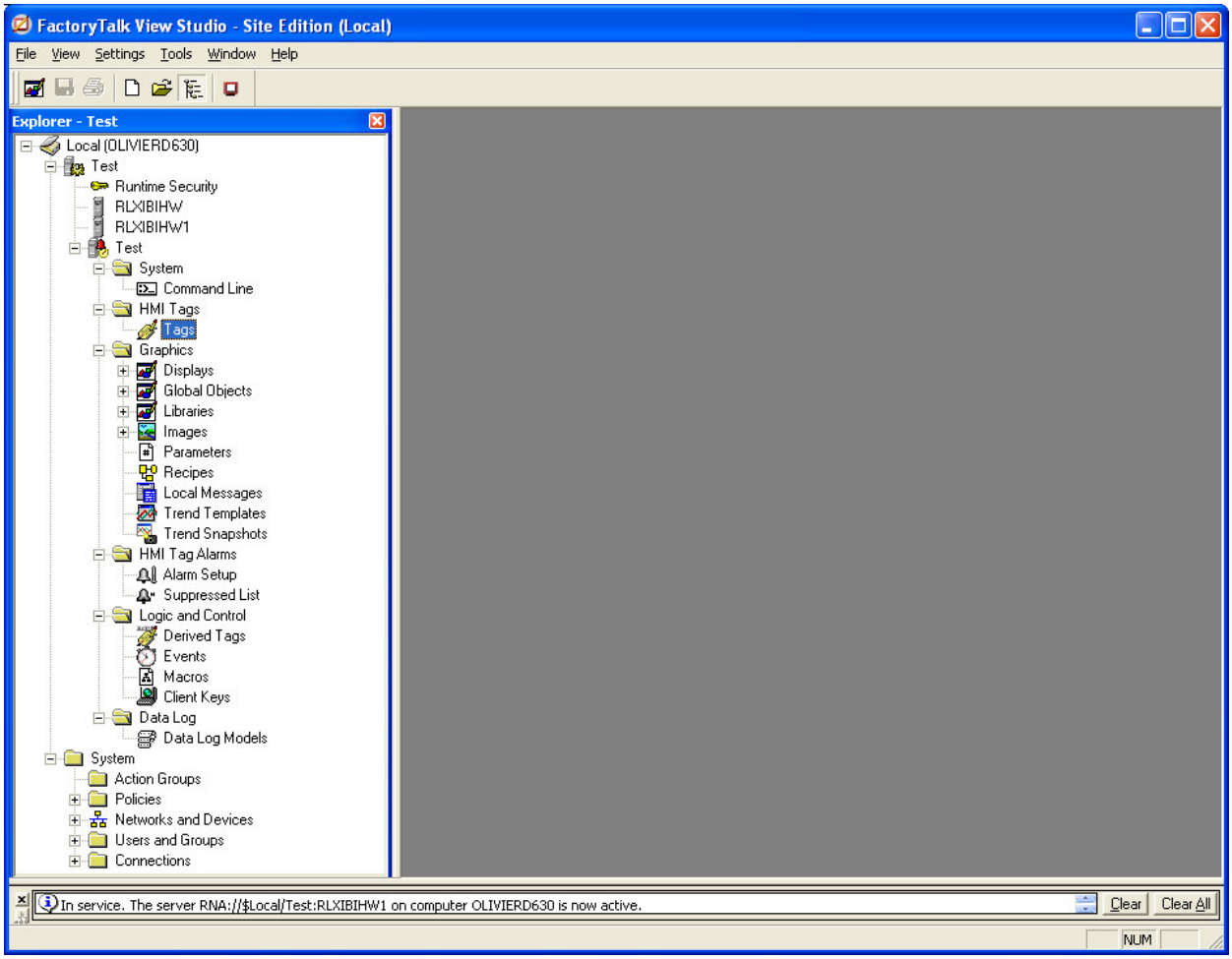
Click on **OK**

The screen shot below appears:

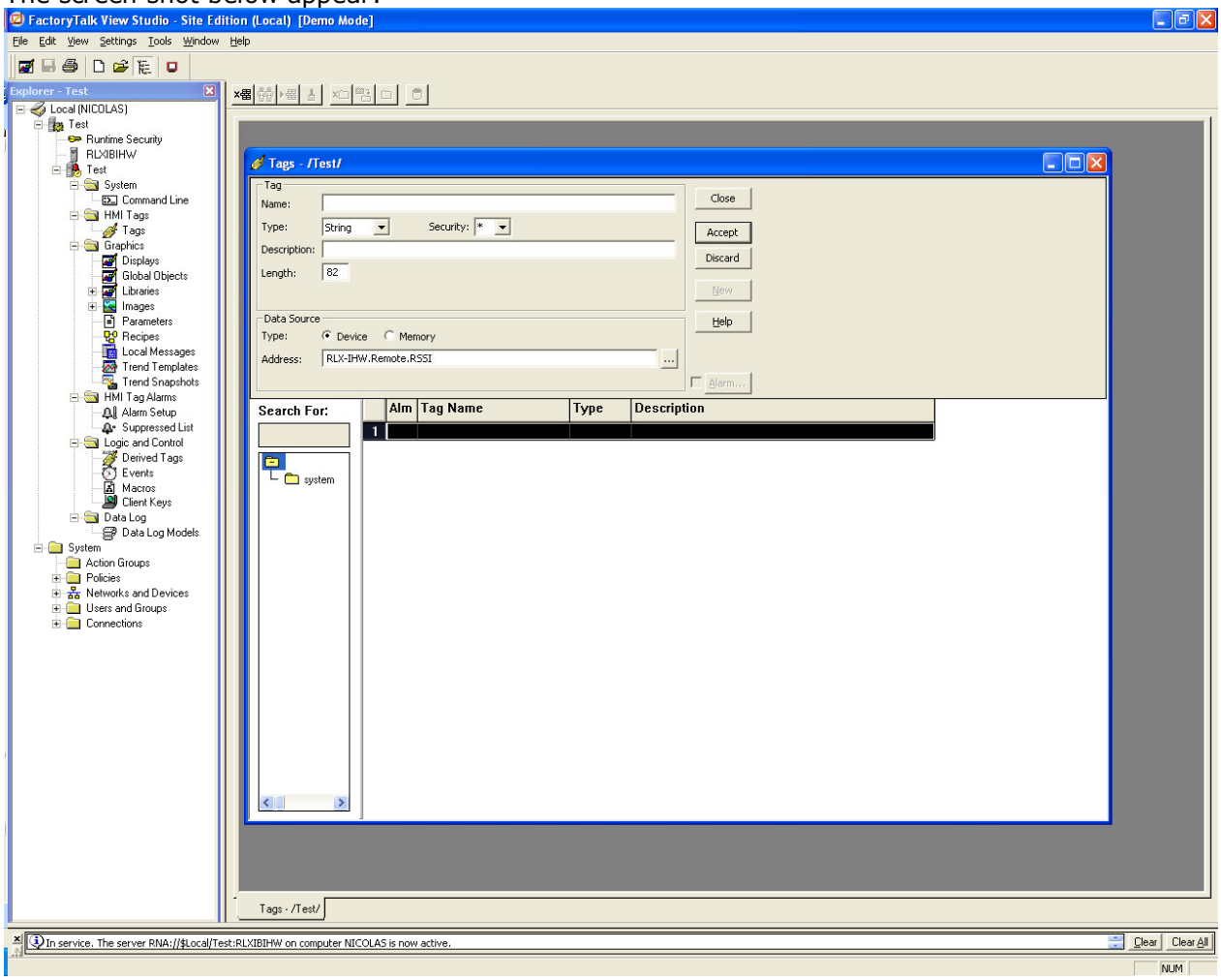


Click on **OK**

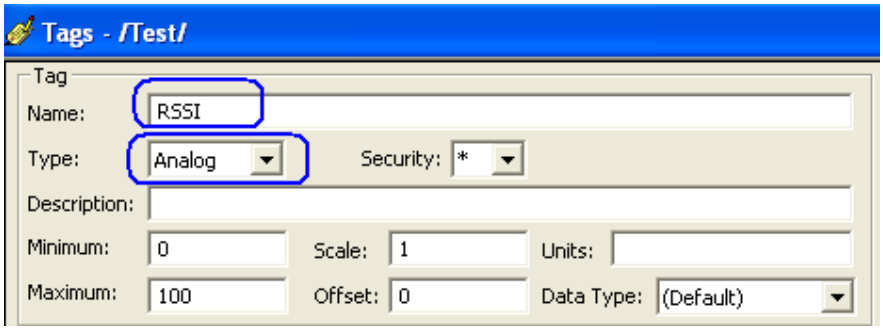
Double click on **Tags** into the **HMI Tags** folder.
Please see below:



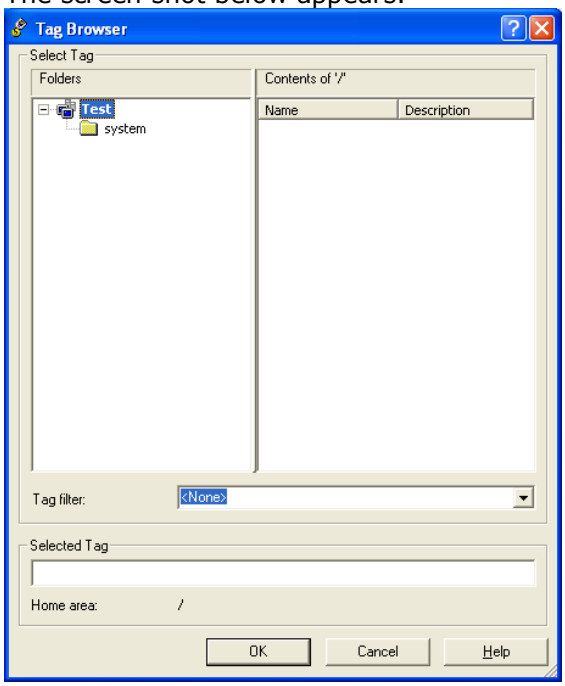
The screen shot below appear:



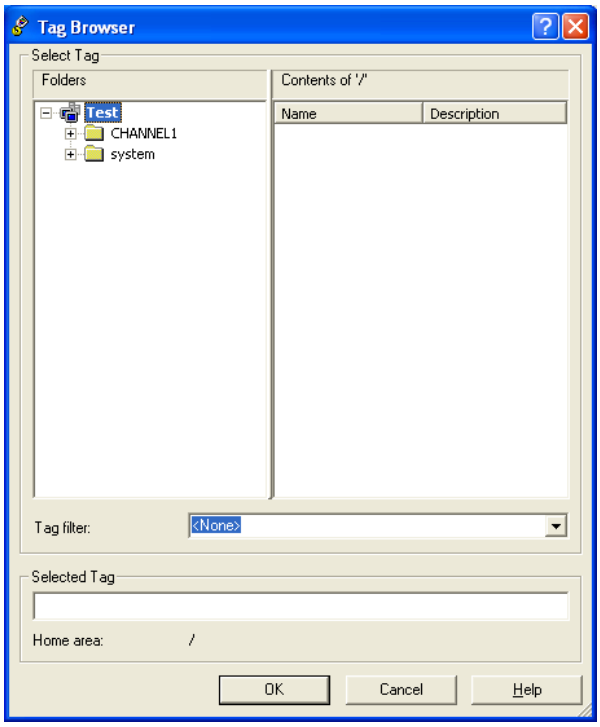
Enter **RSSI** into Name field for the **Tag**.
Select **Analog** for the **Type** list.
Please see below:



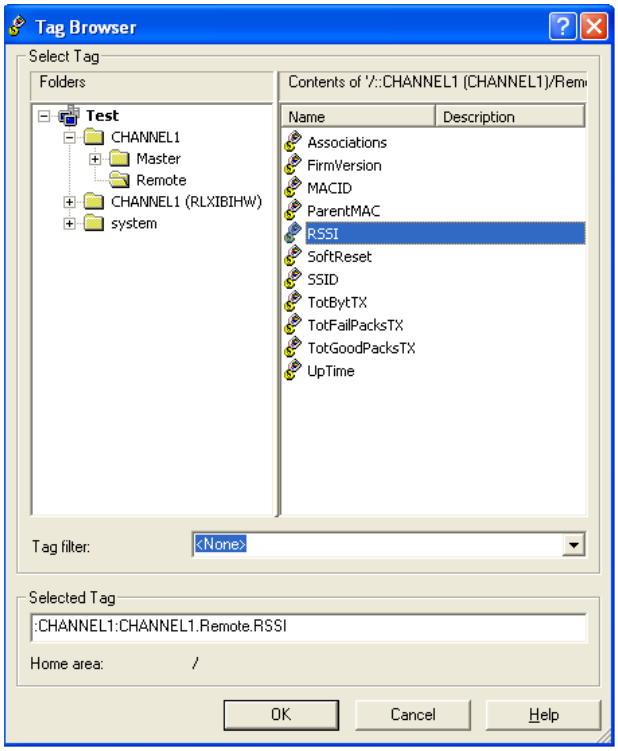
Now browse the field **Address** for the **Data Source**:
The screen shot below appears:



Right click on the project name (**Test**) and **Refresh Folders**
The screen below is shown:

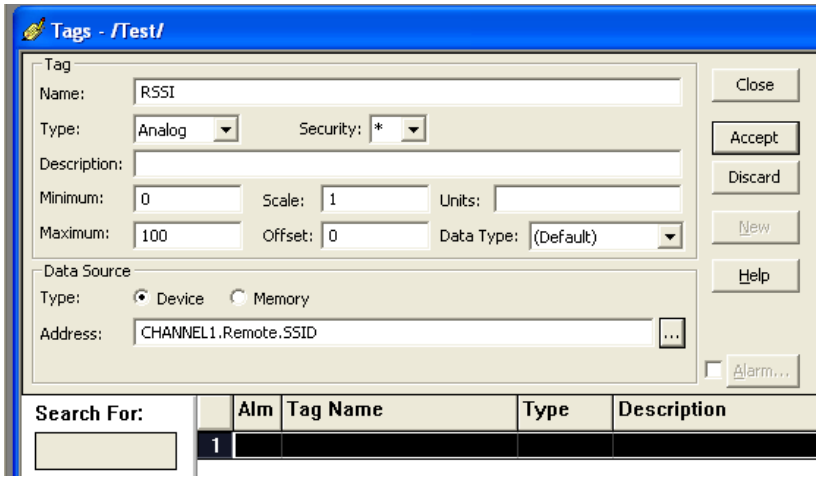


Into the **Remote** module select the RSSI

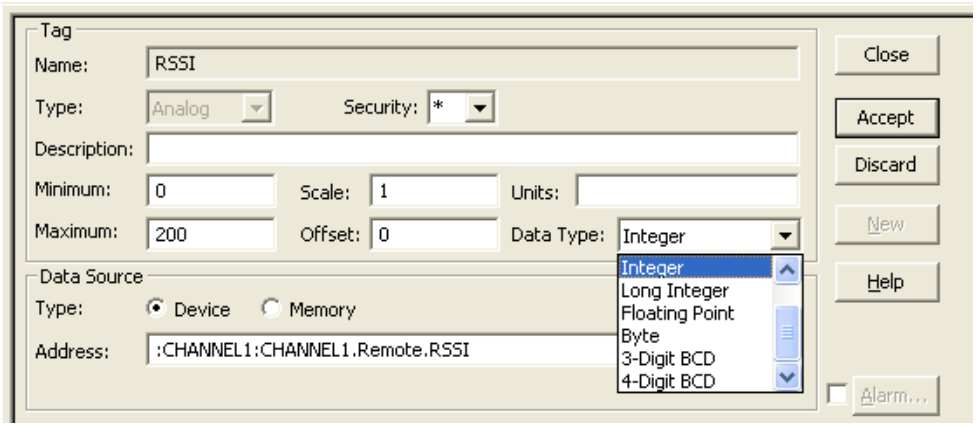


Click on **OK**

The screen below is shown:

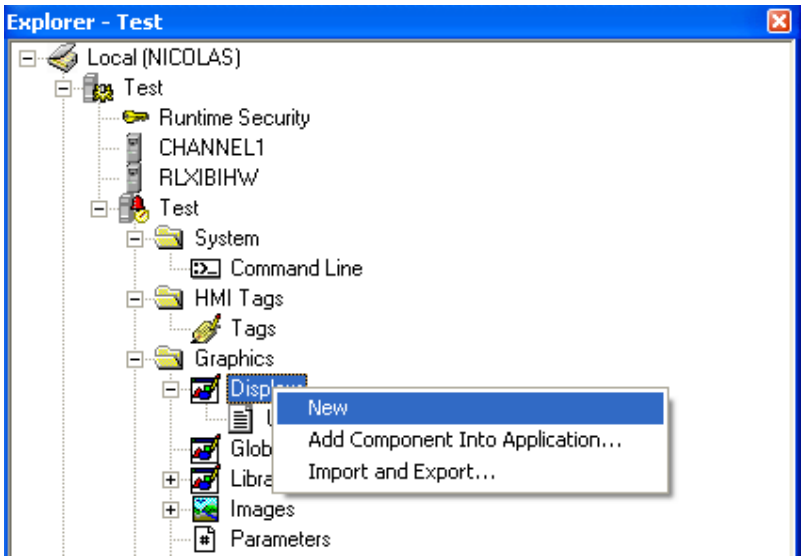


Select **Integer** for the field **Data Type**.
Please see below:

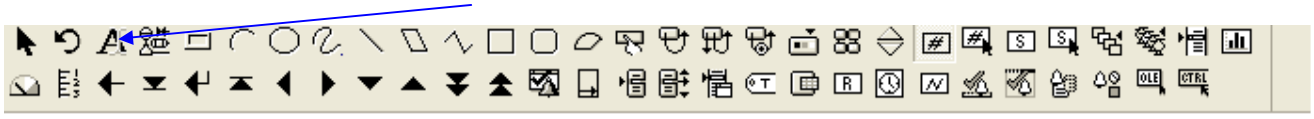


Click on **Accept**.
Click on **Close**

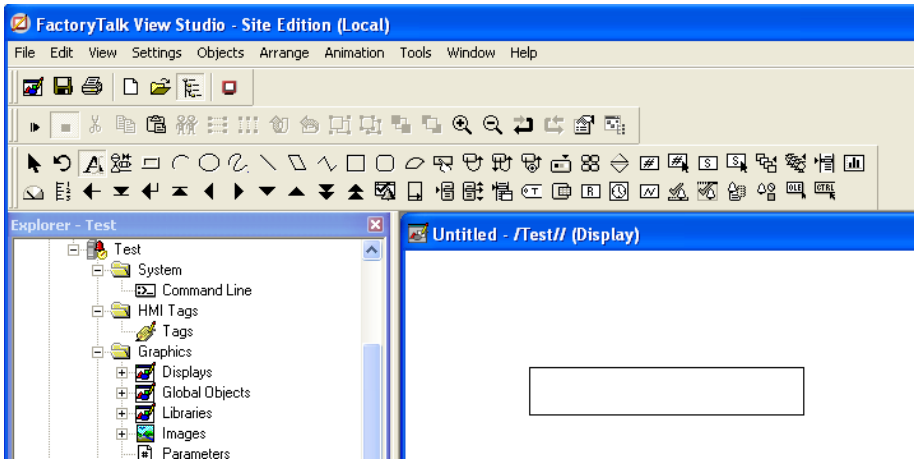
Right click the **Displays** icon and click on **New** to create a new window.
Please see below:



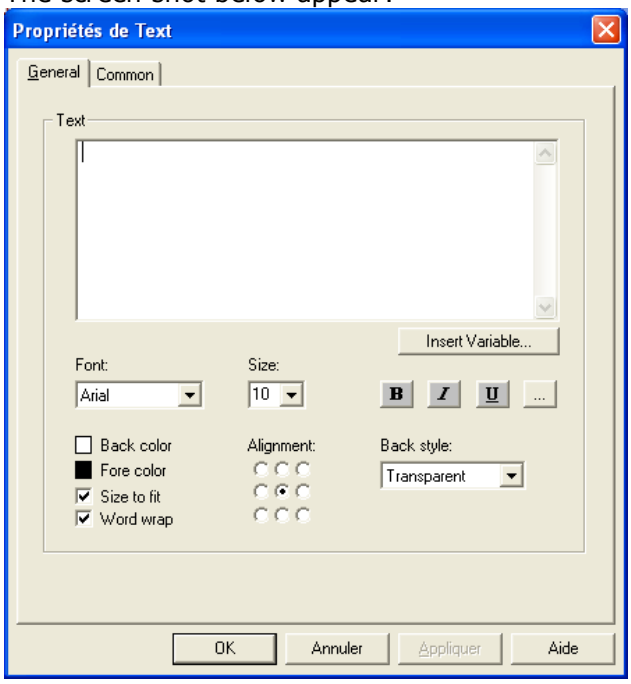
Into the new window add a new Text.
To do this selects the **Text** icon (**A**) below:



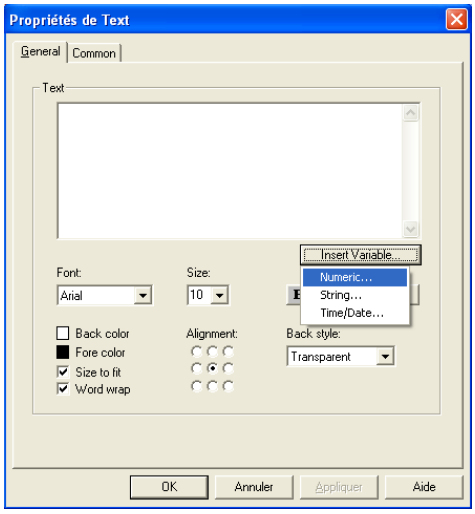
Create a text zone in the Display window.
Please see below:



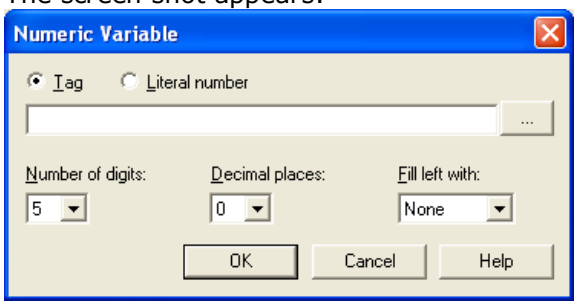
The screen shot below appear:



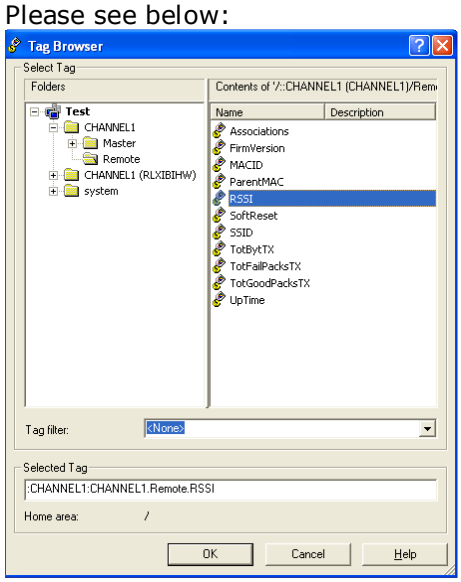
Click on **Insert Variable...** and **Numeric...**as below:



The screen shot appears:

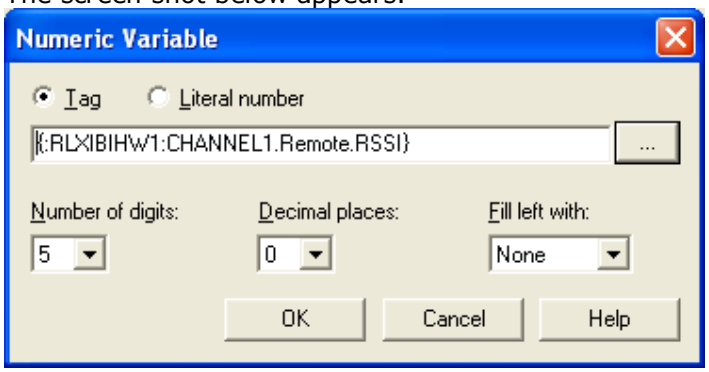


Browse the Tag and select **RSSI**.
Please see below:



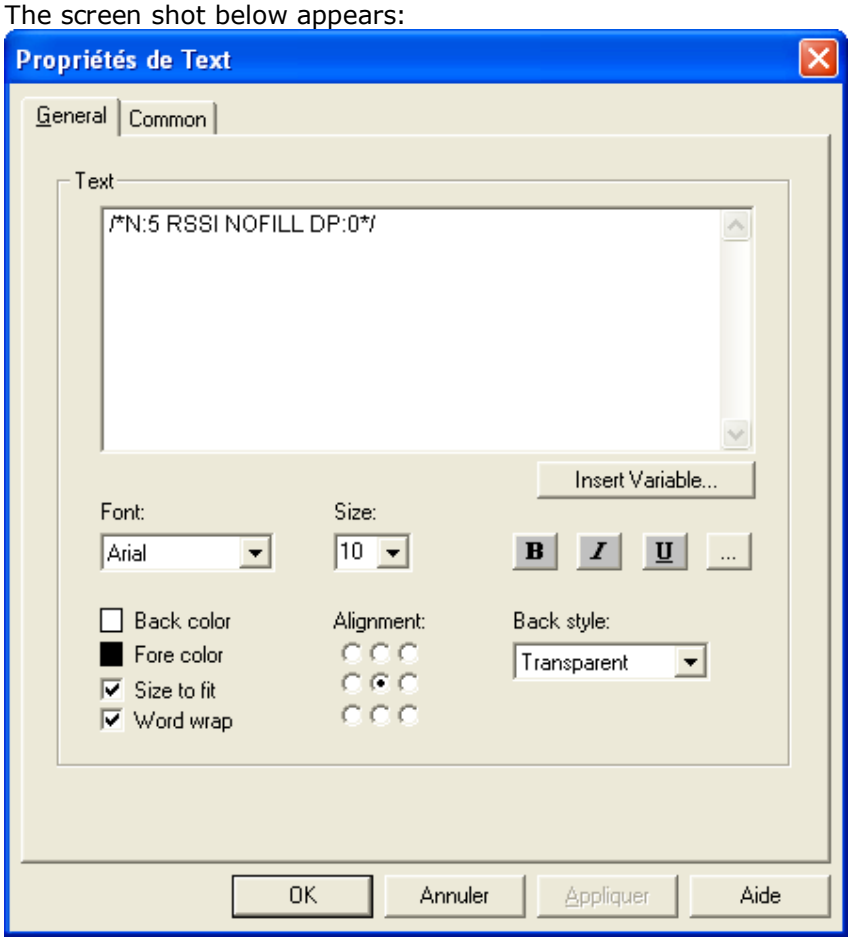
Click on **OK**

The screen shot below appears:



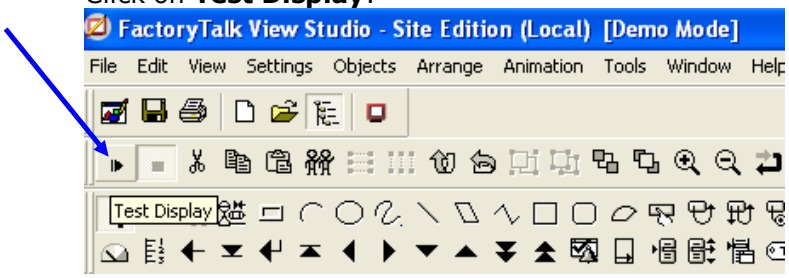
Click on **OK**

The screen shot below appears:

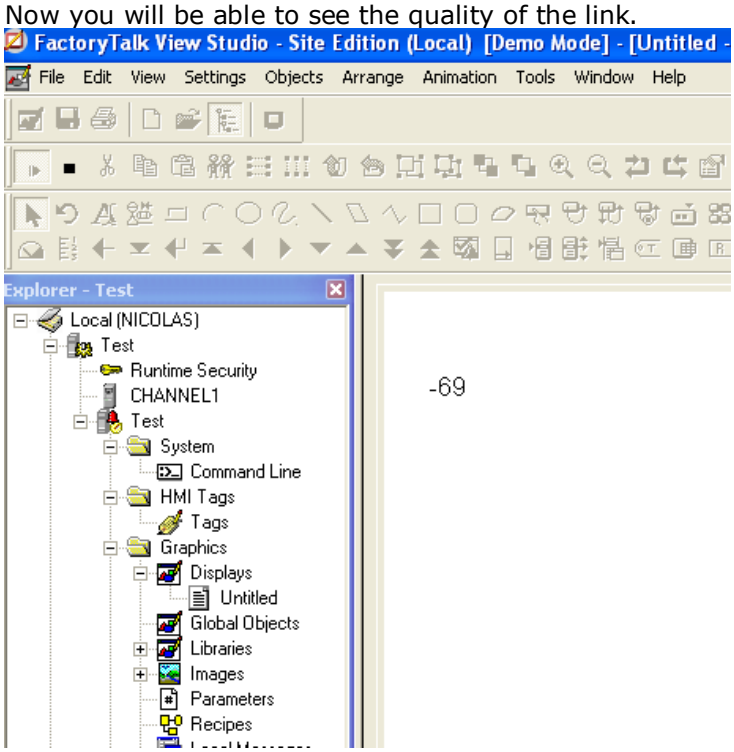


Click on **OK**

Click on **Test Display**:



Now you will be able to see the quality of the link.



Technical Note

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