

# ei<sup>3</sup> Enodia Service Helper Program

## USER'S GUIDE

February, 2023

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### Overview

This document introduces the user to the ei<sup>3</sup> Enodia Service Helper program and describes:

1. The prerequisites for its use,
2. What the Enodia program does, and
3. How to use it in a Remote Service session.

The intended audience of this document is a technical expert who will use Enodia.

## Purpose of Enodia

Remote Service uses a network that allows devices on machines to be manipulated by control programs like PC-Anywhere, VNC, or web browsers. Some software that can be used in this environment is special purpose software like Siemens STEP 7 that is designed for use with Siemens PLCs. The ei<sup>3</sup> Remote Service platform was designed so that each machine device has its own unique address on the machine. Working within ei<sup>3</sup>, each machine device has an IP address which is completely unique in the Argo network. In the Argo network, the local machine IP addresses are translated using the process of Network Address Translation, or NAT.

Most software has been designed to be completely NAT-insensitive and works well when using the Argo network address. Other software is very sensitive to the effects of NAT. For example, when the PLC has an Ethernet connection, Simatic STEP 7 will try to use the local IP address of the PLC on the machine rather than the Argo IP address, and some STEP 7 operations will then fail when using the program with an Argo connection.

Enodia solves this problem by allowing the user to always address the machine device by its local address on the machine. So, when used in conjunction with an Argo Remote Service session, Enodia transparently transforms the local address of a device on the machine to the Argo address for communication yet allows any software that can communicate with a machine device to use the local or real device address for device control, programming, or management.

Because of the interest in using STEP 7 over the Argo network, this document focuses on using Enodia with STEP 7 and a Siemens Ethernet-enabled PLC. However, Enodia can be used with any software that is used to communicate with machine devices. Enodia is a universal Remote Service Helper.

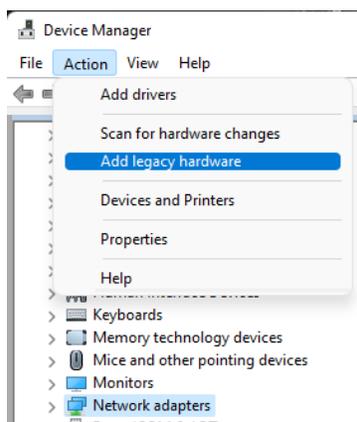
## Prerequisites

### MS Loopback Adapter – Installation

Before Enodia can be used, the Microsoft Loopback adapter MUST be installed on the technician's PC. This is standard Microsoft software distributed with all versions of Windows desktops. Installation of the MS Loopback adapter does not interfere in any way with the normal operation of the PC but is required for use of Enodia.

Instructions for the installation of the MS Loopback adapter can be also found here:  
[https://technet.microsoft.com/en-us/library/cc708322\(v=ws.10\).aspx](https://technet.microsoft.com/en-us/library/cc708322(v=ws.10).aspx)

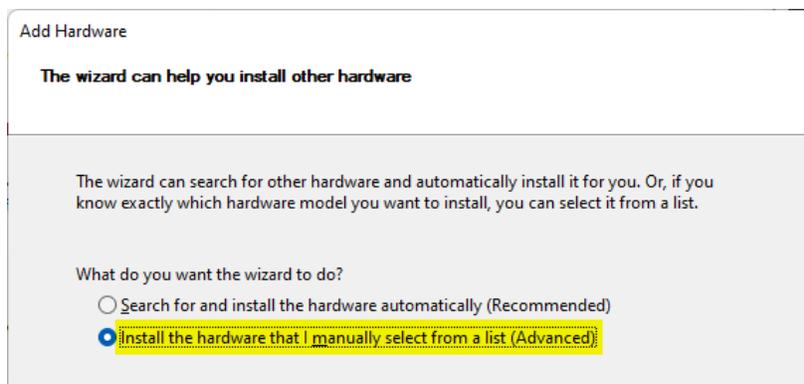
Open the Device Manager, select "Network adapters" in the main device tree, then go to the Action menu and choose "Add legacy hardware":



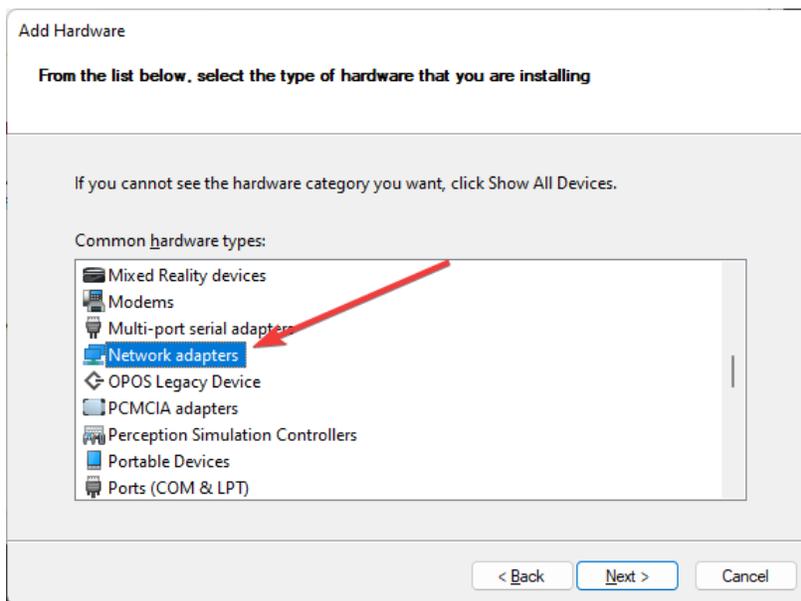
The Add Hardware wizard then starts:



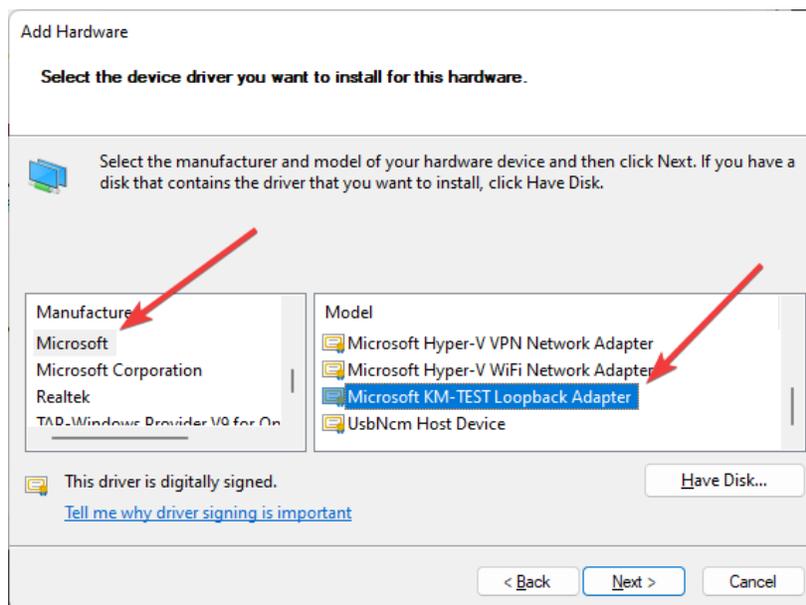
Select the manual installation option:



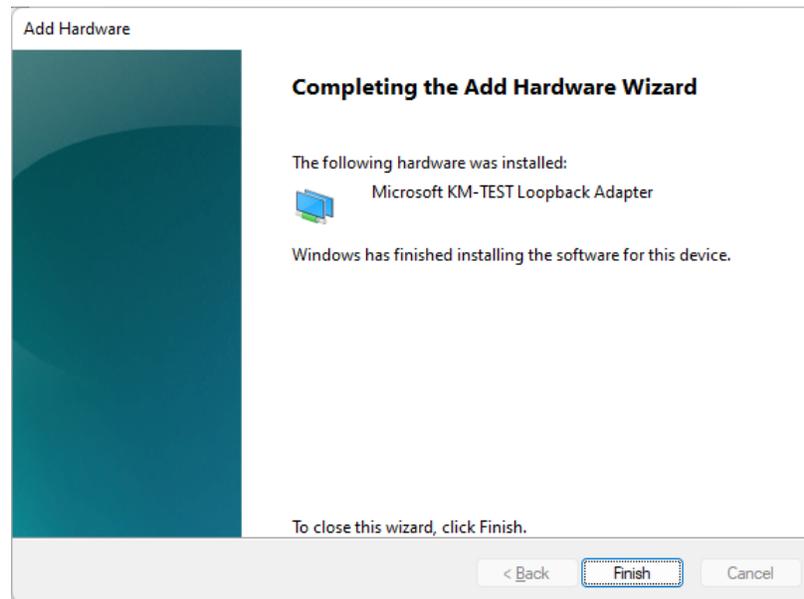
Select network adapters:



Select "Microsoft" under "Manufacturer" and then "Microsoft KM-TEST Loopback Adapter" under "Model":



Complete the wizard:

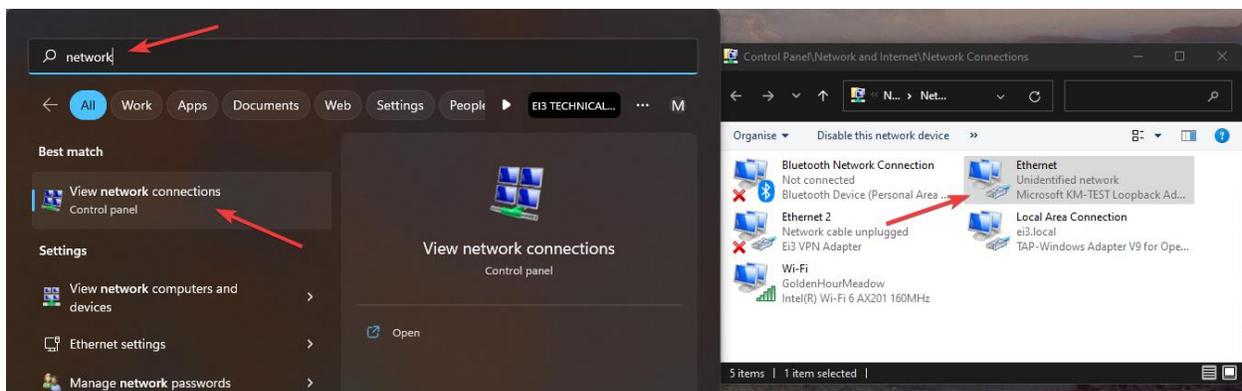


## MS Loopback Adapter – Configuration

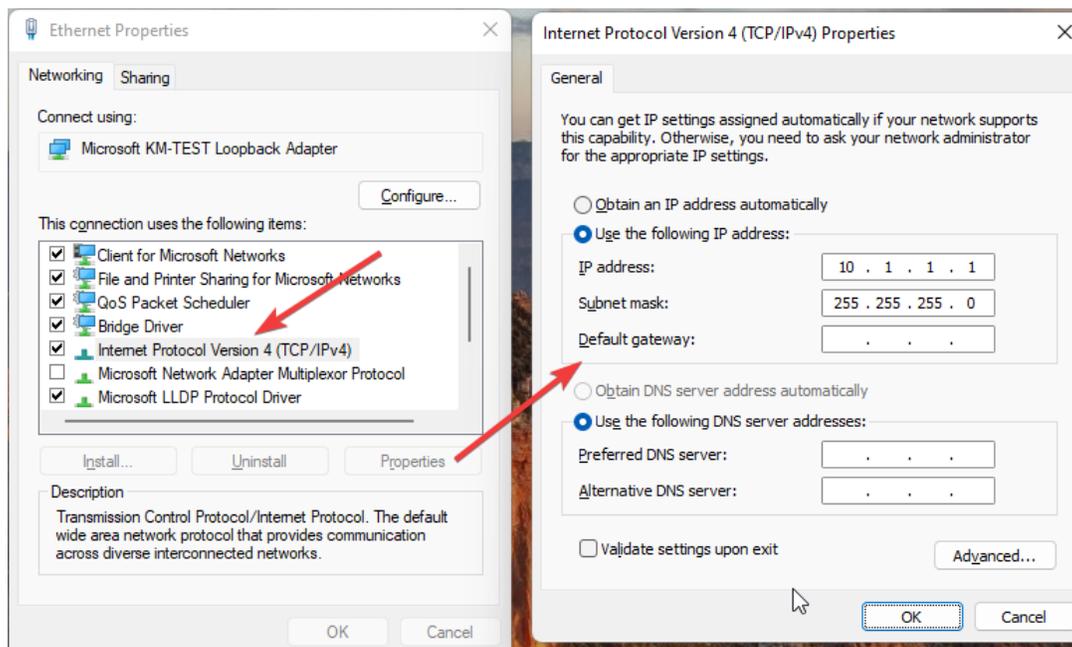
The MS Loopback Adapter should be configured for a static IP address of 10.1.1.1 and a subnet mask of 255.255.255.0.

Configuring it to this address is a one-time operation which is done after the loopback adapter is installed and never has to be repeated. Also, the address will never have to be changed once the technician begins using Enodia, so after initial configuration, no further user intervention is required.

In Windows 10 or 11, please follow these steps. First, open Network Connections. This application can be found by clicking on the Start (Windows) menu and searching. Then, select the KM-TEST Loopback Adapter, right-click on it and choose Properties:



Inside the Networking tab, highlight Internet Protocol Version 4 (TCP/IPv4). Click Properties and set the IP address to 10.1.1.1 and the Subnet mask to 255.255.255.0:



## ei<sup>3</sup> – Configuration

Enodia can only be used when the definition of a device in ei<sup>3</sup> includes an explicit specification of the TCP port that the device listens on for connections. For example:

- An HMI using PC-Anywhere for remote control listens on port 5631;
- A Cube web server listens on port 80;
- An Ethernet-enabled Siemens PLC listens for connections on port 102.

This is shown in the example below, where we configure ei<sup>3</sup> for using Enodia to assist a Remote Service session using STEP 7 to a machine Siemens PLC.

For use with STEP 7, the ei<sup>3</sup> definition of a PLC with a direct ethernet connection must specify that TCP port 102 is to be used as the communication port for the device. Enodia software examines the ei<sup>3</sup> device definition and will only allow communication from STEP 7 to devices so defined. In the SERVICE application, navigate to the device configuration page and enter the value of 102 in the "TCP Port" field, as shown in the screenshot below:

### Edit Device Information

---

Partner Group (Login): ei3 Corporation  
 Location:   
 Machine: FLEXPRESS 16S-10

---

Name:   
 Location:   
 Manufacturer - Category: Siemens - PLC   
 Model:   
 Argo IP Address:   
 Local IP Address:     
 MAC Address:   
 Bus #:   
 TCP Port:   
 Communication Type: [N/A]   
 Connection Software: Siemens Step 7   
 Programming Software: Siemens Step 7   
 Help URL:   
 Click & Launch:

After entering the TCP port, click on the Save button. The machine device is now configured to be used with Enodia. Please note that **no changes should be made to either the Argo or the local IP addresses.**

If port 102 is not added, Enodia will refuse to allow a connection from STEP 7 to the PLC.

To enable the full use of Enodia, all relevant devices on the machine should have their ports configured this way in ei<sup>3</sup>.

Note that **device definitions can only be changed or edited by your company's administrators.**

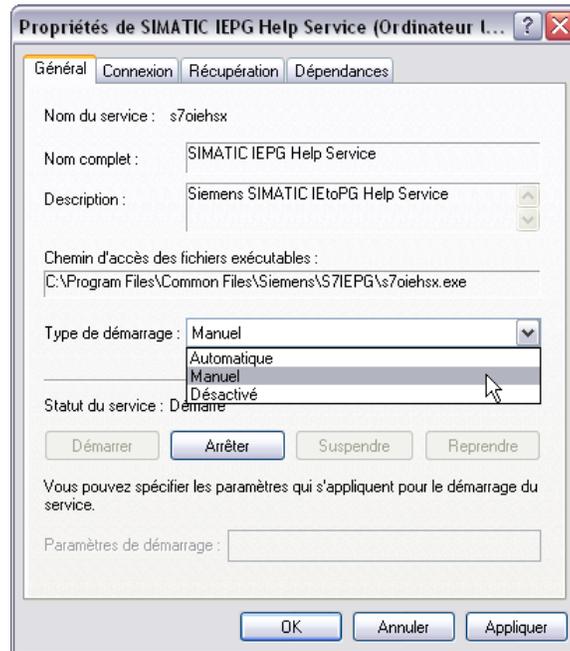
## SIMATIC S7DOS Help Service – Configuration

If you have the SIMATIC suite of software installed on your PC (more specifically – on the same host as Enodia), please be aware that it includes a service named "S7DOS Help Service" which will interfere with the proper functioning of the Enodia software. Therefore, it is necessary to stop the S7DOS Help Service before starting Enodia.

To do this, follow these steps:

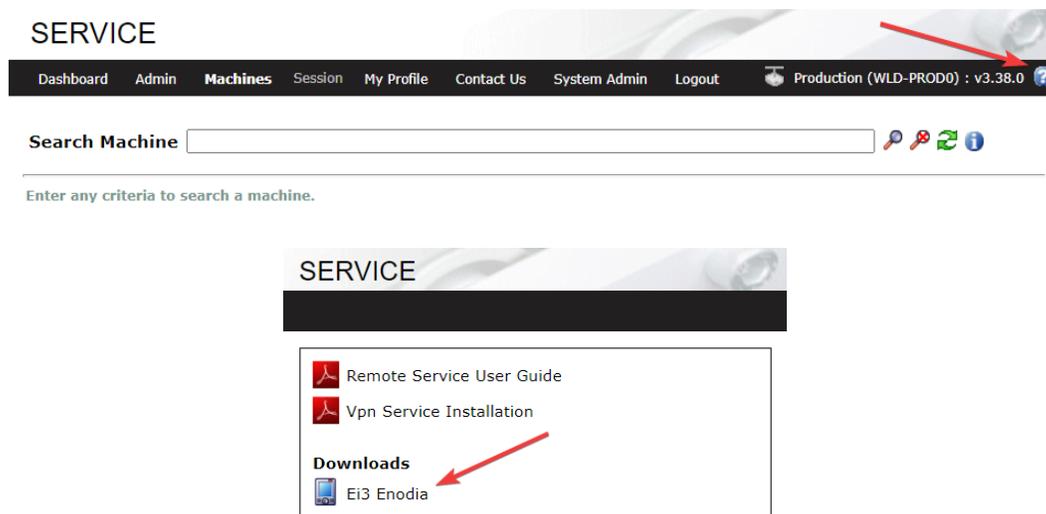
1. Open the Computer Management application;
2. Select Services and Applications and then Services;
3. Locate the S7DOS Help Service and double-click the item;
4. In the tab General, select Startup type: Manual;
5. If the service is running, click Stop;

6. Close the window with OK;
7. Leave the Computer Management window open; we will need it later.



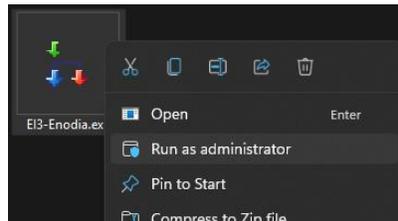
## Obtaining Enodia

To download the Enodia software, log in to SERVICE and click on the question mark (Help) icon on the top-right of the page; the link to the most recent version of Enodia software can be found at the bottom of the page that will be displayed:



Once Enodia is downloaded, please place it in a folder on your computer where it will be easy for you to locate it. Enodia does not require installation. To use the software, simply run the

executable file you downloaded. Note: to work properly, Enodia must be run using the “Run as administrator” option:

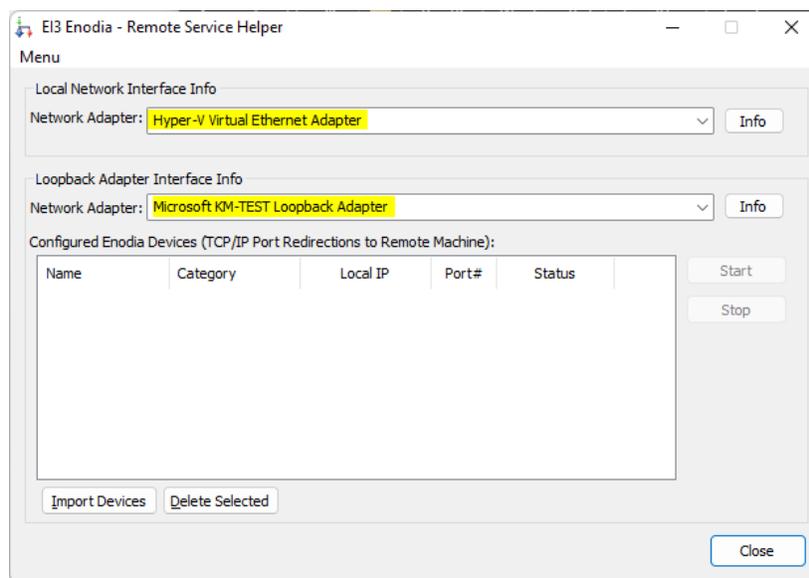


## Using Enodia



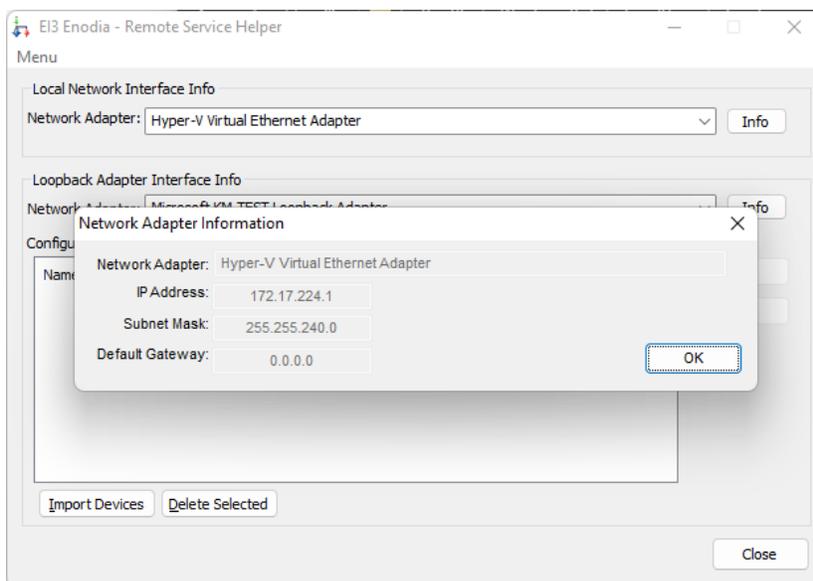
Before using Enodia, you must start a remote session in the SERVICE application in ei<sup>3</sup>. Then, launch Enodia by running the downloaded executable by right-clicking on it and selecting the “Run as Administrator” option. Please note that if you forget to run it as administrator, the program will not operate as expected.

Once Enodia starts, you will see that it shows two network adapters. In the example above, Hyper-V Virtual Ethernet Adapter is the network card in the test PC. The Microsoft KM-TEST Loopback Adapter is also shown, as this is a valid network adapter that we installed earlier.

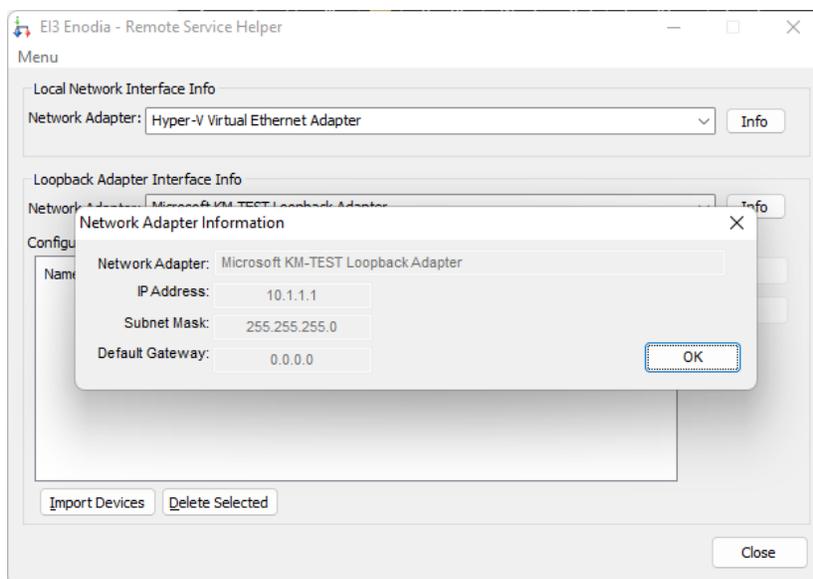


Once Enodia starts, you will see that it shows two network adapters. In the example above, Hyper-V Virtual Ethernet Adapter is the network card in the test PC. The Microsoft KM-TEST Loopback Adapter is also shown as this is a valid network adapter that we installed earlier.

You can click on the “Info” buttons next to each adapter to see the configuration of each:



Above is the configuration of the hardware adapter, and below – of the Loopback adapter:



You may note that the Loopback adapter has the static IP address we configured into it earlier.

To begin using Enodia, click on the “Import Devices” button on the Enodia main window. The following dialog box will then be displayed:

Import Devices Using Argo Key

Argo Key ID/User Name:  Password Optional:

Argo Key Information

Customer #:  Customer Name:

Location:  Address:

Machine #:  Machine Name:

Devices:

| Name | Category | Argo IP | Local IP | Port# | Status |
|------|----------|---------|----------|-------|--------|
|------|----------|---------|----------|-------|--------|

To obtain a list of available devices, enter the username that you connect with to the SERVICE application, and then click on “Get Devices” (the password is optional and does not need to be entered). **IMPORTANT: this will only work once you start a remote session to the machine in ei<sup>3</sup>.** As a result, the window will populate with machine information and the list of devices:

Import Devices Using Argo Key

Argo Key ID/User Name: mblazejczyk Password Optional:

Argo Key Information

Customer #:  Customer Name:

Location:  Address:

Machine #: BSA080762301 Machine Name: LEMANIC CLASSIC + FCC 82

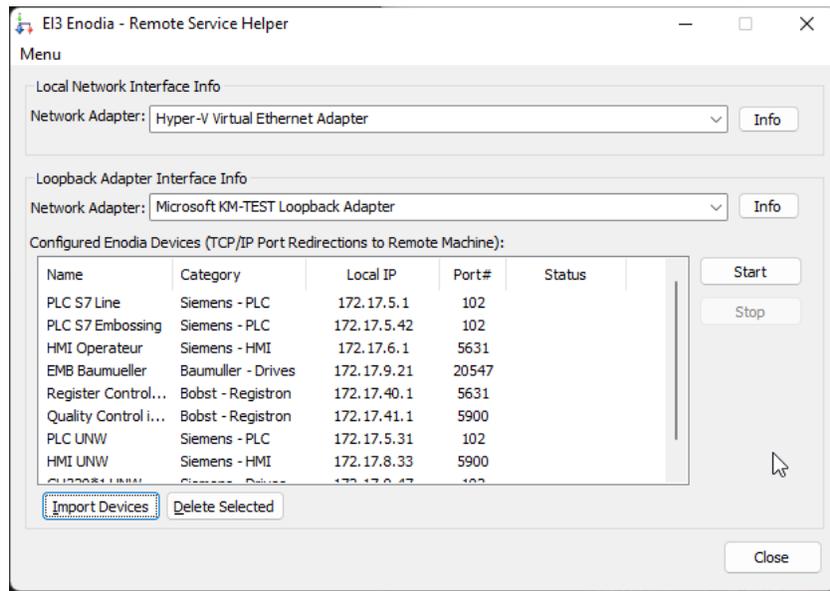
Devices:

| Name                   | Category           | Argo IP     | Local IP    | Port# | Status        |
|------------------------|--------------------|-------------|-------------|-------|---------------|
| PLC S7 Line            | Siemens - PLC      | 10.240.11.2 | 172.17.5.1  | 102   | No Errors     |
| PLC S7 Embossing       | Siemens - PLC      | 10.240.11.3 | 172.17.5.42 | 102   | No Errors     |
| HMI Operateur          | Siemens - HMI      | 10.240.11.4 | 172.17.6.1  | 5631  | No Errors     |
| EMB Baumuller          | Baumuller - Drives | 10.240.11.5 | 172.17.9.21 | 20... | No Errors     |
| Register Control S5100 | Bobst - Registron  | 10.240.11.6 | 172.17.40.1 | 5631  | No Errors     |
| Quality Control iQ300  | Bobst - Registron  | 10.240.11.7 | 172.17.41.1 | 5900  | No Errors     |
| PLC S7 Wetzel          | Siemens - PLC      | 10.240.11.8 | 172.17.5.41 | ---   | Invalid Port# |
| PLC UNW                | Siemens - PLC      | 10.240.11.9 | 172.17.5.31 | 102   | No Errors     |

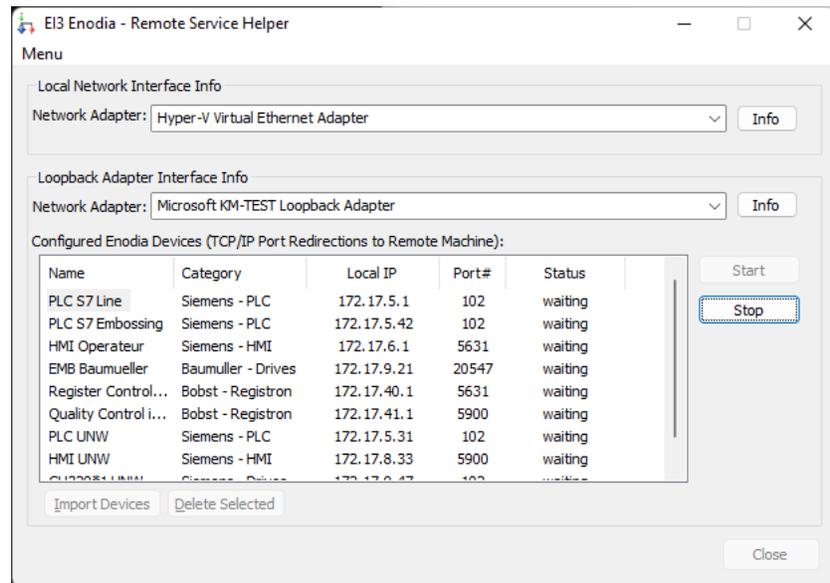
As you can see, Enodia has listed all the relevant information about the devices connected to the machine that you opened a remote session to. Further, Enodia has verified that the PLC can be reached using port 102 as desired. The “Invalid Port#” status indicates that these machine devices are not configured on the platform to use ports for their specific programming tools. The Register Control PC uses PC-Anywhere. Since its port, 5631, was entered into the device definition for these devices, it will be available through the Enodia Remote Service Helper as well. In fact, each device listed has a “Programming” or “Viewing” application.

If the ports for these are entered into the device’s “port” definition field in ei<sup>3</sup>, then they will be available through Enodia.

Once you click on the “OK” button, you will be returned to the main screen of Enodia – but this time, you can also see the list of devices as shown below. Note that we only see the devices that have the port defined in the platform devices definition. Please note: Enodia will support up to 32 active port redirections simultaneously.



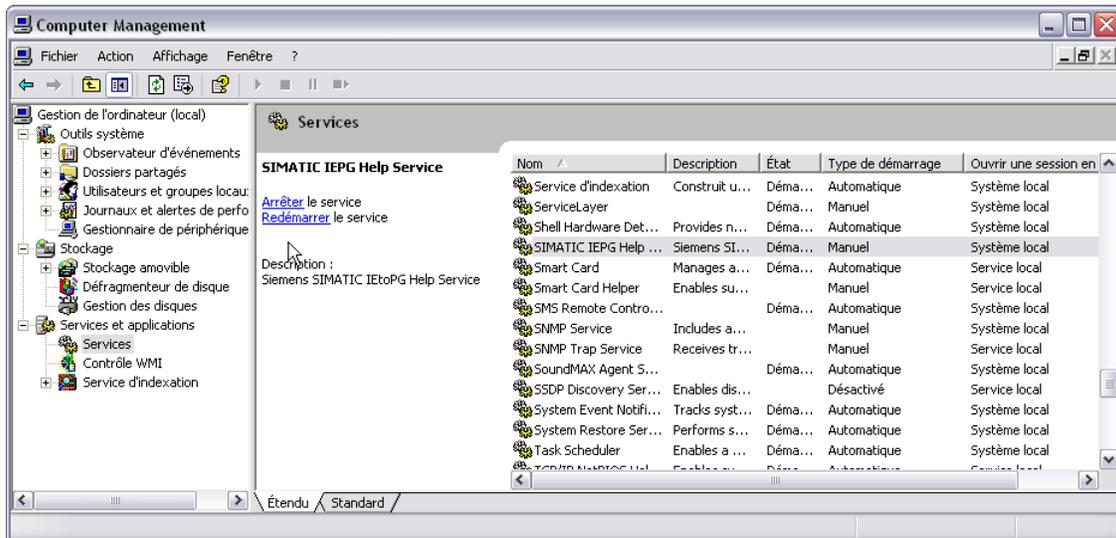
Once you click the “Start” button, Enodia will establish a connection to all applicable devices in the machine:



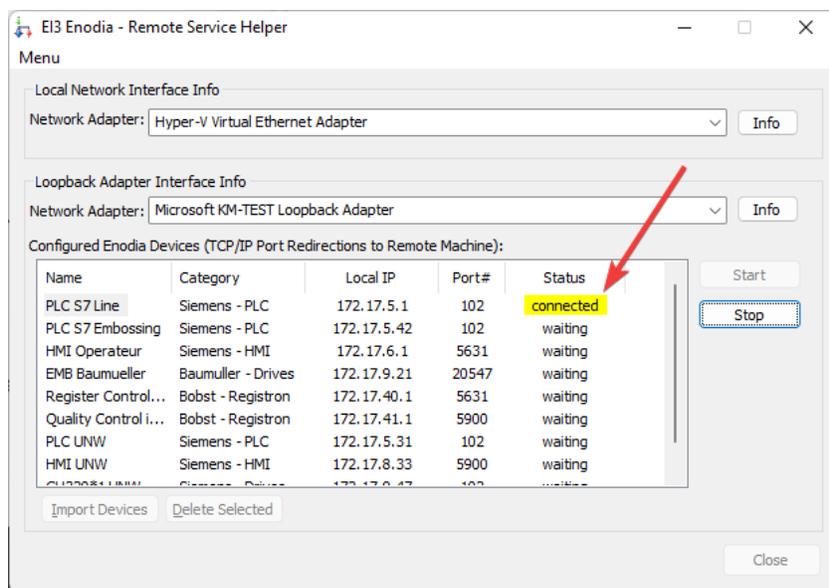
Note that the status of each device has changed to “waiting”. This means that Enodia is ready to mediate communication between software on the technician’s laptop and the remote device in the machine.

**Very important note:** in the section titled: [SIMATIC S7DOS Help Service – Configuration](#), we stopped the SIMATIC S7DOS Help Service. Now that Enodia is connected and waiting, you **must** start the SIMATIC S7DOS Help Service back again for Siemens STEP 7 software to work properly. This step does not apply if you use any other application to access remote devices.

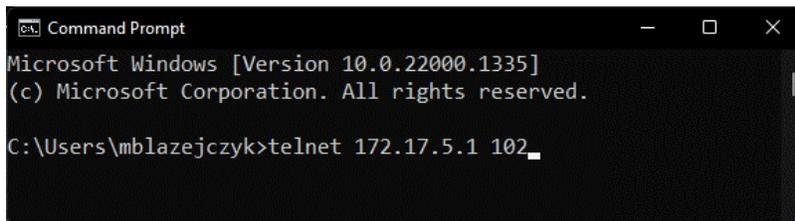
You can start the Service here:



When a program on the PC is connected to the device, its status in Enodia changes to “connected”. When the connection ends, the status will revert to “waiting”.



A connection of this type can be emulated on a PC without the STEP 7 software by running the following command:



```
Command Prompt
Microsoft Windows [Version 10.0.22000.1335]
(c) Microsoft Corporation. All rights reserved.

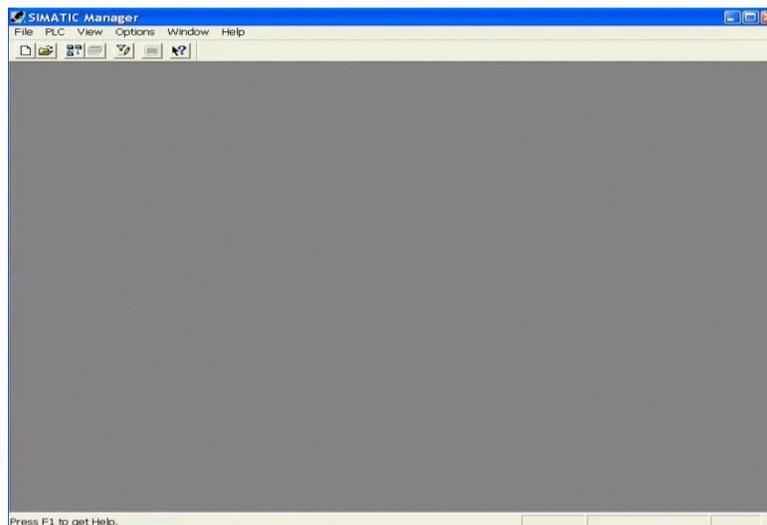
C:\Users\mblazejczyk>telnet 172.17.5.1 102_
```

Note that we are using the local IP address of the device as it is configured on the machine, and the port used by the service application to communicate with it.

## Configuring SIMATIC STEP 7 to work with Enodia

To use STEP 7 to remotely service a device when using Enodia, it is necessary to properly configure the PG/PC interface parameter. The following demonstrates how to do this. Please note that this section is only applicable if STEP 7 software is installed on the same host as the one you are running Enodia on.

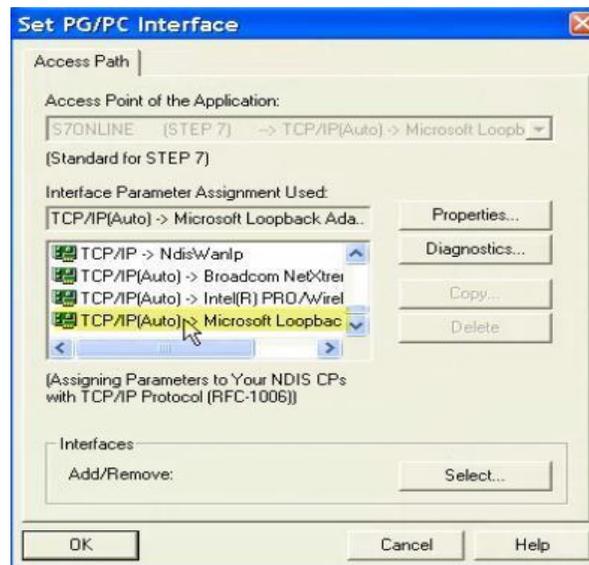
1. Open SIMATIC Manager:



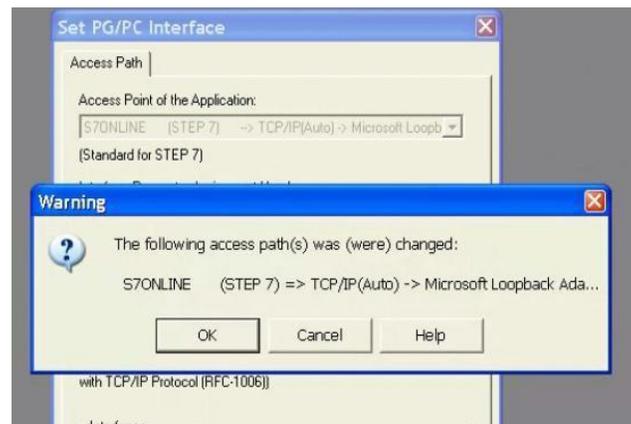
2. Choose Options and then "Set PG/PC Interface":



3. In the list of available Interface Parameters, select the Microsoft Loopback Adapter:



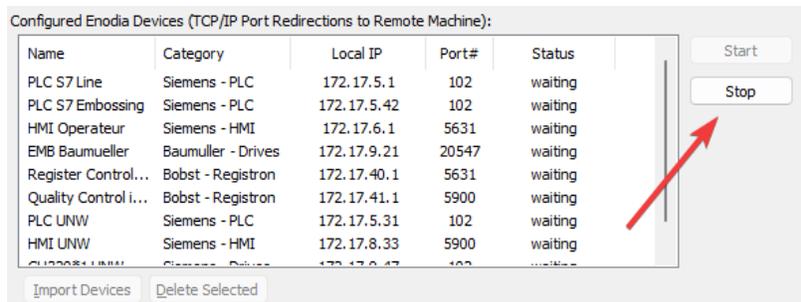
4. Click on OK. The following will appear:



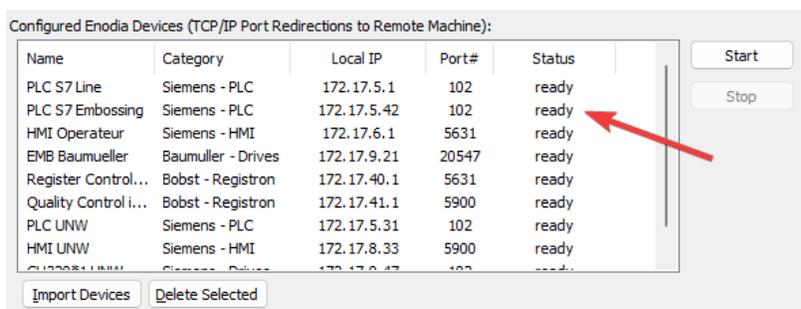
5. Click on OK.
6. Open the Project, Access Remotely, and Go Online.

## Stopping the Enodia session

When the user has completed the remote service session, the Enodia connection should be stopped by clicking on the “Stop” button:



This will change the status of all devices from “waiting” to “ready”:



Note: when the status is “ready” and the “Stop” button is disabled, it means that Enodia is ready to be either restarted or closed. If you are done with the remote session, close the Enodia application. At this point, the remote service session in ei<sup>3</sup> can be ended as well.