
The Application Note is specific to the

Using SyPT Pro DEMO Version to Extract/Troubleshoot Production DPL/SyPT Code

Background – Control Techniques has offered (and continues to) offer a popular series of second-processor options worldwide for their “systems” drive products to extend their capabilities and applications.

These products are all similar in that this additional logic exists in the form of an embedded program that is loaded and running within these second processors. These programs were all developed and validated with one of three software development environments, the **SyPT Pro** (**S**ystem **P**rogramming **T**oolkit **P**rofessional), the **SYPT Workbench** (**S**ystem **P**rogramming **T**oolkit **W**orkbench) or the **DPL Toolkit** (**D**rive **P**rogramming **L**anguage **T**oolkit).

The full **SyPT Pro** is the currently supported version of this program development environment, and resembles a typical Integrated Development Environment (IDE) with features familiar to most software engineers.

Control Techniques sells the full featured version of the SyPT Pro worldwide, and makes a DEMO version of the **SyPT Pro** that is available free, for the download.

The DEMO version of the **SyPT Pro** was originally specified and produced as a sales and marketing tool, lacking all the on-line capability of the full product. But, the DEMO version of the **SYPT Pro** includes a number of useful features that also permit its use for evaluating existing code produced with the full production **SyPT Pro** and doing troubleshooting based on that analysis.

Scope – This application note provides guidance in determining just what logic (in the form of a compiled program) is present in a Control Techniques Second Processor.

The primary focus of this application note is using the **SyPT Pro DEMO** to determine if “source code” is present in the second processor and recovering this logic, if it is present.

When the “source code” is **NOT** present, the **Title**, **Version**, **Author** and **Company** of the logic can always be determined, to aid in the search for the complete code details.

- The SM-Apps Plus, SM-Apps, SM-Apps Lite v2.0, and the SM-Apps Lite are used with the Unidrive SP and the Dlgitax ST for AC Motor Application(s). A **CT-COMMS-CABLE** or **CT-USB-CABLE** is the recommended hardware for the on-line connection (using the **CT-RTU** protocol).
- The UD7x series of second processors (UD70, UD73, UD74, UD75, UD76 and UD77) are used with the Unidrive Classic for AC Motor application(s). A **CTD-PC-232-010** is the recommended hardware for the on-line connection (using the **MD29MON** protocol)
- The MD29 series of second processors (MD29 and MD29AN) are used on the Mentor II / Quantum III for DC Motor application(s). A **CTD-PC-232-010** is the recommended hardware for the on-line connection (using the **MD29MON** protocol).

Examples

Suppose you run across a Unidrive Classic (with a UD7x series co-processor), Unidrive SP (with an Apps, Apps Lite or Apps Plus module) or even a Mentor II or Quantum III with an MD29 or MD29 AN card. This is usually (but not always) indicative that there is a program inside the co-processor doing something rather unique and perhaps - sophisticated.

Scenario 1

If you need to change out the co-processor, at a minimum you will need to have access to the original “**Binary Code**” for this particular machine/drive section- file has a .bin extension. The binary file should have been provided to you by the original machine manufacturer, OEM, Integrator or System Engineer so that should you experience such a situation that you could obtain a replacement co-processor module and either you or Control Techniques could load that module with the original application program. Binary code can be downloaded into the same co-processor using our free WinFlash program loader. To obtain it click here → [WinFlash](#)

Scenario 2

If the drive was a Unidrive Classic (now obsolete) and failed and you are unable to acquire a replacement, the progressive option would be to replace the drive with current products- in this case the Unidrive SP and SM- Apps Plus Co-processor. In this case, you would need to either possess or acquire the original “**Source Code**”. This source code would be necessary in order to examine what was being accomplished by the program and to determine exactly what needs to be done and how to adapt to the new hardware. In many instances, this could be a minor job for one of our Field Engineers or in certain more complex applications (usually where it involved some kind of motion application using the APC –Advanced Position Controller) may be quite involved whereby alternative solutions may be recommended ie – use of EZmotion Module. See also [CTAN277](#) for additional advisement when converting Unidrive Classics.

In any case, use of the SyPT Pro Demo program can be useful for one to determine if the “**Source Code**” is indeed present in the original co-processor and if it is there, allow it to be extracted. Once extracted it could be emailed to someone for examination and further advisement. If the “**Source Code**” is not present (because the creator preferred not to include it), then you nor we (Control Techniques) will be able to extract the code. You will need to contact the originator of the System to go beyond this point. The SyPT Pro demo will help you to identify who the author was and perhaps provide other useful program identifiers.

Scenario 3

If you are involved in troubleshooting a problem you may need to have access to original source code in order to examine and determine what they program is doing, looking for etc. The SyPT Pro demo program could help in this regard once again if the “**Source Code**” is indeed present in the original co-processor and if it is there, allow it to be extracted. If the “**Source Code**” is not present (because the creator preferred not to include it), then you nor we (Control Techniques) will be able to extract the code. You will need to contact the originator of the System to go beyond this point. The SyPT Pro demo will help you to identify who the author was and perhaps provide other useful program identifiers.

Instructions

Getting the SyPT Pro DEMO

The **SyPT Pro** DEMO is a suite of inter-operating Microsoft Windows program available free from the Control Techniques SyPT Pro website. Windows XP Professional is recommended, other OS supported is described in the Read Me that accompanies the suite.

Note that the next two links are live, and that the download file size is 41.9 MByte.

[SyPT Pro Product Website](#)

[Download SyPT Pro Version 2.2.0 Demo](#)

Installing the SyPT Pro DEMO

Download the file "*SPTPro220_DEMO.zip*" and save it to a convenient folder, or even to the desktop. Insure that the user has administrator rights on the PC/Laptop before double-clicking on the downloaded file to begin installation. The defaults, such as installation folder location, are recommended for this installation.

Suggested use with CTScope and CTSoft.

CT Scope and CTSoft are two additional CT software utilities that are useful to install along with the **SyPT Pro** DEMO. Download and install these utilities, following the guidance outlined in the previous getting and installation instructions. Note that the same download location hosts a number of downloads, be sure to choose the latest, English language (EN) version where multiple versions are listed. Also note that installing the latest version of CTSoft will insure that the most current communication service is available to the **SyPT Pro** DEMO, and doing this is highly recommended.

[CTScope Product Website](#)

[Download CTScope](#)

Note that CTScope V01.01.02 was current as of this application note

[CTSoft Product Website](#)

[Download CTSoft](#)

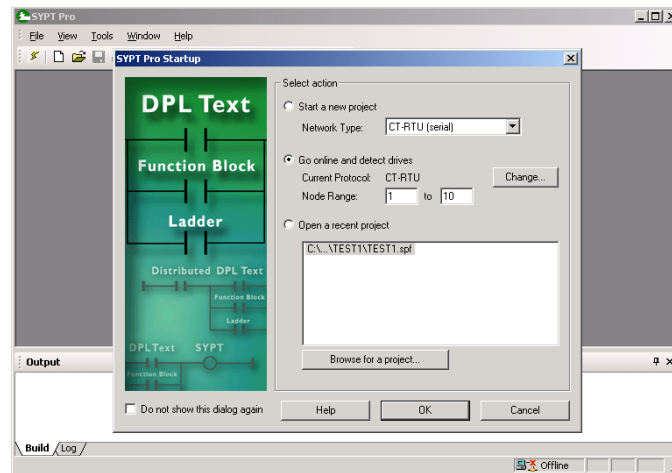
Note that CTSoft V1.10.02 was current as of this application note

Getting Started

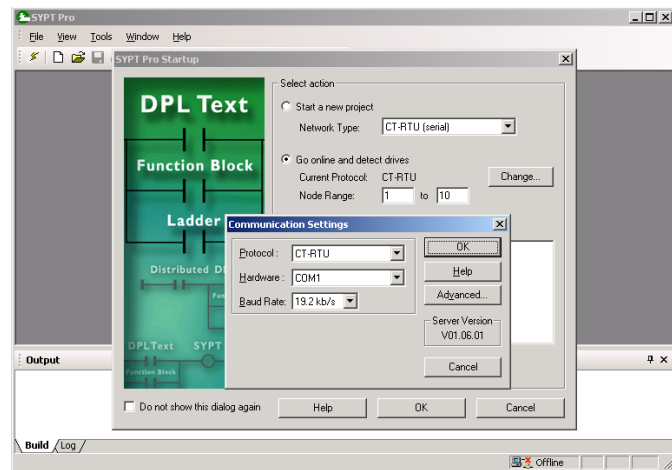
The next section will illustrate connecting to a SP based CTNet DEMO network consisting of two nodes connected via CTNet and a Serial CT-RTU connection from the PC running the SyPT Pro DEMO software.

Initial connection to a SP / SM-Applications on a CNet network

1. Open SyPT Pro and choose go online and detect drives. Left-click on Change...

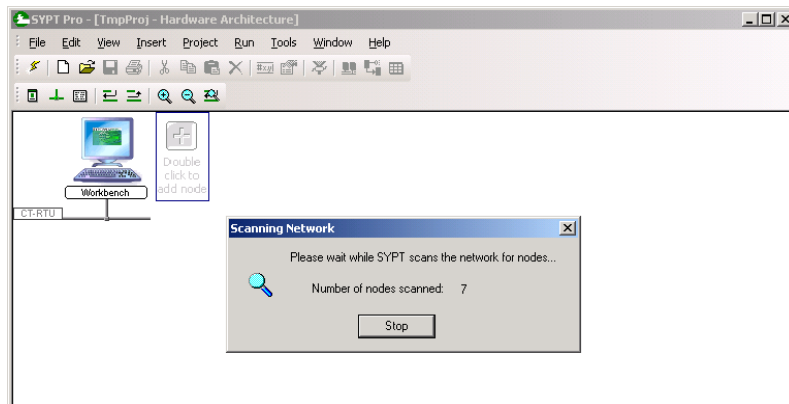


2. Check and confirm CT-RTU Protocol, and 19.2 kb/s Baud rate and that the Hardware is the actual port the serial communication cable is connected to. Click OK to accept, and then OK again, to begin scanning.

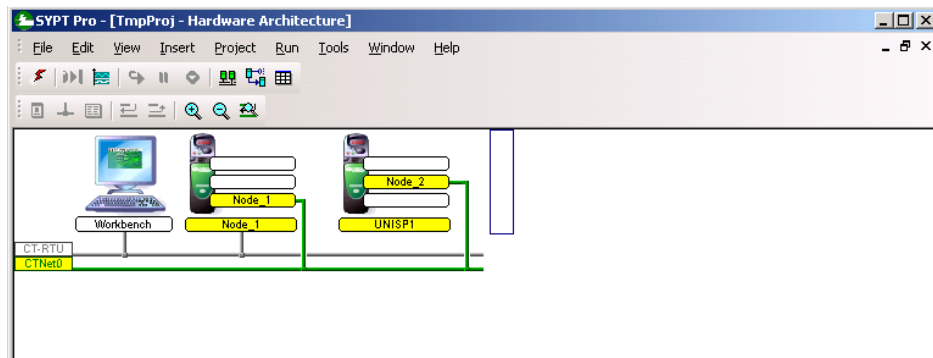


3. Check and confirm these settings against the drive port settings
 - #11.23 1 (default) Serial address
 - #11.24 rtu (default) Serial mode
 - #11.25 19200 (default) Baud rate

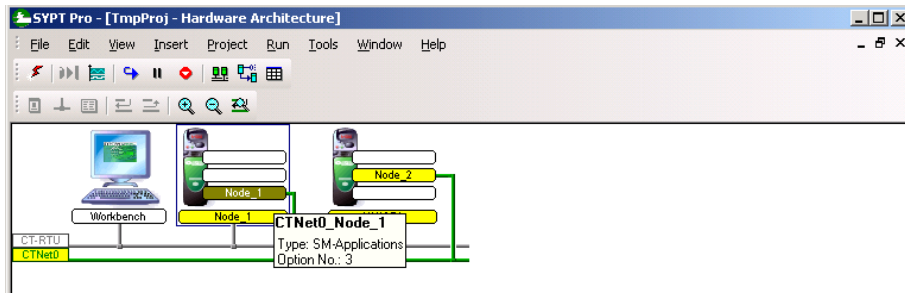
The following illustrate scanning and node detection in progress



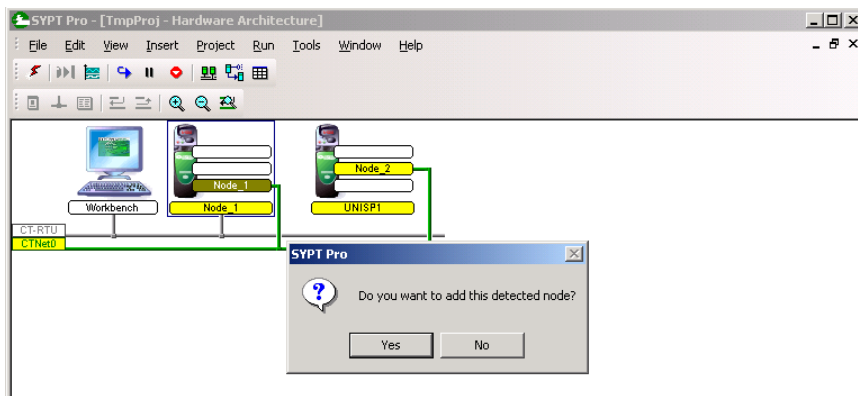
Scanning is now complete for this demo SP project. Two nodes are shown, linked via a CNet backbone segment. CNet0 node 1 is placed in slot 3 and CNet0 node 2 is placed in slot 2. The PC access is via serial link via CT-RTU protocol to the SP at address 0, hosting CNet0 node 1. The next steps are intended to determine details about the actual content in each node, is to “declare” the detected nodes.



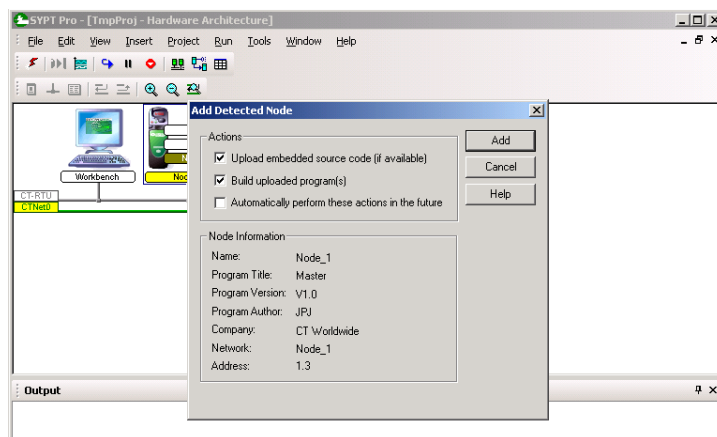
Left-click on Node 1 to select, then double-left click to :Add detected node...



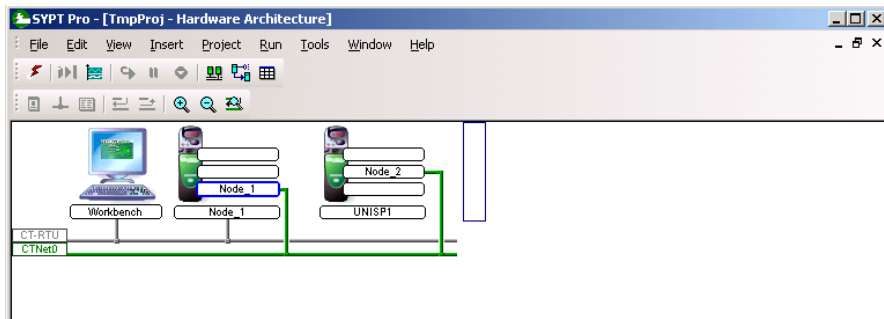
Left-click Yes to add the detected node and continue



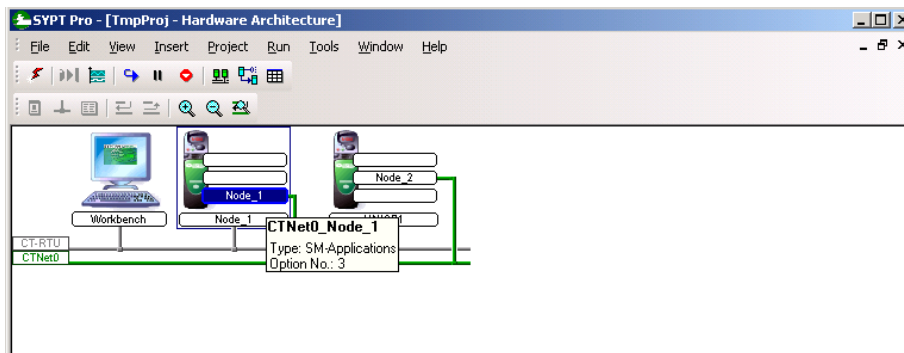
The “**Add Detected Node**” detail window will request confirmation of the details. Click the Add to complete this node. Rinse and repeat these steps to add node 2.



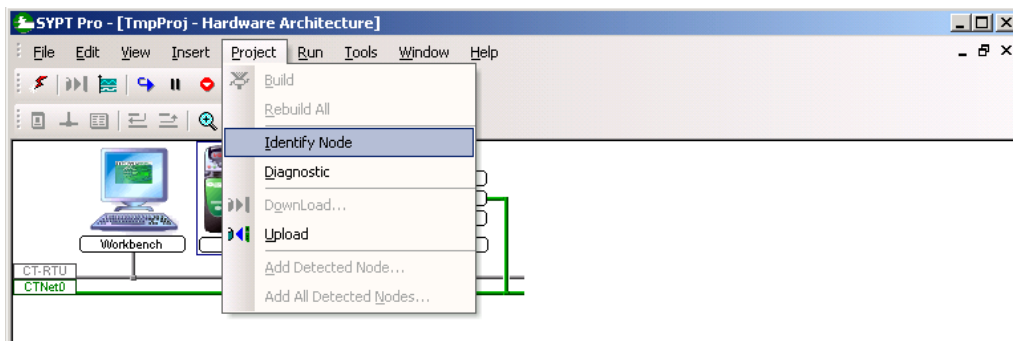
All nodes present in this SP demo project have been added. This is the preferred point to evaluate the program detail and logic in the SM-Application (and /or Plus) modules.



Left-click on SM-Applications (Plus) to select, then right-click to bring up the menu

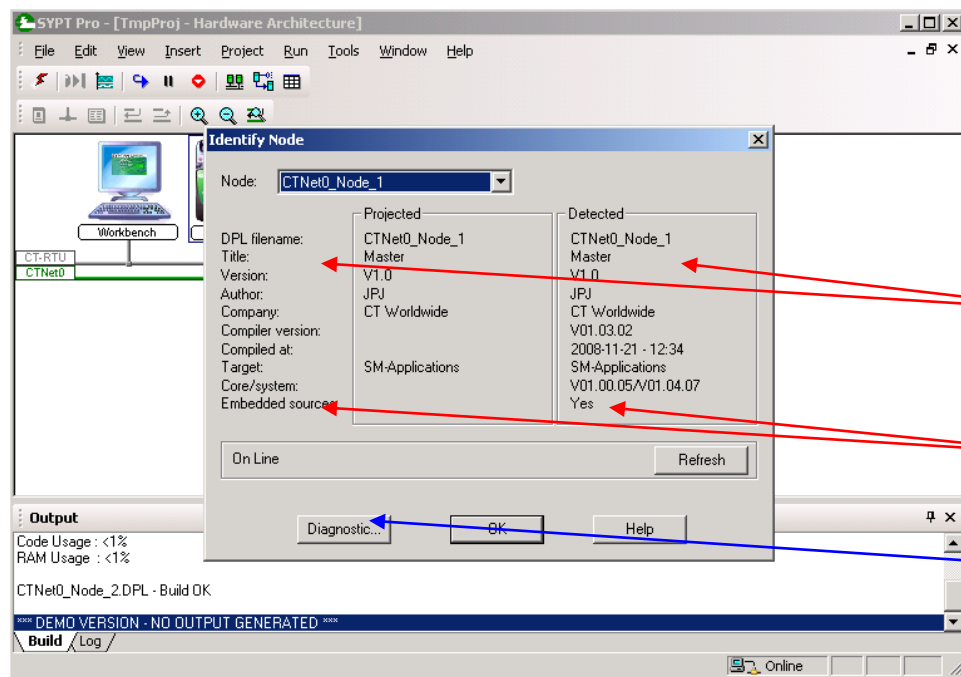


Select "Identify Node"

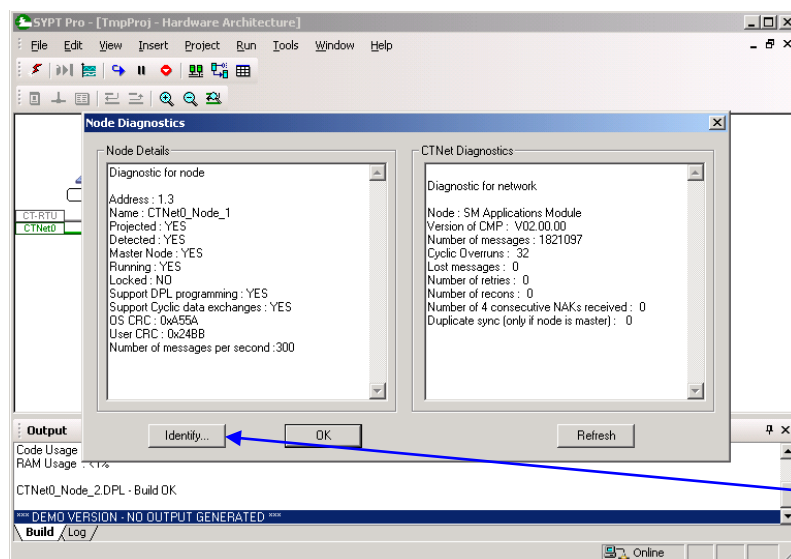


This screen illustrates two of the justifications for using the SyPT Pro DEMO with production code. The Title, Author, Company and Version information for the embedded logic are displayed here, as well as the fact that “Embedded sources” **ARE** present (displayed as “Yes”). If the “Embedded sources” field displays “No”, no further insight would be available, even with the SyPT Pro. The original logic would have to be run down the old-fashioned way (asking the author and / or company), from the information available here.

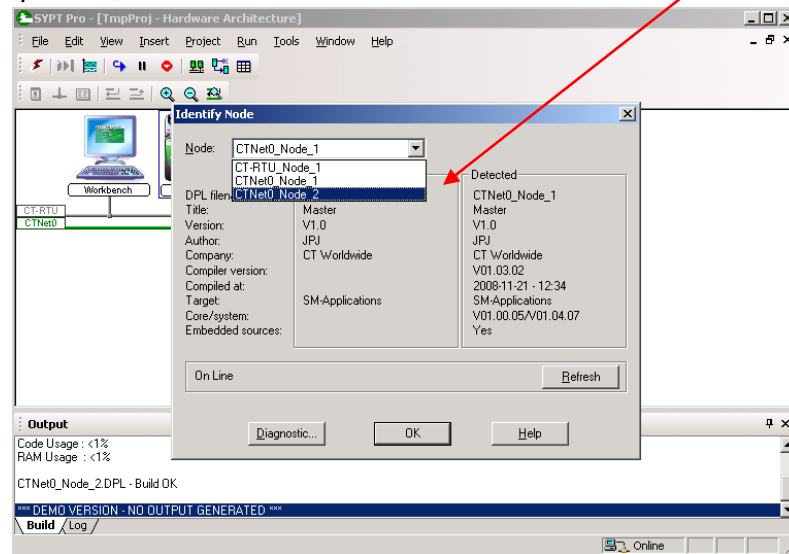
Clicking on “**Diagnostic...**” will bring up the “Node Diagnostics” screen



Clicking on “**Identify...**” will switch back to the “Identify Node” screen. This particular system has run for a significant period of time with few CTNet packet errors,

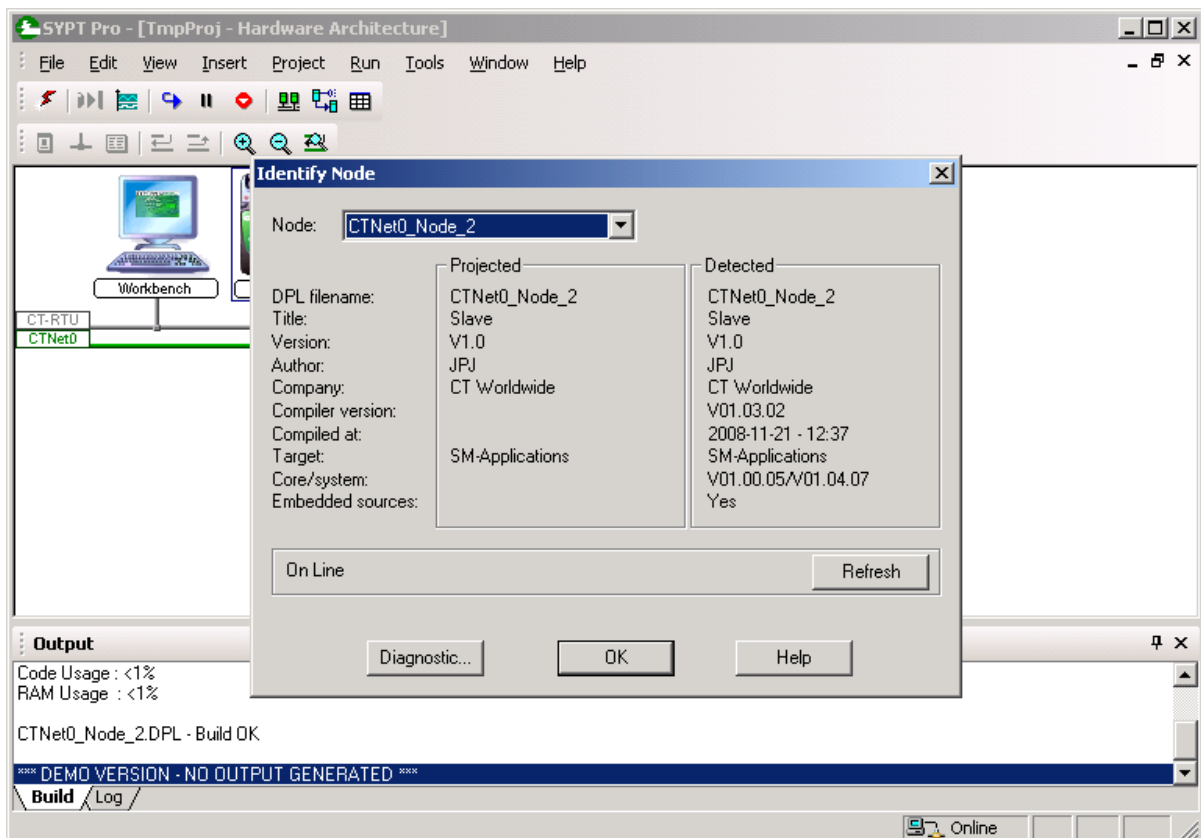


On the Node: drop down, select CTNet0 Node 2



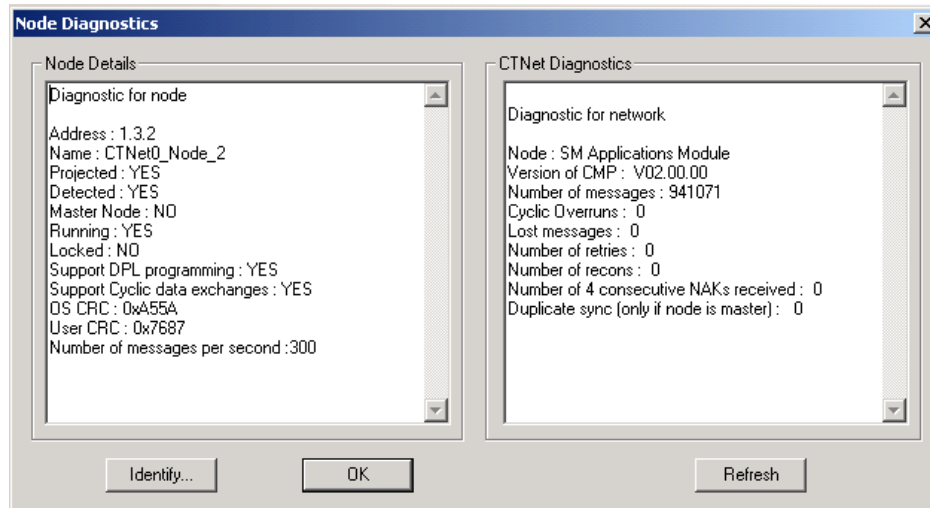
The detail for the other node in this system is now visible. Note that the source code is also available in the second node in this project.

Again, clicking on “**Diagnostic...**” will bring up the “Node Diagnostics” details.



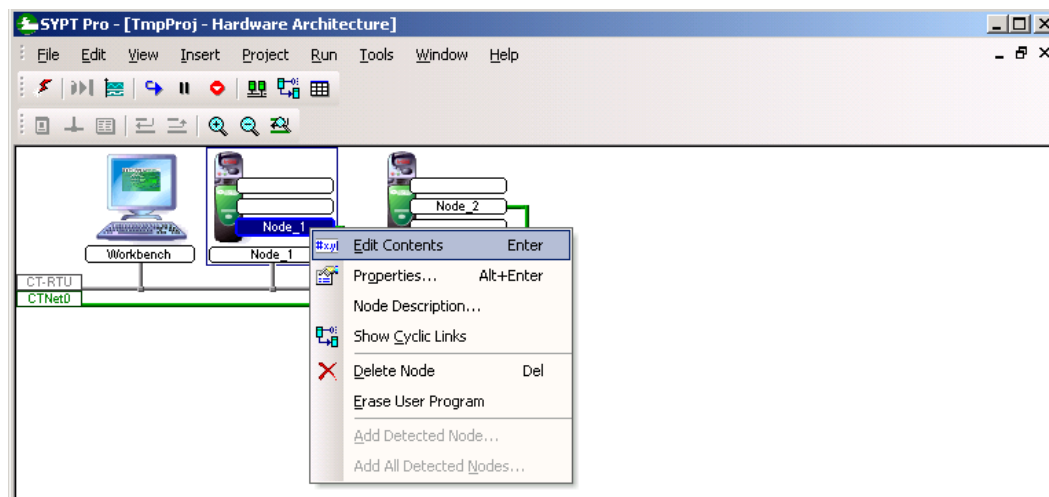
Clicking on “**Identify...**” will switch back to the “Identify Node” screen. This is the other node on a system that has run for a significant period of time with few CTNet packet errors, and this screen should reflect statistics similar to those observed on the first node.

Click OK to dismiss.

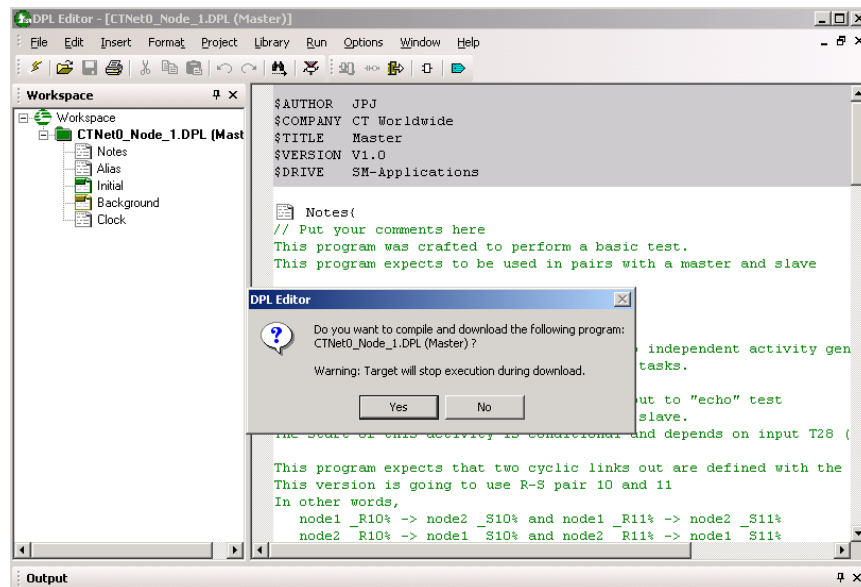


As the source code is available in both nodes, it is possible to use the SyPT Pro DEMO to inspect and study this code.

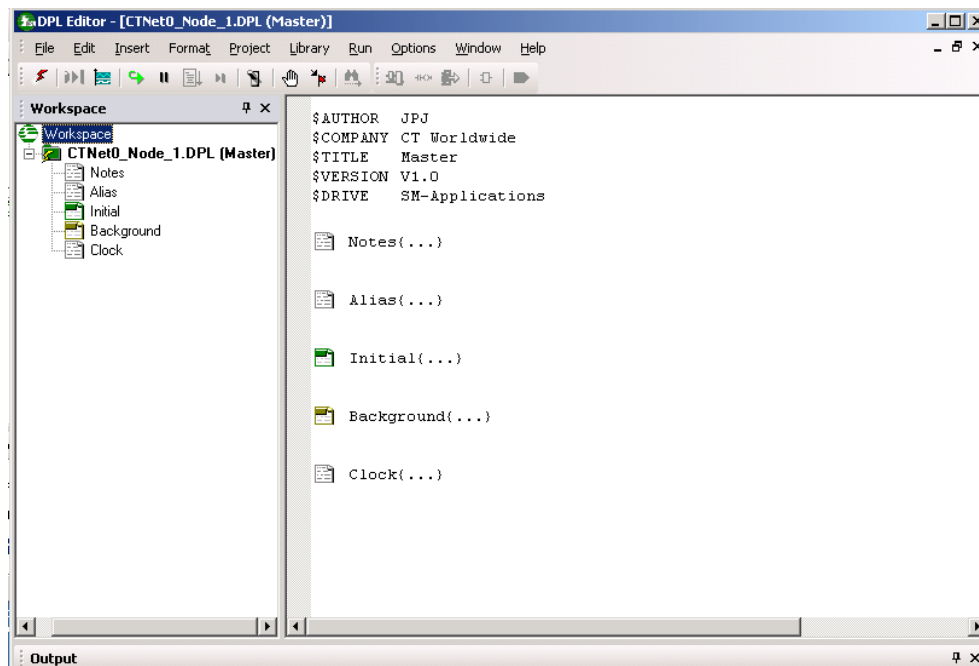
Right-click on the SM-Applications module representing the first node. This will bring up a context-sensitive menu. Select “**Edit Contents**”.



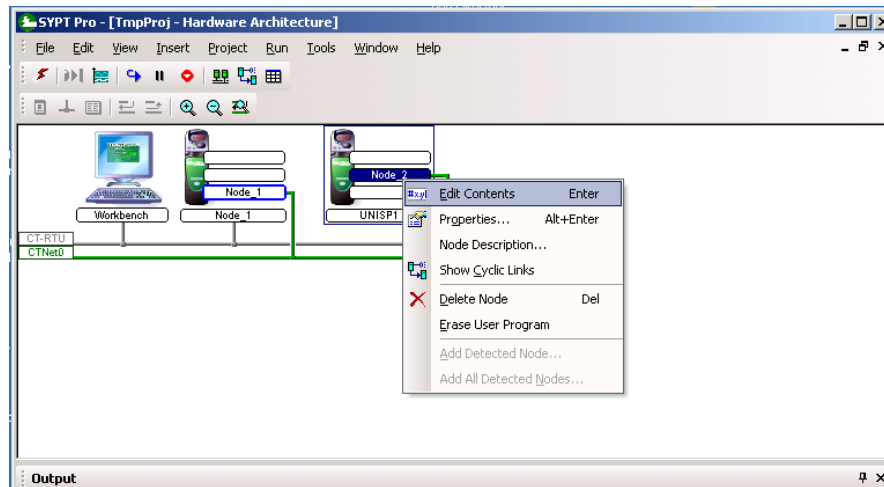
With the DEMO version of the SyPT Pro, this warning message will always appear at this point, for conceptual reasons. Click “Yes” to proceed through a simulated build and download cycle, and dismiss the dialog. Note that the code will not actually “build and download” when using the SyPT Pro DEMO for this, where as the full version of the SyPT Pro **WILL**.



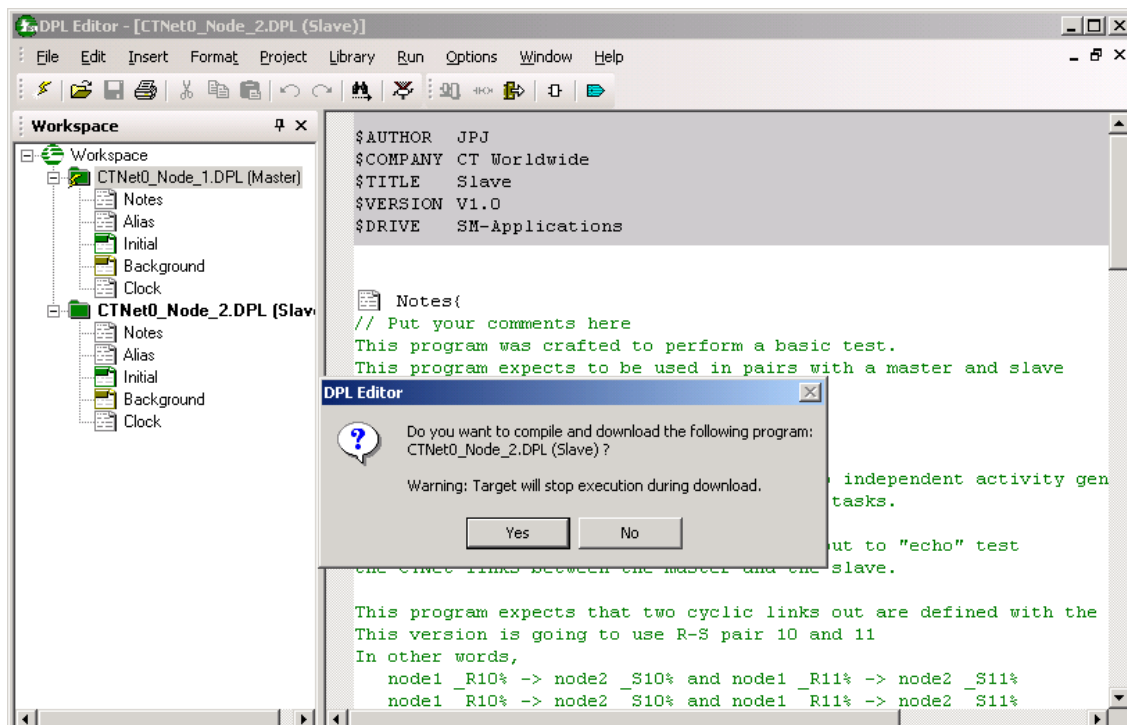
Final product of this effort for the first node. The code has been determined to be present, and up-loaded to the SyPT Pro DEMO, where it can be studied.



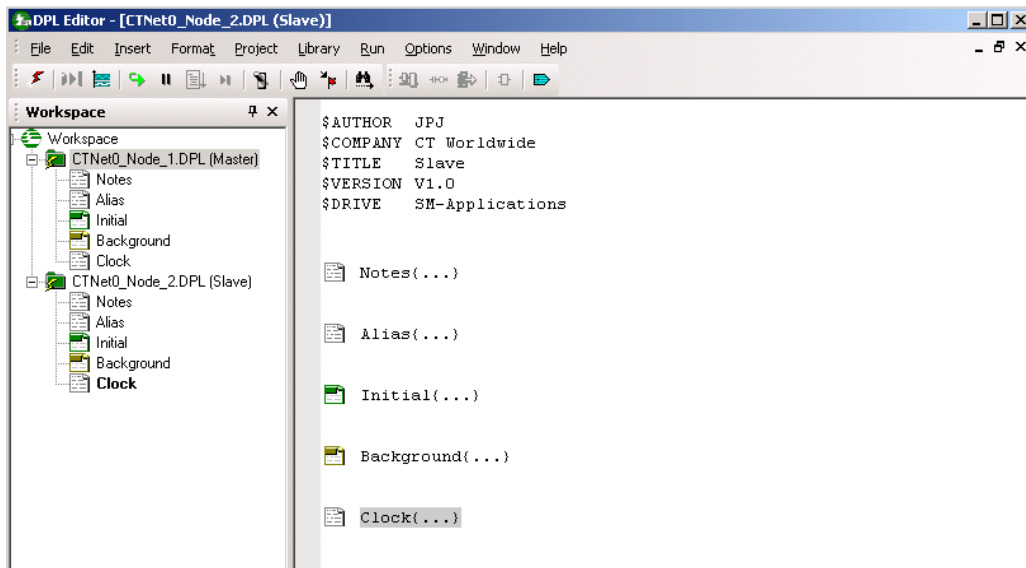
Right-click on the SM-Applications module representing the next node. This will bring up a context-sensitive menu. Select **“Edit Contents”**.



Again, the warning message appears at this point. Click “Yes” to proceed through a simulated build and download cycle, and dismiss the dialog.

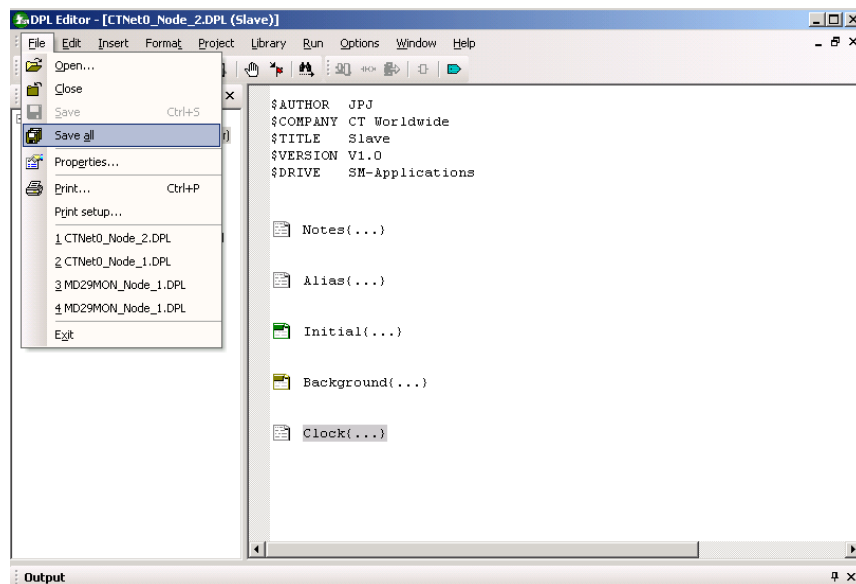


Final product of this effort for the next node. The code has been determined to be present, and up-loaded to the SyPT Pro DEMO, where it can be studied.

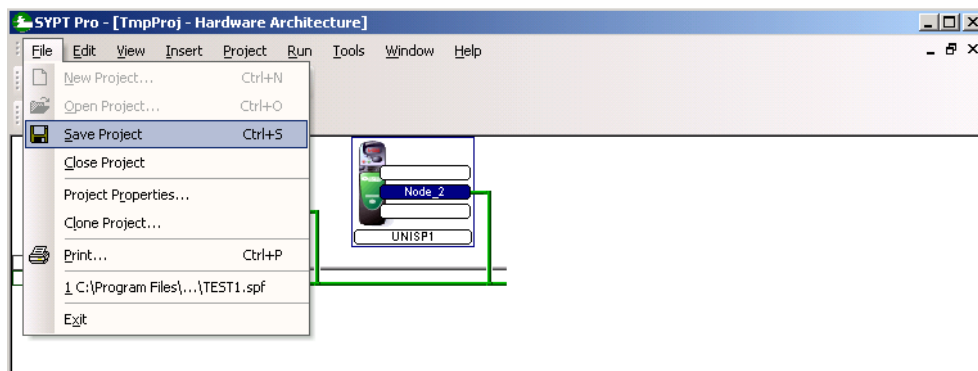


Now, the final steps are to save the project with a known name and location for possible sharing with support or engineering, with would have the full production of the SyPT Pro

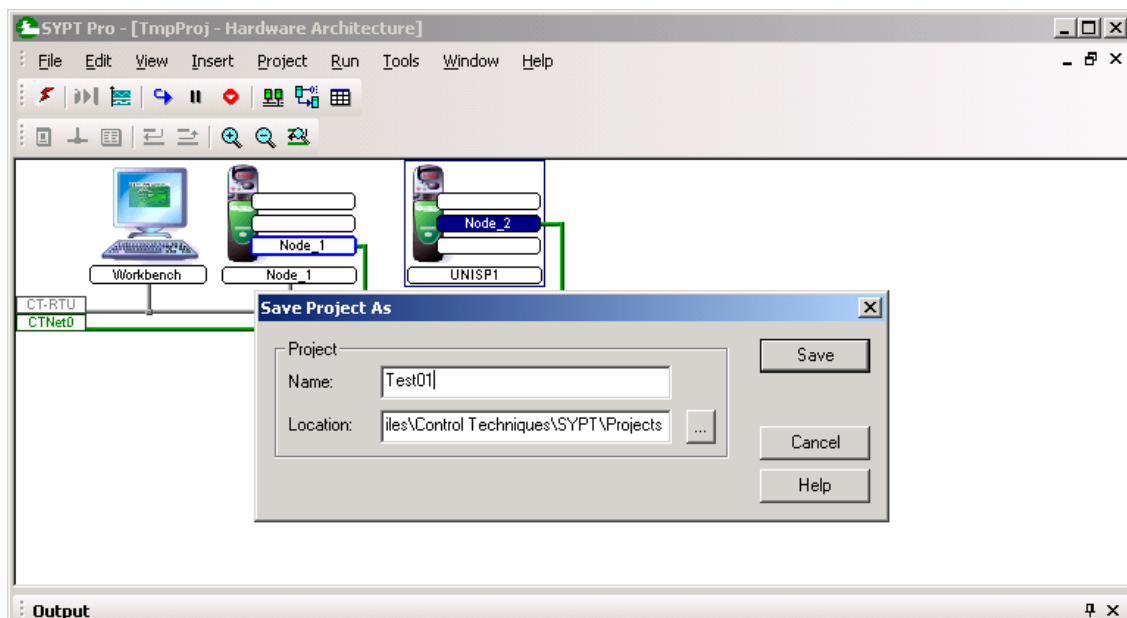
Select "**File....Save all**". On the DPL Editor window



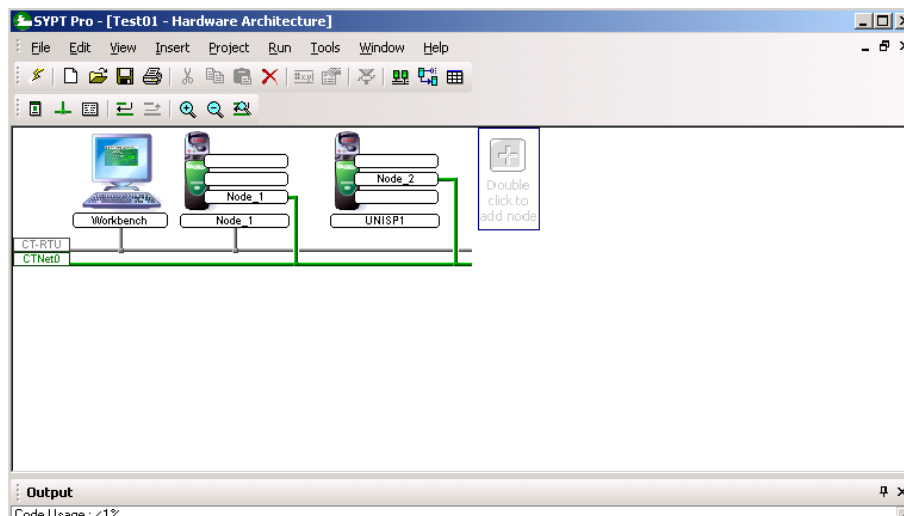
Select “**F**ile....**S**ave **P**roject”. On the SYPT Pro project main window



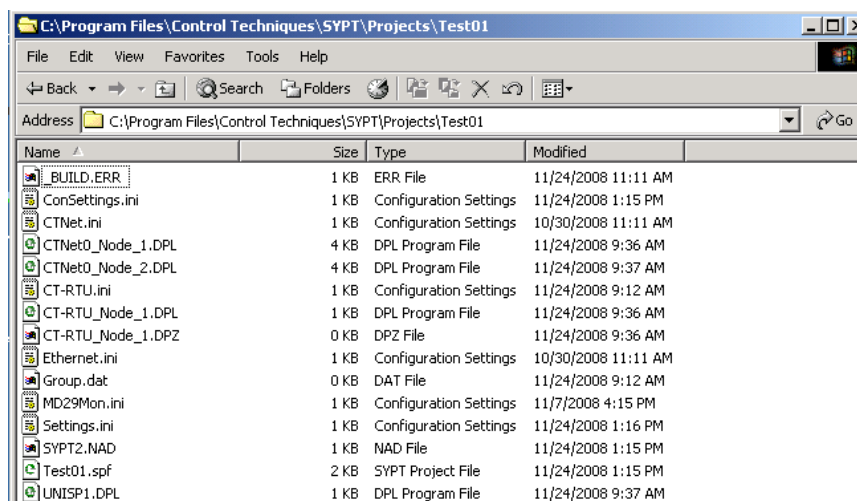
Enter a project name. For project code that is going to be shared with CT Tech support in Grand Island, the name “**Test01**” is recommended, as is the default Projects folder location within the SyPT Pro installation directory. For both the SyPT Pro DEMO and the full production version of the SyPT Pro, this location is C:\ Program Files\ Control Techniques\ SYPT\Projects.



Project save complete.



These are the files saved within the Project folder. The CTNet0_Node_1.DPL and CTNet0_Node_2.DPL files are the recovered source files, and are of particular interest.



Summary

The previous steps walks the reader through determining what is available on a UnidriveSP based test system, and then getting the code for further study of even consultation with support. Other second processors families are similar.

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