

SIEMENS

SIMATIC

Component based Automation Commissioning Systems

Tutorial

Preface, Contents

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Part 1: Creating PROFINET
Components

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System

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Safety Guidelines

This manual contains notices intended to ensure personal safety, as well as to protect the products and connected equipment against damage. These notices are highlighted by the symbols shown below and graded according to severity by the following texts:



Danger

indicates that death, severe personal injury or substantial property damage will result if proper precautions are not taken.



Warning

indicates that death, severe personal injury or substantial property damage can result if proper precautions are not taken.



Caution

indicates that minor personal injury can result if proper precautions are not taken.

Caution

indicates that property damage can result if proper precautions are not taken.

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Siemens AG
Bereich Automation and Drives
Geschäftsgebiet Industrial Automation Systems
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We have checked the contents of this manual for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in this manual are reviewed regularly and any necessary corrections included in subsequent editions. Suggestions for improvement are welcomed.

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Preface

Goal of the manual

This manual is designed to enable you to commission the sample plant described.

It is directed towards persons who work in the field of configuration, commissioning and servicing automation systems.

Required basic knowledge

You are required have a general knowledge of automation technology as well as a broad knowledge of the SIMATIC devices used.

In addition, you are required to have a good working knowledge of computers or other tools similar to the PC (e. g. programming devices) under the operating systems Windows 2000 or XP. Since the use of SIMATIC iMap with SIMATIC devices is based on the STEP 7 basic software you have to know how to use it. You can learn how to use this software in the manual "Programming with STEP 7".

Validity of the manual

This manual is valid for the software package SIMATIC iMap V2.0.

Changes compared to the previous version

Compared to the previous version, the following topics have been added to the manual compared:

- Creating PROFINet components for CPU 317-2 PN/DP and CPU 314C-2 DP.
- Configuring and commissioning a plant with CPU 317-2 PN/DP and CPU 314C-2 DP in SIMATIC iMap.

Your guide through the manual

The tutorial contains

- a description of the entire plant,
- instructions on creating PROFINet components in part 1 and
- instructions on commissioning the system in part 2.

The instructions on commissioning the individual subplants contain all the necessary procedures. Therefore, some descriptions occur more than once, for example, "Creating a new project in SIMATIC iMap" or "Setting the PG/PC Interface".

Place of the manual in the information environment

This manual is part of the documentation package on Component based Automation und SIMATIC iMap. The documentation is supplied with the software and includes the electronic manuals in PDF format:

- Configuring plants with SIMATIC iMap
- Getting Started with SIMATIC iMap
- Commissioning Systems - the updated manual
- Creating PROFINet Components

In addition, the entire documentation is available as an HTML Basic Help.

Conventions

- Menu commands are written in bold letters, for example: **Project> Save**.
- Placeholders are set in angle brackets, for example <File name>.

Further support

Please contact your local SIEMENS partner if you have any further queries on the products described in this manual.

<http://www.siemens.com/automation/partner>

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Phone: +49 (911) 895-3200

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Europe / Africa (Nuremberg) Authorization Local time: 8:00 to 17:00 Phone: +49 (180) 5050-222 Fax: +49 (180) 5050-223 EMail: adsupport@siemens.com GMT: +1:00	United States (Johnson City) Technical Support and Authorization Local time: 8:00 to 17:00 Phone: +1 (423) 262 2522. +1-52520779 740 3699, Fax: EMail: simatic.hotline@sea.siemens.com GMT: -5:00	Asia / Australia (Beijing) Technical Support and Authorization Local time: 8:00 to 17:00 Phone: +86 10 64 75 75 75 Fax: +86 10 64 74 74 74 E-Mail: adsupport.asia@siemens.com GMT: +8:00
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<http://www.siemens.com/automation/service&support>

Here, you will find:

- the newsletter which constantly provides you with up-to-date information about your products.
- your appropriate documentation via our Service & Support search engine
- a forum for the exchange of information between users and specialists worldwide
- your local Automation & Drives partner via our partner database.
- information on repairs, replacement parts and on-site service. You will find more information under "Services".

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Tutorial - Introduction

1

1.1 Overview

Aim of the tutorials for commissioning the system

Numerous tasks are required to commission a plant with PROFINet and PROFIBUS devices in STEP 7, SIMATIC iMap and the plant itself.

The aim of the tutorial is provide you with the skills to commission the example plant described here.

Content of the tutorial

The tutorial includes:

- A description of a complete plant
- Part 1: Instructions for creating PROFINet components and
- Part 2: Instructions for commissioning the system

Procedure

With reference to the examples, you can work step by step through the process of commissioning a complex plant - from creation of the PROFINet components through to monitoring the configured plant online. If you already have off-the-shelf PROFINet components and simply want to interconnect them, you can start from **Part 2: System commissioning**.

1.2 Description of the Complete Plant

The complete plant consists of three machines and a central plant control system. Each machine includes at least one PROFINet device with an Ethernet connector. When the PROFINet device is a PROFIBUS master, the machine may also contain a PROFIBUS device.

Configuration of the plant

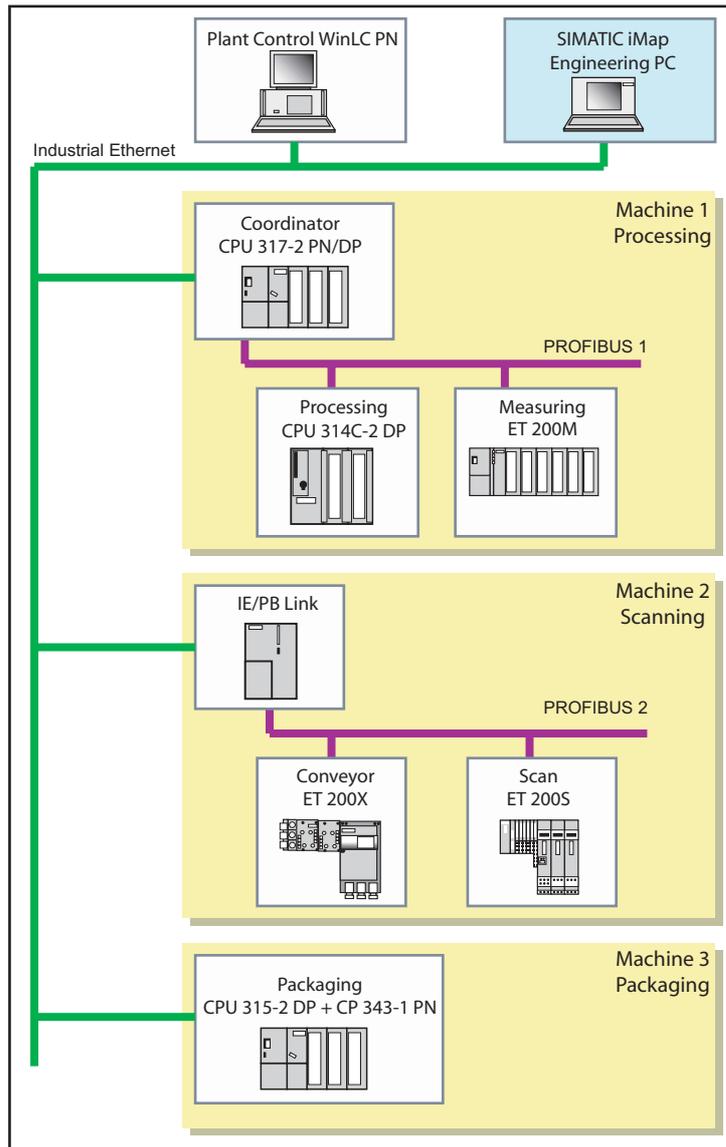


Figure 1-1 Complete plant

Plant components

Component	Device	Device type	Function
Plant_Control	PC station with WinLC PN	PROFINet device	Plant control visualization (optional)
Machine 1 – Processing and measurement			
Coordinator	CPU 317-2 PN/DP	PROFINet device with proxy functionality (DP master)	Coordination of Machine 1
Processing	CPU 314-2 DP	PROFIBUS device (intelligent DP slave)	Machining station
Measurement	ET 200M with IM 153	PROFIBUS device (DP slave)	Measuring station
Machine 2 – Conveying and scanning			
	IE/PB Link	Network gateway with proxy functionality (DP master)	No independent function
Conveyor	ET 200X with BM147/CPU	PROFIBUS device (intelligent DP slave)	Conveyor station
Scan	ET 200S with IM151/CPU	PROFIBUS device (intelligent DP slave)	Scan
Machine 3 – Packaging			
Packaging	CPU 315-2 DP with CP 343-1 PN	PROFINet device	Packaging station

Part 1: Creating PROFINet Components

2

2.1 Overview - Creating PROFINet Components

You need PROFINet components to configure a plant with SIMATIC iMap. They can be created at any time regardless of the actual configuration of the hardware. You can create components as required for the entire plant or for one subplant.

If you use the preassembled PROFINet components, you can skip this chapter and continue with Part 2: Commissioning the System.

Components of the plant

Plant	PROFINet device	PROFIBUS device	PROFINet component
Plant control system	PC station with WinLC PN		Plant control system
Machine 1, Processing			
	CPU 317-2 PN/DP		Coordinator
		CPU 314C-2 DP	Processing
		ET 200M with IM153-1	ET200M_Measuring
Machine 2, Scanning			
	IE/PB Link		IE-PB-Link1_5MB*)
		ET 200S with IM151/CPU	ET200S_Scan
		ET 200X with BM147/CPU	ET200X_Conveyor
Machine 3, Packaging			
	CPU 315-2 DP with a CP 343-1 PN		Packaging

*) The PROFINet component for the IE/PB Link network transition is ready to use in the STEP 7 install directory under Step7\s7cbacomproj.

2.2 Requirements - Creating PROFINet Components

Software Requirements

The following software must be installed before the PROFINet components can be created for the plant:

- Operating system:
 - Microsoft Windows 2000 Professional as of SP4 or
 - Microsoft Windows XP as of SP1
- STEP 7 as of V5.3
- SIMATIC iMap V2.0
 - You need administrator rights for the installation of SIMATIC iMap.
 - You need at least main user rights to operate SIMATIC iMap.

2.3 Basic Procedure - Creating PROFINet Components

Required steps

The PROFINet components are created using STEP 7. The following steps are required to create each PROFINet component:

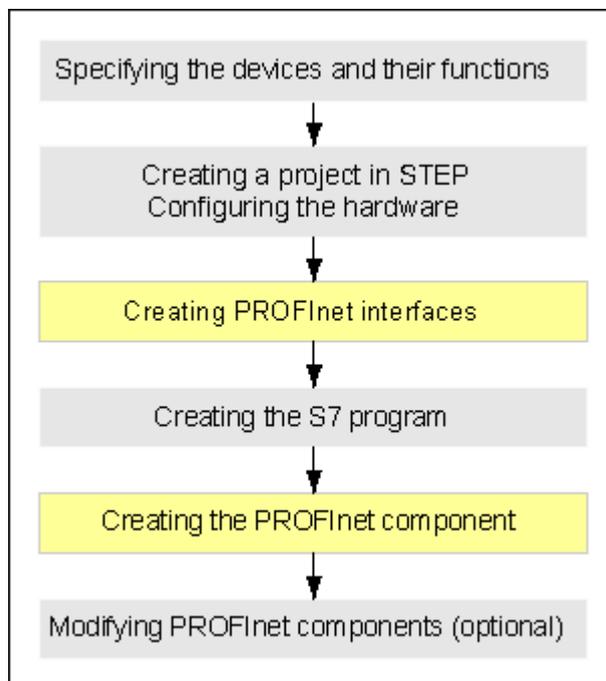


Figure 2-1 Basic procedure - creating PROFINet components

2.4 Creating PROFINet Components

2.4.1 Creating the PROFINet Component for CPU 317-2PN/DP

Create the PROFINet "Coordinator" component for coordination of Machine 1, Processing.

Content of the PROFINet component

The PROFINet "Coordinator" component contains:

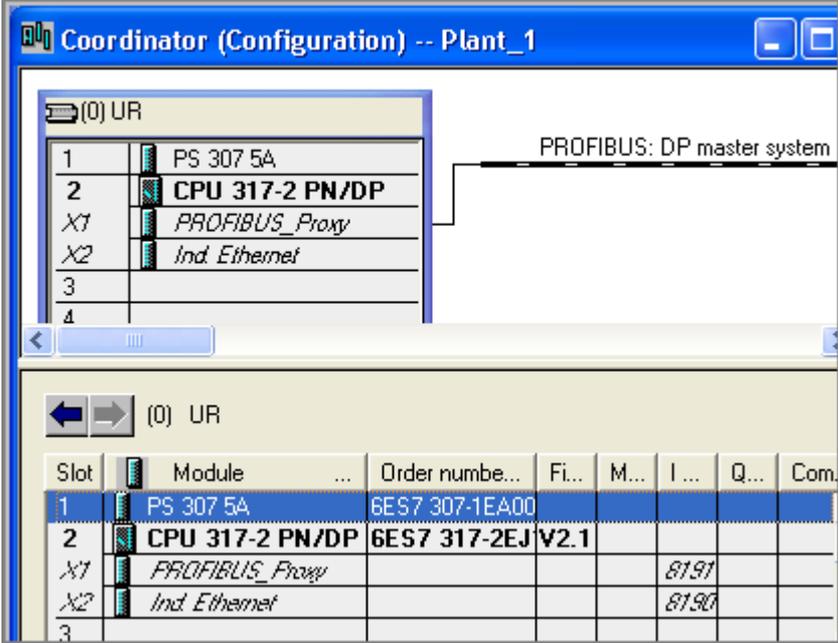
PROFINet component	PROFINet device	Technological function
Coordinator	SIMATIC 300 station with CPU 317-2 PN/DP (PROFINet device with proxy functionality)	Coordination of Machine 1 (S7 program with the component interface)

Basic procedure

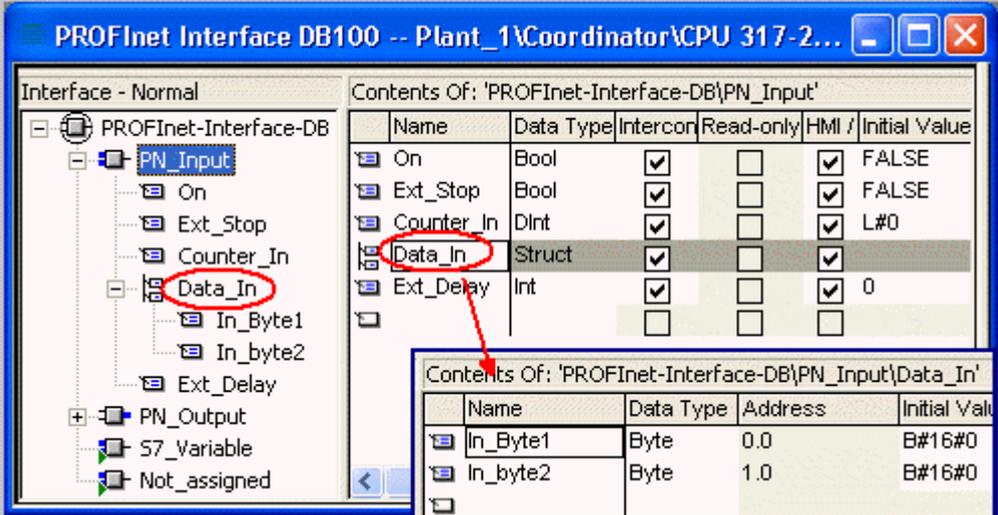
The PROFINet components are created using STEP 7. Carry out the following basic steps:

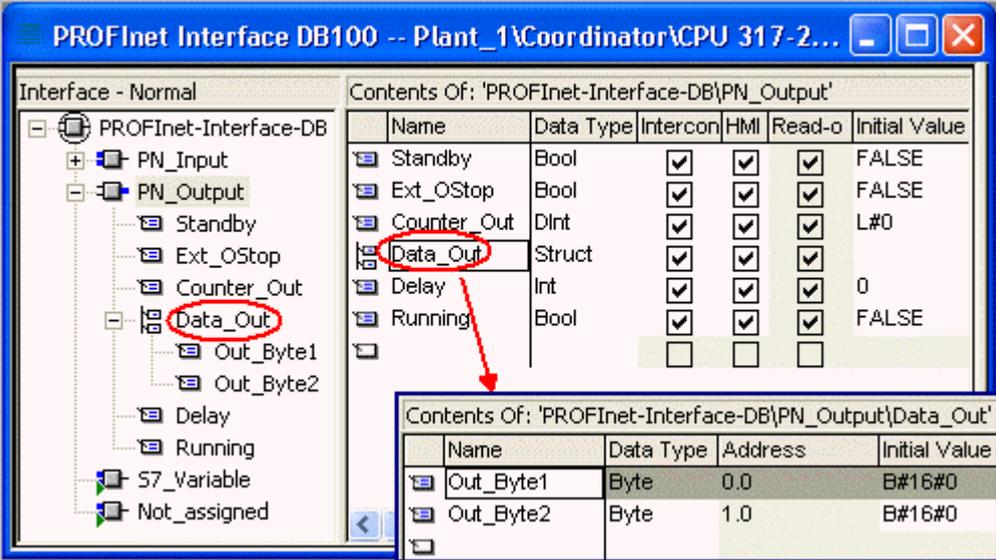
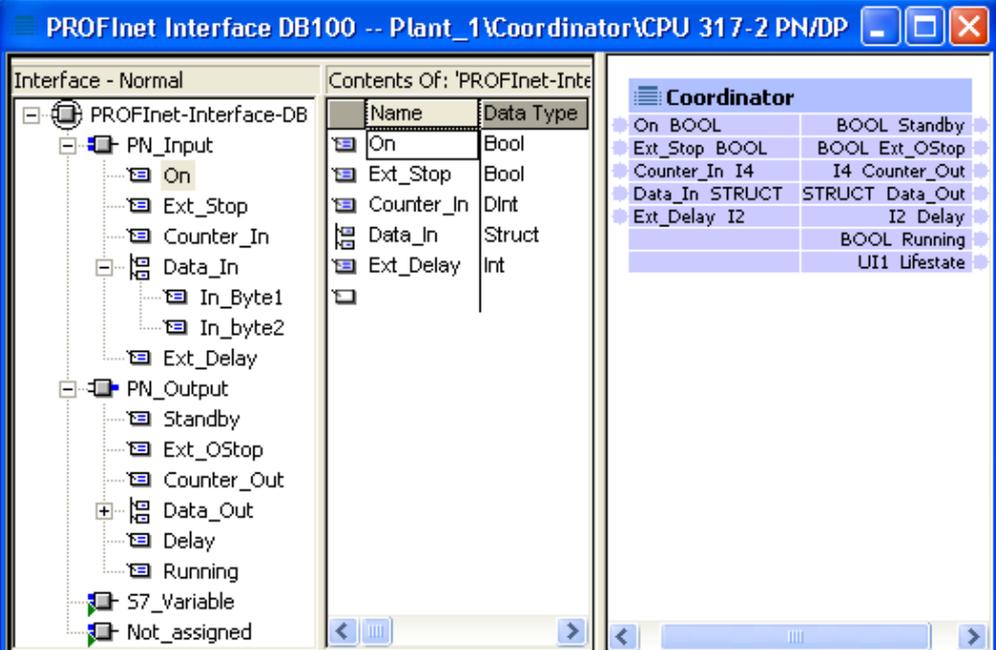
- In SIMATIC Manager, create a project for a component and configure the station hardware in HW Config.
- Create the interface DB for the component interface.
- Create the S7 program.
- Create the PROFINet component using a menu command and save it in a directory.

How to configure the hardware

Task	Procedure
1.	Create a project in SIMATIC Manager and insert a SIMATIC 300 station with the name "Coordinator".
2.	<p>Configure the hardware based on the following illustration:</p>  <p>Note:</p> <p>The DP master system (X1) must be connected to a network. The transmission speed defined here is adopted in SIMATIC iMap for the PROFIBUS of the PROFINet device with proxy functionality.</p> <p>No IP address and subnet mask has to be configured for Industrial Ethernet (X2).</p>

How to create the interface DB

Task	Procedure
1.	<p>In SIMATIC Manager, mark the SIMATIC 300 station and then select the Create PROFINet Interface command from the context menu.</p> <p>The "New/Open PROFINet Interface" dialog opens.</p>
2.	<p>Select CPU 317-2 PN/DP in the left window of the "New/Open PROFINet Interface" dialog. Activate the "New" option and confirm this by pressing the "OK" button.</p> <p>Result: The properties dialog of the newly created block opens.</p>
3.	<p>In the "Name and type" field, enter the desired block number, DB100 for example, and select the block type, "Global DB".</p> <p>Confirm by clicking on the "OK" button. Result: The interface DB is opened in the PROFINet Interface Editor.</p>
4.	<p>Enter the inputs of the technological function in the PN Input section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>

Task	Procedure
5.	<p>Enter the outputs of the technological function in the PN Output section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC IMap plant view.</p>
6.	<p>Save the PROFINet interface DB using the menu command File > Save.</p>
	<p>The PROFINet interface (technological function) is displayed in the right window of the Interface Editor:</p> 

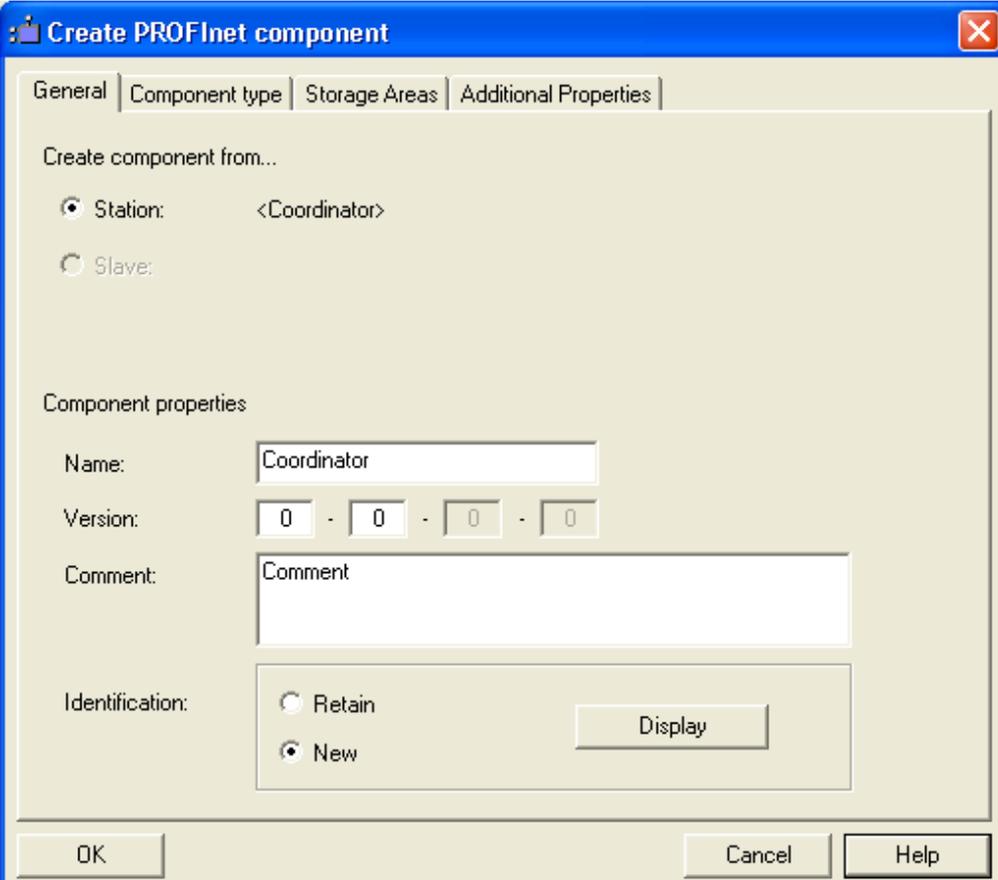
Additional information...

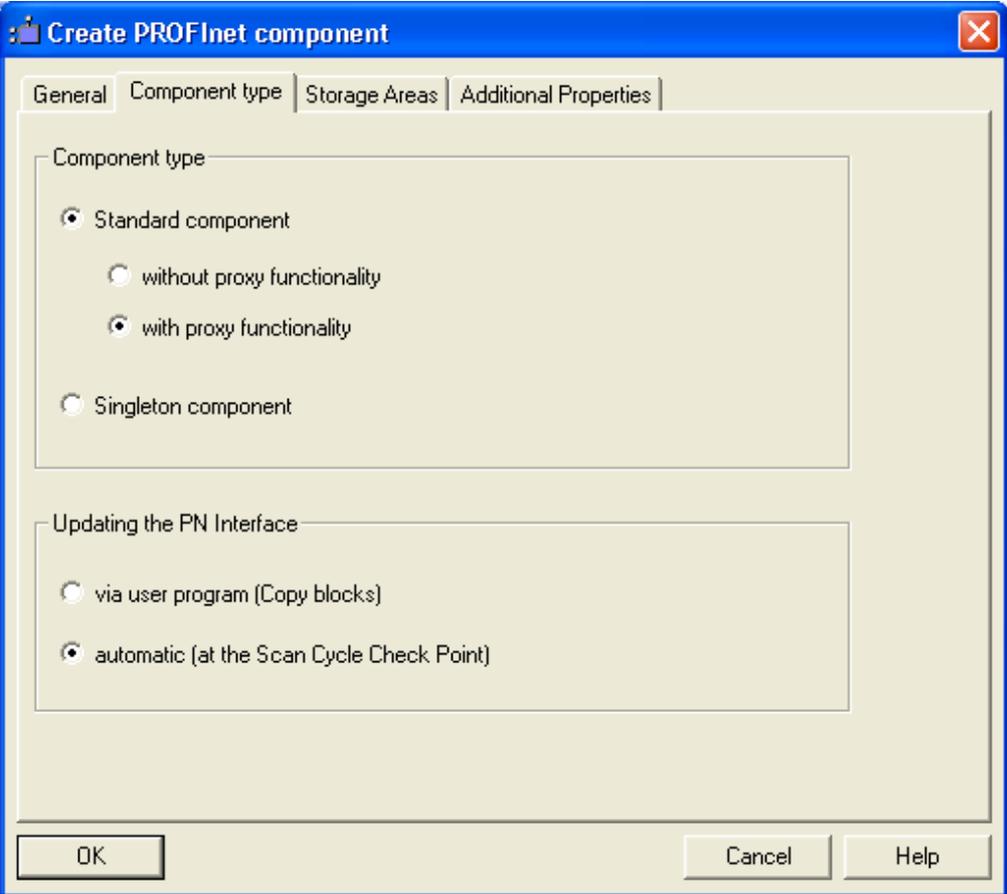
about the interface DB can be found under "Properties of the Interface DB" in the SIMATIC iMap or SIMATIC Manager basic help.

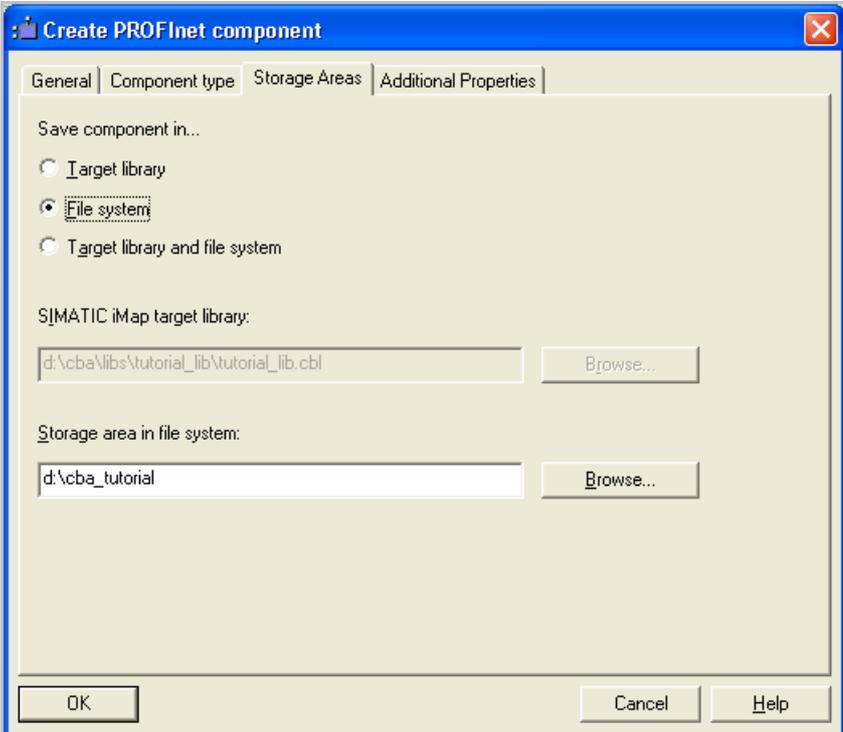
How to create the S7 program

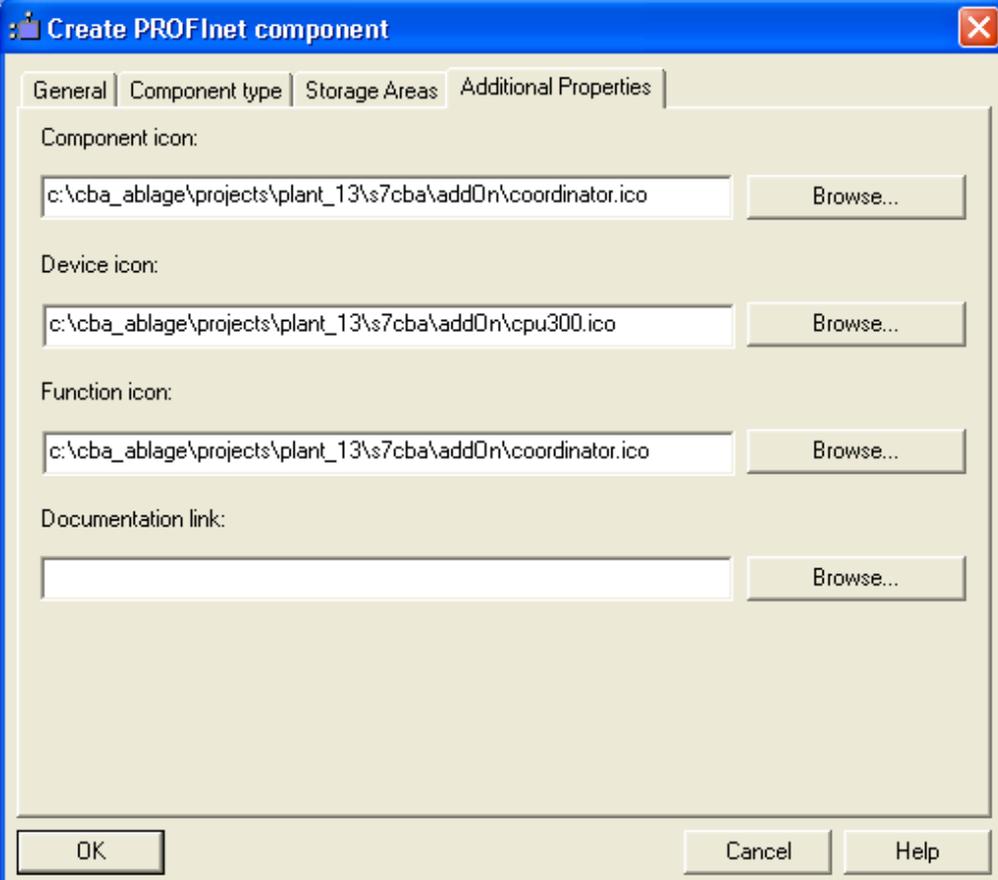
Task	Procedure
1.	Copy all blocks from the "CPU 300-2 PN/DP" block folder of the PROFINet System Library into the block folder of the CPU.
2.	<p>Create the program. The following is an example based on a section from OB1. You can see the reference to the PROFINet interface DB there.</p> <pre> ... //enable component A "PN_Interface_DB".On JCN noon = "PN_Interface_DB".Standby //forward HMISstop to Ooutput HMISstop A "PN_Interface_DB".Ext_StoP = "PN_Interface_DB".Ext_Ostop //increments OCnt if Cnt==Ocnt L "PN_Interface_DB".Counter_In L "PN_Interface_DB".Counter_Out <>D JC GO L "PN_Interface_DB".Counter_Out L 1 +D T "PN_Interface_DB".Counter_OutGO: NOP 0 ... </pre>
3.	Compile and test the S7 program.

How to create the PROFINet component

Task	Procedure
1.	In SIMATIC Manager, mark the SIMATIC PC station and then select the Create PROFINet Component command from the context menu.
2.	<p>On the "General" tab, highlight the "Identification, New" option and enter the following name: "Coordinator".</p> 

Task	Procedure
3.	<p>In the "Component type" tab, select "Standard component with proxy functionality" and "Updating PN interfaces automatic (at cycle control point)".</p>  <p>The screenshot shows a dialog box titled "Create PROFINet component" with a close button (X) in the top right corner. The dialog has four tabs: "General", "Component type", "Storage Areas", and "Additional Properties". The "Component type" tab is active. It contains two sections:</p> <ul style="list-style-type: none">Component type: Three radio button options:<ul style="list-style-type: none"><input checked="" type="radio"/> Standard component<ul style="list-style-type: none"><input type="radio"/> without proxy functionality<input checked="" type="radio"/> with proxy functionality<input type="radio"/> Singleton componentUpdating the PN Interface: Two radio button options:<ul style="list-style-type: none"><input type="radio"/> via user program (Copy blocks)<input checked="" type="radio"/> automatic (at the Scan Cycle Check Point) <p>At the bottom of the dialog, there are three buttons: "OK", "Cancel", and "Help".</p>

Task	Procedure
4.	<p>In the "Storage areas" tab, enter the desired path, for example, D:\cba_tutorial (D stands for a drive of your choice).</p>  <p>The screenshot shows a dialog box titled "Create PROFInet component" with a close button in the top right corner. It has four tabs: "General", "Component type", "Storage Areas", and "Additional Properties". The "Storage Areas" tab is active. Under "Save component in...", there are three radio buttons: "Target library", "File system" (which is selected), and "Target library and file system". Below this, there is a label "SIMATIC iMap target library:" followed by a text input field containing "d:\cba\libs\tutorial_lib\tutorial_lib.cbl" and a "Browse..." button. Another label "Storage area in file system:" is followed by a text input field containing "d:\cba_tutorial" and another "Browse..." button. At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".</p>

Task	Procedure
<p>5.</p>	<p>In the "Additional properties" tab, enter the path of the icon files and optionally the path of the documentation link. You can use the supplied icons as needed (default path: Step7\s7data\s7cbac1x).</p> 
	<p>Result: The PROFInet component is saved as an XML file at the specified location and the archived component project is saved.</p>

2.4.2 Creating the PROFINet Component for CPU 315-2DP

For Machine 3, Packaging, create the PROFINet component "Packaging" from a CPU 315-2 DP with a CP 343-1 PN as the controller for the packaging station.

Content of the PROFINet component

The PROFINet "Packaging" component contains:

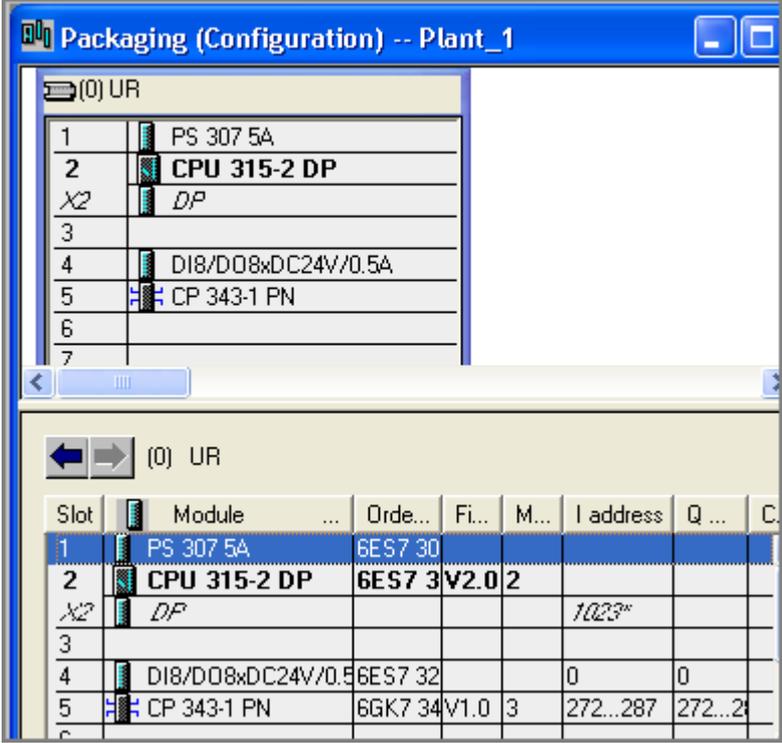
PROFINet component	PROFINet device	Technological function
Packaging	CPU 315-2 DP with CP 343-1 PN (PROFINet device without proxy functionality)	Packaging station (S7 program with the component interface)

Basic procedure

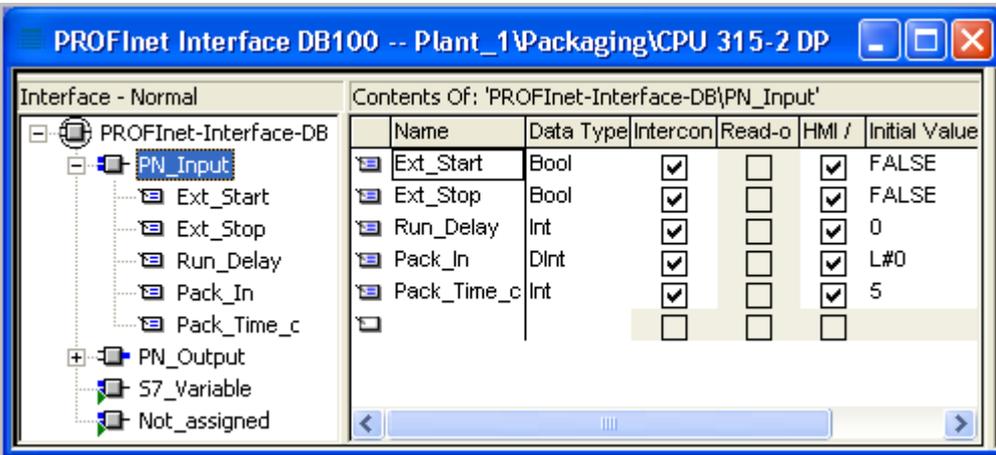
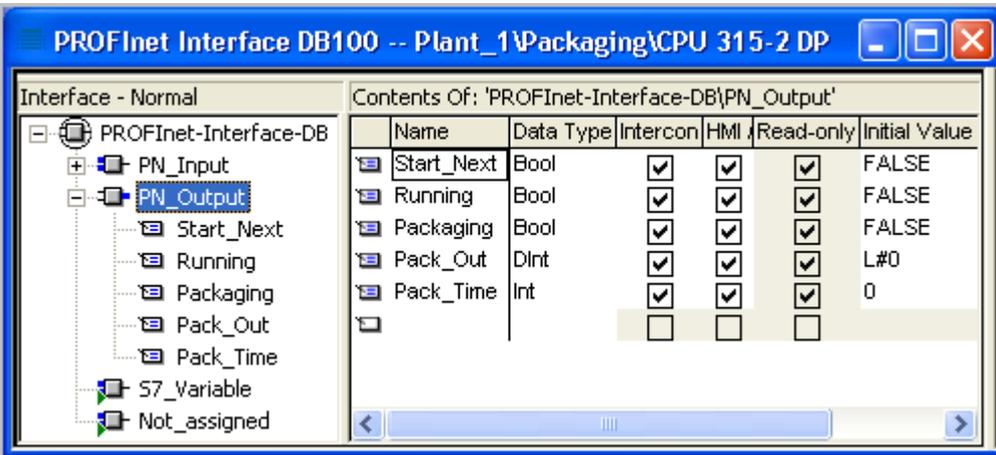
The PROFINet components are created using STEP 7. Carry out the following basic steps:

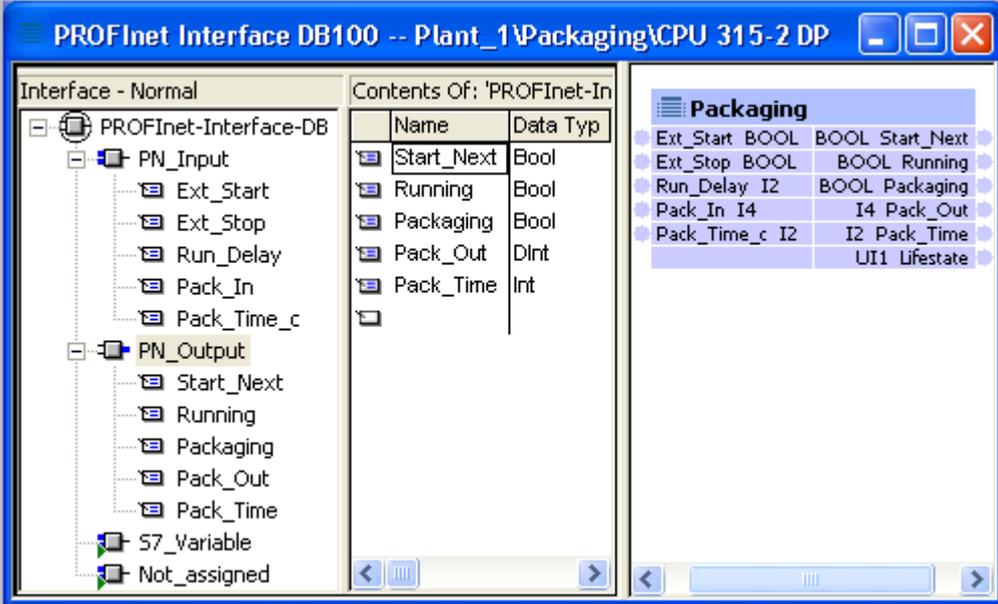
- In SIMATIC Manager, create a project for a component and configure the station hardware in HW Config.
- Create the interface DB for the component interface.
- Create the S7 program.
- Create the PROFINet component using a menu command and save it in a directory.

How to configure the hardware

Task	Procedure																																																								
1.	Create a project in SIMATIC Manager and insert a SIMATIC 300 station with the name "Packaging".																																																								
2.	<p>Configure the hardware based on the following illustration:</p>  <table border="1" data-bbox="507 1003 1241 1249"> <thead> <tr> <th>Slot</th> <th>Module</th> <th>Orde...</th> <th>Fi...</th> <th>M...</th> <th>I address</th> <th>Q ...</th> <th>C.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>PS 307 5A</td> <td>6ES7 30</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>CPU 315-2 DP</td> <td>6ES7 3V2.0 2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X2</td> <td>DP</td> <td></td> <td></td> <td></td> <td>1023"</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>DI8/DO8xDC24V/0.5</td> <td>6ES7 32</td> <td></td> <td></td> <td>0</td> <td>0</td> <td></td> </tr> <tr> <td>5</td> <td>CP 343-1 PN</td> <td>6GK7 34V1.0 3</td> <td></td> <td></td> <td>272...287</td> <td>272...287</td> <td></td> </tr> </tbody> </table> <p>Note: No IP address has to be configured for the CP 343-1 PN.</p>	Slot	Module	Orde...	Fi...	M...	I address	Q ...	C.	1	PS 307 5A	6ES7 30						2	CPU 315-2 DP	6ES7 3V2.0 2						X2	DP				1023"			3								4	DI8/DO8xDC24V/0.5	6ES7 32			0	0		5	CP 343-1 PN	6GK7 34V1.0 3			272...287	272...287	
Slot	Module	Orde...	Fi...	M...	I address	Q ...	C.																																																		
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3																																																									
4	DI8/DO8xDC24V/0.5	6ES7 32			0	0																																																			
5	CP 343-1 PN	6GK7 34V1.0 3			272...287	272...287																																																			

How to create the interface DB

Task	Procedure																																				
1.	<p>In SIMATIC Manager, mark the SIMATIC S7-300 station and then select the Create PROFINet Interface command from the context menu.</p> <p>The "New/Open PROFINet Interface" dialog opens.</p>																																				
2.	<p>Select CPU 315-2 DP in the left window of the "New/Open PROFINet Interface" dialog. Activate the "New" option and confirm this by pressing the "OK" button.</p> <p>Result: The properties dialog of the newly created block opens.</p>																																				
3.	<p>In the "Name and type" field, enter the desired block number, DB100 for example, and select the block type, "Global DB".</p> <p>Confirm by clicking on the "OK" button. Result: The interface DB is opened in the PROFINet Interface Editor.</p>																																				
4.	<p>Enter the inputs of the technological function in the PN Input section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <table border="1" data-bbox="699 936 1332 1272"> <thead> <tr> <th>Name</th> <th>Data Type</th> <th>Intercon</th> <th>Read-o</th> <th>HMI /</th> <th>Initial Value</th> </tr> </thead> <tbody> <tr> <td>Ext_Start</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Ext_Stop</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Run_Delay</td> <td>Int</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>0</td> </tr> <tr> <td>Pack_In</td> <td>DInt</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>L#0</td> </tr> <tr> <td>Pack_Time_c</td> <td>Int</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>5</td> </tr> </tbody> </table> <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>	Name	Data Type	Intercon	Read-o	HMI /	Initial Value	Ext_Start	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Ext_Stop	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Run_Delay	Int	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0	Pack_In	DInt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L#0	Pack_Time_c	Int	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5
Name	Data Type	Intercon	Read-o	HMI /	Initial Value																																
Ext_Start	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE																																
Ext_Stop	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE																																
Run_Delay	Int	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0																																
Pack_In	DInt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L#0																																
Pack_Time_c	Int	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5																																
5.	<p>Enter the outputs of the technological function in the PN Output section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <table border="1" data-bbox="699 1541 1332 1805"> <thead> <tr> <th>Name</th> <th>Data Type</th> <th>Intercon</th> <th>HMI</th> <th>Read-only</th> <th>Initial Value</th> </tr> </thead> <tbody> <tr> <td>Start_Next</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Running</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Packaging</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Pack_Out</td> <td>DInt</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>L#0</td> </tr> <tr> <td>Pack_Time</td> <td>Int</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>0</td> </tr> </tbody> </table> <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>	Name	Data Type	Intercon	HMI	Read-only	Initial Value	Start_Next	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Running	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Packaging	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Pack_Out	DInt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	L#0	Pack_Time	Int	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0
Name	Data Type	Intercon	HMI	Read-only	Initial Value																																
Start_Next	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE																																
Running	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE																																
Packaging	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE																																
Pack_Out	DInt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	L#0																																
Pack_Time	Int	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0																																

Task	Procedure																																								
6.	Save the PROFINet interface DB using the menu command File > Save .																																								
	<p>The PROFINet interface "Packaging" (technological function) is displayed in the right window of the Interface Editor:</p>  <p>The screenshot shows the 'PROFINet Interface DB100 -- Plant_1\Packaging\CPU 315-2 DP' window. It is divided into three main sections:</p> <ul style="list-style-type: none"> Left Panel (Interface - Normal): A tree view showing the hierarchy of the interface database. Under 'PROFINet-Interface-DB', there are 'PN_Input' and 'PN_Output' folders. 'PN_Input' contains 'Ext_Start', 'Ext_Stop', 'Run_Delay', 'Pack_In', and 'Pack_Time_c'. 'PN_Output' contains 'Start_Next', 'Running', 'Packaging', 'Pack_Out', and 'Pack_Time'. Below these are 'S7_Variable' and 'Not_assigned'. Middle Panel (Contents Of: 'PROFINet-In'): A table listing the contents of the selected component. <table border="1" data-bbox="699 533 965 757"> <thead> <tr> <th>Name</th> <th>Data Typ</th> </tr> </thead> <tbody> <tr> <td>Start_Next</td> <td>Bool</td> </tr> <tr> <td>Running</td> <td>Bool</td> </tr> <tr> <td>Packaging</td> <td>Bool</td> </tr> <tr> <td>Pack_Out</td> <td>DInt</td> </tr> <tr> <td>Pack_Time</td> <td>Int</td> </tr> </tbody> </table> Right Panel (Packaging): A detailed view of the 'Packaging' component, showing its internal structure with variables and their data types. <table border="1" data-bbox="997 533 1332 694"> <thead> <tr> <th colspan="4">Packaging</th> </tr> </thead> <tbody> <tr> <td>Ext_Start</td> <td>BOOL</td> <td>BOOL</td> <td>Start_Next</td> </tr> <tr> <td>Ext_Stop</td> <td>BOOL</td> <td>BOOL</td> <td>Running</td> </tr> <tr> <td>Run_Delay</td> <td>I2</td> <td>BOOL</td> <td>Packaging</td> </tr> <tr> <td>Pack_In</td> <td>I4</td> <td>I4</td> <td>Pack_Out</td> </tr> <tr> <td>Pack_Time_c</td> <td>I2</td> <td>I2</td> <td>Pack_Time</td> </tr> <tr> <td></td> <td></td> <td>UI1</td> <td>Lifestate</td> </tr> </tbody> </table> 	Name	Data Typ	Start_Next	Bool	Running	Bool	Packaging	Bool	Pack_Out	DInt	Pack_Time	Int	Packaging				Ext_Start	BOOL	BOOL	Start_Next	Ext_Stop	BOOL	BOOL	Running	Run_Delay	I2	BOOL	Packaging	Pack_In	I4	I4	Pack_Out	Pack_Time_c	I2	I2	Pack_Time			UI1	Lifestate
Name	Data Typ																																								
Start_Next	Bool																																								
Running	Bool																																								
Packaging	Bool																																								
Pack_Out	DInt																																								
Pack_Time	Int																																								
Packaging																																									
Ext_Start	BOOL	BOOL	Start_Next																																						
Ext_Stop	BOOL	BOOL	Running																																						
Run_Delay	I2	BOOL	Packaging																																						
Pack_In	I4	I4	Pack_Out																																						
Pack_Time_c	I2	I2	Pack_Time																																						
		UI1	Lifestate																																						

Additional information...

about the interface DB can be found under "Properties of the Interface DB" in the SIMATIC iMap or SIMATIC Manager basic help.

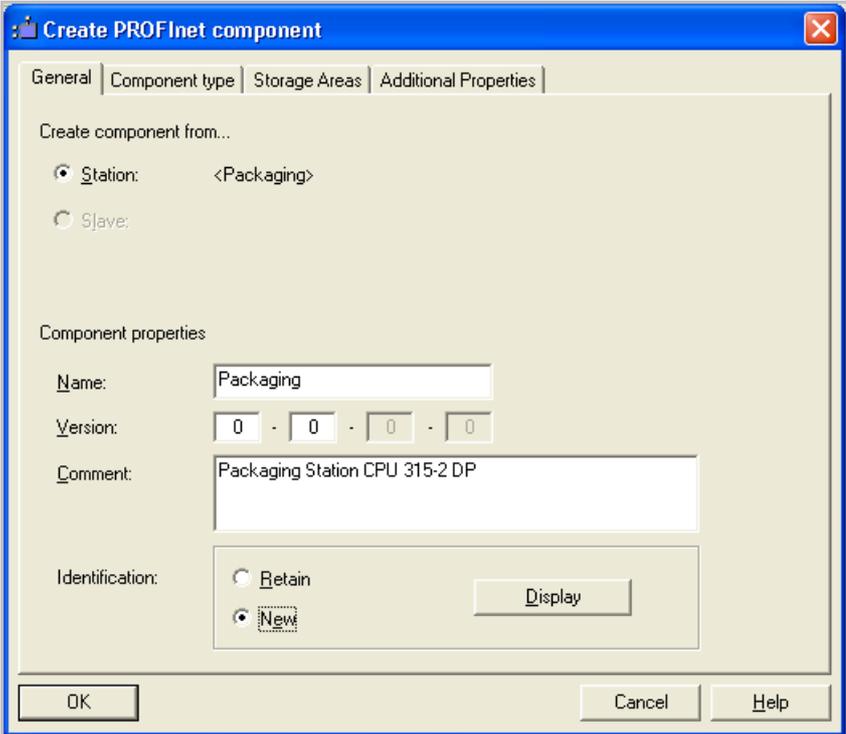
How to create the S7 program

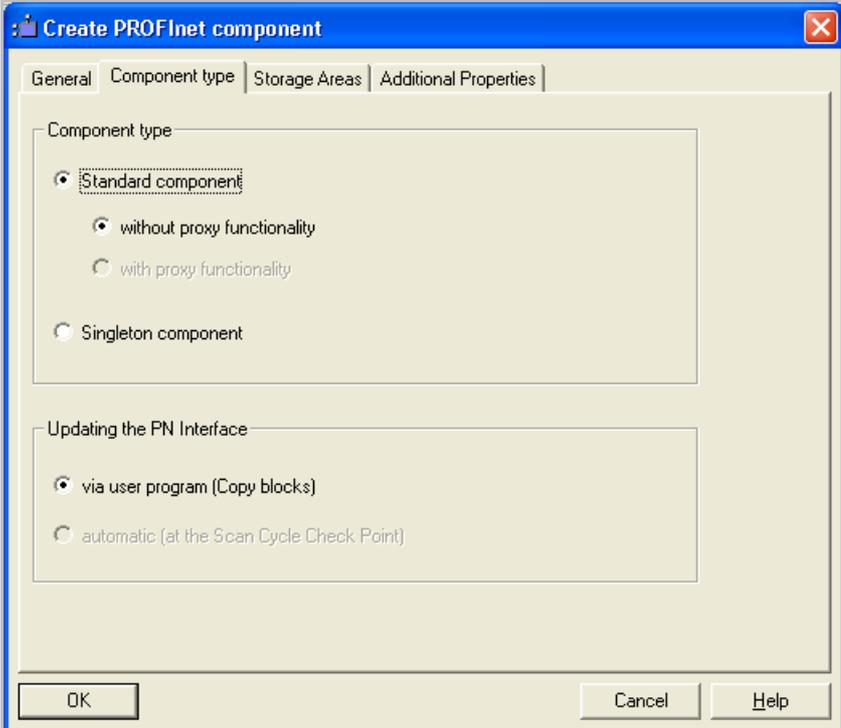
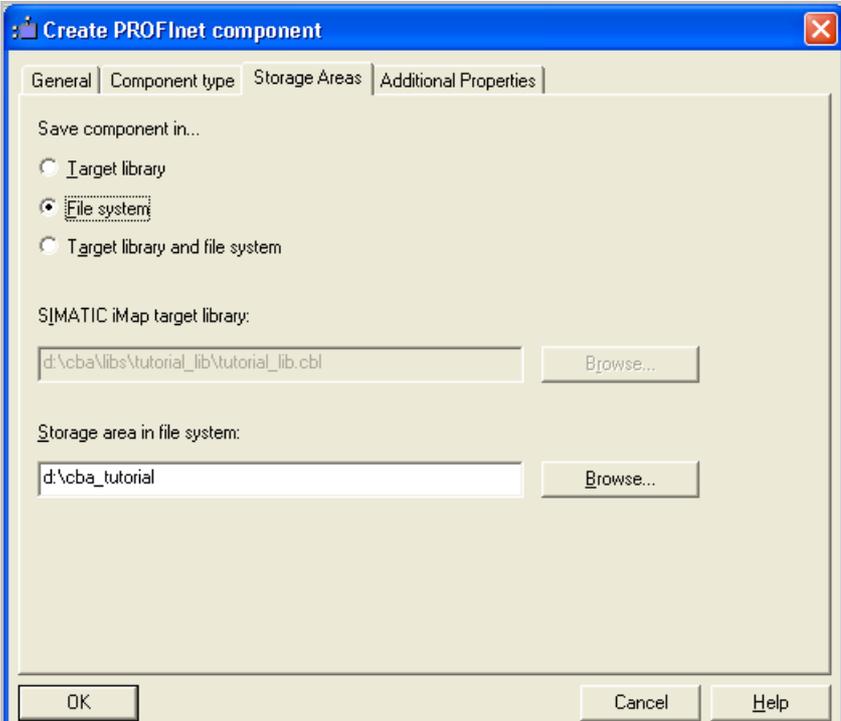
Task	Procedure
1.	Copy all blocks from the "CPU 300" block folder of the PROFINet System Library into the block folder of the CPU.
2.	<p>Create the S7 program in OB1. The following is an example based on a section from OB1. You can see the reference to the PROFINet interface DB there.</p> <pre> ... //refreshing the interface db CALL "PN_InOut", DB41 LADDR :=W#16#110 DONE :=M30.0 ERROR :=M30.1 STATUS:=MW32 //calling the technological function block "conveyor" CALL "Conveyor_with_stop", "Conveyor_with_stop_DB" ExternStop :="PN_Interface_DB".Ext_Stop ExternStart :="PN_Interface_DB".Ext_Start RunDelay :="PN_Interface_DB".Run_Delay ... StartNext :="PN_Interface_DB".Start_Next Running :="PN_Interface_DB".Running ... //forwarding the counter value L "PN_Interface_DB".Counter_In T "PN_Interface_DB".Counter_Out ... </pre>
3	Compile and test the S7 program.

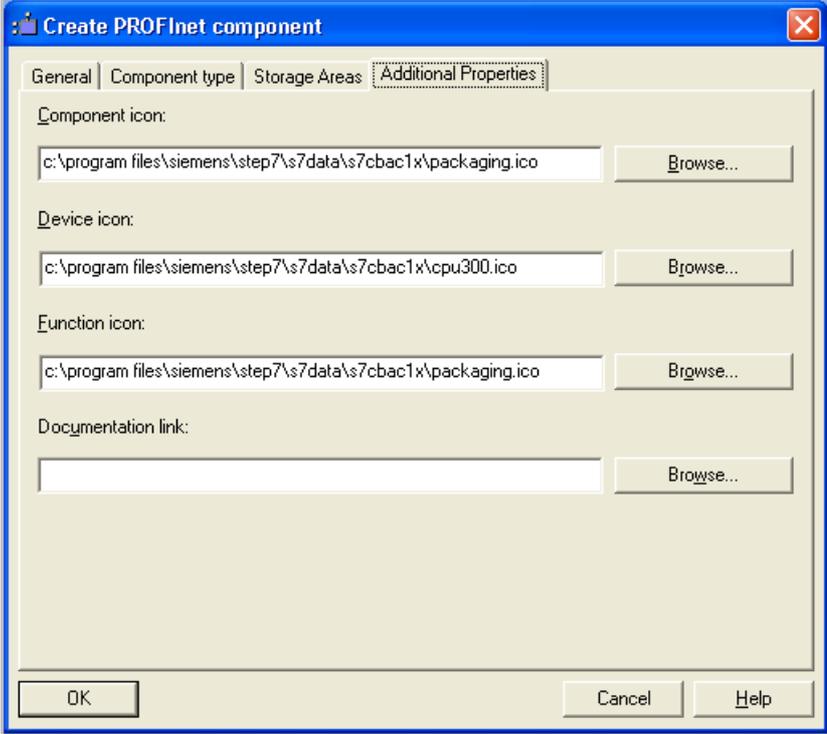
Note

Note that the PN_InOut (FB88) block must be called cyclically in the user program, e.g. in OB1 or in a time OB.

How to create the PROFINet component

Task	Procedure
1.	In SIMATIC Manager, mark the SIMATIC 300 station and then select the Create PROFINet Component command from the context menu.
2.	<p>On the "General" tab, highlight the "Identification, New" option and enter the following name: "Packaging".</p> 

Task	Procedure
3.	<p>Select "Standard component without proxy functionality" in the "Component type" tab.</p>  <p>The screenshot shows the 'Create PROFINet component' dialog box with the 'Component type' tab active. Under 'Component type', the 'Standard component' radio button is selected, and within it, 'without proxy functionality' is chosen. Under 'Updating the PN Interface', 'via user program (Copy blocks)' is selected. The 'OK', 'Cancel', and 'Help' buttons are visible at the bottom.</p>
4.	<p>In the "Storage areas" tab, enter the desired path, for example, D:\cba_tutorial (D stands for a drive of your choice).</p>  <p>The screenshot shows the 'Create PROFINet component' dialog box with the 'Storage Areas' tab active. The 'File system' radio button is selected. The 'SJMATIC iMap target library' field contains the path 'd:\cba\libs\tutorial_lib\tutorial_lib.cbl'. The 'Storage area in file system' field contains the path 'd:\cba_tutorial'. The 'OK', 'Cancel', and 'Help' buttons are visible at the bottom.</p>

Task	Procedure
5.	<p>In the "Additional properties" tab, enter the path of the icon files and optionally the path of the documentation link.</p> <p>You can use the supplied icons as needed (default path: Step7\s7data\s7cbac1x).</p> 
	<p>Result: The PROFINet component is saved as an XML file at the specified location and the archived component project is saved.</p>

2.4.3 Creating the PROFINet Component for WinLC PN

Creating the PROFINet Plant Control" component for coordination of the complete plant

Content of the PROFINet component

The PROFINet "Plant Control" component contains:

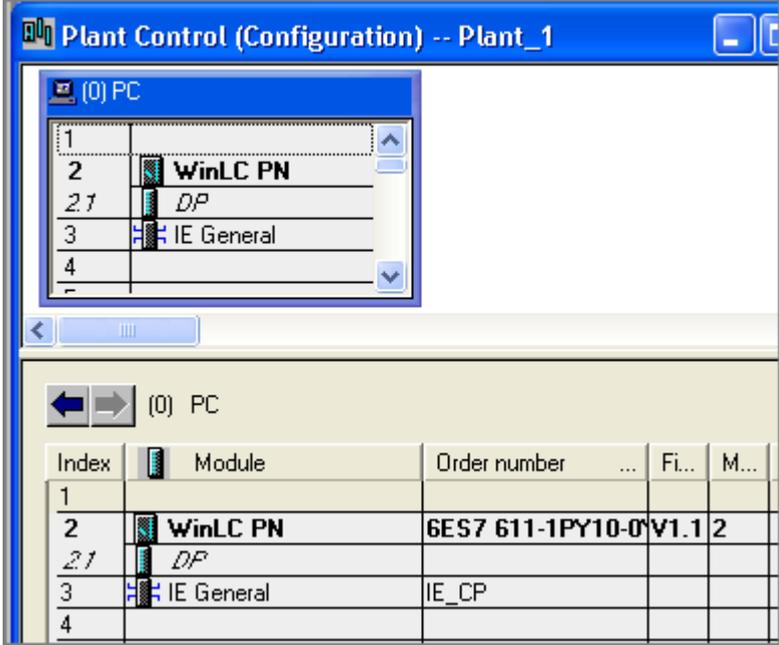
PROFINet component	PROFINet device	Technological function
Plant control system	PC station with WinLC PN (PROFINet device without proxy functionality)	Plant control system (S7 program with the component interface)

Basic procedure

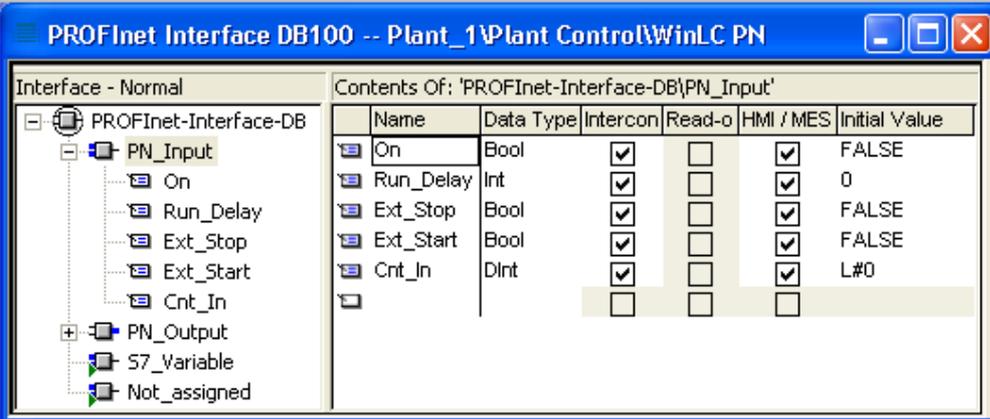
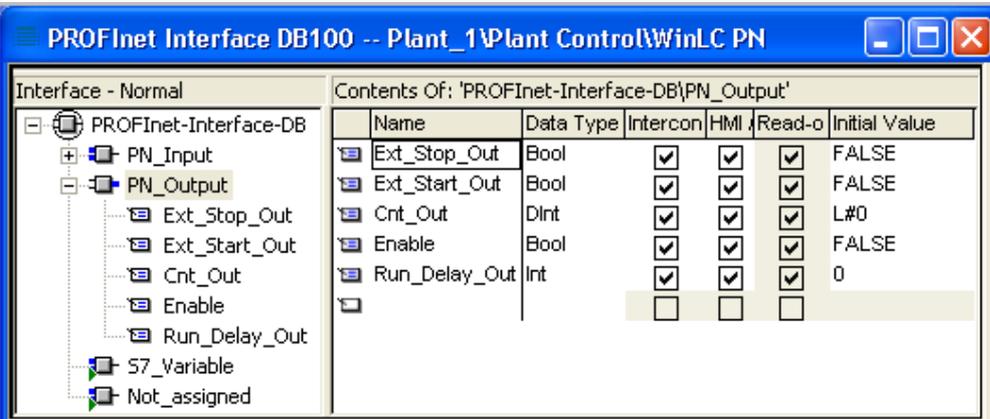
The PROFINet components are created using STEP 7. Carry out the following basic steps:

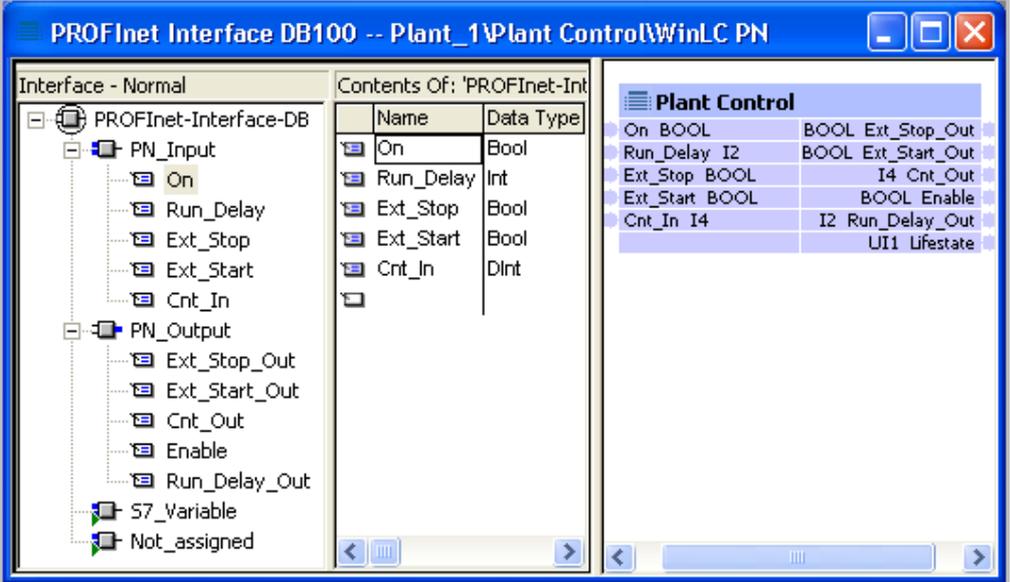
- In SIMATIC Manager, create a project for a component and configure the station hardware in HW Config.
- Create the interface DB for the component interface.
- Create the S7 program.
- Select the PROFINet component using a menu command and store it in a directory.

How to configure the hardware

Task	Procedure																														
1.	Create a project in SIMATIC Manager and insert a SIMATIC PC station with the name "Plant Control".																														
2.	<p>Configure the hardware based on the following illustration:</p>  <table border="1" data-bbox="507 949 1243 1151"> <thead> <tr> <th>Index</th> <th>Module</th> <th>Order number</th> <th>Fi...</th> <th>M...</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>WinLC PN</td> <td>6ES7 611-1PY10-0V1.1 2</td> <td></td> <td></td> </tr> <tr> <td>2.1</td> <td>DP</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>IE General</td> <td>IE_CP</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Note: No IP address has to be configured for the Ethernet-CP IE General.</p>	Index	Module	Order number	Fi...	M...	1					2	WinLC PN	6ES7 611-1PY10-0V1.1 2			2.1	DP				3	IE General	IE_CP			4				
Index	Module	Order number	Fi...	M...																											
1																															
2	WinLC PN	6ES7 611-1PY10-0V1.1 2																													
2.1	DP																														
3	IE General	IE_CP																													
4																															

How to create the interface DB

Task	Procedure
1.	<p>In SIMATIC Manager, mark the PC station and then select the Create PROFINet Interface command from the context menu.</p> <p>The "New/Open PROFINet Interface" dialog opens.</p>
2.	<p>Select WinLC PN in the left window of the "New/Open PROFINet Interface" dialog. Activate the "New" option and confirm this by pressing the "OK" button.</p> <p>Result: The properties dialog of the newly created block opens.</p>
3.	<p>In the "Name and type" field, enter the desired block number, DB100 for example, and select the block type, "Global DB".</p> <p>Confirm by clicking on the "OK" button. Result: The interface DB is opened in the PROFINet Interface Editor.</p>
4.	<p>Enter the inputs of the technological function in the PN Input section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>
5.	<p>Enter the outputs of the technological function in the PN Output section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>

Task	Procedure																								
6.	Save the PROFINet interface DB using the menu command File > Save .																								
	<p>The PROFINet interface (technological function) is displayed in the right window of the Interface Editor:</p>  <p>The screenshot shows the 'PROFINet Interface DB100 -- Plant_1\Plant Control\WinLC PN' window. It is divided into three main sections:</p> <ul style="list-style-type: none"> Left Panel (Tree View): Shows the hierarchical structure of the interface database. The root is 'PROFINet-Interface-DB', which contains 'PN_Input' and 'PN_Output'. 'PN_Input' includes 'On', 'Run_Delay', 'Ext_Stop', 'Ext_Start', and 'Cnt_In'. 'PN_Output' includes 'Ext_Stop_Out', 'Ext_Start_Out', 'Cnt_Out', 'Enable', and 'Run_Delay_Out'. There are also 'S7_Variable' and 'Not_assigned' entries at the bottom. Middle Panel (Table): Titled 'Contents Of: 'PROFINet-Int'', it lists the variables and their data types: <table border="1" data-bbox="687 521 938 734"> <thead> <tr> <th>Name</th> <th>Data Type</th> </tr> </thead> <tbody> <tr> <td>On</td> <td>Bool</td> </tr> <tr> <td>Run_Delay</td> <td>Int</td> </tr> <tr> <td>Ext_Stop</td> <td>Bool</td> </tr> <tr> <td>Ext_Start</td> <td>Bool</td> </tr> <tr> <td>Cnt_In</td> <td>DInt</td> </tr> </tbody> </table> Right Panel (Table): Titled 'Plant Control', it shows a list of variables and their associated data types: <table border="1" data-bbox="963 521 1353 678"> <thead> <tr> <th>Variable</th> <th>Data Type</th> </tr> </thead> <tbody> <tr> <td>On</td> <td>BOOL</td> </tr> <tr> <td>Run_Delay</td> <td>I2</td> </tr> <tr> <td>Ext_Stop</td> <td>BOOL</td> </tr> <tr> <td>Ext_Start</td> <td>BOOL</td> </tr> <tr> <td>Cnt_In</td> <td>I4</td> </tr> </tbody> </table> 	Name	Data Type	On	Bool	Run_Delay	Int	Ext_Stop	Bool	Ext_Start	Bool	Cnt_In	DInt	Variable	Data Type	On	BOOL	Run_Delay	I2	Ext_Stop	BOOL	Ext_Start	BOOL	Cnt_In	I4
Name	Data Type																								
On	Bool																								
Run_Delay	Int																								
Ext_Stop	Bool																								
Ext_Start	Bool																								
Cnt_In	DInt																								
Variable	Data Type																								
On	BOOL																								
Run_Delay	I2																								
Ext_Stop	BOOL																								
Ext_Start	BOOL																								
Cnt_In	I4																								

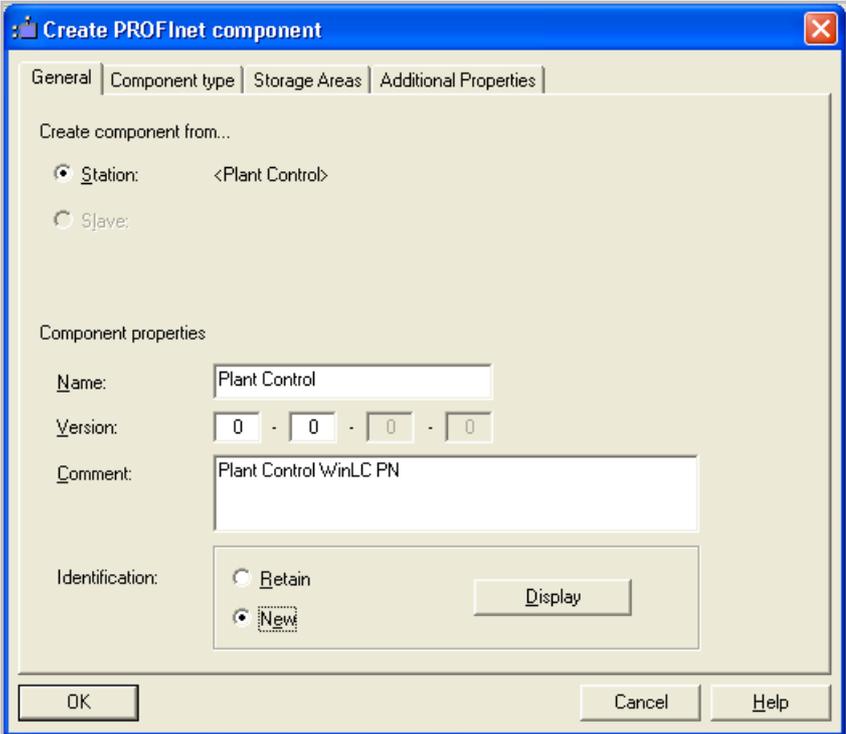
Additional information...

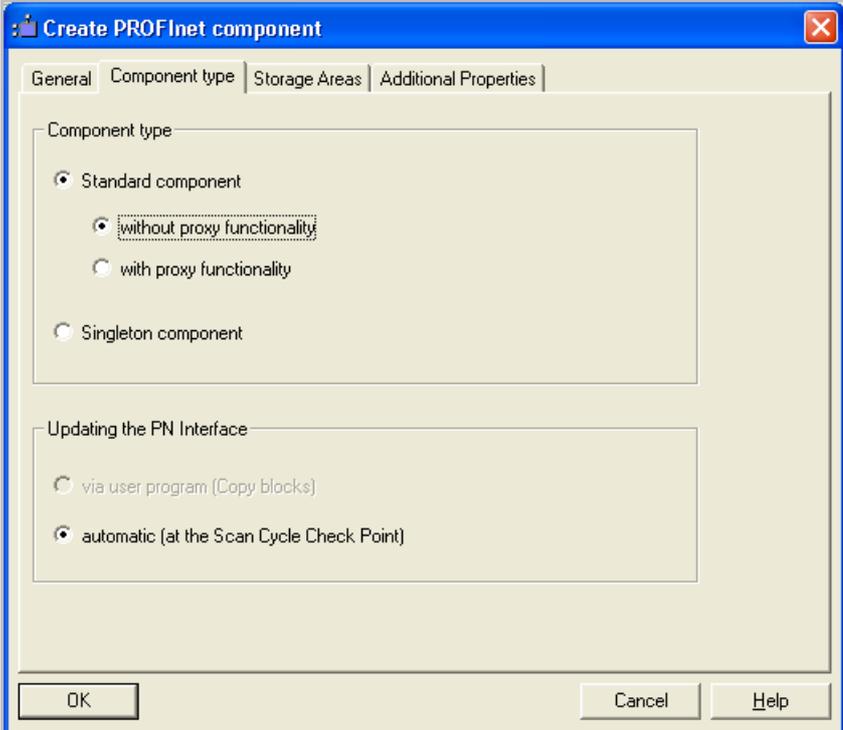
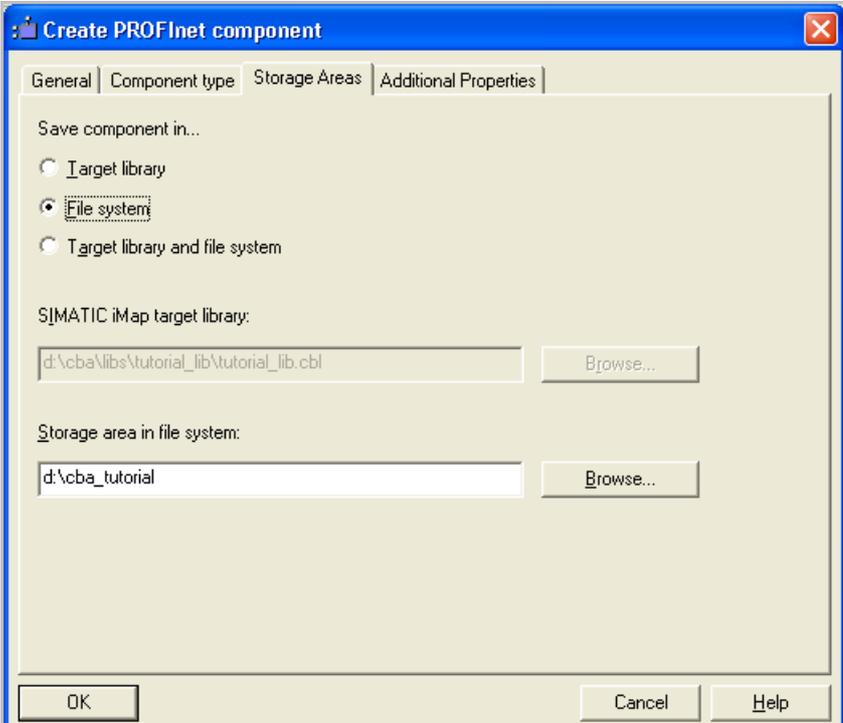
about the interface DB can be found under "Properties of the Interface DB" in the SIMATIC iMap or SIMATIC Manager basic help.

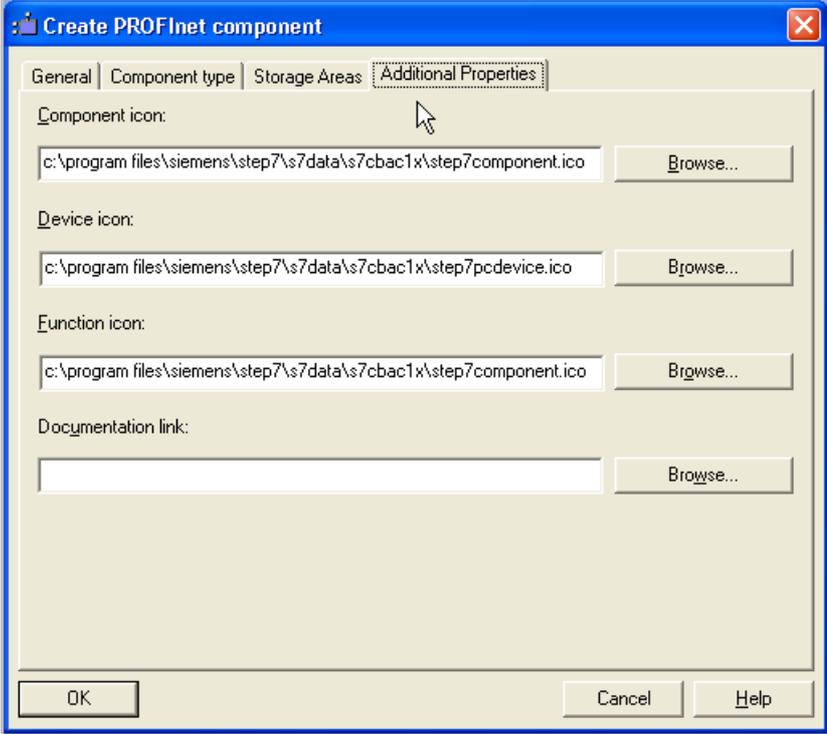
How to create the S7 program

Task	Procedure
1.	Copy all blocks from the "WinLC PN" block folder of the PROFINet System Library into the block folder of the WinLC PN.
2.	<p>Create the program. The following is an example based on a section from OB1. You can see the reference to the PROFINet interface DB there.</p> <pre> ... //forwards RunDelay to ORunDelay L "PN_Interface_DB".RunDelay T "PN_Interface_DB".RunDelay_Out //forwards EStop to OESStop U "PN_Interface_DB".HMISStop = "PN_Interface_DB".HMISStop_Out //increments OCnt if Cnt==OCnt L "PN_Interface_DB".Counter_In L "PN_Interface_DB".Counter_Out <>D SPB GO L "PN_Interface_DB".Counter_Out L 1 +D T "PN_Interface_DB".Counter_Out GO: NOP 0 ... </pre>
3.	Compile and test the S7 program.

How to create the PROFINet component

Task	Procedure
1.	In SIMATIC Manager, mark the SIMATIC PC station and then select the Create PROFINet Component command from the context menu.
2.	<p>On the "General" tab, highlight the "Identification, New" option and enter the following name: "Plant Control".</p> 

Task	Procedure
3.	<p>Select "Standard component without proxy functionality" in the "Component type" tab.</p> 
4.	<p>In the "Storage areas" tab, enter the desired path, for example, D:\cba_tutorial (D stands for a drive of your choice).</p> 

Task	Procedure
5.	<p>In the "Additional properties" tab, enter the path of the icon files and optionally the path of the documentation link.</p> <p>You can use the supplied icons as needed (default path: Step7\s7data\s7cbac1x).</p> 
	<p>Result: The PROFINet component is saved as an XML file at the specified location and the archived component project is saved.</p>

Optional: Proxy functionality

If the PC station of the WinLC PN has a PROFIBUS connector, you can optionally create a PROFINet component with proxy functionality. This will allow you to connect PROFIBUS devices (DP slaves) to the WinLC PN. Perform the following additional task in this case:

- Configure the PC station in HW Config and connect it to the DP master system network.
- Select "Standard component **with** proxy functionality" in the "Component type" tab to create the PROFINet component.

2.4.4 Creating the PROFINet Component for CPU 314C-2 DP

Creating the PROFINet component "Processing" as the processing station with CPU 314C-2 DP for Machine 1.

Content of the PROFINet component

The PROFINet "Processing" component contains:

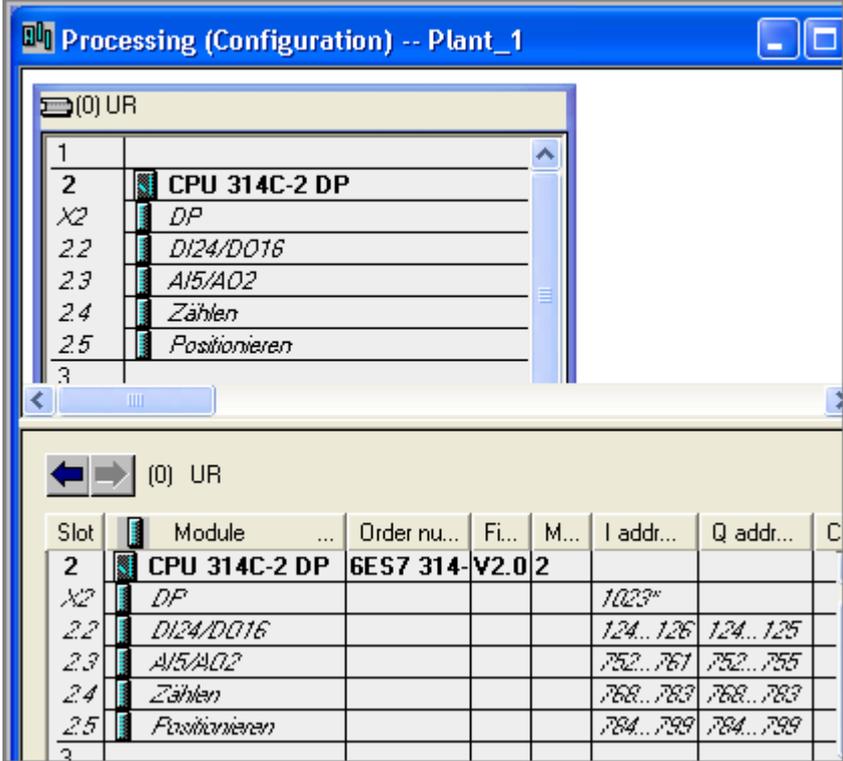
PROFINet component	PROFIBUS device	Technological function
Processing	CPU 314C-2 DP (intelligent DP slave)	Processing station (S7 program with the technological interface)

Basic procedure

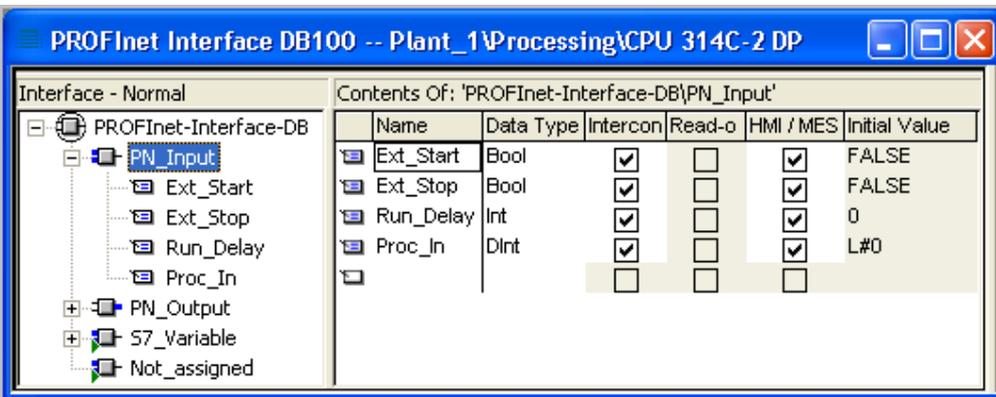
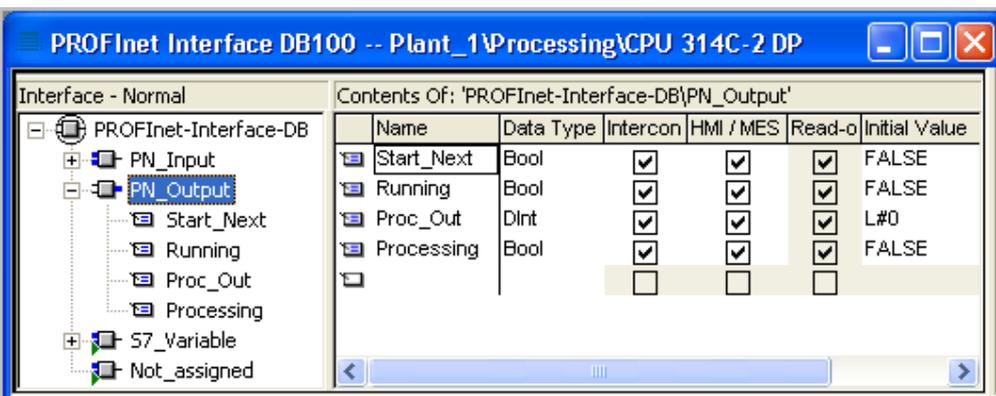
The PROFINet components are created using STEP 7. Carry out the following basic steps:

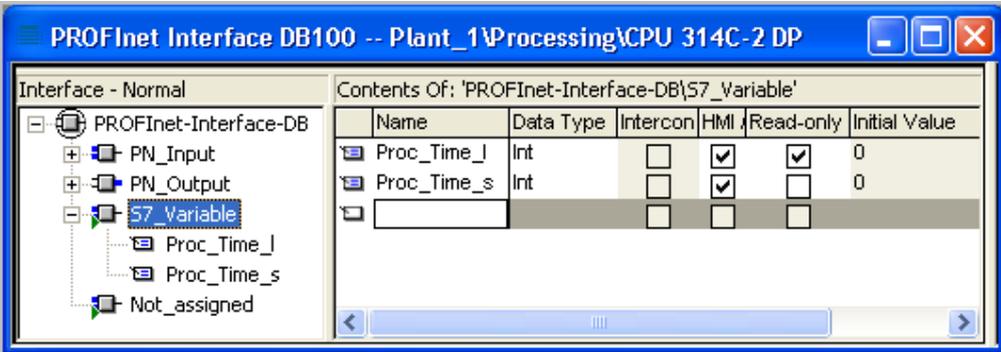
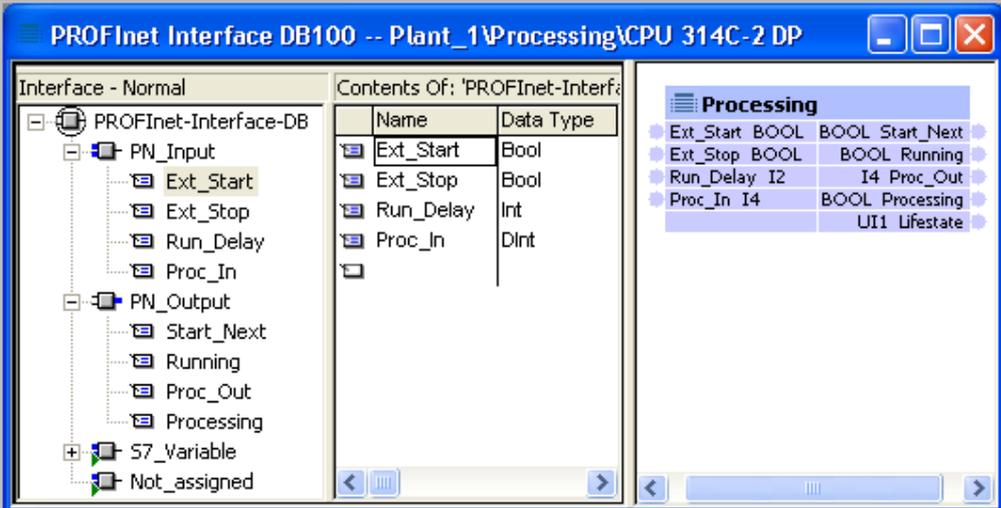
- In SIMATIC Manager, create a project for a component and configure the station hardware in HW Config.
- Create the interface DB for the component interface.
- Create the S7 program.
- Create the PROFINet component using a menu command and save it in a directory.

How to configure the hardware

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1.	Create a project in SIMATIC Manager and insert a SIMATIC 300 station.																																																																
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How to create the interface DB

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2.	<p>Select CPU 314C-2 DP in the left window of the "New/Open PROFINet Interface" dialog. Activate the "New" option and confirm this by pressing the "OK" button.</p> <p>Result: The properties dialog of the newly created block opens.</p>																																				
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		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																	

Task	Procedure																																		
6.	<p>Enter the S7 tags for HMI/MES access via OPC in the S7 Tags section and assign the entries the required properties: Name, Data type, HMI/MES, as shown in the following illustration:</p>  <table border="1" data-bbox="683 481 1337 607"> <thead> <tr> <th>Name</th> <th>Data Type</th> <th>Intercon</th> <th>HMI</th> <th>Read-only</th> <th>Initial Value</th> </tr> </thead> <tbody> <tr> <td>Proc_Time_I</td> <td>Int</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>0</td> </tr> <tr> <td>Proc_Time_s</td> <td>Int</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td>0</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td></td> </tr> </tbody> </table> <p>Selected entries are made read-only when the "Read-only" option is activated.</p> <p>The entries cannot be visible in SIMATIC iMap; they are not displayed in the right window of the Interface Editor.</p>	Name	Data Type	Intercon	HMI	Read-only	Initial Value	Proc_Time_I	Int	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0	Proc_Time_s	Int	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
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7.	<p>Save the PROFINet interface DB using the menu command File > Save.</p>																																		
	<p>The PROFINet interface (technological function) is displayed in the right window of the Interface Editor:</p>  <table border="1" data-bbox="683 1032 970 1234"> <thead> <tr> <th>Name</th> <th>Data Type</th> </tr> </thead> <tbody> <tr> <td>Ext_Start</td> <td>Bool</td> </tr> <tr> <td>Ext_Stop</td> <td>Bool</td> </tr> <tr> <td>Run_Delay</td> <td>Int</td> </tr> <tr> <td>Proc_In</td> <td>DInt</td> </tr> </tbody> </table> <table border="1" data-bbox="1007 1048 1342 1205"> <thead> <tr> <th colspan="4">Processing</th> </tr> </thead> <tbody> <tr> <td>Ext_Start</td> <td>BOOL</td> <td>BOOL</td> <td>Start_Next</td> </tr> <tr> <td>Ext_Stop</td> <td>BOOL</td> <td>BOOL</td> <td>Running</td> </tr> <tr> <td>Run_Delay</td> <td>I2</td> <td>I4</td> <td>Proc_Out</td> </tr> <tr> <td>Proc_In</td> <td>I4</td> <td>BOOL</td> <td>Processing</td> </tr> <tr> <td></td> <td></td> <td>UI1</td> <td>Lifestate</td> </tr> </tbody> </table>	Name	Data Type	Ext_Start	Bool	Ext_Stop	Bool	Run_Delay	Int	Proc_In	DInt	Processing				Ext_Start	BOOL	BOOL	Start_Next	Ext_Stop	BOOL	BOOL	Running	Run_Delay	I2	I4	Proc_Out	Proc_In	I4	BOOL	Processing			UI1	Lifestate
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Additional information...

about the interface DB can be found under "Properties of the Interface DB" in the SIMATIC iMap or SIMATIC Manager basic help.

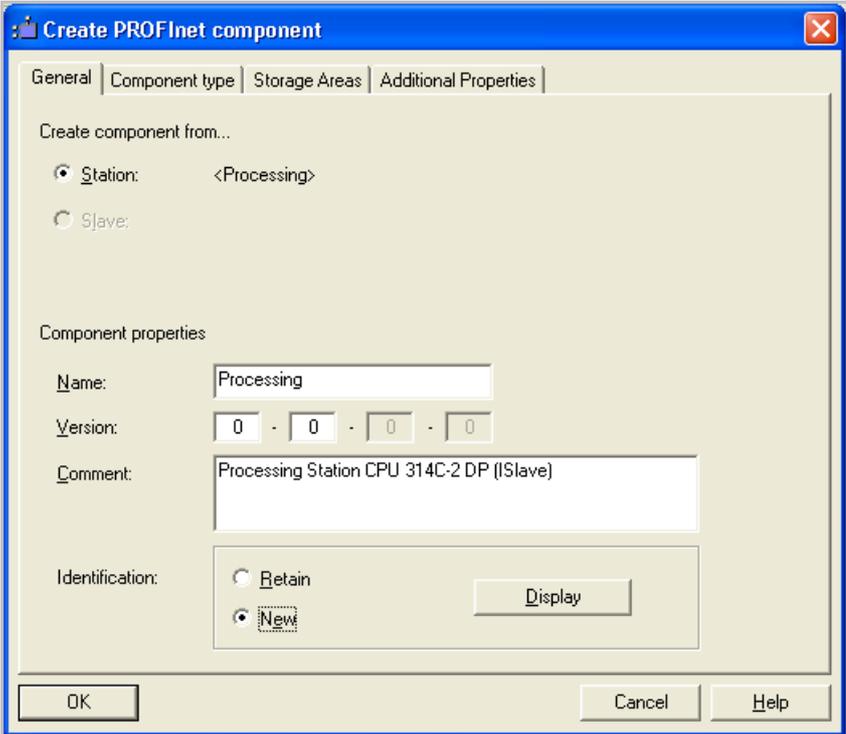
How to create the S7 program

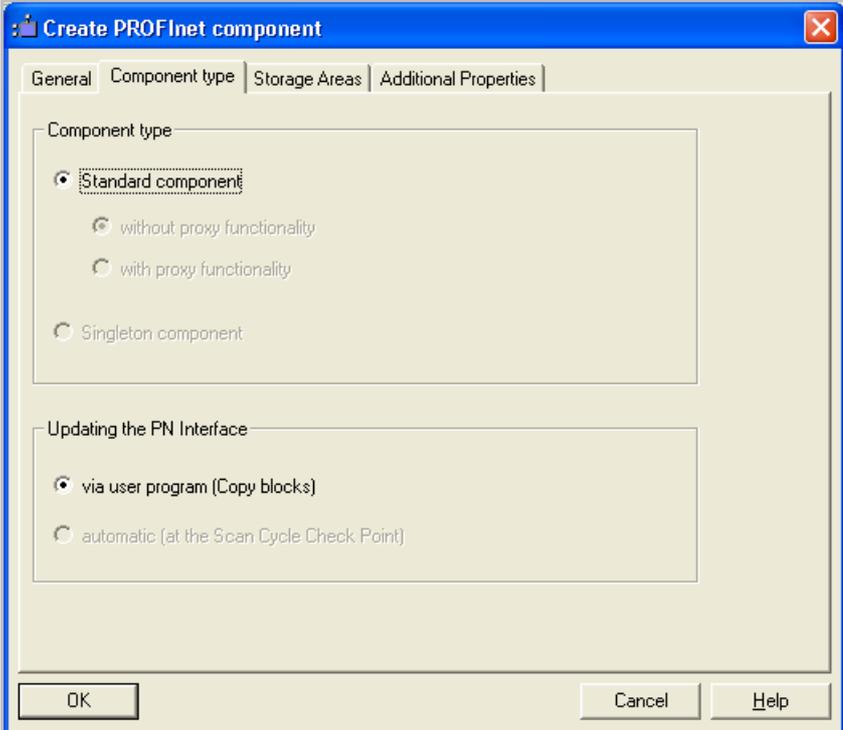
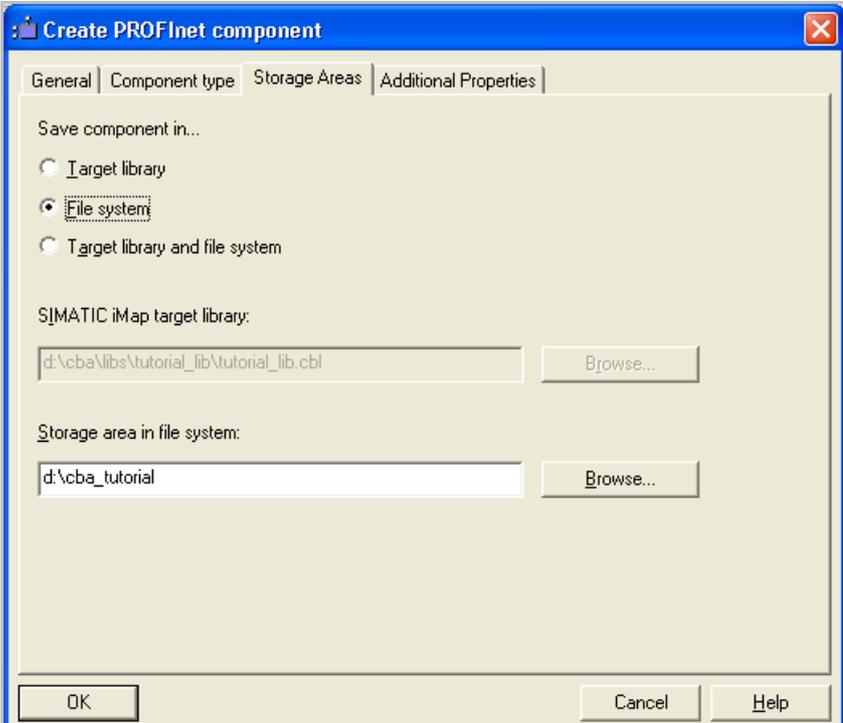
Task	Procedure
1.	Copy all blocks from the "I-DP-Slave" block folder of the PROFINet System Library into the block folder of the CPU.
2.	<p>How to create the S7 program The following is an example based on a section from OB1. You can see the reference to the PROFINet interface DB there.</p> <pre>//refreshing the input section of the interface db CALL "PN_IN" DB_NO := "PN_IO_DB" RET_VAL := MW20 ... CALL "Conveyor_with_stop", "Conveyor_with_stop_DB" ExternStop := "PN_Interface_DB".Ext_Stop ExternStart := "PN_Interface_DB".Ext_Start RunDelay := "PN_Interface_DB".Run_Delay //refreshing the output section of the interface db CALL "PN_OUT" DB_NO := "PN_IO_DB" RET_VAL := MW22</pre>
3.	Compile and test the S7 program.

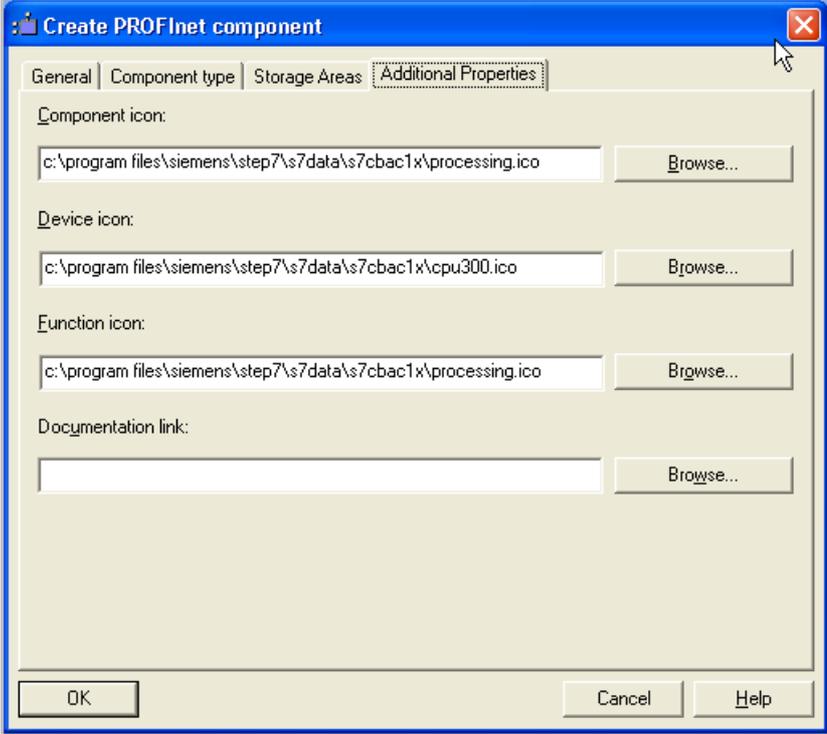
Caution

Note that the PN_IN (FC10) block must be called at the start of OB1 and the PN_OUT (FC11) block at the end of OB1.

How to create the PROFINet component

Task	Procedure
1.	In SIMATIC Manager, mark the SIMATIC 300 station and then select the Create PROFINet Component command from the context menu.
2.	<p>On the "General" tab, highlight the "Identification, New" option and enter the following name: "Processing".</p> 

Task	Procedure
3.	<p>Accept the default settings in the "Component type" tab:</p> 
4.	<p>In the "Storage areas" tab, enter the desired path, for example, D:\cba_tutorial (D stands for a drive of your choice).</p> 

Task	Procedure
5.	<p>In the "Additional properties" tab, enter the path of the icon files and optionally the path of the documentation link.</p> <p>You can use the supplied icons as needed (default path: Step7\s7data\s7cbac1x).</p> 
	<p>Result: The PROFINet component is saved as an XML file at the specified location and the component project is saved.</p>

2.4.5 Creating the PROFINet Component for ET 200S with IM 151/CPU

Creating the PROFINet component "ET200S_Scan" as the scanning station with ET 200S for Machine 2.

Content of the PROFINet component

The PROFINet "ET200S_Scan" component contains:

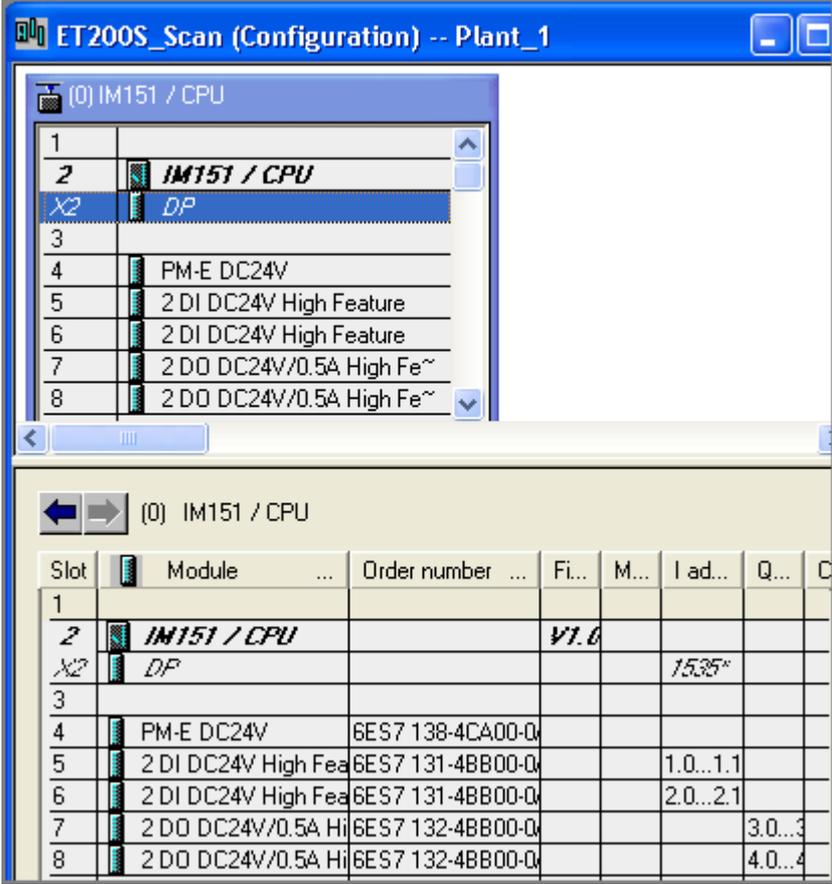
PROFINet component	PROFINet device	Technological function
ET200S_Scan	ET 200S with IM151/CPU (intelligent DP slave)	Scanning station (S7 program with the technological interface)

Basic procedure

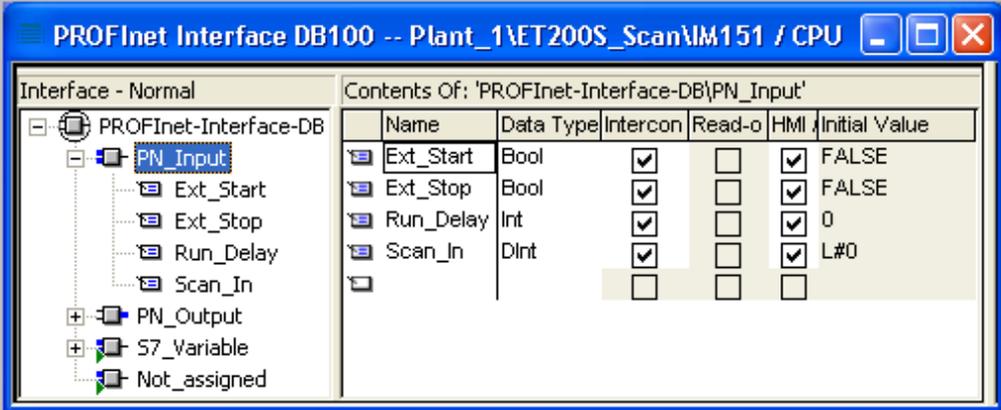
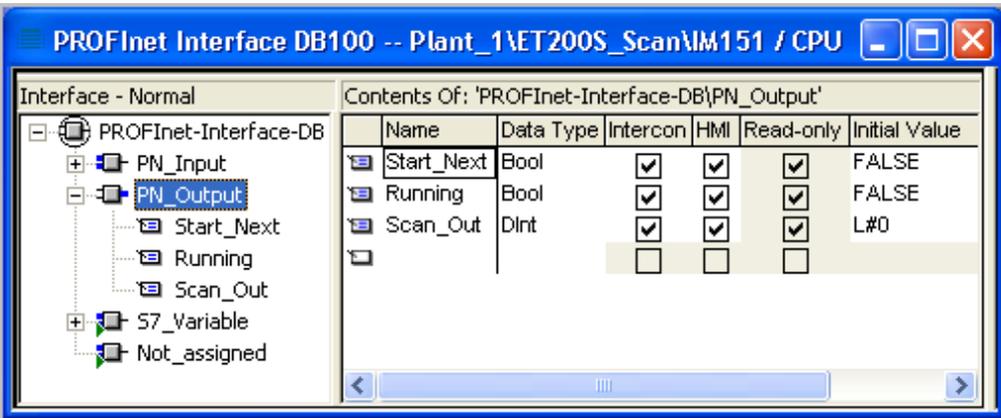
The PROFINet components are created using STEP 7. Carry out the following basic steps:

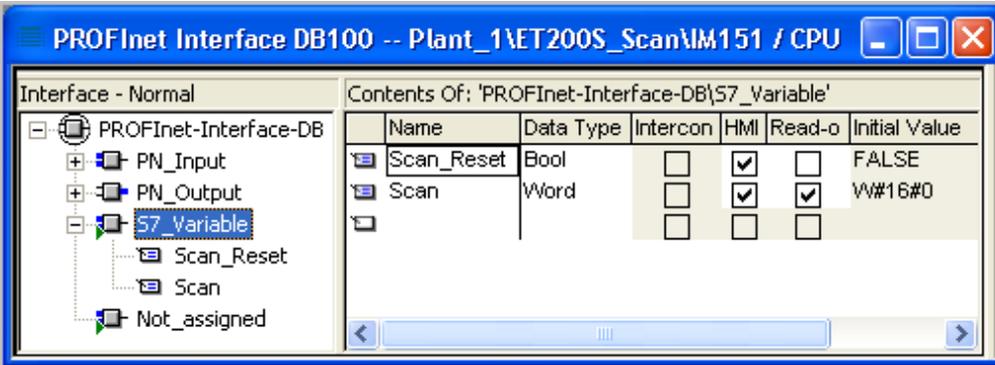
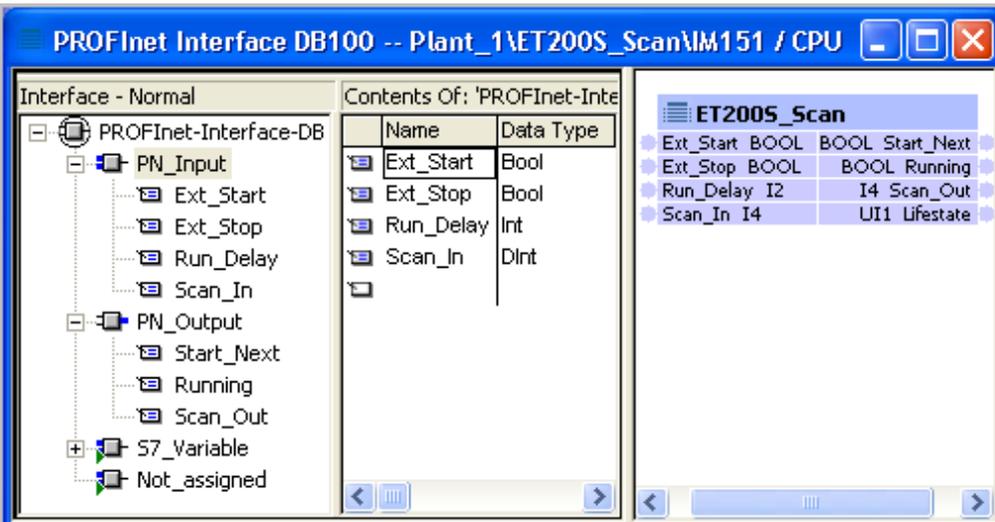
- In SIMATIC Manager, create a project for a component and configure the station hardware in HW Config.
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2.	<p>Select IM 151/CPU in the left window of the "New/Open PROFINet Interface" dialog. Activate the "New" option and confirm this by pressing the "OK" button.</p> <p>Result: The properties dialog of the newly created block opens.</p>																														
3.	<p>In the "Name and type" field, enter the desired block number, DB100 for example, and select the block type, "Global DB".</p> <p>Confirm by clicking on the "OK" button. Result: The interface DB is opened in the PROFINet Interface Editor.</p>																														
4.	<p>Enter the inputs of the technological function in the PN Input section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <table border="1" data-bbox="691 958 1326 1249"> <thead> <tr> <th>Name</th> <th>Data Type</th> <th>Intercon</th> <th>Read-o</th> <th>HMI</th> <th>Initial Value</th> </tr> </thead> <tbody> <tr> <td>Ext_Start</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Ext_Stop</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Run_Delay</td> <td>Int</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>0</td> </tr> <tr> <td>Scan_In</td> <td>DInt</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>L#0</td> </tr> </tbody> </table> <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>	Name	Data Type	Intercon	Read-o	HMI	Initial Value	Ext_Start	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Ext_Stop	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Run_Delay	Int	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0	Scan_In	DInt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L#0
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5.	<p>Enter the outputs of the technological function in the PN Output section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <table border="1" data-bbox="691 1552 1326 1839"> <thead> <tr> <th>Name</th> <th>Data Type</th> <th>Intercon</th> <th>HMI</th> <th>Read-only</th> <th>Initial Value</th> </tr> </thead> <tbody> <tr> <td>Start_Next</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Running</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Scan_Out</td> <td>DInt</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>L#0</td> </tr> </tbody> </table> <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>	Name	Data Type	Intercon	HMI	Read-only	Initial Value	Start_Next	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Running	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Scan_Out	DInt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	L#0						
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Running	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE																										
Scan_Out	DInt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	L#0																										

Task	Procedure
6.	<p>Enter the S7 tags for HMI/MES access via OPC in the S7 Tags section and assign the entries the required properties: Name, Data type, HMI/MES, as shown in the following illustration:</p>  <p>Selected entries are made read-only when the "Read-only" option is activated.</p> <p>The entries cannot be visible in SIMATIC IMap; they are not displayed in the right window of the Interface Editor.</p>
7.	<p>Save the PROFInet interface DB using the menu command File > Save.</p>
	<p>The PROFInet interface (technological function) is displayed in the right window of the Interface Editor:</p> 

Additional information...

about the interface DB can be found under "Properties of the Interface DB" in the SIMATIC iMap or SIMATIC Manager basic help.

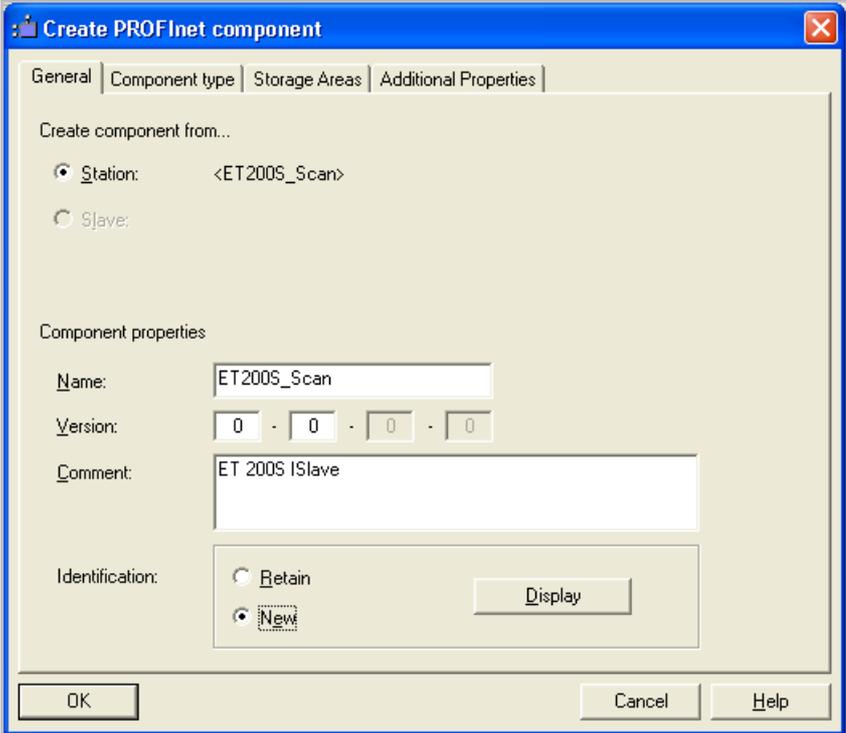
How to create the S7 program

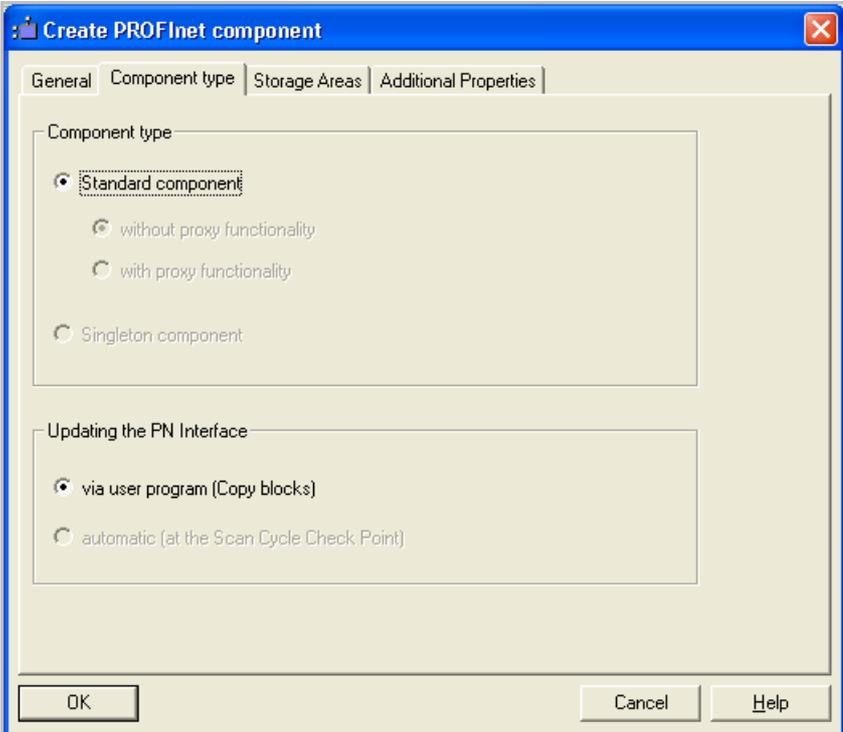
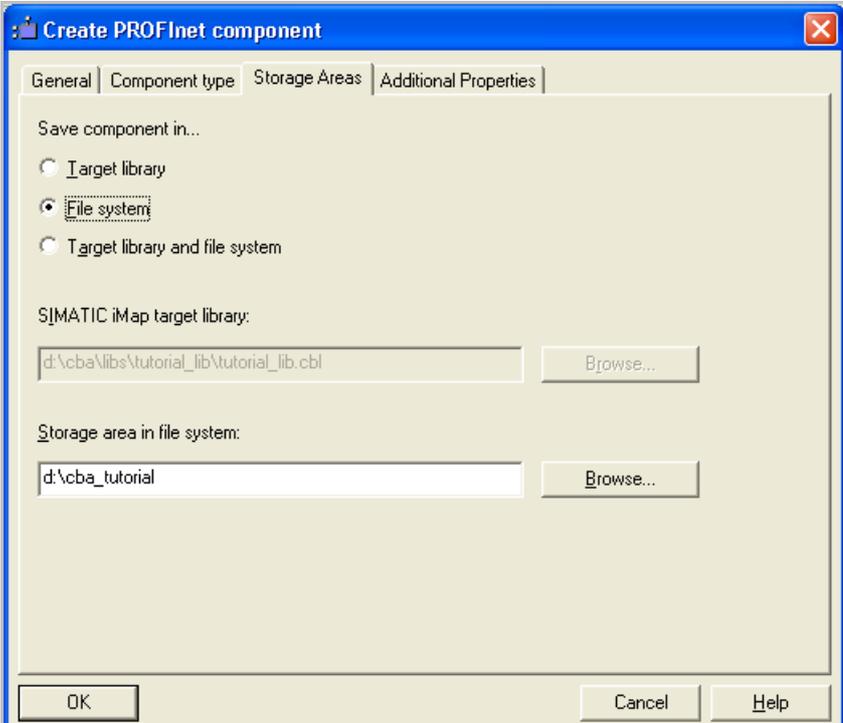
Task	Procedure
1.	Copy all blocks from the "I-DP-Slave" block folder of the PROFINet System Library into the block folder of the CPU.
2.	How to create the S7 program The following is an example based on a section from OB1. You can see the reference to the PROFINet interface DB there. //refreshing the input section of the interface db CALL "PN_IN" DB_NO := "PN_IO_DB" RET_VAL := MW20 ... CALL "Conveyor_with_stop", "Conveyor_with_stop_DB" ExternStop := "PN_Interface_DB".Ext_Stop ExternStart := "PN_Interface_DB".Ext_Start RunDelay := "PN_Interface_DB".Run_Delay //refreshing the output section of the interface db CALL "PN_OUT" DB_NO := "PN_IO_DB" RET_VAL := MW22
3.	Compile and test the S7 program.

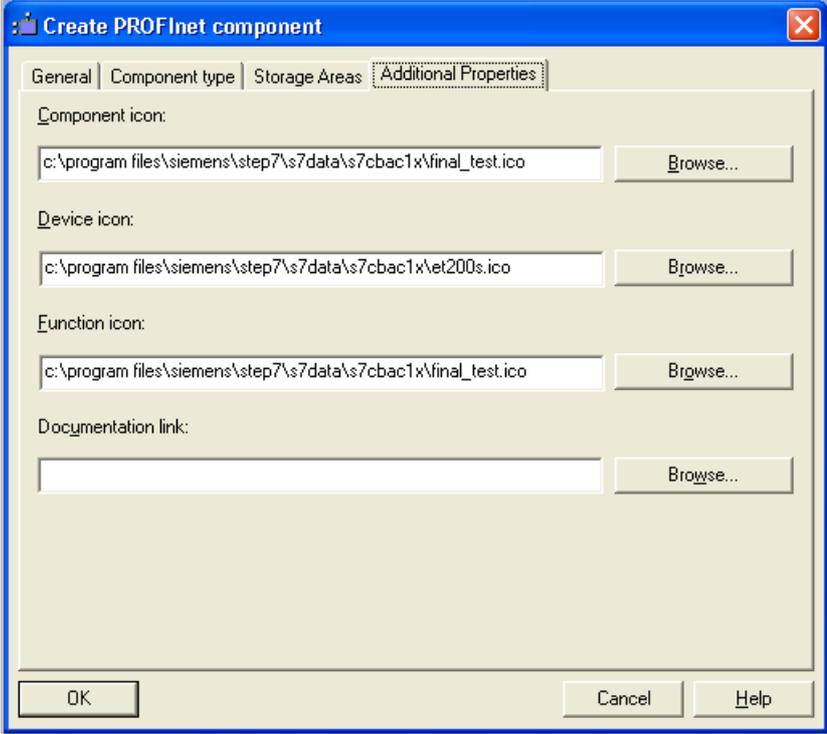
Caution

Note that the PN_IN (FC10) block must be called at the start of OB1 and the PN_OUT (FC11) block at the end of OB1.

How to create the PROFINet component

Task	Procedure
1.	In SIMATIC Manager, select the SIMATIC 300 station and then select the Create PROFINet Component command from the context menu.
2.	<p>On the "General" tab, highlight the "Identification, New" option and enter the following name: "ET200S_Scan".</p> 

Task	Procedure
	<p>Accept the default settings in the "Component type" tab:</p> 
<p>3.</p>	<p>In the "Storage areas" tab, enter the desired path, for example, D:\cba_tutorial (D stands for a drive of your choice).</p> 

Task	Procedure
4.	<p>In the "Additional properties" tab, enter the path of the icon files and optionally the path of the documentation link.</p> <p>You can use the supplied icons as needed (default path: Step7\s7data\s7cbac1x).</p> 
	<p>Result: The PROFINet component is saved as an XML file at the specified location and the component project is saved.</p>

2.4.6 Creating the PROFINet Component for ET 200X with BM147/CPU

Create the PROFINet component "ET200X_Conveyor" for controlling a conveyor belt using with ET 200X for Machine 2.

Content of the PROFINet component

The PROFINet "ET200X_Conveyor" component contains:

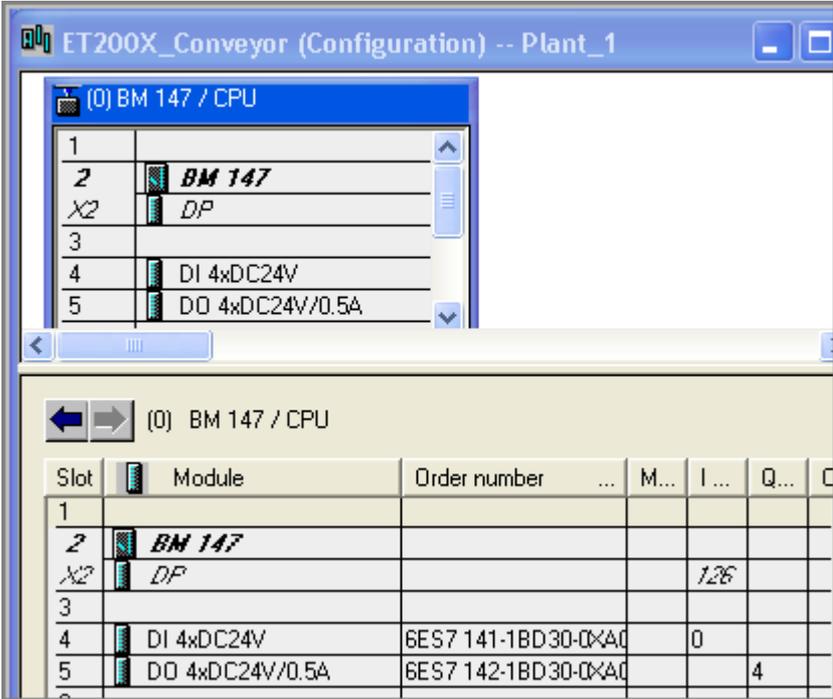
PROFINet component	PROFINet device	Technological function
ET200X_Conveyor	ET 200X with basic module BM147/CPU (intelligent DP slave)	Conveyance station (S7 program with the technological interface)

Basic procedure

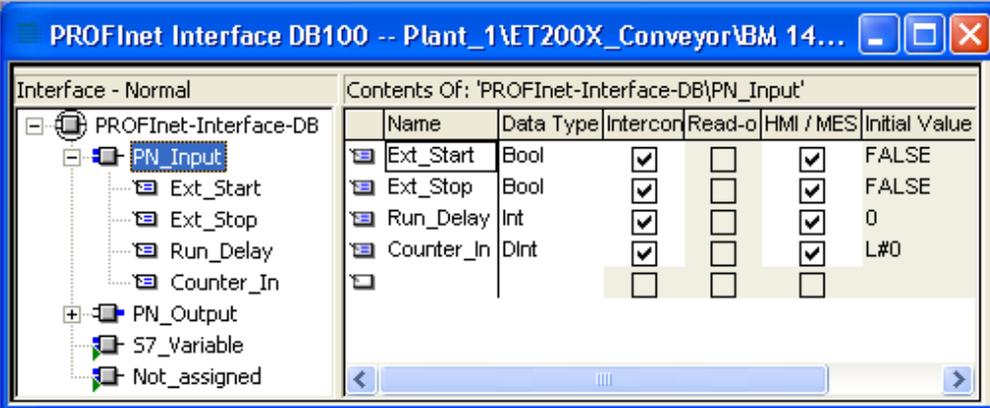
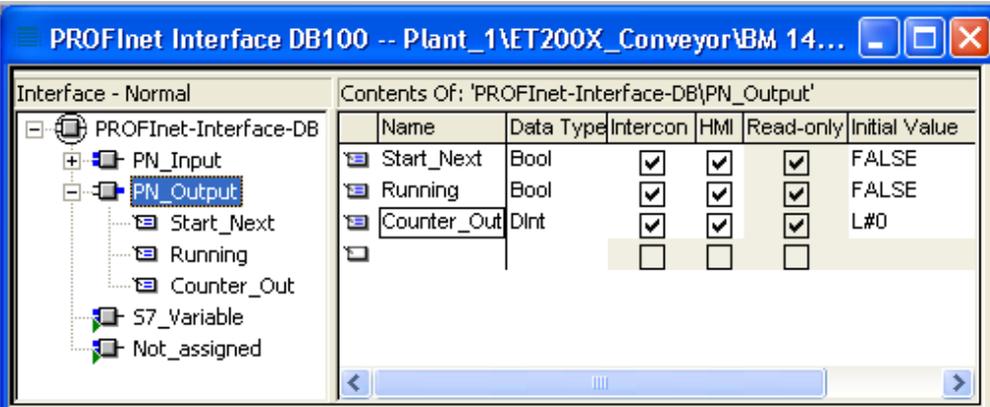
The PROFINet components are created using STEP 7. Carry out the following basic steps:

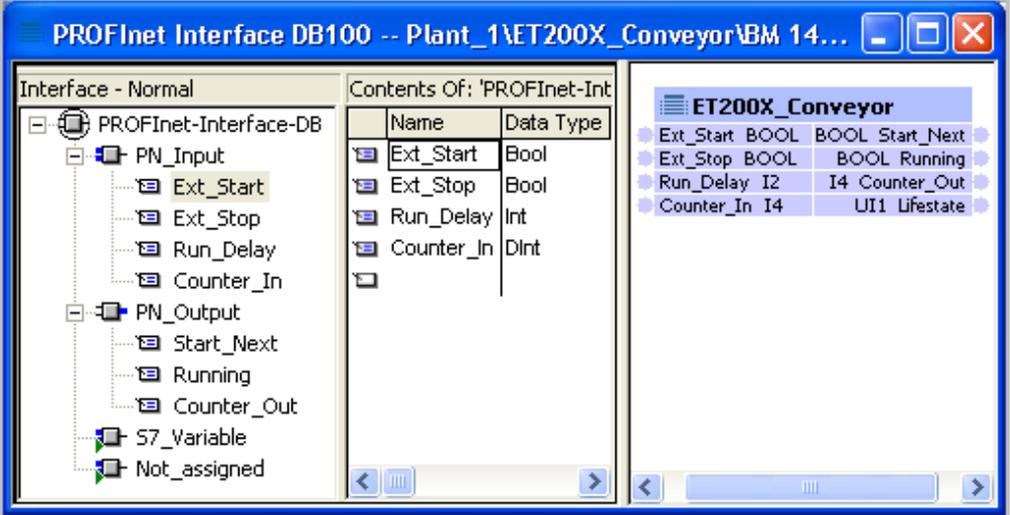
- In SIMATIC Manager, create a project for a component and configure the station hardware in HW Config.
- Create the interface DB for the component interface.
- Create the S7 program.
- Select the PROFINet component using a menu command and store it in a directory.

How to configure the hardware

Task	Procedure																																																	
1.	Create a project in SIMATIC Manager and insert a SIMATIC 300 station.																																																	
2.	<p>Configure the hardware based on the following illustration:</p>  <p>The DP connection (X2) must be configured as a DP slave.</p> <table border="1" data-bbox="475 936 1270 1173"> <thead> <tr> <th>Slot</th> <th>Module</th> <th>Order number</th> <th>M...</th> <th>I...</th> <th>Q...</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>BM 147</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X2</td> <td>DP</td> <td></td> <td></td> <td>126</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>DI 4xDC24V</td> <td>6ES7 141-1BD30-0XA0</td> <td></td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>DO 4xDC24V/0.5A</td> <td>6ES7 142-1BD30-0XA0</td> <td></td> <td></td> <td>4</td> <td></td> </tr> </tbody> </table>	Slot	Module	Order number	M...	I...	Q...	C	1							2	BM 147						X2	DP			126			3							4	DI 4xDC24V	6ES7 141-1BD30-0XA0		0			5	DO 4xDC24V/0.5A	6ES7 142-1BD30-0XA0			4	
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How to create the interface DB

Task	Procedure																														
1.	<p>In SIMATIC Manager, mark the SIMATIC 300 station and then select the Create PROFINet Interface command from the context menu.</p> <p>The "New/Open PROFINet Interface" dialog opens.</p>																														
2.	<p>Select BM 147/CPU in the left window of the "New/Open PROFINet Interface" dialog. Activate the "New" option and confirm this by pressing the "OK" button.</p> <p>Result: The properties dialog of the newly created block opens.</p>																														
3.	<p>In the "Name and type" field, enter the desired block number, DB100 for example, and select the block type, "Global DB".</p> <p>Confirm by clicking on the "OK" button. Result: The interface DB is opened in the PROFINet Interface Editor.</p>																														
4.	<p>Enter the inputs of the technological function in the PN Input section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <table border="1" data-bbox="699 958 1329 1249"> <thead> <tr> <th>Name</th> <th>Data Type</th> <th>Intercon</th> <th>Read-only</th> <th>HMI / MES</th> <th>Initial Value</th> </tr> </thead> <tbody> <tr> <td>Ext_Start</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Ext_Stop</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Run_Delay</td> <td>Int</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>0</td> </tr> <tr> <td>Counter_In</td> <td>DInt</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>L#0</td> </tr> </tbody> </table> <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>	Name	Data Type	Intercon	Read-only	HMI / MES	Initial Value	Ext_Start	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Ext_Stop	Bool	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Run_Delay	Int	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0	Counter_In	DInt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L#0
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5.	<p>Enter the outputs of the technological function in the PN Output section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <table border="1" data-bbox="699 1552 1329 1836"> <thead> <tr> <th>Name</th> <th>Data Type</th> <th>Intercon</th> <th>HMI</th> <th>Read-only</th> <th>Initial Value</th> </tr> </thead> <tbody> <tr> <td>Start_Next</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Running</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>Counter_Out</td> <td>DInt</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>L#0</td> </tr> </tbody> </table> <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>	Name	Data Type	Intercon	HMI	Read-only	Initial Value	Start_Next	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Running	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	Counter_Out	DInt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	L#0						
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Running	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE																										
Counter_Out	DInt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	L#0																										

Task	Procedure																										
6.	Save the PROFINet interface DB using the menu command File > Save .																										
	<p>The PROFINet interface (technological function) is displayed in the right window of the Interface Editor:</p>  <p>The screenshot shows the 'Interface - Normal' window with the following structure:</p> <ul style="list-style-type: none"> PROFINet-Interface-DB <ul style="list-style-type: none"> PN_Input <ul style="list-style-type: none"> Ext_Start Ext_Stop Run_Delay Counter_In PN_Output <ul style="list-style-type: none"> Start_Next Running Counter_Out S7_Variable Not_assigned <p>The 'Contents Of: 'PROFINet-Int' table is as follows:</p> <table border="1" data-bbox="699 495 965 712"> <thead> <tr> <th>Name</th> <th>Data Type</th> </tr> </thead> <tbody> <tr> <td>Ext_Start</td> <td>Bool</td> </tr> <tr> <td>Ext_Stop</td> <td>Bool</td> </tr> <tr> <td>Run_Delay</td> <td>Int</td> </tr> <tr> <td>Counter_In</td> <td>Dint</td> </tr> </tbody> </table> <p>The 'ET200X_Conveyor' component is shown with the following variables:</p> <table border="1" data-bbox="986 495 1342 645"> <tbody> <tr> <td>Ext_Start</td> <td>BOOL</td> <td>BOOL</td> <td>Start_Next</td> </tr> <tr> <td>Ext_Stop</td> <td>BOOL</td> <td>BOOL</td> <td>Running</td> </tr> <tr> <td>Run_Delay</td> <td>I2</td> <td>I4</td> <td>Counter_Out</td> </tr> <tr> <td>Counter_In</td> <td>I4</td> <td>UI1</td> <td>Lifestate</td> </tr> </tbody> </table>	Name	Data Type	Ext_Start	Bool	Ext_Stop	Bool	Run_Delay	Int	Counter_In	Dint	Ext_Start	BOOL	BOOL	Start_Next	Ext_Stop	BOOL	BOOL	Running	Run_Delay	I2	I4	Counter_Out	Counter_In	I4	UI1	Lifestate
Name	Data Type																										
Ext_Start	Bool																										
Ext_Stop	Bool																										
Run_Delay	Int																										
Counter_In	Dint																										
Ext_Start	BOOL	BOOL	Start_Next																								
Ext_Stop	BOOL	BOOL	Running																								
Run_Delay	I2	I4	Counter_Out																								
Counter_In	I4	UI1	Lifestate																								

Additional information...

about the interface DB can be found under "Properties of the Interface DB" in the SIMATIC iMap or SIMATIC Manager basic help.

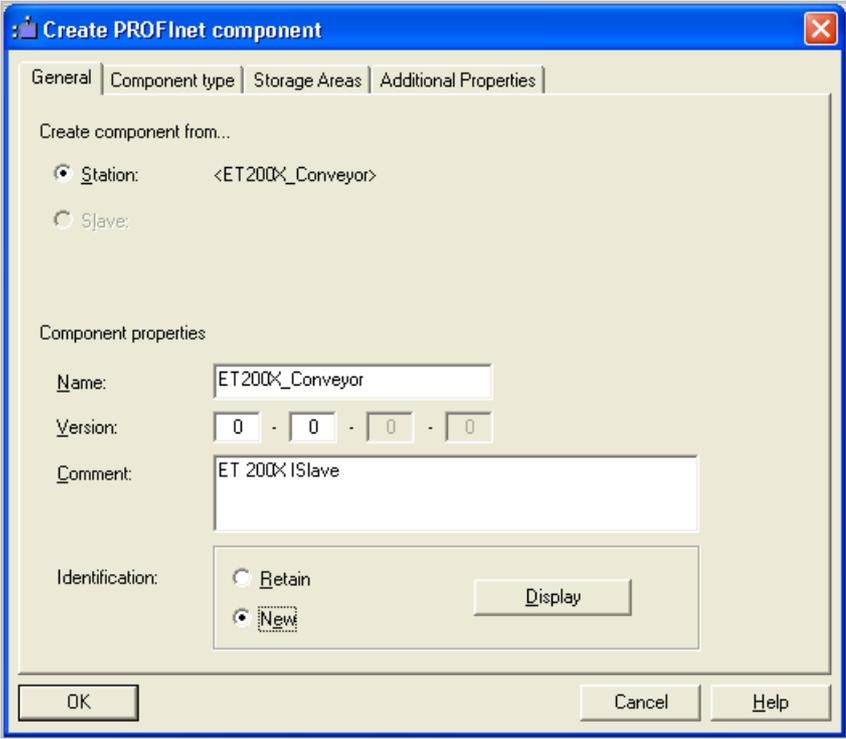
How to create the S7 program

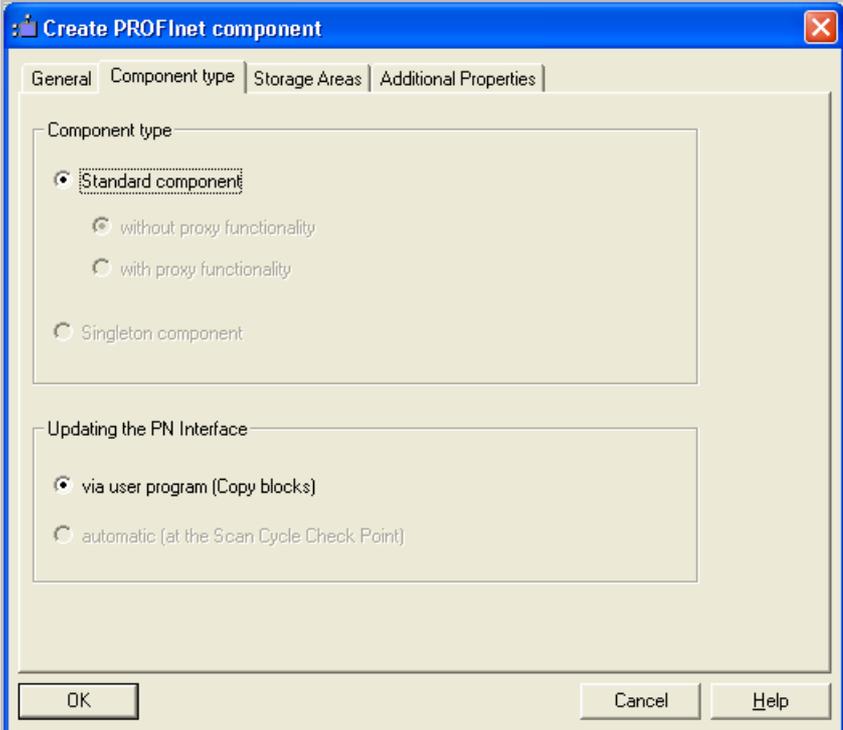
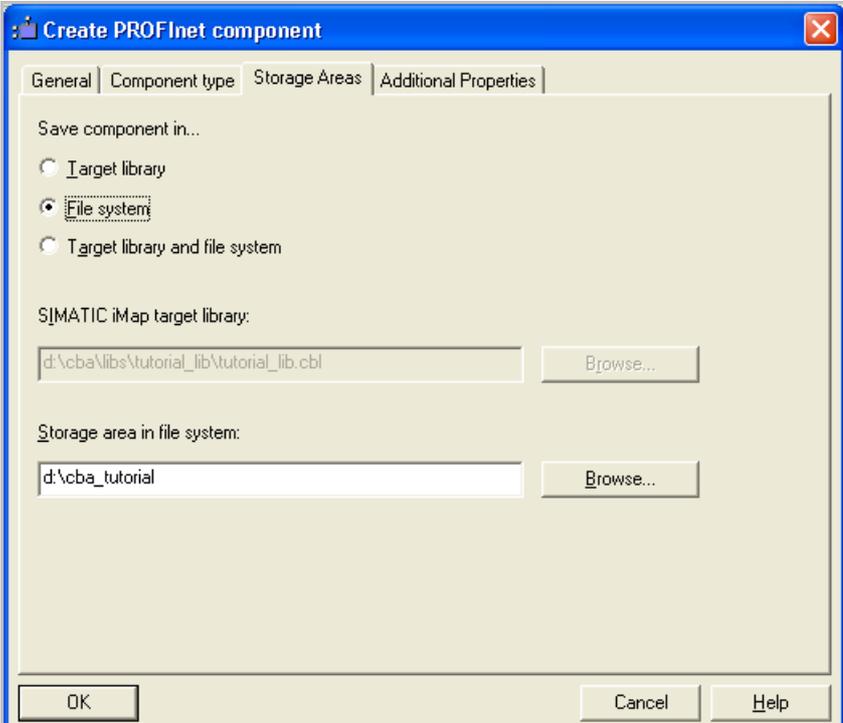
Task	Procedure
1.	Copy all blocks from the "I-DP-Slave" block folder of the PROFINet System Library into the block folder of the CPU.
2.	<p>How to create the S7 program The following is an example based on a section from OB1. You can see the reference to the PROFINet interface DB there.</p> <pre>//refreshing the input section of the interface db CALL "PN_IN" DB_NO := "PN_IO_DB" RET_VAL := MW20 ... CALL "Conveyor_with_stop", "Conveyor_with_stop_DB" ExternStop := "PN_Interface_DB".Ext_Stop ExternStart := "PN_Interface_DB".Ext_Start RunDelay := "PN_Interface_DB".Run_Delay //refreshing the output section of the interface db CALL "PN_OUT" DB_NO := "PN_IO_DB" RET_VAL := MW22</pre>
3.	Compile and test the S7 program.

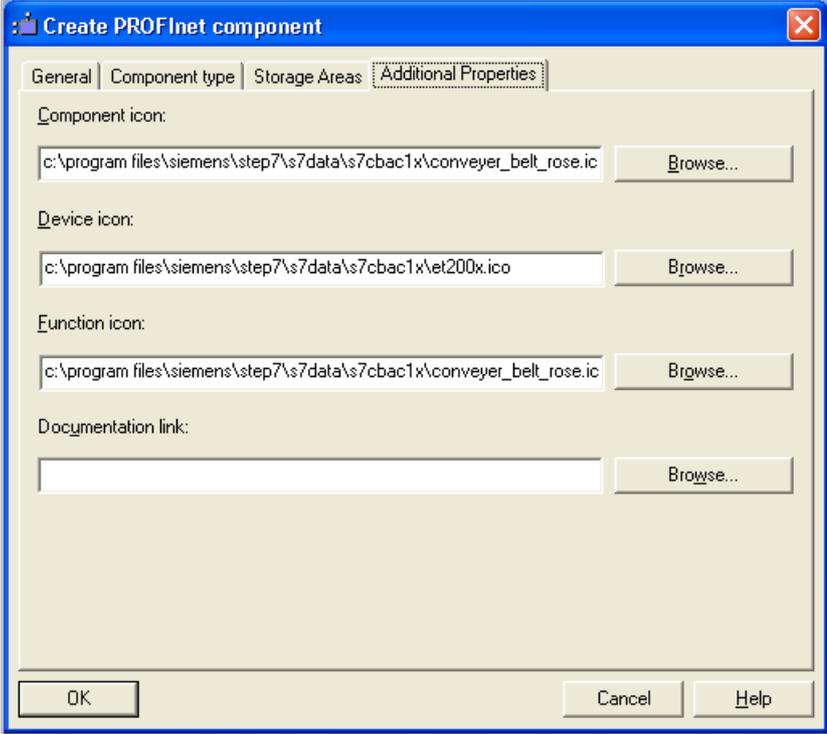
Caution

Note that the PN_IN (FC10) block must be called at the start of OB1 and the PN_OUT (FC11) block at the end of OB1.

How to create the PROFINet component

Task	Procedure
1.	In SIMATIC Manager, select the SIMATIC 300 station and then select the Create PROFINet Component command from the context menu.
2.	<p>On the "General" tab, highlight the "Identification, New" option and enter the following name: "ET200X_Conveyor".</p> 

Task	Procedure
3.	<p>Accept the default settings in the "Component type" tab:</p> 
4.	<p>In the "Storage areas" tab, enter the desired path, for example, D:\cba_tutorial (D stands for a drive of your choice).</p> 

Task	Procedure
5.	<p>In the "Additional properties" tab, enter the path of the icon files and optionally the path of the documentation link.</p> <p>You can use the supplied icons as needed (default path: Step7\s7data\s7cbac1x).</p> 
	<p>Result: The PROFINet component is saved as an XML file at the specified location and the archived component project is saved.</p>

2.4.7 Creating the PROFINet Component for ET 200M with IM 153-1

Create the PROFINet "ET200M_Measuring" component as a measuring module for Machine 1.

Content of the PROFINet component

The PROFINet "ET200M_Measuring" component contains:

PROFINet component	PROFINet device	Technological function
ET200M_Measuring	ET 200M with IM153 (DP slave with fixed functionality)	Measuring module Technological connection only (see below)

Note

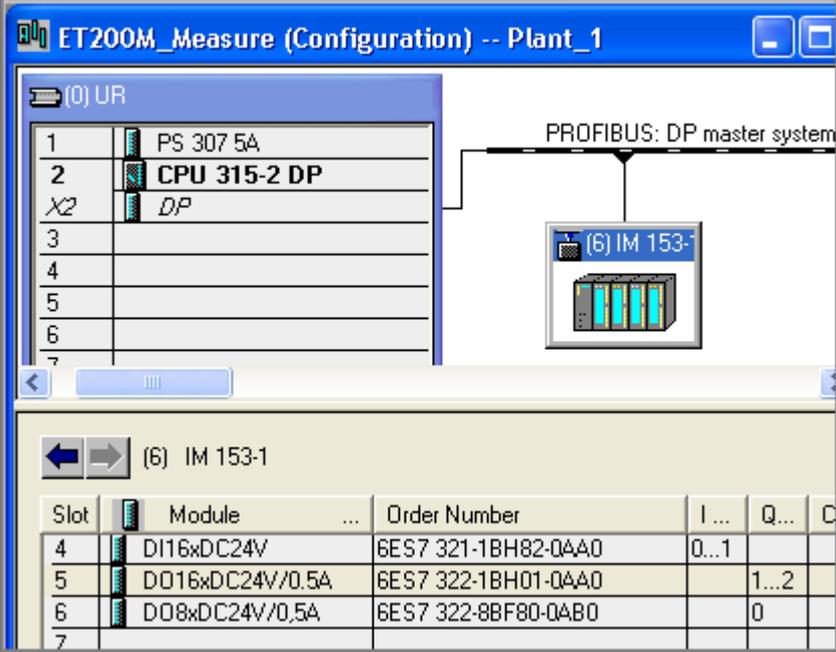
The PROFINet component ET200M_Measuring contains no S7 program, only the technological interface – whereby the signal inputs are formed directly by the outputs of the technological function and the signal outputs are formed by the inputs of the technological function.

Basic procedure

The PROFINet components are created using STEP 7. Carry out the following basic steps:

- In SIMATIC Manager, create a project for a component and configure the station hardware in HW Config.
- Create the interface DB for the component interface.
- Create the S7 program.
- Create the PROFINet component using a menu command and save it in a directory.

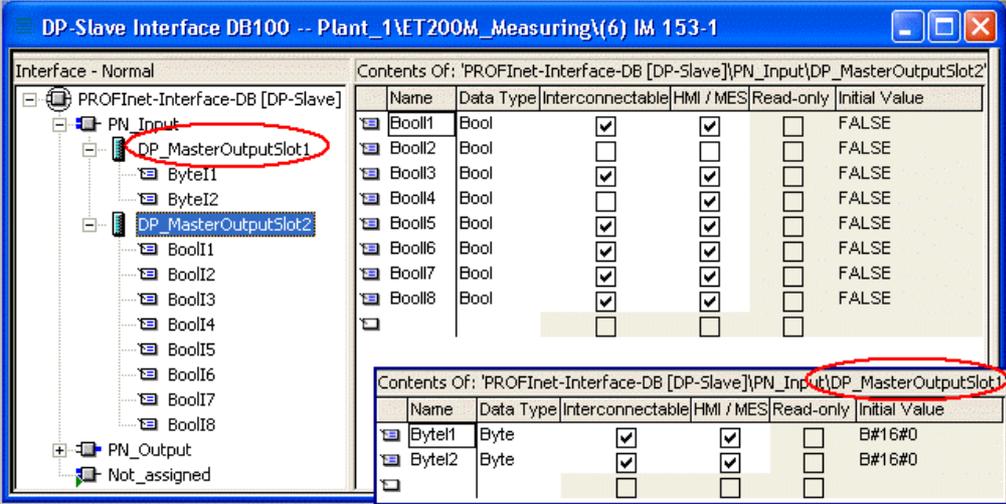
How to configure the hardware

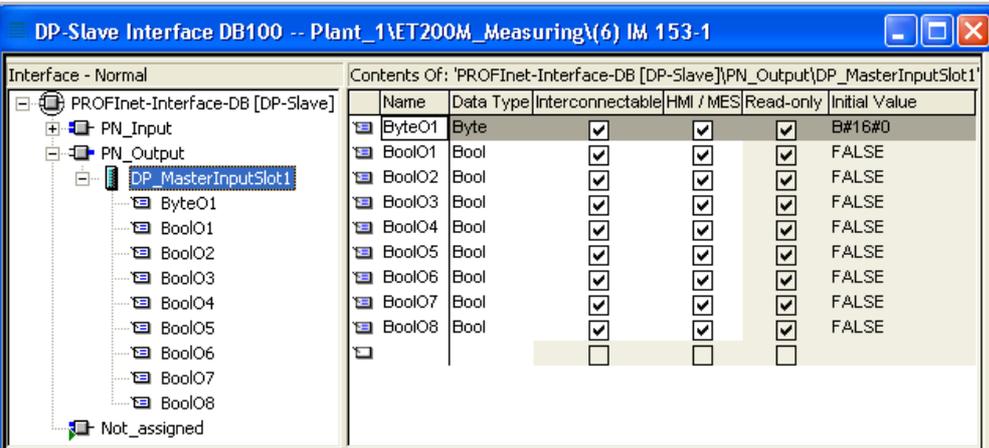
Task	Procedure																														
1.	Create a project in SIMATIC Manager and insert a SIMATIC 300 station.																														
2.	<p>Configure the hardware based on the following illustration:</p>  <p>The input and output modules of the IM153-1 are important here.</p> <table border="1" data-bbox="475 974 1273 1131"> <thead> <tr> <th>Slot</th> <th>Module</th> <th>Order Number</th> <th>I ...</th> <th>Q ...</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>DI16xDC24V</td> <td>6ES7 321-1BH82-0AA0</td> <td>0...1</td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>DO16xDC24V/0.5A</td> <td>6ES7 322-1BH01-0AA0</td> <td></td> <td>1...2</td> <td></td> </tr> <tr> <td>6</td> <td>DO8xDC24V/0.5A</td> <td>6ES7 322-8BF80-0AB0</td> <td></td> <td>0</td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Slot	Module	Order Number	I ...	Q ...	D	4	DI16xDC24V	6ES7 321-1BH82-0AA0	0...1			5	DO16xDC24V/0.5A	6ES7 322-1BH01-0AA0		1...2		6	DO8xDC24V/0.5A	6ES7 322-8BF80-0AB0		0		7					
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7																															

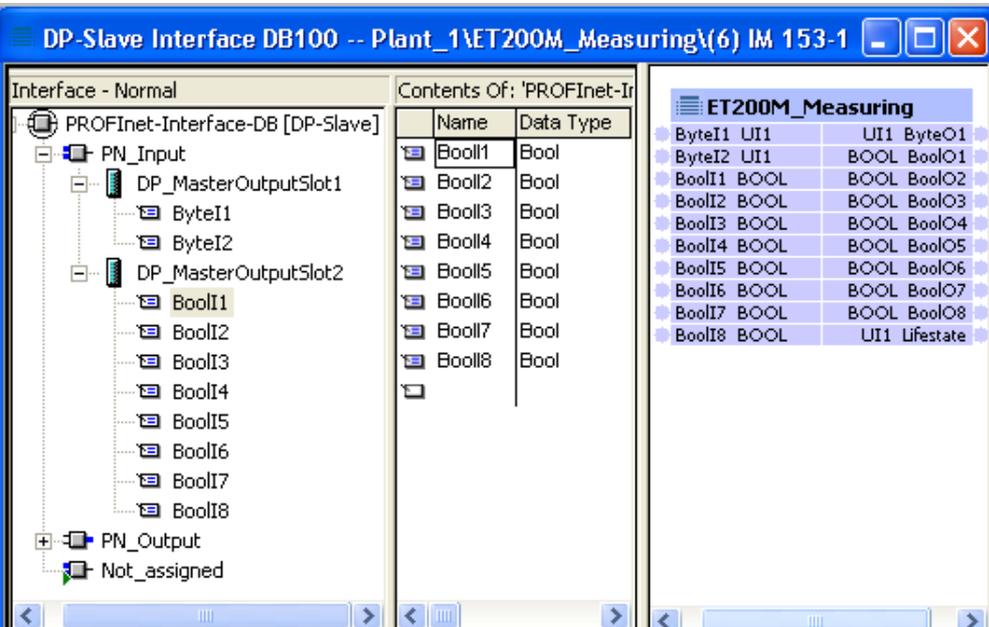
Note

The CPU (DP master) is not part of the PROFINet component to be created and is therefore not displayed in SIMATIC iMap. It is needed, however, in HW Config for the configuration.

How to create the interface DB

Task	Procedure
1.	<p>In SIMATIC Manager, mark the SIMATIC 300 station and then select the Create PROFINet Interface command from the context menu.</p> <p>The "New/Open PROFINet Interface" dialog opens.</p>
2.	<p>Select IM 153-1 in the left window of the "New/Open PROFINet Interface" dialog. Activate the "New" option and confirm this by pressing the "OK" button.</p> <p>Result: The properties dialog of the newly created block opens.</p>
3.	<p>In the "Name and type" field, enter the desired block number, DB100 for example, and select the block type, "Global DB".</p> <p>Confirm by clicking on the "OK" button. Result: The interface DB is opened in the PROFINet Interface Editor.</p>
4.	<p>The output signals from the IM 153-1 are mapped onto the addresses (slots) of the PN_Input section. In the following illustration, DP_MasterOutputSlot1 corresponds to the address area of the first output module (slot 5 in HW Config) and DP_MasterOutputSlot2 corresponds to the address area of the second output module (slot 6 in HW Config).</p> <p>Enter the inputs of the technological function in the slots of the PN Input section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <p>Result: The interconnectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>

Task	Procedure																																																												
5.	<p>The input signals of the IM 153-1 are mapped onto the addresses (slots) of the PN_Output section. In the following illustration, DP_MasterInputSlot1 corresponds to the address area of the first input module (slot 4 in HW Config).</p> <p>Enter the outputs of the technological function in the slots of the PN_Output section and assign the entries the required properties: Name, Data type, Connectable, HMI/MES, as shown in the following illustration:</p>  <table border="1" data-bbox="710 571 1332 862"> <thead> <tr> <th>Name</th> <th>Data Type</th> <th>Interconnectable</th> <th>HMI / MES</th> <th>Read-only</th> <th>Initial Value</th> </tr> </thead> <tbody> <tr> <td>ByteO1</td> <td>Byte</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>B#16#0</td> </tr> <tr> <td>BoolO1</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>BoolO2</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>BoolO3</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>BoolO4</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>BoolO5</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>BoolO6</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>BoolO7</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> <tr> <td>BoolO8</td> <td>Bool</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>FALSE</td> </tr> </tbody> </table> <p>Result: The inter-connectable connectors are graphically displayed in the right-hand window of the Interface Editor, as in the SIMATIC iMap plant view.</p>	Name	Data Type	Interconnectable	HMI / MES	Read-only	Initial Value	ByteO1	Byte	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	B#16#0	BoolO1	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	BoolO2	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	BoolO3	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	BoolO4	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	BoolO5	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	BoolO6	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	BoolO7	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE	BoolO8	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE
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BoolO3	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE																																																								
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BoolO6	Bool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FALSE																																																								
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6.	<p>Save the PROFINet interface DB using the menu command File > Save.</p>																																	
	<p>The PROFINet interface (technological function) is displayed in the right window of the Interface Editor:</p>  <table border="1" data-bbox="1013 1243 1348 1512"> <thead> <tr> <th colspan="3">ET200M_Measuring</th> </tr> </thead> <tbody> <tr> <td>ByteI1</td> <td>UI1</td> <td>UI1 ByteO1</td> </tr> <tr> <td>ByteI2</td> <td>UI1</td> <td>BOOL BoolO1</td> </tr> <tr> <td>BoolI1</td> <td>BOOL</td> <td>BOOL BoolO2</td> </tr> <tr> <td>BoolI2</td> <td>BOOL</td> <td>BOOL BoolO3</td> </tr> <tr> <td>BoolI3</td> <td>BOOL</td> <td>BOOL BoolO4</td> </tr> <tr> <td>BoolI4</td> <td>BOOL</td> <td>BOOL BoolO5</td> </tr> <tr> <td>BoolI5</td> <td>BOOL</td> <td>BOOL BoolO6</td> </tr> <tr> <td>BoolI6</td> <td>BOOL</td> <td>BOOL BoolO7</td> </tr> <tr> <td>BoolI7</td> <td>BOOL</td> <td>BOOL BoolO8</td> </tr> <tr> <td>BoolI8</td> <td>BOOL</td> <td>UI1 Lifestate</td> </tr> </tbody> </table>	ET200M_Measuring			ByteI1	UI1	UI1 ByteO1	ByteI2	UI1	BOOL BoolO1	BoolI1	BOOL	BOOL BoolO2	BoolI2	BOOL	BOOL BoolO3	BoolI3	BOOL	BOOL BoolO4	BoolI4	BOOL	BOOL BoolO5	BoolI5	BOOL	BOOL BoolO6	BoolI6	BOOL	BOOL BoolO7	BoolI7	BOOL	BOOL BoolO8	BoolI8	BOOL	UI1 Lifestate
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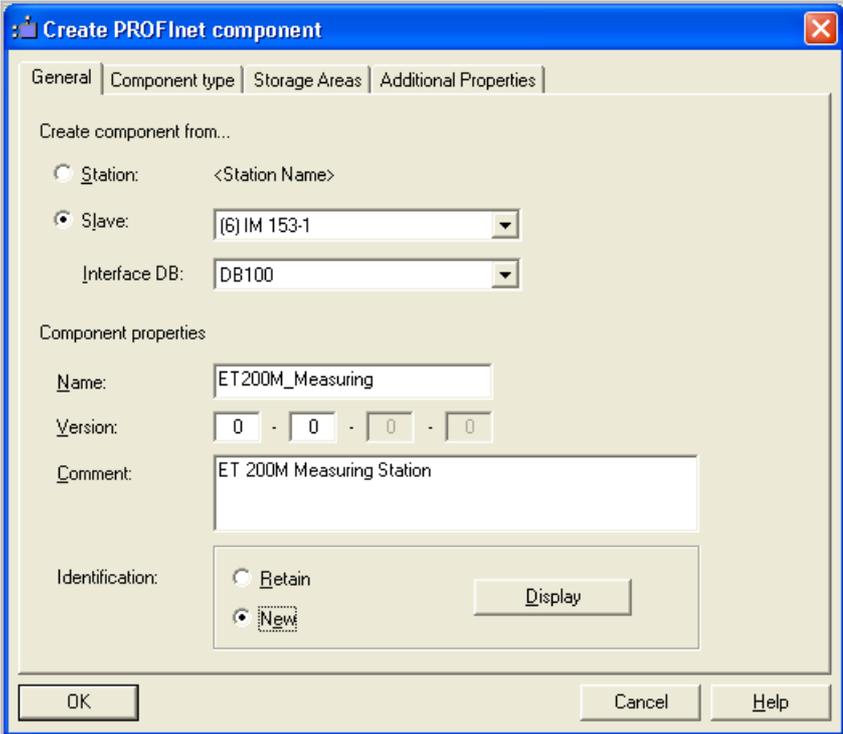
Additional information...

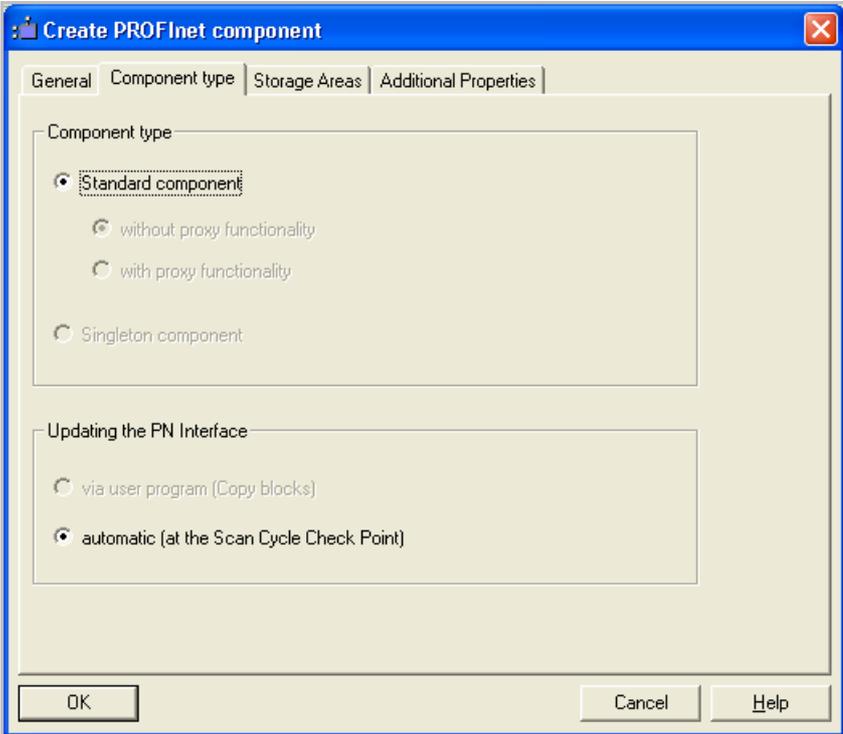
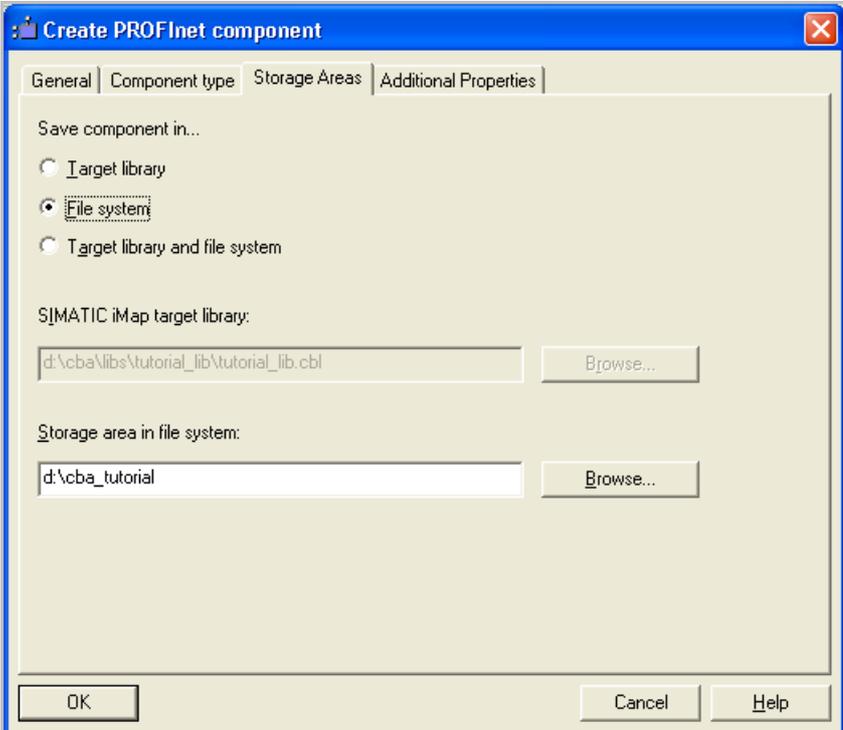
about the interface DB can be found under "Properties of the Interface DB" and "Special features of DP slaves with fixed functionality" in the SIMATIC iMap or SIMATIC Manager basic help.

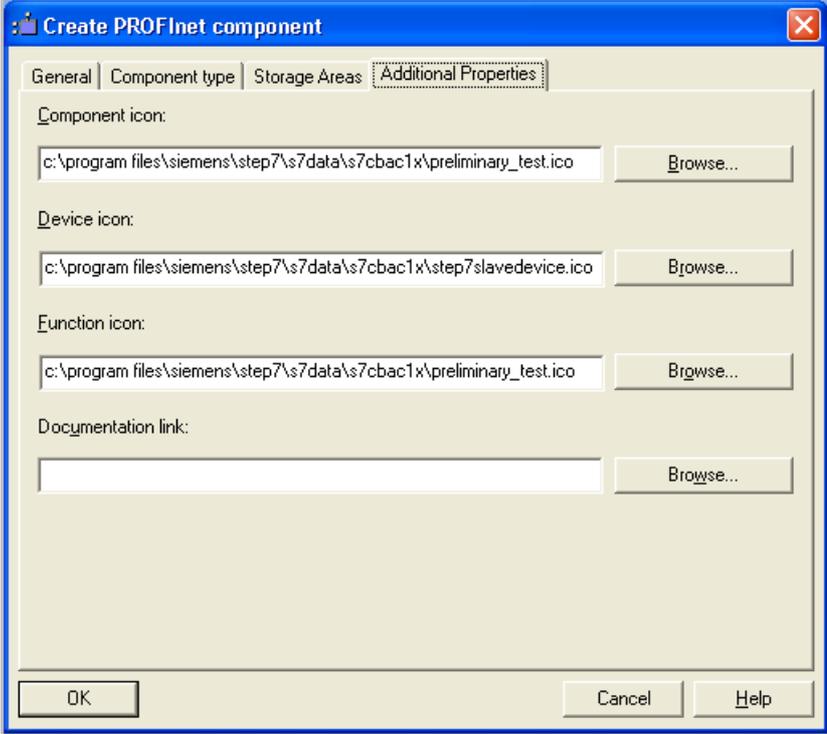
S7 program

No separate S7 program is needed for the ET 200M since it is a module without its own SPS (CPU).

How to create the PROFnet component

Task	Procedure
1.	In SIMATIC Manager, select the SIMATIC PC station and then select the Create PROFnet Component command from the context menu.
2.	<p>In the "General" tab:</p> <ul style="list-style-type: none"> • Mark the option "Create component from a slave". • Mark the option "Identification" and enter the following name: "ET200M_Measuring". 

Task	Procedure
3.	<p>Accept the default settings in the "Component type" tab:</p> 
4.	<p>In the "Storage areas" tab, enter the desired path, for example, D:\cba_tutorial (D stands for a drive of your choice).</p> 

Task	Procedure
<p>5.</p>	<p>In the "Additional properties" tab, enter the path of the icon files and optionally the path of the documentation link. You can use the supplied icons as needed (default path: Step7\s7data\s7cbac1x).</p> 
	<p>Result: The PROFINet component is saved as an XML file at the specified location and the archived component project is saved.</p>

Part 2: Commissioning the System

3

The following descriptions contain step-by-step instructions for commissioning three typical configurations (Machines 1 to 3) as well as the complete plant.

3.1 Requirements - Commissioning the System

Hardware Requirements

The devices must be operable and have the latest firmware versions installed.

Software Requirements

The following software must be installed on the engineering station:

- Operating system:
 - Microsoft Windows 2000 Professional as of SP4 or
 - Microsoft Windows XP as of SP1
- STEP 7 as of V5.3
Required for the generation of the project, the download of the program and the diagnostics for the specific device.
- SIMATIC iMap V2.0
 - You need administrator rights for the installation of SIMATIC iMap.
 - You need at least main user rights to operate SIMATIC iMap.
- SIMATIC NET as of V6.1
Optional – required for the use of WinLC PN and OPC.

Tip

Devices are assigned fixed IP and PROFIBUS addresses in the following descriptions. To ensure that the commissioning runs successfully, we recommend that you use the same addresses.

All IP addresses must be in the same subnet for the described plant.

Requirement for Configuration of the Plant in SIMATIC iMap

You have created the PROFINet components and they are present in the file system.

3.2 Basic Procedure - Commissioning the System

Required steps

The following commissioning tasks must be performed for each device of a plant:

- In the plant:
 - Setup hardware
 - Configure the addresses on the PROFIBUS devices
 - Network devices and connect them with the engineering PC
- In STEP 7:
 - Assign IP and PROFIBUS addresses for the first time, if necessary
 - Make settings for downloading, online monitoring and diagnostics
- In SIMATIC iMap:
 - Configure the plant
 - Commission the plant
 - Perform online monitoring and diagnostics for the plant

Next Steps

Commission one of the following plants:

- Machine 1:
A CPU 317-2 PN/DP with the PROFIBUS devices CPU 314C-2 DP (as intelligent DP slave) and ET 200M
- Machine 2:
An IE/PB Link with the PROFIBUS devices ET 200S with IM151/CPU and ET 200X with BM147/CPU
- Machine 3:
A CPU 315-2 DP with a CP 343-1 PN
- Complete plant
Consisting of Machines 1 to 3 and a PC station WinLC PN.

3.3 Machine 1

3.3.1 Machine 1, Processing: CPU 317-2 PN/DP with PROFIBUS-DP Slaves

Configuration of Machine 1

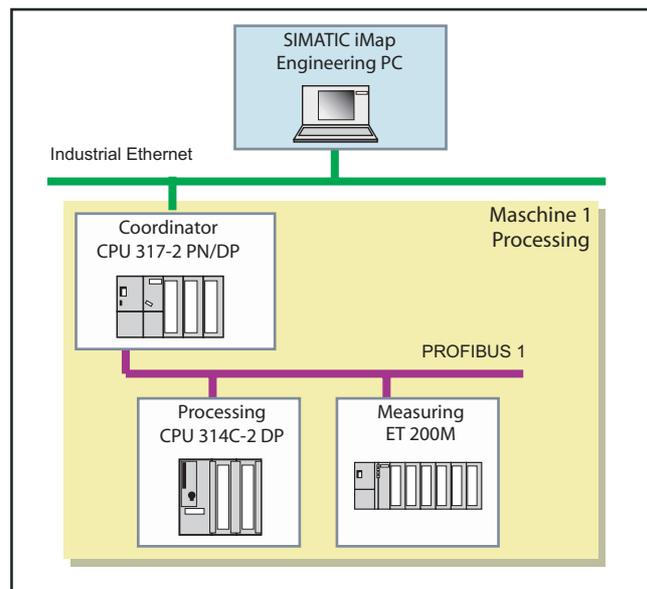


Figure 3-1 Machine 1, Processing

Machine 1 contains the following devices:

- CPU 317-2 PN/DP
as PROFINet device with proxy functionality for both DP slaves
- CPU 314C-2 DP
as PROFIBUS device with programmable functionality (intelligent DP slave) for controlling the "Processing" station
- ET 200M
as PROFIBUS device with fixed functionality (DP slave), "ET200_Measuring" module

Required steps

1. Set up the hardware of the plant:
 - CPU 317-2 PN/DP
 - ET 200M with IM153-1
 - CPU 314C-2 DP
2. Assigning Addresses
 - The CPU 317-2 PN/DP must be assigned an IP address the first time.
 - The CPU 314C-2 DP must be assigned a PROFIBUS address once.
3. Configure plant in SIMATIC iMap.
4. Check the settings in STEP 7
 - Optional - required for the program download to the target device of the plant and for diagnostics of each device.
5. Commission the plant
6. Online monitoring of plant with SIMATIC iMap

3.3.2 Step 1: Setting up the Hardware for Machine 1

3.3.2.1 CPU 317-2 PN/DP - Hardware Setup

Required Hardware

You will need the following S7-300 modules:

Qty.	Designation	Order number
1x	CPU 317-2 PN/DP	6ES7 317 2EJ10-0AB0 / V2.1
1x	Power supply module PS 307 5A	6ES7 307-1EA00-0AA0

How to setup the CPU 317-2 PN/DP

Task	Procedure
1.	Mount the modules on the rail.
2.	Connect the power supply.
3.	Connect the PG/PC using the PG cable to the MPI interface of the CPU 317-2 PN/DP.
4.	Connect the Ethernet cable to the CPU 317-2 PN/DP.
5.	Switch on the power supply of the CPU 317-2 PN/DP.

3.3.2.2 ET 200M - Hardware Setup

Required Hardware

You will require the following modules:

Qty.	Designation	Order number
1x	Interface module IM 153-1	6ES7 153-1AA**-0XB0
1x	Expansion module DI 16xDC24V (no current)	6ES7 321-1BH82-0AA0
1x	Expansion module DO 16xDC24V/0.5A	6ES7 322-1BH01-0AA0
1x	Expansion module DO 8xDC24V/0.5A	6ES7 322-8BF80-0AB0

How to set up the ET 200M

Task	Procedure
1.	Mount the modules on the rail.
2.	Set the interface module IM 153-1 to PROFIBUS address 3.
3.	Connect the power supply.
4.	Wire the I/O module.
5.	Connect the PROFIBUS cable to the IM153-1.

3.3.2.3 CPU 314C-2 DP – Hardware Setup

Required Hardware

You will need the following S7-300 module:

Qty.	Designation	Order number
1x	CPU 314C-2 DP	6ES7 314 6CF01-0AB0 / V2.0

How to setup the CPU 314C-2 DP

Task	Procedure
1.	Mount the module on the rail.
2.	Connect the power supply.
3.	Connect the PG/PC using the PG cable to the MPI interface of the CPU 314C-2 DP.
4.	Switch on the power supply of the CPU 314C-2 DP.

3.3.3 Step 2: Assigning the Devices with Addresses the First Time

3.3.3.1 Assigning CPU 317-2 PN/DP an Address the First Time

The first time, you must download the IP address from STEP 7 to the target device via MPI, if you have not already done so. Optionally, you can also use the PROFIBUS address from SIMATIC iMap

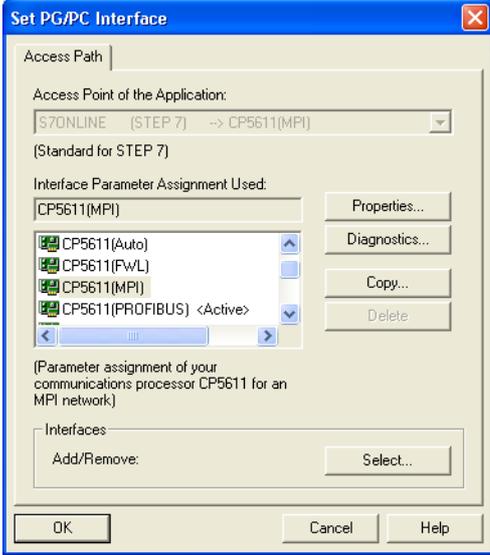
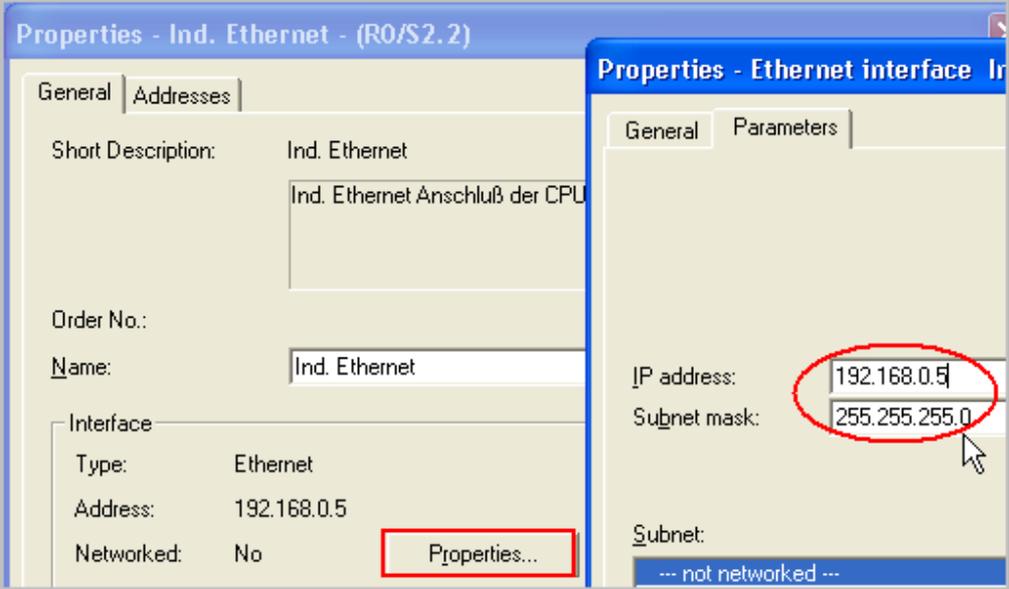
Requirements

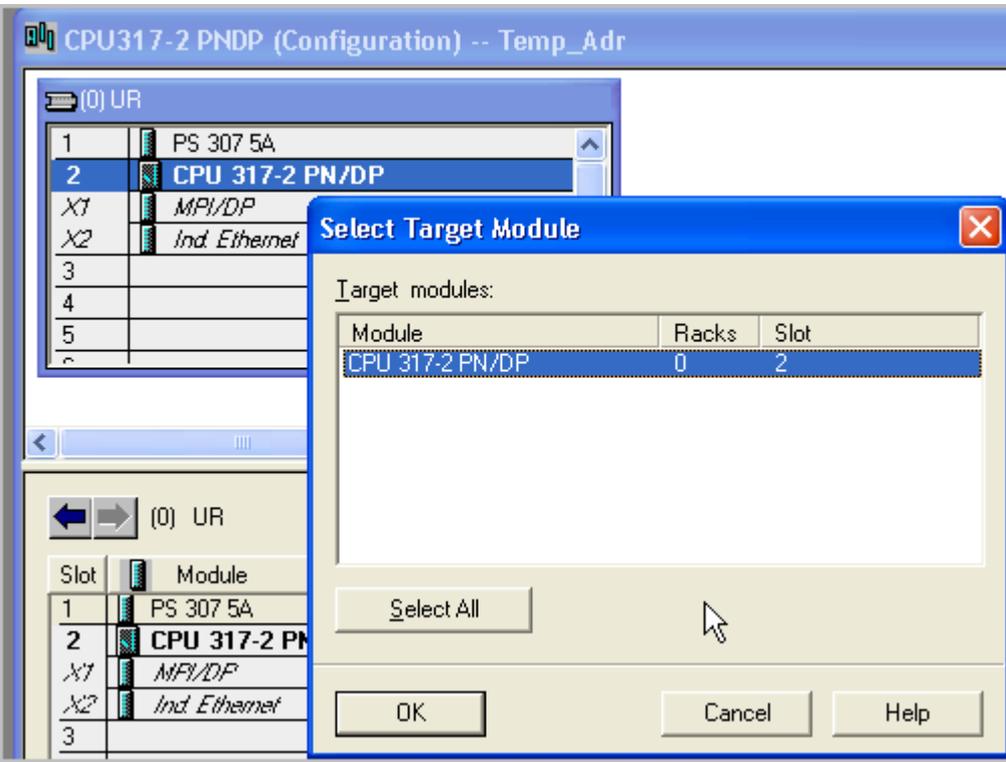
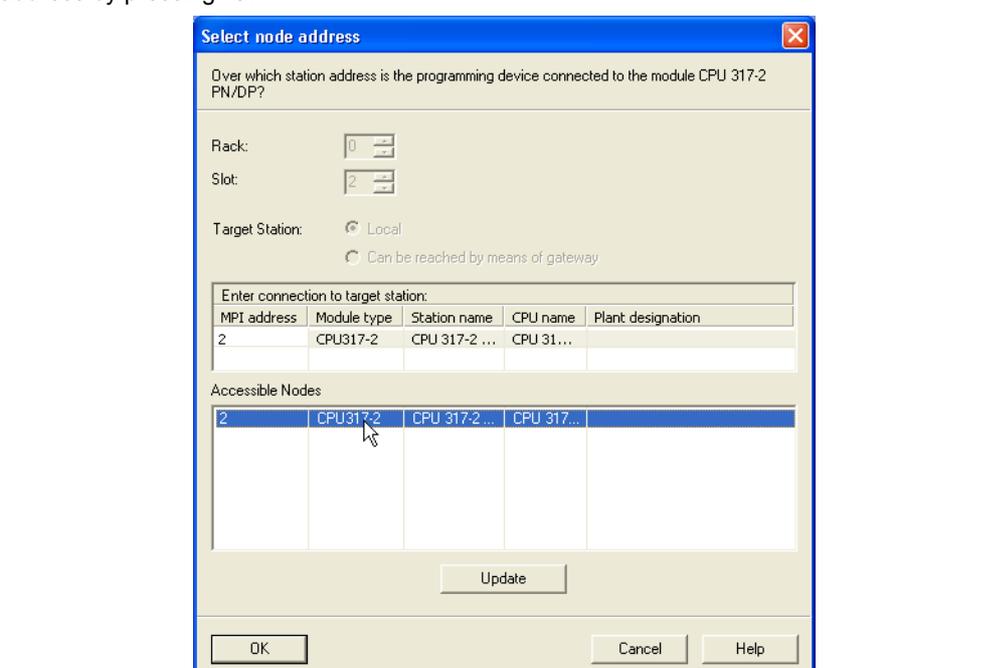
- The CPU must be in STOP.
- The PG/PC must be connected to the X1 port of the CPU with a PG cable.

Note

At commissioning (factory state), the CPU 317-2 PN/DP can be reached at MPI address 2, HSA 31 and 187.5 kbps.

How to assign an address to the CPU 317-2 PN/DP the first time

Task	Procedure
1.	<p>Set the PG/PC interface to MPI.</p> <p>From the Windows taskbar, select Start > SIMATIC > STEP 7 > Set PG/ PC interface. Configure the PG/PC interface so that the S7ONLINE (STEP 7) access point is set to MPI.</p> 
2.	Start SIMATIC Manager and create a temporary project with a SIMATIC 300 station. This project will only be used for assigning addresses for the first time.
3.	Open the station hardware configuration and configure the CPU 317-2 PN/DP. You will not need any I/O modules.
4.	<p>Configure the CPU's industrial Ethernet interface (X2) and set the required IP address and subnet mask, e.g.:</p>  <p>Optional: Configure the CPU's PROFIBUS interface (X1) and set the required PROFIBUS address.</p>
5.	Save and compile the station using the Station > Save and Compile menu command.

Task	Procedure
6.	<p>Select Target System > Download to Module.</p>  <p>Select the CPU 317-2 PN/DP under "Select Target Module" and confirm your selection with "OK".</p>
7.	<p>In the "Select Node Address" dialog enter the MPI address of the CPU or accept the displayed address by pressing "OK".</p> 

Task	Procedure
	Result: The system data including the IP and PROFIBUS address are loaded into the CPU. The CPU can now communicate via PROFINet. If the red error LED lights up, you can ignore it since the correct hardware configuration will subsequently be downloaded from SIMATIC iMap.
8.	Connect the DP slaves to the CPU 317-2 PN/DP using a PROFIBUS cable.

3.3.3.2 Assigning a PROFIBUS Device a PROFIBUS Address the First Time

The first time, you must download the PROFIBUS address from STEP 7 to the target device via MPI, if you have not already done so.

This chapter also applies for the following PROFIBUS devices (central modules as intelligent DP slaves):

- CPU 314C-2 DP
- IM 151/CPU
- BM 147/CPU

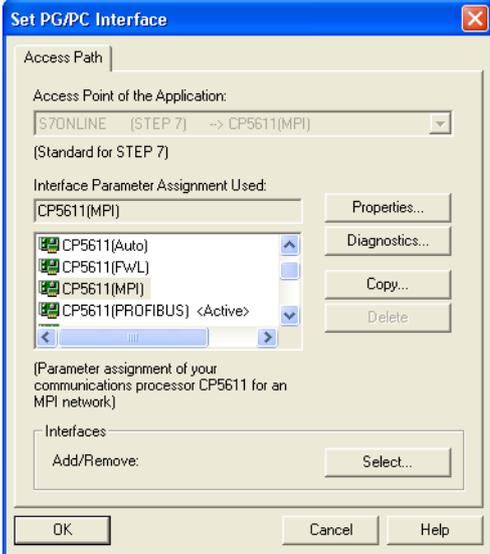
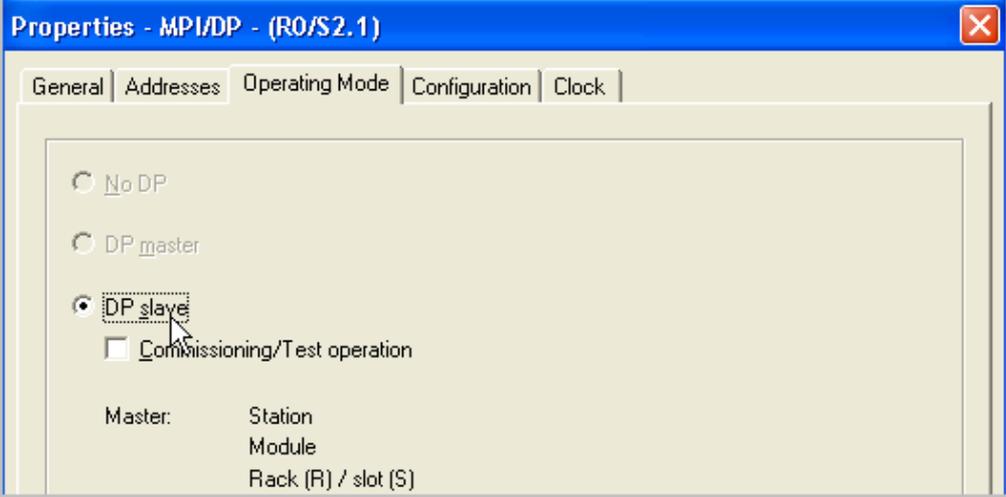
Note

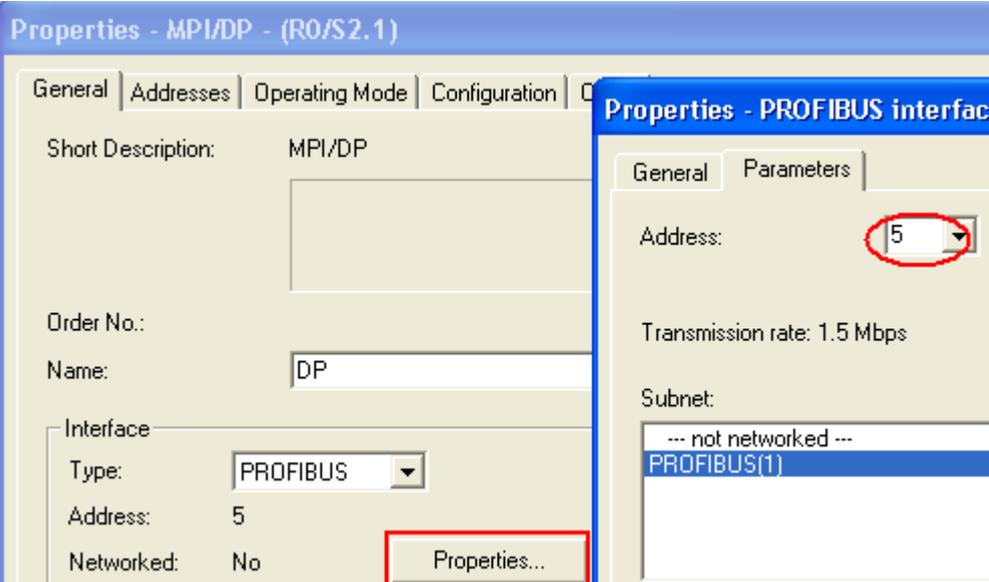
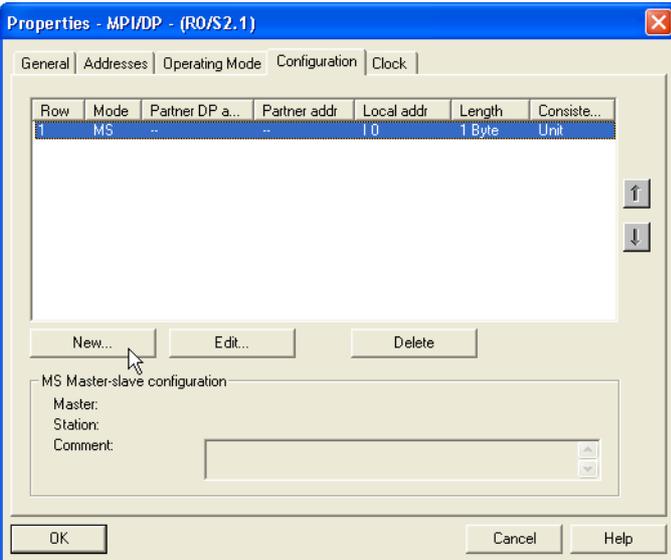
For initial commissioning (as-delivered state), each of these modules can be accessed via MPI address 2, HSA 31 and at 187.5 kBps.

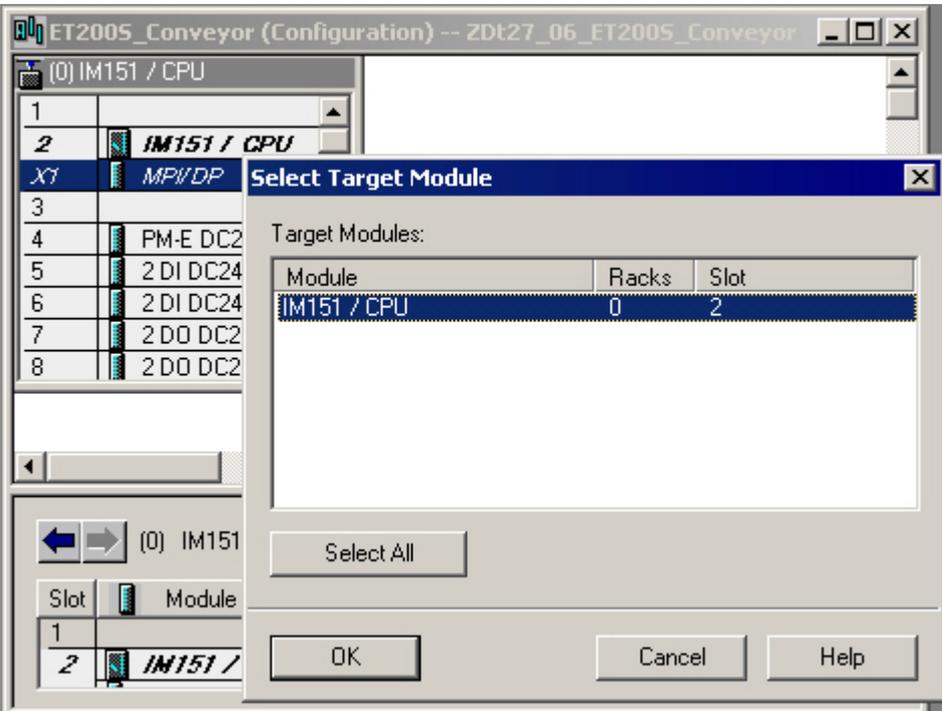
Requirements

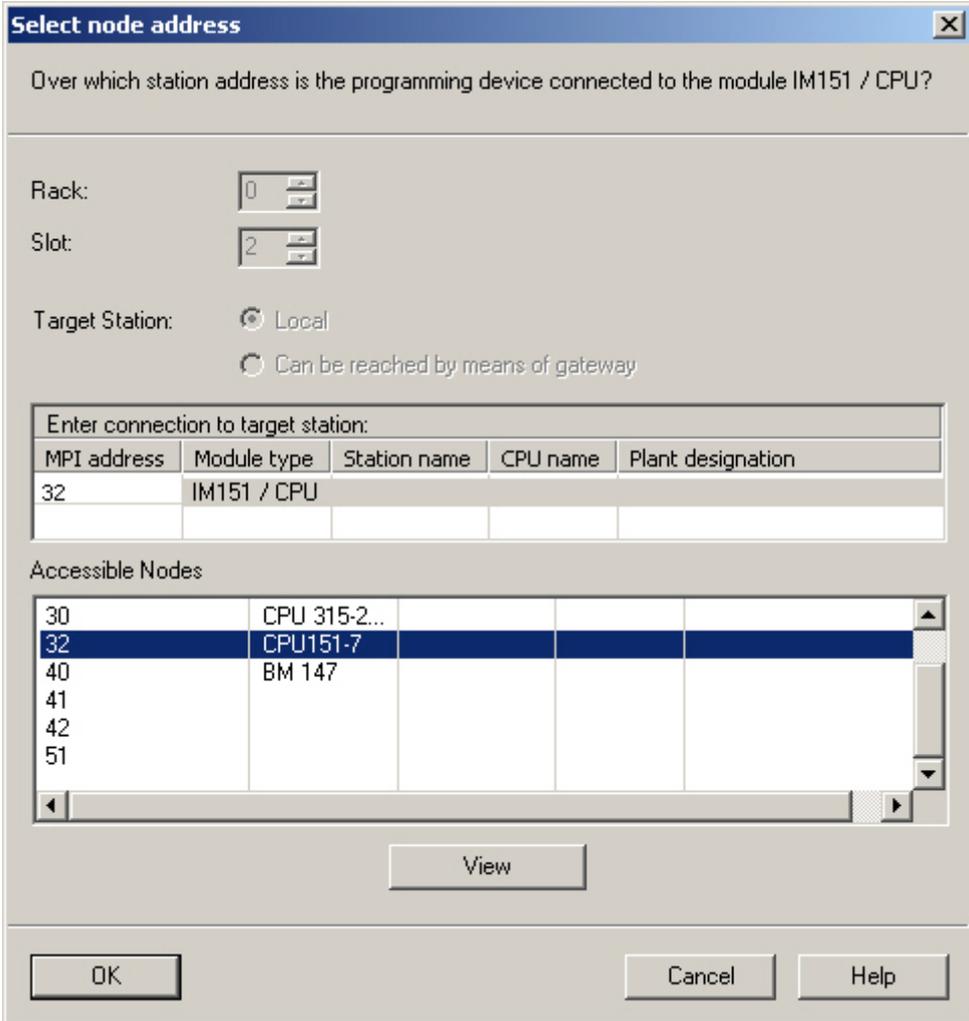
- The CPU must be in STOP.
- The PG/PC must be connected to the CPU with a PG cable.

How to assign a PROFIBUS address to the CPU acting as a DP slave the first time

Task	Procedure
1.	<p>Set the PG/PC interface to MPI.</p> <p>From the Windows taskbar, select Start > SIMATIC > STEP 7 > Set PG/ PC interface. Configure the PG/PC interface so that the S7ONLINE (STEP 7) access point is set to MPI:</p> 
2.	<p>Start SIMATIC Manager and create a temporary project with a SIMATIC 300 station. This project will only be used for assigning addresses for the first time.</p>
3.	<p>Open the station hardware configuration and configure the appropriate CPU (CPU 314C-2 DP, IM 151/CPU or BM 147/CPU) as a DP slave. You will not need any I/O modules.</p> <p>In the object properties for the DP interface, select "DP Slave" operating mode.</p>  <p>The "Commissioning / Test mode" option must not be active.</p>

Task	Procedure														
4.	<p>Configure the CPU's PROFIBUS interface and set the required PROFIBUS address, e.g.:</p> 														
5.	<p>On the "Configuration" tab in the object properties, configure any exchange of data between the intelligent DP slave (I slave) and a DP master:</p>  <table border="1" data-bbox="550 1108 1133 1332"> <thead> <tr> <th>Row</th> <th>Mode</th> <th>Partner DP a...</th> <th>Partner addr</th> <th>Local addr</th> <th>Length</th> <th>Consiste...</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>MS</td> <td>--</td> <td>--</td> <td>10</td> <td>1 Byte</td> <td>Unit</td> </tr> </tbody> </table>	Row	Mode	Partner DP a...	Partner addr	Local addr	Length	Consiste...	1	MS	--	--	10	1 Byte	Unit
Row	Mode	Partner DP a...	Partner addr	Local addr	Length	Consiste...									
1	MS	--	--	10	1 Byte	Unit									
6.	<p>Save and compile the station using the Station > Save and Compile menu command.</p>														

Task	Procedure						
7.	<p>Select Target System > Download to Module.</p>  <p>The screenshot shows the SIMATIC Manager configuration window for 'ET2005_Conveyor (Configuration)'. A 'Select Target Module' dialog box is open, displaying a table of target modules:</p> <table border="1" data-bbox="651 600 1300 853"> <thead> <tr> <th>Module</th> <th>Racks</th> <th>Slot</th> </tr> </thead> <tbody> <tr> <td>IM151 / CPU</td> <td>0</td> <td>2</td> </tr> </tbody> </table> <p>The 'IM151 / CPU' module is selected in the table. The dialog also includes 'Select All', 'OK', 'Cancel', and 'Help' buttons.</p> <p>Select the CPU from the "Select target module" dialog and click on "OK" to confirm.</p>	Module	Racks	Slot	IM151 / CPU	0	2
Module	Racks	Slot					
IM151 / CPU	0	2					

Task	Procedure
8.	<p>In the "Select Node Address" dialog enter the MPI address of the CPU or accept the displayed address by pressing "OK".</p>  <p>Result: The system data including the PROFIBUS address are loaded into the CPU. The CPU can now communicate via PROFIBUS.</p> <p>If the red error LED lights up, you can ignore it since the correct hardware configuration will subsequently be downloaded from SIMATIC iMap.</p>

3.3.4 Step 2: Configuring Machine 1 with SIMATIC iMap

3.3.4.1 Configuring the Plant - Basic Procedure

This procedure can be carried out independent of the hardware setup for the plant.

Requirements

You have created the PROFINet components and they are present in the file system.

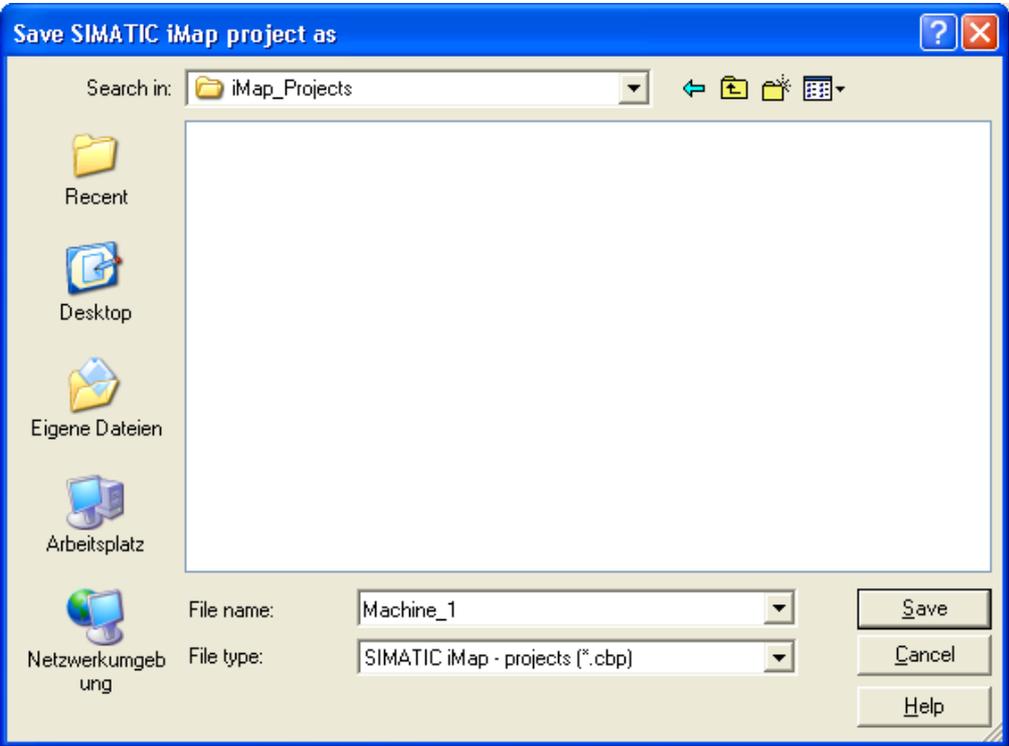
Basic procedure

- Creating a new project in SIMATIC iMap
- Importing PROFINet components from the file system into the project library
- Inserting PROFINet components from the library into the SIMATIC iMap project
- Assigning Addresses
- Interconnecting the technological functions and generating the SIMATIC iMap project

3.3.4.2 Creating a New Project in SIMATIC iMap

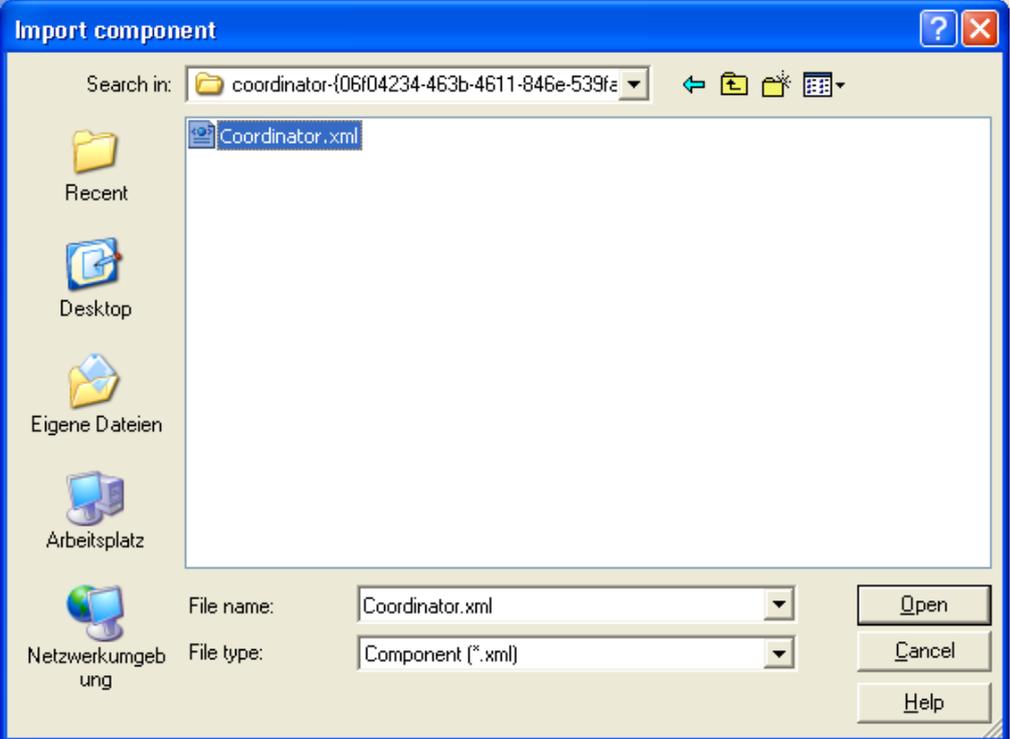
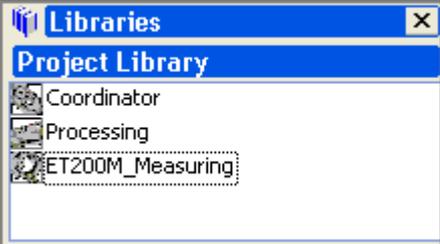
This description applies to both a complete plant or any subplant.

How to create a new SIMATIC iMap project

Task	Procedure
1.	Start SIMATIC iMap if you have not already done so: Double-click on the SIMATIC iMap icon on the desktop or Select Start / Programs / Component based Automation / SIMATIC iMap . Result: SIMATIC iMap is started and a new project is created. Continue with Step 3.
2.	If you have already started SIMATIC iMap, create a new project by selecting the menu command Project > New .
3.	Save the project by selecting the menu command Project > Save .
4.	In the dialog "Save SIMATIC iMap project As", select a folder and enter a name, for example, "Machine_1" in the "File name" field. The same applies to Machine 2, Machine 3 or the complete plant.  <p>Result: The project is saved.</p>

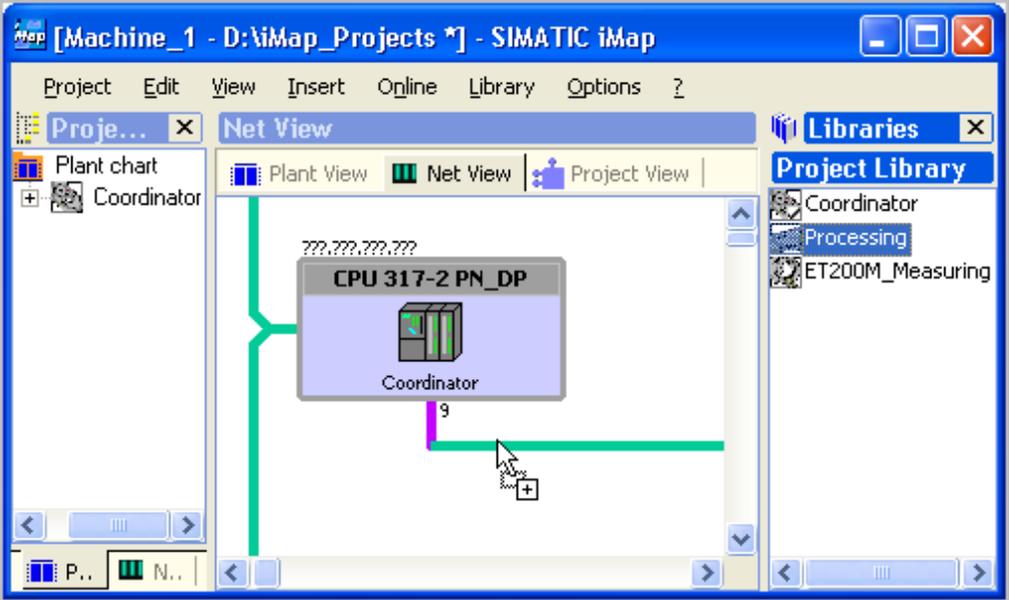
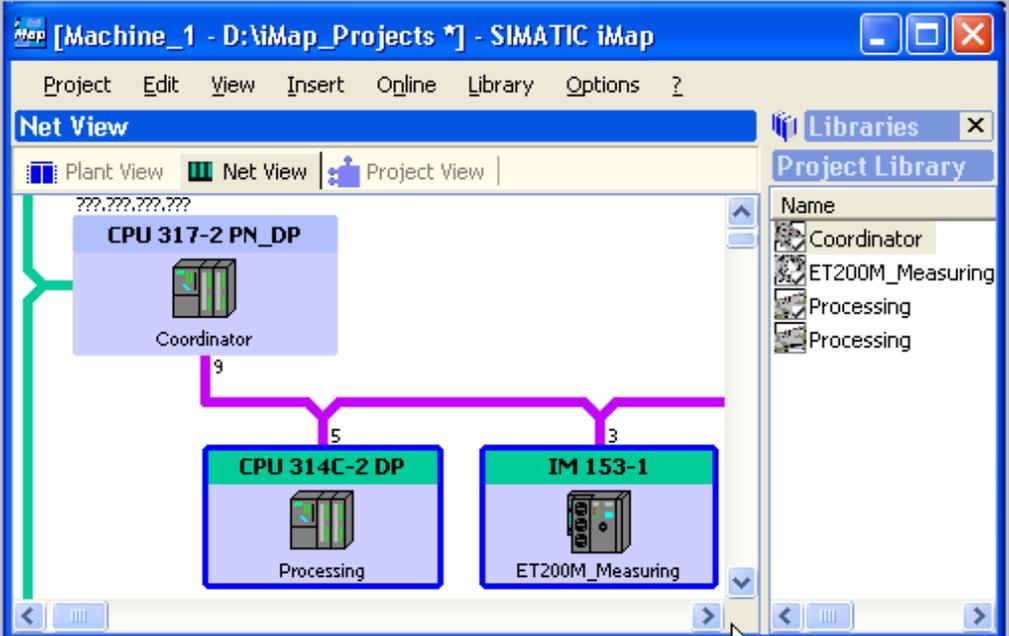
3.3.4.3 Machine 1 - Importing PROFINet Components

How to import PROFINet components into the project library

Task	Procedure
1.	Import the PROFINet component from the file system into the project library. Open the library window in SIMATIC iMap by selecting the menu command View > Library Window .
2.	Click on the "Project Library" window and select Import components from the context menu.
3.	Under "Search in", select the path Program\Siemens\iMap\CBA_Tutorial\Components .
4.	Select the "coordinator--{...}" folder. 
5.	Select the file "Coordinator.xml" and confirm your entry by pressing the "Open" button. Result: The PROFINet "Coordinator" component is entered into the project library.
6.	Repeat Steps 2 to 5 for the following PROFINet components. "Processing" (folder "processing--{...}" and file "Processing.xml") "ET200M_Measuring" (folder "et200m_measuring--{...}" and file "ET200M_Measuring.xml"). Result: The PROFINet components are entered into the project library and can now be used in the project. 

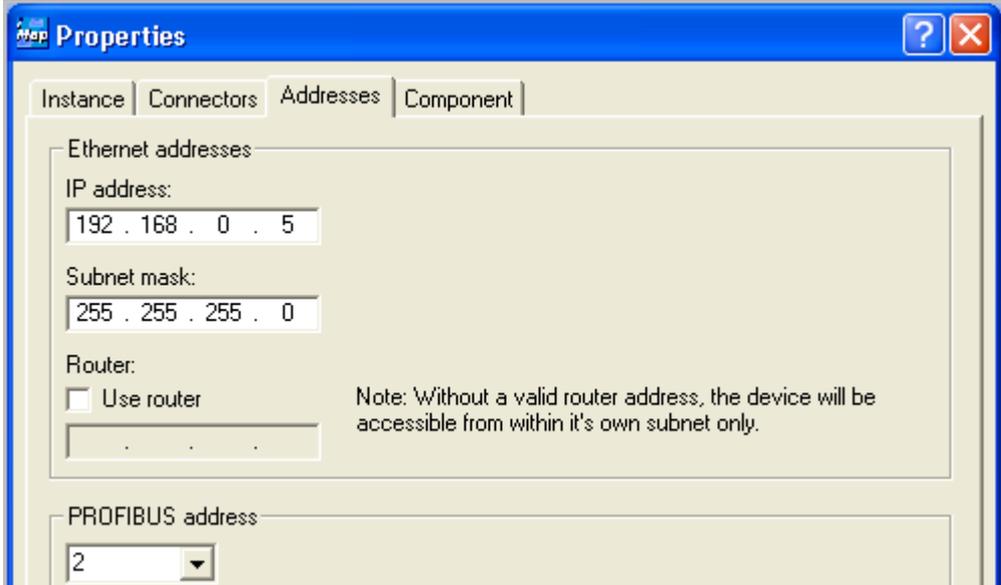
3.3.4.4 Machine 1: Inserting PROFINet Components into the Project

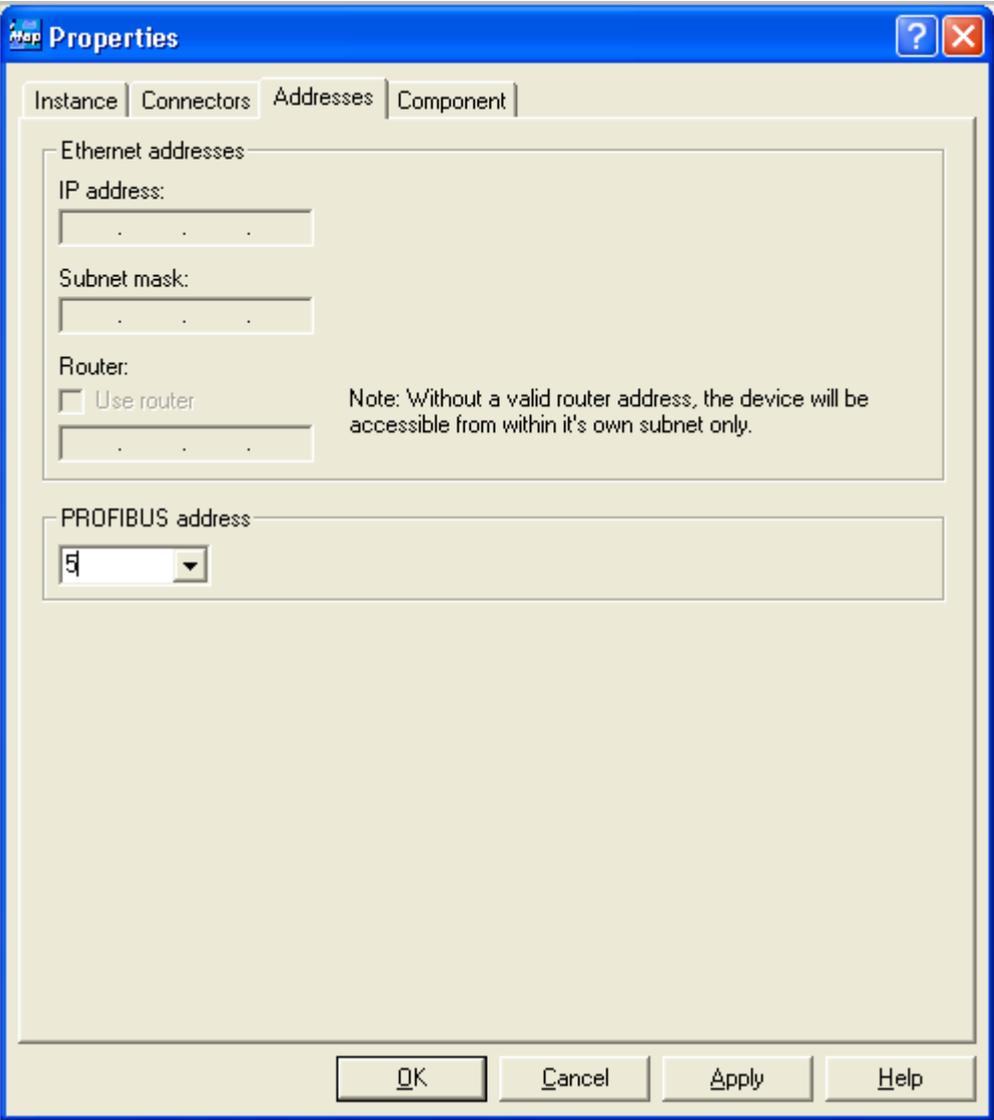
How to insert PROFINet components into the project

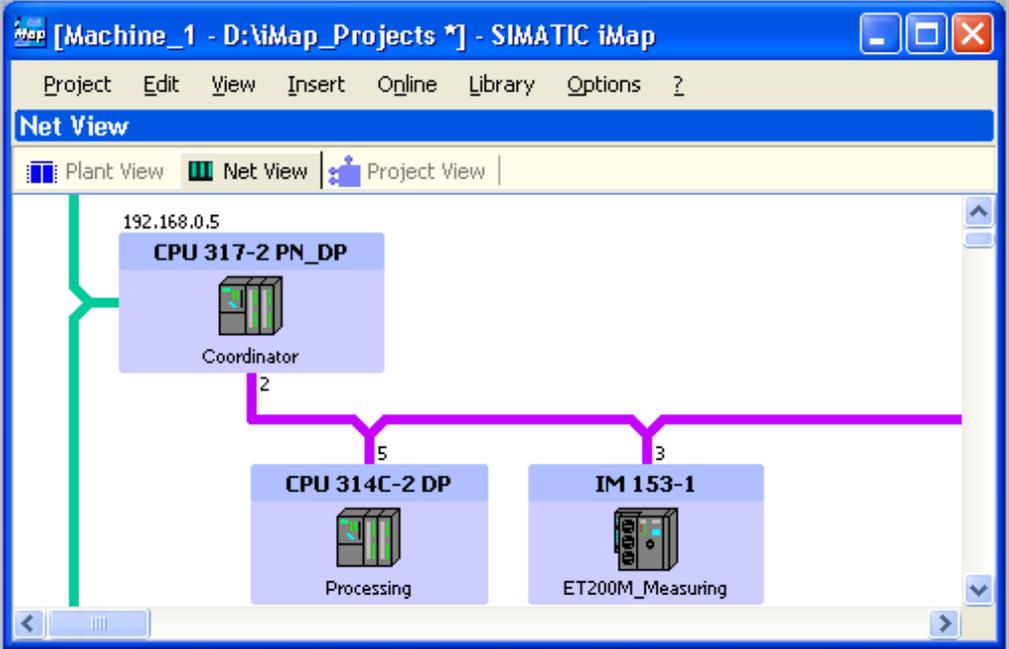
Task	Procedure
1.	<p>Open the net view of the project. Select "Coordinator" in project library and drag the icon into the net view. An instance of the PROFINet component is inserted into the project.</p> <p>The PROFINet device is automatically connected to the Ethernet in the net view and has a PROFIBUS connector as DP master with proxy functionality.</p>
2.	<p>Select the PROFINet "Processing" component in the project library and connect it to the PROFIBUS of the CPU 317-2 PN/DP using Drag and Drop.</p> 
3.	<p>Repeat Step 2 for the PROFINet "ET200M_Measuring" component.</p> 

3.3.4.5 Machine 1: Assigning Addresses

How to assign addresses to devices

Task	Procedure
1.	Open the properties of the CPU 317-2 PN/DP in the net view.
2.	<p>In the "Addresses" tab, enter the IP address and subnet mask together with the PROFIBUS address of the device as shown in the following illustration:</p> 

Task	Procedure
3.	<p>In the net view, open the properties of the PROFIBUS device "CPU 314C-2 DP" (Processing) and enter the PROFIBUS address of the device, e.g. 5, in the "Addresses" tab.</p> 

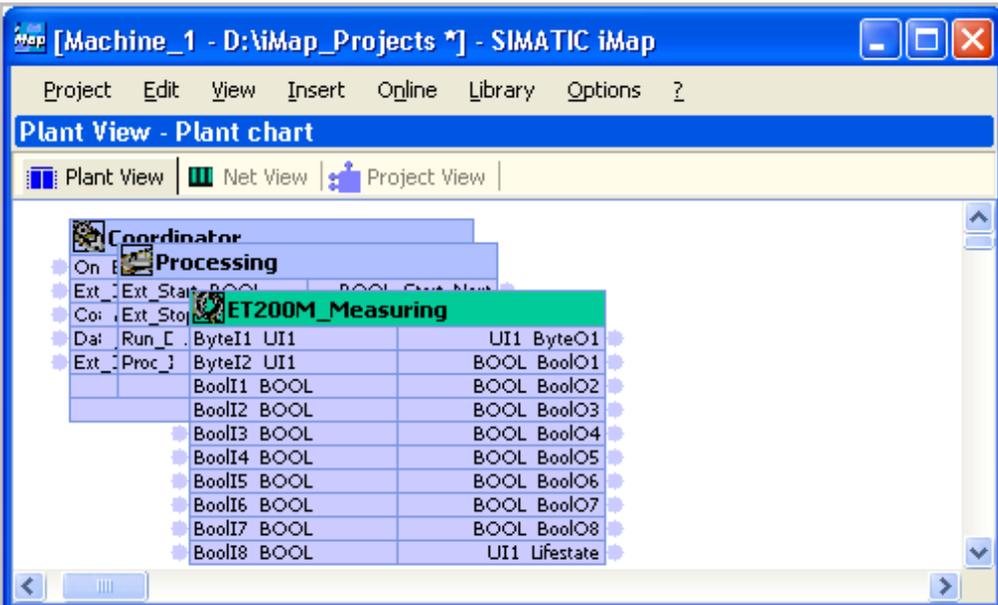
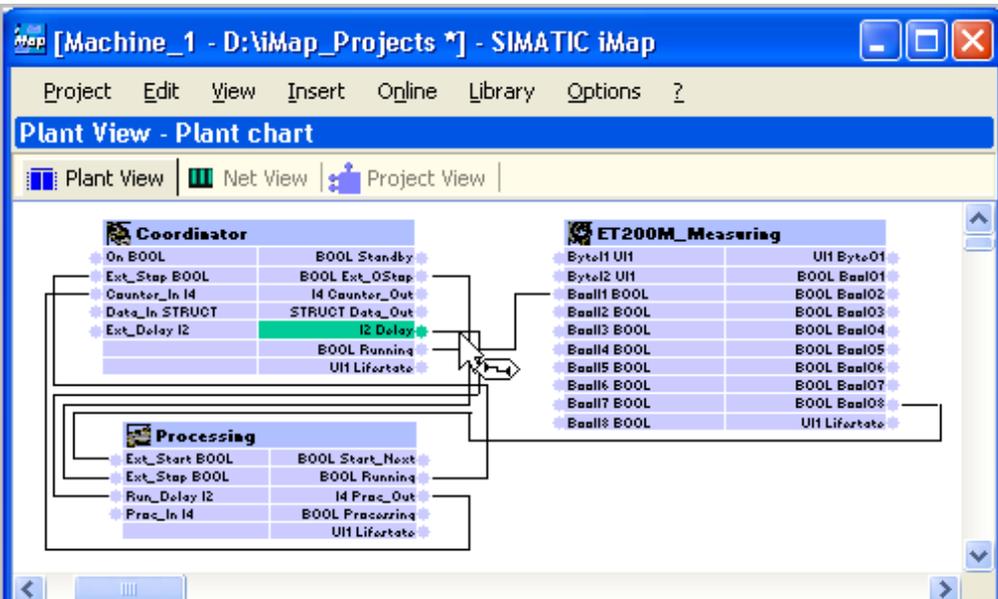
Task	Procedure
4.	<p>Repeat Step 3 for "IM153-1" (ET 200M_Measure) and assign the device the PROFIBUS address that is set by the DIL switch on the IM 153-1, e.g. 3.</p> <p>Machine 1 should then appear as follows in the net view:</p> 

Note

The addresses must match those set on the target devices. The addresses of the CPU 317-2 PN/DP and CPU 314C-2 DP are assigned for the first time from STEP 7 via MPI (see "Step 2: Assigning addresses to the devices for the first time").

3.3.4.6 Machine 1: Interconnecting Technological Functions and Generating the Project

How to interconnect technological functions and generate the project

Task	Procedure
1.	<p>Open the plant view. The technological functions are arranged on top of one another at first:</p> 
2.	<p>Arrange the technological functions and connect them as shown in the following illustration:</p> 

How to generate the project

Task	Procedure
1.	Generate the project <ul style="list-style-type: none"> • with the menu command Project > Generate > Control unit > Changes only or • by clicking on the "Generate" icon If the project has not yet been saved, you are prompted to give the project a name. In the dialog "Save SIMATIC iMap project As", select a folder and enter a name, for example, "Machine 1".
	Result: The project is saved and generated.
2.	Follow the progress of the generation in the information window of the "Generate" tab.
	Result: The plant is configured. It can now be put into operation.

Additional information...

Additional information can be found in the basic help of SIMATIC iMap under:

- Interconnecting Technological Functions
- Generating the Project

3.3.5 Step 4: Checking the Required Settings on the Engineering Station for Machine 1

3.3.5.1 Checking the Required Settings on the Engineering Station for Machine 1

Requirements

- See Chapter "Requirements for Commissioning the System"
- The PG/PC must be connected to the CPU 317-2 PN/DP with an Ethernet cable.

Check your settings

Check the following settings:

- Set the PG/PC Interface to TCP/IP
- Assigning the PG/PC

Note

The PG/PC only has to be assigned in special situations, e.g.:

When several network cards are installed in the PG/PC or

If the PG/PC interface S7ONLINE (STEP 7) is not set to TCP/IP.

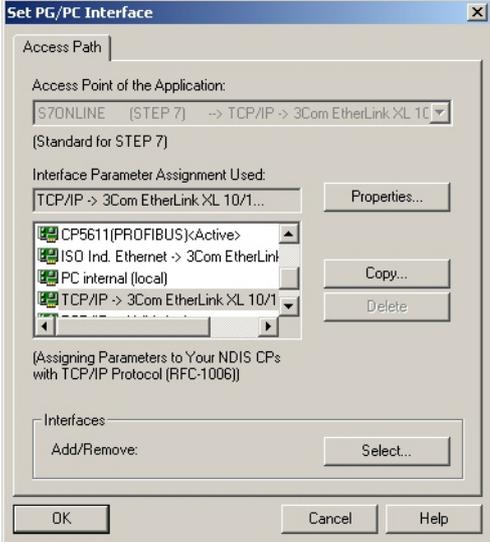
Otherwise the PG/PC assignment runs automatically when the project is generated in SIMATIC iMap, and you may skip this step.

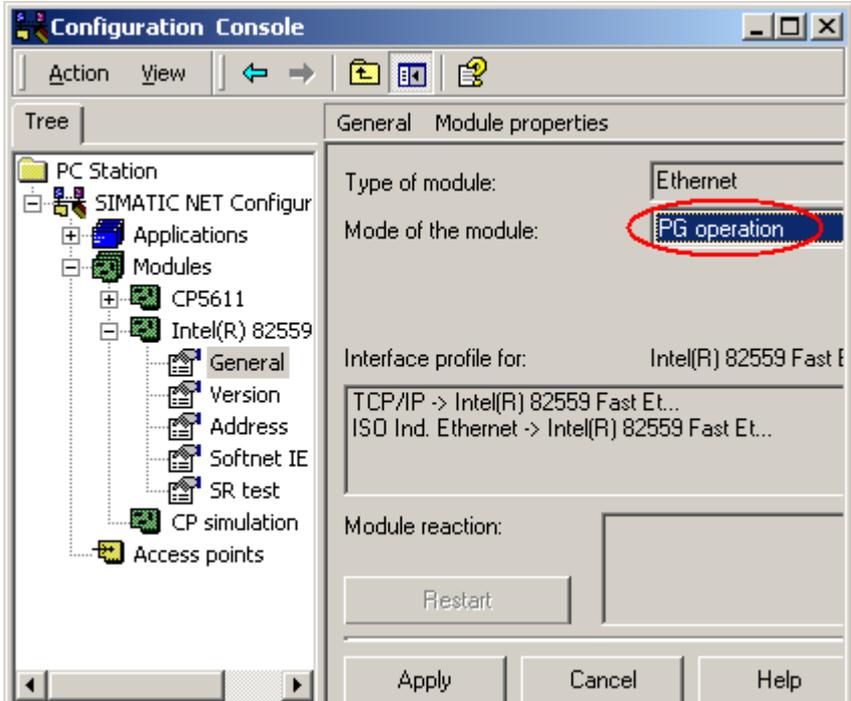
Additional information

Detailed information can be found in the online help for this dialog or in the SIMATIC iMap help topics under "Assign PG/PC".

3.3.5.2 Set the PG/PC Interface to TCP/IP

How to set the PG/PC interface to TCP/IP

Task	Procedure
1.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > PG/ PC Interface and check the following setting: "TCP/IP" must be set as the access point for the "S7ONLINE (STEP 7)" application.</p> 
2.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > Set PC Station. The configuration console opens.</p>

Task	Procedure
3.	<p>In the SIMATIC NET configuration, select the Ethernet module of the computer.</p>  <p>The "PG mode" operating mode must be set under "General".</p>
4.	Accept any changes and close the configuration console.

3.3.5.3 Assigning the PG/PC

Note

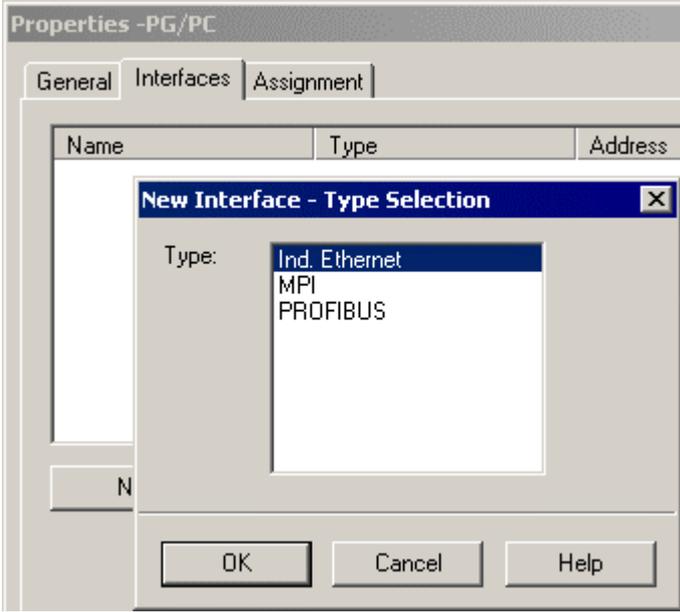
The PG/PC assignment in SIMATIC iMap is automatically performed during the initial generation and anytime the project is newly generated. In special cases it may not be possible to automatically assign the PG/PC, for example:

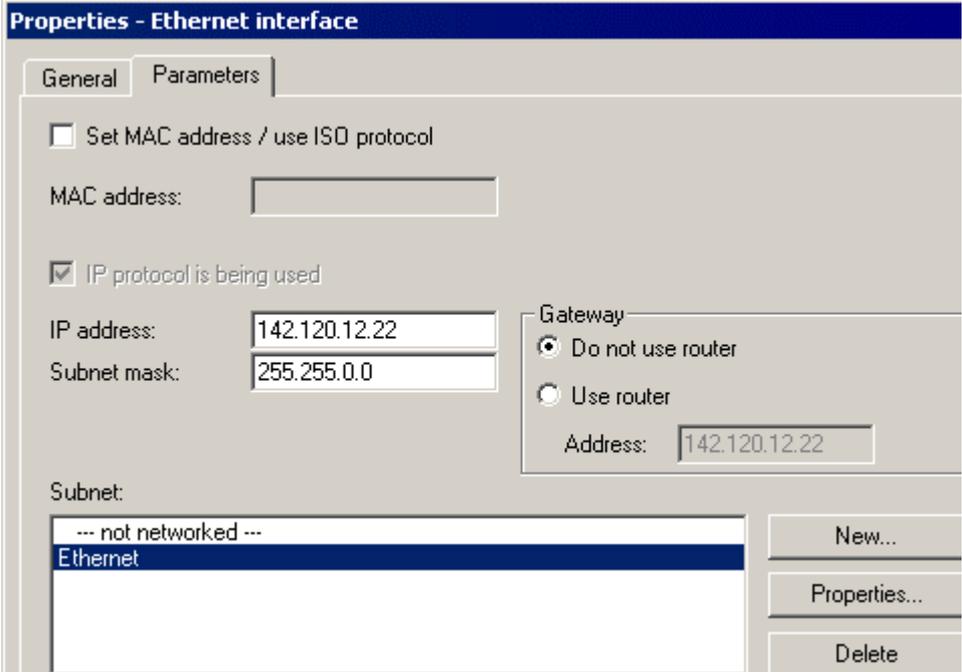
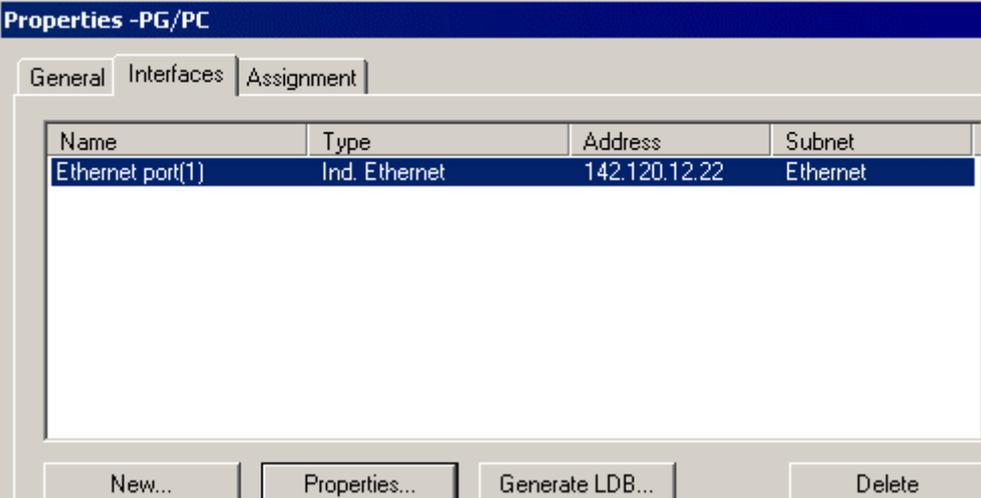
- When several network cards are installed in the PG/PC or
- When the PG/PC interface S7ONLINE (STEP 7) is not set to TCP/IP

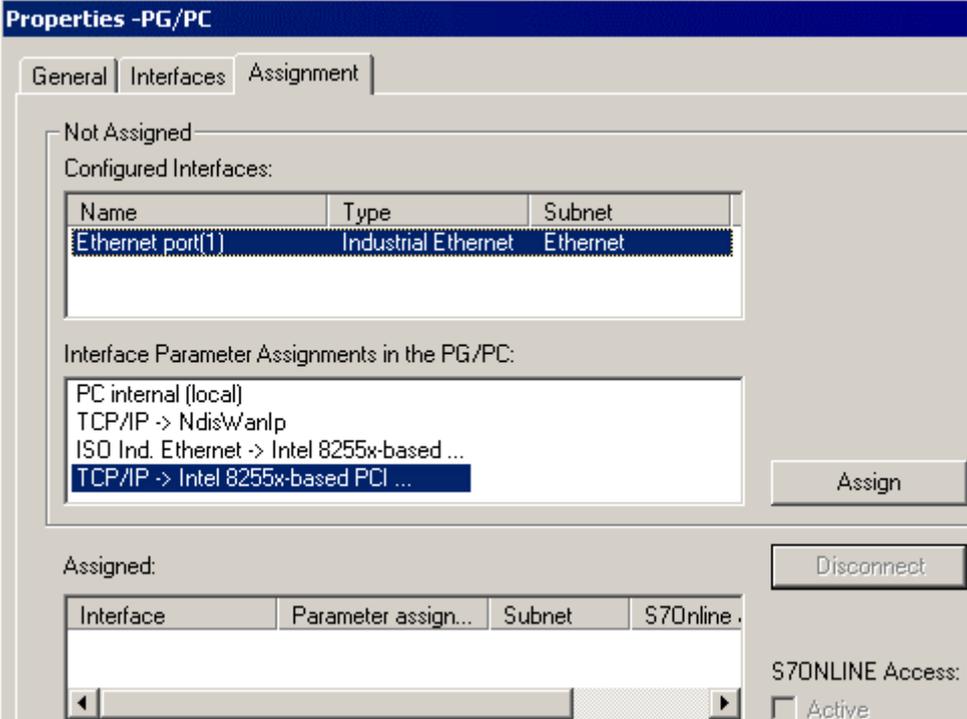
In such situations an error is reported during generation and you must perform the PG/PC assignment as described in the following.

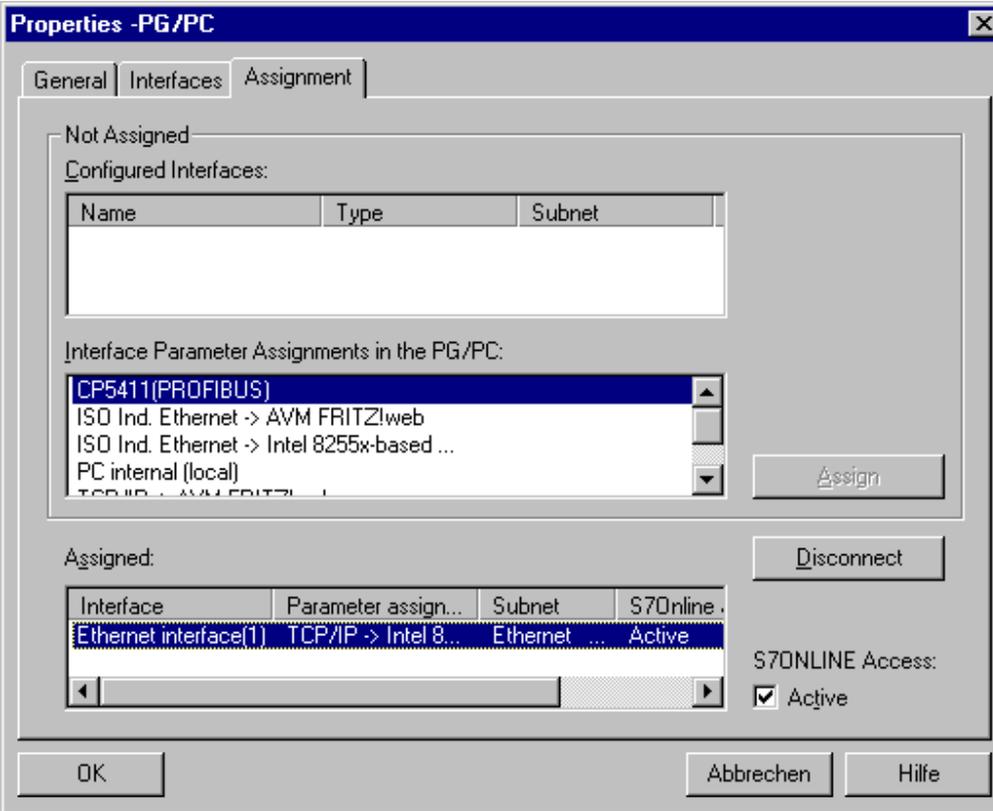
The PG/PC assignment is not necessary when you are using a local WinLC PN which contains a network card in its configuration.

How to assign the PG/PC interface to the SIMATIC iMap project

Task	Procedure
1.	Open the SIMATIC iMap project. Select any device from the SIMATIC iMap net view, then select Special > Assign PG/PC from the context menu. This is necessary to be able to perform the program download to the intelligent PROFIBUS devices.
2.	<p>In the "Interfaces" tab of the "PG/PC Interface" dialog, press the "New" button and select "Industrial Ethernet" from the list.</p>  <p>Click on the "OK" button to confirm your entry.</p>

Task	Procedure								
3.	<p>In the "Properties - Ethernet Interface" dialog, enter the IP address and the subnet mask of the local computer and select the Ethernet subnet.</p> 								
4.	<p>Click on the "OK" button to confirm your entry. Result: The newly configured interface is displayed in the "Interfaces" tab.</p>  <table border="1" data-bbox="411 1305 1337 1624"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Address</th> <th>Subnet</th> </tr> </thead> <tbody> <tr> <td>Ethernet port(1)</td> <td>Ind. Ethernet</td> <td>142.120.12.22</td> <td>Ethernet</td> </tr> </tbody> </table>	Name	Type	Address	Subnet	Ethernet port(1)	Ind. Ethernet	142.120.12.22	Ethernet
Name	Type	Address	Subnet						
Ethernet port(1)	Ind. Ethernet	142.120.12.22	Ethernet						

Task	Procedure						
5.	<p>In the "Assignment" tab, mark the Ethernet interface you have just configured in the "Configured interfaces:" selection field below "Not assigned". In the "Interface parameter settings on the PG/PC:" select</p> <p>TCP/IP -> <network card used></p>  <p>The screenshot shows the 'Properties -PG/PC' dialog box with the 'Assignment' tab selected. Under 'Not Assigned', the 'Configured Interfaces' table has the following data:</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Subnet</th> </tr> </thead> <tbody> <tr> <td>Ethernet port(1)</td> <td>Industrial Ethernet</td> <td>Ethernet</td> </tr> </tbody> </table> <p>Below this, the 'Interface Parameter Assignments in the PG/PC' list contains:</p> <ul style="list-style-type: none"> PC internal (local) TCP/IP -> Ndis/wanlp ISO Ind. Ethernet -> Intel 8255x-based ... TCP/IP -> Intel 8255x-based PCI ... (selected) <p>The 'Assigned' table is currently empty. The 'S7ONLINE Access' checkbox is unchecked.</p>	Name	Type	Subnet	Ethernet port(1)	Industrial Ethernet	Ethernet
Name	Type	Subnet					
Ethernet port(1)	Industrial Ethernet	Ethernet					

Task	Procedure
6.	<p>Confirm by clicking on the "Assign" button. Result: The assigned interface is displayed in the "Assigned" field. Activate the option "S7ONLINE access".</p>  <p>The assignment becomes effective by clicking on "OK".</p>

3.3.6 Step 5: Commissioning Machine 1

Requirements

- See Chapter "Requirements for Commissioning the System"
- The settings in STEP 7 have been checked.
- The project has been generated in SIMATIC iMap.
- The PG/PC must be connected to the CPU 317-2 PN/DP with an Ethernet cable.
- The CPU 317-2 PN/DP must be connected to the DP slaves via PROFIBUS.
- All device are switched on.

Tip: Check the generation status.

Open the project view to determine the generation status of the device. The following illustration shows an example of a generation status.

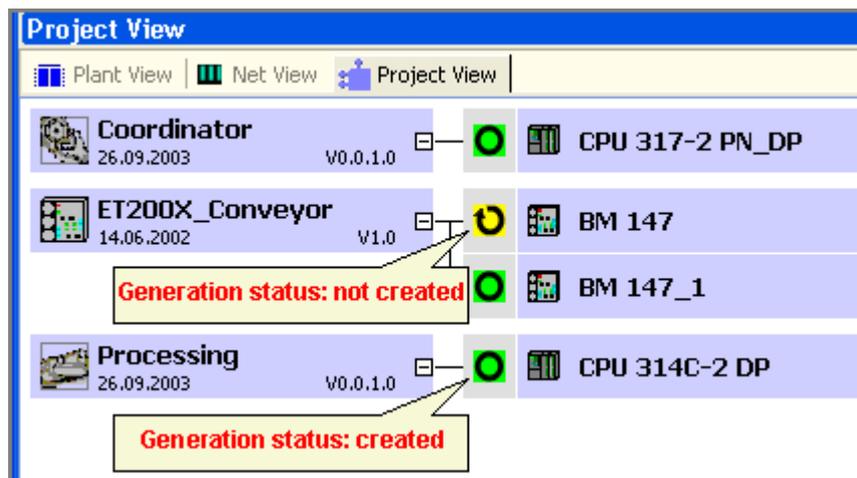
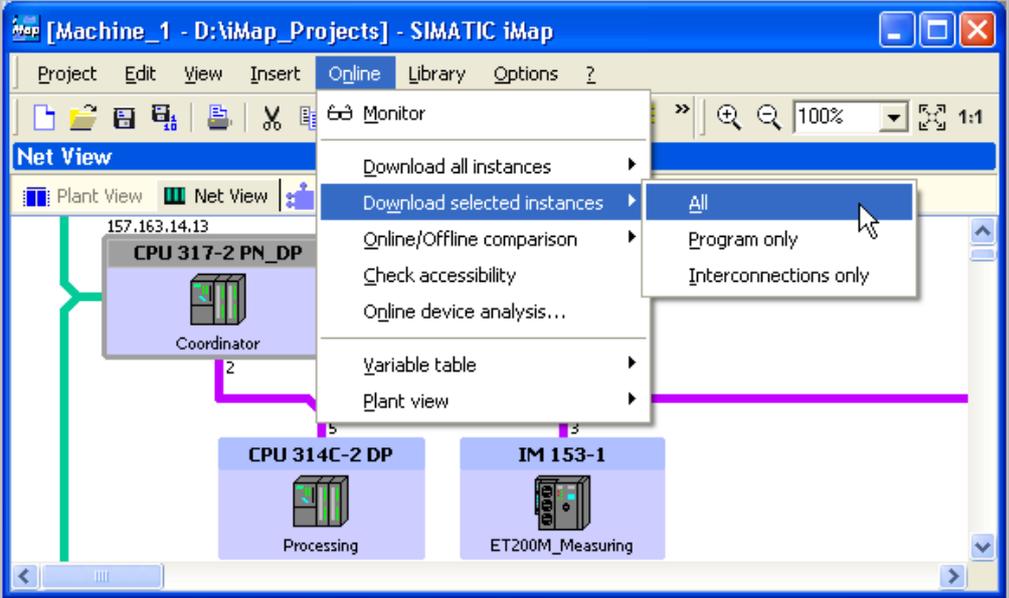


Figure 3-2 Example: Generation status in the project view

The generation status must be "Created". If it is not, generate the project again with the menu command **Project > Generate > Control unit > Changes only**.

How to download the project configuration data to the target systems

Task	Procedure
<p>1.</p>	<p>In SIMATIC iMap: Select the CPU 317-2 PN/DP the net view. Download the data into the device using the command Download Selected Instances > All from the context menu.</p> 
<p>2.</p>	<p>When the CPU 317-2 PN/DP is in RUN, you will be asked if you wish to stop the device. Click on "Yes" to confirm the question. Result: The CPU 317-2 PN/DP is set to STOP and the data is downloaded to the device. You are then asked if you wish to start the device again. Click on "Yes" to confirm the question. You can now download the data to the DP slaves.</p>
<p>3.</p>	<p>Select</p> <ul style="list-style-type: none"> • the device in the net view or • the technological functions in the plant view <p>of the other two PROFINet components, "Processing" and "ET200M_Measuring". Download the data into the devices using the command Download Selected Instances > All from the context menu. For the CPU 314C-2 DP you will be asked the same questions described under Step 2, which you should answer with "Yes" in each case.</p>
	<p>Result: The device are ready for operation.</p>

Notes about downloading

The data must be first downloaded to the DP master with proxy functionality (CPU 317-2 PN/DP) and then to the corresponding DP slaves.

The programs must be downloaded to the DP master and DP slaves each time changes are made to the PROFIBUS in the project, for example, each time PROFIBUS devices are added or removed.

The program download must first be performed with either:

- **Download Selected Instances > All** or
- **Download Selected Instances > Program only**

The interconnections can be subsequently downloaded.

Additional information...

Additional information can be found in the basic help of SIMATIC iMap under:

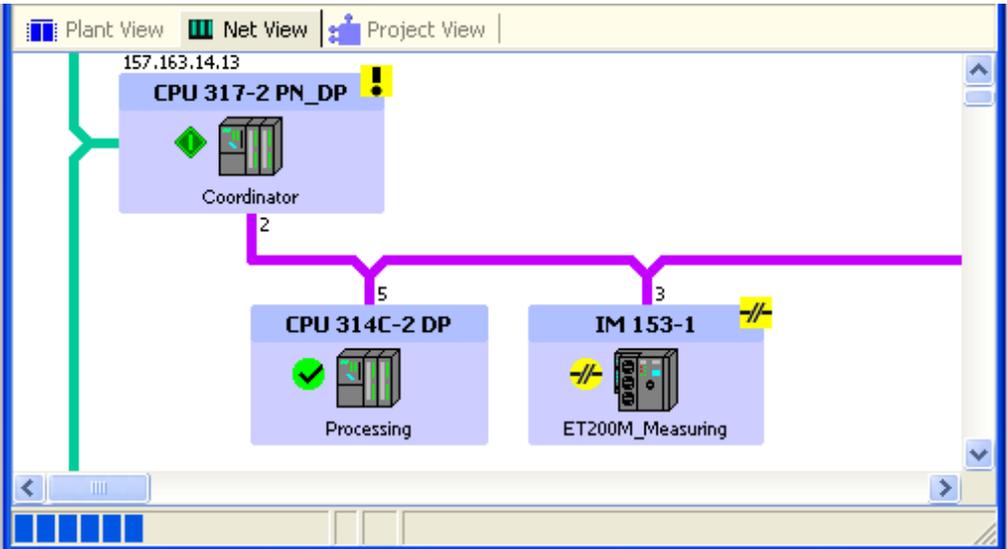
- Download
- Generating the Project

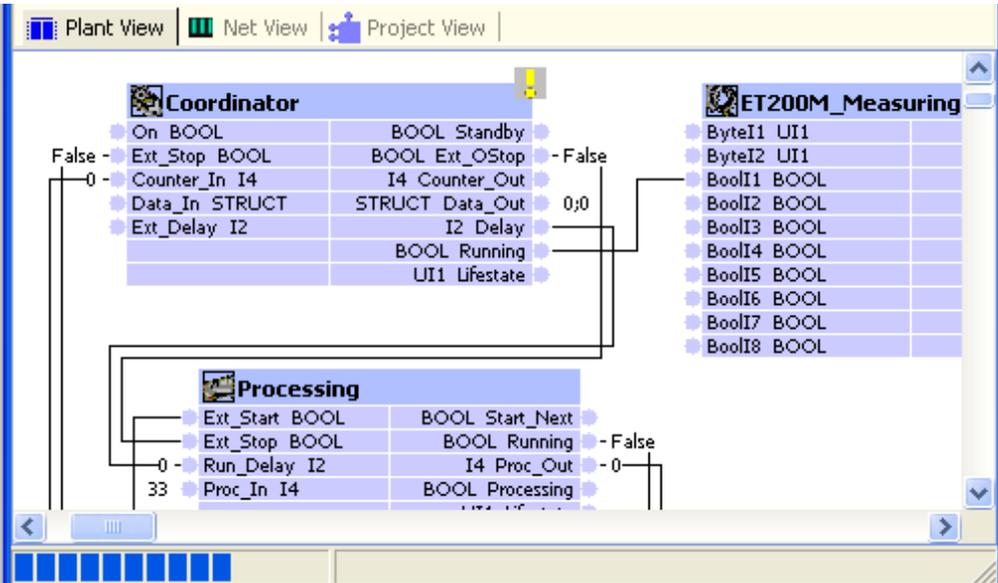
3.3.7 Step 6: Online Monitoring of Machine 1

Requirements

- See Chapter "Requirements for Commissioning the System"
- The PG/PC must be connected to the PC station or one of the PROFINet devices via Ethernet.
- The settings in STEP 7 have been checked.
- The project has been generated in SIMATIC iMap.
- The data has been downloaded to the devices.

How to switch online view on and off

Task	Procedure
1.	<p>Switching online view on/off</p> <p>To switch on the online view in SIMATIC iMap:</p> <ul style="list-style-type: none"> • Click on the "Online Monitoring" icon or • Select Online > Monitor. <p>You are asked if you wish to compare the online and offline program data of the devices. This comparison is optional. You can perform it immediately or at a later point in time.</p> <p>If you answer with "Yes", the data is compared and the results are displayed in the information window.</p> <p>Result: The online view of SIMATIC iMap is switched on and any diagnostic information is immediately displayed on the devices and technological functions in the diagnostics window.</p> 

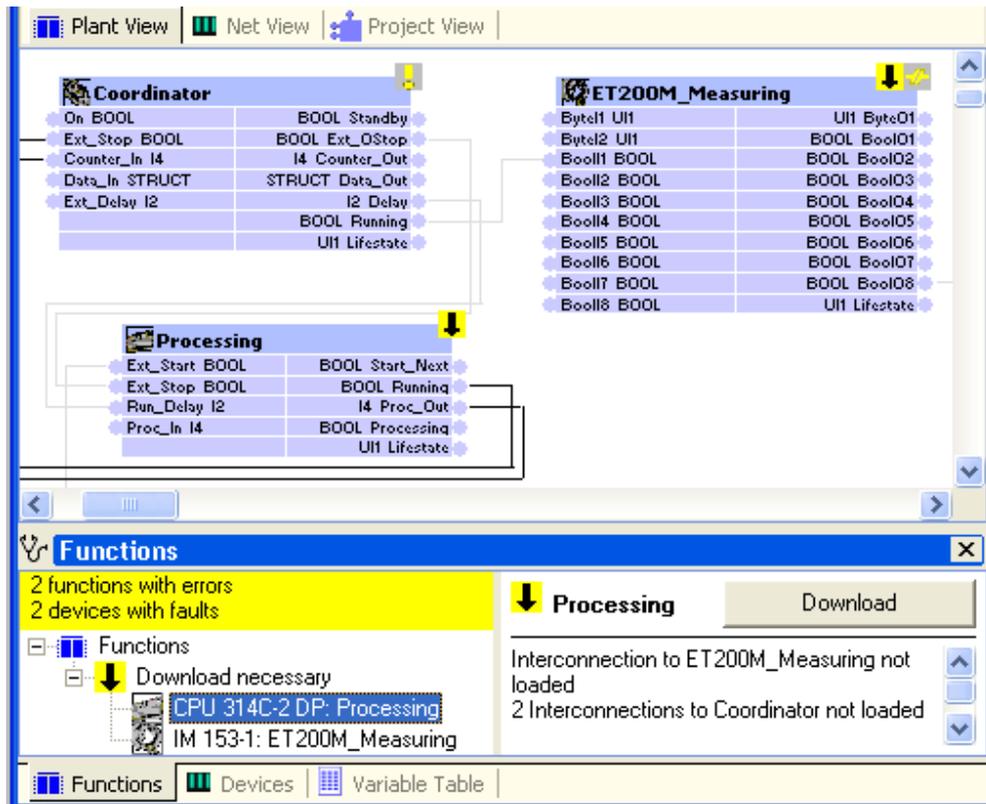
Task	Procedure
<p>2.</p>	<p>Displaying online values</p> <p>In the plant view of the project select the input "Counter_In" of the "Processing" machine and the output "Counter_Out" of the "Coordinator" and then select the menu command Online > Plant view > Display online value. The current online value is then displayed at the connectors.</p> 
<p>3.</p>	<p>Click again on the "Online Monitoring" icon or select the Online > Monitor option to switched off the online view.</p>

Displaying diagnostics information

Diagnostic information is displayed in graphic or text form in SIMATIC iMap if an error occurs.

The diagnostic information for the technological functions is available in the "Functions" tab of the diagnostics window.

Example: You need to download the interconnections for the ET200M. Press the "Download" button in the right section of the diagnostics window.



The diagnostic information for the devices is available in the "Devices" tab of the diagnostics window.

Example: The device is not available. In this case, you need to check the settings and the communication connections.

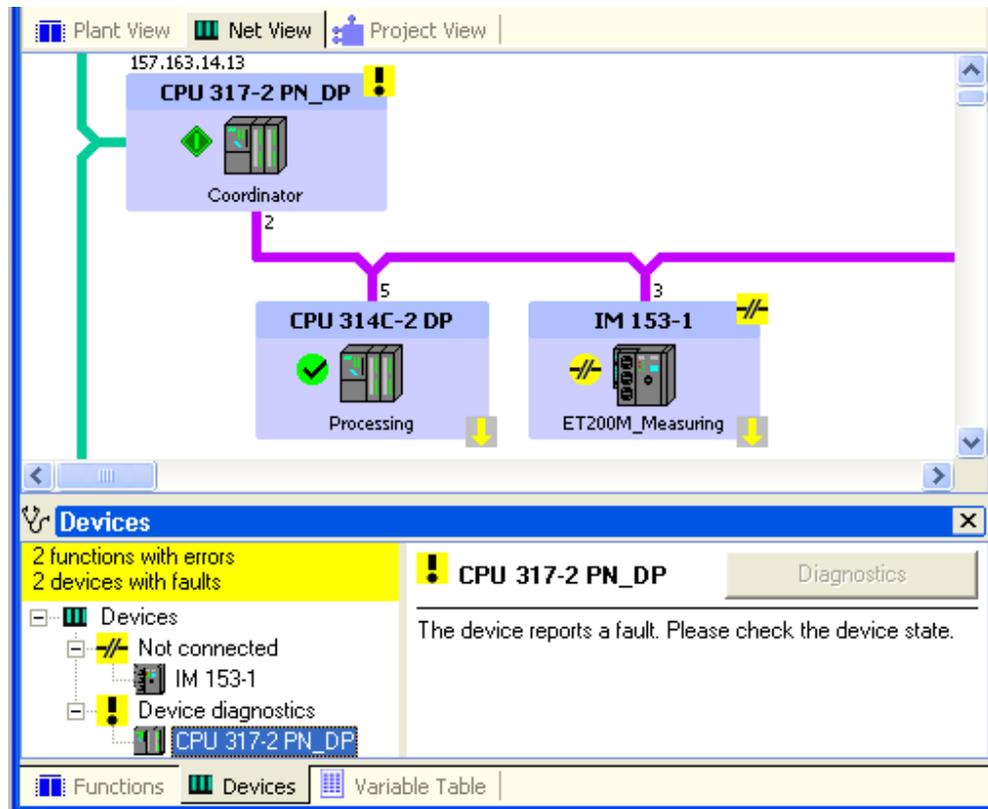


Figure 3-3

Additional information...

Additional information can be found in the basic help of SIMATIC iMap under:

- Diagnostics concept in SIMATIC iMap
- Plant with SIMATIC devices
- Possible data types and value ranges

3.4 Machine 2

3.4.1 Machine 2, Scanning: IE/PB Link with PROFIBUS DP Slaves

Configuration of Machine 2

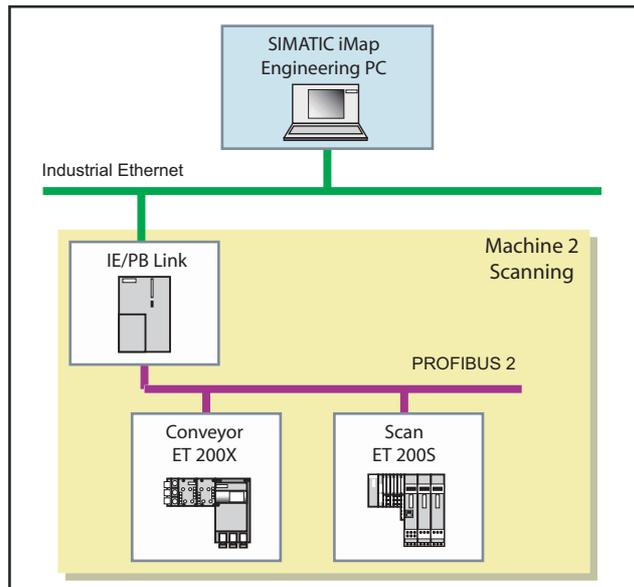


Figure 3-4 Machine 2, Scanning

Machine 2 consists of the following devices:

- One IE/PB Link
A PROFINet device as DP master with proxy functionality for the following PROFIBUS devices:
- ET 200S with IM 151/CPU
as intelligent DP slave for controlling a scanning station "ET200S_Scan"
- ET 200X with BM147/CPU
as intelligent DP slave for controlling a conveyor belt "ET200X_Conveyor"

Required steps

1. Set up the hardware of the plant:
 - IE/PB Link
 - ET 200S with IM151/CPU
 - ET 200X with BM147/CPU
2. Assigning Addresses
 - Assign an IP address to the IE/PB Link the first time
 - Assign the IM151/CPU and BM 147/CPU a PROFIBUS address the first time.
3. Configure plant in SIMATIC iMap.
4. Check the settings in STEP 7
 - Optional - required for the program download to the target device of the plant and for diagnostics of each device.
5. Commission the plant
6. Online monitoring of plant with SIMATIC iMap

3.4.2 Step 1: Setting up the Hardware for Machine 2

3.4.2.1 ET 200S with IM151/CPU - Hardware Setup

Required Hardware

You will require the following modules:

Qty.	Designation	Order number
1x	Interface module IM151/7 CPU and terminal module, 1 unit	6ES7 151-7AA10-0AB0 / V2.1
2 x	Terminal module TM-P15S23-A1, 1 unit	6ES7 193-4CC30-0AA0
2 x	Terminal module TM-E15S24-A1, 5 units	6ES7 193-4CA20-0AA0
2 x	Power module PM-E DC24 V, 1 unit	6ES7 138-4CA00-0AA0
1x	2DI DC24V; High Feature, 2 units	6ES7 131-4BB00-0AB0
1x	2DO DC24V; 0.5 A; High Feature, 2 units	6ES7 132-4BB00-0AB0
1x	Bus connector	6ES7 972-0BA10-0XA0

How to set up the ET 200S

Task	Procedure
1.	Mount the modules on the rail.
2.	Connect the power supply.
3.	Wire the I/O module.
4.	Connect the PG/PC with the PG cable to the IM151/CPU.
5.	Switch on the power supply of the IM151/CPU.

3.4.2.2 ET 200X with BM 147/CPU - Hardware Setup

Required Hardware

You will require the following modules:

Qty.	Designation	Order number
1x	Basic Module BM147/CPU	6ES7 147-1AA10-0XB0 / V2.1
1x	Expansion module DI 4xDC24V	6ES7 141-1BD30-0XA0
1x	Expansion module DO 4xDC24V/0.5A	6ES7 142-1BD30-0XA0

How to set up the ET 200X

Task	Procedure
1.	Mount the modules on the rail.
2.	Connect the power supply.
3.	Wire the I/O module.
4.	Connect the IE/PB Link to the BM147/CPU with the PROFIBUS cable.
5.	Switch the IE/PB Link on if you have not already done so.

3.4.2.3 IE/PB Link - Hardware Setup

Required Hardware

One network gateway IE/PB Link with the required accessories (see Device Manual).

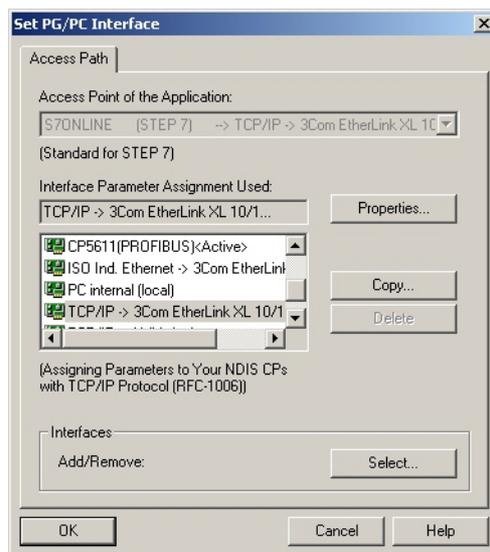
How to set up the IE/PB LinkTask	Procedure
1.	Mount the modules on the rail.
2.	Connect the power supply.
3.	Connect the IE/PB Link to the Ethernet and PROFIBUS.
4.	Switch the power supply on.

3.4.3 Step 2: Assigning the Devices with Addresses the First Time

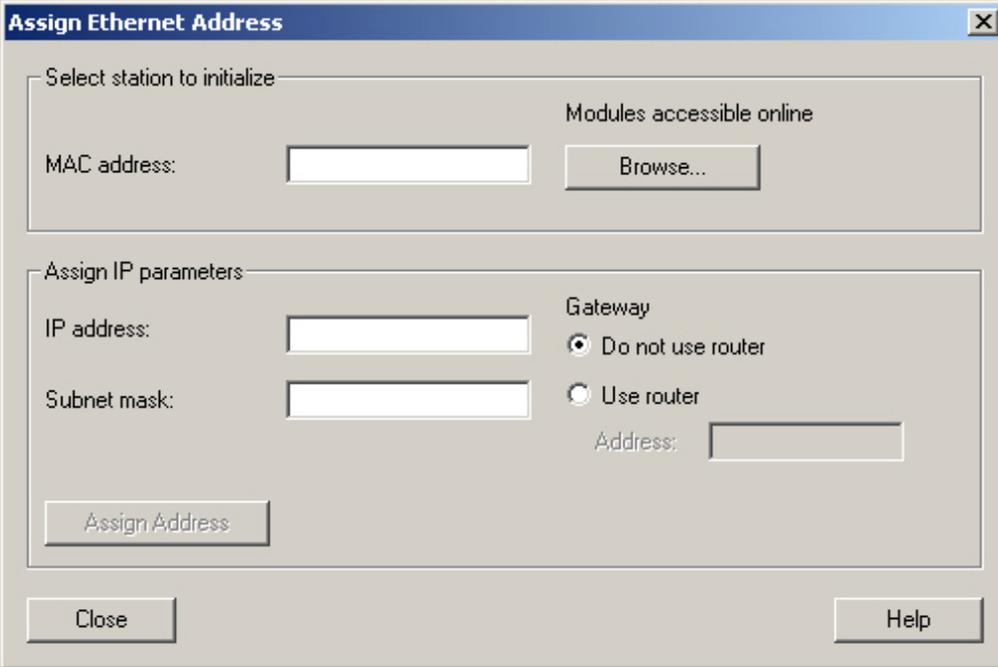
3.4.3.1 Assigning an IP Address to the IE/PB Link the First Time

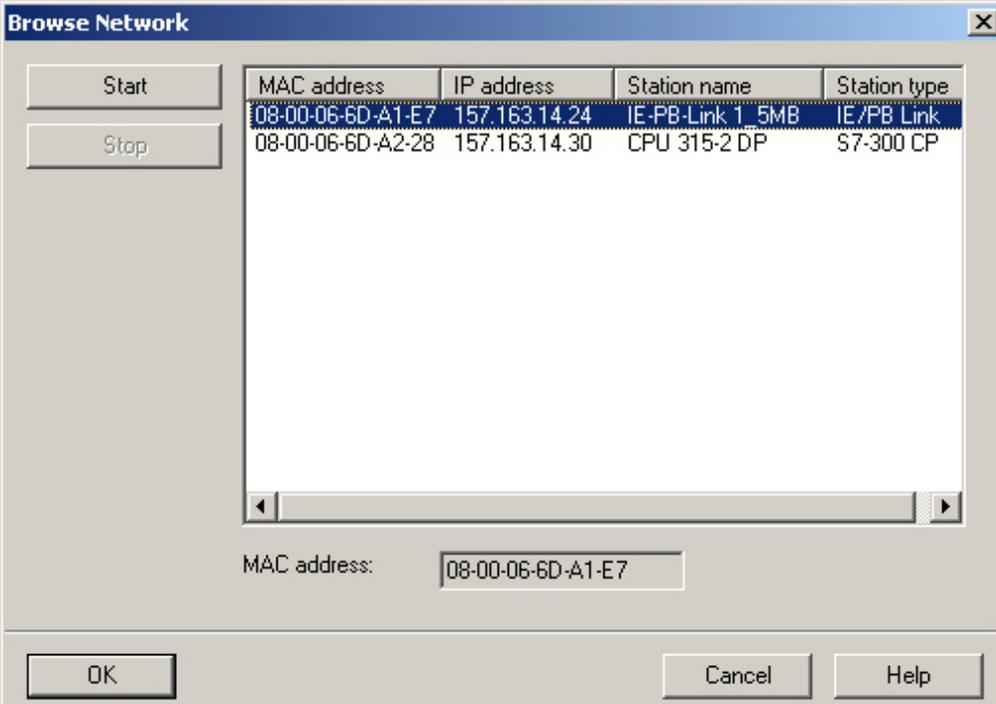
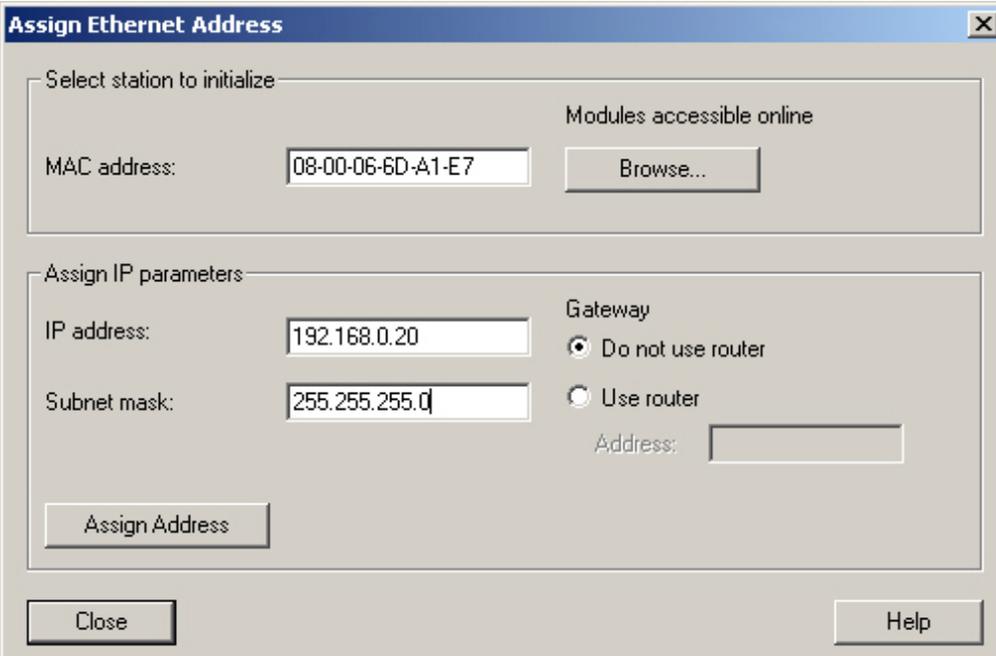
Requirements

- The IP address of the IE/PB Link must be known.
- The connector to the Ethernet LAN must be established; no subnet gateway (router) should be inserted.
- The Ethernet connector of the PG/PC must be available from STEP 7; the PG/PC interface must be set as follows:
S7ONLINE [STEP 7] > TCP/IP > <network module>.
To set the PG/PC interface, select the command **Extras > Set PG/PC interface...** in the SIMATIC Manager or the Windows start menu command **Start > SIMATIC > SIMATIC NET > Settings > Set PG-PC interface .**



How to assign an IP address to the IE/PB Link the first time

Task	Procedure
1.	Open the SIMATIC Manager.
2.	<p>Select the command PLC > Assign Ethernet Address.</p> 
3.	<p>Click on the "Browse..." button to search the network for accessible modules. All accessible stations on the network are displayed.</p>

Task	Procedure
4.	<p>Select the CP with the right MAC address from list of the available components. 0.0.0.0 is displayed in the "IP Address" column the first time an address is assigned.</p> 
5.	<p>Enter the IP parameters as shown in the following diagram and assign them to the IE/PB Link.</p> 
6.	<p>Connect the DP slaves to the IE/PB Link with the PROFIBUS cable.</p>

3.4.3.2 Assigning a PROFIBUS Device a PROFIBUS Address the First Time

The first time, you must download the PROFIBUS address from STEP 7 to the target device via MPI, if you have not already done so.

This chapter also applies for the following PROFIBUS devices (central modules as intelligent DP slaves):

- CPU 314C-2 DP
- IM 151/CPU
- BM 147/CPU

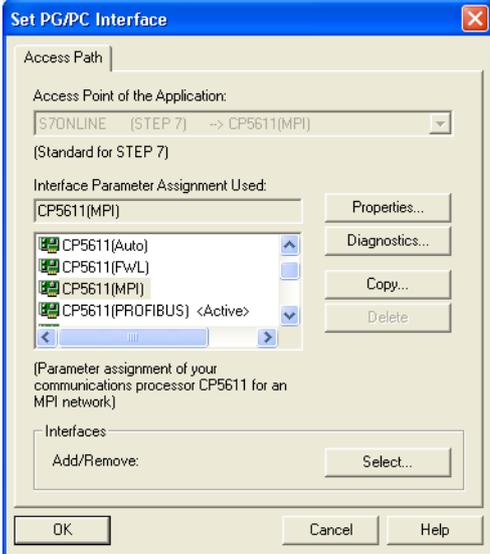
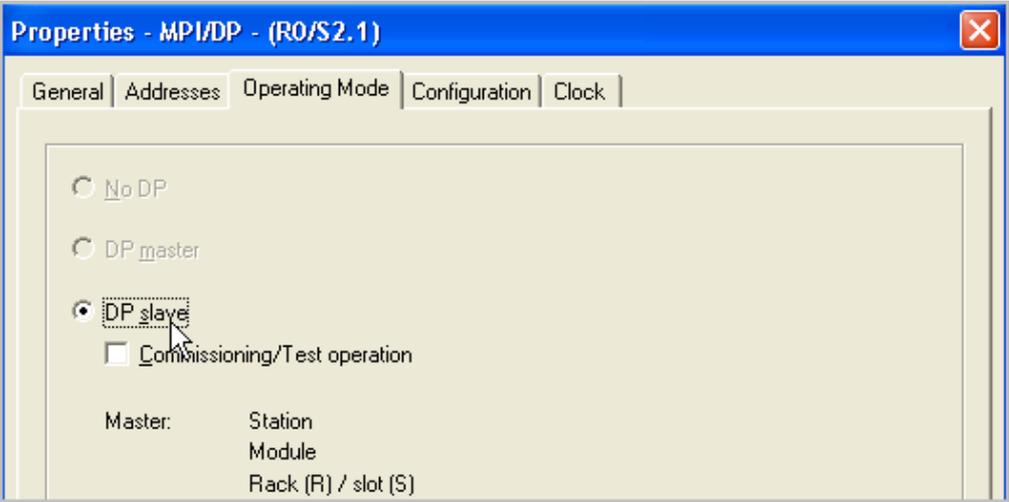
Note

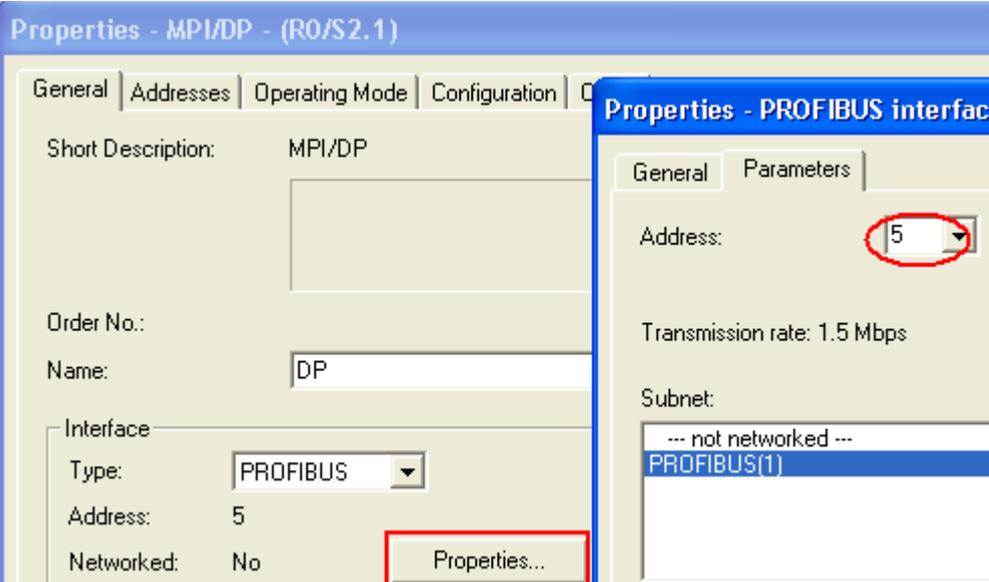
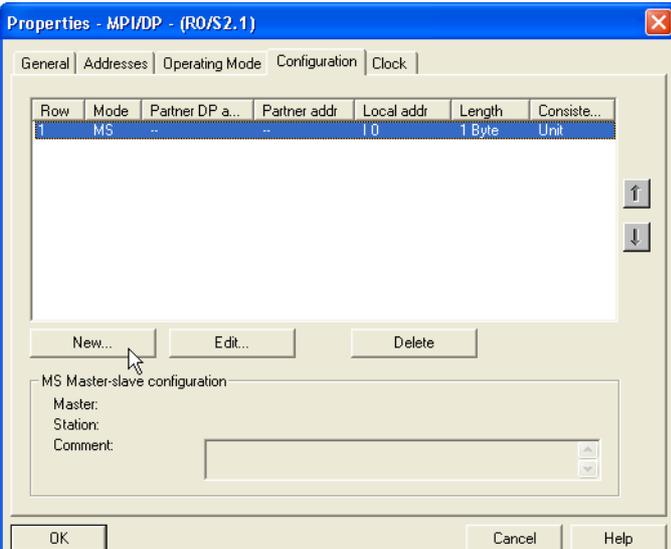
For initial commissioning (as-delivered state), each of these modules can be accessed via MPI address 2, HSA 31 and at 187.5 kBps.

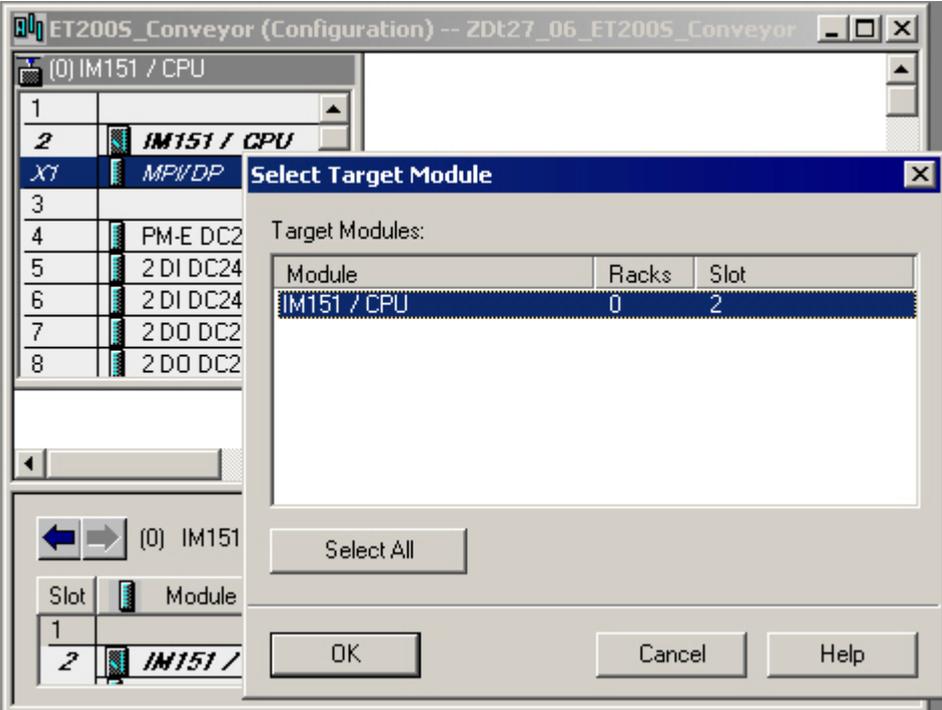
Requirements

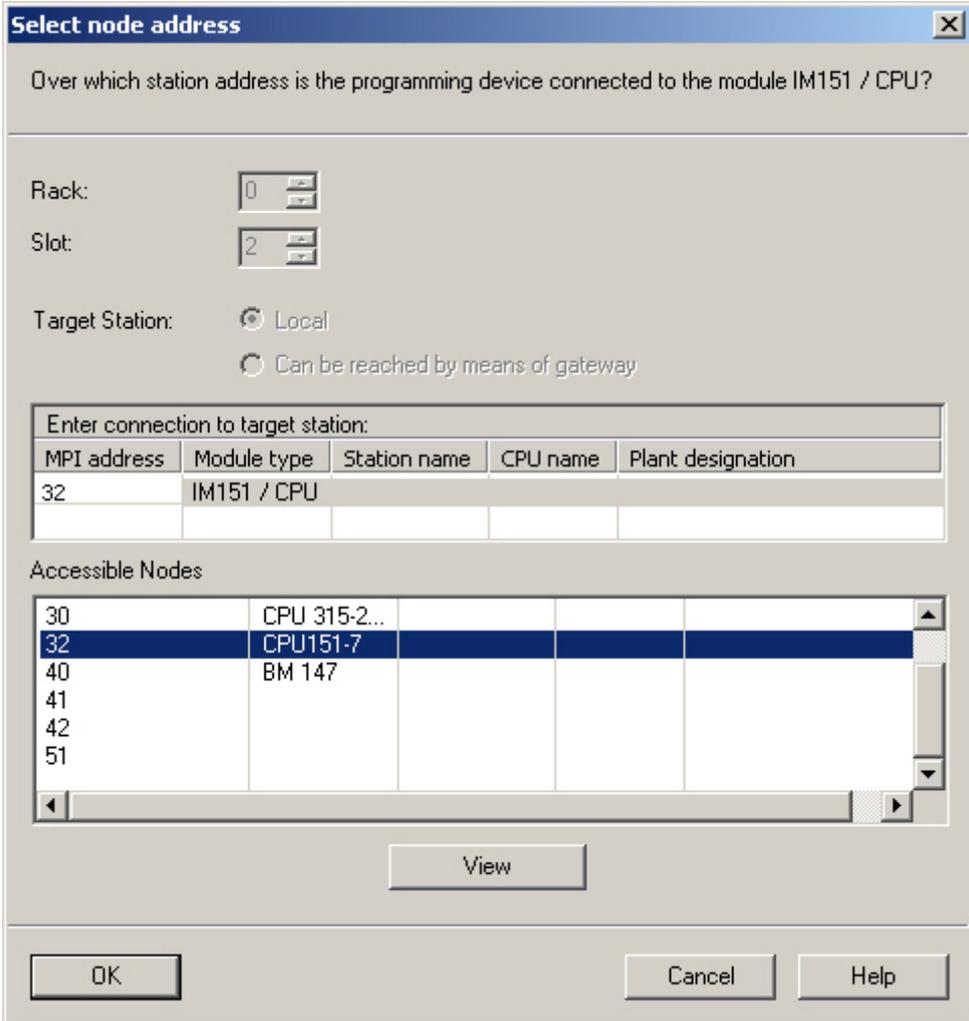
- The CPU must be in STOP.
- The PG/PC must be connected to the CPU with a PG cable.

How to assign a PROFIBUS address to the CPU acting as a DP slave the first time

Task	Procedure
1.	<p>Set the PG/PC interface to MPI.</p> <p>From the Windows taskbar, select Start > SIMATIC > STEP 7 > Set PG/ PC interface. Configure the PG/PC interface so that the S7ONLINE (STEP 7) access point is set to MPI:</p> 
2.	<p>Start SIMATIC Manager and create a temporary project with a SIMATIC 300 station. This project will only be used for assigning addresses for the first time.</p>
3.	<p>Open the station hardware configuration and configure the appropriate CPU (CPU 314C-2 DP, IM 151/CPU or BM 147/CPU) as a DP slave. You will not need any I/O modules.</p> <p>In the object properties for the DP interface, select "DP Slave" operating mode.</p>  <p>The "Commissioning / Test mode" option must not be active.</p>

Task	Procedure														
4.	<p>Configure the CPU's PROFIBUS interface and set the required PROFIBUS address, e.g.:</p> 														
5.	<p>On the "Configuration" tab in the object properties, configure any exchange of data between the intelligent DP slave (I slave) and a DP master:</p>  <table border="1" data-bbox="550 1108 1133 1332"> <thead> <tr> <th>Row</th> <th>Mode</th> <th>Partner DP a...</th> <th>Partner addr</th> <th>Local addr</th> <th>Length</th> <th>Consiste...</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>MS</td> <td>--</td> <td>--</td> <td>10</td> <td>1 Byte</td> <td>Unit</td> </tr> </tbody> </table>	Row	Mode	Partner DP a...	Partner addr	Local addr	Length	Consiste...	1	MS	--	--	10	1 Byte	Unit
Row	Mode	Partner DP a...	Partner addr	Local addr	Length	Consiste...									
1	MS	--	--	10	1 Byte	Unit									
6.	<p>Save and compile the station using the Station > Save and Compile menu command.</p>														

Task	Procedure
7.	<p>Select Target System > Download to Module.</p>  <p>Select the CPU from the "Select target module" dialog and click on "OK" to confirm.</p>

Task	Procedure
8.	<p>In the "Select Node Address" dialog enter the MPI address of the CPU or accept the displayed address by pressing "OK".</p>  <p>Result: The system data including the PROFIBUS address are loaded into the CPU. The CPU can now communicate via PROFIBUS.</p> <p>If the red error LED lights up, you can ignore it since the correct hardware configuration will subsequently be downloaded from SIMATIC iMap.</p>

3.4.4 Step 3: Configuring Machine 2 with SIMATIC iMap

3.4.4.1 Configuring the Plant - Basic Procedure

This procedure can be carried out independent of the hardware setup for the plant.

Requirements

You have created the PROFINet components and they are present in the file system.

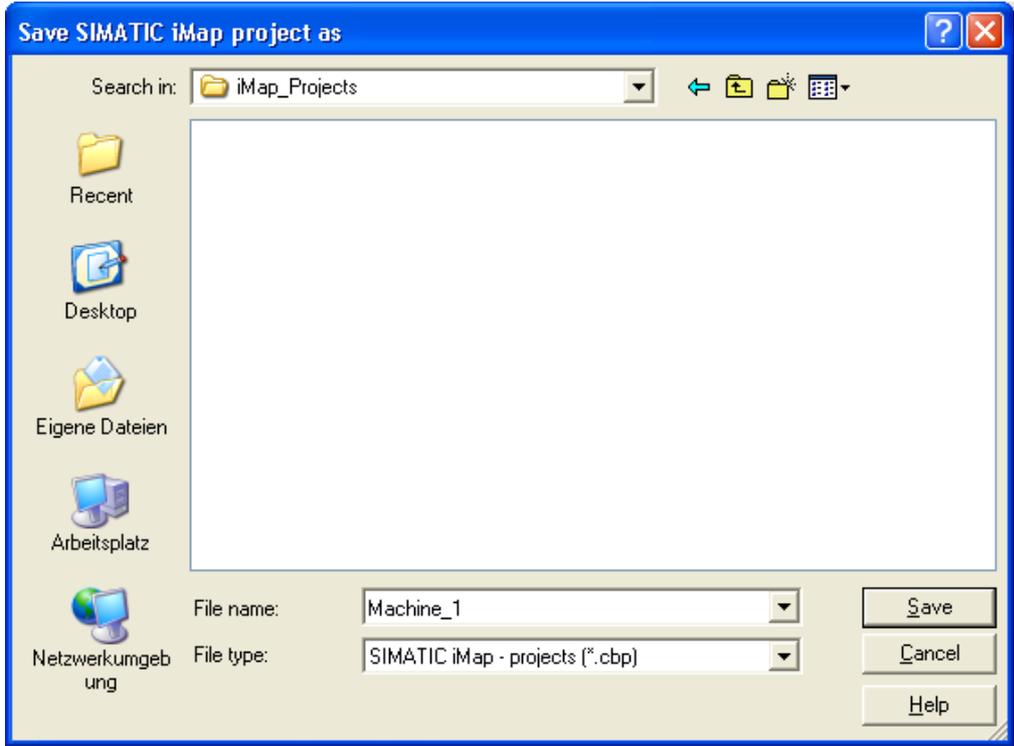
Basic procedure

- Creating a new project in SIMATIC iMap
- Importing PROFINet components from the file system into the project library
- Inserting PROFINet components from the library into the SIMATIC iMap project
- Assigning Addresses
- Interconnecting the technological functions and generating the SIMATIC iMap project

3.4.4.2 Creating a New Project in SIMATIC iMap

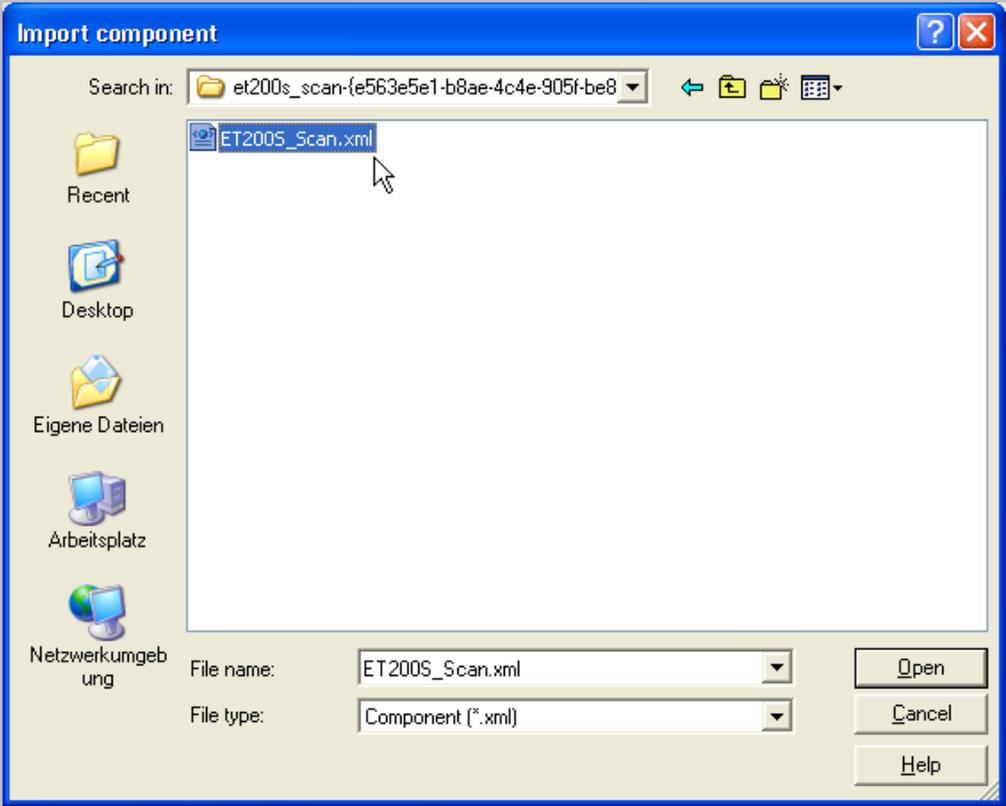
This description applies to both a complete plant or any subplant.

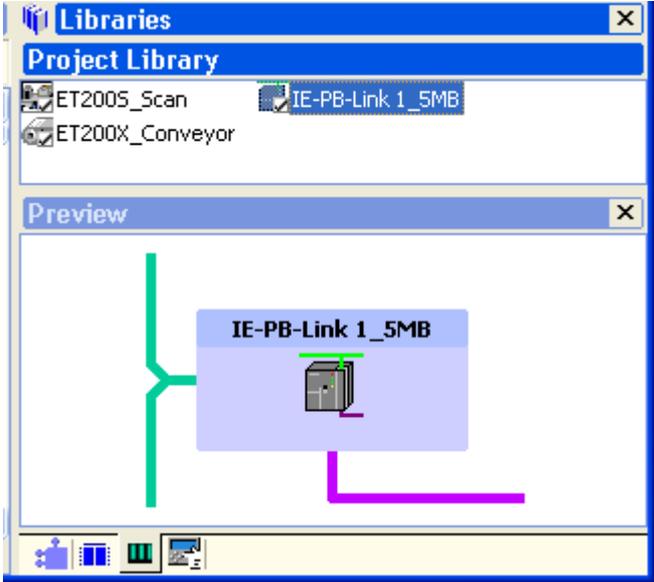
How to create a new SIMATIC iMap project

Task	Procedure
1.	Start SIMATIC iMap if you have not already done so: Double-click on the SIMATIC iMap icon on the desktop or Select Start / Programs / Component based Automation / SIMATIC iMap . Result: SIMATIC iMap is started and a new project is created. Continue with Step 3.
2.	If you have already started SIMATIC iMap, create a new project by selecting the menu command Project > New .
3.	Save the project by selecting the menu command Project > Save .
4.	In the dialog "Save SIMATIC iMap project As", select a folder and enter a name, for example, "Machine_1" in the "File name" field. The same applies to Machine 2, Machine 3 or the complete plant. <div data-bbox="347 913 1361 1659" style="border: 1px solid black; padding: 5px; margin: 10px 0;">  <p>The screenshot shows a Windows-style dialog box titled "Save SIMATIC iMap project as". The search path is set to "iMap_Projects". The file name field contains "Machine_1" and the file type is set to "SIMATIC iMap - projects (*.cbp)". The dialog includes a sidebar with navigation options like "Recent", "Desktop", "Eigene Dateien", "Arbeitsplatz", and "Netzwerkumgebung". Buttons for "Save", "Cancel", and "Help" are located at the bottom right.</p> </div> Result: The project is saved.

3.4.4.3 Machine 2: Importing PROFINet Components

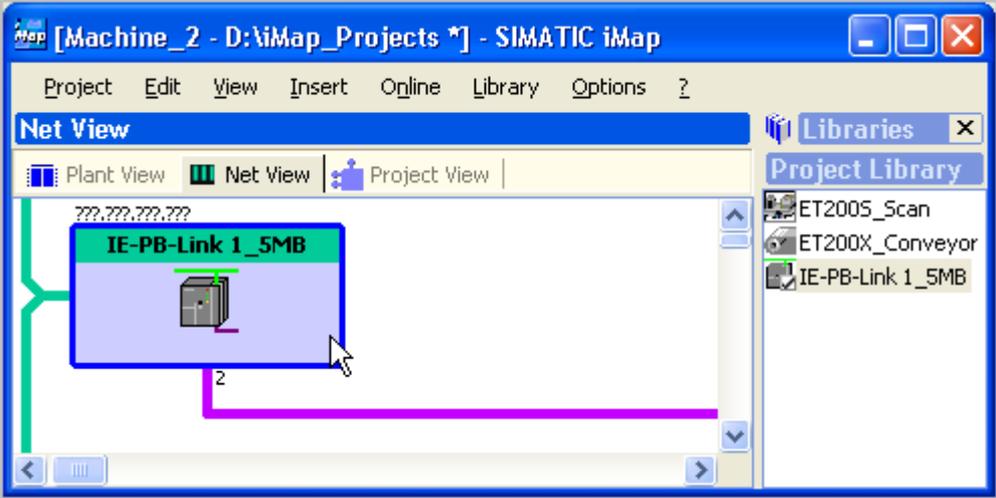
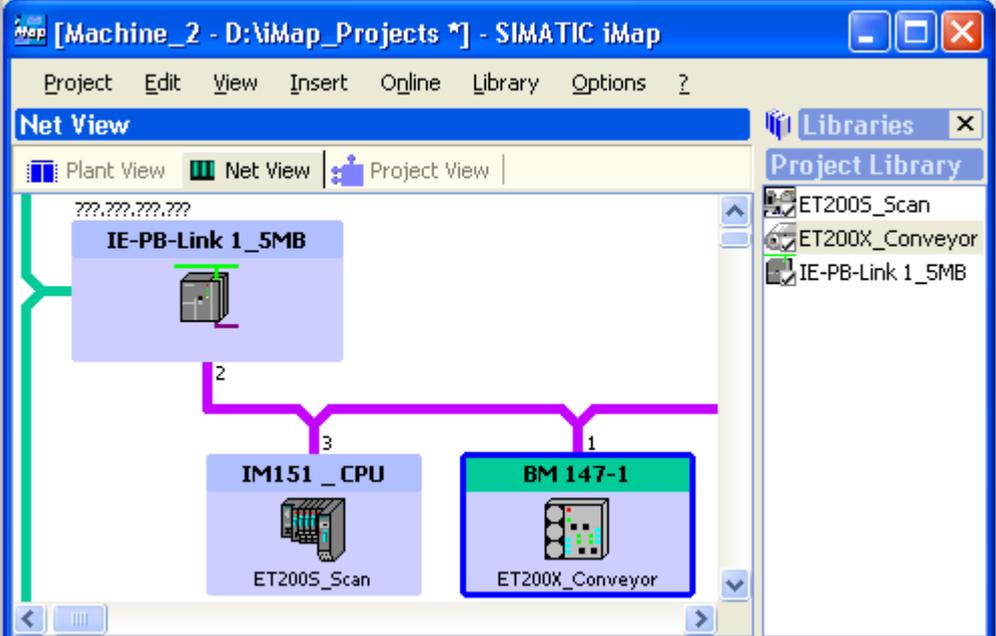
How to import PROFINet components into the project library

Task	Procedure
1.	Import the PROFINet component from the file system into the project library. Open the library window in SIMATIC iMap by selecting the menu command View > Library Window .
2.	Click on the "Project Library" window and select Import components from the context menu.
3.	Under "Search in", select the path Program\Siemens\iMap\CBA_Tutorial\components.
4.	Select the folder "et200s_scan--{...}".
5.	<p>Select the file "ET200S_Scan.xml" and confirm your entry by pressing the "Open" button.</p>  <p>Result: The PROFINet "ET200S_Scan" component is entered into the project library.</p>
6.	<p>Repeat Steps 2 to 5 for the PROFINet components "ET200X_Conveyor" ("et200x_conveyor--{...}") folder and the "ET200X_Conveyor.xml" file.</p> <p>Result: The PROFINet "ET200X_Conveyor" component is entered into the project library.</p>
7.	<p>Repeat Steps 2 to 5 for the preassembled PROFINet components of the IE/PB Link. They are located under imap\components\IE-PB-Link_PN_1,5MBaud-{} in the installation directory of SIMATIC iMap. Select the file "IE-PB-Link PN 1_5MBaud.xml".</p>

Task	Procedure
8.	<p>Result: The PROFINet "IE-PB-Link PN 1_5MBaud" component is entered into the project library.</p>  <p>The screenshot shows the 'Libraries' window in the TIA Portal. The 'Project Library' section contains three components: 'ET2005_Scan', 'ET200X_Conveyor', and 'IE-PB-Link 1_5MB'. The 'IE-PB-Link 1_5MB' component is highlighted. Below the library list is a 'Preview' section showing a graphical representation of the 'IE-PB-Link 1_5MB' component. The component is a purple rectangular block with a small icon of a network switch inside. It is connected to a green busbar on the left and a purple line on the bottom right. The window title is 'Libraries' and it has a close button (X) in the top right corner.</p>

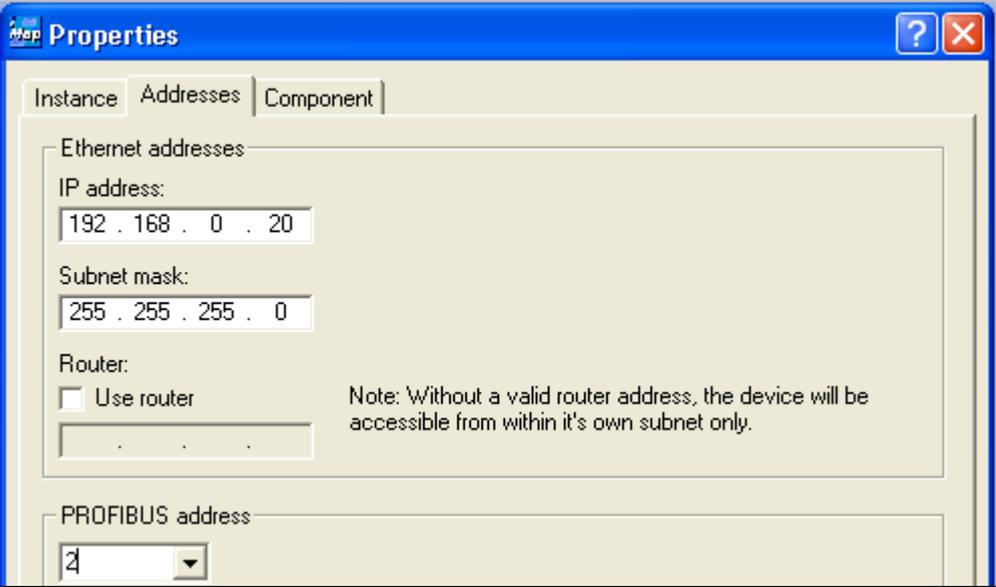
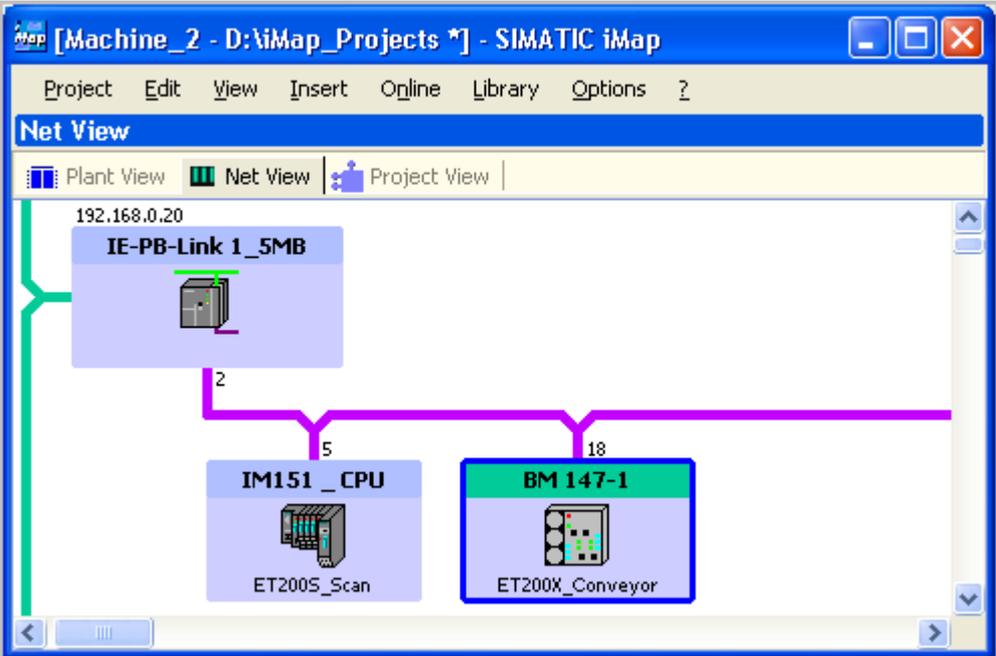
3.4.4.4 Inserting the PROFINet Components into the Project

How to insert instances of PROFINet components into the project

Task	Procedure
<p>1.</p>	<p>Insert an instance of the IE/PB Link into the project: Open the net view of the project. Select "IE-PB-Link 1_5MB" in the project library and drag the icon into the net view. An instance of the PROFINet component is inserted into the project.</p>  <p>The PROFINet device is automatically connected to the Ethernet in the net view and has a PROFIBUS connector as DP master with proxy functionality.</p>
<p>2.</p>	<p>Select the PROFINet "ET200S_Scan" component in the project library and connect it to the PROFIBUS of the IE/PB Link using Drag and Drop.</p>
<p>3.</p>	<p>Repeat Step 2 for the PROFINet "ET200X_Conveyor" component.</p> 

3.4.4.5 Assigning Addresses

How to assign addresses to devices.

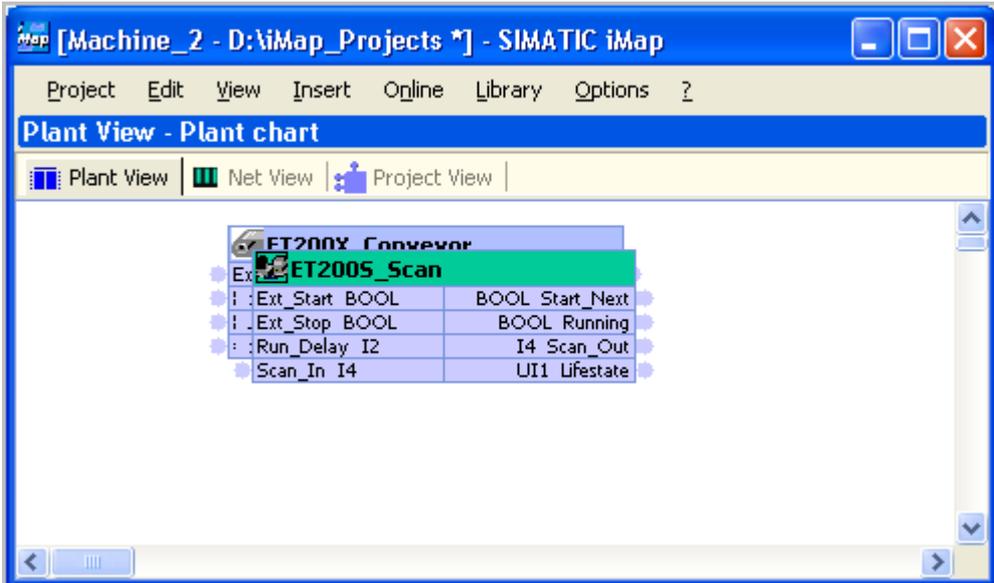
Task	Procedure
1.	<p>In the net view, open the properties of the IE/PB Link and enter the IP addresses and subnet mask together with PROFIBUS address of the device in the "Addresses" tab.</p> 
2.	<p>In the net view, open the properties of the PROFIBUS device "IM151_CPU" (ET 200S) and enter the PROFIBUS address of the device, e.g. 5, in the "Addresses" tab.</p>
3.	<p>Repeat Step 2 for "BM 147" and assign the device the PROFIBUS address, 18, for example. Machine 2 should then appear as follows in the net view:</p> 

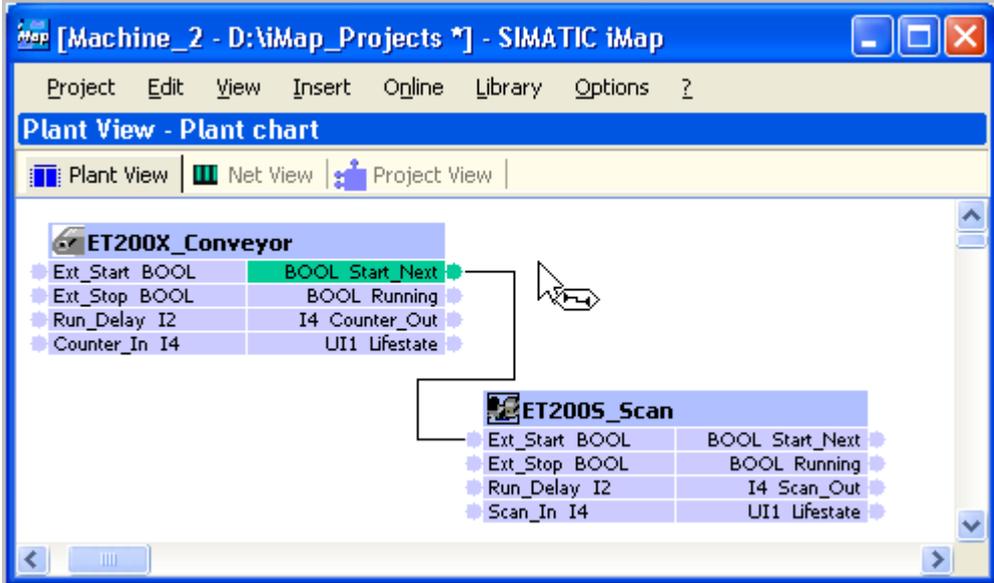
Note

The addresses must match those set on the target devices. The addresses of the IE/PB Link are first assigned with STEP 7 via Ethernet. The PROFIBUS addresses of the IM 151/CPU and BM 147/CPU are assigned for the first time from STEP 7 via MPI (see "Step 2: Assigning addresses to the devices for the first time").

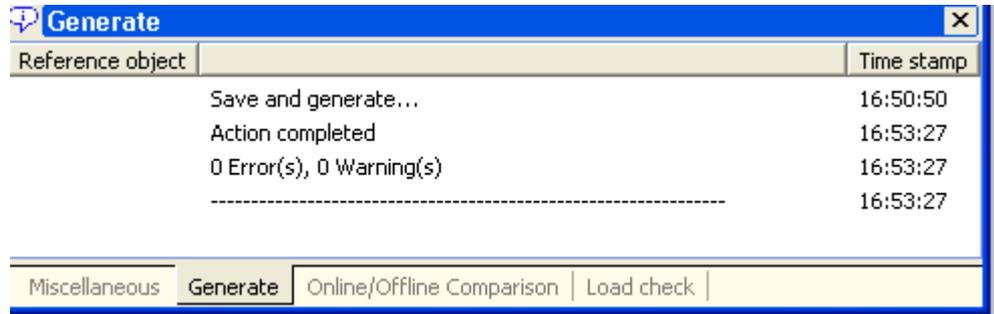
3.4.4.6 Interconnecting Technological Functions and Generating the Project

How to interconnect technological functions and generate the project

Task	Procedure												
1.	<p>Open the plant view. The technological functions are arranged on top of one another at first:</p>  <p>The screenshot shows the SIMATIC iMap interface. The title bar reads "[Machine_2 - D:\iMap_Projects *] - SIMATIC iMap". The menu bar includes Project, Edit, View, Insert, Online, Library, and Options. The main window is titled "Plant View - Plant chart" and has tabs for Plant View, Net View, and Project View. The Plant View tab is active, displaying a hierarchical tree of components. A table of connections is visible, listing inputs and outputs for various components.</p> <table border="1" data-bbox="566 1137 1005 1299"> <tr> <td>Ext_Start</td> <td>BOOL</td> <td>BOOL Start_Next</td> </tr> <tr> <td>Ext_Stop</td> <td>BOOL</td> <td>BOOL Running</td> </tr> <tr> <td>Run_Delay</td> <td>I2</td> <td>I4 Scan_Out</td> </tr> <tr> <td>Scan_In</td> <td>I4</td> <td>UI1 Lifestate</td> </tr> </table>	Ext_Start	BOOL	BOOL Start_Next	Ext_Stop	BOOL	BOOL Running	Run_Delay	I2	I4 Scan_Out	Scan_In	I4	UI1 Lifestate
Ext_Start	BOOL	BOOL Start_Next											
Ext_Stop	BOOL	BOOL Running											
Run_Delay	I2	I4 Scan_Out											
Scan_In	I4	UI1 Lifestate											

Task	Procedure
2.	<p>Arrange the technological functions and connect them as shown in the following illustration:</p> 

How to generate the project

Task	Procedure
1.	<p>Generate the project</p> <ul style="list-style-type: none"> with the menu command Project > Generate > Control unit > Changes only or by clicking on the "Generate" icon <p>If the project has not yet been saved, you are prompted to give the project a name. In the dialog "Save SIMATIC iMap project As", select a folder and enter a name, for example, "Machine 2".</p>
	Result: The project is saved and generated.
2.	<p>Follow the progress of the generation in the information window of the "Generate" tab.</p> 
	Result: The plant is configured. It can now be put into operation.

Additional information...

Additional information can be found in the basic help of SIMATIC iMap under:

- Interconnecting Technological Functions
- Generating the Project

3.4.5 Step 4: Checking the Settings for Downloading and Online Monitoring on the Engineering Station

3.4.5.1 Required Settings on the Engineering Station for Machine 2

Requirements

- See Chapter "Requirements for Commissioning the System"
- The PG/PC must be connected to the IE/PB Link with an Ethernet cable.

Check your settings

Check the following settings:

- Set the PG/PC Interface to TCP/IP
- Assigning the PG/PC

Note

The PG/PC only has to be assigned in special situations, e.g.:

When several network cards are installed in the PG/PC or

If the PG/PC interface S7ONLINE (STEP 7) is not set to TCP/IP.

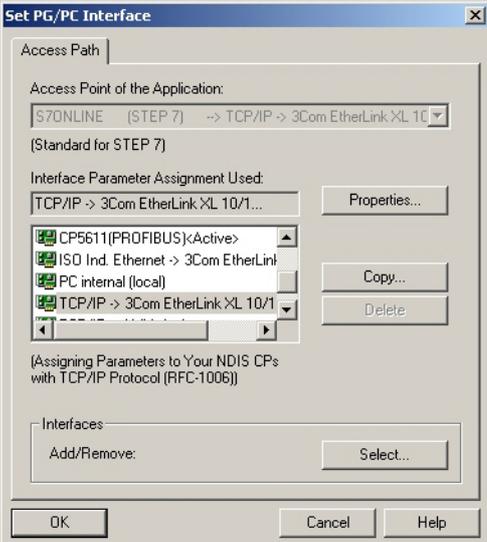
Otherwise the PG/PC assignment runs automatically when the project is generated in SIMATIC iMap, and you may skip this step.

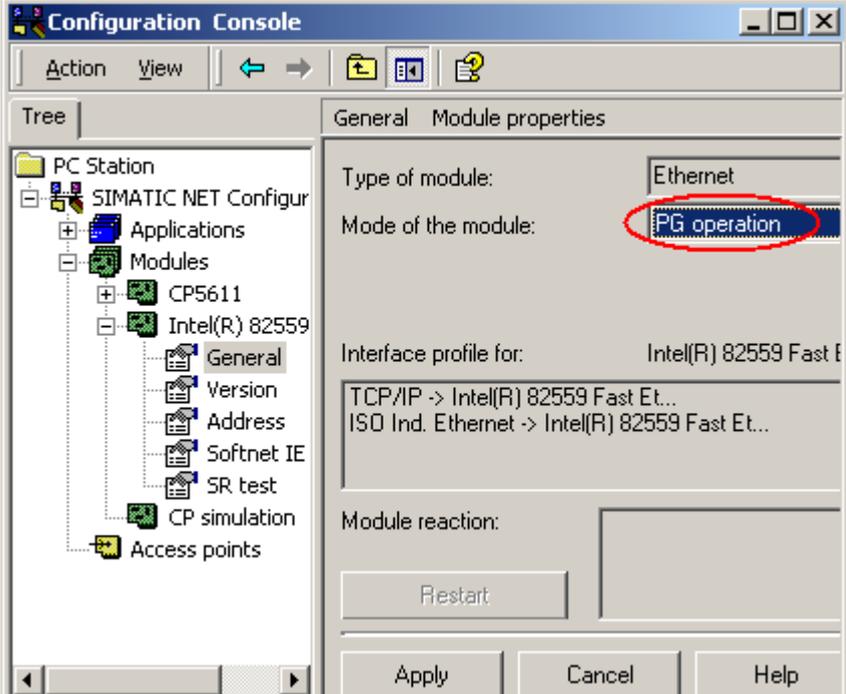
Additional information

Detailed information can be found in the online help for this dialog or in the SIMATIC iMap help topics under "Assign PG/PC".

3.4.5.2 Set the PG/PC Interface to TCP/IP

How to set the PG/PC interface to TCP/IP

Task	Procedure
1.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > PG/ PC Interface and check the following setting: "TCP/IP" must be set as the access point for the "S7ONLINE (STEP 7)" application.</p> 
2.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > Set PC Station. The configuration console opens.</p>

Task	Procedure
3.	<p>In the SIMATIC NET configuration, select the Ethernet module of the computer.</p>  <p>The "PG mode" operating mode must be set under "General".</p>
4.	Accept any changes and close the configuration console.

3.4.5.3 Assigning the PG/PC

Note

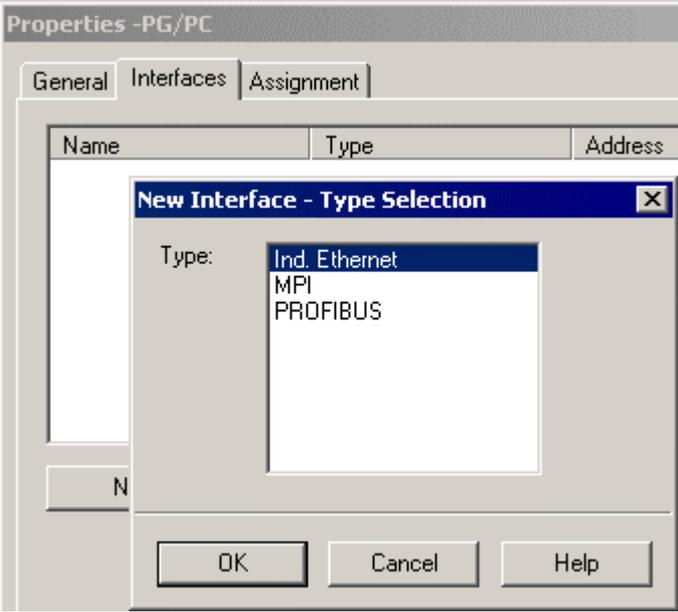
The PG/PC assignment in SIMATIC iMap is automatically performed during the initial generation and anytime the project is newly generated. In special cases it may not be possible to automatically assign the PG/PC, for example:

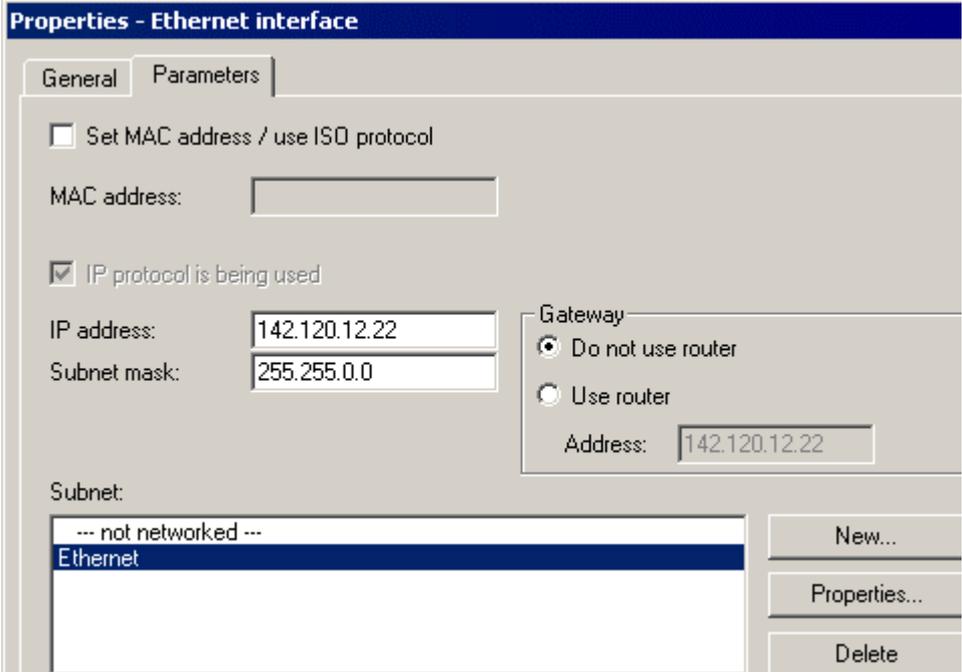
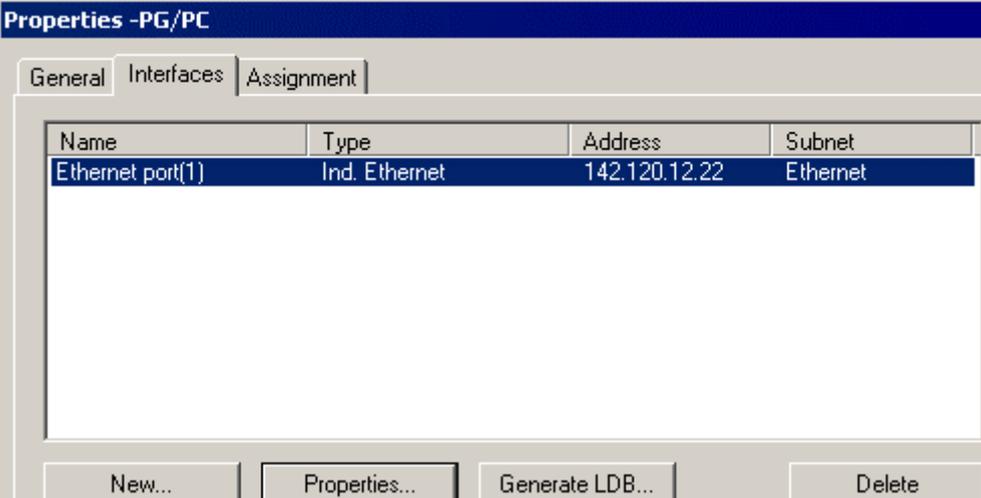
- When several network cards are installed in the PG/PC or
- When the PG/PC interface S7ONLINE (STEP 7) is not set to TCP/IP

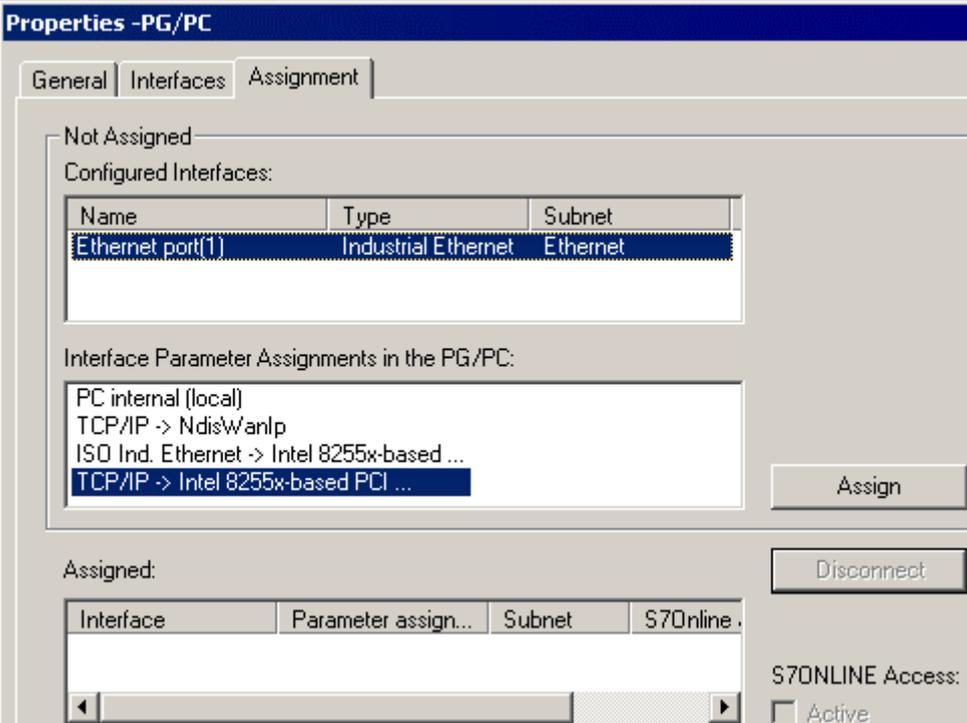
In such situations an error is reported during generation and you must perform the PG/PC assignment as described in the following.

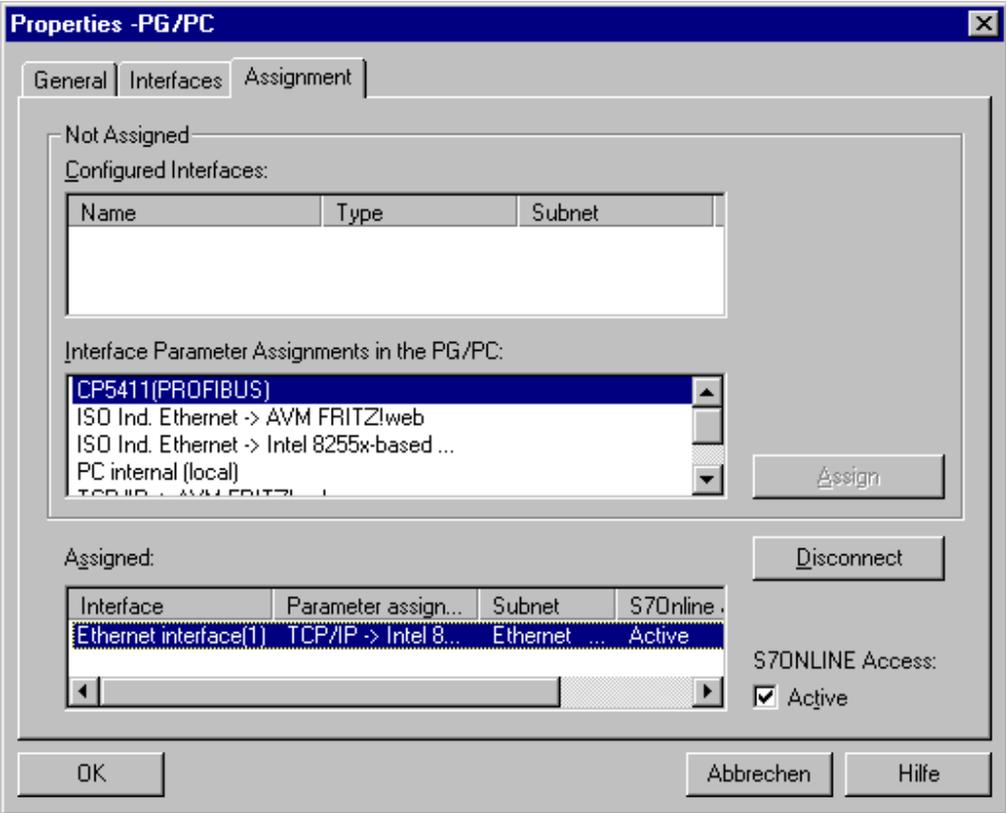
The PG/PC assignment is not necessary when you are using a local WinLC PN which contains a network card in its configuration.

How to assign the PG/PC interface to the SIMATIC iMap project

Task	Procedure
1.	Open the SIMATIC iMap project. Select any device from the SIMATIC iMap net view, then select Special > Assign PG/PC from the context menu. This is necessary to be able to perform the program download to the intelligent PROFIBUS devices.
2.	<p>In the "Interfaces" tab of the "PG/PC Interface" dialog, press the "New" button and select "Industrial Ethernet" from the list.</p>  <p>Click on the "OK" button to confirm your entry.</p>

Task	Procedure								
3.	<p>In the "Properties - Ethernet Interface" dialog, enter the IP address and the subnet mask of the local computer and select the Ethernet subnet.</p> 								
4.	<p>Click on the "OK" button to confirm your entry. Result: The newly configured interface is displayed in the "Interfaces" tab.</p>  <table border="1" data-bbox="411 1303 1337 1624"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Address</th> <th>Subnet</th> </tr> </thead> <tbody> <tr> <td>Ethernet port(1)</td> <td>Ind. Ethernet</td> <td>142.120.12.22</td> <td>Ethernet</td> </tr> </tbody> </table>	Name	Type	Address	Subnet	Ethernet port(1)	Ind. Ethernet	142.120.12.22	Ethernet
Name	Type	Address	Subnet						
Ethernet port(1)	Ind. Ethernet	142.120.12.22	Ethernet						

Task	Procedure														
5.	<p>In the "Assignment" tab, mark the Ethernet interface you have just configured in the "Configured interfaces:" selection field below "Not assigned". In the "Interface parameter settings on the PG/PC:" select</p> <p>TCP/IP -> <network card used></p>  <p>The screenshot shows the 'Properties -PG/PC' dialog box with the 'Assignment' tab selected. Under 'Not Assigned', the 'Configured Interfaces' table has the following data:</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Subnet</th> </tr> </thead> <tbody> <tr> <td>Ethernet port(1)</td> <td>Industrial Ethernet</td> <td>Ethernet</td> </tr> </tbody> </table> <p>Below this, the 'Interface Parameter Assignments in the PG/PC' list contains:</p> <ul style="list-style-type: none"> PC internal (local) TCP/IP -> Ndis/wanlp ISO Ind. Ethernet -> Intel 8255x-based ... TCP/IP -> Intel 8255x-based PCI ... (highlighted) <p>To the right of this list is an 'Assign' button. Below the list is an 'Assigned:' section with an empty table:</p> <table border="1"> <thead> <tr> <th>Interface</th> <th>Parameter assign...</th> <th>Subnet</th> <th>S7Online</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>To the right of this table is a 'Disconnect' button. At the bottom right, there is a section for 'S7ONLINE Access:' with an unchecked 'Active' checkbox.</p>	Name	Type	Subnet	Ethernet port(1)	Industrial Ethernet	Ethernet	Interface	Parameter assign...	Subnet	S7Online				
Name	Type	Subnet													
Ethernet port(1)	Industrial Ethernet	Ethernet													
Interface	Parameter assign...	Subnet	S7Online												

Task	Procedure
6.	<p>Confirm by clicking on the "Assign" button. Result: The assigned interface is displayed in the "Assigned" field. Activate the option "S7ONLINE access".</p>  <p>The assignment becomes effective by clicking on "OK".</p>

3.4.6 Step 5: Commissioning Machine 2

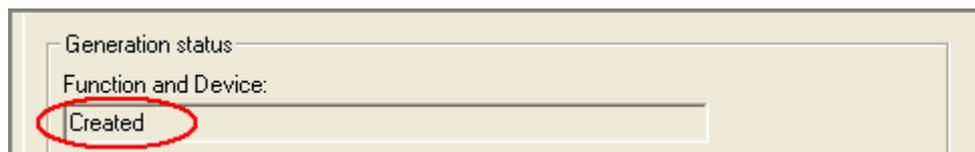
Requirements

- See Chapter "Requirements for Commissioning the System"
- The PG/PC must be connected to the IE/PB Link with an Ethernet cable.
- The IE/PB Link must be connected to the DP slaves with an Ethernet cable.
- The settings in STEP 7 have been checked.
- The project has been generated in SIMATIC iMap.
- All device are switched on.

Tip: Check the generation status.

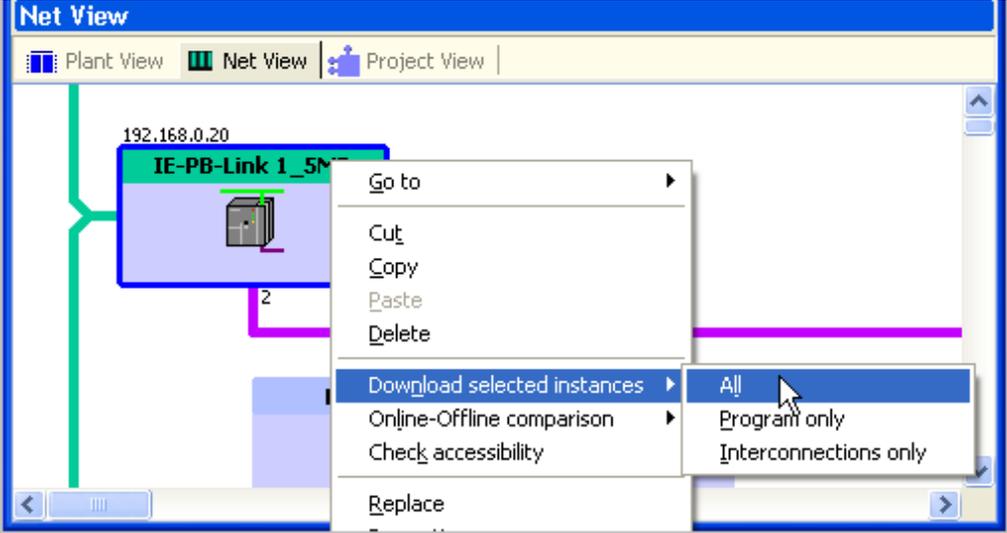
To determine the generation status of the device, open the properties of the

- Device in the net view or
- Technological function in the plant view



The generation status must be "Created". If it is not, generate the project again with the menu command **Project > Generate > Control unit > Changes only**.

How to download the project configuration data to the target system

Task	Procedure
1.	<p>In SIMATIC iMap: Select the IE/PB Link in the net view. Download the data into the device using the command Download Selected Instances > All from the context menu.</p> 
2.	<p>When the IE/PB Link is in RUN, you will be asked if you wish to stop the device. Click on "Yes" to confirm the question. Result: The device is set to STOP and the data is downloaded to the device. You are then asked if you wish to start the device again. Click on "Yes" to confirm the question. You can now download the data to the DP slaves.</p>
3.	<p>Select</p> <ul style="list-style-type: none"> • the device in the net view or • the technological functions in the plant view <p>of the other two PROFINet components, "ET200S_Scan" and "ET200X_Conveyor". Download the data into the devices using the command Download Selected Instances > All from the context menu. For the each device you will be asked the same questions described under Step 2, which you should answer with "Yes" in each case.</p>
	<p>Result: The devices are ready for operation and can be monitored online.</p>

Notes about downloading

The data must be first downloaded to the PROFINet device with proxy functionality (IE/PB Link) and then to the corresponding DP slaves.

The programs must be downloaded to the DP master and DP slaves each time changes are made to the PROFIBUS in the project, for example, each time PROFIBUS devices are added or removed.

The program download must first be performed with either:

- **Online > Download Selected Instances > All** or
- **Online > Download Selected Instances > Program only**

The interconnections can be subsequently downloaded.

Additional information...

Additional information can be found in the basic help of SIMATIC iMap under:

- Download
- Generating the Project

3.4.7 Step 6: Online Monitoring of Machine 2

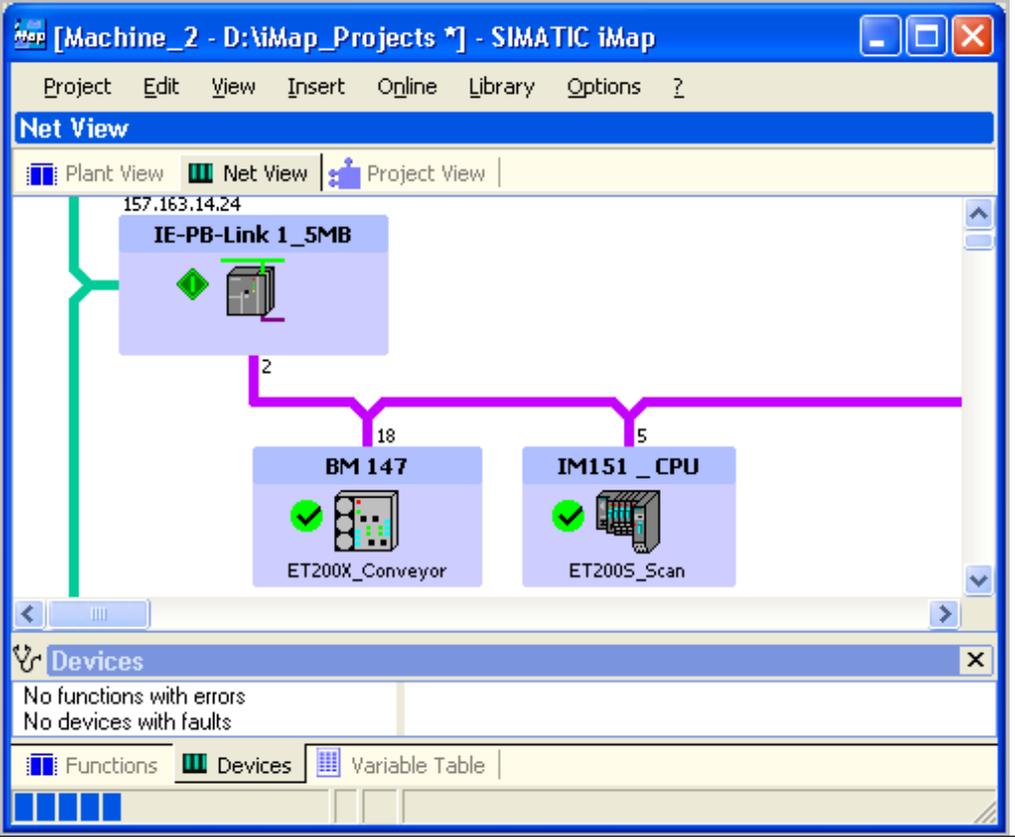
You can use SIMATIC iMap to

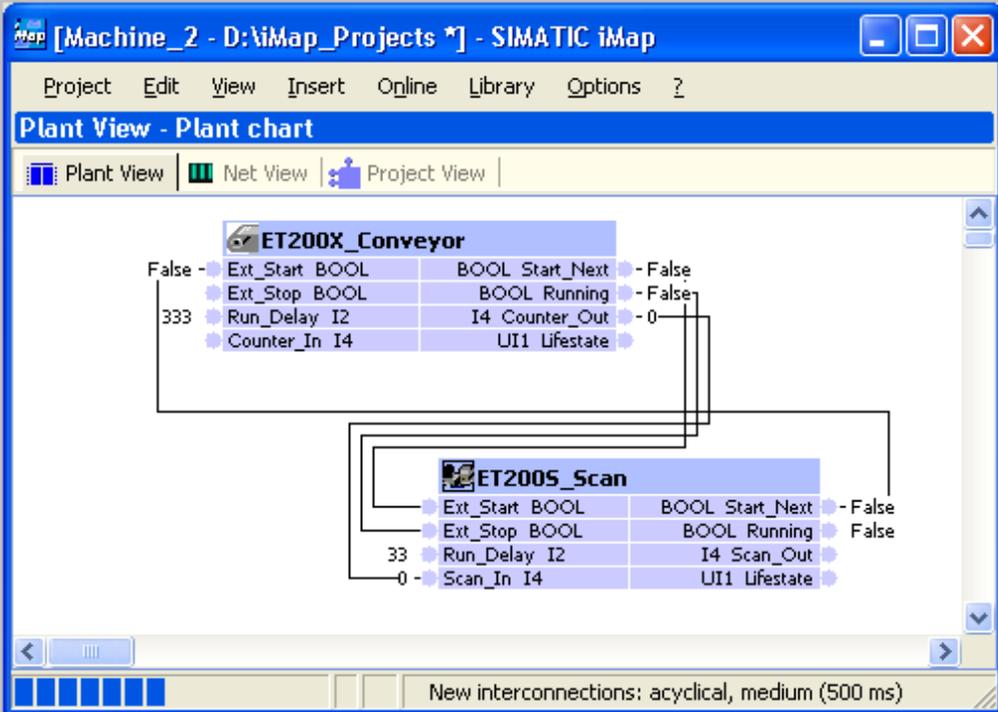
- Perform online monitoring and diagnostics of the devices of the plant
- Set and display online values
- Test the plant using the variable table

Requirements

- See Chapter "Requirements for Commissioning the System"
- The PG/PC must be connected to the IE/PB Link or one of the PROFINet devices via Ethernet.
- The settings in STEP 7 have been checked.
- The project has been generated in SIMATIC iMap.
- The data has been downloaded to the devices.
- The devices must be in the RUN operating state.

How to switch online view on and off

Task	Procedure
1.	<p>Switching online view on/off</p> <p>To switch on the online view in SIMATIC iMap: Click on the "Online Monitoring" icon or Select Online > Monitor.</p> <p>You are asked if you wish to compare the online and offline program data of the devices. This comparison is optional. You can perform it immediately or at a later point in time.</p> <p>If you answer with "Yes", the data is compared and the results are displayed in the information window.</p> <p>Result: The online view of SIMATIC iMap is switched on and any diagnostic information is immediately displayed on the devices and technological functions in the diagnostics window.</p> 

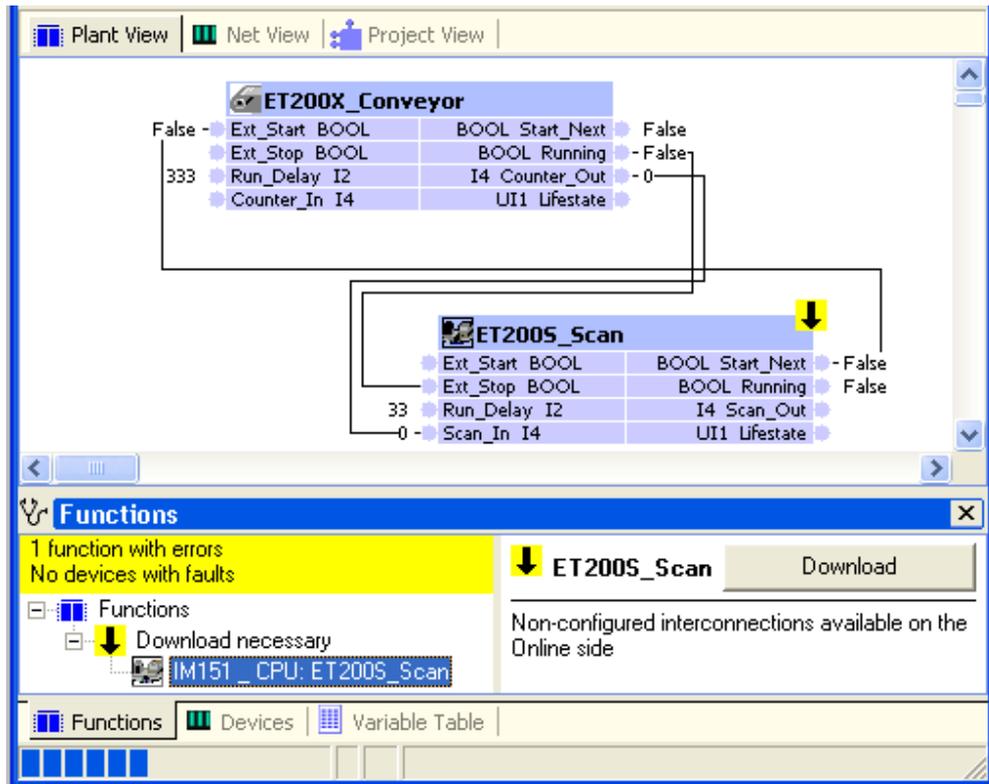
Task	Procedure
<p>2.</p>	<p>Display online values</p> <p>In the plant view of the project select the input "Counter_In" of the "ET200X_Conveyor" and the output "Counter_Out" of the "ET200S_Conveyor" and then select the menu command Online > Plant view > Display online value. The current online value is then displayed at the connectors.</p> 
<p>3.</p>	<p>Click again on the "Online Monitoring" icon or select the Online > Monitor option to switch off the online view..</p>

Displaying diagnostics information

Diagnostic information is displayed in graphic or text form in SIMATIC iMap if an error occurs.

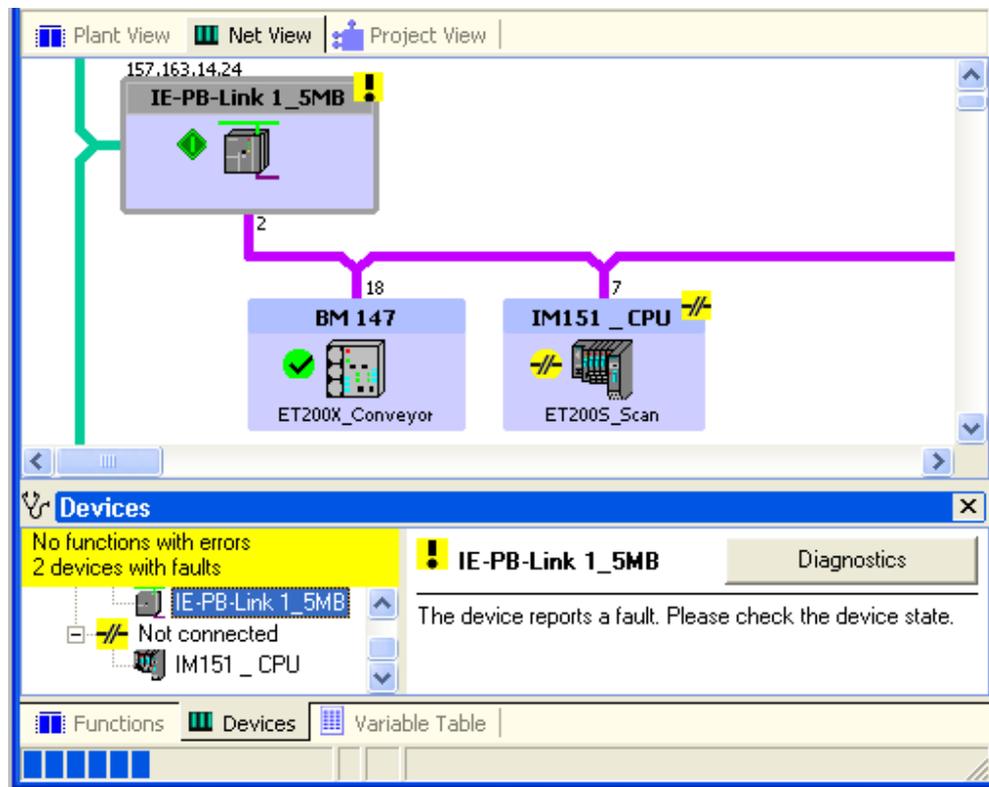
The diagnostic information for the technological functions is available in the "Functions" tab of the diagnostics window.

Example: Interconnection download required Press the "Download" button in the right section of the diagnostics window.



The diagnostic information for the devices is available in the "Devices" tab of the diagnostics window.

Example: The device reports an error. In this case, press the "Diagnostics" button to start a diagnostic routine for the device.



Additional information...

Additional information can be found in the basic help of SIMATIC iMap under:

- Diagnostics concept in SIMATIC iMap
- Plant with SIMATIC devices
- Possible data types and value ranges

3.5 Machine 3

3.5.1 Machine 3, Packaging: CPU 315 with CP 343-1 PN

Configuration of Machine 3

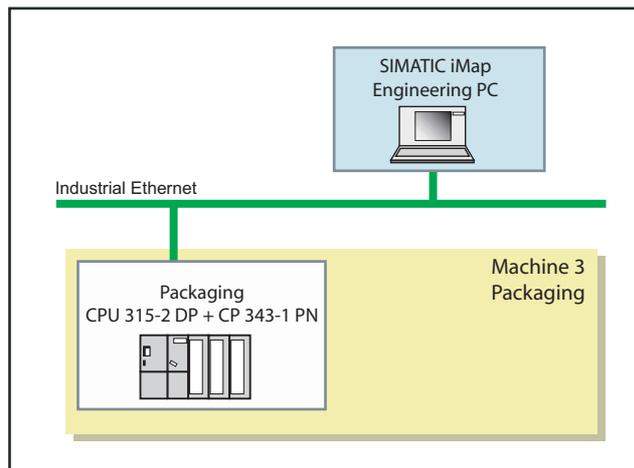


Figure 3-5 Machine 3, Packaging

Machine 3 consists of one PROFINet component. In the following example, this PROFINet component is used to control a packaging station. The PROFINet component includes:

- PROFINet device
 - including one CPU 315-2 DP, one CP 343-1 PN and the appropriate I/O modules
- Technological function "Packaging"
 - consisting of the S7 program with the technological interface.

Required steps

1. Set up the hardware of the plant
2. Assign an IP address to the device the first time
3. Configure plant in SIMATIC iMap.
4. Check the settings in STEP 7
 - Optional - required for the program download to the target device of the plant and for diagnostics of each device.
5. Commission the plant
6. Online monitoring of plant with SIMATIC iMap

3.5.2 Step 1: Setting up the Hardware of Machine 3

Required Hardware

You will need the following S7-300 modules:

Qty.	Designation	Order number
1x	Central module CPU 315-2 DP	6ES7 315-2AF03-0AB0
1x	Power supply module PS 307 5A	6ES7 307-1EA00-0AA0
1x	Communication processor CP 343-1 PN	6GK7 343-1HX00-0XE0
1x	I/O modules DI8/DO8xDC24V/0.5A	6ES7 323-1BH01-0AA0

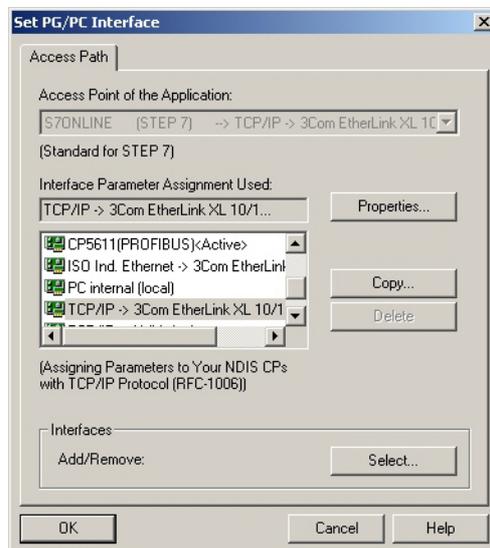
How to setup the hardware

Task	Procedure
1.	Mount the modules on the rail.
2.	Connect the CP 343-1 PN to the backplane bus using the bus connector.
3.	Connect the power supply.
4.	Wire the I/O module.
5.	Connect the Ethernet cable to the CP 343-1 PN.

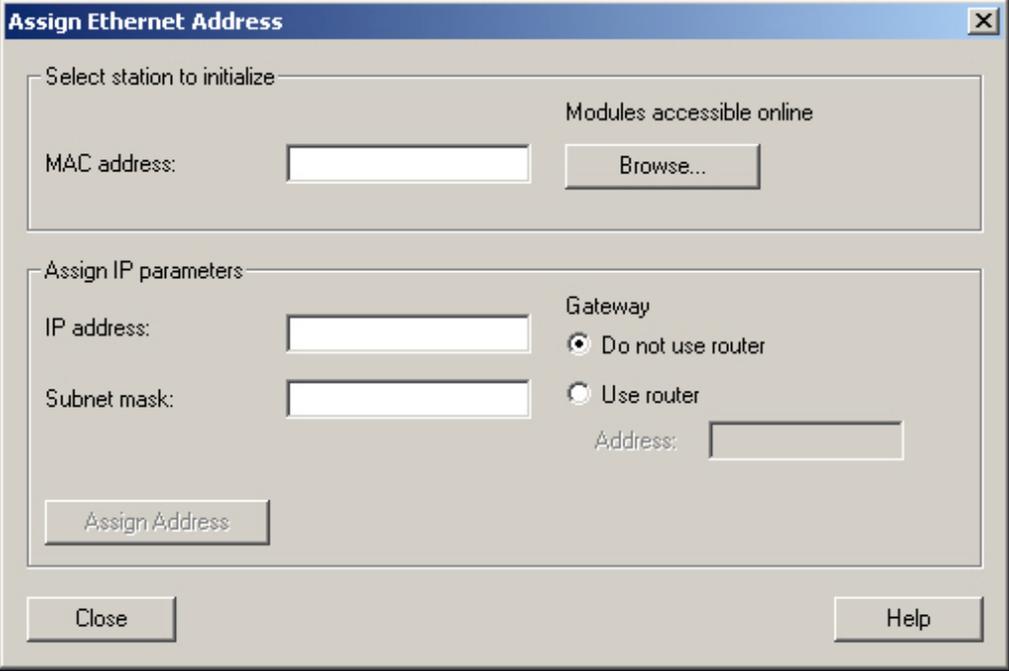
3.5.3 Step 2: Assigning the CP 343-1 PN an IP Address the First Time

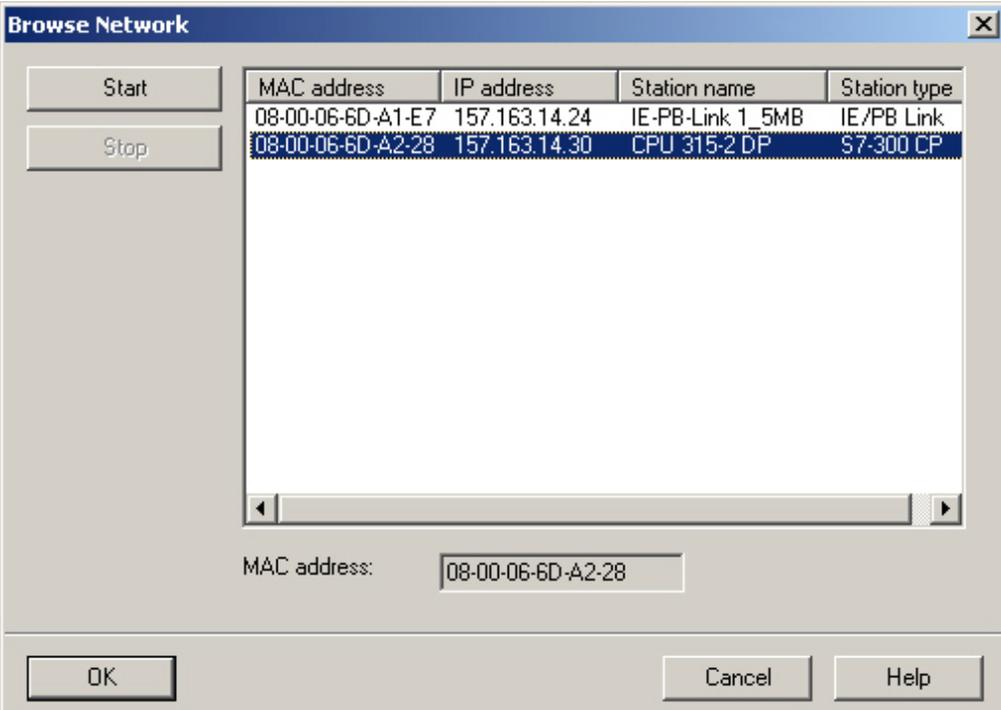
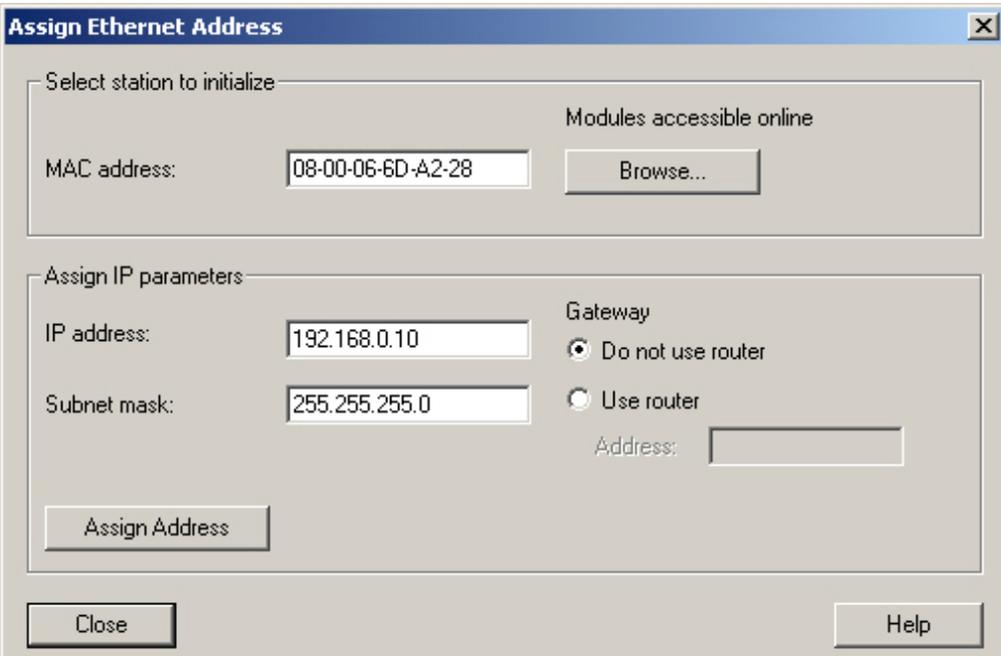
Requirements

- The IP address of the CP 343-1 PN must be known.
- The connector to the Ethernet LAN must be established; no subnet gateway (router) should be inserted.
- The Ethernet connector of the PG/PC must be available from STEP 7; the PG/PC interface must be set as follows:
S7ONLINE [STEP 7] > TCP/IP > <network module>.
To set the PG/PC interface, select the command **Extras > Set PG/PC interface...** in the SIMATIC Manager or the Windows start menu command **Start > SIMATIC > SIMATIC NET > Settings > Set PG-PC interface.**



How to assign an IP address to the CP 343-1 PN the first time

Task	Procedure
1.	Open the SIMATIC Manager.
2.	<p>Select the command PLC > Assign Ethernet Address.</p> 
3.	<p>Click on the "Browse..." button to search the network for accessible modules. All accessible stations on the network are displayed.</p>

Task	Procedure
4.	<p>Select the CP with the right MAC address from list of the available components. 0.0.0.0 is displayed in the "IP Address" column the first time an address is assigned.</p> 
5.	<p>Enter the IP parameters as shown in the following diagram and assign them to the CP 343-1 PN.</p> 

3.5.4 Step 3: Configuring Machine 3 with SIMATIC iMap

3.5.4.1 Configuring the Plant - Basic Procedure

This procedure can be carried out independent of the hardware setup for the plant.

Requirements

You have created the PROFINet components and they are present in the file system.

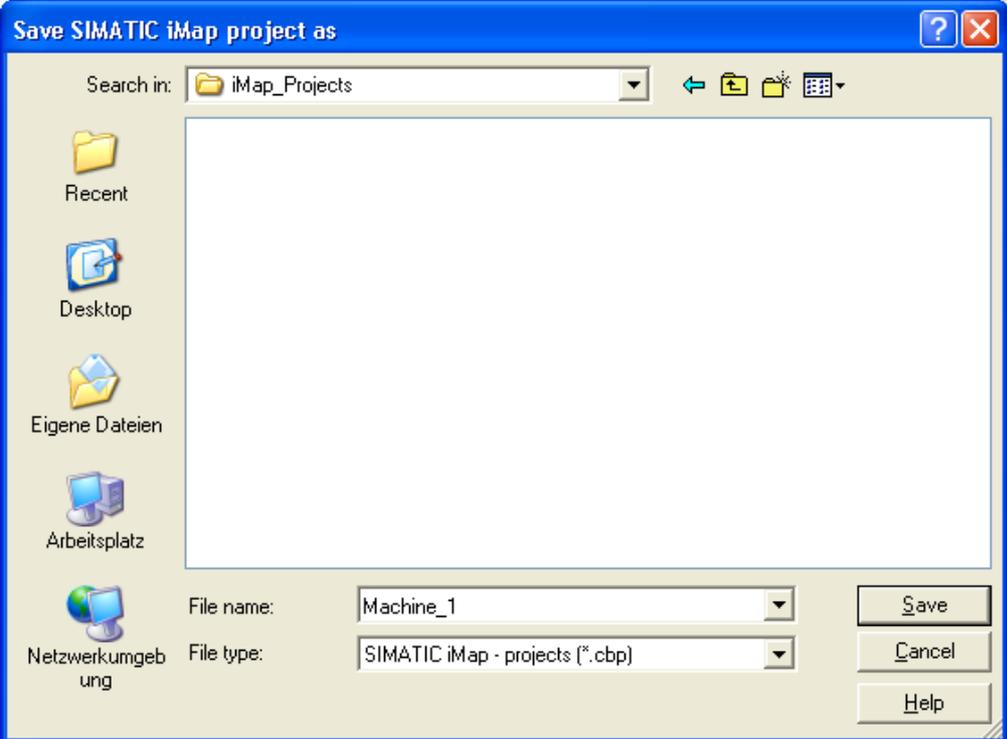
Basic procedure

- Creating a new project in SIMATIC iMap
- Importing PROFINet components from the file system into the project library
- Inserting PROFINet components from the library into the SIMATIC iMap project
- Assigning Addresses
- Interconnecting the technological functions and generating the SIMATIC iMap project

3.5.4.2 Creating a New Project in SIMATIC iMap

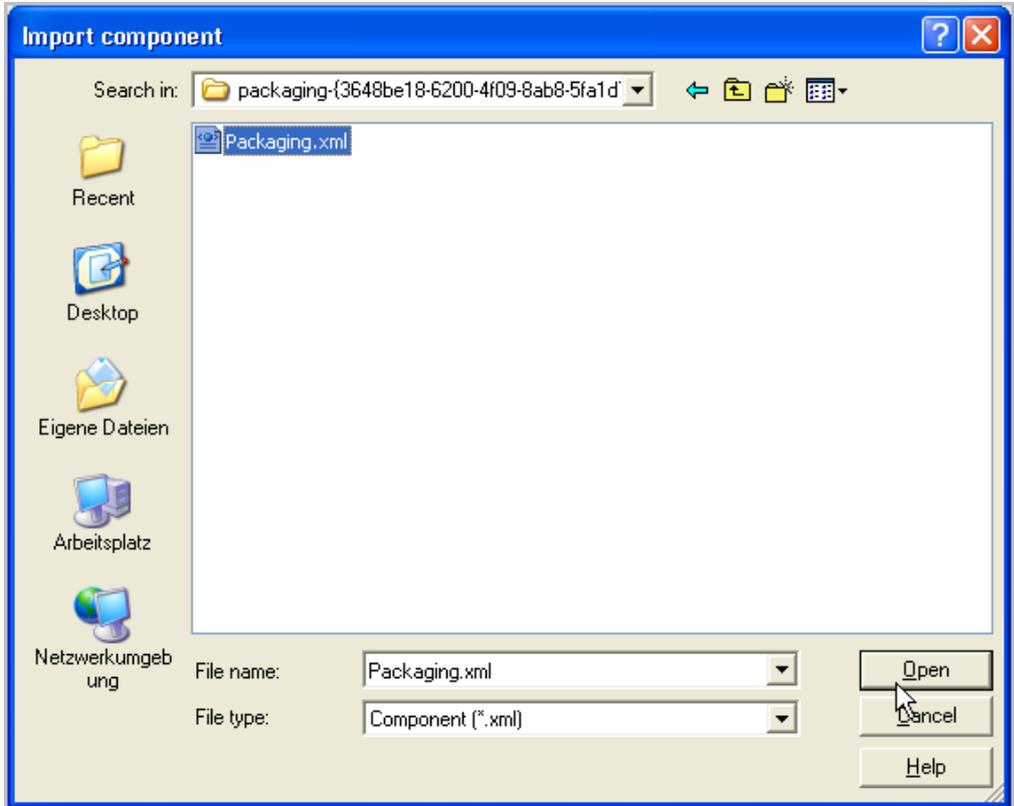
This description applies to both a complete plant or any subplant.

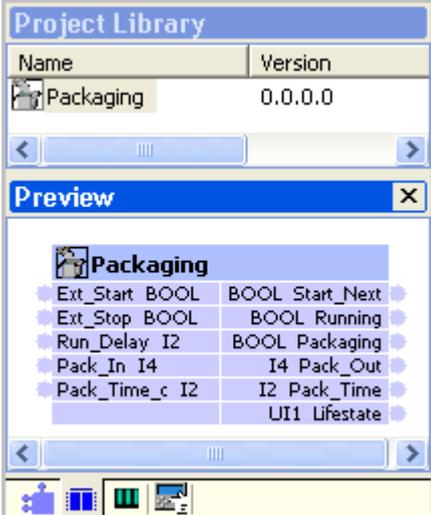
How to create a new SIMATIC iMap project

Task	Procedure
1.	Start SIMATIC iMap if you have not already done so: Double-click on the SIMATIC iMap icon on the desktop or Select Start / Programs / Component based Automation / SIMATIC iMap . Result: SIMATIC iMap is started and a new project is created. Continue with Step 3.
2.	If you have already started SIMATIC iMap, create a new project by selecting the menu command Project > New .
3.	Save the project by selecting the menu command Project > Save .
4.	In the dialog "Save SIMATIC iMap project As", select a folder and enter a name, for example, "Machine_1" in the "File name" field. The same applies to Machine 2, Machine 3 or the complete plant.  Result: The project is saved.

3.5.4.3 Machine 3: Importing PROFINet Component into the Project Library

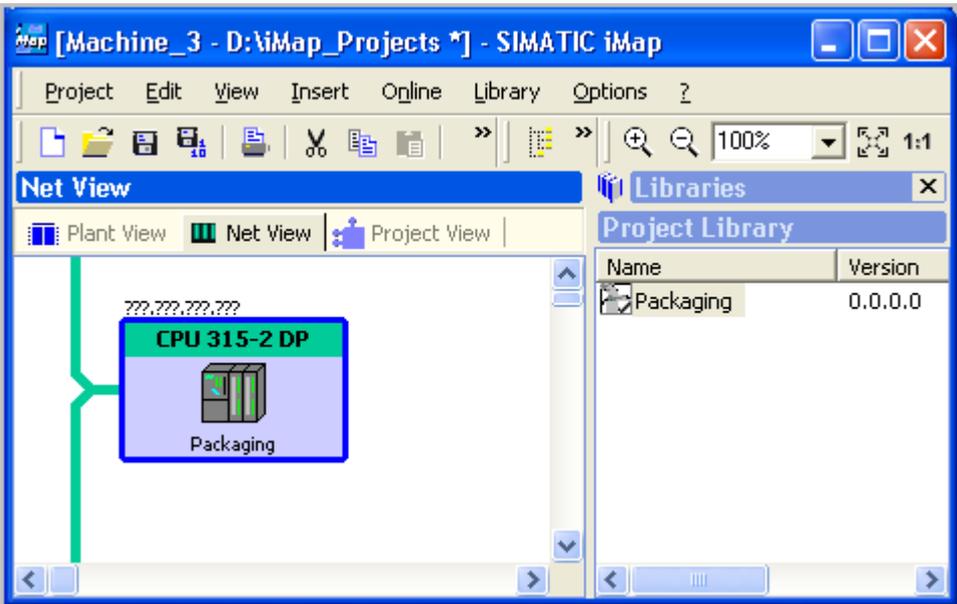
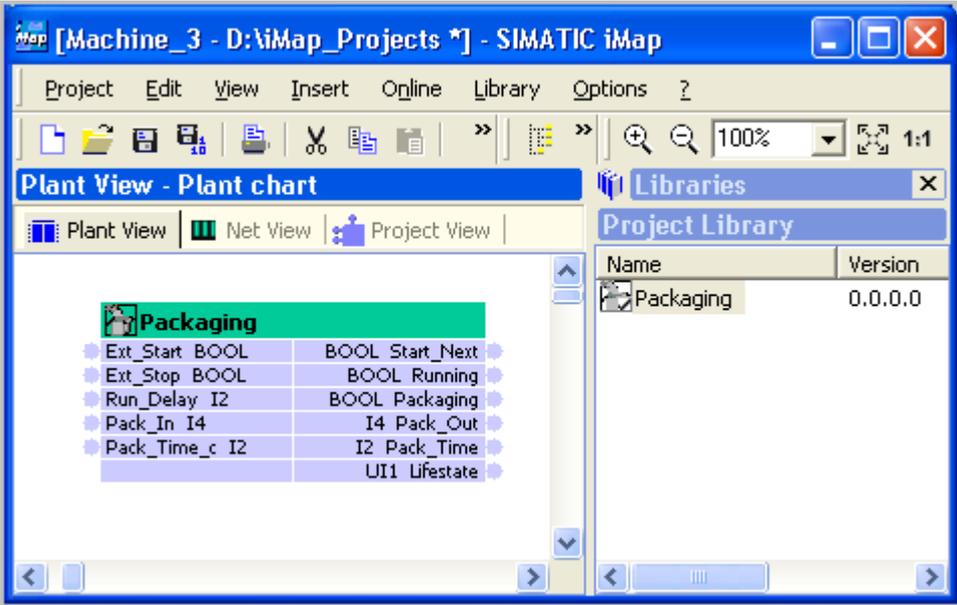
How to import the PROFINet component into the project library

Task	Procedure
1.	Import the PROFINet component from the file system into the project library. In SIMATIC iMap, click on the "Project Library" window and select Import components from the context menu.
2.	Under "Search in", select the path Program\Siemens\iMap\CBA_Tutorial\Components .
3.	Select the "packaging--{...}" folder. <div data-bbox="347 768 1361 1574" style="border: 1px solid black; padding: 10px; margin-top: 10px;">  <p>The screenshot shows the 'Import component' dialog box. The 'Search in' field is set to 'packaging-{3648be18-6200-4f09-8ab8-5fa1d}'. The file list contains one entry: 'Packaging.xml'. The 'File name' field is set to 'Packaging.xml' and the 'File type' is set to 'Component (*.xml)'. The 'Open' button is highlighted with a mouse cursor.</p> </div>

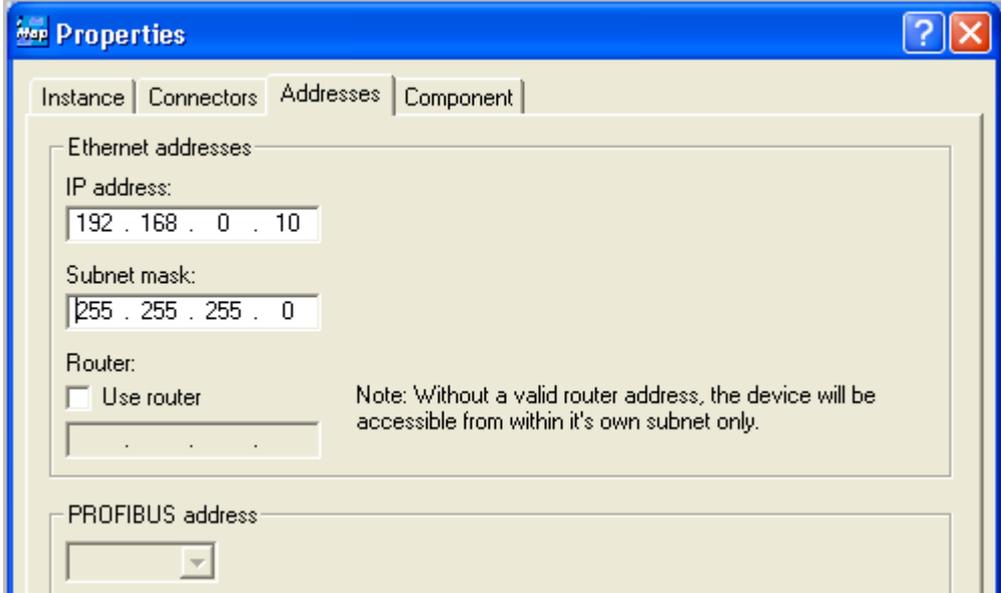
Task	Procedure
4.	<p>Select the file "packaging.xml" and confirm your entry by pressing the "Open" button.</p> <p>Result: The PROFINet Packaging" component is entered into the project library and can now be used in the project.</p> 

3.5.4.4 Machine 3: Inserting PROFINet Component into the Project and Assigning Addresses

How to insert an instance of the PROFINet component into the project

Task	Procedure
1.	<p>Open the net view of the project. Select "Packaging" in project library and drag the icon into the net view. An instance of the PROFINet component is inserted into the project.</p> <p>The PROFINet device is automatically connected to Ethernet in the net view.</p>  <p>The technological function is displayed in the plant view:</p> 
2.	Optional - Repeat Step 1 for additional PROFINet components, e.g. ET200X_Conveyor.

How to assign the IP address to the device

Task	Procedure
1.	Mark the CPU 315-2 DP device in the net view, then select Properties... from the context menu.
2.	<p>Enter the IP address and the subnet mask in the "Properties" dialog of the PROFINet device.</p>  <p>Result: The assigned IP address is displayed for the device in the net view.</p>

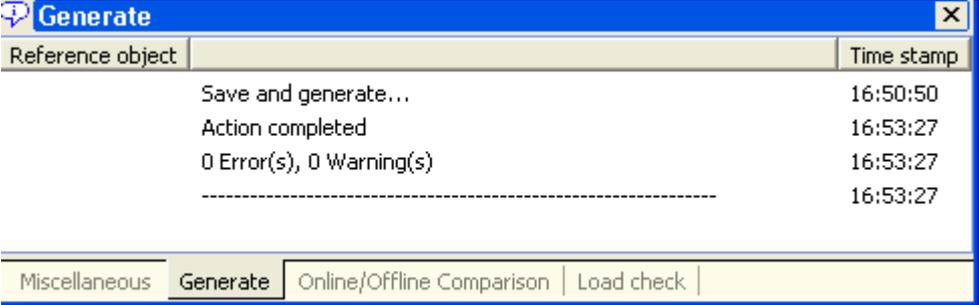
Note

The IP address must match the address set on the target device. The IP address of the CP 343-1 PN is assigned with STEP 7 via Ethernet the first time (see "Step 2: Assigning the CP 343-1 PN an IP Address the First Time").

3.5.4.5 Machine 3: Interconnecting Technological Functions and Generating the Project

The interconnection is not necessary for Machine 3 since the project only contains one PROFINet component.

How to generate the project

Task	Procedure										
1.	<p>Generate the project:</p> <ul style="list-style-type: none"> with the menu command Project > Generate > Control unit > Changes only or by clicking on the "Generate" icon <p>If the project has not yet been saved, you are prompted to give the project a name. In the dialog "Save SIMATIC iMap project As", select a folder and enter a name, for example, "Machine_3".</p> <p>Result: The project is saved and generated.</p>										
2.	<p>Follow the progress of the generation in the information window of the "Generate" tab.</p>  <p>The screenshot shows a window titled 'Generate' with a close button. It contains a table with two columns: 'Reference object' and 'Time stamp'. The table entries are:</p> <table border="1"> <thead> <tr> <th>Reference object</th> <th>Time stamp</th> </tr> </thead> <tbody> <tr> <td>Save and generate...</td> <td>16:50:50</td> </tr> <tr> <td>Action completed</td> <td>16:53:27</td> </tr> <tr> <td>0 Error(s), 0 Warning(s)</td> <td>16:53:27</td> </tr> <tr> <td>-----</td> <td>16:53:27</td> </tr> </tbody> </table> <p>At the bottom of the window, there are tabs: 'Miscellaneous', 'Generate' (selected), 'Online/Offline Comparison', and 'Load check'.</p>	Reference object	Time stamp	Save and generate...	16:50:50	Action completed	16:53:27	0 Error(s), 0 Warning(s)	16:53:27	-----	16:53:27
Reference object	Time stamp										
Save and generate...	16:50:50										
Action completed	16:53:27										
0 Error(s), 0 Warning(s)	16:53:27										
-----	16:53:27										
3.	<p>Result: Machine 3 is configured. It can now be put into operation.</p>										

3.5.5 Step 4: Checking the Required Settings on the Engineering Station for Machine 3

3.5.5.1 Checking the Required Settings on the Engineering Station for Machine 3

Requirements

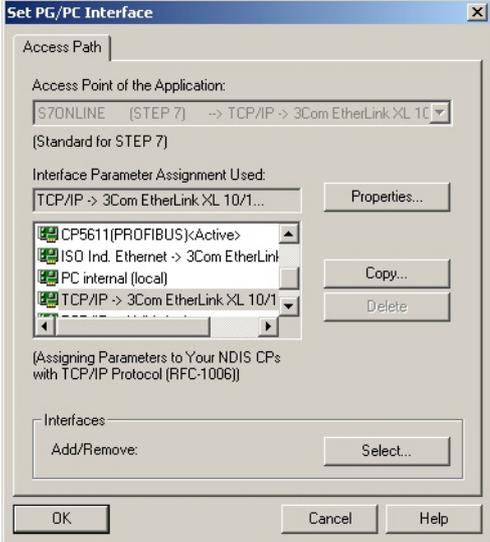
- See Chapter "Requirements for Commissioning the System"
- The PG/PC must be connected to the CP 343-1 PN with an Ethernet cable.

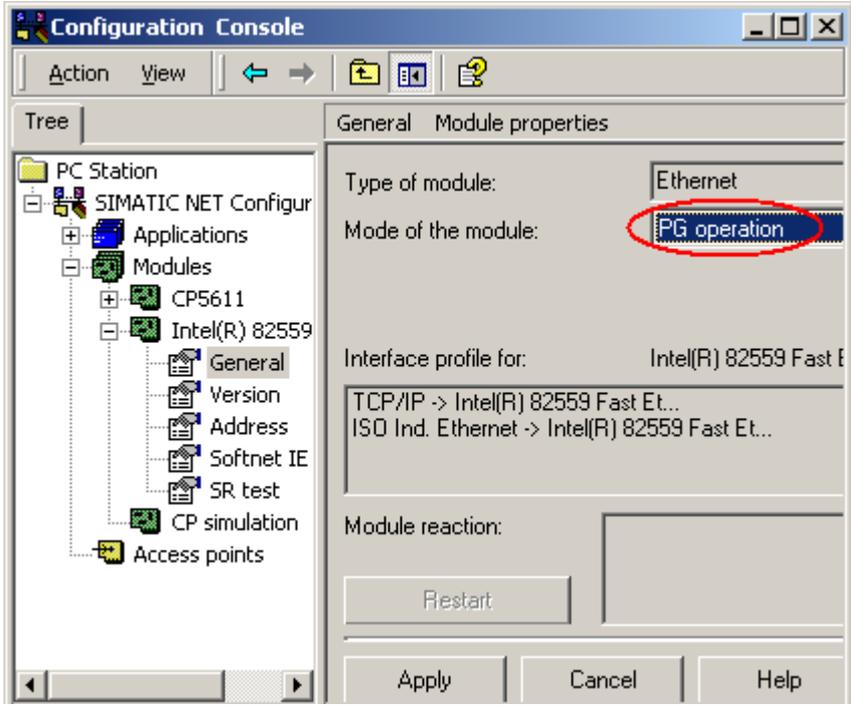
Check your settings

Check if the PG/PC interface is set to TCP/IP.

3.5.5.2 Set the PG/PC Interface to TCP/IP

How to set the PG/PC interface to TCP/IP

Task	Procedure
1.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > PG/ PC Interface and check the following setting: "TCP/IP" must be set as the access point for the "S7ONLINE (STEP 7)" application.</p> 
2.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > Set PC Station. The configuration console opens.</p>

Task	Procedure
3.	<p>In the SIMATIC NET configuration, select the Ethernet module of the computer.</p>  <p>The "PG mode" operating mode must be set under "General".</p>
4.	Accept any changes and close the configuration console.

3.5.6 Step 5: Commissioning Machine 3

Requirements

- See Chapter "Requirements for Commissioning the System"
- The PG/PC must be connected to the CP 343-1 PN with an Ethernet cable.
- The settings in the engineering station have been checked.
- The project has been generated in SIMATIC iMap.
- All device are switched on.

Tip: Check the generation status

To determine the generation status of the device, open the properties of the

- Device in the net view or
- Technological function in the plant view

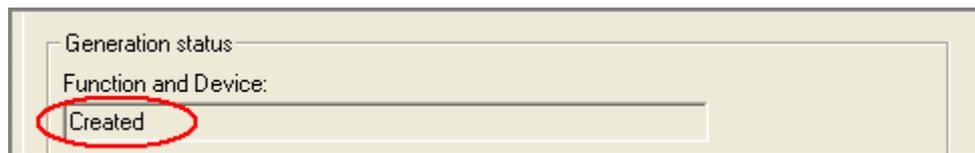
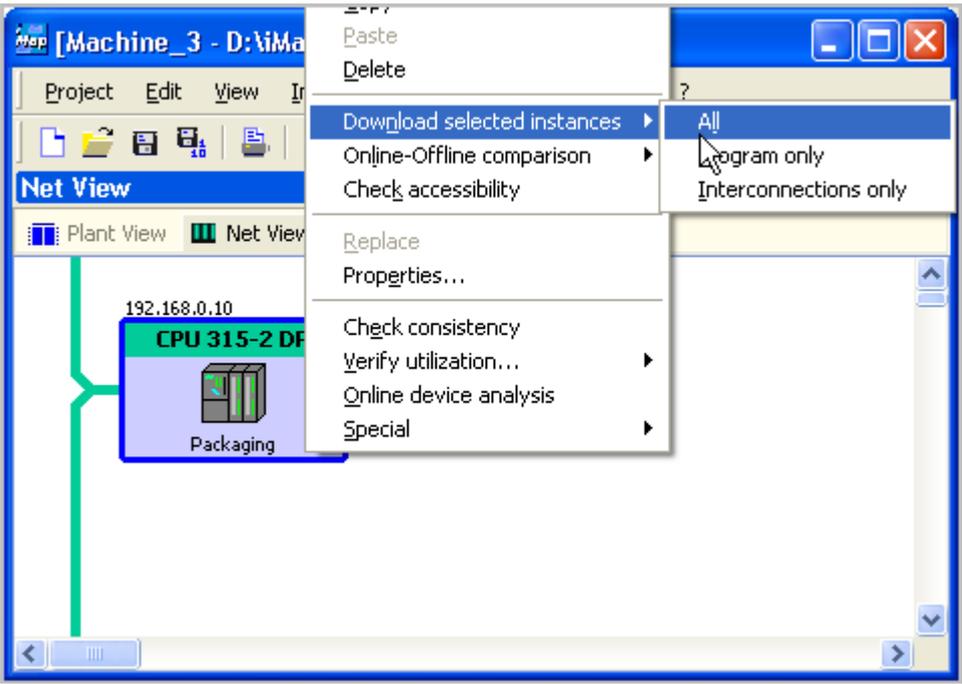


Figure 3-6 Generation status "Created"

The generation status must be "Created". If it is not, generate the project again with the menu command **Project > Generate > Control unit > Changes only**.

How to download the project configuration data to the device

Task	Procedure
1.	<p>In SIMATIC iMap select</p> <ul style="list-style-type: none"> the device in the net view or the technological functions in the plant view <p>and download the data into the device using the command Download Selected Instances > All from the context menu.</p> 
2.	<p>When the CP 343-1 PN is in RUN, you will be asked if you wish to stop the device. Click on "Yes" to confirm the question.</p> <p>Result: The device is set to STOP and the data is downloaded to the device.</p> <p>You are then asked if you wish to start the device again. Click on "Yes" to confirm the question.</p>
	<p>Result: The device is ready for operation and can be monitored online.</p>

Additional information...

Additional information can be found in the basic help of SIMATIC iMap under:

- Download
- Generating the Project

3.5.7 Step 6: Online Monitoring of Machine 3

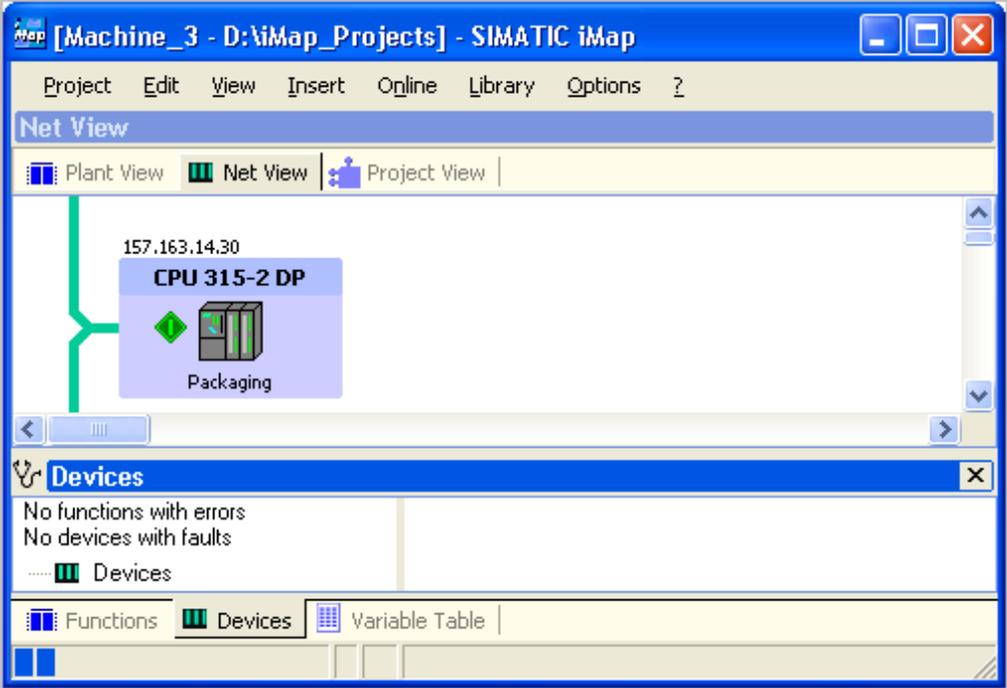
You can use SIMATIC iMap to

- Perform online monitoring and diagnostics of the devices of the plant
- Set and display online values

Requirements

- See Chapter "Requirements for Commissioning the System"
- The PG/PC must be connected to the PROFINET device via Ethernet.
- The settings in STEP 7 have been checked.
- The project has been generated in SIMATIC iMap.
- The data has been downloaded to the device.
- The devices must be in the RUN operating state.

How to switch online view on and off

Task	Procedure
1.	<p>Switching online view on/off</p> <p>To switch on the online view in SIMATIC iMap:</p> <ul style="list-style-type: none"> • Click on the "Online Monitoring" icon or • Select Online > Monitor. <p>You are asked if you wish to compare the online and offline program data of the devices. This comparison is optional. You can perform it immediately or at a later point in time.</p> <p>If you answer with "Yes", the data is compared and the results are displayed in the information window.</p> <p>Result: The online view of SIMATIC iMap is switched on and any diagnostic information is immediately displayed on the devices and technological functions in the diagnostics window.</p> 
2.	<p>Click again on the "Online Monitoring" icon or select the option Online > Monitor to switch of the online view.</p>

Additional information...

Additional information can be found in the basic help of SIMATIC iMap under:

- Diagnostic information in the online view
- Plant with SIMATIC devices
- Possible data types and value ranges

3.6 Plant Control

3.6.1 Plant Control with WinLC PN

The central "Plant Control" is a PC station with WinLC PN. There are two configuration variants based on the position of the WinLC PN.

Configuration variant 1

STEP 7 and SIMATIC iMap are on the local engineering station and WinLC PN is on a remote computer.

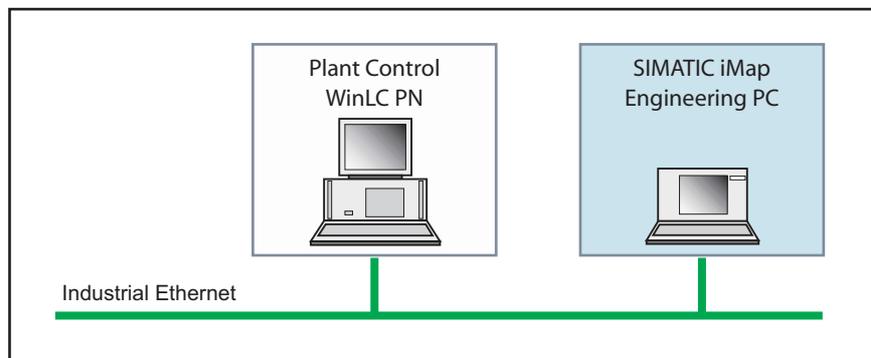


Figure 3-7 Configuration variant 1, with remote WinLC PN

Configuration variant 2

STEP 7, SIMATIC iMap and WinLC PN are on a single computer, the local engineering station.

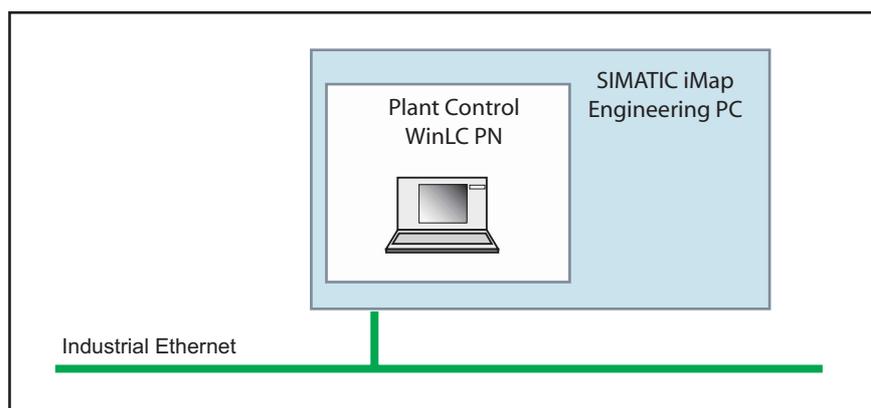


Figure 3-8 Configuration variant 2, with local WinLC PN

Basic procedure

You need to perform the following steps:

- Setup the hardware of the PC station
- Configure plant in SIMATIC iMap.
- Check the settings in STEP 7
- Commission the plant
- Online monitoring of plant with SIMATIC iMap

3.6.2 Step 1: Plant Control - Hardware Setup

Required Hardware

- PC with Windows 2000 as of SP4 or Windows XP as of SP1
- PROFIBUS connector, e.g. via CP 5611

How to set up the hardware for the WinLC PN

Task	Procedure
1.	Only Plants 3-1: Connect the PC to the local engineering station via Ethernet.
2.	Connect the PC to the IM151/CPU with the PROFIBUS cable.

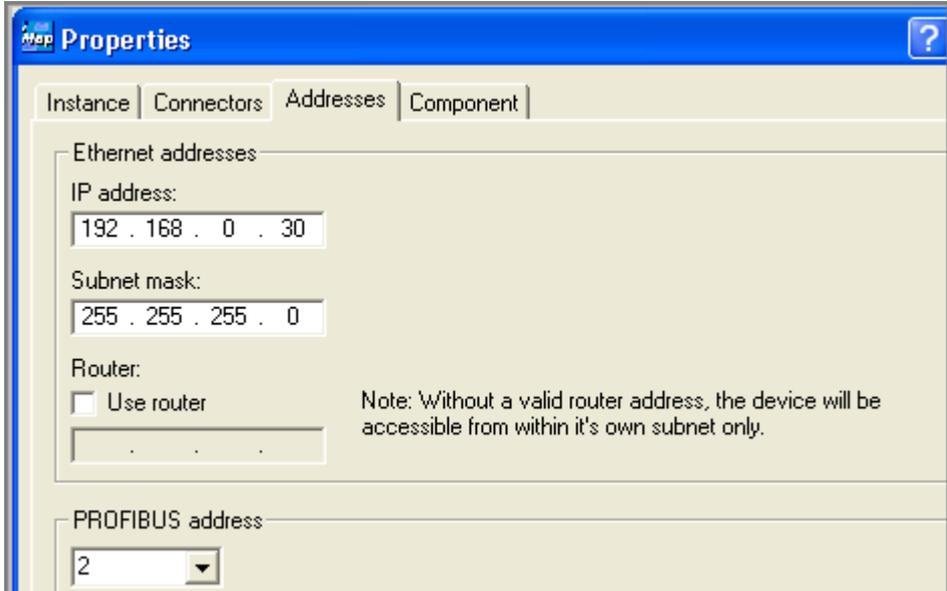
3.6.3 Step 2: Configuring the Plant Control in SIMATIC iMap

The basic procedure is similar to that described for Machine 1, Step 2.

Requirements

You have created the "Plant Control" PROFINet component and it is present in the file system.

How to configure the plant control

Task	Procedure
1.	Create a new project in SIMATIC iMap or use an existing project, for example, Machine_1.
2.	Import the PROFINet Plant Control" component from the file system into the project library. Click on the "Project Library" window and select Import components from the context menu. The preassembled PROFINet component is available under iMap\CBA_Tutorial\components .
3.	Drag the "Plant Control" component from the library into the net view of the project.
4.	Assign addresses to the WinLC PN. Open the properties of the WinLC PN in the net view. On the "Addresses" tab, enter the IP address and subnet mask of the PC station and the PROFIBUS address of the device (only for PROFINet devices with proxy functionality), as shown in the illustration below: <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  </div>
5.	When the WinLC PN is located on the local engineering station: In the "Name" field" of the "Instance" tab, enter the station name for the local PC station, e.g. "WinLC PN".
6.	Optional: Interconnect the "Plant Control" technological function with additional functions in the plant view.
7.	Generate the project with the menu command Project > Generate > Controller Unit > Changes only .
	Result: The "Plant Control" subplant is now configured in SIMATIC iMap.

3.6.4 Step 3: Checking the Settings for Downloading and Online Monitoring

3.6.4.1 Checking the Required Settings on the Engineering Station

There are two different cases:

- Settings for configuration variant 1: STEP 7 and SIMATIC iMap are on the local engineering station and WinLC PN is on a remote computer.
- Settings for configuration variant 2: STEP 7, SIMATIC iMap and WinLC PN are on a single computer, the local engineering station.

Settings for configuration variant 1

Check the following settings:

- On the local engineering PG/PC (with STEP 7 and SIMATIC iMap):
 - Set the PG/PC interface to TCP/IP (see Chapter "Set the PG/PC interface to TCP/IP")
 - Assign PG/PC (only if the WinLC PN is configured as a PROFINET device with proxy functionality and PROFIBUS devices are connected, see the section entitled "Assign PG/PC" for machine 1 or 2)
- Settings on the PC with WinLC PN
 - Set the PG/PC interface to PC internal
 - Configuration console "Set PC station"
(See Chapter "Settings on the PC with WinLC PN ")

Settings for configuration variant 2

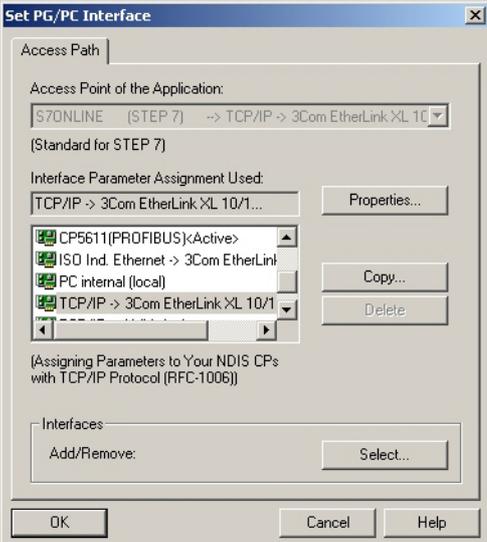
Check the following settings on the PC with the WinLC PN

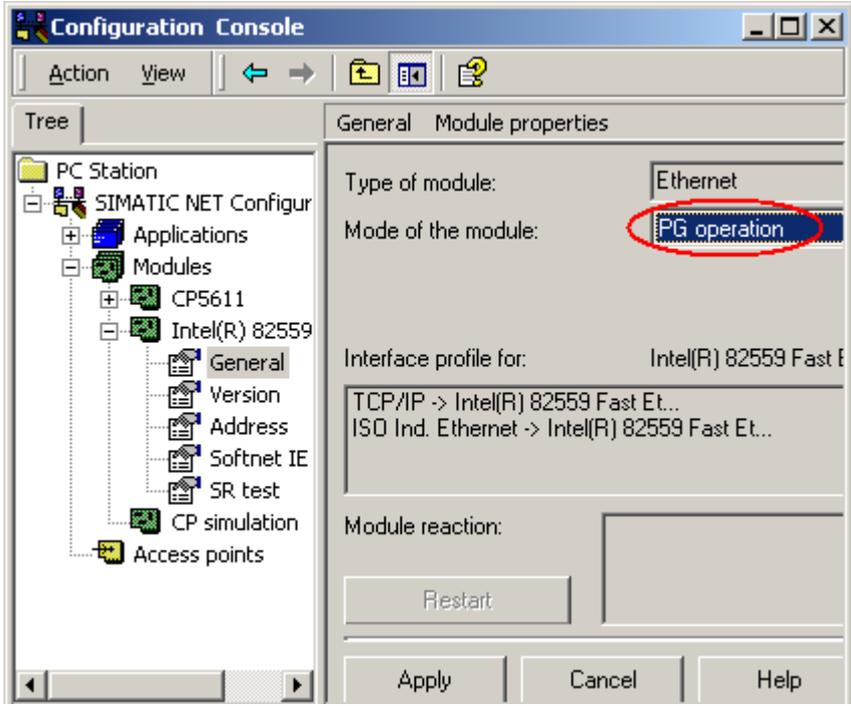
- Set the PG/PC interface to PC internal
- Configuration console "Set PC station"

(See Chapter "Settings on the PC with WinLC PN ")

3.6.4.2 Set the PG/PC Interface to TCP/IP

How to set the PG/PC interface to TCP/IP

Task	Procedure
1.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > PG/ PC Interface and check the following setting: "TCP/IP" must be set as the access point for the "S7ONLINE (STEP 7)" application.</p> 
2.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > Set PC Station. The configuration console opens.</p>

Task	Procedure
3.	<p>In the SIMATIC NET configuration, select the Ethernet module of the computer.</p>  <p>The "PG mode" operating mode must be set under "General".</p>
4.	Accept any changes and close the configuration console.

3.6.4.3 Settings on the PC with WinLC PN

These settings apply to the PC with the WinLC PN in the configuration variants 1 and 2.

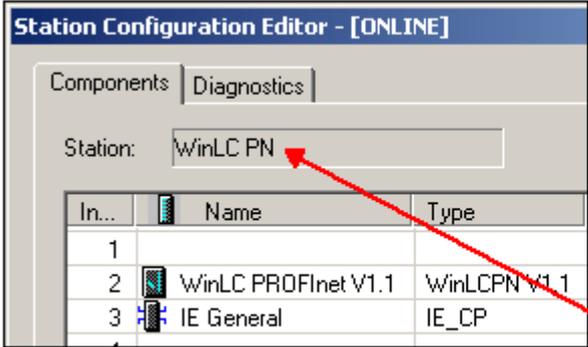
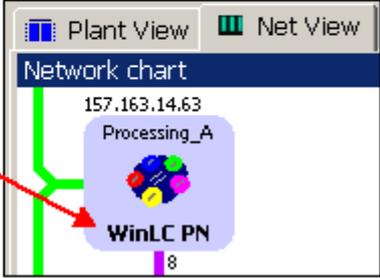
Requirements

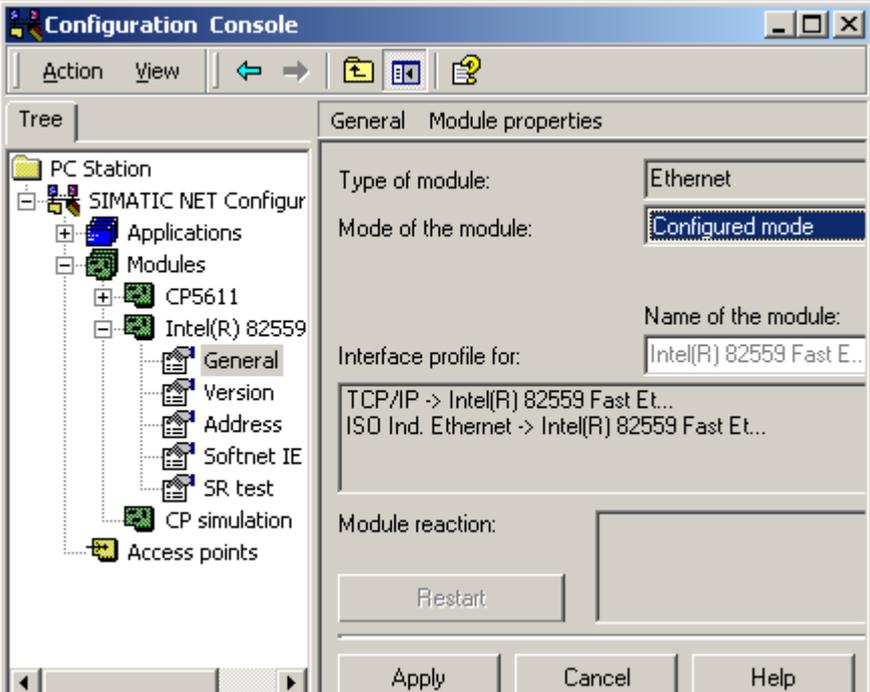
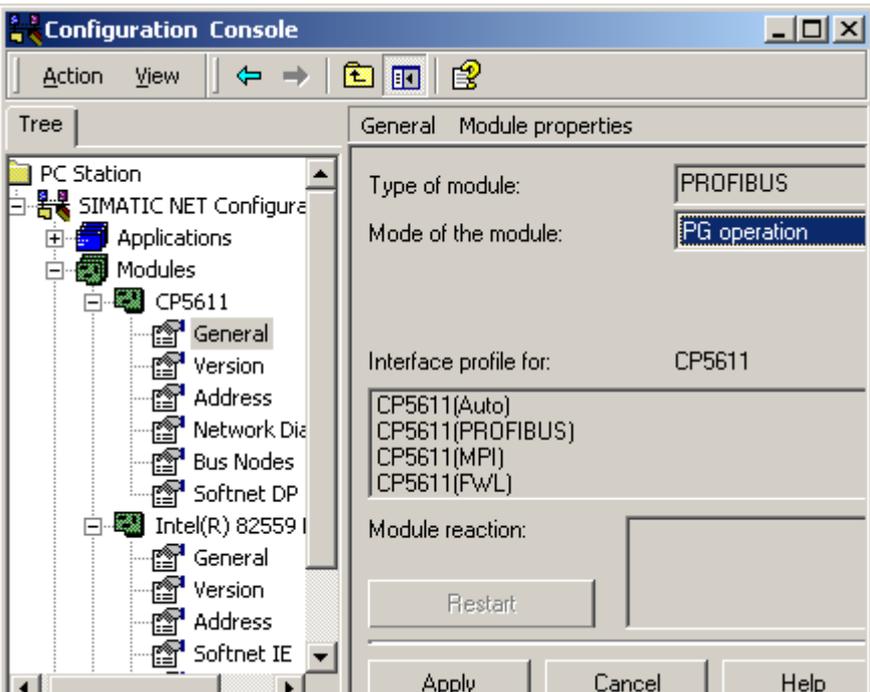
- See Chapter "Requirements for Commissioning the System"
- The software package "WinLC PN V1.1 must be installed on the local PC.

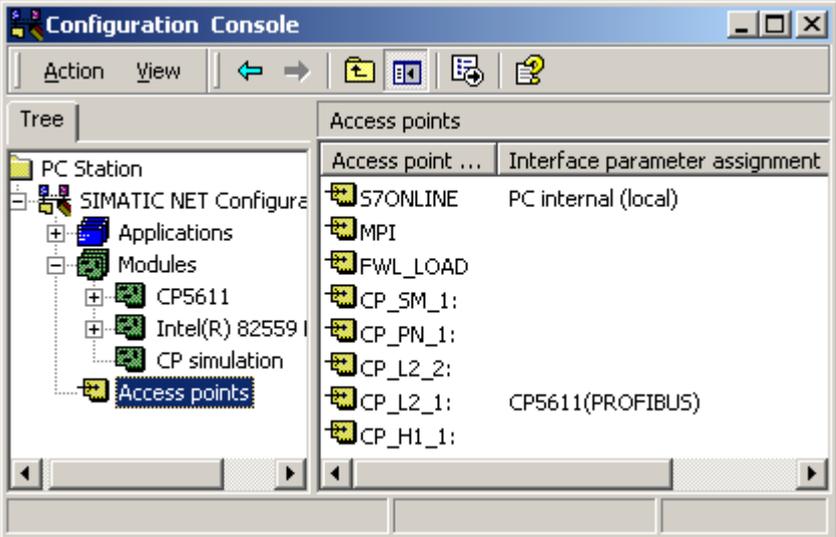
Note

When a WinLC PN is located on the local engineering station, the online connection between SIMATIC iMap and the plant devices is controlled with the station manager of the WinLC PN. The local PC station must therefore be configured for this.

How to configure the local PC station

Task	Procedure
1.	Open the component wizard using <ul style="list-style-type: none"> • the icon on the taskbar or • Start > Program > Autostart > Component wizard.
2.	Ensure that <ul style="list-style-type: none"> • the station name of the local engineering station where the WinLC PN is located is identical to the device name of the "Processing_A" component in the net view of SIMATIC iMap and • the index of the IE_CP is the same as the CP "IE General" slot in the component project in STEP 7/HW Config. <div style="display: flex; justify-content: space-around; align-items: center;">   </div>
3.	Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > Set PC Station. The configuration console opens.

Task	Procedure
<p>4.</p>	<p>Under "Modules" in the "Structure" window, select the Ethernet module of the computer. The "Configured mode" operating mode must be set under "General". The index must be the same as the CP "IE General" slot in the component project in STEP 7/HW Config.</p> 
<p>5.</p>	<p>Optional, for PROFINet devices with proxy functionality only: Select the PROFIBUS module of the computer, if present. The "PG mode" operating mode must be set under "General".</p> 

Task	Procedure
6.	<p>Select "Access Points" and check the following settings:</p> <ul style="list-style-type: none"> • Optional: The local PROFIBUS module must be set as the access point for the "CP_L2_1" application. • "PC internal (local)" must be set as the access point for the "S7ONLINE (STEP 7)" application. 
7.	Accept any changes and close the configuration console.

Tip

You can also set or check the access points using **Start > Settings > Control Panel > Set PG/PC interface.**

3.6.5 Step 4: Commissioning the Plant Control

Requirements

- See Chapter "Requirements for Commissioning the System"
- The settings in STEP 7 have been checked.
- The project has been generated in SIMATIC iMap.
- The WinLC PN is started.
- Configuration variant 1 only: The local engineering station is connected to the remote PC (PC station with WinLC PN) via Ethernet.
- Optional: The PC station with WinLC PN may be connected to any DP slaves via PROFIBUS.

How to download the project configuration data to the WinLC PN

Task	Procedure
1.	In the net view of SIMATIC iMap, mark the WinLC PN and select Download Selected Instances > All in the context menu.
2.	When the WinLC PN is in RUN, you will be asked if you wish to stop the device. Click on "Yes" to confirm the question. Result: The device is set to STOP and the data is downloaded to the device. You are then asked if you wish to start the device again. Click on "Yes" to confirm the question.
3.	When PROFIBUS devices are connected to the PROFIBUS of the WinLC PN, perform a download to the target devices. Mark the PROFIBUS devices and select the command Download Selected Instances > All from the context menu. (See also "Commissioning Machine 1, Step 5")
	Result: The WinLC PN is ready for operation and can be monitored online.

3.6.6 Step 5: Online Monitoring of the Plant Control

Carry out the task described for Machine 3, Step 6.

3.7 Complete Plant

3.7.1 Setup of the Complete Plant

The complete plant consists of Machines 1 to 3 and a central plant control, a PC station with WinLC PN (see "Description of the Complete Plant").

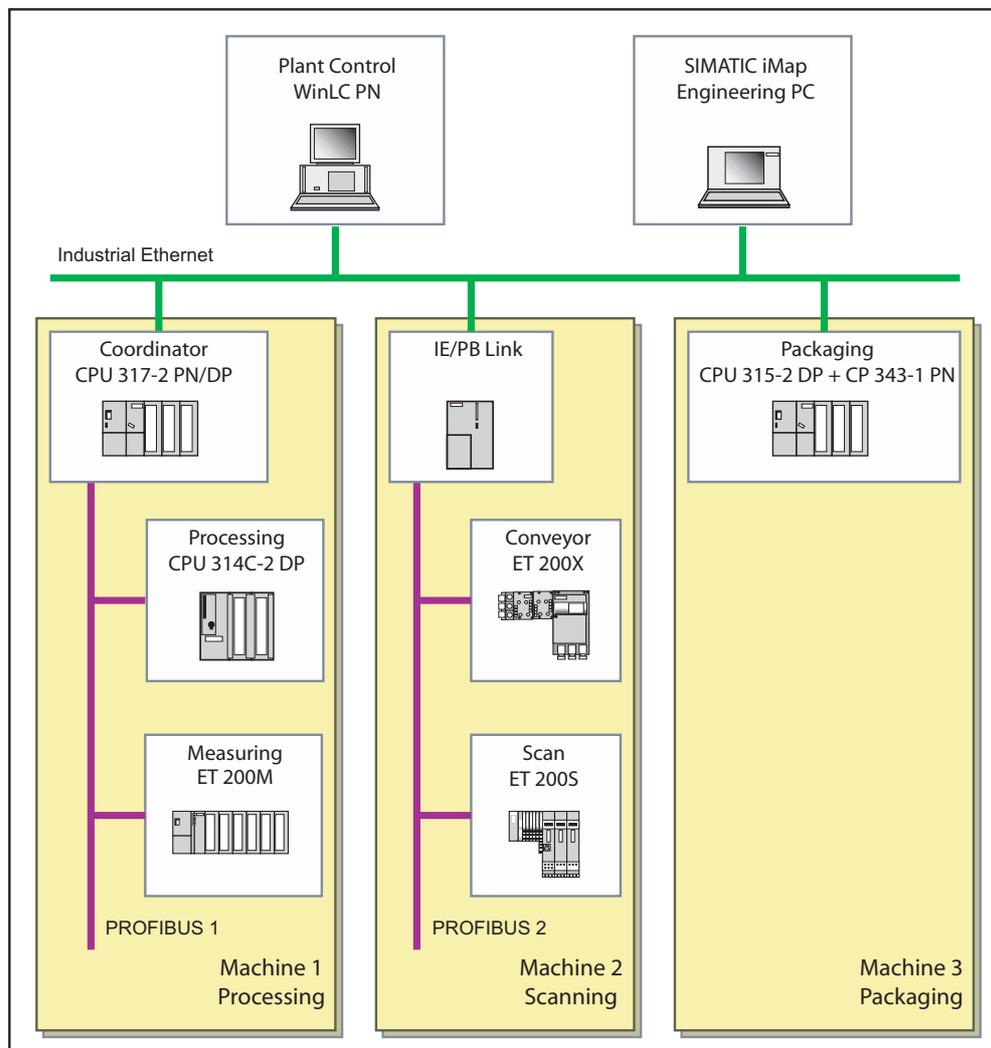


Figure 3-9 Complete plant

3.7.2 Step 1: Complete Plant - Hardware Setup

You can configure Machines 1 to 3 together with the WinLC PN plant control to form a combined complete plant.

How to set up the hardware for the complete plant

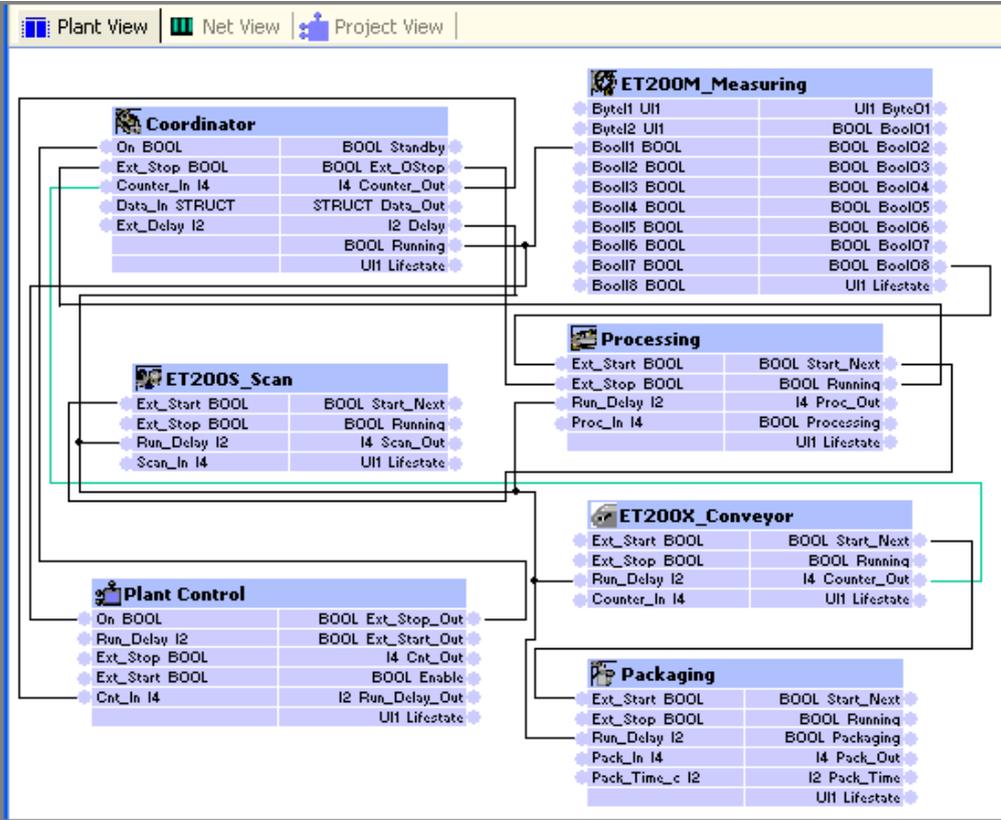
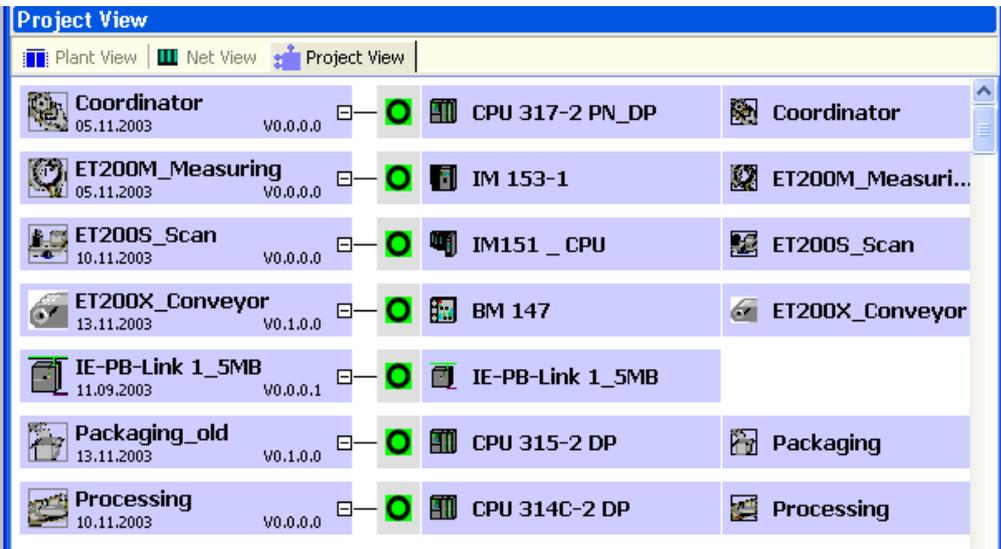
Task	Procedure
1.	Setup the devices as described for Machines 1 to 3.
2.	Install WinLC PN on the remote or local PC and start it.
3.	Connect the CPU 317-2 PN/DP, the CP 343-1 PN, the IE/PB Link and the PC station of the WinLC PN via Ethernet.
4.	Connect the engineering PC (with SIMATIC iMap) to the above devices via Ethernet.

3.7.3 Step 2: Configuring the Complete Plant

How to Configure the Complete Plant

Task	Procedure
1.	<p>Start SIMATIC iMap and ensure that a library is open containing all PROFINet components of three plants. You have the following possibilities:</p> <ul style="list-style-type: none"> • Open a new project with Project > New and open the global library "tutorial_lib" with Library > Open or • Open an existing project, e.g. "Machine_1" and import the missing PROFINet components into the project library with the command Library > Import components. <p>The global library "Tutorial_Lib" is available in the download directory of the tutorial.</p>
2.	Save the project with the command Project > Save as with the name "Tutorial_Plant", for example.
3.	<p>Drag the PROFINet components from the library into the net view of the project in the following order:</p> <ul style="list-style-type: none"> • Plant_Control (WinLC PN) • Coordinator (CPU 317-2 PN/DP) • Processing to the PROFIBUS of the CPU 317-2 PN/DP • ET200M_Measuring to the PROFIBUS of the CPU 317-2 PN/DP • IE-PB-Link 1_5MB • ET200S_Scan to the PROFIBUS of the IE/PB Link • ET200X_Conveyor to the PROFIBUS of the IE/PB Link • Packaging

Task	Procedure
4.	<p>Assign the devices the IP or PROFIBUS addresses, as described for Machines 1 to 3 and the Plant Control.</p> <p>The project should then appear as follows in the net view:</p> <p>The screenshot shows the following network configuration:</p> <ul style="list-style-type: none"> 192.168.0.5 Network: <ul style="list-style-type: none"> Coordinator (CPU 317-2 PN_DP) Processing (CPU 314C-2 DP) ET200M_Measuring (IM 153-1) 192.168.0.20 Network: <ul style="list-style-type: none"> IE-PB-Link 1_5MB ET200X_Conveyor (BM 147) ET200S_Scan (IM151_CPU) Ethernet node (192.168.0.30 Network): <ul style="list-style-type: none"> Plant Control (WinLC PN) Packaging (CPU 315-2 DP)

Task	Procedure																																								
<p>5.</p>	<p>In the plant view, arrange and connect the technological functions as shown in the following illustration:</p>  <p>The interconnection lines on the plant are converted into communication links so that the data can be transferred via Industrial Ethernet and PROFIBUS.. The value of the Counter_Out output is sent to the Counter_In input, etc.</p>																																								
<p>6.</p>	<p>Generate the project with the command Project > Generate > Controller Unit > Changes only.</p>																																								
	<p>Result: The complete plant is now configured in SIMATIC iMap.</p> <p>The generation status of the instances are displayed in the project view.</p>  <table border="1" data-bbox="352 1451 1353 2000"> <thead> <tr> <th>Module Name</th> <th>Version</th> <th>Status</th> <th>Hardware</th> <th>Instance Name</th> </tr> </thead> <tbody> <tr> <td>Coordinator</td> <td>05.11.2003 V0.0.0.0</td> <td>OK</td> <td>CPU 317-2 PN_DP</td> <td>Coordinator</td> </tr> <tr> <td>ET200M_Measuring</td> <td>05.11.2003 V0.0.0.0</td> <td>OK</td> <td>IM 153-1</td> <td>ET200M_Measuri...</td> </tr> <tr> <td>ET200S_Scan</td> <td>10.11.2003 V0.0.0.0</td> <td>OK</td> <td>IM151 _ CPU</td> <td>ET200S_Scan</td> </tr> <tr> <td>ET200X_Conveyor</td> <td>13.11.2003 V0.1.0.0</td> <td>OK</td> <td>BM 147</td> <td>ET200X_Conveyor</td> </tr> <tr> <td>IE-PB-Link 1_5MB</td> <td>11.09.2003 V0.0.0.1</td> <td>OK</td> <td>IE-PB-Link 1_5MB</td> <td></td> </tr> <tr> <td>Packaging_old</td> <td>13.11.2003 V0.1.0.0</td> <td>OK</td> <td>CPU 315-2 DP</td> <td>Packaging</td> </tr> <tr> <td>Processing</td> <td>10.11.2003 V0.0.0.0</td> <td>OK</td> <td>CPU 314C-2 DP</td> <td>Processing</td> </tr> </tbody> </table>	Module Name	Version	Status	Hardware	Instance Name	Coordinator	05.11.2003 V0.0.0.0	OK	CPU 317-2 PN_DP	Coordinator	ET200M_Measuring	05.11.2003 V0.0.0.0	OK	IM 153-1	ET200M_Measuri...	ET200S_Scan	10.11.2003 V0.0.0.0	OK	IM151 _ CPU	ET200S_Scan	ET200X_Conveyor	13.11.2003 V0.1.0.0	OK	BM 147	ET200X_Conveyor	IE-PB-Link 1_5MB	11.09.2003 V0.0.0.1	OK	IE-PB-Link 1_5MB		Packaging_old	13.11.2003 V0.1.0.0	OK	CPU 315-2 DP	Packaging	Processing	10.11.2003 V0.0.0.0	OK	CPU 314C-2 DP	Processing
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Processing	10.11.2003 V0.0.0.0	OK	CPU 314C-2 DP	Processing																																					

Additional information...

Additional information can be found in the basic help of SIMATIC iMap under:

- Interconnecting Technological Functions
- Generating the Project

3.7.4 Step 3: Checking the Required Settings for Downloading and Online Monitoring on the Engineering Station

3.7.4.1 Checking the required settings in the engineering station for the overall plant

Requirements

- See Chapter "Requirements for Commissioning the System"
- The PG/PC must be connected to one of the PROFINET devices, e.g. the CPU 317-2 PN/DP, via Ethernet.

Check your settings

Check the following settings:

- Set the PG/PC Interface to TCP/IP
- Assigning the PG/PC

Note

The PG/PC only has to be assigned in special situations, e.g.:

- If several network cards are installed in the PG/PC or
- If the PG/PC interface S7ONLINE (STEP 7) is not set to TCP/IP.

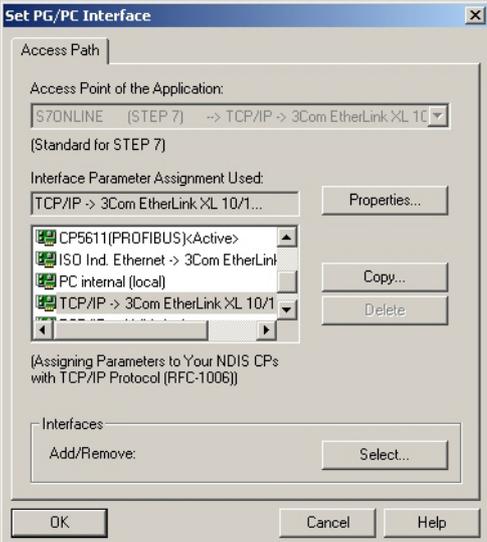
Otherwise the PG/PC assignment runs automatically when the project is generated in SIMATIC iMap, and you may skip this step.

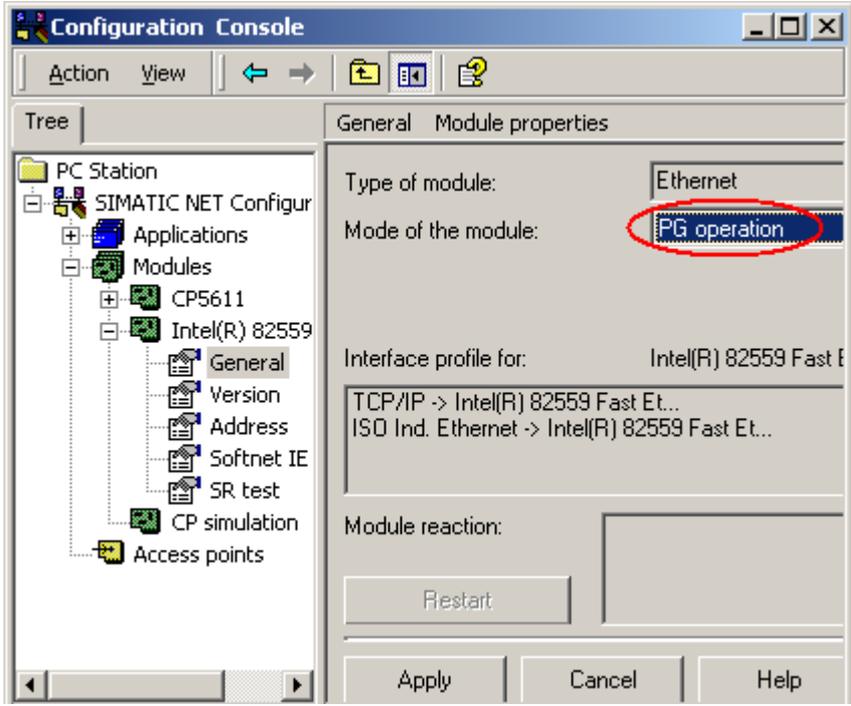
Additional information

Detailed information can be found in the online help for this dialog or in the SIMATIC iMap help topics under "Assign PG/PC".

3.7.4.2 Set the PG/PC Interface to TCP/IP

How to set the PG/PC interface to TCP/IP

Task	Procedure
1.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > PG/ PC Interface and check the following setting: "TCP/IP" must be set as the access point for the "S7ONLINE (STEP 7)" application.</p> 
2.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > Set PC Station. The configuration console opens.</p>

Task	Procedure
3.	<p>In the SIMATIC NET configuration, select the Ethernet module of the computer.</p>  <p>The screenshot shows the 'Configuration Console' window. On the left is a tree view with 'SIMATIC NET Configur' expanded to 'Modules' and then 'Intel(R) 82559'. The right pane shows 'General' properties for the selected module. 'Type of module' is 'Ethernet' and 'Mode of the module' is 'PG operation', which is circled in red. Other settings include 'Interface profile for: Intel(R) 82559 Fast E...' and 'Module reaction:'.</p> <p>The "PG mode" operating mode must be set under "General".</p>
4.	Accept any changes and close the configuration console.

3.7.4.3 Assigning the PG/PC

Note

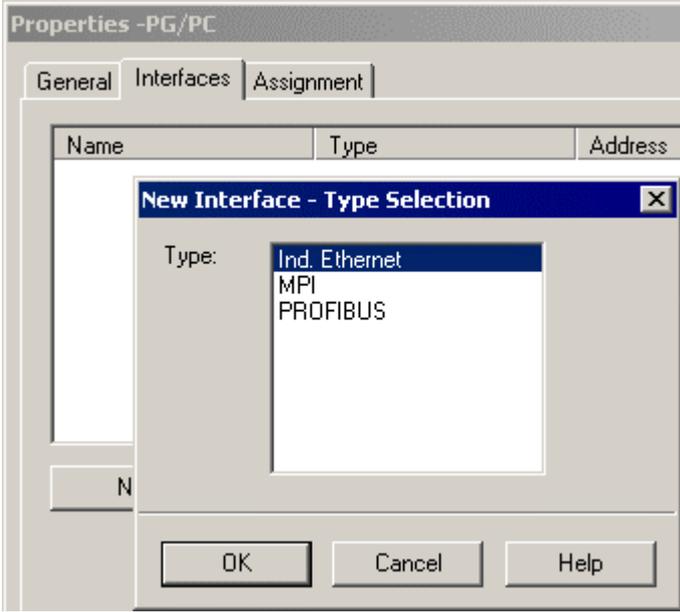
The PG/PC assignment in SIMATIC iMap is automatically performed during the initial generation and anytime the project is newly generated. In special cases it may not be possible to automatically assign the PG/PC, for example:

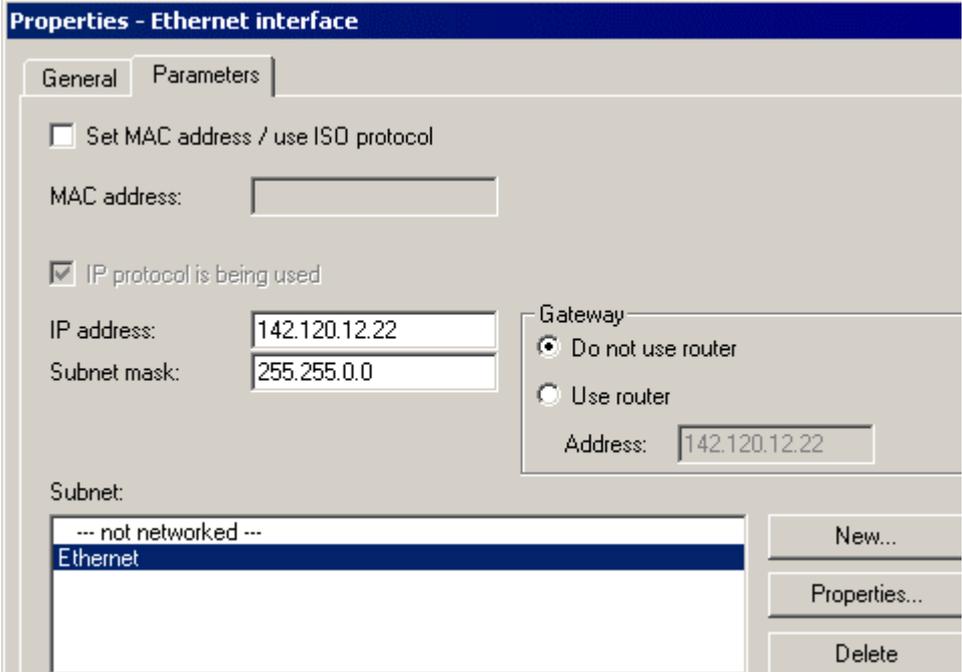
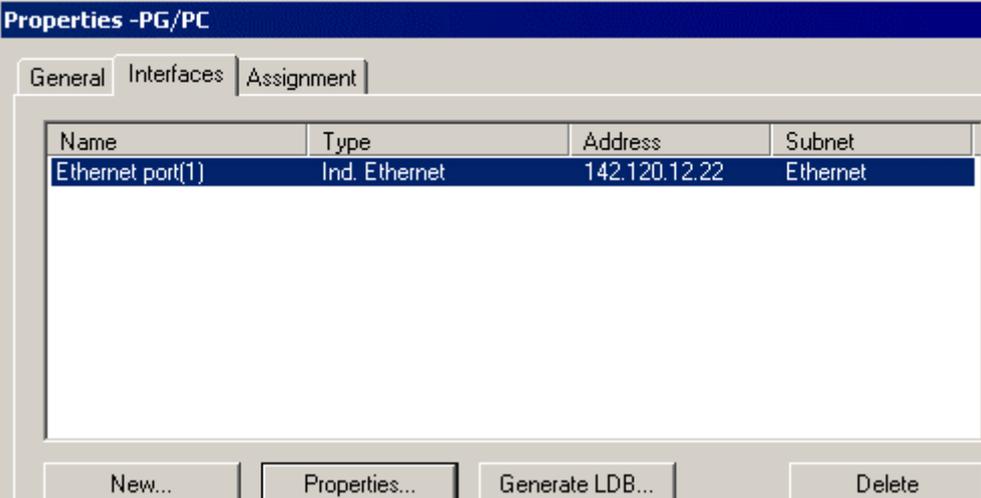
- When several network cards are installed in the PG/PC or
- When the PG/PC interface S7ONLINE (STEP 7) is not set to TCP/IP

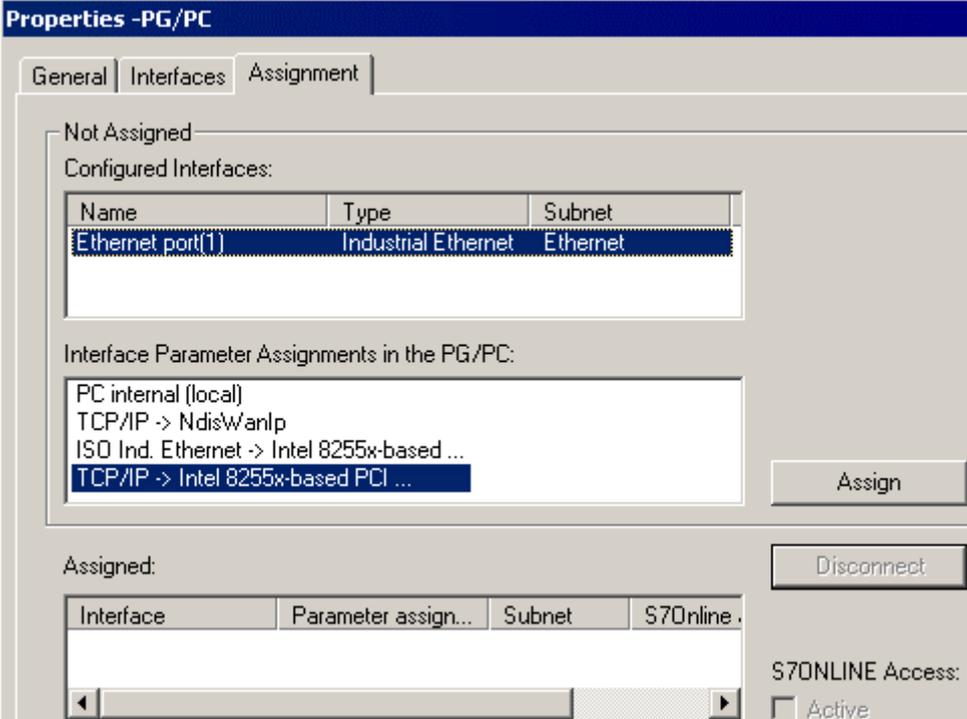
In such situations an error is reported during generation and you must perform the PG/PC assignment as described in the following.

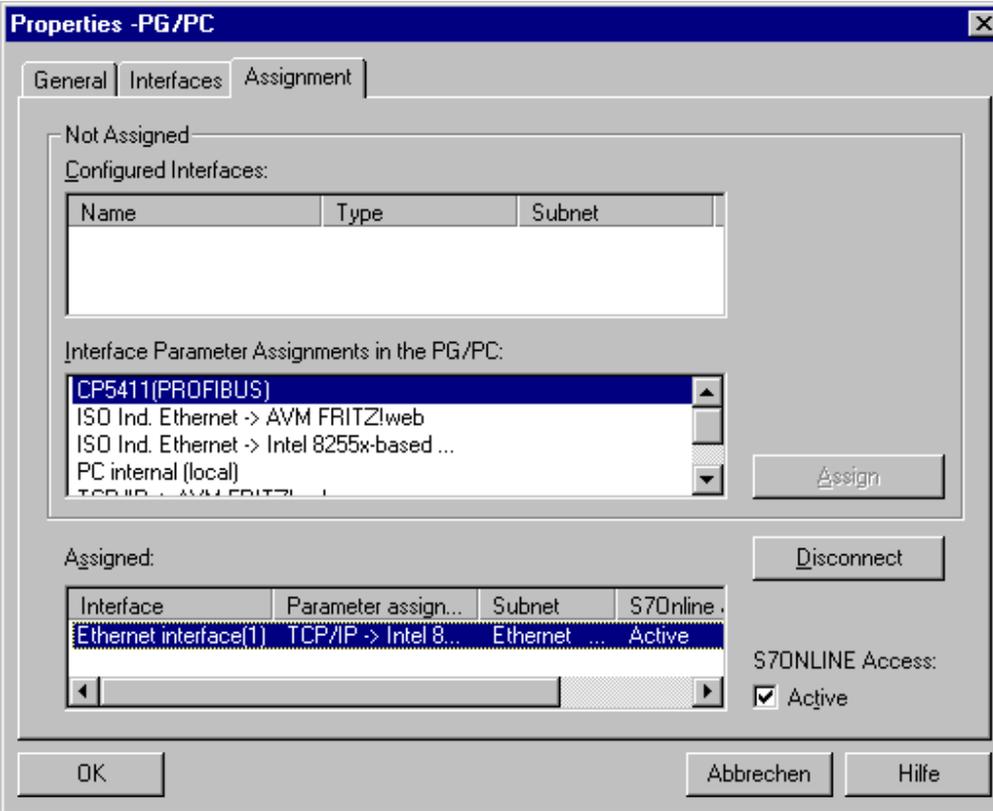
The PG/PC assignment is not necessary when you are using a local WinLC PN which contains a network card in its configuration.

How to assign the PG/PC interface to the SIMATIC iMap project

Task	Procedure
1.	Open the SIMATIC iMap project. Select any device from the SIMATIC iMap net view, then select Special > Assign PG/PC from the context menu. This is necessary to be able to perform the program download to the intelligent PROFIBUS devices.
2.	<p>In the "Interfaces" tab of the "PG/PC Interface" dialog, press the "New" button and select "Industrial Ethernet" from the list.</p>  <p>Click on the "OK" button to confirm your entry.</p>

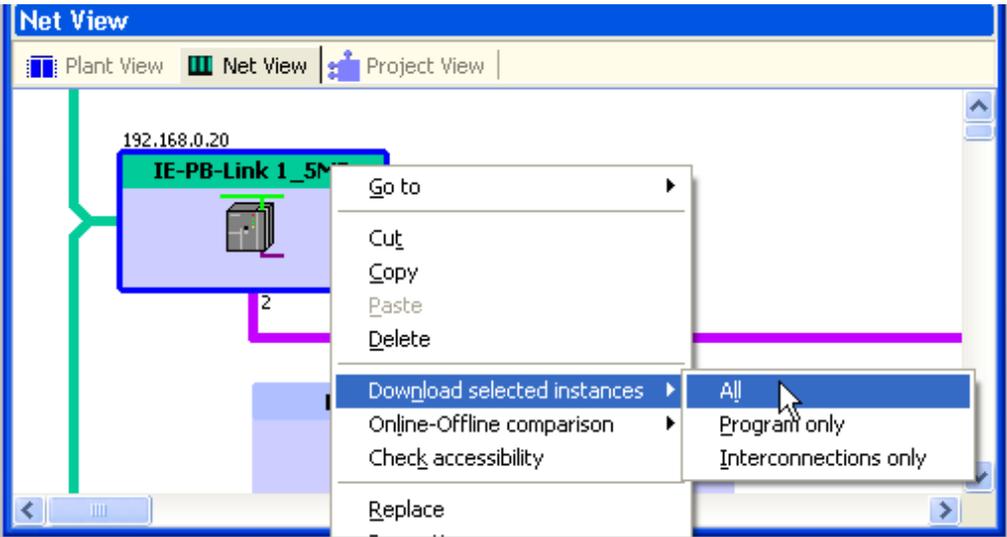
Task	Procedure								
3.	<p>In the "Properties - Ethernet Interface" dialog, enter the IP address and the subnet mask of the local computer and select the Ethernet subnet.</p> 								
4.	<p>Click on the "OK" button to confirm your entry. Result: The newly configured interface is displayed in the "Interfaces" tab.</p>  <table border="1" data-bbox="411 1303 1337 1624"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Address</th> <th>Subnet</th> </tr> </thead> <tbody> <tr> <td>Ethernet port(1)</td> <td>Ind. Ethernet</td> <td>142.120.12.22</td> <td>Ethernet</td> </tr> </tbody> </table>	Name	Type	Address	Subnet	Ethernet port(1)	Ind. Ethernet	142.120.12.22	Ethernet
Name	Type	Address	Subnet						
Ethernet port(1)	Ind. Ethernet	142.120.12.22	Ethernet						

Task	Procedure						
5.	<p>In the "Assignment" tab, mark the Ethernet interface you have just configured in the "Configured interfaces:" selection field below "Not assigned". In the "Interface parameter settings on the PG/PC:" select</p> <p>TCP/IP -> <network card used></p>  <p>The screenshot shows the 'Properties -PG/PC' dialog box with the 'Assignment' tab selected. Under 'Not Assigned', the 'Configured Interfaces' table has the following data:</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Type</th> <th>Subnet</th> </tr> </thead> <tbody> <tr> <td>Ethernet port(1)</td> <td>Industrial Ethernet</td> <td>Ethernet</td> </tr> </tbody> </table> <p>Below this, the 'Interface Parameter Assignments in the PG/PC' list contains:</p> <ul style="list-style-type: none"> PC internal (local) TCP/IP -> Ndis/wanlp ISO Ind. Ethernet -> Intel 8255x-based ... TCP/IP -> Intel 8255x-based PCI ... (highlighted) <p>The 'Assigned' table is currently empty. The 'S7ONLINE Access' checkbox is unchecked.</p>	Name	Type	Subnet	Ethernet port(1)	Industrial Ethernet	Ethernet
Name	Type	Subnet					
Ethernet port(1)	Industrial Ethernet	Ethernet					

Task	Procedure
6.	<p>Confirm by clicking on the "Assign" button. Result: The assigned interface is displayed in the "Assigned" field. Activate the option "S7ONLINE access".</p>  <p>The assignment becomes effective by clicking on "OK".</p>

3.7.5 Step 4: Commissioning the Complete Plant

How to download the project configuration data to the target systems

Task	Procedure
1.	<p>In the net view of SIMATIC iMap, mark the PROFINet devices with proxy functionality: WinLC PN, CPU 317 2 PN/DP and IE/PB Link.</p> <p>Download the data into the devices using the command Download Selected Instances > All from the context menu.</p>  <p>When one of the target devices is in RUN, you will be asked if you wish to stop the device. Click on "Yes" to confirm the question.</p> <p>Result: The target device is set to STOP and the data is downloaded to the target device.</p> <p>You are then asked if you wish to start the device again. Click on "Yes" to confirm the question.</p> <p>Then you can download the data to the remaining target devices of the plant</p>
2.	<p>Select</p> <ul style="list-style-type: none"> • the device in the net view or • the technological functions in the plant view <p>the remaining PROFINet components:</p> <ul style="list-style-type: none"> • Packaging/CPU 315-2 DP with CP 343-1 PN • Processing/CPU 314C-2 DP • ET200S_Scan/IM151_CPU • ET200X_Conveyor/BM147_CPU • ET200_Measuring/IM 153-1 <p>Download the data into the devices using the command Download Selected Instances > All from the context menu.</p> <p>For the CPU 314C-2 DP, IM 151/CPU, BM 147/CPU and CP 343-1 PN you will receive the same prompt as in Step 1, which you should always answer with "Yes".</p> <p>Result: The devices are ready for operation and can be monitored online.</p>

Notes about downloading

First, the data must be loaded to the local WinLC PN, then to the DP master with proxy functionality (e.g. WinLC PN, CPU 317-2 PN/DP and IE/PB Link) and then to the corresponding DP slaves.

The programs must be downloaded to the DP master and DP slaves each time changes are made to the PROFIBUS in the project, for example, each time PROFIBUS devices are added or removed.

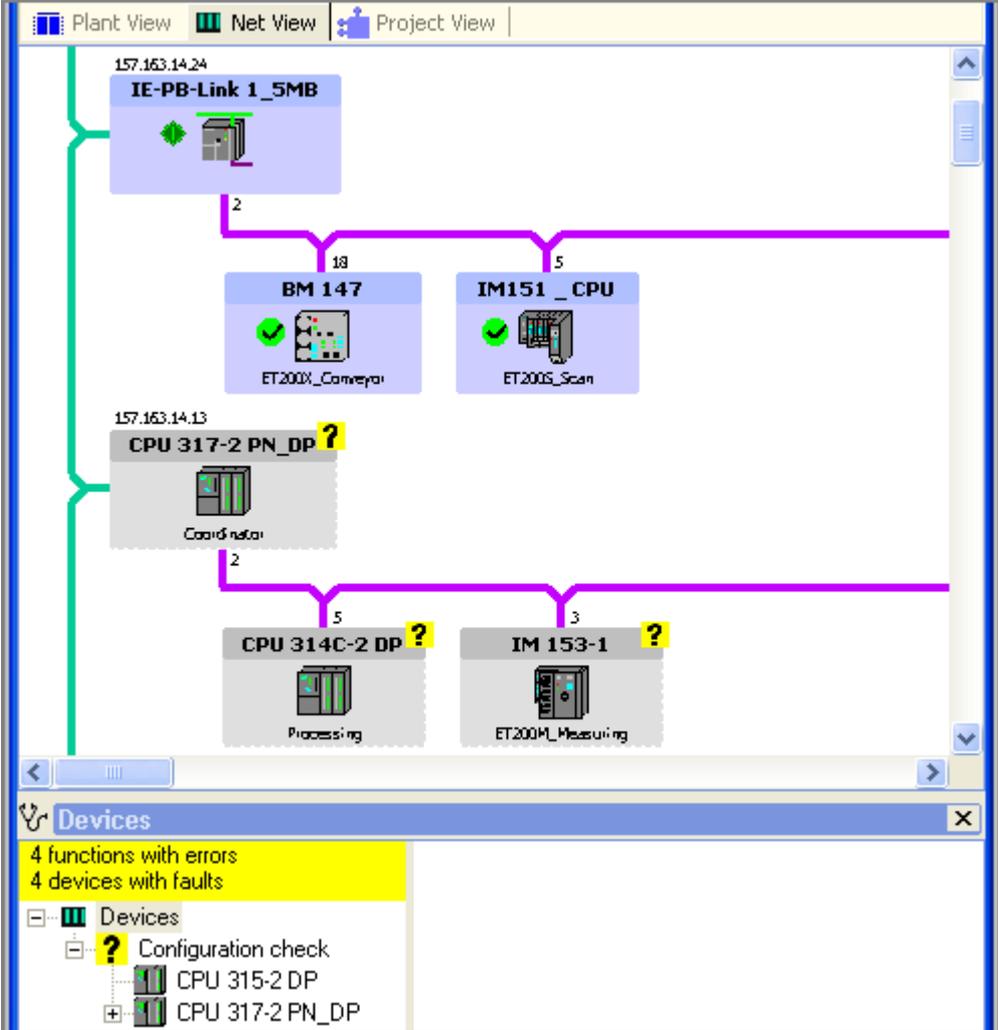
The program download must first be performed with either:

- **Online > Download Selected Instances > All** or
- **Online > Download Selected Instances > Program only**

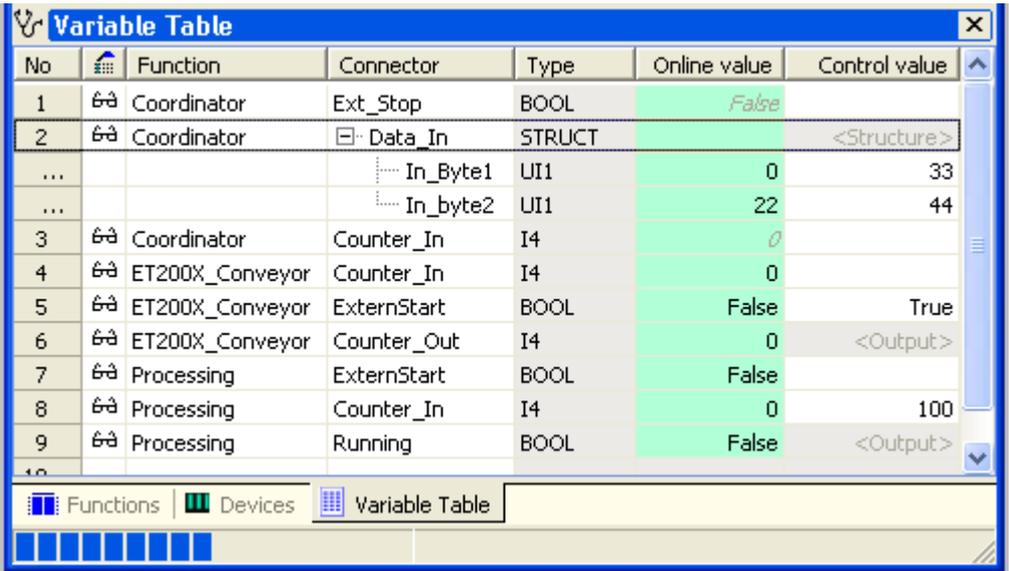
The interconnections can be subsequently downloaded.

3.7.6 Step 5: Online Monitoring the Complete Plant

How to switch online view on and off

Task	Procedure
1.	<p>Switching online view on/off</p> <p>To switch on the online view in SIMATIC iMap:</p> <ul style="list-style-type: none"> Click on the "Online Monitoring" icon or Select Online > Monitor. <p>You are asked if you wish to compare the online and offline program data of the devices. This comparison is optional. You can perform it immediately or at a later point in time.</p> <p>If you answer with "Yes", the data is compared and the results are displayed in the information window.</p> <p>Result: The online view of SIMATIC iMap is switched on and any diagnostic information is immediately displayed on the devices and technological functions in the diagnostics window.</p>  <p>The screenshot displays a network topology in SIMATIC iMap. At the top, there are three tabs: 'Plant View', 'Net View', and 'Project View'. The main area shows a network structure with a central IE-PB-Link 1_SMB (IP: 157.163.14.24) connected to two branches. The left branch contains a BM 147 (ET200X_Conveyor) and a CPU 317-2 PN_DP (IP: 157.163.14.13). The right branch contains an IM151_CPU (ET200S_Scan) and an IM 153-1 (ET200M_Measuring). Below the main network, a 'Devices' window is open, showing a list of devices with a yellow highlight indicating '4 functions with errors' and '4 devices with faults'. The device list includes a 'Configuration check' with a question mark icon, and two CPU units: CPU 315-2 DP and CPU 317-2 PN_DP.</p>

How to create a variable table

Task	Procedure																																																																								
1.	Open the "Variable table" tab in the diagnostics window of SIMATIC iMap.																																																																								
2.	Select the "Coordinator" function in the plant view and drag it into the variable table. Result: The connectors appear in the lines of the variable table.																																																																								
3.	You can alternatively mark the individual connectors or all the technological functions and drag them into the variable table.																																																																								
4.	Mark one or more items in the variable table and select Monitor in the context menu.  <p>The screenshot shows a window titled 'Variable Table' with the following data:</p> <table border="1"> <thead> <tr> <th>No</th> <th>Function</th> <th>Connector</th> <th>Type</th> <th>Online value</th> <th>Control value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Coordinator</td> <td>Ext_Stop</td> <td>BOOL</td> <td>False</td> <td></td> </tr> <tr> <td>2</td> <td>Coordinator</td> <td>Data_In</td> <td>STRUCT</td> <td></td> <td><Structure></td> </tr> <tr> <td>...</td> <td></td> <td>In_Byte1</td> <td>UI1</td> <td>0</td> <td>33</td> </tr> <tr> <td>...</td> <td></td> <td>In_byte2</td> <td>UI1</td> <td>22</td> <td>44</td> </tr> <tr> <td>3</td> <td>Coordinator</td> <td>Counter_In</td> <td>I4</td> <td>0</td> <td></td> </tr> <tr> <td>4</td> <td>ET200X_Conveyor</td> <td>Counter_In</td> <td>I4</td> <td>0</td> <td></td> </tr> <tr> <td>5</td> <td>ET200X_Conveyor</td> <td>ExternStart</td> <td>BOOL</td> <td>False</td> <td>True</td> </tr> <tr> <td>6</td> <td>ET200X_Conveyor</td> <td>Counter_Out</td> <td>I4</td> <td>0</td> <td><Output></td> </tr> <tr> <td>7</td> <td>Processing</td> <td>ExternStart</td> <td>BOOL</td> <td>False</td> <td></td> </tr> <tr> <td>8</td> <td>Processing</td> <td>Counter_In</td> <td>I4</td> <td>0</td> <td>100</td> </tr> <tr> <td>9</td> <td>Processing</td> <td>Running</td> <td>BOOL</td> <td>False</td> <td><Output></td> </tr> </tbody> </table>	No	Function	Connector	Type	Online value	Control value	1	Coordinator	Ext_Stop	BOOL	False		2	Coordinator	Data_In	STRUCT		<Structure>	...		In_Byte1	UI1	0	33	...		In_byte2	UI1	22	44	3	Coordinator	Counter_In	I4	0		4	ET200X_Conveyor	Counter_In	I4	0		5	ET200X_Conveyor	ExternStart	BOOL	False	True	6	ET200X_Conveyor	Counter_Out	I4	0	<Output>	7	Processing	ExternStart	BOOL	False		8	Processing	Counter_In	I4	0	100	9	Processing	Running	BOOL	False	<Output>
No	Function	Connector	Type	Online value	Control value																																																																				
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2	Coordinator	Data_In	STRUCT		<Structure>																																																																				
...		In_Byte1	UI1	0	33																																																																				
...		In_byte2	UI1	22	44																																																																				
3	Coordinator	Counter_In	I4	0																																																																					
4	ET200X_Conveyor	Counter_In	I4	0																																																																					
5	ET200X_Conveyor	ExternStart	BOOL	False	True																																																																				
6	ET200X_Conveyor	Counter_Out	I4	0	<Output>																																																																				
7	Processing	ExternStart	BOOL	False																																																																					
8	Processing	Counter_In	I4	0	100																																																																				
9	Processing	Running	BOOL	False	<Output>																																																																				
	Result: The marked items are highlighted with the "Online Monitoring" icon and the current online values are displayed in the "Online value" column.																																																																								

Additional information...

Additional information can be found in the basic help of SIMATIC iMap under:

- Diagnostics concept in SIMATIC iMap
- Plant with SIMATIC devices
- Perform online monitoring and diagnostics of variables

3.7.7 Analyzing with OPC

OPC: OLE for Process Control

In SIMATIC iMap, you can create an OPC symbol file for the project. This file contains information about the current process data.

Anyone in the office can use an OPC client program to access the data for PROFINet devices at the control and production levels.

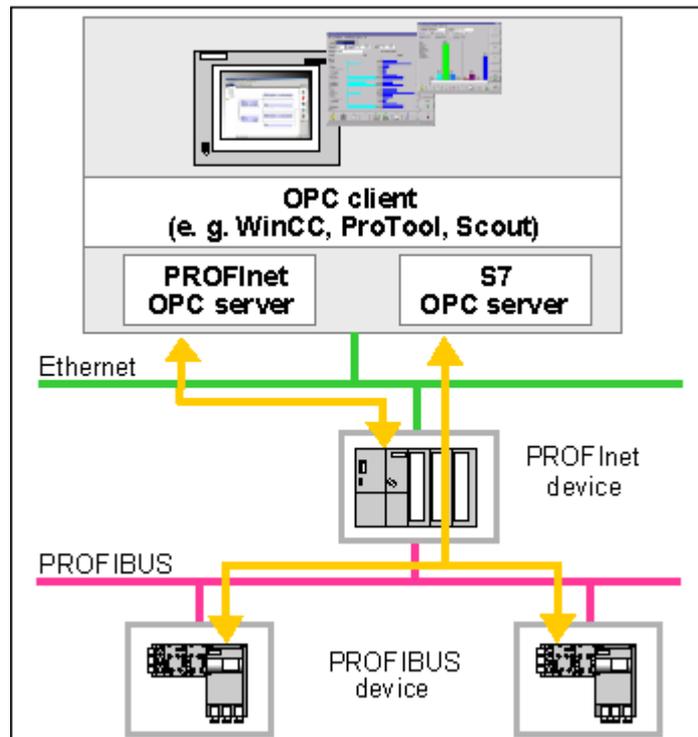


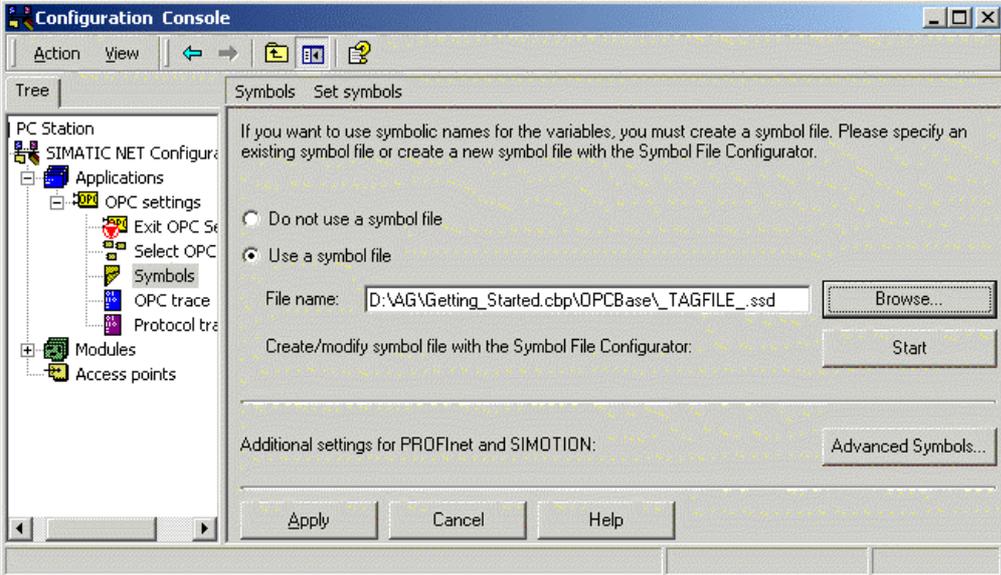
Figure 3-10 Using OPC

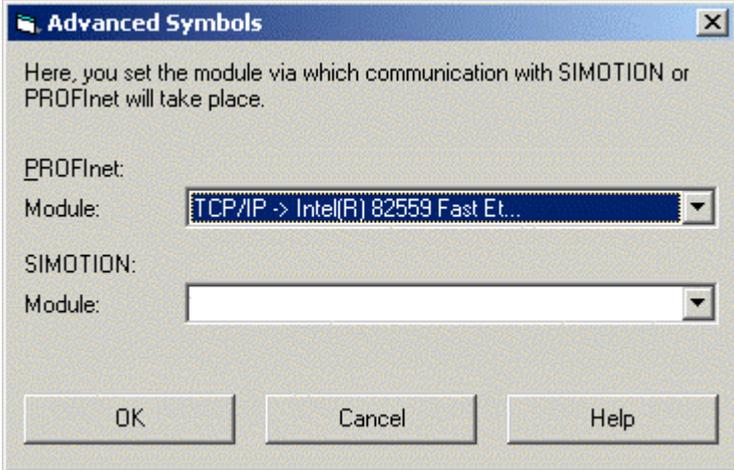
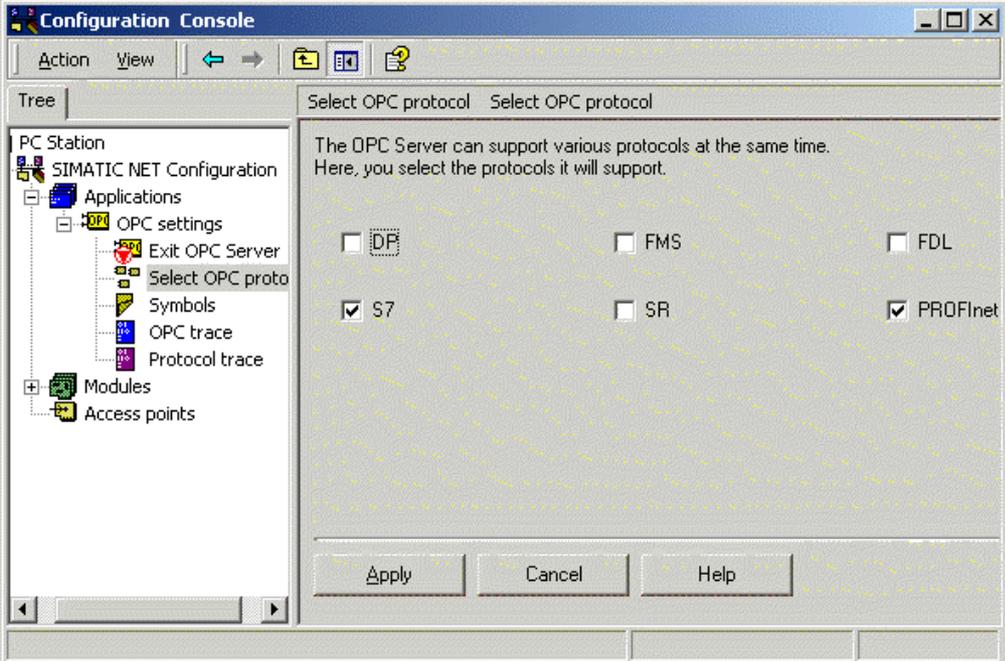
Requirements

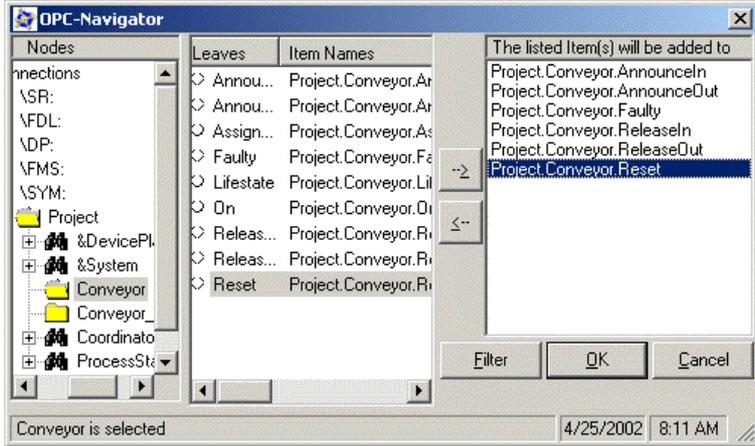
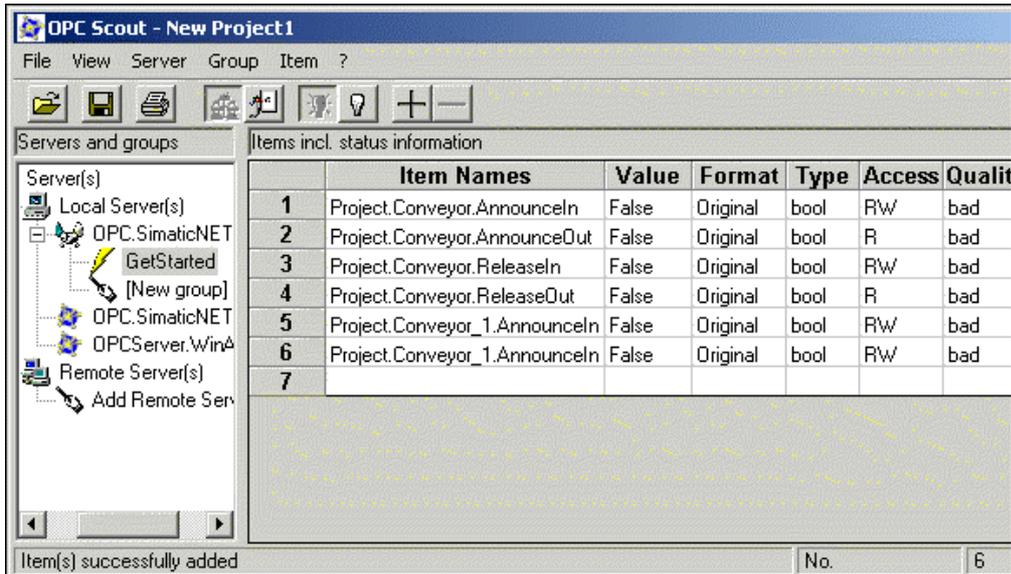
- An OPC client program must be installed, e.g. OPC Scout from SIMATIC Net.
- The SIMATIC iMap project is open and has been generated without error.

How to analyze process data

Table 3-1 Creating and editing the OPC symbol file

Step	Description
1.	In SIMATIC iMap, select Options > Create OPC Symbol File .
2.	Select a folder as the storage location in the "Save OPC symbol file As" dialog field. The OPC symbol file <project name> will be saved in this folder. You can then close SIMATIC iMap.
3.	<p>Select the start menu command Start > SIMATIC > SIMATIC NET > Settings > Set PC Station.</p> <p>The configuration console opens. This is used to make your new OPC symbol file known to a SIMATIC NET OPC server.</p> <p>In the "Structure" window, open the "Applications, Symbols" folder.</p> 
4.	<p>Activate the "Use symbol file" option and enter the path of the symbol file <project name>.sti under "File name" (see Step 2).</p> <p>Click on the "Browse" button to search for the file.</p>

Step	Description
5.	<p>Click on the "Extended symbols" button (see picture in step 2) and select the module for the TCP/IP protocol on your PG/PC from the "PROFINet" box.</p> <p>You need this setting to be able to access non-connectable connectors (see "Properties of the PROFINet Interface")</p> 
6.	<p>Open the OPC protocol selection dialog and mark the PROFINet and S7 protocols.</p>  <p>Click on the "Accept" button to confirm your settings.</p>

Step	Description																																																																
7.	<p>Use the command Start > SIMATIC > SIMATIC NET > Industrial Ethernet > SOFTNET Industrial Ethernet > OPC Scout to start OPC Scout from the task bar.</p> <p>OPC Scout opens. Here you can create a new group for your project data. Double-click to open this group. The OPC navigator opens. Select the project variables that you wish to display by selecting the function in the "Nodes" window. Then use the arrow button to transfer the desired item name to the right-hand window.</p> <p>Example:</p> 																																																																
8.	<p>Click on the "OK" button to confirm your entry.</p> <p>A table with the selected OPC variables and their status information appears in OPC Scout.</p> <p>Example:</p>  <table border="1" data-bbox="592 1375 1358 1644"> <thead> <tr> <th colspan="2"></th> <th>Item Names</th> <th>Value</th> <th>Format</th> <th>Type</th> <th>Access</th> <th>Quality</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>Project.Conveyor.AnnounceIn</td> <td>False</td> <td>Original</td> <td>bool</td> <td>RW</td> <td>bad</td> </tr> <tr> <td>2</td> <td></td> <td>Project.Conveyor.AnnounceOut</td> <td>False</td> <td>Original</td> <td>bool</td> <td>R</td> <td>bad</td> </tr> <tr> <td>3</td> <td></td> <td>Project.Conveyor.ReleaseIn</td> <td>False</td> <td>Original</td> <td>bool</td> <td>RW</td> <td>bad</td> </tr> <tr> <td>4</td> <td></td> <td>Project.Conveyor.ReleaseOut</td> <td>False</td> <td>Original</td> <td>bool</td> <td>R</td> <td>bad</td> </tr> <tr> <td>5</td> <td></td> <td>Project.Conveyor_1.AnnounceIn</td> <td>False</td> <td>Original</td> <td>bool</td> <td>RW</td> <td>bad</td> </tr> <tr> <td>6</td> <td></td> <td>Project.Conveyor_1.AnnounceIn</td> <td>False</td> <td>Original</td> <td>bool</td> <td>RW</td> <td>bad</td> </tr> <tr> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Item(s) successfully added</p>			Item Names	Value	Format	Type	Access	Quality	1		Project.Conveyor.AnnounceIn	False	Original	bool	RW	bad	2		Project.Conveyor.AnnounceOut	False	Original	bool	R	bad	3		Project.Conveyor.ReleaseIn	False	Original	bool	RW	bad	4		Project.Conveyor.ReleaseOut	False	Original	bool	R	bad	5		Project.Conveyor_1.AnnounceIn	False	Original	bool	RW	bad	6		Project.Conveyor_1.AnnounceIn	False	Original	bool	RW	bad	7							
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7																																																																	

Tip: Access with visualization software

Save your selected visualization data to an .OPP file. You can then open this file directly using OPC Scout. When visualization is working with the "OPC Scout" diagnostic tool, you can use any OPC-compatible visualization software (e.g. ProTool/Pro, WinCC, etc.) to access the OPC server running on the PC.

Appendix

4

4.1 Literature and Links

Requirement

- The SIMATIC Manual Collection, containing the latest manuals or
- An Internet connection Here you will find constantly updated information in the form of FAQs and manuals and software for downloading.

Manuals

Links to manuals containing further information about the devices and on working with SIMATIC iMap are given below.

Title	Link or download address
SIMATIC iMap Manuals	SIMATIC iMap Manuals http://www4.ad.siemens.de/view/cs/en/11066277
Device manual S7-CPs / Part B2 Description CP 343-1 PN Edition: 02/2003	Description CP 343-1 PN http://www4.ad.siemens.de/view/cs/en/8776538
SIMATIC NET IE/PB Link Gateway Edition: 11/2002	Description IE/PB Link http://www4.ad.siemens.de/view/cs/en/7851748
SIMATIC Component based Automation - WinLC PN Addendum to WinAC Basis V3.0	Description WinLC PN http://www4.ad.siemens.de/view/cs/en/9857682
SIMATIC Distributed I/O Device ET 200S Edition: 12/2001 Order number: 6ES7151-1AA00-8AA0	Distributed I/O Device ET 200S http://www4.ad.siemens.de/view/cs/en/1144348
SIMATIC ET 200S Interface Module IM 151-7 CPU as of version: 09/2002 Order number: 6ES7151-1AA00-8AA0	SIMATIC ET 200S Interface Module IM 151-7 CPU http://www4.ad.siemens.de/view/cs/en/10805260
SIMATIC Distributed I/O Device ET 200X as of version : 05/2001 Order number : 6ES7198-8FA01-8AA0	Distributed I/O Device ET 200X http://www4.ad.siemens.de/view/cs/en/1142469
Basic Module BM147/CPU as of version: 07/1999 Order number: 6ES7 198-8FA01-8AA0	Basic Module BM147/CPU http://www4.ad.siemens.de/view/cs/en/1142364

Title	Link or download address
Distributed I/O Device ET 200M Revision: 07/00 Order number: 6ES7 153-1AA00-8AA0	Distributed I/O Device ET 200M http://www4.ad.siemens.de/view/cs/en/1142798
SIMATIC Manual Collection as of Edition: 11/2003 Order number: 6ES7998-8XC01-8YE2	SIMATIC Manual Collection http://www4.ad.siemens.de/WW/llisapi.dll?func=cslib.csinfo&lang=en&objid=12283375&lang=en
Information about Component based Automation	Component based Automation http://www4.ad.siemens.de/WW/llisapi.dll?func=ll&objaction=csbrowsesitemap&objid=10805344&nodeid0=10805344&lang=en&siteid=cseus&aktprim=0

4.2 Tips for Operation

The following software is required to commission a plant with PROFINet and PROFIBUS devices: Windows 2000 or XP, SIMATIC STEP 7 and SIMATIC iMap. The following user tasks are often used in these programs:

Windows 2000/XP

In Windows 2000/XP, commands are called from the **Windows taskbar**.

Examples:

- Select **Start > Simatic > SIMATIC NET > ...**
- Start SIMATIC iMap by double-clicking on the "iMap" icon.

SIMATIC Manager / SIMATIC iMap

Menu commands can be selected from the **Menu bar**, from a **context menu** (right mouse button) or by clicking on an **icon** in the icon bar. Objects or windows must be selected for menu commands.

Examples:

- Select the menu command **Library > New....**
- Select **Create PROFINet Component** from the context menu.
- Click on the "Online Monitoring" icon.

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