

Operating WinAC RTX (F) (STEP 7 V5.x) on a PC-Station using WinCC Runtime (TIA Portal)

WinAC RTX (F), SIMATIC STEP 7 V5.x,
SIMATIC WinCC Professional V14 SP1,
SIMATIC WinCC Runtime Advanced V14 SP1,
SIMATIC WinCC Professional V14 SP1

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1 Introduction

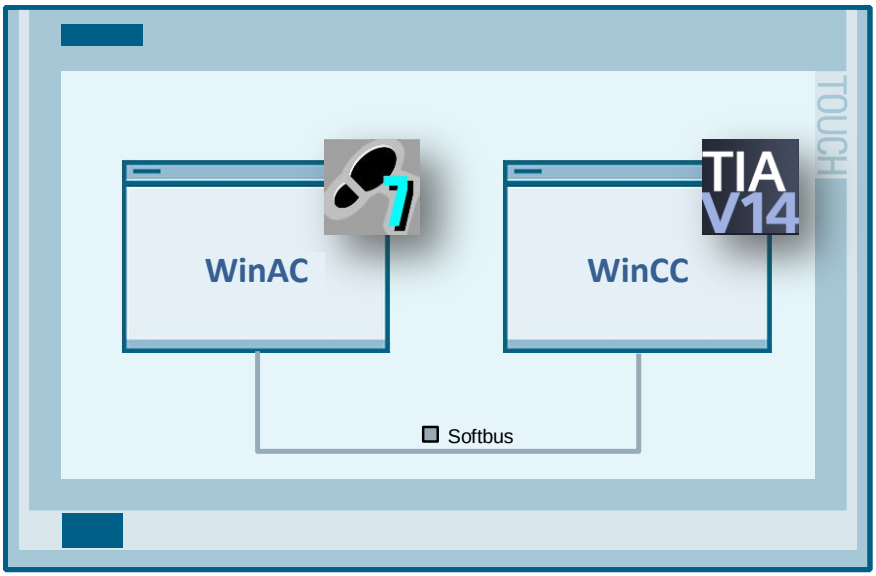
1.1 Overview

The TIA Portal offers the option to create PLC programs and HMI configurations via a uniform software interface.

In some cases it is necessary, due to technical or customer-specific reasons, to continue creating the PLC program with the "STEP 7 V5.x" software and the HMI configuration with the “WinCC (TIA Portal)” software.

For an automation system that is purely PC-based there may therefore be the application case where you want to use the SIMATIC WinAC RTX (F) software controller with a WinCC Runtime (TIA Portal) on a PC station.

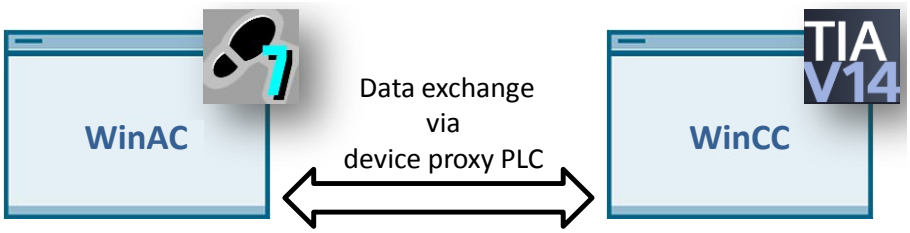
Figure 1-1



1.2 Mode of operation

The TIA Portal gives you the opportunity for integrated configuration. This means you can exchange data between WinCC (TIA Portal) and STEP 7 V5.x via a PLC device proxy.

Figure 1-2



Configuration

Configuring the hardware configuration and the individual software applications takes place separately, in STEP 7 V5.x and the TIA Portal and they will subsequently be loaded separately.

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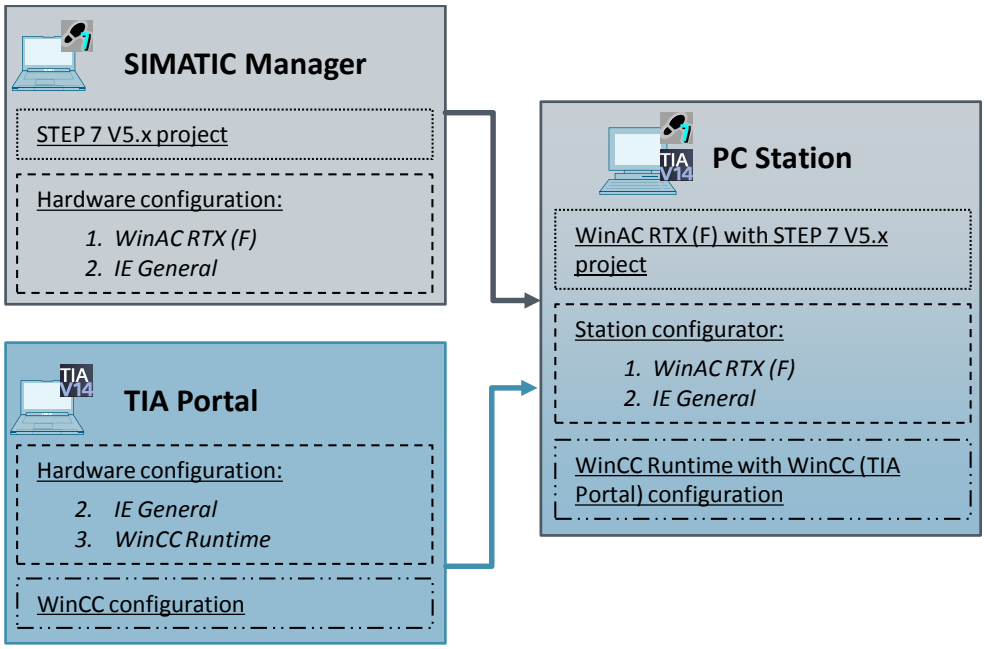
Figure 1-3



1.3 Components used

This application example was created with the following hardware and software components:

Table 1-1

Component	Qty.	Article number
IPC 677E	1	6AV7260-.....-....
SIMATIC WinAC RTX F V4.6	1	6ES7671-1RC08-0YA0
SIMATIC STEP 7 V5.6	1	6ES7810-4C.11-..
SIMATIC WinCC Professional V14 SP1 (Engineering)	1	6AV2103-0DA04-0AH5
SIMATIC WinCC Runtime Advanced V14 SP1	1	6AV2104-0BA04-0AH0
SIMATIC WinCC Runtime Professional V14 SP1	1	6AV2105-0BA04-0AH0
SIMATIC NET V14	1	6GK1704-1HW14-0AA0

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2 Engineering

In this chapter you find out what configuration steps are necessary to operate WinAC RTX (F) on the same PC station using WinCC Runtime (TIA Portal).

Prerequisite

For the following configuration steps, it is assumed that the following conditions already apply:

- WinAC RTX (F) configured in STEP 7 V5.6
- WinCC Runtime Advanced configured in TIA Portal V14 SP1
- WinCC Runtime Advanced configured in TIA Portal V14 SP1
- SIMATIC NET V14 is installed

Short description

The principle approach for the configuration of WinAC RTX (F) using a WinCC Runtime Advanced or WinCC Runtime Professional is to be performed in the following seven steps:

Table 2-1

No.	Short description	System
1.	Creating station configurator	PC station
2.	Setting PG/PC interface	PC station
3.	Configuring and loading hardware and software	SIMATIC Manager
4.	Configuring hardware configuration	TIA Portal
5.	Creating PLC device proxy	TIA Portal
6.	Creating HMI connection	TIA Portal
7.	Loading WinCC Runtime	TIA Portal

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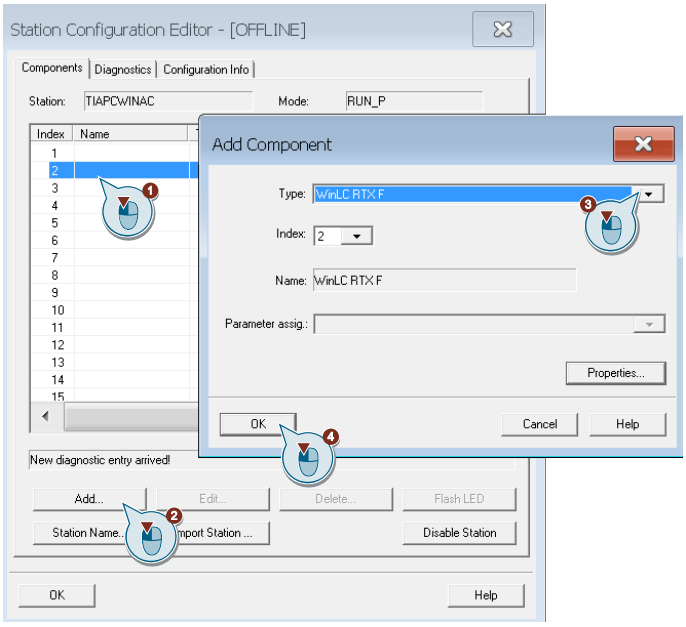
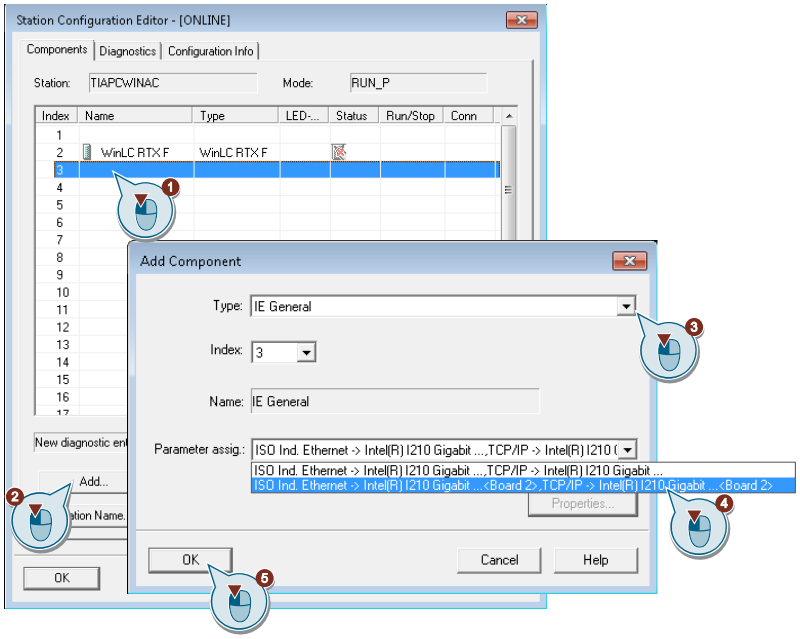
2.1 Configuring the PC station

2.1.1 Creating station configurator

Table 2-2

No.	Description
1.	Open the "Station Configurator" on the PC station. 

No.	Description
2.	• Select index 2 (1). • Click the "Add…" button (2). • Select "WinLC RTX F" as type (3). • Confirm the selection using "OK" (4). 
3.	• Select index 3 (1). • Click the "Add…" button (2). • Select as "IE General" type (3). • Select the network card used (4). • Confirm the selection using "OK" (5). 
4.	Open WinLC RTX (F) on the PC station.
5.	The hardware configuration of the PC station is now complete.

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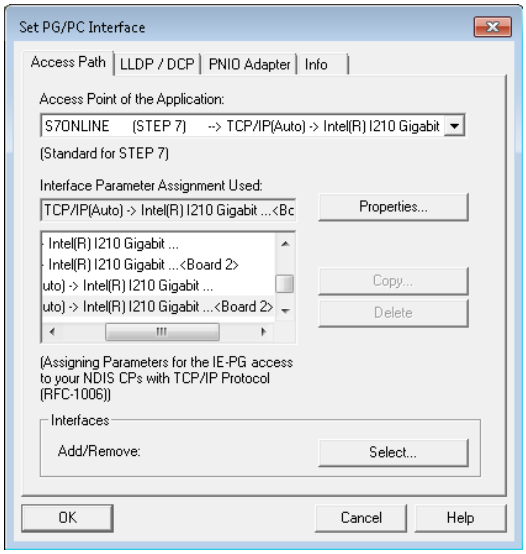
2.1.2 Setting PG/PC interface

Select "S7ONLINE" as access point on the PC station and the network card of the PC station as interface.

Figure 2-1

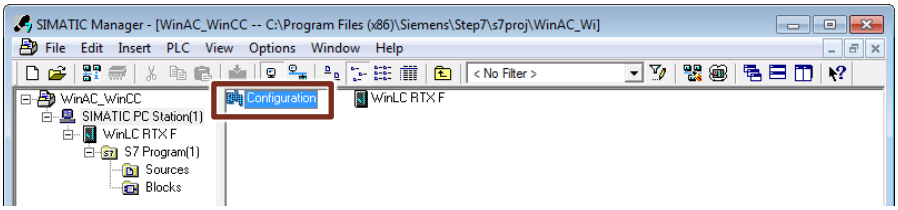


Note Make sure that the interface communicates via the TCP/IP protocol (e.g. "--> TCP/IP [AUTO] -> Intel(R)I210 Gigabit…<Board 2>").

2.2 Configuring SIMATIC manager

Note Make sure the individual modules have the same name.
The names of the individual modules in the SIMATIC Manager, in the station configurator and in WinCC (TIA Portal) have to be identical.

Table 2-3

No.	Description
1.	Open the SIMATIC Manager. 
2.	Create a PC station in the SIMATIC Manager and open the "Configuration" of the PC station. 

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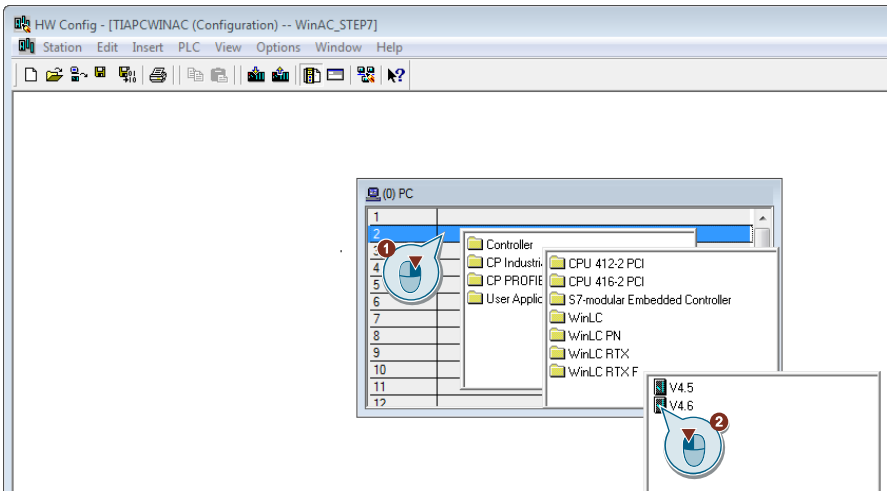
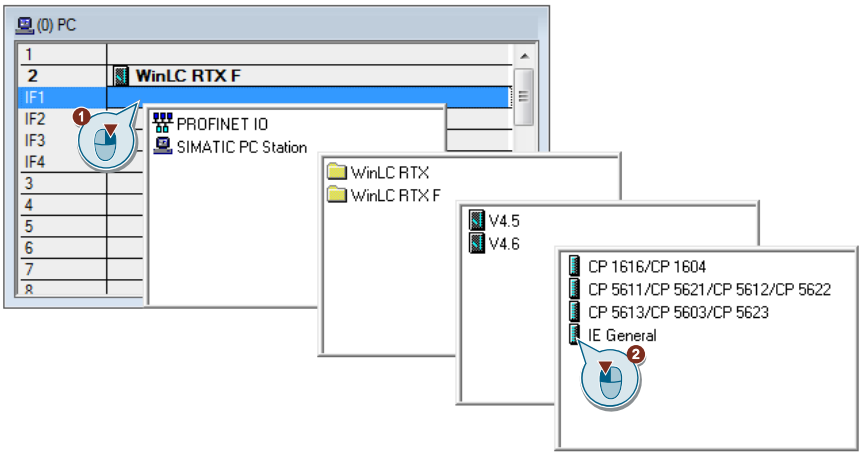
No.	Description
3.	**Configuring WinLC RTX** • Right-click the 2nd slot (1). • Select the option "Insert Object…" from the context menu. • Open the "Controller > WinLC RTX F" folder and click on "V4.6" (2).  **Note** The WinLC RTX (Windows Logical Controller) is the programmable software controller and is part of WinAC RTX (Windows Automation Center).
4.	**Configuring WinLC communication module** • Right-click slot "IF1" (1). • Select the option "Insert Object…" from the context menu. • Open the "SIMATIC PC Station > WinLC RTX F > V4.6" folder and select the module "IE General" (2).  The properties of the Ethernet interface are opened.

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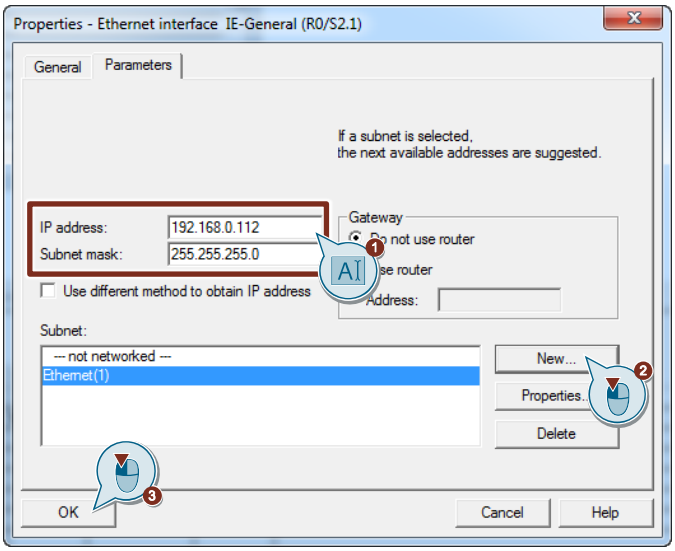
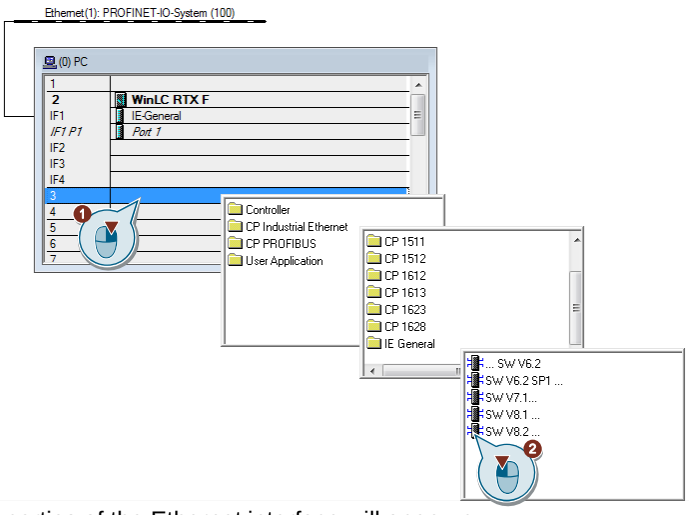
No.	Description
5.	**Adjusting WinLC Ethernet interface** • Enter an IP address and subnet mask (1). • Add a network "Ethernet(1)" (2). • Confirm your selection using "OK" (3). 
6.	**Adding "IE General" communication module** • Right-click the 3rd slot (1). • Select the option "Insert Object…" from the context menu. • Open the "CP Industrial Ethernet > IE General" folder and select the module "SW V8.2…" (2). •  The properties of the Ethernet interface will open up.

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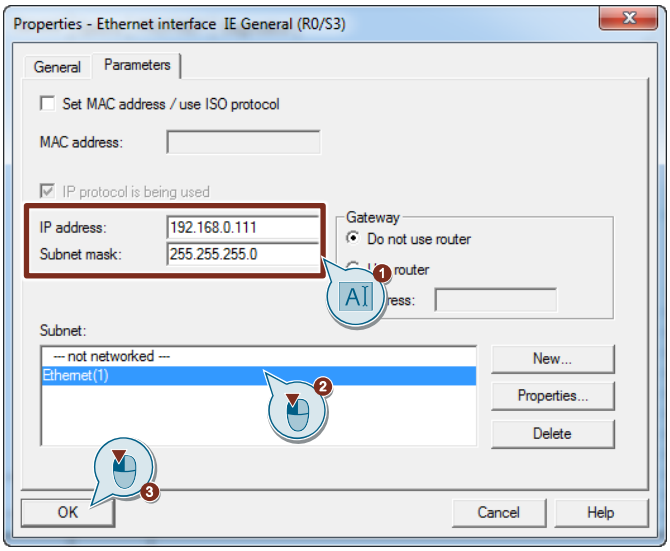
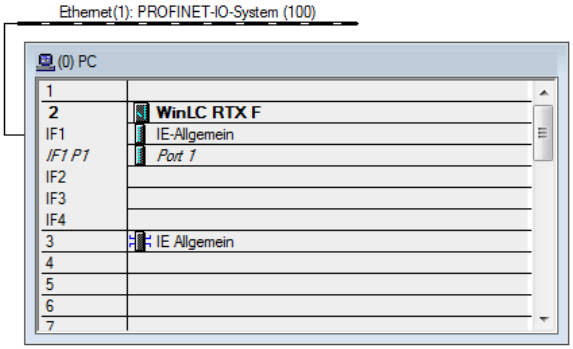
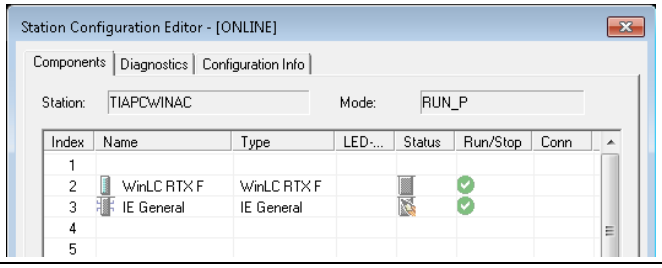
No.	Description
7.	**Adjusting general Ethernet interface** • Enter an IP address and subnet mask (1). • Select the "Ethernet(1)" network in "Subnet" (2). • Confirm your selection using "OK" (3).  The hardware configuration in SIMATIC Manager is complete. 
8.	• Load the entire hardware configuration of the PC station from the SIMATIC Manager. • Reload the "IE General" again separately from the SIMATIC Manager • Load the software of the WinLC RTX F from the SIMATIC Manager. **Note** If you set "WinLC RTX F" onto "RUN" in the PC station, the "WinLC RTX F" software controller and the "IE General" communication module will be in "RUN" mode. 

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2.3 Configuring TIA Portal

In this chapter you find out about the relevant configuration steps in TIA Portal in order to operate a WinCC Runtime Advanced or a WinCC Runtime Professional, using the previously created WinAC RTX (F) 2010.

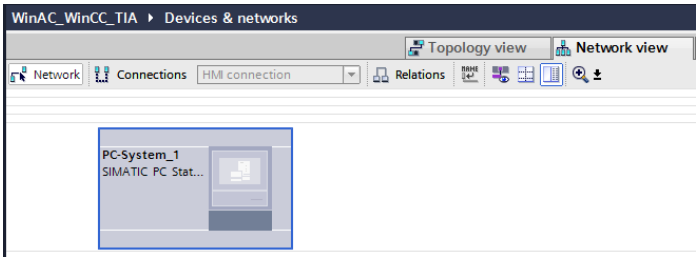
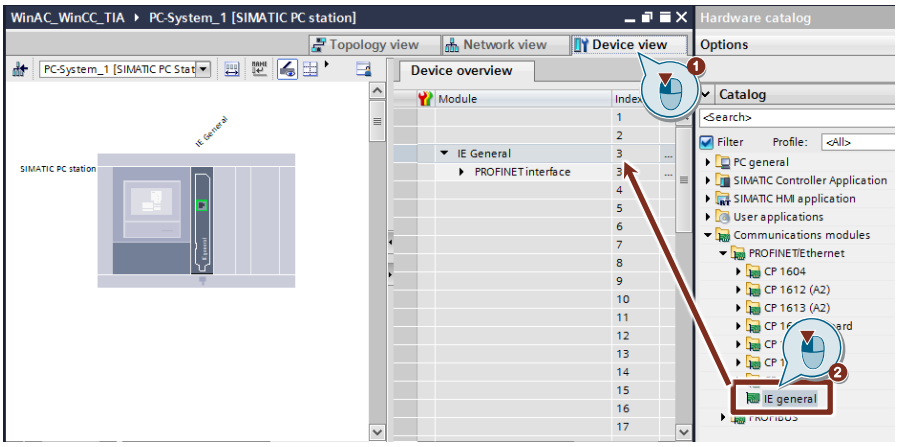
Note The configuration steps for WinCC Runtime Advanced and WinCC Runtime Professional only differ in few details in the settings. The differences are marked accordingly with the appropriate runtime system (e.g. Runtime Professional).

Configuration steps and precise specification of the runtime system are valid for "WinCC Runtime Advanced" as well as "WinCC Runtime Professional".

2.3.1 Configuring hardware configuration

Note Make sure to use the same index and the same name that you have assigned in the "Station Configurator" of the PC station (see chapter 2.1).

Table 2-4

No.	Description
1.	Open the TIA Portal.
2.	**Creating PC Station** Create a PC station in the hardware configuration. 
3.	**Adding communication module** • Open the "Device view" of the PC station (1). • Drag the "IE General" module from the hardware catalog from the "Communication module > PROFINET/Ethernet" folder to index 3 of the PC station. 

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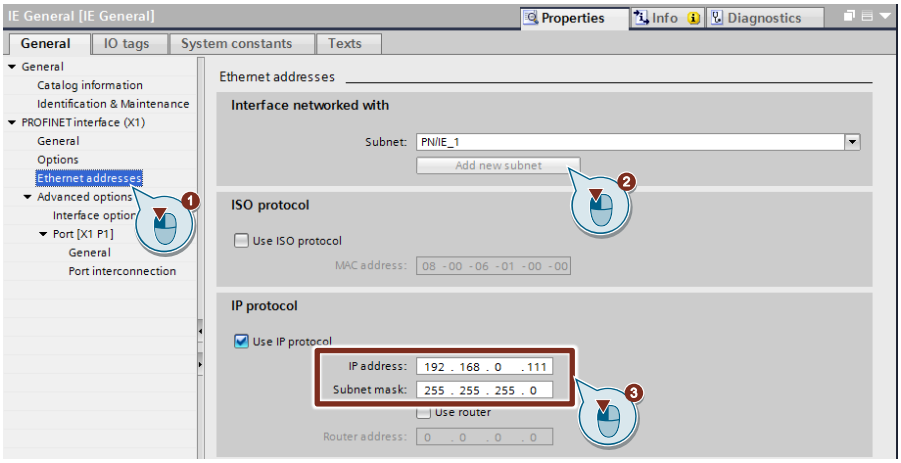
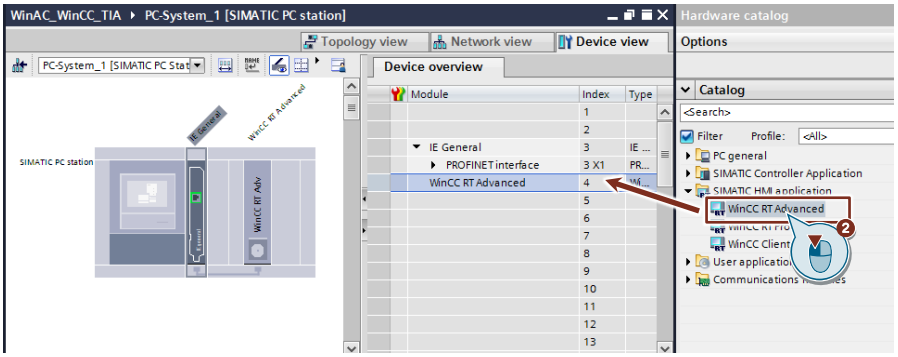
No.	Description
4.	**Adjusting the IP address** • Open the "Properties" of the communication module and select the item "Ethernet addresses" in the area navigation (1). • Add a new subnet (2). • Enter the IP address 192.168.0.111 and the appropriate subnet mask in "IP protocol" (3). 
5.	**Adding WinCC Runtime** Drag the "WinCC RT Advanced" module or "WinCC RT Professional" from the hardware catalog from the "SIMATIC HMI Application" folder to index 4 of the PC station.  **Note** Make sure to use the same index and the same name that you have assigned in the "Station Configurator".

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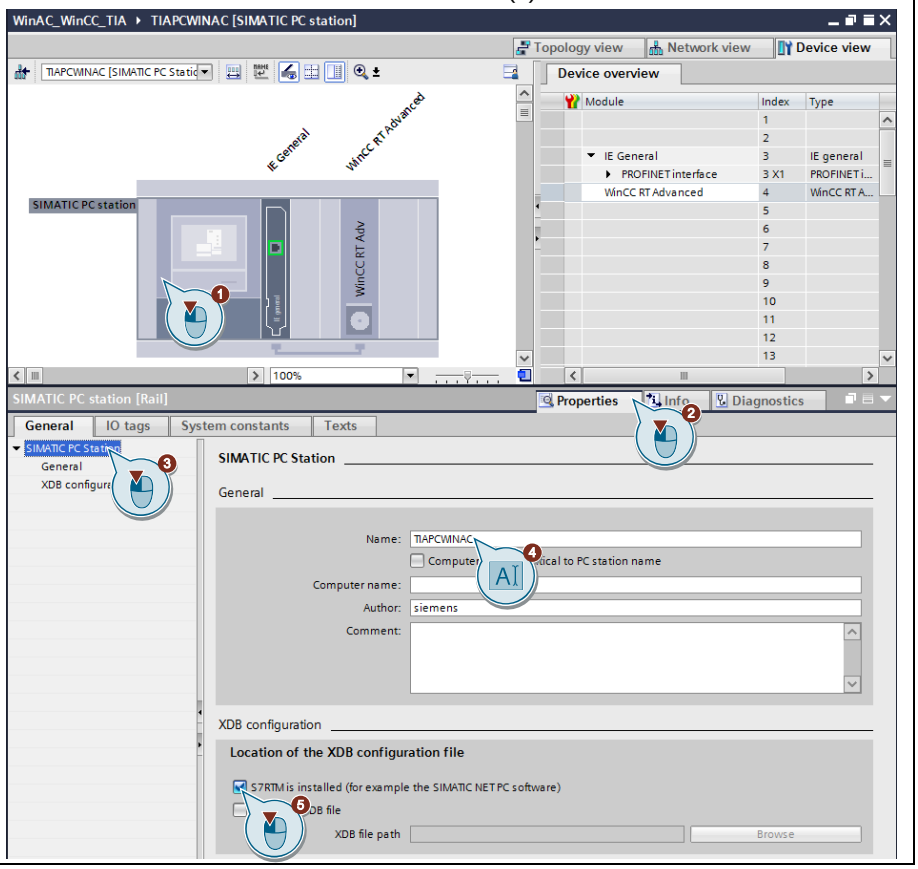
No.	Description
6.	**Adjusting PC station name and XDB configuration** • Select the PC station (1). • Open the "Properties" of the PC station (2). • Select the item "SIMATIC PC Station" in the area navigation (3). • Enter the name of the PC station (4). • Enable the "S7RTM is installed" checkbox (5). 

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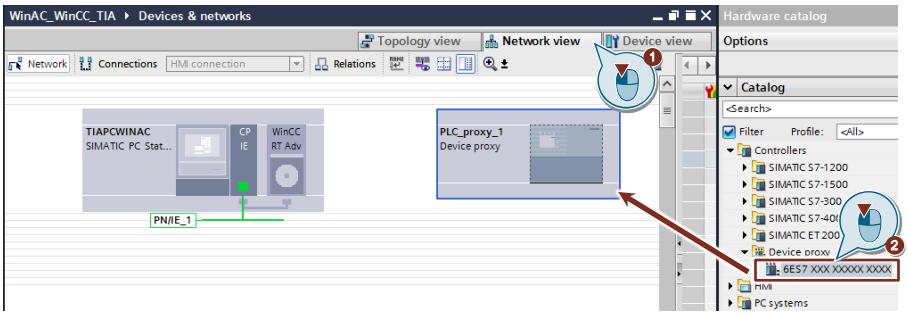
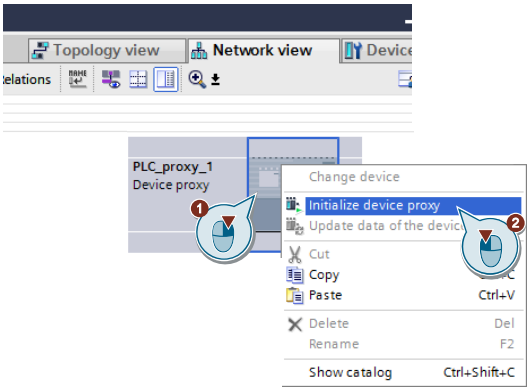
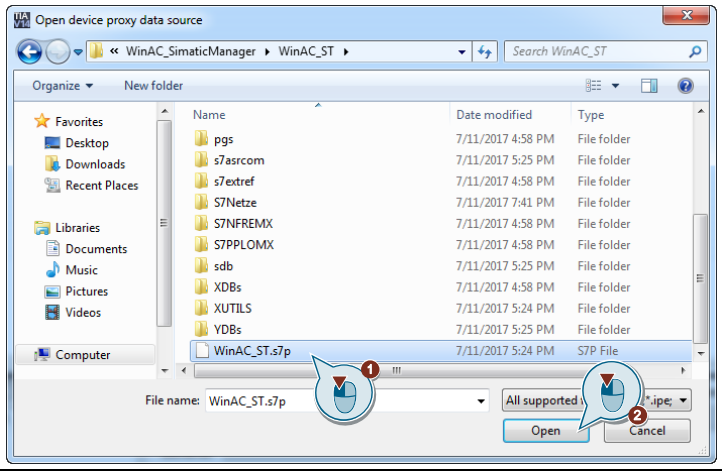
2.3.2 Creating PLC device proxy

Table 2-5

No.	Description
1.	**Creating device proxy** • Open the "Network view" of the hardware configuration (1). • Drag the module "6ES7 XXX XXXXX XXXX" from the hardware catalog in the "Controller > Device proxy" folder to "Network view" (2). 
2.	**Initializing the device proxy** • Right-click on "Device proxy" (1). • Select the "Initialize device proxy" option in the context menu (2). 
3.	**Selecting device proxy data source** • Browse to the storage location of your SIMATIC Manager project and select it (1). • Then click on "Open" (2). 

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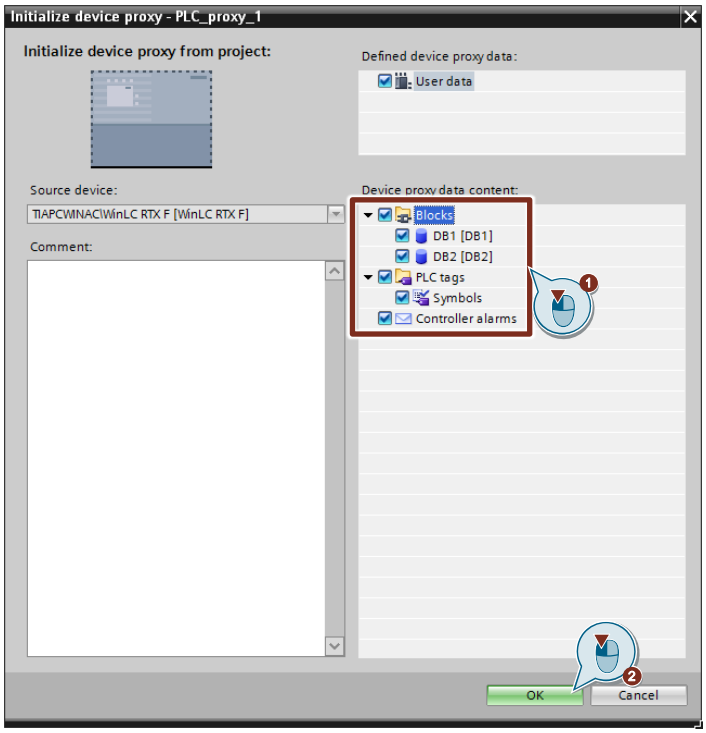
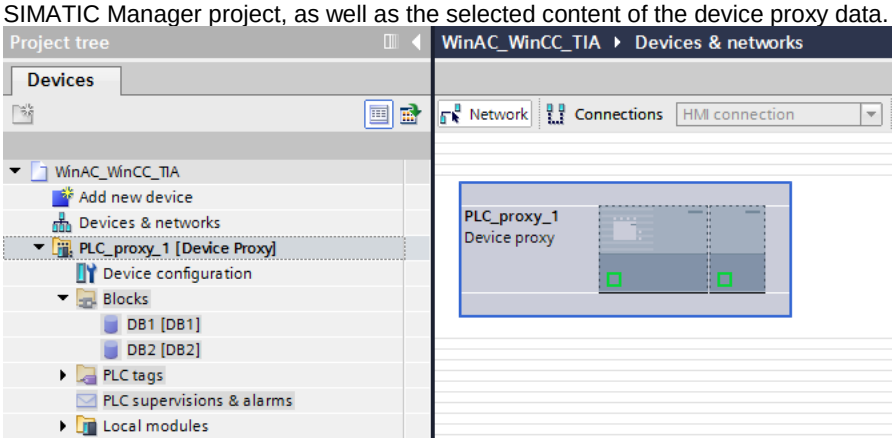
No.	Description
4.	**Initializing device proxy** • Select the contents of the device proxy data you wish to initialize (1). • Confirm the selection using "OK" (2).  A PLC proxy is created that contains the two interfaces of the PC station from the SIMATIC Manager project, as well as the selected content of the device proxy data. 

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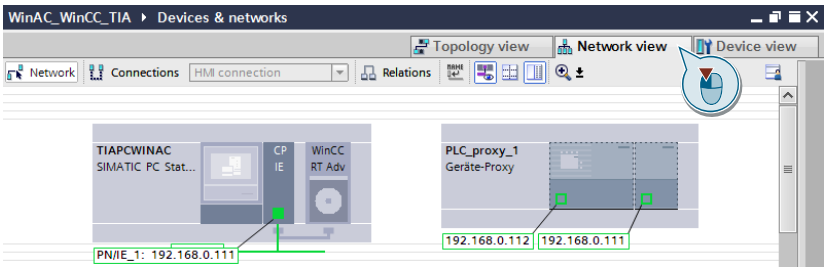
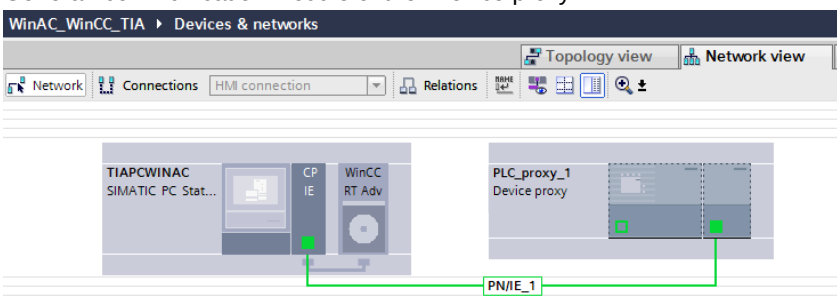
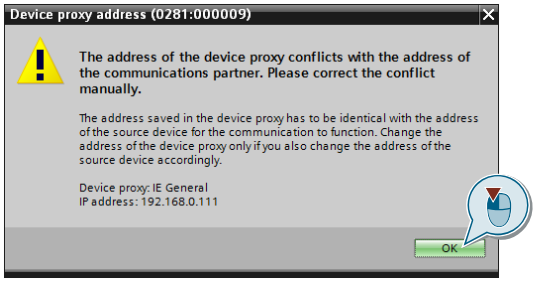
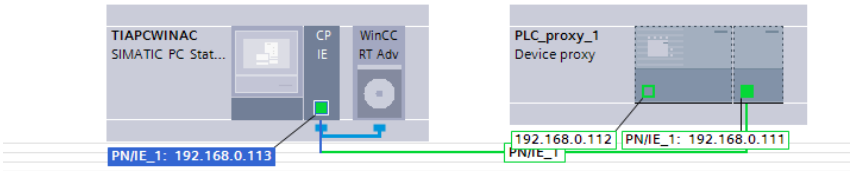
2.3.3 Creating HMI connection

Table 2-6

No.	Description
1.	Open the "Network view" of the hardware configuration.  **Note** The IP address 192.168.0.111 is specified for the "SIMATIC PC Station" as well as for the devices proxy.
2.	**Networking devices** Network the "IE General" communication module of the PC station with the "IE General" communication module of the "Device proxy". 
3.	**IP address conflict** Confirm the note of the IP conflict using "OK". 
4.	**Changing the IP address** Change the IP address of the "IE General" of the "SIMATIC PC Station" in 192.168.0.113.  **Note** The IP address of the device proxy (192.168.0.111) is the real end point and can therefore not be assigned twice in a network. The new IP address of the "SIMATIC PC Station" (192.168.0.113) can be seen as "Dummy IP" and is no longer needed.

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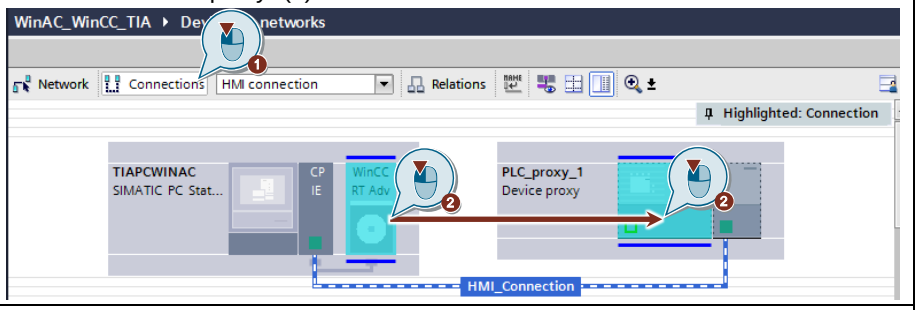
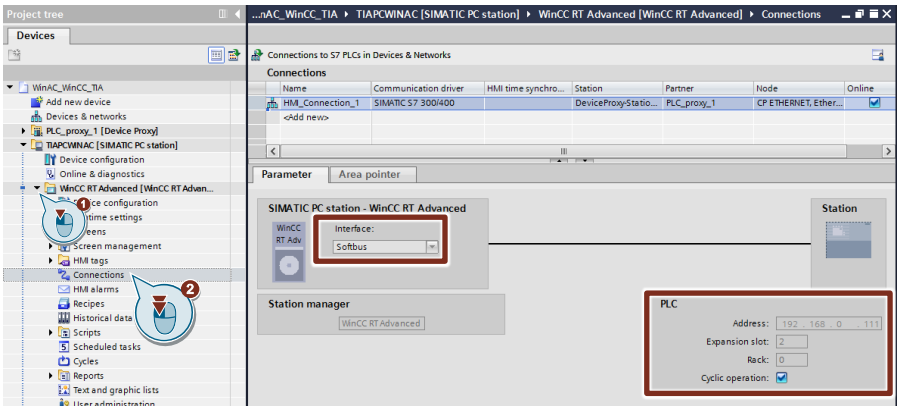
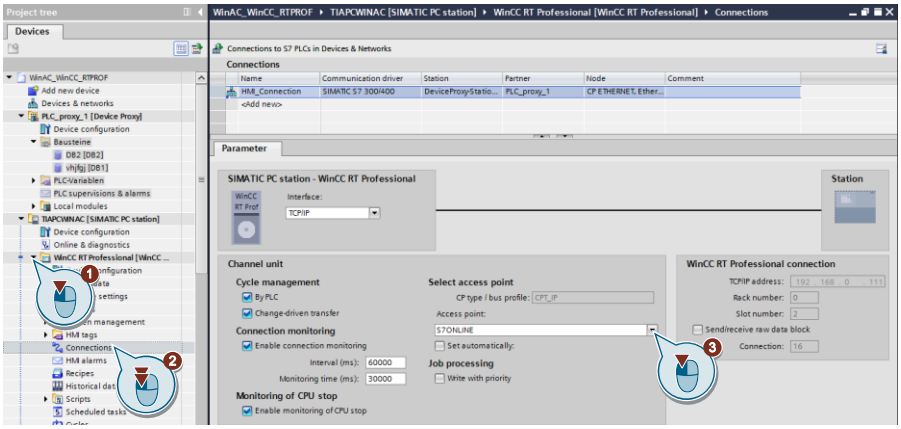
No.	Description
5.	**Creating HMI connection** • Click on "Connections" (1). • Drag a HMI connection from the WinCC Runtime of the "SIMATIC PC Station" to the "Device proxy" (2). 
6.	**WinCC Runtime Advanced: Checking HMI connection** • Open WinCC Runtime Advanced in the PC station of the project navigation (1) • Open the "Connections" (2). • Check whether the connection parameters were created correctly. Observe the following: - SIMATIC PC Station interface: "Softbus" - PLC IP address: "192.168.0.111" 
7.	**WinCC Runtime Professional: Adjusting HMI connection** • Open WinCC Runtime Professional in the PC station of the project navigation (1) • Open the "Connections" (2). • Select "S7ONLINE" as access point (3). 
8.	Configure your WinCC (TIA Portal) project as usual.

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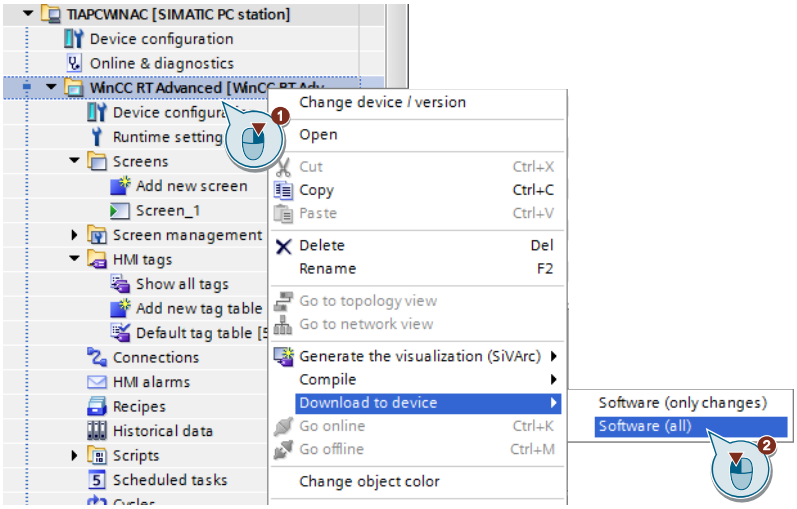
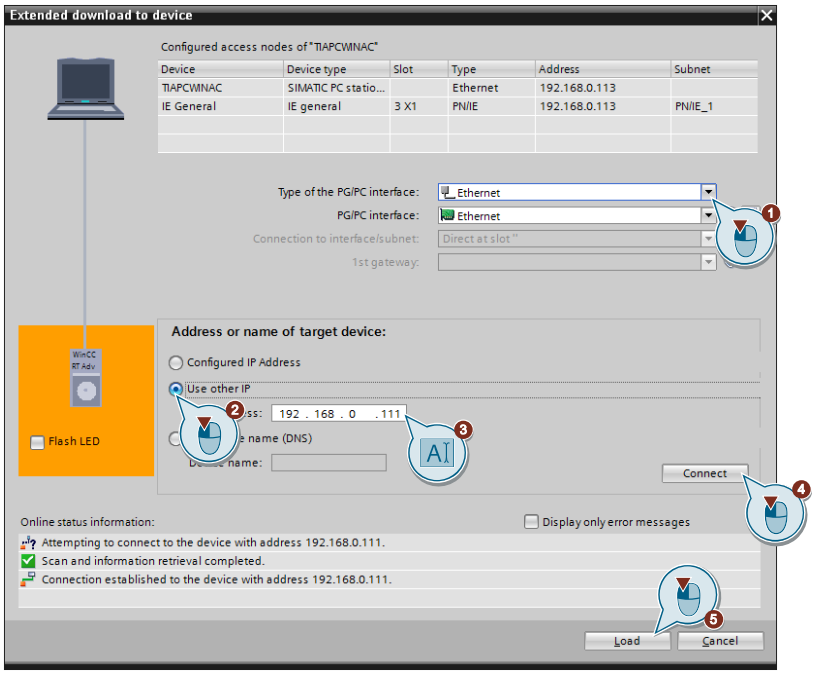
2.3.4 Loading WinCC Runtime

Table 2-7

No.	Description
1.	**Loading WinCC Runtime** • Right-click the Runtime that is located in the SIMATIC PC Station (1) • Select "Download to device > Software (all)" from the context menu (2). 
2.	**WinCC Runtime Advanced: Selecting interface** • Select "Ethernet" as PG/PC interface (1). • Enable the "Use other IP" checkbox (2). • Enter the real IP address of the IE General of the PC station (192.168.0.111) (3). • Click on "Connect" (4). • Load Runtime Advanced onto the PC Station (5).  **Note** The dummy address configured cannot be used here.

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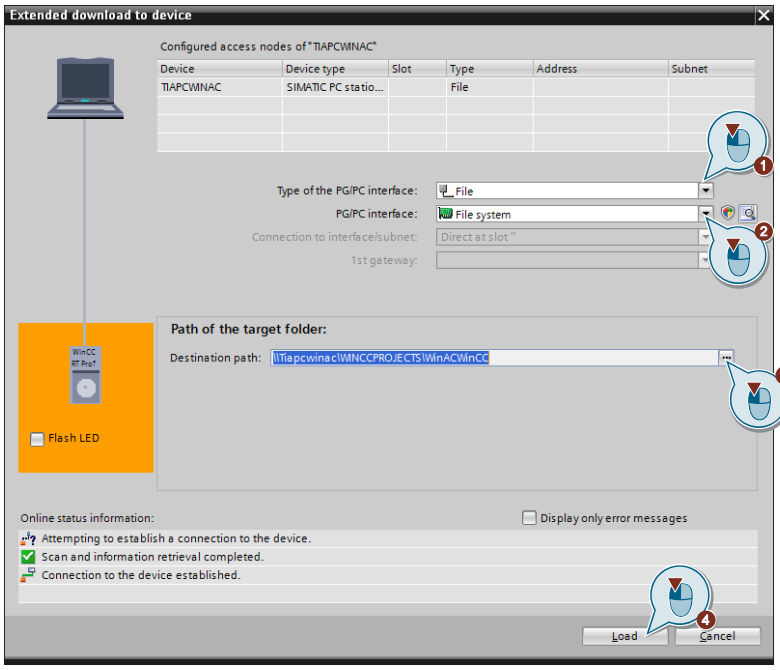
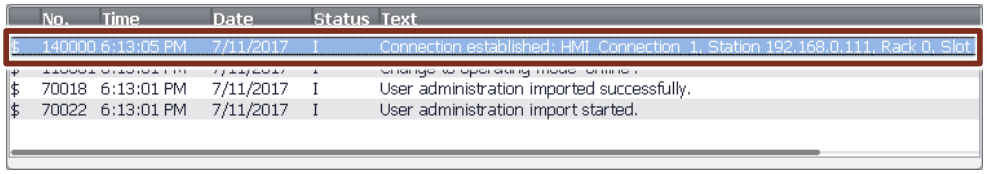
No.	Description
3.	**WinCC Runtime Professional: Selecting path of the target folder** • Select "File" as PG/PC interface (1). • Select "Filesystem" as the PG/PC interface (2). • Browse to the target folder on the PC Station (3). • Load Runtime Professional onto the PC Station (4). 

Result

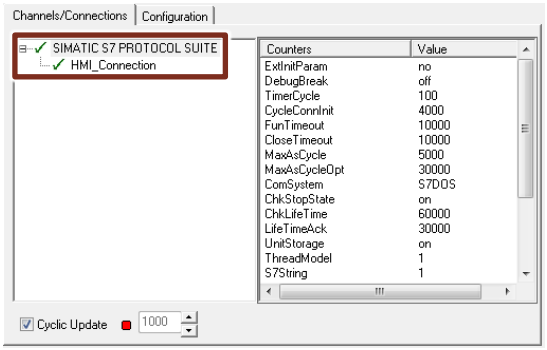
If the connection establishment was successful, a configured message display appears in Runtime Advanced that the connection was established successfully.

Figure 2-2



If you are using a Runtime Professional, the "WinCC Channel diagnosis" will also confirm the establishment of a connection.

Figure 2-3



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3 Annex

3.1 Service and support

Industry Online Support

Do you have any questions or need support?

Siemens Industry Online Support offers access to our entire service and support know-how as well as to our services.

Siemens Industry Online Support is the central address for information on our products, solutions and services.

Product information, manuals, downloads, FAQs and application examples – all information is accessible with just a few mouse clicks at
https://support.industry.siemens.com

Technical Support

Siemens Industry's Technical Support offers quick and competent support regarding all technical queries with numerous tailor-made offers
– from basic support right up to individual support contracts.

Please address your requests to the Technical Support via the web form:
www.siemens.en/industry/supportrequest

Service offer

Our service offer comprises, among other things, the following services:

- Product Training
- Plant Data Services
- Spare Parts Services
- Repair Services
- On Site and Maintenance Services
- Retrofit and Modernization Services
- Service Programs and Agreements

Detailed information on our service offer is available in the Service Catalog:
https://support.industry.siemens.com/cs/sc

Industry Online Support app

Thanks to the "Siemens Industry Online Support" app, you will get optimum support even when you are on the move. The app is available for Apple iOS, Android and Windows Phone:
https://support.industry.siemens.com/cs/ww/en/sc/2067

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3.2 Links and literature

Table 3-1

No.	Topic
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to the entry page of the application example https://support.industry.siemens.com/cs/ww/en/view/73502293

3.3 Change documentation

Table 3-2

Version	Date	Modification
V1.0	09/2017	First version

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