



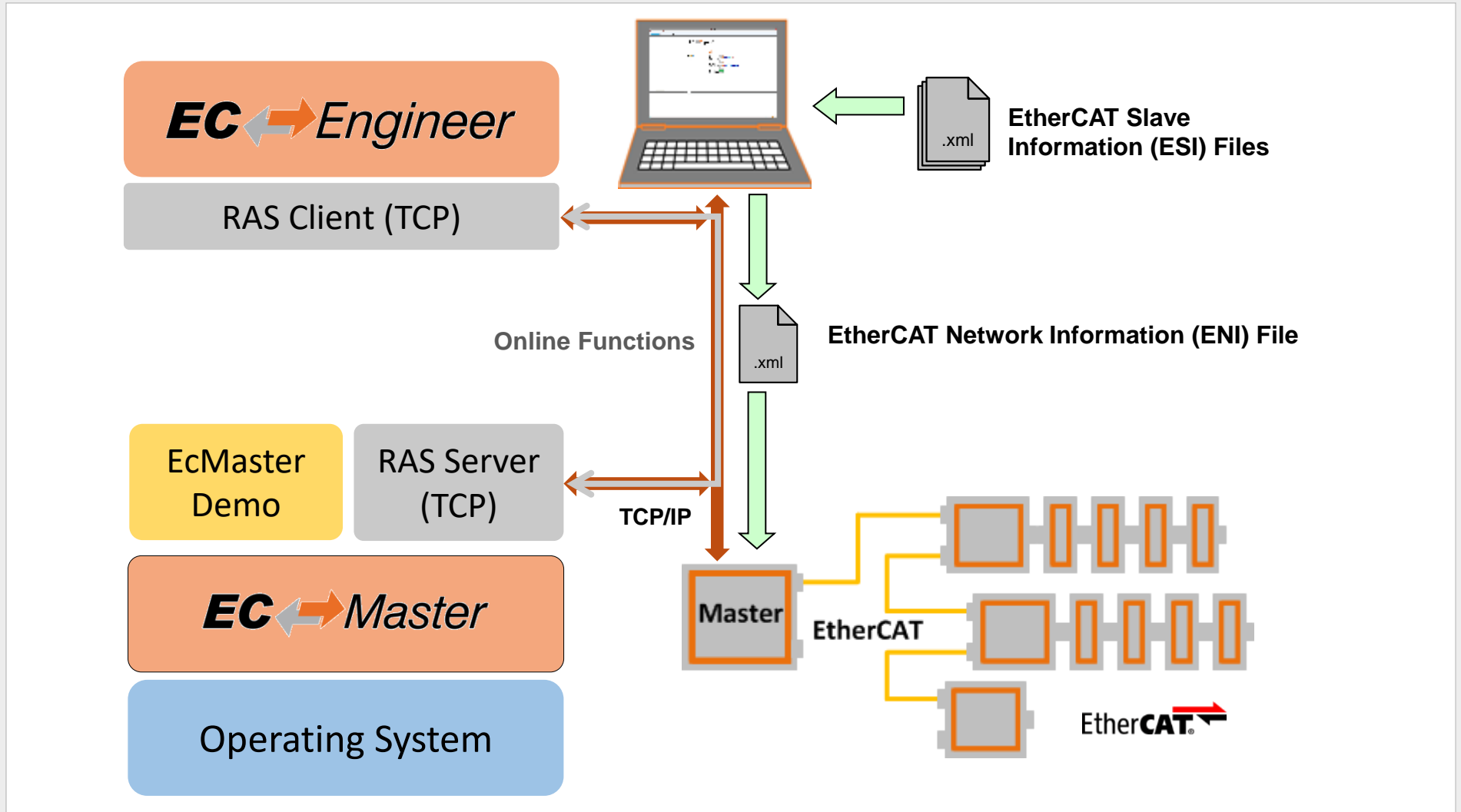
EC-Master Quick Start Guide

Setup an EtherCAT network with acontis products

Content

- Install EC-Master
- Run EcMasterDemo without configuration (ENI file)
- Create network configuration with EC-Engineer
- Run EcMasterDemo with configuration (ENI file)
- Online diagnosis of network with EC-Engineer

EtherCAT System Architecture



- Install the EC-Master from the compressed file
- Optionally extract add-ons and Real-time Ethernet drivers into the installation folder
- Follow operating system-specific steps described in chapter “Platform and Operating Systems (OS)” of the user manual

Run EcMasterDemo without ENI file

- Connect the EtherCAT slave(s)
- Check which network adapter is used for EtherCAT, e.g. eth1
- Run EcMasterDemo on Windows
 - `cd Bin\Windows\x64`
 - `EcMasterDemo.exe -ndis <ip-address> 1 -v 3 -b 4000`
- Run EcMasterDemo on Linux
 - `cd Bin/Linux/x64`
 - `./EcMasterDemo -sockraw eth1 -v 3 -b 4000`
- Run EcMasterDemo on QNX
 - `ifconfig en1 destroy`
 - `cd Bin/QNX71/x64`
 - `LD_LIBRARY_PATH=. ./EcMasterDemo -i8254x 1 1 -v 3 -b 4000`

For other operating systems, please follow steps described in chapter
“Platform and Operating Systems (OS)” of the user manual

EC  **Engineer**

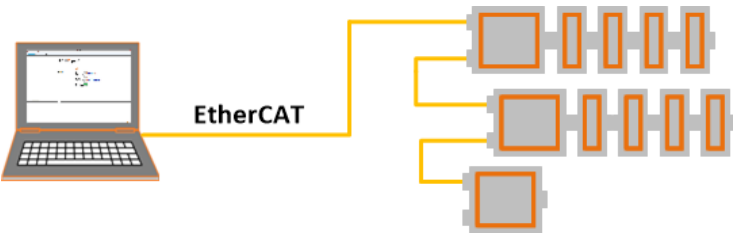
Generate bus configuration with EC-Engineer

EC-Engineer Operating Modes

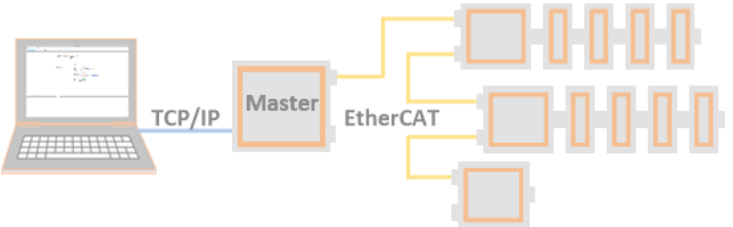
Offline **Configuration:**
(In the Office)



Online **Configuration:**
*Slaves connected to
Engineering System*



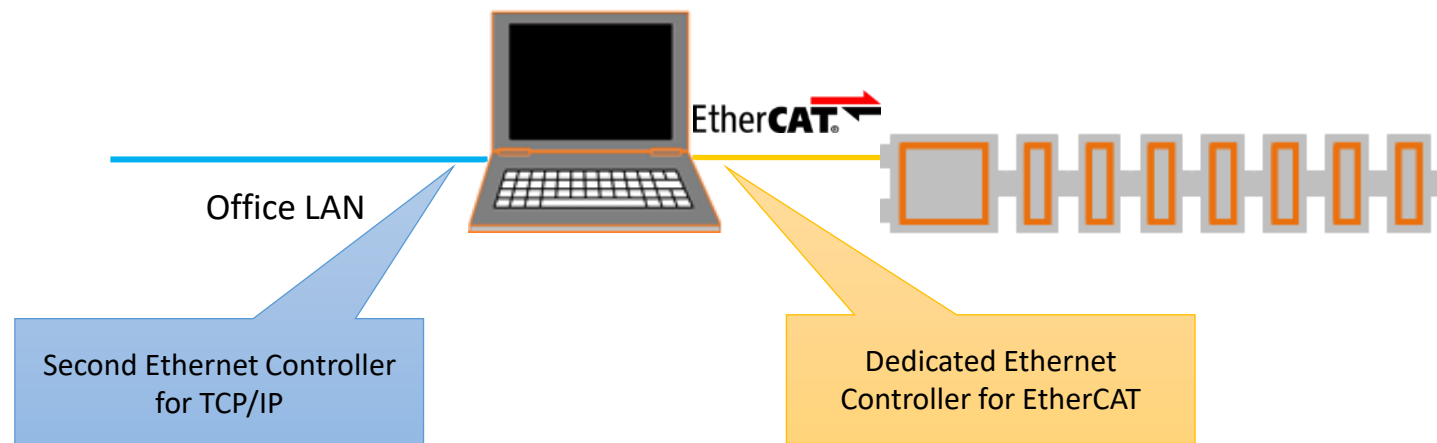
Remote **Configuration:**
*Slaves connected to
Target System*



Generate bus configuration with EC-Engineer

Step 1: Connect EtherCAT Slaves

- EC-Engineer comes with an integrated EtherCAT master for scanning the connected EtherCAT slaves
- Every Ethernet Network Interface with a valid Windows driver can be used
- **Warning:** Do not connect any EtherCAT slaves to your Office LAN
- A second, dedicated Network Interface for EtherCAT is recommended



Generate bus configuration with EC-Engineer

Step 2: Install and start EC-Engineer

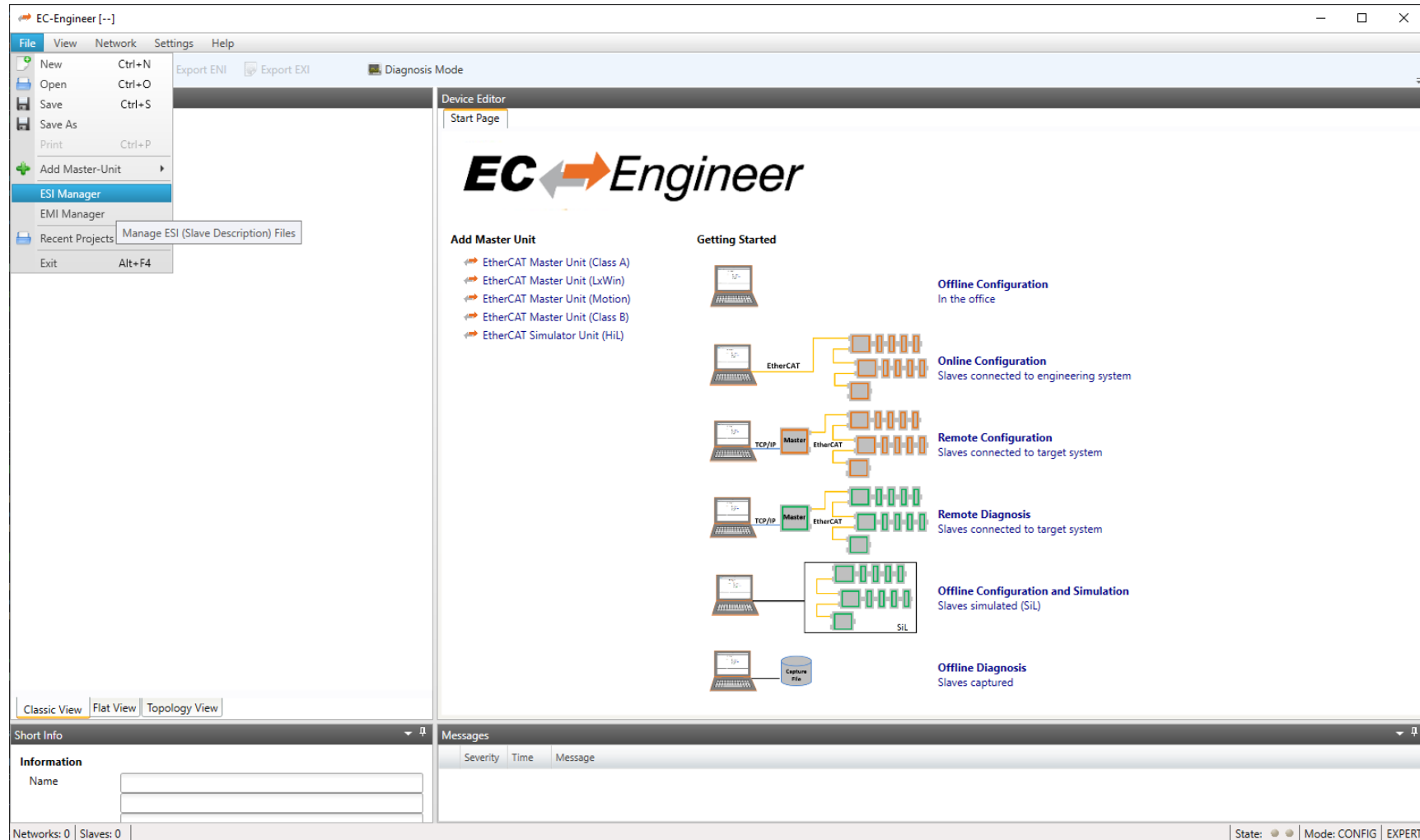
The screenshot displays the EC-Engineer software interface. The main window is titled "EC-Engineer [-]" and has a menu bar with "File", "View", "Network", "Settings", and "Help". Below the menu bar, there are buttons for "Configuration Mode", "Export ENI", "Export EXI", and "Diagnosis Mode".

The interface is divided into several sections:

- Project Explorer:** A sidebar on the left, currently empty.
- Device Editor:** The main workspace, titled "Start Page", featuring the EC-Engineer logo and a "Getting Started" section.
- Getting Started:** A central diagram showing a laptop connected to a bus system. The bus system consists of a "Master" unit and several "Slave" units. The diagram illustrates different configurations: "Offline Configuration" (laptop connected to the bus), "Online Configuration" (laptop connected to the bus via EtherCAT), "Remote Configuration" (laptop connected to the bus via TCP/IP and EtherCAT), "Remote Diagnosis" (laptop connected to the bus via TCP/IP and EtherCAT), "Offline Configuration and Simulation" (laptop connected to a simulated bus system labeled "SiL"), and "Offline Diagnosis" (laptop connected to a "Capture File").
- Add Master Unit:** A list of options on the left side of the "Getting Started" section:
 - EtherCAT Master Unit (Class A)
 - EtherCAT Master Unit (LxWin)
 - EtherCAT Master Unit (Motion)
 - EtherCAT Master Unit (Class B)
 - EtherCAT Simulator Unit (HiL)
- Views:** At the bottom of the "Getting Started" section, there are buttons for "Classic View", "Flat View", and "Topology View".
- Short Info:** A section at the bottom left, currently showing "Information" with empty fields.
- Messages:** A section at the bottom right, showing a message: "INF 13:40:20 EC-Engineer ready, Version 3.7.9".
- Status Bar:** At the very bottom, it shows "Networks: 0 | Slaves: 0" on the left and "State: [indicators] | Mode: CONFIG | EXPERT" on the right.

Generate bus configuration with EC-Engineer

Step 3: Open ESI Manager



The screenshot displays the EC-Engineer software interface. The main window title is "EC-Engineer [-]". The menu bar includes "File", "View", "Network", "Settings", and "Help". The "File" menu is open, showing options like "New", "Open", "Save", "Save As", "Print", "Add Master-Unit", "ESI Manager", "EMI Manager", "Recent Projects", and "Exit". The "ESI Manager" option is highlighted, and a sub-menu is visible with "Manage ESI (Slave Description) Files".

The main workspace is titled "Device Editor" and "Start Page". It features the "EC-Engineer" logo and two main sections: "Add Master Unit" and "Getting Started".

Add Master Unit

- ↳ EtherCAT Master Unit (Class A)
- ↳ EtherCAT Master Unit (LxWin)
- ↳ EtherCAT Master Unit (Motion)
- ↳ EtherCAT Master Unit (Class B)
- ↳ EtherCAT Simulator Unit (HiL)

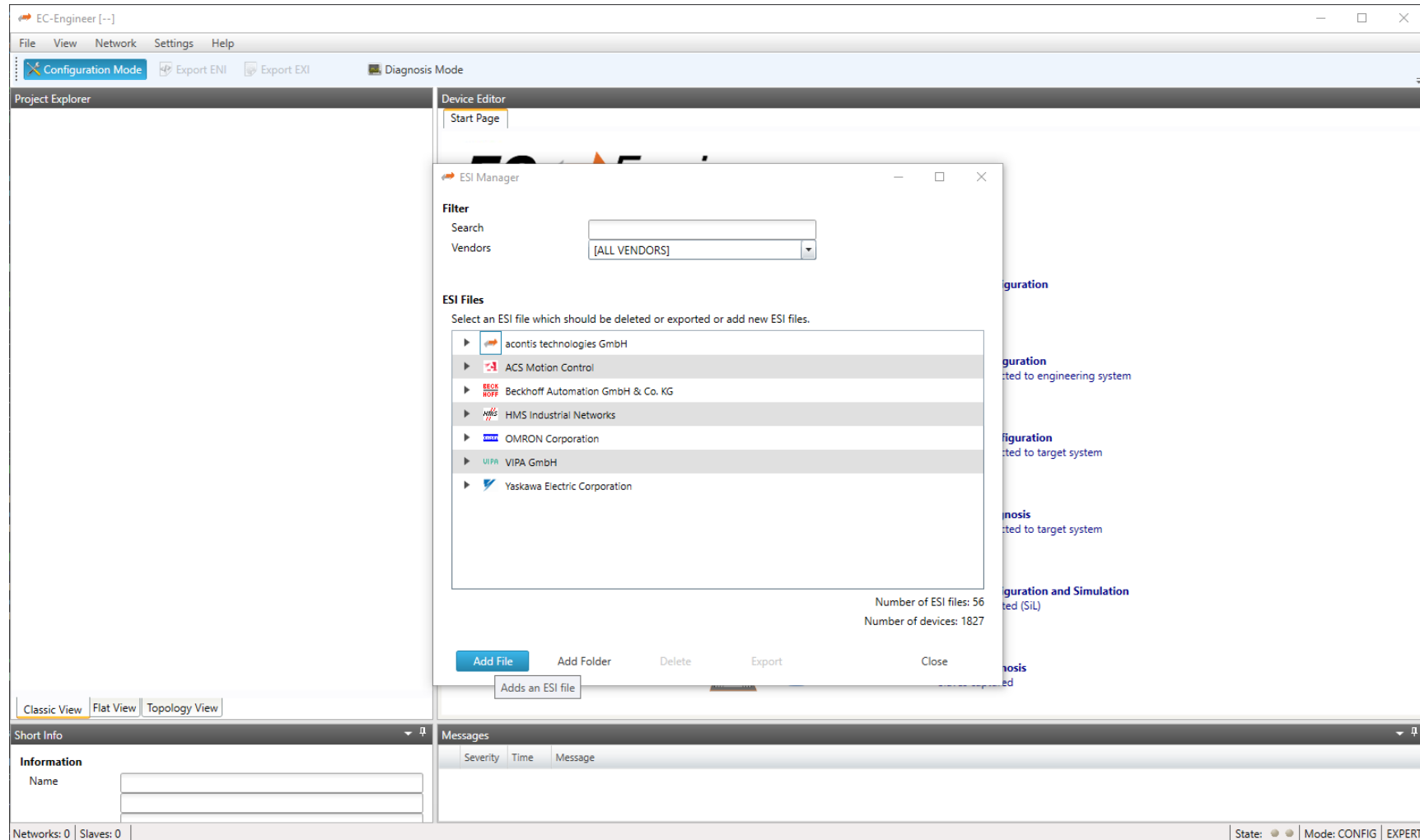
Getting Started

- Offline Configuration**
In the office
- Online Configuration**
Slaves connected to engineering system
- Remote Configuration**
Slaves connected to target system
- Remote Diagnosis**
Slaves connected to target system
- Offline Configuration and Simulation**
Slaves simulated (SiL)
- Offline Diagnosis**
Slaves captured

The interface also includes a "Short Info" panel with "Information" fields (Name, etc.), a "Messages" panel with columns for "Severity", "Time", and "Message", and a status bar at the bottom showing "Networks: 0 | Slaves: 0" and "State: [] Mode: CONFIG | EXPERT".

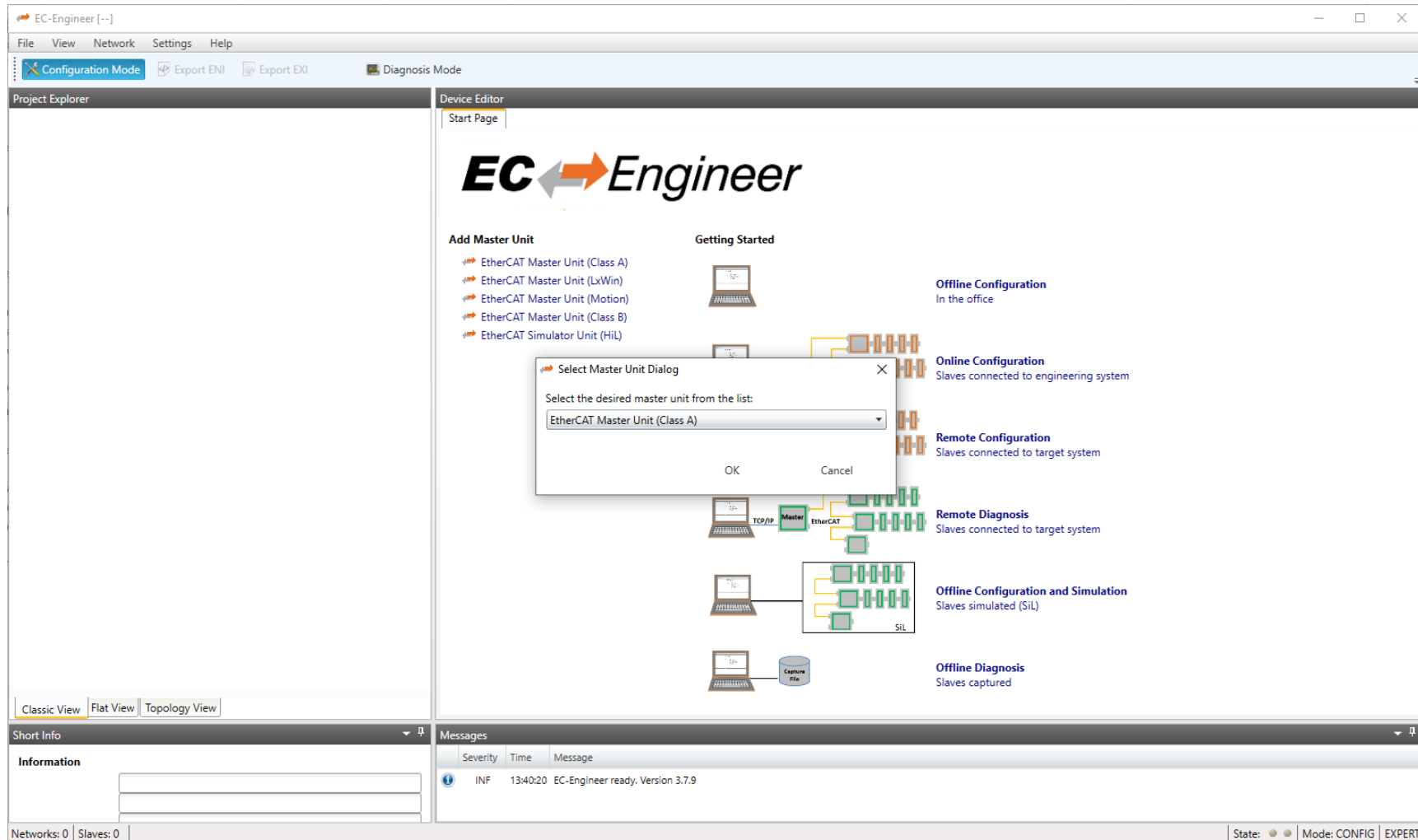
Generate bus configuration with EC-Engineer

Step 4: Add the appropriate ESI File



Generate bus configuration with EC-Engineer

Step 5: Select “Online Configuration” and “EtherCAT Master Unit (Class A)”



The screenshot displays the EC-Engineer software interface. The main window is titled "EC-Engineer [-]" and shows a "Start Page" with the EC-Engineer logo. On the left, the "Project Explorer" is empty. The "Device Editor" pane shows a "Getting Started" section with a list of master units under "Add Master Unit":

- EtherCAT Master Unit (Class A)
- EtherCAT Master Unit (LxWin)
- EtherCAT Master Unit (Motion)
- EtherCAT Master Unit (Class B)
- EtherCAT Simulator Unit (HiL)

A "Select Master Unit Dialog" is open in the center, prompting the user to "Select the desired master unit from the list:" with a dropdown menu currently showing "EtherCAT Master Unit (Class A)". The dialog has "OK" and "Cancel" buttons.

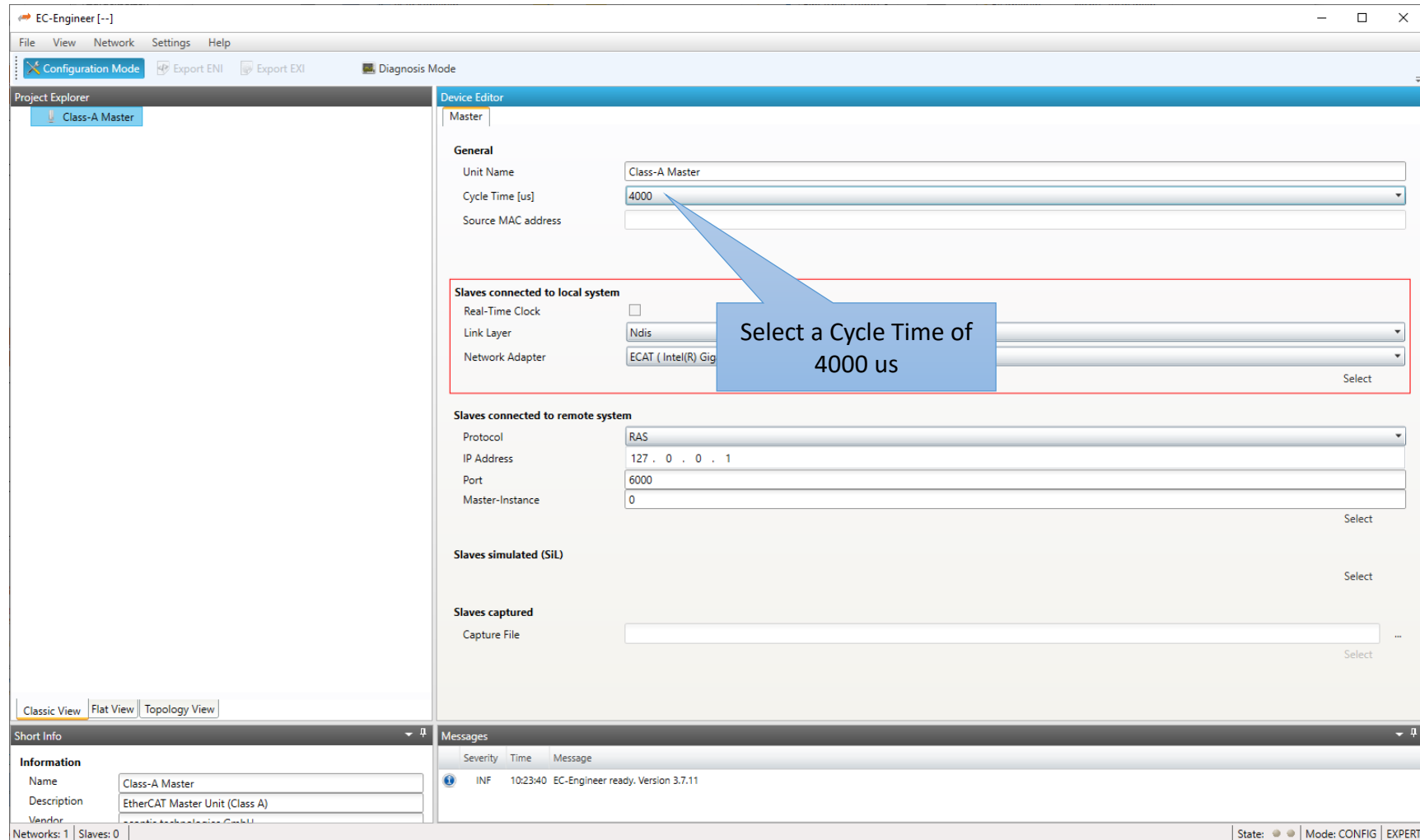
On the right side of the "Getting Started" section, there are several configuration options with corresponding icons:

- Offline Configuration**: In the office
- Online Configuration**: Slaves connected to engineering system
- Remote Configuration**: Slaves connected to target system
- Remote Diagnosis**: Slaves connected to target system
- Offline Configuration and Simulation**: Slaves simulated (SiL)
- Offline Diagnosis**: Slaves captured

At the bottom of the interface, there is a "Short Info" section with "Information" fields and a "Messages" pane showing a log entry: "INF 13:40:20 EC-Engineer ready. Version 3.7.9". The status bar at the bottom right indicates "State: [] Mode: CONFIG | EXPERT".

Generate bus configuration with EC-Engineer

Step 6: Select a Cycle Time of 4000 us



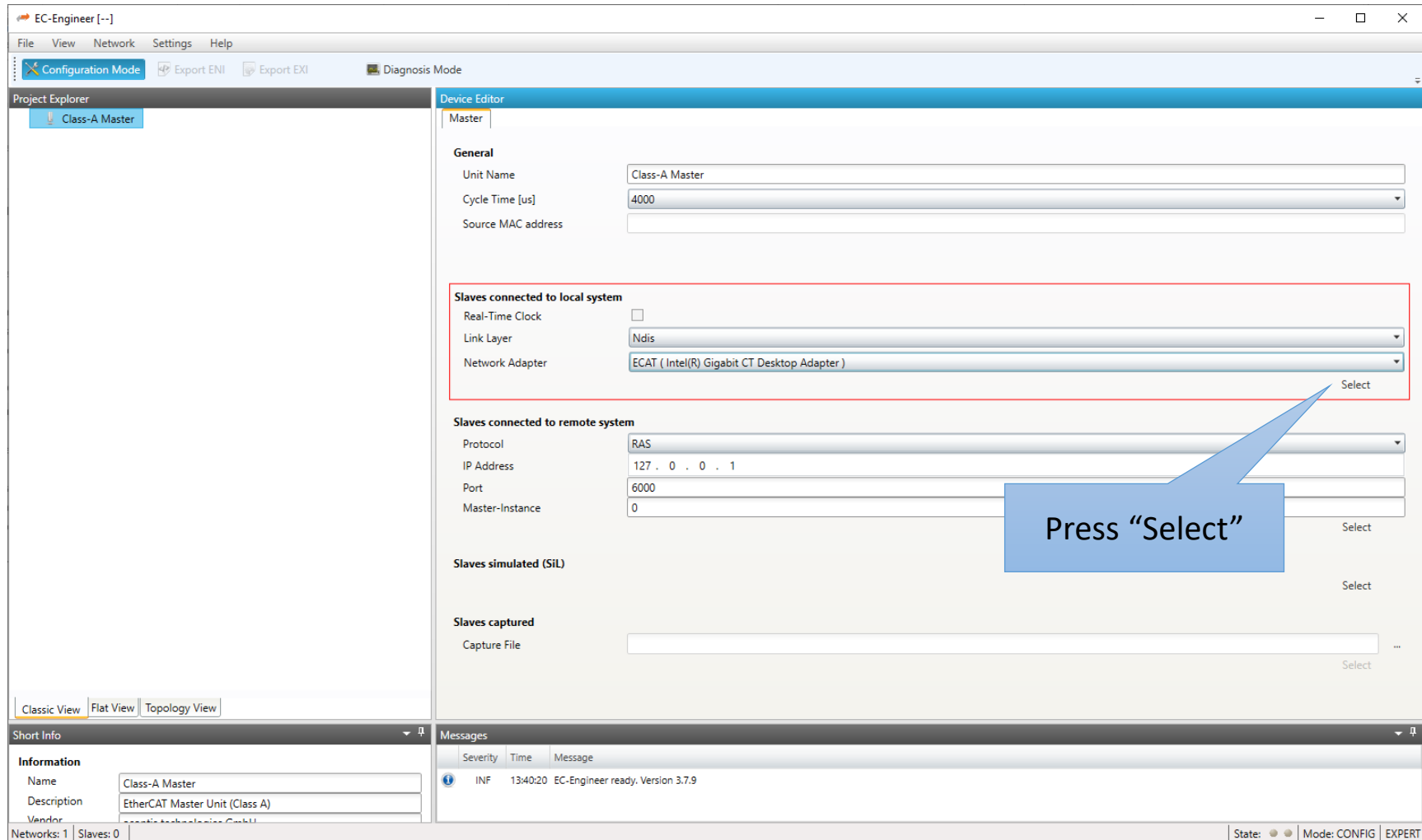
The screenshot displays the EC-Engineer software interface in Configuration Mode. The main window is titled "EC-Engineer [---]" and includes a menu bar (File, View, Network, Settings, Help) and a toolbar (Configuration Mode, Export ENI, Export EXI, Diagnosis Mode). The interface is divided into several panes:

- Project Explorer:** Shows a tree view with "Class-A Master" selected.
- Device Editor:** Contains configuration fields for the selected unit:
 - General:** Unit Name (Class-A Master), Cycle Time [us] (4000), Source MAC address.
 - Slaves connected to local system:** Real-Time Clock (checkbox), Link Layer (Ndis), Network Adapter (ECAT (Intel(R) Gig...)).
 - Slaves connected to remote system:** Protocol (RAS), IP Address (127.0.0.1), Port (6000), Master-Instance (0).
 - Slaves simulated (SiL):** Select button.
 - Slaves captured:** Capture File (text field).
- Short Info:** Information pane showing details for "Class-A Master", including Description (EtherCAT Master Unit (Class A)) and Vendor.
- Messages:** Log pane showing an information message: "INF 10:23:40 EC-Engineer ready. Version 3.7.11".

A blue callout box with a white border and a pointer to the "Cycle Time [us]" dropdown menu contains the text: "Select a Cycle Time of 4000 us".

Generate bus configuration with EC-Engineer

Step 7: Choose network adapter from list and press "Select"



The screenshot shows the EC-Engineer software interface in Configuration Mode. The main window is titled "Device Editor" and displays the configuration for a "Class-A Master" unit. The "General" section includes fields for Unit Name (Class-A Master), Cycle Time [us] (4000), and Source MAC address. The "Slaves connected to local system" section is highlighted with a red box and contains a "Network Adapter" dropdown menu set to "ECAT (Intel(R) Gigabit CT Desktop Adapter)". A blue callout bubble with the text "Press 'Select'" points to the "Select" button next to the dropdown. Other sections include "Slaves connected to remote system" (Protocol: RAS, IP Address: 127.0.0.1, Port: 6000, Master-Instance: 0), "Slaves simulated (SIL)", and "Slaves captured". The bottom status bar shows "State: [] Mode: CONFIG | EXPERT".

Generate bus configuration with EC-Engineer

Step 8: The found slave devices are listed in the tree

The screenshot displays the EC-Engineer software interface. The main window is titled "EC-Engineer [-]" and has a menu bar with "File", "View", "Network", "Settings", and "Help". Below the menu bar, there are tabs for "Configuration Mode", "Export ENI", "Export EXI", and "Diagnosis Mode".

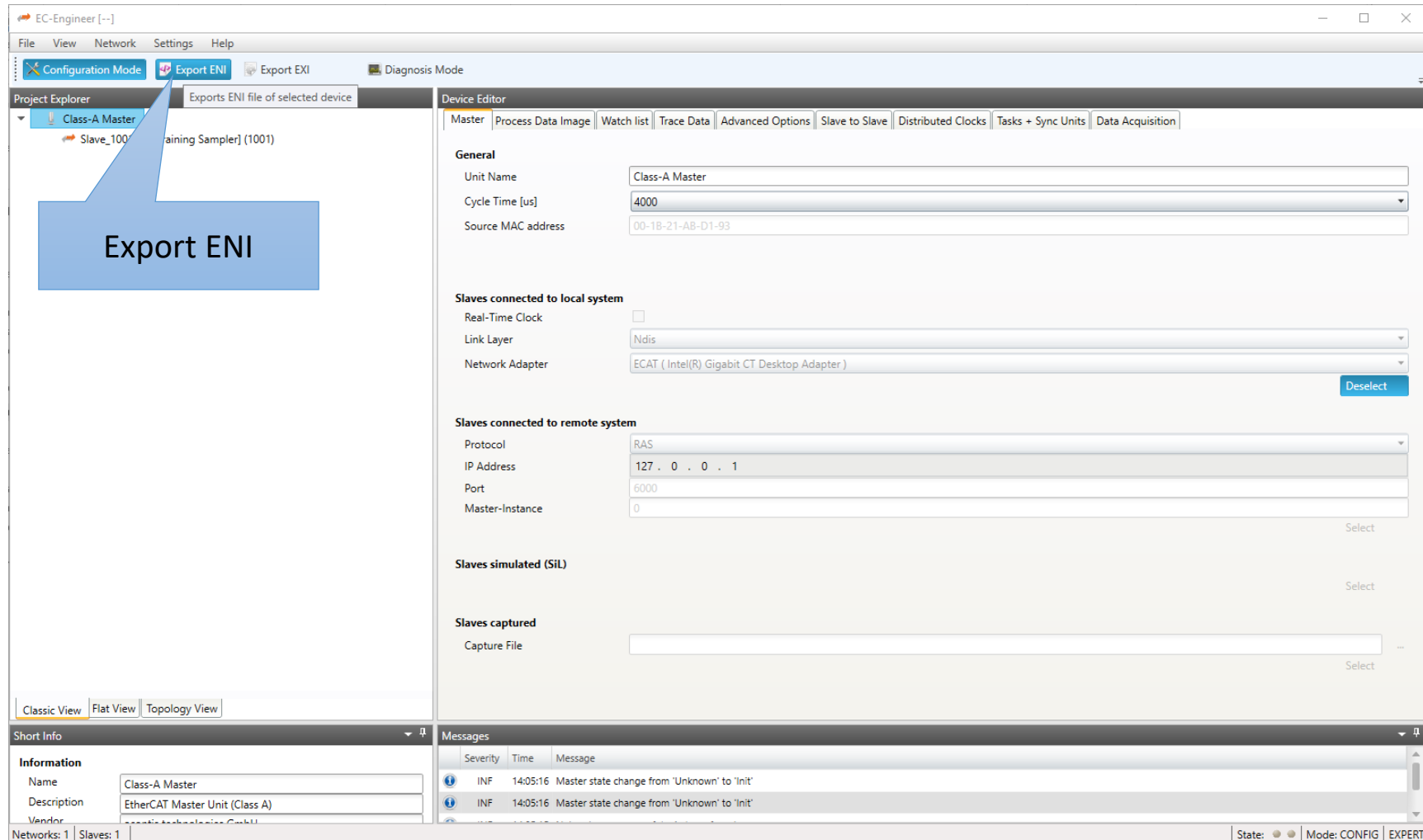
The interface is divided into several panes:

- Project Explorer:** Shows a tree view with "Class-A Master" expanded, containing a sub-entry "Slave_1001 [EC-Training Sampler] (1001)".
- Device Editor:** Contains configuration options for the selected device, organized into sections:
 - General:** Unit Name (Class-A Master), Cycle Time [us] (4000), Source MAC address (00-18-21-AB-D1-93).
 - Slaves connected to local system:** Real-Time Clock (checkbox), Link Layer (Ndis), Network Adapter (ECAT (Intel(R) Gigabit CT Desktop Adapter)).
 - Slaves connected to remote system:** Protocol (RAS), IP Address (127 . 0 . 0 . 1), Port (6000), Master-Instance (0).
 - Slaves simulated (SIL):** (Empty field).
 - Slaves captured:** Capture File (Empty field).
- Short Info:** Information pane for the selected device, showing Name (Class-A Master), Description (EtherCAT Master Unit (Class A)), and Vendor (acontis technologies GmbH).
- Messages:** Log pane showing two informational messages: "Master state change from 'Unknown' to 'Init'" at 14:05:16.

At the bottom of the interface, there are view options: "Classic View", "Flat View", and "Topology View". The status bar at the bottom right shows "State: [indicators] Mode: CONFIG | EXPERT".

Generate bus configuration with EC-Engineer

Step 9: Export ENI file to *D:\eni.xml*



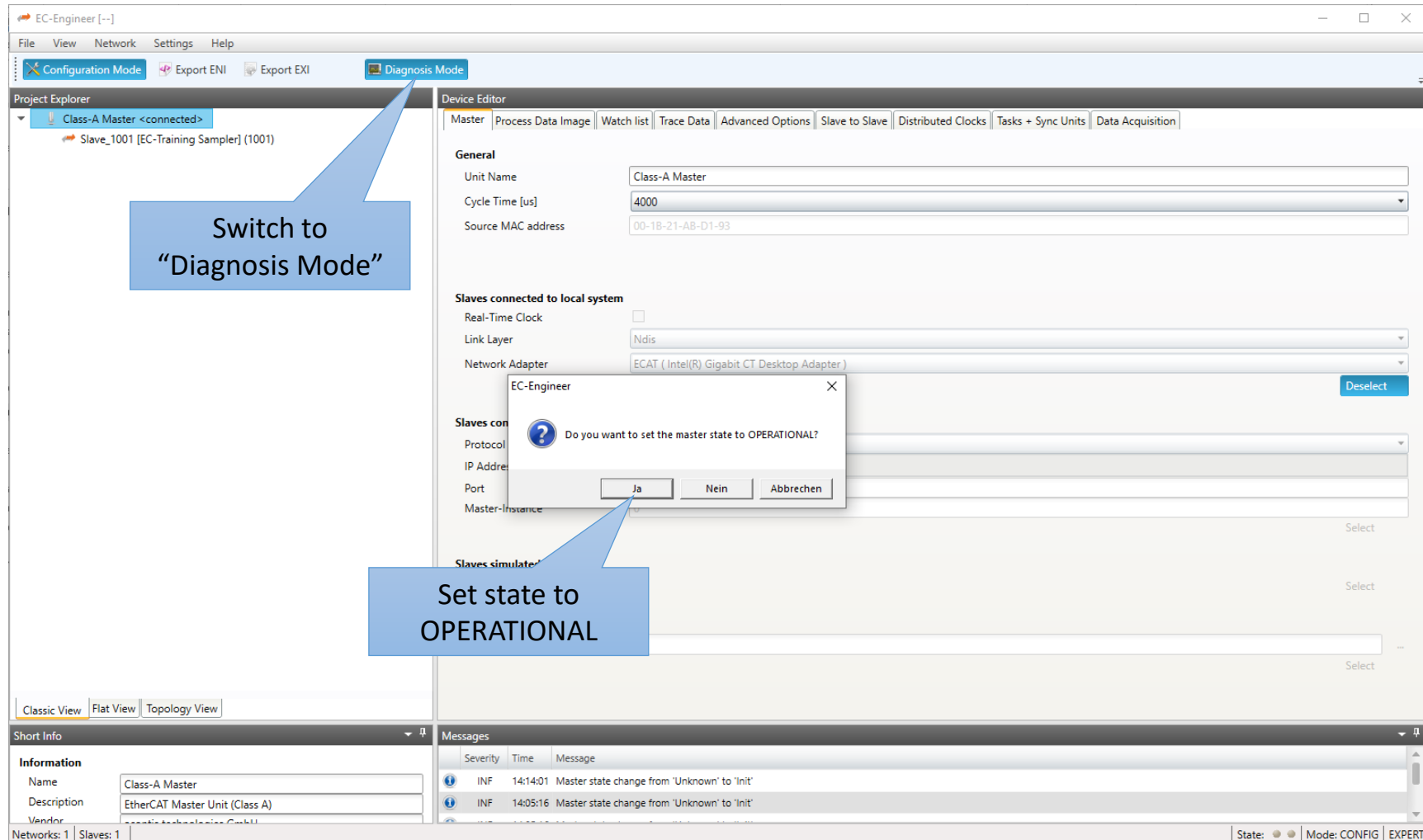
The screenshot displays the EC-Engineer software interface. The 'Export ENI' button is highlighted in the top toolbar. A blue callout box with the text 'Export ENI' points to this button. The main window is divided into several panes:

- Project Explorer:** Shows a tree view with 'Class-A Master' and 'Slave_1000'.
- Device Editor:** Contains configuration fields for 'General', 'Slaves connected to local system', 'Slaves connected to remote system', 'Slaves simulated (SIL)', and 'Slaves captured'.
 - General:** Unit Name (Class-A Master), Cycle Time [us] (4000), Source MAC address (00-1B-21-AB-D1-93).
 - Slaves connected to local system:** Real-Time Clock (checkbox), Link Layer (Ndis), Network Adapter (ECAT (Intel(R) Gigabit CT Desktop Adapter) with a 'Deselect' button).
 - Slaves connected to remote system:** Protocol (RAS), IP Address (127.0.0.1), Port (6000), Master-Instance (0).
 - Slaves simulated (SIL):** Select button.
 - Slaves captured:** Capture File (Select button).
- Short Info:** Information pane showing Name (Class-A Master), Description (EtherCAT Master Unit (Class A)), and Vendor (Acatis technologies GmbH).
- Messages:** Log pane showing two informational messages: 'Master state change from 'Unknown' to 'Init''.

At the bottom, the status bar indicates 'Networks: 1 Slaves: 1' and 'Mode: CONFIG | EXPERT'.

Generate bus configuration with EC-Engineer

Step 10: Switch to “Diagnosis Mode” and set state to OPERATIONAL



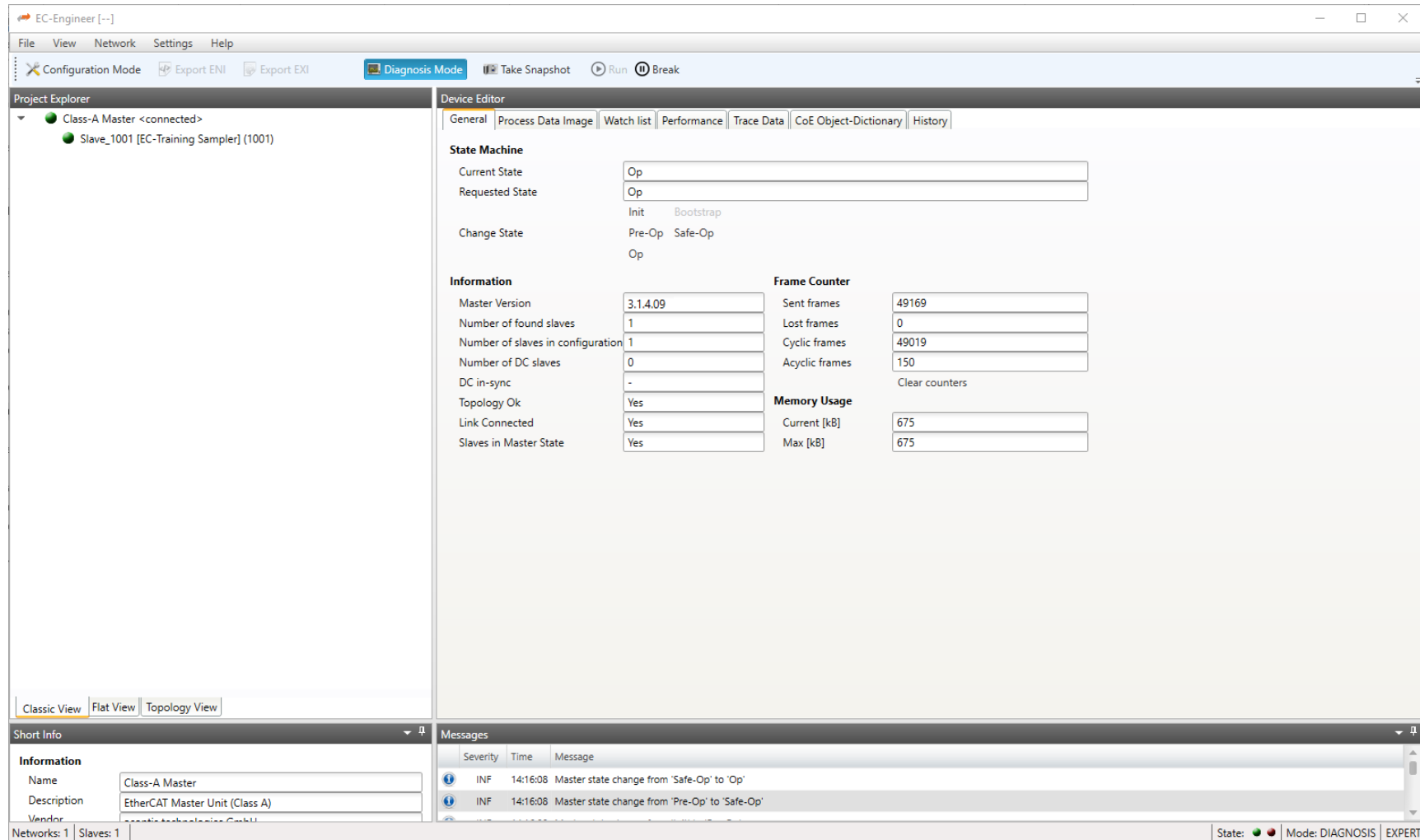
The screenshot shows the EC-Engineer software interface. The top menu bar includes File, View, Network, Settings, and Help. Below the menu bar, there are tabs for Configuration Mode, Export ENI, Export EXI, and Diagnosis Mode. The Diagnosis Mode tab is selected. The Project Explorer on the left shows a tree view with 'Class-A Master <connected>' and 'Slave_1001 [EC-Training Sampler] (1001)'. The Device Editor on the right shows the configuration for the 'Class-A Master' unit. The General section includes fields for Unit Name (Class-A Master), Cycle Time [us] (4000), and Source MAC address (00-1B-21-AB-D1-93). The Slaves connected to local system section includes checkboxes for Real-Time Clock, Link Layer (Ndis), and Network Adapter (ECAT (Intel(R) Gigabit CT Desktop Adapter)). A dialog box is open in the center, asking 'Do you want to set the master state to OPERATIONAL?' with buttons for 'Ja', 'Nein', and 'Abbrechen'. The 'Ja' button is highlighted. The Messages pane at the bottom shows two log entries: 'Master state change from 'Unknown' to 'Init'' at 14:14:01 and 'Master state change from 'Unknown' to 'Init'' at 14:05:16. The bottom status bar shows 'State: [Indicator] Mode: CONFIG | EXPERT'.

Switch to “Diagnosis Mode”

Set state to OPERATIONAL

Generate bus configuration with EC-Engineer

Step 11: Bus is OPERATIONAL



The screenshot displays the EC-Engineer software interface in Diagnosis Mode. The Project Explorer on the left shows a Class-A Master and a Slave_1001. The Device Editor on the right provides detailed status information for the State Machine, including current and requested states, and various counters like sent and lost frames. The Messages window at the bottom shows state change notifications.

Project Explorer

- Class-A Master <connected>
 - Slave_1001 [EC-Training Sampler] (1001)

Device Editor

General | Process Data Image | Watch list | Performance | Trace Data | CoE Object-Dictionary | History

State Machine

Current State	Op
Requested State	Op
Change State	Init Bootstrap Pre-Op Safe-Op Op

Information

Master Version	3.1.4.09
Number of found slaves	1
Number of slaves in configuration	1
Number of DC slaves	0
DC in-sync	-
Topology Ok	Yes
Link Connected	Yes
Slaves in Master State	Yes

Frame Counter

Sent frames	49169
Lost frames	0
Cyclic frames	49019
Acyclic frames	150
Clear counters	

Memory Usage

Current [kB]	675
Max [kB]	675

Short Info


Information

Name	Class-A Master
Description	EtherCAT Master Unit (Class A)
Vendor	...

Networks: 1 Slaves: 1

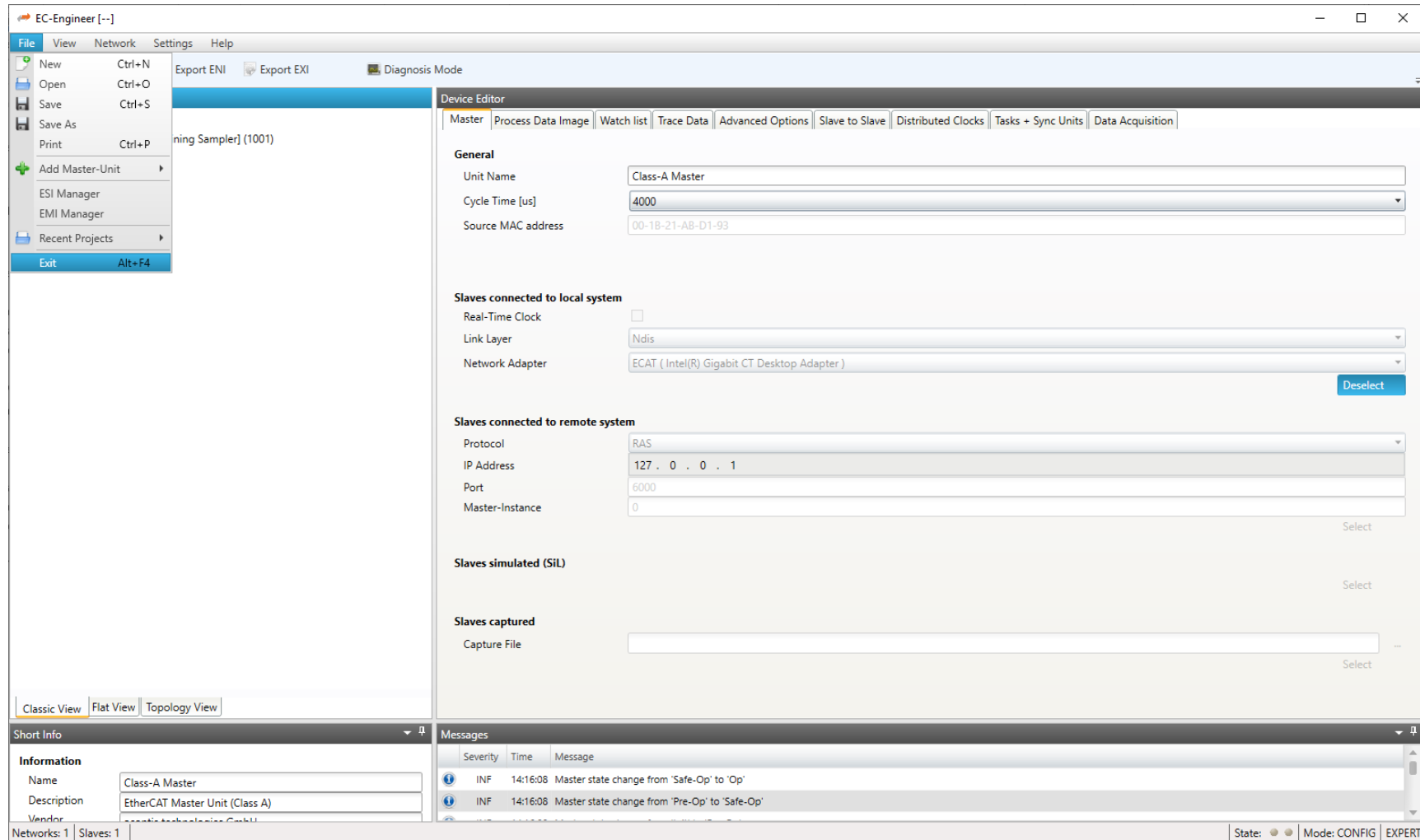
Messages

Severity	Time	Message
INF	14:16:08	Master state change from 'Safe-Op' to 'Op'
INF	14:16:08	Master state change from 'Pre-Op' to 'Safe-Op'

State:  Mode: DIAGNOSIS | EXPERT

Generate bus configuration with EC-Engineer

Step 12: Switch back to “Configuration Mode” and Exit



The screenshot displays the EC-Engineer software interface. The main window is titled "EC-Engineer [-]" and shows a "Device Editor" for a "Class-A Master" unit. The interface is in "Configuration Mode".

File Menu: New (Ctrl+N), Open (Ctrl+O), Save (Ctrl+S), Save As, Print (Ctrl+P), Add Master-Unit, ESI Manager, EMI Manager, Recent Projects, Exit (Alt+F4).

Device Editor - General:

- Unit Name: Class-A Master
- Cycle Time [us]: 4000
- Source MAC address: 00-1B-21-AB-D1-93

Slaves connected to local system:

- Real-Time Clock:
- Link Layer: Ndis
- Network Adapter: ECAT (Intel(R) Gigabit CT Desktop Adapter)

Slaves connected to remote system:

- Protocol: RAS
- IP Address: 127 . 0 . 0 . 1
- Port: 6000
- Master-Instance: 0

Slaves simulated (SIL): Select

Slaves captured: Capture File: Select

Short Info:

Information	Value
Name	Class-A Master
Description	EtherCAT Master Unit (Class A)
Vendor	...

Messages:

Severity	Time	Message
INF	14:16:08	Master state change from 'Safe-Op' to 'Op'
INF	14:16:08	Master state change from 'Pre-Op' to 'Safe-Op'

Networks: 1 Slaves: 1 State: Mode: CONFIG EXPERT

Run EcMasterDemo with ENI file

- Transfer ENI to target device (if not Windows)
- Append ENI path, e.g. `-f D:\eni.xml` to Command Line Parameters
- Master commands all slaves to OP state:

```
0000000182: Bus scan successful - 1 slaves found
0000000185: *****
0000000185: Slave ID.....: 0x00000000
0000000185: Bus Index.....: 0
0000000185: Bus AutoInc Address.: 0x0000 ( 0)
0000000185: Bus Station Address.: 0x03e9 (1001)
0000000185: Bus Alias Address...: 0x0000 ( 0)
0000000185: Vendor ID.....: 0x00004154 = acontis technologies GmbH
0000000185: Product Code.....: 0x00000101 = Unknown
0000000185: Revision.....: 0x00000000 Serial Number: 0
0000000185: ESC Type.....: Infineon (0x98) Revision: 1 Build: 1
0000000185: Connection at Port A: yes (to 0x00010000)
0000000185: Connection at Port D: no (to 0xFFFFFFFF)
0000000185: Connection at Port B: no (to 0xFFFFFFFF)
0000000185: Connection at Port C: no (to 0xFFFFFFFF)
0000000185: Line Crossed.....: no
0000000185: Line Crossed Flags..: 0x0
0000000185: Cfg Station Address.: 0x03e9 (1001)
0000000185: PD IN   Byte.Bit offset: 0.0   Size: 72 bits (MSU 0)
0000000185: PD OUT  Byte.Bit offset: 0.0   Size: 72 bits (MSU 0)
0000000185: *****
0000000217: Master state changed from <UNKNOWN> to <INIT>
0000000361: Master state changed from <INIT> to <PREOP>
0000000471: Master state changed from <PREOP> to <SAFEOP>
0000000520: Master state changed from <SAFEOP> to <OP>
0000000525: EcMasterDemo will stop in 600s...
```

Online diagnosis of network with EC-Engineer

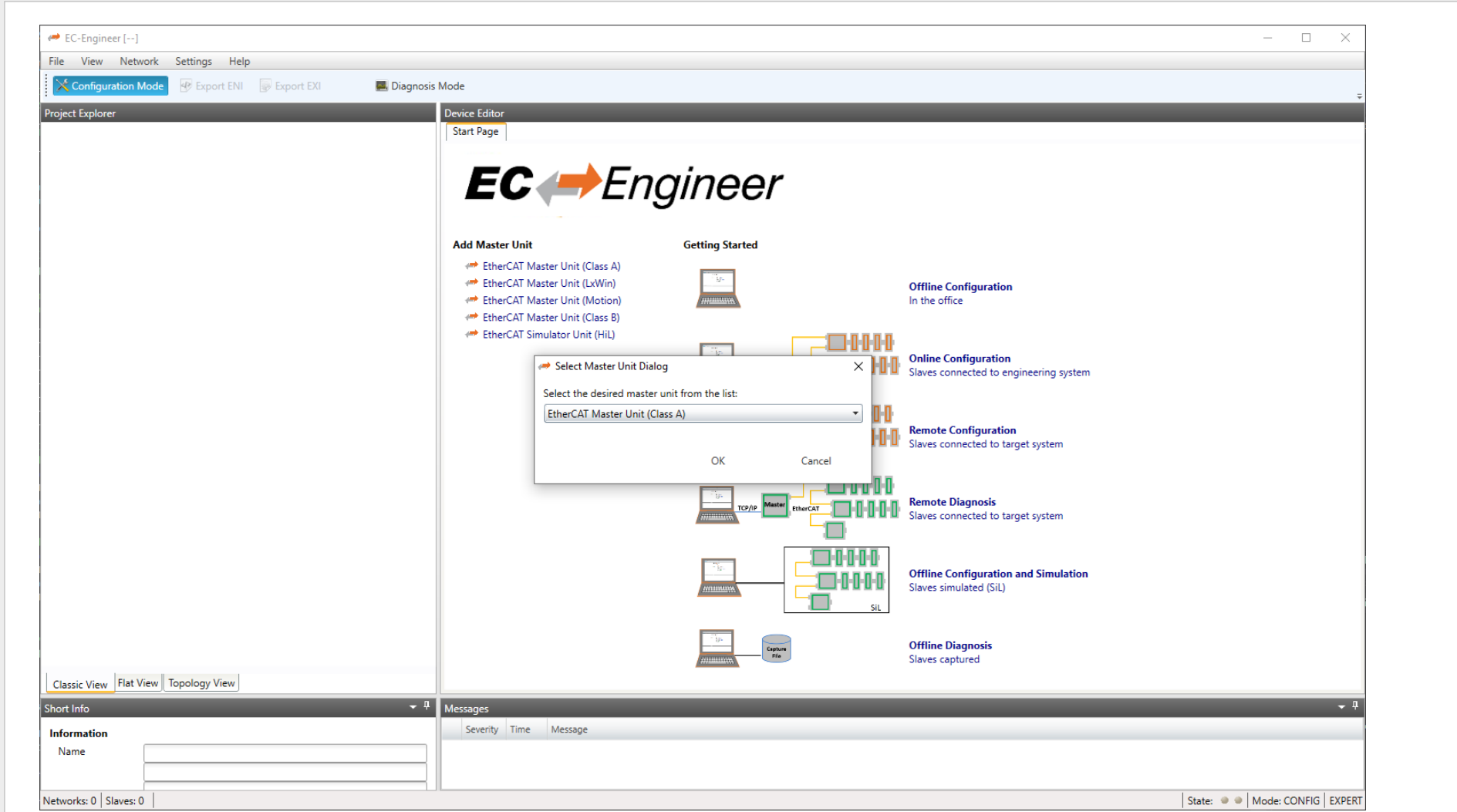
Step 1: Start EcMasterDemo

- Append `-sp` to Command Line Parameters
- Start EcMasterDemo


```
0000000019: emllNdis(\DEVICE\{866DDD08-2B16-4778-84F7-D985180E2DA6}): Ecat Ndis Driver Version 3.1.3.4
0000000019: EtherCAT network adapter MAC: 00-1B-21-AB-D1-93
0000000072: Protected version, stop sending ethernet frames after 60 minutes if not licensed!
0000001966: Bus scan successful - 1 slaves found
0000001992: *****
0000001992: Slave ID.....: 0x00000000
0000001992: Bus Index.....: 0
0000001992: Bus AutoInc Address.: 0x0000 ( 0)
0000001992: Bus Station Address.: 0x03e9 (1001)
0000001992: Bus Alias Address...: 0x0000 ( 0)
0000001992: Vendor ID.....: 0x00004154 = acontis technologies GmbH
0000001992: Product Code.....: 0x00000101 = Unknown
0000001992: Revision.....: 0x00000000 Serial Number: 0
0000001992: ESC Type.....: Infineon (0x98) Revision: 1 Build: 1
0000001992: Connection at Port A: yes (to 0x00010000)
0000001992: Connection at Port D: no (to 0xFFFFFFFF)
0000001992: Connection at Port B: no (to 0xFFFFFFFF)
0000001992: Connection at Port C: no (to 0xFFFFFFFF)
0000001992: Line Crossed.....: no
0000001992: Line Crossed Flags..: 0x0
0000001992: Cfg Station Address.: 0x03e9 (1001)
0000001992: PD IN   Byte.Bit offset: 0.0   Size: 72 bits (MSU 0)
0000001992: PD OUT  Byte.Bit offset: 0.0   Size: 72 bits (MSU 0)
0000001992: *****
0000002250: Master state changed from <UNKNOWN> to <INIT>
0000003433: Master state changed from <INIT> to <PREOP>
0000004331: Master state changed from <PREOP> to <SAFEOP>
0000004739: Master state changed from <SAFEOP> to <OP>
0000004761: EcMasterDemo will stop in 600s...
```

Online diagnosis of network with EC-Engineer

Step 2: Start EC-Engineer and select “Remote Diagnosis”

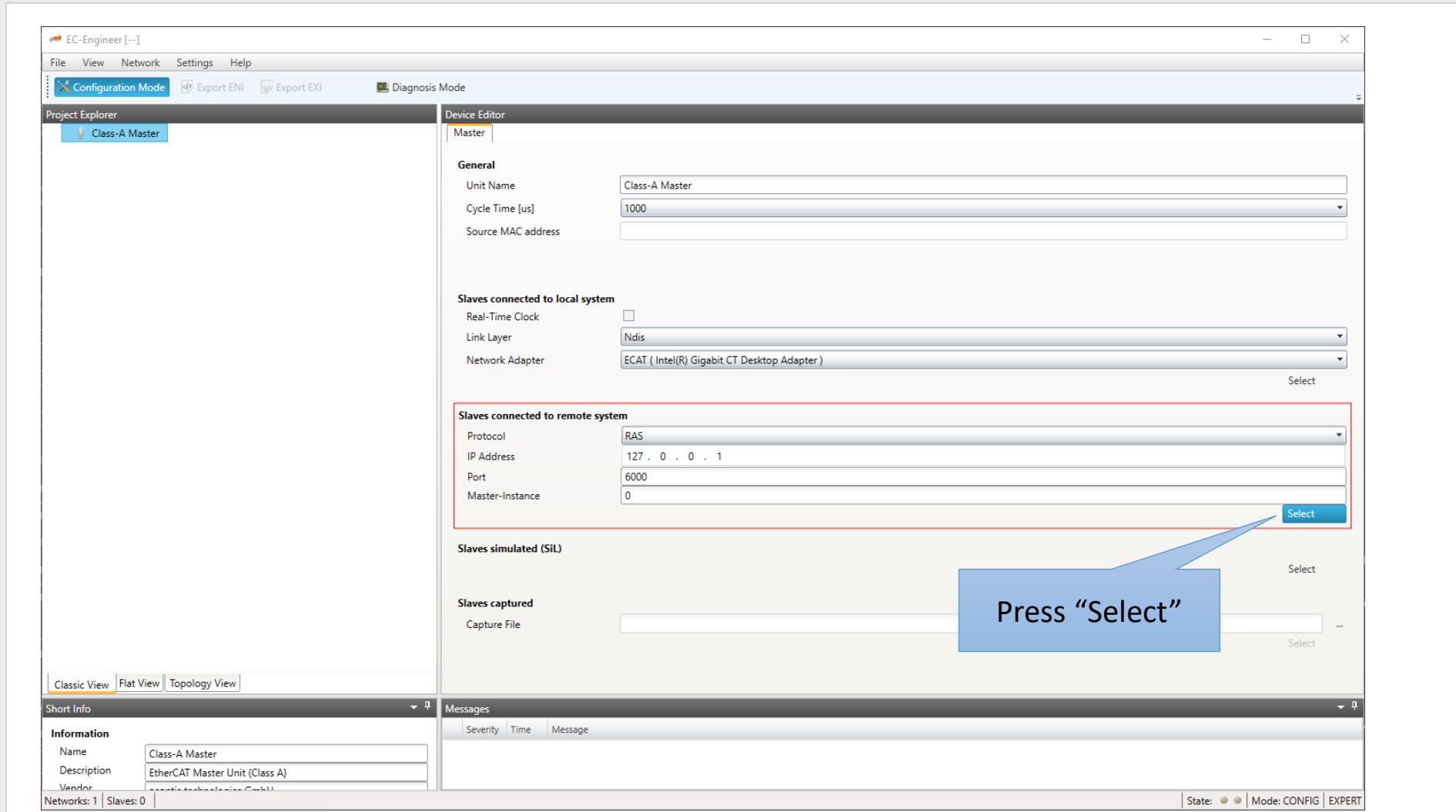


The screenshot displays the EC-Engineer software interface. The main window is titled "EC-Engineer [-]" and has a menu bar with "File", "View", "Network", "Settings", and "Help". Below the menu bar, there are tabs for "Configuration Mode", "Export ENI", "Export EXI", and "Diagnosis Mode". The interface is divided into several sections:

- Project Explorer:** Currently empty.
- Device Editor:** Shows the "Start Page" with the EC-Engineer logo and a "Getting Started" section. This section includes a list of "Add Master Unit" options: EtherCAT Master Unit (Class A), EtherCAT Master Unit (LxWin), EtherCAT Master Unit (Motion), EtherCAT Master Unit (Class B), and EtherCAT Simulator Unit (HiL). To the right, there are six configuration modes with corresponding icons: Offline Configuration (In the office), Online Configuration (Slaves connected to engineering system), Remote Configuration (Slaves connected to target system), Remote Diagnosis (Slaves connected to target system), Offline Configuration and Simulation (Slaves simulated (SiL)), and Offline Diagnosis (Slaves captured).
- Select Master Unit Dialog:** A modal dialog box is open in the center, titled "Select Master Unit Dialog". It contains the text "Select the desired master unit from the list:" and a dropdown menu currently showing "EtherCAT Master Unit (Class A)". There are "OK" and "Cancel" buttons at the bottom.
- Bottom Panel:** Includes "Classic View", "Flat View", and "Topology View" tabs. Below these are "Short Info" and "Messages" sections. The "Short Info" section has a table with "Name" and empty input fields. The "Messages" section has a table with columns "Severity", "Time", and "Message".
- Status Bar:** Shows "Networks: 0 | Slaves: 0" on the left and "State:  | Mode: CONFIG | EXPERT" on the right.

Connect EC-Engineer to EcMasterDemo

Step 3: Choose “Slaves connected to remote system”



The screenshot shows the EC-Engineer software interface in Configuration Mode. The Project Explorer on the left shows a 'Class-A Master' unit. The Device Editor on the right is configured for this unit. The 'Slaves connected to remote system' section is highlighted with a red box, and a blue callout bubble points to the 'Select' button next to the Master-Instance field.

General

- Unit Name: Class-A Master
- Cycle Time [us]: 1000
- Source MAC address: [Empty]

Slaves connected to local system

- Real-Time Clock:
- Link Layer: Ndis
- Network Adapter: ECAT (Intel(R) Gigabit CT Desktop Adapter)

Slaves connected to remote system

- Protocol: RAS
- IP Address: 127 . 0 . 0 . 1
- Port: 6000
- Master-Instance: 0

Slaves simulated (SIL)

- [Empty]

Slaves captured

- Capture File: [Empty]

Information

- Name: Class-A Master
- Description: EtherCAT Master Unit (Class A)
- Vendor: [Empty]

Networks: 1 | Slaves: 0

State: [Empty] Mode: CONFIG | EXPERT

Online diagnosis of network with EC-Engineer

Step 4: Select Slave and check input and force output variables



The screenshot shows the EC-Engineer software interface in 'Diagnosis Mode'. The 'Project Explorer' on the left shows a 'Class-A Master <connected>' with a slave 'Slave_1001 [EC-Training Sampler] (1001)'. The 'Device Editor' on the right has the 'Variables' tab selected, displaying a table of variables for the slave device.

Name	Datatype	Offset	Size	Value	Forced
Slave_1001 [EC-Training Sampler].InputDigital.Bit0	BOOL	IN: 0.0	0.1	1	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputDigital.Bit1	BOOL	IN: 0.1	0.1	1	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputDigital.Bit2	BOOL	IN: 0.2	0.1	0	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputDigital.Bit3	BOOL	IN: 0.3	0.1	0	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputDigital.Bit4	BOOL	IN: 0.4	0.1	0	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputDigital.Bit5	BOOL	IN: 0.5	0.1	0	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputDigital.Bit6	BOOL	IN: 0.6	0.1	0	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputDigital.Bit7	BOOL	IN: 0.7	0.1	0	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputAnalog.Triangle	INT	IN: 1.0	2.0	66	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputAnalog.Rectangle	INT	IN: 3.0	2.0	0	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputAnalog.NetworkClock	INT	IN: 5.0	2.0	0	<input type="checkbox"/>
Slave_1001 [EC-Training Sampler].InputAnalog.Prescaler	INT	IN: 7.0	2.0	0	<input type="checkbox"/>

Below the table is a 'Chart' showing a sawtooth wave oscillating between 0 and 100. The 'Edit Variable' section shows the 'Value' set to 66, with 'Force' and 'Release' buttons.

- Monitor inputs
- Force outputs
- Slave states
- Change master and/or slave state
- CoE Object Dictionary
- Extended Diagnosis