EC-Master EtherCAT Master

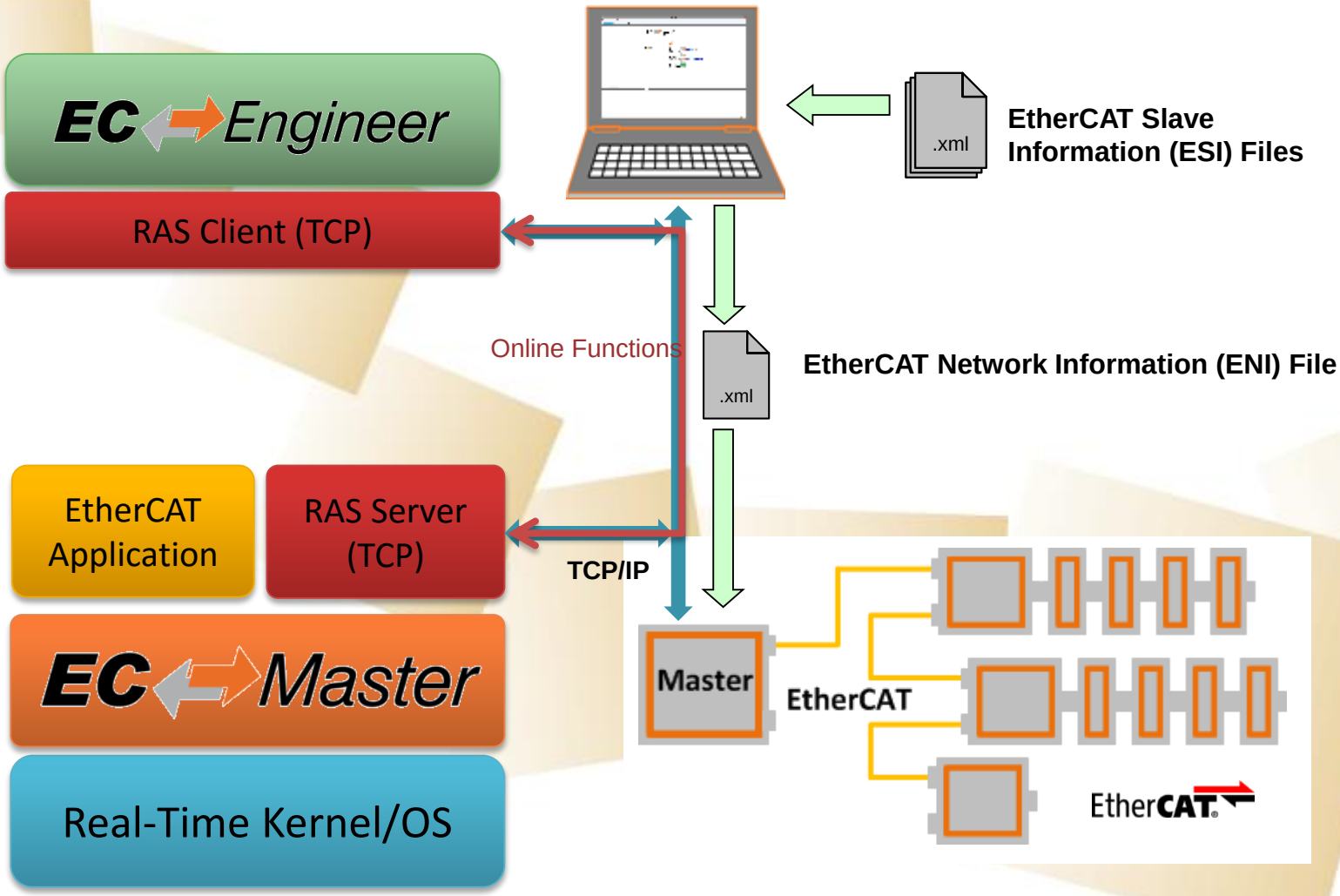
Quick Start Guide

Content

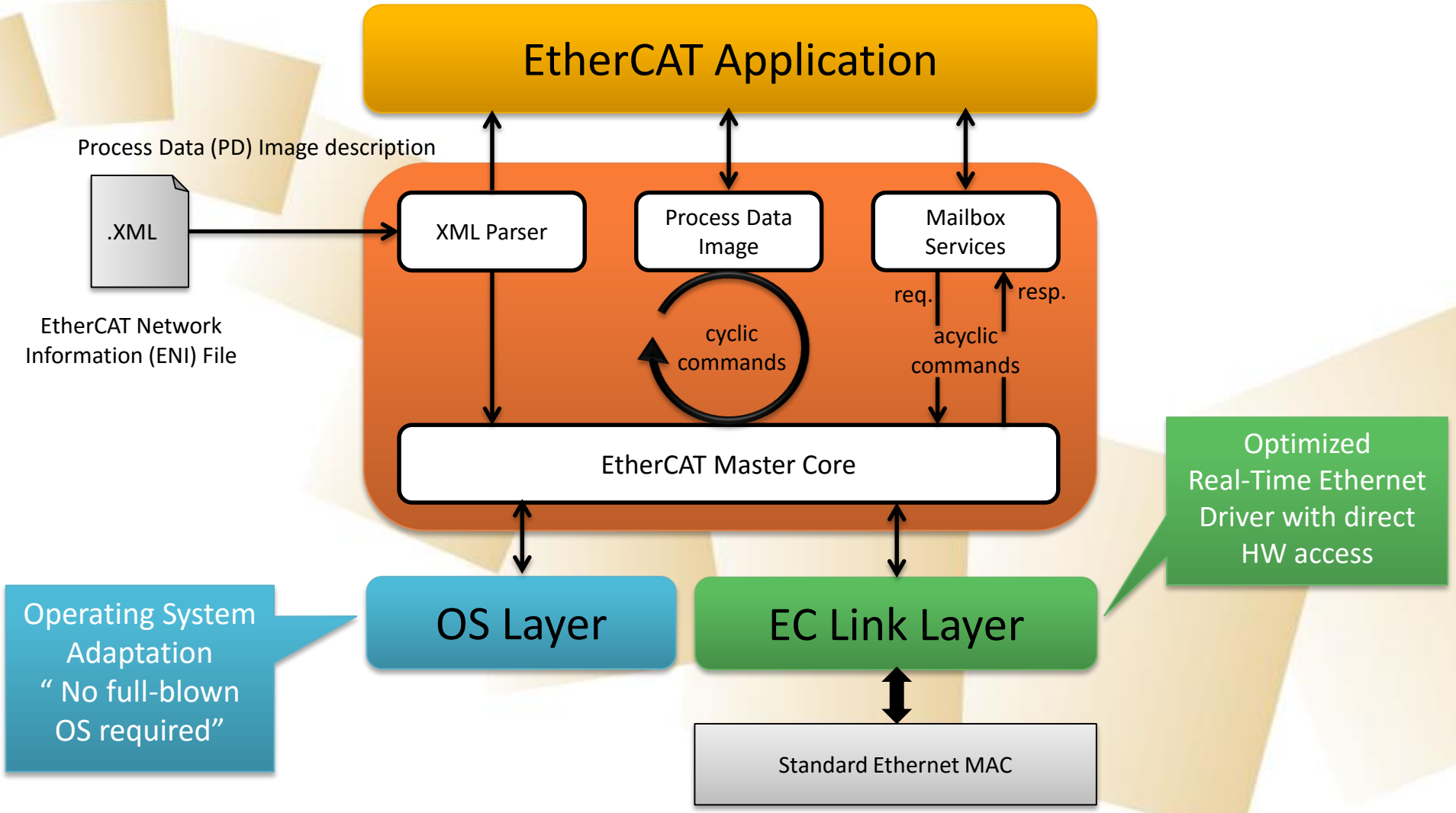
EC Master

- EtherCAT System Architecture
- EtherCAT Master Architecture
- EtherCAT Master Building Blocks
- Generate bus configuration with EC-Engineer
- Operate slaves with EC-STA EtherCAT Slave Test Application
- Connect EC-Engineer with EC-STA Application
- Next steps

EtherCAT System Architecture



EC-Master Architecture



EC-Master: Building Blocks

EC Master

EC-Master according to ETG.1500 Master Classes Directive

Class A Core

- Compare network configuration
- Cyclic process data exchange
- All mailbox protocols: CoE, SoE, EoE, FoE, AoE, VoE
- Slave to slave communication
- **Distributed Clocks with master synchronization**

Class B Core

- Compare network configuration
- Cyclic process data exchange
- Mailbox protocol CoE
- Mailbox protocol SoE
- Mailbox protocol EoE
- Slave to slave communication

Feature Pack
Cable Redundancy

Feature Pack
Hot Connect

Feature Pack
Remote Access

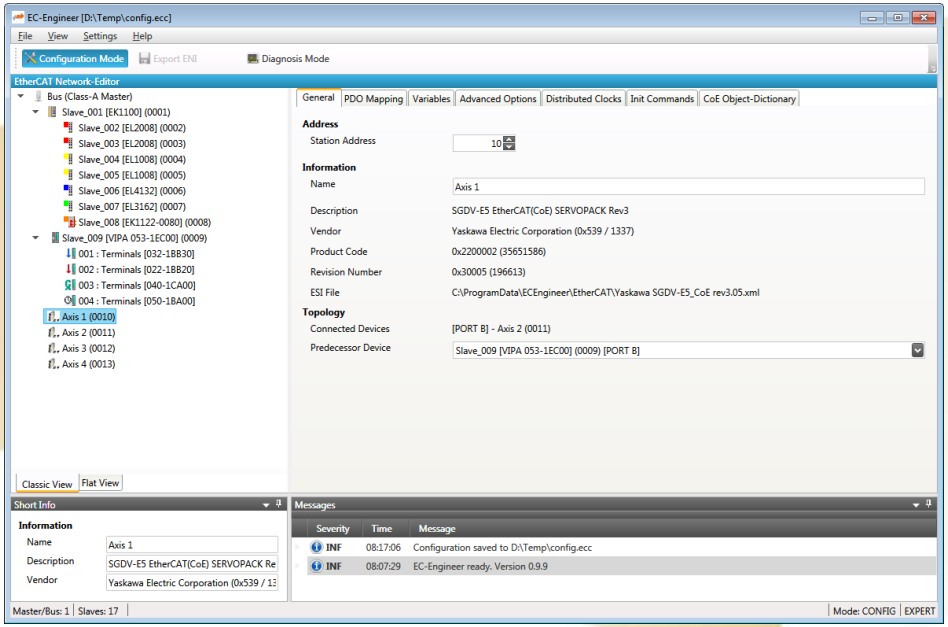
Feature Pack
Superset ENI

Feature Pack
EoE Endpoint

Feature Pack
Master Obj. Dict.

EC-Engineer: Overview

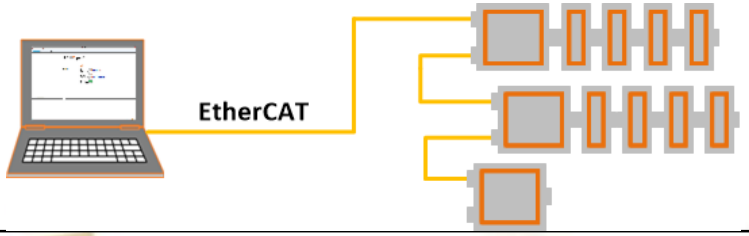
- One single tool for EtherCAT configuration and diagnosis
- Perfect supplement to EC-Master
- Import of EtherCAT Slave Information (ESI) files
- Export of EtherCAT Network Information (ENI) file
- Register here to get a free evaluation version:
  http://www.acontis.com/eng/products/downloads/index.php



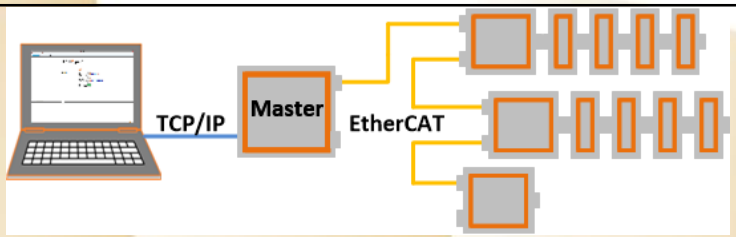
EC-Engineer Operating Modes

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

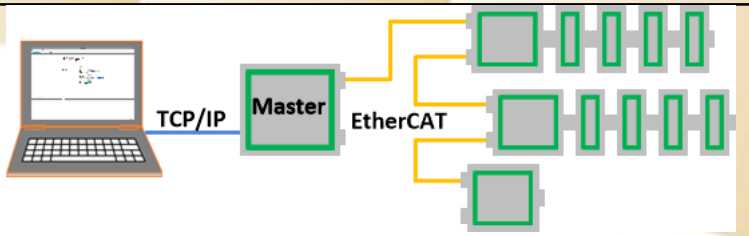
*Online **Configuration**:*
Slaves connected to
Engineering System



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



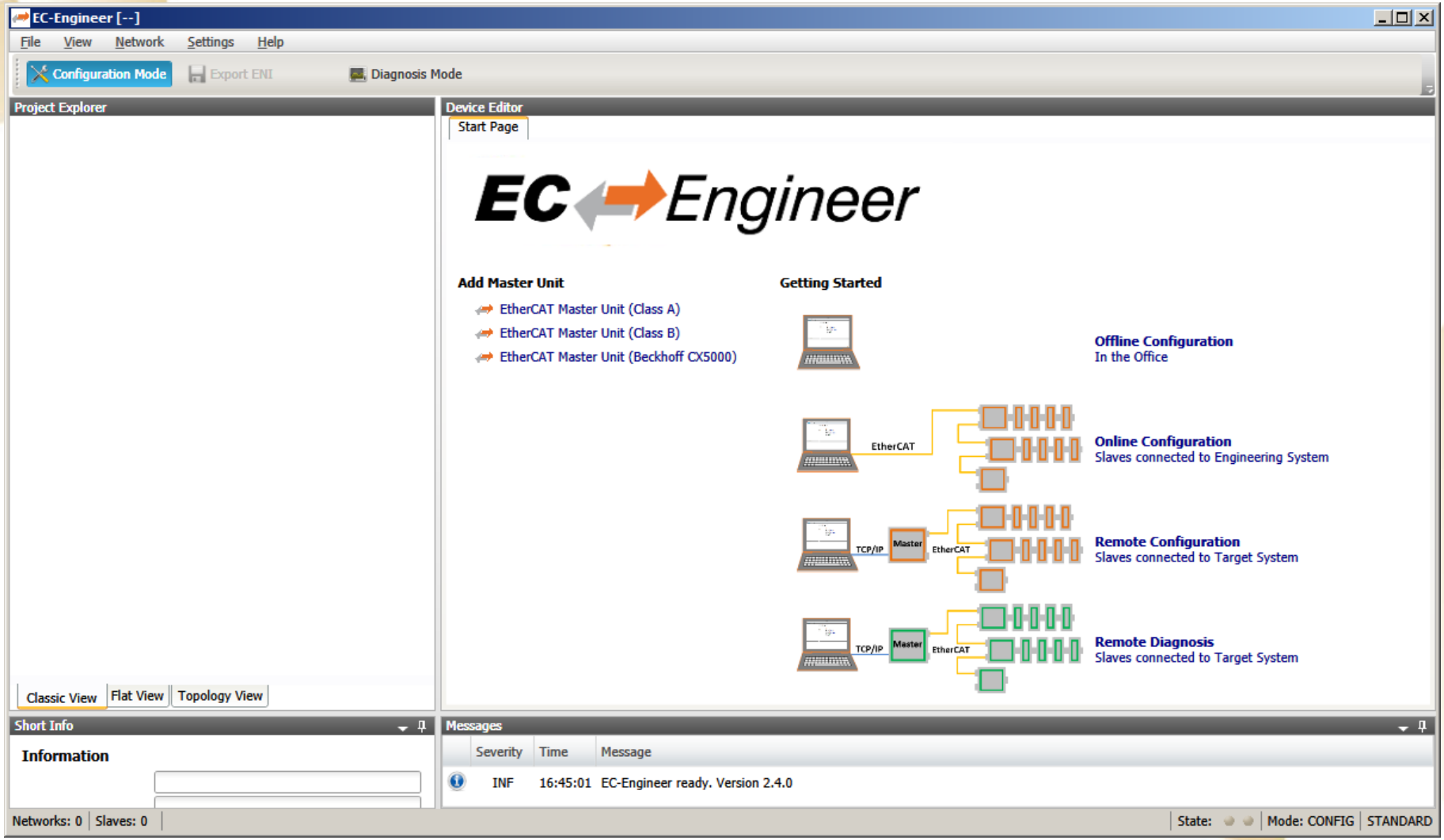
*Remote **Diagnosis**:*
Slaves connected to
Target System



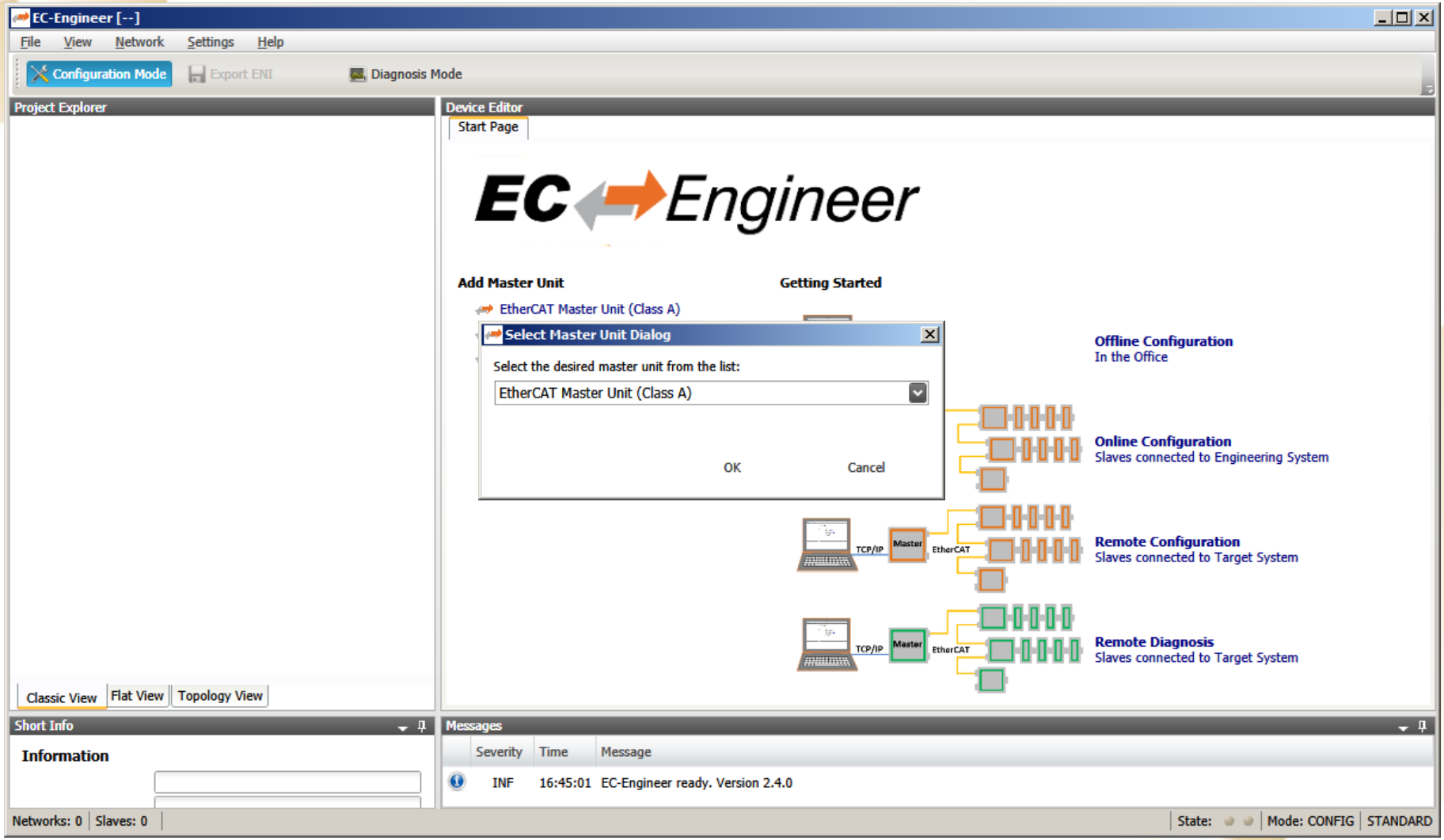
Generate bus configuration with EC-Engineer
Step 1: Connect EtherCAT Slaves

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

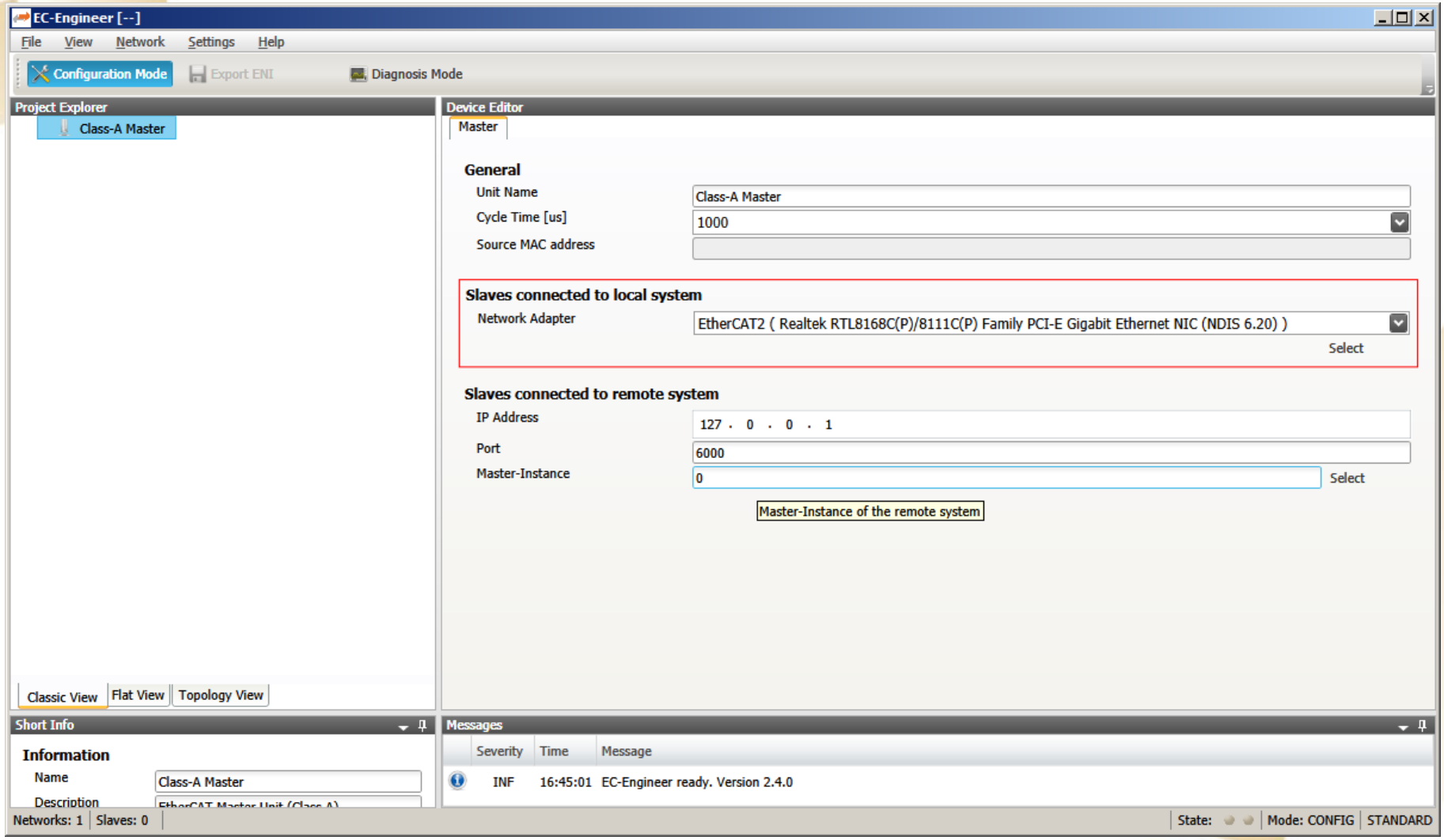
Generate bus configuration with EC-Engineer
Step 2: Install and start EC-Engineer



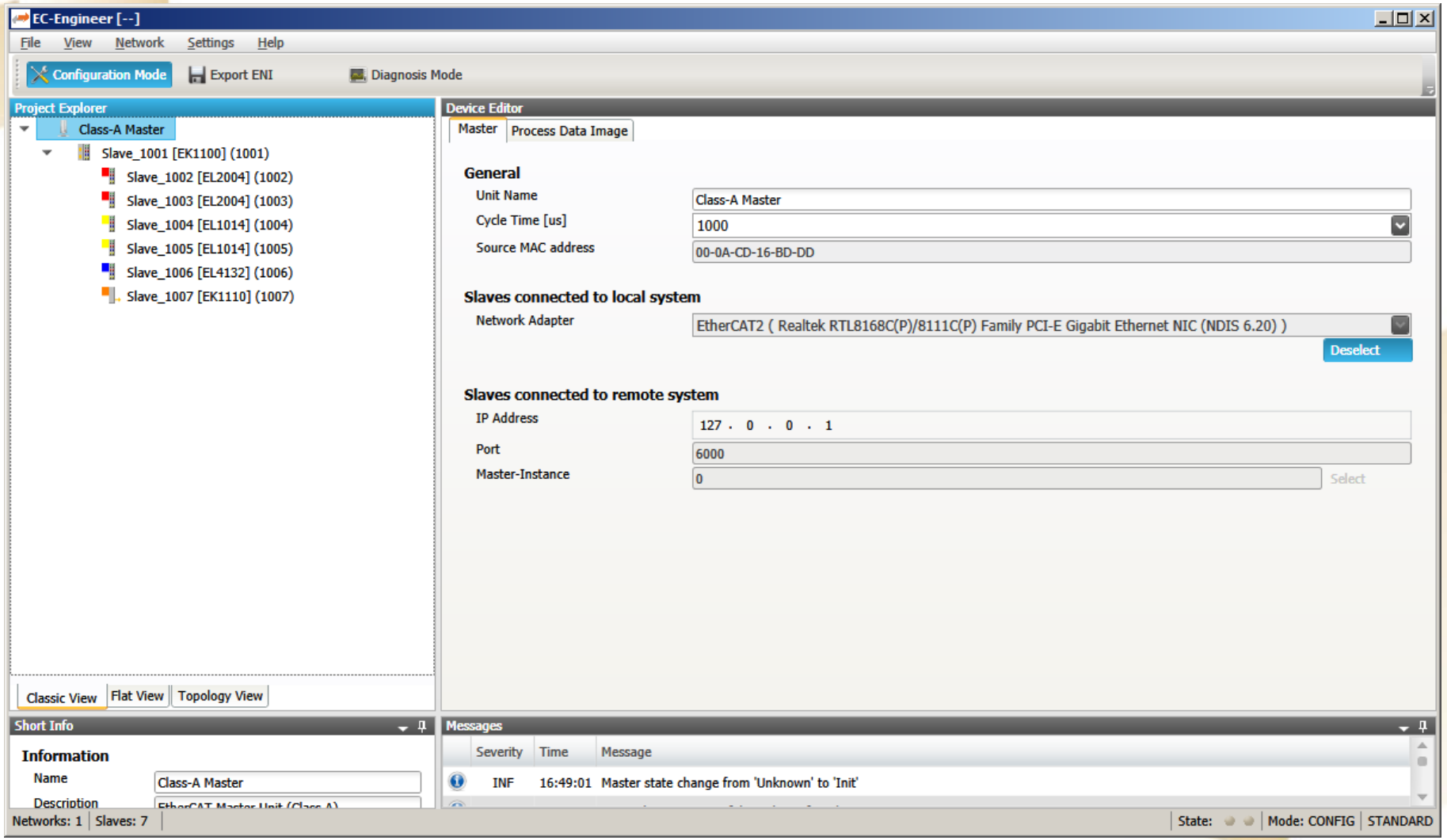
Generate bus configuration with EC-Engineer
Step 3: Select "Online Configuration" and "EtherCAT Master Unit (Class A)"



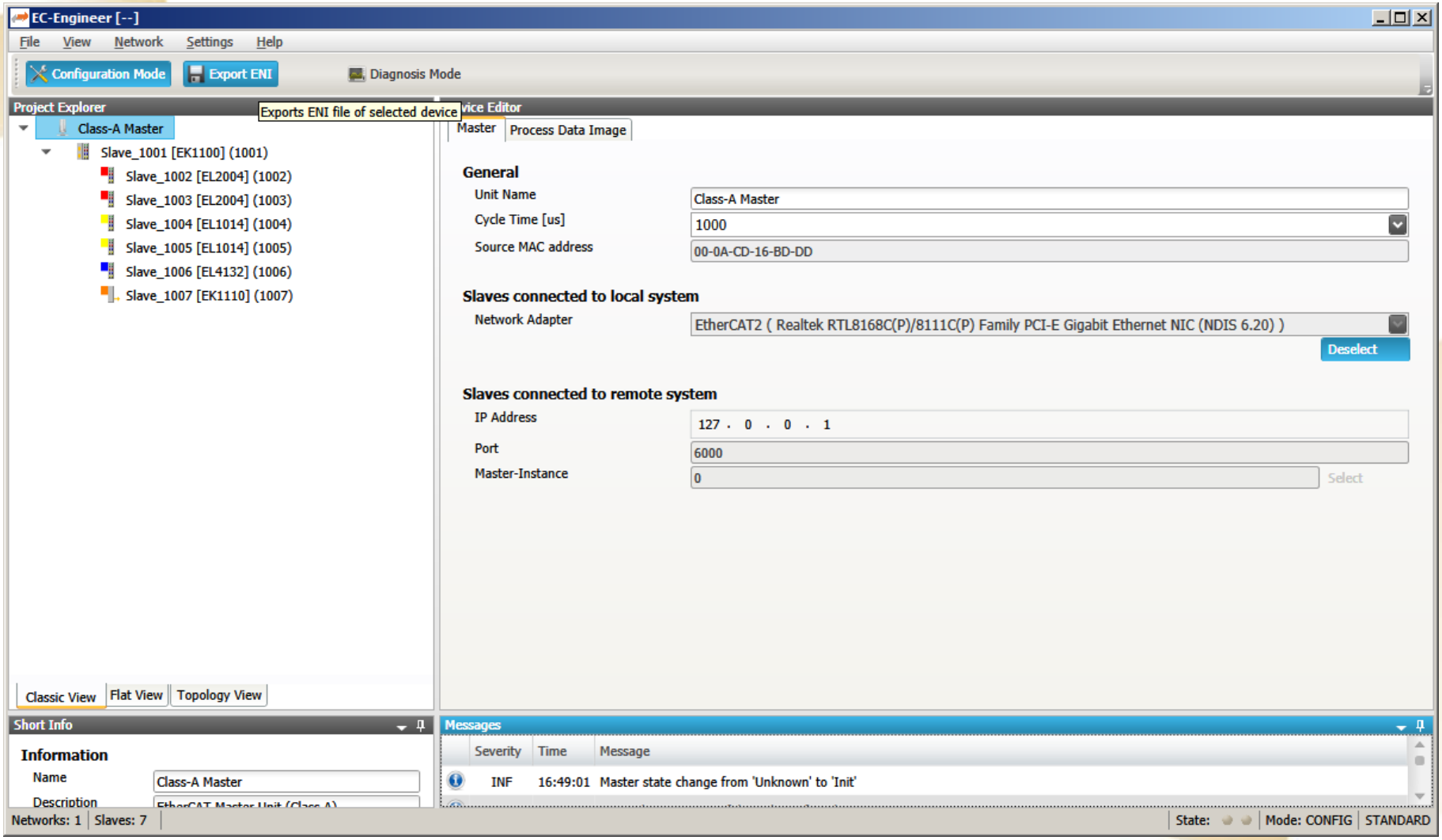
Generate bus configuration with EC-Engineer
Step 4: Choose network adapter from list and press "Select"



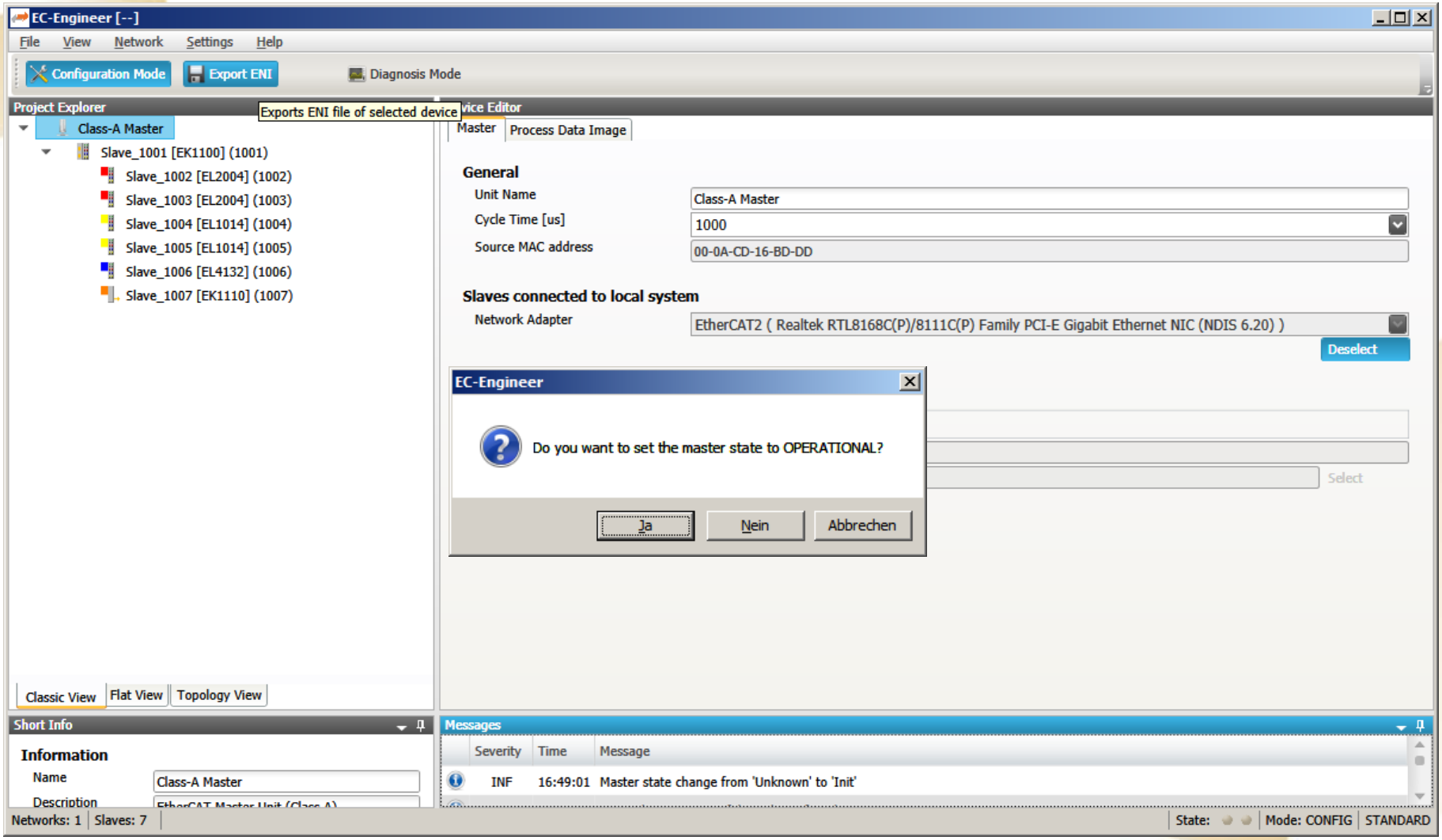
Generate bus configuration with EC-Engineer
Step 5: The found slave devices are listed in the tree



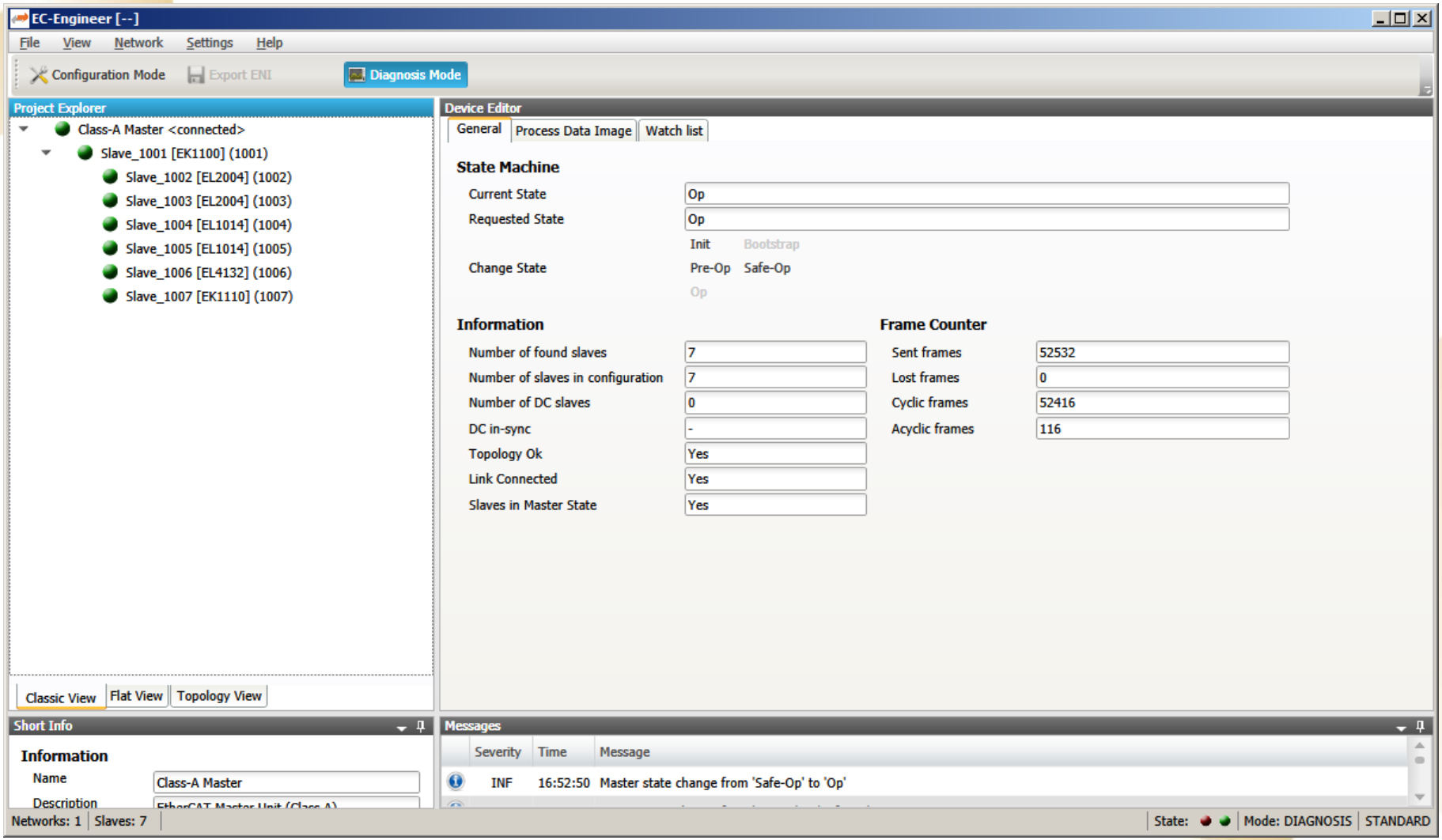
Generate bus configuration with EC-Engineer
Step 6: Export ENI file



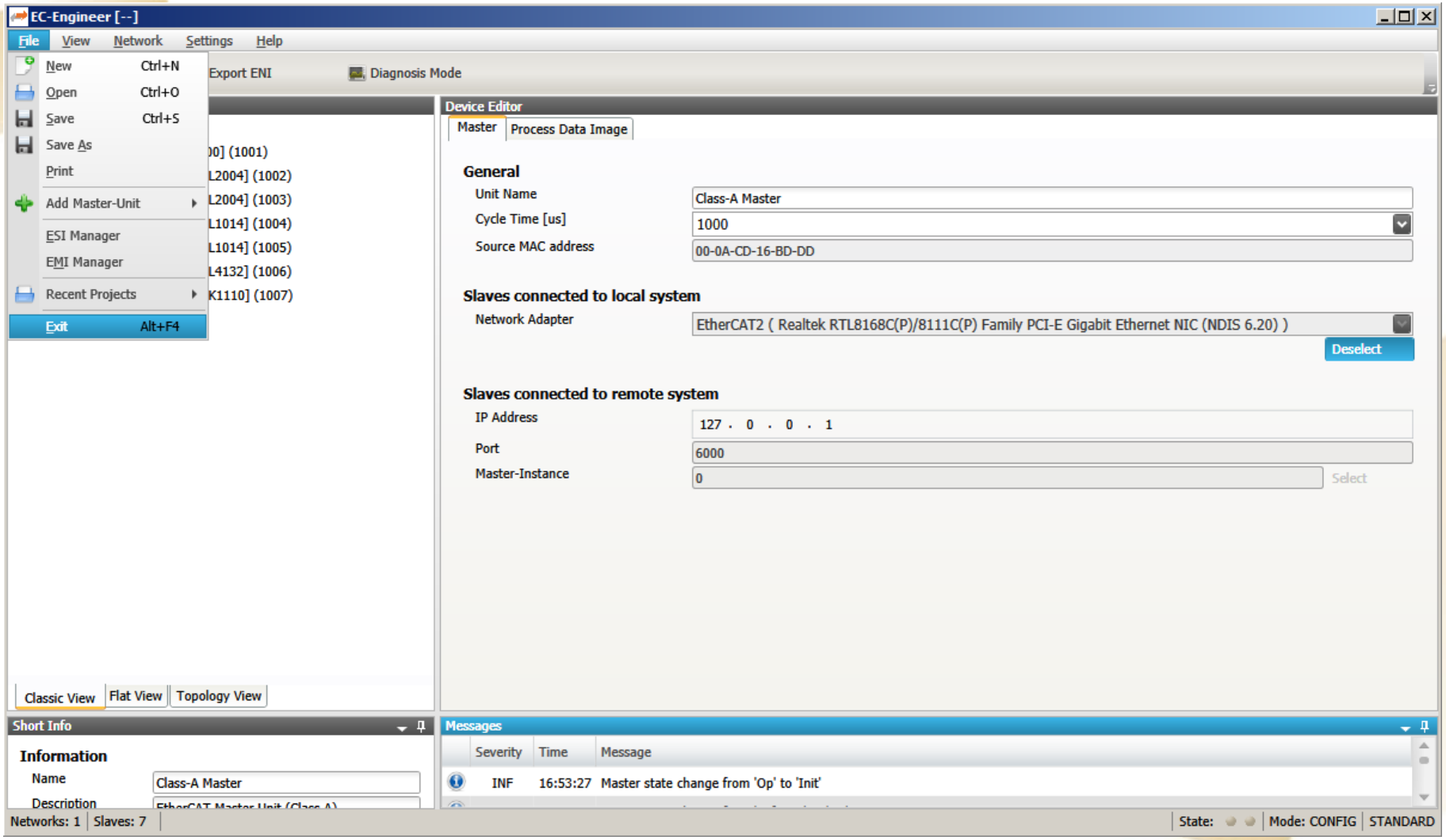
Generate bus configuration with EC-Engineer
Step 7: Switch to "Diagnosis Mode" and set state to OPERATIONAL



Generate bus configuration with EC-Engineer
Step 8: Bus is OPERATIONAL



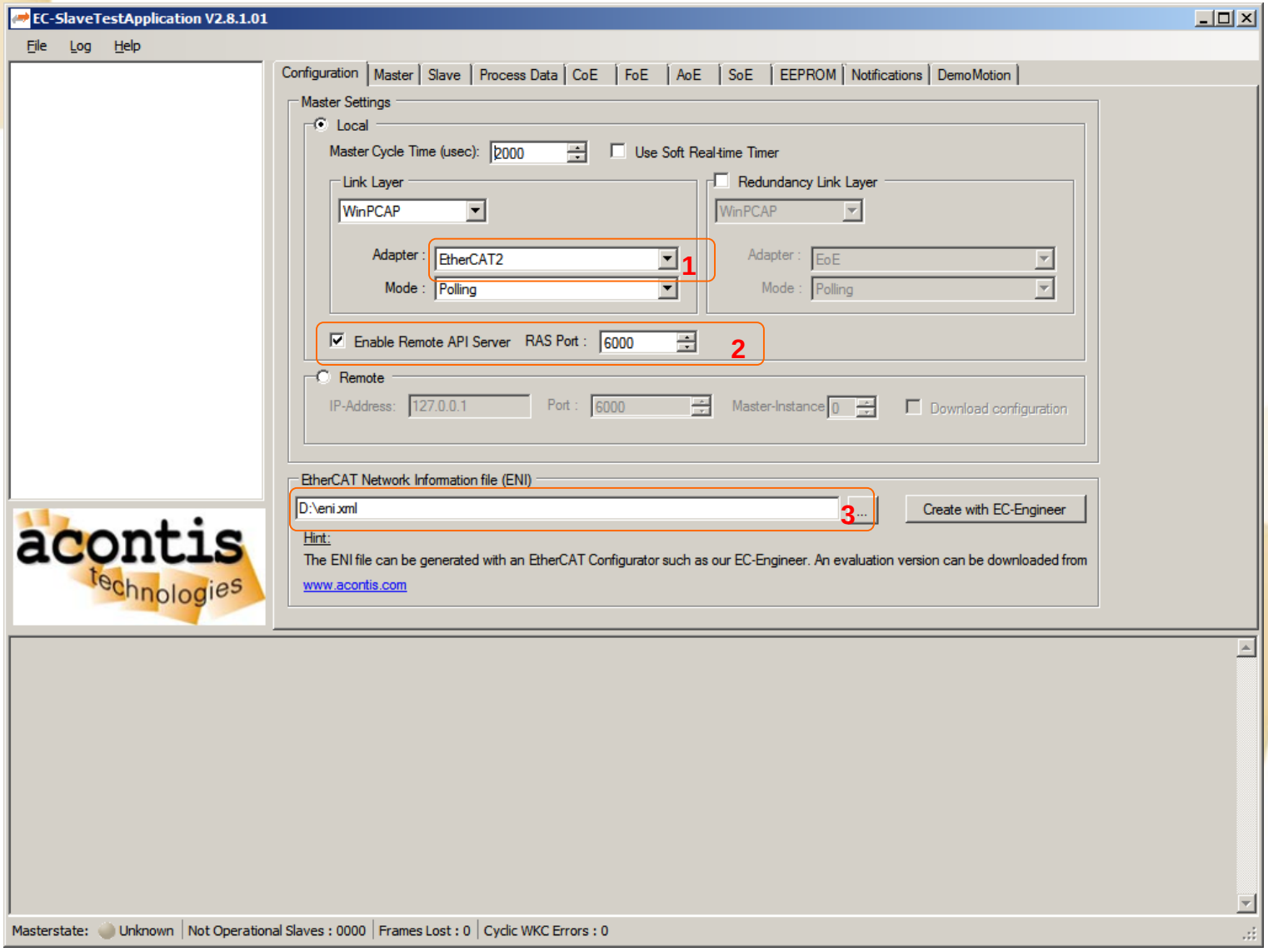
Generate bus configuration with EC-Engineer
Step 9: Switch back to "Configuration Mode" and Exit



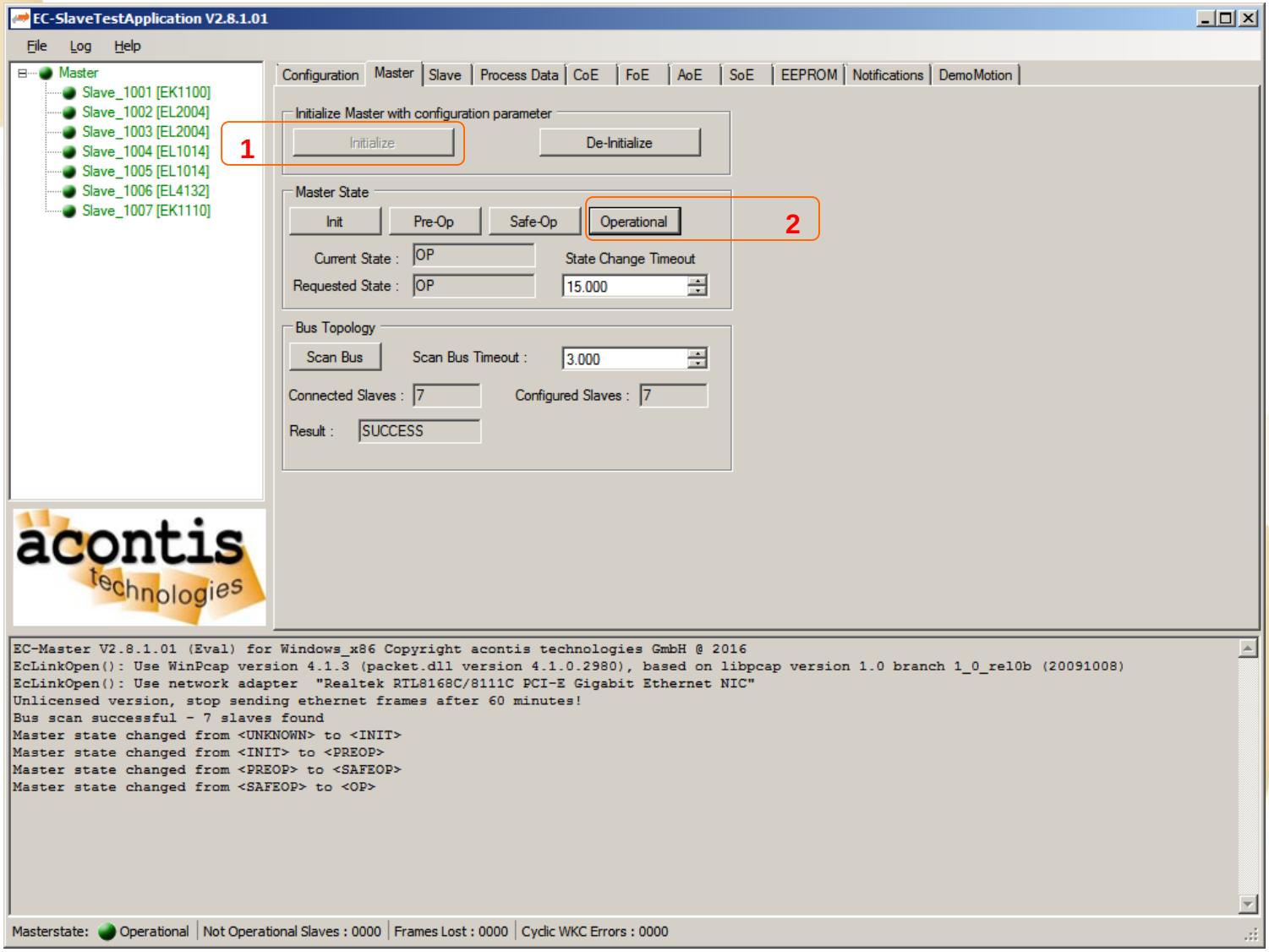
Install the EC-Master

- Extract/Install the EC-Master by running setup.exe
  - Note: Some platforms as ZIP/tar.gz archive, not as setup.exe
- The documentation including this Quick Start Guide is in folder “Doc”
- There is an EC-SlaveTestApplication starter in the Windows start menu

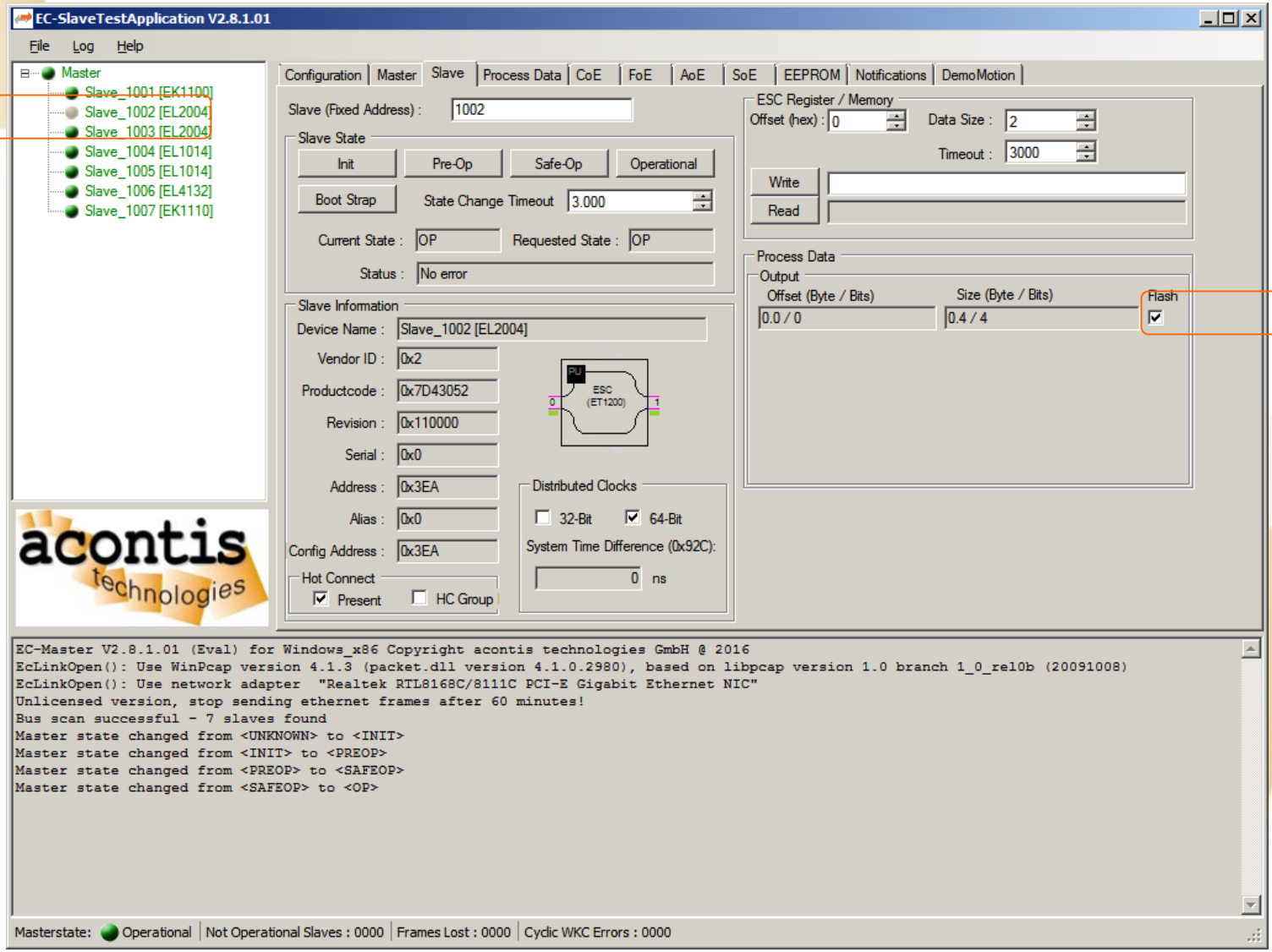
Operate slaves with EC-STA Slave Test Application
Step 1: Start EC-STA from the start menu and configure



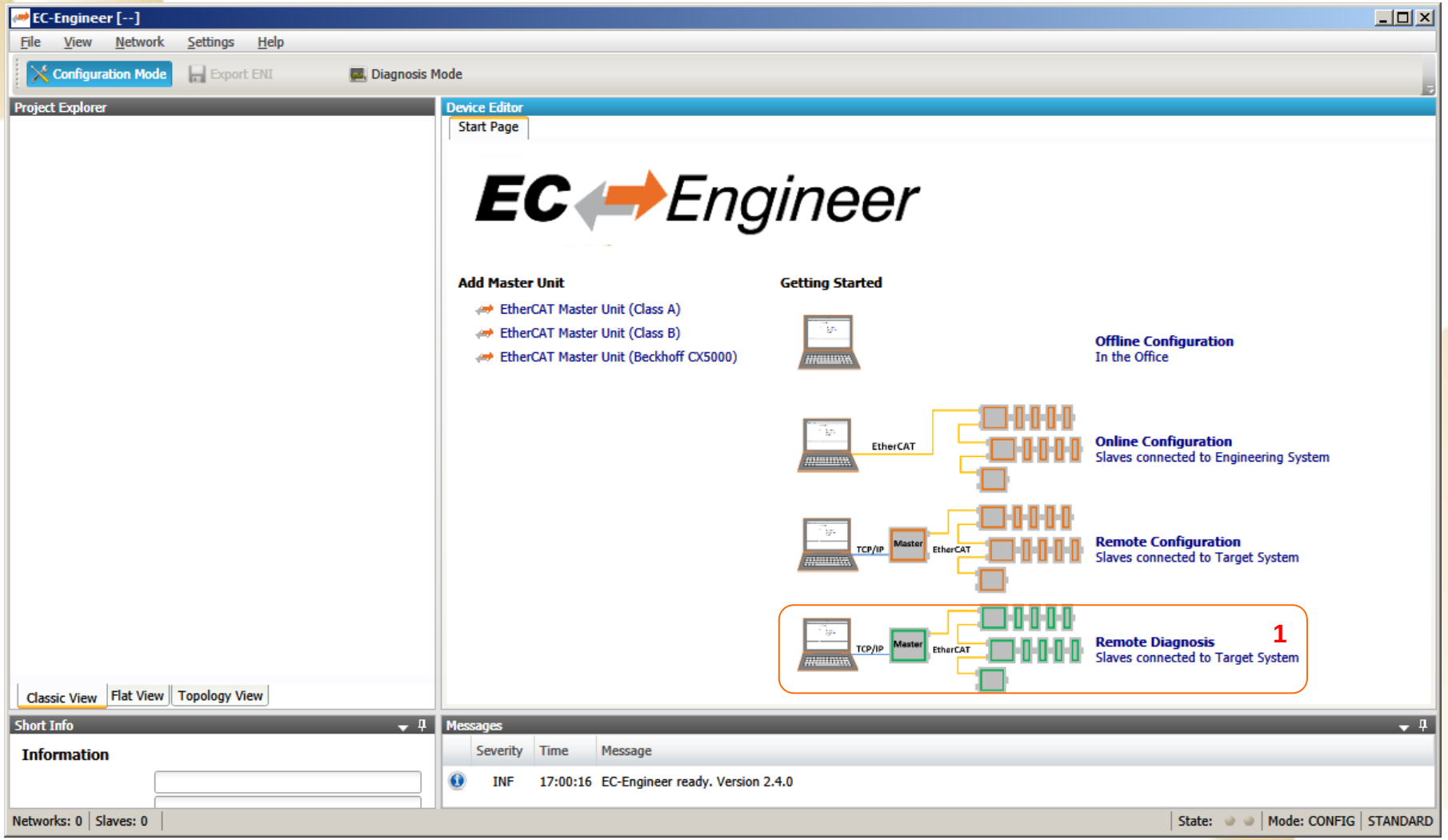
Operate slaves with EC-STA Slave Test Application
Step 2: Initialize and set master state to operational



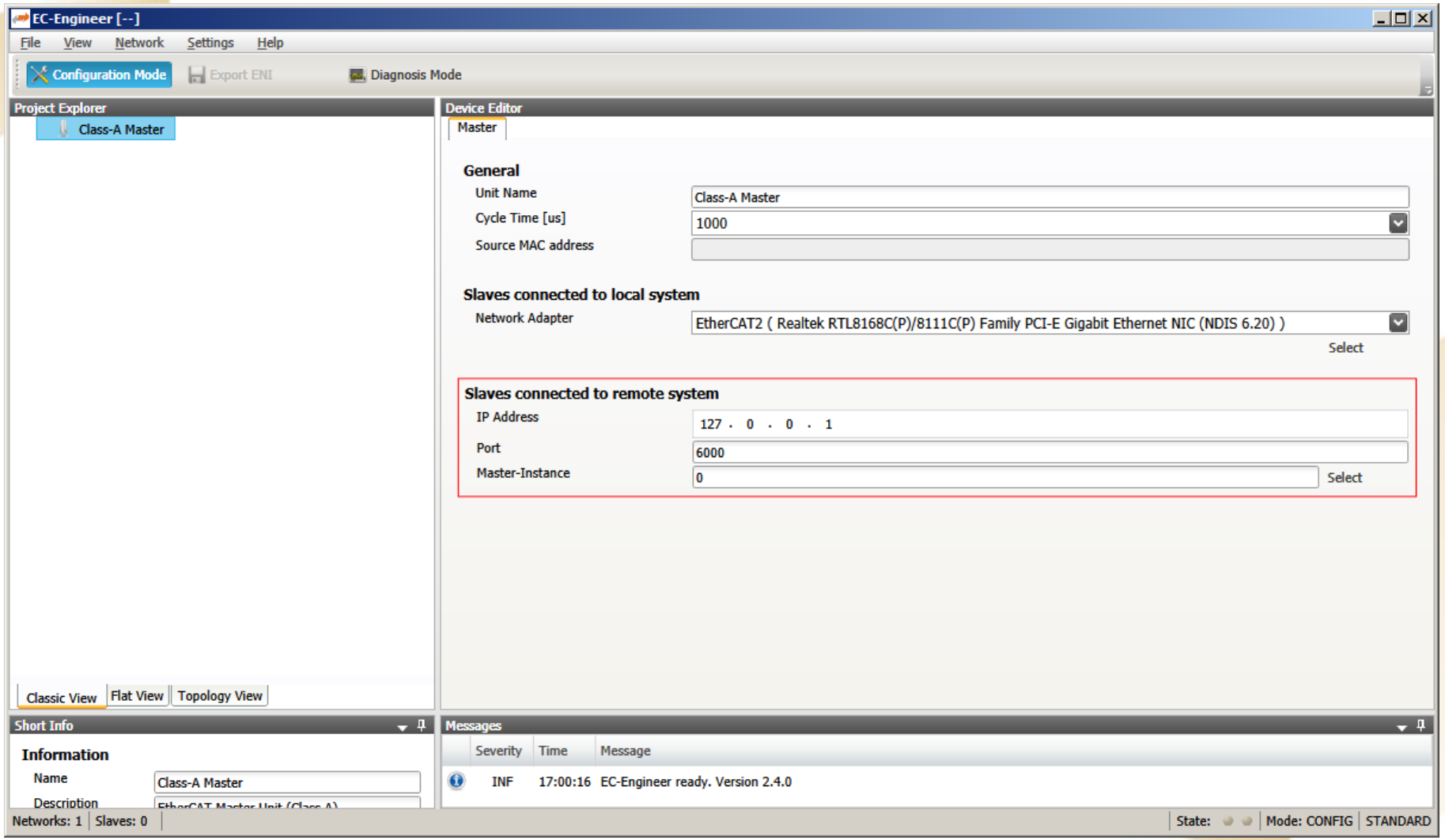
Operate slaves with EC-STA Slave Test Application
Step 3: Do further tests, e. g., flashing outputs



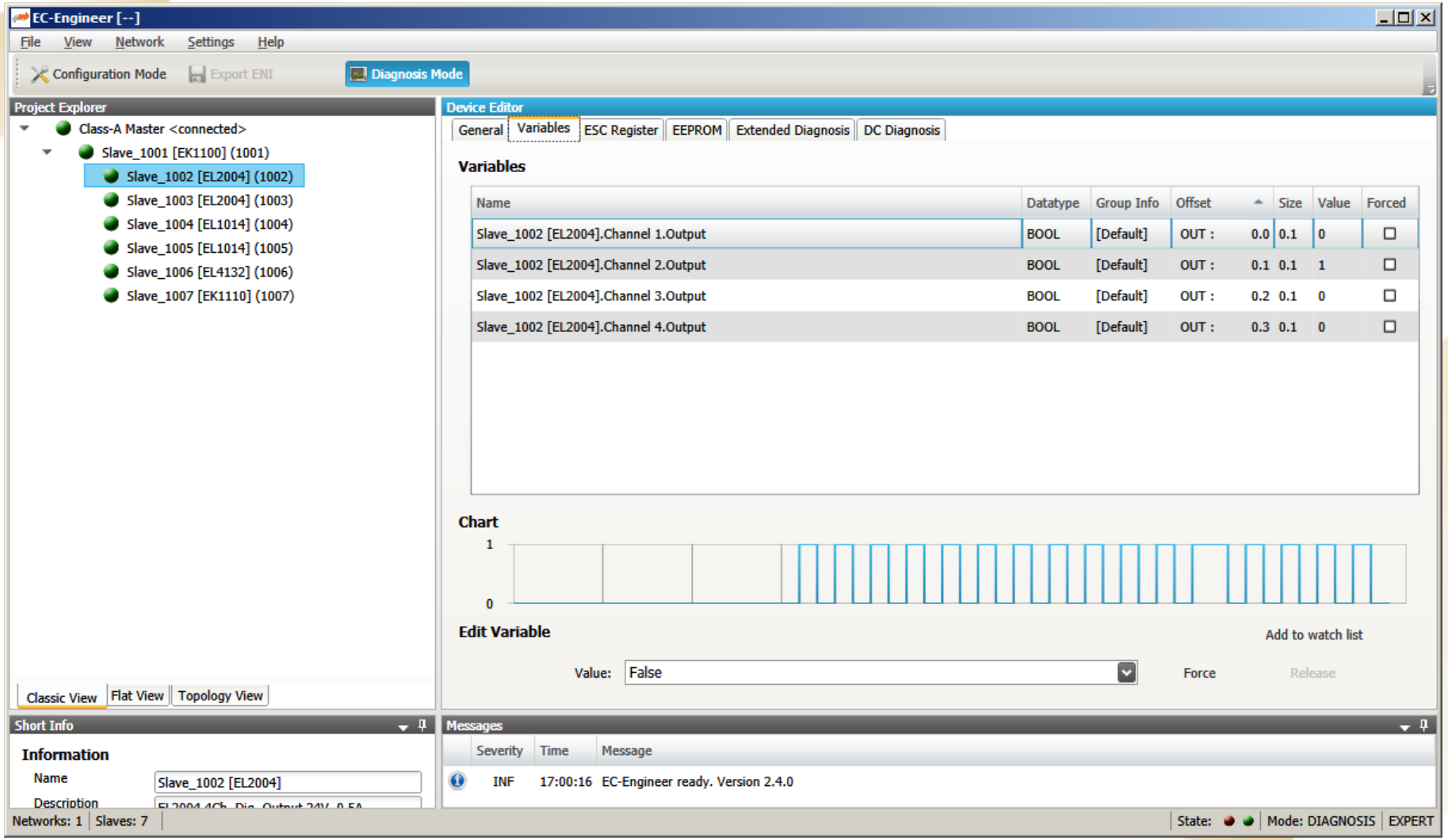
Connect EC-Engineer with EC-STA Application
Step 1: Start EC-Engineer and select "Remote Diagnosis"



Connect EC-Engineer with EC-STA Application
Step 2: Choose "Slaves connected to remote system"



Connect EC-Engineer with EC-STA Application
Step 3: Check input or output variables



Next Steps

- Run EcMasterDemo on your target system
  → See EC-Master User Manual Chapter 2 "Getting Started"
  - 2.3 Operating system configuration
  - 2.3.1 Link Layer selection
  - 2.4 Running EcMasterDemo

- Learn more about EcMasterDemo and the application framework
  → See EC-Master User Manual Chapter 3.1 "Application Framework"