



acontis technologies GmbH

EC-Master

EtherCAT Master Stack

Feature Pack EtherCAT Open Mode

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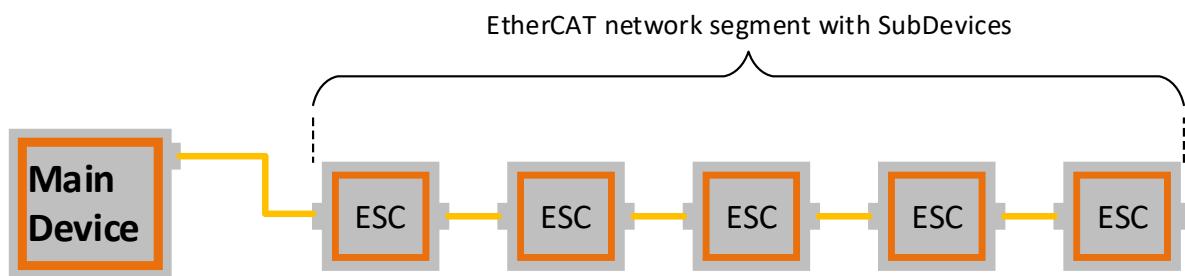
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1 Introduction

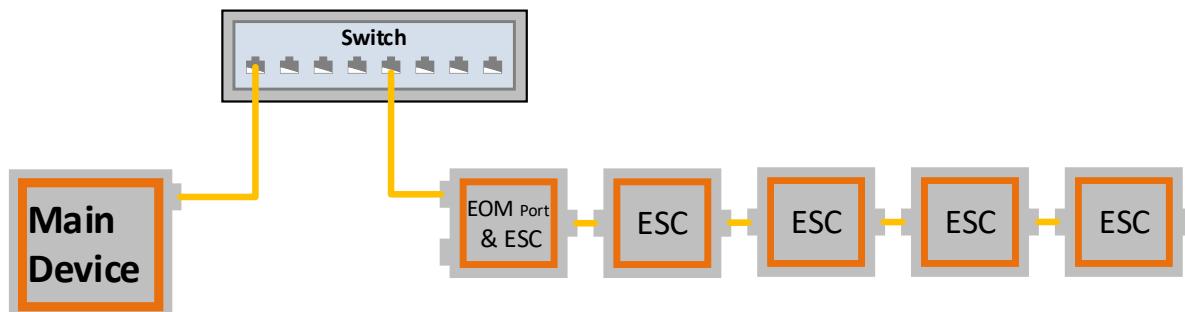
1.1 EtherCAT mode types

1.1.1 EtherCAT Direct Mode



The EtherCAT direct mode is the standard EtherCAT mode , in which the first sub-device of the network is directly connected to the EtherCAT main-device. The EtherCAT communication is embedded in RAW ethernet frames.

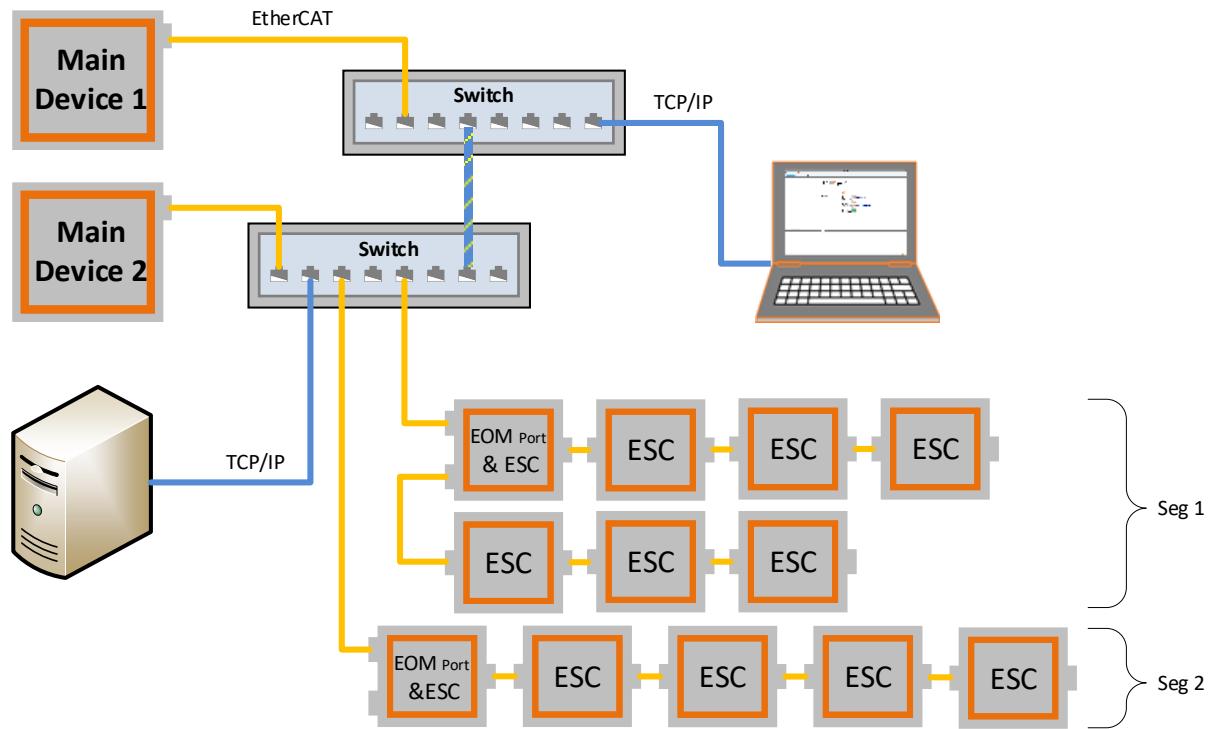
1.1.2 EtherCAT Open Mode



In this special mode the EtherCAT communication is embedded in UDP/IP frames and the EtherCAT Network segments can be operated through a standard IT network using switches.

The first sub-device in the segment has a MAC-Address, which is used to communicate with the segment.

1.2 Advantages of EtherCAT Open Mode



The advantage of this mode are the following:

- The ability to run the EtherCAT Device Protocol (EDP) and other protocols (TCP/IP) on the same Infrastructure, so that no new Infrastructure is needed.
- Main-Device does not need to be around the plant, which can be a harsh environment, and can be instead put in a server room.
- A Main-Device can control several physically separate networks using only one network card
- Multiple Main-Devices can access the same network (redundancy)

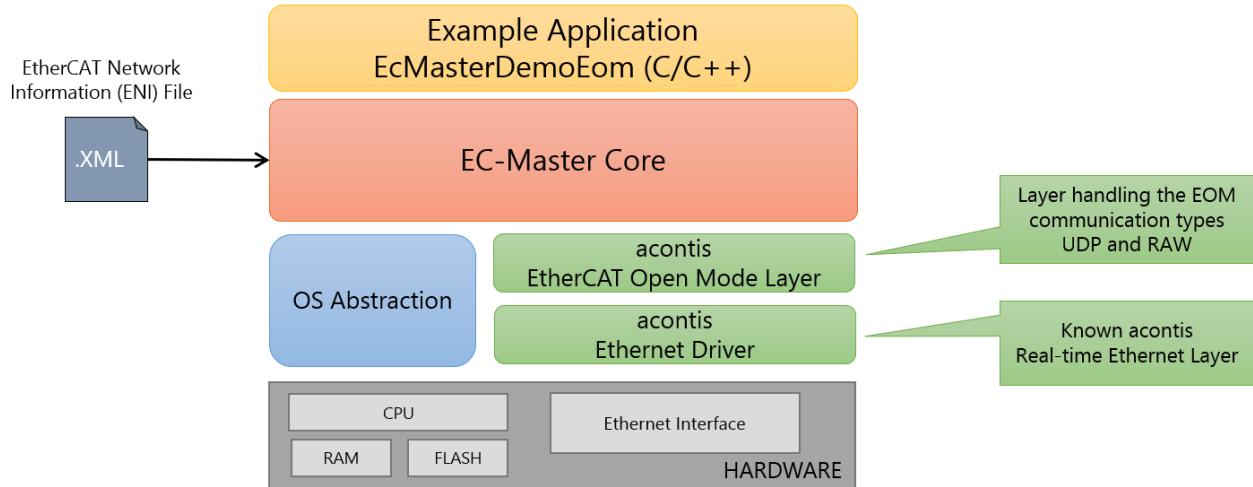
1.3 Known restrictions

EtherCAT Open mode can not be used with the following features:

- Cable Redundancy
- Master Redundancy

2 Implementation

2.1 Architecture



The standard EC-Master architecture is extended with the acontis EtherCAT Open Mode Layer (emllEom). This Layer can handle two communication types UDP and RAW.

2.2 EcMasterDemoEom

2.2.1 Command line parameters

EcMasterDemoEom <Link Layer> [-f configFileName] [-t time] [-b time] [-v level] [-a affinity] [-perf] [-auxclk period] [-sp [port]] [-log prefix] [-flash address]

e.g. **EcMasterDemoEom -sp -b 1000 -eom 1 1 udp --targetmac 00-01-05-78-20-AF --link -ndis 172.17.5.150 1 --hostip 192.168.100.1 --targetip 192.168.100.3 -t 0**

The parameters are as follows:

- **-f <configFileName>**
Path to ENI file.
- **-t <time>**
Running duration in msec. When the time expires the demo application exits completely.
<time>: Time in msec, 0 = forever
- **-b <cycle time>**
Specifies the bus cycle time. Defaults to 1000µs (1ms).
<cycle time>: Bus cycle time in µsec
- **-v <level>**
The verbosity level specifies how much console output messages will be generated by the demo application. A high verbosity level leads to more messages.
<level>: Verbosity level: 0=off (default), 1..n=more messages
- **-a <affinity>**
The CPU affinity specifies which CPU the demo application ought to use.
<affinity>: 0 = first CPU, 1 = second, ...

- **-perf**
Enable max. and average time measurement in μ s for all EtherCAT jobs (e.g. ProcessAllRxFrames).
- **-auxclk <period>**
Use auxiliary clock
<period>: Clock period in μ s (if supported by Operating System).
- **-sp [port]**
If platform has support for IP Sockets, this commandline option enables the Remote API Server to be started with the EcMasterDemo. The Remote API Server is going to listen on TCP Port 6000 (or port parameter if given) and is available for connecting Remote API Clients. This option is included for attaching the EC-Lyser Application to the running master.
- **-log prefix**
Use given file name prefix for log files.
- **-flash <address>**
Flash outputs
<address>: 0=all, >0 = slave station address