



**acontis technologies GmbH**

**SOFTWARE**

**EC-Simulator**

**Release Notes**

**V3.2.3.05**

**AT3501**

**Edition: December 5, 2025**

EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

© Copyright **acontis technologies GmbH**

Neither this document nor excerpts therefrom may be reproduced, transmitted, or conveyed to third parties by any means whatever without the express permission of the publisher. At the time of publication, the functions described in this document and those implemented in the corresponding hardware and/or software were carefully verified; nonetheless, for technical reasons, it cannot be guaranteed that no discrepancies exist. This document will be regularly examined so that corrections can be made in subsequent editions. Note: Although a product may include undocumented features, such features are not considered to be part of the product, and their functionality is therefore not subject to any form of support or guarantee.

# Contents

<b>1</b>	<b>New Features</b>	<b>4</b>
<b>2</b>	<b>Migration</b>	<b>5</b>
<b>3</b>	<b>Enhancements/bug fixes</b>	<b>6</b>

## 1 New Features

## 2 Migration

### 2.1 From V3.1

- Replace emlli8254x with emllIntelGbe and support of TTS for Intel® i210 and i211
- Rename RAS client and server to EcSimulatorRasClient, EcSimulatorRasServer
- Rename emPerfMeasInternal to emPerfMeas, old deprecated API removed

## 3 Enhancements/bug fixes

### 3.1 V3.2.3.05

#### Enhancement

- Enable file logging specifically in CEcLogging
- Add EcWrapperRust
- Rename SafeOs[Free|DeleteEvent|DeleteLock] to OsSafe[Free|DeleteEvent|DeleteLock]
- Add date and time to frames from pcap recorder on Windows

#### Fixes

- Fix Object Entry Description for wBitLen = 0 (gaps)
- Fix object type ARRAY for empty PDO assign (0x1C12, 0x1C13)
- Fix EC\_NOTIFY\_SB\_EEPROM\_ACCESS\_DENIED is printing Unknown Text instead of the right notification text
- Fix non-expedited transfer using registered CoE object transfer handler for objects not in Object Dictionary

#### Platform

- Update RtaccWin V1.1.1
- Fix -sheth command-line option of examples in user manual
- Add support for Rockchip RK3506 and Allwinner T153 and T527 to emllDW3504
- Add support for emllDW3504 on QNX7 with ARM64
- Add support for emllTemac
- Add support for Microchip PolarFire to emllGEM
- Update emllTlEnetIcssg to TI SDK11
- Add support for SSL/TLS to RAS
- Update RtaccWin V1.1.0
- Add fingerprint support to emllLAN743x
- Fix setting IRQ thread priority with Linux PREEMPT
- Fix EcMasterRasClient, EcDaq Eval artefacts in unrestricted packages for Linux
- Fix EcLinkGetEthernetAddress() in emllFslFec returning unexpected value for iMX8M (broken since V3.2.3.02)
- Fix CEcMasterDotNet.Init() returns EC\_E\_NOTSUPPORTED after Init() and Deinit() called several times
- Fix CCAT for CX53x0
- Fix thread priority class setting in OsCreateThread() on Windows
- Fix gcc 13.3 compiler warnings

## 3.2 V3.2.3.04

### Enhancement

- Add esSetLogParms()

### Fixes

- Fix occasional crash on demo shutdown with pcap recorder enabled

### Platform

- Add support for RTL8126 to emllRTL8169
- Add signed publisher information to Windows installer (MSI)
- Add full scan of Mdio bus in PhyLib
- Add support for Ti DP83869 to PhyLib
- Add support for Renesas RZ/G2L to emllSHEth
- Add connection token to RAS
- Update atemsy V1.4.35
  - Add driver initialization entry point for Kernel >= 6.6.00
  - Fix Xenomai 3.3 support
  - Fix CPSWG for Kernel >= 6.12
  - Add RiscV support
  - Fix PCI IO memory resource management Kernel >= 6.0.00
- Update atemsy V1.4.36
  - Fix PCI MSI interrupt broken since V1.4.35 for Kernel >= 6.0.00
- Fix cmake CFLAGS for native builds
- Add bEalInitDeinitByApp to emllDpdk
- Add signature check for pvInstance parameter to EcLinkFreeSendFrame() in emllIntelGbe
- Fix SGMII support for all instances in emllGEM
- Fix linkParms.eLinkMode command line parsing for emllHPE
- Fix build errors with musl toolchain on Linux

## 3.3 V3.2.3.03

### Enhancement

- Add support for Fingerprint to esSetLicenseKey()
- Add esGetLicenseFingerprint()
- Add date and time to frames from pcap recorder on Linux

### Fixes

- Fix pbyOutBuf not handled by IoControl() in EC-Wrapper
- Rename CPcapRecorder::InitInstance(...) to CPcapRecorder::StartPcapRecorder(...) (fix overloaded-virtual warning)
- Fix crash in esGetProcessData() if Process Data Image disabled

### Platform

- Rename Xilinx GEM to Cadence GEM/MACB
- Add support for Intel Alder-Lake to emllDW3504
- Add support for AllWinner T536 to emllDW3504
- Fix RtaccDevice driver eval version in protected link layer packages
- Fix missing emSetSimSlaveState() in EcMasterRasClient
- Reset adapter if RX or TX disabled on reconnection in emlIRTL8169
- Fix project files for uC3 on iMX8

## 3.4 V3.2.3.02

### Enhancement

- Add support for ENI with zero slaves

### Fixes

- Fix PDO mapping related prints of object dictionary in examples
- Fix EC\_T\_LINK\_PARMS::dwIstStackSize not used in emllRemote, emllTap
- Fix crash in LWR handler if Process Data Image at Master exceeds Process Data Image at Simulator
- Fix truncated lines in log file about skipped/dropped messages in examples
- Fix RAS server start failure handling in emllSimulator
- Fix crash in esGetSlave(Inp|Outp)VarInfoNumOf(), esGetSlave(Inp|Outp)VarInfo[Ex](), esGetSlave(Inp|Outp)VarByObject[Ex]() if network not configured
- Fix Object 0x2002, SubIndex 6 “Number of Mailbox slaves in Configuration” in Simulator Object Dictionary
- Fix “–connect” command line parsing for emllSimulator

### Platform

- Add EC\_LINKIOCTL\_GET\_INTELGBE\_STATISTICS to emllIntelGbe
- Update RtaccWin V1.1.0
- Add RAS Server as shared library for Linux
- Add UDP Mailbox Gateway Server to EC-Wrapper
- Add support for iMX8 on uC3
- Add support for Raspberry Pi 5 to emllGEM
- Add ZEROCOPY Driver mode to emllSockXdp
- Add OsPlatformMemoryBarrier for x86\_64Bit and ARM\_64Bit
- Increase stack size of RAS Server worker threads for SWIFT
- Fix occasional wrong link status disconnected in emllETSEC
- Fix print performance histogram on console for FreeRTOS
- Update atemsys V1.4.34
  - Fix for platform devices without 32-bit DMA
  - Add Device Tree Ethernet driver support for Raspberry Pi 5
  - Fix non-PCI IO Memory for PCI devices
- Fix emConfigureNetwork() over RAS returns EC\_E\_INVALIDPARMS for GenOpENI

- Add bDisableForceBroadcast to emllHpe
- Add workaround for I210 Errata 25 (Slow System Clock) to emllIntelGbe on VxWorks7

## 3.5 V3.2.3.01

### Enhancement

- Include EcDemoTimingTaskPlatform.h through EcDemoApp.h
- Fix dependencies to EcMaster, EcSimulator and EcMonitor in EcText.cpp and EcLogging.cpp
- Add EC\_NOTIFY\_EEPROM\_OPERATION on EEPROM write
- Add support for max mailbox size
- Add support for pcap recorder by default to EcMasterDemoDc on Windows

### Fixes

- Fix crash in EC-Wrapper examples for EC-Simulator HiL
- Fix lock-up in process frame while esDeinitSimulator() pending
- Fix ecwDeinitSimulator() was only called by DeinitInstance() in EC-Wrapper if RAS Server closed after Simulator
- Fix partially uninitialized data at esCoeSdoUpload() for object entry data length less than 8 bit
- Fix memory leak if esExtendSlaveCoeObjectDictionary() called multiple times
- Fix configured PDO to SyncManager assignment
- Fix crash in pcap recorder destructor if instance not previously deregistered

### Platform

- Add ZEROCOPY Driver mode to emllSockXdp
- Add Perfmeas to RFS4 and RFS5
- Create EcRtEthDemo Package
- Add Wrapper DLLs to RAS for Windows
- Add support for RK3576 and RK3562 to emllDW3504
- Add emllDpdk for Linux ARM 64Bit
- Generate SHA for delivery packages
- Add armv7-vfp-eabihf to Linux ARM 32Bit
- Add promiscuous mode setting to emllSockRaw ("–promiscuousmode")
- Add support for Intel X700 adapter family to emllDpdk
- Add emllHpe for INtime
- Add support for ET2000 to emllMultiplier
- Set bind flags to XDP\_COPY and remove unneeded structures in emllSockXdp
- Fix interrupt mode for Xenomai4
- Fix LinkOsUnmapMemory() on SylixOS
- Resolve "Fix emRasGetConnectionInfo() returning wrong SPOC Information"
- Fix crash in LinkOsInterruptDisable on VxWorks70 64Bit
- Fix crash in RAS Server receiving malformed data during connection establishment

- Fix GEM\_CLK\_CTRL handling to emllGEM on Ultrascale
- Add workaround for I210 Errata 25 (Slow System Clock) to emllIntelGbe on VxWorks

## 3.6 V3.2.2.05

### Enhancement

- Add eCnfType\_FileByApp to esConfigureNetwork()
- Add histogram export to EC-Wrapper examples
- Report missing DLLs in EC-Wrapper
- Add logging thread to EC-Wrapper
- Add Sync Manager Synchronous Mode
- Add support for random periodic frame loss simulation to esSetErrorGenerationAtSlavePort()

### Fixes

- Fix EcSimulatorSilDemo compilation with CMake
- Fix config slave list for ENI including EK1200
- Fix crash on memory access at slave above 0xA000
- Fix ENI parser error handling
- Fix multiple port connection settings parsing from EXI
- Fix cycle time in DS402 simulation
- Fix frame error simulation for EC-Simulator SiL
- Fix APPL\_InputMapping(), APPL\_OutputMapping() not called if Master sends cyclic commands with different logical address
- Call OsMeasCalibrate() only once within esInitSimulator()
- Fix EC\_T\_SB\_STATUS\_NTFY\_DESC, esGetCfgSlaveInfo() for EK1200, EL9011

### Platform

- Update RtaccWin V1.0.9
- Add timing task support for SWIFT (Apple)
- Add parameters for communication thread of RAS Client
- Reduce timeout waiting for link connected in emllICSS
- Add EcSimulatorHilDemoGuiDotNet
- Add instance identification by PCI location for emllNdis
- Fix max frame len for emllTap
- Fix emllRemote --rxbuffercnt command line parsing in examples
- Fix access violation during emllCCAT initialization with invalid parameters
- Fix crash in OsDeleteThreadHandle() on Linux with musl libc
- Fix resource leak from interrupt initialization on VxWorks

## 3.7 V3.2.2.04

### Enhancement

- Add support for DC System Time Difference 0x092C, Bit 31
- Call APPL\_InputMapping() and APPL\_OutputMapping() only once per cycle
- Add synchronization of process data update to cyclic frame
- Add esGetCfgSlaveSmInfo()

### Fixes

- Change ESC DC CtlLimit reached log message severity from EC\_LOG\_LEVEL\_ANY to EC\_LOG\_LEVEL\_VERBOSE\_CYC
- Fix ESC port TX frame logging and error simulation
- Fix platform dependent performance regression (broken since V3.2.2.03)

### Platform

- Add EC\_OS\_NAMESPACE
- Add support for Xenomai4 ARM 64Bit
- Add RAW mode to emllEom
- Add support for second port to emllCPSWG on Linux (Ti AM64x)
- Add support for WAGO PFC200 and CC100 with Ethernet Switch Chip
- Fix support for MacOS
- Fix emllGem bNoPhyAccess
- Add bNoPhyAccess parameter to emllFslFec
- Remove bpf dependency from emllSockXdp
- Fix CRC error handling of emllDW3504 for GMAC4.x, ...
- Add support for INtime Distributed RTOS
- Fix emllIntelGbe link reconnect
- Update atemsys V1.4.32
  - Add support for dsa driver with Device Tree (insmod atemsys bRegisterDtbNetDevice=1)
  - Fix Device Tree support for Kernel > 6.1.00
  - Add support for TI AM64 CPSWG Second Port
- Fix compiler error due to INVALID\_SOCKET defined in EcOsPlatform.h on Linux
- Fix occasional 5ms freeze in emllTiEnetCpswg on FreeRTOS
- Fix esGetCfgSlaveInfo() over RAS on PPC

## 3.8 V3.2.2.03

### Enhancement

- Add command line parameter “-printvars” to EcSimulatorHilDemo
- Add support for ENI with invalid Mailbox States settings
- Add support for emllDpdk to EC-Wrapper
- Change esSetVoeReceiveCallback() to return EC\_E\_NO\_VOE\_SUPPORT instead of EC\_E\_NO\_MBX\_SUPPORT in case of device emulation
- Add support for AL Status IRQ in ESC register 0x0210:3 (0x08)
- Increase pcap recorder default buffer size from 50 to 1000 frames and write interval from 1ms to 50ms
- Replace OsDbgAssert() with assert() in xmlparse.cpp
- Add cmake build files for Linux
- Add support for cable redundancy to EC-Wrapper
- Add support for EC-Simulator SiL license key parameter “–lic” to EcMasterDemoPython
- Add EC\_NOTIFY\_SLAVE\_ERROR\_STATUS\_INFO on AL Status Error Bit change (ESC register 0x0130.4)
- Add support for DCM BusShift to EC-Simulator HiL
- Add esSetSimSlaveState()
- Add slave state change delay example
- Add support for SyncManager Watchdog

### Fixes

- Change location of WIBU\_PHDR\_GAP for EC-Simulator Dongled for Linux
- Fix support for internal DS402 application with default object dictionary
- Use data type identifier 0x000A (DEFTYPE\_ARRAY\_OF\_BYTE) for data type name “ARRAY [0..XXX] OF USINT” (DEFTYPE\_ARRAY\_OF\_USINT not defined in ETG.1020)
- Fix license check for EC-Simulator HiL protected with multiple linklayer instances
- Fix partially uninitialized data at CoE SDO upload in SubIndex0 with complete access
- Fix CoE SDO download with complete access to partial writeable objects
- Fix memory leak in pcap recorder re-usage
- Fix EoE ping handler on Linux
- Fix crash on CoE read/write for objects without data var pointer
- Fix missing EcMbxGatewaySrv.h in packages
- Fix support for CoE Object Dictionary Data Types REAL, LREAL

### Platform

- Add ATEMRAS\_T\_SRVPARMS::dwMaxQueuedNotificationSize
- Add emllIntelGbe for QNX71 ARM\_32Bit
- Add support for EC\_NOTIFY\_SLAVE\_STATECHANGED, EC\_NOTIFY\_SLAVE\_ERROR\_STATUS\_INFO to RAS Client on PPC
- Update RtaccWin V1.0.8
- Reduce Socket timeout if IP address is not available

- Add emllEom supporting EtherCAT Open Mode
- Add support for Xenomai4
- Update atemsys V1.4.31
  - Set license to “SPDX-License-Identifier: GPL-2.0+ WITH Linux-syscall-note”
- Add protocol version negotiation to emllRemote
- Add device IDs for I219LM and I219V
- Replace OsPrintf() with EcLogMsg() in EcSocket
- Fix handling of EC\_T\_LINK\_PARMS\_DW3504::dwRxDmaDesCnt, dwTxDmaDesCnt in emllDW3504
- Reduce large memory allocations in RAS Server
- Fix EcLinkOpen() sporadically returning EC\_E\_TIMEOUT in emllBcmGenet

## 3.9 V3.2.2.02

### Enhancement

- Remove obsolete fallback to AtEcat.dll and add fallback to load DLL without explicit full path (DLL searched using PATH environment variable instead) in EC-Wrapper
- Add support for multi axis per slave (DS402)

### Fixes

- Fix missing string termination in GetCfgSlaveEoeInfo(), GetSlaveProp() and CoeReadObjectDictionary() if string length equals buffer size
- Fix auto connection of network adapters in Mixed Mode
- Fix cable redundancy in Mixed Mode

### Platform

- Add EC\_LINKIOCTL\_FORCE\_LINK\_STATUS
- Add EC-Master shared library for QNX
- Add EC\_LINKIOCTL\_GET\_PCI\_INFO to emllIntelGbe for Windows and Linux
- Add support for Semidrive D9 to emllDW3504
- Add support for emllDW3504 on Intel Tiger-Lake
- Fix CPU affinity for up to 64 cores
- Fix link open failed in emllCCAT for some Beckhoff CX
- Add RtaccDevice\_DmaFree() to Windows LinkOsFreeDmaBuffer()
- Fix ecatGetSrcMacAddress() returns wrong MAC address if link down for emllCmsisEth
- Update atemsys V1.4.30
  - Fix for Kernel > 6.4.00
  - Fix for systems without 32-bit DMA

## 3.10 V3.2.2.01

### Enhancement

- Add EC\_IOCTL\_GET\_LINKLAYER\_MODE to EC-Simulator
- Add EC-Simulator HiL for RTX64
- Add support for multi instance to EC-Simulator SDK Protected
- Add “-readod ...”, “-readvars ...” to examples

### Fixes

- Fix performance measurement: JOB\_Total was sometimes bigger than Task Duration (JOB\_Total + App)
- Fix memory corruption if ENI file contains more than 64 cyclic frames

### Platform

- Add support for EC\_NOTIFY\_MBSLAVE\_COE\_SDO\_ABORT, EC\_NOTIFY\_SLAVE\_INITCMD\_RESPONSE\_ERROR, EC\_NOTIFY\_MBSLAVE\_INITCMD\_TIMEOUT, EC\_NOTIFY\_MASTER\_INITCMD\_RESPONSE\_ERROR to RAS on PPC
- Add support for PENTIUM4llvm\_SMP on VxWorks70
- Add support for EC\_NOTIFY\_SB\_MISMATCH, EC\_NOTIFY\_FRAME\_RESPONSE\_ERROR, EC\_NOTIFY\_SLAVES\_PRESENCE to RAS Client on PPC
- Update RtaccWin V1.0.7
- Add support for STM32H743 on uC3
- Move AtXmlParser.cpp and .h to SourcesCommon
- Add emllSockXdp (Linux AF\_XDP sockets)
- Add missing notifications to marshalNotify() switch case that may cause an assertion failure
- Fix crash in EC-Wrapper .NET with multiple RAS connections after first connection closed
- Fix emllNdis interrupt mode (broken since V3.2.1.05)
- Fix RAS Client performance issue
- Fix occasional crash in emllCPSWG on Jacinto and AM654x

EC\_NOTIFY\_HC\_TOPOCHGDONE,  
EC\_NOTIFY\_SLAVE\_PRESENCE,

## 3.11 V3.2.1.05

### Enhancement

- Add support for EC\_T\_UINT64 (“0x%016llx”) to EcSnprintf()
- Add support for pcap recorder by default to examples on INtime6, Linux
- Add log message on receiving EtherCAT commands exceeding EtherCAT frame
- Update RtaccWin V1.0.6
- Add CycFrameRxCallbackWrapper to EcSimulatorSilDemo
- Add support for EC-Simulator SiL Protected to EC-Wrapper
- Add support for EC\_LINKIOCTL... to esIoCtl()

### Fixes

- Fix bus cycle time below 1 ms in examples on RTOS-32
- Fix notification handlers not called after first client deregistered

- Fix simulated slave port link status in Mixed Mode
- Fix crash if LRD/LWR/LRW starts after FMMU start
- Terminate EcSimulatorHilDemo after evaluation time elapsed (EC\_E\_EVAL\_EXPIRED)
- Replace assert() with OsDbgAssert() in xmlparse.cpp
- Fix ARMW, FRMW WKC

## Platform

- Add support for Ti AM243x to emllTiEnetIcssg on FreeRTOS
- Add QNX8 support
- Add support for Yocto Linux
- Add EC-Simulator HiL FP Real-time Accelerator for Windows
- Update atemsys V1.4.29
  - Add support for TI AM64 CPSWG
  - Fix PCI dma\_coherent bit handling for Kernel between 4.15.0 and 5.4.0
- Add PCI device IDs for Intel DWMAC 43a2 and 43ac
- Add emlldW3504 for VxWorks x86
- Add support for emllBcmNetXtreme to EC-Wrapper
- Add support for RISC-V on Microchip Polar Fire
- Add emlldDpdk for Linux x86 64Bit
- Add emllVlan
- Replace EcatDrv with RtaccDevice
- Add emllCPSWG on TI AM64x and TI AM62x
- Add support to set frequency using OsMeasCalibrate() multiple times on Linux
- Fix PHY initialization for 8168H/8111H in emllRTL8169
- Enable bus master and memory space in PCI command register on QNX
- Change name of TI Jacinto 7 from “TI J721E” (eCPSWG\_J721E) to “TI TDA4x (Jacinto 7)” (eCP-SWG\_TDA4X) in emllCPSWG
- Add EC\_T\_LINK\_PARMS\_DW3504::bNoPhyAccess for emlldW3504
- Fix EcLinkClose() blocked until frame received in emllTap
- Fix EcLinkRecvFrame() does not return if no frame received in emllTap
- Fix MAC Protected License Check in emllBcmGenet
- Fix emllIntelGbe returns EC\_E\_NOMEMORY if cable redundancy and bResetOnDisconnect is used
- Fix start with link disconnected for emllBcmNetXtreme
- Fix LinkOsAllocDmaBuffer() fails on RtaccWin due to wrong RtaccWin InstanceID in case of multiple RtaccWin devices
- Disable OsDbgAssert(...) in EcSimulator.dll on Windows
- Fix undefined symbol LinkOsGetPciInfo in emllBcmNetXtreme for Linux
- Fix legacy parameters handling in emllIntelGbe
- Fix missing PCI info for Real-time Ethernet Drivers on Windows
- Add OsReleaseLinkLayerRegFunc to Linux

- Fix PHY handling in case of link disconnected for emllCPSW, emllDW3504, emllFslFec, emllGEM, emllICSS, emllRTL8169

## 3.12 V3.2.1.04

### Enhancement

- Update Expat V2.6.0

### Fixes

- Fix no slaves found in bus scan for EC-Simulator SiL on RTOS-32
- Fix PHY reset on re-connect EC-Simulator HiL with emllIntelGbe leads to link loss at Master
- Add missing emllSnarfGpp to EC-Simulator HiL for VxWorks70 packages
- Fix EEPROM CRC error for slaves with identification value and generic EEPROM content
- Fix SDO complete access download for array of USINT

### Platform

- Add EC\_T\_LINK\_PARMS\_INTELGBE::bNoPhyCtrlOnConnect to emllIntelGbe
- Fix emllIntelGbe PHY reset blocked handling for I225, I350
- Add emllBPF for QNX7.1
- Change Real-time Ethernet Driver package nomenclature from “EC-Master-…”, “EC-Simulator-…” to “EC-RtEth-…”
- Add EC\_COMPAREBITS
- Fix legacy parameters handling in emllIntelGbe
- Fix emllTap initialization
- Disable LinkRecvFrame(...) in emllTap in case of EcLinkMode\_INTERRUPT
- Fix RX stuck in emlli8254x in case of frames exceeding buffer size
- Fix memory corruption in RAS Server in emNotifyApp if dwInBufSize exceeds LARGEST\_NOTIFICATION

## 3.13 V3.2.1.03

### Enhancement

- Disable SSC OP\_PD\_REQUIRED
- Set calling convention at callback function types
- Add support for SylixOS on ARM64
- Add support for EtherCAT in UDP
- Add esSetSlaveCoeObjectTransferCallbacks() example
- Add support for esSetSlaveCoeObjectTransferCallbacks() for empty Object Dictionary after esClearSlaveCoeObjectDictionary()
- Add pdwOutDataLen, bCheckReadAccess, pdwErrorCode to EC\_T\_PF\_COE\_READ\_CB and bCheckWriteAccess, pdwErrorCode to EC\_T\_PF\_COE\_WRITE\_CB
- Enable DC unit for ESCs if DC Cycle Time configured
- Improve hash table performance

### Fixes

- Abort CoE SDO Download to SubIndex 0 if download value exceeds max SubIndex from object description
- Fix invalid read in EC\_COPYBITS at end of pbySrc
- Fix invalid read in esConfigureNetwork() for slaves with CoE Object 0x10F3
- Fix invalid read in esConfigureNetwork() for slaves with default dictionary
- Fix SDO complete access upload for array of USINT
- Disable frame polling in interrupt mode
- Fix CoE Object Dictionary DataTypes
- Fix missing peer disconnection in esSetLinkDownGenerationAtSlavePort(), esResetLinkDownGenerationAtSlavePort()
- Fix mailbox repeating
- Fix EcMasterDemoMotion and EcSimulatorSilDemoMotion command line parsing if started with DemoConfig.xml (regression since V3.2.1.01)
- Fix EC\_T\_MBXTFER::MbxData from esCoeGetEntryDesc(), ...
- Fix EcSimulatorHilDemo on VxWorks69
- Add EC\_NOTIFY\_SLAVE\_STATECHANGED for simulated slaves with firmware
- Fix EC-Simulator Dongled on Linux stops after 10 minutes

## Platform

- Add support for emGetSlaveInpVarByObjectEx() and emGetSlaveOutVarByObjectEx() to RAS
- Add support for TI J721E to emllCPSWG
- Add emRasSrvSetLogParms()
- Add emllTap
- Add support for TI CPSWG AM6x and Jacinto 7 (j784s4) based on Enet LLD on FreeRTOS (emllTiEnetCp-sw)
- Add support for AMD Xilinx Vitis on FreeRTOS
- Add support for TI AM65x to emllCPSWG on Linux
- Add EC\_LINKIOCTL\_SET\_MSECCOUNTERPTR to emllGEM
- Add emllDW3504 for Xenomai3 ARM\_64Bit
- Add support for EC\_NOTIFY\_CLIENTREGISTRATION\_DROPPED, EC\_NOTIFY\_CYCCMD\_WKC\_ERROR, EC\_NOTIFY\_COE\_MBXSND\_WKC\_ERROR, EC\_NOTIFY\_SLAVE\_NOT\_ADDRESSABLE, EC\_NOTIFY\_ALL\_DEVICES\_OPERATIONAL to RAS client on PPC
- Add device IDs for I219LM and I219V
- Add support for emUnregisterClient(), EC\_IOCTL\_UNREGISTERCLIENT to RAS Client on PPC
- Update atemsys V1.4.28
  - Fix PCIe compatibility for atemsys < V1.3.5
  - Fix support for Kernel > 6.05.00
  - Fix ATEMSSYS\_IOCTL\_CPSWG\_CMD Kernel version
  - Add support for Device Tree Ethernet driver to CPSWG
  - Fix support for arm/aarch64 Kernel >= 6.00.00
  - Fix of \_dma\_configure version
  - Add ATEMSSYS\_IOCTL\_IOMEM\_CMD for Kernel mode access to protected registers

- Add ATEMYS\_IOCTL\_CPSWG\_CMD to configure K3\_UDMA\_CPSWG channels, flows and rings
- Add emllRemote for Linux, Windows
- Fix OsWaitForEvent(..., dwTimeout) on RTOS-32
- Fix EC-Simulator HiL EC-Wrapper
- Fix missing DLLs in EC-STA packages
- Fix dependency of compiled OsLayer to Sources/OsLayer on Windows
- Deactivate Filters in the NDIS driver
- Fix emCoeGetODList(), emCoeGetObjectDesc(), emCoeGetEntryDesc() for RAS Client on PPC
- Remove duplicate warning of missing PREEMPT RT patch on Linux
- Fix long timeout at RAS Client disconnection after socket shutdown
- Fix emNotifyApp() over RAS without emRegisterClient() at RAS Client
- Fix EcMbxGatewayClnt uploads not existing object for internal config slave cache
- Fix EcMbxGatewayClnt logging (EC\_T\_MBX\_GATEWAY\_CLNT\_CONDESC::LogParms)
- Fix erroneously deregister client in RAS Server for previously dropped client
- Fix RAS Client EC\_LOG\_LEVEL\_INFO\_API logging

## 3.14 V3.2.1.02

### Enhancement

- Add HiL/SiL-specific Quick Start Guide
- Add Sync Manager polling if AL Event disabled in Sync Manager Control Register
- Skip physical slaves at license check slave count
- Add esGetSlaveInpVarByObjectEx(), esGetSlaveOutpVarByObjectEx()

### Fixes

- Fix EcMasterDemoMotion command line parsing if started with DemoConfig.xml (regression since V3.2.1.01)
- Fix timing task CPU affinity
- Fix potential naming conflict of Expat library
- Fix crash in EcSimulatorSiLDemo on shutdown with pcap recorder enabled
- Fix support for MAC independent license key (regression since V3.1.4.09)
- Fix process data partially not updated due to wrong FMMU copy length
- Fix EC\_T\_MBXTFER::eTferStatus update in esCoeGetEntryDesc(), esCoeSdoDownloadReq(), esCoeSdoUploadReq(), esCoeGetODList(), esCoeGetObjectDesc()
- Fix missing context for esSetSlaveCoeObjectTransferCallbacks()
- Fix console logging freeze on RTOS-32 (regression since V3.1.4.05)
- Enable DC unit for ESCs with 3 or more ports
- Fix slave data lookup error if configured station address at simulator differs from master
- Fix cycle time performance measurement is implemented in eUsrJob\_SendAllCycFrames instead of eUsrJob\_StartTask (regression since V3.1.2.03)
- Fix registered client lookup on notification
- Fix esGetSlaveId(), esGetSlaveFixedAddr() for SIMULATOR\_SLAVE\_ID

- Fix missing string termination in SDO value log message of DEFTYPE\_VISIBLESTRING in CoeReadObjectDictionary() in examples
- Fix Master OD reading canceled at RX PDO mapping and TX PDO mapping in CoeReadObjectDictionary() in examples

### Platform

- Remove support for T-Kernel and eT-Kernel
- Add FP Real-time Accelerator for Windows
- Add support for Broadcom BCM5719 (emllBcmNetXtreme)
- Remove obsolete EC\_LINKIOCTL\_REGISTER\_FRAME\_CLBK, EC\_LINKIOCTL\_UNREGISTER\_FRAME\_CLBK
- Add MAC Protection for Rockchip RK3588 and RK3568
- Use poll() or epoll() instead of select() for sockets
- Add support for i.MX93 to emllFslFec
- Fix support for KSZ9131 (disable EEE in Phylib)
- Add EC\_T\_LINK\_PARMS\_GEM::bNotUseCacheSync to fix performance issue with emllGEM e.g. on older systems by disabling internal LinkOsCacheDataSync() (default: enabled)
- Add support for MAC protection to emllDW3504 on Rockchip RK3399
- Fix crash in rt\_task\_inquire due to bug in Xenomai3 API
- Fix emllIntelGbe EcLinkGetSpeed()
- Fix DW3504 Altera Cyclone Performance issue by turn off cache sync
- Fix memory leak in emllAlteraTSE
- Fix emRasSrvStop hangs on EC-Win(RTOS-32)
- Configure TTS interrupt only if EC\_T\_LINK\_PARMS\_ICSS::TtsParms::pfnStartCycle set
- Fix emlIRZT1 MAC address reset
- Fix RAS server on RTX64 (broken since V3.1.4.01)
- Fix threading on TI-RTOS AM65x (e.g. RAS server starved)

## 3.15 V3.2.1.01

### Enhancement

- Add CopyInfo to EC\_T\_PROCESS\_VAR\_INFO
- Change IPv4 parameter variables type from EC\_T\_DWORD to EC\_T\_IPADDR
- Remove legacy performance measurement APIs
- Extend EC\_T\_SIM\_SLAVE\_CFG\_INFO, EC\_T\_SIM\_SLAVE\_STATUS\_INFO
- Add EC\_T\_SIMULATOR\_INIT\_PARMS::bApiLockByApp
- Add pdwVersionType parameter to esGetVersion()
- Rename RAS client and server to EcSimulatorRasClient, EcSimulatorRasServer
- Rename esPerfMeasInternalXxx to esPerfMeasXxx
- Fix crash in esConfigureNetwork() if network already configured
- Fix occasional AoE mailbox data corruption

- Fix missing SM\_CHANGE\_EVENT when byte containing Sync Manager Enable Bit (0x0806, 0x080E, 0x0816,...) is written
- Fix reentrancy of esInitSimulator() after esInitSimulator() was called with bad parameters

#### Platform

- Fix emllIntelGbe EcLinkGetSpeed()
- Add pdwSpeed parameter to EcLinkGetSpeed
- Add support for 64Bit DMA physical address on INtime6
- Add szLoadPath to EC\_T\_LINK\_PARMS
- Add QNX SMMUMAN support
- Add support for Rockchip DW3504
- Add support for IRQ CPU affinity on Linux
- Add device IDs for Intel Pro/1000 (i8254x) I226
- Add support for Xilinx KR260 SGMII Port
- Fix INVALID\_STATE in CEcWrapperDotNet::DeinitInstance() if started with MbxGatewaySrv
- Add support for SGMII on Marvell 88E1510 for Intel DW3504
- Fix DW3504 Rockchip Clocks and second Instance
- Fix EcatDrv to support KeTimer period < 16ms

## 3.16 V3.2.0.03

#### Enhancement

- Use default TaskId 0 if eUsrJob\_StartTask called with EC\_NULL
- EC\_COPYBITS\_INLINE declare EC\_T\_BYTE\* pbySrc as const
- Add esGetCfgSlaveEoeInfo()
- Add support for CoE object entry gaps

#### Fixes

- Fix IntelGbe EclinkOpen() faulty log messages
- Fix RAS protocol corruption in case of concurrent send requests at server
- Fix occasional lock-up at stopping acceptor thread in emRasSrvStop(...)
- Fix crash in EC-Wrapper .NET if variable size exceeds 512 bytes
- Fix text translation crash in EC-Wrapper
- Fix force process data after FMMU start
- Fix CoE upload error also ignored if ignore CoE download set

#### Platform

- Add support for ecatGetCfgSlaveInfo() to RAS client on PPC
- Add Device ID for Intel Pro/1000 I82545EM Copper
- Update atemsys V1.4.25
  - Add IOCTL\_INT\_CPU\_AFFINITY
  - Add Device Tree Ethernet driver support for RockChip

## 3.17 V3.2.0.02

### Enhancement

- Add “-maxbusslaves” parameter to examples
- Add SSC\_APPL-callback EC\_T\_SLAVE\_SSC\_APPL\_DESC::pfnMainInit for APPL\_MainInit
- Add simulator id and slave address to EC\_PF\_SSC\_APPL callbacks
- Set calling convention at EC\_PF\_SSC\_APPL callbacks
- Add esEoeSendFrame() and support for pfnEoeReceive and pfnEoeSettingInd
- Add support for APRW and FPRW
- Add esSetSlaveAoeObjectTransferCallbacks()
- Add esGetSimSlaveInfo()
- Fix support for MAC independent license key
- Fix support for ULINT datatype from EXI (e.g. Timestamp Object 0x10F8)
- Fix esGetMasterState() at startup
- Fix duplicated frames logging

### Fixes

- Fix value distribution for min and max bin in performance measurement histogram
- Remove systematic delay of 250ms within emConfigLoad(), emConfigureMaster(), emConfigExtend(), emDeinitMaster(), emRescueScan(), emSelfTestScan()

### Platform

- Microsoft ® Windows ® Visual Studio ® project files updated to VS2015
- Add EC\_T\_LINK\_PARMS::dwLinkSpeed
- Add wait within EcLinkRecvFrame() for all previously sent frames returned to emllProxy
- Fix API call over RAS delayed if a parallel RAS connection is broken
- Add support for STM32MP135 to DW3504
- Add PartialImage libraries for VxWorks70 linklayers
- Add support for ecatNotifyApp() from RAS Server application to RAS Client application
- Change connection type from UDP to TCP for emllProxy
- Fix memory leak in RAS Client if connection lost while EoE-Endpoint active
- Fix EC\_COPYBITS out-of-bounds read from pbySrc
- Fix all printf replaced with EcLogMsg in LinkOsLayer for VxWorks
- Add esVoeSend() over RAS
- Update atemsys V1.4.24
  - Fix PCI bars
  - Add Device Tree Ethernet driver support for STM32mp135

## 3.18 V3.2.0.01

### Enhancement

- Update to expat V2.4.9
- Obsolete .NET and Python interface classes, enums and methods removed

### Platform

- Add IstStackSize to all Linklayers parameters
- Change Mutex default setting for Linux
- Add support for VxWorks MSI
- Add PartialImage libaries for VxWorks70
- Update atemsys V1.4.22
  - Fix Build Warnings
  - Fix kernel config depending irq structures
  - Fix kernel version 4.12 to 4.15 for handle of dma\_coherent bit
  - Add IOMMU support, new mapping to userspace active and tested for kernel > 5.4, use old mapping with ATEMSYS\_LEGACY\_DMA=1 define or activate new mapping with ATEMSYS\_LEGACY\_DMA=0 define for older kernel

## 3.19 V3.1.4.08

- Add EC-Simulator Linux HiL x86 32 Bit Dongled
- Add esSendSlaveCoeEmergency()
- Fix JobTask cycle time in Python examples
- Fix performance measurement in EcSimulatorHilDemoPython
- Fix assert on cyclic frame processing for slaves with sync units containing empty PDOs only
- Fix EC\_T\_CFG\_SLAVE\_INFO::wNumProcessVarsInp, EC\_T\_CFG\_SLAVE\_INFO::wNumProcessVarsOutp from esGetCfgSlaveInfo() due to erroneously skipped entries by variables not assigned to any slave

### Platform

- Add support for VxWorks MSI
- Fix lock-up in emllProxyEcLinkClose() on Windows

## 3.20 V3.1.4.07

- Call myAppWorkpd() after cyclic frame processing in EcSimulatorHilDemoMotion in Interrupt Mode
- Fix performance measurement in EcSimulatorHilDemoMotion

### Platform

- Add EcSimulatorHilDemoMotion for INtime6, QNX7, QNX71, VxWorks70
- Fix VxWorks RTP AtemSys pipe release
- Fix memory violation leading to undefined behavior like crash or erroneous timeout during DC related InitCmd on VxWorks70 PPC and x86 with emllSnarf, SystemTime() since VxWorks70SR660 and DMA on x86 since VxWorks70vw2203

## 3.21 V3.1.4.06

- Add error simulation between real slaves
- Add support for 12 slaves license limit
- Fix slave information prints contain “ERROR: Not found” in examples
- Increase log buffer in examples
- Fix EcSimulatorHilDemoMotion parameter handling
- Fix CoE emergency if SOE\_SUPPORTED in SSC (SOE\_EMERGENCY\_SUPPORTED=0)
- Remove BlockNode handling from CEmNotification
- Fix crash in case of invalid ENI containing a hot connect group head slave with physical address equal to zero

### Platform

- Add link status state machine to emllBcmGenet
- Add support for Linux ARM 32 Bit to emllBcmGenet
- Force disconnection using PHY loopback for emlli8254x if ResetOnDisconnect not set
- Add support for emllTiEnetCcssg on AM64xEVM with FreeRTOS
- Add emlldW3504 for Xenomai
- Select ‘ECAT Protocol Driver’ installation on Windows by default if not currently installed
- Fix PCI link layer support for QNX ARM 32 Bit
- Add DCM MasterShift for QNX
- Fix missing ATEMRAS\_NOTIFY\_CONNECTION EMRAS\_EVT\_SERVERSTOPPED on connection termination by server
- Fix TX hang in emlli8254x for I219 after uncontrolled termination
- Fix lock-up in EC-Wrapper RAS connection on termination by server
- Set default stack size to 0x8000 for 64 Bit architectures

## 3.22 V3.1.4.05

- Add frame RX time to DC simulation
- Add EC\_LINKIOCTL\_GETONTIMER\_CYCLETIME, EC\_LINKIOCTL\_SETONTIMER\_CYCLETIME, EC\_LINKIOCTL\_ONTIMER to SiL
- Fix compiler errors for EXCLUDE\_EC\_SIMULATOR\_HIL, EXCLUDE\_EC\_SIMULATOR\_SIL, EXCLUDE\_INTERFACE\_LOCK, EXCLUDE\_MASTER\_OBD and INCLUDE\_PERF\_MEAS
- Set EC-Master cycle time as EC-Simulator SiL cycle time by default in emInitMaster()
- Fix missing loop closed info in DL status for initially disconnected ports
- Fix no messages in error log if NOPRINTF defined
- Set cycle time parameter in EcSimulatorHilDemo

### Platform

- Add Xenomai3 ARM 64Bit support to RTL8169
- Add support for Universal WIBU Code
- Add emllBcmGenet for Raspberry PI 4 (BCM2711)

- Fix reset MAC address at DW3504
- Fix memory leak in OsCreateEvent() on Linux, Xenomai, RTEMS and SylixOs in case of semaphor initialization error

## 3.23 V3.1.4.04

- Add pOsParms to EC\_T\_LINK\_PARMS\_SIMULATOR
- Fix EcSimulatorHilDemo startup error
- Fix EcSimulatorSilDemo startup error

### Platform

- Add support for Xenomai3 ARM 64Bit
- Add support for VxWorks70

## 3.24 V3.1.4.03

- Fix access to some object types by implicitly pad entries to even 16bit memory addresses (SSC\_OBJ\_WORD\_ALIGN)
- Add “-oem” command line parameter to examples
- Add AtesRasClient
- Add notification logging (e.g. slave state change) to EcSimulatorHilDemo
- Fix memory leak in SSC on AoE read and SDO info
- Fix memory leak in esInitSimulator if called with invalid parameters
- Fix EC\_IOCTL\_ISLINK\_CONNECTED on start

### Platform

- Increase resolution for OsSystemTimeGet() on Windows
- Add bDisablePromiscousMode and bDisableForceBroadcast parameters to emllNdis
- Add absolute path support alternative to OsGetLinkLayerRegFunc for VxWork70
- Fix counter overrun in OsQueryMsecCount on VxWorks69 PENTIUM4
- Fix RTOS-32 is not supporting cycle times below 1000us (broken since V3.1.1.06)
- Fix occasional crash in RAS Server on EC\_IOCTL\_UNREGISTERCLIENT
- Fix occasional crash on emRasClntRemoveConnection after emRasSrvStop
- Fix Interrupt Mode support for emllProxy
- Fix Multi Tasks Configuration doesn't work with emllNdis Linklayer
- Fix memory leak on RAS socket disconnect while API call pending
- Fix to block emRasClntRemoveConnection, emRasSrvStop until all worker threads terminated

## 3.25 V3.1.4.02

- Add performance measurement level to -perf command line parameter
- Add emGetMemoryUsage over RAS
- Add link layer parameters help to Python example application
- Fix crash on simulator restart in OPERATIONAL
- Fix crash with DS402 and EXI containing Object Dictionary
- Fix occasional crash on concurrent call of esPowerSlave and EC-Simulator frame processing
- Fix occasional crash in emllSimulator IST
- Fix invalid write to second byte in buffer on esCoeSdoUpload with datalen = 1
- Fix invalid temp data read at end of CoE object type BYTE Array [0..n]
- Fix blocking API handling over RAS
- Fix command line contains unexpected application name in RTOS-32 config files

### Platform

- Add Xenomai support
- Add MAC protection to emllFslFec for i.MX8 and i.MX8m
- Add “EcatDrv for Optimized Link Layers” to EC-Simulator HiL User Manual
- Fix CPSW transmit channels to work with acontis CPSW Linux driver patch

## 3.26 V3.1.4.01

- Add esVoeSend, esSetVoeReceiveCallback
- Add write support to read-only CoE objects
- Fix access to CoE SubIndex on odd word address
- HiL: Fix start with link disconnected and link reconnection
- Fix mailbox queue entries memory leak (SSC related)
- SiL: Increase IST stack size from 0x4000 to 0x8000
- SiL: Fix occasional lock-up in IST
- Don't call OsMeasCalibrate() if performance measurement is disabled
- Rename PerfMeas distances to offsets
- Fix AoE support for PPC

### Platform

- Fix i8254x interrupt mode on ARM/AARCH64
- Fix AoE support for PPC
- Updated to ECAT NDIS Protocol Driver Setup V3.1.3.4. Hide command window during driver installation
- Updated to atems V1.4.20
  - Fix support for CMA (Contiguous Memory Allocator) for kernel > 4.9.00

## 3.27 V3.1.3.03

- Fix topology info if master assignes other addresses than in ENI/EXI
- No error on ScanBus request
- Add EC\_T\_MASTER\_INFO::dwMasterStateSummary
- EC\_T\_MASTER\_INFO::BusDiagnosisInfo data available even if compiled with EXCLUDE\_MASTER\_OBD
- Cycle time and JOB\_Total timer missing in EcMonitor since V3.1.2.10

### Platform

- Updated to atemsy V1.4.18
  - Remove obsolete ARM cycle count register(CCNT)
  - Fix PCI driver do registration for all Ethernet network adapters
  - Add modul parameter AllowedPciDevices to adjust PCI driver
- Add CPU affinity support to Link Layers supporting interrupt mode

## 3.28 V3.1.3.02

- Support ENI file with CU2508 only
- Alias can be used for all configured address command types (FPRD, FPWR, ...)
- Use station address as alias address in simulated default EEPROM (if EEPROM for the slave not explicitly set in EXI)
- Return simulated frame to master before post processing

### Platform

- Add RTL8168H support to emllRTL8169
- Fix DMA buffer alignment in emllRTL8169 (regression since V3.1.3.01)
- Fix DMA allocation, requesting memory below 4GB for AARCH64/ARM64 on QNX
- Updated to ECAT NDIS Protocol Driver V3.1.3.2
  - Move promiscuous mode setting from NDIS Link-Layer to NDIS protocol driver
  - Add an entry “DontSetPromiscuousMode” in the Windows registry to avoid setting promiscuous mode in ECAT NDIS Protocol Driver
  - Rename Setup to “ECAT NDIS Protocol Driver”
- Fix EcatDrvGetDrvVersion on Windows (regression since V3.1.3.01)
- Fix DMA memory allocation address handling if base is > 2GB leading to permanent frameloss in VxWorks-32Bit
- Add RTL8125 support to emllRTL8169
- Add Link Layer IST CPU affinity mask and priority for .NET and Python
- Add CYCFRAME\_RX\_CB for .NET and Python
- Updated to atemsy V1.4.17.  
Fix atemsy dma\_set\_mask\_and\_coherent() missing in kernels under 3.12.55
- NDIS fix start-up with link disconnected

## 3.29 V3.1.3.01

- Fix EC-Simulator HiL multi link Interrupt Mode
- Fix line crossed in mixed mode
- Implicitely IgnoreCoeDownloadError for EXI
- Add interrupt mode support for emllSockRaw
- Updated to EcatDrv V3.1.3.01 Add Print EcatDrv Version to Ecat Driver for Windows
- Fix parse PCI bus hardware ID string on Windows

## 3.30 V3.1.2.11

- Fix lock-up in esConfigureNetwork in case of link disconnected and only one slave configured
- Fix ERROR SDO: Toggle bit not alternated for ENI with segmented CoE InitCmds

## 3.31 V3.1.2.10

- Fix force process data (MixedMode)

## 3.32 V3.1.2.09

- Fix occasional lock-up in e.g. esSetSlaveSscApplication due to endless “wait until SyncManager is disabled”
- Fix auto increment address usage in case on line break
- Fix Bus Diagnosis Object 0x2002, SubIndex 4: Number of DC Slaves found
- Remove absent slave’s objects from 0x3nnn, 0x9nnn
- Fix esGetBusSlaveInfo wPrevPort not set
- Refresh OD on DL Status Change
- Fix return code of esGetBusSlaveInfo for absent slaves
- Fix Simulator OD on reconnect slave at other position
- Improve pcap recorder timestamps using OsPerfMeas
- Updated to atemsy V1.4.15
- Fix missing signal handler for SIGINT, SIGTERM on QNX
- Fix EcatDrv to support AuxClk period < 16ms
- Add 64Bit DMA support for RTL8169

## 3.33 V3.1.2.08

- Fix default port 0 connection of slaves with wHCIIdentifyAddrPrev (busmismatch)
- Add SlaveID to BusSlaveInfo
- Fix EK1200 support
- Add EC\_NOTIFY\_HC\_TOPOCHGDONE for esPowerSlave, esDisconnectPort, esConnectPorts
- Increase MAX\_MBX\_WRITE\_ADDRESS

## 3.34 V3.1.2.07

- Fix identity object (0x1018) in case of Default Object Dictionary for PPC

## 3.35 V3.1.2.06

- Add eCnfType\_Data for SiL
- Add FSoE
- Add EoE supported detection support
- Add EC\_IOCTL\_SIMULATOR\_SET\_MBX\_PROCESS\_CTL, EC\_IOCTL\_SIMULATOR\_GET\_MBX\_PROCESS\_CTL
- Fix HiL with winpcap
- Fix WKC for multi sync unit slaves on LRW
- Fix performance measurement

## 3.36 V3.1.2.05

- Fix esForceProcessDataBits for multiple slaves' INPUTs

## 3.37 V3.1.2.04

- Add Mixed Mode 2: Real slave between simulated slaves
- Fix Process Data Image Sync for Process Data below Adr 0x1000
- Fix esSetProcessDataBits for INPUTs, e.g. EcSimulatorHilDemoPython
- Fix missing EcWrapper for HiL
- Fix encrypted ENI/EXI accepted if OEM key missing (esSetOemKey)
- Fix missing interrupt callback registration at link layer for HiL
- Fix last SimSlave CoE object missing at esCoeGetODList
- Fix occasional crash in esResetSlaveCoeObjectDictionary

## 3.38 V3.1.1.07

- Add Object 0x2001 “Master State Summary”, Bit 8: Slaves in requested State

## 3.39 V3.1.1.06

- Discard process data variables not assigned to slaves e.g. variables from “Image-Info” in TwinCAT are out of allocated “Image”
- Replace MAC address fall back AA:BB:CC:CA:FE:xx with 00:00:00:00:00:xx
- Fix occasional crash in EXI loading

## 3.40 V3.1.1.05

- Fix EC-Simulator SiL Dongled delivery

## 3.41 V3.1.1.04

- Fix NULL pointer crash in EcSimulatorHilDemo::RasNotifyCallback
- Add SONAME for libEcSimulator.so on Linux
- Add interrupt mode for EC-Simulator HiL
- Add Mixed Mode with EC-Simulator at end support (Mixed Mode 1)
- Add /EtherCATConfig/Config/ExtendedInfo/Entry/Slaves/Slave/Simulated support
- Fix process image sync with copy offset (TwinCAT ENI)
- Skip “not used sync managers shall be disabled” check (non-acontis Master)
- Fix DPRAM from process image sync (forced data)
- Prevent lock-up in esConfigureNetwork if circulating topology provided

## 3.42 V3.1.1.03

- EC-Master supports EC-Simulator SiL license
- Add slave address in CoE object transfer callbacks
- Fix station address look-up order in esGetSlaveId

## 3.43 V3.1.1.02

- Add supported Mbx Protocols to esGetCfgSlaveInfo, esGetSlaveInfo
- CiA402 axis simulation enabled only for ApplicationName “DS402” in EXI (Regression since V3.1.1.01)
- Add “-simulator … –connect” option for e.g. Cable Redundancy
- esLogFrameEnableAtSlavePort, esLogFrameDisableAtSlavePort
- Add esSetLinkDownAtSlavePort, esSetLinkDownGenerationAtSlavePort, esResetLinkDownGenerationAtSlavePorts
- Add esSetErrorAtSlavePort, esSetErrorGenerationAtSlavePort, esResetErrorGenerationAtSlavePorts
- Fix emInitSimulator invalid parameters logging
- Add EXI parsing “PowerOff”, “PortConnection”, “IgnoreCoeDownloadError”
- Add EC\_NOTIFY\_SLAVE\_PRESENCE
- Fix esIsSlavePresent

## 3.44 V3.1.1.01

- Fix Object dictionary reset for esSetSlaveSscApplication
- Add pvContext to esSetSlaveCoeObjectTransferCallbacks
- Fix FoE, SDO transfers in SSC for PPC
- Fix esGetSlaveInpVarInfoEx, esGetSlaveOutpVarInfoEx

## 3.45 V3.1.0.20

- Add EL6695 support (extend slave RAM size to 0xA000)
- Fix invalid CoE access due to mismatched TYPEDEF\_ARRAY\_… bit offset
- Fix invalid process data access in simulated slave application

## 3.46 V3.1.0.19

- Add RAS support to EcMasterDemoMotion with EC-Simulator SiL
- Add EC\_IOCTL\_REGISTER\_CYCFRAME\_RX\_CB
- Simulator API calls over RAS esPowerSlave, esDisconnectSlave, esConnectSlaves
- Fix unknown tag warnings on startup with EXI
- Fix memory leak in Diagnosis History object of SSC
- Check Sync Manager settings according to ENI/EXI
- Fix INPUTs access from application
- Fix WKC error for Slaves with zero-lengthed FMMUs / Sync Managers
- Add Multi Sync Manager Channel support to SSC and EC-Simulator
- Fix EC-Simulator SiL OnTimer Thread on INtime
- Fix DS402 after esPowerSlave

- Clear slave inputs on slave power off

## 3.47 V3.1.0.18

- Fix crash on esPowerSlave with object dictionary from EXI or application
- Fix link layer based license key handling (HiL)
- Fix Reference Clock position for auto-connect floating hot connect
- Ignore empty RECORD / ARRAY data types
- Ignore SoE writes exceeding object's default buffer size
- Fix WIBU Product Code for EC-Simulator Dongled
- Fix partially uninitialized Object Entry Data (EXI)
- Fix occasional crash due to 0x3002 "Outputs" SDO structur (generic OD)
- Fix object length on SDO complete access download according to object description
- Fix missing awaiting all APIs have finished in esDeinitSimulator
- Fix illegal unlock in ReleaseInterface if EC-Simulator compiled with EXCLUDE\_INTERFACE\_LOCK
- PDI read OUTPUT Sync Manager already in SAFEOP to prevent WKC errors (simulated slaves with Process Data in Mailbox Mode)
- Ignore 0x1C33, SubIndex 1: Synchronisation type. Needed for simulated slaves with Process Data in Mailbox Mode.
- Add esSetLicenseKey to EcSimulatorHilDemo
- Extended 0x1C12 / 0x1C13 to 16 entries (PDO\_ASSIGN\_CNT)

## 3.48 V3.1.0.17

- Add INPUTs from Process Data Image for slaves without device emulation
- Add initially connect / disconnect all hot connect groups
- Add handler for unknown data type in Object Dictionary
- Add esResetSlaveCoeObjectDictionary
- Add esGetNumConnectedSlaves, esGetNumConnectedSlavesMain,
- Add esIsSlavePresent (linked in topology and powered on)
- Add slave information to identity object (0x1018) for default Object Dictionary
- Fix CoE OD memory leak in esSetSlaveSscApplication
- Fix slave SSC default application flash support
- Fix ecatPerfMeas
- Fix crash in esSetSlaveSscApplication for default handlers
- Fix memory leak in Object Dictionary in case of esSetSlaveSscApplication
- Fix memory corruption during logical command parsing
- Change esGetSlaveIdAtPosition: Use auto increment address from ENI/EXI
- Change licensed slave count (24 / 64 / 128 / 256)
- Add EC-Simulator-SiL-Linux-x86\_32Bit-Dongled

- Refactor emllSimulator as wrapper for EcSimulator. SiL delivery contains EC-Simulator core library.
- Rename esRemoveSlaveCoeObject to esDeleteSlaveCoeObject
- Rename esAddSlaveCoeObjects to esExtendSlaveCoeObjectDictionary

## 3.49 V3.1.0.16

- Add esSetLicenseKey for HiL (incl. MAC based key) and SiL
- Refactor emllSimulator as wrapper for EcSimulator (SiL)
- SiL: bDisableProcessDataImage, bJobsExecutedByApp defaults to FALSE
- Add EcSimulatorSilDemo
- Apply forced INPUTs to Process Data Image
- Add esGetSlaveIdAtPosition using auto increment address from ENI/EXI
- Add wNumProcessVarsInp, wNumProcessVarsOutp to esGetCfgSlaveInfo
- Add esClearSlaveCoeObjectDictionary, esRemoveSlaveCoeObject
- Add esCoeSdoDownload, esCoeSdoUpload
- Add esCoeGetODList, esCoeGetObjectDesc, esCoeGetEntryDesc for slaves
- Add esSetSlaveSscApplication
- Add esAddSlaveCoeObjects
- Add esSetSlaveCoeObjectTransferCallbacks
- Apply mailbox settings from ENI/EXI to EEPROM default content
- Increased SSC mailbox limits
- Add RAS server to emllSimulator (SiL)
- Add DL control feature “Temporary use of settings in 0x0100:0x0103[8:15]”
- Parse Hot Connect identification (Ado134, EEPROM, DPRAM) from ENI/EXI
- Add object mappable as TxPDO / RxPDO parsing from EXI
- Add object access restrictions parsing from object dictionary in EXI
- Updates to EXI parsing for new EXI format, e.g. Slave Application
- CiA402 axis simulation enabled only for ApplicationName “DS402” in EXI
- Add OEM EXI support
- Add initial memset for slave process data
- Add EC-Simulator OD reading support to EC-SlaveTestApplication
- Fix EC-Simulator OD reading (regression since V3.1.0.15)
- Re-init slave on power cycle (esPowerSlave)
- Deny BOOTSTRAP and mailbox protocols requests not enabled at ENI slave
- Fix esSetSlaveState to higher state denied
- Fix crash in esSetSlaveState for Device Emulation (not supported)
- Fix occasional crash in SSC CoE read
- Fix occasional crash in SSC Mailbox handler
- Fix crash if DS402 activated without Target Velocity

- Ignore complete access to simple object PDO config (legacy ESI support)
- Return coherent port receive times even if input port is not port A, supporting junction redundancy and line crossed topologies

## 3.50 V3.1.0.15

- Fix cyclic mailbox state cmd for HiL
- Fix ECAT Event Mask (0x0200) register refresh
- Prevent endless loop in ReceiveFrame
- Set port mode auto (revert auto-close) on slave power on
- Fix AoE for Linux x64
- Fix EC-Simulator HiL with SockRaw
- Add NDIS link layer
- Fix VendorId, ProductCode, RevisionNumber, and SerialNumber internally get from EEPROM as WORD instead of DWORD, leading to missing tabs in EC-Engineer

## 3.51 V3.1.0.14

- Add esSetSlaveState
- Add esReadSlaveIdentification
- Add esGetSlaveStatistics / esClearSlaveStatistics
- Fix esGetBusSlaveInfo returning erroneous children slaves information
- Add CiA402 simulation
- Add esSetOemKey for AtesRasSrv
- Add EC-Engineer MDP scan support using online EXI
- Add CoE Object Dictionary from EXI
- Extend default RxPDOs, TxPDOs 0x1600...0x1603, 0x1A00...0x1A03, SI 1...8 (writeable)
- Ignore CoE download error in case of default Object Dictionary
- Add INPUT setting by EC-Engineer support
- Fix EC-Simulator device information in Object Dictionary
- Add abyMac, dwRxBufferCnt, dwBusCycleTimeUsec, bJobsExecutedByApp, qwOemKey to EC\_T\_LINK\_PARMS\_SIMULATOR
- Add missing SDK\INC\EcSimulator.h to EC-Simulator SiL
- Fix EC-Simulator SiL Process Data Image support
- Fix esGetNumConfiguredSlaves

## 3.52 V3.1.0.13

- Add esConnectPorts, esDisconnectPort, esPowerSlave to EcSimulator.def
- Update SSC from V5.11 to V5.12
- Add EC-Simulator-HiL-QNX6
- Fix CPU Affinity for emllSimulator

## 3.53 V3.1.0.12

- Refresh AL Status and Control in object dictionary
- Add esGetSlaveId, esGetSlaveFixedAddr, esGetSlaveProp, esGetSlaveState, esGetSlaveInfo
- Add EC-Simulator-HiL-QNX7
- Add frame logging
- Add Network Operation Functions (esConnectPorts, esDisconnectPort, esPowerSlave)
- Fix occasional crash in ProcessFrame
- Add EEPROM write by EtherCAT support

## 3.54 V3.1.0.11

- Add EC\_NOTIFY\_SLAVE\_STATECHANGED
- Add RegisterClient / UnregisterClient
- Add EK1200 support
- Device Emulation for non-mailbox slaves if Extended Info not available for slave
- Increase MAX\_PD\_WRITE\_ADDRESS, MAX\_PD\_READ\_ADDRESS to end of DPRAM (0x3FFF)
- Device Emulation for non-mailbox slaves if Extended Info not available for slave
- Support Port Receive Times
- Add EcSimulatorHilDemo

### Platform

- Add Linux
- Add Windows