

# End-to-End Communication Protection Wrapper

## Release Notes

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## Revision Chart

A revision is a new edition of the document and affects all sections of this document.

Version	Date	Responsible Person	Modification
0.1	05.10.2010	CWE	Version for Pre-Series Release 0.1
0.2	03.11.2010	CWE	Version for Pre-Series Release 0.2
0.3	10.12.2010	CWE	Version for Pre-Series Release 0.3
0.4	04.02.2011	CWE	Version for Pre-Series Release 0.4
1.0.0	11.02.2011	AWO	Version for Series Release 1.0.0
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1.1.1	07.09.2011	AWO	Version for Series Release 1.1.1
1.1.3	09.11.2011	AWO	Version for Series Release 1.1.3
1.3.0	20.12.2011	AWO	Version for Series Release 1.3.0
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1.3.3	25.05.2012	AWO	Version for Series Release 1.3.3
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1.4.2	17.05.2013	AWO	Version for Series Release 1.4.2
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1.4.5	24.10.2013	AWO	Version for Update Release 1.4.5
1.5.0	06.11.2014	AWO	Version for Update Release 1.5.0
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2.0.1	23.01.2015	AWO	Version for Release 2.0.1
2.0.2	13.03.2015	AWO	Version for Release 2.0.2

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## 1 Overview

This document lists the artifacts, versions and change history of the End-to-End Protection Wrapper for use case AUTOSAR RTE with E2Elib Profiles 1 and 2.

**Note:** The E2E Release version is a free running version number which is incremented each time an artifact of any E2EPW package is updated. It may therefore be that in a particular package, no changes apply.

## 1.1 Abbreviation and glossary

Acronym Term	/ Meaning
E2Elib	End-to-end library (an Autosar module for end-to-end protection)
COM	Communication Layer
E2EPW	E2Elib protection wrapper
P01, P02	Profile 1, Profile 2
RTE	RunTime Environment – see AUTOSAR specification

## 2 Contents of the release

The following table lists all files of the End-To-End Communication Protection Wrapper and the corresponding version.

Directory/file	Version
LICENSE	2.0.2
pwg.exe	2.0.1
pwg_preprocessor.exe	2.0.2
UserManual_E2EPW.pdf	2.0.1
2pdu_rte_p01_demo.cfg	2.0.0
2pdu_rte_p02_demo.cfg	2.0.0
ReleaseNotes_E2EPW.pdf	2.0.2

### 3 Change History, known Limitations

#### 3.1 Protection wrapper generator changes

##### Release 2.0.2

- Now including <swc>\_MemMap.h instead of MemMap.h in generated E2EPW files.

##### Release 2.0.1

- None

##### Release 2.0.0

- Initial version of E2EPW-Generator to support updated E2Elib profile 1 and 2 which are conform to AUTOSAR Release 4.2.1.
- Updated E2E config file version (not backward compatible to previous versions)
- Updated E2EPW-Preprocessor to support new settings but maintain backward-compatibility to existing AUTOSAR configurations (.arxml) by using appropriate default values for new settings.
- No updated User Manual yet available
- No Safety Manual and to Safety Case yet available

##### Release 1.5.0

- None

##### Release 1.4.5

- Added Release Notes End-To-End Communication Protection Wrapper document to delivery.
- Removed example 2 in chapter "E2EPW and RTE in a Safety-Related System" in the User Manual, as this example turned out to be not feasible.

##### Release 1.3.2

- Adaptions regarding memory partitioning and the used MemMap.h and Compiler\_Cfg.h defines in the generated code; now conform to new specification given by Vector after last release.
- Added a check for null-byte in configuration file – now gives proper error message instead of random syntax error because of unexpected end of file.
- Updated E2EPW User Manual and E2EPW Safety Manual.

##### Release 1.3.1

- Updated E2EPW User Manual and E2EPW Safety Manual.

##### Release 1.3.0

- Check of configuration field Data\_Len altered: for Profile PXORCRC8, the allowed min.value is now 3 bytes instead of 2.

- In E2EPW\_Write\_<p>\_<o> (), the local variable ppa is now 'static' (was an AUTOSAR deviation, now eliminated).
- If the PDE\_Name of a non-opaque PA occurs in another PA of the same config-file, then a warning is produced ("The PDE\_Name <pde\_name> occurs in multiple protected areas.").
- Generated files for marshaling and deserial check are renamed: "E2EPW\_Marshal\_<node>\_<pde>.[c|h]" is now named "E2EPW\_Marshal\_<pde>.[c|h]" "E2EPW\_CheckDeserial\_<node>\_<pde>.[c|h]" is now named "E2EPW\_CheckDeserial\_<pde>.[c|h]".
- MemMap.h has been renamed to E2EPW\_MemMap.inc, Compiler\_Cfg.h has been renamed to E2EPW\_Compiler\_Cfg.inc.
- Prefix of MemMap-directives in generated code has changed from E2EPW to the Node\_Name (upper-case variant of it) of the according PA (e.g. E2EPW\_START\_SEC\_CODE -> NODE1\_START\_SEC\_CODE).
- max. allowed value for Max\_Delta\_Counter\_Resync ist now 14 (instead 15) for P02, PXOR and PXORCRC8 and 13 (instead 14) for P01.

### Release 1.1.2

- Preview version for E2E profile P01 only.

### Release 1.1.1

- MemMap.h updated according to Vector naming conventions (of the default project).
- Missing MISRA justifications in generated code added (comments only, no functional change in generated code).

### Release 1.1.0

- The return-value of Rte\_Read\_<p>\_<o> () other than E2E\_E\_OK is **not** considered an error any more (but still returned by E2EPW\_Read\_<p>\_<o> ()).
- MemMap define E2EPW\_START\_SEC\_CODE\_LIB in generated code is now E2EPW\_START\_SEC\_CODE (generated code is part of application).

### Release 1.0.3

- The max. length of PDE\_NAME, PDE\_Type, Node\_Name, Signal\_Name, Port\_Name and VDP\_Name has been extended from 32 to 128 characters.
- The max. length of include file names has been extended from 64 to 260 characters.
- The max. length of the input filename and output path has been extended from 256 to 260 characters.

## 3.2 Protection wrapper generator limits

The following limitations are only valid for the usecase AUTOSAR RTE:



- The internal behavior of the generated E2EPW code is backward-compatible to earlier versions (which were compatible to AUTOSAR R3.2.1/R4.0.1.).
- The API-Function names were updated to reflect changes of the specification in AUTOSAR R4.2.1:
  - E2EPW\_Init\_<p>\_<o>\_rx was renamed to E2EPW\_ReadInit\_<p>\_<o>
  - E2EPW\_Init\_<p>\_<o>\_tx was renamed to E2EPW\_WriteInit\_<p>\_<o>
  - E2EPW\_Get\_SenderState\_<p>\_<o> was renamed to E2EPW\_Get\_ProtectState\_<p>\_<o> (as was the datatype of the data structure)
  - E2EPW\_Get\_ReceiverState\_<p>\_<o> was renamed to E2EPW\_Get\_CheckState\_<p>\_<o> (as was the datatype of the data structure)

Limits that were also present in previous versions:

- Is\_Opaque has not been tested yet and shall not be used.
- The combination of Port and DE is expected to be unique. If this cannot be guaranteed (e.g. two SW-Cs using the same Port+DE combination), an external macro may be used to redefine the function names to avoid linker errors. The integrator is responsible to ensure that this has no unintended side-effects to the operation of the protection wrapper functions (typically ensured by corresponding integration tests).
- Multiple instantiation of the same Protected Data Element + Port combination are currently not supported by the E2EPWG. However, a SW-C specific header file may be added to redefine the function prototypes at compile-time. This is a manual workaround without tool support.

### 3.3 Preprocessor changes

#### Release 2.0.2

- Added support for AUTOSAR MetaModel 4.1.3
- Fixed handling of Unused-Bit-Pattern, if present/provided in MetaModel

#### Release 2.0.1

- Added support for AUTOSAR MetaModel 3.2.2
- Now supporting data offset of signal groups in I-PDUs (automatic detection)
- Added support for AUTOSAR MetaModel 4.1.2
- Improved log output format, also for internal processing errors (error traceback now only visible with option -v2)
- Change of behavior regarding parsing/data aggregation errors: now, these errors are considered [Warnings] and do only lead to skipping the currently processed EndToEndProtection (indicated by dedicated [Info] message).
- Support for E2Elib Profile 1C workaround: according settings to map Profile 1C to Profile 1A is done by preprocessor. However, the application still must handle the DataIDNibble. Comment generated in E2E config file indicates the applied workaround settings.

#### **Release 2.0.0**

- Support for additional configuration settings for the updated E2Elib profiles.
- Changed output format of generated E2E config file to be compatible with updated E2EPW-Generator (format 2.0.0).

#### **Release 1.5.0**

- Minor fix in E2EPWG-Preprocessor: E2Elib profile 4 now is ignored and only produces a warning, thus enabling parallel use of E2EPWG for profiles 1 and 2 and E2E-Transformer for profile 4.

#### **Release 1.4.5**

- None

#### **Release 1.4.4**

- Added support for Application Data Types (AUTOSAR 4)
- Fixed a problem with Application-SW-Cs in Composition-SW-Cs when using a Proxy-SW-C.

#### **Release 1.4.1**

- Feature update: the CPU-byte-order can now be specified by providing the ECUC-File as command line parameter to the Preprocessor.
- CPU-byte-order specification is now mandatory (no longer using default value).
- Corrected naming of the input files.

#### **Release 1.3.8**

- Fixed an issue that lead to an unnecessary abort of preprocessing in case multiple I-Signals are named similar and at least one of them is used for End-to-End communication protection.

#### **Release 1.3.7**

- Added support for a special Proxy SW-C use case where the Proxy SW-C receives a data element and forwards it to multiple SW-Cs where at least two of them are using E2E.

#### **Release 1.3.6**

- Fixed a bug regarding multiple Signal triggerings (usually the case in Gateway ECUs).

#### **Release 1.3.5**

- Fixed a bug regarding splitting ApplicationSWComponentTypes across multiple AR-Packages.

#### **Release 1.3.4**

- Added support for AUTOSAR arxml format/schema <http://autosar.org/schema/r4.0>, schema AUTOSAR\_4-0-3.xsd

- Added support for new error message output format needed by Configurator 5.
- Reworked the error message output format and information that is provided therein.
- For AUTOSAR 4 formats, Unused\_Bit\_Value is taken from .arxml, while for AUTOSAR 3 formats OEM specific defaults are used.
- Removed several dependencies on AR-Package names.

### Release 1.3.3

- Added support for Proxy SW-Cs.
- Moved inclusion of Rte\_<SW-C Name>.h to the C-Files (Includes\_C instead of Includes\_H). This solves an issue about usage of the same DE in several SW-Cs.

### Release 1.3.0

- Bugfix: When multiple I-Signals are using an E2E-protected System-Signal, the I-Signals of the same transmission direction are now checked for consistency properly.
- Performance improvement: preprocessor runtime grew exponential to filesize. Now using lookup tables for references, greatly improving performance.
- Changed default value for Use\_RTE\_Update from 'NO' to 'YES'.

### Release 1.1.1

- Support for AUTOSAR XML Schema version 3.2.1.

### Release 1.0.3

- Support for Profile 'NONE' – this deactivates an End-To-End-Protection set found in the input file.
- Improved wording and content of several error messages.
- Better evaluation and handling of references in the XML data.
- Correct mapping of System-Signals to I-Signals.
- No dependencies on name and nesting of AR-PACKAGES.
- Added check for matching signal length of System-Signal and I-Signal.

## 3.4 Preprocessor restrictions

Multiple I-PDUs carrying a protected signal group/PDE must have the same signal layout, which is checked by the Preprocessor (the check is indicated by a warning message).

Multiple protected signal groups/PDEs in an I-PDU are currently not supported by the Preprocessor.